Koppers Inc

General Information

ID	Branch	SIC	County	Basin	Start	End
876	Energy and Transportation	2491	Grenada	Yazoo River	11/09/1981	

Address

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

Telecommunications

Type	Address or Phone
Work phone number	(662) 226-4584, Ext. 11

Alternate / Historic AI Identifiers

Alt ID	Alt Name	Alt Type	Start Date	End Date
2804300012	Koppers Industries, Inc.	Air-AIRS AFS	10/12/2000	
096000012	Koppers Industries, Inc.	Air-Title V Fee Customer	03/11/1997	
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	01/01/2009
MSR220005	Koppers Industries, Inc.	GP-Wood Treating	09/25/1992	
MSD007027543	Koppers Industries, Inc.	Hazardous Waste-EPA ID	08/27/1999	
HW8854301	Koppers Industries, Inc.	Hazardous Waste-TSD	06/28/1988	06/28/1998
HW8854301	Koppers Industries, Inc.	Hazardous Waste-TSD	11/10/1999	09/30/2009
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
MSU081080	Koppers Industries, Inc.	Water-SOP	11/09/1981	11/30/1985

Regulatory Programs

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	Baseline Stormwater	01/01/1900	
Water	PT CIU	11/14/1995	
	PT CIU - Timber Products		

Water	Processing (Subpart 429)	11/14/1995	
Water	PT SIU	11/14/1995	

Locational Data

Latitude	Longitude	Metadata	S / T / R	Map Links
33 ° 44 ' 3 .00 (033.734167)	89 ° 47 ' 8 .06 (089.785572)	**Point Desc:** PG- Plant Entrance (General). Data collected by Mike Hardy on 11/8/2005. Elevation 223 feet. Just inside entrance gate. **Method:** GPS Code (Psuedo Range) Standard Position (SA Off) **Datum:** NAD83 **Type:** MDEQ	Section: Township: Range:	SWIMS TerraServer Map It

12/20/2006 12:16:40 PM

Mississippi Department of Environmental Quality
Office of Pollution Control

I-sys 2000 Master Site Detail Report

Site Name: Koppers Industries Inc

PHYSICAL ADDRESS

LINE 1:	Tie Plant Road
LINE 2:	
LINE 3:	
MUNICIPALITY:	Tie Plant
STATE CODE:	MS
ZIP CODE:	38960-

MAILING ADDRESS

LINE 1:	PO Box 160
LINE 2:	
LINE 3:	
MUNICIPALITY:	Tie Plant
STATE CODE:	MS
ZIP CODE:	38960-

OTHER INFORMATION

MASTER ID:	000876
COUNTY:	Grenada
REGION	NRO
SIC 1.	2491
AIR TYPE:	TITLE V
HW TYPE:	TSD
SOLID TYPE:	
WATER TYPE:	INDUSTRIAL
BRANCH:	Energy

ECED CONTACT:
Collier, Melissa

BASIN:

AIR PROGRAMS ☑ SIP ☐ PSD ☐ NSPS ☐ NESHAPS ☐ MACT

Mississippi Department of Environmental Quality
Office of Pollution Control

Pemits

PROGRAM	PERMIT TYPE	PERMIT #	MDEQ PERMIT CONTACT	ACTIVE
AIR	TITLE V	096000012	Burchfield, David	YES
WATER	PRE-TREATMENT	MSP090300	Collins, Bryan	YES
HAZ. WASTE	TSD	HW8854301		YES
HAZ. WASTE	EPA ID	MSD007027543		YES
HAZ. WASTE	TSD	HW8854301	Stover, Wayne	YES

Compliance Actions

MEDIA	ACTIVITY TYPE	SCHEDULED	COMPLETED	INSPECTED B
HAZ WASTE	Financial Record Review	1/18/00	1/18/00	Twitty, Russ
WATER	CMI - PRETREATMENT			Whittington, Darryail
WATER	CEI - PRETREATMENT	9/30/00		Twitty, Russ
WATER	CEI - NA	9/30/00		Twitty, Russ
HAZ WASTE	Compliance Evaluation Inspection	9/30/00		Twitty, Russ
AIR	State Compliance Inspection	9/30/00		Twitty, Russ
WATER	CEI - NA	3/2/99	3/2/99	Twitty, Russ
HAZ WASTE	Compliance Evaluation Inspection	3/2/99	3/2/99	Twitty, Russ
AIR	State Compliance Inspection	3/2/99	3/2/99	Twitty, Russ

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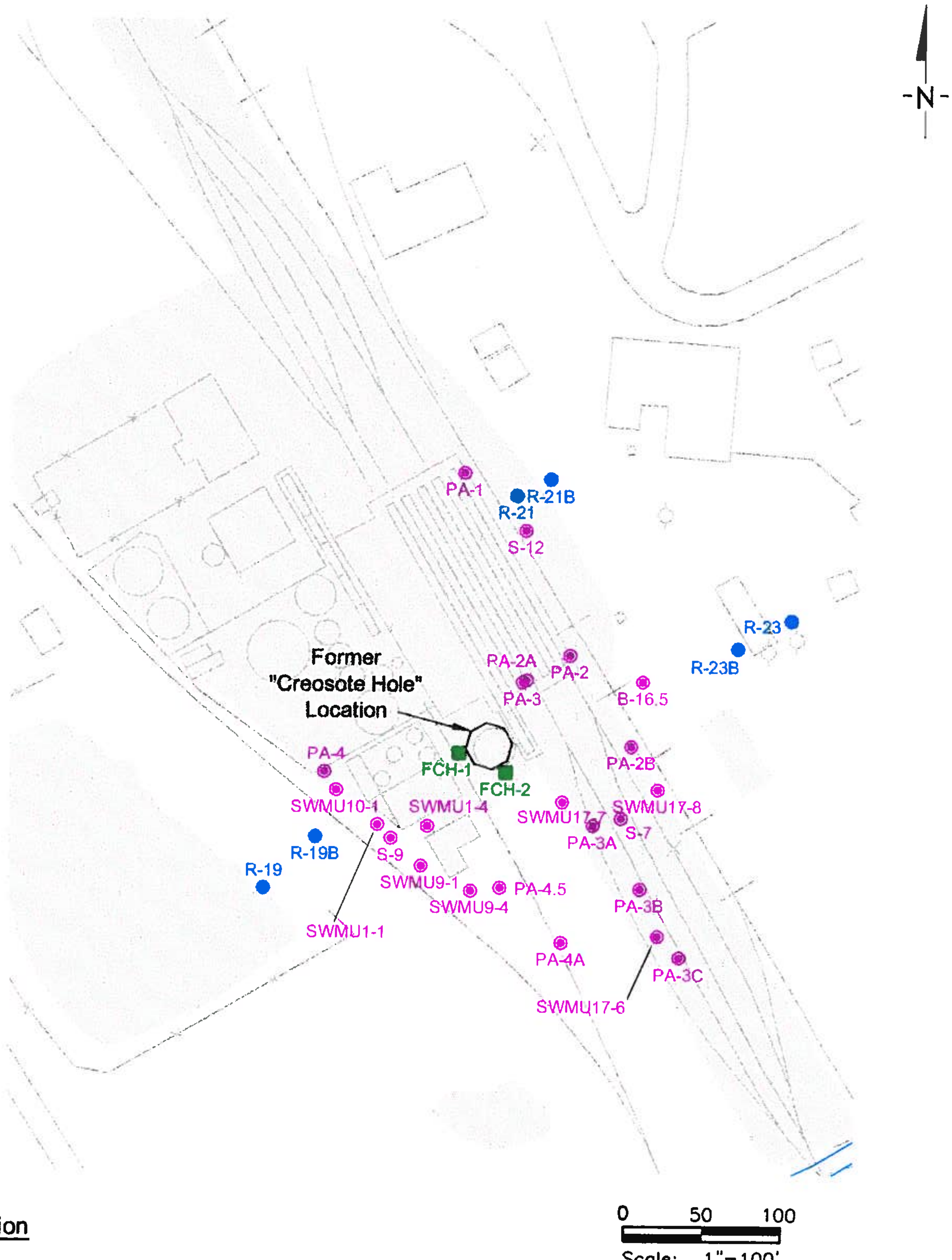

Explanation

- Existing Monitor Well Locations
- Existing Boring Locations
- SWMU Area
- Proposed Former "Creosote Hole" Boring Locations

TITLE:	Proposed Soil Borings Near Former "Creosote Hole" Location
LOCATION:	Koppers Industries, Inc., Grenada, MS

GeoTrans, Inc.

CHECKED:	JAA	FIGURE:
DRAFTED:	GHP	1
DATE:	05-31-02	

EBASCO SERVICES INCORPORATED EBASCO
145 Technology Park/Atlanta, Norcross, Georgia 30092, (404) 449-5800

March 23, 1987
RMIV-REM-87-091
Response Date: N/A

Mr. Kurt Batsel
Regional Project Officer
Residuals Management Branch
U.S. Environmental Protection Agency
Region IV
345 Courtland Street
Atlanta, Georgia 30365

Dear Mr. Batsel:

Subject: REM III - EPA CONTRACT NO. 68-01-7250
WORK ASSIGNMENT NO. 19-40RR.0-21
KOPPERS COMPANY, INC. FACILITY
DRAFT INTERIM RFA REPORT

As the REM III Contractor, Ebasco Services Incorporated (Ebasco) is pleased to provide the Draft Interim RCRA Facility Assessment Report for the Koppers Company, Inc. Facility. This report is provided for your review and we are prepared to make appropriate revisions as you direct.

Please call Ed Hagarty at (301) 942-5600 or me at (404) 662-2378 with any items which may need clarification or revision.

Very truly yours,

Russell H. Boyd

Russell H. Boyd, Jr., P.E.
Regional Manager
Region IV

RHB/blw

ACKNOWLEDGMENT OF RECEIPT

Please acknowledge receipt of this enclosure on the duplicate copy of this letter and return the signed duplicate letter to: Russell H. Boyd, Jr., P.E., Ebasco Services Incorporated, 145 Technology Park, Norcross, Georgia, 30092.

Signature

Date

cc: R. Frost
M. K. Yates
M. Amdurer
E. Hagarty
File: RCRA: 21

March 87

KOPPERS COMPANY INCORPORATED
GRENADA, MISSISSIPPI

DRAFT INTERIM RFA REPORT

EPA Work Assignment No.: 19-4ORR.0-02-21

under

Contract No. 68-01-7250

Prepared by:

C. C. Johnson & Malhotra, P.C.
Silver Spring, MD

Approved By:

Ebasco Services Incorporated
Atlanta, GA

Prepared By:

Ivan Noel

Ivan C. Noel
Site Manager
C. C. Johnson & Malhotra, P.C.

Approved By:

Russell H. Boyd Jr.

Russell H. Boyd, Jr., P.E.
Regional Manager, Region IV
Ebasco Services Incorporated

KOPPERS COMPANY INCORPORATED
GRENADA, MISSISSIPPI
INTERIM RESOURCE
CONSERVATION AND RECOVERY ACT (RCRA)
FACILITY ASSESSMENT

Prepared For:

EBASCO SERVICES INCORPORATED
Atlanta, GA

Prepared By:

C. C. JOHNSON & MALHOTRA, P.C.
Silver Spring, MD

March 1987

EPA WORK ASSIGNMENT NO. 19-4ORR.0-02-21
UNDER
EPA CONTRACT NO. 68-01-7250

EBASCO SERVICES INCORPORATED

INTERIM RFA

KOPPERS COMPANY INCORPORATED
Grenada, MS

MARCH 1987

NOTICE

The information in this document has been funded by the United States Environmental Protection Agency (U.S. EPA) under REM III Contract No. 68-01-7250 to Ebasco Services Incorporated (Ebasco). This Interim RFA Report is a draft and has not been formally released by either Ebasco or the U.S. EPA. As a draft, this document should not be cited or quoted and is being circulated for comment only.

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impacted by pentachlorophenol, benzene, and polynuclear aromatic hydrocarbons. The existing wells and analytical data from the wells provide adequate characterization of the groundwater impacts in the vicinity of the former "creosote hole" location. Therefore, no additional wells will be drilled or sampled in the vicinity of the former "creosote hole".

Potential Additional Sampling of Site and/or Private Wells

Koppers Industries, Inc. (KII) has a plant production well on site that is used for fire suppression and non-potable sanitary services. Beazer sampled and analyzed the KII plant production well on August 8, 2000 for polynuclear aromatic hydrocarbons and pentachlorophenol. The analytical results are summarized below:

KII Plant Production Well
Sampled August 2, 2000

Parameter	Result	Units
2-methylnaphthalene	< 0.1	µg/L
acenaphthene	< 0.1	µg/L
acenaphthylene	< 0.1	µg/L
anthracene	< 0.1	µg/L
benz(a)anthracene	< 0.1	µg/L
benzo(a)pyrene	< 0.1	µg/L
benzo(b)fluoranthene	< 0.1	µg/L
chrysene	< 0.1	µg/L
benzo(g,h,i)perylene	< 0.1	µg/L
benzo(k)fluoranthene	< 0.1	µg/L
dibenz(a,h)anthracene	< 0.1	µg/L
dibenzofuran	< 0.1	µg/L
fluoranthene	< 0.1	µg/L
indeno(1,2,3-c,d)pyrene	< 0.1	µg/L
naphthalene	< 0.1	µg/L
pentachlorophenol	<0.5	µg/L
phenanthrene	< 0.1	µg/L
pyrene	< 0.1	µg/L

The vertical and lateral extent of site constituents in the Upper Sand and Lower Sand Zones were characterized during the Phase II RFI activities in 1991 and 1997 through 2000. The extent of site constituents extends approximately 850 feet east (downgradient) of the site. No domestic wells appear to be threatened by the site impacts. Therefore, performing additional sampling and analysis of site or private wells is unwarranted.

Potential Dioxin Analyses of Groundwater Samples

Polychlorinated Dibenzo-p-Dioxins/Polychlorinated Dibenzo Furans (PCDDs/PCDFs) constitute a class of 210 structurally related chemical compounds, or congeners, that are often present in complex mixtures. PCDDs/PCDFs have been associated with wood treating operations due to impurities in technical grade pentachlorophenol. PCDDs/PCDFs are considered insoluble in water with a solubility less than 1 µg/L and are considered immobile in soil due to their K_{oc} values that exceed $1x10^6$ (Montgomery and Welkom, 1996). The transport of dioxins/furans via groundwater is unlikely given the low solubility and low mobility of dioxins/furans congeners. Therefore, sampling and analyzing site groundwater for PCDDs/PCDFs would not assist in the characterization of site constituents.

This letter provides Beazer's response to the site characterization issues identified by the EPA, including: additional sampling in the vicinity of the former "creosote hole", potential additional sampling of site and/or private wells; and, potential dioxin analyses of groundwater samples.

If you have any questions regarding this transmittal, please contact Mike Bollinger at (412) 208-8864.

Sincerely,

GEOTRANS, INC.

for

Jennifer Abrahams, R.G.
Project Manager

Attachment

cc: Jerry Cain, MDEQ
Mike Bollinger, Beazer
Tim Basilone, KII
Tom Henderson, KII
Paul Anderson, AMEC

GeoTrans, Inc.
A TETRA TECH COMPANY
3035 Prospect Park Drive
Suite 40
Rancho Cordova, CA 95670-6070
www.geotransinc.com
916-853-1800 FAX 916-853-1860

June 5, 2002
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RCRA Programs Branch
Waste Management Division
U.S. Environmental Protection Agency
61 Forsyth Street SW
Atlanta, Georgia 30303

Attn: Mr. Narinda M. Kumar, Chief
South Programs Section

Subject: Work Plan to Characterize Soil in the Vicinity of the Former "Creosote Hole"
Koppers Industries/Beazer East, Inc.
Tie Plant, Mississippi
EPA I.D. No. MSD 007 027 543

Dear Mr. Kumar:

This work plan is submitted on behalf of Beazer East, Inc. to characterize soil constituents in the vicinity of the former "creosote hole" at the Koppers Industries, Inc. Grenada Facility in Grenada, Mississippi (site). The results of this proposed work will address concerns raised by Koppers Industries, Inc. in a November 22, 2000 letter to EPA.

Historical Sanborn maps from 1925, 1945, and 1959 identify a site feature in the Central Process Area that is labeled "creosote hole". Activities performed during the RCRA Facility Investigation at the site include drilling and sampling soil borings and monitoring wells for site constituents in the vicinity of the former "creosote hole". The boring and well locations are shown on Figure 1. Beazer will drill and sample two additional borings adjacent to the former "creosote hole" to further characterize this former site feature.

SCOPE OF WORK

The scope of work is described below.

1) Drill two soil borings approximately 20-feet deep in the vicinity of the former "creosote hole" location, as shown on Figure 1. The soil boring lithology will be described, including visual evidence of non-aqueous phase liquids, if present.

2) Collect two soil samples for analysis from each boring. Samples will be collected near the surface and just above the water table; the sample depths will be approximately one-foot and 20-feet below ground surface. The samples will be submitted for analysis of pentachlorophenol and polynuclear aromatic hydrocarbons by EPA method 8270 SIM and benzene, ethylbenzene, toluene, and xylenes by EPA method 8021B.
3) The borings will be grouted with cement-bentonite grout pumped through a tremie pipe installed to the bottom of the boring immediately after the soil samples are collected.
4) The drill cuttings and decontamination water will be drummed and labeled. These site investigation materials will be disposed of appropriately in accordance with state and federal regulations.

The field investigations will be performed in accordance with sampling procedures and quality assurance objectives specified in the January 8, 1997 *RCRA Facility Investigation, Work Plan Addendum, Koppers Industries, Inc., Grenada Facility, Grenada, Mississippi*. The Health and Safety Plan presented in the August 16, 1999 *Work Plan to Complete Phase II RCRA Facility Investigation, KII Grenada Facility, Grenada, Mississippi* (Work Plan to Complete RFI) will be followed while conducting the sampling activities described in this work plan.

SCHEDULE

Beazer plans to implement this work immediately upon approval from the EPA. The field work is anticipated to be completed in one day. The laboratory analytical results will be received in approximately three weeks. The analytical results will require one week to conduct quality assurance/quality control reviews and enter into the site database.

A summary of the field activities and laboratory results for the former "creosote hole" investigations will be submitted to the EPA upon completion.

If you have any questions regarding this work plan, please call Mike Bollinger at (412) 208-8864.

Sincerely,

GEOTRANS, INC.

for

Jennifer A. Abrahams, R.G.
Project Manager

Attachment
cc: Jerry Cain, MDEQ
Mike Bollinger, Beazer
Tim Basilone, KII
Tom Henderson, KII
Paul Anderson, AMEC

APPENDIX A

SITE VISIT TRIP REPORT

T. Cook

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

4WD-RPB

Mr. Michael W. Bollinger
Beazer East, Inc.
One Oxford Centre, Suite 3000
Pittsburgh, PA 15219

SUBJ: (1) Letter of February 7, 2002
(2) Northern Stream Sediment Sampling
Dated, March 14, 2002
Response to EPA's December 7, 2001 Comments
on the Workplan to Further Characterize
Sediments in the Northern Stream
Koppers Industries/Beazer East, Inc.
Tie Plant, Mississippi
EPA I.D. No. MSD 007 027 543

Dear Mr. Bollinger:

The U.S. Environmental Protection Agency (EPA) has reviewed the letters of February 7, 2002 and March 14, 2002 in response to the EPA's December 7, 2001 Comments on the Workplan to Further Characterize Sediments in the Northern Stream for Koppers/Beazer, Tie Plant, Mississippi. The letter of March 14, 2002 contains the summary of the results of the Northern Sediment sampling performed to date.

Based on review, it is found that the facility has addressed the comment no. 4 of the EPA's December 7, 2001 comments. The first three comments have not been addressed. Please address the first three comments, contained in the EPA's letter of December 7, 2001 in an itemized manner. Also, note that the EPA comments have been focused on the contamination assessment of the Northern Stream which eventually will determine both the remedial action and ecological risk assessment. A response to the first three comments must be submitted to EPA and the Mississippi Department of Environmental Quality (MDEQ), no later than forty-five (45) calendar days after the receipt of this letter. Please mail two (2) copies of the response to EPA and one (1) copy to MDEQ at the following addresses:

Narindar M. Kumar, Chief	Jerry Cain, Chief
RCRA Programs Branch	Environmental Permit Division
Waste Management Division	Mississippi Department of Environmental Quality
U.S. EPA Region 4	Office of Pollution Control
61 Forsyth Street, Southwest	P.O. Box 10385
Atlanta, Georgia 30303	Jackson, MS 39289-0385

T. Cook

GeoTrans, Inc.
A TETRA TECH COMPANY
3035 Prospect Park Drive
Suite 40
Rancho Cordova, CA 95670-6070
www.geotransinc.com
916-853-1800 FAX 916-853-1860

RECEIVED
JUN 6 2002

June 5, 2002
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RCRA Programs Branch
Waste Management Division
U.S. Environmental Protection Agency
61 Forsyth Street SW
Atlanta, Georgia 30303

Attn: Mr. Narinda M. Kumar, Chief
South Programs Section

Subject: Response to EPA's May 2, 2002 Letter
Follow-up to the March 19, 2002 Meeting
Koppers Industries/Beazer East, Inc.
Tie Plant, Mississippi
EPA I.D. No. MSD 007 027 543

Dear Mr. Kumar:

On behalf of Beazer East, Inc. (Beazer), this letter provides a response to your letter dated May 2, 2002, and received by Beazer on May 6, 2002. The letter prepared by EPA summarizes the status of risk assessment and site characterization issues for the Koppers Industries, Inc. Grenada Facility in Grenada, Mississippi (site) that were discussed at the March 19, 2002 meeting between EPA and Beazer.

EPA stated their satisfaction with the potential exposure scenarios for the risk assessment, as discussed at the meeting. Beazer will submit the revised risk assessment to the EPA with the Complete Phase II RCRA Facility Investigation (RFI) Report.

The site characterization issues included: additional sampling in the vicinity of the former "creosote hole"; potential additional sampling of site and/or private wells; and, potential dioxin analyses of groundwater samples. These issues are addressed below.

<u>Former "Creosote Hole"</u>

Beazer agreed to drill and sample two soil borings in the vicinity of the former "creosote hole" location. A work plan to further characterize the site soil constituents in the vicinity of the former "creosote hole" is attached to this letter.

Three well pairs (a total of six monitoring wells) are present within a 150-foot radius around the former "creosote hole" location. Analytical results for water samples from these wells indicate that the groundwater in the Upper Sand and Lower Sand Zones is

1.0 INTRODUCTION

The Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) is designed to evaluate potential releases of hazardous wastes or hazardous constituents and to implement corrective actions, as necessary, under the broad authority of the 1984 Hazardous and Solid Waste Amendments (HSWA). The RFA identifies information on solid waste management units (SWMUs) at RCRA facilities, evaluates the potential for releases to the environment, and determines the need for future investigations.

The Interim RFA begins with a desktop exercise to review existing U.S. Environmental Protection Agency (EPA) files and gather data from appropriate state environmental agencies regarding SWMUs and potential releases at the RCRA facility. Additional information is obtained through a trip to the facility to identify SWMUs, provide visual confirmation of SWMU characteristics and releases, and develop locations and rationale for onsite sampling, if required at a later date.

The Koppers Company SWMU response letter, RCRA Part B permit application, additional file information provided by EPA-Region IV, file information from state regulatory agencies, and Koppers environmental-related files have been reviewed and pertinent information is summarized herein. Information obtained during the site trip conducted on January 15, 1987 and documented in the Site Trip Report (C. C. Johnson & Malhotra, P.C.) is discussed in this report and included as Appendix A.

2.0 DESCRIPTION OF FACILITY OPERATIONS

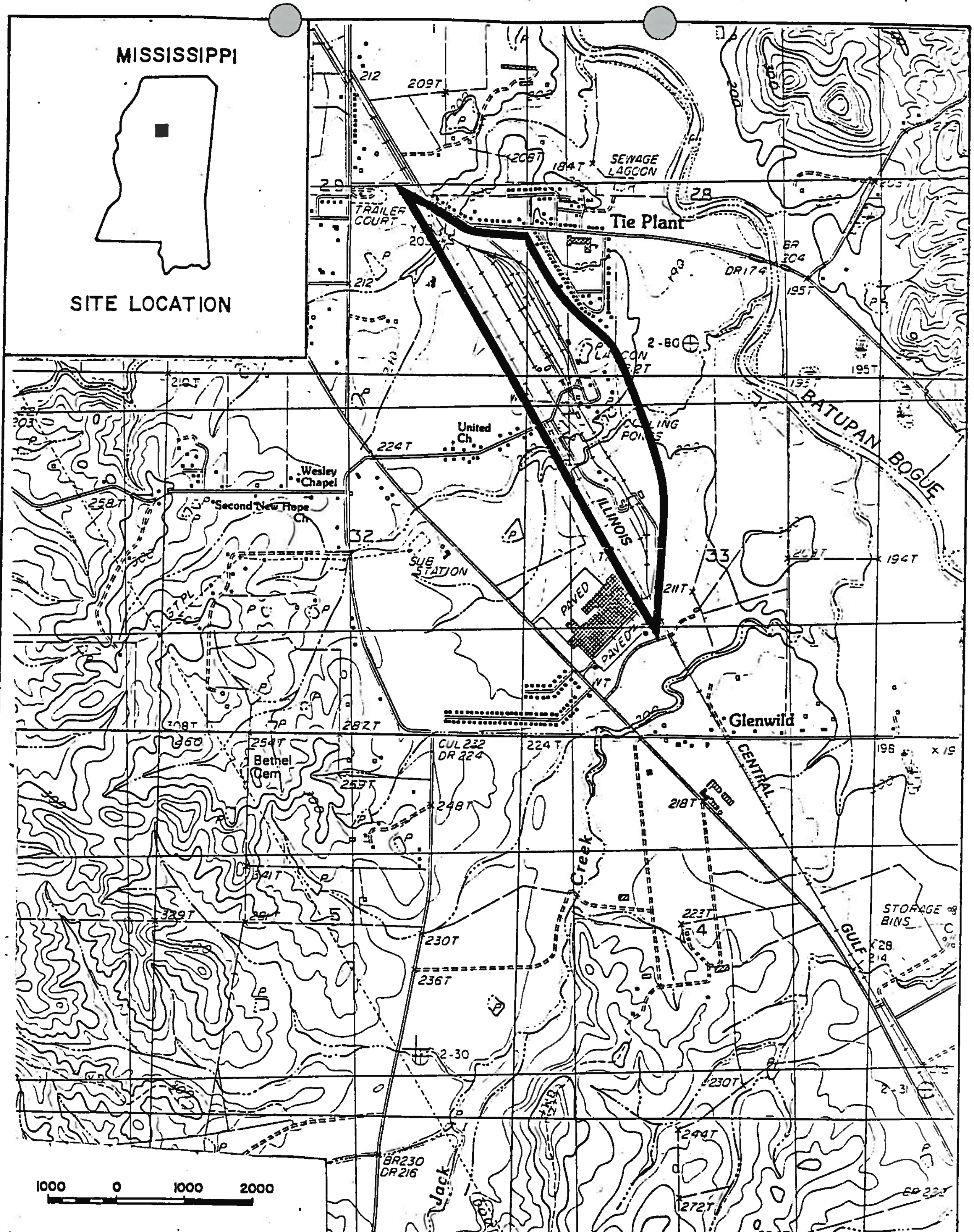
The Koppers Company began operation at the Grenada facility (Figure 2-1), EPA Identification No. MSD007027543, in the 1930s. Reportedly, a wood preserving facility has existed on the grounds since approximately 1900. The facility has been involved with the use of creosote and pentachlorophenol in the pressure treatment of wood products for railroads, utilities and others. The primary product is treated railroad cross ties. Raw materials and treated products arrive and leave by rail and truck.

Generally, wood comes to the facility presized, although the facility does have limited wood working capabilities to size ties or fabricate wood products to customer specifications. Once the wood product is sized, it is preconditioned by air drying, steaming or the Boulton process to reduce the woods moisture content and increase its permeability. The wood is loaded on to tram cars which are pushed into the cylinder using a small locomotive, lift truck, or similar equipment. The cylinder is sealed and steam conditioning or the "Boulton" process may be applied. Treatment solutions are then pumped into the cylinder and pressure applied. Treatment solutions currently include creosote in a diesel fuel carrier and a pentachlorophenol and oil mixture. The plant manager indicated that he thought a different chemical process was used in the past (prior to 1970) but was unsure of the process. Salts of chromium, arsenic and copper are sometimes used as wood preservatives. At the end of the process, the excess treatment solution is pumped out of the cylinder and back to a storage tank for re-use. A final vacuum is then pulled and any additional solution on the wood or in the cylinder is pumped to the storage tank. The cylinder door is opened and the trams, loaded with treated wood, are removed from the cylinder to a drip track where excess treatment chemicals drip from wood to an underdrain to the oil/water separator.

used to [illegible]

Koppers also operates a wood fired co-generation boiler at the facility. Wastes generated at the facility with adequate BTU value are burned in the boiler. The plant also receives truck load shipments of high BTU-value waste from other Koppers facilities which generate creosote and wood preserving wastes suitable for use as boiler fuel.

facility no longer receives waste from offsite?



APPROXIMATE PROPERTY BOUNDRY OF KOPPERS COMPANY, INC.

KOPPERS COMPANY, INC.

FIGURE 2-1 VICINITY MAP

SOURCE: USGS TIE PLANT QUADRANGLE

3.0 ENVIRONMENTAL SETTING, WASTE GENERATION, AND TARGET POPULATIONS

3.1 GEOLOGIC AND HYDROLOGIC SETTING

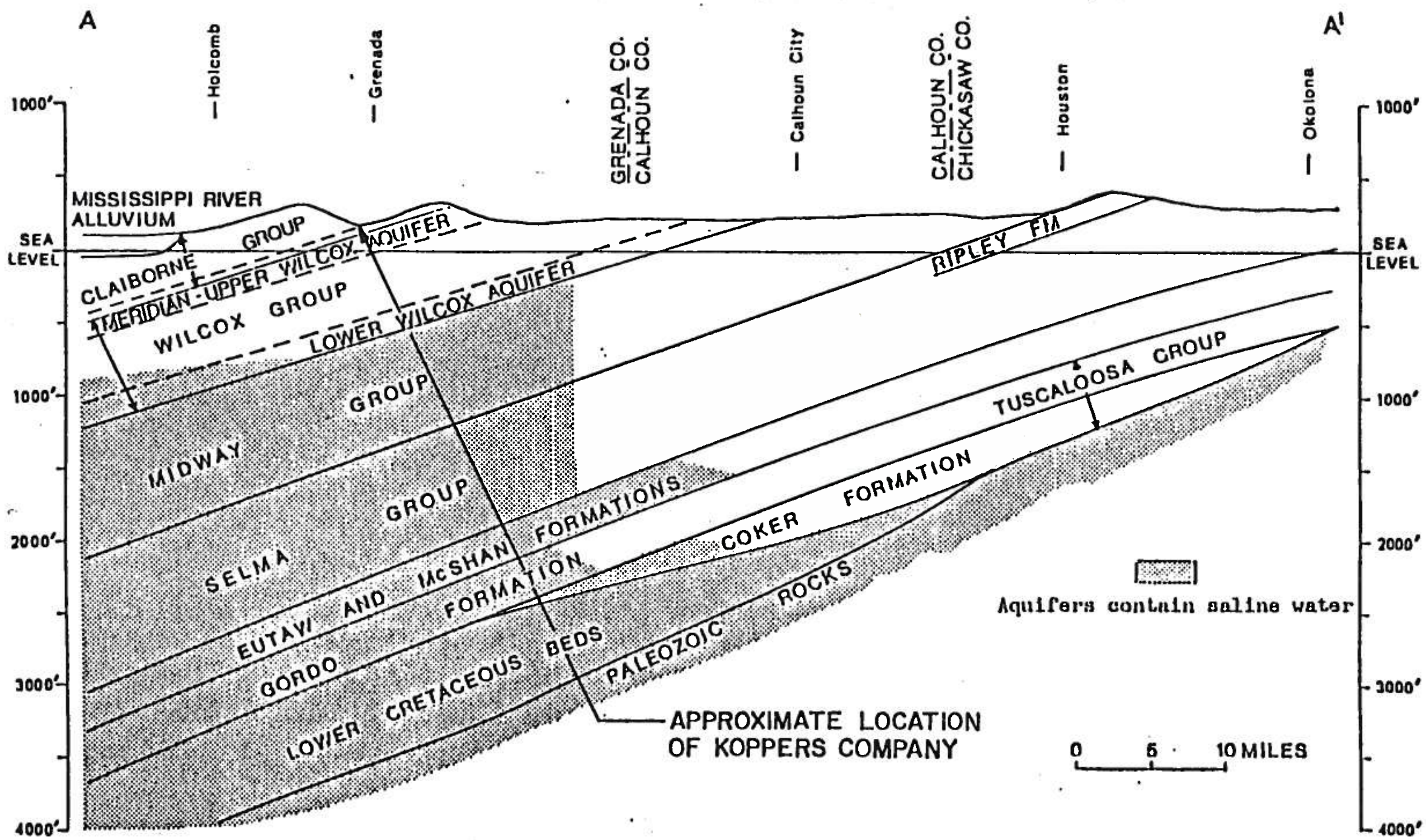
3.1.1 Physiography

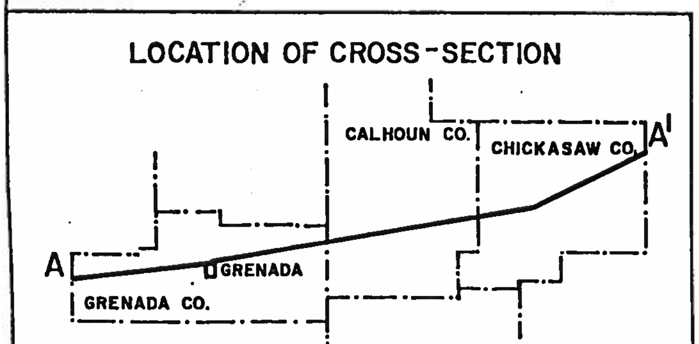
The Koppers Company facility is located in Grenada County, Central Mississippi. Figure 2-1 is taken from the USGS Tie Plant Quadrangle of Grenada County. Most of Grenada County, including the area of the facility, lies in the North-Central Hills Physiographic Province. This province is characterized by rolling hills with well defined drainage. Elevations in the area of the facility range from approximately 210 feet above mean sea level at topographic highs to approximately 180 feet above mean sea level near Batupan Bogue.

3.1.2 Stratigraphy and Structure

The formations exposed in Grenada County range in age from Eocene to Holocene and out-crop in nearly north-south bands. The general dip direction of the formations, with the exception of flat lying surface deposits, is westward toward the Mississippi embayment. The Claiborne Group, specifically the Tallahatta Formation, out-crops in the area of the Kopper facility and is underlain by the Wilcox Group which includes the Holly Spring and Ackerman Formations. In this area, the deeper formations typically contain saline waters and will not be discussed here. Figure 3-1 shows a geologic cross-section of the Grenada, Mississippi area which depicts the local stratigraphy.

The Tallahatta Formation includes in ascending order, the Meridian Sand, Basic City Shale, and Neshoba Sand members. The Basic City Shale member is composed of sparsely fossiliferous light-colored clay-stone, siltstone, and shale. Ledges of hard quartzitic rock (buhrstone) are common. Beginning in central Mississipi, south of the facility, the upper part of the Basic City Shale member interfingers northward into the Neshoba Sand member, a unit reportedly present in Grenada County. The Neshoba Sand member of the Tallahatta Formation typically consists of a fine micaceous quartz sand containing interbedded gray clay. The Neshoba and overlying Winona Sand, which outcrops to the west of the facility, are hydraulically connected to form the Winona-Tallahatta aquifer. The Winona sand out-crops in many of the hills to the west of the facility.





KOPPERS COMPANY, INC.

FIGURE 3-1 GEOLOGIC CROSS-SECTION THROUGH GRENADA COUNTY, MISSISSIPPI

SOURCE: NEWCOME AND BETTANDORFF, 1974

The above discussion was extracted from Spiers, 1977. Brown and Adams, 1943 report that the Basic City Shale member out-crops in the area of the facility and do not discuss the Neshoba Sand member. Brown and Adams do however describe the Basic City Shale as consisting of sands in northern Mississippi.

Although the Meridian Sand member is part of the Tallahatta Formation, it is a separate aquifer. Together with the sand beds in the upper part of the Wilcox Group , the Meridian Sand member comprises the extensive Meridian-Upper Wilcox aquifer. The Meridian Sand out-crops to the east of the facility and, according to Brown and Adams, to the south of the facility along the Batupan Bogue. In 22 test holes studied during the Brown and Adams investigation, the Meridian Sand ranges in thickness from 8 to 147 feet and averages 77 feet, but its thickness increases northward until in three test holes at the Grenada Air Base it averages 215 feet. The Brown and Adams study covered an area beginning approximately one mile south of the facility.

The Meridian Sand member is characterized by an abundance of kyanite, staurolite, and muscovite. The kyanite is usually colorless, only a few thick fragments being sky-blue. The staurolite is honey-colored to amber-colored and contains numerous inclusions. White mica is especially abundant in the fine sand at the base of the Meridian sand. These minerals were found in abundance, even in the coarser fractions. Secondary pyrite is evident in samples from test holes where some is cemented between sand grains. The middle part of the sand member generally contains the coarest grains of sand, although locally in test holes and in outcrops a grit containing cobbles may be near the base. The only fossils found were some faecal pellets at the Air Base and fragments of petrified wood.

The underlying Wilcox Group includes the Holly Spring and Ackerman Formations. The Holly Springs formation is composed of shale or clay, sandy shale, lignite, silt, calcareous sandstone or siltstone, and sand. The sand is mostly at the base of the formation where the largest grain size was found. Shale, sandy shale, and lignite are found throughout the formation, seemingly without any simple pattern of deposition. Most of the shale and sandy shale is carbonaceous and ranges in color from light gray to nearly black. The basal sand of the Holly Springs Formation is gray and commonly contains numerous opaque grains. Most of the grains consist of quartz (milky and clear), feldspars, magnetite, and other undetermined minerals.

The Ackerman Formation consists of shale, sandstone, siltstone and soft brown lignite. The shale is silty and in part sandy, calcareous, and carbonaceous. Some of it is light gray and appears kaolinitic. The sand consists mostly of fine angular quartz and mica. The sandstone and siltstone are cemented with carbonate, probably mostly siderite, and are usually slightly glauconitic. The most persistent features of the formation are some siderite-cemented siltstones near the middle and a fine silty sand at the base.

Based on well logs from monitoring wells installed during various hydrogeologic investigations at the facility, it appears likely that the Neshoha Sand member directly underlies the facility. The well logs indicate that this unit generally consists of fine sands, clay, clayey silts, and silts and generally extends to a depth of approximately 10-20 feet. In some borings this unit consists almosts entirely of sands. The underlying stratum appears to be the Meridian Sand member of the Tallahatta Formation. This formation extends at least to a depth of 145 feet (the maximum extent of the borings conducted at the facility). It consists primarily of grey/green medium grained sands with clay, clayey silts and silts.

3.1.3 Hydrology

The climate of the Grenada County is moist and subtropical. More than half of the average yearly rainfall of 52.3 inches comes in winter and spring. The winters are mild, and the summers are warm and humid.

3.1.3.1 Surface Water--The Koppers Company facility lies in the drainage basin of the Batupan Bogue. Batupan Bogue flows northerly and drains an approximately 200 square mile area to the Yalobusha River. The Batupan Bogue is located approximately 2000-3000 feet to the northeast of the facility.

Based on a topographic map of the area (Tie Plant Quadrangle) it appears the facility grounds are drained by two unnamed streams and Jack Creek which discharge to the Batupan Bogue. These tributaries transect the facility running in a northeasterly direction. Jack Creek is located just south of the southeast boundary of the facility. One of the unnamed tributaries passes at the northwest boundary of the facility, and the other splits the facility, passing just southwest of the treatment area.

The Soil Survey of Grenada County describes the soils in the area of the facility as poorly drained. The well logs of the monitoring well installed at the facility indicate that the soils contain significant amounts of clay and silt. Thus, it appears likely that a large portion of the precipitation that falls in the area of the facility will run-off to surface drainage.

3.1.3.2 Ground Water--Based on data reported in the facility's January, 1987 Hydrogeologic Investigation Report of Findings, depth to ground water at the facility in November and December of 1986 ranged from approximately 14 feet to 29 feet. These water levels indicate that ground water under the facility flows generally in a northeasterly direction varying to the east and north in some areas. The Report of Findings concluded that Batupan Bogue is a likely discharge area for the shallow ground water moving across the facility.

Ground water underlying the site is probably part of the Meridian-Upper Wilcox Aquifer. The outcrop of the Meridian Sand is located just east of the facility and is a likely recharge area for the aquifer. The base of the Meridian-Upper Wilcox aquifer dips 20-50 feet per mile to the southwest from the outcrop area. The aquifer is of major importance in this area and supplies water for most municipal and industrial uses.

Koppers Co. operates a well which withdraws water from the Meridian-Upper Wilcox aquifer at the facility. This well is reportedly 500 feet deep and is operated at a rate of approximately 200 gpm with a total daily withdrawal not exceeding 50,000 gallons. The well is used for process and drinking water supply. Heatcraft, Inc. (located near the southeast end of the facility) operates three wells, all of an approximate depth of 500 feet, which withdraw over 0.5 mgd with a maximum pumping rate of roughly 550 gpm per well.

Heavy industrial and municipal withdrawals from shallower wells (many are 175-250 feet deep) in the Meridian-Upper Wilcox aquifer in the area of Grenada, Mississippi cause a localized low of the piezometric head of the aquifer in that area. Grenada is located approximately 3 miles north of the facility. Although it appears that the shallow ground water at the facility is flowing northeasterly towards the Batupan Bogue, the localized low of the piezometric surface of the aquifer in the Grenada area may also influence the ground water flow pattern in the area of the facility. Also, since the facility is located near a likely recharge area for the Meridian-Upper Wilcox aquifer and the aquifer down-dips to the southwest of the outcrop area, some vertical gradient may exist at the facility. Water level measurements in two sets of paired wells (one deep well and one shallow well) reported in the January, 1987 Report of Findings showed a definite downward gradient in one of the pairs and no apparent gradient in the other.

localized gw flow ptn effects

3.2 WASTE GENERATION

Hazardous wastes generated at the facility include creosote wastes (U051), bottom sediments from a lagoon used for the treatment of wastewater from the wood preserving process (K001), pentachlorophenol wastes (F027), contaminated soils, and unreclaimable oil.

√ analyze for dioxin levels.

3.2.1 Creosote Wastes

Creosote wastes (U051) are generated by the cleaning of storage tanks and process equipment. The creosote wastes which are removed as no longer usable are burned in the boiler operated at the facility. Residues resulting from the boiler operation are spread at the land farm (SWMU No. 5). Some of these wastes are also discharged in the process wastewater to the oil/water separators (SWMU No. 1), and may make their way to the surface lagoon (SWMU No. 2) and spray irrigation field (SWMU No. 3). ?

make their way ?!

3.2.2 Lagoon Bottom Sediment

Bottom sediments (K001) are periodically removed from the wastewater treatment lagoon. This lagoon receives various wastewater streams and run-off from the treatment area which first pass through an oil/water separator. Some creosote and diesel fuel mixture and pentachlorophenol and oil mixture are carried through the separator and enter the lagoon. The sediment is dredged from the lagoon at a reported rate of 2500 pounds each year. Wastes from the cleaning of the oil/water separator are handled along with these wastes. The wastes are currently burned in the boiler operated at the facility and the resulting residue disposed-of at the land farm (SWMU No. 5). Prior to 1980, the wastes were applied directly to the land farm.

dry or wet [illegible]

what is the difference between waste disposed of at the land farm and applied directly to the land farm

3.2.3 Pentachlorophenol Wastes

Pentachlorophenol wastes (F027) are no longer usable pentachlorophenol discarded from the wood treatment process. Pentachlorophenol wastes are currently burned in the boiler operated at the facility and the resulting residue spread at the land farm (SWMU No. 5). Some of the wastes also are discharged in the process wastewater to the oil/water separator (SWMU No. 1), and may reach the surface lagoon (SWMU No. 2) and spray irrigation field (SWMU No. 3). ?

[illegible] Dec [illegible]

3.2.4 Contaminated Soils

Soil contaminated with creosote, pentachlorophenol, diesel fuel, or oil by spills or other events along with door pit wastes from the treatment area are also burned in the boiler. The door pit wastes consist of wood chips, contaminated soils, and oil residue. The wastes are burned in the boiler and resulting residue spread at the land farm.

3.2.5 Unreclaimable Oil

Oil which is determined to be unreclaimable is also burned in the boiler operated at the facility. As mentioned above, residue resulting from boiler operation is disposed of at the land farm. forbidden after Dec 1, 1987

3.3 TARGET POPULATIONS

The Meridian - Upper Wilcox aquifer, which underlies the facility, is the primary source of water supply in this area. The aquifer yields large enough quantities of water for municipal and industrial supplies, but is also used for small domestic supplies. Domestic supply wells with a casing diameter of under six inches are excluded from permitting by State law and thus it is difficult to determine their location. However, it was estimated by a State DNR employee that approximately 13 domestic supply wells are located within two miles of the facility. Users of any domestic supply wells located near the facility or most importantly to the east, northeast or north of the facility should be considered a potential target population.

Koppers Co. operates a supply well at the facility and Heatcraft, Inc. operates three supply wells within approximately 1500 feet of the southern boundary of the facility. All of these wells are used for process as well as drinking water supplies and are approximately 500 feet deep. Users of these wells may be a potential target population.

Grenada County and Grenada City, as well as a number of industrial users operate supply wells in the area. Most of these wells are located in the Grenada City area. Grenada County, however, operate six supply wells within three miles of the facility and one about three quarters of a mile to the southwest of the facility. Exact locations of these wells have not been determined. Residents of the community of Tie Plant reportedly receive their water from the Grenada County Authority. Should severe ground water contamination be detected at the facility, users of these wells may be potential target populations.

Batupan Bogue could potentially receive contaminated shallow ground water flowing under the facility, as well as contaminated surface run-off. The Batupan Bogue flows north through Grenada to join the Yalobush River. Based on the size of these water bodies, it is not likely that either of these is used for water supply. Since the Batupan Bogue, which is most at risk of contamination, may support recreational fishing and flows through a number of communities, the potential for direct contact with contaminated waters in the stream does exist. Any persons coming in direct contact with the waters of, or eating fish removed from, Batupan Bogue downstream of the facility should be considered potential target populations.

It is important to note the proximity of the facility, and particularly the spray irrigation field to the community of Tie Plant. Ponded water was noted on the spray field and seepage was found emanating from the berm of the field. Children playing in the area of the spray field and/or adults passing through the area may be a potential target population. closure ?

Wildlife that come in contact with contaminated ground water, surface water soils or vegetation are also a potential target population.

3.4 ENVIRONMENTAL MONITORING

Numerous hydrogeologic studies have been performed in the area of the regulated surface lagoon and spray irrigation field. In the course of these studies, approximately 18 monitoring wells and 13 temporary piezometers were installed, seven borings were logged and numerous ground water samples were collected. The locations of the sample points are shown on Figure 3-2. Most of the information gathered in these studies is summarized in the Hydrogeologic Investigation Report of Findings prepared for the facility in January of 1987. This data is presented as Appendix B

TABLE 2: SUMMARY OF PAH DATA

Sample: GM860080

Source WELL R-109
Description: GROUNDWATER

Date Collected 11/18/86
Date Received: 11/20/86

Acenaphthene	<0.250
Acenaphthylene	<0.250
Anthracene	<0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	<0.250
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	<0.250
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested.

Carbazole	<0.250
Naphthalene	<0.500

The above results are reported in ug/L .

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PRODUCED ON 01/05/87 AT 14:55 PAGE

SAMPLE #	SOURCE	DESCRIPT	DATE-COL	DATE-REC
GM860081	B1 32.5-34	SOILS	12/10/86	12/10/86
GM860082	B2 74-75.5	SOILS	12/10/86	12/10/86
GM860083	B2 139-140.5	SOILS	12/10/86	12/10/86
GM860084	B3 99-100.5	SOILS	12/10/86	12/10/86
GM860085	B3 134-135.5	SOILS	12/10/86	12/10/86
GM860086	B4 64-65.5	SOILS	12/10/86	12/10/86

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TABLE 2: SUMMARY OF PAH DATA
==============================

Sample: GM860079 | Source WELL R-10
Description: GROUNDWATER

Date Collected: 11/19/86
Date Received: 11/20/86

Acenaphthene	<0.250
Acenaphthylene	<0.250
Anthracene	<0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	0.319
Benzo(g,h,i)perylene	0.515
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	<0.250
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	<0.250
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested

Carbazole	<0.250
Naphthalene	<0.500

The above results are reported in ug/L

TABLE 2: SUMMARY OF PAH DATA
==============================

Sample: GM860076

Source: WELL R-12
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene	50.3
Acenaphthylene	8.34
Anthracene	1.48
Benzo(a)anthracene	1.31
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	0.521
Fluorene	24.1
Indeno(123-cd)pyrene	<0.250
Phenanthrene	2.99
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole	35.1
Naphthalene	357

The above results are reported in ug/L .

TABLE 2: SUMMARY OF PAH DATA
==============================

Sample: GM860077

Source: WELL T3
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene	<0.250
Acenaphthylene	<0.250
Anthracene	<0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	<0.230
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	0.326
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested.

Carbazole	<0.250
Naphthalene	<0.500

The above results are reported in ug/L

TABLE 2: SUMMARY OF PAH DATA
============================

Sample: GM860078

Source: WELL F8

Description: GROUNDWATER

Date Collected: 11/18/86

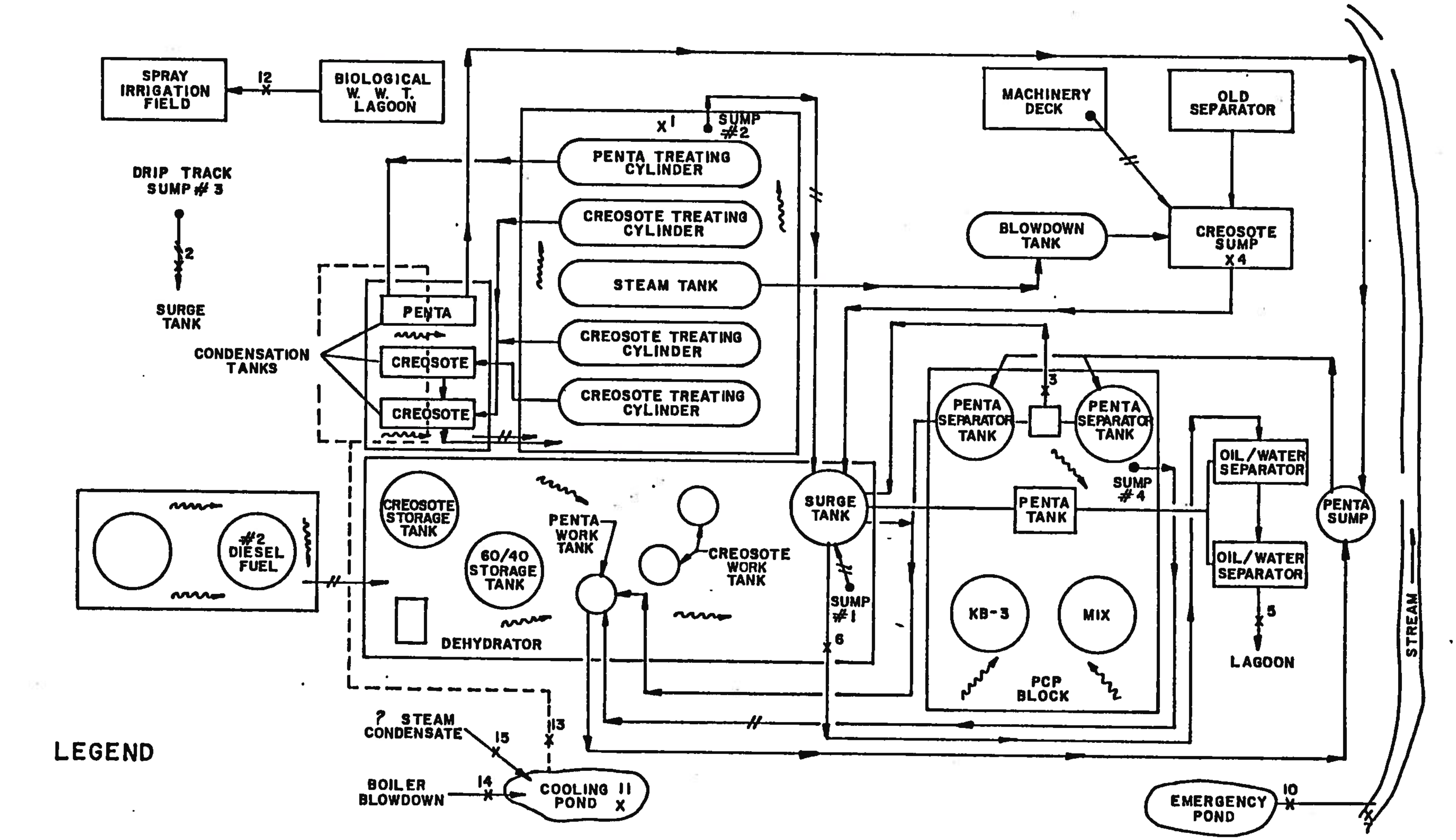
Date Received: 11/19/86

Acenaphthene	<0.250
Acenaphthylene	<0.250
Anthracene	<0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	0.809
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	<0.250
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	0.221
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole	<0.250
Naphthalene	<0.500

The above results are reported in ug/L .



LEGEND

SURFACE WATER DIRECTION OF FLOW

FLOW

SURFACE RUNOFF

SUMP

NONCONTACT COOLING WATER

C.C. JOHNSON & MALHOTRA, P.C.

KOPPERS COMPANY, INC.

FIGURE 4-3 WATER TREATMENT SYSTEM

SOURCE: KOPPERS CO.

been determined. Residents of the community of Tie Plant reportedly receive their water from the Grenada County Authority. Should severe ground water contamination be detected at the facility, users of these wells may be potential target populations.

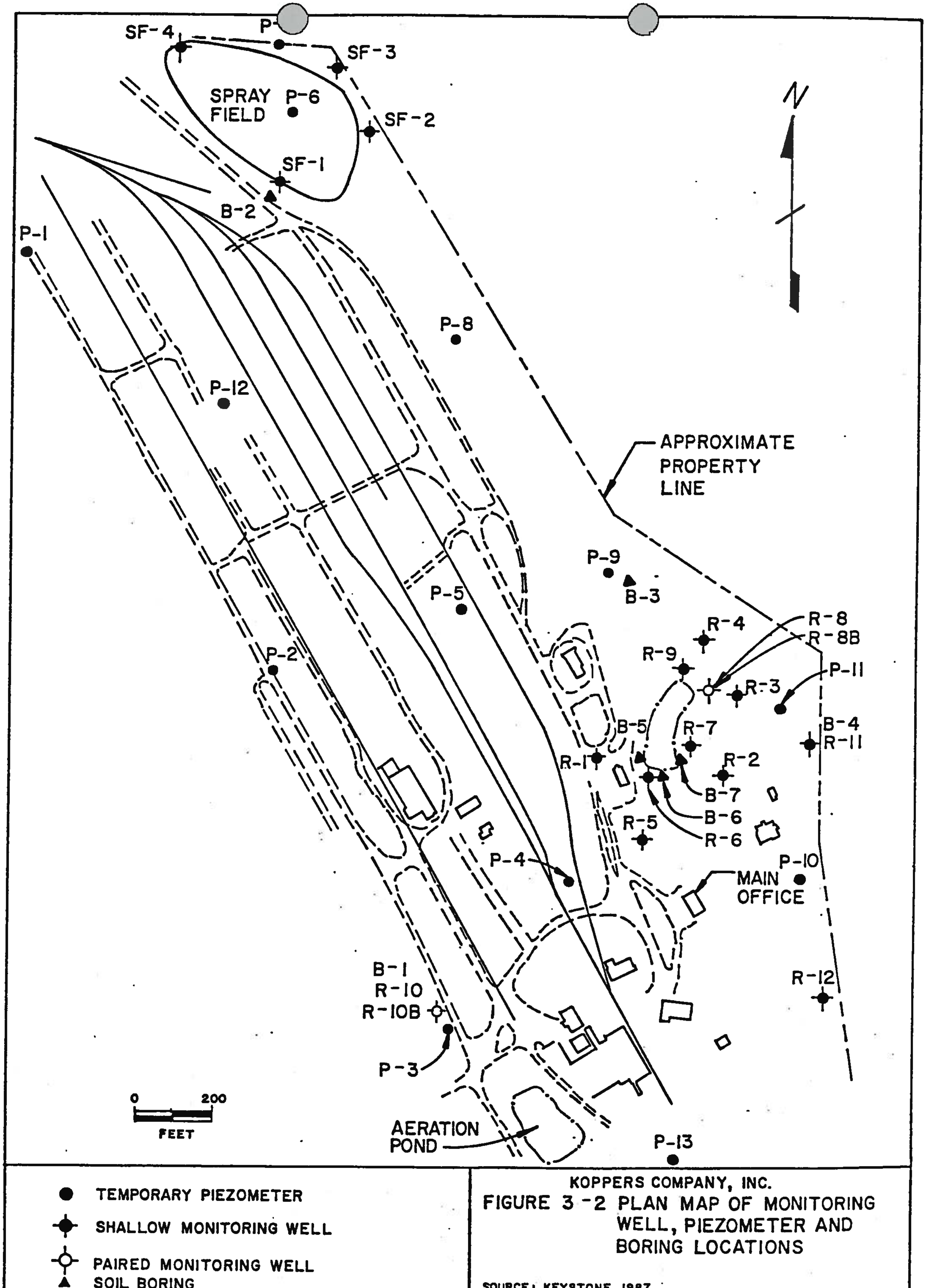
Batupan Bogue could potentially receive contaminated shallow ground water flowing under the facility, as well as contaminated surface run-off. The Batupan Bogue flows north through Grenada to join the Yalobush River. Based on the size of these water bodies, it is not likely that either of these is used for water supply. Since the Batupan Bogue, which is most at risk of contamination, may support recreational fishing and flows through a number of communities, the potential for direct contact with contaminated waters in the stream does exist. Any persons coming in direct contact with the waters of, or eating fish removed from, Batupan Bogue downstream of the facility should be considered potential target populations.

It is important to note the proximity of the facility, and particularly the spray irrigation field to the community of Tie Plant. Ponded water was noted on the spray field and seepage was found emanating from the berm of the field. Children playing in the area of the spray field and/or adults passing through the area may be a potential target population.

Wildlife that come in contact with contaminated ground water, surface water soils or vegetation are also a potential target population.

3.4 ENVIRONMENTAL MONITORING

Numerous hydrogeologic studies have been performed in the area of the regulated surface lagoon and spray irrigation field. In the course of these studies, approximately 18 monitoring wells and 13 temporary piezometers were installed, seven borings were logged and numerous ground water samples were collected. The locations of the sample points are shown on Figure 3-2. Most of the information gathered in these studies is summarized in the Hydrogeologic Investigation Report of Findings prepared for the facility in January of 1987. This data is presented as Appendix B



KOPPERS COMPANY, INC.

FIGURE 3-2 PLAN MAP OF MONITORING WELL, PIEZOMETER AND BORING LOCATIONS

SOURCE: KEYSTONE, 1987

of this report and discussed below. Additional data were presented in an earlier Report of Ground Water Assessment prepared in September of 1985. Data in the 1985 report do not appear as reliable as those presented in the more recent report due to varying detection limits, missing data, and confusion of reporting units.

As discussed earlier in the ground water section (Section 3.1.3.2) it appears that the direction of ground water flow at the facility is northeasterly varying to the east and north in areas. Based on this flow direction, wells R-5, R-6 would be upgradient of the surface impoundment. These wells and well R-12 (located near the abandoned wastewater treatment system) showed contamination with PAHs, PCP, and in the case of R-5 and R-12, phenols. Well R-1, which is located in the west of the surface impoundment showed contamination with PAHs.

Based on the logs of the piezometers, chemical odors were detected in the soils at locatins P-12 and P-13. P-12 is located near the treated wood storage area and P-13 is located east of the cooling ponds.

At the spray irrigation field, PAHs were detected in well SF-1, SF-3, and SF-4 while PCP was detected in SF-2. SF-1 is expected to be the upgradient well, but is located very near the spray field and may also be impacted by the field.

It is important to note a shortcoming with the data discussed above. PCP typically has a number of complex degradation products, including chlorinated benzoquinones, chlorinated dihydroxybenzenes, tri- and tetrachlorophenols, and possibly dioxins in trace amounts. Also, diesel fuel contains a number of volatile and semivolatile constituents (including benzene and toluene) and may also contain metals contaminants. Analyses for these compounds have not been performed on any samples to date.

4.0 SWMU DESCRIPTIONS

For each SWMU, unit characteristics, waste characteristics, pollutant migration pathways, and evidence of release are discussed in this section. Recommendations for further action at each SWMU are presented in Section 5.0.

Thirteen SWMUs were identified during the records review and visual site inspection.Table 4-1 summarizes the wastes reportedly stored, disposed or spilled at each of the SWMUs. The locations of the SWMUs are identified on Figures 4-1 and 4-2.

4.1 OIL/WATER SEPARATOR (SWMU NO. 1)

The Koppers Company wastewater treatment system consists of a surface impoundment and sprayfield which are preceded by a surge tank for equalization and oil/water separators. The oil/water separators will be discussed in this section as SWMU No. 1. This will be followed in Section 4.2 by a discussion of the surface lagoon (SWMU No. 2) and in Section 4.3, the sprayfield will be discussed as SWMU No. 3.

4.1.1 Unit Characteristics

The following information is based on the flow diagram of the wastewater treatment system provided by the facility. This diagram is presented here as Figure 4-3.

Reportedly, all of the wastewater from Koppers processing area is collected in a surge tank before it passes to the oil/water separators. Referring to Figure 4-3, the surge tank receives water from several locations. Sump #1 collects surface run-off from both the work tank area and diesel fuel storage area. Sump #2 collects water from several areas: the treating cylinder basement, the creosote and pentachlorophenol (PCP) condensation tanks, and run-off from the condensation tank area. Sump #3 collects water from the drip track area. Sump #4 receives run-off from the PCP tank and PCP separator tank. The creosote sump also receives water from the steam tank used in the preconditioning of wood. Water that is collected in the equipment deck also runs-off into the creosote sump. Wastewater also drains from the PCP tank to the surge tank. The PCP tank receives water that is drawn off through the recovery of PCP from the oil/water separator.

There are presently two oil/water separators operating in series, but they may be used individually at times. The first separator receives an oil/water mixture from the surge tank to which a flocculation agent is added. The pentachlorophenol and oil rises to the surface and is recycled to the process before the wastewater passes into the second separator. In the second separator, creosotes, which are heavier than water, are removed and recycled to the process. The effluent is then pumped to the surface lagoon.

4.1.2 Waste Characteristics

The oil/water separator potentially receives water containing all of the hazardous materials used at the facility. It is likely that creosote in a no. 2 diesel fuel carrier and pentachlorophenol/oil mixture are received in the largest quantities. Sax (1979) describes creosote as a mixture of phenols. The facility's Part B Application reports that creosote consists of 200 or more components reported as primarily polycyclic aromatic hydrocarbons (PAHs) including phenanthrene (21%), fluorene (10%), fluoranthene (10%), acenaphthene (9%), and pyrene (9%). It is assumed that these percentages are by weight. EPA defines wastes pentachlorophenol (F027) as formulations containing tri-, tetra-, or pentachlorophenols or formulations containing compounds derived from these chlorophenols. No. 2 diesel fuel contains a variety of volatile and semi-volatile hydrocarbons and sometimes contains metals such as vanadium, nickel and sulfur. Oil also sometimes contains metals contaminants.

4.1.3 Ground Water

4.1.3.1 Pollutant Migration Pathways--The oil/water separators are constructed of concrete. No evidence of leakage from the separators was noted during the site inspection, although the separator walls appear to be coated with an oil residue. Some areas adjacent to the oil/water separators, and throughout the treatment area, have a ground floor of soil or gravel while some process units are placed on concrete pads. The ground surfaces adjacent to the oil/water separators appeared oil stained in areas. Since it appears that contamination of the soils exists in the area surrounding the oil/water separator and may have existed for a long period of time, a pathway for ground water contamination does exist. Also, leakage from the piping systems servicing the oil/water separator could be another pathway for contamination of ground water.

4.1.3.2 <u>Evidence of Release</u>--No direct evidence of release to ground water from the oil/water separators was found in the site records.

4.1.4 <u>Surface Water</u>

4.1.4.1 <u>Pollutant Migration Pathways</u>--It appeared during the site visit that no provisions exist to contain run-off from the area of the oil/water separators. An unnamed tributary to the Batupan Bogue passed through the facility to the southwest of this area and likely receives run-off from the area of the oil/water separators. Soils adjacent to the separators appear contaminated. Thus, a potential pathway exists for contamination of surface waters.

4.1.4.2 <u>Evidence of Release</u>--No evidence of release to surface waters from the oil/water separators was found in the site records or noted during the site inspection. Based on available information, the unnamed tributary to Batupan Bogue has not been sampled.

4.1.5 <u>Air</u>

4.1.5.1 <u>Pollutant Migration Pathways</u>--Based on unit and waste characteristics, no significant pathways for migration of pollutants to the air are expected. Some volatilization of constituents of no. 2 diesel fuel may however occur.

4.1.5.2 <u>Evidence of Release</u>--No evidence of release to the air was found in the site records, nor was evidence of release noted during the visual site inspection.

4.1.6 Soils

4.1.6.1 Pollutant Migration Pathways--Soils adjacent to the oil/water separator could be contaminated in the event of a separator overflow or spillage during maintenance of the separator. A direct pathway for contamination of soils adjacent to the separators exists.

4.1.6.2 Evidence of Release--Contamination of the soils adjacent to the separators with an oil-like residue was noted during the site inspection.

4.1.7 Subsurface Gas

4.1.7.1 Pollutant Migration Pathways--Unit and waste characteristics suggest that the generation of subsurface gas is not likely.

4.1.7.2 Evidence of Release--No evidence of a subsurface gas release was found in the records.

4.2 SURFACE LAGOON (SWMU NO. 2)

4.2.1 Unit Characteristics

This unit consists of a biological treatment lagoon located in the northeastern portion of the facility (see Photographs 1 and 2). The surface lagoon was constructed in the early 1970's by excavating soil from within the containment area and using the excavated material to build up the perimeter dike. No design drawings or documentation of construction procedures are available. Although the lagoon has no liner, it was constructed in the near-surface clays and silts present at the site (Koppers, 1975). Reportedly, the water in the lagoon is aerated with spray nozzles, although the pond was not being aerated during the site inspection and no aeration equipment was visible in the area.

The lagoon is an irregular shaped rectangle covering approximately one half acre. The dike crest is at an elevation of approximately 212 feet (above MSL). An emergency spillway exists at the southwest corner of the lagoon at an elevation of approximately 209 feet. The facility indicates that the bottom of the lagoon is at an elevation of aproximately 202 feet. Thus, the maximum possible depth of water is about seven feet. The water level in the lagoon is reportedly controlled by regulating the rate of inflow to the lagoon and the outflow from the lagoon to the spray irrigation fields. The flow rate to the surface lagoon is approximately 5,000 to 10,000 gallons/day. Reportedly, the water level is maintained well below the maximum elevation. At the time the lagoon was surveyed in February of 1985, the water level elevation was approximately 205.4 feet.

The dike and slopes are covered with grass and in the denser wooded areas with pinestraw. Trees up to about 5 inches in diameter are scattered around the dike, especially along the north and east sides. No significant surface erosion was observed during the visual site inspection. The impoundment is surrounded by a 4 foot high metal mesh fence topped with two feet of barbed wire.

The lagoon is also a point of generation of a hazardous waste, K001 bottom sediments. Koppers estimated that about 2,500 pounds of bottom sediments are removed from the lagoon each year. Prior to 1980 these wastes were spread directly at the land farm. Since 1980, the sediments have been burned in the boiler and resulting residue spread at the land farm.

4.2.2 <u>Waste Characteristics</u>

This unit receives a waste stream from the oil/water separators. The wastewater likely contains all or some constituents of creosote, no. 2 diesel fuel, pentachlorophenol and oil. The characteristics of these wastes are described in Section 4.1.2. No analysis of the wastewater entering the lagoon was found in the files. Table 4-2 lists typical hazardous organic compounds found in wood preseving plant wastewaters.

As mentioned above, the lagoon is also the source of generation of a hazardous waste, K001 bottom sediments. No analysis of the bottom sediment from this facility, prior to burning in the boiler, was found in files. Table 4-3 lists typical hazardous organic compounds found in K001 bottom sediments.

TABLE 4-2

HAZARDOUS ORGANIC COMPOUNDS FOUND IN
TYPICAL WOOD PRESERVING PLANT WASTEWATER

Using Pentachlorophenol	Using Creosote
Phenol	Toluene*
2,4-Dichlorophenol	Fluoranthene
2,4,6-Trichlorophenol	Naphthalene
4-Nitrophenol	1,2-Benzathracene
4,6-Dinitro o-cresol	Chrysene
Tetrachlorophenol	
Pentachlorophenol	
Benzene*	

*Certain volatile compounds in the wastewater, such as toluene and benzene, may volatilize completely during the evaporation process and thus may not appear in the sludge.

Source: EPA Listing Background Document - Wood Preserving.

TABLE 4-3

HAZARDOUS ORGANIC COMPOUNDS FOUND IN
TYPICAL WOOD PRESERVING PLANT BOTTOM SEDIMENT SLUDGE

Creosote Polynuclear Aromatics	Phenolics
Benz(a)anthracene	Phenol
Benzo(a)pyrene	2-chlorophenol
Chrysene	Pentachlorophenol
	2,4-dimethylphenol
	2,4,5-trichlorophenol

Source: EPA Listing Background Document - Wood Preserving.

4.2.3 Ground Water

4.2.3.1 Pollutant Migration Pathways--The surface lagoon is constructed in an area where clays and silts exist near the surface. However, a significant portion of these low permeability materials was likely relocated during construction of the lagoon and may be further removed when the bottom sediment are dredged. The base of the lagoon is reportedly at an elevation of approximately 202 feet while surrounding ground elevation averages approximately 207-208 feet. Thus, a direct pathway for migration of hazardous constituents from the lagoon to ground water may exist.

4.2.3.2 Evidence of Release--Approximately ten monitoring wells exist in the area of the surface lagoon. Based on water level and sample data presented in the January, 1987 Report of Findings, the lagoon does not appear to be contributing significant amounts of PAHs to the ground water, but may be contributing low concentrations of phenols.

4.2.4 Surface Water

4.2.4.1 Pollutant Migration Pathways--The lagoon has an emergency spillway which would, in the event of an overflow, drain to an unnamed tributary to Batupan Bogue. The facility reports that an overflow has not occurred. Also, should the lagoon be found to be contaminating the ground water, an additional pathway for migration to surface water may result. Ground water passing under the lagoon most likely discharges to Batupan Bogue.

4.2.4.2 Evidence of Release--No evidence of a release to surface water from the lagoon was found in site records or noted during the site inspection. However, sample data from the unnamed tributary and Batupan Bogue were not available.

4.2.5 Air

4.2.5.1 Pollutant Migration Pathways--Volatile constituents of the no. 2 diesel fuel or other chemicals used at the facility could volatilize from the lagoon and enter the atmosphere. It is not likely that this occurrence would significantly effect air quality.

4.2.5.2 Evidence of Release--No evidence of release to the air was found in the site records, nor was evidence of release noted during the site inspection.

4.2.6 Soils

4.2.6.1 Pollutant Migration Pathways--Two potential pathways exist for contamination of soils by the surface lagoon should they be found to contain hazardous constituents. First, contaminants may migrate vertically from the lagoon to the underlying soils and, secondly, surrounding soils may be contaminated by overflows from the lagoon.

4.2.6.2 Evidence of Release--No evidence of release to the soils was found in the records, nor was evidence of release noted during the site inspection.

4.2.7 Subsurface Gas

4.2.7.1 Pollutant Migration Pathways--Should a plume of volatile contaminants be found to be emanating from the lagoon, the presence of subsurface gases would be likely. No data concerning the presence of volatile compounds in the ground water near the lagoon was found in the records.

4.2.7.2 Evidence of Release--No evidence of a subsurface gas release was found in the records.

4.3 SPRAY IRRIGATION FIELD (SWMU NO. 3)

4.3.1 Unit Characteristics

The spray irrigation field receives wastewater after it has passed through the oil/water separators and surface lagoon. The spray field is located in northern portion of the property and covers an area of approximately four acres. It is surrounded by a one to three foot high soil berm and was constructed upon native soils which are reported to be relatively poorly drained in this area. The slope of the ground surface is estimated to range from zero to three percent. The field is vegetated with bermuda grass (Cyndon actylen), with some smart weed (Polygonum hydropiperoides), panic grass (Panicum) and a broad leaf weed dock (Rumex) also present. Six willow trees are located within the sprayfield.

The irrigation field was constructed along with the surface lagoon around 1980 and since then has received effluent from the lagoon. The frequency of pumping depends upon water levels within the lagoon and climatic conditions. Spraying reportedly does not occur during rainfalls. The maximum application rate is reportedly 1,800 gallons per day with this amount generally applied in one 15 minute period. Reportedly, during hot weather periods (high rate of evaporation from the lagoon) the facility will operate for days or weeks between applications of lagoon effluent to the sprayfield.

Koppers indicated that a piping system with spray nozzles exists at the site. Ponded water with an oily sheen was noted on the spray field. Also, a seep emanating from the soil berm was found. The seep is located on the eastern edge of the spray field and drains towards the residences located nearby.

4.3.2 Waste Characteristics

The sprayfield receives wastewater from the surface impoundment. This wastewater likely contains some chemical constituents or degradation products of creosote, no. 2 diesel fuel, pentachlorophenol and oil. The constituents of these wastes are described in Section 4.1.2.

4.3.3 Ground Water

4.3.3.1 Pollutant Migration Pathways--Wastewater from the surface lagoon are periodically applied to the spray irrigation field. Soils in the area of the field are generally clays and silts with relatively low permeability. However, the long term application of wastewater as occurs at this site may result in a pathway through these soils to the ground water even though the rate of movement may be slow.

4.3.3.2 Evidence of Release--Four monitoring wells exist at the spray irrigation field. Based on data presented in the January, 1987 Report of Findings, the sprayfield is contributing some contamination to the ground water. PCP was detected in SF-2 while flouranthene was detected at levels exceeding the Ambient Water Quality Criteria (0.0028 ug/L for individual or combined PAHs) in SF-1, SF-3, and SF-4. Flourene was detected in concentrations exceeding these limits in SF-3. Well SF-1 is used as the background well for the spray field. The detection limit used for the PAH analyses (0.250 ug/L) was almost one hundred times higher than the Ambient Water Quality Criteria for PAHs and further investigation is necessary.

Also, as discussed in Section 4.2.3.2, more extensive analytical investigation of the samples may be required due to the possible presence of volatile and semi-volatile constituents of no. 2 diesel fuel or degradation products of PCP in the wastewater sprayed on the field.

4.3.4 Surface Water

4.3.4.1 Pollutant Migration Pathways--Ponded water with an oily sheen was noted on the spray irrigation field and a seep was found emanating from the berm constructed on the southeastern portion of the field. This drainage would likely make its way to the unnamed tributary or Batupan Bogue. Thus, a direct pathway exists for contamination of surface water. It is also important to note the location of the sprayfield in relation to the community of Tie Plant. One home is located less than 150 feet from the seep area.

Ground water passing under the sprayfield most likely discharges to Batupan Bogue. This may be another pathway for contamination of surface water.

4.3.4.2 Evidence of Release--As discussed above, ponded water and a seep were noted at the sprayfield druing the site inspection. No analysis of the seep or tributary to Batupan Bogue was found in the records.

4.3.5. Air

4.3.5.1 Pollutant Migration Pathways--Should volatile contaminants be present in the water, a direct pathway for migration of contaminant to the air exists during spraying. This occurrence is not expected to significantly degrade air quality. However, the proximity of the sprayfield to the community of Tie Plant would worsen the impact of any release on human health.

4.3.5.2 Evidence of Release--No evidence of release to the air was found in the site records, nor was evidence of release noted during the visual site inspection.

4.3.6 Soils

4.3.6.1 Pollutant Migration Pathways--Since wastewater is sprayed directly onto the soils of the field, a direct pathway exists for contamination of soils.

4.3.6.2 Evidence of Release--No soil sample data from the spray field area was found in the records. Ponded water with an oily sheen was noted during the site inspection.

4.3.7 Subsurface Gas

4.3.7.1 Pollutant Migration Pathways--Should a plume of volatile contaminants be found to be emanating from the sprayfield, the presence of subsurface gases would be likely. The presence of volatile compounds in the ground water at the sprayfield may be less likely than at the lagoon since the residence time in the lagoon and spraying would have resulted in the volatilization of these compounds with very little reaching the subsurface.

4.3.7.2 Evidence of Release--No evidence of a subsurface gas release was found in the records. No data concerning volatile compounds in the ground water near the sprayfield was found in the records.

4.4 BOILER (SWMU NO. 4)

4.4.1 Unit Characteristics

SWMU No. 4 is the facility's co-generation boiler. Located in the treatment area, this unit is used to burn bottom sediments from the impoundment, waste creosote and pentachlorophenol, contaminated soils, unreclaimable oil, and other similiar wastes from other Koppers wood preservation facilities. Koppers has state permission to burn hazardous wastes as fuel in the Boiler. According to MDNR personnel, the facility is not required to have a permit for the boiler because it meets the EPA's definition of an industrial boiler.

The facility receives truck load shipments of high BTU-value waste from other Koppers facilities which generate creosote and wood preserving wastes suitable for use as boiler fuel. Shipments received are analyzed for BTU value. Analyses are kept in operating records. The wastes are transported to this facility in steel drums and are reportedly received at a rate which is proportional to the rate at which the boiler is operated (800 pounds/hour, maximum). Upon arrival at the facility, the trucks are unloaded on a concrete loading-unloading pad and the drums are transported by fork lift to the boiler feed hopper. Wastes are then mixed with sawdust and automatically fed to the boiler. Ash from the boiler is spread at the land farm (SWMU No. 5).

4.4.2 Waste Characteristics

Creosote and pentachlorophenol wastes as well as soils contaminated with these wastes and unreclaimable oil are burned in the boiler. The characteristics of these wastes are described in Section 4.1.2. The residue from the boiler has been analyzed and, according to the facility, found to be non-hazardous. The analysis is attached as Appendix B. The data, however, may not be sufficient to support this conclusion. Wastes are received from other Koppers facilities, some of which may use different chemical preservatives. Salts of metals are commonly used as wood preservatives. Also, oils and diesel fuel often contain some metal contaminants. EP toxicity testing for metals has not been done and may be appropriate.

4.4.3 Ground Water

4.4.3.1 Pollutant Migration Pathways--The boiler rests on a concrete pad. Thus, spills that may occur during loading of the boiler may be cleaned up before reaching a pathway to the ground water. Soils near to the pad appeared oil stained in areas. It is not known if these spills resulted from activities related to boiler operations since other processes are located nearby. If spillage onto the soils occurred over a long period of time, a pathway for contamination of ground water would exist. Contaminants could pass through the soil and enter the ground water.

4.4.3.2 Evidence of Release--No direct evidence of release to ground water from the unit was found in the site records or noted during the site inspection.

4.4.4 Surface Water

4.4.4.1 Pollutant Migration Pathways--It is not known whether surface run-off from the area of the boiler drains to a sump and to the oil/water separators or if run-off is uncontrolled. Should run-off in the area of the boilers be uncontrolled, a direct pathway for migration of contaminants to surface water would result.

4.4.4.2 Evidence of Release--No evidence of release to surface waters from this unit was found in the records or was noted during the site inspection. No sample data from the unnamed tributary to Batupan Bogue, which passes the southeast of this unit, was available in the records.

4.4.5 Air

4.4.5.1 Pollutant Migration Pathways--The burning of hazardous wastes in the boilers provides a direct pathway for contaminant migration to the air. As discussed earlier, this operation is regulated by MDNR and thus acceptable levels of emissions are established by the State.

4.4.5.2 Evidence of Release--No data concerning the composition of the off-gases from the boiler was available in the records.

4.4.6 Soils

4.4.6.1 Pollutant Migration Pathways--Soils adjacent to the boiler could be contaminated in the event of spillage during loading of the boiler. Thus, a direct pathway for contamination of soils adjacent to he boiler exists.

4.4.6.2 Evidence of Release--Soils in some areas adjacent to the boiler appeared oil stained. It is not known whether this contamination resulted from the boiler operation or other processes taking place in the treatment area. No soil sample data was available in the records.

4.4.7 Subsurface Gas

4.4.7.1 Pollutant Migration Pathways--Unit and waste characteristics suggest that the generation of subsurface gas is not likely.

4.4.7.2 Evidence of Release--No evidence of a subsurface gas release was found in the records.

4.5 LAND FARM (SWMU NO. 5)

4.5.1 Unit Characteristics

Prior to November of 1980, K001 bottom sediments were spread and disked into the soil in an area located in southern tip of the facility. The area is flat and covers approximately one and one-half acres. Currently, residue from the boiler is spread over the area and the site is disked occasionally.

4.5.2 Waste Characteristics

The K001 wastes are bottom sediments from the surface lagoon used for the treatment of wood preserving process waste streams. The surface lagoon likely receives water contaminated with all of the hazardous materials presently used at the facility. The primary hazardous chemicals used include creosote, no. 2 diesel fuel, pentachlorophenol and oil. The characteristics of these wastes are discussed in Section 4.1.2 and a typical composition of K001 sediments is presented in Table 4.3. Since 1980, these wastes and other wood preserving wastes have been burned in the boiler (SWMU No. 4) and the resulting residue spread at the land farm. An analysis of the boiler residue is attached as Appendix B and discussed in Section 4.4.2.

This unit received bottom sediments from the abandoned lagoons as well as the present lagoon. The plant manager indicated that prior to 1970, different treatment chemicals may have been used at the facility. Salts of chromium, copper and arsenic are other commonly used wood preservatives at other wood preserving facilities.

4.5.3 Ground Water

4.5.3.1 Pollutant Migration Pathways--Prior to 1980, K001 bottom sediments were applied directly to the ground surface at this unit. Since 1980, residue from boiler operations have been applied here. Since contaminants could easily leach through the soils to the ground water, a direct pollutant migration pathway exists.

4.5.3.2 Evidence of Release--No evidence of a release to ground water was found in the records. No ground water monitoring wells exist in the area of the land farm.

4.5.4 Surface Water

4.5.4.1 Pollutant Migration Pathways--No effort is made to contain or prevent surface run-off from the land farm. Since no vegetation was noted in the area, a pathway may exist for erosion and migration of the materials spread at the unit to surface drainage. Drainage from this unit would likely make its way to Jack Creek, a tributary to Batupan Bogue.

4.5.4.2 Evidence of Release--No signs of significant surface erosion or run-off were noted during the site inspection. Also, no sample data from Jack Creek or Batupan Bogue was found in the records.

4.5.5 Air

4.5.5.1 Pollutant Migration Pathways--It is likely that any volatile compounds which may have been in the K001 bottom sediment would have volatilized since 1980 when the direct application of the sediments ceased. Since 1980, only boiler residue has been spread here. All volatile compounds would be removed during burning.

4.5.5.2 Evidence of Release--No evidence of continued release to the air was found in the site records, nor was evidence of release noted during the visual site inspection.

4.5.6 Soils

4.5.6.1 Pollutant Migration Pathways--Since wastes containing hazardous constituents have been in the past, and still may be, applied to the soils at the land farm, a direct pathway for contamination of soils exists.

4.5.6.2 Evidence of Release--No sample data exists for the soils in the area of the land farm.

4.5.7 Subsurface Gas

4.5.7.1 Pollutant Migration Pathways--Based on unit and waste characteristics, the generation of subsurface gas is not expected.

4.5.7.2 Evidence of Release--No evidence of subsurface gas release was found in the records.

4.6 PROCESS COOLING PONDS (SWMU NO. 6)

4.6.1 Unit Characteristics

This SWMU consists of a a cooling pond located near the work tank area and an emergency overflow pond located next to the cooling pond. Cool water from the cooling pond is circulated through the facility's cooling system, heat is exchanged and the heated water is returned to the pond for cooling and reuse. Reportedly, spray nozzles within the pond are used occasionally for cooling and evaporation purposes. The spray nozzles did not appear operable at the time of the site inspection.

The emergency pond is used to contain water that overflows from the cooling pond. It is not known whether an overflow event has ever occurred. The emergency pond drains to an unnamed tributary to Batupan Bogue.

There are also provisions for draining the process spill containment areas to the cooling pond. The facility reports that these provisions have never been used but exist for emergency purposes only.

4.6.2 Waste Characteristics

According to available facility literature, the emergency pond does not receive wastewater. However, it is possible for treatment chemicals to enter the ponds as a result of leaking condenser tubes from the facility's cooling system or during maintenance of the various systems. During the site inspection, a small oily sheen was visible near the inlet area to the cooling pond.

4.6.3 Ground Water

4.6.3.1 Pollutant Migration Pathways--Should the cooling water become contaminated with hazardous constituents or should a spill be drained to the system, a pathway for contamination of ground water would exist through the cooling ponds.

4.6.3.2 Evidence of Release--No evidence of release to ground water was found in the records or noted during the site inspection, nor was any analytical data of the cooling water found in the records.

4.6.4 Surface Water

4.6.4.1 Pollutant Migration Pathways--The cooling pond has an overflow to an emergency pond which drains to an unnamed tributary to Batupan Bogue. Thus, should the cooling water become contaminated with hazardous constituents or a spill be drained to the system, and should the cooling pond overflow, a direct pathway for migration of contaminants to surface water would exist.

4.6.4.2 Evidence of Release--Facility personnel could not recall the cooling pond ever overflowing to the emergency pond. No evidence that this has occurred was found in the records or noted during the site inspection.

4.6.5 Air

4.6.5.1 Pollutant Migration Pathways--Based on unit and waste characteristics, no significant migration of pollutants to the air are expected.

4.6.5.2 Evidence of Release--No evidence of release to the air was found in the site records, nor was evidence of release noted during the visual site inspection.

4.6.6 Soils

4.6.6.1 Pollutant Migration Pathways--Contamination of the soils underlying the cooling and emergency ponds could result if the cooling water contains hazardous constituents or a spill is drained to the system.

4.6.6.2 Evidence of Release--No evidence of release to the soils was found in the records, or noted during the visual site inspection.

4.6.7 Subsurface Gas

4.6.7.1 Pollutant Migration Pathways--The generation of subsurface gas is not expected.

4.6.7.2 Evidence of Release--No evidence of subsurface gas release was found in the records.

4.7 CONTAINER STORAGE AREAS (SWMU NO. 7)

4.7.1 Unit Description

According to plant personnel, container storage takes place in two areas near the boiler. The first location consists of an L-shaped concrete pad approximately 20 feet by 30 feet located next to the sludge feeder in the boiler area. This unit is used as temporary storage for wastes generated at Koppers, Grenada and for wastes received from other Koppers facilities prior to burning in the boiler. According to plant personnel the pad has been in operation since 1980 and is permitted by the State as a temporary storage area. Wastes from the processing area are collected in dumpsters then shoveled into drums and moved to the storage area. The drummed wastes are accumulated until evaluated for use on-site as a wood fuel additive for the boiler or until manifested to an off-site treatment storage or disposal facility. The pad has capacity for ninety 55-gallon drums (One truck load usually contains 65 to 70 drums). Between one and 20 drums of waste are burnt in the boiler a day depending on the energy requirements of the facility. There is no containment wall around the pad.

The second storage area is an inactive regulated concrete pad with containment wall located adjacent to the boiler room. This pad has been in operation since 1980 and is currently used to store empty drums. The drums originally contained chemicals used in the facility's processing operation. There were no evidence of recent leaks or spills adjacent to the concrete pads. It is generally believed that a drain in this area leads to the cooling pond. A closure plan for both areas has been developed and the facility intends to construct a storage building for all wastes.

4.7.2 Waste Characteristics

Reportedly, the container storage areas receive three types of waste, U051 (creosote), F027 (certain pentachlorophenol wastes) and K001 (bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol). The characteristics of these wastes are discussed in Section 4.1.2.

4.7.3 Ground Water

4.7.3.1 Pollutant Migration Pathways--Most 55-gallon drums of wastes are stored on concrete pads. One of the pads has a containment wall while the other does not. Spills which occur in the storage area without a containment wall may run to nearby soils and percolate to the ground water.

4.7.3.2 Evidence of Release--No direct evidence of a release to ground water from the container storage area was found in the records or noted during the site inspection. Soils in places throughout the treatment area appeared oil stained.

4.7.4 Surface Water

4.7.4.1 Pollutant Migration Pathways--Run-off or spills which may occur at the uncontained storage area may flow overland to the unnamed tributary to Batupan Bogue which passes to the southeast of the treatment area. Also, it is generally believed that the storage area with a containment wall is drained to the cooling pond. Should a spill occur at the storage area, it could potentially enter the cooling pond and subsequently the emergency pond and unnamed tributary to Batupan Bogue,. Thus, a pathway for contamination of surface water by the unit may exist.

4.7.4.2 Evidence of Release--No evidence of release to surface waters from the storage area was found on the site records or noted during the site inspection. Based on available information, the unnamed tributary to Batupan Bogue has not been sampled.

4.7.5 Air

4.7.5.1 Pollutant Migration Pathways--Since wastes are stored in closed 55-gallon drums, no significant pathways for migration of pollutants to the air are expected.

4.7.5.2 Evidence of Release--No evidence of release to the air was found in the site records, or noted during the site inspection.

4.7.6 Soils

4.7.6.1 Pollutant Migration Pathways--Should a spill occur at the storage area without a containment wall soil contamination would result.

4.7.6.2 Evidence of Release--Soils in places throughout the treatment area, including areas adjacent to where drums are stored appeared oil stained during the site inspection.

4.7.7 Subsurface Gas

4.7.7.1 Pollutant Migration Pathways--Unit and waste characteristics suggest that the generation of subsurface gas is not likely unless ground water contamination with volatile compounds is occurring in the treatment area.

4.7.7.2 Evidence of Release--No evidence of a subsurface gas release was found in the records.

4.8 DRIP TRACK AREA (SWMU NO. 8)

4.8.1 Unit Characteristics

Train cars loaded with treated wood are removed from the treatment cylinders and taken to the drip track area. There, the wood is allowed to drip until it is determined that the dripping is complete. The drip track area has been in operation since around 1979. The area was constructed with clean fill, a filament membrane type barrier, two feet of concrete and a underdrain system to a sump. Drippings in the sump are pumped to the oil/water separator.

4.8.2 Waste Characteristics

The waste stream from the drip track area consists of creosote in a diesel fuel carrier and pentachorophenol in oil. The characteristics of these wastes are discussed in Section 4.1.2.

4.8.3 Ground Water

4.8.3.1 Pollutant Migration Pathways--Since soils adjacent to the drip track appear oil stained in areas, a pathway for ground water contamination may exist. Also should a leak occur in the underdrain to the oil/water separator a direct pathway for ground water contamination may result.

4.8.3.2 Evidence of Release--No direct evidence of a release to ground water was found in the site records or noted during the site inspection.

4.8.4 Surface Water

4.8.4.1 Pollutant Migration Pathways--Since soils in some areas adjacent to the drip track appear oil stained, a pathway for surface water contamination may exist via surface run-off.

4.8.4.2 Evidence of Release--No evidence of a release to surface water was found in the records or noted during the site inspection. The unnamed tributary to Batupan Bogue which passes to the southeast of the treatment area was not inspected during the visit. No sample data from the stream was found in the files.

4.8.5 Air

4.8.5.1 Pollutant Migration Pathways--Some volatile constituents of no. 2 diesel fuel may volatilize from the wood at the drip track. Thus, a pathway for air contamination may exist. This occurrence is not expected to impact air quality significantly.

4.8.5.2 Evidence of Release--No evidence of release to the air was found in the records or noted during the site inspection.

4.8.6 Soils

4.8.6.1 Pollutant Migration Pathways--Should the underdrain of the drip track become clogged or for some other reason treatment chemicals overflow the drip track, a pathway for soil contaminant would exist.

4.8.6.2 Evidence of Release--Soils in some areas adjacent to the drip track appeared oil stained.

4.8.7 Subsurface Gas

4.8.7.1 Pollutant Migration Pathways--A pathway for the generation of subsurface gas may exist if a ground water contaminant plume containing volatile compounds is found to underlie the treatment area.

4.8.7.2 Evidence of Release--No evidence of a release of subsurface gases was found in the site records or noted during the site inspection.

4.9 CHEMICAL UNLOADING AREAS (SWMU NO. 9)

4.9.1 Unit Treatment

The chemical unloading areas consist of two unloading docks: a no. 2 diesel fuel unloading dock and a creosote unloading dock. The docks are both concrete paved and include containment walls. Tanker trucks arrive at the unloading stations and pump the chemicals to the appropriate holding tanks through hook-ups at the docks. The unloading docks are equipped with safety catch basins which collect any leaks that may occur during unloading operations. Chemicals collected in the catch basins are reportedly pumped to 55-gallon drums which are stored at the container storage areas (SWMU No. 7) prior to use in the treatment process.

4.9.2 Waste Characteristics

The wastes which are handled at the unloading docks are no. 2 diesel fuel and creosote. The characteristics of these materials are discussed in Section 4.1.2.

4.9.3 Ground Water

4.9.3.1 Pollutant Migration Pathways--Soils appeared oil stained in some areas near the unloading docks which may indicate that spills may have occurred outside the containment walls. Thus, a pathway for ground water contamination may exist via percolation through the soils.

4.9.3.2 Evidence of Release--No direct evidence of release to ground water was found in the records or noted during the site inspection.

4.9.4 Surface Water

4.9.4.1 Pollutant Migration Pathways--Soils appeared oil stained in some areas adjacent to the unloading docks and no provisions for control of surface run-off were visible. Thus, a pathway for contamination of surface water may exist.

4.9.4.2 Evidence of Release--No evidence of a release to surface water was found in the site records or noted during the site inspection. No sample data from the unnamed tributary to Batupan Bogue which passes to the southeast was found in the records.

4.9.5 Air

4.9.5.1 Pollutant Migration Pathways--Except in the event of spills from which some volatilization of constituents of no. 2 diesel fuel may occur, no significant pathways for contamination of air are expected.

4.9.5.2 Evidence of Release--No evidence of release to air was found in the records or noted during the site inspection.

4.9.6 Soils

4.9.6.1 Pollutant Migration Pathways--Should the containment walls surrounding the unloading areas overflow or a spill occur outside these areas during unloading, a direct pathway for contamination of soils would exist.

4.9.6.1 Evidence of Release--Soils in areas adjacent to the unloading docks appeared oil stained.

4.9.7 Subsurface Gas

4.9.7.1 Pollutant Migration Pathways--Should a ground water contaminant plume containing volatile compounds be found to underlie the treatment area, a pathway may exist for the generation of subsurface gases.

4.9.7.1 Evidence of Release--No evidence of release of subsurface gas was found in the records or noted during the site inspection.

4.10 UNDERGROUND STORAGE TANK (SWMU NO. 10)

4.10.1 Unit Characteristics

SWMU No. 10 consists of an underground concrete storage tank located adjacent to the treatment cylinders in the treatment area. The tank is 20 feet in diameter and 15 to 18 feet deep. The unit stores back-up water for the facility's fire protection system. The top of the tank is at ground elevation and is bordered in one direction by the control building and an adjacent 2-foot concrete barrier. The tank is uncontained at ground surface in all other directions and is covered with strips of board, some of which appeared to have deteriorated. Thus, run-off from around the area adjacent to storage tank could enter the tank. Plant personnel could not recall the last time the tank was used.

4.10.2 Waste Characteristics

The storage tank is generally filled with rain water possibly including surface run-off from areas adjacent to the tank. The adjacent areas are within the facility's treatment area and soils or run-off contaminated with process wastes could enter the tank. The characteristics of the wastes generated at the treatment area are described in Section 4.1.2.

4.10.3 Ground Water

4.10.3.1 Pollutant Migration Pathways--The tank is reportedly constructed of concrete. If the concrete is not fully intact, or the tank is subject to overflows and water in the tank is contaminated with hazardous constituents, a pathway for contamination of ground water may exist via percolation throught the surrounding soils.

4.10.3.2 Evidence of Release--No direct evidence of release to ground water was found in the records or noted during the site inspection.

4.10.4 Surface Water

4.10.4.1 Pollutant Migration Pathways--No direct pathways for contamination of surface water from this unit are expected to occur.

4.10.4.2 Evidence of Release--No evidence of release to surface water was found in the records or noted during the site inspection.

4.10.5 Air

4.10.5.1 Pollutant Migration Pathways--No significant pathways for contamination of the air are expected to occur.

4.10.5.2 Evidence of Release--No evidence of release to the air was found in the records or noted during the site inspection.

4.10.6 Soils

4.10.6.1 Pollutant Migration Pathways--Should the water within the tank be contaminated with hazardous constituents and the tank found to be leaky or suject to overflows, a direct pathway for contamination of soils surrounding the tank may exist.

4.10.6.2 Evidence of Release--No evidence of release to soils was found in the records or noted during the site inspection.

4.10.7 Subsurface Gas

4.10.7.1 Pollutant Migration Pathways--Unit and waste characteristics suggest that the generation of subsurface gas is not likely.

4.10.7.2 Evidence of Release--No evidence of a subsurface gas release was found in the records.

4.11 ABANDONED WASTE TREATMENT SYSTEM (SWMU NO. 11)

4.11.1 Unit Characteristics

SWMU No. 11 is located near the southeast corner of the facility and consists of a creosote blowdown tank, an effluent settling tank and two effluent lagoons. The blowdown and settling tanks are located adjacent to each other with the effluent lagoons less than 100 feet east of them.

The system was used for managing wood treating wastewaters from around 1970 to about 1980. It was operated similarly to the existing waste treatment system (SWMU Nos. 1,2,3). Creosote and other chemicals from the treatment process which were removed at the blowdown or settling tanks were returned to the treatment area. Wastes reportedly were drummed and stored on-site prior to off-site disposal. Water from the settling tank drained by gravity to the two effluent ponds. The water reportedly also contained some oil and treatment chemicals.

The blowdown tank and effluent tank were constructed of concrete. The blowdown tank is about six feet deep with the top at ground elevation (Photograph 16). The settling tank is also constructed of concrete and is approximately four feet deep. The bottom of this tank is at ground elevation.

During the site inspection, both tanks were observed to contain a black oily water. Plant personnel indicated that the contents of the tanks were a result of rain water accumulating in the tanks over a period of time. The facility intends to pump the water to the existing oil/water separator, steam clean the tanks and in the case of the blowdown tank, fill and cover it with sand. Residue from the tanks will be treated at the boiler providing they contain the appropriate BTU values.

The lagoons were reportedly closed by pumping the liquid thorugh the existing oil/water separator, removing the sediments from the bottom, backfilling with clean fill and grading the area (see Photograph 18). The sediments removed from the ponds were mixed with ash from the boiler and spread at the land farm area (SWMU No. 5).

4.11.2 Waste Characteristics

The abandoned waste treatment system was used for managing wastewaters from the wood treatment process. The type of wastes included creosote in a diesel fuel carrier and pentachlorophenol/oil wastes. The characteristics of these wastes are described in Section 4.1.2. Other types of chemical preservatives may have been used at the facility prior to 1970. Facility personnel indicate that a different process was used but were unsure of the type of process. Salts of chromium, arsenic, and copper are commonly used in the wood preserving process.

4.11.3 Ground Water

4.11.3.1 Pollutant Migration Pathways--Since soils in the area of both tanks are oil stained and subsurface soils in the area of the closed lagoon are likely contaminated, a direct pathway for ground water contamination exists via percolation through the soils.

4.11.3.2 Evidence of Release--Monitoring well R-12 appears to be in the area of this unit. The exact relation (upgradient/downgradient) of R-12 to the unit could not be determined from the maps provided in the January, 1987 Report of Findings. R-12 is contaminated with PAHs, with PCP and phenols were also present. The data appear to indicate that a plume of ground water contamination exists in the area of this unit.

4.11.4 Surface Water

4.11.4.1 Pollutant Migration Pathways--Since soil contamination is likely at the unit, surface erosion could occur during run-off, causing migration of contaminants to an unnamed tributary of Batupan Bogue, which passes south of the unit. Also, if a ground water plume is present it may discharge to Batupan Bogue. Thus, pathways for contamination of surface water may exist.

4.11.4.2 Evidence of Release--No evidence of release to surface water was found in the records or noted during the site inspection. No significant erosion was noted at the unit although the closed ponds are rough graded and not vegetated. No sample data from the unnamed tributary was found in the records.

4.11.5 Air

4.11.5.1 Pollutant Migration Pathways--The disposal of wastes ceased here around 1980. Most volatile compounds would have volatilized in the seven year period since operation of the unit ended. Thus, no significant pathways for migration of contamination to the air are expected to occur.

4.11.5.2 Evidence of Release--No evidence of release to the air was found in the records or noted during the site inspection.

4.11.6 Soils

4.11.6.1 Pollutant Migration Pathways--Soil contamination around the tank likely resulted from poor waste management practices. Contamination of soils around the closed lagoons is likely due to leaching of hazardous constituents from the lagoons. Also, all of the contaminated bottom sediments may not have been removed during closure. Thus, pathways for soil contamination exist at the unit.

4.11.6.2 Evidence of Release--Soils adjacent to the tanks appeared oil stained during the site inspection.

4.11.7 Subsurface Gas

4.11.7.1 Pollutant Migration Pathways--Should a plume of ground water contamination containing volatile compounds be found at the unit, a pathway for the release of subsurface gases would exist.

4.11.7.1 Evidence of Release--No evidence of release of subsurface gases was found in the records or noted during the site inspection.

4.12 NORTH WASTE PILES (SWMU NO. 12)

4.12.1 Unit Characteristics

This unit consists of two piles containing miscellaneous materials located at the northern end of the facility (see Figure 4-1). The northern-most pile, herein called pile no. 1, is located approximately 100 feet south of an unnamed bridge at the facility's northern boundary. The ground surface north of the waste pile dips into a gully which is drained by an unnamed stream flowing across the northern boundary of the facility. The stream flows less than 1 mile in a northeasterly direction to Batupan Bogue. During the site inspection, brown oily water was observed leaching from the pile, down the gully and into the unnamed stream. Plant personnel indicated that the brown color of the leaching water was derived from the preservatives in the wood.

The second pile (pile no. 2) is located in a flat area approximately 200 feet southwest of pile no. 1. Standing water was observed in a low area next to the pile. No oil sheen was noted.

4.12.2 Waste Characteristics

During the visual site inspection, the following wastes were observed in pile no. 1: construction debris, treated and untreated wood, railroad iron, scrap metal, rubber tires and other inert materials. Waste pile no. 2 contained mainly treated and untreated wood.

4.12.3 Ground Water

4.12.3.1 Pollutant Migration Pathways--Based on the characteristics of the wastes, a migration pathway for contamination of ground water exists through leaching from the piles to the soil and into the ground water.

4.12.3.2 Evidence of Release--During the visual site inspection, leachate was observed coming from pile no. 1. No ground water investigation has been conducted in the area, nor has the seep been sampled.

4.12.4 Surface Water

4.12.4.1 Pollutant Migration Pathways--Pile no. 1 is located adjacent to an unnamed stream. Surface run-off from the pile can reach the stream and flow to Batupan Bogue.

4.12.4.2 Evidence of Release--During the site visit, a brown oily water was observed leaching from pile no. 1 into the unnamed stream. The pile is seemingly contributing contamination to the stream. No evidence of release to surface water from pile no. 2 was visible during the site inspection.

4.12.5 Air

4.12.5.1 Pollutant Migration Pathways--Treated wood is expected to contain volatiles. Thus, a pathway exists for air emissions of hazardous constituents. These emissions are not expected to impact air quality seriously.

4.12.5.2 Evidence of Release--There was no evidence of a continuing release of hazardous constituents to air in the site records, nor was any noted during the site inspection.

4.12.6 Soils

4.12.6.1 Pollutant Migration Pathways--The soils in contact with or underlying any hazardous wastes containing piles are expected to be contaminated by leachates from the piles. Such a pathway is likely to exist.

4.12.6.2 Evidence of Release--No soil sample data was found in the records.

4.12.7 Subsurface Gas

4.12.7.1 Pollutant Migration Pathways--A pathway for the generation of subsurface gas may exist if a ground water contaminant plume containing volatile compounds is found to underlie the waste pile.

4.12.7.2 Evidence of Release--No evidence of subsurface gas release was found in the records.

4.13 SOUTH WASTE PILES (SWMU NO. 13)

4.13.1 Unit Characteristics

SWMU No. 13 consists of two waste piles at the facility's southern boundary. The first pile (pile no. 3) is located less than 25 feet south of the land farm area (SWMU No. 5) and just inside the southern tip of the facility's boundary (see Figure 4-2 and Photograph 13). The second pile (pile no. 4) is located about 100 feet northwest of pile no. 3. It is not known how long the piles have been there.

4.13.2 Waste Characteristics

During the site visit, Pile No. 3 was observed to contain mainly untreated wood. Pile No. 4 consists of approximately 25 empty drums which originally contained railroad spikes. There were no signs of hazardous material disposal.

4.13.3 Ground Water

4.13.3.1 Pollutant Migration Pathways--Since no hazardous materials were disposed in the waste piles, ground water migration of hazardous constituents from the pile is not expected.

4.13.3.2 Evidence of Release--No evidence of release to ground water was found in the site records, nor was any evidence of release noted during the site inspection.

4.13.4 Surface Water

4.13.4.1 Pollutant Migration Pathways--Based on the non-hazardous nature of wastes at the sites, surface water migration of hazardous constituents from the pile is not expected.

4.13.4.2 Evidence of Release--No evidence of release to surface water was found in the site records, nor was evidence of release noted during the site inspection.

4.13.5 Air

4.13.5.1 Pollutant Migration Pathways--Based on the non-hazardous nature of wastes in the piles, air emissions of hazardous constituents are not expected.

4.13.5.2 Evidence of Release--No evidence of release to the air was found in the site records, nor was evidence of release noted during the site inspection.

4.13.6 Soils

4.13.6.1 Pollutant Migration Pathways--Because the wastes do not contain hazardous constituents, soils beneath the waste piles are not expected to become contaminated.

4.13.6.2 Evidence of Release--No evidence of release to the soils was found in the records, nor was any noted during the visual site inspection.

4.13.7 Subsurface Gas

4.13.7.1 Pollutant Migration Pathways--The generation of subsurface gas is not expected at this unit.

4.13.7.2 Evidence of Release--No evidence of subsurface gas release was found in the records.

5.0 CONCLUSIONS AND RECOMMENDATIONS

This section presents a summary of release information and provides recommendations for further action at each SWMU.

5.1 SUMMARY OF RELEASE INFORMATION

Table 5-1 presents a summary of release information for each SWMU, based on available file information and the site inspection. Subsurface gas migration is not included in the table because waste characteristics do not lend themselves to the generation of significant amounts of subsurface gas.

5.2 RECOMMENDATINS FOR FURTHER ACTION

Recommendations for further action are summarized in Table 5-2 and discussed in more detail in the following sections. These recommendations are intended as a preliminary investigation of the facility and, based on data from these samples, further investigation of all or some of the SWMUs may be necessary. It is suggested that an additional site inspection be conducted prior to the final determination of the locations of any wells or sampling points. All wells should be constructed and samples collected in accordance with RCRA requirements.

5.2.1 SWMUs Requiring No Further Action

No further action is recommended at SWMU No. 13 because no hazardous constituents are expected to be present.

5.2.2 SWMUs Requiring Further Action

5.2.2.1 SWMU Nos. 1,4,6,7,8,9, and 10--Because these units are located in one general area of the facility (the treatment area) and because the waste characteristics are similar, these units are grouped together in this section. Hazardous wastes are handled or stored at these units and soils in various locations throughout the treatment area appear to be contaminated. The units are likely releasing hazardous constituents to ground water and surface water. Additionally, hydrogeologic studies performed in the area of the surface lagoon suggest that an upgradient source of ground water contamination may exist. No sampling has been

TABLE 5-1

SUMMARY OF SWMU RELEASE INFORMATION

SWMU Number	Ground Water Migration	Surface Water Migration	Air Migration	Soil Migration
1	P	P	M	E
2	E	P	NE	NE
3	E	E	M	E
4	P	P	E	E
5	E	P	M	E
6	P	P	NE	NE
7	P	P	NE	P
8	P	P	NE	E
9	P	P	NE	E
10	P	NE	NE	NE
11	E	E	NE	E
12	P	E	NE	E
13	NE	NE	NE	NE

E = Expected
NE = Not Expected
M = Minimal
P = Possible
D = Documented

TABLE 5-2

RECOMMENDATION FOR FURTHER ACTION

SWMU Number	Recommended Action	Hazardous Constituents	Media to be Sampled	Analytical Parameters	Comments
1,2,4, 6-11	sampling	Cresote, diesel fuel, PCP, and oil	ground water surface water	group 1 group 1	Ground water contamination at wells R-1, R-5 and R-6
3	sampling	Same as above	ground water surface water soils	group 1 group 1 group 1 plus dioxins	
5	sampling	Same as above	ground water soils	group 1 group 1 plus dioxins and EP Toxicity for metals	
11	implement corrective measure	Same as above	N/A	N/A	
12	sampling	Same as above	surface water leachate	group 1 group 1	
13	none	N/A	N/A	N/A	Waste characteristic suggest slight potential for release
Unnamed stream	sampling	Unknown	surface water	group 1	

N/A - Not Applicable

group 1 - Priority pollutants, chlorinated benzoquinones, chlorinated dihydroxybenzenes, trichlorophenols and tetrachlorophenols.

performed at the treatment area. It is therefore recommended that a remedial investigation be undertaken to determine the source and extent of the ground water contamination. The RI should be consistent with MDNR and RCRA requirements.

5.2.2.2 SWMU NO. 2--Numerous hydrogeologic studies have been performed in the area of the surface lagoon. The investigations concluded that there is no evidence that ground water quality has been degraded immediately downgradient of the surface lagoon. The lagoon is located adjacent to the treatment area which would be the subject of an RI as described in 5.2.2.1. It is therefore recommended that this unit be included in the RI.

5..2.2.3 SWMU No. 3--The spray field has also been the subject of several hydrogeologic studies. These studies suggest that the field is not seriously impacting the ground water but are not conclusive. It is therefore recommended that additional samples be taken.

It is recommended that one ground water sample be taken at each of wells SF-1 through SF-4 and analyzed for priority pollutants, chlorinated benzoquinones, chlorinated dihydroxybenzenes, and trichlorophenols and tetrachlorophenols. A surface water sample should also be collected at the seep if possible. This sample should be analyzed for the same parameters as the ground water.

Additionally, three soil samples should be collected. Two samples should be collected within the spray field and another outside and upgradient of the field (background). The samples should be taken between zero and two feet in depth and analyzed for priority pollutants, chlorinated benzoquinones, chlorinated dihydroxybenzenes, trichlorophenols, tetrachlorophenols and also dioxins.

5.2.2.4 SWMU No. 5--This unit received K001 bottom sediments and boiler ash. The boiler ash has been determined by the facility to be non-hazardous. Further analysis should be conducted on the ash to confirm this conclusion. Also, the K001 bottom sediment likely were contaminated with most of the hazardous materials used at the facility. A sample program for the land farm area is thus recommended.

Four ground water monitoring wells should be installed near the land farm area. One ground water sample should be taken from each well and analyzed for priority pollutants, chlorinated benzoquinones, chlorinated dihydroxybenzenes, and trichlorophenols and tetrachlorophenols.

Additionally, two subsurface and two surface soil samples should be taken in the land farm area between zero and two feet and two and four feet in depth. One background sample should also be collected. These samples should be analyzed for the same parameters as the ground water plus dioxins and EP Toxicity from metals.

5.2.2.5 SWMU No. 11--Analytical results of samples collected in 1986 from well R-12 indicate that two closed ponds may be seriously impacting the ground water. The ponds should be included in the RI recommended in Section 5.2.2.1. Based on the results of the RI, these closed ponds may need to be investigated as being a potential source of ground water contamination.

It is further recommended that Koppers plan and implement corrective action, as they reportedly plan to do, to clean up the abandoned creosote blowdown tank and the settling tank.

Additionally surface water samples should be taken at the unnamed stream flowing adjacent to SWMU No. 11. The samples should be taken at points upstream and downstream of the unit. The samples should be analyzed for priority pollutants, chlorinated benzoquinones, chlorinated dihydroxybenzenes, and trichlorophenols and tetrachlorophenols.

5.2.2.6 SWMU No. 12--Leachate was observed seeping from the area of pile no. 1 to an unnamed stream at the northern facility boundary. The leachate may contain hazardous constituents resulting in contamination of the stream. It is therefore recommended that sampling be conducted. One sample each should be taken at the seep and at upgradient and downgradient locations of the stream passing by pile no. 1. If it is not possible to obtain a leachate sample, then a soil sample at a location along the drainage between the pile and the stream should be taken. The samples should be analyzed for priority pollutants, chlorinated benzoquinones, chlorinated dihydroxybenzenes, trichlorophenols and tetrachlorophenols.

5.3 ADDITIONAL RECOMMENDATIONS

During the piezometer installation performed by Law Engineering (logs of the piezometers are included in the January, 1987 Report of Findings) chemical odors where found in the soils at locations P-12 and P-13. P-12 is located near the treated wood storage area and P-13 is located east of the cooling pond. The exact locations of these piezometers could not be determined from the map. These areas may require further investigation, but were not considered solid waste management units and thus are not discussed in this report.

MEMORANDUM

TO: File

FROM: Ivan C. Noel, Site Manager

SUBJECT: Site Visit Trip Report--Koppers Company

FACILITY: Koppers Company, Grenada, Mississippi

DATE: January 15, 1987

PARTICIPANTS: Ivan C. Noel (CCJM, PC, Site Manager)
Jim Hardage (MDNR Representative)
David L. King (Regional Environmental Supervisor Koppers Co.)
J.D. Clayton (Plant Manager)

INFORMATION REVIEWED:

- Report of Ground Water Assessment
- Koppers Draft Application for A Hazardous Waste Facility Permit (B)
- Information regarding potential releases from SWMUs
- Koppers Part A Application
- Hazardous Waste Manifest

FACILITY TOUR:

Ivan Noel and the MDNR representative arrived at the Koppers Company facility at approximately 11:30 a.m. (1/15/87). The party proceeded to the Plant Manager's office where Mr. Noel provided a brief description of the RFA process, and the purpose and agenda for the site visit.

Following the introduction, Mr. King, Mr. Noel and Mr. Hardage toured the facility. Mr. Clayton helped explain certain aspects of plant operations. The facility tour was completed at approximately 3:30 p.m. The remainder of the site visit involved reviewing file information, and discussing facility operations and concerns. The visit was completed at approximately 4:30 p.m. with the touring participants leaving the facility at that time.

The following SWMUs were identified at the facility:

- Oil/Water Separator -- There are presently two oil/water separators operating in series, but they may be used individually at times. The first separator receives an oil/water mixture from the surge tank to which a flocculation agent is added. The

REFERENCES

Bettandorff and Newcome. 1973. Water for Industrial Development in Calhoun, Chickasaw, Choctaw, Grenada, Webster, and Yalobusha Counties, Mississippi. USGS and Mississippi Research and Development Center.

Brown and Adams. 1943. Geology and Ground Water Supply at Camp McCain. Mississippi State Geologic Survey Bulletin No. 55.

Keystone Environmental Resources, Inc. 1987. Report of Findings - Hydrogeologic Investigation. Monroeville, Pennsylvania.

Law Engineering Testing Co. 1985. Report of Ground Water Assessment. Charlotte, North Carolina.

Sax. 1979. Dangerous Properties of Industrial Materials. Van Nostrand Reinhold Co. New York, New York.

Spiers. 1977. The Winona - Tallahatta Aquifer in Mississippi. USGS.

USDA. 1967. Soil Survey Grenada County ,Mississippi. Soil Conservation Service.

USEPA. Listing Background Document-Wood Preserving.

USEPA. 1983. Treatability Manual. Washington, D.C.: Office of Water Regulations and Standards.

Wasson. 1980. Potentiometric Map of the Meridian-Upper Wilcox Aquifer in Mississippi. USGS.

pentachlorophenol and oil rises to the surface and is recycled back to the process before the wastewater passes into the second separator. In the second separator, creosotes, which is heavier than water, are removed and recycled back to the process. The effluent is then pumped to the surface lagoon.

- Surface Lagoon -- This unit consists of an unlined biological treatment lagoon located in the northeastern portion of the facility. The surface lagoon was constructed in the early 1970's by excavating soil from within the containment area and using the excavated material to build up the perimeter dike.

- Spray Irrigation Field -- The irrigation field was constructed along with the surface lagoon in the mid-1970's and since then has received wastewater from the lagoon. Ponded water with an oily sheen was noted on the spray field. Also, a seep emanating from the soil berm was found. The seep is located on the eastern edge of the spray field and drains towards the residences located nearby.

- Boiler -- This unit is used to burn bottom sediments from the impoundment, waste creosote and pentachlorophenol removed as no longer useful, contaminated soils, unreclaimable oil, and other similiar wastes from other Koppers wood preservation facilities.

- Land Farm -- Prior to November of 1980, K001 bottom sediments were spread and disked into the soil in an area located in the southern tip of the facility. The area is flat and covers approximately one and one-half acres. Currently, residue from the boiler is spread over the area and the site is disced occasionally.

- Cooling Ponds -- This unit includes a cooling pond located near the work tank area and an emergency overflow pond located next to the cooling pond.

- Container Storage Area -- According to plant personnel container storage takes place on a 20 feet by 30 feet cement pad and on an inactive regulated concrete pad near the boiler. There were no evidence of leaks or spills in either container storage area.

- Drip Track Area -- Treated wood loaded on train cars are removed from the treatment cylinders and taken to the drip track area. There, the wood is allowed to drip until it is determined that the dipping is complete.

- Chemical Unloading Areas -- The chemical unloading areas consist of two unloading docks, a no. 2 diesel fuel unloading dock and a creosote unloading dock. The docks are both concrete paved and include containment walls. Tanker trucks arrive at the unloading stations, pump the chemical to the appropriate holding tanks through hook-ups at the docks.

- Underground Storage Tank -- This unit consists of an underground concrete storage tank located adjacent to the treatment cylinders in the treatment area. The tank is 20 feet in diameter and 15 to 18 feet deep. The unit stores back-up water for the facility's fire protection system. The top of the tank is at ground elevation.

- Abandoned Waste Treatment System -- The system is located near the southeast corner of the facility and consists of a creosote blowdown tank, an effluent settling tank and two effluent lagoons. The blowdown tank and settling tank are located adjacent to each other with the effluent lagoons less than 100 feet east of the tanks. Both tanks were observed to contain a black oily looking water.

- North Waste Piles -- This unit consists of two piles at the northern end of the facility. The northern-most pile was observed to contain miscellaneous materials including treated wood while the second pile contains mainly treated wood. A chocolate brown colored water with an oily sheen was observed leaching out of the first pile and into an unnamed stream.

- South Waste Piles -- Two piles containing miscellaneous materials are located on the southern boundary of the facility. One pile contained untreated wood while the other contained a number of drums.

General Information:

- There were no problems relative to site access.

- Some of the photos taken were impaired because of inclement weather.

- No additional health and safety concerns were identified.

- No problems relative to Remedial Investigation including sample collection. The Plant Manager may desire to collect split samples so some notification would be appreciated.

AMERICAN INTERPLEX CORPORATION

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5668 SOUTH REX ROAD
MEMPHIS, TENNESSEE 38119
(901) 767-2081

Koppers Company, Inc.
Post Office Box 15490
North Little Rock, AR 72117

April 9, 1986

ATTN: Mr. David L. King

Control No. 6574

Description of Sample: Four (4) samples of boiler ash & four (4) samples of Boiler Cinders from Grenada Plant received on 3/26/86

Results:

Parameters, ppm	Boiler Ash Composite	Boiler Cinder Composite
*EPA No. K001	N.D. <0.01, <0.01	N.D. <0.01, <0.01

*Analytes in EPA No. K001 are as follows:

Pentachlorophenol	Chrysene
Phenol	Naphthalene
2-Chlorophenol	Flouranthene
P-Chloro-m-cresol	Benzo(b)flouranthene
2,4-Dimethylphenyl	Benzo(a)pyrene
2,4-Dinitrophenol	Indeno(1,2,3-cd)pyrene
Trichlorophenols	Benz(a)anthracene
Tetrachlorophenols	Dibenz(a)anthracene
Cresote	Acenaphthalene

Method: EPA 625

Remarks: Duplicate analyses were performed as per request.
N.D. = None Detected

AMERICAN INTERPLEX CORPORATION

By [signature]
Lydia Morton, Lab Director

APPENDIX B

ANALYTICAL RESULTS

SPECTRIX MONROEVILLE

TABLE OF CONTENTS

PRODUCED ON 12/19/86 AT 14:10 PAGE

SAMPLE #	SOURCE	DESCRIPT	DATE-COL	DATE-REC
GM860061	WELL SF-1	GROUNDWATER	11/18/86	11/19/86
GM860062	WELL SF-2	GROUNDWATER	11/18/86	11/19/86
GM860063	WELL SF-3	GROUNDWATER	11/18/86	11/19/86
GM860064	WELL SF-4	GROUNDWATER	11/18/86	11/19/86
GM860065	WELL R-1	GROUNDWATER	11/18/86	11/19/86
GM860066	WELL R-2	GROUNDWATER	11/18/86	11/19/86
GM860067	WELL R-3	GROUNDWATER	11/18/86	11/19/86
GM860068	WELL R-4	GROUNDWATER	11/18/86	11/19/86
GM860069	WELL R-5	GROUNDWATER	11/18/86	11/19/86
GM860070	WELL R-6	GROUNDWATER	11/18/86	11/19/86
GM860071	WELL R-7	GROUNDWATER	11/18/86	11/19/86
GM860072	WELL R-8	GROUNDWATER	11/18/86	11/19/86
GM860073	WELL R-8B	GROUNDWATER	11/18/86	11/19/86
GM860074	WELL R-9	GROUNDWATER	11/18/86	11/19/86
GM860075	WELL R-11	GROUNDWATER	11/18/86	11/19/86
GM860076	WELL R-12	GROUNDWATER	11/18/86	11/19/86
GM860077	WELL TB	GROUNDWATER	11/18/86	11/19/86
GM860078	WELL FB	GROUNDWATER	11/18/86	11/19/86
GM860079	WELL R-10	GROUNDWATER	11/18/86	11/20/86
GM860080	WELL R-10B	GROUNDWATER	11/18/86	11/20/86

SPECTRIX MONROEVILLE

TABLE 1: SUMMARY OF ANALYTICAL DATA   PRODUCED ON 12/19/86 AT 14:32   PAGE

SAMPLE #	RSLT. LNE		SOURCE
pH (FIELD)			
GM860061	pH, units :	7.0	WELL SF-1
GM860062	pH, units :	7.0	WELL SF-2
GM860063	pH, units :	7.0	WELL SF-3
GM860064	pH, units :	7.0	WELL SF-4
GM860065	pH, units :	5.6	WELL R-1
GM860066	pH, units :	5.2	WELL R-2
GM860067	pH, units :	4.9	WELL R-3
GM860068	pH, units :	5.1	WELL R-4
GM860069	pH, units :	6.9	WELL R-5
GM860070	pH, units :	6.2	WELL R-6
GM860071	pH, units :	5.7	WELL R-7
GM860072	pH, units :	5.2	WELL R-8
GM860073	pH, units :	6.0	WELL R-9B
GM860074	pH, units :	6.1	WELL R-9
GM860075	pH, units :	7.4	WELL R-11
GM860076	pH, units :	6.5	WELL R-12
GM860077	pH, units :	6.5	WELL TB
GM860078	pH, units :	7.2	WELL FB
GM860079	pH, units :	6.3	WELL R-10
GM860080	pH, units :	6.4	WELL R-10B
pH (LAB)			
GM860061	pH, units :	6.9	WELL SF-1
GM860062	pH, units :	7.0	WELL SF-2
GM860063	pH, units :	6.7	WELL SF-3
GM860064	pH, units :	6.5	WELL SF-4
GM860065	pH, units :	5.7	WELL R-1
GM860066	pH, units :	5.2	WELL R-2
GM860067	pH, units :	4.9	WELL R-3
GM860068	pH, units :	5.3	WELL R-4
GM860069	pH, units :	6.3	WELL R-5
GM860070	pH, units :	6.1	WELL R-6
GM860071	pH, units :	5.6	WELL R-7
GM860072	pH, units :	5.4	WELL R-8
GM860073	pH, units :	6.0	WELL R-9B
GM860074	pH, units :	5.6	WELL R-9
GM860075	pH, units :	7.5	WELL R-11
GM860076	pH, units :	6.7	WELL R-12
GM860077	pH, units :	5.9	WELL TB
GM860078	pH, units :	6.0	WELL FB
GM860079	pH, units :	6.3	WELL R-10
GM860080	pH, units :	6.5	WELL R-10B

TABLE 1: SUMMARY OF ANALYTICAL DATA PRODUCED ON 12/19/96 AT 14 33 PAGE

SAMPLE #	RSLT.LNE		SOURCE
CONDUCTIVITY (FIELD)			
GM860061	Cond.,umhos/cm :	837	WELL SF-1
GM860062	Cond.,umhos/cm :	814	WELL SF-2
GM860063	Cond.,umhos/cm :	771	WELL SF-3
GM860064	Cond.,umhos/cm :	618	WELL SF-4
GM860065	Cond.,umhos/cm :	225	WELL R-1
GM860066	Cond.,umhos/cm :	325	WELL R-2
GM860067	Cond.,umhos/cm :	571	WELL R-3
GM860068	Cond.,umhos/cm :	254	WELL R-4
GM860069	Cond.,umhos/cm :	757	WELL R-5
GM860070	Cond.,umhos/cm :	355	WELL R-6
GM860071	Cond.,umhos/cm :	229	WELL R-7
GM860072	Cond.,umhos/cm :	440	WELL R-8
GM860073	Cond.,umhos/cm :	271	WELL R-9S
GM860074	Cond.,umhos/cm :	199	WELL R-9
GM860075	Cond.,umhos/cm :	556	WELL R-11
GM860076	Cond.,umhos/cm :	530	WELL R-12
GM860077	Cond.,umhos/cm :	8	WELL TB
GM860078	Cond.,umhos/cm :	2	WELL FB
GM860079	Cond.,umhos/cm :	271	WELL R-10
GM860080	Cond.,umhos/cm :	292	WELL R-10S
CONDUCTIVITY (LAB)			
GM860061	Cond.,umhos/cm :	950	WELL SF-1
GM860062	Cond.,umhos/cm :	900	WELL SF-2
GM860063	Cond.,umhos/cm :	800	WELL SF-3
GM860064	Cond.,umhos/cm :	680	WELL SF-4
GM860065	Cond.,umhos/cm :	225	WELL R-1
GM860066	Cond.,umhos/cm :	600	WELL R-2
GM860067	Cond.,umhos/cm :	600	WELL R-3
GM860068	Cond.,umhos/cm :	240	WELL R-4
GM860069	Cond.,umhos/cm :	800	WELL R-5
GM860070	Cond.,umhos/cm :	325	WELL R-6
GM860071	Cond.,umhos/cm :	240	WELL R-7
GM860072	Cond.,umhos/cm :	430	WELL R-8
GM860073	Cond.,umhos/cm :	275	WELL R-9S
GM860074	Cond.,umhos/cm :	195	WELL R-9
GM860075	Cond.,umhos/cm :	550	WELL R-11
GM860076	Cond.,umhos/cm :	520	WELL R-12
GM860077	Cond.,umhos/cm :	2	WELL TB
GM860078	Cond.,umhos/cm :	1	WELL FB
GM860079	Cond.,umhos/cm :	262	WELL R-10
GM860080	Cond.,umhos/cm :	292	WELL R-10S

SPECTRIX MONROEVILLE

TABLE 1: SUMMARY OF ANALYTICAL DATA   PRODUCED ON 12/19/9[illegible] AT 1[illegible]:32   PAGE

SAMPLE #	RSLT. LNE	SOURCE
PENTACHLOROPHENOL		
GM860061	PCP, ug/L: <1.00	WELL SF-1
GM860062	PCP, ug/L: 1.11	WELL SF-2
GM860063	PCP, ug/L: <1.00	WELL SF-3
GM860064	PCP, ug/L: <1.00	WELL SF-4
GM860065	PCP, ug/L: <1.00	WELL R-1
GM860066	PCP, ug/L: <1.00	WELL R-2
GM860067	PCP, ug/L: <1.00	WELL R-3
GM860068	PCP, ug/L: <1.00	WELL R-4
GM860069	PCP, ug/L: 1.23	WELL R-5
GM860070	PCP, ug/L: 1.14	WELL R-6
GM860071	PCP, ug/L: <1.00	WELL R-7
GM860072	PCP, ug/L: 1.19	WELL R-8
GM860073	PCP, ug/L: <1.00	WELL R-8B
GM860074	PCP, ug/L: 1.10	WELL R-9
GM860075	PCP, ug/L: <1.00	WELL R-11
GM860076	PCP, ug/L: 1.37	WELL R-12
GM860077	PCP, ug/L: 35.2	WELL TB
GM860078	PCP, ug/L: <1.00	WELL FB
GM860079	PCP, ug/L: 1.[illegible]	WELL R-10
GM860080	PCP, ug/L: 1.54	WELL R-10B
PHENOL		
GM860061	Phenol, mg/L: <0.005	WELL SF-1
GM860062	Phenol, mg/L: <0.005	WELL SF-2
GM860063	Phenol, mg/L: <0.005	WELL SF-3
GM860064	Phenol, mg/L: <0.005	WELL SF-4
GM860065	Phenol, mg/L: <0.005	WELL R-1
GM860066	Phenol, mg/L: <0.005	WELL R-2
GM860067	Phenol, mg/L: <0.005	WELL R-3
GM860068	Phenol, mg/L: <0.005	WELL R-4
GM860069	Phenol, mg/L: 0.129	WELL R-5
GM860070	Phenol, mg/L: <0.005	WELL R-6
GM860071	Phenol, mg/L: <0.005	WELL R-7
GM860072	Phenol, mg/L: <0.005	WELL R-8
GM860073	Phenol, mg/L: <0.005	WELL R-8B
GM860074	Phenol, mg/L: <0.005	WELL R-9
GM860075	Phenol, mg/L: <0.005	WELL R-11
GM860076	Phenol, mg/L: 0.438	WELL R-12
GM860077	Phenol, mg/L: <0.005	WELL TB
GM860078	Phenol, mg/L: <0.005	WELL FB
GM860079	Phenol, mg/L: 0.009	WELL R-10
GM860080	Phenol, mg/L: 0.010	WELL R-10B

TABLE 1: SUMMARY OF ANALYTICAL DATA PRODUCED ON 12/19/86 AT 14:33 PAGE

SAMPLE #	RSLT. LNE	SOURCE
TOTAL ORGANIC CARBON		
GM860061	TOC, mg/L: <1.00	WELL SF-1
GM860062	TOC, mg/L: 1.69	WELL SF-2
GM860063	TOC, mg/L: 2.01	WELL SF-3
GM860064	TOC, mg/L: 2.19	WELL SF-4
GM860065	TOC, mg/L: 2.14	WELL R-1
GM860066	TOC, mg/L: 2.27	WELL R-2
GM860067	TOC, mg/L: 2.69	WELL R-3
GM860068	TOC, mg/L: 1.27	WELL R-4
GM860069	TOC, mg/L: 22.3	WELL R-5
GM860070	TOC, mg/L: 4.03	WELL R-6
GM860071	TOC, mg/L: 1.47	WELL R-7
GM860072	TOC, mg/L: <1.00	WELL R-8
GM860073	TOC, mg/L: 1.55	WELL R-8B
GM860074	TOC, mg/L: 1.11	WELL R-9
GM860075	TOC, mg/L: 3.25	WELL R-11
GM860076	TOC, mg/L: 29.2	WELL R-12
GM860077	TOC, mg/L: <1.00	WELL TB
GM860078	TOC, mg/L: <1.00	WELL FB
GM860079	TOC, mg/L: 1.07	WELL R-10
GM860080	TOC, mg/L: <1.00	WELL R-10B
TOTAL DISSOLVED SOLIDS		
GM860061	mg/L, TDS @ 180 C: 730	WELL SF-1
GM860062	mg/L, TDS @ 180 C: 844	WELL SF-2
GM860063	mg/L, TDS @ 180 C: 644	WELL SF-3
GM860064	mg/L, TDS @ 180 C: 552	WELL SF-4
GM860065	mg/L, TDS @ 180 C: 254	WELL R-1
GM860066	mg/L, TDS @ 180 C: 570	WELL R-2
GM860067	mg/L, TDS @ 180 C: 529	WELL R-3
GM860068	mg/L, TDS @ 180 C: 260	WELL R-4
GM860069	mg/L, TDS @ 180 C: 500	WELL R-5
GM860070	mg/L, TDS @ 180 C: 210	WELL R-6
GM860071	mg/L, TDS @ 180 C: 290	WELL R-7
GM860072	mg/L, TDS @ 180 C: 350	WELL R-8
GM860073	mg/L, TDS @ 180 C: 305	WELL R-8B
GM860074	mg/L, TDS @ 180 C: 400	WELL R-9
GM860075	mg/L, TDS @ 180 C: 550	WELL R-11
GM860076	mg/L, TDS @ 180 C: 660	WELL R-12
GM860077	mg/L, TDS @ 180 C: 30	WELL TB
GM860078	mg/L, TDS @ 180 C: 22	WELL FB
GM860079	mg/L, TDS @ 180 C: 224	WELL R-10
GM860080	mg/L, TDS @ 180 C: 316	WELL R-10B

TABLE 2: SUMMARY OF PAH DATA

Sample: GM860061 Source: WELL SF-1

Description: GROUNDWATER

Date Collected: 11/18/86

Date Received: 11/19/86

Acenaphthene.	0.250
Acenaphthylene . . . . . :	<0.250
Anthracene.	<0.250
Benzo(a)anthracene . .	<0.250
Benzo(a)pyrene. . . .	<0.250
Benzo(b)fluoranthene :	<0.250
Benzo(g,h,i)perylene :	<0.250
Benzo(k)fluoranthene. :	<0.250
Chrysene.	<0.250
Dibenz(ah)anthracene. :	<0.250
Fluoranthene.	0.312
Fluorene . . . . :	<0.250
Indeno(123-cd)pyrene. :	<0.250
Phenanthrene. . . . . . :	<0.250
Pyrene. . . . . :	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole. . . . . . . :	<0.250
Naphthalene . . . . . . :	<0.500

The above results are reported in ug/L .

TABLE 2: SUMMARY OF PAH DATA
==============================

Sample: GM860062

Source: WELL SF-2
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene	<0.250
Acenaphthylene	<0.250
Anthracene	<0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	<0.250
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	<0.250
Pyrene	<0.250

Other Polynuclear Aromatic Compounds Tested:

Carbazole	<0.250
Naphthalene	<0.500

The above results are reported in ug/L

TABLE 2: SUMMARY OF PAH DATA
============================

Sample: GM860063

Source WELL SF-3
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene	: <0.250
Acenaphthylene	: <0.250
Anthracene	: <0.250
Benzo(a)anthracene	: <0.250
Benzo(a)pyrene	: <0.250
Benzo(b)fluoranthene	: <0.250
Benzo(g,h,i)perylene	: <0.250
Benzo(k)fluoranthene	: <0.250
Chrysene	: <0.250
Dibenz(ah)anthracene	: <0.250
Fluoranthene	: 0.273
Fluorene	: 4.45
Indeno(123-cd)pyrene	: <0.250
Phenanthrene	: <0.250
Pyrene	: <0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole	: <0.250
Naphthalene	: <0.500

The above results are reported in ug/L

TABLE 2: SUMMARY OF PAH DATA
============================

Sample: GM860064

Source: WELL SF-4

Description: GROUNDWATER

Date Collected 11/18/86

Date Received: 11/19/86

Acenaphthene	<0.250
Acenaphthylene	<0.250
Anthracene	<0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	0.343
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	<0.250
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole	<0.250
Naphthalene	<0.500

The above results are reported in ug/L

TABLE 2: SUMMARY OF PAH DATA
==============================

Sample: GM860065

Source: WELL R-1

Description: GROUNDWATER

Date Collected: 11/18/86

Date Received 11/19/86

Acenaphthene..........	14.5
Acenaphthylene........	1.62
Anthracene............	<0.250
Benzo(a)anthracene....	<0.250
Benzo(a)pyrene........	<0.250
Benzo(b)fluoranthene..	<0.250
Benzo(g,h,i)perylene..	<0.250
Benzo(k)fluoranthene..	<0.250
Chrysene..............	0.456
Dibenz(ah)anthracene..	<0.250
Fluoranthene..........	0.503
Fluorene..............	<0.250
Indeno(123-cd)pyrene..	<0.250
Phenanthrene..........	5.58
Pyrene................	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole.............	7.26
Naphthalene...........	<0.500

The above results are reported in ug/L

TABLE 2: SUMMARY OF PAH DATA

Sample: GM860066

Source: WELL R-2
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene	0.250
Acenaphthylene	<0.250
Anthracene	<0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	0.259
Dibenz(ah)anthracene	<0.250
Fluoranthene	<0.250
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	<0.250
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole	<0.250
Naphthalene	<0.500

The above results are reported in ug/L

TABLE 2: SUMMARY OF PAH DATA
============================

Sample: GM860067

Source: WELL R-3
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene	<0.250
Acenaphthylene	<0.250
Anthracene	<0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	0.256
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	<0.250
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole	<0.250
Naphthalene	<0.500

The above results are reported in ug/L .

TABLE 2: SUMMARY OF PAH DATA

Sample: GM860068

Source: WELL R-4
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene	<0.250
Acenaphthylene	<0.250
Anthracene	0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	0.252
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	<0.250
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole	<0.250
Naphthalene	<0.500

The above results are reported in ug/L

TABLE 2: SUMMARY OF PAH DATA
============================

Sample: GM860069

Source: WELL 8-5
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene	126
Acenaphthylene	30.2
Anthracene	27.2
Benzo(a)anthracene	0.262
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	2.89
Fluorene	80.4
Indeno(123-cd)pyrene	<0.250
Phenanthrene	94.0
Pyrene	0.816

Other Polynuclear Aromatic Compounds tested:

Carbazole	89.6
Naphthalene	1630

The above results are reported in ug/L .

TABLE 2: SUMMARY OF PAH DATA
============================

Sample: GM860070

Source: WELL R-6
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene	13.7
Acenaphthylene	14.8
Anthracene	10.9
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	0.506
Fluorene	4.48
Indeno(123-cd)pyrene	<0.250
Phenanthrene	7.34
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole	12.6
Naphthalene	<0.500

The above results are reported in ug/L .

TABLE 2: SUMMARY OF PAH DATA
==============================

Sample: GM860071

Source: WELL R-7
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene........	<0.250
Acenaphthylene....... :	<0.250
Anthracene........	<0.250
Benzo(a)anthracene...	<0.250
Benzo(a)pyrene......	<0.250
Benzo(b)fluoranthene :	<0.250
Benzo(g,h,i)perylene :	<0.250
Benzo(k)fluoranthene :	<0.250
Chrysene...........	<0.250
Dibenz(ah)anthracene.	<0.250
Fluoranthene....... :	<0.250
Fluorene........	<0.250
Indeno(123-cd)pyrene :	<0.250
Phenanthrene.......	<0.250
Pyrene.........	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole........	<0.250
Naphthalene....... :	<0.500

The above results are reported in ug/L .

TABLE 2: SUMMARY OF PAH DATA
============================

Sample: GM860072

Source: WELL R-3
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene	<0.250
Acenaphthylene	<0.250
Anthracene	<0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	<0.250
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	<0.250
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested.

Carbazole	<0.250
Naphthalene	<0.500

The above results are reported in ug/L .

TABLE 2: SUMMARY OF PAH DATA

Sample: GM860073

Source: WELL R-98

Description: GROUNDWATER

Date Collected: 11/18/86

Date Received: 11/19/86

Acenaphthene	<0.250
Acenaphthylene	<0.250
Anthracene	<0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	0.301
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	0.381
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole	0.540
Naphthalene	<0.300

The above results are reported in µg/L.

TABLE 2: SUMMARY OF PAH DATA
==============================

Sample: GM860074

Source: WELL R-9
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene	<0.250
Acenaphthylene	<0.250
Anthracene	<0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	0.250
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	<0.250
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole	<0.250
Naphthalene	<0.500

The above results are reported in ug/L

TABLE 2: SUMMARY OF PAH DATA

Sample: GM860075

Source: WELL R-11
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene	<0.250
Acenaphthylene	<0.250
Anthracene	<0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	<0.250
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	<0.250
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole	<0.250
Naphthalene	<0.500

The above results are reported in ug/L .

KOPPERS COMPANY INCORPORATED
GRENADA, MISSISSIPPI

DRAFT INTERIM RFA REPORT

EPA Work Assignment No.: 19-4ORR.0-02-21

under

Contract No. 68-01-7250

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KOPPERS COMPANY INCORPORATED
GRENADA, MISSISSIPPI
INTERIM RESOURCE
CONSERVATION AND RECOVERY ACT (RCRA)
FACILITY ASSESSMENT

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March 1987

EPA WORK ASSIGNMENT NO. 19-4ORR.0-02-21
UNDER
EPA CONTRACT NO. 68-01-7250

EBASCO SERVICES INCORPORATED

INTERIM RFA

KOPPERS COMPANY INCORPORATED
Grenada, MS

MARCH 1987

NOTICE

The information in this document has been funded by the United States Environmental Protection Agency (U.S. EPA) under REM III Contract No. 68-01-7250 to Ebasco Services Incorporated (Ebasco). This Interim RFA Report is a draft and has not been formally released by either Ebasco or the U.S. EPA. As a draft, this document should not be cited or quoted and is being circulated for comment only.

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DRAFT INTERIM RCRA FACILITY ASSESSMENT REPORT
KOPPERS COMPANY
GRENADA, MISSISSIPPI
WORK ASSIGNMENT NO.: 19-40RR.0-02-21

1.0 INTRODUCTION

The Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) is designed to evaluate potential releases of hazardous wastes or hazardous constituents and to implement corrective actions, as necessary, under the broad authority of the 1984 Hazardous and Solid Waste Amendments (HSWA). The RFA identifies information on solid waste management units (SWMUs) at RCRA facilities, evaluates the potential for releases to the environment, and determines the need for future investigations.

The Interim RFA begins with a desktop exercise to review existing U.S. Environmental Protection Agency (EPA) files and gather data from appropriate state environmental agencies regarding SWMUs and potential releases at the RCRA facility. Additional information is obtained through a trip to the facility to identify SWMUs, provide visual confirmation of SWMU characteristics and releases, and develop locations and rationale for onsite sampling, if required at a later date.

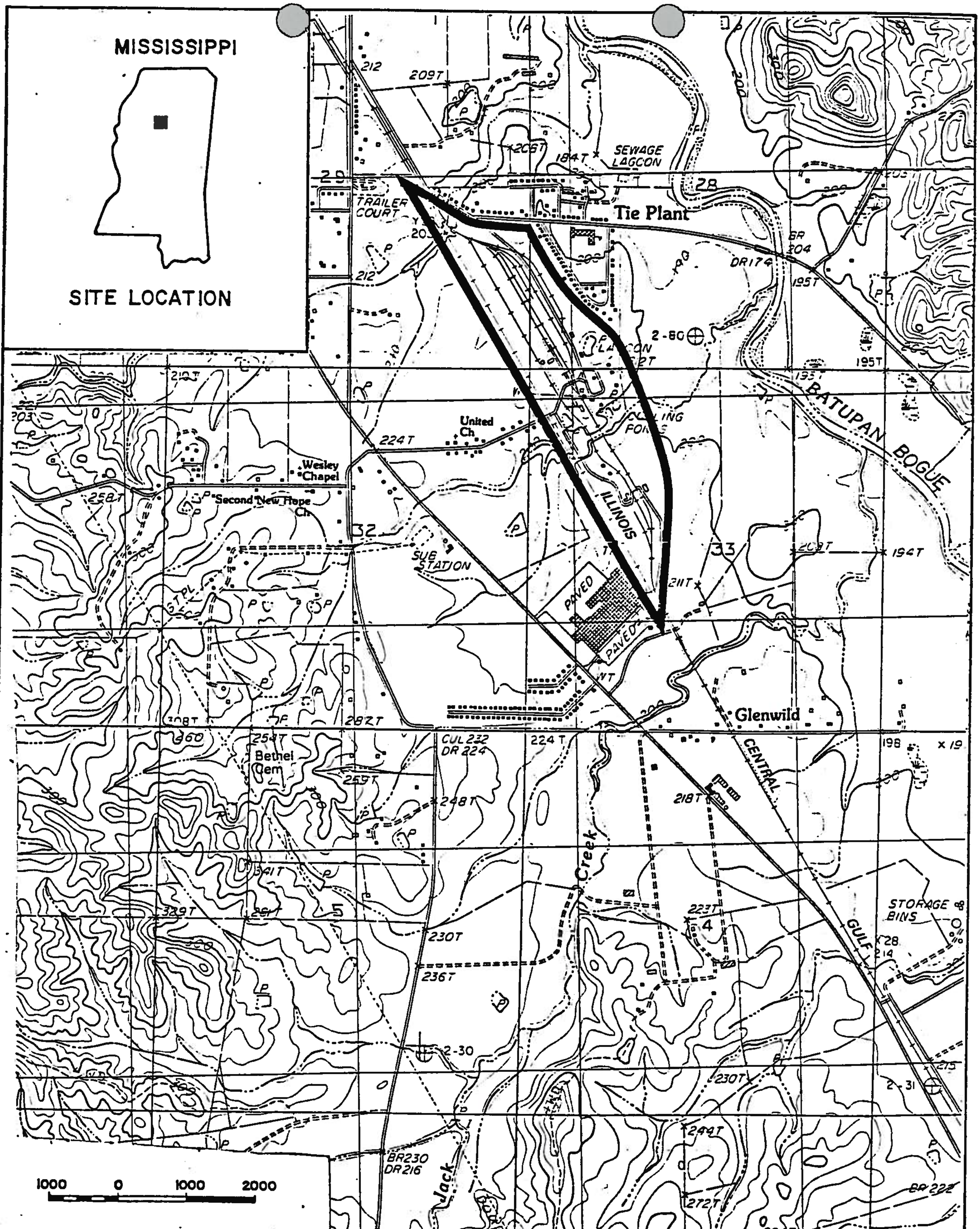
The Koppers Company SWMU response letter, RCRA Part B permit application, additional file information provided by EPA-Region IV, file information from state regulatory agencies, and Koppers environmental-related files have been reviewed and pertinent information is summarized herein. Information obtained during the site trip conducted on January 15, 1987 and documented in the Site Trip Report (C. C. Johnson & Malhotra, P.C.) is discussed in this report and included as Appendix A.

2.0 DESCRIPTION OF FACILITY OPERATIONS

The Koppers Company began operation at the Grenada facility (Figure 2-1), EPA Identification No. MSD007027543, in the 1930s. Reportedly, a wood preserving facility has existed on the grounds since approximately 1900. The facility has been involved with the use of creosote and pentachlorophenol in the pressure treatment of wood products for railroads, utilities and others. The primary product is treated railroad cross ties. Raw materials and treated products arrive and leave by rail and truck.

Generally, wood comes to the facility presized, although the facility does have limited wood working capabilities to size ties or fabricate wood products to customer specifications. Once the wood product is sized, it is preconditioned by air drying, steaming or the Boulton process to reduce the woods moisture content and increase its permeability. The wood is loaded on to tram cars which are pushed into the cylinder using a small locomotive, lift truck, or similar equipment. The cylinder is sealed and steam conditioning or the "Boulton" process may be applied. Treatment solutions are then pumped into the cylinder and pressure applied. Treatment solutions currently include creosote in a diesel fuel carrier and a pentachlorophenol and oil mixture. The plant manager indicated that he thought a different chemical process was used in the past (prior to 1970) but was unsure of the process. Salts of chromium, arsenic and copper are sometimes used as wood preservatives. At the end of the process, the excess treatment solution is pumped out of the cylinder and back to a storage tank for re-use. A final vacuum is then pulled and any additional solution on the wood or in the cylinder is pumped to the storage tank. The cylinder door is opened and the trams, loaded with treated wood, are removed from the cylinder to a drip track where excess treatment chemicals drip from wood to an underdrain to the oil/water separator.

Koppers also operates a wood fired co-generation boiler at the facility. Wastes generated at the facility with adequate BTU value are burned in the boiler. The plant also receives truck load shipments of high BTU-value waste from other Koppers facilities which generate creosote and wood preserving wastes suitable for use as boiler fuel.



APPROXIMATE PROPERTY BOUNDRY OF KOPPERS COMPANY, INC.

KOPPERS COMPANY, INC.

FIGURE 2-1 VICINITY MAP

SOURCE: USGS TIE PLANT QUADRANGLE

3.0 ENVIRONMENTAL SETTING, WASTE GENERATION, AND TARGET POPULATIONS

3.1 GEOLOGIC AND HYDROLOGIC SETTING

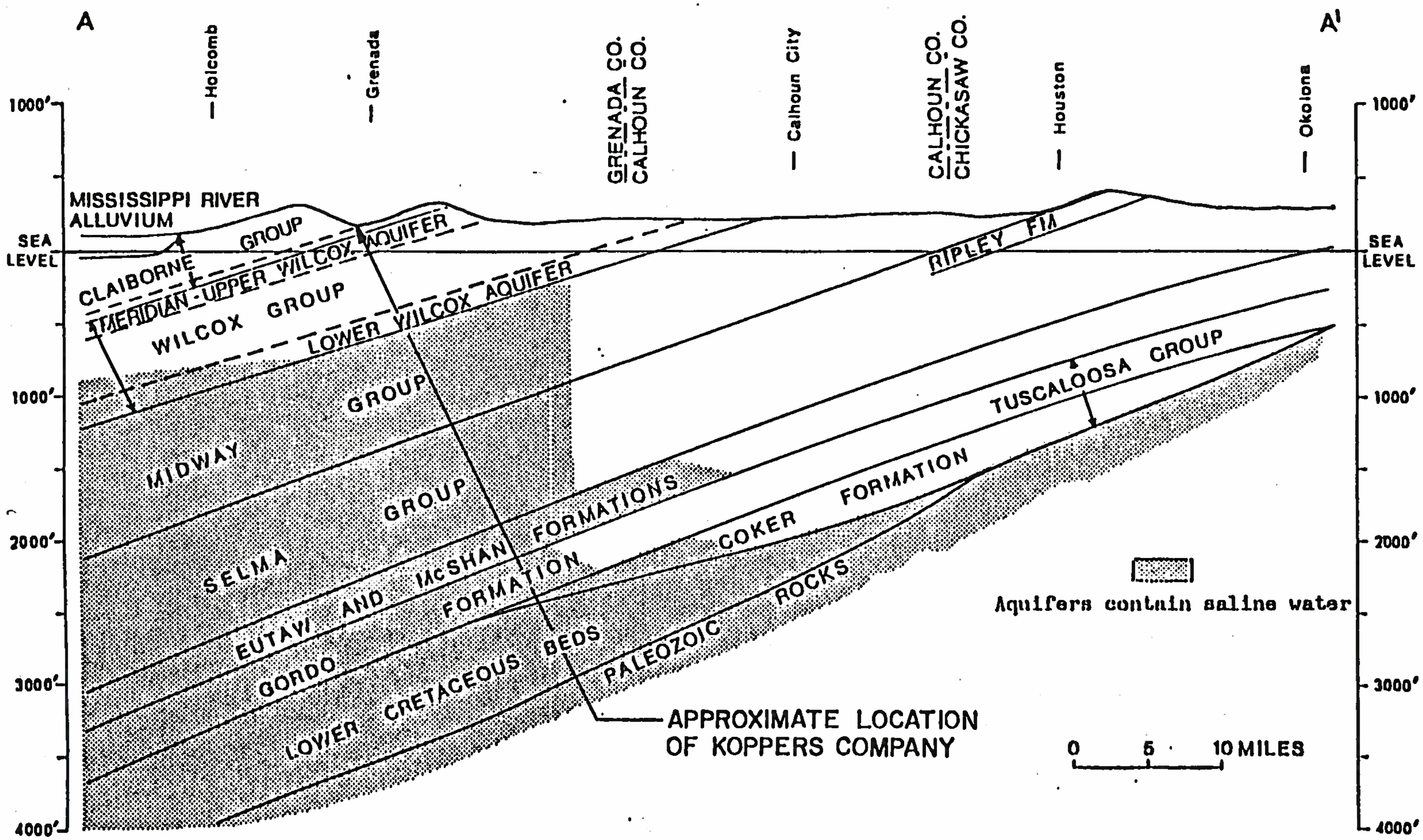
3.1.1 Physiography

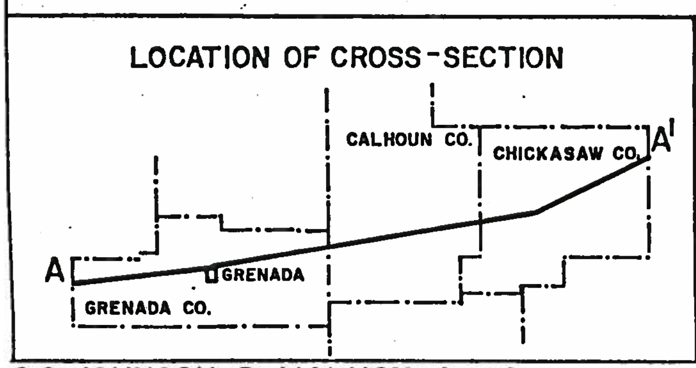
The Koppers Company facility is located in Grenada County, Central Mississippi. Figure 2-1 is taken from the USGS Tie Plant Quadrangle of Grenada County. Most of Grenada County, including the area of the facility, lies in the North-Central Hills Physiographic Province. This province is characterized by rolling hills with well defined drainage. Elevations in the area of the facility range from approximately 210 feet above mean sea level at topographic highs to approximately 180 feet above mean sea level near Batupan Bogue.

3.1.2 Stratigraphy and Structure

The formations exposed in Grenada County range in age from Eocene to Halocene and out-crop in nearly north-south bands. The general dip direction of the formations, with the exception of flat lying surface deposits, is westward toward the Mississippi embayment. The Claiborne Group, specifically the Tallahatta Formation, out-crops in the area of the Kopper facility and is underlain by the Wilcox Group which includes the Holly Spring and Ackerman Formations. In this area, the deeper formations typically contain saline waters and will not be discussed here. Figure 3-1 shows a geologic cross-section of the Grenada, Mississippi area which depicts the local stratigraphy.

The Tallahatta Formation includes in ascending order, the Meridian Sand, Basic City Shale, and Neshoba Sand members. The Basic City Shale member is composed of sparsely fossiliferous light-colored clay-stone, siltstone, and shale. Ledges of hard quartzitic rock (buhrstone) are common. Beginning in central Mississipi, south of the facility, the upper part of the Basic City Shale member interfingers northward into the Neshoba Sand member, a unit reportedly present in Grenada County. The Neshoba Sand member of the Tallahatta Formation typically consists of a fine micaceous quartz sand containing interbedded gray clay. The Neshoba and overlying Winona Sand, which outcrops to the west of the facility, are hydraulically connected to form the Winona-Tallahatta aquifer. The Winona sand out-crops in many of the hills to the west of the facility.





KOPPERS COMPANY, INC.

FIGURE 3-1 GEOLOGIC CROSS-SECTION THROUGH GRENADA COUNTY, MISSISSIPPI

SOURCE: NEWCOME AND BETTANDORFF, 1974

The above discussion was extracted from Spiers, 1977. Brown and Adams, 1943 report that the Basic City Shale member out-crops in the area of the facility and do not discuss the Neshoba Sand member. Brown and Adams do however describe the Basic City Shale as consisting of sands in northern Mississippi.

Although the Meridian Sand member is part of the Tallahatta Formation, it is a separate aquifer. Together with the sand beds in the upper part of the Wilcox Group , the Meridian Sand member comprises the extensive Meridian-Upper Wilcox aquifer. The Meridian Sand out-crops to the east of the facility and, according to Brown and Adams, to the south of the facility along the Batupan Bogue. In 22 test holes studied during the Brown and Adams investigation, the Meridian Sand ranges in thickness from 8 to 147 feet and averages 77 feet, but its thickness increases northward until in three test holes at the Grenada Air Base it averages 215 feet. The Brown and Adams study covered an area beginning approximately one mile south of the facility.

The Meridian Sand member is characterized by an abundance of kyanite, staurolite, and muscovite. The kyanite is usually colorless, only a few thick fragments being sky-blue. The staurolite is honey-colored to amber-colored and contains numerous inclusions. White mica is especially abundant in the fine sand at the base of the Meridian sand. These minerals were found in abundance, even in the coarser fractions. Secondary pyrite is evident in samples from test holes where some is cemented between sand grains. The middle part of the sand member generally contains the coarest grains of sand, although locally in test holes and in outcrops a grit containing cobbles may be near the base. The only fossils found were some faecal pellets at the Air Base and fragments of petrified wood.

The underlying Wilcox Group includes the Holly Spring and Ackerman Formations. The Holly Springs formation is composed of shale or clay, sandy shale, lignite, silt, calcareous sandstone or siltstone, and sand. The sand is mostly at the base of the formation where the largest grain size was found. Shale, sandy shale, and lignite are found throughout the formation, seemingly without any simple pattern of deposition. Most of the shale and sandy shale is carbonaceous and ranges in color from light gray to nearly black. The basal sand of the Holly Springs Formation is gray and commonly contains numerous opaque grains. Most of the grains consist of quartz (milky and clear), feldspars, magnetite, and other undetermined minerals.

The Ackerman Formation consists of shale, sandstone, siltstone and soft brown lignite. The shale is silty and in part sandy, calcareous, and carbonaceous. Some of it is light gray and appears kaolinitic. The sand consists mostly of fine angular quartz and mica. The sandstone and siltstone are cemented with carbonate, probably mostly siderite, and are usually slightly glauconitic. The most persistent features of the formation are some siderite-cemented siltstones near the middle and a fine silty sand at the base.

Based on well logs from monitoring wells installed during various hydrogeologic investigations at the facility, it appears likely that the Neshoha Sand member directly underlies the facility. The well logs indicate that this unit generally consists of fine sands, clay, clayey silts, and silts and generally extends to a depth of approximately 10-20 feet. In some borings this unit consists almosts entirely of sands. The underlying stratum appears to be the Meridian Sand member of the Tallahatta Formation. This formation extends at least to a depth of 145 feet (the maximum extent of the borings conducted at the facility). It consists primarily of grey/green medium grained sands with clay, clayey silts and silts.

3.1.3 Hydrology

The climate of the Grenada County is moist and subtropical. More than half of the average yearly rainfall of 52.3 inches comes in winter and spring. The winters are mild, and the summers are warm and humid.

3.1.3.1 Surface Water--The Koppers Company facility lies in the drainage basin of the Batupan Bogue. Batupan Bogue flows northerly and drains an approximately 200 square mile area to the Yalobusha River. The Batupan Bogue is located approximately 2000-3000 feet to the northeast of the facility.

Based on a topographic map of the area (Tie Plant Quadrangle) it appears the facility grounds are drained by two unnamed streams and Jack Creek which discharge to the Batupan Bogue. These tributaries transect the facility running in a northeasterly direction. Jack Creek is located just south of the southeast boundary of the facility. One of the unnamed tributaries passes at the northwest boundary of the facility, and the other splits the facility, passing just southwest of the treatment area.

The Soil Survey of Grenada County describes the soils in the area of the facility as poorly drained. The well logs of the monitoring well installed at the facility indicate that the soils contain significant amounts of clay and silt. Thus, it appears likely that a large portion of the precipitation that falls in the area of the facility will run-off to surface drainage.

3.1.3.2 Ground Water--Based on data reported in the facility's January, 1987 Hydrogeologic Investigation Report of Findings, depth to ground water at the facility in November and December of 1986 ranged from approximately 14 feet to 29 feet. These water levels indicate that ground water under the facility flows generally in a northeasterly direction varying to the east and north in some areas. The Report of Findings concluded that Batupan Bogue is a likely discharge area for the shallow ground water moving across the facility.

Ground water underlying the site is probably part of the Meridian-Upper Wilcox Aquifer. The outcrop of the Meridian Sand is located just east of the facility and is a likely recharge area for the aquifer. The base of the Meridian-Upper Wilcox aquifer dips 20-50 feet per mile to the southwest from the outcrop area. The aquifer is of major importance in this area and supplies water for most municipal and industrial uses.

Koppers Co. operates a well which withdraws water from the Meridian-Upper Wilcox aquifer at the facility. This well is reportedly 500 feet deep and is operated at a rate of approximately 200 gpm with a total daily withdrawal not exceeding 50,000 gallons. The well is used for process and drinking water supply. Heatcraft, Inc. (located near the southeast end of the facility) operates three wells, all of an approximate depth of 500 feet, which withdraw over 0.5 mgd with a maximum pumping rate of roughly 550 gpm per well.

Heavy industrial and municipal withdrawals from shallower wells (many are 175-250 feet deep) in the Meridian-Upper Wilcox aquifer in the area of Grenada, Mississippi cause a localized low of the piezometric head of the aquifer in that area. Grenada is located approximately 3 miles north of the facility. Although it appears that the shallow ground water at the facility is flowing northeasterly towards the Batupan Bogue, the localized low of the piezometric surface of the aquifer in the Grenada area may also influence the ground water flow pattern in the area of the facility. Also, since the facility is located near a likely recharge area for the Meridian-Upper Wilcox aquifer and the aquifer down-dips to the southwest of the outcrop area, some vertical gradient may exist at the facility. Water level measurements in two sets of paired wells (one deep well and one shallow well) reported in the January, 1987 Report of Findings showed a definite downward gradient in one of the pairs and no apparent gradient in the other.

3.2 WASTE GENERATION

Hazardous wastes generated at the facility include creosote wastes (U051), bottom sediments from a lagoon used for the treatment of wastewater from the wood preserving process (K001), pentachlorophenol wastes (F027), contaminated soils, and unreclaimable oil.

are also burned in the boiler. The door pit wastes consist of wood chips, contaminated soils, and oil residue. The wastes are burned in the boiler and resulting residue spread at the land farm.

3.2.5 Unreclaimable Oil

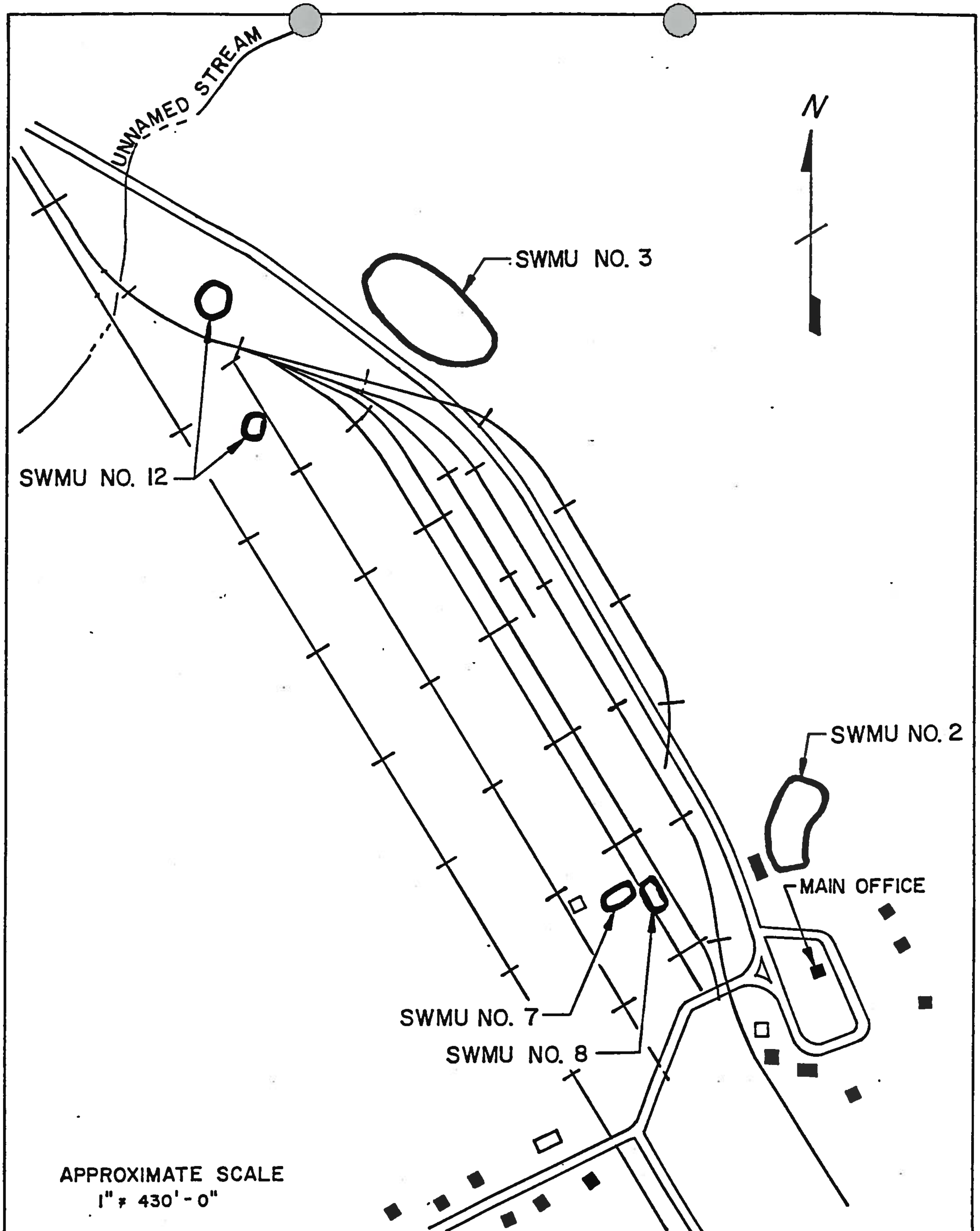
Oil which is determined to be unreclaimable is also burned in the boiler operated at the facility. As mentioned above, residue resulting from boiler operation is disposed of at the land farm.

3.3 TARGET POPULATIONS

The Meridian - Upper Wilcox aquifer, which underlies the facility, is the primary source of water supply in this area. The aquifer yields large enough quantities of water for municipal and industrial supplies, but is also used for small domestic supplies. Domestic supply wells with a casing diameter of under six inches are excluded from permitting by State law and thus it is difficult to determine their location. However, it was estimated by a State DNR employee that approximately 13 domestic supply wells are located within two miles of the facility. Users of any domestic supply wells located near the facility or most importantly to the east, northeast or north of the facility should be considered a potential target population.

Koppers Co. operates a supply well at the facility and Heatcraft, Inc. operates three supply wells within approximately 1500 feet of the southern boundary of the facility. All of these wells are used for process as well as drinking water supplies and are approximately 500 feet deep. Users of these wells may be a potential target population.

Grenada County and Grenada City, as well as a number of industrial users operate supply wells in the area. Most of these wells are located in the Grenada City area. Grenada County, however, operate six supply wells within three miles of the facility and one about three quarters of a mile to the southwest of the facility. Exact locations of these wells have not



SEE TABLE 4 - 1 FOR KEY

KOPPERS COMPANY, INC.

FIGURE 4-2 LOCATION OF SWMUs

SOURCE: USGS TIE PLANT QUADRANGLE

3.2.1 Creosote Wastes

Creosote wastes (U051) are generated by the cleaning of storage tanks and process equipment. The creosote wastes which are removed as no longer usable are burned in the boiler operated at the facility. Residues resulting from the boiler operation are spread at the land farm (SWMU No. 5). Some of these wastes are also discharged in the process wastewater to the oil/water separators (SWMU No. 1), and may make their way to the surface lagoon (SWMU No. 2) and spray irrigation field (SWMU No. 3).

3.2.2 Lagoon Bottom Sediment

Bottom sediments (K001) are periodically removed from the wastewater treatment lagoon. This lagoon receives various wastewater streams and run-off from the treatment area which first pass through an oil/water separator. Some creosote and diesel fuel mixture and pentachlorophenol and oil mixture are carried through the separator and enter the lagoon. The sediment is dredged from the lagoon at a reported rate of 2500 pounds each year. Wastes from the cleaning of the oil/water separator are handled along with these wastes. The wastes are currently burned in the boiler operated at the facility and the resulting residue disposed-of at the land farm (SWMU No. 5). Prior to 1980, the wastes were applied directly to the land farm.

3.2.3 Pentachlorophenol Wastes

Pentachlorophenol wastes (F027) are no longer usable pentachlorophenol discarded from the wood treatment process. Pentachlorophenol wastes are currently burned in the boiler operated at the facility and the resulting residue spread at the land farm (SWMU No. 5). Some of the wastes also are discharged in the process wastewater to the oil/water separator (SWMU No. 1), and may reach the surface lagoon (SWMU No. 2) and spray irrigation field (SWMU No. 3).

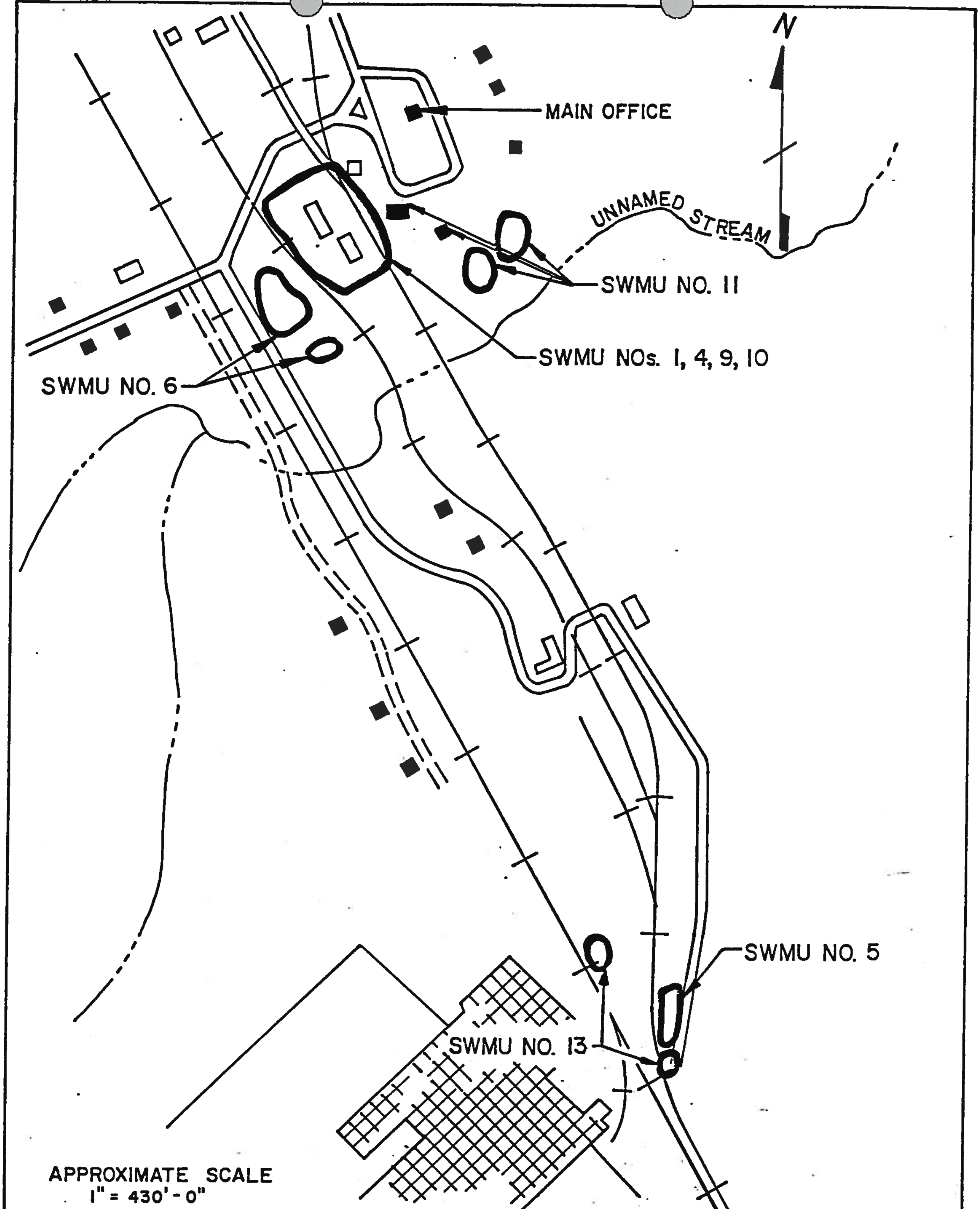
3.2.4 Contaminated Soils

Soil contaminated with creosote, pentachlorophenol, diesel fuel, or oil by spills or other events along with door pit wastes from the treatment area

TABLE 4-1

SOLID WASTE MANAGEMENT UNITS
KOPPERS COMPANY
GRENADA, MISSISSIPPI

Area of Concern	Period of Operation	Types of Wastes Stored, Disposed or Spilled
SWMU 1 OIL/WATER SEPARATOR	At least 1975 to present	Creosote, no. 2 diesel fuel, pentachlorophenol and oil wastes
SWMU 2 SURFACE LAGOON	Same as 1	Same as 1
SWMU 3 SPRAY IRRIGATION FIELD	Same as 1	Same as 1
SWMU 4 BOILER	At least 1975 to present	Creosote wastes, pentachlorophenol wastes, contaminated soils, bottom sediments, and unreclaimable oil
SWMU 5 LAND FARM	At least 1970 to 1980 1980 to present	K001 bottom sediments boiler ash
SWMU 6 PROCESS COOLING PONDS	At least 1970 to present	Unknown
SWMU 7 CONTAINER STORAGE AREA	1980 to present	Creosote, pentachlorophenol, bottom sediments, contaminated soils, and unreclaimable oil
SWMU 8 DRIP TRACK AREA	1979 to present	Creosote, no 2 diesel fuel, pentachlorophenol and oil wastes
SWMU 9 CHEMICAL UNLOADING AREA	At least 1975 to present	Creosote, no. 2 diesel fuel
SWMU 10 UNDER GROUND STORAGE TANK	At least 1970 to present	Unknown, possibly creosote, pentachlorophenol contaminated run-off
SWMU 11 ABANDONED WASTE TREATMENT SYSTEM	At least 1970 to about 1980	Creosote, no. 2 diesel fuel, pentachlorophenol and oil
SWMU 12 NORTH WASTE PILES (2 Piles)	Unknown	Construction debris, treated and untreated wood, railroad iron, scrap metal, rubber tires, other inert materials
SWMU 13 SOUTH WASTE PILES (2 Piles)	Unknown	Untreated wood, empty railroad spike drums



· SEE TABLE 4-1 FOR KEY

KOPPERS COMPANY, INC.

FIGURE 4-1 LOCATION OF SWMUs

SOURCE: USGS TIE PLANT QUADRANGLE

Koppers Company, Inc., Science and Technology
436 Seventh Avenue. Pittsburgh. PA 19
Telephone 412-227-2000

RT. 9/12/86.

KOPPERS

RECEIVED
SEP - 2 1986
DEPT. OF NATURAL RESOURCE
BUREAU OF POLLUTION CONTROL

August 28, 1986

Mississippi Dept. of Natural Resources
Post Office Box 10385
Jackson, Mississippi 39209

ATTENTION: Mr. Jim Hardage
Hazardous Waste Section

RE: Koppers Company, Inc.
MSD 007 027 543
Boiler Ash Analysis

Dear Mr. Hardage:

Attached is the analysis of the Boiler Ash samples taken at our Grenada, Mississippi plant in March, 1986 which you requested. These were analyzed for K001 Appendix VII constituents by American Interplex Corp.

Please contact me at this office if we can be of any further assistance.

Sincerely yours,

Charles Brush

Charles P. Brush, P.E.
Program Manager
Hazardous Waste Affairs

CPB/bj
Enclosure

cc: J.D. Clayton
J. Kane
C.P. Markle

DIVISION OF SOLID WASTE
REVIEWED BY JH
DATE 9/11/86
COMMENTS

APPENDIX C

BOILER ASH ANALYSIS

AMERICAN INTERPLEX CORPORATION

3400 ASHER AVENUE
LITTLE ROCK, ARKANSAS 72204
(501) 664-5060

5668 SOUTH REX ROAD
MEMPHIS, TENNESSEE 38119
(901) 767-2081

Koppers Company, Inc.
Post Office Box 15490
North Little Rock, AR 72117

April 9, 1986

ATTN: Mr. David L. King

Control No. 6574

Description of Sample: Four (4) samples of boiler ash & four (4) samples of Boiler Cinders from Grenada Plant received on 3/26/86

Results:

Parameters, ppm	Boiler Ash Composite	Boiler Cinder Composite
*EPA No. K001	N.D. <0.01, <0.01	N.D. <0.01, <0.01

*Analytes in EPA No. K001 are as follows:

Pentachlorophenol	Chrysene
Phenol	Naphthalene
2-Chlorophenol	Flouranthene
P-Chloro-m-cresol	Benzo(b)flouranthene
2,4-Dimethylphenyl	Benzo(a)pyrene
2,4-Dinitrophenol	Indeno(1,2,3-cd)pyrene
Trichlorophenols	Benz(a)anthracene
Tetrachlorophenols	Dibenz(a)anthracene
Cresote	Acenaphthalene

Method: EPA 625

Remarks: Duplicate analyses were performed as per request.
N.D. = None Detected

AMERICAN INTERPLEX CORPORATION

By
Lydia Morton, Lab Director

CHAIN OF CUSTODY RECORD

Location of Sampling: X Producer   __ Hauler   __ Disposal Site

__ Other: ____________________

Company's Name: Koppers Co, Inc   Telephone (601) 226-4584

Address: P.O. Box 160 (number, street)   Tie Plant (city)   MS (state)   38960 (zip)

Collector's Name: [signature] (signature)   Telephone (601) 226-4584

Date Sampled: 4 samples of Ash + Cinders 3/19 - 3/22/86   Time Sampled: 7 Am hours

Type of Process Producing Waste: Boiler Ash and Cinders

Waste Type Code: NA   Other: ____________________

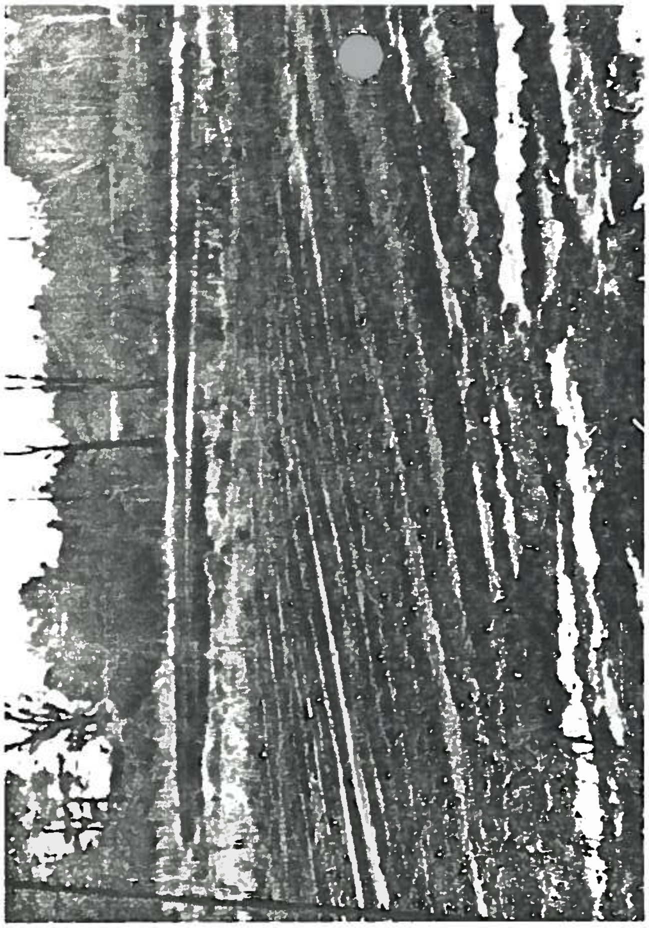
Field Information: Samples (1pt) were collect of Ash on 3/19/86, 3/20/86, 3/21/86, + 3/22/86   1 pt Samples of Cinders (Bottom Ash) were collected on 3/19/86, 3/20/86, 3/21/86, + 3/22/86
LAB TO COMPOSITE SAMPLES FOR ASH + CINDERS (Bottom ASH)

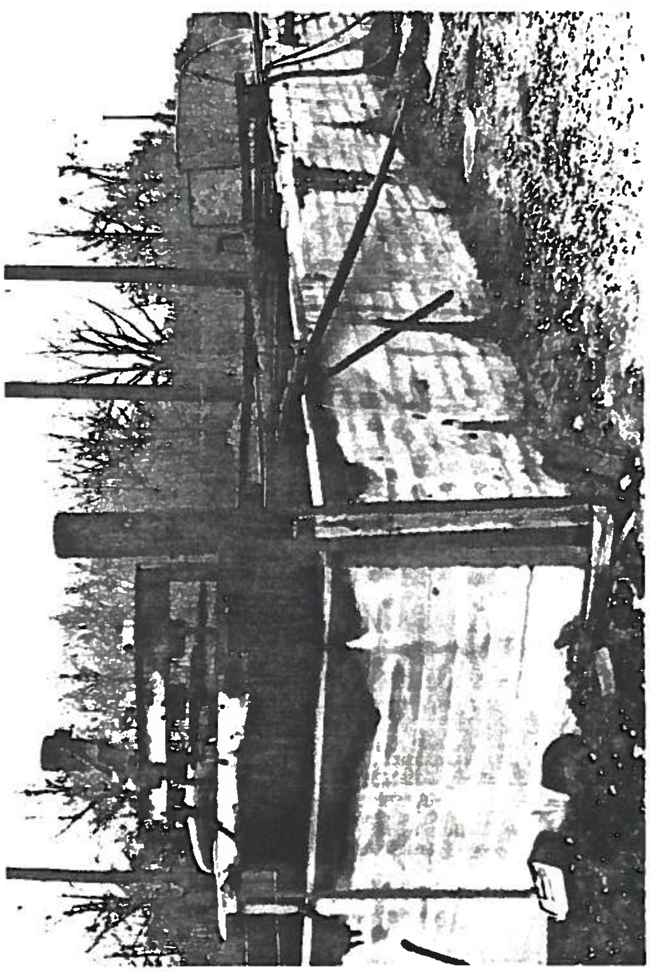
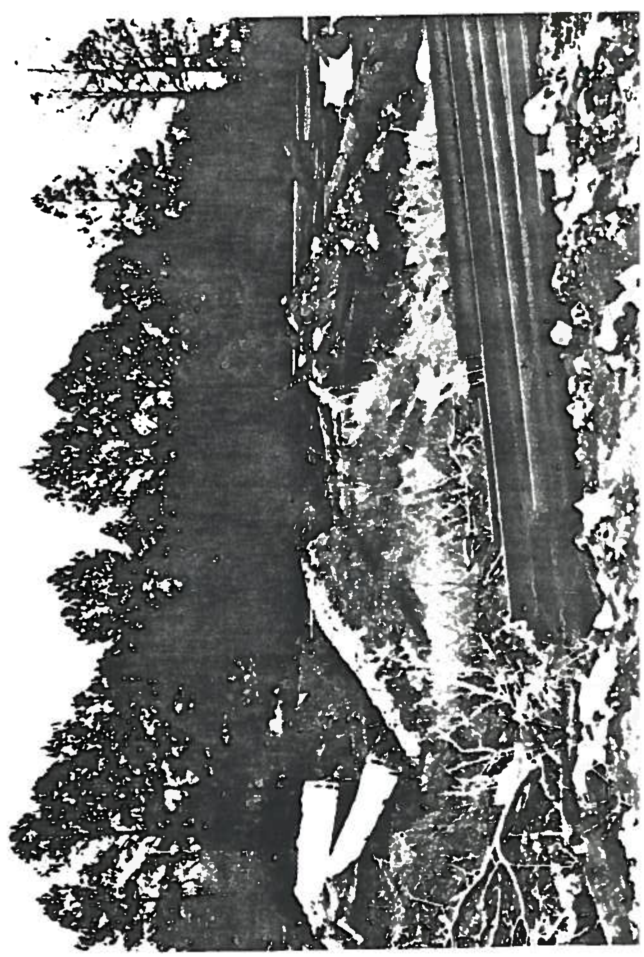
Sample Allocation:

1. ~~[illegible]~~ (name of organization)
2. ____________________ (name of organization)
3. ____________________ (name of organization)

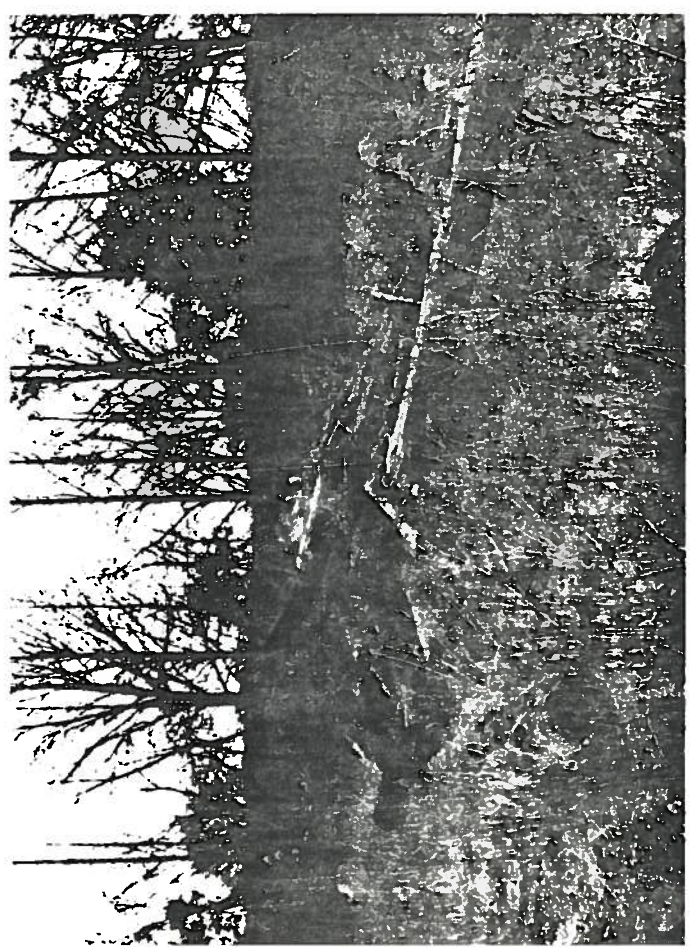
Chain of Possession

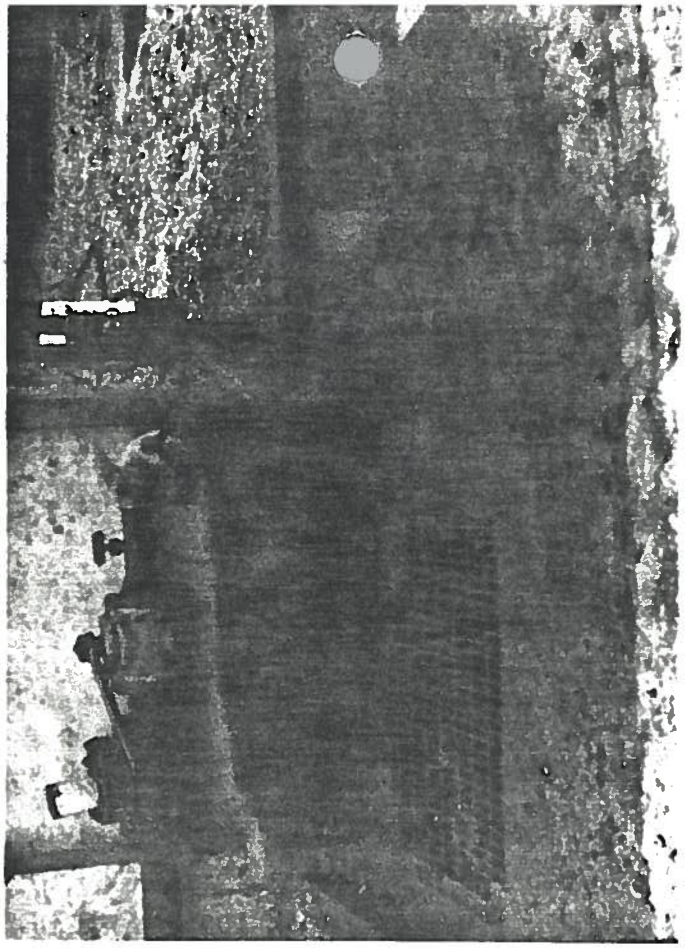
	Signature	Title	Inclusive dates
1.	[signature]		3/25/86
2.	David L. King	Reg Envr. Coord	3/25/86
3.	[signature]	Lab Dir	3/26/86

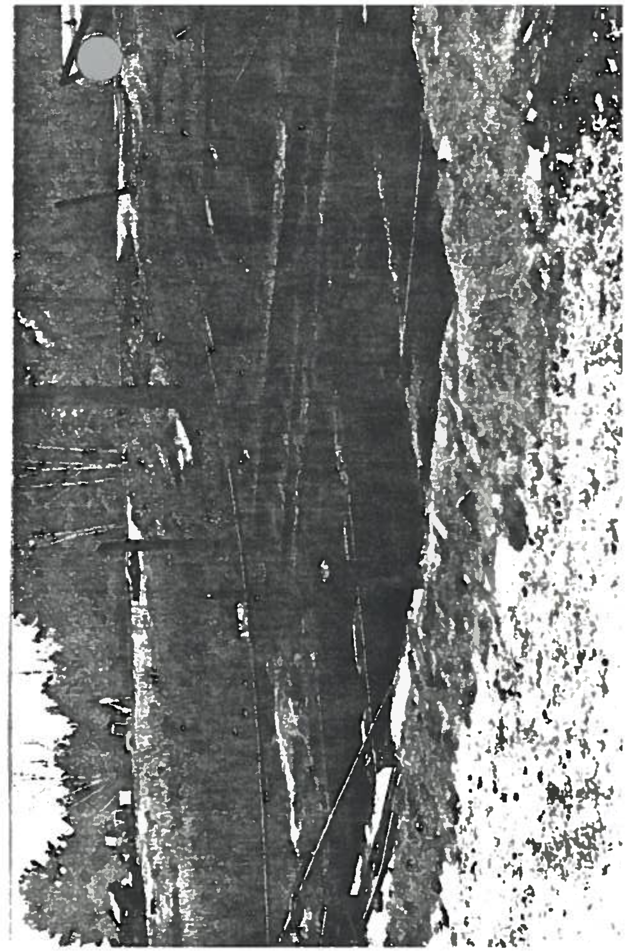


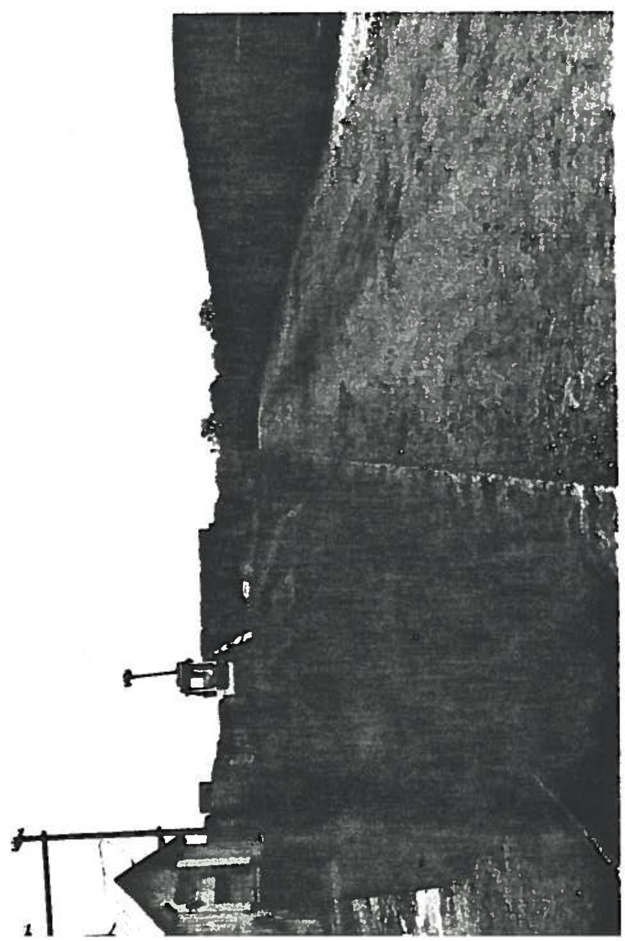



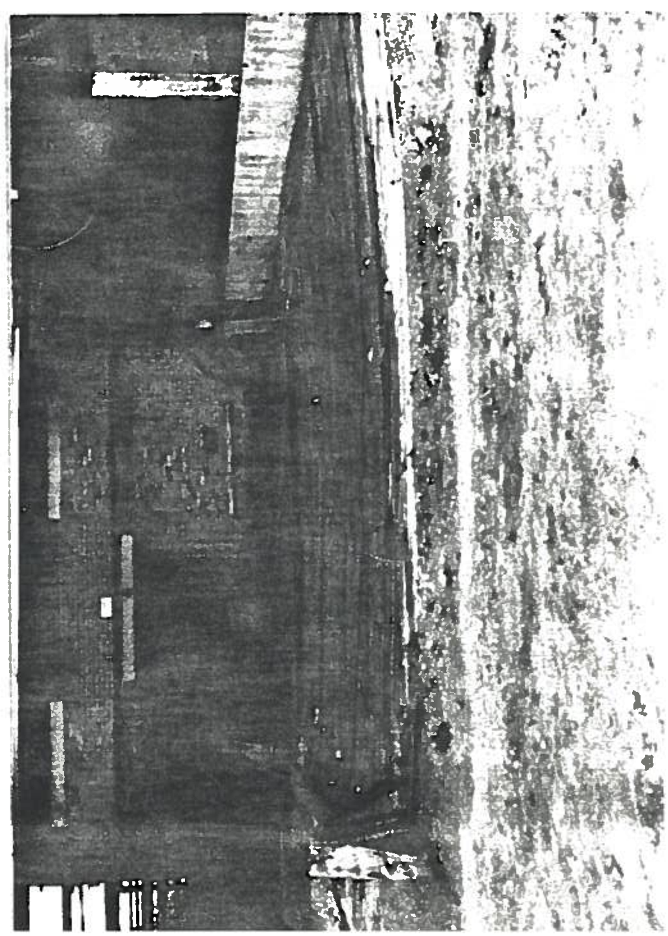


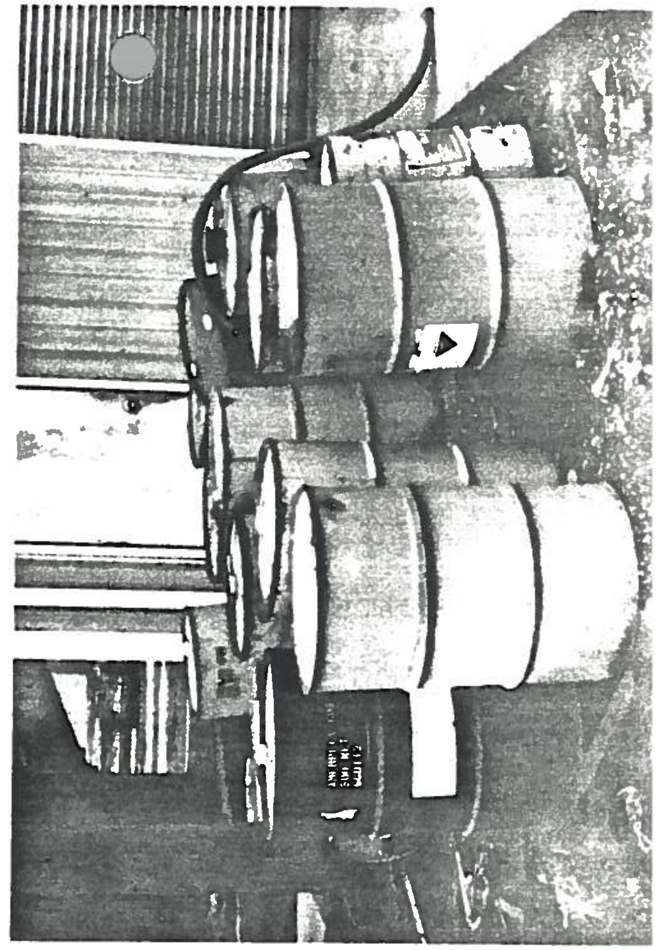
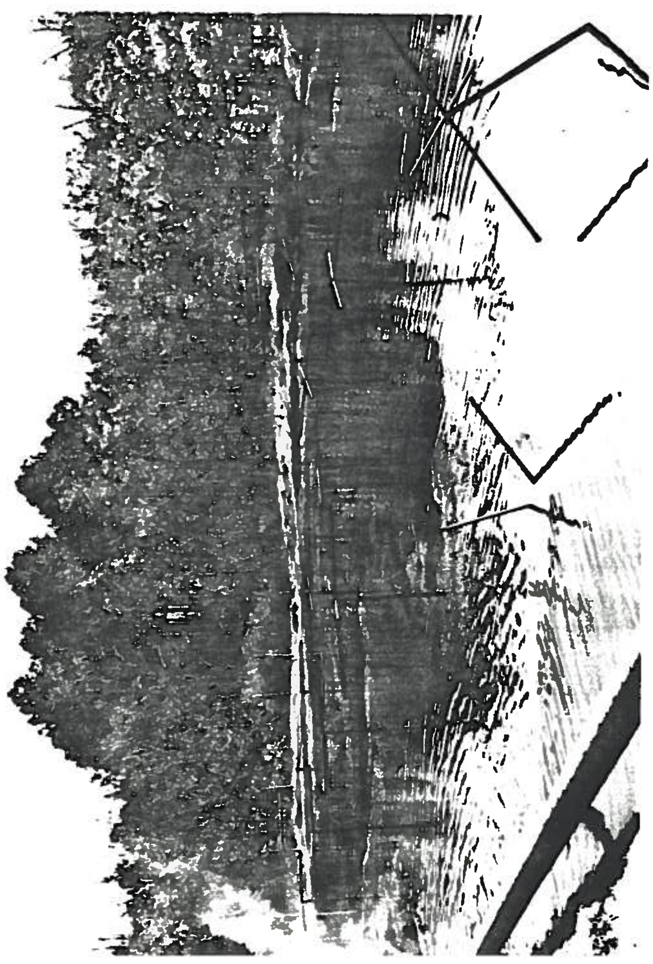
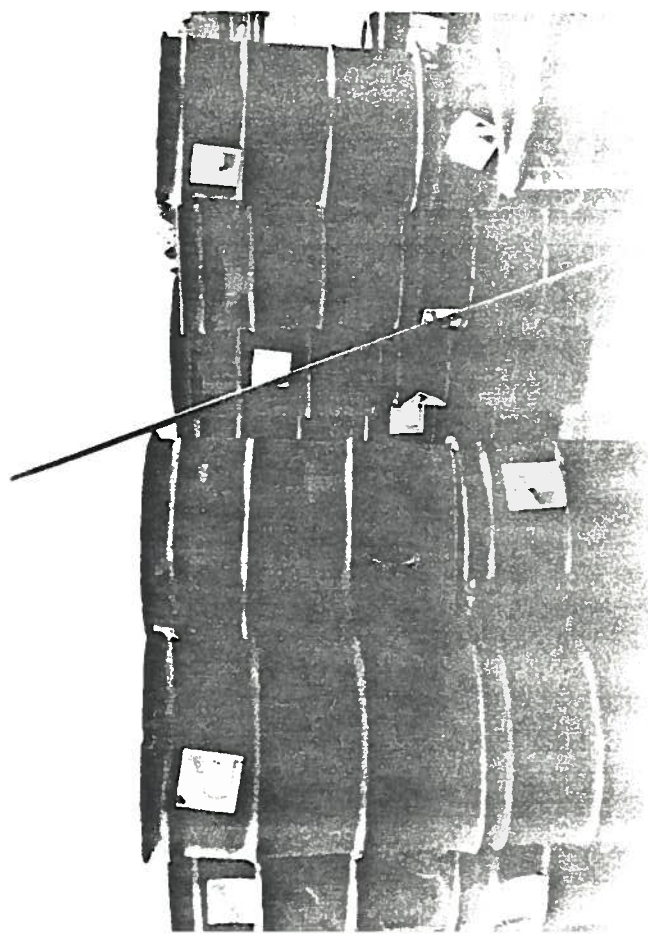



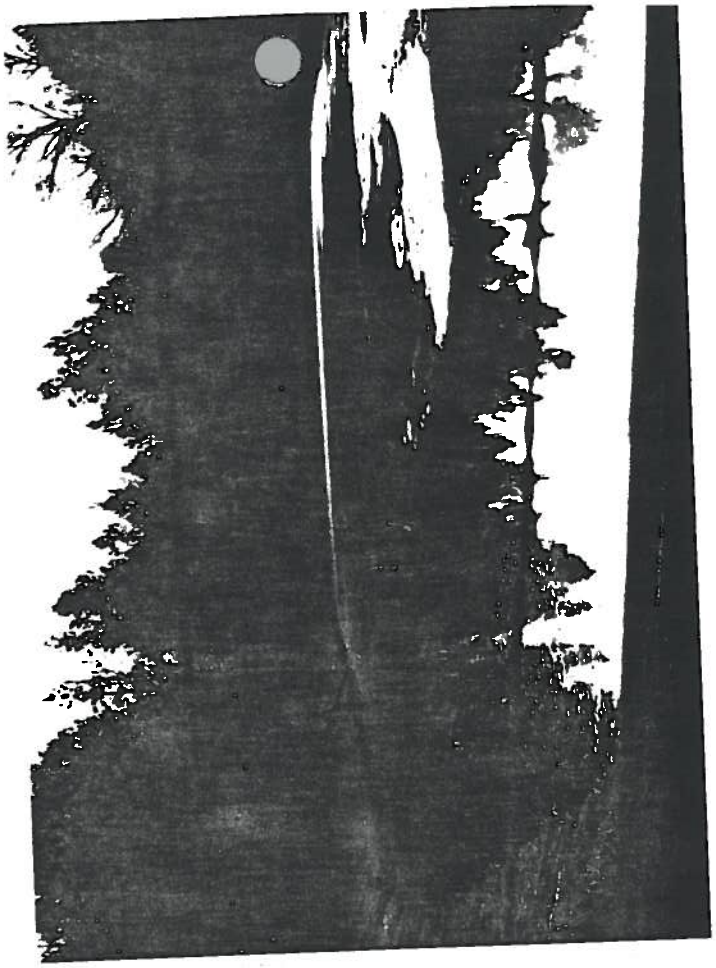


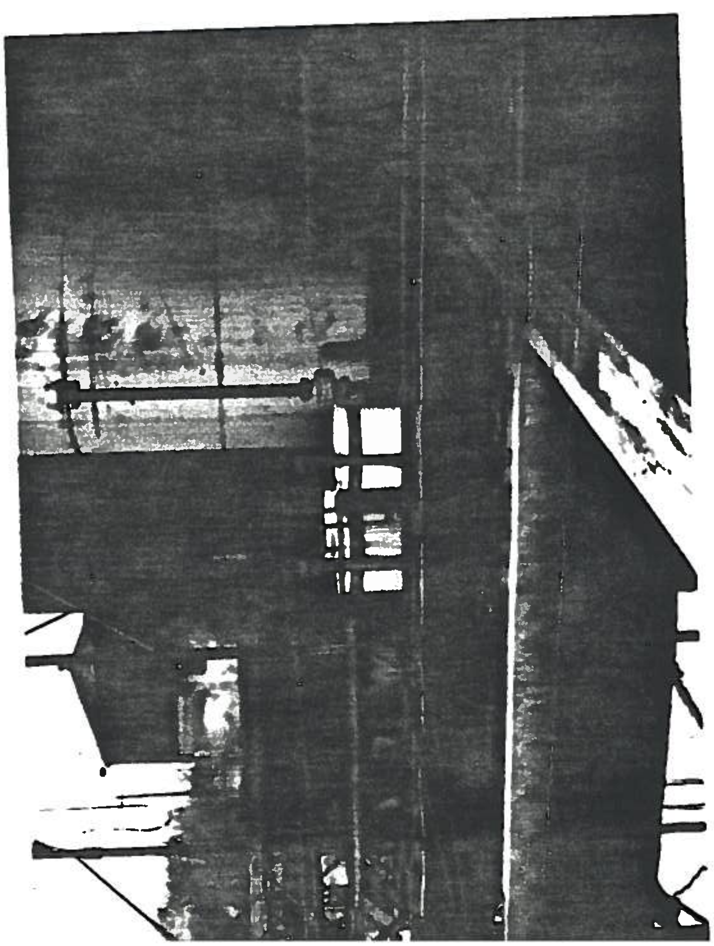


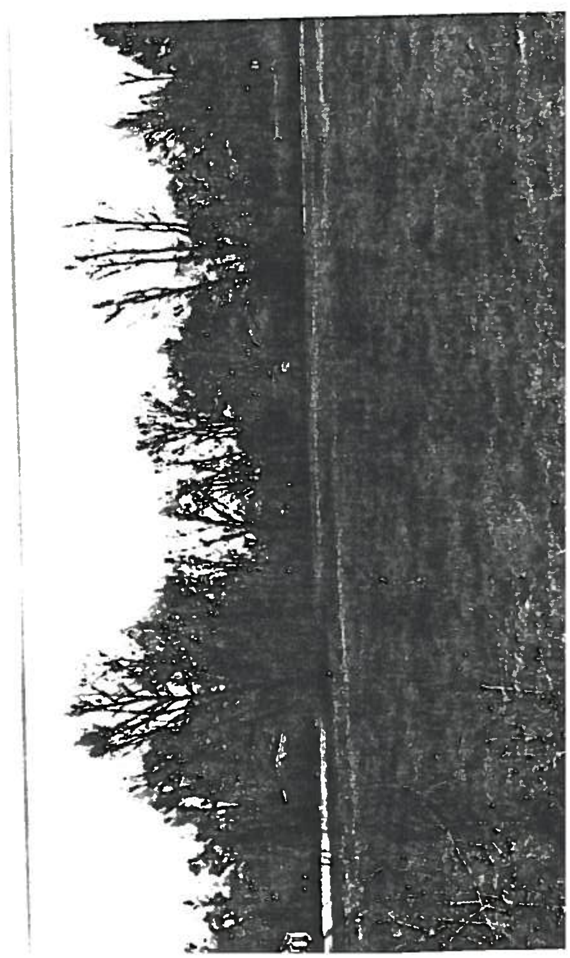


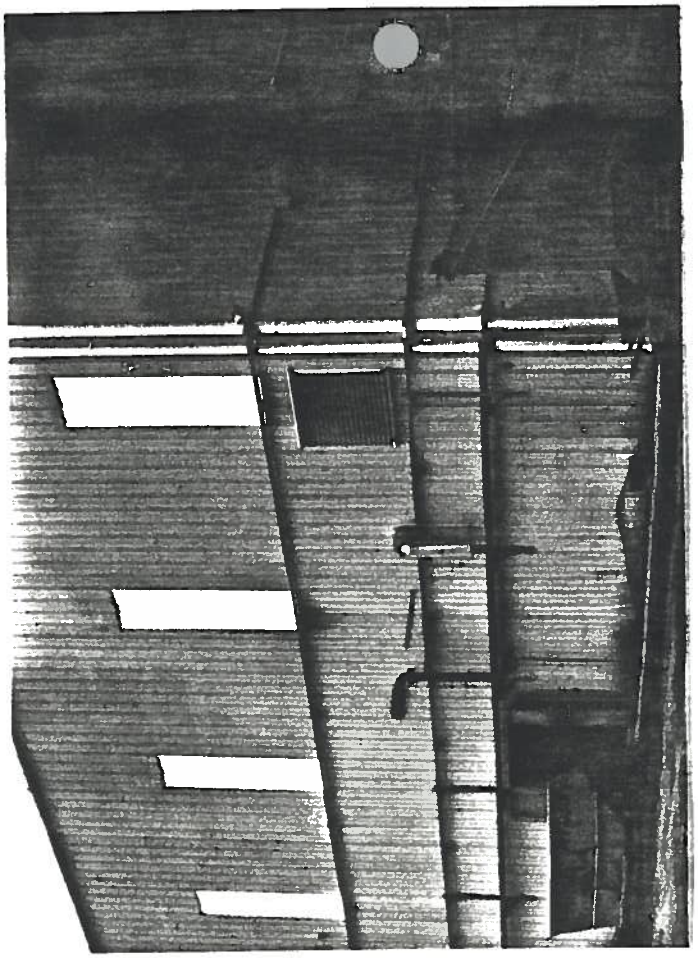


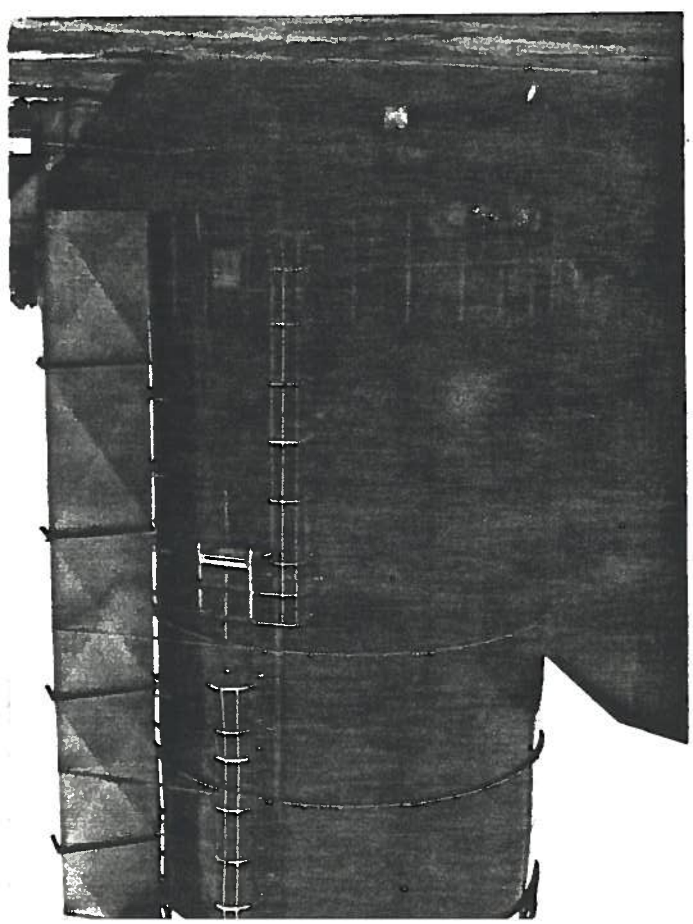













RCRA Facility Investigation Quarterly Progress Report
Kopper's Industries, Inc./Beazer East, Inc.
Grenada, Mississippi

In accordance with requirement II.F.4.i, of the Hazardous Waste Permit, the following represents the first quarterly progress report for the Kopper's Industries, Inc. Phase II RCRA Facility Investigation initiated May 1, 1991. This progress report addresses the following items:

a. A description of the portion of the RFI completed;

b Summaries of the findings;

c. Summaries of all deviations from the approved RFI Work Plan during the reporting period;

d. Summaries of all problems or potential problems encountered during the reporting period;

e. Projected work for the next reporting period; and

f. Copies of daily reports, inspections, laboratory monitoring data, etc.

The following responses address the above issues:

a. The field activity portions of the RFI Work Plan completed as of June 30, 1991 are:

   1) The monitoring well installation program, with the exception of the five off-site wells;

   2) The soil boring program; and

   3) The surficial soil, stream, sediment, and surface water sampling.

   Beazer East is continuing its negotiation with the adjacent landowner east of the facility regarding the installation of the five off-site monitoring wells(R37, R38, R38B, R39B, R39C). Due to this delay, additional time is required to complete the monitoring well installation program beyond the scheduled completion date of May 28, 1991.

In order to assess the subsurface geologic conditions prior to aquifer characterization, four soil boring locations were selected and drilled for the collection of the geotechnical soil samples. The locations are as follows:

Boring	Location
GB-1	Half way between wells R-41 and PW-1
GB-2	Between wells PW-1 and R-23B
GB-3	South of well R-23B
GB-4	North of well R-23B

Soil samples were also collected from the process and container storage areas for characterization purposes.

In addition, two soil borings, SB-17 and SB-18, located downgradient from SWMU 12 (North Waste Piles), were drilled and sampled to 14 ft and 22 ft, respectively on May 6, 1991, preparatory to the potential installation of one monitoring well immediately downgradient from the southernmost waste pile. Based on the analytical results from these borings, provided in Table 2, the monitoring well will be installed.

With the exception of the off-site wells, the project is one week ahead of schedule.

b. A summary of the monitoring well construction details for the newly installed wells is provided in Table 1. The findings of the soil boring and surficial soil, stream, sediment and surface water sampling programs are incomplete because the analytical data are not yet available. The findings of these programs will be summarized in subsequent quarterly reports.

c. A summary of deviations from the approved RFI Work Plan during this reporting period include the following:

- Sample equipment preparation;
- Sample equipment decontamination procedure;
- Soil classification system;
- HNu calibration gas; and

- The screened interval for monitoring well R-23B.

Section 5.1 of the Quality Assurance Project Plan (QAPP) describes a rigorous sample equipment preparation procedure for bailers and funnels, well (bladder) pumps, and other equipment (e.g., trowel, trays). However, it is not clear if split spoon samplers are also required to undergo one of these procedures. In order to establish a consistent equipment preparation procedure, all of the miscellaneous sampling equipment (knives, trowels) were purchased new and a baseline equipment rinsate was created in the field prior to their use. The equipment blank was prepared using the field decontamination procedure discussed below. Baseline equipment blanks were prepared for split spoon samplers with the same procedure, although these were not purchased new.

The approved Work Plan is inconsistent with regard to the field decontamination procedure. Page 5-7 of the Work Plan calls for hexane for split spoon samplers, while page 5-10 of the QAPP specifies acetone. Hexane has been selected as the solvent for decontamination of all the equipment previously mentioned because of the potential interference of acetone in the analysis of volatile organic compounds.

NOT miscibl in H_2O [illegible]

The Burmeister Classification System is identified in the Work Plan for describing lithology. However, D&M standard procedures call for the use of the more widely accepted Unified Soil Classification System (USCS). Therefore, the USCS has been used. These methods vary only slightly as a means of describing lithology and direct correlations can be made between classifications.

The HNu calibration gas specified in the Work Plan is n-hexane. Based on discussion with Dames & Moore's industrial hygienist, isobutylene was selected as the preferred HNu calibration gas.

The locations for monitoring wells as shown in the Work Plan and as installed in the field are generally consistent. In some instances, the specific well location was moved due to access limitations and potential interference with plant operations. In no instance is the distance from the well location in the Work Plan to the actual location in the field greater than approximately 10 feet. In all instances of well relocation, due consideration was given to the new location's position relative to groundwater gradient from the designated SWMU.

The proposed depth for pumping well R-23B was 42 feet below land surface (ft-bls), such that the top of the screen (at 32 ft-bls) was to be ten feet below the bottom of the screen in the existing shallow well (at 22 ft-bls). During the drilling of the borehole, sand was not encountered in the lower zone until a depth of 42 ft-bls had been reached. As the intended purpose of this well was for use as a pumping well during the aquifer characterization, the boring was drilled an additional eight feet to allow the well screen to be set entirely in the lower sand. As installed, the well is screened from 44 to 54 ft-bls, rather than the proposed 32 to 42 ft-bls.

d. A summary of problems encountered during the reporting period is contained in Item c., above, which discusses deviations from the Work Plan.

e. The anticipated sequence of field activities and estimated completion dates for the next quarter are as follows:

		Estimated Completion Date
1.	Surficial Soil, Stream Sediment and Water Sampling	07-01-91
2.	Aquifer Characterization	08-16-91
3.	Ground-Water Sampling	07-12-91
4.	Surveying	07-12-91
5.	Off-site monitoring well installation	To be determined

f. The soil data base is not complete as of this submittal. Copies of field and laboratory monitoring data will be provided in the next quarterly report.

TABLE 1
MONITORING WELL INSTALLATION PROGRAM

RCRA Facility Investigation
First Quarterly Progress Report
Kopper's Industries, Inc.Facility
Grenada, Mississippi

Well Construction Details

Well Name	Location	Depth (ft-bls)	Screened Interval (ft-bls)	Casing
R-32	S Portion of Plant	28.5	18-28	
R-33	SWMU 1, 4, 9, 10	26.5	16-26	
R-19B	SWMU 6	49.5	39-49	6 in., 20 ft.
R-25B	SWMU 8	53.5	43-53	6 in., 20 ft.
R-34	SWMU 8	32.5	22-32	
R-35	SWMU 8	27.5	17-27	
R-42	SWMU 13	25.8	15-25	
R-43	SWMU 13	24.5	14-24	
R-40	Process Cooling Pond	28.5	18-28	
R-41	NE Portion of Plant	26.5	16-26	
R-44	SW Portion of Plant	22.5	12-22	
R-45	NE Portion of Plant	30.5	20-30	
R-20B	SWMU 1,4,9,10	53.5	43-53	6 in., 30 ft.
R-21B	SWMU 1,4,9,10	50.0	39.5-49.5	6 in., 25 ft.
R-12C	SWMU 11	63.0	52.5-62.5	
R-16B	SWMU 11	42.5	32.0-42.0	
R-36	SWMU 11	32.0	21.5-31.5	
R-23B	SWMU 11 (Pumping Well)	44.5	34-44	8 in., 25 ft.
PW-1	NE/Central Portion of Plant (Pumping Well)	32.5	22-32	

TABLE 2
SOIL ANALYTICAL DATA

RCRA FACILITY INVESTIGATION
FIRST QUARTERLY REPORT
KOPPERS INDUSTRIES, INC. FACILITY
GRENADA, MISSISSIPPI

SOIL BORINGS SB-17(B-1) AND SB-18(B-2)
SWMU NO. 12 (NORTH WASTER PILES)

	SB-17 (2-4)	SB-17 (10-12)	SB-18 (8-10)	SB-18 (16-18)	HEALTH BASED CRITERIA FOR SYSTEMIC TOXICANTS SOIL(MG/KG)	WATER(UG/L)
PHENOLS(UG/KG)						
==============						
PHENOL	ND	ND	4,500	ND	3,000	1,000
2-CHLOROPHENOL	ND	ND	4,100	ND	NA	NA
4-CHLORO-M-CRESOL	ND	ND	5,000	ND	4,000	2,000
4-NITROPHENOL	ND	ND	5,200	ND	NA	NA
PENTACHLOROPHENOL	ND	ND	5,500	ND	2,000	1,000
PURGEABLE AROMATICS(UG/KG)						
==========================						
BENZENE	210	ND	ND	ND	NA	5(MCL)
CHLOROBENZENE	250	ND	ND	ND	2,000	1,000
1,2-DICHLOROBENZENE	230	ND	ND	ND	NA	NA
POLYNUCLEAR AROMATICS(UG/KG)						
============================						
NAPTHALENE	2,400	ND	ND	2,280	NA	NA
ACENAPHTHYLENE	ND	ND	ND	4,150	NA	NA
ACENAPHTHENE	ND	ND	ND	2,310	NA	NA
FLUORENE	ND	ND	ND	485	NA	NA
PHENANTHRENE	475	ND	ND	1,070	NA	NA
ANTHRACENE	4,830	ND	ND	1,010	NA	NA
FLUORANTHENE	1,100	27.4	ND	956	NA	NA
PYRENE	1,260	45	ND	251	NA	NA
BENZO(A)ANTHRACENE	196	6.62	ND	40.7	NA	NA
CHRYSENE	546	ND	ND	453	NA	NA
BENZO(B)FLUORANTHENE	274	4.72	ND	34.9	NA	NA
BENZO(K)FLUORANTHENE	132	2.54	ND	10.1	NA	NA
BENZO(A)PYRENE	124	3.17	ND	25.5	NA	NA
DIBENZ(AH)ANTHRACENE	ND	ND	ND	51.3	NA	NA
BENZO(GHI)PERYLENE	129	2.77	ND	68.6	NA	NA
INDENO(123CD)PYRENE	79.7	ND	ND	277	NA	NA

CHAIN OF CUSTODY RECORD

Location of Sampling: X Producer ___ Hauler ___ Disposal Site

___ Other: ______________________

Company's Name Koppers Co, Inc Telephone (601) 226-4584

Address P.O. Box 160 Tie Plant, MS 38960
number street city state zip

Collector's Name [signature] Telephone (601) 226-4584
signature

Date Sampled 4 samples of ASH + CINDERS 3/19 - 3/22/86 Time Sampled 7 Am hours

Type of Process Producing Waste Boiler Ash and Cinders

Waste Type Code NA Other ______________________

Field Information Samples (1pt) were collect of Ash on 3/19/86, 3/20/86, 3/21/86, + 3/22/86 1 pt Samples of Cinders (Bottom Ash) were collected on 3/19/86, 3/20/86, 3/21/86, + 3/22/86
LAB TO COMPOSITE SAMPLES FOR ASH + CINDERS (Bottom ASH)

Sample Allocation:

1. ~~[illegible]~~
name of organization
2. ______________________
name of organization
3. ______________________
name of organization

Chain of Possession

signature	title	inclusive dates
1. [signature]		3/25/86
2. David L. King	Reg Envr. Coord	3/25/86
3. [signature]	Lab Dir	3/26/86

4.0 SWMU DESCRIPTIONS

For each SWMU, unit characteristics, waste characteristics, pollutant migration pathways, and evidence of release are discussed in this section. Recommendations for further action at each SWMU are presented in Section 5.0.

Thirteen SWMUs were identified during the records review and visual site inspection.Table 4-1 summarizes the wastes reportedly stored, disposed or spilled at each of the SWMUs. The locations of the SWMUs are identified on Figures 4-1 and 4-2.

4.1 OIL/WATER SEPARATOR (SWMU NO. 1)

The Koppers Company wastewater treatment system consists of a surface impoundment and sprayfield which are preceded by a surge tank for equalization and oil/water separators. The oil/water separators will be discussed in this section as SWMU No. 1. This will be followed in Section 4.2 by a discussion of the surface lagoon (SWMU No. 2) and in Section 4.3, the sprayfield will be discussed as SWMU No. 3.

4.1.1 Unit Characteristics

The following information is based on the flow diagram of the wastewater treatment system provided by the facility. This diagram is presented here as Figure 4-3.

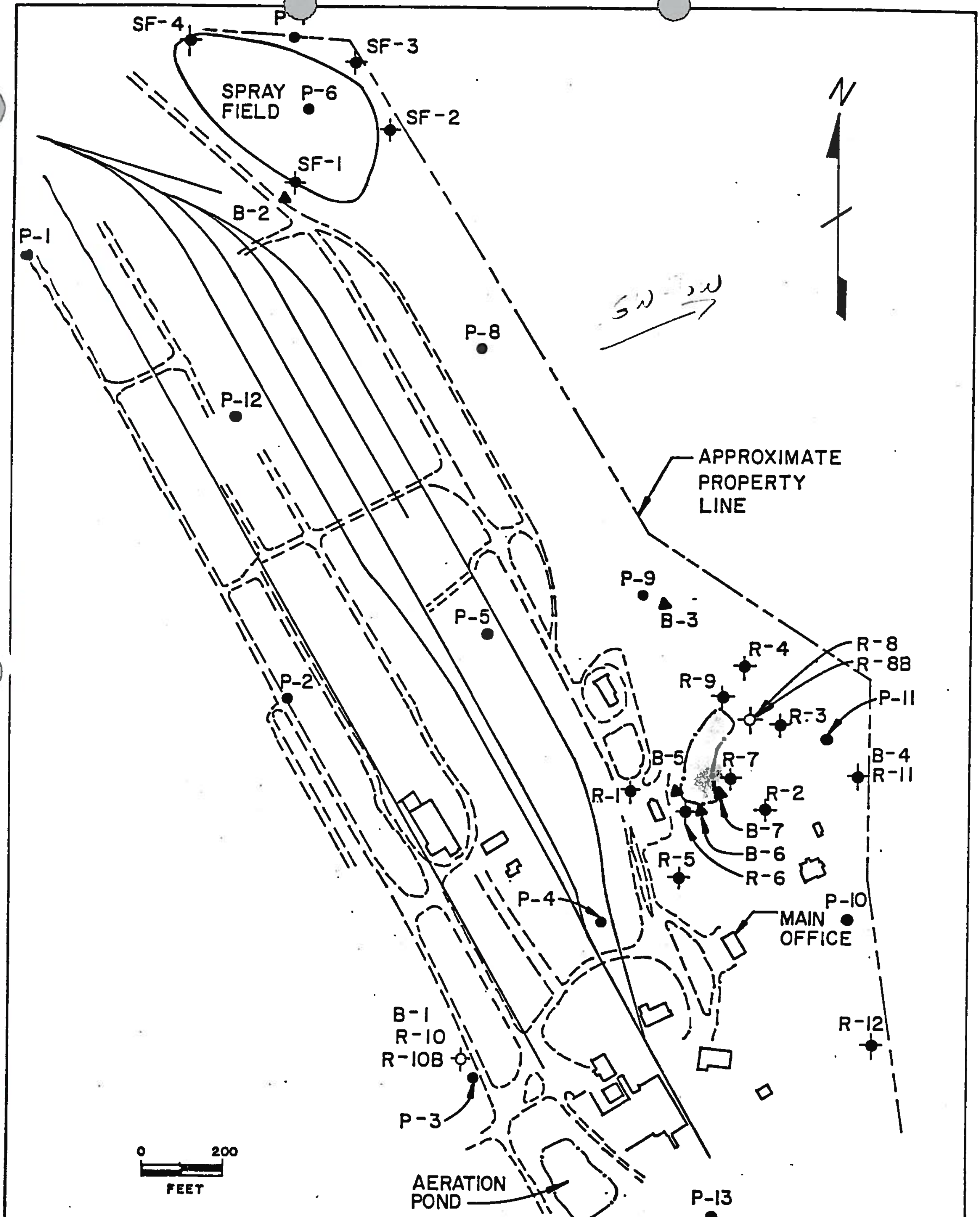
Reportedly, all of the wastewater from Koppers processing area is collected in a surge tank before it passes to the oil/water separators. Referring to Figure 4-3, the surge tank receives water from several locations. Sump #1 collects surface run-off from both the work tank area and diesel fuel storage area. Sump #2 collects water from several areas: the treating cylinder basement, the creosote and pentachlorophenol (PCP) condensation tanks, and run-off from the condensation tank area. Sump #3 collects water from the drip track area. Sump #4 receives run-off from the PCP tank and PCP separator tank. The creosote sump also receives water from the steam tank used in the preconditioning of wood. Water that is collected in the of this report and discussed below. Additional data were presented in an earlier Report of Ground Water Assessment prepared in September of 1985. Data in the 1985 report do not appear as reliable as those presented in the more recent report due to varying detection limits, missing data, and confusion of reporting units.

As discussed earlier in the ground water section (Section 3.1.3.2) it appears that the direction of ground water flow at the facility is northeasterly varying to the east and north in areas. Based on this flow direction, wells R-5, R-6 would be upgradient of the surface impoundment. These wells and well R-12 (located near the abandoned wastewater treatment system) showed contamination with PAHs, PCP, and in the case of R-5 and R-12, phenols. Well R-1, which is located in the west of the surface impoundment showed contamination with PAHs.

Based on the logs of the piezometers, chemical odors were detected in the soils at locatins P-12 and P-13. P-12 is located near the treated wood storage area and P-13 is located east of the cooling ponds.

At the spray irrigation field, PAHs were detected in well SF-1, SF-3, and SF-4 while PCP was detected in SF-2. SF-1 is expected to be the upgradient well, but is located very near the spray field and may also be impacted by the field.

It is important to note a shortcoming with the data discussed above. PCP typically has a number of complex degradation products, including chlorinated benzoquinones, chlorinated dihydroxybenzenes, tri- and tetrachlorophenols, and possibly dioxins in trace amounts. Also, diesel fuel contains a number of volatile and semivolatile constituents (including benzene and toluene) and may also contain metals contaminants. Analyses for these compounds have not been performed on any samples to date.



● TEMPORARY PIEZOMETER
SHALLOW MONITORING WELL
PAIRED MONITORING WELL
▲ SOIL BORING

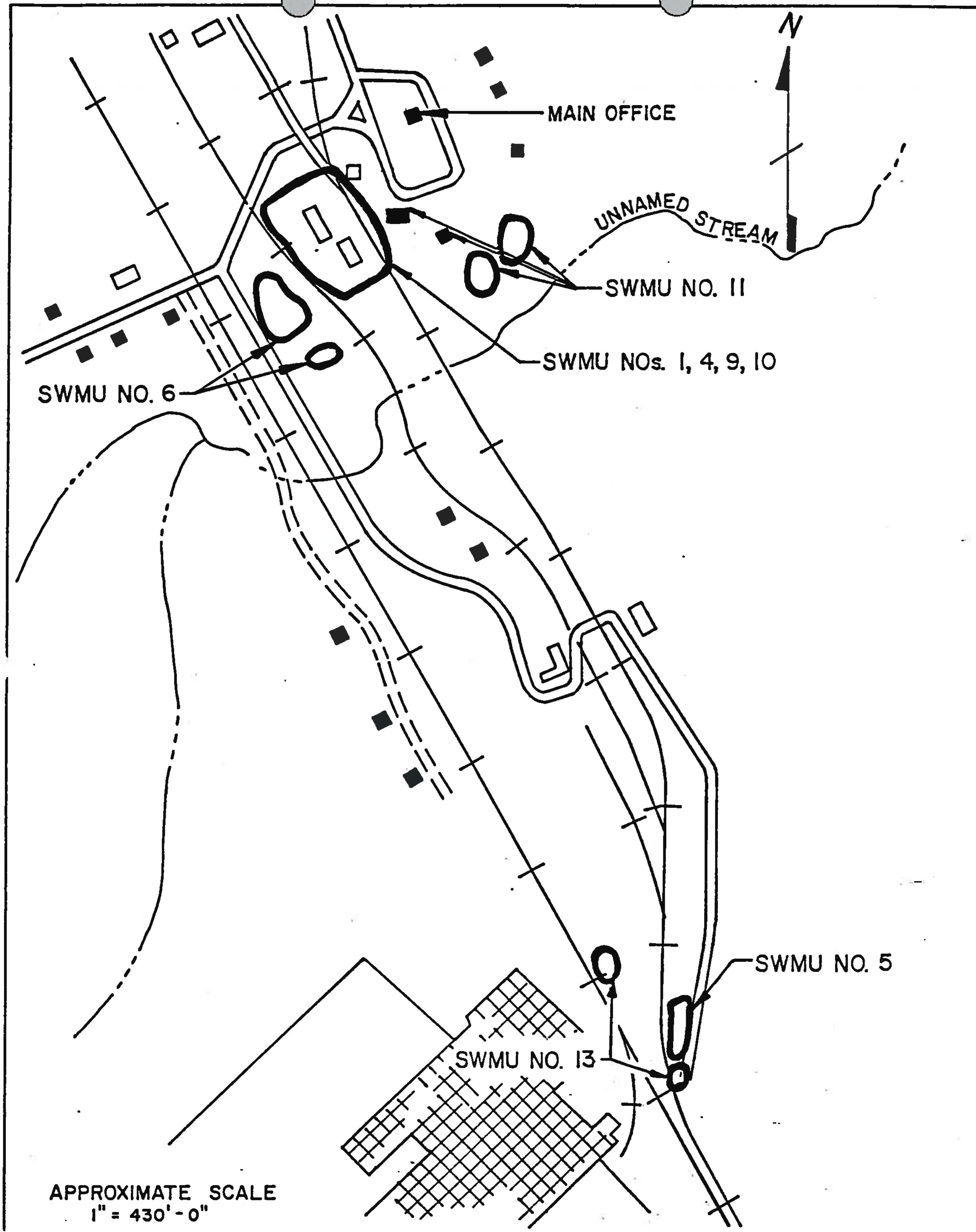
KOPPERS COMPANY, INC.
FIGURE 3-2 PLAN MAP OF MONITORING WELL, PIEZOMETER AND BORING LOCATIONS

SOURCE: KEYSTONE, 1987

TABLE 4-1

SOLID WASTE MANAGEMENT UNITS
KOPPERS COMPANY
GRENADA, MISSISSIPPI

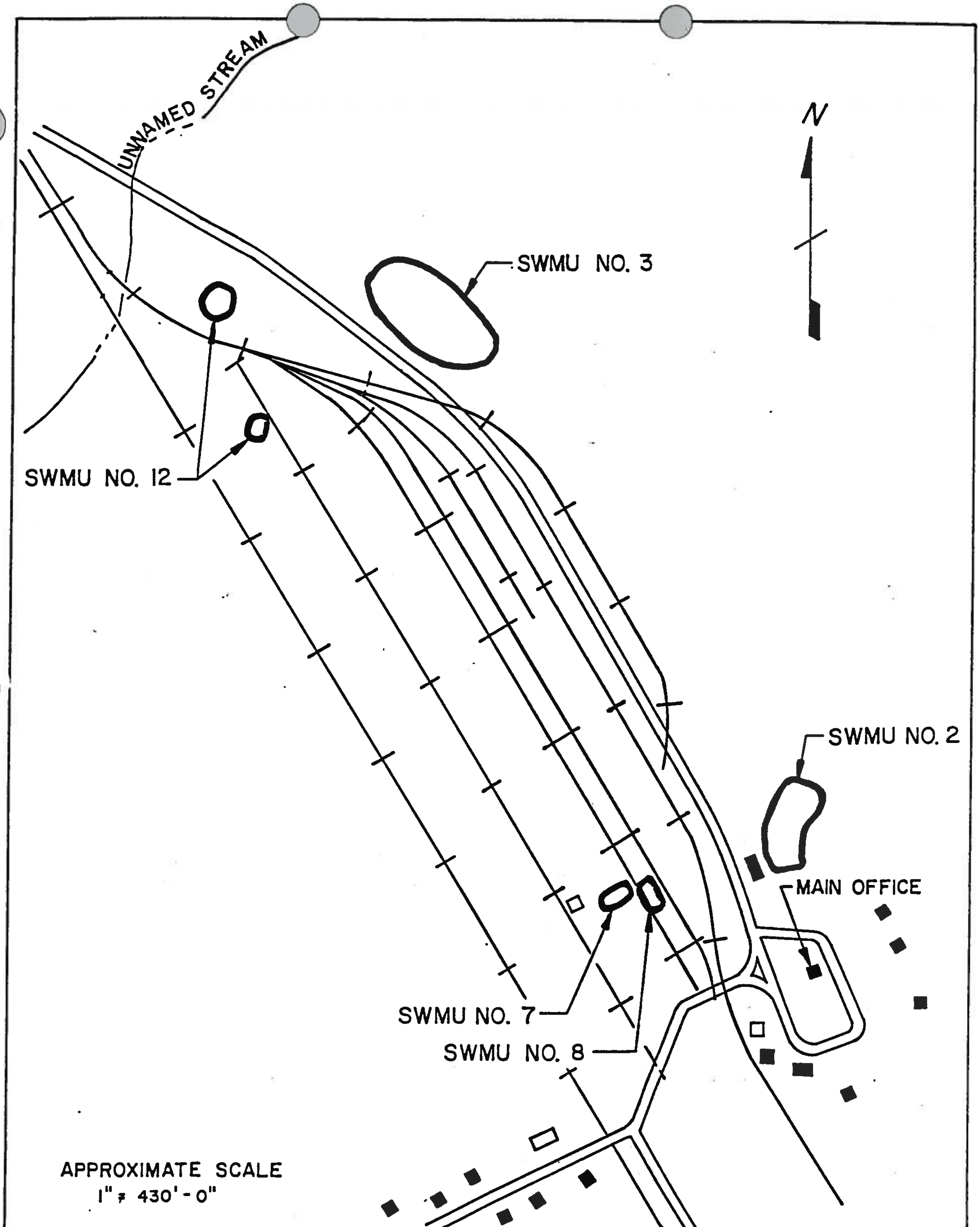
Area of Concern	Period of Operation	Types of Wastes Stored, Disposed or Spilled
SWMU 1 OIL/WATER SEPARATOR	At least 1975 to present	Creosote, no. 2 diesel fuel, pentachlorophenol and oil wastes
SWMU 2 SURFACE LAGOON	Same as 1	Same as 1
SWMU 3 SPRAY IRRIGATION FIELD	Same as 1	Same as 1
SWMU 4 BOILER	At least 1975 to present	Creosote wastes, pentachlorophenol wastes, contaminated soils, bottom sediments, and unreclaimable oil
SWMU 5 LAND FARM	At least 1970 to 1980 1980 to present	K001 bottom sediments boiler ash
SWMU 6 PROCESS COOLING PONDS	At least 1970 to present	Unknown
SWMU 7 CONTAINER STORAGE AREA	1980 to present	Creosote, pentachlorophenol, bottom sediments, contaminated soils, and unreclaimable oil
SWMU 8 DRIP TRACK AREA	1979 to present	Creosote, no 2 diesel fuel, pentachlorophenol and oil wastes
SWMU 9 CHEMICAL UNLOADING AREA	At least 1975 to present	Creosote, no. 2 diesel fuel
SWMU 10 UNDER GROUND STORAGE TANK	At least 1970 to present	Unknown, possibly creosote, pentachlorophenol contaminated run-off
SWMU 11 ABANDONED WASTE TREATMENT SYSTEM	At least 1970 to about 1980	Creosote, no. 2 diesel fuel, pentachlorophenol and oil
SWMU 12 NORTH WASTE PILES (2 Piles)	Unknown	Construction debris, treated and untreated wood, railroad iron, scrap metal, rubber tires, other inert materials
SWMU 13 SOUTH WASTE PILES (2 Piles)	Unknown	Untreated wood, empty railroad spike drums



· SEE TABLE 4-1 FOR KEY

KOPPERS COMPANY, INC.
FIGURE 4-1 LOCATION OF SWMUs

SOURCE: USGS TIE PLANT QUADRANGLE

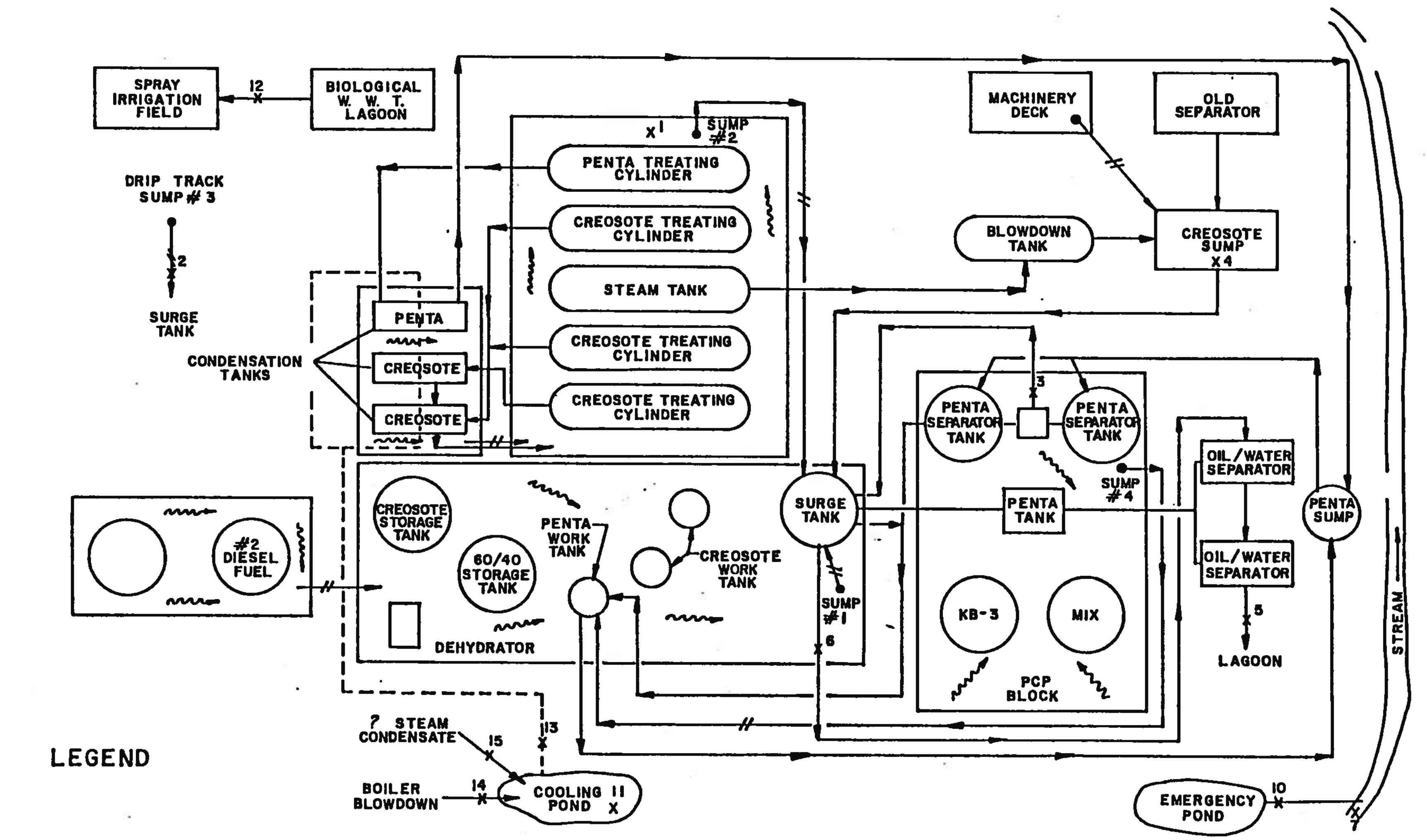


SEE TABLE 4 - 1 FOR KEY

KOPPERS COMPANY, INC.

FIGURE 4-2 LOCATION OF SWMUs

SOURCE: USGS TIE PLANT QUADRANGLE



LEGEND

- SURFACE WATER DIRECTION OF FLOW
- FLOW
- SURFACE RUNOFF
- SUMP
- NONCONTACT COOLING WATER

KOPPERS COMPANY, INC.

FIGURE 4-3 WATER TREATMENT SYSTEM

SOURCE: KOPPERS CO.

C.C. JOHNSON & MALHOTRA, P.C.

equipment deck also runs-off into the creosote sump. Wastewater also drains from the PCP tank to the surge tank. The PCP tank receives water that is drawn off through the recovery of PCP from the oil/water separator.

There are presently two oil/water separators operating in series, but they may be used individually at times. The first separator receives an oil/water mixture from the surge tank to which a flocculation agent is added. The pentachlorophenol and oil rises to the surface and is recycled to the process before the wastewater passes into the second separator. In the second separator, creosotes, which are heavier than water, are removed and recycled to the process. The effluent is then pumped to the surface lagoon.

4.1.2 Waste Characteristics

The oil/water separator potentially receives water containing all of the hazardous materials used at the facility. It is likely that creosote in a no. 2 diesel fuel carrier and pentachlorophenol/oil mixture are received in the largest quantities. Sax (1979) describes creosote as a mixture of phenols. The facility's Part B Application reports that creosote consists of 200 or more components reported as primarily polycyclic aromatic hydrocarbons (PAHs) including phenanthrene (21%), fluorene (10%), fluoranthene (10%), acenaphthene (9%), and pyrene (9%). It is assumed that these percentages are by weight. EPA defines wastes pentachlorophenol (F027) as formulations containing tri-, tetra-, or pentachlorophenols or formulations containing compounds derived from these chlorophenols. No. 2 diesel fuel contains a variety of volatile and semi-volatile hydrocarbons and sometimes contains metals such as vanadium, nickel and sulfur. Oil also sometimes contains metals contaminants.

4.1.3 Ground Water

4.1.3.1 Pollutant Migration Pathways--The oil/water separators are constructed of concrete. No evidence of leakage from the separators was noted during the site inspection, although the separator walls appear to be coated with an oil residue. Some areas adjacent to the oil/water separators, and throughout the treatment area, have a ground floor of soil or gravel while some process units are placed on concrete pads. The ground surfaces adjacent to the oil/water separators appeared oil stained in areas. Since it appears that contamination of the soils exists in the area surrounding the oil/water separator and may have existed for a long period of time, a pathway for ground water contamination does exist. Also, leakage from the piping systems servicing the oil/water separator could be another pathway for contamination of ground water.

4.1.3.2 Evidence of Release--No direct evidence of release to ground water from the oil/water separators was found in the site records.

4.1.4 Surface Water

4.1.4.1 Pollutant Migration Pathways--It appeared during the site visit that no provisions exist to contain run-off from the area of the oil/water separators. An unnamed tributary to the Batupan Bogue passed through the facility to the southwest of this area and likely receives run-off from the area of the oil/water separators. Soils adjacent to the separators appear contaminated. Thus, a potential pathway exists for contamination of surface waters.

4.1.4.2 Evidence of Release--No evidence of release to surface waters from the oil/water separators was found in the site records or noted during the site inspection. Based on available information, the unnamed tributary to Batupan Bogue has not been sampled.

4.1.5 Air

4.1.5.1 Pollutant Migration Pathways--Based on unit and waste characteristics, no significant pathways for migration of pollutants to the air are expected. Some volatilization of constituents of no. 2 diesel fuel may however occur.

4.1.5.2 Evidence of Release--No evidence of release to the air was found in the site records, nor was evidence of release noted during the visual site inspection.

4.1.6 Soils

4.1.6.1 Pollutant Migration Pathways--Soils adjacent to the oil/water separator could be contaminated in the event of a separator overflow or spillage during maintenance of the separator. A direct pathway for contamination of soils adjacent to the separators exists.

4.1.6.2 Evidence of Release--Contamination of the soils adjacent to the separators with an oil-like residue was noted during the site inspection.

4.1.7 Subsurface Gas

4.1.7.1 Pollutant Migration Pathways--Unit and waste characteristics suggest that the generation of subsurface gas is not likely.

4.1.7.2 Evidence of Release--No evidence of a subsurface gas release was found in the records.

4.2 SURFACE LAGOON (SWMU NO. 2)

4.2.1 Unit Characteristics

This unit consists of a biological treatment lagoon located in the northeastern portion of the facility (see Photographs 1 and 2). The surface lagoon was constructed in the early 1970's by excavating soil from within the containment area and using the excavated material to build up the perimeter dike. No design drawings or documentation of construction procedures are available. Although the lagoon has no liner, it was constructed in the near-surface clays and silts present at the site (Koppers, 1975). Reportedly, the water in the lagoon is aerated with spray nozzles, although the pond was not being aerated during the site inspection and no aeration equipment was visible in the area.

The lagoon is an irregular shaped rectangle covering approximately one half acre. The dike crest is at an elevation of approximately 212 feet (above MSL). An emergency spillway exists at the southwest corner of the lagoon at an elevation of approximately 209 feet. The facility indicates that the bottom of the lagoon is at an elevation of aproximately 202 feet. Thus, the maximum possible depth of water is about seven feet. The water level in the lagoon is reportedly controlled by regulating the rate of inflow to the lagoon and the **outflow from the** lagoon **to the spray irrigation fields.** The flow rate to the surface lagoon is approximately 5,000 to 10,000 gallons/day. Reportedly, the water level is maintained well below the maximum elevation. At the time the lagoon was surveyed in February of 1985, the water level elevation was approximately 205.4 feet.

The dike and slopes are covered with grass and in the denser wooded areas with pinestraw. Trees up to about 5 inches in diameter are scattered around the dike, especially along the north and east sides. No significant surface erosion was observed during the visual site inspection. The impoundment is surrounded by a 4 foot high metal mesh fence topped with two feet of barbed wire.

The lagoon is also a point of generation of a hazardous waste, K001 bottom sediments. Koppers estimated that about 2,500 pounds dry or wet of bottom sediments are removed from the lagoon each year. Prior to 1980 these wastes were spread directly at the land farm. Since 1980, the **sediments have been burned in the boiler** and resulting residue spread at the land farm

4.2.2 <u>Waste Characteristics</u>

This unit receives a waste stream from the oil/water separators. The wastewater likely contains all or some constituents of creosote, no. 2 diesel fuel, pentachlorophenol and oil. The characteristics of these wastes are described in Section 4.1.2. No analysis of the wastewater entering the lagoon was found in the files. Table 4-2 lists typical hazardous organic compounds found in wood preseving plant wastewaters.

As mentioned above, the lagoon is also the source of generation of a hazardous waste, K001 bottom sediments. No analysis of the bottom sediment from this facility, prior to burning in the boiler, was found in files. Table 4-3 lists typical hazardous organic compounds found in K001 bottom sediments.

K001 sludge was sampled Feb 25, 1987 and reported in Koppers April 23, 1987 Spray Field Characterization (see p. 2-3, 2-4 & 3-[illegible]

TABLE 4-2

HAZARDOUS ORGANIC COMPOUNDS FOUND IN
TYPICAL WOOD PRESERVING PLANT WASTEWATER

Using Pentachlorophenol	Using Creosote
Phenol	Toluene*
2,4-Dichlorophenol	Fluoranthene
2,4,6-Trichlorophenol	Naphthalene
4-Nitrophenol	1,2-Benzathracene
4,6-Dinitro o-cresol	Chrysene
Tetrachlorophenol	
Pentachlorophenol	
Benzene*	

*Certain volatile compounds in the wastewater, such as toluene and benzene, may volatilize completely during the evaporation process and thus may not appear in the sludge.

Source: EPA Listing Background Document - Wood Preserving.

TABLE 4-3

HAZARDOUS ORGANIC COMPOUNDS FOUND IN
TYPICAL WOOD PRESERVING PLANT BOTTOM SEDIMENT SLUDGE

Creosote Polynuclear Aromatics	Phenolics
Benz(a)anthracene	Phenol
Benzo(a)pyrene	2-chlorophenol
Chrysene	Pentachlorophenol
	2,4-dimethylphenol
	2,4,5-trichlorophenol

Source: EPA Listing Background Document - Wood Preserving.

4.2.3 Ground Water

4.2.3.1 Pollutant Migration Pathways--The surface lagoon is constructed in an area where clays and silts exist near the surface. However, a significant portion of these low permeability materials was likely relocated during construction of the lagoon and may be further removed when the bottom sediment are dredged. The base of the lagoon is reportedly at an elevation of approximately 202 feet while surrounding ground elevation averages approximately 207-208 feet. Thus, a direct pathway for migration of hazardous constituents from the lagoon to ground water may exist.

4.2.3.2 Evidence of Release--Approximately ten monitoring wells exist in the area of the surface lagoon. Based on water level and sample data presented in the January, 1987 Report of Findings, the lagoon does not appear to be contributing significant amounts of PAHs to the ground water, but may be contributing low concentrations of phenols.

4.2.4 Surface Water

4.2.4.1 Pollutant Migration Pathways--The lagoon has an emergency spillway which would, in the event of an overflow, drain to an unnamed tributary to Batupan Bogue. The facility reports that an overflow has not occurred. Also, should the lagoon be found to be contaminating the ground water, an additional pathway for migration to surface water may result. Ground water passing under the lagoon most likely discharges to Batupan Bogue.

4.2.4.2 Evidence of Release--No evidence of a release to surface water from the lagoon was found in site records or noted during the site inspection. However, sample data from the unnamed tributary and Batupan Bogue were not available.

4.2.5 Air

4.2.5.1 Pollutant Migration Pathways--Volatile constituents of the no. 2 diesel fuel or other chemicals used at the facility could volatilize from the lagoon and enter the atmosphere. It is not likely that this occurrence would significantly effect air quality.

4.2.5.2 Evidence of Release--No evidence of release to the air was found in the site records, nor was evidence of release noted during the site inspection.

4.2.6 Soils

4.2.6.1 Pollutant Migration Pathways--Two potential pathways exist for contamination of soils by the surface lagoon should they be found to contain hazardous constituents. First, contaminants may migrate vertically from the lagoon to the underlying soils and, secondly, surrounding soils may be contaminated by overflows from the lagoon.

4.2.6.2 Evidence of Release--No evidence of release to the soils was found in the records, nor was evidence of release noted during the site inspection.

4.2.7 Subsurface Gas

4.2.7.1 Pollutant Migration Pathways--Should a plume of volatile contaminants be found to be emanating from the lagoon, the presence of subsurface gases would be likely. No data concerning the presence of volatile compounds in the ground water near the lagoon was found in the records.

4.2.7.2 Evidence of Release--No evidence of a subsurface gas release was found in the records.

4.3 SPRAY IRRIGATION FIELD (SWMU NO. 3)

4.3.1 Unit Characteristics

The spray irrigation field receives wastewater after it has passed through the oil/water separators and surface lagoon. The spray field is located in northern portion of the property and covers an area of approximately four acres. It is surrounded by a one to three foot high soil berm and was constructed upon native soils which are reported to be relatively poorly drained in this area. The slope of the ground surface is estimated to range from zero to three percent. The field is vegetated with bermuda grass (Cyndon actylen), with some smart weed (Polygonum hydropiperoides), panic grass (Panicum) and a broad leaf weed dock (Rumex) also present. Six willow trees are located within the sprayfield.

The irrigation field was constructed along with the surface lagoon around 1980 and since then has received effluent from the lagoon. The frequency of pumping depends upon water levels within the lagoon and climatic conditions. Spraying reportedly does not occur during rainfalls. The maximum application rate is reportedly 1,800 gallons per day with this amount generally applied in one 15 minute period. Reportedly, during hot weather periods (high rate of evaporation from the lagoon) the facility will operate for days or weeks between applications of lagoon effluent to the sprayfield.

Koppers indicated that a piping system with spray nozzles exists at the site. Ponded water with an oily sheen was noted on the spray field. Also, a seep emanating from the soil berm was found. The seep is located on the eastern edge of the spray field and drains towards the residences located nearby.

4.3.2 Waste Characteristics

The sprayfield receives wastewater from the surface impoundment. This wastewater likely contains some chemical constituents or degradation products of creosote, no. 2 diesel fuel, pentachlorophenol and oil. The constituents of these wastes are described in Section 4.1.2.

4.3.3 Ground Water

4.3.3.1 Pollutant Migration Pathways--Wastewater from the surface lagoon are periodically applied to the spray irrigation field. Soils in the area of the field are generally clays and silts with relatively low permeability. However, the long term application of wastewater as occurs at this site may result in a pathway through these soils to the ground water even though the rate of movement may be slow.

4.3.3.2 Evidence of Release--Four monitoring wells exist at the spray irrigation field. Based on data presented in the January, 1987 Report of Findings, the sprayfield is contributing some contamination to the ground water. PCP was detected in SF-2 while flouranthene was detected at levels exceeding the Ambient Water Quality Criteria (0.0028 ug/L for individual or combined PAHs) in SF-1, SF-3, and SF-4. Flourene was detected in concentrations exceeding these limits in SF-3. Well SF-1 is used as the background well for the spray field. The detection limit used for the PAH analyses (0.250 ug/L) was almost one hundred times higher than the Ambient Water Quality Criteria for PAHs and further investigation is necessary.

Also, as discussed in Section 4.2.3.2, more extensive analytical investigation of the samples may be required due to the possible presence of volatile and semi-volatile constituents of no. 2 diesel fuel or degradation products of PCP in the wastewater sprayed on the field.

4.3.4 Surface Water

4.3.4.1 Pollutant Migration Pathways--Ponded water with an oily sheen was noted on the spray irrigation field and a seep was found emanating from the berm constructed on the southeastern portion of the field. This drainage would likely make its way to the unnamed tributary or Batupan Bogue. Thus, a direct pathway exists for contamination of surface water. It is also important to note the location of the sprayfield in relation to the community of Tie Plant. One home is located less than 150 feet from the seep area.

Ground water passing under the sprayfield most likely discharges to Batupan Bogue. This may be another pathway for contamination of surface water.

4.3.4.2 Evidence of Release--As discussed above, ponded water and a seep were noted at the sprayfield druing the site inspection. No analysis of the seep or tributary to Batupan Bogue was found in the records.

4.3.5. Air

4.3.5.1 Pollutant Migration Pathways--Should volatile contaminants be present in the water, a direct pathway for migration of contaminant to the air exists during spraying. This occurrence is not expected to significantly degrade air quality. However, the proximity of the sprayfield to the community of Tie Plant would worsen the impact of any release on human health.

4.3.5.2 Evidence of Release--No evidence of release to the air was found in the site records, nor was evidence of release noted during the visual site inspection.

4.3.6 Soils

4.3.6.1 Pollutant Migration Pathways--Since wastewater is sprayed directly onto the soils of the field, a direct pathway exists for contamination of soils.

4.3.6.2 Evidence of Release--No soil sample data from the spray field area was found in the records. Ponded water with an oily sheen was noted during the site inspection.

4.3.7 Subsurface Gas

4.3.7.1 Pollutant Migration Pathways--Should a plume of volatile contaminants be found to be emanating from the sprayfield, the presence of subsurface gases would be likely. The presence of volatile compounds in the ground water at the sprayfield may be less likely than at the lagoon since the residence time in the lagoon and spraying would have resulted in the volatilization of these compounds with very little reaching the subsurface.

4.3.7.2 Evidence of Release--No evidence of a subsurface gas release was found in the records. No data concerning volatile compounds in the ground water near the sprayfield was found in the records.

4.4 BOILER (SWMU NO. 4)

4.4.1 Unit Characteristics

SWMU No. 4 is the facility's co-generation boiler. Located in the treatment area, this unit is used to burn bottom sediments from the impoundment, waste creosote and pentachlorophenol, contaminated soils, unreclaimable oil, and other similiar wastes from other Koppers wood preservation facilities. Koppers has state permission to burn hazardous wastes as fuel in the Boiler. According to MDNR personnel, the facility is not required to have a permit for the boiler because it meets the EPA's definition of an industrial boiler.

The facility receives truck load shipments of high BTU-value waste from other Koppers facilities which generate creosote and wood preserving wastes suitable for use as boiler fuel. Shipments received are analyzed for BTU value. Analyses are kept in operating records. The wastes are transported to this facility in steel drums and are reportedly received at a rate which is proportional to the rate at which the boiler is operated (800 pounds/hour, maximum). Upon arrival at the facility, the trucks are unloaded on a concrete loading-unloading pad and the drums are transported by fork lift to the boiler feed hopper. Wastes are ~~then mixed with sawdust~~ and automatically fed to the boiler. Ash from the boiler is spread at the land farm (SWMU No. 5).

Not after Dec 1 1987

4.4.2 Waste Characteristics

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Creosote and pentachlorophenol wastes as well as soils contaminated with these wastes and unreclaimable oil are burned in the boiler. The characteristics of these wastes are described in Section 4.1.2. The residue from the boiler has been analyzed and, according to the facility, found to be non-hazardous. The analysis is attached as Appendix B. The data, however, may not be sufficient to support this conclusion. Wastes are received from other Koppers facilities, some of which may use different chemical preservatives. Salts of metals are commonly used as wood preservatives. Also, oils and diesel fuel often contain some metal contaminants. EP toxicity testing for metals has not been done and may be appropriate.

4.4.3 Ground Water

4.4.3.1 Pollutant Migration Pathways--The boiler rests on a concrete pad. Thus, spills that may occur during loading of the boiler may be cleaned up before reaching a pathway to the ground water. Soils near to the pad appeared oil stained in areas. It is not known if these spills resulted from activities related to boiler operations since other processes are located nearby. If spillage onto the soils occurred over a long period of time, a pathway for contamination of ground water would exist. Contaminants could pass through the soil and enter the ground water.

4.4.3.2 Evidence of Release--No direct evidence of release to ground water from the unit was found in the site records or noted during the site inspection.

4.4.4 Surface Water

4.4.4.1 Pollutant Migration Pathways--It is not known whether surface run-off from the area of the boiler drains to a sump and to the oil/water separators or if run-off is uncontrolled. Should run-off in the area of the boilers be uncontrolled, a direct pathway for migration of contaminants to surface water would result.

4.4.4.2 Evidence of Release--No evidence of release to surface waters from this unit was found in the records or was noted during the site inspection. No sample data from the unnamed tributary to Batupan Bogue, which passes the southeast of this unit, was available in the records.

4.4.5 Air

4.4.5.1 Pollutant Migration Pathways--The burning of hazardous wastes in the boilers provides a direct pathway for contaminant migration to the air. As discussed earlier, this operation is regulated by MDNR and thus acceptable levels of emissions are established by the State.

4.4.5.2 Evidence of Release--No data concerning the composition of the off-gases from the boiler was available in the records. Air T.L.?

4.4.6 Soils

4.4.6.1 Pollutant Migration Pathways--Soils adjacent to the boiler could be contaminated in the event of spillage during loading of the boiler. Thus, a direct pathway for contamination of soils adjacent to he boiler exists.

4.4.6.2 Evidence of Release--Soils in some areas adjacent to the boiler appeared oil stained. It is not known whether this contamination resulted from the boiler operation or other processes taking place in the treatment area. No soil sample data was available in the records.

4.4.7 Subsurface Gas

4.4.7.1 Pollutant Migration Pathways--Unit and waste characteristics suggest that the generation of subsurface gas is not likely.

4.4.7.2 Evidence of Release--No evidence of a subsurface gas release was found in the records.

4.5 LAND FARM (SWMU NO. 5)

4.5.1 Unit Characteristics

Prior to November of 1980, K001 bottom sediments were spread and disked into the soil in an area located in southern tip of the facility. The area is flat and covers approximately one and one-half acres. Currently, residue from the boiler is spread over the area and the site is disked occasionally.

4.5.2 Waste Characteristics

The K001 wastes are bottom sediments from the surface lagoon used for the treatment of wood preserving process waste streams. The surface lagoon likely receives water contaminated with all of the hazardous materials presently used at the facility. The primary hazardous chemicals used include creosote, no. 2 diesel fuel, pentachlorophenol and oil. The characteristics of these wastes are discussed in Section 4.1.2 and a typical composition of K001 sediments is presented in Table 4.3. Since 1980, these wastes and other wood preserving wastes have been burned in the where: Data is Not Provided!

boiler (SWMU No. 4) and the resulting residue spread at the land farm. An analysis of the boiler residue is attached as Appendix B and discussed in Section 4.4.2.

This unit received bottom sediments from the abandoned lagoons as well as the present lagoon. The plant manager indicated that prior to 1970, different treatment chemicals may have been used at the facility. Salts of chromium, copper and arsenic are other commonly used wood preservatives at other wood preserving facilities.

4.5.3 Ground Water

4.5.3.1 Pollutant Migration Pathways--Prior to 1980, K001 bottom sediments were applied directly to the ground surface at this unit. Since 1980, residue from boiler operations have been applied here. Since contaminants could easily leach through the soils to the ground water, a direct pollutant migration pathway exists.

4.5.3.2 Evidence of Release--No evidence of a release to ground water was found in the records. No ground water monitoring wells exist in the area of the land farm. E-God Wrong

4.5.4 Surface Water

4.5.4.1 Pollutant Migration Pathways--No effort is made to contain or prevent surface run-off from the land farm. Since no vegetation was noted in the area, a pathway may exist for erosion and migration of the materials spread at the unit to surface drainage. Drainage from this unit would likely make its way to Jack Creek, a tributary to Batupan Bogue.

4.5.4.2 Evidence of Release--No signs of significant surface erosion or run-off were noted during the site inspection. Also, no sample data from Jack Creek or Batupan Bogue was found in the records.

4.5.5 Air

4.5.5.1 Pollutant Migration Pathways--It is likely that any volatile compounds which may have been in the K001 bottom sediment would have volatilized since 1980 when the direct application of the sediments ceased. Since 1980, only boiler residue has been spread here. All volatile compounds would be removed during burning.

4.5.5.2 Evidence of Release--No evidence of continued release to the air was found in the site records, nor was evidence of release noted during the visual site inspection.

4.5.6 Soils

4.5.6.1 Pollutant Migration Pathways--Since wastes containing hazardous constituents have been in the past, and still may be, applied to the soils at the land farm, a direct pathway for contamination of soils exists.

4.5.6.2 Evidence of Release--No sample data exists for the soils in the area of the land farm.

4.5.7 Subsurface Gas

4.5.7.1 Pollutant Migration Pathways--Based on unit and waste characteristics, the generation of subsurface gas is not expected.

4.5.7.2 Evidence of Release--No evidence of subsurface gas release was found in the records.

4.6 PROCESS COOLING PONDS (SWMU NO. 6) How is this pond constructed?

4.6.1 Unit Characteristics

This SWMU consists of a a cooling pond located near the work tank area and an emergency overflow pond located next to the cooling pond. Cool water from the cooling pond is circulated through the facility's cooling system, heat is exchanged and the heated water is returned to the pond for cooling and reuse. Reportedly, spray nozzles within the pond are used occasionally for cooling and evaporation purposes. The spray nozzles did not appear operable at the time of the site inspection.

The emergency pond is used to contain water that overflows from the cooling pond. It is not known whether an overflow event has ever occurred. The emergency pond drains to an unnamed tributary to Batupan Bogue.

There are also provisions for draining the process spill containment areas to the cooling pond. The facility reports that these provisions have never been used but exist for emergency purposes only.

4.6.2 Waste Characteristics

According to available facility literature, the emergency pond does not receive wastewater. However, it is possible for treatment chemicals to enter the ponds as a result of leaking condenser tubes from the facility's cooling system or during maintenance of the various systems. During the site inspection, a small oily sheen was visible near the inlet area to the cooling pond.

4.6.3 Ground Water Depends on construction of pond

4.6.3.1 Pollutant Migration Pathways--Should the cooling water become contaminated with hazardous constituents or should a spill be drained to the system, a pathway for contamination of ground water would exist through the cooling ponds.

4.6.3.2 Evidence of Release--No evidence of release to ground water was found in the records or noted during the site inspection, nor was any analytical data of the cooling water found in the records.

4.6.4 Surface Water

4.6.4.1 Pollutant Migration Pathways--The cooling pond has an overflow to an emergency pond which drains to an unnamed tributary to Batupan Bogue. Thus, should the cooling water become contaminated with hazardous constituents or a spill be drained to the system, and should the cooling pond overflow, a direct pathway for migration of contaminants to surface water would exist.

4.6.4.2 Evidence of Release--Facility personnel could not recall the cooling pond ever overflowing to the emergency pond. **No evidence that this** has occurred was found in the records or noted during the site inspection.

4.6.5 Air

4.6.5.1 Pollutant Migration Pathways--Based on unit and waste characteristics, no significant migration of pollutants to the air are expected.

4.6.5.2 Evidence of Release--No evidence of release to the air was found in the site records, nor was evidence of release noted during the visual site inspection.

4.6.6 Soils

4.6.6.1 Pollutant Migration Pathways--Contamination of the soils underlying the cooling and emergency ponds could result if the cooling water contains hazardous constituents or a spill is drained to the system.

4.6.6.2 Evidence of Release--No evidence of release to the soils was found in the records, or noted during the visual site inspection.

4.6.7 Subsurface Gas

4.6.7.1 Pollutant Migration Pathways--The generation of subsurface gas is not expected.

4.6.7.2 Evidence of Release--No evidence of subsurface gas release was found in the records.

4.7 CONTAINER STORAGE AREAS (SWMU NO. 7)

4.7.1 Unit Description

According to plant personnel, container storage takes place in two areas near the boiler. The first location consists of an L-shaped concrete pad approximately 20 feet by 30 feet located next to the sludge feeder in the boiler area. This unit is used as temporary storage for wastes generated at Koppers, Grenada and for wastes received from other Koppers facilities prior to burning in the boiler. According to plant personnel the pad has been in operation since 1980 and is permitted by the State as a temporary storage area. Wastes from the processing area are collected in dumpsters then shoveled into drums and moved to the storage area. The drummed wastes are accumulated until evaluated for use on-site as a wood fuel additive for the boiler or until manifested to an off-site treatment storage or disposal facility. The pad has capacity for ninety 55-gallon drums (One truck load usually contains 65 to 70 drums). Between one and 20 drums of waste are burnt in the boiler a day depending on the energy requirements of the facility. There is no containment wall around the pad.

The second storage area is an inactive regulated concrete pad with containment wall located adjacent to the boiler room. This pad has been in operation since 1980 and is currently used to store empty drums. The drums originally contained chemicals used in the facility's processing operation. There were no evidence of recent leaks or spills adjacent to the concrete pads. It is generally believed that a drain in this area leads to the cooling pond. A closure plan for both areas has been developed and the facility intends to construct a storage building for all wastes.

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4.7.2 Waste Characteristics

Reportedly, the container storage areas receive three types of waste, U051 (creosote), F027 (certain pentachlorophenol wastes) and K001 (bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol). The characteristics of these wastes are discussed in Section 4.1.2.

4.7.3 Ground Water

4.7.3.1 Pollutant Migration Pathways--Most 55-gallon drums of wastes are stored on concrete pads. One of the pads has a containment wall while the other does not. Spills which occur in the storage area without a containment wall may run to nearby soils and percolate to the ground water.

4.7.3.2 Evidence of Release--No direct evidence of a release to ground water from the container storage area was found in the records or noted during the site inspection. Soils in places throughout the treatment area appeared oil stained.

4.7.4 Surface Water

4.7.4.1 Pollutant Migration Pathways--Run-off or spills which may occur at the uncontained storage area may flow overland to the unnamed tributary to Batupan Bogue which passes to the southeast of the treatment area. Also, it is generally believed that the storage area with a containment wall is drained to the cooling pond. Should a spill occur at the storage area, it could potentially enter the cooling pond and subsequently the emergency pond and unnamed tributary to Batupan Bogue,. Thus, a pathway for contamination of surface water by the unit may exist.

4.7.4.2 Evidence of Release--No evidence of release to surface waters from the storage area was found on the site records or noted during the site inspection. Based on available information, the unnamed tributary to Batupan Bogue has not been sampled.

4.7.5 Air

4.7.5.1 Pollutant Migration Pathways--Since wastes are stored in closed 55-gallon drums, no significant pathways for migration of pollutants to the air are expected.

4.7.5.2 Evidence of Release--No evidence of release to the air was found in the site records, or noted during the site inspection.

4.7.6 Soils

4.7.6.1 Pollutant Migration Pathways--Should a spill occur at the storage area without a containment wall soil contamination would result.

4.7.6.2 Evidence of Release--Soils in places throughout the treatment area, including areas adjacent to where drums are stored appeared oil stained during the site inspection.

4.7.7 Subsurface Gas

4.7.7.1 Pollutant Migration Pathways--Unit and waste characteristics suggest that the generation of subsurface gas is not likely unless ground water contamination with volatile compounds is occurring in the treatment area.

4.7.7.2 Evidence of Release--No evidence of a subsurface gas release was found in the records.

4.8 DRIP TRACK AREA (SWMU NO. 8)

4.8.1 Unit Characteristics

Train cars loaded with treated wood are removed from the treatment cylinders and taken to the drip track area. There, the wood is allowed to drip until it is determined that the dripping is complete. The drip track area has been in operation since around 1979. The area was constructed with clean fill, a filament membrane type barrier, two feet of concrete and a underdrain system to a sump. Drippings in the sump are pumped to the oil/water separator.

what is configuration of barrier?

4.8.2 Waste Characteristics

The waste stream from the drip track area consists of creosote in a diesel fuel carrier and pentachorophenol in oil. The characteristics of these wastes are discussed in Section 4.1.2.

4.8.3 Ground Water

4.8.3.1 Pollutant Migration Pathways--Since soils adjacent to the drip track appear oil stained in areas, a pathway for ground water contamination may exist. Also should a leak occur in the underdrain to the oil/water separator a direct pathway for ground water contamination may result.

4.8.3.2 Evidence of Release--No direct evidence of a release to ground water was found in the site records or noted during the site inspection.

4.8.4 Surface Water

4.8.4.1 Pollutant Migration Pathways--Since soils in some areas adjacent to the drip track appear oil stained, a pathway for surface water contamination may exist via surface run-off.

4.8.4.2 Evidence of Release--No evidence of a release to surface water was found in the records or noted during the site inspection. The unnamed tributary to Batupan Bogue which passes to the southeast of the treatment area was not inspected during the visit. No sample data from the stream was found in the files.

4.8.5 Air

4.8.5.1 Pollutant Migration Pathways--Some volatile constituents of no. 2 diesel fuel may volatilize from the wood at the drip track. Thus, a pathway for air contamination may exist. This occurrence is not expected to impact air quality significantly.

4.8.5.2 Evidence of Release--No evidence of release to the air was found in the records or noted during the site inspection.

4.8.6 Soils

4.8.6.1 Pollutant Migration Pathways--Should the underdrain of the drip track become clogged or for some other reason treatment chemicals overflow the drip track, a pathway for soil contaminant would exist.

4.8.6.2 Evidence of Release--Soils in some areas adjacent to the drip track appeared oil stained.

4.8.7 Subsurface Gas

4.8.7.1 Pollutant Migration Pathways--A pathway for the generation of subsurface gas may exist if a ground water contaminant plume containing volatile compounds is found to underlie the treatment area.

4.8.7.2 Evidence of Release--No evidence of a release of subsurface gases was found in the site records or noted during the site inspection.

4.9 CHEMICAL UNLOADING AREAS (SWMU NO. 9)

4.9.1 Unit Treatment

The chemical unloading areas consist of two unloading docks: a no. 2 diesel fuel unloading dock and a creosote unloading dock. The docks are both concrete paved and include containment walls. Tanker trucks arrive at the unloading stations and pump the chemicals to the appropriate holding tanks through hook-ups at the docks. The unloading docks are equipped with safety catch basins which collect any leaks that may occur during unloading operations. Chemicals collected in the catch basins are reportedly pumped to 55-gallon drums which are stored at the container storage areas (SWMU No. 7) prior to use in the treatment process.

4.9.2 Waste Characteristics

The wastes which are handled at the unloading docks are no. 2 diesel fuel and creosote. The characteristics of these materials are discussed in Section 4.1.2.

4.9.3 Ground Water

4.9.3.1 Pollutant Migration Pathways--Soils appeared oil stained in some areas near the unloading docks which may indicate that spills may have occurred outside the containment walls. Thus, a pathway for ground water contamination may exist via percolation through the soils.

4.9.3.2 Evidence of Release--No direct evidence of release to ground water was found in the records or noted during the site inspection.

4.9.4 Surface Water

4.9.4.1 Pollutant Migration Pathways--Soils appeared oil stained in some areas adjacent to the unloading docks and no provisions for control of surface run-off were visible. Thus, a pathway for contamination of surface water may exist.

4.9.4.2 Evidence of Release--No evidence of a release to surface water was found in the site records or noted during the site inspection. No sample data from the unnamed tributary to Batupan Bogue which passes to the southeast was found in the records.

4.9.5 Air

4.9.5.1 Pollutant Migration Pathways--Except in the event of spills from which some volatilization of constituents of no. 2 diesel fuel may occur, no significant pathways for contamination of air are expected.

4.9.5.2 Evidence of Release--No evidence of release to air was found in the records or noted during the site inspection.

4.9.6 Soils

4.9.6.1 Pollutant Migration Pathways--Should the containment walls surrounding the unloading areas overflow or a spill occur outside these areas during unloading, a direct pathway for contamination of soils would exist.

4.9.6.1 Evidence of Release--Soils in areas adjacent to the unloading docks appeared oil stained.

4.9.7 Subsurface Gas

4.9.7.1 Pollutant Migration Pathways--Should a ground water contaminant plume containing volatile compounds be found to underlie the treatment area, a pathway may exist for the generation of subsurface gases.

4.9.7.1 Evidence of Release--No evidence of release of subsurface gas was found in the records or noted during the site inspection.

4.10 UNDERGROUND STORAGE TANK (SWMU NO. 10)

4.10.1 Unit Characteristics

SWMU No. 10 consists of an underground concrete storage tank located adjacent to the treatment cylinders in the treatment area. The tank is 20 feet in diameter and 15 to 18 feet deep. The unit stores back-up water for the facility's fire protection system. The top of the tank is at ground elevation and is bordered in one direction by the control building and an adjacent 2-foot concrete barrier. The tank is uncontained at ground surface in all other directions and is covered with strips of board, some of which appeared to have deteriorated. Thus, run-off from around the area ad~~jacent to storage tank could enter the tank.~~ Plant personnel could not recall the last time the tank was used.

4.10.2 Waste Characteristics

The storage tank is generally filled with rain water possibly including surface run-off from areas adjacent to the tank. The adjacent areas are within the facility's treatment area and soils or run-off contaminated with process wastes could enter the tank. The characteristics of the wastes generated at the treatment area are described in Section 4.1.2.

most-likely yes!

4.10.3 Ground Water

4.10.3.1 Pollutant Migration Pathways--The tank is reportedly constructed of concrete. If the concrete is not fully intact, or the tank is subject to overflows and water in the tank is contaminated with hazardous constituents, a pathway for contamination of ground water may exist via percolation throught the surrounding soils.

4.10.3.2 Evidence of Release--No direct evidence of release to ground water was found in the records or noted during the site inspection.

4.10.4 Surface Water

4.10.4.1 Pollutant Migration Pathways--No direct pathways for contamination of surface water from this unit are expected to occur.

4.10.4.2 Evidence of Release--No evidence of release to surface water was found in the records or noted during the site inspection.

4.10.5 Air

4.10.5.1 Pollutant Migration Pathways--No significant pathways for contamination of the air are expected to occur.

4.10.5.2 Evidence of Release--No evidence of release to the air was found in the records or noted during the site inspection.

4.10.6 Soils

4.10.6.1 Pollutant Migration Pathways--Should the water within the tank be contaminated with hazardous constituents and the tank found to be leaky or suject to overflows, a direct pathway for contamination of soils surrounding the tank may exist.

4.10.6.2 Evidence of Release--No evidence of release to soils was found in the records or noted during the site inspection.

4.10.7 Subsurface Gas

4.10.7.1 Pollutant Migration Pathways--Unit and waste characteristics suggest that the generation of subsurface gas is not likely.

4.10.7.2 Evidence of Release--No evidence of a subsurface gas release was found in the records.

4.11 ABANDONED WASTE TREATMENT SYSTEM (SWMU NO. 11)

4.11.1 Unit Characteristics

SWMU No. 11 is located near the southeast corner of the facility and consists of a creosote blowdown tank, an effluent settling tank and two effluent lagoons. The blowdown and settling tanks are located adjacent to each other with the effluent lagoons less than 100 feet east of them.

The system was used for managing wood treating wastewaters from around 1970 to about 1980. It was operated similarly to the existing waste treatment system (SWMU Nos. 1,2,3). Creosote and other chemicals from the treatment process which were removed at the blowdown or settling tanks were returned to the treatment area. Wastes reportedly were drummed and stored on-site prior to off-site disposal. Water from the settling tank drained by gravity to the two effluent ponds. The water reportedly also contained some oil and treatment chemicals.

The blowdown tank and effluent tank were constructed of concrete. The blowdown tank is about six feet deep with the top at ground elevation (Photograph 16). The settling tank is also constructed of concrete and is approximately four feet deep. The bottom of this tank is at ground elevation.

During the site inspection, both tanks were observed to contain a black oily water. Plant personnel indicated that the contents of the tanks were a result of rain water accumulating in the tanks over a period of time. The facility intends to pump the water to the existing oil/water separator, steam clean the tanks and in the case of the blowdown tank, fill and cover it with sand. Residue from the tanks will be treated at the boiler providing they contain the appropriate BTU values.

The lagoons were reportedly closed by pumping the liquid thorough the existing oil/water separator, removing the sediments from the bottom, backfilling with clean fill and grading the area (see Photograph 18). The sediments removed from the ponds were mixed with ash from the boiler and spread at the land farm area (SWMU No. 5).

4.11.2 <u>Waste Characteristics</u>

The abandoned waste treatment system was used for managing wastewaters from the wood treatment process. The type of wastes included creosote in a diesel fuel carrier and pentachlorophenol/oil wastes. The characteristics of these wastes are described in Section 4.1.2. Other types of chemical preservatives may have been used at the facility prior to 1970. Facility personnel indicate that a different process was used but were unsure of the type of process. Salts of chromium, arsenic, and copper are commonly used in the wood preserving process. Inf

4.11.3 Ground Water

4.11.3.1 Pollutant Migration Pathways--Since soils in the area of both tanks are oil-stained and subsurface soils in the area of the closed lagoon are likely contaminated, a direct pathway for ground water contamination exists via percolation through the soils.

4.11.3.2 Evidence of Release--Monitoring well R-12 appears to be in the area of this unit. The exact relation (upgradient/downgradient) of R-12 to the unit could not be determined from the maps provided in the January, 1987 Report of Findings. R-12 is contaminated with PAHs, with PCP and phenols were also present. The data appear to indicate that a plume of ground water contamination exists in the area of this unit.

4.11.4 Surface Water

4.11.4.1 Pollutant Migration Pathways--Since soil contamination is likely at the unit, surface erosion could occur during run-off, causing migration of contaminants to an unnamed tributary of Batupan Bogue, which passes south of the unit. Also, if a ground water plume is present it may discharge to Batupan Bogue. Thus, pathways for contamination of surface water may exist.

4.11.4.2 Evidence of Release--No evidence of release to surface water was found in the records or noted during the site inspection. No significant erosion was noted at the unit although the closed ponds are rough graded and not vegetated. No sample data from the unnamed tributary was found in the records.

4.11.5 Air

4.11.5.1 Pollutant Migration Pathways--The disposal of wastes ceased here around 1980. Most volatile compounds would have volatilized in the seven year period since operation of the unit ended. Thus, no significant pathways for migration of contamination to the air are expected to occur.

4.11.5.2 Evidence of Release--No evidence of release to the air was found in the records or noted during the site inspection.

4.11.6 Soils

4.11.6.1 Pollutant Migration Pathways--Soil contamination around the tank likely resulted from poor waste management practices. Contamination of soils around the closed lagoons is likely due to leaching of hazardous constituents from the lagoons. Also, all of the contaminated bottom sediments may not have been removed during closure. Thus, pathways for soil contamination exist at the unit.

4.11.6.2 Evidence of Release--Soils adjacent to the tanks appeared oil stained during the site inspection.

4.11.7 Subsurface Gas

4.11.7.1 Pollutant Migration Pathways--Should a plume of ground water contamination containing volatile compounds be found at the unit, a pathway for the release of subsurface gases would exist.

4.11.7.1 Evidence of Release--No evidence of release of subsurface gases was found in the records or noted during the site inspection.

4.12 NORTH WASTE PILES (SWMU NO. 12)

4.12.1 Unit Characteristics

This unit consists of two piles containing miscellaneous materials located at the northern end of the facility (see Figure ~~4-1~~ 4-2). The northern-most pile, herein called pile no. 1, is located approximately 100 feet south of an unnamed bridge at the facility's northern boundary. The ground surface north of the waste pile dips into a gully which is drained by an unnamed stream flowing across the northern boundary of the facility. The stream flows less than 1 mile in a northeasterly direction to Batupan Bogue. During the site inspection, brown oily water was observed leaching from the pile, down the gully and into the unnamed stream. Plant personnel indicated that the brown color of the leaching water was derived from the preservatives in the wood.

The second pile (pile no. 2) is located in a flat area approximately 200 feet southwest of pile no. 1. Standing water was observed in a low area next to the pile. No oil sheen was noted.

4.12.2 Waste Characteristics

During the visual site inspection, the following wastes were observed in pile no. 1: construction debris, treated and untreated wood, railroad iron, scrap metal, rubber tires and other inert materials. Waste pile no. 2 contained mainly treated and untreated wood.

4.12.3 Ground Water

4.12.3.1 Pollutant Migration Pathways--Based on the characteristics of the wastes, a migration pathway for contamination of ground water exists through leaching from the piles to the soil and into the ground water.

4.12.3.2 Evidence of Release--During the visual site inspection, leachate was observed coming from pile no. 1. No ground water investigation has been conducted in the area, nor has the seep been sampled.

4.12.4 Surface Water

4.12.4.1 Pollutant Migration Pathways--Pile no. 1 is located adjacent to an unnamed stream. Surface run-off from the pile can reach the stream and flow to Batupan Bogue.

4.12.4.2 Evidence of Release--During the site visit, a brown oily water was observed leaching from pile no. 1 into the unnamed stream. The pile is seemingly contributing contamination to the stream. No evidence of release to surface water from pile no. 2 was visible during the site inspection.

4.12.5 Air

4.12.5.1 Pollutant Migration Pathways--Treated wood is expected to contain volatiles. Thus, a pathway exists for air emissions of hazardous constituents. These emissions are not expected to impact air quality seriously.

4.12.5.2 Evidence of Release--There was no evidence of a continuing release of hazardous constituents to air in the site records, nor was any noted during the site inspection.

4.12.6 Soils

4.12.6.1 Pollutant Migration Pathways--The soils in contact with or underlying any hazardous wastes containing piles are expected to be contaminated by leachates from the piles. Such a pathway is likely to exist.

4.12.6.2 Evidence of Release--No soil sample data was found in the records.

4.12.7 Subsurface Gas

4.12.7.1 Pollutant Migration Pathways--A pathway for the generation of subsurface gas may exist if a ground water contaminant plume containing volatile compounds is found to underlie the waste pile.

4.12.7.2 Evidence of Release--No evidence of subsurface gas release was found in the records.

4.13 SOUTH WASTE PILES (SWMU NO. 13)

4.13.1 Unit Characteristics

SWMU No. 13 consists of two waste piles at the facility's southern boundary. The first pile (pile no. 3) is located less than 25 feet south of the land farm area (SWMU No. 5) and just inside the southern tip of the facility's boundary (see Figure 4-2 and Photograph 13). The second pile (pile no. 4) is located about 100 feet northwest of pile no. 3. It is not known how long the piles have been there.

4.13.2 Waste Characteristics

During the site visit, Pile No. 3 was observed to contain mainly untreated wood. Pile No. 4 consists of approximately 25 empty drums which originally contained railroad spikes. There were no signs of hazardous material disposal.

4.13.3 Ground Water

4.13.3.1 Pollutant Migration Pathways--Since no hazardous materials were disposed in the waste piles, ground water migration of hazardous constituents from the pile is not expected.

4.13.3.2 Evidence of Release--No evidence of release to ground water was found in the site records, nor was any evidence of release noted during the site inspection.

4.13.4 Surface Water

4.13.4.1 Pollutant Migration Pathways--Based on the non-hazardous nature of wastes at the sites, surface water migration of hazardous constituents from the pile is not expected.

4.13.4.2 Evidence of Release--No evidence of release to surface water was found in the site records, nor was evidence of release noted during the site inspection.

4.13.5 Air

4.13.5.1 Pollutant Migration Pathways--Based on the non-hazardous nature of wastes in the piles, air emissions of hazardous constituents are not expected.

4.13.5.2 Evidence of Release--No evidence of release to the air was found in the site records, nor was evidence of release noted during the site inspection.

4.13.6 Soils

4.13.6.1 Pollutant Migration Pathways--Because the wastes do not contain hazardous constituents, soils beneath the waste piles are not expected to become contaminated.

4.13.6.2 Evidence of Release--No evidence of release to the soils was found in the records, nor was any noted during the visual site inspection.

4.13.7 Subsurface Gas

4.13.7.1 Pollutant Migration Pathways--The generation of subsurface gas is not expected at this unit.

4.13.7.2 Evidence of Release--No evidence of subsurface gas release was found in the records.

5.0 CONCLUSIONS AND RECOMMENDATIONS

This section presents a summary of release information and provides recommendations for further action at each SWMU.

5.1 SUMMARY OF RELEASE INFORMATION

Table 5-1 presents a summary of release information for each SWMU, based on available file information and the site inspection. Subsurface gas migration is not included in the table because waste characteristics do not lend themselves to the generation of significant amounts of subsurface gas.

5.2 RECOMMENDATINS FOR FURTHER ACTION

Recommendations for further action are summarized in Table 5-2 and discussed in more detail in the following sections. These recommendations are intended as a preliminary investigation of the facility and, based on data from these samples, further investigation of all or some of the SWMUs may be necessary. It is suggested that an additional site inspection be conducted prior to the final determination of the locations of any wells or sampling points. All wells should be constructed and samples collected in accordance with RCRA requirements.

5.2.1 SWMUs Requiring No Further Action

No further action is recommended at SWMU No. 13 because no hazardous constituents are expected to be present.

5.2.2 SWMUs Requiring Further Action

5.2.2.1 SWMU Nos. 1,4,6,7,8,9, and 10--Because these units are located in one general area of the facility (the treatment area) and because the waste characteristics are similar, these units are grouped together in this section. Hazardous wastes are handled or stored at these units and soils in various locations throughout the treatment area appear to be contaminated. The units are likely releasing hazardous constituents to ground water and surface water. Additionally, hydrogeologic studies performed in the area of the surface lagoon suggest that an upgradient source of ground water contamination may exist. No sampling has been

TABLE 5-1

SUMMARY OF SWMU RELEASE INFORMATION

SWMU Number	Ground Water Migration	Surface Water Migration	Air Migration	Soil Migration
1	P	P	M	E
2	E	P	NE	NE
3	E	E	M	E
4	P	P	E	E
5	E	P	M	E
6	P	P	NE	NE
7	P	P	NE	P
8	P	P	NE	E
9	P	P	NE	E
10	P	NE	NE	NE
11	E	E	NE	E
12	P	E	NE	E
13	NE	NE	NE	NE

E = Expected
NE = Not Expected
M = Minimal
P = Possible
D = Documented

TABLE 5-2

RECOMMENDATION FOR FURTHER ACTION

SWMU Number	Recommended Action	Hazardous Constituents	Media to be Sampled	Analytical Parameters	Comments
1,2,4, 6-11	sampling	Cresote, diesel fuel, PCP, and oil	ground water surface water	group 1 group 1	Ground water contamination at wells R-1, R-5 and R-6
3	sampling	Same as above	ground water surface water soils	group 1 group 1 group 1 plus dioxins	
5	sampling	Same as above	ground water soils	group 1 group 1 plus dioxins and EP Toxicity for metals	
11	implement corrective measure	Same as above	N/A	N/A	
12	sampling	Same as above	surface water leachate	group 1 group 1	
13	none	N/A	N/A	N/A	Waste characteristic suggest slight potential for release
Unnamed stream	sampling	Unknown	surface water	group 1	

N/A - Not Applicable

group 1 - Priority pollutants, chlorinated benzoquinones, chlorinated dihydroxybenzenes, trichlorophenols and tetrachlorophenols.

performed at the treatment area. It is therefore recommended that a remedial investigation be undertaken to determine the source and extent of the ground water contamination. The RI should be consistent with MDNR and RCRA requirements.

5.2.2.2 SWMU NO. 2--Numerous hydrogeologic studies have been performed in the area of the surface lagoon. The investigations concluded that there is no evidence that ground water quality has been degraded immediately downgradient of the surface lagoon. The lagoon is located adjacent to the treatment area which would be the subject of an RI as described in 5.2.2.1. It is therefore recommended that this unit be included in the RI.

5..2.2.3 SWMU No. 3--The spray field has also been the subject of several hydrogeologic studies. These studies suggest that the field is not seriously impacting the ground water but are not conclusive. It is therefore recommended that additional samples be taken.

It is recommended that one ground water sample be taken at each of wells SF-1 through SF-4 and analyzed for priority pollutants, chlorinated benzoquinones, chlorinated dihydroxybenzenes, and trichlorophenols and tetrachlorophenols. A surface water sample should also be collected at the seep if possible. This sample should be analyzed for the same parameters as the ground water.

Additionally, three soil samples should be collected. Two samples should be collected within the spray field and another outside and upgradient of the field (background). The samples should be taken between zero and two feet in depth and analyzed for priority pollutants, chlorinated benzoquinones, chlorinated dihydroxybenzenes, trichlorophenols, tetrachlorophenols and also dioxins. ?

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5.2.2.4 SWMU No. 5--This unit received K001 bottom sediments and boiler ash. The boiler ash has been determined by the facility to be non-hazardous. Further analysis should be conducted on the ash to confirm this conclusion. Also, the K001 bottom sediment likely were contaminated with most of the hazardous materials used at the facility. A sample program for the land farm area is thus recommended.

Four ground water monitoring wells should be installed near the land farm area. One ground water sample should be taken from each well and analyzed for priority pollutants, chlorinated benzoquinones, chlorinated dihydroxybenzenes, and trichlorophenols and tetrachlorophenols.

Additionally, two subsurface and two surface soil samples should be taken in the land farm area between zero and two feet and two and four feet in depth. One background sample should also be collected. These samples should be analyzed for the same parameters as the ground water plus dioxins and EP Toxicity from metals.

5.2.2.5 SWMU No. 11--Analytical results of samples collected in 1986 from well R-12 indicate that two closed ponds may be seriously impacting the ground water. The ponds should be included in the RI recommended in Section 5.2.2.1. Based on the results of the RI, these closed ponds may need to be investigated as being a potential source of ground water contamination.

It is further recommended that Koppers plan and implement corrective action, as they reportedly plan to do, to clean up the abandoned creosote blowdown tank and the settling tank.

Additionally surface water samples should be taken at the unnamed stream flowing adjacent to SWMU No. 11. The samples should be taken at points upstream and downstream of the unit. The samples should be analyzed for priority pollutants, chlorinated benzoquinones, chlorinated dihydroxybenzenes, and trichlorophenols and tetrachlorophenols.

5.2.2.6 SWMU No. 12--Leachate was observed seeping from the area of pile no. 1 to an unnamed stream at the northern facility boundary. The leachate may contain hazardous constituents resulting in contamination of the stream. It is therefore recommended that sampling be conducted. One sample each should be taken at the seep and at upgradient and downgradient locations of the stream passing by pile no. 1. If it is not possible to obtain a leachate sample, then a soil sample at a location along the drainage between the pile and the stream should be taken. The samples should be analyzed for priority pollutants, chlorinated benzoquinones, chlorinated dihydroxybenzenes, trichlorophenols and tetrachlorophenols.

5.3 ADDITIONAL RECOMMENDATIONS

During the piezometer installation performed by Law Engineering (logs of the piezometers are included in the January, 1987 Report of Findings) chemical odors where found in the soils at locations P-12 and P-13. P-12 is located near the treated wood storage area and P-13 is located east of the cooling pond. The exact locations of these piezometers could not be determined from the map. These areas may require further investigation, but were not considered solid waste management units and thus are not discussed in this report.

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APPENDIX A

SITE VISIT TRIP REPORT

MEMORANDUM

TO: File

FROM: Ivan C. Noel, Site Manager

SUBJECT: Site Visit Trip Report--Koppers Company

FACILITY: Koppers Company, Grenada, Mississippi

DATE: January 15, 1987

PARTICIPANTS: Ivan C. Noel (CCJM, PC, Site Manager)
Jim Hardage (MDNR Representative)
David L. King (Regional Environmental Supervisor Koppers Co.)
J.D. Clayton (Plant Manager)

INFORMATION REVIEWED:

- o Report of Ground Water Assessment
- o Koppers Draft Application for A Hazardous Waste Facility Permit (B)
- o Information regarding potential releases from SWMUs
- o Koppers Part A Application
- o Hazardous Waste Manifest

FACILITY TOUR:

Ivan Noel and the MDNR representative arrived at the Koppers Company facility at approximately 11:30 a.m. (1/15/87). The party proceeded to the Plant Manager's office where Mr. Noel provided a brief description of the RFA process, and the purpose and agenda for the site visit.

Following the introduction, Mr. King, Mr. Noel and Mr. Hardage toured the facility. Mr. Clayton helped explain certain aspects of plant operations. The facility tour was completed at approximately 3:30 p.m. The remainder of the site visit involved reviewing file information, and discussing facility operations and concerns. The visit was completed at approximately 4:30 p.m. with the touring participants leaving the facility at that time.

The following SWMUs were identified at the facility:

- o Oil/Water Separator -- There are presently two oil/water separators operating in series, but they may be used individually at times. The first separator receives an oil/water mixture from the surge tank to which a flocculation agent is added. The pentachlorophenol and oil rises to the surface and is recycled back to the process before the wastewater passes into the second separator. In the second separator, creosotes, which is heavier than water, are removed and recycled back to the process. The effluent is then pumped to the surface lagoon.

- Surface Lagoon -- This unit consists of an unlined biological treatment lagoon located in the northeastern portion of the facility. The surface lagoon was constructed in the early 1970's by excavating soil from within the containment area and using the excavated material to build up the perimeter dike.

- Spray Irrigation Field -- The irrigation field was constructed along with the surface lagoon in the mid-1970's and since then has received wastewater from the lagoon. Ponded water with an oily sheen was noted on the spray field. Also, a seep emanating from the soil berm was found. The seep is located on the eastern edge of the spray field and drains towards the residences located nearby.

- Boiler -- This unit is used to burn bottom sediments from the impoundment, waste creosote and pentachlorophenol removed as no longer useful, contaminated soils, unreclaimable oil, and other similiar wastes from other Koppers wood preservation facilities.

- Land Farm -- Prior to November of 1980, K001 bottom sediments were spread and disked into the soil in an area located in the southern tip of the facility. The area is flat and covers approximately one and one-half acres. Currently, residue from the boiler is spread over the area and the site is disced occasionally.

- Cooling Ponds -- This unit includes a cooling pond located near the work tank area and an emergency overflow pond located next to the cooling pond.

- Container Storage Area -- According to plant personnel container storage takes place on a 20 feet by 30 feet cement pad and on an inactive regulated concrete pad near the boiler. There were no evidence of leaks or spills in either container storage area.

- Drip Track Area -- Treated wood loaded on train cars are removed from the treatment cylinders and taken to the drip track area. There, the wood is allowed to drip until it is determined that the dipping is complete.

- Chemical Unloading Areas -- The chemical unloading areas consist of two unloading docks, a no. 2 diesel fuel unloading dock and a creosote unloading dock. The docks are both concrete paved and include containment walls. Tanker trucks arrive at the unloading stations, pump the chemical to the appropriate holding tanks through hook-ups at the docks.

- Underground Storage Tank -- This unit consists of an underground concrete storage tank located adjacent to the treatment cylinders in the treatment area. The tank is 20 feet in diameter and 15 to 18 feet deep. The unit stores back-up water for the facility's fire protection system. The top of the tank is at ground elevation.

- Abandoned Waste Treatment System -- The system is located near the southeast corner of the facility and consists of a creosote blowdown tank, an effluent settling tank and two effluent lagoons. The blowdown tank and settling tank are located adjacent to each other with the effluent lagoons less than 100 feet east of the tanks. Both tanks were observed to contain a black oily looking water.

- North Waste Piles -- This unit consists of two piles at the northern end of the facility. The northern-most pile was observed to contain miscellaneous materials including treated wood while the second pile contains mainly treated wood. A chocolate brown colored water with an oily sheen was observed leaching out of the first pile and into an unnamed stream.

- South Waste Piles -- Two piles containing miscellaneous materials are located on the southern boundary of the facility. One pile contained untreated wood while the other contained a number of drums.

General Information:

- There were no problems relative to site access.

- Some of the photos taken were impaired because of inclement weather.

- No additional health and safety concerns were identified.

- No problems relative to Remedial Investigation including sample collection. The Plant Manager may desire to collect split samples so some notification would be appreciated.

APPENDIX B

ANALYTICAL RESULTS

LE OF CONTENTS

PRODUCED ON 12/19/86 AT 14:10 PAGE

SAMPLE #	SOURCE	DESCRIPT	DATE-COL	DATE-REC
GM860061	WELL SF-1	GROUNDWATER	11/18/86	11/19/86
GM860062	WELL SF-2	GROUNDWATER	11/18/86	11/19/86
GM860063	WELL SF-3	GROUNDWATER	11/18/86	11/19/86
GM860064	WELL SF-4	GROUNDWATER	11/18/86	11/19/86
GM860065	WELL R-1	GROUNDWATER	11/18/86	11/19/86
GM860066	WELL R-2	GROUNDWATER	11/18/86	11/19/86
GM860067	WELL R-3	GROUNDWATER	11/18/86	11/19/86
GM860068	WELL R-4	GROUNDWATER	11/18/86	11/19/86
GM860069	WELL R-5	GROUNDWATER	11/18/86	11/19/86
GM860070	WELL R-6	GROUNDWATER	11/18/86	11/19/86
GM860071	WELL R-7	GROUNDWATER	11/18/86	11/19/86
GM860072	WELL R-8	GROUNDWATER	11/18/86	11/19/86
GM860073	WELL R-8B	GROUNDWATER	11/18/86	11/19/86
GM860074	WELL R-9	GROUNDWATER	11/18/86	11/19/86
GM860075	WELL R-11	GROUNDWATER	11/18/86	11/19/86
GM860076	WELL R-12	GROUNDWATER	11/18/86	11/19/86
GM860077	WELL T8	GROUNDWATER	11/18/86	11/19/86
GM860078	WELL F8	GROUNDWATER	11/18/86	11/19/86
GM860079	WELL R-10	GROUNDWATER	11/18/86	11/20/86
GM860080	WELL R-10B	GROUNDWATER	11/18/86	11/20/86

SPECTRIX MONROEVILLE

[illegible]LE 1: SUMMARY OF ANALYTICAL DATA   PRODUCED ON 12/19/96 AT 14:32   PAGE

SAMPLE #	RSLT. LNE		SOURCE
pH (FIELD)			
GM860061	pH, units :	7.0	WELL SF-1
GM860062	pH, units :	7.0	WELL SF-2
GM860063	pH, units :	7.0	WELL SF-3
GM860064	pH, units :	7.0	WELL SF-4
GM860065	pH, units :	5.6	WELL R-1
GM860066	pH, units :	5.3	WELL R-2
GM860067	pH, units :	4.9	WELL R-3
GM860068	pH, units :	5.1	WELL R-4
GM860069	pH, units :	6.9	WELL R-5
GM860070	pH, units :	6.8	WELL R-6
GM860071	pH, units :	5.7	WELL R-7
GM860072	pH, units :	5.2	WELL R-8
GM860073	pH, units :	6.0	WELL R-9B
GM860074	pH, units :	6.1	WELL R-9
GM860075	pH, units :	7.4	WELL R-11
GM860076	pH, units :	6.5	WELL R-12
GM860077	pH, units :	6.5	WELL TB
GM860078	pH, units :	7.2	WELL FB
[illegible]60079	pH, units :	6.3	WELL R-10
[illegible]60080	pH, units :	6.4	WELL R-10B
p[illegible] LAB)			
G[illegible]0061	pH, units :	6.9	WELL SF-1
GM860062	pH, units :	7.0	WELL SF-2
GM860063	pH, units :	6.7	WELL SF-3
GM860064	pH, units :	6.5	WELL SF-4
GM860065	pH, units :	5.7	WELL R-1
GM860066	pH, units :	5.2	WELL R-2
GM860067	pH, units :	4.9	WELL R-3
GM860068	pH, units :	5.3	WELL R-4
GM860069	pH, units :	6.3	WELL R-5
GM860070	pH, units :	6.1	WELL R-6
GM860071	pH, units :	5.6	WELL R-7
GM860072	pH, units :	5.4	WELL R-8
GM860073	pH, units :	6.0	WELL R-9B
GM860074	pH, units :	5.6	WELL R-9
GM860075	pH, units :	7.5	WELL R-11
GM860076	pH, units :	6.7	WELL R-12
GM860077	pH, units :	5.9	WELL TB
GM860078	pH, units :	6.0	WELL FB
GM860079	pH, units :	6.3	WELL R-10
GM860080	pH, units :	6.5	WELL R-10B

TABLE 1: SUMMARY OF ANALYTICAL DATA   PRODUCED ON 12/19/86 AT 14 33   PAGE

SAMPLE #	RSLT.LNE		SOURCE
CONDUCTIVITY (FIELD)			
GM860061	Cond.,umhos/cm :	837	WELL SF-1
GM860062	Cond.,umhos/cm :	814	WELL SF-2
GM860063	Cond.,umhos/cm :	771	WELL SF-3
GM860064	Cond.,umhos/cm :	618	WELL SF-4
GM860065	Cond.,umhos/cm :	225	WELL R-1
GM860066	Cond.,umhos/cm :	322	WELL R-2
GM860067	Cond.,umhos/cm :	571	WELL R-3
GM860068	Cond.,umhos/cm :	254	WELL R-4
GM860069	Cond.,umhos/cm :	737	WELL R-5
GM860070	Cond.,umhos/cm :	355	WELL R-6
GM860071	Cond.,umhos/cm :	239	WELL R-7
GM860072	Cond.,umhos/cm :	440	WELL R-8
GM860073	Cond.,umhos/cm :	271	WELL R-8S
GM860074	Cond.,umhos/cm :	199	WELL R-9
GM860075	Cond.,umhos/cm :	556	WELL R-11
GM860076	Cond.,umhos/cm :	530	WELL R-12
GM860077	Cond.,umhos/cm :	8	WELL TB
GM860078	Cond.,umhos/cm :	2	WELL FB
GM860079	Cond.,umhos/cm :	271	WELL R-10
GM860080	Cond.,umhos/cm :	292	WELL R-10S
CONDUCTIVITY (LAB)			
GM860061	Cond.,umhos/cm :	950	WELL SF-1
GM860062	Cond.,umhos/cm :	900	WELL SF-2
GM860063	Cond.,umhos/cm :	800	WELL SF-3
GM860064	Cond.,umhos/cm :	680	WELL SF-4
GM860065	Cond.,umhos/cm :	225	WELL R-1
GM860066	Cond.,umhos/cm :	600	WELL R-2
GM860067	Cond.,umhos/cm :	600	WELL R-3
GM860068	Cond.,umhos/cm :	240	WELL R-4
GM860069	Cond.,umhos/cm :	800	WELL R-5
GM860070	Cond.,umhos/cm :	325	WELL R-6
GM860071	Cond.,umhos/cm :	240	WELL R-7
GM860072	Cond.,umhos/cm :	430	WELL R-8
GM860073	Cond.,umhos/cm :	275	WELL R-8S
GM860074	Cond.,umhos/cm :	195	WELL R-9
GM860075	Cond.,umhos/cm :	590	WELL R-11
GM860076	Cond.,umhos/cm :	520	WELL R-12
GM860077	Cond.,umhos/cm :	2	WELL TB
GM860078	Cond.,umhos/cm :	1	WELL FB
GM860079	Cond.,umhos/cm :	262	WELL R-10
GM860080	Cond.,umhos/cm :	292	WELL R-10S

SPECTRIX MONROEVILLE

[illegible]LE 1: SUMMARY OF ANALYTICAL DATA PRODUCED ON 12/19/86 AT 11:32 PAGE

SAMPLE #	RSLT.LNE	SOURCE
PENTACHLOROPHENOL		
GM860061	PCP, ug/L: <1.00	WELL SF-1
GM860062	PCP, ug/L: 1.11	WELL SF-2
GM860063	PCP, ug/L: <1.00	WELL SF-3
GM860064	PCP, ug/L: <1.00	WELL SF-4
GM860065	PCP, ug/L: <1.00	WELL R-1
GM860066	PCP, ug/L: <1.00	WELL R-2
GM860067	PCP, ug/L: <1.00	WELL R-3
GM860068	PCP, ug/L: <1.00	WELL R-4
GM860069	PCP, ug/L: 1.33	WELL R-5
GM860070	PCP, ug/L: 1.14	WELL R-6
GM860071	PCP, ug/L: <1.00	WELL R-7
GM860072	PCP, ug/L: 1.19	WELL R-8
GM860073	PCP, ug/L: <1.00	WELL R-8B
GM860074	PCP, ug/L: 1.10	WELL R-9
GM860075	PCP, ug/L: <1.00	WELL R-11
GM860076	PCP, ug/L: 1.37	WELL R-12
GM860077	PCP, ug/L: 35.2	WELL TB
GM860078	PCP, ug/L: <1.00	WELL FB
[illegible]60079	PCP, ug/L: 1.85	WELL R-10
[illegible]60080	PCP, ug/L: 1.54	WELL R-10B
P[illegible]OL		
GM[illegible]0061	Phenol, mg/L: <0.005	WELL SF-1
GM860062	Phenol, mg/L: <0.005	WELL SF-2
GM860063	Phenol, mg/L: <0.005	WELL SF-3
GM860064	Phenol, mg/L: <0.005	WELL SF-4
GM860065	Phenol, mg/L: <0.005	WELL R-1
GM860066	Phenol, mg/L: <0.005	WELL R-2
GM860067	Phenol, mg/L: <0.005	WELL R-3
GM860068	Phenol, mg/L: <0.005	WELL R-4
GM860069	Phenol, mg/L: 0.129	WELL R-5
GM860070	Phenol, mg/L: <0.005	WELL R-6
GM860071	Phenol, mg/L: <0.005	WELL R-7
GM860072	Phenol, mg/L: <0.005	WELL R-8
GM860073	Phenol, mg/L: <0.005	WELL R-8B
GM860074	Phenol, mg/L: <0.005	WELL R-9
GM860075	Phenol, mg/L: <0.005	WELL R-11
GM860076	Phenol, mg/L: 0.438	WELL R-12
GM860077	Phenol, mg/L: <0.005	WELL TB
GM860078	Phenol, mg/L: <0.005	WELL FB
GM860079	Phenol, mg/L: 0.008	WELL R-10
GM860080	Phenol, mg/L: 0.019	WELL R-10B

TABLE 1: SUMMARY OF ANALYTICAL DATA

PRODUCED ON 12/19/96 AT 14:32 PAGE

SAMPLE #	RSLT. LNE	SOURCE
TOTAL ORGANIC CARBON		
GM860061	TOC, mg/L: <1.00	WELL SF-1
GM860062	TOC, mg/L: 1.60	WELL SF-2
GM860063	TOC, mg/L: 2.01	WELL SF-3
GM860064	TOC, mg/L: 2.19	WELL SF-4
GM860065	TOC, mg/L: 2.14	WELL R-1
GM860066	TOC, mg/L: 2.67	WELL R-2
GM860067	TOC, mg/L: 2.99	WELL R-3
GM860068	TOC, mg/L: 1.27	WELL R-4
GM860069	TOC, mg/L: 22.3	WELL R-5
GM860070	TOC, mg/L: 4.03	WELL R-6
GM860071	TOC, mg/L: 1.47	WELL R-7
GM860072	TOC, mg/L: <1.00	WELL R-8
GM860073	TOC, mg/L: 1.55	WELL R-8B
GM860074	TOC, mg/L: 1.11	WELL R-9
GM860075	TOC, mg/L: 3.35	WELL R-11
GM860076	TOC, mg/L: 29.2	WELL R-12
GM860077	TOC, mg/L: <1.00	WELL TB
GM860078	TOC, mg/L: <1.00	WELL FB
GM860079	TOC, mg/L: 1.07	WELL R-10
GM860080	TOC, mg/L: <1.00	WELL R-10B
TOTAL DISSOLVED SOLIDS		
GM860061	mg/L, TDS @ 180 C 730	WELL SF-1
GM860062	mg/L, TDS @ 180 C 844	WELL SF-2
GM860063	mg/L, TDS @ 180 C 644	WELL SF-3
GM860064	mg/L, TDS @ 180 C 552	WELL SF-4
GM860065	mg/L, TDS @ 180 C 254	WELL R-1
GM860066	mg/L, TDS @ 180 C 570	WELL R-2
GM860067	mg/L, TDS @ 180 C 529	WELL R-3
GM860068	mg/L, TDS @ 180 C 260	WELL R-4
GM860069	mg/L, TDS @ 180 C 600	WELL R-5
GM860070	mg/L, TDS @ 180 C 210	WELL R-6
GM860071	mg/L, TDS @ 180 C 290	WELL R-7
GM860072	mg/L, TDS @ 180 C 350	WELL R-8
GM860073	mg/L, TDS @ 180 C 309	WELL R-8B
GM860074	mg/L, TDS @ 180 C 400	WELL R-9
GM860075	mg/L, TDS @ 180 C 550	WELL R-11
GM860076	mg/L, TDS @ 180 C 660	WELL R-12
GM860077	mg/L, TDS @ 180 C 30	WELL TB
GM860078	mg/L, TDS @ 180 C 22	WELL FB
GM860079	mg/L, TDS @ 180 C 324	WELL R-10
GM860080	mg/L, TDS @ 180 C 316	WELL R-10B

TABLE 2: SUMMARY OF PAH DATA
==============================

Sample: GM860061 | Source: WELL SF-1
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene	0.250
Acenaphthylene	<0.250
Anthracene	<0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	0.312
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	<0.250
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole	<0.250
Naphthalene	<0.500

The above results are reported in ug/L .

TABLE 2: SUMMARY OF PAH DATA

Sample: GM860062 Source: WELL SF-2
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene	<0.250
Acenaphthylene	<0.250
Anthracene	<0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	<0.250
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	<0.250
Pyrene	<0.250

Other Polynuclear Aromatic Compounds Tested:

Carbazole	<0.250
Naphthalene	<0.500

The above results are reported in ug/L

TABLE 2: SUMMARY OF PAH DATA

Sample: GM860063

Source WELL SF-3
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene..........	<0.250
Acenaphthylene.........	<0.250
Anthracene..........	<0.250
Benzo(a)anthracene...	<0.250
Benzo(a)pyrene.........	<0.250
Benzo(b)fluoranthene...	<0.250
Benzo(g,h,i)perylene...	<0.250
Benzo(k)fluoranthene...	<0.250
Chrysene..........	<0.250
Dibenz(ah)anthracene...	<0.250
Fluoranthene..........	0.273
Fluorene..........	4.45
Indeno(123-cd)pyrene...	<0.250
Phenanthrene..........	<0.250
Pyrene..........	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole..........	<0.250
Naphthalene..........	<0.500

The above results are reported in ug/L

TABLE 2: SUMMARY OF PAH DATA

Sample: GM860064

Source: WELL SF-4
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene	<0.250
Acenaphthylene	<0.250
Anthracene	<0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	0.343
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	<0.250
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole	<0.250
Naphthalene	<0.500

The above results are reported in ug/L

TABLE 2: SUMMARY OF PAH DATA

Sample: GM860065

Source: WELL R-1
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene	14.5
Acenaphthylene	1.62
Anthracene	<0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	0.456
Dibenz(ah)anthracene	<0.250
Fluoranthene	0.503
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	5.58
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole	7.26
Naphthalene	<0.500

The above results are reported in ug/L

TABLE 2: SUMMARY OF PAH DATA
==============================

Sample: GM860066 | Source: WELL R-3
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene...........	0.250
Acenaphthylene......... :	<0.250
Anthracene.............	<0.250
Benzo(a)anthracene.....	<0.250
Benzo(a)pyrene.........	<0.250
Benzo(b)fluoranthene... :	<0.250
Benzo(g,h,i)perylene... :	<0.250
Benzo(k)fluoranthene... :	<0.250
Chrysene............... :	0.259
Dibenz(ah)anthracene... :	<0.250
Fluoranthene........... :	<0.250
Fluorene...............	<0.250
Indeno(123-cd)pyrene... :	<0.250
Phenanthrene........... :	<0.250
Pyrene.................	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole.............. :	<0.250
Naphthalene............ :	<0.500

The above results are reported in ug/L

TABLE 2: SUMMARY OF PAH DATA
==============================

Sample: GM860067

Source: WELL R-3
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene	<0.250
Acenaphthylene	<0.250
Anthracene	<0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	0.256
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	<0.250
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole	<0.250
Naphthalene	<0.500

The above results are reported in ug/L .

TABLE 2: SUMMARY OF PAH DATA

Sample: GM860068

Source: WELL R-4

Description: GROUNDWATER

Date Collected: 11/18/86

Date Received: 11/19/86

Acenaphthene	<0.250
Acenaphthylene	<0.250
Anthracene	<0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	0.252
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	<0.250
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole	<0.250
Naphthalene	<0.500

The above results are reported in ug/L

TABLE 2: SUMMARY OF PAH DATA
============================

Sample: GM860069

Source: WELL R-5
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene	136
Acenaphthylene	30.3
Anthracene	27.2
Benzo(a)anthracene	0.262
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	2.89
Fluorene	30.4
Indeno(123-cd)pyrene	<0.250
Phenanthrene	94.0
Pyrene	0.916

Other Polynuclear Aromatic Compounds tested:

Carbazole	29.6
Naphthalene	1630

The above results are reported in ug/L .

TABLE 2: SUMMARY OF PAH DATA

Sample: GM860070

Source: WELL R-6

Description: GROUNDWATER

Date Collected: 11/18/96

Date Received: 11/19/96

Acenaphthene	13.7
Acenaphthylene	14.8
Anthracene	10.9
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	0.506
Fluorene	4.48
Indeno(123-cd)pyrene	<0.250
Phenanthrene	7.34
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole	12.6
Naphthalene	<0.500

The above results are reported in ug/L.

TABLE 2: SUMMARY OF PAH DATA
==============================

Sample: GM860071 | Source: WELL R-7
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene........	<0.250
Acenaphthylene......	<0.250
Anthracene..........	<0.250
Benzo(a)anthracene..	<0.250
Benzo(a)pyrene......	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene............	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene........	<0.250
Fluorene............	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene........	<0.250
Pyrene..............	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole...........	<0.250
Naphthalene.........	<0.500

The above results are reported in ug/L .

TABLE 2: SUMMARY OF PAH DATA

Sample: GM860072

Source: WELL R-3
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene	<0.250
Acenaphthylene	<0.250
Anthracene	<0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	<0.250
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	<0.250
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole	<0.250
Naphthalene	<0.300

The above results are reported in ug/L.

TABLE 2: SUMMARY OF PAH DATA
==============================

Sample: GM860073

Source: WELL R-88
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene	<0.250
Acenaphthylene	<0.250
Anthracene	<0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	0.301
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	0.381
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole	0.540
Naphthalene	<0.300

The above results are reported in ug/L.

TABLE 2: SUMMARY OF PAH DATA
============================

Sample: GM860074

Source: WELL R-9
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene	<0.250
Acenaphthylene	<0.250
Anthracene	<0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	<0.250
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	<0.250
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole	<0.250
Naphthalene	<0.500

The above results are reported in ug/L

TABLE 2: SUMMARY OF PAH DATA
============================

Sample: GM860075

Source: WELL R-11
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene	<0.250
Acenaphthylene	<0.250
Anthracene	0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	<0.250
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	<0.250
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole	<0.250
Naphthalene	<0.500

The above results are reported in ug/L .

TABLE 2: SUMMARY OF PAH DATA

Sample: GM860076

Source: WELL R-12
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene	50.3
Acenaphthylene	8.34
Anthracene	1.48
Benzo(a)anthracene	1.31
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	0.521
Fluorene	24.1
Indeno(123-cd)pyrene	<0.250
Phenanthrene	2.99
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole	35.1
Naphthalene	357

The above results are reported in ug/L .

TABLE 2: SUMMARY OF PAH DATA
=============================

Sample: GM860077 Source: WELL T3
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/19/86

Acenaphthene..........	<0.250
Acenaphthylene........	<0.250
Anthracene............	<0.250
Benzo(a)anthracene....	<0.250
Benzo(a)pyrene........	<0.250
Benzo(b)fluoranthene..	<0.250
Benzo(g,h,i)perylene..	<0.250
Benzo(k)fluoranthene..	<0.250
Chrysene..............	<0.250
Dibenz(ah)anthracene..	<0.250
Fluoranthene..........	<0.250
Fluorene..............	<0.250
Indeno(123-cd)pyrene..	<0.250
Phenanthrene..........	0.326
Pyrene................	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole............	<0.250
Naphthalene..........	<0.500

The above results are reported in ug/L

TABLE 2: SUMMARY OF PAH DATA
==============================

Sample: GM860079

Source: WELL F8

Description: GROUNDWATER

Date Collected: 11/18/86

Date Received: 11/19/86

Acenaphthene........	<0.250
Acenaphthylene	<0.250
Anthracene	<0.250
Benzo(a)anthracene....	<0.250
Benzo(a)pyrene.......	0.309
Benzo(b)fluoranthene..	<0.250
Benzo(g,h,i)perylene .	<0.250
Benzo(k)fluoranthene.	<0.250
Chrysene...........	<0.250
Dibenz(ah)anthracene.	<0.250
Fluoranthene.........	<0.250
Fluorene	<0.250
Indeno(123-cd)pyrene..	<0.250
Phenanthrene	0.231
Pyrene.............	<0.250

Other Polynuclear Aromatic Compounds tested:

Carbazole	<0.250
Naphthalene..........	<0.500

The above results are reported in ug/L .

TABLE 2: SUMMARY OF PAH DATA
=============================

Sample: GM860079

Source WELL R-10
Description GROUNDWATER

Date Collected: 11/19/86
Date Received: 11/20/86

Acenaphthene	<0.250
Acenaphthylene	<0.250
Anthracene	<0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	0.319
Benzo(g,h,i)perylene	0.915
Benzo(k)fluoranthene.	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	<0.250
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	<0.250
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested.

Carbazole	<0.250
Naphthalene	<0.500

The above results are reported in ug/L

TABLE 2: SUMMARY OF PAH DATA
============================

Sample: GM860080

Source: WELL R-109
Description: GROUNDWATER

Date Collected: 11/18/86
Date Received: 11/20/86

Acenaphthene	<0.250
Acenaphthylene	<0.250
Anthracene	<0.250
Benzo(a)anthracene	<0.250
Benzo(a)pyrene	<0.250
Benzo(b)fluoranthene	<0.250
Benzo(g,h,i)perylene	<0.250
Benzo(k)fluoranthene	<0.250
Chrysene	<0.250
Dibenz(ah)anthracene	<0.250
Fluoranthene	<0.250
Fluorene	<0.250
Indeno(123-cd)pyrene	<0.250
Phenanthrene	<0.250
Pyrene	<0.250

Other Polynuclear Aromatic Compounds tested.

Carbazole	<0.250
Naphthalene	<0.500

The above results are reported in ug/L .

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SPECTRIX MONROEVILLE

TABLE OF CONTENT

PRODUCED ON 01/05/87 AT 14:55 PAGE

SAMPLE #	SOURCE	DESCRIPT	DATE-COL	DATE-REC
GM860081	B1 32.5-34	SOILS	12/10/86	12/10/86
GM860082	B2 74-75.5	SOILS	12/10/86	12/10/86
GM860083	B2 139-140.5	SOILS	12/10/86	12/10/86
GM860084	B3 99-100.5	SOILS	12/10/86	12/10/86
GM860085	B3 134-135.5	SOILS	12/10/86	12/10/86
GM860086	B4 64-65.5	SOILS	12/10/86	12/10/86

APPENDIX C

BOILER ASH ANALYSIS

Koppers Company, Inc., Science and Technology
436 Seventh Avenue, Pittsburgh, PA 19
Telephone 412-227-2000

AT. 9/12/86.

KOPPERS

RECEIVED
SEP - 2 1986
DEPT. OF NATURAL RESOURCE
BUREAU OF POLLUTION CONTROL

August 28, 1986

Mississippi Dept. of Natural Resources
Post Office Box 10385
Jackson, Mississippi 39209

ATTENTION: Mr. Jim Hardage
Hazardous Waste Section

RE: Koppers Company, Inc.
MSD 007 027 543
Boiler Ash Analysis

Dear Mr. Hardage:

Attached is the analysis of the Boiler Ash samples taken at our Grenada, Mississippi plant in March, 1986 which you requested. These were analyzed for K001 Appendix VII constituents by American Interplex Corp.

Please contact me at this office if we can be of any further assistance.

Sincerely yours,

Charles Brush

Charles P. Brush, P.E.
Program Manager
Hazardous Waste Affairs

CPB/bj
Enclosure

cc: J.D. Clayton
J. Kane
C.P. Markle

DIVISION OF SOLID WASTE
REVIEWED BY JH
DATE 9/11/86
COMMENTS

TITLE V FEES

Fund 3479 - Div.1044, 3044, 4044, 5044, 6044, 7044, 9044, and 9045

Month	Receipts	Expenditures	Balance
Beginning Balance			1,027,616.03
July, 2010	12,726.52	333,579.00	(320,852.48)
August, 2010	3,019,985.00	365,043.05	2,654,941.95
September, 2010	582,591.65	400,670.82	181,920.83
October, 2010	18,285.56	382,275.85	(363,990.29)
November, 2010	150,178.86	363,389.40	(213,210.54)
December, 2010	154,564.64	373,846.57	(219,281.93)
January, 2011	4,588.02	371,688.00	(367,099.98)
February, 2011	223,688.06	408,845.05	(185,156.99)
March, 2011	67,706.32	380,711.84	(313,005.52)
April, 2011	0.00	392,117.27	(392,117.27)
May, 2011	204,829.99	343,090.54	(138,260.55)
June, 2011	18,744.16	389,658.32	(370,914.16)
Lapse			0.00
Plus: Interest Earned	47,350.60		47,350.60
Plus: Refunds Received			0.00
Total	4,505,239.38	4,504,915.71	1,027,939.70

Amount Budgeted	5,175,901.00	6,324,208.00
Budget Remaining	670,661.62	1,819,292.29

% of SFY Completed	100.00%	100.00%
% Rec'd/Expended	87.04%	71.23%

Encumbrances	36,350.75
Accounts Receivable	398,728.78

Margaret Hassin, Maya Rao