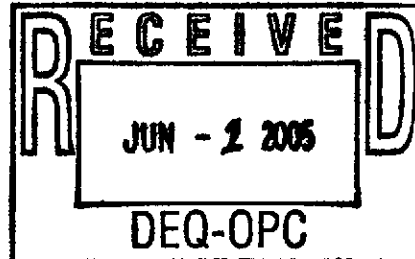


East Bay Expansion Work Plan



Prepared for:



Kuhlman Electric Corporation
101 Kuhlman Avenue
Crystal Springs, MS

Prepared by:



P. O. Box 15369
Hattiesburg, MS 39404

May 27, 2005

Executive Summary

The work, described herein, includes the removal, characterization for disposal, handling, and disposal where necessary of approximately 1,800 in-place cubic yards of soil and concrete currently located within the immediate footprint of a planned building and foundation expansion to an existing process building. The surface area involved comprises approximately 8,700 sq. ft. which is currently overlain by concrete and asphalt. The anticipated average depth of the excavation required for the foundation design is approximately 5.5 ft. below ground surface (bgs), however, this depth may vary from 3' to 7' bgs due to current irregular surface elevations.

Previous investigations of this area identified contaminants of concern including PCBs (Aroclor 1260), and chlorinated benzenes. Subsequent corrective action measures addressed only portions of this area via soil removal.

It is unknown if the depths to which this previous removal action reached within the boundaries of where corrective action occurred are adequate for worker protection during the building foundation excavation and construction as specified in the original remediation plan. In addition, the previous corrective action measures were not performed within the entire footprint of the intended expansion.

In respect of the stated corrective action, it was recognized that the need for continued precaution with respect to health and safety was inherent due to the persistence of the constituents of concern (COCs). Consequently, engineering controls for construction activities, and inspection and training requirements were stipulated in the **Remediation Work Plan for Kuhlman Electric Plant Site, Kuhlman Electric Corporation, October 2001, (CA Plan)** for ongoing repairs and maintenance activities.

The primary chemical constituents of concern are PCBs, primarily Aroclor 1260, and chlorinated benzenes as identified by earlier investigation. The allowable worker protection standard for Aroclor 1260 and some of the chlorinated benzenes in connection with the expansion project are yet undetermined, consequently, the appropriate personal protection measures for personnel performing the proposed work will have to be established via a job specific Health and Safety evaluation and a plan developed prior to the performance of the work.

The objectives of this current effort are (i) to provide engineering controls to eliminate the potential exposure pathways for construction workers during the grading and foundation construction activities within this area in a manner protective of health; (ii) protection of the environment by prevention of releases, etc. in connection with COCs in the soils at the site; and (iii) to comply with applicable laws and regulations with respect to the intended activities.

This work plan has been developed at MDEQ's request such that the work can be performed in a safe and effective manner and to satisfy the requirements stipulated by, at a minimum, the applicable provisions of the Remediation Work Plan for Kuhlman Electric Plant Site, October 2001; the Toxic Substance Control Act (TSCA) 40 CFR 761.61(a); and applicable OSHA Worker Protection requirements.

The proposed work will be comprised of the following general tasks:

- Development of a job specific Health and Safety plan for the intended work,
- Mobilization, establishment of decontamination facilities, and establishment of survey control,
- Establishment of security of the work area,
- Installation of stormwater control measures to prevent intrusion into the intended excavation area,
- Utility location and identification within the intended excavation and surrounding area,
- Removal, segregation, and stockpiling of “clean” asphalt and fill soil previously placed atop geotextile within the areas previously remediated under the CA Plan,
- Sawing, demolition, and characterization of the concrete slab materials covering a portion of the area,
- Removal and disposal of the concrete slab materials,
- Sampling of the in-place soil to be removed for characterization,
- Excavation and removal of soil within the construction boundaries for disposal,
- Placement of geotextile on bottom and sides of the resultant excavation,
- Installation of 8” to 12” of compacted backfill throughout the excavation,
- Final inspection and release to the General Contractor for foundation construction,
- Final decontamination and demobilization,
- Final project report preparation and submittal.

Contingency plans will be in place should sampling indicate material segregation and alternate disposal methods have to be employed.

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B	Mississippi General Contractors License
C	Health and Safety Plan

1.0 INTRODUCTION

This work plan has been developed subsequent to discussions with the Mississippi Department of Environmental Quality (MDEQ) regarding implementation of a planned building expansion within the boundary of an area previously the subject of Corrective Action Measures at the Kuhlman Electric Corporation (KEC) facility located at 101 Kuhlman Avenue, Crystal Springs, Mississippi. KEC owns and operates an electrical transformer manufacturing facility at this location.

Previous investigations at this facility confirmed the presence of soil impacted with PCB (Aroclor 1260) and various chlorinated benzenes. Corrective action measures have been conducted at this facility including a portion of the area intended for the current expansion. This work plan addresses the proposed excavation and disposal of soil and demolition debris impacted with Aroclor 1260 and chlorinated benzenes.

This plan is prepared by Environmental Management Services, Inc. (EMS) and provides pertinent information applicable to the proposed actions for review and approval by MDEQ prior to implementation.

This Work Plan has been developed such that the work can be performed in a safe and effective manner and to satisfy the requirements stipulated by, at a minimum, the applicable provisions of the Remediation Work Plan for Kuhlman Electric Plant Site, October 2001; the Toxic Substance Control Act (TSCA) 40 CFR 761.61(a); and applicable OSHA Worker Protection requirements.

The following sections referenced in the *Remediation Work Plan for Kuhlman Electric Plant Site, October 2001* present general information regarding the past history, operations, characteristics of the subject property and the surrounding vicinity, regulatory history, description of previous work, and remedial objectives.

- 1.0 Introduction
 - 1.1 Site Description
 - 1.2 Background
 - 1.3 Summary of Previous Work Performed at the KEC Plant
 - 1.3.1 Assessment Summary
 - 1.4 Remediation Objectives and Rationale

A site location map is provided as Figure 1. Figure 2 is a facility layout identifying the area proposed for the intended expansion within the facility. Figure 3 is specific to the area of excavation and building construction and includes the proposed sampling location layout for the area to be excavated.

2.0 HAZARDOUS SUBSTANCE IDENTIFICATION

Constituents of concern (COCs) have been identified at the facility and they include PCBs (Aroclor 1260) and various chlorinated benzenes. The concentrations and locations within the subject area and vicinity are indicated on Figure 5 included as Attachment A from the previous investigation. In addition, elevated concentrations of the noted COCs were present in soil removed during a maintenance event associated with a water line repair within the subject area.

3.0 PROJECT OBJECTIVES

The objectives of this current effort are:

- to provide engineering controls to eliminate the potential exposure pathways for construction workers during the grading and foundation construction activities within this area in a manner protective of health;
- protection of the environment by prevention of releases, etc.; and
- to comply with all applicable laws and regulations with respect to the intended activities.

As stated above, this Work Plan has been developed such that the work can be performed in a safe and effective manner and to satisfy the requirements stipulated by, at a minimum: the applicable provisions of the Remediation Work Plan for Kuhlman Electric Plant Site, October 2001; the Toxic Substance Control Act (TSCA), 40 CFR 761.61(a); and applicable OSHA Worker Protection requirements.

4.0 RELEASE AND EXPOSURE POTENTIAL

Evaluation of the site characteristics and setting, site background, operations, potential migration pathways, characteristics of the COCs, and nature of the intended removal action identify the following potential receptors and exposure mechanisms for COCs that must be addressed for this removal action:

- Workers performing the removal action via dermal contact with waste, contaminated soil/sediment, and contaminated groundwater/stormwater;
- Workers performing the removal action via inhalation from waste, contaminated soil/sediment, and contaminated groundwater/stormwater;
- Workers performing the removal action via incidental ingestion from waste, contaminated soil/sediment, and contaminated groundwater/stormwater;
- Site workers via the same mechanisms as above;
- Onsite surface water via surface runoff/stormwater;
- Offsite surface water via surface runoff/stormwater;
- Offsite public roads via releases from transportation vehicles/equipment.

Workers performing the removal action are the population most likely to be exposed to COCs present in the soils at the project location. Therefore, a job specific Health and Safety (H&S) Plan and strict implementation is warranted.

Dust control and associated personnel and area air monitoring is warranted during work times and is required in the H&S plan.

Security measures are mandatory to prohibit site personnel and visitors access to the work area during the duration of the work.

Stormwater control measures and maintenance of control facilities throughout the duration of the work is warranted.

Contingency plans including collection and storage facilities for potential groundwater intrusion events are warranted.

A plan and facilities for vehicle and personnel decontamination including waste collection, handling, storage, and disposal is warranted.

5.0 GEOLOGY AND HYDROGEOLOGY

The shallow geology within the general area at the expected depths of excavation is well documented as extensive excavation has been performed at this facility during Corrective Action (CA) activities. The specific localized lithology within the excavation boundaries will be determined precisely during the conduct of the extensive characterization sampling. This information will be used to make a determination of the need for side shoring or other protective measures prior to excavation.

Due to the proximity to the existing building and upgradient conditions, the potential exists for localized groundwater intrusion during the excavation activities. Provisions will be made for removal capability and liquid storage prior to commencement of the excavation. Sampling, testing, waste characterization and disposition are inherent to all liquids generated during the work.

6.0 FIELD WORK

EMS will function as the remediation contractor for the intended work. EMS is licensed with the State of Mississippi for this type work (license attached). The proposed work will be comprised of the general tasks as described in the following sections:

6.1 Mobilization, Establishment of Decontamination Facilities, and Establishment of Survey Control

Mobilization to the job site will occur within one week of notice to proceed is received. Coordination with plant personnel and the general contractor will precede mobilization to agree upon the functional arrangement for the performance of the work, equipment storage, decon facilities, traffic flow, security, etc.

Manpower and equipment will be transported to the job site as agreed and both personnel and equipment decontamination facilities will be constructed including designated adjoining temporary waste storage and handling areas.

The EMS surveyor will coordinate with the general contractor, locate previous survey benchmarks, and establish baseline coordinates with which to maintain survey control throughout the project.

6.2 Establishment of Security of the Work Area

Via coordination with plant personnel and the general contractor, facilities will be installed to cordon the immediate work zone from local foot and vehicular traffic. The work zone will include the area to be excavated, buffer area for heavy equipment operation and parking, truck loading, waste handling and storage, and the decontamination facilities. A secondary zone will be designated for "clean" storage and support operations equipment, etc.

All excluded areas will be clearly marked and prohibition of entry for non-authorized personnel maintained throughout the duration of the excavation and removal activities.

KEC plant security will maintain monitoring of the designated exclusion zone during non-work periods.

A minimum of three continuous air monitoring stations will be installed within the work area distributed such to provide representative sampling of the ambient air during the work.

6.3 Installation of Stormwater Control - Measures to Prevent Intrusion into the Intended Excavation Area

There are three primary potential pathways that stormwater could enter the excavation area; from upgradient surface runoff along an existing chain wall; direct entry from rainfall; and from building roof and wall runoff.

- Berms will be constructed and maintained to divert upgradient runoff near the existing chain wall.
- The open excavation areas will be covered at end of day or in preparation for rainfall events. Runoff from temporary covers will be directed to downstream elevations and into existing drainage pathways.

- The building is currently curbed with downspouts at several locations along the east wall. These facilities will be inspected and temporary piping installed to divert roof drainage away from the excavation and work area.

In the event any liquids collect in the excavations via stormwater intrusion or groundwater seepage, these liquids will be collected and stored in a secure area for characterization and appropriate disposition.

6.4 Utility Location and Identification within the Intended Excavation and Surrounding Area

Coordination with plant personnel will occur prior to mobilization to attempt to identify and locate all utility or other structures within the work area. Examination of drawings and discussions with personnel knowledgeable regarding the previous excavations will be conducted.

Although this is entirely on private property, the Mississippi One Call service notification will be made.

Field instrumentation will be utilized post asphalt removal and post concrete removal to scan the intended excavation areas. An EM-31 conductivity instrument and a Schonstedt GA-52CX magnetic locator will be utilized over all areas possible in an attempt to locate and or isolate potential unknown subsurface obstacles. It is understood that at least one abandoned 8-inch diameter waterline exists within the intended excavation area.

6.5 Removal, Segregation, and Stockpiling Of “Clean” Asphalt and Fill Soil Previously Placed Atop Geotextile within the Areas Previously Remediated Under the Corrective Action Plan

The previous CA activities included placement of geotextile fabric at the final depths of excavation, backfilling with clean fill, and placement of an asphalt surface over the areas remediated.

The asphalt cover will be removed and the materials either stockpiled onsite for reuse or hauled directly offsite for disposal.

Utility clearance measures will be implemented over this area after asphalt removal.

Probing will be performed during sampling activities listed below and will establish the depths of the clean backfill. The backfill will be removed down to within approximately 6 inches of the geotextile. The clean fill material will be stockpiled onsite for reuse.

6.6 Sawing, Demolition, and Characterization of the Concrete Slab Materials Covering a Portion of the Area

A concrete slab of varying thickness overlies the southeast portion of the proposed expansion. After establishing the proposed limits necessary for the foundation construction, sawing of the slab where it joins adjacent surfaces that will remain will be performed. The slab will then be broken in place via use of a hydraulic breaker. The grid pattern designated for the sampling of the concrete and soil will be surveyed and marked, then representative samples of the concrete taken per the sampling protocol for construction debris. Characterization of this material will ensue and the appropriate plans made for removal and disposal. Equipment used in the demolition process will be decontaminated prior to use elsewhere. Dust control measures will be implemented during the demolition process to prevent potential airborne releases.

6.7 Removal and Disposal of the Concrete Slab Materials

It is anticipated that the concrete construction debris will be characterized such as to allow disposal in a Subtitle "D" landfill, (contents less than 50 mg/kg). In that event, the materials will be excavated, loaded on trucks, and hauled directly to the appropriate disposal facility for disposal. All trucks will be covered, inspected and/or decontaminated prior to exiting the site, and manifested.

In the event disposal at a Subtitle "C" landfill is deemed necessary from the waste characterization, standby roll-off containers will be used to hold the material until removal and disposal can be effected. The roll-offs will be covered immediately, properly labeled, and placed into a secure area prior to shipment.

6.8 Sampling of the In-Place Soil and Concrete Construction Debris to Be Removed for Characterization

Sampling of soil and concrete construction debris will be performed in-place to establish adequate waste characterization information for disposal purposes. All materials exhibiting less than 50 mg/kg concentration of Aroclor 1260 will be transported to a Subtitle "D" landfill for disposal. Any material exhibiting 50 mg/kg or greater concentration of Aroclor 1260 will be transported to a Subtitle "C" landfill for disposal.

The sampling location and frequency is proposed based upon the rationale of adequately representing both volume and special distribution within the intended excavation. It is proposed that a sampling grid be established approximately on a 10-foot by 10-foot pattern covering the entire area to be excavated. The total depth of excavation planned is to elevation 461.3 feet relative to onsite benchmarks, which allows for over excavation from the expected construction depths.

Concrete Construction Debris

It is proposed that (15) samples be taken of the concrete via a random statistical spatial selection for the approximately 3,100 sq. ft. area. This yields approximately one sample per 3.8 cubic yards of material anticipated. In addition, it is proposed that up to three **biased** sample locations be chosen should field inspection indicate the potential presence of petroleum type substances or discoloration. The sample location selection is shown on Figure 3.

It is proposed that a representative sample from the entire slab cross section be taken at each location and analyzed for Aroclor 1260.

Soil

Utilizing the grid layout proposed above, it is proposed that (70) soil samples be taken, one at each grid node. This yields approximately one sample for each 18.5 cubic yards of soil anticipated to be excavated. In addition, it is proposed that up to seven **biased** sample locations be chosen should field inspection indicate the potential presence of petroleum type substances or discoloration. The sample locations proposed are shown on Figure 3.

The intended method of sampling is with Geoprobe[®] soil sampling equipment. Soil samples will be collected using a Geoprobe[®] Macro-core 48-inch long, 2-inch diameter soil sampling probe equipped with a disposable 1.5-inch diameter clear PVC sample collection tube within the probe. Prior to insertion, the soil sampling probe and drill/push rod will be decontaminated in a designated decontamination station location established on site in accordance with field decontamination procedures referenced in EISOPQAM Appendix B "*Standard Field Cleaning Procedures*". Several decontaminated, pre-assembled soil probes are typically used in a Geoprobe soil boring effort to streamline the time necessary to acquire soil samples from a borehole location. Upon completion of each 4-foot soil "push", the sample collection tube will be retrieved and split open, and the soil will be visually described and logged by the field geologist or hydrogeologist in accordance with the Unified Soil Classification System. In a rapid fashion, portions of the soil core will then be field screened for volatile organic vapor content and selected for laboratory chemical analysis as necessary in accordance with the selection criteria.

Each soil core will be field screened at approximate one-foot intervals for volatile organic vapor concentration using a calibrated Photovac Model 2020 Photoionization Detector (PID) equipped with a 10.6 eV lamp or a Heath Consultants, Detecto-Pak[®] Flame Ionization Detector (FID).

The field screening technique will entail initially splitting the core liner tube to expose the top of the soil core along its length. In a rapid fashion, the soil core will be pried apart slightly at approximately 6-inch to 12-inch intervals using a clean disposable Teflon[®] spatula. Upon prying apart each small section, the probe of the detector will be inserted into the opening to record the concentration of volatile organic vapors present in the small headspace created in the core. All soil descriptions, detector readings and other pertinent observations will be recorded on dedicated soil boring logs for each location. Soil samples will be collected for laboratory analysis in accordance with the rationale listed. Any anomalously high detector readings from

portions of the soil core not originally slated for chemical analysis may be included in the sampling program if deemed warranted by the field geologist or hydrogeologist.

It is proposed that one sample per location be obtained. This will be accomplished via compositing all sample material obtained at each location from (1) four-foot or less interval. Samples will exclude concrete and the recent fill material located in the corrective action area. All core samples will be examined by a Mississippi Registered Geologist and screened with FID equipment prior to final sample preparation as described above.

All samples will be collected in accordance with EPA Region IV EISOPQAM.

All sample locations will be surveyed by a Mississippi Registered Land Surveyor and referenced to the current coordinate system utilized for this site.

All samples will be analyzed either by an on site laboratory and/ or an off site lab as referenced in *Section 6.2 Analytical Methods of the CA Plan noted previously.*

6.9 Excavation and Removal of Soil within the Construction Boundaries for Disposal

The vertical and horizontal boundaries of the intended excavation are well defined. The results from the above described sampling for waste characterization will be closely examined to determine if any of the area contains waste that exceeds the disposal criteria for disposal in a Subtitle "D" landfill. If not, the excavation will proceed via conventional means and all excavated soil will be loaded directly into trucks for transport to the appropriate disposal facility. In the event concentrations of the primary COC Aroclor 1260 are found that meet or exceed the 50 mg/kg level, the soil from this area will be segregated and loaded into standby roll-off containers and arrangements made for disposal at the appropriate Subtitle "C" landfill. MDEQ will be notified of any samples exceeding this threshold concentration.

Excavation near and adjacent to the existing building and foundations will be finalized either by manual digging or air lance measures, dependent upon the H&S conditions warranted. Excavation will terminate at existing foundations or footers encountered.

Continuous air monitoring of the area and personnel will be performed during all work periods during the excavation and loading process.

Dust control measures will be effected when necessary to prevent airborne transport of particulate.

Survey control will be maintained throughout the excavation process.

All loaded trucks will be covered, inspected, and decontaminated if necessary prior to exiting the facility.

All waste shipments will be manifested and documented for inclusion into the final report submittal to MDEQ.

6.10 Placement of Geotextile on Bottom and Sides of the Resultant Excavation

After it is determined that the limits of the excavation have been reached throughout the entire excavation, the general contractor will be given opportunity to examine the final bottom hole conditions for structural integrity. Upon acceptance, geotextile fabric will be installed and anchored to cover the bottom and sides of the area excavated.

The geotextile material to be used will be approved by the general contractor as suitable for sub-grade application.

No confirmatory sampling is planned prior to installation of the geotextile.

6.11 Installation of 8 To 12-Inches of Compacted Backfill throughout the Excavation

After installation of the geotextile, clean fill material supplied by the general contractor will be placed into the excavation and compacted to an 8to12-inch thickness. The removal will then be considered complete and the excavated area released to the general contractor for foundation construction. Materials to be used in this backfill will be supplied by and certified clean by the general contractor. Material testing and compaction specification requirements will be provided by the general contractor prior to initiation of the excavation. Field compaction testing is to be provided by the general contractor.

6.12 Final Decontamination and Demobilization

Upon completion of the excavation, all waste handling operations and facilities will be decommissioned and all final waste characterized and shipped offsite for disposal at the respective facilities per the characterization.

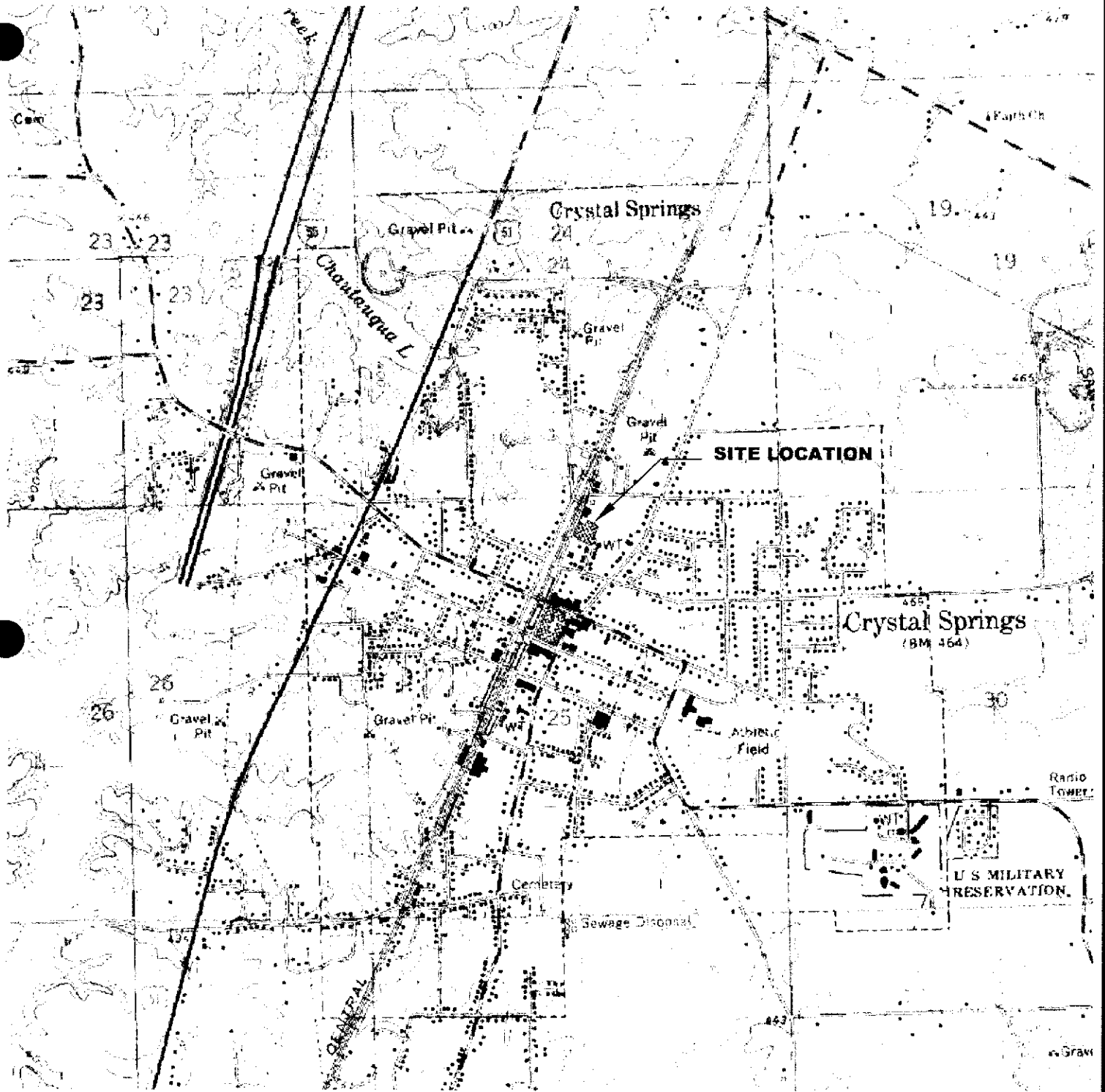
7.0 SCHEDULE

Mobilization can be effected within one week of receipt of the notice to proceed. The work is anticipated to require up to three weeks to complete without weather interferences or discovery of unknown conditions.

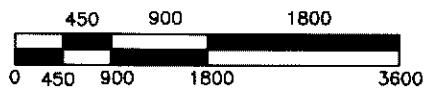
The anticipated sequence of work is as follows:

- 1) Development of a job specific health and Safety plan for the intended work,
- 2) Mobilization, establishment of decontamination facilities, and establishment of survey control,
- 3) Establishment of security of the work area,
- 4) Installation of stormwater control measures to prevent intrusion into the intended excavation area,
- 5) Utility location and identification within the intended excavation and surrounding area,
- 6) Sawing, demolition, and characterization of the concrete slab materials covering a portion of the area,
- 7) Sampling of the in-place soil to be removed for characterization,
- 8) Removal and disposal of the concrete slab materials,
- 9) Excavation and removal of soil within the construction boundaries of the concrete covered area for disposal,
- 10) Removal, segregation, and stockpiling of "clean" asphalt and fill soil previously placed atop geotextile within the areas previously addressed under the CA Plan,
- 11) Excavation and removal of soil within the construction boundaries of the asphalt covered area for disposal,
- 12) Placement of geotextile on bottom and sides of the resultant excavation,
- 13) Installation of 8" to 12" of compacted backfill throughout the excavation,
- 14) Final inspection and release to the General Contractor for foundation construction,
- 15) Final decontamination and demobilization,
- 16) Final project report preparation and submittal

Figures



SCALE 1 INCH = 1800 FEET



NOTE: PROPERTY BOUNDARIES AND SCALE ARE APPROXIMATE.

REFERENCE: U.S.G.S. TOPOGRAPHIC MAP
1963 - CRYSTAL SPRINGS
7.5 MINUTE SERIES
LINCOLN COUNTY, MS

SITE LOCATION MAP

EAST BAY EXPANSION SOIL REMEDIATION

KUHLMAN ELECTRIC
CRYSTAL SPRINGS, MS

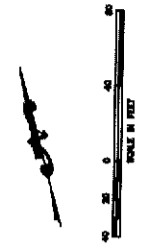
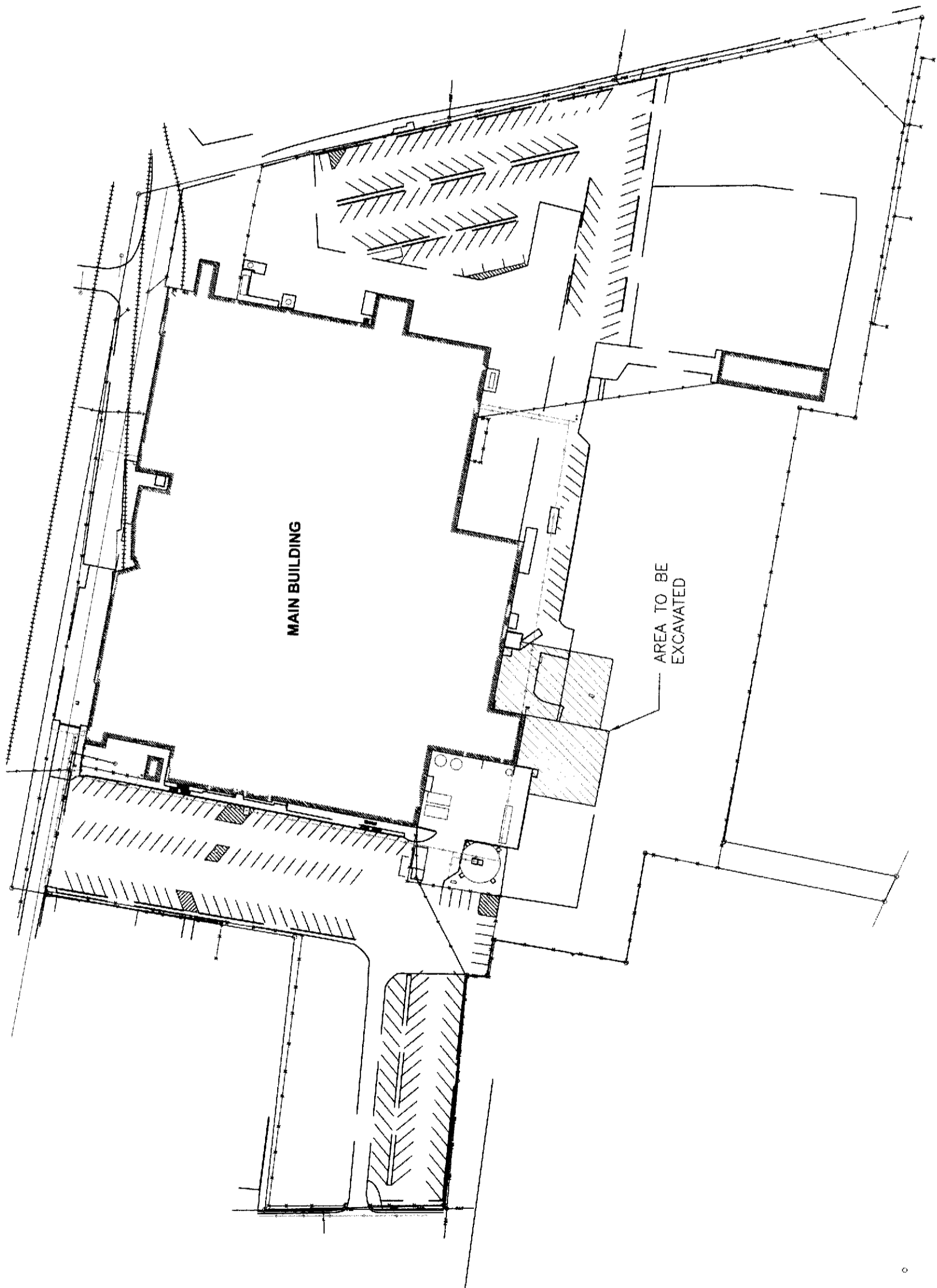
DATE: 5/25/05	APPROVED:	DRAWN BY: KRK
SCALE: 1" = 1800'	BY: DATE:	CAD NO. SITE LOCATION

ENVIRONMENTAL
MANAGEMENT SERVICES, INC.

FIGURE

1

H:\2005\msh\20050527\chris\ms\7\10\10000000\SITE LOCATION.MXD



FACILITY LAYOUT
 EAST BAY EXPANSION SOIL REMEDIATION
 KUHLMAN ELECTRIC CORPORATION
 CRYSTAL SPRINGS, MS

DATE: 5/25/05	APPROVED:	DRAWN BY: KRK
SCALE: AS SHOWN	BY:	CAD NO. FACILITY LAYOUT
	DATE:	FIGURE

ENVIRONMENTAL
 MANAGEMENT SERVICES, INC.

REFERENCE: GEOENVIRONMENTAL ASSOC. LLC
 MARTIN & SLACLE
 BLACK MOUNTAIN, NC

RECEIVED



LEGEND

- ⊕ PROPOSED POTENTIAL SAMPLE LOCATIONS (106 TOTAL / 80 TO BE SAMPLED)
- △ PROPOSED POTENTIAL CONCRETE SAMPLE LOCATIONS (21 TOTAL / 15 TO BE SAMPLED)

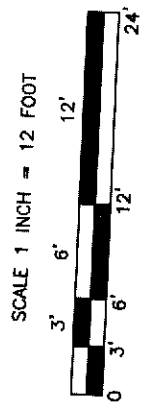
PROPOSED SAMPLE LOCATIONS
 EAST BAY EXPANSION SOIL REMEDIATION
 KUHLMAN ELECTRIC CORPORATION
 CRYSTAL SPRINGS, MS

DATE: 5/25/06
 SCALE: 1" = 12'

APPROVED: _____
 BY: _____
 DRAWN BY: KRK
 CAD NO. _____
 FACILITY LAYOUT

ENVIRONMENTAL
 MANAGEMENT SERVICES, INC.

FIGURE 3



CONCRETE COVERED AREA

ASPHALT COVERED AREA (GEOTEXTILE UNDERLAYMENT)

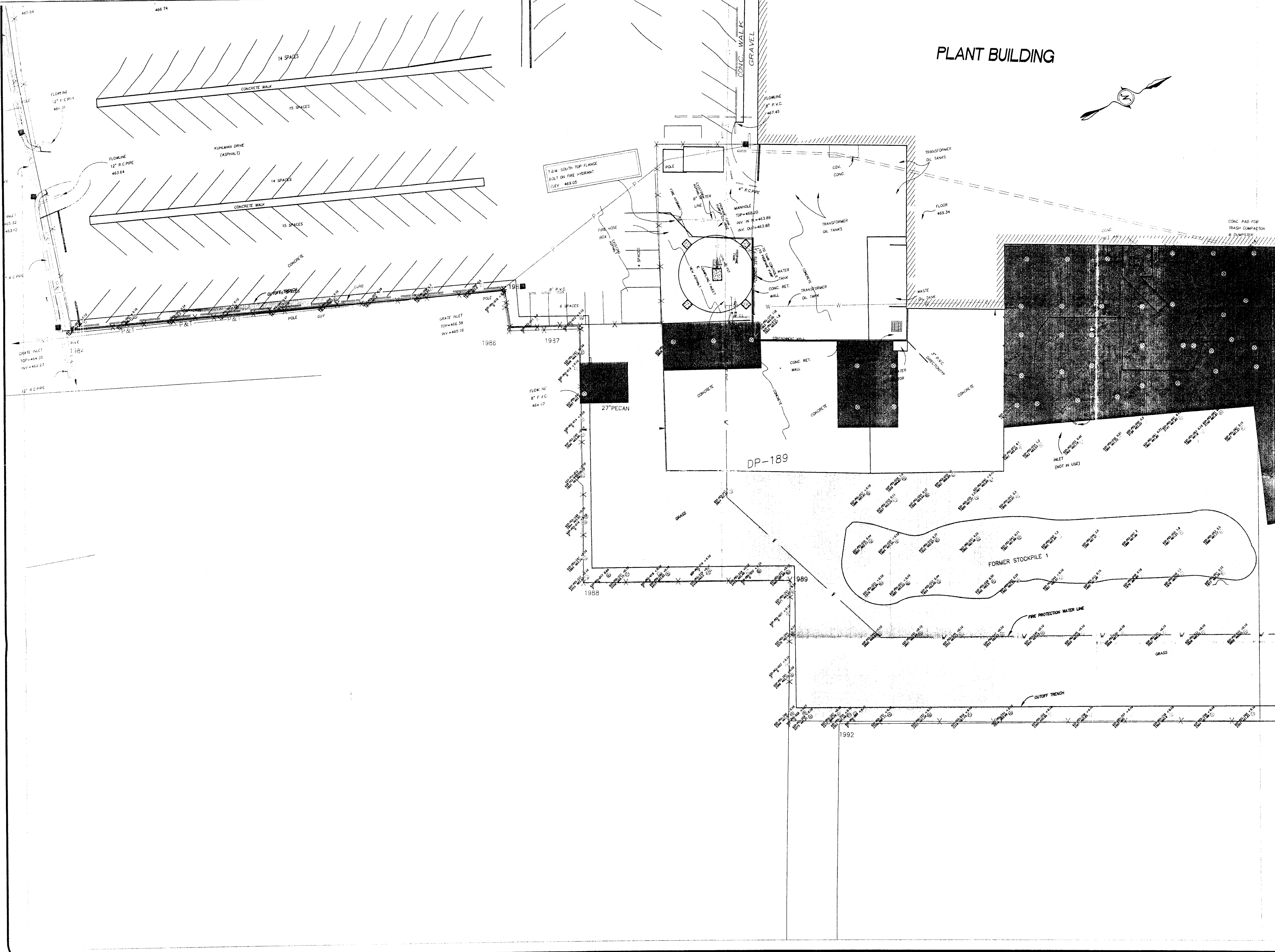
SOIL-COVERED AREA (GEOTEXTILE UNDERLAYMENT)

FOOTINGS DESIGNED TO BE INSTALLED BY OTHERS (C&I, INC. JACKSON, MS)

REFERENCE: GEOMONITORING ASSOC. LLC
 MARTIN & SLAGLE
 BLACK MOUNTAIN, NC

Attachment A

**Confirmatory Sample Locations
Martin & Slagle**



PREPARED FOR:
BorgWarner Inc
 Drainage Channel

GeoEnvironmental Associates LLC
MARTIN & SLAGLE
 PO Box 1023
 Black Mountain NC 28711
 828.669.3929 828.669.5289

REV	DESCRIPTION
1	SCALE 1"=30'
2	DR: DGR
3	CHK: O
4	REV: 0
5	DATE: 6/10/04

DRAWING NAME: CLOSURE F5

CONFIRMATION
 SAMPLE LOCATIONS

KUHLMAN ELECTRIC CORPORATION
 101 KUHLMAN DRIVE
 CRYSTAL SPRINGS, MS

FIGI

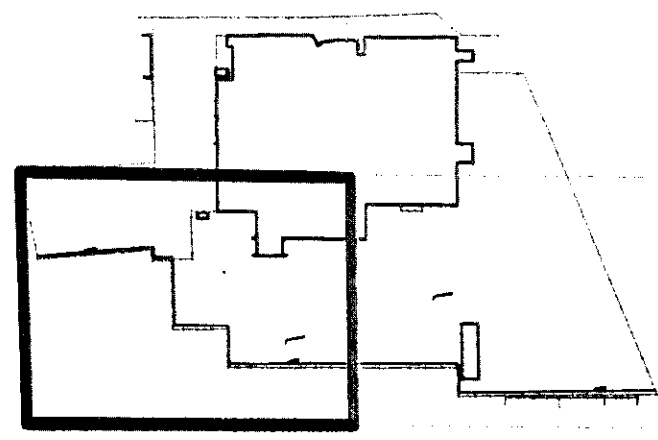
LEGEND

- ① SAMPLE ID NUMBER
 - ② PCB mg/kg
 - ③ SURVEY NUMBER
 - ④ ELEVATION
- SOIL REMOVED TO THE SUBTITLE 'D' LANDFILL
- SOIL REMOVED TO THE SUBTITLE 'C' LANDFILL
- ENGINEERED CAP
- EDGE OF CONCRETE OR ASPHALT
- FENCE
- 10 5 0 20ft

THIS IS A CLASS "A" SURVEY ACCORDING TO MINIMUM STANDARDS FOR LAND SURVEYING IN THE STATE OF MISSISSIPPI ESTABLISHED BY THE AUTHORITY OF SECTION 73-13-15(b), MISSISSIPPI CODE OF 1972 AS AMENDED.

REFERENCE MERIDIAN - TRUE NORTH BASED ON RECORDED PLATS.

INDICATES FERROUS METAL ROD ALONG PROPERTY LINES OR PROPERTY CORNERS.



Attachment B

Mississippi General Contractors License

STATE OF MISSISSIPPI



Certificate of Responsibility

No. 11682

Which Expires Apr. 12, 2006

State Board of Contractors

THIS IS TO CERTIFY THAT
ENVIRONMENTAL MANAGEMENT SERVICES, INC.
P.O. BOX 15369
HATTIESBURG, MS 39401

is duly registered and entitled to practice

AIR POLLUTION CONTROL BUILDING SPECIALTIES
HAZARDOUS MAT. ABATEMENT & REMEDIATION INSTALL. OF EQUIP., MACHINERY & ENGINES



Witness our hands and Seal of the Board,
dated Jackson, Miss. 13 day of Apr., 2005

Norman Black
CHAIRMAN
SECRETARY

Attachment C
Health and Safety Plan

SITE SPECIFIC HEALTH AND SAFETY PLAN

EAST BAY EXPANSION

**Kuhlman Electric Corporation
101 Kuhlman Drive
Crystal Springs, Mississippi**

Prepared For:

**KUHLMAN ELECTRIC CORPORATION
101 Kuhlman Drive
Crystal Springs, MS 39059**

Prepared by:

ENVIRONMENTAL 
MANAGEMENT SERVICES, INC.

**P.O. Box 15369
Hattiesburg, MS 39404**

May 2005

EXECUTIVE SUMMARY

Site Name: Kuhlman Electric

Site Address: Kuhlman Electric Corporation
101 Kuhlman Drive
Crystal Springs, Mississippi 39059

Site Work Description: Environmental investigation activities including installation of Geoprobe[®] borings, and soil and concrete sampling. Excavating and backfilling an area in preparation for construction activities.

Site Contaminants of Concern: Polychlorinated Biphenyls (PCBs)

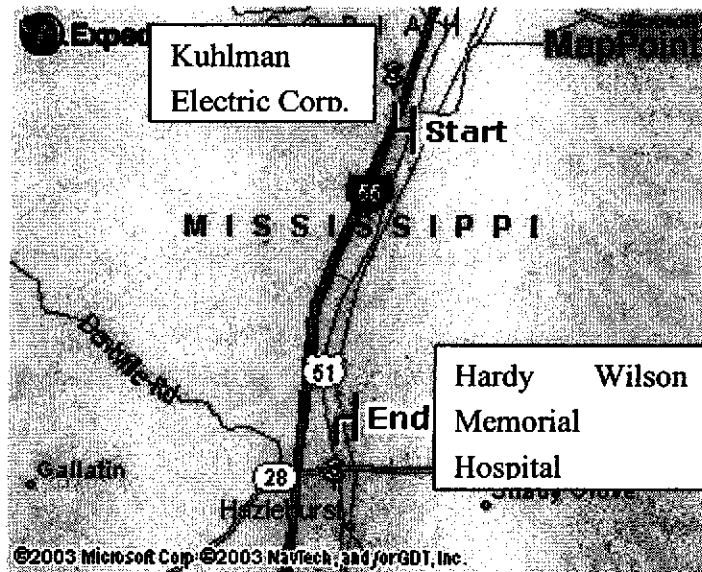
Personal Protective Equipment Designation: Level C and modified Level D

PPE Upgrade Action Levels: If air monitoring reveals levels greater than 10 ppm peak or 1 ppm (15 minute average), then upgrade to Level B with Self-Contained Breathing Apparatus.

Main Project Contacts:

Name	Title	Office Location	Office Phone	Home Phone	Cell Phone
Clyde Woodward	EMS Project Manager	Hattiesburg, MS	(601) 544-3674	(601) 736-6115	(601) 408-4387
Al Thomas	Kuhlman Electric	Crystal Springs, MS	(601) 892-6462		(601) 955-7668
Kate Carlton	EMS H&S Coordinator	Hattiesburg, MS	(601) 544-3674	(601) 579-4863	(601) 408-4383
Robbie Gates	EMS Site H&S Officer	Hattiesburg, MS	(601) 544-3674	(601) 736-7809	(601) 441-6434

**HOSPITAL LOCATION MAP AND ROUTE DIRECTIONS
EAST BAY EXPANSION
CRYSTAL SPRINGS, MS**



NEAREST MEDICAL FACILITY:

Hardy Wilson Memorial Hospital
233 Magnolia Street
Hazlehurst, MS
(601) 894-6200

DRIVING DIRECTIONS:

- 1) Start at the Kuhlman Electric site (101 Kuhlman Drive) and turn Left onto East Railroad Avenue, then Right onto East Marion Avenue
- 2) Turn Left onto US-51 for 1.4 miles, then Right onto South Pat Harrison Drive
- 3) Merge onto I-55 South via the ramp on the left and head south for 6.6 miles
- 4) Take Exit 61 and turn Left onto MS-28 East
- 5) Turn Right onto Caldwell Drive and then Right onto Magnolia Street

EMERGENCY PHONE NUMBERS:

DIAL 911 – State your Name, Location, and Nature of Emergency

Fire Department –	(601) 892-1313	200 West Marion Avenue
Police Department –	(601) 892-2121	237 West Railroad Avenue North
Ambulance -	(601) 894-2222	233 Magnolia Street, Hazlehurst

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- 1 Air Quality Monitoring Criteria for Non-Routine Activities
- 2 Potential Chemical Hazard Summary

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- 1 Site Location Plan
- 2 Site Layout

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- A Material Safety Data Sheets
- B Tailgate Safety Meeting Form
- C Medical Monitoring Status & OSHA Training Report
- D Incident Report Form
- E EISOPQAM Standard Field Cleaning Procedures

**SITE SPECIFIC HEALTH AND SAFETY PLAN
EAST BAY EXPANSION
CRYSTAL SPRINGS, MS**

1.0 POLICY

It is Environmental Management Services, Inc.'s (EMS's) policy that all EMS employees, subcontractors and visitors working on the Kuhlman Electric East Bay Expansion Project with the potential for exposure to hazardous substances comply with the procedures of the Health and Safety Plan appropriate for their assigned tasks while on site. Subcontractors are responsible for preparation of their own health and safety plan for their employees who work at the Kuhlman Electric site who perform activities outside the scope of work activities identified in this Site Health and Safety Plan.

2.0 PURPOSE

The purpose of this Site Health and Safety Plan (HASP) is to identify the potential hazards (physical and chemical) associated with the activities carried out by EMS employees and subcontractors working on the Kuhlman Electric east bay expansion project.

The format of the report lists pertinent quick-reference information in the Executive Summary and more detailed Health & Safety information in the text of the HASP. The reader should consult the appropriate section(s) for reference once the entire plan is read, understood, and indicated as such through their signature on the compliance agreement, also contained in the Executive Summary.

3.0 SCOPE

This Health and Safety Plan applies to employees of EMS, visitors, and subcontractor employees of Kuhlman Electric, working at the following site in conjunction with the east bay expansion project:

Kuhlman Electric Corporation
101 Kuhlman Drive
Crystal Springs, Mississippi 39059

The site location is shown in Figure 1 of this Health and Safety Plan.

4.0 OBJECTIVES

The objective of the Health and Safety Plan (HASP) is to establish guidelines and requirements for the safety of field personnel during the field activities associated with the referenced Kuhlman Electric east bay expansion project. The specific activities addressed by this plan are defined in Section 6.0.

All employees of EMS, visitors to the site, and subcontractors of Kuhlman Electric involved in field activities at this site are required to abide by the provisions of this plan. They are required to read this plan and sign the attached Compliance Agreement in the Executive Summary prior to initiation of any work.

The health and safety guidelines and requirements presented are based on a review of available information and an evaluation of potential hazards. This plan outlines the health and safety procedures and equipment required for activities at this site to minimize the potential for exposures of field personnel. This plan may be modified in response to additional information obtained regarding the potential hazards to field investigative personnel.

4.1 Site Description and History

The subject property is an operating industrial facility which manufactures power transformers. Located at 101 Kuhlman Drive in Crystal Springs, MS, the facility has been in operation since 1952. Transformer oil is stored in a secondary containment area located at the southeast corner of the main plant building. Prior to their ban in 1976, PCBs were commonly found in transformer oil. Previous environmental assessments conducted at the Kuhlman site indicate that soil contaminated with PCBs and various chlorinated benzenes is present on-site.

4.2 Anticipated Scope of Work

The scope of the future work for the Kuhlman Electric east bay expansion project for which this HASP applies includes various environmental site investigation and characterization activities for waste disposal purposes and excavating and backfilling an approximately 8,800 square foot area in preparation for future construction activities. In general, the anticipated field work may include all or part of the following:

- Collect samples of concrete and soil for waste characterization and disposal;

- operate air monitoring equipment outside the perimeter of the work area;
- demolition of concrete slab;
- removal and disposal of concrete and soil;
- placement of geotextile lining along bottom and sides of excavation area;
- install compacted backfill throughout excavation area; and
- decontamination of equipment and personnel.

The HASP is purposefully compiled to address safety measures that encompass these activities and their probable related tasks.

5.0 RESPONSIBILITIES

The following sections detail the responsibilities assigned to each member of the Health and Safety team assigned to this project, including overall corporate and project specific personnel.

5.1 EMS President

For this project the EMS President, Mr. Clyde Woodward, has the following responsibilities and authorities:

5.1.1 Responsibilities

- Assure that the work activities of supervised employees and subcontractors are performed in a manner consistent with the EMS Health and Safety Program.
- Assure that an approved Health and Safety Plan is prepared and properly implemented for this project.
- Designate a project Health and Safety Officer (HSO) and provide the HSO with project information related to health and safety matters and to assist the HSO in the development of the Health and Safety Plan.
- Implement the Health and Safety Plan.
- Assure compliance with the Health and Safety Plan by EMS personnel and EMS contractor personnel.
- Coordinate with the HSO on health and safety matters.
- Assure that adequate funds are allocated to fully implement project Health and Safety plans.

5.1.2 Authorities

- Determine matters relating to schedule, cost, and personnel assignments on hazardous waste management projects.
- Temporarily suspend field activities, if the health and safety of personnel are endangered, pending further consideration by the HSO.
- Temporarily suspend any individual from field activities for infractions of the Health and Safety Plan, pending further consideration by the HSO.
- Assign HSO-approved Site Safety Officer (SSO) to the project and assign a suitably qualified replacement, if necessary.

5.2 EMS Health and Safety Personnel

EMS will appoint a Health and Safety Coordinator to serve as a point of contact for the EMS President. The Health and Safety Coordinator will be responsible for creating and updating the Health and Safety Plan, ensuring personnel assigned to perform the work described in 4.2 above have current HAZWOPER training and medical surveillance monitoring, and assist in determining proper personal protective equipment based on site conditions. For this project,

Kate Carlton will serve as the Health and Safety Coordinator. The Site Health and Safety Officer assigned to this project is Robbie Gates.

As the EMS Site Health and Safety Officer, Mr. Gates has the following responsibilities and authorities:

5.2.1 Responsibilities

- Direct the implementation of the Health and Safety Program of the environmental services site operations personnel and provide recommendations for improvement of the program;
- Coordinate the health and safety activities of the field operations;
- Determine need for project Health and Safety Plans;
- Review and approve Health and Safety Plans;
- Monitor implementation of Health and Safety Plans;
- Investigate reports of incidents or accidents and report accidents or incidents to the EMS President;
- Determine whether an accidental exposure or injury merits a change in the affected individual's work assignments and whether changes in work practices are required;
- Coordinate with EMS President and Health and Safety Coordinator with regard to health and safety equipment needs;
- Report immediately safety-related incidents or accidents to the EMS President;
- Maintain health and safety equipment on site, as specified in the Health and Safety Plan.

5.2.2 Authorities

- Approve or disapprove Health and Safety Plans;
- Access project files;
- Direct changes in personnel work practices to improve health and safety of employees involved in hazardous waste management activities;
- Remove individuals from projects, if their conduct jeopardized their health and safety or that of co-workers;
- Suspend work on any project that jeopardizes the health and safety of personnel involved.

5.3 Employees, Subcontractors, and Visitors

Employees and visitors will comply with all requirements/provisions of the Health and Safety Plan, including exclusion from the primary work zone. Other contractors will comply with all requirements of this Health and Safety Plan where applicable. If the work of the contractor's employees is outside the scope of work identified in this plan, then the contractor must develop and implement his own site-specific health and safety plan for protection of his employees while at the Kuhlman Electric site. Employees will report all incidents related to

health and safety to the Site Health and Safety Officer immediately and to the EMS President within 24 hours of the incident.

It is the responsibility of contractors to provide their employees with a site specific health and safety plan for all work conducted at the Kuhlman Electric site which is beyond the scope of work outlined in this plan. The contractor employees are required to comply with their employer's health and safety plan. The contractor employees shall also comply with EMS's Site Specific Health and Safety Plan, which will be provided to all contractor employees for review prior to or upon entering the Kuhlman Electric site. Contractor employees must also report any health and safety incidents to the EMS Site Health and Safety Officer immediately and EMS President within 24 hours of the incident, as specified in the EMS General Health and Safety Requirements and Procedures.

Visitors to the Kuhlman Electric east bay expansion site shall be instructed to stay outside the work zone during the extent of their stay. Visitors who request observation of the work zone must have the necessary health and safety training (OSHA 29 CFR 1910.120) and be certified and trained to wear all appropriate health and safety personal protective equipment prior to entering the work zone. Should respiratory protection be necessary, visitors who wish to enter the work zone must produce evidence of a physical examination, respiratory protection training, and a respirator fit test, if necessary, within the past twelve (12) months.

6.0 GENERAL DESCRIPTION OF WORK

EMS workers at the Kuhlman Electric east bay expansion project site for which this program applies will perform similar general duties and are potentially exposed to the same or similar substances throughout the extent of the project. General work activities are described below.

No recent environmental or personal air monitoring has been conducted to characterize or quantify the actual worker exposures; therefore, only an estimate of the potential exposures has been made based on similar site investigation efforts at similar facilities. For this site investigation, personal protective equipment will be worn to negate, to the extent practical, worker exposure to contaminants.

6.1 Concrete and Soil Boring Activities

Concrete and soil potentially contaminated with PCBs and their natural breakdown components must be removed from the area before construction can begin. Assessment activities for characterization and disposal of the concrete and soil will include intrusive efforts related to the collection of soil samples and concrete samples for laboratory analysis. For the majority of the investigative tasks, a Geoprobe[®] direct-push rig will be used to collect the required samples. The Geoprobe[®] device creates minimal cuttings due to the direct-push operation, and worker exposure to the contaminants of concern (COC) is only through the transfer and field analysis of small samples of material. Workers may be exposed to PCBs and chlorinated benzenes that may be present in the materials.

6.2 Concrete Slab Demolition

The concrete slab overlying the area of the proposed excavation must be removed prior to the initiation of excavation activities. EMS personnel will saw the slab where it joins adjacent surfaces and then use a hydraulic breaker to break up the concrete. All hand and power operated tools shall be maintained in a safe condition and inspected daily before use. Tools exhibiting unsafe conditions shall be removed from service and replaced. Dust control measures will be implemented during the demolition process to prevent potential airborne releases. Potential hazards include machine guarding, heat stress, slip, trip, and fall, noise, and potential chemical exposure to PCBs.

6.3 Excavation Activities

Approximately 1,800 cubic yards of soil and concrete are scheduled to be removed during the east bay expansion project. The material will be excavated, loaded on trucks, and then

hauled directly to the appropriate disposal facility. Prior to the commencement of excavation activities, EMS personnel shall locate any underground installations including sewer, telephone, fuel, electric, and water lines, that may be expected to be encountered during excavation work. While the excavation is open, underground installations will be protected as necessary to safeguard employees. A stairway, ladder, ramp, or other safe means of egress shall be located in trench excavations that are 4 feet or greater in depth so as to require no more than 25 feet of lateral travel for employees. Working in excavations where water has accumulated is prohibited.

No employee shall be permitted underneath loads handled by lifting or digging equipment. Employees shall be required to stand away from any vehicle being loaded or unloaded to avoid being struck by any spillage or falling materials. Hard hats shall be worn when overhead hazards are present. When mobile equipment is operated adjacent to an excavation, or when such equipment is required to approach the edge of an excavation, an employee will direct and spot the equipment operator. Materials and equipment shall be kept at least 2 feet from the edge of the excavation to prevent equipment and materials from falling or rolling into the excavation. Where stability of adjoining buildings or structures is endangered by excavation operations, support systems (i.e., shoring or bracing) shall be provided. A safety harness and line shall be readily available for emergency rescue if needed.

Daily inspections of excavations, the adjacent areas, and protective systems shall be made by a competent person prior to the start of work and as needed throughout the shift. Inspections shall also be made after every rainstorm or other hazard increasing event. These inspections are only required when employee exposure can be reasonably anticipated. Should evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions be discovered, exposed employees shall be removed from the area until the necessary precautions have been taken to ensure their safety.

The potential hazards associated with the operation of the construction machinery, trenching and excavation activities include physical hazards (machine guarding, heat and cold stress, radiation (sunlight and ultraviolet), etc.), overhead and buried utilities, noise, fire hazards, and in some cases potential chemical exposure.

6.5 General Site Activities

The general site activities related to the project entail decontamination of equipment and personnel, surveying, and overseeing the collection of waste materials for transport. These activities may present potential exposure PCBs, sunlight, noise and moderate to high heat stress depending upon environmental conditions. Exposure to slip, trip, and fall hazards created by wet surfaces and accumulated equipment may also be experienced by personnel.

7.0 HAZARD ASSESSMENT

An assessment of hazards has been made for each activity group specified in the previous section. The following hazards have been identified:

7.1 Physical Hazards

The physical hazards associated with this project can be summarized as follows:

- Heat Stress
- Slip, Trip, Fall Hazards
- Operation of Mobile Equipment
- Heavy Lifting
- Noise
- Electrical (aboveground utility) Hazards

7.1.1 Heat Stress

The personal protective equipment (PPE) designated for field activities at this site will be Level C (full-facepiece air purifying respirator, white Tyvek® coveralls, gloves, steel-toed boots, and a hard hat as appropriate). Because of the heat and humidity that can be expected during this project, the wearing of chemical resistant suits and respirator can increase the chance for heat stress, heat exhaustion, or heat stroke. The work should be optimally scheduled during the early morning or late evening hours to allow the work to be conducted at lower ambient temperatures. Additional breaks or rest periods may be required due to the added heat stress from the PPE.

7.1.2 Slip, Trip, Fall Hazards

Potential for slips, trips and falls from site operations is deemed moderate to high. Proper housekeeping procedures to safely store and use the equipment while working is essential to preventing slips, trips, and falls.

EMS employees and subcontractors shall keep all work areas and means of access clean, safe, and orderly. Any subcontractor employee who does not keep work areas clean, safe, and orderly can be removed from the site by the Site Health and Safety Officer.

All passageways and access ways shall be kept free of materials, supplies, and obstructions at all times. Tools, materials, extension cords, hoses, or debris shall not cause tripping or other hazards. Tools, materials, and equipment subject to displacement or falling shall be

adequately secured. Storage and construction sites shall be kept free from the accumulation of combustible materials.

Accumulation of liquids, particularly flammable and combustible liquids, on floors, walls, etc., is prohibited. All spills of flammable and combustible liquids shall be removed immediately, and materials used in the cleanup shall be properly disposed in an approved flammables storage container (safety can or equivalent).

7.1.3 Operation of Mobile Equipment

Operations of mobile equipment present potential for physical injury due to pinching, crushing or lacerations. Any EMS employees or subcontractors who operate mobile equipment are responsible for operating the equipment in a safe manner. The guidelines outlined in this section should be followed as well as the equipment manufacturer's instructions regarding safe operation of the equipment.

Machinery and equipment shall not be operated in a manner that will endanger persons or property. Safe operating speeds and loads shall be observed with all machinery or equipment. Machinery shall be operated in accordance with the manufacturer's instructions and recommendations.

7.1.4 Heavy Lifting

Manual lifting or movement of heavy objects may expose workers to back, arm, and shoulder injuries. Whenever possible, mechanical lifting should be used to lift or move loads. Loads weighing greater than 50 pounds may require two people. Smart lifting practices including stretching, bending at the knees, and bringing the load close to the body prior to lifting shall be used when heavy objects are lifted or moved by employees.

7.1.5 Noise

Heavy equipment operations will likely produce noise hazards to personnel working in the immediate vicinity of the equipment operations. If personnel must resort to yelling or raising their voices to be heard above the equipment (e.g., operation of diesel generators, pneumatic hammers, chain saws, etc.), the use of earplugs or similar hearing protection devices is required. Permanent hearing loss could potentially result from repeated exposure to excessively noisy operations. A baseline and annual audiometric testing requirement is part of the medical surveillance program for EMS employees. Appropriate hearing protective devices shall be provided by EMS to all employees and subcontractors carrying out activities

where the Occupational Safety Health Administration (OSHA) Permissible Exposure Limit (PEL) is found to be exceeded.

7.1.6 Operations Adjacent to Overhead Lines

Work activity adjacent to overhead lines shall not be initiated until a survey has been made to ascertain the safe clearance from energized lines. EMS will be responsible performing a daily survey in this regard. No overhead lines were observed in or near the secondary containment area during a recent inspection. However, daily inspections will be made to verify the absence of such. If a potential hazard is found, it is the responsibility of the EMS Project Manager to make sure this information is provided to any other contractors who will be performing work in the vicinity of overhead lines and no work is to commence until an all-safe condition is determined and communicated to all personnel.

Any overhead wire shall be considered energized unless and until the person owning such line or operating officials of the electrical utility supplying the line assures that it is not energized and it has been visibly grounded.

Operations adjacent to overhead lines are prohibited unless at least one of the following conditions is satisfied:

- 1) Power has been shut off and positive means to prevent the lines from being energized;
- 2) Equipment, or any part does not have the capability of coming within the minimum clearance from energized overhead lines as specified in this section, or the equipment has been positioned and blocked to assure no part, including cables, can come within the minimum clearances as specified in this section; a notice of the minimum required clearance has been posted at the operator's position, or
- 3) In transit with boom lowered and no load, the equipment clearance is at least 4 feet for voltages or 50 kV or greater up to and including 345 kV, and 16 feet for voltages greater than 345 kV. (Source: Army Corps of Engineers Safety and Health Requirements Manual).

Minimum Clearance from Energized Overhead Electric Lines

<u>Nominal system voltage</u>	<u>Minimum required clearance</u>
<u>0-50kV</u>	<u>10 feet</u>
<u>51-100kV</u>	<u>12 feet</u>
<u>101-200kV</u>	<u>15 feet</u>
<u>201-300 kV</u>	<u>20 feet</u>
<u>301-500 kV</u>	<u>25 feet</u>
<u>501-750 kV</u>	<u>35 feet</u>
<u>751-1000kV</u>	<u>45 feet</u>

Work activity that could affect or be affected by overhead lines shall not be initiated until coordinated with the appropriate utility officials.

Cranes and equipment with booms shall not be positioned so as to allow any part of the equipment or load to come within 10 feet of lines operating up to 50 kV. For lines operating above 50 kV, this distance must be at least 10 feet plus 0.4 inch for each 10 kV over 50 kV or twice the length of the line insulator, but never less than 10 feet.

7.2 Chemical Hazards

The main chemical hazards associated with this project can be summarized as polychlorinated biphenyls (PCBs). In general, worker potential chemical exposures for the planned work are considered light to moderate hazards at the Kuhlman Electric east bay expansion project site. No recent air monitoring (environmental or personal) has been conducted to quantify/characterize worker exposures at this site; therefore, only a qualitative estimate of the potential exposures has been made based on site visits and similar investigative efforts at similar facilities.

Attachment A contains Material Safety Data Sheets (MSDS) of the main chemical components that could be deemed environmental contaminants. The MSDS indicate the effect of chemical exposure for the main chemical hazards identified at the site. Table 2 presents a summary of the MSDS information related to the pertinent chemical exposure limit information. These chemicals include PCBs and their associated natural breakdown components that are considered toxic or containing a regulated maximum concentration limit in groundwater and/or drinking water. In addition, other chemicals including fuels and equipment decontamination solvents are included.

Personnel can be exposed to chemical hazards through four routes of exposure: inhalation, ingestion, absorption, and injection.

Personnel will wear full-facepiece air purifying respirators to control the inhalation of chemical hazards during the concrete slab demolition and excavation activities of this project. The full-facepiece respirator will also supply eye protection.

Ingestion of chemical hazards will be controlled on this site by prohibiting any eating, smoking, chewing or "dipping" of smokeless tobacco, or drinking in the work zone and by requiring all field personnel to decontaminate themselves before leaving the site.

Tyvek[®] suits and latex gloves will be worn by field personnel to prevent potential chemical exposure. Additionally, a portable eye wash station capable of providing 15 minutes of flushing is required onsite for emergency first aid for eye irritations. The eye wash station will be located on site within 50 feet of chemical storage areas or within a readily accessible distance from the site work location.

PPE to protect the body against contact with known or anticipated chemical hazards has been divided into four categories by the Occupational Safety and Health Administration (OSHA) (i.e., Level A, B, C and D) according to the degree of protection afforded. The degree of protection goes from the highest level (Level A) to the lowest (Level D). The level of protection selected depends upon the task-by-task hazard analysis but will be Level C for the concrete slab demolition and excavation activities conducted at the Kuhlman Electric site.

7.3 Task-by-Task Hazard Analysis

The activities to be conducted at the site are listed in Section 6.0. A task-by-task hazard analysis is presented in the following section. The chemical hazard analysis was based on the following criteria:

Low- activities are likely to result in negligible chemical exposure (i.e., at least 10 times lower than the OSHA PEL).

Moderate - activities are likely to result in chemical exposure below established exposure limits.

High - activities are likely to result in chemical exposure near or above established exposure limits.

Task 1 –Concrete and Soil Boring Activities

<u>Hazard</u>	<u>Anticipated</u>
Physical	Moderate
Chemical	Low
Heat Stress	Moderate to High
Biological	Low
Noise	Moderate to High

Task 2 –Concrete Slab Demolition

<u>Hazard</u>	<u>Anticipated</u>
Physical	Moderate to High
Chemical	Moderate
Heat Stress	Moderate to High
Biological	Low
Noise	High

Task 3 –Excavation Activities

<u>Hazard</u>	<u>Anticipated</u>
Physical	Moderate to High
Chemical	Moderate
Heat Stress	Moderate to High
Biological	Low
Noise	Moderate to High

Task 4-General Site Activities

<u>Hazard</u>	<u>Anticipated</u>
Physical	Moderate
Chemical	Low to Moderate
Heat Stress	Moderate to High
Biological	Low
Noise	Low to Moderate

For emergency response procedures, where warranted, Level C PPE should be utilized for the maximum protection for initial response by EMS personnel. For all other general, non-intrusive activities with the exception of welding activities at the site, modified Level D PPE appears to be appropriate, based on the observations made of the tasks conducted by EMS employees or subcontractors and the reported concentrations of chemicals in the soil.

8.0 GENERAL HEALTH AND SAFETY REQUIREMENTS

8.1 Site Control and Work Zones

The minimum level of protection for the job site is modified Level D PPE. During concrete slab demolition and excavation activities, Level C PPE will be worn. Site control will be maintained by the requirement of a sign-in/-out checkpoint for the site (typically at the project manager's vehicle). All EMS employees, subcontractors, and visitors will be required to sign-in/-out at the site entry check point and be briefed on the safety considerations of the site work.

To minimize the movement of contaminants from the site to uncontaminated areas, three work zones will be set up during activities conducted under Level B and Level C PPE. The three work zones will include the following:

- Zone 1: Exclusion Zone
- Zone 2: Contamination Reduction Zone
- Zone 3: Support Zone

Based on physical site conditions and air monitoring, the Site Health and Safety Officer will determine the extent of the zones. All persons entering the exclusion zone must wear, at a minimum, Level C PPE during concrete slab demolition and excavation activities. Access into the exclusion zone will be limited to those individuals essential to the performance and documentation of the project, and who are able to provide certification of proper training in hazardous waste operations (29 CFR 1910.120).

Between the exclusion zone and support zone is the personnel contamination reduction zone (CRZ), which provides a transition zone between the contaminated and clean areas of the site. This zone will be located directly outside of the exclusion zone and will be defined as a 10-foot (minimum) zone directly outside the exclusion zone. Decontamination of personnel and equipment will take place in this area. A decontamination pad, lined with polyethylene or plastic sheeting, will be constructed in the CRZ. Additional decontamination pads will be constructed as needed. Personnel performing decontamination activities in the CRZ must wear, at a minimum, Level C PPE.

The support zone will be an uncontaminated area from which operations will be directed. It is essential that contamination from the site be kept out of this area. Included in this area will be a storage area for decontaminated clothing, additional personal protective equipment, etc. Level D PPE is required in the support zone.

8.2 Personal Protective Equipment Provided

Level C PPE includes, either a powered air-purifying hood or air-purifying respirator with organic vapor and/or other appropriate cartridges, Tyvek suit, gloves, chemical-resistant steel-toed boots, and hard hats (where overhead hazards exist). Safety glasses will not be required as the powered air purifying respirator is equipped with a hood and the full facepiece air purifying respirator provides eye protection. For non-intrusive, routine site activities, the modified Level D PPE includes a hard hat (overhead hazards), Tyvek® coverall, safety glasses with side shields and steel-toed, steel shanked safety boots. Hearing protective devices (hearing plugs or muffs) will also be provided for activities or areas posted for noise hazards.

The following personal protective equipment will be required of and/or made available to personnel involved in the field work at this site:

Level C Protection

Inner gloves - chemically resistant (Nitrile or Neoprene)

Outer gloves - latex

Boots - chemically resistant, steel-toed, and steel shanked

Tyvek suit

Powered air-purifying respirator with hood or Respirator with organic vapor cartridges

Hearing protection, noise plugs or equivalent (use during noisy operations)

Hardhat

Modified Level D Protection

Inner gloves - Nitrile or Neoprene

Outer gloves - Latex

Coveralls, Tyvek®

Boots - chemically resistant, steel-toed, and steel shanked

Safety glasses with side shields or goggles

Hearing protection, noise plugs or equivalent (use during noisy operations)

Hardhat

8.2.1 Head Protection

For splash protection, hooded Tyvek® will be required. For overhead protection, a hardhat will be required.

8.2.2 Eye Protection

The hooded powered air purifying unit and full-facepiece air purifying respirator will serve for eye protection during the concrete slab demolition and excavation activities. Safety glasses with side shields or goggles will serve for eye protection during other activities conducted at the site.

8.2.3 Skin Protection

Latex gloves will be worn by all personnel contacting materials or samples potentially impacted by dilute solutions of the COC. Inner gloves of Neoprene or Nitrile with latex outer gloves for dexterity must be worn by all personnel who have potential for dermal contact with recovered free product if it exists. The gloves will be disposed of after each use or when they become worn or punctured. If the gloves appear to be deteriorating under chemical action, the Site Health and Safety Officer should be notified. Additionally Tyvek® coveralls will be provided.

8.2.4 Footwear

Steel-toed and shanked boots with chemically resistant boot covers or steel-toed and shanked chemically resistant boots will be worn by all EMS on-site personnel during intrusive site investigative operations requiring Level D or higher.

8.2.5 Respiratory Protection

A powered air-purifying hood or a respirator with organic vapor cartridges and/or other types of cartridges as deemed appropriate by the Site HSO is required for all activities at the site requiring Level C PPE. The organic vapor cartridges should be changed on a regular basis or in case of break through of organic vapors. Refer to Table 1 for the Air Quality Monitoring Action Levels for non-routine activities. Table 1 outlines the air monitoring equipment, parameters, airborne concentrations, and respiratory upgrade requirements for non-routine activities. If air monitoring reveals levels greater than 10 ppm (peak) or 1 ppm (15 minute average), then an air-purifying respirator with organic vapor cartridges shall be worn by personnel.

8.2.6 Hearing Protection

Hearing plugs shall be worn by personnel when in close proximity to excessively noisy operations (above 85 dbA).

In addition to the personal protective equipment listed above, a portable eyewash station, a first aid kit, and a fire extinguisher will be available for use. The portable eyewash stations must be capable of flushing for 15 minutes. An eye wash station will be located on site in a centrally designated location or within approximately 50 feet of the active cleaning or sampling operations.

8.3 Medical Examination

Before commencing any of the field activities, all EMS employees involved in the work must have taken an annual medical examination within the last twelve months as part of EMS's medical surveillance program and deemed acceptable for work. For intrusive activities that have the potential for contact with contaminated material, any EMS subcontractor employees must take an approved medical examination as part of their employer's medical surveillance program. The medical surveillance program of the subcontractor must meet the minimum requirements for those outlined in EMS's medical surveillance program.

8.4 Compliance Agreement

The EMS Site Health and Safety Officer shall hold meetings with all field personnel before work commences. Initially, all personnel shall be provided with a copy of this safety plan for review; the work activities shall be discussed and questions answered. Signed Compliance Agreement Forms located in the Executive Summary of this document shall be collected by the Site Health and Safety Officer and filed with the central project files in the EMS home office. Employees or contract workers refusing to sign the form will not be allowed to work on the site.

8.5 Prohibitions

- Smoking, eating, drinking, chewing gum or tobacco, storing food or food containers shall not be permitted inside the exclusion zone or the contamination reduction zone. Good personal hygiene should be practiced by field personnel to avoid ingestion of contaminants or spread of contaminated materials;
- Ignition of flammable liquids within, on, or through improvised heating devices or space heaters is prohibited;

- Approach or entry into areas or spaces where toxic or explosive concentrations of gases or dust may exist without proper equipment available to enable safe entry will be avoided;
- Conduct of onsite operations that may involve contact with contaminated materials shall not be permitted without offsite back-up personnel;

8.6 Site Safety Meetings

During all non-routine site activities involving EMS employees or subcontractors, daily “tailgate” safety meetings will be held by the Site Health and Safety Officer to review and plan the specific health and safety aspects of scheduled work for that day. An example of the EMS Tailgate Safety Meeting Form is presented in Attachment B.

8.7 Safety Training

All personnel entering established work areas must have available onsite for review documentation of their successful completion of specific training required by 29 CFR 1910.120. Training requirements include an initial 40-hour Hazardous Waste Operations (HAZWOPER) course and an 8-hour annual refresher for HAZWOPER. Reports generated from EMS’s training database detailing OSHA training and medical monitoring status of the EMS personnel is contained in Attachment C. Training certificates will be presented upon request.

8.8 Decontamination Procedure

Adequate personnel decontamination stations are essential to assuring protection for employees engaged in sampling operations from contaminants which may have come in contact with their PPE during site characterization operations. Decontamination for routine operations shall include hand and face washing and scrubbing, discarding disposable gloves and outer boot covers (if worn), or scrubbing the outside of chemically resistant safety boots with soap and water.

An adequate personnel decontamination station placed at the edge of the exclusion zone will consist of at least the following components:

- a. An adequate sized plastic sheet for flooring
- b. Boot wash equipment
 1. Water/Liqui-Nox solution container

2. Water rinse container
3. Long handled plastic brush
4. Containers for wash water
- c. Waste containers (disposable PPE, tape, etc.)
- d. Hand wash equipment
 1. Water/Liqui-Nox solution container
 2. Water rinse container
 3. Paper towels
 4. Containers for wash water

8.8.1 Decontamination of Personnel

For routine operations, all personnel will utilize the decontamination area provided for personnel to wash hands and face and to wash boots. All personnel who enter the exclusion zone utilized for work will be required to undergo decontamination when leaving the exclusion zone.

The following steps are required for personnel decontamination:

- a. Deposit equipment that needs to be decontaminated on plastic drop cloths.
- b. Wash suits, boots and outer gloves with long handled brushes in washtubs containing detergent water.
- c. Rinse suits, boots and outer gloves with long handled brushes in washtubs containing clear water or use a sprayer to rinse off boots and gloves.
- d. Remove tape and outer gloves.
- e. Remove outer protective clothing by turning inside out.
- f. Rinse respirator.
- g. Remove inner gloves.
- h. Wash hands and face.

8.8.2 Decontamination of Equipment

Decontamination of equipment shall be accomplished by the procedures outlined in Appendix B of the EPA Environmental Investigation Standard Operating Procedures and Quality Assurance Manual, revised 2001 and included as Appendix E.

8.9 Disposal of Decontamination Wastes

All waste from decontamination procedures (i.e., disposable suits, tape, wash/rinse solutions, gloves, etc.) shall be contained on site in 55-gallon drums for subsequent disposal. The drums' contents shall be clearly labeled on the outside of each drum using a permanent marker with the appropriate Hazardous Waste Labeling according to the EPA and Department of Transportation (DOT) requirements (Solid Waste, N.O.S., etc.).

9.0 EMERGENCIES/ACCIDENTS

9.1 Emergency Services

Procedures for emergency response are given in Section 9.2. The Project Manager shall coordinate emergency response on site. Emergency phone numbers and directions shall be posted in a prominent location in the support zone. The Project Manager shall confirm the location of and directions to the hospital and medical clinic. Any revisions to this section must be posted and all personnel notified of the changes. Copies of this plan and Material Safety Data Sheets shall be provided to any emergency response personnel upon request.

9.1.1 Emergency Phone Numbers

In case of an emergency, the following local emergency services must be notified. These numbers shall be posted throughout the site and/or made accessible to each employee on site.

Emergency numbers for the hospital, fire department, and police are shown on page i in the Executive Summary of this document.

9.1.2 Hospital Route

The route to the hospital is described on page i in the Executive Summary section of this HASP.

9.1.3 EMS Environmental and Health and Safety Emergency Contacts

Name	Title	Office Location	Office Phone	Home Phone	Cell Phone
Clyde Woodward	EMS Project Manager	Hattiesburg, MS	(601) 544-3674	(601) 736-6115	(601) 408-4387
Al Thomas	Kuhlman Electric	Crystal Springs, MS	(601) 892-6462		(601) 955-7668
Kate Carlton	EMS H&S Coordinator	Hattiesburg, MS	(601) 544-3674	(601) 579-4863	(601) 408-4383
Robbie Gates	EMS Site H&S Officer	Hattiesburg, MS	(601) 544-3674	(601) 736-7809	(601) 441-6434

9.2 Emergency Response Procedures

The Project Manager has responsibility and authority for coordinating all emergency response activities until proper authorities arrive and assume control.

If an employee working in a contaminated area is physically injured, Red Cross first aid procedures should be administered by certified personnel, if available. Depending on the severity of the injury, emergency medical response may be sought. If the employee can be moved, they will be taken to the edge of the work area (on a stretcher, if needed), where contaminated clothing will be removed (if possible), and emergency first aid administered, and then they will be transported to the hospital.

9.2.1 Emergency Medical Procedures

For severe injuries, illnesses, or overexposures:

- Remove the injured or exposed person(s) from immediate danger;
- If possible, at least partial decontamination should be completed. Wash, rinse, and/or cut off protective clothing and equipment and redress the victim in clean coveralls;
- If decontamination cannot be done, wrap the victim in blankets or plastic sheeting to reduce contamination of other personnel;
- Render emergency first aid and call an ambulance for transport to the local hospital immediately. Notify emergency personnel of contaminants on-site. The MSDS information, which is included in Attachment A, should be sent with the victim to the hospital;
- Evacuate other personnel on site to a safe place until the Site Health and Safety Officer determines that it is safe to resume work;
- Report the accident to the Site Health and Safety Officer immediately and complete an incident report form found in Attachment D.

For minor injuries or illnesses:

- Complete a full decontamination;
- Administer first aid. Minor injuries may be treated on site, but trained medical personnel will examine all injuries;
- Notify the Site Health and Safety Officer immediately.

9.2.2 First Aid - Chemical Injury

If the injury to the worker is chemical in nature (e.g., overexposure), the following first aid procedures are to be instituted as soon as possible. MSDS information should be consulted as soon as practical for further detailed procedures related to exposure of particular contaminants.

Eye Exposure	If contaminated solid or liquid gets into the eyes, wash eyes immediately with sterile saline solution, lifting the lower and upper eyelids occasionally. Continue eyewash for 15 minutes. Cover the eye with a dry pad and obtain medical attention immediately. (Contact lenses are not permitted in the exclusion zone).
Skin Exposure	If contaminated solid or liquid gets on the skin, promptly wash contaminated skin for 15 minutes using soap or mild detergent and water. If solids or liquids penetrate through the clothing, remove the clothing immediately and wash the skin using soap or mild detergent and water. Obtain medical attention immediately if symptoms warrant.
Breathing	If a person breathes in large amounts of organic vapor, move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. Keep the affected person warm and at rest. Obtain medical attention as soon as possible.
Swallowing	Call a doctor in all cases. Arrange urgent transport to hospital. If patient is conscious, rinse mouth with fresh water. DO NOT induce vomiting. If patient is unconscious, loosen collar and other clothing and lay patient on left side in recovery position. If necessary, carry out CPR or administer oxygen. Ensure patient does not become cold (keep patient covered).

9.2.3 First Aid - Physical Injury

Animal Bites	Thoroughly wash the wound with soap and water. Flush the area with running water and apply a sterile dressing. Immobilize affected part until a physician has attended the victim. See that the animal is kept alive and in quarantine. Obtain name and address of the owner of the animal.
Burns (minor)	Do not apply Vaseline or grease of any kind. Apply cold water applications until pain subsides. Cover with a wet sterile gauze dressing. Do not break blisters or remove tissue. Seek medical attention.
Burns (severe)	Do not remove adhered particles of clothing. Do not apply ice or immerse in cold water. Do not apply ointment, grease or Vaseline. Cover burns with thick sterile dressings. Keep burned feet or legs elevated. Seek medical attention immediately.
Cramps	Treat as heat exhaustion.
Cuts	Apply pressure with sterile gauze dressing and elevate the area until bleeding stops. Apply a bandage and seek medical attention.

Eyes	Keep victim from rubbing the eye. Flush (foreign objects) from the eye with water. If flushing fails to remove the object, apply a dry, protective dressing and consult a physician.
Fainting	Keep the victim lying down with feet elevated. Loosen tight clothing. If victim vomits, roll him onto his side or turn his head to the side. If necessary, wipe out his mouth. Maintain an open airway. Bathe his face gently with cool water. Unless recovery is prompt, seek medical attention.
Fracture	Deformity of an injured part usually means a fracture. If fracture is suspected, splint the part as it lies. Do not attempt to move the injured part of the person. Seek medical attention immediately.
Snake Bites	Keep the bite area as low as possible. Transport the victim immediately to a medical facility.
Insect Bites	Remove "stinger", if present. Keep affected part down below the level of the heart. Apply ice bag. For minor bites and stings apply soothing lotion, such as calamine.
Puncture Wounds	If a puncture wound is deeper than skin surface, seek medical attention. Serious infection can arise unless proper treatment is received.
Sprains	Elevate injured part and apply ice bag or cold packs. Do not soak in hot water. If pain and swelling persist, seek medical attention.
Unconsciousness	Never attempt to give anything by mouth. Keep victim flat, maintain an open airway. If victim is not breathing, provide artificial respiration by mouth-to-mouth breathing and call for an ambulance immediately.

9.2.4 Injury Due to Heat

If a person is suffering from heat exhaustion (profuse perspiration, normal body temperature), the following procedures will be taken:

- Remove the person to a cooler, shaded area.
- Give 8 ounces of water every 15 minutes for three or four doses.
- Allow the person to rest.
- If the person is suffering from cramps, press warm, wet towels over the cramped area.

If the person is suffering from heat stroke (skin hot and dry, very high body temperature), the following procedures will be taken:

- Decontaminate the victim.
- Cool the victim quickly by soaking the person in cool but not cold water, sponging the body with rubbing alcohol or cool water, or pouring water on the body.

- Reduce the body temperature to a safe level (about 102 to 105° F).
- Observe the victim for 10 minutes; if the body temperature starts to rise again, cool the victim again.
- Transport to hospital for medical attention as soon as possible.

9.2.5 Fire/Explosion

In the event of a fire or explosion, the local fire department should be summoned immediately. Upon their arrival, the Site Health and Safety Officer or Project Manager will advise the fire commander of the location, nature, and identification of the hazardous materials on-site.

If it is safe to do so, site personnel may:

- Use fire fighting equipment available on site to control or extinguish the fire; and
- Remove or isolate flammable or other hazardous materials that may contribute to the fire.

Otherwise, immediate evacuation of the area is indicated. In the event of an explosion, all personnel shall be evacuated and the fire department notified. No one shall re-enter the area until it has been cleared by explosives safety personnel.

9.2.6 Natural Disasters

Natural disasters may occur at the site due to weather. These include lightning and high winds.

1. Lightning - Persons should not work in open areas, near trees or other equipment outside during lightning storms. Stop work until the storm passes. If possible, clear the site until the storm passes.
2. High Winds - If high winds are forecast, then the site should be cleared before the winds become hazardous. Workers should be instructed to go to an appropriate shelter.
3. If an evacuation is called, account for all personnel before leaving the site.
4. Notify Site Health and Safety Officer of any work stoppage due to lightning or high winds.

9.3 Emergency Equipment

This equipment will be stored at appropriate locations selected during site mobilization. Emergency response equipment shall be moved from one site to another based on changing locations of field activities in order to ensure that emergency equipment is available in the work area.

- Fire Extinguishers (10 lb. ABC);
- First Aid Kit: At least one industrial first aid kit will be provided and maintained and fully stocked in the support zone;
- Gatorade or the equivalent;
- Extra full set of PPE;
- Emergency eye wash stations.

10.0 AIR QUALITY MONITORING

In an effort to document the concentrations of contaminants being released to the air during the east bay expansion activities, EMS will operate air monitoring units outside the perimeter of the identified work area for the duration of the activities. Samples will be collected from each air monitoring unit on a daily basis and submitted to Micro-Methods, Inc. Laboratory in Ocean Springs, MS for analysis. Additionally personnel air monitoring will be conducted using personal air pumps for exposed workers to document worker exposure.

An organic vapor analyzer (OVA) is used to monitor the breathing zone of workers for organic vapors. The action level for upgrading to Level C will be peak reading of 10 ppm or a consistent average reading of 1 ppm or greater in a 15 minute period. If the air monitoring level is greater than or equal to 10 ppm, the edge of the exclusion zone should be moved until the reading drops below 10 ppm. The OVA is equipped with a flame-ionization detector (FID). A photoionization detector (PID) is another organic vapor detector that is an alternative. However, the PID is known to be subject to positive interference from the humidity in the environment and is not recommended as the primary instrument to be utilized for organic vapor detection in humid locations. If a PID is used at the site, the PID should be equipped with a 10.6 eV lamp. If an FID is used, it should be equipped with a detachable charcoal filter to check for the presence of naturally occurring methane in the response.

For non-routine activities, the breathing zone of the worker should be evaluated every fifteen minutes to support the appropriateness of the level of protection as shown in Table 2.

11.0 HEALTH AND SAFETY INCIDENT REPORT FORM

The Health and Safety Incident Report Form may be found in Attachment D.

12.0 MATERIAL SAFETY DATA SHEETS

The Material Safety Data Sheets for site related constituents are found in Attachment A.

TABLES

**TABLE 1
AIR QUALITY MONITORING CRITERIA FOR NON-ROUTINE ACTIVITIES**

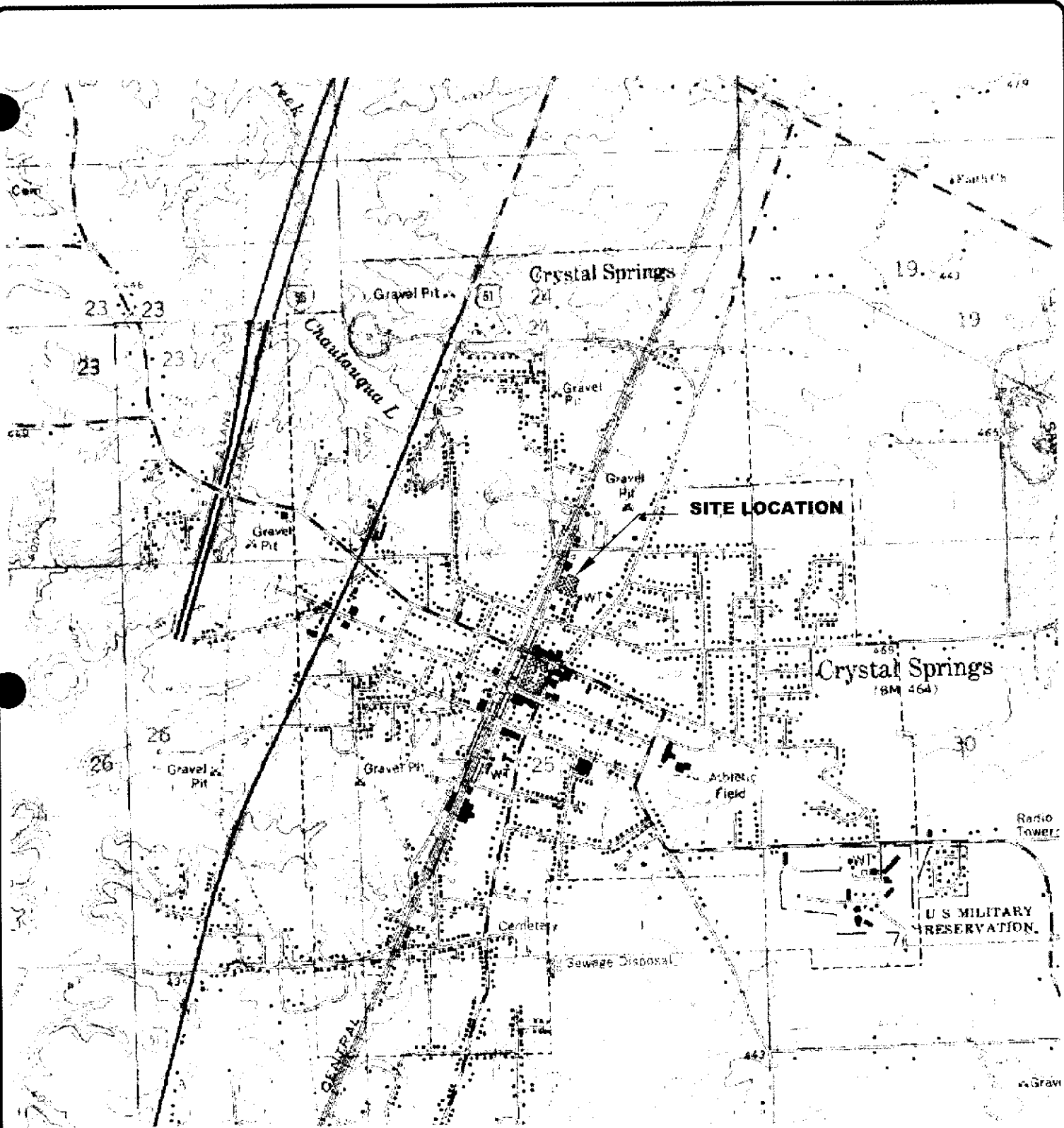
Monitoring Parameter (breathing zone)	Method	Maximum Airborne Concentration	Action Taken
Organic Vapors	Organic Vapor Analyzer (Flame-ionization detector or Photoionization detector with 10.6 eV lamp.)	<p><10 ppm peak or 1 ppm (15 minute average)</p> <p>>10 ppm peak or >1 ppm (15 minute average)</p> <p>10-500 ppm</p> <p>>500 ppm</p>	<p>Continue Level D</p> <p>Upgrade to Level C</p> <p>Level C</p> <p>Evacuate and/or Upgrade to Level B</p>
Explosive Vapors	Combustible Gas Indicator (CGI)	<p>500 ppm-10,000 ppm</p> <p>>10,000 ppm</p> <p>>10 % LEL</p>	<p>Level B</p> <p>Evacuate</p> <p>Evacuate</p>

Table 2
Potential Chemical Hazard Summary
Kuhlman Electric Secondary Containment Preparation
Crystal Springs, MS

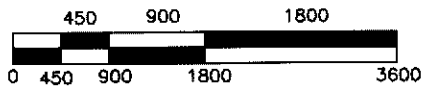
Chemical	Estimate Exposure (Low, Moderate, High)	OSHA PELs		General Health Hazards
		TWA	STEL	
Chlorodiphenyl (Aroclor 1242)	Low	1 mg/m ³	N/A	Eye irritation, chloracne, liver damage, and reproductive effects
Chlorodiphenyl (Aroclor 1254)	Low	0.5 mg/m ³	N/A	Eye irritation, chloracne, liver damage, and reproductive effects
Benzene	Low	1 ppm	5 ppm	Eye, skin, nose, and respiratory system irritant; giddiness, headache, nausea, staggered gait, fatigue, anorexia, lassitude, dermatitis, bone marrow depression
Toluene	Low	200 ppm	C 300 ppm; 500 ppm (10-min max peak)	Eye and nose irritant, fatigue, weak, confusion, euphoria, dizziness, headache, dilated pupils, muscle fatigue, insomnia, liver and kidney damage
Xylene	Low	100 ppm	435 mg/m ³	Eye, skin, nose and throat irritant, dizziness, excitement, drowsiness, incontinence, staggering gait, nausea, vomiting, abdominal pain
Petroleum Hydrocarbons (gasoline)	Low-Moderate	N/A	N/A	Overexposure results in eye and respiratory irritation, dizziness, nausea, and loss of consciousness. Skin irritation. Extremely flammable - vapor accumulation could flash and/or explode.
Liqui-Nox	Low-Moderate	N/A	N/A	Eye and skin irritation, headache and nausea, vomiting, diarrhea, and gastric distress
Isopropyl Alcohol	Low-Moderate	400 ppm 980 mg/m ³	N/A	Overexposure results in eye and respiratory irritation, dizziness, drowsiness, and loss of consciousness. Skin irritation. Extremely flammable - vapor accumulation could flash and/or explode.

Notes: - Consult appropriate OSHA publications for more detailed information
- Consult MSDS sheets for additional safety and toxicity information

FIGURES



SCALE 1 INCH = 1800 FEET



NOTE: PROPERTY BOUNDARIES AND SCALE ARE APPROXIMATE.

REFERENCE: U.S.G.S. TOPOGRAPHIC MAP
1963 - CRYSTAL SPRINGS
7.5 MINUTE SERIES
LINCOLN COUNTY, MS

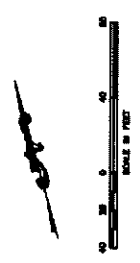
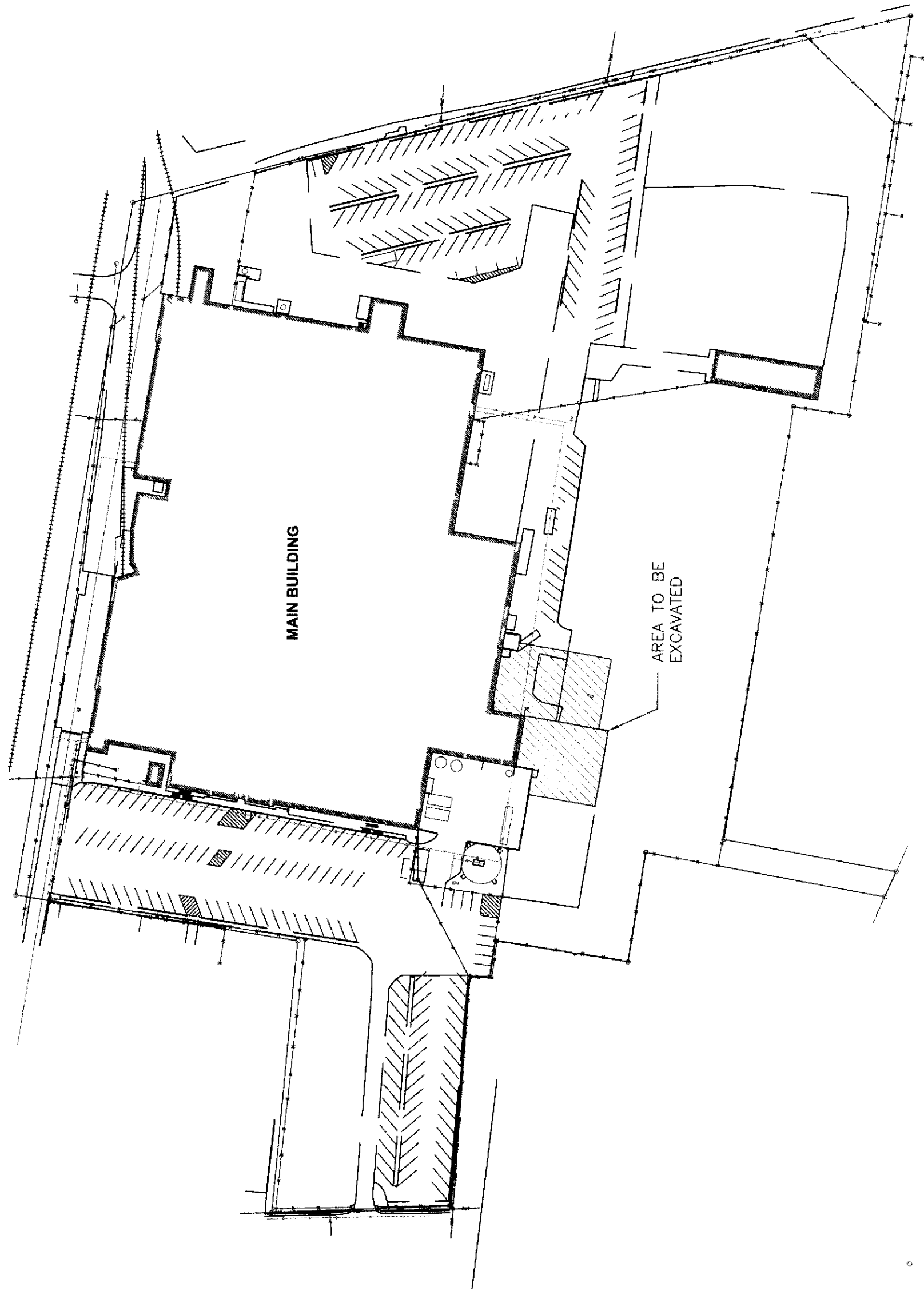
SITE LOCATION MAP

EAST BAY EXPANSION SOIL REMEDIATION

KUHLMAN ELECTRIC
CRYSTAL SPRINGS, MS

DATE: 5/25/05	APPROVED:	DRAWN BY: KRK
SCALE: 1" = 1800'	BY:	CAD NO.
	DATE:	SITE LOCATION

ENVIRONMENTAL
MANAGEMENT SERVICES, INC.



FACILITY LAYOUT
 EAST BAY EXPANSION SOIL REMEDIATION
 KUHLMAN ELECTRIC CORPORATION
 CRYSTAL SPRINGS, MS

DATE: 5/25/05	APPROVED:	BY:	DATE:	CAD NO.:	FACILITY LAYOUT
		AS SHOWN			FIGURE
					2

ENVIRONMENTAL MANAGEMENT SERVICES, INC.

REFERENCE: GEOENVIRONMENTAL ASSOC. LLC
 MARTIN & SLAGLE
 BLACK MOUNTAIN, NC



Advanced Signs & Safety Solutions

Search Item Number GO

1-800-442-3633

Regulation Resource Site

On-Line Catalog | Site Home | MSDS | CFR | Safety Resources | Safety News

MSDS Database Search Resource Site All GO

Material Safety Data Sheet

Name ARCOLOR 1242, 44804
Company SUPELCO INC

MSDS cjpzr
FSC 6810

Most Popular
in Hazard Marking

- ▶ Software - Markware
- ▶ RTK Label Blanks
- ▶ Diamond Panel Kits
- ▶ Do-It-Yourself Panels
- ▶ Panel Characters - Die-Cut

MSDS Safety Information

FSC: 6810
 MSDS Date: 01/01/1998
 MSDS Num: CJPZR
 LIIN: 00N091843
 Product ID: ARCOLOR 1242, 44804
 MFN: 01
 Responsible Party
 Cage: 54968
 Name: SUPELCO INC
 Address: SUPELCO PARK
 City: BELLEFONTE PA 16823-0048
 Info Phone Number: 814-359-3441
 Emergency Phone Number: 814-359-3441
 Resp. Party Other MSDS No.: I448120
 Review Ind: Y
 Published: Y

Fast Find

- ▶ Confined Space Checklist
- ▶ Lockout Checklist
- ▶ CFR - 1910 L Fire Protection
- ▶ Asbestos Fact Sheet
- ▶ Traffic Signs
- ▶ Parking Signs
- ▶ Industrial Signs
- ▶ Tags

Contractor Summary

Cage: 54968
 Name: SIGMA-ALDRICH INC.
 Address: 3050 SPRUCE STREET
 Box: 14508
 City: ST. LOUIS MO 63103
 Phone: 314-771-5765/414-273-3850X5996

Item Description Information

Ingredients

Cas: 53469-21-9
 RTECS #: TQ1356000
 Name: AROCLOR 1242. LD50 (ORAL, RAT): 4250 MG/KG
 Percent by Wt: 0.
 OSHA PEL: 1 MG/M3
 ACGIH TLV: 1 MG/M3
 ACGIH STEL: NOT ESTABLISHED
 EPA Rpt Qty: 1 LB
 DOT Rpt Qty: 1 LB

Cas: 540-84-1
 RTECS #: SA3320000
 Name: PENTANE, 2,2,4-TRIMETHYL-
 Percent by Wt: 100.
 EPA Rpt Qty: 1 LB
 DOT Rpt Qty: 1 LB

Health Hazards Data

LD50 LC50 Mixture: SEE INGREDIENT 1



Toxicological Information

Regulatory Information

Sara Title III Information: AROCLOR 1242 IS SUBJECT TO THE REPORTING REQUIREMENTS OF SARA TITLE III, SECTION 313.

Federal Regulatory Information: AROCLOR 1242 IS NOT LISTED ON THE TSCA (TOXIC SUBSTANCES CONTROL ACT) INVENTORY. THIS MATERIAL IS INTENDED FOR RESEARCH AND DEVELOPMENT USE ONLY AND MAY NOT BE USED FOR DRUG, HOUSEHOLD, OR OTHER PURPOSES. IT IS SUBJECT TO TSCA REGULATIONS AT CFR 40 PART 720.36 WHICH DEAL WITH THE EXEMPTION OF CHEMICALS USED IN RESEARCH AND DEVELOPMENT FROM PMN (PREMANUFACTURE NOTIFICATION) REQUIREMENTS. IN ADDITION, THE BURDEN OF SAFETY USE OF THE MATERIAL RESTS WITH YOU AND, THEREFORE, IT SHOULD BE HANDLED ONLY BY QUALIFIED PERSONS TRAINED IN LABORATORY PROCEDURES AND GOOD SAFETY PRACTICES.

HAZCOM Label

Product ID: ARCOLOR 1242, 44804
 Cage: 54968
 Company Name: SIGMA-ALDRICH INC.
 Street: 3050 SPRUCE STREET
 PO Box: 14508
 City: ST. LOUIS MO
 Zipcode: 63103
 Health Emergency Phone: 814-359-3441
 Label Required IND: Y
 Date Of Label Review: 08/19/1999
 Status Code: A
 Origination Code: F
 Chronic Hazard IND: Y
 Eye Protection IND: YES
 Skin Protection IND: YES
 Signal Word: DANGER
 Respiratory Protection IND: YES
 Health Hazard: Slight
 Contact Hazard: Slight
 Fire Hazard: Severe
 Reactivity Hazard: Slight
 Hazard And Precautions: FLAMMABLE. ACUTE/CHRONIC: CONTAINS LOW CONCENTRATION(S) OF MATERIAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER. SUCH CONCENTRATION (S) IS/ARE SUBSTANTIALLY BELOW OSHA-HCS THRESHOLDS WHICH WOULD REQUIRE LISTING HEREIN AS A COMPONENT OF THIS MIXTURE. CARCINOGENICITY - HUMAN SUSPECT.

Disclaimer

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Material Safety Data Sheet

Name F111 AROCHLOR 1254
Company CHEM SERVICE INC

MSDS bwkrm
FSC 6550

MSDS Safety Information

FSC: 6550
MSDS Date: 02/19/1993
MSDS Num: BWKRM
LIIN: 00F038135
Product ID: F111 AROCHLOR 1254
MFN: 01
Responsible Party
Cage: 84898
Name: CHEM SERVICE INC
Address: 660 TOWER LN
Box: 3108
City: WEST CHESTER PA 19381-3108
Info Phone Number: 610-692-3026/800-452-9994
Emergency Phone Number: 610-692-3026/800-452-9994
Review Ind: Y
Published: Y

Preparer Co. when other than Responsible Party Co.

Cage: 84898
Name: CHEM SERVICE INC
Box: 3108
City: WEST CHESTER PA 19381

Contractor Summary

Cage: 84898
Name: CHEM SERVICE INC
Box: 3108
City: WEST CHESTER PA 19381
Phone: 215-692-3026
Cage: 8Y898
Name: CHEM SERVICE, INC
Address: 660 TOWER LN
Box: 599
City: WEST CHESTER PA 19301-9650
Phone: 610-692-3026

Ingredients

Cas: 11097-69-1
RTECS #: TQ1360000
Name: CHLORODIPHENYL (54% CL), PCB, AROCLOR 1254, POLYCHLORINATED BIPHENYL
(SUSP HUMAN CARC BY IARC; NTP - GROUP 2A) *94-4*
Other REC Limits: 0.001 MG/CUM NIOSH
OSHA PEL: 0.5 MG/CUM (SKIN)
NIOSH TLV: 0.5 MG/CUM (SKIN)
Rpt Qty: 1 LB
DOT Rpt Qty: 1 LB

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Health Hazards Data

LD50 LC50 Mixture: ORAL LD50 (RAT/MOUSE): 1295 MG/KG
Route Of Entry Inds - Inhalation: NO
Skin: NO
Ingestion: YES
Carcinogenicity Inds - NTP: YES
IARC: YES
OSHA: NO
Effects of Exposure: CAN CAUSE EYE IRRITATION ANDamp; CHLORACNE. EXPOSURE CAN CAUSE LIVER DAMAGE ANDamp; DELAYED ADVERSE HEALTH EFFECTS.
Explanation Of Carcinogenicity: SEE INGREDIENTS
Signs And Symptoms Of Overexposure: IRRITATION, SEVERE EYE INFLAMMATION, SWELLING OF ADJOINING TISSUES, GI DISTURBANCES, DISCOLORATION OF NAILS/SKIN.
First Aid: EYES: FLUSH W/WATER FOR 15-20 MINS. SKIN: FLUSH W/WATER FOR 15-20 MINS. IF NO BURNS HAVE OCCURRED-USE SOAP ANDamp; WATER TO CLEANSE. INHALATION: REMOVE TO FRESH AIR. GIVE OXYGEN/CPR IF NEEDED. KEEP WARM ANDamp; QUIET.
INGESTION: INDUCE VOMITING. DONT' GIVE LIQUIDS/INDUCE VOMITING TO AN UNCONSCIOUS/CONVULSIVE PERSON. IF VOMITING-WATCH CLOSELY TO MAKE SURE AIRWAY DOESN'T BECOME OBSTRUCTED. (SEE SUPP)

Handling and Disposal

Spill Release Procedures: EVACUATE AREA. WEAR APPROPRIATE OSHA EQUIPMENT. VENTILATE AREA. ABSORB ON VERMICULITE/SIMILAR MATERIAL. SWEEP UP ANDamp; PLACE IN AN APPROPRIATE CONTAINER. HOLD FOR DISPOSAL. WASH CONTAMINATED SURFACES TO REMOVE ANY RESIDUES.
Waste Disposal Methods: BURN IN A CHEMICAL INCINERATOR EQUIPPED W/AN AFTERBURNER ANDamp; SCRUBBER. IAW/FEDERAL, STATE ANDamp; LOCAL REGULATIONS.
Handling And Storage Precautions: STORE ONLY W/COMPATIBLE CHEMICALS. KEEP TIGHTLY CLOSED IN A COOL DRY PLACE.
Other Precautions: AVOID CONTACT W/SKIN, EYES ANDamp; CLOTHING. CONTACT LENSES SHOULD NOT BE WORN IN LABORATORY. ALL CHEMICALS SHOULD BE CONSIDERED HAZARDOUS-AVOID DIRECT PHYSICAL CONTACT. PRODUCT IS FOR LABORATORY USE ONLY.

Fire and Explosion Hazard Information

Flash Point Text: 431.6F
Extinguishing Media: CO2, DRY CHEMICAL POWDER/SPRAY
Unusual Fire/Explosion Hazard: N/K
D.

Control Measures

Respiratory Protection: USE APPROPRIATE OSHA/MSHA APPROVED SAFETY EQUIPMENT.
Ventilation: USE ONLY IN A HOOD.
Eye Protection: SHIELDS
Work Hygienic Practices: REMOVE/LAUNDER CONTAMINATED CLOTHING BEFORE REUSE.

Physical/Chemical Properties

B.P. Text: 689-734F
M.P/F.P Text: 50F
Vapor Pres: 0.00006
Solubility in Water: INSOLUBLE
Appearance and Odor: LIGHT YELLOW LIQUID

Reactivity Data

Stability Indicator: YES
Materials To Avoid: STRONG OXIDIZING AGENTS, ACTIVE METALS.
Hazardous Polymerization Indicator: NO

Toxicological Information

MSDSDefinition of
terms**Material Safety Data Sheet for Gasoline****1. Chemical Product****MSDS Number:** U4080**MSDS Date:** 01-1-99**Product Name:** Gasoline

24 Hour Emergency Phone: (210) 979-8346
Transportation Emergencies: Call Chemtrec at 1-800-424-9300
MSDS Assistance: (210) 592-4593

Distributors Name and Address:

T.W. Brown Oil Co., Inc.
 1857 Knoll Drive
 Ventura, California 93003

Chemical Name: Gasoline**Cas Number:** 8006-61-9

Synonyms/Common Names: This Material Safety Data Sheet applies to the following product descriptions for Hazard Communication purposes only. Technical specifications vary greatly depending on the product, and are not reflected in this document. Consult specification sheets for technical information.

Unleaded Gasoline Blendstocks/Subgrades- all types, grades, octanes, and vapor pressures.
California Air Resources Board (Carb) Gasoline- all grades, octanes, vapor pressures, and oxygenate blends.
Reformulated Gasoline (RFG)- all grades, octanes, vapor pressures, and oxygenate blends.
California Reformulated Gasoline (CARFG)- all grades, octanes, vapor pressures, and oxygenate blends.
Conventional Gasoline- all grades, octanes, vapor pressures, and oxygenate blends.

2. Composition, Information On Ingredients

Product Use: This product is intended for use as a fuel in engines or for use in engineered processes. Use in other applications may result in higher exposures and require additional controls, such as local exhaust ventilation and personal protective equipment.

Description: Reformulated gasoline is a complex mixture of hydrocarbons from a variety of chemical processes blended to meet standardized product specifications. Composition varies greatly and includes C₇ to C₁₂ hydrocarbons with a boiling range of about 80-473 degrees F. The following is a non-exhaustive list of common components, typical percentage ranges in product, and occupational exposure limits for each. Functional and performance additives may also be present at concentrations below reporting thresholds.

Component or Material Name	%	CAS Number	ACGIH Limits TLV - STEL - Units	OSHA Exposure Limits PEL - STEL - C/P - Units
Gasoline	90-100	Mixture	300-500-ppm	NA-NA-NA - - -
Butane	<9	106-97-8	800-NA-ppm	NA-NA-NA - - -
Pentane	<6	109-66-0	600-750-ppm	1000-NA-NA-ppm

n-Hexane	<4	110-54-3	50-NA-ppm	500-NA-NA-ppm
Hexan(other isomers)	<8	NA	500-1,000-ppm	NA-NA-NA- ---
Benzene	1.2 - 4.9	7-4-2	0.5-2.5-ppm	1-5-NA-ppm
N-heptane	<2	14-82-5	400-500-ppm	500-NA-NA-ppm
Ethylbenzene	<2	100-41-4	100-125-ppm	100-NA-NA-ppm
Xylene (o,m,p, - isomers)	<11	1330-20-7	100-150-ppm	100-NA-NA-ppm
Cyclohexane	<2	110-82-7	300-NA-ppm	300-NA-NA-ppm
Trimethylbenzene	<4	25551-13-7	25-NA-ppm	NA-NA-NA- ---
Methyl-t-butyl ether (MTBE)	0-15	1634-04-4	40-NA-ppm	NA-NA-NA- ---
Toluene	<12	108-88-3	50-NA-ppm	200-300/500-NA-ppm
Ethyl-t-butyl ether (ETBE)	0-7	637-92-9	N/A-NA-ppm	NA-NA-NA- ---
t-amyl-methyl-ether	0-5	994-05-8	N/A-NA-ppm	NA-NA-NA- ---
Ethanol	0-11	64-17-5	1,000-NA-ppm	1,000-NA-NA-ppm

C=Ceiling concentration not to be exceeded at any time. P= Peak concentration for a single 10 minute exposure per day.

3. Hazards Identification

Health Hazard Data:

1. The major effect of exposure to this product is central nervous system depression and polyneuropathy.
2. Studies have shown that repeated exposure of laboratory animals to high concentrations of whole gasoline vapors at 67,262 and 2056 ppm has caused kidney damage and cancer of the kidney in rats and liver cancer in mice.
3. LARC has listed gasoline as possibly carcinogenic (2B) to humans with limited evidence in humans in the absence of sufficient evidence in experimental animals. NIOSH lists gasoline as a carcinogen with no further classification.
4. N-heptane and cyclohexane cause narcosis and irritation of eyes and mucous membranes. Cyclohexane has been reported to cause liver and kidney changes in rabbits. N-heptane has been reported to cause polyneuritis following prolonged exposure.
5. ACGIH lists benzene a human carcinogen with and assigned TLV of 0.5 ppm 8 hour TWA and a STEL of 2.5 ppm; IARC, NTP & OSHA show sufficient evidence for classifying Benzene as a human carcinogen, see 29 CFR 1910.1028 for current PEL of 1 ppm and specific actions to take. Studies have shown that benzene can induce leukemia at concentrations as low as 1 ppm. Significant elevations of chromosomal aberrations have been corroborated among workers exposed to levels at mean concentrations less than 10 ppm. Based on risk assessment studies by Rinsky, an individual inhaling 1 ppm of benzene for 40 years, the odds of benzene-induced leukemic death were 1.7 times higher than those of unexposed workers.
6. MTBE is a mild irritant to the eye with an LC50 of 85 mg/m³ on 4 hr. exposure and an LD50 ~4 ml/Kg (RATS). An increase in anesthesia with increasing concentration (250,500 & 1000 ppm) was observed during a 90 day Test exposure. ACGIH has listed MTBE as an animal carcinogen (A3) based on tests in experimental animals at relatively high dose levels, by routes of administration, at sites, of histologic types, or by mechanisms not considered relevant to worker exposure. Available evidence suggests that MTBE is not likely to cause cancer in humans except under uncommon or unlikely routes of levels of exposure.
7. Trimethylbenzene (pseudocumene (1,2,4,) & mesitylene (1,2,5,)) has a PEL and TLV of 25 ppm 8



LIQUI-NOX

Supplier: Same as manufacturer.

Manufacturer:	Alconox, Inc. 10 Glen St., Dept. 10 White Plains, NY 10604
---------------	------------------------------------------------------------------

Manufacturer emergency phone 800-255-3924.
number: 813-248-0573 (outside of the United States).

Manufacturer:	Alconox, Inc. 10 Glen St., Dept. 10 White Plains, NY 10604
---------------	------------------------------------------------------------------

Supplier MSDS date: 2003/10/23

Product Classification:	
-------------------------	--------------------------------------------------------------------------------------

25155-30-0	10-30	SODIUM DODECYLBENZENESULFONATE	NOT AVAILABLE	438 MG/KG RAT ORAL	NOT AVAILABLE
				1330 MG/KG MOUSE ORAL	

Physical state: Liquid.

Appearance & color:	Colorless Pale yellow
---------------------	--------------------------

Odor threshold (ppm): Not available.

Vapour pressure (mmHg):	0.38 (20°C)
-------------------------	-------------

Vapour density (air=1): >1

Volatiles (%):	
----------------	--

By volume: Not available.

Evaporation rate (oil soluble):	4
---------------------------------	---

Boiling point (°C): 100 (212F)

Freezing point (°C): Not available

pH: 8.5

Specific gravity @ 20°C: 1.08

Solubility in water (%): Complete.

Concentration in gas phase: Not available

VOC: None

[Redacted]

Flammability: Not flammable.

Conditions of flammability: Surrounding air

Extinguishing media: Carbon dioxide, dry chemical, foam.
Water
Water fog.

Special procedures: Self-contained breathing apparatus should be worn. Fire fighters should wear full protective gear. Use water spray to control the exposed containers.

Auto-ignition temperature: Not available.

Flash point (°C) method: None

Lower flammability limit (% vol): Not applicable.

Upper flammability limit (% vol): Not applicable

Not available.

Sensitive to mechanical impact: Not available

Hazardous combustion products: Oxides of carbon (COx).
Hydrocarbons.

Rate of burning: Not available

Explosive power: Containers may rupture if exposed to heat or fire.

[Redacted]

Chemical stability: Product is stable under normal handling and storage conditions.

Condition of stability: Extreme temperatures

Hazardous polymerization: Will not occur.

Incompatible substances: Strong acids
Strong oxidizing agents

Hazardous decomposition products: See hazardous combustion products.

Route of entry: Skin contact, eye contact, inhalation and ingestion.

[REDACTED]

Eye contact: May cause irritation.

[REDACTED]

Inhalation: May cause headache and nausea.

[REDACTED]

Effects of chronic exposure: See effects of acute exposure.

[REDACTED]

LC50 of product, species & route: Not available.

[REDACTED]

Sensitization to product: Not available.

[REDACTED]

Reproductive effects: Not available.

[REDACTED]

Mutagenicity: Not available.

[REDACTED]

Medical conditions aggravated by exposure: Not available.

[REDACTED]

MSDS Response: Hazardous materials and chemical information

Handling procedures and equipment: Protect against physical damage.
Avoid breathing vapors/mists.
Wear personal protective equipment appropriate to task.
Wash thoroughly after handling.
Keep out of reach of children.
Avoid contact with skin, eyes and clothing.
Avoid extreme temperatures.
Launder contaminated clothing prior to reuse.

Emergency information: First aid, fire, spill, reactivity, and other safety information

Environmental information: Environmental effects and disposal information

Precautionary Measures

Personal Protection:  Wear appropriate gloves.

Respiratory/Type: None required under normal use.

Eye Protection:  Wear eye protection.

Footwear/Type: Safety shoes per local regulations.

Other/Type: **Other/Type:** Eye wash facility should be in close proximity.
Emergency shower should be in close proximity.

Additional equipment: Additional safety equipment

MSDS

Material Safety Data Sheet

TSI Incorporated
500 Cardigan Road
Shoreview, MN 55126-3996

24 hour Emergency telephone
CHEMTREC: 1-800-424-9300

Outside US and Canada
Chemtrec: 703-527-3887

NOTE: CHEMTREC number to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-874-2811) for assistance.

ISOPROPYL ALCOHOL (90 - 100%)

1. Product Identification

Synonyms: 2-Propanol; sec-propyl alcohol; isopropanol; sec-propanol; dimethylcarbinol

CAS No.: 67-63-0

Molecular Weight: 60.10

Chemical Formula: (CH₃)₂CHOH

Product Codes:

TSI products: 8016, 8016M, 2918011

2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Isopropyl Alcohol	67-63-0	90 - 100%	Yes
Water	7732-18-5	0 - 10%	No

3. Hazards Identification

Emergency Overview

WARNING! FLAMMABLE LIQUID AND VAPOR. HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO EYES AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM. MAY BE HARMFUL IF ABSORBED THROUGH SKIN. MAY CAUSE IRRITATION TO SKIN.

SAF-T-DATA^(tm) Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate

Flammability Rating: 3 - Severe (Flammable)

Reactivity Rating: 2 - Moderate

Contact Rating: 3 - Severe

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES;
CLASS B EXTINGUISHER

Storage Color Code: Red (Flammable)

Potential Health Effects

Inhalation:

Inhalation of vapors irritates the respiratory tract. Exposure to high concentrations has a narcotic effect, producing symptoms of dizziness, drowsiness, headache, staggering, unconsciousness and possibly death.

Ingestion:

Can cause drowsiness, unconsciousness, and death. Gastrointestinal pain, cramps, nausea, vomiting, and diarrhea may also result. The single lethal dose for a human adult = about 250 mls (8 ounces).

Skin Contact:

May cause irritation with redness and pain. May be absorbed through the skin with possible systemic effects.

Eye Contact:

Vapors cause eye irritation. Splashes cause severe irritation, possible corneal burns and eye damage.

Chronic Exposure:

Chronic exposure may cause skin effects.

Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders or impaired liver, kidney, or pulmonary function may be more susceptible to the effects of this agent.

4. First Aid Measures

Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion:

Give large amounts of water to drink. Never give anything by mouth to an unconscious person. Get medical attention.

Skin Contact:

Immediately flush skin with plenty of water for at least 15 minutes. Call a physician if irritation develops.

Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. Fire Fighting Measures

Fire:

Flash point: 12C (54F) CC

Autoignition temperature: 399C (750F)

Flammable limits in air % by volume:

lcl: 2.0; ucl: 12.7

Listed fire data is for Pure Isopropyl Alcohol.

Explosion:

Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Contact with strong oxidizers may cause fire or explosion. Vapors can flow along surfaces to distant ignition source and flash back. Sensitive to static discharge.

Fire Extinguishing Media:

Water spray, dry chemical, alcohol foam, or carbon dioxide. Water spray may be used to keep fire exposed containers cool, dilute spills to nonflammable mixtures, protect personnel attempting to stop leak and disperse vapors.

Special Information:

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! If a leak or spill has not ignited, use water spray to disperse the vapors, to protect personnel attempting to stop leak, and to flush spills away from exposures.

7. Handling and Storage

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Containers of this material

may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product. Small quantities of peroxides can form on prolonged storage. Exposure to light and/or air significantly increases the rate of peroxide formation. If evaporated to a residue, the mixture of peroxides and isopropanol may explode when exposed to heat or shock.

8. Exposure Controls/Personal Protection

Airborne Exposure Limits:

For Isopropyl Alcohol (2-Propanol):

-OSHA Permissible Exposure Limit (PEL):

400 ppm (TWA)

-ACGIH Threshold Limit Value (TLV):

200 ppm (TWA), 400 ppm (STEL), A4 - not classifiable as a human carcinogen.

Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded, a full facepiece respirator with organic vapor cartridge may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Neoprene and nitrile rubber are recommended materials.

Eye Protection:

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. Physical and Chemical Properties

Appearance:

Clear, colorless liquid.

Odor:

Rubbing alcohol.

Solubility:

Miscible in water.

Specific Gravity:

0.79 @ 20C/4C

pH:

No information found.

% Volatiles by volume @ 21C (70F):

100

Boiling Point:

82C (180F)

Melting Point:

-89C (-128F)

Vapor Density (Air=1):

2.1

Vapor Pressure (mm Hg):

44 @ 25C (77F)

Evaporation Rate (BuAc=1):

2.83

10. Stability and Reactivity

Stability:

Stable under ordinary conditions of use and storage. Heat and sunlight can contribute to instability.

Hazardous Decomposition Products:

Carbon dioxide and carbon monoxide may form when heated to decomposition.

Hazardous Polymerization:

Will not occur.

Incompatibilities:

Heat, flame, strong oxidizers, acetaldehyde, acids, chlorine, ethylene oxide, hydrogen-palladium combination, hydrogen peroxide-sulfuric acid combination, potassium tert-butoxide, hypochlorous acid, isocyanates, nitroform, phosgene, aluminum, oleum and perchloric acid.

Conditions to Avoid:

Heat, flames, ignition sources and incompatibles.

11. Toxicological Information

Oral rat LD50: 5045 mg/kg; skin rabbit LD50: 12.8 gm/kg; inhalation rat LC50: 16,000 ppm/8-hour; investigated as a tumorigen, mutagen, reproductive effector.

-----\Cancer Lists\-----

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Isopropyl Alcohol (67-63-0)	No	No	3
Water (7732-18-5)	No	No	None

12. Ecological Information

Environmental Fate:

When released into the soil, this material is expected to quickly evaporate. When released into the soil, this

material may leach into groundwater. When released into the soil, this material may biodegrade to a moderate extent. When released to water, this material is expected to quickly evaporate. When released into the water, this material is expected to have a half-life between 1 and 10 days. When released into water, this material may biodegrade to a moderate extent. This material is not expected to significantly bioaccumulate. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life between 1 and 10 days. When released into the air, this material may be removed from the atmosphere to a moderate extent by wet deposition.

Environmental Toxicity:

The LC50/96-hour values for fish are over 100 mg/l. This material is not expected to be toxic to aquatic life.

13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. Transport Information

Domestic (Land, D.O.T.)

Proper Shipping Name: ISOPROPANOL

Hazard Class: 3

UN/NA: UN1219

Packing Group: II

Information reported for product/size: 355LB

International (Water, I.M.O.)

Proper Shipping Name: ISOPROPANOL

Hazard Class: 3

UN/NA: UN1219

Packing Group: II

Information reported for product/size: 355LB

15. Regulatory Information

----- \Chemical Inventory Status - Part 1\ -----
Ingredient

-----	TSCA	EC	Japan	Australia
----- Isopropyl Alcohol (67-63-0)	Yes	Yes	Yes	Yes

Water (7732-18-5)

Yes Yes Yes Yes

-----\Chemical Inventory Status - Part 2\-----

Ingredient

-----Canada-----
Korea DSL NDSL Phil.

Isopropyl Alcohol (67-63-0)

Yes Yes No Yes

Water (7732-18-5)

Yes Yes No Yes

-----\Federal, State & International Regulations - Part 1\-----

Ingredient

-SARA 302- -----SARA 313-----
RQ TPQ List Chemical Catg.

Isopropyl Alcohol (67-63-0)

No No Yes No

Water (7732-18-5)

No No No No

-----\Federal, State & International Regulations - Part 2\-----

Ingredient

-RCRA- -TSCA-
CERCLA 261.33 8(d)

Isopropyl Alcohol (67-63-0)

No No No

Water (7732-18-5)

No No No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: Yes
SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No
Reactivity: No (Mixture / Liquid)

Australian Hazchem Code: 2[S]2

Poison Schedule: None allocated.

WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

16. Other Information

NFPA Ratings: Health: 2 Flammability: 3 Reactivity: 0

Label Hazard Warning:

WARNING! FLAMMABLE LIQUID AND VAPOR. HARMFUL IF SWALLOWED OR INHALED.
CAUSES IRRITATION TO EYES AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS
SYSTEM. MAY BE HARMFUL IF ABSORBED THROUGH SKIN. MAY CAUSE IRRITATION TO SKIN.

Label Precautions:

Keep away from heat, sparks and flame.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

Avoid breathing vapor or mist.

Avoid contact with eyes, skin and clothing.

ATTACHMENT B

TAILGATE SAFETY MEETING FORM

EMS Project Office: EMS - Hattiesburg, MS		Job Site: Kuhlman Electric, Crystal Springs, MS	
Date:	Time:	Job Name: East Bay Expansion Project	
Client: Kuhlman Electric Corporation		Address: 101 Kuhlman Drive, Crystal Springs, MS	
Specific Location: 101 Kuhlman Drive, Crystal Springs, MS (secondary containment area)			
Work Scope: Environmental sampling, excavating & backfilling, air monitoring, and waste collection & disposal			
Chemicals Used: Isopropyl Alcohol, Fuels, Liquinox, DI Water			
SAFETY TOPICS PRESENTED			
Protective Clothing/Equipment: Level C and Modified Level D			
Chemical Hazards: Polychlorinated biphenyls (PCBs)			
Physical Hazards: Slip, Trip, Fall, Noise, Pinching, Heat, Weather, Heavy Lifting, Traffic			
Emergency Procedures: Dial 911 - Refer to HASP Section 9.0 for additional information			
Hospital/Clinic: Hardy Wilson Memorial Hosp.		Phone: (601) 894-6200	Paramedic Phone: 911
Hospital Address: 233 Magnolia Street, Hazlehurst, MS (South of Job Site on US 55)			
Special Equipment: Powered Air Purifying Respirator & Full Facepiece Air Purifying Respirator			
Other: All Attendees Must Have Read and Signed the Site Specific Health and Safety Plan			
ATTENDEES			
NAME PRINTED		SIGNATURE	
_____		_____	
_____		_____	
_____		_____	
_____		_____	
Meeting conducted by:			
_____		_____	
Project Manager: Clyde Woodward		Site Health and Safety Officer: Robbie Gates	

ATTACHMENT C

MEDICAL MONITORING STATUS & OSHA TRAINING RECORDS

Employee Annual Physical Expirations

<i>Name</i>	<i>Date</i>	<i>Expiration</i>	<i>Notes</i>
Brandon Guillory	10/4/2004	10/4/2005	Drug Screen Random
Brandon Guillory	2/25/2005	2/25/2006	Annual
Bryan Sherman	11/5/2004	11/5/2005	Drug Screen Entrance
Bryan Sherman	4/11/2005	4/11/2006	Drug Screen Randon
Carl Jamison	8/26/2004	8/26/2005	DOT Drug Screen
Carl Jamison	11/3/2004	11/3/2005	Drug Screen Random
Charlie Cospelich	5/12/2004	5/12/2005	Annual
Charlie Cospelich	8/6/2004	8/6/2005	Drug Screen Randon
Chris Johnson	7/21/2004	7/21/2005	Annual
Chris Woodward	7/28/2004	7/28/2005	Annual
Chris Woodward	8/9/2004	8/9/2005	Drug Screen Random
Clyde Woodward	10/1/2004	10/1/2005	Annual
Clyde Woodward	10/1/2004	10/1/2005	Drug Screen Random
Demarais Duckworth	6/2/2004	6/2/2005	Drug Screen
Demarais Duckworth	3/1/2005	3/1/2006	Drug Screen Random
Jacob Groomes	8/16/2004	8/16/2005	Annual
Jacob Groomes	10/1/2004	10/1/2005	Drug Screen Random
Jeff Caskey	7/1/2004	7/1/2005	Annual
Jeff Caskey	8/6/2004	8/6/2005	Drug Screen Random
Jeff Gonsoulin	6/24/2004	6/24/2005	DOT Drug Screen
Jeff Gonsoulin	10/13/2004	10/13/2005	Annual
Jill Lamberth	11/5/2004	11/5/2005	Annual
Jim Bryars	10/13/2004	10/13/2005	Annual
Joe Thompson	11/23/2004	11/23/2005	Annual
John Dobson	8/9/2004	8/9/2005	Annual
John Dobson	3/1/2005	3/1/2006	Drug Screen Random
Kate Carlton	10/4/2004	10/4/2005	Annual
Kate Carlton	10/4/2004	10/4/2005	Drug Screen Randon

<i>Name</i>	<i>Date</i>	<i>Expiration</i>	<i>Notes</i>
Ken Ruckstuhl	8/4/2004	8/3/2005	Drug Screen Entrance
Ken Ruckstuhl	8/4/2004	8/3/2005	Entrance
Kevin Kammerdeiner	10/12/2004	10/12/2005	Drug Screen Random
Kevin Kammerdeiner	10/28/2004	10/28/2005	Annual
Lane Fortenberry	7/21/2004	7/21/2005	Annual
Lane Fortenberry	10/22/2004	10/22/2005	Drug Screen Randon
Lewis Hobbs	10/15/2004	10/15/2005	Annual
Lewis Hobbs	10/26/2004	10/26/2005	Drug Screen Random
Lori Star	5/27/2004	5/27/2005	Annual
Lori Star	4/25/2005	4/25/2006	Annual
Melissa Regan	10/12/2004	10/12/2005	Drug Screen Random
Michelle Strickland	10/1/2004	10/1/2005	Drug Screen Random
Robbie Gates	7/6/2004	7/6/2005	Annual
Robbie Gates	11/23/2004	11/23/2005	Drug Screen Random
Rodney Durham	12/22/2004	12/22/2005	Annual
Sean Fleming	7/22/2004	7/22/2005	Annual
Sean Fleming	11/23/2004	11/23/2005	Drug Screen Randon
Sonia Cazenave	11/5/2004	11/5/2005	Drug Screen Entrance
Stevie Hicks	8/9/2004	8/9/2005	Drug Screen Random
Toby Lemaire	8/25/2004	8/25/2005	Drug Screen
Toby Lemaire	8/26/2004	8/26/2005	Entrance
Winston Russell	7/27/2004	7/27/2005	Annual
Winston Russell	10/26/2004	10/26/2005	Drug Screen Random

Hazardous Waste Operations Training

<i>Name</i>	<i>Date</i>	<i>Certificate Expiration</i>	<i>Course Title</i>
Brandon Guillory	5/4/2005	5/4/2006	8 Hr. Hazardous Waste Operations
Carl Jamison	9/3/2004	9/3/2005	8 Hr. Hazardous Waste Operations Refresher
Chris Johnson	9/3/2004	9/3/2005	8 Hr. Hazardous Waste Operations Refresher
Chris Woodward	9/3/2004	9/3/2005	8 Hr. Hazardous Waste Operations Refresher
Clyde Woodward	9/3/2004	9/3/2005	8 Hr. Hazardous Waste Operations Refresher
Jacob Groomes	10/21/2004	10/21/2005	40 Hr. Hazwoper
Jeff Gonsoulin	9/3/2004	9/3/2005	8 Hr. Hazardous Waste Operations Refresher
Jim Bryars	9/3/2004	9/3/2005	8 Hr. Hazardous Waste Operations Refresher
Joe Thompson	9/3/2004	9/3/2005	8 Hr. Hazardous Waste Operations Refresher
John Dobson	9/3/2004	9/3/2005	8 Hr. Hazardous Waste Operations Refresher
Kate Carlton	9/3/2004	9/3/2005	8 Hr. Hazardous Waste Operations Refresher
Ken Ruckstuhl	9/3/2004	9/3/2005	8 Hr. Hazardous Waste Operations Refresher
Kevin Kammerdeiner	10/30/2004	10/30/2005	40 Hr. Hazwoper
Lane Fortenberry	9/3/2004	9/3/2005	8 Hr. Hazardous Waste Operations Refresher
Lewis Hobbs	9/3/2004	9/3/2005	8 Hr. Hazardous Waste Operations Refresher
Robbie Gates	9/3/2004	9/3/2005	8 Hr. Hazardous Waste Operations Refresher
Rodney Durham	7/19/2004	7/19/2005	8 Hr. Hazardous Waste Operations Refresher
Savi Chiniche	9/3/2004	9/3/2005	8 Hr. Hazardous Waste Operations Refresher
Sean Fleming	9/3/2004	9/3/2005	8 Hr. Hazardous Waste Operations Refresher
Stevie Hicks	9/3/2004	9/3/2005	8 Hr. Hazardous Waste Operations Refresher
Toby Lemaire	5/27/2004	5/27/2005	8 Hr. Hazardous Waste Operations Refresher
Winston Russell	10/30/2004	10/30/2005	8 Hr. Hazardous Materials Refresher

ATTACHMENT D

INCIDENT REPORT FORM

INCIDENT REPORT FORM

Project Name: _____

Project Number: _____

Date of Incident: _____

Time of Incident: _____

Location: _____

TYPE OF INCIDENT (Check all applicable items)

- Illness Fire, explosion, flash
- Injury Unexpected exposure
- Property Damage Vehicular Accident
- Health & Safety Infraction
- Other (describe) _____

DESCRIPTION OF INCIDENT (Describe what happened and possible cause. Identify individual involved, witnesses, and their affiliations; and describe emergency or corrective action taken. Attach additional sheets, drawings, or photographs as needed.)

Reporter: _____
 Print Name

 Signature

 Date

Reporter must deliver this report to the Facility Operations Manager (i.e., Health & Safety Officer) within 24 hours of the reported incident for medical treatment cases or other incidents.

Reviewed by: _____
 Health & Safety Officer

 Date

Distribution by HSO:

- EMS President
- Personnel Office (medical treatment cases only)

APPENDIX E

EISOPQAM STANDARD FIELD CLEANING PROCEDURES

**APPENDIX B
STANDARD FIELD CLEANING PROCEDURES**

PERFORMANCE OBJECTIVE:

- To remove contaminants of concern from sampling, drilling and other field equipment to concentrations that do not impact study objectives using a standard cleaning procedure.

B.1 Introduction

Cleaning procedures in this appendix are intended for use by field personnel for cleaning sampling and other equipment in the field. Emergency field sample container cleaning procedures are also included; however, they should not be used unless absolutely necessary. Cleaning procedures for use at the Field Equipment Center (FEC) are in Appendix C.

Sampling and field equipment cleaned in accordance with these procedures must meet the minimum requirements for Data Quality Objectives (DQO) definitive data collection. Alternative field decontamination procedures may be substituted as outlined in Section 5.12 when samples are to be analyzed for data uses at a lower DQO level. Deviations from these procedures should be documented in the approved study plan, field records, and investigative reports.

These are the materials, methods, and procedures to be used when cleaning sampling and other equipment in the field.

B.1.1 Specifications for Cleaning Materials

Specifications for standard cleaning materials referred to in this appendix are as follows:

- Soap shall be a standard brand of phosphate-free laboratory detergent such as Liquinox®. Use of other detergent must be justified and documented in the field logbooks and inspection or investigative reports.
- Solvent shall be pesticide-grade isopropanol. Use of a solvent other than pesticide-grade isopropanol for equipment cleaning purposes must be justified in the study plan. Otherwise its use must be documented in field logbooks and inspection or investigation reports.
- Tap water may be used from any municipal water treatment system. Use of an untreated potable water supply is not an acceptable substitute for tap water.
- Analyte free water (deionized water) is tap water that has been treated by passing through a standard deionizing resin column. At a minimum, the finished water should contain no detectable heavy metals or other inorganic compounds (i.e., at or above analytical detection limits) as defined by a standard inductively coupled Argon Plasma Spectrophotometer (ICP) (or equivalent) scan. Analyte free water obtained by other methods is acceptable, as long as it meets the above analytical criteria.

- Organic/analyte free water is defined as tap water that has been treated with activated carbon and deionizing units. A portable system to produce organic/analyte free water under field conditions is available. At a minimum, the finished water must meet the analytical criteria of analyte free water and should contain no detectable pesticides, herbicides, or extractable organic compounds, and no volatile organic compounds above minimum detectable levels as determined by the Region 4 laboratory for a given set of analyses. Organic/analyte free water obtained by other methods is acceptable, as long as it meets the above analytical criteria.
- Other solvents may be substituted for a particular purpose if required. For example, removal of concentrated waste materials may require the use of either pesticide-grade hexane or petroleum ether. After the waste material is removed, the equipment must be subjected to the standard cleaning procedure. Because these solvents are not miscible with water, the equipment must be completely dry prior to use.

Solvents, laboratory detergent, and rinse waters used to clean equipment shall not be reused during field decontamination.

B.1.2 Handling and Containers for Cleaning Solutions

Improperly handled cleaning solutions may easily become contaminated. Storage and application containers must be constructed of the proper materials to ensure their integrity. Following are acceptable materials used for containing the specified cleaning solutions:

- Soap must be kept in clean plastic, metal, or glass containers until used. It should be poured directly from the container during use.
- Solvent must be stored in the unopened original containers until used. They may be applied using the low pressure nitrogen system fitted with a Teflon® nozzle, or using Teflon® squeeze bottles.
- Tap water may be kept in clean tanks, hand pressure sprayers, squeeze bottles, or applied directly from a hose.
- Analyte free water must be stored in clean glass, stainless steel, or plastic containers that can be closed prior to use. It can be applied from plastic squeeze bottles.
- Organic/analyte free water must be stored in clean glass, Teflon®, or stainless steel containers prior to use. It may be applied using Teflon® squeeze bottles, or with the portable system.

Note: Hand pump sprayers generally are not acceptable storage or application containers for the above materials (with the exception of tap water). This also applies to stainless steel sprayers. All hand sprayers have internal oil coated gaskets and black rubber seals that may contaminate the solutions.

B.1.3 Disposal of Solvent Cleaning Solutions

Procedures for the safe handling and disposition of investigation derived waste (IDW), including used wash water, rinse water, and spent solvents are in Section 5.15.

B.1.4 Equipment Contaminated with Concentrated Wastes

Equipment used to collect samples of hazardous materials or toxic wastes or materials from hazardous waste sites, RCRA facilities, or in-process waste streams should be field cleaned before returning from the

study. At a minimum, this should consist of washing with soap and rinsing with tap water. More stringent procedures may be required at the discretion of the field investigators.

B.1.5 Safety Procedures for Field Cleaning Operations

Some of the materials used to implement the cleaning procedures outlined in this appendix can be harmful if used improperly. Caution should be exercised by all field investigators and all applicable safety procedures should be followed. At a minimum, the following precautions should be taken in the field during these cleaning operations:

- Safety glasses with splash shields or goggles, and latex gloves will be worn during all cleaning operations.
- Solvent rinsing operations will be conducted in the open (never in a closed room).
- No eating, smoking, drinking, chewing, or any hand to mouth contact should be permitted during cleaning operations.

B.1.6 Handling of Cleaned Equipment

After field cleaning, equipment should be handled only by personnel wearing clean gloves to prevent re-contamination. In addition, the equipment should be moved away (preferably upwind) from the cleaning area to prevent recontamination. If the equipment is not to be immediately re-used it should be covered with plastic sheeting or wrapped in aluminum foil to prevent re-contamination. The area where the equipment is kept prior to re-use must be free of contaminants.

B.2 Field Equipment Cleaning Procedures

Sufficient clean equipment should be transported to the field so that an entire study can be conducted without the need for field cleaning. However, this is not possible for some specialized items such as portable power augers (Little Beaver®), well drilling rigs, soil coring rigs, and other large pieces of field equipment. In addition, particularly during large scale studies, it is not practical or possible to transport all of the precleaned field equipment required into the field. In these instances, sufficient pre-cleaned equipment should be transported to the field to perform at least one days work. The following procedures are to be utilized when equipment must be cleaned in the field.

B.2.1 Specifications for Decontamination Pads

Decontamination pads constructed for field cleaning of sampling and drilling equipment should meet the following minimum specifications:

- The pad should be constructed in an area known or believed to be free of surface contamination.
- The pad should not leak excessively.
- If possible, the pad should be constructed on a level, paved surface and should facilitate the removal of wastewater. This may be accomplished by either constructing the pad with one corner lower than the rest, or by creating a sump or pit in one corner or along one side. Any sump or pit should also be lined.
- Sawhorses or racks constructed to hold equipment while being cleaned should be high enough above ground to prevent equipment from being splashed.

- Water should be removed from the decontamination pad frequently.
- A temporary pad should be lined with a water impermeable material with no seams within the pad. This material should be either easily replaced (disposable) or repairable.

At the completion of site activities, the decontamination pad should be deactivated. The pit or sump should be backfilled with the appropriate material designated by the site project leader, but only after all waste/rinse water has been pumped into containers for disposal. No solvent rinsates will be placed in the pit. Solvent rinsates should be collected in separate containers for proper disposal. See Section 5.15 of this SOP for proper handling and disposal of these materials. If the decontamination pad has leaked excessively, soil sampling may be required.

B.2.2 "Classic Parameter" Sampling Equipment

"Classic Parameters" are analyses such as oxygen demand, nutrients, certain inorganics, sulfide, flow measurements, etc. For routine operations involving classic parameter analyses, water quality sampling equipment such as Kemmerers, buckets, dissolved oxygen dunkers, dredges, etc., may be cleaned with the sample or analyte-free water between sampling locations. A brush may be used to remove deposits of material or sediment, if necessary. If analyte-free water is samplers should be flushed at the next sampling location with the substance (water) to be sampled, but before the sample is collected.

Flow measuring equipment such as weirs, staff gages, velocity meters, and other stream gaging equipment may be cleaned with tap water between measuring locations, if necessary.

The previously described procedures are not to be used for cleaning field equipment to be used for the collection of samples undergoing trace organic or inorganic constituent analyses.

B.2.3 Sampling Equipment used for the Collection of Trace Organic and Inorganic Compounds

The following procedures are to be used for all sampling equipment used to collect routine samples undergoing trace organic or inorganic constituent analyses:

1. Clean with tap water and soap using a brush if necessary to remove particulate matter and surface films. Equipment may be steam cleaned (soap and high pressure hot water) as an alternative to brushing. Sampling equipment that is steam cleaned should be placed on racks or saw horses at least two feet above the floor of the decontamination pad. PVC or plastic items should not be steam cleaned.
2. Rinse thoroughly with tap water.
3. Rinse thoroughly with analyte free water.
4. Rinse thoroughly with solvent. Do not solvent rinse PVC or plastic items.
5. Rinse thoroughly with organic/analyte free water. If organic/analyte free water is not available, equipment should be allowed to completely dry. Do not apply a final rinse with analyte water. Organic/analyte free water can be generated on-site utilizing the portable system.
6. Remove the equipment from the decontamination area and cover with plastic. Equipment stored overnight should be wrapped in aluminum foil and covered with clean, unused plastic.

B.2.4 Well Sounders or Tapes

1. Wash with soap and tap water.
2. Rinse with tap water.
3. Rinse with analyte free water.

B.2.5 Fultz® Pump Cleaning Procedure

CAUTION - To avoid damaging the Fultz® pump:

- Never run pump when dry
- Never switch directly from the forward to the reverse mode without pausing in the "OFF" position

The Fultz® pump should be cleaned prior to use and between each monitoring well. The following procedure is required:

1. Pump a sufficient amount of soapy water through the hose to flush out any residual purge water.
2. Using a brush, scrub the exterior of the contaminated hose and pump with soapy water. Rinse the soap from the outside of the hose with tap water. Rinse the hose with analyte-free water and recoil onto the spool.
3. Pump a sufficient amount of tap water through the hose to flush out all the soapy water (approximately one gallon).
4. Pump a sufficient amount of analyte-free water through the hose to flush out the tap water, then purge with the pump in the reverse mode.
5. Rinse the outside of the pump housing and hose with analyte-free water (approximately 1/4 gal.).
6. Place pump and reel in clean plastic bag.

B.2.6 Goulds® Pump Cleaning Procedure

CAUTION - During cleaning always disconnect the pump from the generator.

The Goulds® pump should be cleaned prior to use and between each monitoring well. The following procedure is required:

1. Using a brush, scrub the exterior of the contaminated hose and pump with soap and tap water.
2. Rinse the soap from the outside of the pump and hose with tap water.
3. Rinse the tap water residue from the outside of pump and hose with analyte-free water.
4. Place the pump and hose in a clean plastic bag.

B.2.7 Redi-Flo2® Pump

The Redi-Flo2® pump should be cleaned prior to use and between each monitoring well. The following procedure is required:

CAUTION - Make sure the pump is not plugged in.

1. Using a brush, scrub the exterior of the pump, electrical cord and garden hose with soap and tap water. Do not wet the electrical plug.
2. Rinse with tap water.
3. Rinse with analyte free water.
4. Place the equipment in a clean plastic bag.

To clean the Redi-Flo2® ball check valve:

1. Completely dismantle ball check valve. Check for wear and/or corrosion, and replace as needed.
2. Using a brush, scrub all components with soap and tap water.
3. Rinse with analyte free water.
4. Reassemble and re-attach the ball check valve to the Redi-Flo2® pump head.

B.2.8 Automatic Sampler Tubing

The Silastic® and Tygon® tubing previously used in the automatic samplers may be field cleaned as follows:

1. Flush tubing with tap water and soap.
2. Rinse tubing thoroughly with tap water.
3. Rinse tubing with analyte free water.

B.3 Downhole Drilling Equipment

These procedures are to be used for drilling activities involving the collection of soil samples for trace organic and inorganic constituent analyses, and for the construction of monitoring wells to be used for the collection of groundwater samples for trace organic and inorganic constituent analyses.

B.3.1 Introduction

Cleaning and decontamination of all equipment should occur at a designated area (decontamination pad) on the site. The decontamination pad should meet the specifications of Section B.2.1.

Tap water (potable) brought on the site for drilling and cleaning purposes should be contained in a pre-cleaned tank of sufficient size so that drilling activities can proceed without having to stop and obtain additional water.

A steam cleaner and/or high pressure hot water washer capable of generating a pressure of at least 2500 PSI and producing hot water and/or steam (200°F plus), with a soap compartment, should be obtained.

B.3.2 Preliminary Cleaning and Inspection

The drill rig should be clean of any contaminants that may have been transported from another hazardous waste site, to minimize the potential for cross-contamination. Further, the drill rig itself should not serve as a source of contaminants. In addition, associated drilling and decontamination equipment, well construction materials, and equipment handling procedures should meet these minimum specified criteria:

- All downhole augering, drilling, and sampling equipment should be sandblasted before use if painted, and/or there is a buildup of rust, hard or caked matter, etc., that cannot be removed by steam cleaning (soap and high pressure hot water), or wire brushing. Sandblasting should be performed prior to arrival on site, or well away from the decontamination pad and areas to be sampled.
- Any portion of the drill rig, backhoe, etc., that is over the borehole (kelly bar or mast, backhoe buckets, drilling platform, hoist or chain pulldowns, spindles, cathead, etc.) should be steam cleaned (soap and high pressure hot water) and wire brushed (as needed) to remove all rust, soil, and other material which may have come from other hazardous waste sites before being brought on site.
- Printing and/or writing on well casing, tremie tubing, etc., should be removed before use. Emery cloth or sand paper can be used to remove the printing and/or writing. Most well material suppliers can supply materials without the printing and/or writing if specified when ordered.
- The drill rig and other equipment associated with the drilling and sampling activities should be inspected to insure that all oils, greases, hydraulic fluids, etc., have been removed, and all seals and gaskets are intact with no fluid leaks.
- PVC or plastic materials such as tremie tubes should be inspected. Items that cannot be cleaned are not acceptable and should be discarded.

B.3.3 Drill Rig Field Cleaning Procedure

Any portion of the drill rig, backhoe, etc., that is over the borehole (kelly bar or mast, backhoe buckets, drilling platform, hoist or chain pulldowns, spindles, cathead, etc.) should be steam cleaned (soap and high pressure hot water) between boreholes.