Main Enforcement Order

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION IV

IN THE MATTER OF:	)	
	)	ADMINISTRATIVE ORDER
Sloss Industries Corporation P.O. Box 5327 3500 35th Avenue North Birmingham, AL 35207	)	U.S. EPA Docket No. 89-39-R
EPA ID No. ALD 000 828 848	)	Proceeding under Section 3008(h) of the Resources Conservation and Recovery Act, as amended, 42 U.S.C. Section 6928(h)
RESPONDENT	)	

I. JURISDICTION

This Administrative Order (Order) is issued pursuant to the authority vested in the Administrator of the United States Environmental Protection Agency ("EPA") by Section 3008(h) of the Solid Waste Disposal Act, commonly referred to as the Resource Conservation and Recovery Act of 1976 ("RCRA"), as amended by the Hazardous and Solid Waste Amendments of 1984, 42 U.S.C. Section 6928(h). The authority vested in the Administrator has been delegated to the Regional Administrators by EPA Delegation Nos. 8-31 and 8-32 dated April 16, 1985, and has been further delegated to the Director of the Waste Management Division of the EPA, Region IV.

This Order is issued to Sloss Industries Corporation ["Respondent"], Birmingham, Alabama. (This facility was formerly known as Jim Walters Resources, Inc.) This Order is based upon the administrative record compiled by EPA and incorporated herein by reference. The record is available for review by Respondent and the public at EPA's Region IV office located at 345 Courtland Street, N.E., Atlanta, Georgia 30365.

II. PARTIES BOUND

1. This Order shall apply to and be binding upon the Respondent and its officers, directors, employees, agents, successors and assigns, and

upon all persons, independent contractors, contractors, and consultants acting under or for Respondent.

2. No change in ownership, corporate or partnership status relating to the Facility will in any way alter Respondent's responsibility under this Order.

3. Respondent shall provide a copy of this Order to all contractors, subcontractors, laboratories, and consultants retained to conduct or monitor any portion of work performed pursuant to this Order within one (1) week of the effective date of this Order or date of such retention, and shall condition all such contracts on compliance with the terms of this Order.

4. Respondent shall give notice of this Order to any successor in interest prior to transfer of ownership or operation of the Facility and shall notify EPA within ninety (90) days prior to such transfer.

III. STATEMENT OF PURPOSE

The issuance of this Order requires Respondent to: (1) perform a RCRA Facility Investigation (RFI) to determine fully the nature and extent of any release of hazardous waste and hazardous constituents at or from solid waste management units (SWMUs) at its facility, and (2) perform a Corrective Measure Study (CMS) to identify and evaluate alternatives for the corrective action necessary to prevent or mitigate any migration or releases of hazardous wastes or hazardous constituents at or from the Facility.

IV. FINDINGS OF FACT

1. Respondent is a company doing business in the State of Alabama and is a person as defined in Section 1004(15) of RCRA, 42 U.S.C. Section 6903(15) and Section 22-30-3(10) of the Alabama Hazardous Waste Management Act (AHWMA).

2. Respondent is a generator, and an owner/operator of a hazardous waste management facility located at 3500 35th Avenue North, Birmingham, Alabama, and was engaged in the treatment and storage of hazardous waste at the Facility subject to interim status requirements [40 CFR Part 265]. Pursuant to Section 3006 of RCRA, the State of Alabama was granted final authorization for its hazardous waste program on December 23, 1987. The Alabama Department of Environmental Management (ADEM) is authorized to enforce the Hazardous Waste Management Regulations promulgated pursuant to the Environmental Management Act, Section 22-22A-5(1). However, any applicable requirement imposed by the Hazardous and Solid Waste Amendments

of 1984 (HSWA), Public Law 98-616 (November 8, 1984), is effective in all states regardless of their authorization status and will be carried out by EPA until the State is granted final authorization with respect to such requirement. RCRA Section 3306(g), 42 U.S.C. 6926(g)

3. Respondent owned and operated its facility as a hazardous waste management facility on and after November 19, 1980, the applicable date which renders facilities subject to interim status requirements and the requirement to have a permit under Sections 3004 and 3005 of RCRA, 42 U.S.C. Sections 6924 and 6925.

4. Pursuant to Section 3010 of RCRA, 42 U.S.C. Section 6930, Respondent sent EPA its Notification of Hazardous Waste Activity, dated August 15, 1980. Respondent identified itself as a generator of hazardous waste and an owner/operator of a treatment, storage, and disposal facility for hazardous waste. This notification listed four hazardous waste codes: D002, D003, F016 and K087. (F016 subsequently was dropped by the EPA as a listed hazardous waste.)

5. In its original Part A Hazardous Waste Permit Application, dated November 17, 1980, Respondent identified itself as operating a coke plant, a chemical plant, a blast furnace and a mineral wool plant. Respondent described its facility as engaging in the production of foundry and furnace coke, pig iron, specialty organic chemicals for industry, processed mineral fibers, mineral fibers for ceiling tile and insulating products, and by-product chemicals. Its coke by-products include such chemicals as ammonium sulfate, light oil and coal tar, while speciality organic chemicals include sulfonyl bisphenol. Respondent also acknowledged, in its original Part A, handling the following hazardous wastes at its facility:

K087 - decanter tank tar sludge from coking operations
U019 - benzene
U188 - phenol
U220 - methylbenzene
U239 - xylene (dimethylbenzene)

On April 7, 1982, the four U waste codes were deleted by the facility from Respondent's Part A as being covered by the facility's NPDES permit. In late 1984, Respondent requested that its Part A be withdrawn, and on November 30, 1984 this request was denied. On October 2, 1985, Respondent submitted a revised Part A Application, and listed the D002 (corrosive) and K087 waste codes.

6. Respondent generates waste streams which contain a wide variety of organic constituents included, but not limited to: methylene chloride; dichloroethene; chloroform; benzene; chlorobenzene; toluene; phenol; nitrophenol; 4 nitrophenol; 2,4 dinitrophenol; 2,4,6 trichlorophenol; pentachlorophenol; and 4-chloro-3-methylphenol.

7. On May 9 and 10, 1989, EPA conducted a Visual Site Inspection (VSI) of Respondent's facility as part of a RCRA Facility Assessment (RFA). Facility representatives present throughout this inspection were Charles Jones (Director, Environmental Affairs) and Kent Roberts (Manager, Technical Services). During the VSI, 39 RCRA SWMUs were identified and are summarized below:

SWMU #1: Quench Towers and Quench Tower Sumps

The Facility operates two quench towers, one located at the north end and the other located at the south end of the coke oven batteries. Hot (2,000 degree F) coke product loaded onto a locomotive-driven rail car is brought into a quench tower to be cooled to approximately 100 degrees F. This rapid quenching is accomplished by spraying the hot coke with water from above. This generates contact cooling water which runs off of the coke and into a sump directly beneath the quench tower. Coke particles entrained in the quenching water settle in this sump. This water then flows into the Quench Tower Pump Basin (SWMU #2). Water loss resulting from evaporation is compensated for by adding plant service water to the system. Baffles have been installed in the top of each quench tower to minimize the carry-over of coke dust entrained in the steam generated by quenching. Wastes accumulated in this unit include: 1) contact cooling water from the quenching operation, 2) rainfall from the coke wharf, and 3) runoff from the surrounding area. Releases into the environment are in the form of steam emissions from the quench tower. These emissions carry particulate matter which can be seen settling in the surrounding area. Pitting of the concrete sides of the sump is visible and may indicate a release into the soil and groundwater.

SWMU #2: Quench Tower Pump Basins

Each quench tower at the Facility is connected to a pump basin immediately adjacent to it. These concrete, partially inground, holding basins contain water which has been used in the quenching process. Quench water from both the Quench Tower Sump (SWMU #1) and the Old Quench Tower Settling Basin (SWMU #3) flow into this unit before it is recirculated and sprayed on the coke. As the volume of water in this basin decreases due to evaporation, plant service water is added from cooling spray ponds located elsewhere. The waste generated by this process is contact cooling water from the quenching operation. Releases into the environment could result from the badly deteriorated concrete containment wall which has cracks and is missing pieces.

SWMU #3: Old Quench Tower Settling Basins

These partially inground, concrete basins were presumably the primary quench tower sumps prior to the construction of the current quench towers (SWMU #1). Presently, they provide increased contact cooling

water capacity for the quench tower sump/pump basin system. Water from this unit flows to the Quench Tower Pump Basin (SWMU #2) for reuse. The waste managed in this unit is contact cooling water from the Quench Tower Sump (SWMU #1). Releases into the environment could result from pitting in the sides of the concrete basins.

SWMU #4: Biological Treatment Facility (BTF) Sewer

The BTF Sewer is a facility-wide network comprising both inground open-to-the-surface troughs, and underground clay piping. Tile troughs are found inside chemical process buildings, and receive any fluids spilled onto the floor. Concrete troughs are found outside in the coke process areas, and receive fluids generated by the coke process. The underground piping is used outside chemical process buildings and has storm drains connecting it to the ground surface at various points. Runoff from the coke process area, and other areas around the Facility, flows into these drains and into the underground piping network. This unit originally emptied directly into the Polishing Pond (SWMU #22). In 1975, this sewer was diverted for chemical and biological treatment to the recently built Biological Treatment Facility (BTF). During the VSI Mr. Roberts said that the only information they had concerning the design and construction of the system was that the sewer is constructed of clay pipe. Wastes managed by this unit are surface runoff from the coke process area of the plant, material collected in various sumps and drains in the coke process area, material discharged to floor drains in the chemical manufacturing plant, the centrifuge wastewater from the production of sulfones, and wastewater from the production of benzenesulfonyl chloride (BSC). Additionally, this unit receives an effluent from the U.S. Pipe and Foundry Company facility located across 35th Avenue from the Respondent. U.S. Pipe and Foundry effluent is composed of wastewater mixed with sand and cement from the cement lining of pipe operations, wastewater mixed with sand from core molds and carbon block from casting operations, wastewater mixed with sand from the core shop, and drainage water from powerhouse compressors. These waste streams pass through a series of settling basins and ponds before being discharged to the Sloss BTF Sewer. Mr. Roberts acknowledged that a break and subsequent leak have occurred in the pipe in the area of the BTF.

SWMU #5: Coal Tar Storage Area Drain System

This unit consists of an inground concrete trough surrounding two above-ground steel tanks containing coal tar. The top of the trough is covered by steel plates, and it discharges to the BTF Sewer (SWMU #4). The wastes managed by this unit are spillage from the coal tar tanks and surface runoff from the immediate area. Releases into the environment could occur if the integrity of the unit is impaired.

SWMU #6: Spill Area Around Diesel Tank

This unit consists of an area adjacent to a 10,000 gallon, steel, above-ground diesel tank. The tank is underlain by concrete and surrounded by a continuous concrete containing wall. Spillage of diesel fuel on the outside of the concrete containing wall, and on the ground immediately outside of this wall, was observed during the VSI. Ron Schoen, Coke Plant Quality Control Engineer, stated that the tank is filled every 7-10 days, and that diesel fuel was probably spilled during the unloading of fuel from the delivery truck into the tank.

SWMU #7: Coal Tar Collection Sump in #1 Pump House

The #1 Pump House contains pumps and valves for the transferring of coal tar. The building has a concrete floor with an inground concrete sump which receives drippage from the pumps and valves. The material collected in the sump is pumped to the Flushing Liquor Decanter (SWMU #8). The wastes handled by this unit are coal tar and flushing liquor drippage. Releases into the environment could not be determined during the VSI because the unit was too heavily covered with coal tar.

SWMU #8: Flushing Liquor Decanter

Flushing liquor is the term for contact cooling water used to cool exhaust gases from coke ovens. As the water comes into contact with the exhaust gases, coke fines and organics are entrained. The flushing liquor is then sent to the decanter where the heavier organic fractions and coke fines settle out. The decanter consists of an above-ground steel tank resting on a concrete base. The material managed by this unit contains many organic and inorganic constituents, including those found in K087 and K060. Some staining of the concrete base and surrounding soil was noted during the VSI.

SWMU #9: Flushing Liquor Decanter Sump

This unit is an inground concrete sump which runs between Coal Tar Tank T-61 and the back of the Flushing Liquor Decanter (SWMU #8). The unit appeared to receive surface runoff and drippage from the coal tar tanks and Flushing Liquor Decanter (SWMU #8). During the VSI this unit was observed to contain some liquid.

SWMU #10: Coal Tar Decanter for Number 3 and 4 Coke Batteries

This unit consists of an above-ground steel tank positioned on a concrete pad. As solid material settles out of the coal tar in the decanter, it is removed via a drag conveyor. This solid material is decanter tank tar sludge and is accumulated on steel catch pans at the

rate of approximately 5 cubic feet per 8-hour shift. It is then placed in coke ovens, which operate at 2700 to 2900 degrees F. [Decanter tank tar sludge (K087) is a listed hazardous waste generated by the coal tar decanting process and contains the hazardous constituents phenol and naphthalene. If not recycled, this material is considered a hazardous waste.] During the VSI, it appeared that the catch pans may have been overtopped. This was evidenced by sludge on the exterior of the pans and staining in the area. None of the facility personnel present during the VSI could state whether or not steel pans had always been used to catch the sludge.

SWMU #11: Coal Tar Decanter for Coke Battery 5

This unit consists of an above-ground steel tank positioned on a concrete pad. As solid material settles out of the coal tar in the decanter, it is removed via a drag conveyor. This solid material is decanter tank tar sludge and is accumulated on steel catch pans at the rate of approximately 5 cubic feet per 8-hour shift. It is then placed in coke ovens, which operate at 2700 to 2900 degrees F. [Decanter tank tar sludge (K087) is a listed hazardous waste generated by the coal tar decanting process and contains the hazardous constituents phenol and naphthalene. If not recycled, this material is considered a hazardous waste.] During the VSI, it appeared that the catch pans may have been overtopped. This was evidenced by sludge on the exterior of the pans and staining in the area. None of the facility personnel present during the VSI could state whether or not steel pans had always been used to catch the sludge.

SWMU #12: Coal Tar Decanter for 1 and 2 Coke Batteries

This unit was taken out of service in 1979. It currently consists of an above-ground steel tank positioned on a concrete pad. As solid material settled out of the coal tar in the decanter, it was removed via a drag conveyor. This solid material was decanter tank tar sludge. [Decanter tank tar sludge (K087) is a listed hazardous waste generated by the coal tar decanting process and contains the hazardous constituents phenol and naphthalene. If not recycled, this material is considered a hazardous waste.] During the VSI, there was no evidence of a catch pan to accumulate the sludge. Steve McCay, Chief Engineer, Coke Plant, stated that a steel pan or board may have been used.

SWMU #13: The Equalization Basin at the Biological Treatment Facility (BTF)

The Equalization Basin is a surface impoundment designed for the collection, physical mixing, and transfer of process wastewaters. This basin was constructed in 1975 of earthen materials, and has a

compacted clay liner of unknown thickness. With a minimum of 2 feet of freeboard, this basin has a maximum storage capacity of approximately 4 million gallons. All of the wastes collected by the BTF Sewer (SWMU #4) are discharged into this impoundment. It is the first in sequence at the BTF to receive process wastewaters from the facility, and it holds these wastewaters prior to pH adjustment and biological treatment. ADEM conducted sampling in this basin on November 28, 1984, and tested its influent at a pH of 0.55 SU and its effluent at a pH of 0.80 SU. In a February 1, 1985 letter, ADEM provided the Respondent with notice that the the Equalization Basin was a regulated unit because it contained the characteristic hazardous waste D002 (corrosivity). According to the "Surface Impoundment Closure Plan" prepared by Robinson and Layton, Inc., and dated April 30, 1987, the wastewater from the production of benzenesulfonyl chloride is the sole source of the low pH. (According to Mr. Roberts, no listed hazardous wastes have been placed in the Equalization Basin.) The basin has held process wastewater with a pH less than 2 SU for more than a decade, rendering the long-term integrity of the compacted clay liner questionable. This is evidenced by samples taken from the six groundwater monitoring wells installed around the basin. Samples from these wells were collected by ADEM on April 17, 1986 as part of a Comprehensive Monitoring Evaluation. Analyses of groundwater samples taken from these wells revealed the following hazardous waste constituents: Well #1: chromium (over primary drinking water standards), phenol, cyanide, copper and arsenic; Well #2: chromium (over primary drinking water standards), arsenic (at a concentration of more than twice of any of the other wells), and copper; Well #3: fluorene, phenanthrene and cyanide; Well #4: phenol, naphthalene, cyanide, acenaphthylene, arsenic, copper, chromium, and 2,4 dimethyl phenol; Well #5: arsenic and cyanide; and Well #6: chromium (over primary drinking water standards), phenol, naphthalene, phenanthrene, cyanide, anthracene, fluoranthene, copper, arsenic, pyrene, benzo anthracene, and chrysene. U.S. EPA Region IV Environmental Services Division (ESD) collected samples from the Equalization Basin on February 11, 1986. A sample of the effluent contained the following: 15 volatile organic compounds (including benzene, toluene and chlorobenzene), 36 extractable organic compounds (including naphthalene, and phenol), total phenol, cyanide, and arsenic. A sludge sample collected and composited from 10 locations around the basin contained the following: benzene, tetrachloroethylene, toluene, chlorobenzene, ethyl benzene, total xylenes, cyanide, arsenic, barium, lead, and 31 extractable organic compounds (EOC's). These EOC's were detected at concentrations ranging from an estimated 300,000 ug/kg to 15,000,000 ug/kg, with 18 of the EOC's exceeding 1,000,000 ug/kg.

SWMU #14: pH Neutralization Basin at the BTF

This unit is next in the process sequence at the BTF. This unit consists of an inground concrete tank in which lime slurry is introduced from a steel, above-ground tank beside the basin. Three mixers mix the lime slurry with the wastewater in order to raise the pH from approximately 2.5 SU to 10 SU. The waste managed in this unit is the effluent from the Equalization Basin (SWMU #13). Since no active treatment takes place in the Equalization Basin (SWMU #13), the wastewater in this unit would be expected to contain the same constituents.

SWMU #15: Primary Clarifier at the BTF

The primary clarifier consists of a circular, inground concrete tank containing a skimmer arm and a sludge scraper to remove floating and settled solids. This unit receives pH-adjusted wastewater from the pH Neutralization Basin (SWMU #14). Effluent goes to the Aeration Basins (SWMU #16).

SWMU #16: Aeration Basins at the BTF

There are two aeration basins at the BTF, and each receives wastewater from the Primary Clarifier (SWMU #15). Both consist of an inground concrete tank with four mechanical aerators. The wastewater is aerated to provide oxygen for the microorganisms used to degrade organic matter.

SWMU #17: Secondary Clarifier at the BTF

The secondary clarifier receives wastewater from the Aeration Basins (SWMU #16). This unit consists of a circular, inground concrete tank with a skimmer arm and sludge scraper to remove floating and settled solids. Effluent from this unit was sampled on February 11, 1986 by ESD and found to contain 10 extractable organic compounds, total phenols, and cyanide. Any effluent produced by this unit goes to the Polishing Pond (SWMU #22).

SWMU #18: BTF Thickener

The thickener consists of a circular, inground concrete tank. It receives sludge from the primary and secondary clarifiers (SWMUs #15 and #17) where the volume is reduced by gravity thickening. The thickened sludge then goes to the Aerobic Digester (SWMU #19).

SWMU #19: Aerobic Digester at the BTF

The digester consists of an inground concrete tank with two mechanical aerators. Sludge enters the digester from the Aeration Basins (SWMU #16), the Thickener (SWMU #18), and the clarifiers (SWMUs #15 and #17). Aeration of this material in the absence of nutrients results in mineralization of the sludge. The sludge goes to the Sludge Dewatering Machine (SWMU #20).

SWMU #20: Sludge Dewatering Machine

This unit is essentially a filter press. Sludge received from the Aerobic Digester (SWMU #19) is compressed on a fine mesh screen and fluid is forced out. The fluid goes to the Polishing Pond (SWMU #22) and the sludge is then screw-fed into the back of a dump truck. (This unit produces approximately 12 tons of sludge per day.) When a sufficient quantity of sludge has accumulated, it is taken to the Biological Sludge Disposal Area (SWMU #23). On February 11, 1986, ESD sampled the sludge produced by this unit and detected the following: cyanide, arsenic, toluene, chlorobenzene, chromium, lead, zinc, mercury, and 13 extractable organic compounds.

SWMU #21: BTF Emergency Basin

The Emergency Basin was located immediately west of the Equalization Basin (SWMU #13) and was connected to it. The Emergency Basin (now backfilled) was a surface impoundment of approximately half the area of the Equalization Basin (SWMU #13). The Emergency Basin was designed to serve as a reservoir into which highly concentrated wastewater would be diverted in the event of a sudden chemical spill in one of the process areas. This would protect the microbes in the BTF from being shocked by a sudden influx of undiluted chemical wastes. This unit has never been reported to have been used for its intended purpose, however it occasionally received overflow wastes from the Equalization Basin (SWMU #13) during periods of heavy rainfall. Since the Emergency Basin received the same wastes as the Equalization Basin (SWMU #13), it would be expected to have the same constituents of concern.

SWMU #22: Polishing Pond

This unit is an unlined, 17-acre surface impoundment built in 1919 and constructed of earthen materials. It currently provides tertiary treatment of wastewaters so that the quality of its effluent will meet NPDES discharge requirements. It receives wastewaters from the Secondary Clarifier (SWMU #17) and effluent from the Storm Water Runoff Sewer (SWMU #25). Additionally, runoff from the Blast Furnace

Emission Control Sludge Waste Pile (SWMU #24) goes into the Polishing Pond. This unit was in operation prior to the start-up of the Biological Treatment Facility and received untreated wastewaters from the process areas. On February 11, 1985, ESD conducted sampling at this unit. Sludge samples collected from three different locations adjacent to the influent structure to this pond contained the following: four volatile organic compounds, 10 extractable organic compounds (including sulfonylbisbenzene detected at a concentration of up to 60,000,000 ug/kg), cyanide, arsenic, barium, lead, zinc and mercury. Barium and 10 extractable organic compounds were found in samples of the final effluent to this pond. Due to the unlined condition of the impoundment and the presence of hazardous constituents in the sediment, this unit has a high probability for releasing to soil and groundwater.

SWMU #23: Biological Sludge Disposal Area

This land disposal site is an unlined, two-acre cleared area surrounded by a soil dike. The sludge disposed of here is generated by the Sludge Dewatering Machine (SWMU #20). Mr. Jones indicated that the sludge is covered with soil monthly. Additionally, sludge had also been poured onto the ground outside of the diked area. On February 11, 1986, ESD sampled this sludge and discovered the following: cyanide, arsenic, chromium, lead, zinc, mercury, volatile organic compounds, and extractable organic compounds. The presence of hazardous constituents and the unlined condition of the unit indicate a high probability of release to soil and groundwater.

SWMU #24: Blast Furnace Emission Control Sludge Waste Pile

F016. rescinded

This unit is adjacent to the BTF, and is composed of a material which was formerly a listed hazardous waste with EPA hazardous waste code F016. (F016 is dewatered air pollution control scrubber sludges from coke ovens and blast furnaces. Originally it was listed as hazardous due to its cyanide content.) On February 11, 1986, ESD sampled this unit and detected the following: cyanide, chromium, lead, and zinc. Runoff from this pile goes into the 17 acre Polishing Pond (SWMU #22). This unit covers several acres, and consists of a black granular material. It is partially vegetated on one side, with material being removed from its other side. During the VSI, Mr. Roberts stated that the sludge was being sold.

SWMU #25: Storm Water Runoff Sewer

This unit consists of concrete pipes and drains, and collects runoff from various areas of the plant, such as the coal storage area and parking lots. The maintenance shop drain system also empties into this sewer. No sampling of the liquids in this system has taken place. These various fluids empty into the Polishing Pond (SWMU #22).

SWMU #26: Chemical Manufacturing Plant Main Process Building Floor Drain

Sulfonic acid is manufactured here in reactors and tanks situated on a raised, tile-covered platform. Tile-lined troughs collect primarily non-contact cooling water, and in the event of a leak or spill, would receive material from the production of sulfonic acid. All fluids collected are discharged to floor drains connected to the BTF Sewer (SWMU #4). Mr. Roberts stated that a tile lining is required because the spilled material is corrosive. During the VSI it was observed that some tiles were chipped and some had been patched.

SWMU #27: TSA 94 Building Floor Drain System

The reactors and tanks in this building are used in the production of toluene sulfonic acid 94% (TSA 94). The floor beneath the process units is lined with tile, as are the collection troughs. This drain system receives primarily non-contact cooling water, however, leaks or spills from the process units would collect in this system. Waste collected in this drain system is discharged to the BTF Sewer (SWMU #4). During the VSI, a separation between the drain and the floor was noted, which resulted in a breach in the drain.

SWMU #28: Sulfonation Building Floor Drain

This unit consists of a stainless steel lined trough in the floor of the Sulfonation Building, and receives contact and non-contact cooling water. Any spills or leaks from the sulfonation process unit would be collected in the trough. This unit discharges to the BTF Sewer (SWMU #4). According to Mr. Roberts, a fire occurred in this area in 1980 or 1981. Water or chemicals generated in fighting the fire would have entered the trough and been discharged to the BTF Sewer (SWMU #4).

SWMU #29: Chemical Product Tank Containment Area

Adjacent to the TSA 94 Building, chemical products are stored in tanks situated on a concrete pad with concrete dikes and a sump. The sump collects rainwater and any spilled material in the containment area, and then discharges these fluids to the BTF Sewer (SWMU #4). Chemical products stored in this area include: TSA 94, sulfuric acid, phenol sulfonic acid 65%, and orthoxylene. During the VSI, the outer linings on the TSA 94 and phenol sulfonic acid 65% tanks were observed to have rusted through. The concrete in the area of the sump is corroded.

SWMU #30: Centrifuge Wastewater Tank

This unit manages centrifuge wastewater from the production of sulfones, and is temporarily stored in a steel, above-ground tank situated in a concrete containment area. This wastewater is gradually released to the BTF Sewer (SWMU #4). During the VSI, a white residue was observed in the containment area.

SWMU #31: Monohydrate Building Floor Drain and Sump

This building houses the centrifuge used in the production of sulfones. This process generates the wastewater stored in the Centrifuge Wastewater Tank (SWMU #30). The floor in this building contains a concrete drain that leads to a concrete sump on the outside of the building. Any spills, or fluids generated by washing the centrifuge, go into the BTF Sewer (SWMU #4).

SWMU #32: Benzenesulfonyl Chloride (BSC) Drum Storage Area

This unit consists of approximately 400 plastic, 55 gallon drums which contain or have contained BSC. The drums were stacked one drum high on wooden pallets on gravel-covered ground. Most drums had their bungs closed during the VSI, but some were left open. No leaks or spills were observed during the VSI.

SWMU #33: Benzenesulfonyl Chloride (BSC) Plant Drum Storage Area

This unit consists of approximately 100 plastic 55 gallon drums of BSC stored both inside and outside of the BSC Plant. Most drums were closed while some were open. Several of the drums showed signs of deterioration such as splitting and bulging.

SWMU #34: Benzenesulfonyl Chloride (BSC) Wastewater Neutralization System

This unit is comprised of a series of above-ground tanks and mixing units where lime is added to the BSC wastewater to raise the pH to approximately 2.5 SU. The effluent enters the BTF Sewer (SWMU #4); a sludge is generated by the addition of lime. The sludge is disposed of at the Biological Sludge Disposal Area (SWMU #23).

SWMU #35: Old Waste Pile at Mineral Wool Plant

This unit consists of a large, unlined, sparsely vegetated waste pile adjacent to the Mineral Wool Plant. The material in this waste pile consists of flue dust and waste material generated from the mineral wool process. The waste generated in the process is chemically identical to the finished product, but does not have the appropriate

texture to be sold as mineral wool. The primary constituents of mineral wool and flue dust (as supplied during the VSI by R. B. Russell, Mineral Fiber Plant Manager) are listed below:

Mineral Wool	Flue Dust
SiO_2	SiO_2
CaO	CaO
Al_2O_3	S
MgO	K_2O
Fe_2O_3	Al_2O_3
S	MgO
MnO	Fe_2O_3
P_2O_5	MnO
	Na_2O
	TiO_2
	P_2O_5

Waste from the plant is placed on the pile daily. During the VSI, Mr. Russell stated that they are currently looking into methods for returning this material to the plant process. Some of the material has been removed for this purpose.

SWMU #36: Maintenance Shop Used Oil Tank

This unit is an above-ground, rectangular steel tank used to manage approximately 300 gallons of waste oil generated by the Maintenance Shop. The tank rests on two railroad cross ties on a gravel base. Waste oil is accumulated here prior to pick up for recycling by a contractor.

SWMU #37: BTF Sewer Tar Trap

This unit is an inground concrete basin functioning as an oil/water separator. The trap is designed to remove and accumulate coal tar generated in the coking process and collected by the BTF Sewer (SWMU #4). According to Mr. Jones, this tar trap is cleaned approximately every six (6) months, and the material is placed in the coke ovens.

SWMU #38: Landfill

This unit is a northeast-southwest trending ridge-shaped plateau, approximately 60 feet high, containing a variety of debris. The different types of debris observed during the VSI included concrete rubble, wood and other construction debris, conveyor belts, empty metal 55 gallon drums, blast furnace flue dust and coal that had been degraded by weathering. A Solid Waste Disposal - Geohydrologic

Evaluation of this landfill conducted in October of 1980 by the Environmental Division of the Geological Survey of Alabama (EDGSA) indicated that flue dust, decanter tank tar, tar trap residue, mineral wool slag waste and construction debris may have been disposed of in this unit. The EDGSA recommended that: 1) disposal of waste material at this site be discontinued, 2) the unit be capped and 3) monitoring wells be installed. The unit is not capped and no containment controls were apparent during the VSI. This unit is still in use.

SWMU #39: Blast Furnace Emission Control Sludge Waste Pile Near Landfill

This waste pile is composed of blast furnace emission control sludge. (At one time this waste was a listed hazardous waste with EPA hazardous waste code F016. It was listed as hazardous because of its cyanide content.) This waste pile is a partially vegetated, elongated ridge parallel to and adjacent to the landfill, and consists of a black granular material. The pile is partially vegetated. No release controls were noted during the VSI.

8. The geographical and geological setting of the Respondent's facility is as follows;

According to a September 26, 1986 ADEM Memorandum, Respondent's facility is located in Jefferson County, Alabama, in the NE 1/4 of the NW 1/4 of Section 7, T17S, R2W of the Birmingham North Quadrangle. The original Part A places the Facility at latitude 33'34"30"' and longitude 86'47"30"'.

The ADEM Memorandum describes Jefferson County as lying in the southernmost extension of the Appalachian Valley and Ridge and the Appalachian Plateaus physiographic provinces. The Alabama Valley and Ridge section of the Appalachian Valley and Ridge Province is comprised of northeast to southwest trending valleys and ridges. This Memorandum states that most of the Respondent's facility lies in the Birmingham Valley District of the Alabama Valley and Ridge section, and is located in the northern flank of the Blount Mountain Syncline on the upper plate of the Opossum Valley thrust fault.

The ADEM Memorandum describes rocks in the Appalachian Valley and Ridge Province as being characterized by intense faulting, folding and fracturing. The Alabama Valley and Ridge section is characterized by northeast trending anticlinal and synclinal structures which are generally cut longitudinally by thrust faults. Normal, reverse and wrench faults are locally abundant. The ADEM Memorandum further states that the Respondent's Equalization Basin (SWMU #13) lies within 2,000 feet of the Opossum Valley thrust fault.

The ADEM Memorandum stated that joints and joint sets occur throughout the rocks of Jefferson County with angles of dip ranging from 70 to 90 degrees, although lower angles (10 to 30 degrees) have been recorded. The linear extent of most joint sets ranges from a few feet to several hundred feet, with greater joint spacing occurring in thicker-bedded rocks. Joints generally are confined to one bed in thin-bedded rocks, but may extend vertically through several beds of thick-bedded rocks, according to the ADEM Memorandum. The number of joint sets increases in areas contiguous to large folds and major faults.

The ADEM Memorandum described the rock and soil beneath the Respondent's facility as follows. The Facility lies atop the Cambrian Conasauga Formation, which is composed of limestone with thin partings of shale and dolomite. The Conasauga typically weathers to a clayey or silty-clay soil that ranges from 5 to 20 feet thick. Such soils usually have an infiltration rate of one inch per 20 to 60 minutes. Sediments penetrated by the installation of Respondent's present RCRA monitoring wells consist of between 13 to 20 feet of sandy clay, (which necessarily would have a faster rate of infiltration). Beneath the soil covering, bedrock surfaces are irregular and pinnacles may project to the surface.

Pinnacles, whether they reach to the ground surface or not, have a decreased thickness of soil cover relative to the surrounding, lower portions of the same bedrock. As such, they would have little or no soil protection to either slow down the movement of contaminants, or dilute its hazardous nature once it was spilled on the ground or left a surface impoundment. Therefore, contaminants would reach the fractured, faulted and/or jointed limestone bedrock more quickly, and in a more concentrated form. Upon reaching these various types of openings or channels in the bedrock, the contaminants or contaminated groundwater could travel through the rock and thence on into the groundwater more rapidly. This situation would be greatly aggravated in the event of a low pH waste [such as the very acidic wastes in the Equalization Basin (SWMU #13)] entering the limestone bedrock since limestone ($CaCO_3$) is easily dissolved by even dilute acids. In this case, the acidic waste would begin dissolving the limestone upon contact and enlarging the natural channels in the bedrock created by fracturing, faulting or jointing. This enlargement would permit an even greater flow of wastes into the groundwater and offsite.

9. The hydrogeological characteristics in the area of Respondent's facility are described below:

According to an ADEM Memorandum dated September 26, 1986, the most productive formations in the area for groundwater include the Conasauga (upon which Respondent's facility lies), the Ketona Dolomite, the Knox Group, Ordovician limestones, the Chickamauga Limestone, the Fort Payne Chert-Tuscumbia Limestone, the Hartsville Sandstone and the Bangor Limestone. This Memorandum also stated that groundwater in Jefferson County, Alabama is used to a limited degree, and sources for industrial and domestic use are not widely developed.

The ADEM Memorandum noted that the availability of groundwater in Jefferson County is affected by the relationship of topography to geologic and hydrologic conditions such as structure, the nature of the rock units, faults, fractures, joint sets, and solution cavities. Ground Engineering and Testing Service, Inc., a contractor hired by Respondent to conduct groundwater flow studies at Respondent's facility, stated in their August 27, 1986 Report that at Respondent's site, the underlying rock generally contains channels and open voids near the rock/soil interface where groundwater flow is concentrated. This contractor acknowledged that the Conasauga Formation underlying the Facility "often contains fractures and solution channels through which groundwater easily flows."

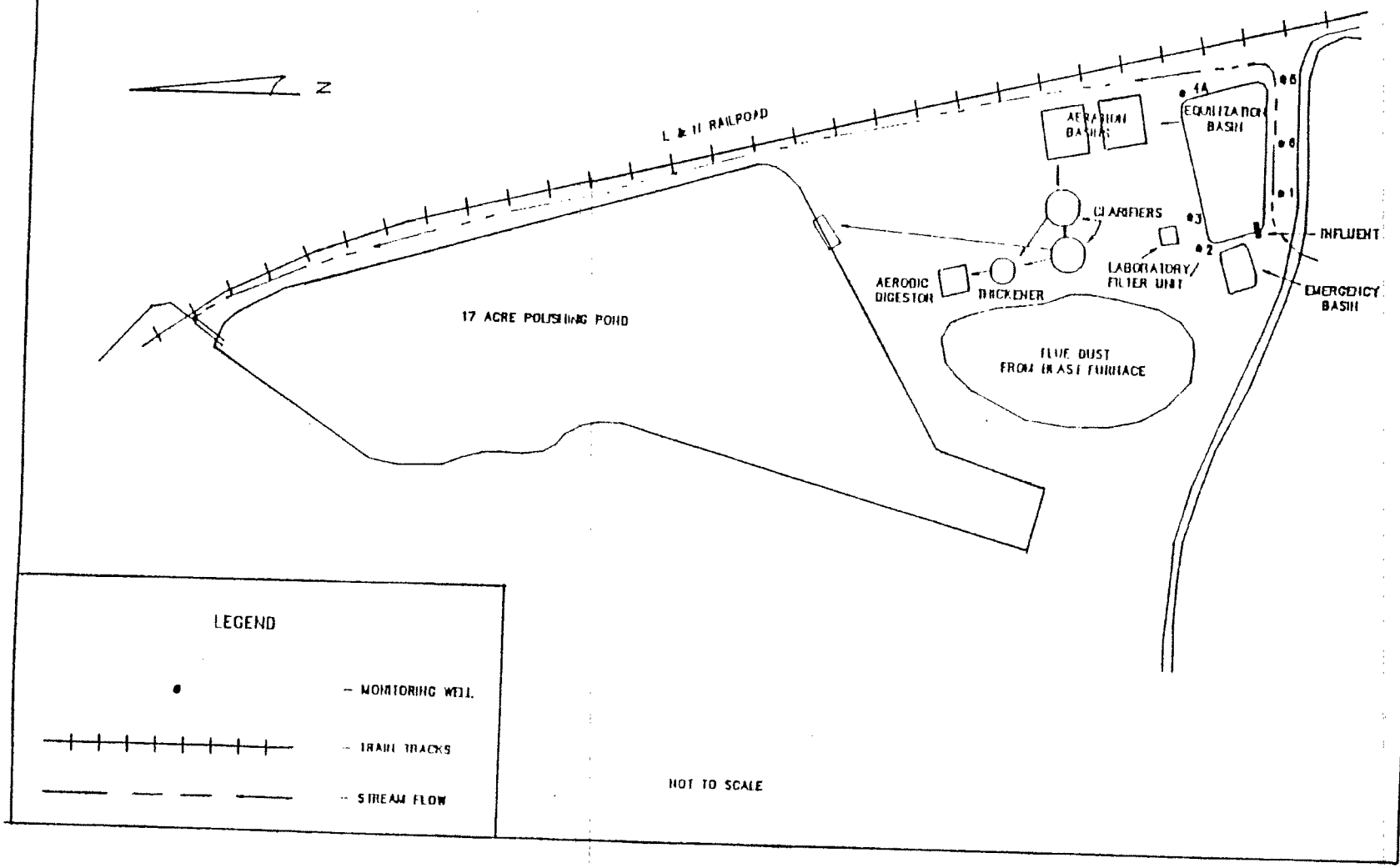
According to the September 26, 1986 ADEM Memorandum, the Facility is bordered on the south and west by a small intermittent stream, and two large, deep limestone quarries which lie within 1,000 feet of the Equalization Basin (SWMU #13). Potentiometric maps compiled by ADEM from groundwater elevation data from the Facility's monitoring wells indicate that groundwater flow is radial toward the intermittent stream. Localized groundwater flow is also toward the two quarries and could be affected by quarrying activities and any large quantities of water removed from the quarries. The ADEM Memorandum quotes Facility representatives as having acknowledged removing large volumes of water from at least one of the quarries.

The ADEM Memorandum describes the water table in areas underlain by the Conasauga Formation as being generally shallow, about 6 to 30 feet below ground surface. The Conasauga Formation, upon which Respondent's Equalization Basin (SWMU #13) is located, is an aquifer. A "Progress/Status Report" issued by Respondent and dated February 6, 1987 stated that Respondent discovered in October 1986 that a spring had been tapped and rerouted through a pipe when the Biological Treatment Facility was initially constructed in 1975. This Report stated that this spring originated near the Control Building and was drained, via a cast iron pipe, along the side of the Equalization Basin (SWMU #13) to an adjacent creek. The presence of groundwater so close to the ground surface increases the risk of rapid groundwater contamination in the event of a release from one of the SWMUs.

10. Respondent's groundwater monitoring well system is described below:

On March 2 - 3, 1987, the Environmental Services Division (ESD) of EPA conducted a Comprehensive Groundwater Monitoring Evaluation (CME) at Respondent's facility. According to the CME Report, Respondent installed six monitoring wells around the Equalization Basin (SWMU #13) in August 1985. (See Figure 1.) These monitoring wells were required here

(figure taken from ESD Comprehensive Groundwater Monitoring Evaluation Report dated March 23, 1987)



because the industrial wastewater entering the Equalization Basin (SWMU #13) exhibited the characteristic of corrosivity as defined by 40 CFR 261.22. The CME Report stated that because the Equalization Basin (SWMU #13) had a pH of 2.0 SU or less it was a RCRA regulated unit, and therefore a RCRA groundwater monitoring system should have been installed by November 1981. When the groundwater monitoring system was originally installed, groundwater flow was assumed to be to the north. Well #1 was designated the upgradient well and Wells #2, #3, and #4 were designated as downgradient wells. After the initial four wells were installed, it was determined that groundwater flow was toward the intermittent stream (to the southeast) and Wells #5 and #6 were installed as downgradient wells. Well #4 was abandoned as a RCRA monitoring well because Respondent concluded that the contamination found in it was due to a nearby leaky pipe carrying waste. In its place Well #4A was installed in February 1987. Presently, Well #2 is designated as the upgradient well, and Wells #1, #3, #4A, #5, and #6 are designated as downgradient.

The September 26, 1986 ADEM Memorandum stated that Respondent's groundwater monitoring wells are located approximately 70 feet from the toe of the Equalization Basin (SWMU #13). This ADEM Memorandum further stated that liquid hazardous wastes influenced by bedding plane or fracture flow potentially could allow contaminated groundwater to flow into the lower limestone aquifer and under the detection interval of the present monitoring wells. This would preclude the immediate detection of contamination issuing from this basin. The ADEM Memorandum further stated that the wells are partially hydraulically separated from the Equalization Basin (SWMU #13) by an intermittant stream which intercepts near surface groundwater before it reaches the wells. The combination of the above characteristics potentially could allow contaminated groundwater to not be accurately represented in the Respondent's monitoring wells. The March 2 - 3, 1987 CME Report stated that there has not been any site-specific hydrologic data collected to determine if the well screens are properly placed. The CME Report concluded that the wells do not appear adequate to satisfy the requirements of 40 CFR 265.91.

11. Releases of hazardous wastes and constituents at the Respondent's facility have been documented and are discussed below. The U.S. EPA Region IV Environmental Services Division (ESD) conducted sampling at Respondent's facility on February 11, 1986.

ESD collected two sets of samples from the Equalization Basin (SWMU #13). A sample of the influent contained the following: 15 volatile organic compounds (including benzene, toluene and chlorobenzene), 36 extractable organic compounds (including

naphthalene and phenol), total phenol, cyanide, and arsenic. A sludge sample collected and composited from 10 locations around the basin contained the following: benzene, tetrachloroethylene, toluene, chlorobenzene, ethyl benzene, total xylenes, cyanide, arsenic, barium, lead, and 31 extractable organic compounds (EOC's). These EOC's were detected at concentrations ranging from an estimated 300,000 ug/kg to 15,000,000 ug/kg, with 18 of the EOC's exceeding 1,000,000 ug/kg.

On April 17, 1986, ADEM Field Operations conducted sampling of Respondent's six RCRA monitoring wells as part of a Comprehensive Monitoring Evaluation. Analyses of groundwater samples taken from these wells detected the following hazardous waste constituents: Well #1: chromium (over primary drinking water standards), phenol, cyanide, copper and arsenic; Well #2: chromium (over primary drinking water standards), arsenic (at a concentration of more than twice that of any of the other wells), and copper; Well #3: fluorene, phenanthrene and cyanide; Well #4: phenol, naphthalene, cyanide, acenaphthylene, arsenic, copper, chromium, and 2,4 dimethyl phenol; Well #5: arsenic and cyanide; and Well #6: chromium (over primary drinking water standards), phenol, naphthalene, phenanthrene, cyanide, anthracene, fluoranthene, copper, arsenic, pyrene, benzo anthracene, and chrysene. On August 4, 1986, Respondent discovered a statistically significant increase in Total Organic Carbon and in Specific Conductance parameters in monitoring Well #4. Additionally, total phenols, naphthalene, acenaphthylene, cyanide and 2,4 dimethyl phenol were detected. On August 25, 1986, Respondent notified EPA and ADEM of these findings.

Respondent hired Ground Engineering and Testing Service, Inc. of Birmingham, Alabama, a private engineering firm, to investigate the Facility's Equalization Basin (SWMU #13). On August 25, 1986, the engineering firm excavated around the weir leading from this basin and discovered that an 18 inch diameter, vitrified clay pipe connected to the weir was leaking "raw waste" from two joints. Ground Engineering also noted in its letter of August 27, 1986, to Robison and Layton of Birmingham, Alabama, that the soil in the immediate vicinity of the leaking joints was discolored, and that Well #4 is located near this leaking pipe. Ground Engineering concluded that the contamination in Well #4 was due to leaking joints in this pipe. A "Groundwater Assessment Plan for the Equalization Basin" (prepared by Robison and Layton, Inc. of Birmingham, Alabama, and dated September 4, 1986) acknowledged that the leaking vitrified clay pipe "does not explain the waste specific constituents present in Well #6," or their absence in Wells #1 and #5. In the same report, Robison and Layton, Inc. speculated that the waste specific constituents in Well #6 could be due to a condensate trap on an adjacent buried coke oven gas line from a nearby facility. According

to a "Progress/Status Report Groundwater Assessment/Remedial Action Plan" generated by Respondent and dated February 6, 1987, the basin's weir and discharge pipe were removed, relocated and replaced with a "welded joint stainless line." This was completed in late October 1986.

The effluent from the Secondary Clarifier (SWMU #17) was sampled by ESD on February 11, 1986 and found to contain 10 extractable organic compounds, total phenols, and cyanide.

ESD sampled the sludge produced by the Sludge Dewatering Machine (SWMU #20) and detected the following: 13 extractable organic compounds, arsenic, cyanide, chromium, lead, mercury, zinc, chlorobenzene, and toluene.

The Polishing Pond (SWMU #22) was sampled twice by ESD (February 11, 1985). Sludge samples collected from three different locations adjacent to the influent structure to this pond contained the following: 10 extractable organic compounds (including sulfonylbisbenzene detected at a concentration of up to 60,000,000 ug/kg), 4 volatile organic compounds, cyanide, arsenic, barium, lead, zinc and mercury. Samples of the final effluent to this pond contained 10 extractable organic compounds and barium.

The Blast Furnace Emission Control Sludge Waste Pile (SWMU #24) was also sampled by ESD (February 11, 1986). Samples taken from two locations contained cyanide, chromium, lead, and zinc.

The previously referenced RFA identifies the the hazardous constituents and hazardous waste release potential for the 39 SWMUs as follows:

Low Potential for Release: SWMUs # 8, 14, 15, 16, 17, 18, 19, 20, 28, 30, 32, 33, 34, 35, and 36;

Moderate Potential for Release: SWMUs # 1, 2, 3, 5, 7, 9, 24, 25, 26, 27, 29, 31, 37, 38, and 39;

High Potential for Release: SWMUs # 4, 6, 10, 11, 12, 13, 21, 22, and 23. SWMU #13 has already experienced a significant release.

12. Hazardous wastes and/or constituents may further migrate from the Facility into the environment in the following pathways:

The September 26, 1986 ADEM Memorandum stated that the Equalization Basin (SWMU #13) and the Emergency Basin (SWMU #21) rest directly on the steeply dipping limestones of the Conasauga Formation. The bedding planes or fractures of this formation potentially could permit liquid contaminants to flow into the lower limestone aquifer. Additionally, the very low pH of the wastewater in the Equalization Basin (SWMU #13) could readily dissolve the underlying limestone ($CaCO_3$) along

any flowpath taken by the acidic waste and thereby increase the amount of wastewater that could migrate offsite. The presence of limestone pinnacles reaching to the surface increases the opportunity for acidic wastes to migrate rapidly offsite. This would be due to the absence of the mitigating effects of soil cover to retard the acidic wastes both chemically and physically. (See paragraph #8.) No evidence of surface runoff of wastes was observed during the VSI of May 9 and 10, 1989.

Sampling conducted by ADEM Field Operations on April 17, 1986, indicates that all of the downgradient wells are contaminated. The September 26, 1986 ADEM Memorandum stated that apparently seepage from the Equalization Basin (SWMU #13) has proceeded long enough that contaminants have migrated well beyond the point where a proper interim status monitoring system should have been installed. (See paragraph 10.) The ADEM Memorandum further stated that vertical flow produced by a combination of a breach in the clay liner and the relatively high basin hydraulic head might easily have allowed contaminants to pass under the nearby stream and apparent groundwater discharge point.

13. The hazardous wastes and hazardous waste constituents identified in paragraph 11 above may pose a threat to human health and the environment. The hazardous effects of substances identified in Respondet's SWMUs are described below from the Handbook of Toxic and Hazardous Chemicals and Carcinogins by Marshall Sittig (1985) and from Dangerous Properties of Industrial Materials, Seventh Edition, by N. Irving Sax and Richard J. Lewis, Sr. (1989):

> Anthracene is a skin irritant and an allergen. It is also an experimental tumorigen and neoplastigen. It has been reported in the EPA TSCA Inventory, and is on the Community Right to Know List (40 CFR Part 300).
>
> Arsenic is listed by EPA as a priority toxic pollutant, and some of its compounds are listed as hazardous substances. It is also listed by EPA as a contaminant (EPA hazardous waste number D004) when it meets the criteria for being EP Toxic (40 CFR 261.24). Arsenic is a carcinogen, having been cited as a cause of skin cancer, although the incidence is low. Skin cancer in humans is causally associated with exposure to inorganic arsenic compounds in drugs, drinking water and the occupational environment. Harmful effects and symptoms are as follows: trivalent arsenic compounds are corrosive to the skin, especially the moist mucous membranes which are most sensitive to its irritant action; conjunctiva, moist and macerated areas of the skin, eyelids, the angles of the ears, nose, mouth, and respiratory mucosa are vulnerable to the irritant effects; arsenic trioxide and pentoxide are capable of producing skin sensitization and contact dermatitis.

Barium is listed by EPA as a contaminant (EPA hazardous waste number D005) when it meets the criteria for being EP Toxic (40 CFR 261.24). When ingested or given orally, the soluble, ionized compounds exert a profound effect on all muscles (especially smooth muscles) markedly increasing their contractility. The heart rate is slowed and may stop in systole. Other effects include increased intestinal peristalsis, vascular constriction, bladder contraction, and increased voluntary muscle tension.

Benzene is listed by EPA as a hazardous waste (U019) when discarded, a priority toxic pollutant and a carcinogen. Acute exposure to benzene results in central nervous system depression; headache, dizziness, nausea, convulsions, coma, and death may result. Death has occurred from large acute exposure or as a result of ventricular fibrillation. Benzene is basically a myelotoxic agent. Recent research has shown increases in the rate of chromosomal aberrations associated with benzene myelotoxicity.

Chlorobenzene is a constituent of the listed hazardous waste F002. It is also listed by EPA as a hazardous substance and as a priority toxic pollutant. Harmful effects and symptoms include: irritation of the eyes and nose, drowsiness, incoherence, skin irritation, and liver damage.

Chromium is listed by EPA as a contaminant (EPA hazardous waste number D007) when it meets the criteria for being EP Toxic (40 CFR 261.24), and as a priority toxic pollutant. Chromium compounds in the +3 state are of low order of toxicity. In the +6 state, chromium compounds are irritants and corrosive, and can enter the body by ingestion, inhalation, and through the skin.

Chrysene is a listed hazardous waste (U050) when discarded. It is an experimental carcinogen, neoplastigen and tumorigen by skin contact.

Cyanides are listed by EPA as hazardous wastes (P030) when discarded, hazardous substances, and priority toxic pollutants. Harmful effects and symptoms include: weakness, headaches, confusion, nausea, vomiting, eye and skin irritation, and slow gasping respiration.

Inorganic Lead is listed by EPA as a contaminant (EPA hazardous waste number D008) when it meets the criteria for being EP Toxic (40 CFR 261.24), a priority toxic pollutant and (various compounds) as hazardous substances. Harmful effects and symptoms include: decreased physical fitness, fatigue, sleep disturbance, headache, aching bones and muscles, digestive symptoms (particularly constipation), abdominal pains and decreased appetite, anemia, pallor, a "lead line" on the gums, and decreased hand-grip strength.

Elemental Mercury is listed by EPA as a contaminant (EPA hazardous waste number D009) when it meets the criteria for being EP Toxic (40 CFR 261.24). Harmful effects and symptoms include: coughing, chest pains, syspnea, bronchitis, pneumonia, tremors, insomnia, irritability, indecision, headaches, fatigue, weakness, stomatitis, salivation, gastrointestinal disturbance, anorexia, weight loss, proteinuria, and irritation of eyes and skin.

Inorganic Mercury is listed by EPA as a contaminant (EPA hazardous waste number D009) when it meets the criteria for being EP Toxic (40 CFR 261.24), and a priority toxic constituents pollutant. Mercury is a primary irritant of skin and mucous membranes. It may occasionally be a skin sensitizer. Harmful effects and symptoms are as follows. Exposure to lower levels over prolonged periods produces symptom complexes that can vary widely from individual to individual. These may include weakness, loss of appetite, loss of weight, insomnia, indigestion, diarrhea, metallic taste in the mouth, increased salivation, soreness of mouth or throat, inflammation of gums, black line on the gums, loosening of teeth, irritability, loss of memory, and tremors of fingers, eyelids, lips, or tongue. More extensive exposures, either daily or one-time exposures, can produce extreme irritability, excitability, anxiety, delirium with hallucinations, melancholia, or manic depressive psychosis. Either acute or chronic exposure may produce permanent changes to affected organs and organ systems.

Naphthalene is listed by EPA as a hazardous waste (U165) when discarded, a hazardous substance, and a priority toxic pollutant. Harmful systemic effects and symptoms are as follows. Inhaling high concentrations of naphthalene vapor or ingesting naphthalene may cause intravascular hemolysis and its consequences. Initial symptoms include eye irritation, headache, confusion, excitement, malaise, profuse sweating, nausea, vomiting, abdominal pain, and irritation of the bladder. There may be progressive jaundice, hematuria, hemoglobinuria, renal tubular blockage, and acute renal shutdown. Locally, naphthalene is a primary irritant and causes erythema and dermatitis upon repeated contact. It is also an allergen and may produce dermatitis in hypersensitive individuals.

Phenanthrene is moderately toxic by ingestion. It is also a human skin photosensitizer, and an experimental neoplastigen and tumorigen by skin contact.

Phenol is listed by EPA as a hazardous waste (U188) when discarded, a constituent in EPA hazardous waste K087, a hazardous substance, and a priority toxic pollutant. Harmful effects and

symptoms are as follows. Systemic effects may occur from any route of exposure. These include paleness, weakness, sweating, headache, ringing of the ears, shock, cyanosis, excitement, frothing of the nose and mouth, dark colored urine, and death. If death does not occur, kidney damage may occur. Locally, phenol has a marked corrosive effect on any tissue. When it comes in contact with the eyes it may cause severe damage and blindness. If the chemical is not removed promptly, it may cause a severe burn or systemic poisoning.

Pyrene is moderately toxic by ingestion and intraperitoneal routes. It is also a skin irritant and an experimental tumorigen.

Tetrachloroethylene is a constituent of the listed hazardous waste F001, a priority toxic pollutant and a carcinogen. Acute exposure to tetrachloroethylene may cause central nervous system depression, hepatic injury, and anesthetic death. Signs and symptoms of overexposure include malaise, dizziness, headache, increased perspiration, fatigue, staggering gait, and slowing of mental ability. Locally, repeated contact may cause a dry, scaly, and fissured dermatitis.

Toluene is a constituent of the listed hazardous waste F005, a hazardous substance, and a priority toxic pollutant. Acute exposure to toluene primarily causes central nervous system depression. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness, poor coordination with staggering gait, skin parestesia, collapse and coma. Locally, toluene may cause irritation of the eyes, respiratory tract, and skin.

Xylene is listed by EPA as a hazardous waste (U239) when discarded. It is mildly toxic by ingestion and inhalation, and moderately toxic by intraperitoneal and subcutaneous routes. It is an experimental teratogen.

Zinc has the following harmful effects and symptoms by ingestion: cough, dyspnea and sweating. It is a a human skin irritant.

14. Respondent's Biological Treatment Facility (BTF) is located in the northern portion of the City of Birmingham where there is a mixture of residential and industrial usage. The BTF is approximately a quarter mile to the west and northwest of Tarrant City, and approximately a half a mile to the southeast of a residential neighborhood. Target populations therefore include people living in nearby housing and working in the adjacent industries.

V. CONCLUSIONS OF LAW AND DETERMINATIONS

Based on the Findings of Fact set out above, and after consideration of the administrative record, the Director of the Waste Management Division, EPA Region IV, has made the following conclusions of law and determinations:

1. Respondent is a "person" within the meaning of Section 1004(15) of RCRA, 42 U.S.C. Section 6903(15):

2. Respondent is the owner or operator of a facility that has operated subject to Section 3005(e) of RCRA, 42 U.S.C. Section 6925(e).

3. Certain wastes and constituents found at Respondent's facility are hazardous wastes or hazardous constituents thereof as defined by Section 1004(5) of RCRA, 42 U.S.C. Section 6903(5). These are also hazardous wastes or hazardous constituents within the meaning of Section 3001 of RCRA, 42 U.S.C. Section 6921 and 40 CFR Part 261.

4. There is or has been a release of hazardous wastes and/or hazardous constituents into the environment from Respondent's facility.

5. The actions required by this Order are necessary to protect human health and/or the environment.

VI. WORK TO BE PERFORMED

Pursuant to Section 3008(h) of RCRA, 42 U.S.C. Section 6928(h), Respondent is hereby ordered to perform the following tasks in the manner and by the dates specified herein. All work undertaken pursuant to this Order shall be performed in a manner consistent with, at a minimum: the attached Scope(s) of Work; the EPA-approved Interim Measures Workplan, RCRA Facility Investigation (RFI) Workplan, Corrective Measures Implementation Program Plan, and other Workplans; RCRA and its implementing regulations; and applicable EPA guidance documents. Relevant guidance may include, but is not limited to, the "RCRA Facility Investigation (RFI) Guidance" (EPA 530/SW-87-001), "RCRA Groundwater Monitoring Technical Enforcement Guidance Document" (OSWER Directive 9950.1, September 1986), "Test Methods for Evaluating Solid Waste" (SW-846, November 1986), and "Construction Quality Assurance for Hazardous Waste Land Disposal Facilities" (EPA 530/SW-85-031, July 1986.)

RCRA Facility Investigation (RFI)

1. Within 45 days of the effective date of this Order, Respondent shall submit to EPA and ADEM a work plan for an RFI. The RFI Work Plan and activities conducted pursuant to this Order are subject to approval by EPA and shall be performed in a manner consistent with the RFI Scope of Work contained in Attachment A. Attachment A to this Order is incorporated by reference as if fully set forth herein. The RFI Work Plan shall be developed in accordance with, at a minimum, RCRA, its implementing regulations, and EPA guidance documents determined by EPA to be relevant, including but not limited to, the "RCRA Facility Investigation (RFI) Guidance Manual--Draft", (OSWER 9502.00-6c, EPA 530/SW-87-001, July 1987).

2. The RFI Work Plan shall be designed to define the presence magnitude, extent, direction and rate of movement of any hazardous wastes or hazardous constituents, within and beyond the Facility boundary. The RFI Work Plan shall document the procedures Respondent shall use to conduct those investigations necessary to: (1) characterize the source(s) of contamination; (2) determine the nature, extent, and rate of movement of hazardous waste constituents on and off Respondent's property; (3) determine the possible routes of migration of hazardous wastes and hazardous constituents on and off the Facility, including characterization of the geology and hydrology of the Facility which delineates possible routes of migration; (4) determine the extent and potential for migration of hazardous wastes and hazardous constituents through each of the environmental media; (5) identify actual or potential receptors, and (6) develop alternative options from which EPA will select a corrective measure to remediate the observed and potential contamination. The Work Plan shall include a specific schedule for implementation of all activities described in the Work Plan.

3. In accordance with Attachment A herein, the RFI Work Plan shall include: (a) a Project Management Plan, which includes a schedule for implementation of the Work Plan; including preparation and submission of preliminary and final reports to EPA; (b) a Data Collection Quality Assurance Plan; (c) a specific Data Management Plan; (d) a Health and Safety Plan; and (e) a Community Relations Plan.

CORRECTIVE MEASURES STUDY (CMS)

4. Upon completion of the RFI, the Respondent shall conduct a CMS in accordance with CMS Scope of Work in Attachment B. Attachment B to this Order is incorporated by reference as if fully set forth herein.

CORRECTIVE MEASURES IMPLEMENTATION (CMI)

5. If Respondent has complied with the terms of this Order, after public comment and EPA's selection of the corrective measure to be

implemented, EPA shall provide a 90-day period for negotiation of an administrative order on consent [or a judicial consent decree] for implementation of the corrective measure. If agreement is not reached during this period, EPA reserves all rights to implement the corrective measure or other remedial response and to take any other appropriate actions under RCRA, the Comprehensive Environmental Response Compensation and Liability Act of 1980 (CERCLA), or any other available legal authority, including issuance of a unilateral administrative order directing Respondent to implement the corrective measure.

SUBMISSIONS/AGENCY APPROVAL/ADDITIONAL WORK

6. Within 10 days of approval or modification by EPA of the Work Plans, Respondent shall commence work and implement the tasks required by the Work Plans submitted pursuant to the Scope(s) of Work contained in Attachments A and B in accordance with the standards, specifications and schedule stated in the Work Plans as approved or modified by EPA.

7. Beginning with the month following the effective date of this Order, Respondent shall provide EPA and ADEM with progress reports for each month on the tenth day of the following month. The progress reports shall be developed as specified in the Scopes of Work contained in Attachment A and B hereto. At a minimum, these progress reports shall: (1) describe all activities undertaken in achieving compliance with this Order; (2) describe all plans and activities completed during the past month, as well as the actions which are scheduled for the next month; (3) identify any requirements under this Order that were not completed as provided and any problem areas and anticipated problem areas in complying with this Order; and (4) include the results of sampling and tests and other data generated pursuant to the Work Plan(s).

8. Respondent shall provide draft and final RFI and CMS reports to EPA and ADEM in accordance with the schedules contained in this Order and its attachments.

9. EPA will review all draft and final reports or work plans, and notify Respondent in writing of EPA's approval, disapproval or modification of the reports, work plans, or any part thereof. In the event of any disapproval, EPA shall specify in writing the deficiencies and reasons for such disapproval. With the receipt of EPA's disapproval of any reports or work plans, Respondent shall amend and submit revised reports or work plans which EPA will approve or modify. Reports, as approved or modified, shall be deemed incorporated into and part of this Order.

10. Two (2) copies of all documents, including work plans, preliminary and final reports, progress reports, and other correspondence to be submitted pursuant to this Order shall be hand delivered or sent by

certified mail, return receipt requested, to the Project Coordinator designated pursuant to Section XII of this Order.

11. Consistent with the objectives of this Order, EPA may determine that certain tasks, including investigatory work or engineering evaluations, are necessary in addition to the tasks and deliverables included in the Plans. If EPA determines that such additional work is necessary, EPA will request in writing that Respondent perform the additional work in this situation and shall specify the basis and reasons for EPA's determination that the additional work is necessary. Within fifteen (15) days after the receipt of such request, Respondent shall have the opportunity to meet with EPA to discuss the additional work EPA has requested and to propose alternatives. Within fifteen (15) days of this meeting, or the receipt of EPA's request for additional work, whichever is later, Respondent shall commence with the additional work EPA has requested according to an EPA approved work plan. All additional work performed by Respondent under this paragraph shall be performed in a manner consistent with this Order.

12. All work performed pursuant to this Order shall be under the direction and supervision of a professional engineer licensed in the State of Alabama with expertise in hazardous waste site investigations and remediation. Within ten (10) days of the effective date of this Order, Respondent shall notify EPA and ADEM in writing of the name, title, and qualifications of the engineer, and of any contractors, or subcontractors and their personnel to be used in carrying out the terms of the Order.

VII. QUALITY ASSURANCE

Throughout all sample collections and analysis activities, Respondent shall use EPA-approved quality assurance, quality control, and chain-of-custody procedures, as specified in the approved Plans. In addition, Respondent shall:

1. Consult with EPA in planning for, and prior to, field sampling and laboratory analysis.

2. Inform the EPA Project Coordinator, ten (10) days in advance of which laboratories will be used by Respondent and ensure that EPA personnel and EPA authorized representatives have reasonable access to the laboratories and personnel used for analyses.

3. Ensure that laboratories used by Respondent for analyses perform such analyses according to EPA methods included in "Test Methods for Evaluating Solid Waste" (SW-846, November 1986 - 3rd. Edition) or other methods deemed satisfactory to EPA. If methods other than EPA methods are to be used, Respondent shall submit all protocols to be used for analyses to EPA for approval within ten days prior to the commencement of analyses.

4. Ensure that laboratories used by Respondent for analyses participate in a quality assurance/quality control program equivalent to that which is followed by EPA. As part of such a program, and upon request by EPA, such laboratories shall perform analysis of samples provided by EPA to demonstrate the quality of the analytical data.

5. Use the EPA guidance to evaluate all data to be used in the proposed plans including data collected prior to EPA approval of these plans required by Section VI of this Order. This evaluation shall be provided to EPA as part of the plans required by Section VI of this Order, and shall be updated as necessary or as required by EPA.

VIII. PUBLIC COMMENT AND PARTICIPATION

1. Following proposed modification or proposed approval by EPA of a CMS Final Report, EPA shall make the RFI Final Report (or summary of report), the CMS Final Report (or summary of report), and EPA's justification for selecting the proposed remedy available to the public for review and comment for at least twenty-one (21) days.

2. Following the public review and comment period, EPA will notify Respondent which alternative corrective measure is selected, if any. If the Corrective Measure recommended in the CMS Final Report is not the corrective measure selected by EPA after consideration of public comments, EPA will inform Respondent in writing of the reasons for such decision and the Respondent shall modify the CMS Final Report as directed by EPA.

IX. ON-SITE AND OFF-SITE ACCESS

1. Respondent shall provide access to EPA or its designated representatives to enter and freely move about all property at the Facility during the effective dates of the Order for the purposes of, inter alia: interviewing Facility personnel and contractors; inspecting records, operating logs, and contracts related to the Facility; reviewing the progress of the Respondent in carrying out the terms of this Order; conducting such sampling, tests, or monitoring as EPA or its representatives deem necessary; using a camera, sound recording, or other documentary type equipment; and verifying the reports and data submitted to EPA by the Respondent. The Respondent shall permit such persons to inspect and copy all records, files, photographs, documents, and other writings, including all sampling and monitoring data, that pertain to work undertaken pursuant to this Order. The Respondent shall comply with all approved health and safety plans.

2. To the extent that work required by this Order, or by any approved Work Plans prepared pursuant hereto must be done on property not owned or controlled by the Respondent, Respondent shall use their best efforts to

obtain site access agreements from the present owner(s) of such property within 10 days of approval of any Work Plan for which site access is required. Best efforts as used in this Section shall include, at a minimum, a certified letter from Respondent to the present owners of such property requesting access agreements to permit Respondent, EPA and its authorized representatives to access such property. Any such access agreement shall be incorporated by reference into this Order. In the event that agreements for site access are not obtained within 10 days upon approval of the work plans which identify the need for access, Respondent shall notify EPA in writing regarding both the efforts undertaken to obtain access and its failure to obtain such agreements within 5 days thereafter. In the event that EPA obtains access, Respondent shall undertake EPA approved work on such property.

3. Nothing in this section limits or otherwise affects EPA's right of access and entry pursuant to applicable law, including but not limited to RCRA and CERCLA.

X. SAMPLING AND DATA/DOCUMENT AVAILABILITY

1. Respondent shall submit to EPA and ADEM all results of sampling, and/or tests, or other data generated by or on behalf of the Respondent in accordance with the requirements of this Order and its attachments.

2. Respondent shall notify EPA and ADEM at least ten (10) days before engaging in any field activities such as any well drilling, installation of equipment, or sampling. At the request of EPA, Respondent shall provide or allow EPA or its authorized representative to take split or duplicates of all samples collected by Respondent pursuant to this Order. Similarly, at the request of Respondent, EPA will allow Respondent or their authorized representatives to take split or duplicates of all samples collected by EPA under this Order. EPA will notify Respondent at least ten (10) days before conducting any sampling under this Order.

3. All information and data shall be available to the public except to the extent that it is confidential business information. Disputes over confidentiality shall be covered by 40 CFR Part 2. Physical or analytical data shall not be deemed confidential.

XI. RECORD PRESERVATION

Respondent shall preserve, during the pendency of this Order and for a minimum of six (6) years after approval or modification of the final CMS report, all records and documents in their possession or in the possession of their divisions, employees, agents or consultants or contractors which relate in any way to this Order or to hazardous waste management and disposal at the Facility. At the conclusion of six (6)

years, Respondent shall then make such records available to EPA for inspection or shall provide copies of any such records to EPA. Respondent shall notify EPA 30 days prior to the destruction of any such records, and shall provide EPA with the opportunity to take possession of any such records.

XII. PROJECT COORDINATOR

1. Within (ten) 10 days of the effective date of this Order, EPA and Respondent shall each designate a Project Coordinator. Respondent shall notify EPA in writing of the Project Coordinator it has selected. Each Project Coordinator shall be responsible for overseeing the implementation of this Order. The EPA Project Coordinator will be EPA's designated representative. All communications between Respondent and EPA, and all documents, reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Order, shall be directed through the Project Coordinators.

2. Respondent and EPA shall provide at least ten (10) days written notice prior to changing Project Coordinators.

3. The absence of the EPA Project Coordinator from the Facility shall not be cause for the stoppage of work.

4. If EPA determines that activities in compliance or noncompliance with this Order, have caused or may cause a release of hazardous waste or hazardous constituents, hazardous substances, pollutants, or contaminants, or a threat or potential threat to the public health or to the environment, EPA may order Respondent to stop further implementation of the Order for such a period of time as may be needed to abate any such release or threat and/or undertake any action which EPA determines is necessary to abate such a release or threat.

XIII. NOTIFICATION

1. Unless otherwise specified, reports, notices or other submissions required under this Order shall be in writing and shall be hand delivered or sent by certified mail, return receipt requested to:

Allan E. Antley, Chief
Compliance Section
RCRA Branch
U.S. EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

Mrs. Sue Robertson, Chief
Land Division
Alabama Department of
Environmental Management
1751 Congressman Dickinson Dr.
Montgomery, Alabama 36130

2. Documents to be submitted to Respondent will be sent to:

Charles Jones
Manager of Environmental Affairs
Sloss Industries Corporation
P.O. Box 5327
3500 35th Avenue North
Birmingham, AL 35207

XIV. PENALTIES FOR NONCOMPLIANCE

The failure or refusal to carry out the terms of this Order in a manner deemed satisfactory subjects Respondent to a civil penalty in an amount not to exceed $25,000 for each day of noncompliance with this Order in accordance with Section 3008(h) of RCRA, 42 U.S.C. Section 6928(h).

XV. DISPUTE RESOLUTION

1. If Respondent disagrees, in whole or in part, with any EPA disapproval or other decision or directive made by EPA pursuant to this Order, Respondent shall notify EPA in writing of its objections and the basis therefore within fifteen (15) calendar days of receipt of EPA's disapproval, decision or directive. Said notice shall specify the following: the points in dispute; the position Respondent maintains should be adopted as consistent with the requirements of the Order; the basis for Respondent's position; and any matters which Respondent considers necessary for EPA's determination. Within fifteen (15) business days of EPA's receipt of such written notice, EPA shall provide to Respondent its final decision on the pending dispute which shall be binding upon parties to this Order.

2. The existence of a dispute as defined herein, and EPA's consideration of such matters as placed into dispute shall not excuse, toll or suspend any compliance obligation or deadline required pursuant to this Order during the pendency of the dispute resolution process.

3. Notwithstanding any other provisions of this Order, no action or decision by EPA, including without limitation, decisions of the Regional Administrator, Region IV, pursuant to this Order shall constitute final agency action giving rise to any rights to judicial review prior to EPA's initiation of judicial action to compel Respondent's compliance with the mandate(s) of this Order.

XVI. RESERVATION OF RIGHTS

1. This Order shall not be construed as a waiver or limitation of any rights, remedies, powers and/or authorities which EPA has under RCRA, CERCLA, or any other statutory or common law enforcement authority of the United States of America.

2. EPA hereby reserves all of its statutory and regulatory powers, authorities, rights, remedies, both legal and equitable, which may pertain to Respondent's failure to comply with any applicable laws and regulations and with any of the requirements of this Order, including but not limited to: the right both to disapprove of work performed by the Respondent and to request that Respondent perform tasks in addition to those stated in the Work Plans; the right to perform any portion of the work herein or any additional site characterization, studies, and response/corrective actions as it deems necessary; the authority to undertake removal actions or remedial actions; the right to seek reimbursement from Respondent for such additional costs incurred by the United States; and the right to take additional enforcement action pursuant to Section 3008(h) of RCRA should the Agency determine that such actions are warranted.

3. Compliance by Respondent with the terms of this Order shall not relieve Respondent of its obligations to comply with RCRA or any other applicable State or Federal law or regulation including without limitation, any conditions of a permit issued under RCRA or any other applicable State or Federal law or regulation.

XVII. OTHER CLAIMS

Nothing in this Order shall constitute or be construed as a release from any claim, cause of action or demand in law or equity against any person, firm, partnership, or corporation for any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous constituents, hazardous substances, hazardous wastes, pollutants, or contaminants found at, taken to, or taken from the facility.

XVIII. OTHER APPLICABLE LAWS

All actions required to be taken pursuant to this Order shall be undertaken in accordance with the requirements of all applicable local, State, and Federal laws and regulations. Respondent shall obtain or cause its representatives to obtain all permits and approvals necessary under such laws and regulations.

XIX. INDEMNIFICATION OF THE UNITED STATES GOVERNMENT

Respondent shall indemnify and save and hold harmless the United States Government, its agencies, departments, agents, and employees from any and all claims or causes of action arising from or on account of acts or omissions of Respondent or its agents, independent contractors, receivers, trustees, and assigns in carrying out activities required by this Order. The United States government shall not be held out or construed to be a party to any contract entered into by Respondent in carrying out activities pursuant to this Order.

XX. FINANCIAL ASSURANCE

1. Within sixty (60) calendar days of the effective date of this Order, Respondent shall present to EPA for review a summary and analysis of Respondent's existing instruments for financial assurance provisions as established by EPA regulations 40 CFR Part 265.143 [ADEM Administrative Code 14-6-.08(4)] and 40 CFR 265.145 [ADEM Administrative code 14-6-.08(5)] and/or any other instruments that have been provided previously by Respondent for any purpose related to liability coverage, closure, and post-closure care of their facility. Respondent shall also provide a copy of each instrument for which a summary and analysis is being provided in accordance with this Section. The analysis shall describe clearly, but shall not be limited to, the following items:

a. The nature of these instruments and the extent to which they are available for access by EPA for the purpose of ensuring the completion of all requirements established pursuant to this Order, including all Tasks described in the Attachments hereto; and

b. Precise dollar amounts that are available to EPA, and schedules for their availability, for the above-stated purposes. The amount of funds available through these instruments must be no less than the sum of funds that would be available if a separate mechanism had been established and maintained for the financial assurance of closure, post-closure, liability coverage, and the actions required under this Order.

2. EPA will review the submittal and will provide notice to the Respondent as to the adequacy of its existing financial assurance measures for the above-stated purposes, and shall indicate therein what additional financial assurances, if any, must be provided by Respondent to ensure compliance with the terms of this Order.

3. Within thirty (30) days of Respondent's receipt of a notice from EPA that Respondent's financial assurance measures are inadequate,

Respondent shall establish an irrevocable standby letter of credit or shall otherwise provide [per 40 CFR Part 265.143/ADEM Administrative Code 14-6-.08(4)] additional financial assurances according to the terms provided in said notice. Such additional financial assurance measures shall be available to EPA to perform such terms or conditions established pursuant to the Order, provided that prior to drawing upon any such assurance measure, EPA shall notify Respondent in writing of its alleged failure to perform the requirements of this Order and provide Respondent with a reasonable time period of not less than fifteen (15) calendar days within which to remedy the alleged nonperformance.

4. This Order in no way negates Respondent's obligation to establish and/or maintain financial assurance for closure and post-closure care under 40 CFR Parts 265.143 [ADEM Administrative Code 14-6-.08(4)] and 40 CFR 265.145 [ADEM Administrative code 14-6-.08(5)].

XXI. SUBSEQUENT MODIFICATION

1. This Order may be amended by EPA. Such amendments shall be in writing, shall have as their effective date the date on which they are signed by EPA, and shall be incorporated into this Order.

2. Any reports, plans, specifications, schedules, and attachments required by this Order are, upon approval or modification by EPA, incorporated into this Order. Any noncompliance with such EPA-approved reports, plans, specifications, schedules, and attachments shall be considered a violation of the requirements of this Order and shall subject the Respondent to the statutory penalty provisions referenced in Section XIV of this Order and other sanctions.

3. No informal advice, guidance, suggestions, or comments by EPA regarding reports, plans, specifications, schedule and any other writing submitted to Respondent will be construed as relieving Respondent of its obligation to obtain written approval, if and when required by this Order.

XXII. SEVERABILITY

If any provision or authority of this Order or the application of this Order to any party or circumstances is held by any judicial or administrative authority to be invalid, the application of such provisions to other parties or circumstances and the remainder of the Order shall remain in force and shall not be affected thereby.

XXIII. TERMINATION AND SATISFACTION

The provisions of this Order shall be deemed satisfied upon Respondent's receipt of written notice from EPA that Respondent has demonstrated, to the satisfaction of EPA, that the terms of this Order, including any additional tasks which, subject to the limitations set forth

herein, Respondent is ordered to undertake, have been satisfactorily completed. EPA shall issue such notices after receipt of notice by Respondent that they have completed the requirements of the Order.

XXIV. NOTICE OF OPPORTUNITY TO REQUEST A HEARING

In accordance with Section 3008(b) of RCRA, 42 U.S.C. 6928(b), the Initial Administrative Order shall become final unless Respondent files a response and requests a public hearing in writing no later than thirty (30) days after service of the Initial Administrative Order in accordance with 40 CFR Part 24.

(a) The response and request for hearing must be filed with

Regional Hearing Clerk
345 Courtland Street, N.E.
Atlanta, Georgia 30365

A copy of the response and request for a hearing and copies of any subsequent documents filed in this action should be sent to Office of Regional Counsel, at the same address. The response must specify each factual or legal determination or relief provision that is contested and for which the hearing is requested, raising all issues regarding appropriateness of the terms of the Order including any proposals for modifications of the Order. Respondent must also submit affidavits and exhibits that support any of its allegations, claims or defenses at the time that it files a response. Any hearings on the Order will be conducted in accordance with the attached provisions.

The Order directs the respondent to undertake only an RFI and a CMS, which includes monitoring, surveys, testing, information gathering, analyses, and studies (including studies designed to develop recommendations for appropriate corrective measures); therefore, according to 40 CFR 24.08, the appropriate hearing procedure is that set forth in Subpart B. Respondent may include with its response to the Order and request for a hearing a statement indicating whether it believes the Subpart C hearing procedure should be employed for the requested hearing and the reason(s) therefore.

(b) Respondent's failure to file a written response and request a hearing within thirty (30) days of service of this Order will constitute a binding admission of all allegations contained in the Order and a waiver of Respondent's right to a hearing.

XXV. SETTLEMENT CONFERENCE

Whether or not Respondent requests a hearing, an informal conference may be requested in order to discuss the facts of this case and to arrive at settlement. To request an informal conference contact:

Zylpha Pryor
Office of Regional Counsel
EPA, Region IV
345 Courtland Street, N.E.
Atlanta, Georgia 30365

A request for an informal conference does not extend the thirty (30) day period during which a written response and request for a hearing must be submitted. The informal conference procedure may be pursued simultaneously with the adjudicatory hearing procedure.

XXVI. SURVIVABILITY/PERMIT INTEGRATION

Subsequent to the issuance of this Order, A RCRA permit may be issued to the facility incorporating the requirements of this Order by reference into the permit.

Any requirements of this Order shall not terminate upon the issuance of a RCRA permit unless the requirements are expressly replaced by more stringent requirements in the permit.

XXVII. EFFECTIVE DATE

This Order shall become effective thirty (30) days after it is served unless Respondent requests a public hearing pursuant to RCRA Section 3008(b), 42 U.S.C. Section 6928(b).

IT IS SO ORDERED:

BY: Don Guinyard 9/29/89

Patrick M. Tobin, Director
Waste Management Division
U.S. Environmental Protection Agency
Region IV

Date

Effective Date:

CERTIFICATE OF SERVICE

I hereby certify that I have caused a copy of the foregoing Administrative Order to be served upon the person designated below on the date below, by causing said copy to be deposited in the U.S. Mail First Class (certified mail: return receipt requested, postage prepaid) in Atlanta, Georgia, in an envelope addressed to:

D. R. Wedell, President
Sloss Industries Corp.
P.O. Box 5327
3500 35th Avenue, North
Birmingham, Alabama 35207

I have further caused the original and one copy of the Administrative Order and this certification of service to be filed with the Regional Hearing Clerk, United States Environmental Protection Agency, Region IV, 345 Courtland Street, N.E., Atlanta, Georgia 30365 on the date specified below.

These are said persons' last known address to the subscriber.

Date this 19th day of September 1989.

Angela Teagle
Compliance Clerk
Waste Compliance Section

Attachment A

ATTACHMENT A

SCOPE OF WORK FOR A RCRA FACILITY INVESTIGATION (RFI)

AT

SLOSS INDUSTRIES INCORPORATED,

BIRMINGHAM, ALABAMA

An RFI is to determine the nature and extent of releases of hazardous wastes or constituents from regulated units, solid waste management units, and other source areas at the Facility and to gather all necessary data to support the Corrective Measures Study (CMS). The Respondent shall furnish all personnel, materials, and services necessary for, or incidental to, performing the RCRA remedial investigation at SLOSS INDUSTRIES, INCORPORATED, Birmingham, Alabama.

SCOPE

The RFI consists of seven tasks:

Task I: Description of Current Conditions
- A. Facility Background
- B. Nature and Extent of Contamination
- C. Implementation of Interim Measures

Task II: Preinvestigation Evaluation of Corrective Measures Technologies

Task III: RFI Work Plan Requirements
- A. Project Management Plan
- B. Data Collection Quality Assurance Plan
- C. Data Management Plan
- D. Health and Safety Plan
- E. Community Relations Plan

Task IV: Facility Investigation
- A. Environmental Setting
- B. Source Characterization
- C. Contamination Characterization
- D. Potential Receptor Identification

Task V: Investigation Analysis
- A. Data Analysis
- B. Protection Standards
- C. Draft and Final Reports

Task VI: Laboratory and Bench-Scale Studies

Task VII: Reports
- A. Preliminary and Work Plan
- B. Progress
- C. Draft and Final

TASK I: DESCRIPTION OF CURRENT CONDITIONS

The Respondent shall submit to EPA and ADEM for EPA review and approval, a report providing the background information pertinent to the Facility, plus contamination and interim measures as set forth below. The data gathered during any previous investigations, including but not limited to, the RFA, or inspections and other relevant data shall be included.

A. Facility Background

The Respondent's report shall summarize the regional location, pertinent boundary features, general Facility physiography, hydrogeology, and historical use of the Facility for the treatment, storage or disposal of solid and hazardous waste. The Respondent's report shall include:

1. Map(s) depicting the following:

   a. General geographic location;

   b. Property lines, with the owners of all adjacent property clearly indicated;

   c. Topography and surface drainage depicting all waterways, wetlands, floodplains, water features, drainage patterns, and surface water containment areas. The map shall show contours at 10 foot intervals with 5 foot supplementals and will clearly show the pattern of surface water flow in the vicinity of and from each operational unit and solid waste management units. The scale of the map should be a maximum scale of 1 inch equals 200 feet;

   d. All tanks, buildings, utilities, paved areas, easements, right-of-ways, and other features;

   e. All solid or hazardous waste treatment, storage or disposal areas active after November 19, 1980;

   f. All known past solid or hazardous waste treatment, storage or disposal areas regardless of whether they were active on November 19, 1980.

   g. All known past and present product and waste underground tanks or piping;

   h. Surrounding land uses (residential, commercial, agricultural, recreational); and

i. The location of all production and groundwater monitoring wells within a 3 mile radius of the site. These wells shall be clearly labeled and ground and top of casing elevations and construction details included (these elevations and details may be included as an attachment).

j. Cross-sections of the Facility including but not limited to solid and hazardous waste management units.

k. Aerial photographs of the entire facility.

All maps shall be consistent with the requirements set forth in 40 CFR Part 270.14(b)(19)/ADEM Administrative Code 14-8-.02(5)(B)18, and be of sufficient detail and accuracy to locate and report all current and future work performed at the site;

2. A history and description of ownership and operation, solid and hazardous waste generation, treatment, storage and disposal activities at the Facility;

3. Approximate dates or periods of past product and waste spills, identification of the materials spilled, the amount spilled, the location where spilled, and a description of the response actions conducted (local, state, or federal response units or private parties), including any inspection reports or technical reports generated as a result of the response; and

4. A summary of past permits requested and/or received, any enforcement actions and their subsequent responses and a list of documents and studies prepared for the Facility.

B. Nature and Extent of Contamination

The Respondent shall prepare and submit to EPA and ADEM, for EPA review and approval, a preliminary report describing the existing information on the nature and extent of contamination.

1. The Respondent's report shall summarize all possible source areas of contamination. This, at a minimum, should include all regulated units, solid waste management units, spill areas, and other suspected source areas of contamination. For each area, the Respondent shall identify the following:

a. Location of unit/area (which shall be depicted on a Facility map);

b. Quantities of solid and hazardous wastes;

c. Hazardous waste or constituents, to the extent known for each area; and

d. Identification of areas where additional information is necessary.

2. The Respondent shall prepare an assessment and description of the existing degree and extent of contamination. This should include:

a. Available monitoring data, sampling results and qualitative information on locations and levels of contamination at the Facility, including both an areal and cross-sectional view of plume extent (define a zero line);

b. All potential migration pathways including information on geology, pedology, hydrogeology, physiography, hydrology, water quality, meteorology, and air quality; and

c. The potential impact(s) on human health and the environment, including demography, groundwater and surface water use, and land use.

TASK II: PRE-INVESTIGATION EVALUATION OF CORRECTIVE MEASURE TECHNOLOGIES

Prior to starting the Facility investigation, the Respondent shall submit to EPA and ADEM a report that identifies the potential corrective measures technologies that may be used on-site or off-site for the containment, treatment, remediation, and/or disposal of contamination. This report shall also identify any field data that needs to be collected in the Facility investigation to facilitate the evaluation and selection of the final corrective measure or measures (e.g., compatibility of waste and construction materials, information to evaluate effectiveness, treatability of wastes, etc.). This report shall be submitted with the Description of Current Situation (Task I) report.

TASK III: RFI WORK PLAN REQUIREMENTS

The Respondent shall prepare an RFI Work Plan. This RFI work plan shall include the development of several plans, which shall be prepared concurrently. During the RFI, it may be necessary to revise the RFI Work Plan to increase or decrease the detail of information collected to accommodate the Facility specific situation. The RFI Work Plan includes the following:

A. Project Management Plan

The Respondent shall prepare a Project Management Plan which will include a discussion of the technical approach, schedules, budget, and personnel. The Project Management Plan will also include a description of qualifications of personnel performing or directing the RFI, including contractor personnel. This plan shall also document the overall management approach to the RFI.

B. Data Collection Quality Assurance Plan

The Respondent shall prepare a plan to document all monitoring procedures: sampling, field measurements and sample analysis performed during the investigation to characterize the environmental setting, source, and contamination, so as to ensure that all information, data and resulting decisions are technically sound, statistically valid, and properly documented.

1. Data Collection Strategy

The strategy section of the Data Collection Quality Assurance Plan shall include but not be limited to the following:

a. Description of the intended uses for the data, and the necessary level of precision and accuracy for these intended uses;

b. Description of methods and procedures to be used to assess the precision, accuracy and completeness of the measurements data;

c. Description of the rationale used to assure that the data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition or an environmental condition. Examples of factors which shall be considered and discussed include:

i) Environmental conditions at the time of sampling;

ii) Number of sampling points;

iii) Representativeness of selected media; and

iv) Representativeness of selected analytical parameters.

d. Description of the measures to be taken to assure that the following data sets can be compared to each other:

i) RFI data generated by the Respondent over some time period;

ii) RFI data generated by an outside laboratory or consultant versus data generated by the Respondent;

iii) Data generated by separate consultants or laboratories, and

iv) Data generated by an outside consultant or laboratory over some time period.

e. Details relating to the schedule and information to be provided in quality assurance reports. The reports should include but not be limited to:

i) Periodic assessment of measurement data accuracy, precision, and completeness;

ii) Results of performance audits;

iii) Results of system audits;

iv) Significant quality assurance problems and recommended solutions; and

v) Resolutions of previously stated problems.

2. Sampling

The Sampling section of the Data Collection Quality Assurance Plan shall discuss:

a. Selecting appropriate sampling locations, depths, etc.;

b. Providing a statistically sufficient number of sampling sites;

c. Measuring all necessary ancillary data;

d. Determining conditions under which sampling should be conducted;

e. Determining which media are to be sampled (e.g., groundwater, air, soil, sediment, etc.);

f. Determining which parameters are to be measured and where;

g. Selecting the frequency of sampling and length of sampling period;

h. Selecting the types of sample (e.g., composites vs. grabs) and number of samples to be collected;

i. Measures to be taken to prevent contamination of the sampling equipment and cross contamination between sampling points;

j. Documenting field sampling operations and procedures, including:

i) Documentation of procedures for preparation of reagents or supplies which become an integral part of the sample (e.g., filters, and adsorbing reagents);

ii) Procedures and form for recording the exact location and specific considerations associated with sample acquisition;

iii) Documentation of specific sample preservation method;

iv) Calibration of field devices;

v) Collection of replicate samples;

vi) Submission of field-biased blanks, where appropriate;

vii) Potential interferences present at the Facility;

viii) Construction materials and techniques, associated with monitoring wells and piezometers;

ix) Field equipment and sample containers listing;

x) Sampling order; and

xi) Decontamination procedures.

k. Selecting appropriate sample containers;

l. Sample preservations; and

m. Chain-of-custody, including;

i) Standardized field tracking reporting forms to establish sample custody in the field prior to and during shipment; and

ii) Pre-prepared sample labels containing all information necessary for effective sample tracking.

3. Field Measurements

The Field Measurements section of the Data Collection Quality Assurance Plan shall discuss:

a. Selecting appropriate field measurement locations, depths, etc.;

b. Providing a statistically sufficient number of field measurements;

c. Measuring all necessary ancillary data;

d. Determining conditions under which field measurements should be conducted;

e. Determining which media are to be addressed by appropriate field measuresments (e.g., groundwater, air, soil, etc.);

f. Determining which parameters are to be measured and where;

g. Selecting the frequency of field measurement and length of field measurements period; and

h. Documenting field measurement operations and procedures, including:

i) Procedures and forms for recording raw data and the exact location, time, and Facility-specific considerations associated with the data acquisition;

ii) Calibration of field devices;

iii) Collection of replicate measurements;

iv) Submission of field-biased blanks, where appropriate;

v) Potential interferences present at the Facility;

vi) Construction materials and techniques associated with monitoring wells and piezometers used to collect field data;

vii) Field equipment listing;

viii) Order in which field measurements were made; and

ix) Decontamination procedures.

4. Sample Analysis

The Sample Analysis section of the Data Collection Quality Assurance Plan shall specify the following:

a. Chain-of-Custody procedures, including:

i) Identification of a responsible party to act as sample custodian at the laboratory facility authorized to sign for incoming field samples, obtain documents of shipment, and verify the data entered onto the sample custody records;

ii) Provision for a laboratory sample custody log consisting of serially numbered standard lab-tracking report sheets; and

iii) Specification of laboratory sample custody procedures for sample handling, storage, and dispersement for analysis.

b. Sample storage procedures and storage times;

c. Sample preparation methods;

d. Analytical procedures, including:

i) Scope and application of the procedure;

ii) Sample matrix;

iii) Potential interferences;

iv) Precision and accuracy of the methodology; and

v) Method detection limits.

e. Calibration procedures and frequency;

f. Data reduction, validation and reporting;

g. Internal quality control checks, laboratory performance and systems audits and frequency, including:

i) Method blank(s);

ii) Laboratory control sample(s);

iii) Calibration check sample(s);

iv) Replicate sample(s);

v) Matrix-spiked sample(s);

vi) "Blind" quality control sample(s);

vii) Control samples;

viii) Surrogate samples;

ix) Zero and span gases; and

x) Reagent quality control checks.

A performance audit will be conducted by EPA on the laboratories selected by the Respondents. This audit must be completed and approved prior to the facility investigation.

h. Preventive maintenance procedures and schedules;

i. Corrective action (for laboratory problems); and

j. Turn-around time.

C. Data Management Plan

The Respondent shall develop and initiate a Data Management Plan to document and track investigation data and results. This plan shall identify and set up data documentation materials and procedures, project file requirements, and project-related progress reporting procedures and documents. The plan shall also provide the format to be used to present the raw data and conclusions of the investigation. The Data Management Plan shall include:

1. Data Record

The data record shall include the following:

a. Unique sample or field measurement code;

b. Sampling or field measurement location and sample or measurement type;

c. Sampling or field measurement raw data;

d. Laboratory analysis identification number;

e. Property or component measured; and

f. Results of analysis (e.g., concentration).

2. Tabular Displays

The following data shall be presented in tabular displays:

a. Unsorted (raw) data;

b. Results for each medium, or for each constituent monitored;

c. Data reduction for statistical analysis;

d. Sorting of data by potential stratification factors (e.g., location, soil layer, topography); and

e. Summary data.

3. Graphical Displays

The following data shall be presented in graphical format (e.g., bar graphs, line graphs, area or plan maps, isopleth plots, cross-sectional plots or transects, three-dimensional graphs, etc.):

a. Display sampling location and sampling grid;

b. Indicate boundaries of sampling area, and areas where more data are required;

c. Display levels of contamination at each sampling location;

d. Display geographical extent of contamination;

e. Display contamination levels, averages, and maxima;

f. Illustrate changes in concentration in relation to distance from the source, time, depth or other parameters; and

g. Indicate features affecting intramedia transport and show potential receptors.

D. Health and Safety Plan

The Respondent shall prepare a Facility Health and Safety Plan.

1. Major elements of the Health and Safety Plan shall include:

a. Facility description including availability of resources such as roads, water supply, electricity and telephone service;

b. Describe the known hazards and evaluate the risks associated with each activity conducted;

c. List key personnel and alternates responsible for site safety, responses operations, and for protection of public health;

d Delineate work area;

e. Describe levels of protection to be worn by personnel in work area;

f. Establish procedures to control site access;

g. Describe decontamination procedures for personnel and equipment;

h. Establish site emergency procedures;

i. Address emergency medical care for injuries and toxicological problems;

j. Describe requirements for an environmental surveillance program;

k. Specify any routine and special training required for field personnel; and

l. Establish procedures for protecting workers from weather-related problems.

2. The Facility Health and Safety Plan shall be consistent with:

   a. NIOSH Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (1985);

   b. EPA Order 1440.1 - Respiratory Protection;

   c. EPA Order 1440.3 - Health and Safety Requirements for Employees Engaged in Field Activities;

   d. Facility Contingency Plan;

   e. EPA Standard Operating Safety Guide (1984);

   f. OSHA regulations particularly in 29 CFR 1910 and 1926;

   g. State and local regulations; and

   h. Other EPA guidance as provided.

E. Community Relations Plan

The Respondent shall prepare a plan for the dissemination of information to the public regarding investigation activities and results.

TASK IV: FACILITY INVESTIGATION

The Respondent shall conduct those investigations necessary to: characterize the Facility (Environmental Setting); define the source (Source Characterization); define the degree and extent of contamination (Contamination Characterization); and identify actual or potential receptors.

The investigations should result in data of adequate technical quality to support the development and evaluation of the corrective measure alternative or alternatives during the CMS.

The site investigation activities shall follow the plans set forth in Task III. All sampling and analyses shall be conducted in accordance with the Data Collection Quality Assurance Plan. All sampling locations shall be documented in a log and identified on a detailed site map.

A. Environmental Setting

The Respondent shall collect information to supplement and verify existing information on the environmental setting at the Facility. The Respondent shall characterize the following:

1. Hydrogeology

The Respondent shall conduct a program to evaluate hydrogeologic conditions at the Facility. This program shall provide the following information:

a. A description of the regional and Facility-specific geologic and hydrogeologic characteristics affecting groundwater flow beneath the Facility, including:

i) Regional and Facility-specific stratigraphy: description of strata including strike and dip, identification of stratigraphic contacts;

ii) Structural geology: description of local and regional structural features (e.g., folding, faulting, tilting, jointing, etc.).

iii) Depositional and post-depositional history;

iv) Identification and characterization of areas and amounts of recharge and discharge.

v) Regional and facility-specific groundwater flow patterns; and

vi) Characterize seasonal variations in the groundwater flow regime.

b. An analysis of any topographic features that might influence the groundwater flow system. (Note: Stereographic analysis of aerial photographs may aid in this analysis).

c. Based on field data, test, and cores, a representative and accurate classification and description of the hydrogeologic units which may be part of the migration pathways at the Facility (i.e., the aquifers and any intervening saturated and unsaturated units), including:

i) Hydraulic conductivity and porosity (total and effective);

ii) Lithology, grain size, sorting, degree of cementation;

iii) An interpretation of hydraulic interconnections between saturated zones including but not limited to the depths, thickness, and degree of lateral

continuity and hydraulic characteristics of any discernible confining units between water-bearing zones underneath the Facility; and

iv) The attenuation capacity and mechanisms of the natural earth materials (e.g., ion exchange capacity, organic carbon content, mineral content etc.).

d. Based on field studies and cores, structural geology and hydrogeologic cross sections showing the extent (depth, thickness, lateral extent) of hydrogeologic units which may be part of the migration pathways identifying:

i) Sand and gravel deposits in unconsolidated deposits;

ii) Zones of fracturing or channeling in consolidated or unconsolidated deposits;

iii) Zones of relatively higher or lower permeability that might direct or restrict the flow of contaminants;

iv) The uppermost aquifer: geologic formation, group of formations, or part of a formation capable of yielding a significant amount of groundwater to wells and springs; and

v) Water-bearing zones above the first confining layer that may serve as a pathway for contaminant migration including perched zones of saturation.

e. Based on data obtained from groundwater monitoring wells and piezometers installed upgradient and downgradient of the the BTF Sewer (SWMU #4), the Spill Area Around Diesal Tank (SWMU #6), Coal Tar Decanters 1, 2, 3, 4, and 5 (SWMUs #10, #11, and #12), the Equalization Basin (SWMU #13), the BTF Emergency Basin (#21), the Polishing Pond (SWMU #22), the Biological Sludge Disposal Area (SWMU #23) and other sources of contamination, a representative description of water levels or fluid pressure monitoring including:

i) Water-level contour and/or potentiometric maps;

ii) Hydrologic cross sections showing vertical gradients;

iii) The flow system, including the vertical and horizontal components of flow; and

iv) Any temporal changes in hydraulic gradients, for example, due to tidal or seasonal influences.

f. A description of man-made influences that may affect the hydrogeology of the site, identifying:

i) Active and inactive local water-supply and production wells with an approximate schedule of pumping; and

ii) Man-made hydraulic structures (pipelines, french drains, ditches, unlined ponds, septic tanks, NPDES outfalls, retention areas, etc.).

2. Soils

The Respondent shall conduct a program to characterize the soil and rock units above the water table in the vicinity of all contaminant release(s). Such characterization shall include but not be limited to, the following information:

a. USGS soil classification;
b. Surface soil distribution;
c. Soil profile, including ASTM classification of soils;
d. Transects of soil stratigraphy;
e. Hydraulic conductivity (saturated and unsaturated);
f. Relative permeability;
g. Bulk density;
h. Porosity;
i. Soil sorptive capacity;
j. Cation exchange capacity (CEC);
k. Soil organic content;
l. Soil pH;
m. Particle size distribution;
n. Elevation and depth of water table;
o. Moisture content;
p. Effect of stratification on unsaturated flow;
q. Infiltration
r. Evapotranspiration;
s. Storage capacity;
t. Vertical flow rate; and
u. Mineral content.

3. Surface Water and Sediment

The Respondent shall conduct a program to characterize the surface water bodies in the vicinity of the Facility. Such characterization shall include, but not be limited to, the following activities and information:

a. Description of the temporal and permanent surface-water bodies including:

i) For lakes and estuaries: location, elevation, surface area, inflow, outflow, depth, temperature stratification, and volume;

ii) For impoundments: location, elevation, surface area, depth, volume, freeboard, and purpose of impoundment;

iii) For rivers, streams, ditches, drains, swamps and channels: location, elevation, flow, velocity, depth, width, seasonal fluctuations, and flooding tendencies (i.e., 100 year event);

iv) Drainage patterns; and

v) Evapotranspiration.

b. Description of the chemistry of the natural surface water and sediments. This includes determining the pH, total dissolved solids, total suspended solids, biological oxygen demand, alkalinity, conductivity, dissolved oxygen profiles, nutrients (NH_3, NO_3^-/NO_2^-, PO_4^{-3}), chemical oxygen demand, total organic carbon, specific contaminant concentrations, etc.

c. Description of sediment characteristics including:

i) Deposition area;

ii) Thickness profile; and

iii) Physical and chemical parameters (e.g., grain size, density, organic carbon content, ion exchange capacity, pH, etc.).

4. Air

The Respondent shall provide information characterizing the climate in the vicinity of the Facility. Such information shall include, but not be limited to:

a. A description of the following parameters:

i) Annual and monthly rainfall averages;

ii) Monthly temperature averages and extremes;

iii) Wind speed and direction;

iv) Relative humidity/dew point;

v) Atmospheric pressure;

vi) Evaporation data;

vii) Development of inversions; and

viii) Climate extremes that have been known to occur in the vicinity of the Facility, including frequency of occurrence.

b. A description of topographic and man-made features which affect air flow and emission patterns, including:

i) Ridges, hills or mountain areas;

ii) Canyons or valleys;

iii) Surface water bodies (e.g., rivers, lakes, bays, etc.);

iv) Wind breaks and forest; and

v) Buildings.

B. Source Characterization

The Respondent shall collect analytical data to completely characterize the wastes and the areas where wastes have been placed, collected or removed including: type; quantity; physical form; disposition (containment or nature of deposits); and Facility characteristics affecting release (e.g., Facility security, and engineered barriers).

The source characterization shall include quantification of the following specific characteristics, at each source area:

1. Unit/Disposal Area Characteristics:

   a. Location of unit/disposal area;
   b. Type of unit/disposal area;
   c. Design features and dimensions;
   d. Operating practices (past and present);
   e. Period of operation;
   f. Age of unit/disposal area;
   g. General physical conditions; and
   h. Method used to close the unit/disposal area.

2. Waste Characteristics:

   a. Type of waste placed in the unit:

      i) Hazardous classification (e.g., flammable, reactive, corrosive, oxidizing or reducing agent);

      ii) Quantity; and

      iii) Chemical composition.

   b. Physical and chemical characteristics;

      i) Physical form (solid, liquid, gas);
      ii) Physical description (e.g., powder, oily sludge);
      iii) Temperature;
      iv) pH;
      v) General chemical class (e.g., acid, base, solvent);
      vi) Molecular weight;
      vii) Density;
      viii) Boiling point;
      ix) Viscosity;
      x) Solubility in water;
      xi) Cohesiveness of the waste;
      xii) Vapor pressure;
      xiii) Flash point.

   c. Migration and dispersal characteristics of the waste;

      i) Sorption;
      ii) Biodegradability, bioconcentration, biotransformation;
      iii) Photodegradation rates;
      iv) Hydrolysis rates; and
      v) Chemical transformations.

The Respondent shall document the procedures used in making the above determinations.

C. Contamination Characterization

The Respondent shall collect analytical data on groundwater, soils, surface water, sediment, and subsurface gas contamination in the vicinity of the Facility. This data shall be sufficient to define the extent, origin, direction, and rate of movement of contaminant plumes. Data shall include time and location of sampling, media sampled, concentrations found, conditions during sampling, and the identity of the individuals performing the sampling and analysis. The Respondent shall address the following types of contamination at the Facility:

1. Groundwater Contamination

The Respondent shall conduct a Groundwater Investigation to characterize any plumes of contamination at the Facility. This investigation shall at a minimum provide the following information:

a. A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the Facility;

b. The horizontal and vertical direction of contaminant movement;

c. The velocity of contaminant movement;

d. The horizontal and vertical concentration profiles of Appendix IX constituents in the plume(s);

e. An evaluation of factors influencing the plume movement; and

f. An extrapolation of future contaminant movement.

The Respondent shall document the procedures used in making the above determinations (e.g., well design, well construction, geophysics, modeling, etc.).

2. Soil Contamination

The Respondent shall conduct an investigation to characterize the contamination of the soil and rock units above the water table in the vicinity of any contaminant releases. The

investigation shall include, but not be limited to, the BTF Sewer (SWMU #4), the Spill Area Around Diesal Tank (SWMU #6), Coal Tar Decanters 1, 2, 3, 4, and 5 (SWMUs #10, #11, and #12), the Equalization Basin (SWMU #13), the BTF Emergency Basin (#21), the Polishing Pond (SWMU #22), the Biological Sludge Disposal Area (SWMU #23) and the Blast Furnace Emission Control Sludge Waste Pile (SWMU #24). For each area, the Respondent shall identify the following:

a. A description of the vertical and horizontal extent of contamination.

b. A description of contaminant and soil chemical properties within the contaminant source area and plume. This includes contaminant solubility, speciation, adsorption, leachability, exchange capacity, biodegradability, photolysis, oxidation and other factors that might affect contaminant migration and transformation.

c. Specific contaminant concentrations.

d. The velocity and direction of contaminant movement.

e. An extrapolation of future contaminant movement.

The Respondent shall document the procedures used in making the above determinations.

3. Surface-Water and Sediment Contamination

The Respondent shall conduct a surface-water investigation to characterize contamination in surface-water bodies resulting from contaminant releases at the Facility. The investigation shall include, but not be limited to, the following information:

a. A description of the horizontal and vertical extent of any immiscible or dissolved plume(s) originating from the Facility, and the extent of contamination in underlying sediments;

b. The horizontal and vertical direction of contaminant movement;

c. The contaminant velocity;

d. An evaluation of the physical, biological and chemical factors influencing contaminant movement;

e. An extrapolation of future contaminant movement; and

f. A description of the chemistry of the contaminated surface waters and sediments. This includes determining the pH, total dissolved solids, specific contaminant concentrations, etc.;

The Respondent shall document the procedures used in making the above determinations.

4. Air Contamination

The Respondent shall conduct an investigation to characterize the particulate and gaseous contaminants released into the atmosphere. This investigation shall provide the following information:

a. A description of the horizontal and vertical direction and velocity of contaminant movement;

b. The rate and amount of the release; and

c. The chemical and physical composition of the contaminant(s) released, including horizontal and vertical concentration profiles.

The Respondent shall document the procedures used in making the above determinations.

5. Subsurface Gas Contamination

The Respondent shall conduct an investigation to characterize subsurface gases emitted from buried hazardous waste constituents in the groundwater. This investigation shall include the following information:

a. A description of the horizontal and vertical extent of subsurface gases mitigation;

b. The chemical composition of the gases being emitted;

c. The rate, amount, and density of the gases being emitted; and

d. Horizontal and vertical concentration profiles of the subsurface gases emitted.

The Respondent shall document the procedures used in making the above determinations.

D. Potential Receptors

The Respondent shall collect data describing the human populations and environmental systems that are susceptible to contaminant exposure from the Facility. Chemical analysis of biological samples may be needed. Data on observable effects in ecosystems may also be obtained. The following characteristics shall be identified:

1. Local uses and possible future uses of groundwater:

   a. Type of use (e.g., drinking water source: municipal or residential, agricultural, domestic/non-potable, and industrial); and

   b. Location of groundwater users including wells and discharge areas.

2. Local uses and possible future uses of surface waters and drainage from the Facility:

   a. Domestic and municipal (e.g., potable and lawn/gardening watering);

   b. Recreational (e.g., swimming, fishing);

   c. Agricultural;

   d. Industrial; and

   e. Environmental (e.g., fish and wildlife propagation).

3. Human use of or access to the Facility and adjacent lands, including but not limited to:

   a. Recreation;

   b. Hunting;

   c. Residential;

   d. Commercial;

   e. Zoning; and

   f. Relationships between population locations and prevailing wind direction.

4. A description of the biota in surface water bodies on, adjacent to, or affected by the Facility.

5. A description of the ecology on and adjacent to the Facility.

6. A demographic profile of the people who use or have access to the Facility and adjacent land, including but not limited to: age; sex; and sensitive subgroups.

7. A description of any endangered or threatened species near the facility.

TASK V: INVESTIGATION ANALYSIS

The Respondent shall prepare an analysis and summary of all the Facility investigations and their results. The objective of this task shall be to ensure that the investigation data are sufficient in quality (e.g., quality assurance procedures have been followed) and quantity to describe the nature and extent of contamination, potential threat to human health and/or the environment, and to support the CMS.

A. Data Analysis Draft and Final Report

The Respondent shall prepare and submit to EPA and ADEM, for EPA approval, a draft RFI Report which shall contain an analysis and summary of all Facility investigations implemented pursuant to Task IV and their results. EPA will review the Draft RFI Report and will provide comments thereon to the Respondent. Within thirty (30) days of receipt of EPA comments, Respondent shall submit the revised RFI Report to EPA and ADEM. EPA will approve the revised RFI Report or modify it. The revised RFI Report as approved or modified by EPA shall become the Final RFI Report.

The RFI Report shall describe the nature and extent of contamination at the Facility including sources and migration pathways, potential threat to human health and/or the environment, and to support the CMS. The report shall describe the extent of contamination (qualitative/quantitative) in relation to background levels indicative for the area. The report shall include the identification of applicable protection standards including these under item B below.

B. Protection Standards

1. Groundwater Protection Standards

For regulated units, Respondent shall provide information to support the Agency's selection/development of Groundwater Protection Standards for all of the Appendix VIII constituents found in the groundwater during the Facility Investigation (Task IV).

a The Groundwater Protection Standards shall consist of:

i) For any constituents listed in Table 1 of 40 CFR 264.94, the respective value given in that table (MCL) if the background level of the constituent is below the one given in Table 1; or

ii) The background level of that constituent in the groundwater; or

iii) An EPA approved Alternate Concentration Limit (ACL).

b. Information to support EPA's subsequent selection of ACLs shall be developed by the Respondent in accordance with EPA's guidance. For any proposed ACLs, the Respondent shall include a justification based upon the criteria set forth in 40 CFR 264.94(b).

c. Within 90 calendar days of receipt of any proposed ACLs, the EPA shall notify the Respondent in writing of approval, disapproval or modifications. The EPA shall specify in writing the reason(s) for any disapproval or modification.

d. Within 60 calendar days of receipt of the EPA's notification or disapproval of any proposed ACL, the Respondent shall amend and submit revisions to the EPA.

2. Other Relevant Protection Standards

The Respondent shall identify all relevant and applicable standards for the protection of human health and the environment (e.g., National Ambient Air Quality Standards, Federally-approved State Water Quality Standards, etc.).

TASK VI: LABORATORY AND BENCH-SCALE STUDIES

The Respondent shall conduct laboratory and/or bench-scale studies to determine the applicability of a corrective measure technology or technologies to the Facility conditions. The Respondent shall analyze the technologies, based on literature review, vendor contracts, and past experience to determine the testing requirements.

The Respondent shall develop a testing plan identifying the type(s) and goal(s) of the study(ies), the level of effort needed, and the procedures to be used for data management and interpretation.

Upon completion of the testing, the Respondent shall evaluate the testing results to assess the technology or technologies with respect to the site-specific questions identified in the test plan.

The Respondent shall prepare a report summarizing the testing program and its results, both positive and negative.

TASK VII: REPORTS

A. Preliminary and Work Plan

The Respondent shall submit to EPA and ADEM, for EPA review and approval, reports on tasks I and II when it submits the RFI Work Plan (Task III).

B. Progress

The Respondent shall at minimum provide EPA with signed, monthly, progress reports containing:

1. A description and estimate of the percentage of the RFI completed;

2. Summaries of all findings;

3. Summaries of all changes made in the RFI during the reporting period;

4. Summaries of all contacts with representatives of the local community, public interest groups or State government during the reporting period;

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

6. Actions being taken to rectify problems;

7. Changes in personnel involved with the RFI during the reporting period;

8. Projected work for the next reporting period; and

9. Copies of daily reports, inspection reports, laboratory/monitoring data, etc.

C. Draft and Final

As outlined in Task V, the Respondent shall prepare a Draft RFI Report to present and document the findings of Tasks IV-V. The RFI Report

shall be developed in draft form for EPA review. The RFI Report shall be developed in final format incorporating comments received on the Draft RFI Report. Task VI shall be submitted as a separate report when the Final RFI Report is submitted. All reports become final upon EPA approval.

Three copies of all reports, including the Task I report, Task II report, Task III work plan, Task VI report and both the Draft and Final RFI Reports (Task IV-V) shall be provided by Respondent to EPA.

Facility Submission Summary

A Summary of the information reporting requirements contained in the RFI Scope of Work is presented below.

Facility Submission	Due Date
Description of Current Situation (Task I)	Within 30 days after the effective date of this Order
Pre-Investigation Evaluation of Corrective Measure Technologies (Task II)	Within 30 days after the effective date of this Order
RFI Work Plan (Task III)	Within 45 days after the effective date of this Order
Implementation of approved RFI Work Plan (Task IV)	Within 10 days of notice of approval of revised RFI Work Plan
Draft RFI Report (Task IV and V)	365 days after RFI Work Plan approval
Final RFI Report (Tasks IV and V)	30 days after Comments on Draft RFI Report
Laboratory and Bench-Scale Studies (Task VI)	Concurrent with Final RFI Report
Progress Reports on Tasks I through VI	Monthly, pursuant to the Order

Attachment B

ATTACHMENT B

SCOPE OF WORK FOR A CORRECTIVE MEASURES STUDY (CMS)

AT

SLOSS INDUSTRIES INCORPORATED

BIRMINGHAM, ALABAMA

ATTACHMENT B

SCOPE OF WORK FOR A CORRECTIVE MEASURES STUDY (CMS)

AT

SLOSS INDUSTRIES INCORPORATED

BIRMINGHAM, ALABAMA

PURPOSE

The purpose of this Corrective Measures Study (CMS) is to develop and evaluate the corrective action alternative or alternatives, and to recommend the corrective measure or measures to be taken at Sloss Industries Incorporated, Birmingham, Alabama. Respondent will furnish the personnel, materials, and services necessary to prepare the CMS, except as otherwise specified. Respondent shall submit to EPA and ADEM, ninety (90) calendar days after submittal of the Final RFI Report, a Draft CMS Report. This report shall contain all information requested in the task outlined below. EPA will review the Draft CMS report and EPA will provide comments to Respondent. Within thirty (30) calendar days of receipt of EPA comments, Respondent shall modify the Draft CMS Report to incorporate such comments and shall submit the revised CMS Report to EPA and ADEM. EPA will approve the revised CMS Report or modify it. The revised CMS Report as approved or modified by EPA shall become the Final CMS Report. Upon receipt of the Final CMS Report, EPA shall announce its availability to the public for review and comments, and then inform Respondent of its final decision as to the approved corrective measures to be implemented.

SCOPE

The CMS consists of four tasks:

Task VIII: Identification and Development of the Corrective Measure Alternative or Alternatives

A. Description of Current Situation
B. Establishment of Corrective Action Objectives
C. Screening of Corrective Measures Technologies
D. Identification of the Corrective Measure Alternative or Alternatives

Task IX: Evaluation of the Corrective Measure Alternative or Alternatives

A. Technical/Environmental/Human Health/Institutional
B. Cost Estimate

Task X: Justification and Recommendation of the Corrective Measure or Measures

A. Technical
B. Environmental
C. Human Health

PURPOSE

The purpose of this Corrective Measures Study (CMS) is to develop and evaluate the corrective action alternative or alternatives, and to recommend the corrective measure or measures to be taken at Sloss Industries Incorporated, Birmingham, Alabama. Respondent will furnish the personnel, materials, and services necessary to prepare the CMS, except as otherwise specified. Respondent shall submit to EPA and ADEM, ninety (90) calendar days after submittal of the Final RFI Report, a Draft CMS Report. This report shall contain all information requested in the task outlined below. EPA will review the Draft CMS report and EPA will provide comments to Respondent. Within thirty (30) calendar days of receipt of EPA comments, Respondent shall modify the Draft CMS Report to incorporate such comments and shall submit the revised CMS Report to EPA and ADEM. EPA will approve the revised CMS Report or modify it. The revised CMS Report as approved or modified by EPA shall become the Final CMS Report. Upon receipt of the Final CMS Report, EPA shall announce its availability to the public for review and comments, and then inform Respondent of its final decision as to the approved corrective measures to be implemented.

SCOPE

The CMS consists of four tasks:

Task VIII: Identification and Development of the Corrective Measure Alternative or Alternatives

A. Description of Current Situation
B. Establishment of Corrective Action Objectives
C. Screening of Corrective Measures Technologies
D. Identification of the Corrective Measure Alternative or Alternatives

Task IX: Evaluation of the Corrective Measure Alternative or Alternatives

A. Technical/Environmental/Human Health/Institutional
B. Cost Estimate

Task X: Justification and Recommendation of the Corrective Measure or Measures

A. Technical
B. Environmental
C. Human Health

Task XI: Reports

A. Progress
B. Draft
C. Final

TASK VIII: IDENTIFICATION AND DEVELOPMENT OF THE CORRECTIVE ACTION ALTERNATIVE OR ALTERNATIVES

Based on the results of the RFI and consideration of the identified Preliminary Corrective Measure Technologies (Task II), Respondent shall identify, screen and develop the alternative or alternatives for removal, containment, treatment and/or other remediation of the contamination based on the objectives established for the corrective action.

A. Description of Current Situation

Respondent shall submit an update to the information describing the current situation at the Facility and the known nature and extent of the contamination as documented by the RFI Report. Respondent shall provide an update to information presented in Task I of the RFI to the Agency regarding previous response activities, and any interim measures which have or are being implemented at the Facility. Respondent shall also make a Facility-specific statement of the purpose for the response, based on the results of the RFI. The statement of purpose should identify the actual or potential exposure pathways that should be addressed by corrective measures.

B. Establishment of Corrective Action Objectives

Respondent, in conjunction with the EPA, shall establish site-specific objectives for the corrective action. These objectives shall be based on public health and environmental criteria, information gathered during the RFI, EPA guidance, and the requirements of any applicable Federal statues. At a minimum, all corrective actions concerning groundwater releases from regulated units must be consistent with, and as stringent as, those required under 40 CFR 264.100

C. Screening of Corrective Measure Technologies

Respondent shall review the results of the RFI and reassess the technologies specified in Task II and to identify additional technologies which are applicable at the Facility. Respondent shall screen the preliminary corrective measure technologies identified in Task II of the RFI, and any supplemental technologies to eliminate

those that may prove infeasible to implement, that rely on technologies unlikely to perform satisfactorily or reliably, or that do not achieve the corrective measure objective within a reasonable time period. This screening process focuses on eliminating those technologies which have severe limitations for a given set of waste and site-specific conditions. The screening step may also eliminate technologies based on inherent technology limitations.

Site, waste, and technology characteristics which are used to screen inapplicable technologies are described in more detail below:

1. Site Characteristics

   Site data should be reviewed to identify conditions that may limit or promote the use of certain technologies. Technologies whose use is clearly precluded by site characteristics should be eliminated from further consideration;

2. Waste Characteristics

   Identification of waste characteristics that limit the effectiveness or feasibility of technologies is an important part of the screening process. Technologies clearly limited by these waste characteristics should be eliminated from consideration. Waste characteristics particularly affect the feasibility of in-situ methods, direct treatment methods, and land disposal (on/off-site); and

3. Technology Limitations

   During the screening process, the level of technology development, performance record, and inherent construction, operation, and maintenance problems should be identified for each technology considered. Technologies that are unreliable, perform poorly, or are not fully demonstrated may be eliminated in the screening process. For example, certain treatment methods have been developed to a point where they can be implemented in the field without extensive technology transfer or development.

D. Identification of the Corrective Measure Alternative or Alternatives

Respondent shall develop the Corrective Measure Alternative or Alternatives based on the corrective action objectives and analysis of Preliminary Corrective Measure Technologies, as presented in Task II of the RFI and as supplemented following the preparation of the RFI Report. Respondent shall rely on engineering practice to determine which of the previously identified technologies appear most suitable

for the site. Technologies can be combined to form the overall corrective action alternative or alternatives. The alternative or alternatives developed should represent a workable number of option(s) that each appear to adequately address all site problems and corrective action objectives. Each alternative may consist of an individual technology or a combination of technologies. Respondent shall document the reasons for excluding technologies, identified in Task II, as supplemented in the development of the alternative or alternatives.

TASK IX: EVALUATION OF THE CORRECTIVE MEASURE ALTERNATIVE OR ALTERNATIVES

Respondent shall describe each corrective measure alternative that passes through the Initial Screening in Task VIII and evaluate each corrective measure alternative and it's components. The evaluation shall be based on technical, environmental, human health and institutional concerns. Respondent shall also develop cost estimates of each corrective measure.

A. Technical/Environmental/Human Health/Institutional

Respondent shall provide a description of each corrective measure alternative which includes, but is not limited to, the following: preliminary process flow sheets; preliminary sizing and type of construction for buildings and structures; and rough quantities of utilities required. Respondent shall evaluate each alternative in the four following areas:

Technical;

1. Respondent shall evaluate each corrective measure alternative based on performance, reliability, implementability and safety.

   a. Respondent shall evaluate performance based on the effectiveness and useful life of the corrective measure:

      i) Effectiveness shall be evaluated in terms of the ability to perform intended functions, such as containment, diversion, removal, destruction, or treatment. The effectiveness of each corrective measure shall be determined either through design specifications or by performance evaluation. Any specific waste or site characteristics which could potentially impede effectiveness shall be considered. The evaluation should also consider the effectiveness of combinations of technologies; and

ii) Useful life is defined as the length of time to level of effectiveness can be maintained. Most corrective measure technologies, with the exception of destruction, deteriorate with time. Often, deterioration can be slowed through proper system operation and maintenance, but the technology eventually may require replacement. Each corrective measure shall be evaluated in terms of the projected service lives of its component technologies. Resource availability in the future life of the technology, as well as appropriateness of the technologies, must be considered in estimating the useful life of the project.

b. Respondent shall provide information on the reliability of each corrective measure including their operation and maintenance requirements and their demonstrated reliability:

i) Operation and maintenance requirements include the frequency and complexity of necessary operation and maintenance. Technologies requiring frequent or complex operation and maintenance activities should be regarded as less reliable than technologies requiring little or straightforward operation and maintenance. The availability of labor and materials to meet these requirements shall also be considered; and

ii) Demonstrated and expected reliability is a way of measuring the risk and effect of failure. Respondent should evaluate whether the technologies have been used effectively under analogous conditions; whether the combination of technologies have been used together effectively; whether failure of any one technology has an immediate impact on receptors; and whether the corrective measure has the flexibility to deal with uncontrollable changes at the site.

c. Respondent shall describe the implementability of each corrective measure including the relative ease of installation (constructability) and the time required to achieve a given level of response:

i) Constructability is determined by conditions both internal and external to the Facility conditions and include such items as location of underground

utilities, depth to water table, heterogeneity of subsurface materials, and location of the Facility (i.e., remote location vs. a congested urban area). Respondent shall evaluate what measures can be taken to facilitate construction under these conditions. External factors which affect implementation include the need for special permits or agreements, equipment availability, and the location of suitable off-site treatment or disposal facilities; and

ii) Time has two components that shall be addressed: the time it takes to implement a corrective measure and the time it takes to actually see beneficial results. Beneficial results are defined as the reduction of contaminants to some acceptable, pre-established level.

d. Respondent shall evaluate each corrective measure alternative with regard to safety. This evaluation shall include threats to the safety of nearby communities and environments as well as those to workers during implementation. Factors to consider are fire, explosion, and exposure to hazardous substances.

2. Environmental;

Respondent shall perform an Environmental Assessment for each alternative. The Environmental Assessment shall focus on the Facility condition and pathways of contamination actually addressed by each alternative. The Environmental Assessment for each alternative will include, at a minimum, an evaluation of: the short- and long-term beneficial and adverse effects of the response alternative; any adverse effects on environmentally sensitive areas; and an analysis of measures to mitigate adverse effects.

3. Human Health; and

Respondent shall access each alternative in terms of the extent to which it mitigates short- and long-term potential exposure to any residual contamination and protects human health both during and after implementation of the corrective measure. The assessment will describe the levels and characterizations of contaminants on-site, potential exposure routes, and potentially affected population. Each alternative will be evaluated to determine the level of exposure to contaminants and the reduction

over time. For management of mitigation measures, the relative reduction of impact will be determined by comparing residual levels of each alternative with existing criteria, standards, or guidelines acceptable to EPA.

4. Institutional.

Respondent shall assess relevant institutional needs for each alternative. Especially, the effects of Federal, state and local environmental and public health standards, regulations, guidance, advisories, ordinances, or community relations on the design, operation, and timing of each alternative.

B. Cost Estimate

Respondent shall develop an estimate of the cost of each corrective measure alternative (and for each phase or segment of the alternative). The cost estimate shall include both capital and operation and maintenance costs.

1. Capital costs consist of direct (construction) and indirect (non construction and overhead) costs.

a. Direct capital costs include:

i) Construction costs: Costs of materials, labor (including fringe benefits and worker's compensation), and equipment required to install the corrective measure.

ii) Equipment costs: Costs of treatment, containment, disposal and/or service equipment necessary to implement the action; these materials remain until the corrective action is complete;

iii) Land and site-development costs: Expenses associated with purchase of land and development of existing property; and

iv) Building and services costs: Costs of process and non-process buildings, utility connections, purchased services, and disposal costs.

b. Indirect capital costs include:

i) Engineering expenses: Costs of administration, design, construction supervision, drafting, and testing of corrective measure alternatives;

ii) Legal fees and license or permit costs: Administrative and technical costs necessary to obtain licenses and permit for installation and operation;

iii) Start-up and shake-down costs: Costs incurred during corrective measure start-up; and

iv) Contingency allowances: Funds to cover costs resulting from unforeseen circumstances, such as adverse weather conditions, strikes, and inadequate Facility characterization.

2. Operation and maintenance costs are post-construction costs necessary to ensure continued effectiveness of a corrective measure. Respondent shall consider the following operation and maintenance cost components:

a. Operating labor costs: Wages, salaries, training, overhead, and fringe benefits associated with the labor needed for post-construction operations;

b. Maintenance materials and labor costs: Costs for labor, parts, and other resources required for routine maintenance of facilities and equipment;

c. Auxiliary materials and energy: Costs of such items as chemicals and electricity for treatment plant operations, water and sewer service, and fuel;

d. Purchased services: Sampling costs, laboratory fees, and professional fees for which the need can be predicted;

e. Disposal and treatment costs: Costs of transporting, treating, and disposing of waste materials, such as treatment plant residues, generated during operations;

f. Administrative costs: Costs associated with administration of corrective measure operation and maintenance not included under other categories;

g. Insurance, taxes, and licensing costs: Costs of such items as liability and sudden accidental insurance; real estate taxes on purchased land or rights-of-way; licensing fees for certain technologies; and permit renewal and reporting costs;

h. Maintenance reserve and contingency funds: Annual payments into escrow funds to cover (1) costs of anticipated replacement or rebuilding of equipment and (2) any large unanticipated operation and maintenance costs; and

i. Other costs: Items that do not fit any of the above categories.

TASK X. JUSTIFICATION AND RECOMMENDATION OF THE CORRECTIVE MEASURE OR MEASURES

Respondent shall justify and recommend a corrective measure alternative using technical, human health, and environmental criteria. This recommendation shall include summary tables which allow the alternative or alternatives to be understood easily. Trade-offs among health risks, environmental effects, and other pertinent factors shall be highlighted. EPA will select the corrective measure alternative or alternatives to be implemented based on the results of Tasks IX and X. At a minimum, the following criteria will be used to justify the final corrective measure or measures.

A. Technical

1. Performance - corrective measure or measures which are most effective at performing their intended functions and maintaining the performance over extended periods of time will be given preference;

2. Reliability - corrective measure or measures which do not require frequent or complex operation and maintenance activities and that have proven effective under waste and Facility conditions similar to those anticipated will be given preference;

3. Implementability - corrective measure or measures which can be constructed and operated to reduce levels of contamination to attain or exceed applicable standards in the shortest period of time will be preferred; and

4. Safety - corrective measure or measures which pose the least threat to the safety of nearby residents and environments as well as workers during implementation will be preferred.

B. Human Health

The corrective measure or measures must comply with existing EPA criteria, standards, or guidelines for the protection of human health. Corrective measures which provide the minimum level of exposure to contaminants and the maximum reduction in exposure with time are preferred.

C. Environmental

The corrective measure or measures posing the least adverse impact (or greatest improvement) over the shortest period of time on the environment will be favored.

TASK XI: REPORTS

Respondent shall prepare a CMS Report presenting the results of Task VIII through X and recommending a corrective measure alternative. Two copies of the preliminary report shall be provided by Respondent to EPA and ADEM for EPA review and approval.

A. Progress

Respondent shall at a minimum provide the EPA and ADEM with signed, monthly progress reports containing:

1. A description and estimate of the percentage of the CMS completed;

2. Summaries of all findings;

3. Summaries of all changes made in the CMS during the reporting period;

4. Summaries of all contacts with representative of the local community, public interest groups or State government during the reporting period;

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

6. Actions being taken to rectify problems;

7. Changes in personnel involved with the CMS during reporting period;

8. Projected work for the next reporting period; and

9. Copies of daily reports, inspection reports, laboratory/ monitoring data, etc.

B. Draft

The Report shall at a minimum include:

1. A description of the Facility;

   a. Site topographic map and preliminary layouts.

2. A summary of the corrective measure or measures;

   a. Description of the corrective measure or measures and rationale for selection;

   b. Performance expectations;

   c. Preliminary design criteria and rationale;

   d. General operation and maintenance requirements; and

   e. Long-term monitoring requirements.

3. A summary of the RFI and impact on the selected corrective measure or measures:

   a. Field studies (groundwater, surface water, soil, air); and

   b. Laboratory studies (bench scale, pick scale).

4. Design and Implementation Precautions:

   a. Special technical problems;

   b. Additional engineering data required;

   c. Permits and regulatory requirements;

   d. Access, easements, right-of-way;

   e. Health and safety requirements; and

   f. Community relations activities.

5. Cost Estimates and Schedules:

   a. Capital cost estimate;

   b. Operation and maintenance cost estimate; and

   c. Project schedule (design, construction, operations).

Two copies of the draft shall be provided by Respondent to EPA and ADEM.

C. Final

Respondent shall finalize the CMS Report incorporating comments received from EPA on the Draft CMS Report. The report shall become final upon EPA approval.

D. Public Review and Final Selection of Corrective Measures

Upon receipt of the Final CMS Report, EPA shall announce its availability to the public for review and comment. At the end of the comment period, EPA shall review the comments and then inform the Respondent of its final decision as to the approved corrective measures to be implemented.

Facility Submission Summary

A summary of the information reporting requirements contained in the CMS Scope of Work is presented below:

Facility Submission	Due Date
Draft CMS Report (Tasks VIII, IX, and X)	90 calendar days after submittal of the Final RFI
Final CMS Report (Tasks VIII, IX, and X)	30 calendar days after comments on the Draft CMS
Progress Reports (Tasks VIII, IX, and X)	Monthly