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WORK PLAN FOR CBC GULFPORT SITES 1, 4 AND 5 NCBC GULFPORT MS
7/25/1996
MORRISON KNUDSEN

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WORK PLAN

CBC GULFPORT, SITES 1, 4 AND 5

CBC GULFPORT, SITES 1, 4 AND 5
GULFPORT, MISSISSIPPI

CONTRACT N62467-93-D-1106
DELIVERY ORDER #0002
STATEMENT OF WORK #009

REVISION #0
JULY 25, 1996

Prepared For:

SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
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Prepared By:

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Gulfport, Mississippi**

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Date

ACCEPTANCE

U.S. Navy Responsible Authority

Date

EXECUTIVE SUMMARY

An interim removal action is planned to be conducted at Sites 1, 4 & 5 of Construction Battalion Center (CBC), Gulfport, Mississippi, using a two-phase approach. The two-phase approach was selected because contaminants at the sites are poorly defined and the possible existence of dioxin at the site. The first phase, which is discussed in this work plan, is an exploratory program to better define the wastes, drums and debris at the sites. The results of the first phase will be used to determine the required actions for the second phase. Requirements for the second phase interim removal will be identified and scoped following completion of this exploratory effort.

Field activities for first phase will be conducted in stages to include soil boring and sampling followed by test trenching at selected areas. The soil boring and sampling will be performed prior to test trenching to allow a better definition of the proposed trench areas.

The interim removal actions will be performed under the direction of Southern Division and as a partnering effort between Morrison Knudsen Corporation under Environmental Response Action Contract (ERAC) and ABB Environmental Services under Comprehensive Long-Term Environmental Action, Navy (CLEAN). The various activities envisioned for the two phases are listed below.

PHASE	ACTIVITY
First Phase	Informal Notice to Mississippi Department of Environmental Quality and Public
	Work Plan for Visual Verification
	Sampling (Geoprobe)
	Review of Sample Results
	Test Trench
Second Phase	Engineering Evaluation and Cost Analysis (EE/CA)
	Public Participation
	Action Memorandum
	Interim Removal Action Work Plan
	Interim Removal

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APPENDIX

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1.0 INTRODUCTION

1.1 BACKGROUND AND OBJECTIVES

This work plan describes a visual verification action to be undertaken at Site 1 - Training Area, Site 4 - Golf Course Area, and Site 5 - Heavy Equipment Training Area of Construction Battalion Center (CBC), Gulfport, Mississippi. The work plan was prepared by Morrison Knudsen Corporation (MK) for Naval Facilities Engineering Command (NAVFACENGCOM), Southern Division (SouthDiv), pursuant to the scope of work defined in Delivery Order #0002, Statement of Work #09, under Contract #N62467-93-D-1106.

The primary objectives of the visual verification action are to:

- evaluate the site to better define future remedial action by soil boring;
- verify the presence of drums by test trenching;
- perform all work in a manner that maximizes worker safety and minimizes environmental impacts; and
- cost-effectively and efficiently execute the work in accordance with the Delivery Order requirements while meeting or exceeding all site-specific, local, state, and federal requirements.

As shown on Figure 1, CBC Gulfport is located in the city of Gulfport, in Harrison County, in the southeastern corner of the State of Mississippi. CBC Gulfport supports four Naval Mobile Construction Battalions and serves as the focal point for deployment of Naval Construction Force (NCF) personnel for the Atlantic Fleet battalions. The location of the three sites is shown in Figure 2.

MK reviewed available information from the sites, including the Verification Study Report (HLA, 1987) and RI/FS Work Plan (ABB, 1993) and has performed a detailed Geophysical Investigation (MK, 1995). Based on this review, the site characteristics are summarized below.

Site # 1, Training Area (Figure 3): The site is the Training Area and consists of an inactive landfill. An unknown quantity of chemical wastes containerized in 55-gallon drums was disposed by trench-and-fill operation between 1942 and 1948. The site was subsequently backfilled with soil and is now characterized by planted trees, grass areas and buildings associated with the training mission of the base.

Site # 4, Golf Course Area (Figure 4): The site consists of an inactive fill site located at the golf course practice putting green, number nine green, and number one tee areas. An estimated 16,000 tons of solid waste and unknown quantity of liquid wastes were disposed by trench-and-fill operation from 1966 to 1972. Ten feet of fill was reportedly placed over the site waste.

Site # 5, Heavy Equipment Training Area (Figure 5): The site consists of an area located between Fourth Street and Colby Avenue. An estimated 6,000 cubic yards of solid waste, unknown quantity of liquid waste (not containerized), 50 to 100 drums of liquid DDT and boxes of powdered DDT were disposed by trench-and-fill method from 1972 to 1976. The site was eventually covered with four to six feet of fill.

1.2 SITE GEOLOGY/HYDROGEOLOGY

Monitoring well logs and background geological information indicate that the sites are underlain by unconsolidated soils consisting of sands and silty sands to a depth of about 20 feet. A clay layer was encountered below the sandy soils.

The ground-water level was recorded to a depth of 7.4 feet below ground surface (ABB, 1993). The recorded ground-water depth for each monitoring well is shown in Table 1.

1.3 SUMMARY OF GEOPHYSICAL REPORT

As part of the Geophysical Investigation (MK, 1995), each of the three sites was surveyed for the presence and delineation of metallic materials. Three geophysical instruments were employed for this purpose: 1) EM31 to map buried metal and conductive soils, 2) EM34 to locate any deeper (greater than 20 feet) conductive zones, and 3) EM61 to identify zones of metallic burials.

The results of the geophysical investigation are presented in Figures 6, 7 and 8. The primary zones (Ax) are large and/or contain the strongest discrete metallic anomalies. The secondary zones (Bx) contain less intense, discrete anomalies and/or are smaller in overall size. Possible target depths at the three sites vary from 1 foot to approximately 15 feet. Based on the results, it was recommended that future excavation start at the major target positions within the primary anomaly zones, and if drums are uncovered in the primary zones, then the secondary target zones should also be investigated.

1.4 WORK PLAN ORGANIZATION

This work plan has been developed using a modular approach in order to facilitate use on other, technically similar projects performed under contract with Southern Division. The work plan main text provides the overall execution plan for the work and describes each definable feature of work (DFOW) which is anticipated. Other plans and documents which complement the work plan are attached as appendices and are briefly described in the following sections.

1.4.1 Site Safety and Health Plan

The Site Safety and Health Plan (SSHP), included as Appendix A, describes safety and health requirements for the removal activities. The SSHP is consistent with requirements of the Occupational Safety and Health Administration's (OSHA) Hazardous Waste Site Regulations, 29 CFR 1910.120 and 29 CFR 1926.65 along with the U.S. Army Corps of Engineers' *Safety and Health Requirements Manual* EM 385-1-1 dated October 1992.

The SSHP is applicable to all personnel who enter the work areas described in this work plan and SSHP.

1.4.2 Quality Control Plan

The Quality Control Plan (QCP), included as Appendix B, identifies Quality testing and inspection requirements for the scope of work to be performed. A Testing Plan and Log is included which lists required tests and inspections for each definable feature of work. The Site Quality Control Supervisor (SQCS) ensures that all tests and inspections are performed to the standards specified and at the required frequencies. Results of these tests and inspections are documented on the Testing Plan and Log.

The Three Phases of Control program will be performed to fully and adequately encompass both on-site and off-site work. The Three Phases of Control are performed for each definable feature of work delineated in the project-specific QCP. The Three Phases of Control consist of a Preparatory Phase, Initial Phase and Follow-up Phase.

1.4.3 Chemical Data Acquisition Plan

The Chemical Data Acquisition Plan (CDAP), included as Appendix C, summarizes both field procedures as well as quality assurance objectives and procedures for data collection. The CDAP is divided into three parts:

- I. Introduction and Objectives
- II. Sampling and Analysis Plan
- III. Quality Assurance Procedures

Part II includes all procedures to be used in the field, including sampling, documentation, decontamination, maintenance and calibration of equipment. Part III includes a discussion of data quality objectives (DQOs), aspects of data validation and quality control in the laboratory.

1.4.4 Waste Management Plan

Wastes generated by the work activities are regulated by the Mississippi Nonhazardous Waste Management Regulations and Hazardous Waste Management Regulations, which incorporate by reference the requirements of 40 CFR 260, EPA regulations for *Hazardous Waste Management System: General*. Local disposal approvals may be required for

disposal of nonhazardous solid wastes in a municipal landfill. Approvals will also be required by a hazardous waste treatment, storage and disposal facility for any hazardous waste that may be transported to the facility for processing. A detailed discussion on waste management for the project is found in the Waste Management Plan, Appendix D.

1.4.5 Environmental Protection Plan

An environmental protection plan, attached as Appendix E, describes the methods which will be used to protect human health and the environment during work execution.

1.4.6. Specifications

Technical specifications, attached as Appendix F, provide the necessary detail to ensure requirements for the various work items are clearly communicated to site workers and subcontractors who will be employed to execute the work. Hence, the specifications are part and parcel to the unique bid packages developed for this project.

2.0 ENVIRONMENTAL COMPLIANCE

2.1 REGULATORY COMPLIANCE

Applicable regulations governing activities occurring under the removal action include:

- 40 CFR 261 - *Identification and Listing of Hazardous Waste* - The federal regulations defining hazardous wastes.
- 40 CFR 262 - *Standards Applicable to Generators of Hazardous Waste* - The federal regulations governing the management of hazardous wastes by facilities that generate hazardous wastes, but conduct no long-term treatment, storage or disposal of the hazardous wastes at the facility.
- 40 CFR 263 - *Standards Applicable to Transporters of Hazardous Waste* - Federal regulations governing transport of hazardous wastes. These regulations must be read in conjunction with U.S. Department of Transportation standards found in Title 49 of the Code of Federal Regulations.
- 40 CFR 268 - *Land Disposal Restrictions* - Federal regulations prohibiting land disposal of hazardous wastes prior to treatment by the methods or to the standards specified within the regulation.
- 40 CFR 300 - *National Oil and Hazardous Substances Pollution Contingency Plan (NCP)* - The purpose of the NCP is to provide the organizational structure and procedures for preparing for and responding to discharges of oil and releases of hazardous substances, pollutants, and contaminants.
- 49 CFR 172 - *Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements* - Federal regulation for preparing hazardous materials, including hazardous wastes, for shipment. 49 CFR 172 is used by generators to determine proper labelling, manifesting and placarding of hazardous wastes for transport to an off-site treatment or disposal facility.
- 49 CFR 173 - *Shippers - General Requirements for Shipments and Packaging* - Federal regulations defining the hazard classes and specifying packaging requirements for each hazard class.
- 49 CFR 178 - *Specifications for Packaging* - Federal specifications for containers used in shipping hazardous materials and hazardous wastes.

- 29 CFR 1910.120 - *Hazardous Waste Operations and Emergency Response* - Federal regulations setting forth training standards and work practices that are protective of worker health for hazardous waste site employees.
- 29 CFR 1926 - *Safety and Health Regulations for Construction* - Federal standards protective of worker health for general construction work activities.
- *Mississippi Nonhazardous Waste Management Regulations* - State regulations governing the management and disposal of nonhazardous solid wastes.
- *Mississippi Hazardous Waste Management Regulations* - State regulations governing the generation and management of hazardous wastes. Mississippi regulations are similar to the federal regulations found at 40 CFR 260 through 268. However, the State of Mississippi also directs specific reporting requirements for the management of hazardous wastes.

2.2 PERMITS, APPROVALS AND NOTIFICATIONS

In accordance with CERCLA 42 USC 9601 Section 121 (e), no specific permits will be required for this visual verification study.

2.2.1 Construction Permits

Although no state or federal construction permits are required, CBC Gulfport has requirements governing construction activities carried out on site. An excavation permit must be obtained prior to any digging, drilling or trenching at Sites 1, 4 and 5. Specific trenching, drilling and digging locations need to be provided to the CBC Gulfport Public Works Department to obtain the necessary utility clearances. The permit is valid for 90 days from the date of issue. If the work extends for more than 90 days, the permit will need to be extended or reissued.

Hot work permits including welding and torch work will be issued on an as needed basis at each site.

Personnel entering the excavations to expose and remove any drums encountered may be subject to confined space entry as specified in the SSHP.

2.2.2 Notification

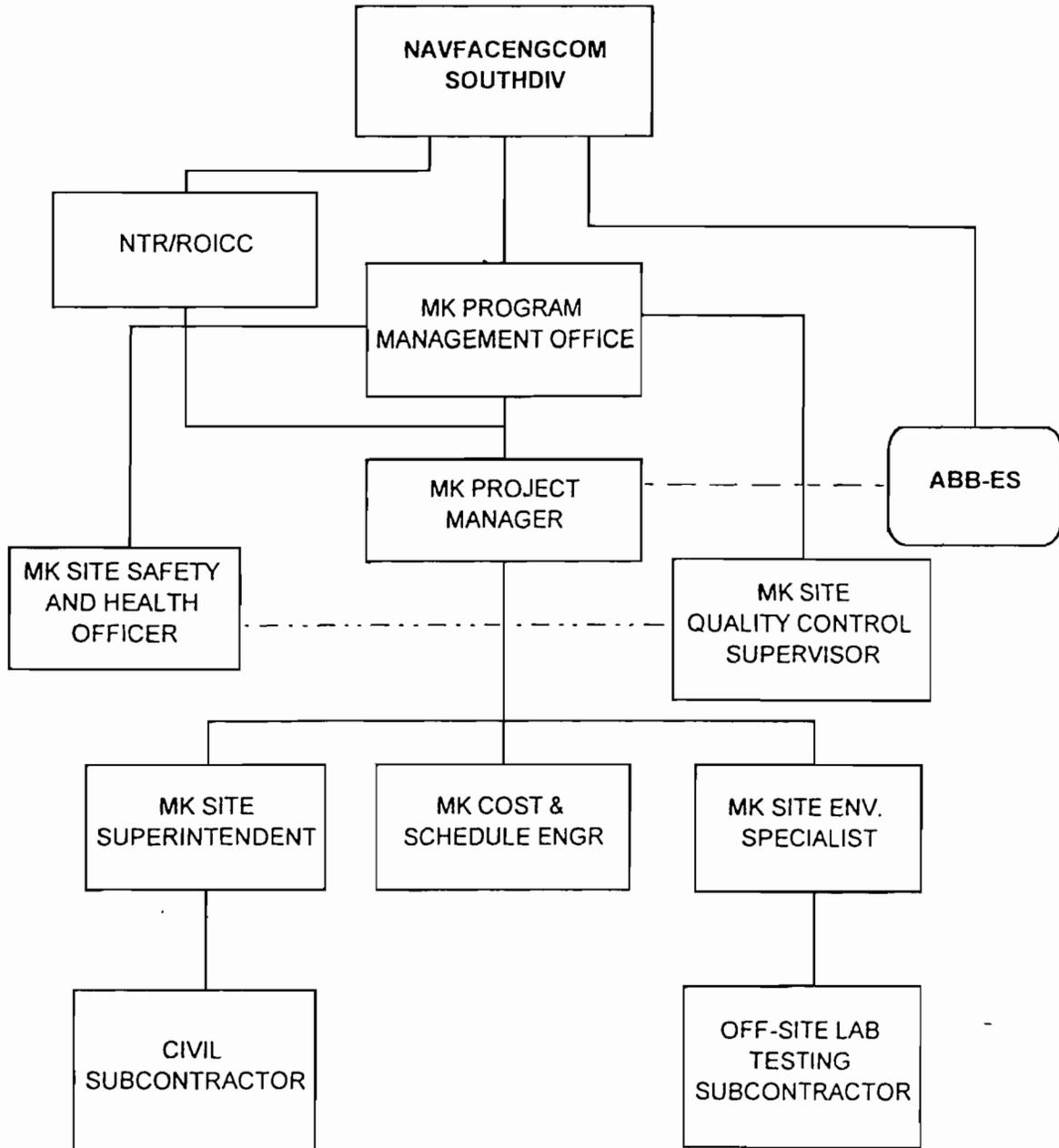
Waste disposal will require approval by the receiving facility prior to waste shipment. The USEPA and Mississippi Department of Environmental Quality (MDEQ) will be notified of waste shipments in accordance with the generator reporting requirements of 40 CFR 262 EPA Regulations for Hazardous Waste Generators, and the Mississippi Hazardous Waste Regulations.

2.3 IR MANUAL REQUIREMENTS

The Department of Defense conducts Installation Restoration (IR) programs pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Executive Order 12580, dated January 23, 1987. The Department of the Navy formalized its policies regarding CERCLA activities in the *Navy/Marine Corps Installation Restoration Manual* (IR Manual), February 1992. The interim removal action will be performed as per IR Manual requirements using a two-phase approach. The first phase includes a visual verification action as per this work plan. The second phase, including Engineering Evaluation and Cost Analysis, public notice, action memorandum, and removal action will be performed following completion of the first phase.

3.0 PROJECT ORGANIZATION

CBC GULFPORT ORGANIZATION CHART



PROJECT RESPONSIBILITIES	
TEAM MEMBERS	RESPONSIBILITIES
NAVFACENGCOM SouthDiv	Overview of project execution and coordination between Contractor, CBC Gulfport, and other agencies.
Program Management Office (PMO)	Overall responsibility for all cleanup measures at all sites in the Southern Division of the Naval Facilities Engineering Command under Contract No. N62467-93-D-1106. The PMO is the point of contact for SouthDiv.
NTR/ROICC	SouthDiv's on-site representative and is the liaison between CBC officials and the Project Manager.
Project Manager (PM)	<p>Overall responsibility for implementing this Work Plan and all other project activities. The PM will control all on-site forces to ensure completion of project tasks.</p> <ul style="list-style-type: none"> • Single point of contact for liaison. • Coordinates the project resources to ensure compliance with the appropriate plans, procedures, and regulatory requirements, • Oversees all personnel on-site and coordinates with the Program Management Office (PMO).
ABB-ES	Responsible for technical oversight during soil boring and review of analytical laboratory results.
Site Superintendent	<p>Reports to the PM and will act as the Assistant Project Manager. Has primary responsibility for the coordination and control of all field activities to ensure that all tasks included in this Work Plan are completed.</p> <ul style="list-style-type: none"> • Directs and coordinates the activities of all on-site subcontractors. • Provides daily reports to the PM on the status of field activities.
Cost and Schedule Engineer	<p>Reports to the PM and has primary responsibility for the maintenance of the cost and schedule control systems, including regular assessments of performance.</p> <ul style="list-style-type: none"> • Provides administrative support services. • Evaluates cost and schedule information and provides status reports. • Prepares monthly progress reports. • Reviews cost/schedule submissions by subcontractors. • Verifies progress against payment requests. • Maintains the document control system. • Maintains contract change notice log and trend logs.

PROJECT RESPONSIBILITIES

TEAM MEMBERS	RESPONSIBILITIES
<p>Site Environmental Specialist</p>	<p>Reports to PM and has the responsibility for environmental and waste disposal issues.</p> <ul style="list-style-type: none"> • Performs field screening. • Coordinates with Site Superintendent on sample collection and on-site laboratory testing. • Directs the activities of the off-site laboratory testing subcontractor. • Coordinates off-site waste disposal.
<p>Site Safety and Health Officer (SSHO)</p>	<p>Reports to the PMO. Implements and ensures compliance with the Task-Specific Site Safety and Health Plan (SSHP). Tracks and reports on safety-related matters.</p> <ul style="list-style-type: none"> • Responsible for the control and elimination of existing and potential industrial hazards. • Implements and executes personnel monitoring program to ensure proper monitoring of internal and external exposures. • Provides site-specific training to personnel as required by the SSHP. • Tracks all personnel training requirements, survey data, certifications, and records to ensure compliance with plans and regulations. • Assists in developing and implementing the SSHP. • Reviews and approves subcontractor Safety and Health Plans and Programs. Conducts audits as appropriate to ensure compliance. • Reviews and approves work permits for appropriate industrial hygiene and safety controls. • Provides monitoring to ensure the protection of project personnel, the public, and the environment. • Maintains an inventory of industrial hygiene and safety supplies as appropriate. • Maintains monitoring equipment and calibration records. • Stops work when necessary to ensure the safety of personnel and to prevent damage to the environment.
<p>Site Quality Control Supervisor (SQCS)</p>	<p>Reports to the PMO and has primary responsibility for verifying a consistently high level of quality for the project.</p> <ul style="list-style-type: none"> • Reviews and checks all documents, reports, and testing results. • Coordinates with procurement, engineering, and cost/schedule departments. • Observes all field activities to ensure compliance with this Work Plan and completes Field Inspection Checklists (Appendix B). • Keeps minutes of the periodic quality meetings. • Implements the three phases of quality control: Preparatory, Initial, and Follow-up inspections. • Ensures tracking and resolution of nonconformance/rework items.

4.0 PROJECT EXECUTION

4.1 WORK APPROACH

The visual verification action at Site 1 - Training Area, Site 4 - Golf Course Area, and Site 5 - Heavy Equipment Training Area will be performed using the observational approach. The observational approach recognizes the uncertainty involved in environmental removals such as this project and permits modifications to be made in the field during cleanup. Further, the observational approach allows work to proceed using the most probable rather than the most unfavorable possibilities.

The Geophysical Investigation provided anomaly zones in each of the site. However, the precise location of each buried drum is not known. The approach is to select the most probable areas within the anomaly zones and prioritize the selected areas for visual verification action which will consist of soil boring and excavation of test trenches. As shown in Figure 9, a field decision will be made during the excavation and removal process whether to continue with further excavation or to terminate the excavation depending on the quantity of buried drums encountered. The extent of each area can also be modified depending on the buried drums encountered. MK's PM will submit recommendations for NTR's approval, if further excavation and removal at a site is not required. No excavations will extend below the ground water table except to that required to remove an exposed drum.

In addition to the buried drums and containers, debris and contaminated soil will also be removed from the excavated area. The quantity and extent of debris and contaminated soil will determine the extent of the excavation area. It has been assumed that five cubic yards of impacted soil will be removed per drum. Air monitoring will be performed at the perimeter of the areas during soil excavation and drum removal. Engineering controls will be applied to minimize airborne contaminant migration off the work area.

4.2 DEFINABLE FEATURES OF WORK

The DFOW for Sites 1, 4 and 5 are:

- Mobilization and demobilization
- Soil boring
- Decontamination
- Clearing and grubbing
- Test trenching
- Sampling and analysis

- Site restoration
- Reports.

A brief description of the DFOW is provided in this section. A detailed description of the work elements is further described in the specifications, Appendix F. The DFOW is cross-referenced with other elements of the associated plans as shown on Table 2.

4.2.1 Mobilization and Demobilization

Current planning is to perform the work at the three sites consecutively, so that there will be only one mobilization effort. The mobilization effort will involve the following tasks:

- Mobilize support facilities,
- Obtain excavation permits,
- Conduct pre-construction meeting,
- Inspect site and evaluate environmental conditions,
- Inspect equipment,
- Establish work zones, and
- Establish erosion and sedimentation controls.

4.2.2 Soil Boring

The purpose of soil boring is to determine the extent of dioxin and other contaminants at the site. Soil boring will be performed using a Geoprobe or similar equipment and soil samples will be collected above the water table. Sampling and laboratory testing will be performed in accordance with Appendix C, Chemical Data Acquisition Plan.

The analytical laboratory results from soil borings will be evaluated and the extent of test trenching will be re-defined.

4.2.3 Clearing and Grubbing

All areas requiring excavation, fill or as otherwise indicated shall be cleared and grubbed.

Clearing will consist of the felling, trimming, and cutting of trees into sections and the satisfactory disposal of the trees and other vegetation designated for removal, including timber, snags, brush, and rubbish occurring in the areas to be cleared. Trees, stumps, roots, brush, and other vegetation in areas to be cleared will be cut off flush with or

below the original ground surface. Trees and vegetation to be left standing will be protected from damage incident to clearing, grubbing, and construction operations by the erection of barriers or by such other means as the circumstances require.

Grubbing will consist of the removal and disposal of stumps, roots larger than 3 inches in diameter, and matted roots from the designated grubbing areas.

Logs, stumps, roots, brush, rotten wood, and other refuse from the clearing and grubbing operations will be disposed of off-site or in an acceptable on-site location.

4.2.4 Test Trenching

Test trenching will consist of soil excavation at selected areas. If drums and debris are encountered during test trenching, they will be removed and disposed of appropriately as discussed below.

4.2.4.1 Soil Excavation and Backfill

Test trenching will be performed within the selected areas shown in Figures 10 to 12. At each site the selected areas are prioritized for excavation and drum removal (Number one area being the highest priority). The extent of the test trenching may be re-defined based on the results of soil boring. Also, as discussed in Section 4.1, the actual extent of excavations will depend on the quantity of buried drums and containers encountered.

Suitable topsoil from the natural ground cover will be excavated and stockpiled for later use.

The soil will be carefully excavated with a backhoe or trackhoe until obstructions are encountered. Metal detectors will also be used to determine whether there is a possibility of buried and other debris. Once the drums have been removed, the open excavation will be screened with metal detectors to determine if additional metallic debris exists below the excavated surface.

Excavated soil will be temporarily stockpiled on a six mil polyethylene liner surrounded by strawbale berms. A stockpiling plan will be developed for each area, detailing planned locations for individual stockpiles and protective measures that will be used for protection of human health and the environment. Visibly contaminated soil will be stockpiled separately from other excavated soil.

The excavated soil will be sampled from the stockpile and the test results will be compared to the risk based concentration levels as discussed in Appendix C. If the test results are below the risk based concentration levels, the stockpile from which the sample was collected will be used as backfill. The excavated soil with chemical concentrations above the risk based concentration levels will be disposed of at an off-site facility. To supplement the quantity of soil disposed off-site, clean backfill will be obtained from a suitable on-site or off-site borrow source.

The backfill will be placed in 12 inch lifts and compacted. Final grade of the backfill and topsoil will be to the existing grade.

4.2.4.2 Drum Removal

Based on the available information (HLA, 1987), buried drums are likely to be encountered in the three sites. However, no records are available on the number of drums buried in each site.

Due to the inherent risks associated with excavating and handling drums with unknown contents, the entire drum excavation and management process will be carefully planned. All drums will be handled, to the extent possible, with remote handling equipment. Such equipment includes a drum grappler attached to a hydraulic excavator, a front-end loader equipped with a bucket sling, a rough terrain forklift, a roller conveyor or drum carts. An excavator will be used to remove soil from above and around the buried drums. The drums will be inspected to determine if they can be removed by mechanical means. Deteriorated drums will be overpacked. The drums will be moved to a temporary staging area and the drum contents sampled for on-site laboratory analysis.

Once sampled, the drums will then be moved to a main staging area and segregated into the following groups:

- Hazardous Liquids
- Hazardous Solids
- Nonhazardous Liquids
- Nonhazardous Solids

The drums will be further segregated according to chemical compatibility.

The following disposal practices will be used:

- Drummed liquid wastes will be pumped into a bulk tanker for shipment to an off-site for treatment and/or disposal.
- Empty drums will be crushed on-site and shipped off-site for disposal at a landfill licensed to dispose of these drums as nonhazardous waste.
- If bulking of liquids and/or solids is not practical, the drummed liquids and/or solids will be prepared for shipment in approved DOT containers, properly labeled and shipped off-site for treatment and/or disposal.
- Drummed solid wastes will be open and consolidated into rolloffs for shipment off-site for treatment and/or disposal.
- Waste transportation and disposal will be accomplished in accordance with the requirements detailed in Appendix D, Waste Management Plan.

4.2.4.3 Debris Removal

In addition to the buried drums, other debris typical of landfill sites is also expected to be encountered during excavation. The following steps will be taken when debris is encountered in the excavation:

Debris will be segregated as recyclable/salvageable materials or solid nonhazardous waste/construction debris.

It is assumed that recyclable/salvageable material consists mostly of metal objects. Metal objects will be decontaminated at the decontamination facility. The metal may be cut into smaller pieces for handling or to reduce the volume. Metal scrap will be sent to a recycling center for reuse. Appliances used for cooling purposes (such as freezers, refrigerators, air conditioners or dehumidifiers) are expected to contain freon. The refrigerant will be collected and disposed of at an off-site licensed facility.

Solid nonhazardous waste/construction debris will include concrete, scrap wood, roofing materials or floor tiles. Floor tiles and other suspect materials will be stockpiled and sampled for asbestos. Asbestos containing waste will be disposed of as a special waste at a licensed facility. Debris that does not contain asbestos or other hazardous materials or wastes will be disposed at a landfill permitted to accept the debris.

4.2.5 **Sampling and Analysis**

Sampling and analysis will be performed as follows:

- Direct push (Geoprobe) sampling,
- Sampling of drummed contents and on-site laboratory analysis for characterization,
- Off-site laboratory analysis for characterization and waste disposal.

Details of sampling and analysis are provided in Appendix C - Chemical Data Acquisition Plan.

4.2.6 **Site Restoration**

All backfilled areas will be covered with three inches of topsoil, seeded and fertilized. Erosion control measures shall be maintained until the growth of grasses is sufficient to prevent erosion. Saplings will be planted if required by NTR, to replace trees that were removed during construction.

4.2.7 Reports

A letter report will be prepared following completion of soil boring and sampling. The letter report will include sampling locations and results of analytical laboratory testing.

A Construction Completion Report will be prepared four weeks following completion of site work. A typical outline for the Construction Completion Report is provided below.

1.0	INTRODUCTION
2.0	PROJECT DESCRIPTION
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APPENDIX D	ANALYTICAL DATA SUMMARY
APPENDIX E	AS-BUILTS

5.0
SCHEDULE

A construction schedule for the work at Site 5 is shown in the following page. Durations for major activities are as shown below:

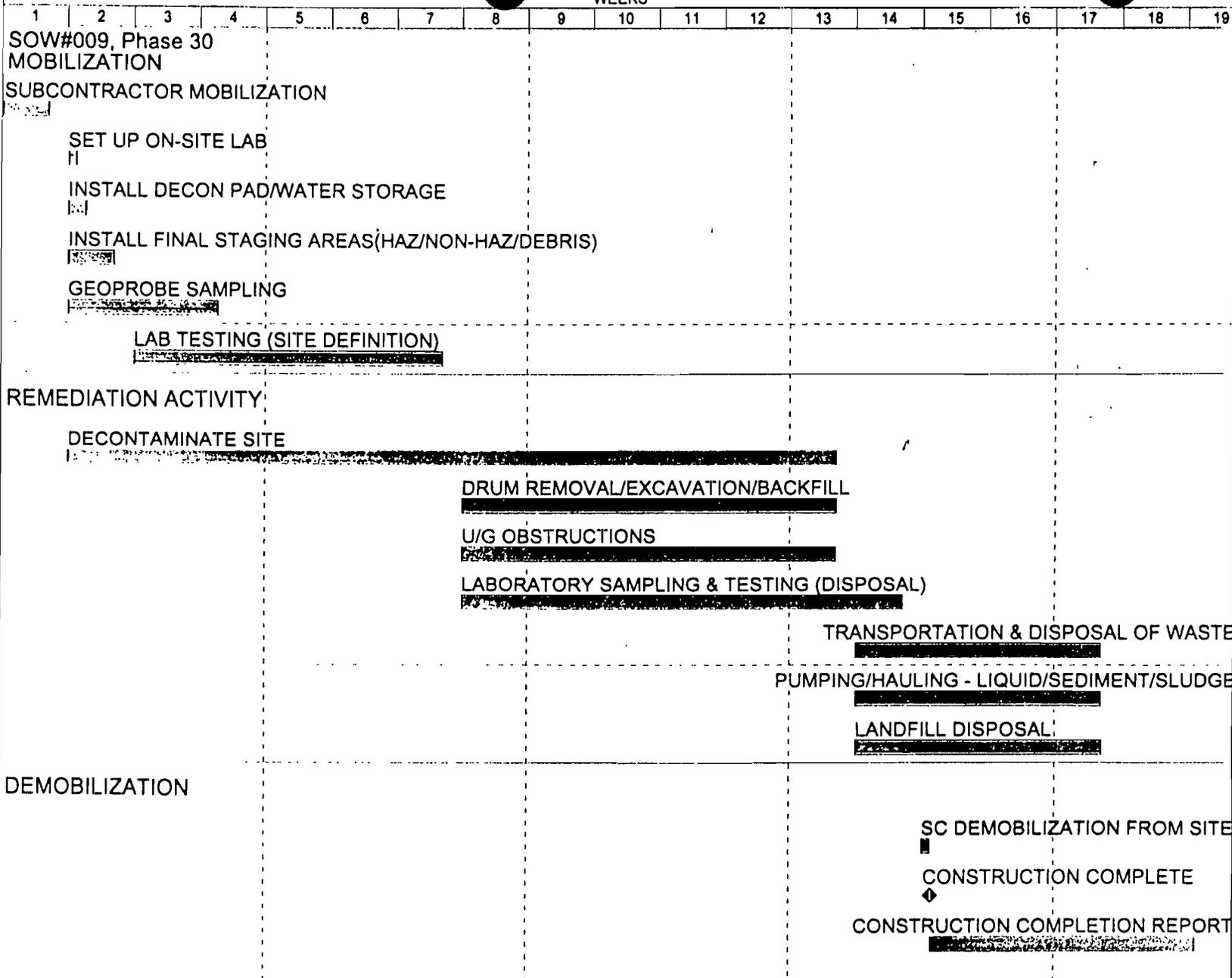
Construction 14 weeks

Construction Completion Report 4 weeks

Construction Schedules for Sites 1 and 4 will be developed at a later date, when approval for work at these sites are received.

ACTIVITY ID ORIG DUR

WEEKS



Plot Date 18JUL96
 Data Date 26JAN96
 Project Start 1JAN96
 Project Finish 27AUG96

Activity Bar/Early Dates
 Critical Activity
 Progress Bar
 Milestone/Flag Activity

GLFS Sheet 1 of 1
 MORRISON KNUDSEN CORPORATION
 SOUTH DIV ERAC PROGRAM - WO# 4324
 DO#0002 - GULFPORT S/C SCHEDULE

Date	Revision	Checked	Approved

6.0 REFERENCES

- MK, 1995, *Geophysical Investigation of Sites 1, 4 and 5 at the Naval Construction Battalion Center, Gulfport, Mississippi*, prepared by Geosphere Midwest Inc. for Morrison Knudsen Corporation.
- HLA, 1987, *Draft Final Verification Report, Naval Construction Battalion Center, Gulfport, Mississippi*, prepared by Harding Lawson Associates.
- ABB, 1993, *RI/FS Workplan, Naval Construction Battalion Center, Gulfport, Mississippi*, prepared by ABB Environmental Services.
- *Navy/Marine Corps Installation Restoration Manual*, February 1992.
- The U.S. Army Corps of Engineers' *Safety and Health Requirements Manual* EM 385-1-1 dated October 1992.
- 40 CFR 261 - *Hazardous Waste Identification and Listing*.
- 40 CFR 262 - *Standards Applicable to Generators of Hazardous Waste*.
- 40 CFR 263 - *Standards Applicable to Transporters of Hazardous Waste Regulations*.
- 40 CFR 268 - *Land Disposal Restrictions*.
- 49 CFR 172 - *Hazardous Materials Tables, Hazardous Materials Communications Requirements and Emergency Response Information Requirements*.
- 49 CFR 173 - *Shippers - General Requirements for Shipments and Packaging*.
- 49 CFR 178 - *Specifications for Packaging*.
- 29 CFR 1910.120 - *Hazardous Waste Operations and Emergency Response*.
- 29 CFR 1926 - *Safety and Health Regulations for Construction*.
- *Mississippi Nonhazardous Waste Management Regulations*.
- *Mississippi Hazardous Waste Management Regulations*.
- *CBC Installation Restoration Community Relations Plan, 1993*
- ASTM D 698 - *Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5 Lb Rammer and 12-in Drop*. ASTM Standards, Volume 04.08.
- ASTM D 2922 - *Test Method for Density of Soil and Soil-Aggregate In Place by Nuclear Methods (Shallow Depth)*. ASTM Standards, Volume 04.08.

TABLE 1 GROUND-WATER LEVELS

SITE	MONITORING WELL	DEPTH BELOW GROUND SURFACE (FEET)
Site # 1	GPT 1-1	2.0
	GPT 1-2	2.4
	GPT 1-3	1.3
Site # 4	GPT 4-1	0.1
	GPT 4-2	2.4
	GPT 4-3	7.4
Site # 5	GPT 5-1	4.8
	GPT 5-2	2.9
	GPT 5-3	6.4

TABLE 2 LIST OF DFW AND OTHER ELEMENTS OF ASSOCIATED PLANS

DFW (WORK PLAN)	SPECIFICATION SECTIONS (TECHNICAL SPECIFICATIONS - APPENDIX F)	ACTIVITY HAZARD ANALYSIS (SSHP - APPENDIX A)	FIELD INSPECTION CHECKLIST (QCP - APPENDIX B)
Mobilization and demobilization	01503 - Temporary Facilities	1 of 11	MD-01
Soil boring	TBD*	TBD	SB-01
Decontamination	01500 - Decontamination	5 of 11	DE-01
Clearing and grubbing	02105 - Clearing and Grubbing	1 of 11	CG-01
Test trenching	01565 - Dust Control 01566 - Surface Water and Erosion Control 02210 - Excavation 02215 - Drum Removal 02224 - Backfilling 02225 - Buried Debris Removal	2 of 11 8 of 11 3 of 11 9 of 11 4 of 11 10 of 11 8 of 11 11 of 11	EB-01 DD-01
Sampling and analysis	None	7 of 11	SA-01
Site restoration	02960 - Site Restoration	6 of 11	SR-01

* TBD= To be done at a later date.

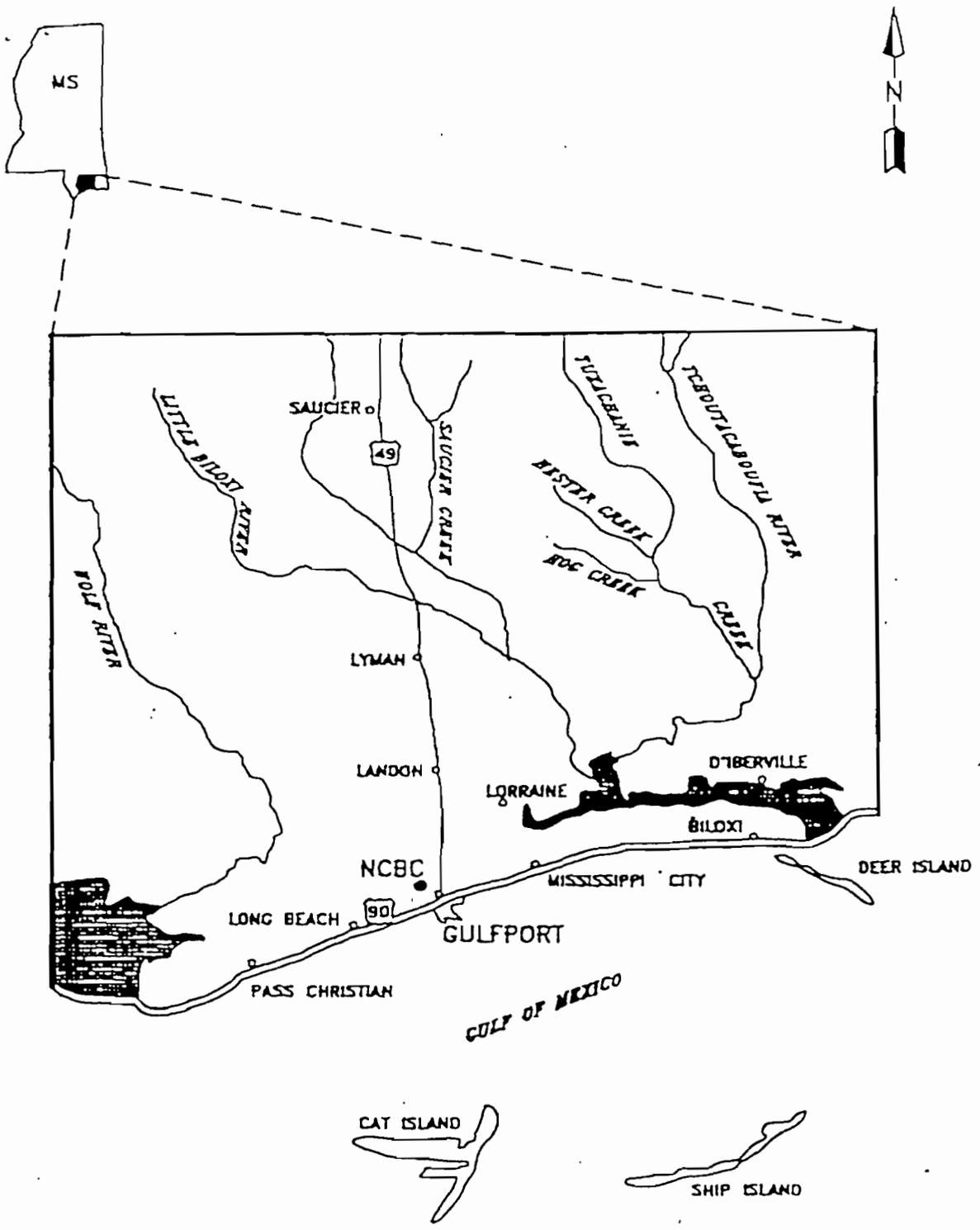
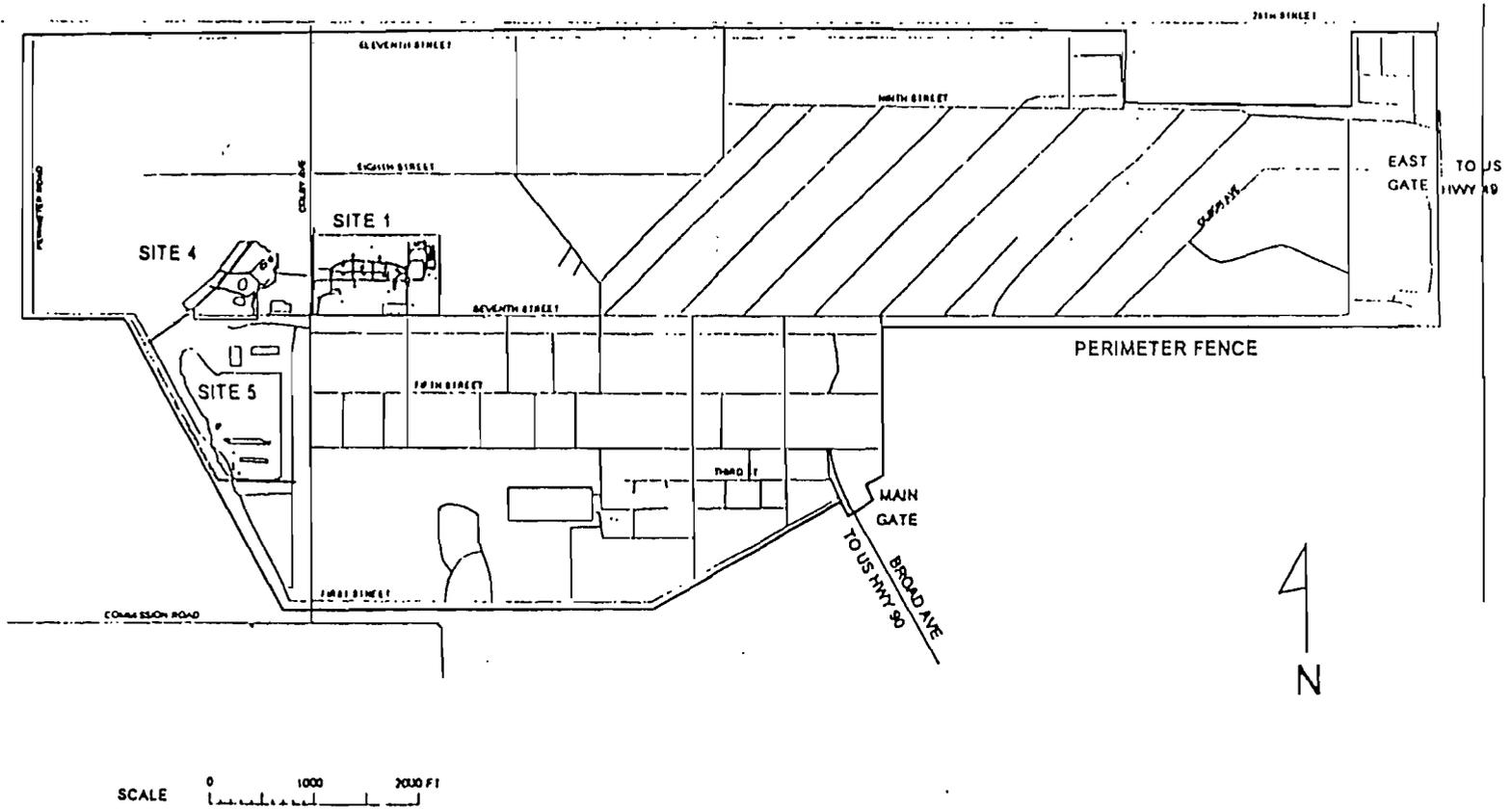
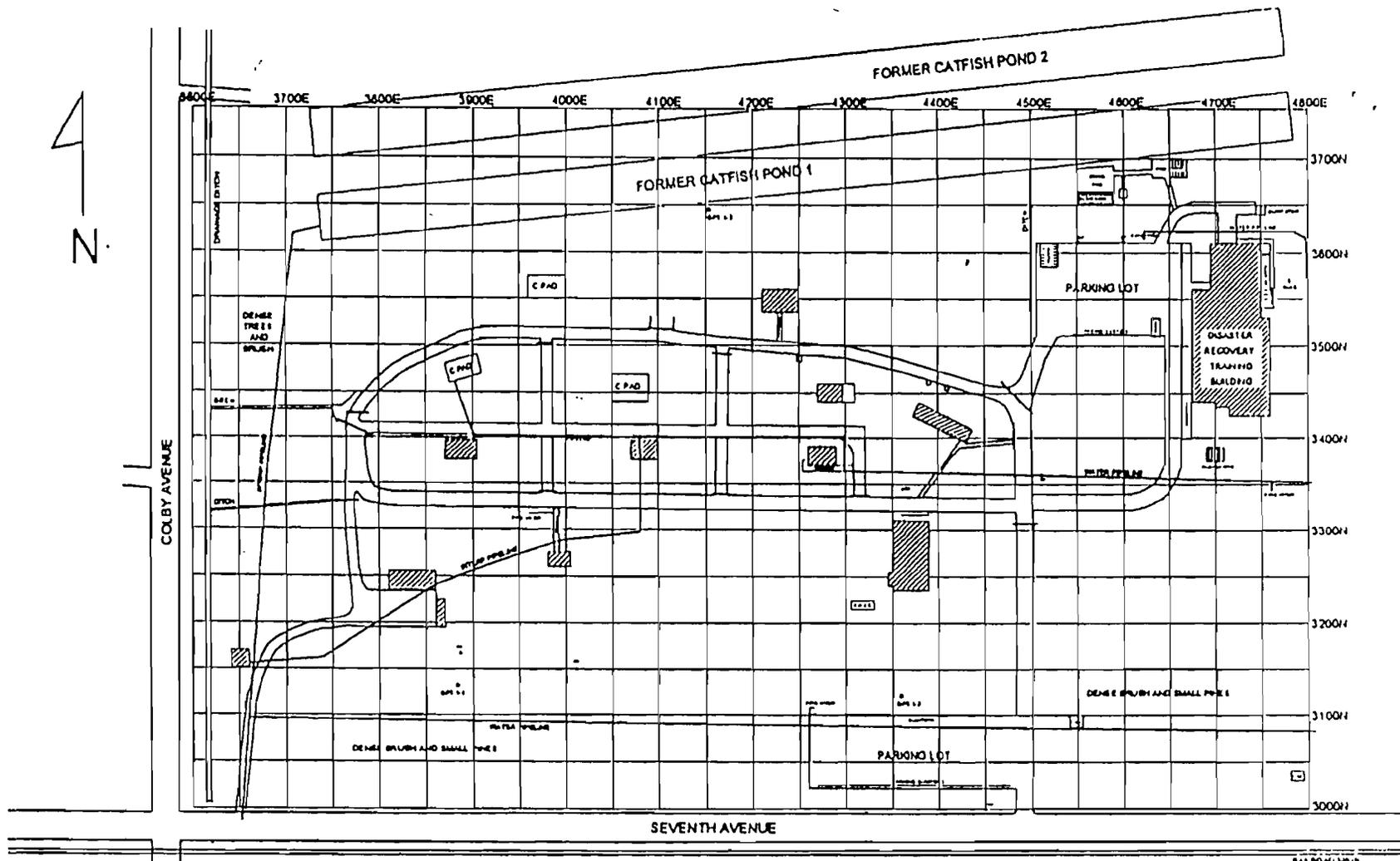


FIGURE 1
VICINITY MAP



**FIGURE 2
SITE LOCATION MAP**



LEGEND

○	TELEPHONE POLE
▽	BASKETBALL POLE
—	CLAVERT
□	MONITOR WELL
□	CONCRETE PAD WITH REBAR
▨	BUILDING

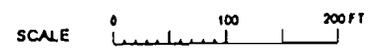
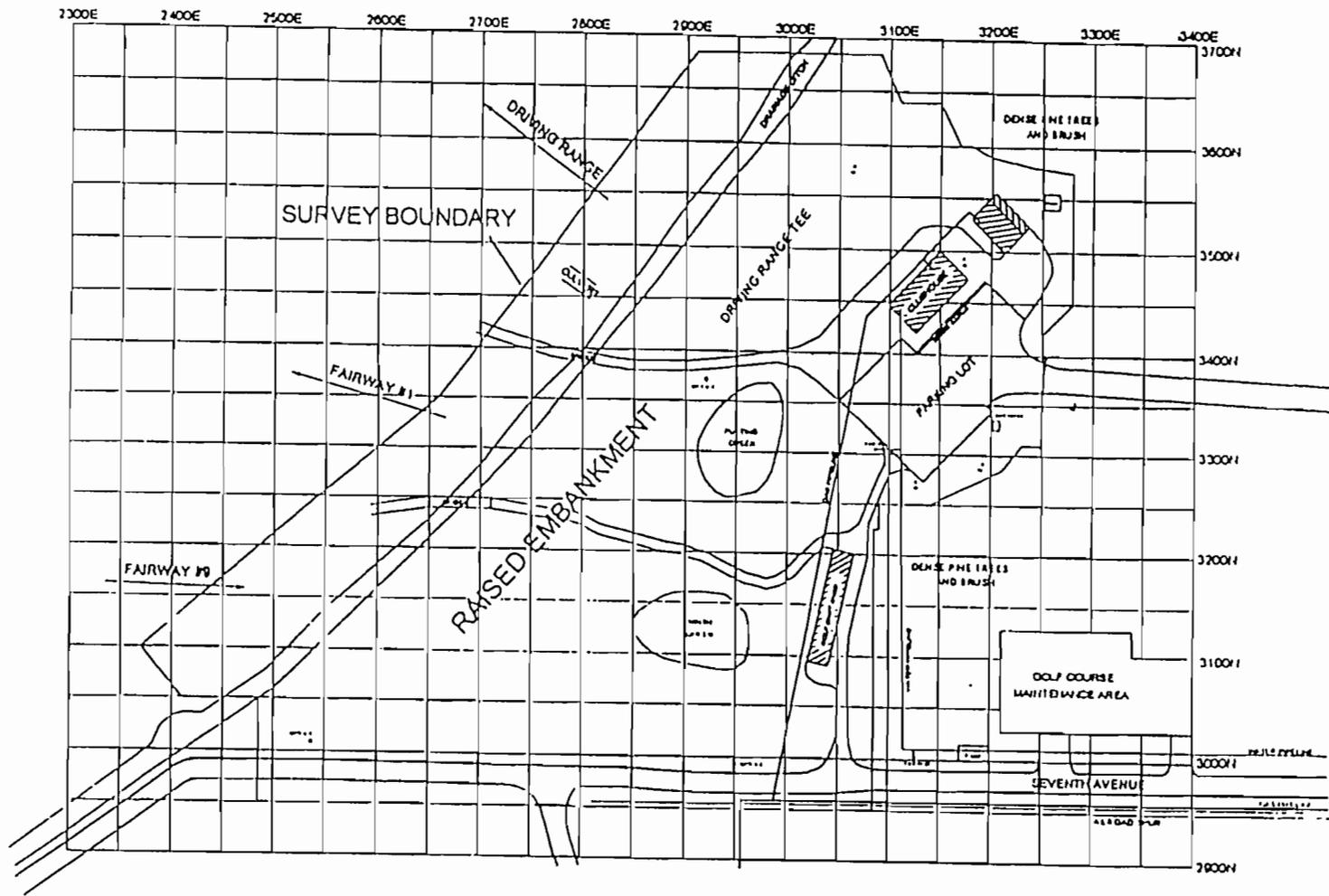


FIGURE 3
SITE # 1, TRAINING AREA



LEGEND

○	TELEPHONE POLE
—	CULVERT
□	MONITOR WELL
▨	BUILDING

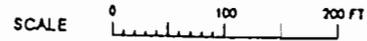
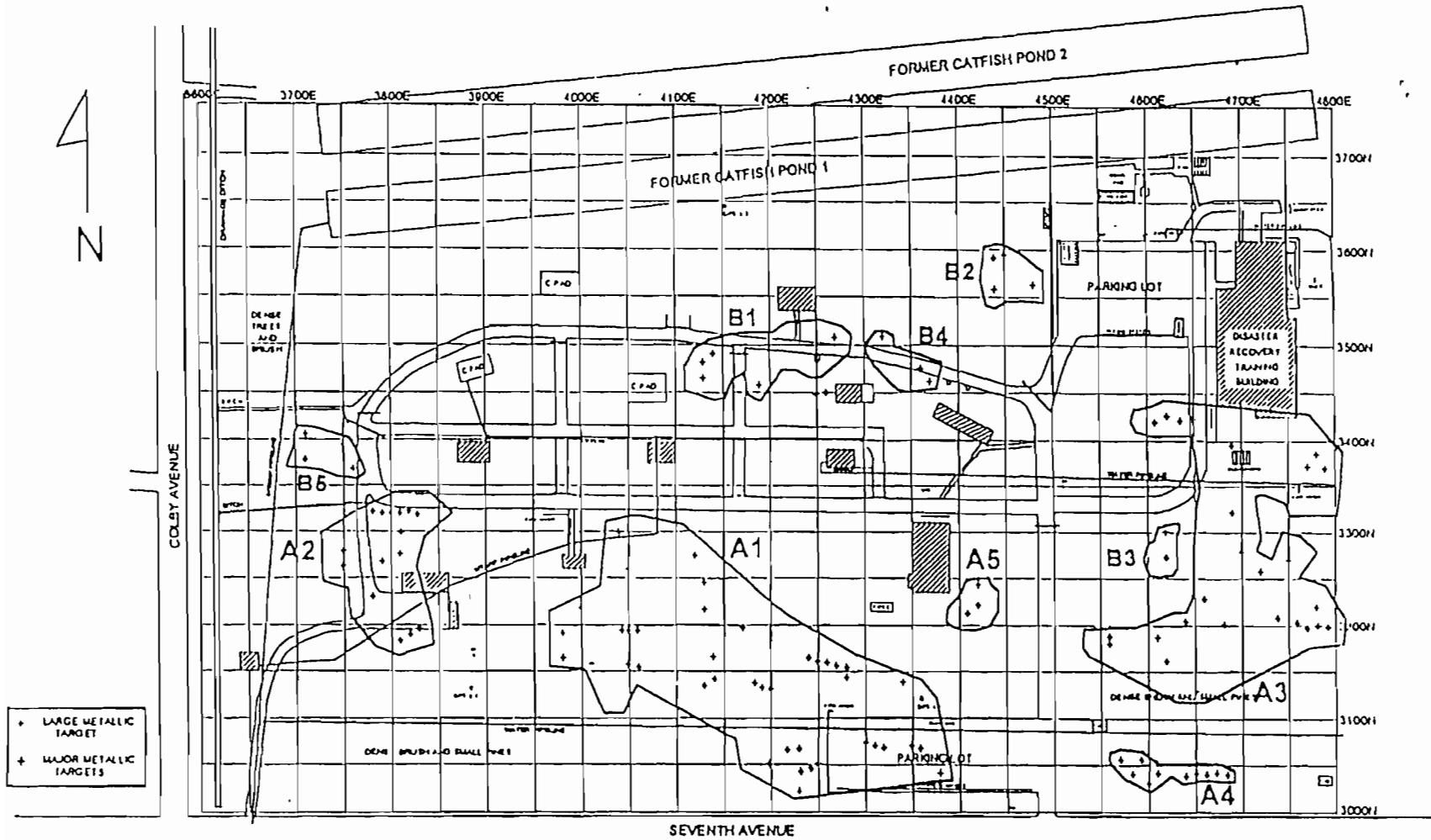


FIGURE 4
SITE # 4, GOLF COURSE AREA



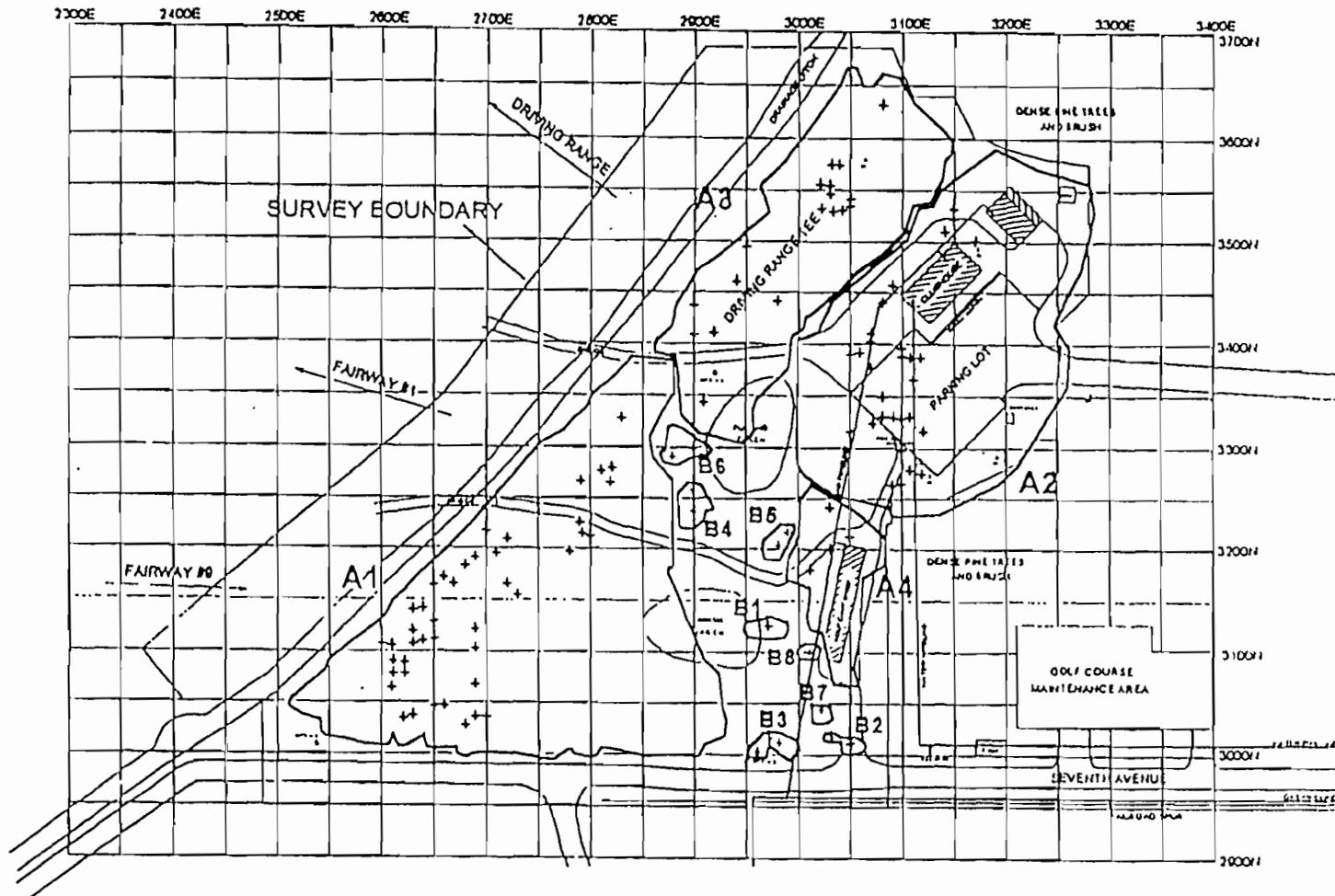
+ LARGE METALLIC TARGET
 + MAJOR METALLIC TARGETS

ANOMALY MAP
 B1 SECONDARY ANOMALY AREA
 A1 PRIMARY ANOMALY AREA

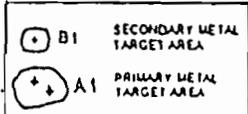
LEGEND	
⊕	TELEPHONE POLE
⊕	BASEBALL POLE
—	CULVERT
⊕	MONITOR WELL
C.PAD	CONCRETE PAD WITH REBAR
▨	BUILDING

SCALE 0 100 200 FT

FIGURE 6
 SITE # 1, ANOMALY MAP



ANOMALY MAP

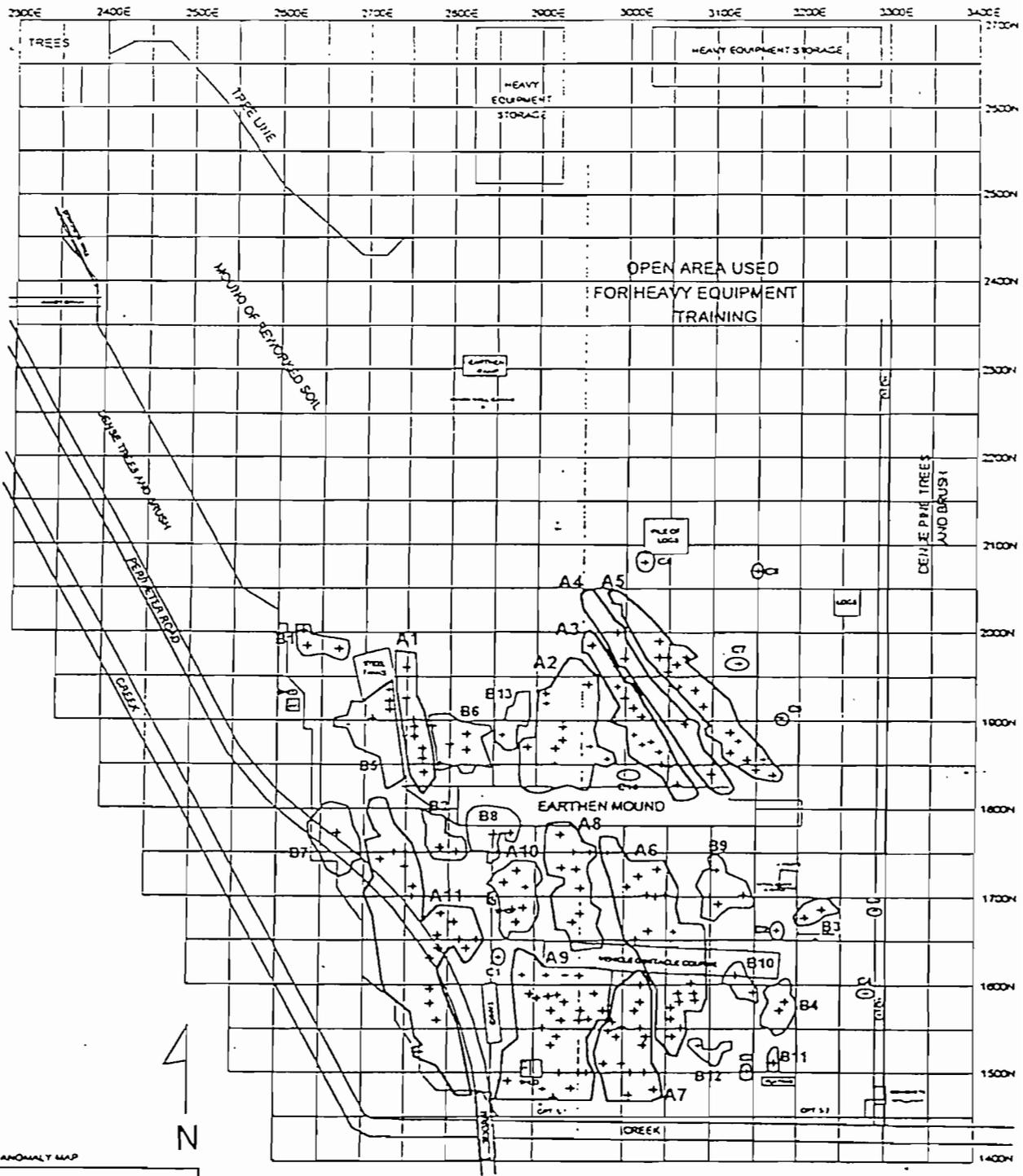


LEGEND



SCALE 0 100 200 FT

FIGURE 7
SITE # 4, ANOMALY MAP



ANOMALY MAP

C1	LARGE METAL TARGET
B1	SECONDARY ANOMALY AREA
A1	PRIMARY ANOMALY AREA

LEGEND

○	TELEPHONE POLE
□	WATER WELL
▭	RADIATION

FIGURE 8
SITE # 5, ANOMALY MAP

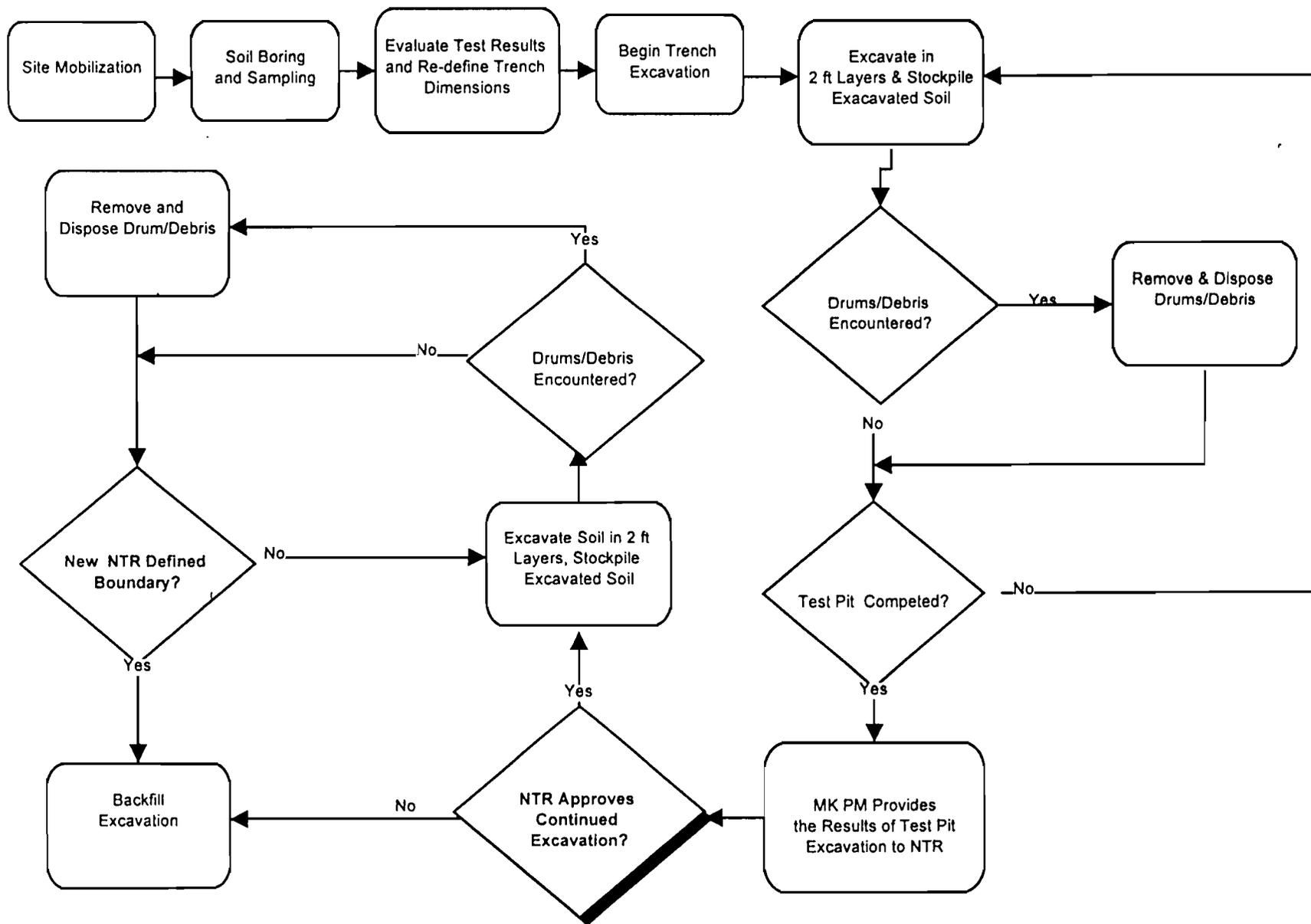
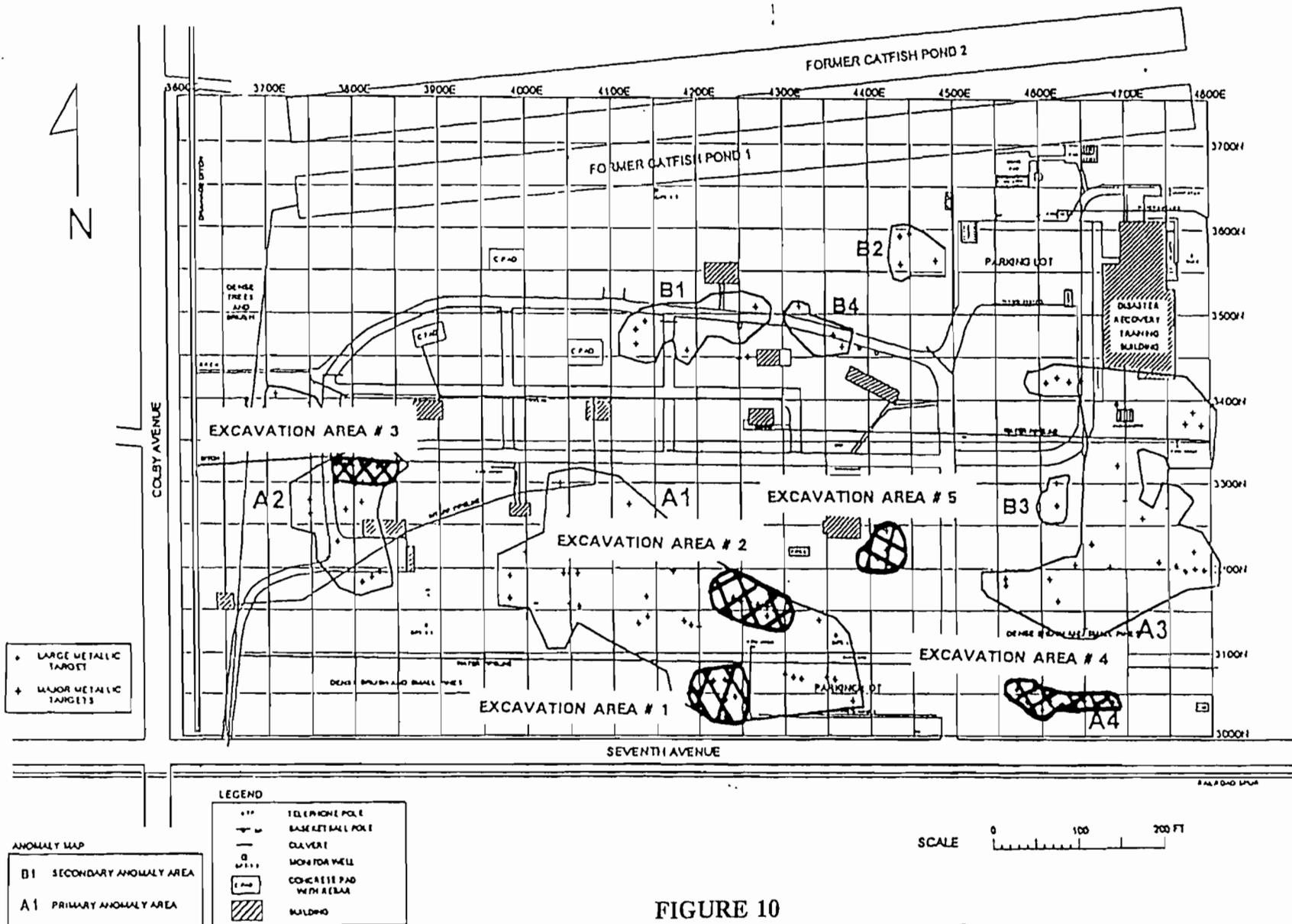
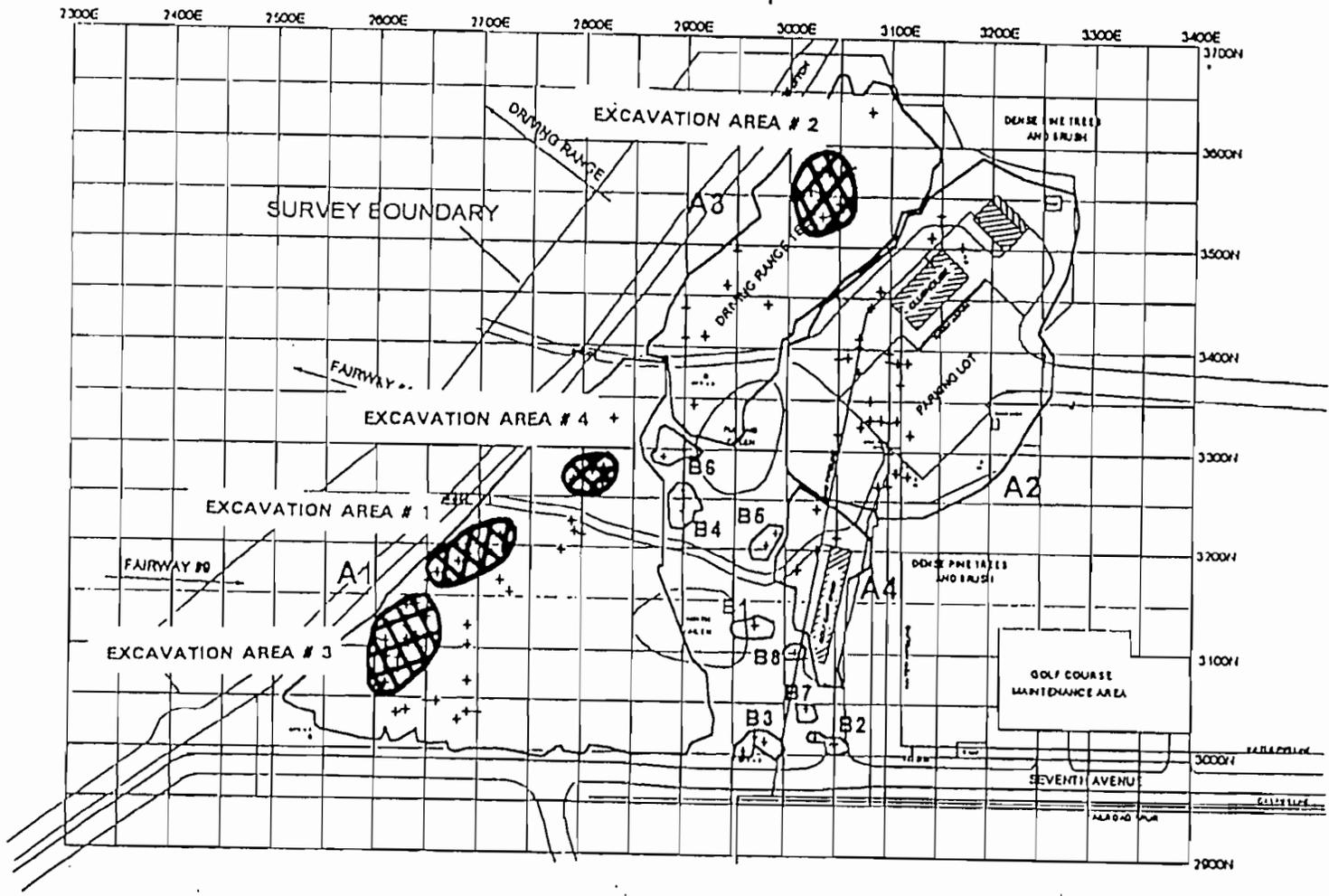


FIGURE 9
EXCAVATION DECISION TREE





ANOMALY MAP		LEGEND	
	B1 SECONDARY METAL TARGET AREA		TELEPHONE POLE
	A1 PRIMARY METAL TARGET AREA		CAVEAT
			MENTION WELL
			BEDDING

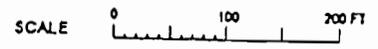


FIGURE 11
SITE # 4, PROPOSED EXCAVATION AREAS

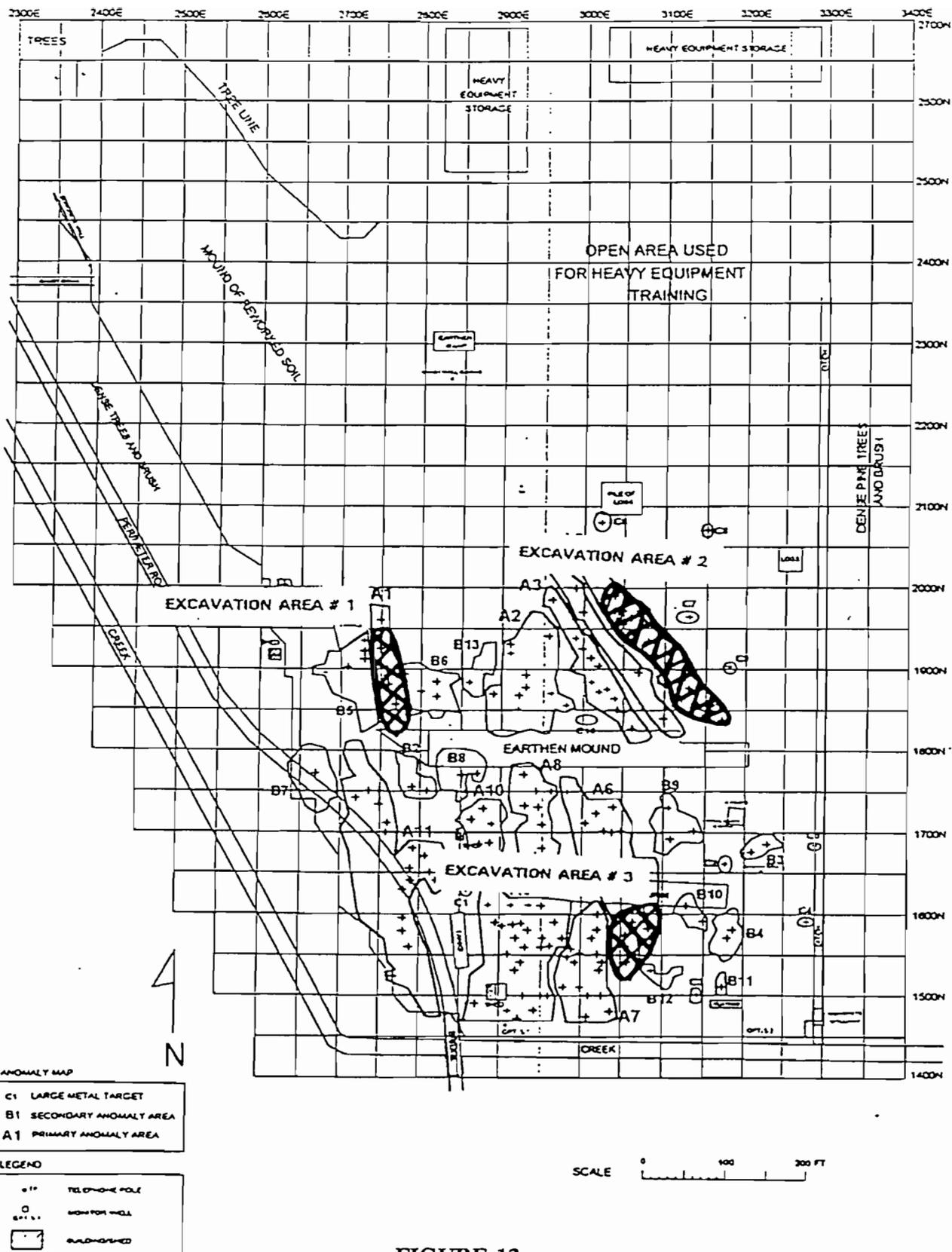


FIGURE 12
SITE # 5, PROPOSED EXCAVATION AREAS

APPENDIX A

SITE SAFETY AND HEALTH PLAN (SSHP)

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- A ACTIVITY HAZARDS ANALYSIS (AHA)
- B WORK ZONE MAPS

SITE SAFETY AND HEALTH PLAN FOR REMEDIATION ACTIVITIES AT CBC GULFPORT, SITES 1, 4 AND 5

1.0 SITE DESCRIPTION, CONTAMINANT CHARACTERIZATION AND REFERENCES

1.1 INTRODUCTION

This Site Safety and Health Plan (SSHP) describes safety and health requirements for remediation activities at Naval Construction Battalion Center (CBC) Gulfport, Sites 1, 4, and 5. This SSHP is consistent with requirements of the Occupational Safety and Health Administration's (OSHA) Hazardous Waste Site Regulations, 29 CFR 1910.120 and 29 CFR 1926.65 along with the U.S. Army Corps of Engineers' (ACOE) *Safety and Health Requirements Manual* EM 385-1-1 dated October 1992. This SSHP is applicable to all personnel who enter into work areas described in this SSHP and who are under Morrison Knudsen Corporation (MK) or MK's Subcontractors' control.

1.2 SITE DESCRIPTION

CBC Gulfport is located in southern Mississippi, west of Biloxi in Harrison County. Work will be conducted at three sites, Sites 1, 4, and 5 below. The Definable Features of Work (DFOW) for Sites 1, 4 and 5 include: Mobilization and Demobilization; Soil Boring (push sampling); Decontamination; Clearing and Grubbing; Test Trenching (includes soil excavation and backfill, drum removal and debris removal); Sampling and Analysis; Site Restoration; and Reports. Figure 1 is included as the vicinity map and Figure 2 as the work site map.

Site # 1. Training Area: The site is the Training Area and consists of an inactive fill site. An unknown quantity of chemical wastes containerized in 55-gallon drums were disposed by trench-and-fill operation between 1942 and 1948. The site was subsequently covered and is now characterized by planted trees, grass areas and buildings associated with the Disaster Recovery Training. MK's Geophysical Survey determined that the site is about 18.7 acres.

Site # 4. Golf Course Area: The site consists of an inactive fill site located at the golf course practice putting green, number nine green, and number one tee areas. An estimated 16,000 tons

of solid waste and unknown quantity of liquid wastes were disposed by trench-and-fill operation from 1966 to 1972. Ten feet of fill was reportedly placed over the site upon closure of the site. MK's Geophysical Survey indicated that the site is about 5.8 acres.

Site # 5. Heavy Equipment Training Area: The site consists of a fill site located between Fourth Street and Colby Avenue. An estimated 6,000 cubic yards of solid waste, unknown quantity of liquid waste (not containerized), 50 to 100 drums of liquid DDT and boxes of powdered DDT were disposed by trench-and-fill method from 1972 to 1976. The site was eventually covered with 4 to 6 feet of fill. MK Geophysical Survey indicated the site is about 16 acres.

1.3 CONTAMINANT CHARACTERISTICS

Data on potential contaminants is from Harding Lawson Associates, 1987, Final Verification Report. Table 1 is provided as a summary on each known potential contaminant. Its description, exposure limits, signs and symptoms of acute exposure and recommended first aid is listed. Technical Memorandum Number 6, ABB Environmental Services, Inc, 1996 identifies the potential existence of dioxins and furans in the soil media. MSDS's or NIOSH Pocket Guides for each of the contaminants plus and other chemical substances used in remedial construction shall be organized into separate MSDS Binders by the MK SSHO to be located on site.

Site # 1. Training Area:

Materials disposed at the site: 55-gallon drums of paint, oil, solvents, paint strippers and cleaning compounds. Excavation revealed drums with xylene, toluene and 1,2-dichloroethane. Individual chemicals constituents detected: Groundwater - toluene, chloroform, dichlorobromomethane, chromium and lead. Sediment - chromium. Dioxin and Furan contaminants may be present.

Site # 4. Golf Course Area:

Materials disposed at the site: Solid and liquid wastes including fuel, oils, solvents, paints and paint thinners. Solvents are thought to include toluene, xylene, and methyl ethyl ketone (MEK). Individual chemicals constituents detected: Groundwater - toluene, chloroform, dichlorobromomethane, chromium and lead. Sediment - chromium and lead. Dioxin and Furan contaminants may be present.

Site # 5, Heavy Equipment Training Area:

Materials disposed at the site: Buried containerized and noncontainerized chemical wastes including liquid wastes, paints, paint thinners, some solid wastes and liquid/powder dichlorodiphenyl-trichloroethane (DDT). Liquid wastes include fuels, oils, MEK, toluene and xylene. Individual chemicals constituents detected: Groundwater - toluene, chloroform, dichlorobromomethane, chromium and lead. Sediment - chromium and lead. Dioxin and Furan contaminants may be present.

1.4 REFERENCES

1. *Draft Final Verification Report*, Harding Lawson Associates, HLA Job No. 2176,093.12, November 11, 1987.
2. *RI/FS Workplan, NCBC Gulfport*, ABB Environmental Services, Volume 1, UIC No.:17, December 1993.
3. *Geophysical Investigation of Sites 1, 4, and 5 at NCBC Gulfport*, Geosphere Midwest Inc., August 1995.
4. *Technical Memorandum No.6 Area A, Former Herbicide Orange Storage Area, Groundwater Sampling Event No.6*, ABB Environmental Services, Inc, Unit ID No. N62604, May 1996.
5. *Safety and Health Requirements Manual*, US Army Corps of Engineers (ACOE), EM 385-1-1, October 1992.
6. *Pocket Guide to Chemical Hazards*, National Institute for Occupational Safety and Health (NIOSH), 1994.
7. *Limits for Air Contaminants*, Title 29 CFR Part 1910 Section 1000, Table Z-1, July 1, 1995 revision.
8. *Threshold Limit Values for Chemical Substances and Physical Agents and Biological Indices*, American Conference of Governmental Industrial Hygienists (ACGIH), 1995 - 1996.
9. *Accident Prevention Plan For Naval Facilities Engineering Command Southern Division*, Prepared by Morrison Knudsen under contract N62467-93-D- 1 106, May 20, 1994, Revision 0.

10. *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities*, NIOSH/OSHA/USCG/EPA, DHHS (NIOSH) Publication No. 85-115, October 1985.
11. Maslansky, Carol J. and Steven P., *Air Monitoring Instrumentation, A Manual for Emergency, Investigatory, and Emergency Responders*, Van Nostrand Reinhold, 1993.
12. *Industrial Hygiene Procedures Manual*, Morrison Knudsen Corporation EC&E Group, Rev.No 0, April 1994.
13. *Safety and Health Program Description for Hazardous Waste Operations*, Morrison Knudsen Corporation, Rev. 1, September 1994.
14. Morrison Knudsen Corporation (MK), 1995. *Safety Procedures and Guidelines Manual*. November.
15. The following MK NAVFAC SouthDiv Project Procedures:
 - PHSP 01.1, Hazardous Energy Control (Lockout/Tagout)*, 3/15/96.
 - PHSP 02.1, Emergency Response*, 3/15/96.
 - PHSP 03.1, Spill Response*, 3/15/96.
 - PHSP 04.1, Incident Reporting*, 3/15/96.
 - PHSP 05.1, Excavations*, 5/21/96.

2.0 SAFETY AND HEALTH HAZARDS SUMMARY

2.1 OVERVIEW

During removal activities, the potential risk of acute exposure to the chemical contaminants listed in Table 1 is considered moderate. Engineering controls, Administrative Controls and Personal Protective Equipment (PPE) control requirements shall be strictly adhered to. The chemical agents posing the highest health risk are benzene and vinyl chloride, but generally, any concentrations of organic vapors pose a health risk and in some cases by direct contact also. Benzene may be a component of the buried spent solvents and other wastes, and vinyl chloride may be a decomposition product, but we would expect mostly toluene and xylene noting that benzene was not considered a contaminant in the Verification Report. Any of the buried spent solvents when exposed to the atmosphere and allowed to vaporize could create a toxic and flammable atmosphere, especially in confined spaces such as excavations where the vapors being

heavier than air could accumulate. Heavy metals may be present in the buried materials along with acid residuals (mainly hydrochloric) from decomposition of the solvents if the initial containers were breached. PPE, decontamination and good hygiene practices are critical when working with these agents and will be emphasized throughout the work campaign.

The estimated highest risk on this job will be initial excavation to expose a buried anomaly and its removal. Strict air monitoring protocols are required along with upgrades to PPE. Remote handling of a buried drum or container shall be utilized as much as possible. Underground utilities shall be identified and excavation stability shall be monitored. Open excavations shall be treated initially as a permit confined space and downgraded only after assessment of stability and atmospheric conditions. Monitoring shall be continuous when working inside of excavations. DDT is less of a concern than the organics, health risk by direct contact is minimal. Airborne potential is unlikely. Dioxins and furans are a concern by direct contact. Both have irritant properties to skin and mucous membranes. Airborne potential is unlikely.

Other potential hazards at this project site are construction safety hazards associated with heavy equipment; walking and working surfaces, especially in wet and muddy environments; traffic control and worker protection during work in and around roadways and parking areas; occupational noise levels from equipment; physical hazards during initial clearing and site restoration; and eye/head/feet physical hazards. Heat stress could likely be a concern during the summer months.

2.2 ACTIVITY HAZARD ANALYSES (AHA)

AHA have been prepared for each anticipated task in accordance with EM 385-1-1, October 1992 (ACOE, 1992). These hazard analyses are in the form of worksheets contained in Attachment A of this SSHP. AHA are cross-referenced to DFOW as shown on Table 2 of the Work Plan. Each site activity shall be reviewed by field supervision, namely the MK SSHO, MK General Superintendent and Subcontractor Job Supervisors(s) prior to starting work to determine if the prepared AHA adequately addresses the planned activity. If the prepared AHA requires revision or a new task is identified, additional hazard analysis will be prepared as needed. A new AHA worksheet shall be field prepared by the Subcontractor Job Supervisor and the MK SSHO before the activity takes place. The Pre-Entry Briefing meeting is utilized to review the AHA and is conducted with all affected workers by the Subcontractor Job Supervisor.

2.3 CHEMICAL HAZARDS

See write-up in Section 2.1. Refer to Table 1 for a summary on potential chemicals of concern.

2.4 BIOLOGICAL HAZARDS

Use caution and assess work areas for insect, snake and biohazard plant life. The MK SSHO shall meet with Base representatives and medical personnel to discuss potential concerns during mobilization.

2.5 CONSTRUCTION SAFETY HAZARDS

2.5.1 Physical Hazards

The physical hazards associated with the project include the use of heavy equipment, power and handtools and special power equipment. Examples include backhoes, excavators and dump trucks; clearing and grubbing equipment; underground utilities, electrical lines and process lines; and material handling equipment. Other physical hazards include confined space entry and excavations; heat stress; adverse weather conditions, and noise. Other possible safety hazards include the potential for slipping, falling, head trauma, lifting heavy objects, struck by and struck against and pinch points. All these physical hazards could cause slips, trips, and falls, cuts, contusions, and lacerations, traffic accidents, electrical shock, fires and explosions, crunching, pinching, injury from falling objects and heat/cold stress related disorders. Hazards also arise from vehicular traffic in and around the parking areas during remedial construction activities.

2.5.2 Noise

Certain operations may create noise levels that exceed the applicable limits (e.g. heavy equipment operation). Hearing protection will be provided for all field personnel and its use is required when noise levels exceed 85 dBA steady state or 140 dBA impulse, regardless of the duration of exposure. A comprehensive Hearing Conservation Program shall be implemented by the Subcontractor when noise levels equal or exceed 85 dBA as an 8-hour time weighted average.

2.5.3 Heat and Cold Stress

All employees are to be alert to the signs and symptoms of heat stress. Should any of the following symptoms occur: extreme fatigue, cramps, dizziness, headache, nausea, profuse sweating, rapid pulse, pale clammy skin, the employee is to immediately leave the work area, rest, cool off, and drink plenty of cool water. If the symptoms do not subside after a reasonable rest period, the employee shall notify their supervisor who in turn will notify the MK SSHO and seek medical assistance. The MK SSHO and the site supervisor will be alert to signs of heat stress in site personnel and increase the frequency of breaks and fluid consumption as necessary. Cold stress is not anticipated as an occupational risk.

2.5.4 Excavations

MK Project Procedure PHSP 05.1 shall be followed regarding excavation safety. Positive controls must be in place to safeguard excavation from collapse. The soil shall be classified as Class C Soils. Positive identification of underground utilities and services is required at least 24 hours prior to any excavation or trenching. A Base Permit and/or an MK Excavation and Trenching Permit shall be posted at the excavation site. The underground utility locates shall be completed as described in Section 2.5.5 that follows. Individuals shall be properly trained prior to initiating work activities. A competent person shall evaluate all excavations on a daily basis regardless of whether personnel will enter. The competent person must be present whenever water removal is taken place from an excavation.

2.5.5 Underground Utilities

Underground utilities have been identified in the Geophysical Report and compared to Base utility drawings. Surface markings shall be provided by the Subcontractor. When energy control is required for underground utilities the requirements established in MK project procedure PHSP 01.1 shall be followed as stated in Section 2.5.7.

Utility identification will be coordinated by MK. For facilities related utility and process system locations, the MK Project Engineer will work with the Subcontractor and Base Public Works Department (PWD) representative to reverify the utility drawings against the Geophysical Survey results. A site specific utility map shall be field prepared for each work area or existing drawings

shall be used. Surface markings shall be completed. Primary and secondary shut-off locations shall be identified in case a utility is struck. MK will notify the PWD at least 5 working days in advance of excavating activities.

MK's Civil, Transportation and Disposal (CTD) Subcontractor shall use metal detectors during the excavation process to locate and quantify the size of the underground anomaly or designated utility. A site walk shall be conducted after utilities have been identified as a final check to assure agreement between all parties involved. Personnel attending shall include the Base PWD, utility locate personnel, MK, and Subcontractor personnel.

2.5.6 Fire and Explosion

No hot work or open flames will be allowed in the work area without a "Hot Work Permit". The MK Hot Work Permit form will be available through the MK SSHO. When fire or explosion hazards exist, all tools shall be of the non-sparking variety and pumps/blowers will be bonded or grounded to minimize hazards associated with static discharge. Use of any tool that can be considered an ignition hazard where fire and explosion hazards may exist is strictly prohibited. Portable power tools shall be explosion proof in accordance with NFPA 70B and 70E, Class 1, Division 1, Group D or otherwise approved for use in potentially explosive atmospheres. Excavation probes and digging tools (e.g. shovels) shall be non sparking.

At least two 20 lb or equivalent "ABC" multi purpose fire extinguisher shall be maintained for fire response at the entrance to the Contamination Reduction Zone (CRZ). All mobile heavy equipment must be fitted with a minimum 10 lb "ABC" fire extinguisher. Any temporary trailers or structures must have fire extinguishers installed in accordance with NFPA 10. Depending on the fire loading, in most cases a 5 lb "ABC" is sufficient in each office trailer. This extinguisher must be mounted at least four feet from the floor next to a egress door.

2.5.7 Electrical Hazards, Control of Hazardous Energy (Lockout/Tagout)

When energy control is anticipated for any utility and/or mechanical and process equipments, the requirements established in MK Project Procedure PHSP 01.1 shall be followed. The Subcontractor shall have available a complete set of Lock and Tag Hardware along with the MK Site (General) Superintendent. In addition, Ground Fault Circuit Interrupters (GFCIs) will be

installed on all portable electrical equipment and installations in accordance with EM 385-1-1 Section 11.C.05. All extension cords shall have GFCI protection and shall be inspected and determined to be free of cracks or frays. The MK Site Superintendent and the Subcontractor Supervisor have the responsibility for energy control. Energy control involving any Base utility or process equipment shall be coordinated through the Public Works department by the MK Site Superintendent. The CTD Subcontractor will initiate all energy control requests to MK three working days in advance of anticipated work commencement.

In addition, energy controls apply to motorized heavy equipment and the following requirement applies. At a minimum, during service and maintenance of motorized equipment, the key shall be removed and in possession of the service or maintenance person and a "Do Not Operate" tag signed by this person shall be displayed near the start-up controls.

2.5.8 Locating and Handling Buried Drums and Containers

Practices and procedures for safe handling of drums and other hazardous waste containers as described in this SSHP and the Contract documents shall be reviewed at mobilization during the project kick-off safety meeting. Drums and containers suspected of containing hazardous material shall be visual inspected and categorized by hazard category. Drums and containers of unknowns shall be placed in temporary staging until they can be sampled and categorized. Assume all unlabeled drums contain hazardous material until their contents is characterized.

A drum/container handling plan shall be established by the MK PM when the Work Zones are defined by the CTD Subcontractor based on the category of the drums/container identified. The drums can either be sampled in place and characterized or moved to a staging area for sampling and characterization. At all times minimize the amount of handling and use remote moving/handling equipment. Overpacks shall be available and ready before any attempt is made to move drums along with portable spill containment and clean up supplies; fire extinguishing equipment and eye wash/drench.

Drums shall be opened in Level B PPE from behind explosive resistant shields using non-sparking tools or with remote opening equipment designed for blast containment. Air monitoring shall be completed continuously and as close to the source as possible. A drum or container shall be surveyed for ionizing radiation by the MK SSHO if suspected of containing radiological materials.

All drums shall be staged with secondary containment in place and be protected from weather, especially direct sunlight.

2.5.9 General Motor Vehicle, Hand and Power Equipment Safety

The following traffic rules will apply to all motorized vehicles and equipment while on site:

- Equipment carrying waste shall always have the right-of-way within the Work Zones.
- The speed limit is 10 mph, or as posted. Exceeding the speed limit is cause for disciplinary action, including removal from the site.
- Personnel shall not ride equipment that has not been specifically designed for the transport of personnel.
- Seatbelts shall be worn at all times when operating any motorized equipment or vehicle.
- All motor vehicles and equipment including hand and power tools shall be subject to an incoming safety inspection by the MK SSHO. The MK SSHO reserves the right to reject any subcontractor equipment. A "DO NOT USE" or "DEFECTIVE" tag will be placed on the equipment and documented in the MK SSHO Logbook. Corrective action will be pursued with the Subcontractor Supervisor.
- Daily safety checklists shall be completed by Subcontractor heavy equipment operators, especially any type of overhead crane or lifting equipment, and delivered to the MK Site Project Office on a daily basis. The checklist should be based on the equipment manufacturers recommended guidelines for daily checks using a format established and prepared by the owner/operator/subcontractor and approved by the MK SSHO.

2.5.10 Traffic and Work Site Control Safety

Potential hazards from vehicular traffic around the work areas will be controlled by placing approved barricades and signs around the work area. Workers required to work in active traffic areas or roadways will be required to wear high visibility reflective vests. Suggested types of

barricades along with placement and signs will follow the requirements of EM 385-1-1, Section 8 and 29 CFR 1926.201 and 202. All road closures shall be scheduled at least 10 days in advance with the Base PWD.

2.5.11 Clearing and Grubbing Safety

Clearing and grubbing of any work site shall be completed in accordance with the requirements of EM 385-1-1 Section 31. All tree and shrub removal equipment, either hand or power tool shall be inspected on a daily basis by the Subcontractor Job Supervisor or designee. The correct equipment must be chosen for the job and all operators shall be trained in safe operation, and the correct PPE selected.

2.5.12 Access and Haul Road Safety

When special access and haul roads are constructed for this project, they shall be constructed in accordance with EM 385-1-1 Section 21.I. Dust controls by wetting shall be implemented by the Subcontractor when determined to be necessary.

2.5.13 Overhead Utility Lines

Overhead high voltage power lines represent an electrocution hazard. Work conducted in proximity of overhead power lines will be performed in accordance with the requirements in EM 385-1-1, Section 11.E. Energy control requirements shall be implemented when disconnecting any component subsystem.

3.0 RESPONSIBILITIES AND AUTHORITIES SUMMARY

This section describes the roles and responsibilities of project personnel with regard to safety and health. Ultimately, responsibility for the safety and health lies with the individual. All personnel must be cognizant of the hazards and the methods of reducing the risk of injury and illness. All personnel will comply with the rules and procedures set forth in this plan and will make project management aware of any conditions which may jeopardize the welfare of project workers and/or the general public. The specific personnel names and telephone numbers of responsible persons are presented in Table 2 herein.

3.1 MK PROJECT MANAGER (PM)

The PM is responsible for the management of all aspects of the project, including safety and health. The PM is responsible for ensuring that all project tasks receive appropriate safety and health review before commencement of field activities and that the necessary equipment and facilities are available to implement the SSHP.

3.2 MK GENERAL SUPERINTENDENT AND SUBCONTRACTOR JOB SUPERVISORS

The MK General Superintendent and the Subcontractor Job Supervisor(s) are responsible for ensuring that the safety and health aspects for their particular task are addressed. They are responsible for the implementation of the SSHP in the field and for ensuring that all project personnel comply with provisions of the plan. The MK General Superintendent and Subcontractor Job Supervisor(s) are also responsible for notifying the MK Site Safety and Health Officer (SSHO) of any changes in work conditions which may affect the safety and health aspects of the task. The MK General Superintendent is responsible for conducting Plan of the Day (POD) meetings. The Subcontractor Job Supervisor(s) are responsible for conducting Pre-Entry Briefings and Post Entry Briefings.

The Subcontractor Job Supervisor(s) must notify the MK SSHO and MK General Superintendent of all accidents and incidents as soon as possible. The Subcontractor Job Supervisor(s) shall conduct an accident investigation and record the results of the investigation on a Supervisor Accident Investigation Report form or equivalent form. The initial investigation report shall be formally transmitted to the MK Project Manager within four hours after critical management of the incident is complete. The MK Project Manager shall follow the reporting requirements described in Section 11.2 of this SSHP. Section 11.2 references the MK Project Procedure PHSP-04-1. The MK General Superintendent shall conduct a critique of the incident with selected MK and Subcontractor personnel as soon as possible after critical management of the incident is complete. Lessons learned will then be developed by the MK General Superintendent and Subcontractor Job Supervisor(s) and communicated to all affected personnel.

3.3 MK CERTIFIED INDUSTRIAL HYGIENIST (CIH)

The MK CIH who is the MK Project Management Office (PMO) Health and Safety Manager is responsible for preparation of the Site Safety and Health Plan (SSHP). The CIH is based out of the Boise, ID office. The CIH is responsible for making modifications to the plans and recommending changes to the work tasks if they affect safety and health. The CIH is responsible for ensuring that all required sampling/monitoring is performed and that all required safety and health documentation is maintained. The CIH may assign some tasks to the MK SSHO for implementation.

3.4 MK SITE SAFETY AND HEALTH OFFICER (SSHO)

The MK SSHO is responsible for the day-to-day implementation of the Site Safety and Health Plan (SSHP), and verification of compliance with the SSHP and all applicable occupational safety and health rules and regulations. The MK SSHO has the authority to suspend work at any time if there is an imminent threat to the health and safety of project workers or the general public. The MK SSHO shall assure the Navy's designated authority at the site is notified immediately of any accident including spills. The MK SSHO shall assist in the accident investigation effort and shall have final approval authority for accident reports. The MK Work Plan document describes in detail the role and responsibilities of the MK SSHO on this project.

3.5 SUBCONTRACTOR DESIGNATED COMPETENT SAFETY PERSON

The CTD Subcontractor shall designate a competent and qualified person, subject to the approval of the MK SSHO and the MK Site Project Engineer, responsible for the implementation of this SSHP and their Company's safety and health program. This designated person shall be referred to as the Subcontractor SSHO. The Subcontractor's SSHO shall be qualified to perform air monitoring to support the subcontractor's operation and be supplied with the appropriate monitoring equipment described in Section 7 of this plan. The Subcontractor SSHO shall provide the MK SSHO copies of all factory calibration certificates and the forms to be used to record daily field calibrations for each instrument. The Subcontractor SSHO shall provide a daily site safety report and shall coordinate his efforts with the MK SSHO.

3.6 SUBCONTRACTOR PERSONNEL

All subcontractors are required to have a qualified designated competent safety person who will assure and abide by the requirements of this SSHP as stated above. They are also required to comply with all applicable and appropriate federal, state, and local laws, standards, and regulations. Subcontractors must notify the MK SSHO and MK General Superintendent of all accidents as soon as possible. Subcontractors must maintain records of all first aid rendered and recordable, and lost time injuries. Subcontractors must notify the MK SSHO of any changes in work conditions which may affect the safety and health aspects of the task.

3.7 NEAREST EMERGENCY MEDICAL FACILITY

Directions to Gulfport Memorial Hospital 4500 13th Street, Gulfport, MS 39501

Phone: 601-863-1441

1. From Main Gate, travel south on Broad Avenue approximately 3/8 of mile,
2. Hospital Medical Center located on left hand side of road.

A copy of the map to the hospital shall be posted at work sites for reference, refer to Figure 3 for a copy of this map plus Table 2 for phone numbers.

4.0 TRAINING AND SAFETY MEETING REQUIREMENTS SUMMARY

This Section lists all regulatory driven and project specific training required for this job. Table 3 provides a summary on training requirements. Safety related meetings required for this project are described beginning in Section 4.8.

4.1 HAZARDOUS WASTE OPERATIONS TRAINING

All personnel entering a contamination reduction zone or exclusion zone shall have completed the initial 40-Hour Hazardous Waste Operations Safety and Health Training and three days of supervised experience pursuant to 29 CFR 1910.120(e)(3). All personnel shall receive eight hours of refresher training annually, pursuant to 29 CFR 1910.120(e)(8), as necessary. All on-site supervisors and managers as well as subcontractor superintendents and foremen shall receive an additional eight hours of specialized training pursuant to 29 CFR 1910.120(e)(4).

4.2 SITE SPECIFIC TRAINING

All personnel shall receive site-specific safety and health training prior to entering the site or commencement of work. All site employees and subcontractors, including those working in the support zone, shall receive this training. The Subcontractor Job Supervisor(s) are responsible for identifying personnel requiring this training and coordinated with the MK SSHO regarding scheduling of this training. The MK SSHO or designated alternate will conduct the training. Site visitors shall receive site-specific training prior to entering an exclusion zone. An abbreviated version of this training will be given to site visitors not entering an exclusion zone but whose business will be conducted unescorted in the near vicinity of the Work Zones. The format and content will be left up to the discretion of the MK SSHO. This training will cover the SSHP, but not necessarily be limited to, the following topics.

- Names of site safety and health personnel.
- Safety and health hazards present on the site and anticipated during the work campaign.
- Hazard Communication.
- PPE requirements.
- Safe work practices including drum handling.
- Engineering controls.
- Medical surveillance requirements, including recognition or symptoms and signs which might indicate overexposure to hazards.

- Decontamination procedures.
- Emergency procedures.
- Spill containment plan.
- Confined Space Entry.
- Energy Control.
- All other requirements of this SSHP.

4.3 CONFINED SPACE ENTRY TRAINING

If excavations greater than 5 foot deep are to be entered, the excavation shall be treated initiated as a permit confined space until authorized to be downgraded by the MK SSHO to non permit confined space in accordance with MK Industrial Hygiene (IH) Procedure Number 9 and 29 CFR 1910.146. These initial precautions are established because of the potential for organic vapor accumulation in the excavation. Downgrading is based on initial and periodic air monitoring to insure the breathing atmosphere is safe or can be maintained safe by ventilation equipment, and engineering controls in place to safeguard the excavation from collapse.

If permit required confined space designations are made, then personnel involved with confined space entry work shall be required to have certified documented training in confined space entry procedures in accordance with the requirements of 29 CFR 1910.146. Copies of certificates must be presented to the MK SSHO prior to commencing work. Confined space entry procedures shall be implemented by the MK SSHO in accordance with MK IH Procedure 9. An MK Confined Space Entry Permit shall be posted at each work site during permit confined space entry activities. The Base Fire Department shall be notified of the location of confined space entries and expected duration at least two hours in advance of entry by the MK SSHO.

4.4 RESPIRATORY PROTECTION TRAINING

All MK personnel and Subcontractors required to use respiratory protection shall have certified training in respirator use, care and maintenance pursuant to 29 CFR 1926.103 and 29 CFR 1910.134. Each individual shall be medically qualified to wear a respiratory device and have documented evidence of successfully completing respiratory training and fit testing.

4.5 HAZARD COMMUNICATION TRAINING

All personnel shall complete hazard communication training pursuant to 29 CFR 1910.1200 and 29 CFR 1926.59 regarding all potentially hazardous chemicals to which they may be exposed. In the event that the OSHA regulations regarding other contaminants or hazards become applicable, substance-specific training pursuant to the subject regulation will be performed for the affected project personnel.

Each subcontractor shall have a written Hazard Communication Program in accordance with OSHA's Hazard Communication Standard, 29 CFR 1910.1200 and applicable State Department of Health Regulations. Material Safety Data Sheets (MSDS) for all hazardous materials in the work area shall be readily available for employees to review. MSDSs and/or NIOSH Pocket Guides for the contaminants suspected to be in the various work sites will be placed in a site MSDS Right-To-Know Binder. Copies will be maintained at each work site or some location convenient for employees to review plus a copy will be kept at the MK Project Office and the Subcontractor(s) Project Office.

Hazard Communication training will be included as part of the Site-Specific Training required in Section 4.2. When new chemicals are brought onto the work site or new chemical contaminants are identified, an MSDS and/or NIOSH Pocket Guide will be added to the MSDS Right-To-Know Binder(s) with a corresponding review by the MK SSHO and Subcontractor Job Supervisor(s) and if necessary, training shall be conducted with affected individuals. The MK SSHO has overall responsibility for maintenance of the MSDS database. Subcontractors are responsible for notifying the MK SSHO of new chemicals or substances being used in the work place. Subcontractor Job Supervisor(s) are responsible for reviewing the MSDS, identifying training needs for affected workers and transmitting a copy of the MSDS to the MK SSHO.

4.6 CPR/FIRST AID AND BLOOD BORNE PATHOGENS

At least two employees on each shift shall be qualified to administer First Aid and CPR. At the minimum, the MK SSHO and each Subcontractor shall have at least one person First Aid/CPR qualified. These personnel are also required to be trained to 29 CFR 1910.1030 (Blood borne Pathogens) in accordance with MK IH Procedure 11. Trained First Aid and CPR personnel shall be identified by hard hat stickers or other means of identification.

4.7 DEPARTMENT OF TRANSPORTATION (DOT) HAZARDOUS MATERIALS TRAINING

All personnel required to classify, mark, select packaging, inspect, load and transport hazardous materials must be trained to 49 CFR Part 172 Subpart H. This includes personnel responsible for packaging of samples to be sent to off site laboratories for analysis. Also included are personnel responsible for completing a hazardous waste or hazardous material manifest and insuring the hazardous waste/material is properly prepared for off site shipment.

4.8 SAFETY MEETINGS

Safety meetings for all MK employees and subcontractors personnel shall be conducted on a weekly basis. This is a group meeting intended to be a self assessment of safety performance and a chance to review any lessons learned as a group, plus an opportunity to introduced specialized training topics. The meeting shall be chaired by the MK General Superintendent and Subcontractor Supervisor(s) with assistance by the MK SSHO and/or subcontractor designated competent safety person. This safety meeting can also be used to describe any changes in the Site Specific Training described in Section 4.4. Safety Meetings are documented using Figure 4 from this plan or equivalent. An additional Safety Meeting for all MK personnel and Subcontractor Job Supervisor(s) shall be conducted at least once per month. The monthly meeting is chaired by the MK Project Manager or General Superintendent with assistance from the MK SSHO. Its purpose is to review and rate safety performance and identify any areas requiring additional specialized training. By design, the meeting should be held offsite during non working hours, preferably as a dinner or luncheon type meeting. This meeting shall be documented to include date, time, personnel in attendance, topics, and instructor. The Safety Meeting shall be documented using Figure 4 or equivalent.

4.9 PLAN OF THE DAY (POD) MEETINGS

Plan Of The Day (POD) Meetings shall be held at the beginning of each shift to review the planned work of the day as well as any safety and quality concerns. The meeting is chaired by the MK General Superintendent or MK PM. The attendee's include the Subcontractor(s) Job Supervisor, the MK Quality Control representative, the MK SSHO and other selected personnel.

The date, time, personnel attending and meeting minutes shall be documented using Figure 3 or equivalent.

4.10 PRE- AND POST-ENTRY BRIEFINGS (MEETING)

Pre-entry briefings shall be held for employees prior to their initiating any new or differing site activity in an exclusion zone and at such other times as necessary to ensure employees are knowledgeable of the work plan activity, the Activity Hazards Analysis (AHA), and that the plan and analyses are being followed. Pre Entry Briefs are the responsibility of the Subcontractor Job Supervisor. Attendance shall be documented using Figure 5 from this Plan. Feedback on the AHA worksheets is highly regarded and the MK SSHO should make every effort to validate their applicability.

Post-entry briefings shall be held as needed to assure changes in conditions or work methods are promptly reported and addressed. In addition, all incidents will be promptly evaluated and the evaluation results will be communicated to personnel in post-entry briefings and other meetings. Lessons-learned from these evaluations shall be communicated to all affected personnel. Post Entry Briefs are the responsibility of the Subcontractor Job Supervisor. They are not required to be formally documented, a logbook entry is sufficient.

4.11 QUALITY CONTROL PREPARATORY PHASE INSPECTION MEETING

The MK SSHO shall attend all Quality Control Preparatory Phase Inspection Meetings to discuss any safety and health concerns requiring special attention and to review anticipated safety requirements for a specific definable feature of work, and to review specific air monitoring required.

4.12 RECORDKEEPING

Written records of all required training and meetings shall be maintained on site by the MK SSHO. These records shall be made available to U.S. Navy personnel upon request. Subcontractors to MK shall provide copies of training certifications along with proof of medical surveillance physical and respirator certification to the MK Project Manager or MK SSHO prior to personnel working on site.

5.0 MEDICAL PROGRAM SURVEILLANCE PROGRAM REQUIREMENTS

5.1 SUMMARY

All project personnel who work within the exclusion zone for more than three days per month, or are required to use respiratory protection regardless of the time within the exclusion zone, will participate in a medical surveillance program in accordance with OSHA 1910.120 and 1926.65, Section 16 from the MK Safety and Health Program Description for Hazardous Waste Site Operations (MK employees only), and as described in this section. New construction or clean activities (no contamination likely to be encountered) will not require participation in the Medical Surveillance Program unless special tasks dictate as determined by the MK SSHO.

The medical surveillance program consists of a baseline or initial examination, an annual medical examination, a termination examination, and episodic medical examinations as necessary. Termination exams specific to this job have been determined to not be necessary unless specific criteria is met as discussed in the MK Safety and Health Program for Hazardous Waste Site Operations, Section 16. Note: if MK personnel require physicals or other medical surveillance in the field, the MK PM and MK SSHO shall establish a purchase order agreement with the selected medical facility and contact the Health and Safety Manager for a copy of a sample Client Profile for their use as the purchase order specification.

At a minimum, the content of the initial, annual and termination examinations shall consist of the following medical tests and procedures (or as determined by the examining physician):

- Medical and occupation history.
- Complete physical examination.
- Pulmonary function test (FVC and FEV₁).
- Complete blood count, generally SMAC-22 or 24 biochemical profile.
- Audiometry.
- Complete urinalysis.
- Resting electrocardiogram.
- Vision screen.
- Chest X-ray (PA) (at the direction of the examining physician).

An episodic examination will be required if any worker develops signs or symptoms related to the possible overexposure to hazardous substances or other health hazards, or that the employee has been injured or exposed above the permissible exposure limits or published exposure levels in an emergency situation. The scope of any episodic examination will be left to the discretion of the examining physician.

A copy of the examining physician's written opinion about the employee's ability to perform work on this hazardous waste site and use respiratory protection, and a statement that the physician has informed the employee of the results of the examination shall be kept on site. Subcontractors must provide this information to the MK Project Manager or the MK SSHO prior to mobilization activities on site. For privacy reasons, these statements must not contain the specific results of medical examinations or tests.

5.2 DRUG ABUSE PREVENTION PROGRAM

Morrison Knudsen Corporation is committed to the establishment and maintenance of a safe and efficient work environment for all employees free from the effects of alcohol, illegal drugs, other controlled substances, and prohibited items.

5.3 RECORDKEEPING

MK will manage medical surveillance records for MK employee's only. The statements by the examining physician(s) attesting to the medical qualification of individual workers shall be maintained at the project site for both MK and the Subcontractor and will remain a part of the project files. The Subcontractor's are responsible for all medical records management for their direct hire employees in accordance with OSHA 1910.120 and 1926.65.

6.0 PERSONAL PROTECTIVE EQUIPMENT (PPE)

6.1 GENERAL REQUIREMENTS

In addition to engineering controls and administrative controls (e.g. work practices), PPE (a.k.a. Chemical Protective Clothing) shall be used to protect personnel from exposure to contaminants

which may be encountered during activities on site as warranted. The following guidelines will be followed:

- Respirators and other PPE necessary to protect the health of employees shall be provided by their employer.
- Only NIOSH/MSHA-approved respirators and cartridges shall be used.
- The respirator user's medical status shall be verified by the MK SSHO before work is performed requiring respirator use.
- MK IH Procedure 14.0 shall serve as the written standard operating procedure governing the use of respirators at the job site. Section 10 from MK Safety and Health Program Description for Hazardous Waste Operations shall serve as the written standard operating procedure governing the use of PPE at the job site. Safe Work Practice (SWP) 4.0, found in Section 17 of the MK Safety and Health Program Description shall serve as guidance in chemical protective clothing selection and donning/doffing procedures.
- Respirators will be assigned to individual employees for their exclusive use and marked to indicate to whom it was assigned, for the duration of this project.

Table 4 presents the basic levels (Level B, C, Modified D, and D) of PPE.

Table 5 lists the minimum PPE level required for each task or operation. If air sampling/monitoring indicates that modification to the levels of protection are warranted, the SSHO is empowered with the authority to authorize the modification based on the guidance provided in **Table 6**, Airborne Contaminant Response Criteria.

The PPE has been selected based on what is known or anticipated about the site specific hazards. If conditions change, PPE selection and use shall be reviewed by the MK SSHO and the General Superintendent and upgraded or downgraded per their assessment. The MK SSHO shall record the rationale for the modification as a log book entry. Personnel will be trained if necessary on the use and limitations of specific pieces of PPE prior to initiation of work by their designated

Supervisors during the Pre-Entry Briefs with assistance when necessary from the MK SSHO or General Superintendent.

PPE will be maintained and stored in accordance with the manufacturer's recommendation and good industrial hygiene practices. Personnel will inspect PPE prior to each use to assure the PPE is clean and good working order. Training will be provided to personnel concerning PPE inspection criteria by their supervisors with assistance when necessary from the MK SSHO.

The MK SSHO shall conduct evaluations of effectiveness and useability of PPE. Logbook entries are sufficient but the data should be readily transferable to the safety and health project completion report (see Section 13.5).

7.0 AIR MONITORING AND SAMPLING

Air monitoring refers to direct real time reading of airborne concentrations and air sampling refers to time integrated air sampling, either personal or area samples. The CTD Subcontractor is responsible for supplying one photo ionizing detector (PID) with 10.2 or 10.6 eV lamp, one flame ionization detector (FID), a supply of colormetric indicator tubes and handpump, and one combustible gas indicator (CGI)/ oxygen (O₂) meter as described in subsections 7.2.1 and 7.2.3. The MK SSHO will maintain an additional PID and CGI/O₂ meter plus an assortment of colormetric indicator tubes and a sound level meter. Execution of real time air monitoring will be coordinated by the MK SSHO in accordance with the requirements for air monitoring depicted in Table 8. Time integrated air sampling, if necessary, will be completed by the MK SSHO.

7.1 GENERAL

This section describes the air sampling and air monitoring program performed to evaluate project worker exposure to potentially hazardous airborne materials. The air sampling/monitoring results will be used to:

- Assess worker exposure to potentially hazardous materials with respect to the Permissible Exposure Limit (PEL) for Air Contaminants (Title 29 Code of Federal Regulations, Part 1910.1000) or other published exposure levels.

- Assess the adequacy of engineering, administrative and PPE controls.
- Delineate areas where controls or respiratory protection is needed.
- Establish work control zones.

7.2 AIR MONITORING

7.2.1 Volatile Organic Compounds

A direct-reading, real-time PID with a 10.2 or 10.6 eV lamp and a FID instrument capable of detecting volatile organic compounds (VOCs) will be used whenever excavation and penetration in potentially contaminated areas occurs and for screening checks on uncovered drums and debris. This monitoring shall be completed on a continuous basis beginning with initial penetration and excavation. Depending on degree of soil contamination if any, monitoring can be completed on a periodic basis at the discretion of the MK SSHO. Monitoring shall be continuous when excavating to expose a potential drum contact and switched to periodically during drum/container removal, placement in overpack and initial staging using lift all. Monitoring shall be continuous during drum sampling activities. Readings will be taken at locations that reflect approximate concentrations of organic vapors and gases in the breathing zone of personnel in the work area. Results of the monitoring will be documented. If necessary, the level of PPE used by personnel in the exclusion zone work area will be modified. Table 6 lists the level of PPE used based on the concentration of organic vapors and gases in the breathing zone of project personnel. The direct-reading real-time organic vapor and gas monitoring equipment will be "response checked" according to the manufacturer's instructions prior to use each day, and calibrated by the manufacturer or other qualified personnel yearly. Records of the response check, maintenance and annual calibration will be maintained on site.

Colorimetric indicator tubes (e.g., Dräger tubes) shall be used at the MK SSHO's discretion whenever the PID/FID instrument measures breathing zone concentrations of organic gases or vapors exceeding 5 parts per million (ppm) PID or FID equivalents greater than background concentrations for time period greater than five minutes or as deemed necessary by the MK SSHO. Colorimetric Tubes are used to further characterize the potential exposure. Generally, the frequency of sampling with indicator tubes is driven on the monitoring results of the PID/FID.

The following compounds shall be measured by colorimetric indicator tubes as determined by the MK SSHO: benzene; petroleum hydrocarbons (n-Octane); toluene; xylene; ethylbenzene; 1,2-dichloroethane; TCE; PCE; MEK; and vinyl chloride.

If levels of benzene or vinyl chloride are detected near its Action Level (AL) or one half of the ACGIH TLV-TWA, or if any organic is detected at concentrations approaching its AL or one half the ACGIH TLV-TWA, the level of PPE shall be assessed for adequacy using the guidance specified in Table 6, or as determined by the MK SSHO. The MK SSHO may also require the use of direct reading color diffusion tube in order to assess work period exposures to trichloroethylene and perchloroethylene whenever non-benzene or non-vinyl chloride readings are reported. In the event of multiple organic exposures, it will be necessary for the MK SSHO to determine additive effects of the mixtures using the guidelines of the ACGIH "Additive Effects" method.

7.2.2 Ionizing Radiation Monitoring

Deleted requirement.

7.2.3 Combustible Gas and Oxygen Monitoring

A direct reading real time combination instrument capable of measuring % Lower Explosive Level (LEL) and percent of oxygen O₂ will be used whenever excavation and penetration in potentially contaminated areas occurs and during characterization and screening of drums/debris. This monitoring shall be completed on a continuous basis beginning with initial penetration and excavation. Depending on degree of soil contamination if any, monitoring can be completed on a periodic basis at the discretion of the MK SSHO. Monitoring shall be continuous when excavating to expose a potential drum contact and switched to periodically during drum/container removal, placement in overpack and initial staging using lift all. Monitoring shall be continuous during drum sampling activities. Results of the measurements will be documented. If necessary, the level of PPE will be modified. Table 6 describes the level of PPE to be used based on the concentration of organic vapors and gases in the breathing zone of project personnel. The combination gas meter will be "response checked" according to the manufacturer's instructions prior to use each day, and calibrated by the manufacturer or other qualified personnel yearly. Records of the response check, maintenance and annual calibration will be maintained on site.

7.2.4 Confined Space Monitoring

Entry into open excavations greater than 5 foot depth shall be considered permit-required confined spaces until air monitoring has determined that the space can be entered without a permit. The logic of classification of confined spaces shall follow the requirements established in 29 CFR 1910.146 Appendix A. Monitoring and hazard evaluation shall be completed and recorded by the MK SSHO on either a MK "Non-Permit Required Confined Space Work Form" (Attachment IV, Procedure 9 of IH Procedures Manual), or on a "Confined Space Entry Form" (Attachment VI, Procedure 9 of IH Procedures Manual), or the MK Excavation and Trenching Permit.

Monitoring must be conducted for (1) oxygen content to demonstrate that available oxygen is greater than 19.5 % and less than 23.5 %, (2) flammable/explosive atmospheres must be less than 10 % of the lower flammable limit (LFL) of potential explosive/flammable gases or dusts that may be present, and (3) toxic gases (organics) must be less than either the OSHA PEL or the ACGIH TLV whichever is less or required by law. Only personnel suitably trained to conduct hazard evaluations of confined spaces will be authorized to conduct monitoring and testing of atmospheres.

7.2.5 Noise Monitoring

Noise monitoring will be performed by the MK SSHO at the initiation of tasks or operations posing an occupational risk. Sound levels will be determined at locations that best approximate the sound levels at the ear of potentially affected personnel. Noise monitoring equipment will be "response checked" according to the manufacturer's instructions prior to use each day, and calibrated by the manufacturer or other qualified personnel yearly. Records of the response check, maintenance and annual calibration will be maintained on site. In some cases, areas requiring hearing protection will be posted to alert workers to the requirement for hearing protection.

7.2.6 Heat Stress and Cold Stress Monitoring

When temperatures at the site are above 65°F, the wet bulb globe temperature (WBGT) may be used to monitor the potential for heat stress. Work/rest periods will be adjusted according to the

guidelines stated in the current edition of *ACGIH Threshold Limit Values for Chemical Substances and Physical Agents*. When the clothing worn differs from the ACGIH standard ensemble such as in the case of workers wearing semipermeable or impermeable clothing, guidelines established in the NIOSH/OSHA/USCG/EPA, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, Section 8 should be consulted. The following is a summary from that document.

When employees are required to wear impermeable chemical protective clothing in temperatures exceeding 70°F, employees shall use the "buddy system" to monitor each other's pulse rate at the start of each rest period. If the pulse rate exceeds 110 beats per minute, the next work period shall be shortened by one-third without shortening the rest period. The pulse rate shall be monitored again at the beginning of the next rest period and if the pulse rate exceeds 110 beats per minute, the work period shall again be shortened by one-third. No employee shall be permitted to continue working in PPE if his or her pulse rate exceeds 110 beats per minute continuously. Table 7 can be used to establish work/rest periods and the frequency of monitoring pulse rates. Cold Stress monitoring is not anticipated as necessary for this job.

7.3 AIR SAMPLING

7.3.1 Organic Compounds

Time-integrated air sampling for aromatic hydrocarbons using personal air sampling pumps will be performed by the MK SSHO whenever the real-time monitoring measures concentrations in the personal breathing zone exceeding 5 ppm organic gases or vapors for more than five consecutive minutes and the MK SSHO has reason to believe benzene or vinyl chloride could be contributing significantly to the exposure threat or any other organic vapor contaminant is present in concentration levels greater than its PEL or TLV-TWA. Time-integrated air samples will be collected and analyzed at the MK SSHO's discretion for aromatic hydrocarbons. The air samples will be collected and analyzed in accordance with NIOSH Method 1501 or equivalent method for benzene; or NIOSH 1007 or equivalent method for vinyl chloride; or collected using 50/100 charcoal/coconut sorbent tubes for other organics. The air sampling pump will be calibrated before and after sample collection. Passive dosimeters may be used in conjunction with air sampling pumps. Analysis of all air samples will be performed by an American Industrial Hygiene Association (AIHA) accredited laboratory.

7.3.2 Metals

During work at all sites, the MK SSHO, not the Subcontractor, shall obtain two time integrated air samples from the maximally exposed individuals for metals scan in accordance with OSHA ID-125. A total of six air samples are required. The task posing the most exposure to potential metals as an airborne aerosol shall be evaluated. This will most likely be excavation and debris/drum handling tasks. The collection media is a 0.8 micrometer MCE clear styrene acrylonitrile 3 piece cassette. The sampling rate shall be set in the range of 2-4 liters per minute (LPM) and the collection volume at 960 liters. Two sample blanks shall be included with each sample media from each work area for analysis. The MK SSHO shall be responsible for obtaining all necessary industrial hygiene equipment and coordination of laboratory services. Results shall be communicated by the MK SSHO immediately to affected personnel. A copy of all results including the chain-of-custody shall be forwarded to the Health and Safety Manager for approval prior to releasing any information.

7.3.3 Pesticides and Dioxin/Furans

During work at Site 5, the MK SSHO shall obtain two time integrated air samples from the maximally exposed individuals for pesticides. The task posing the most exposure to potential metals as an airborne aerosol shall be evaluated. This will most likely be excavation and debris/drum handling tasks. The samples shall be collected using a OSHA Versatile Sampler (OVS) from SKC Corporation containing 270 mg of XAD-2 in the primary bed and 140 mg in the backup bed. An equivalent collection media can also be used as recommended by the analytical laboratory. The collection media is a combination tube designed to capture aerosols and vapors. The sampling rate shall be set at 1.0 liters per minute and the collection volume at 60 to 180 liters. The marker analyte is DDT, but a full scan for chlorinated pesticides shall be completed by the laboratory. The MK SSHO shall be responsible for obtaining all necessary industrial hygiene equipment and coordination of laboratory services. Results shall be communicated by the MK SSHO immediately to affected personnel. A copy of all results including the chain-of-custody shall be forwarded to the Health and Safety Manager for approval prior to releasing any information.

During work at any site where the soil boring results indicate a positive detection of any dioxin or furan compound, the MK SSHO shall obtain two time integrated air samples from the maximally exposed individuals for dioxins and furans. The task posing the most exposure to potential metals as an airborne aerosol shall be evaluated. This will most likely be excavation and debris/drum handling tasks. The samples shall be collected using a Midget Impinger with standard nozzle. The laboratory will specify and provide the collection media liquid. An equivalent collection media can also be used as recommended by the analytical laboratory. The minimal sampling rate shall be set at 1.0 liters per minute and the collection volume at 30 liters. The MK SSHO shall verify with the analytical laboratory whether collection volumes can be doubled and not invalidate their analysis procedure. This will provide conservative results. The analytes are 2,3,7,8-Tetrachlorodibenzo-p-dioxin and 2,3,7,8-Tetrachlorodibenzofuran. The MK SSHO shall be responsible for obtaining all necessary industrial hygiene equipment and coordination of laboratory services. Results shall be communicated by the MK SSHO immediately to affected personnel. A copy of all results including the chain-of-custody shall be forwarded to the Health and Safety Manager for approval prior to releasing any information.

7.4 RECORDKEEPING AND CHAIN OF CUSTODY

Written records of all monitoring will be maintained on site by the MK SSHO using Figure 6. Affected employees will be notified of monitoring results representative of their potential exposure by the MK SSHO. Monitoring results can be communicated at Safety Meetings and Pre-Entry Briefs.

For industrial hygiene sampling requiring collection and shipment of a sample to an approved analytical laboratory, Chain-of-Custody forms will be properly completed and accompany all collected samples in accordance with MK Industrial Hygiene Procedures Manual, Procedure 7.0, titled Analytical Laboratory Procedures. The selected AIHA accredited industrial hygiene lab will be American Analytical Laboratories, Inc., Akron, Ohio (216-535-1300) or a local accredited laboratory when one is located and approved by MK. Turn-around time is estimated at 5-10 working days. Workers will be notified by the MK SSHO of time integrated sampling results via memo to the designated supervisor.

For both direct reading monitoring and time integrated sampling, the MK SSHO should record a brief summary in his logbook. This will facilitate collection and presentation of data when the safety and health project completion report (Section 13.5) is completed by the MK SSHO.

8.0 GENERAL SAFETY RULES AND PROCEDURES

8.1 GENERAL

Operations shall be conducted in a safe manner consistent with the policies and procedures outlined in this SSHP. The number of personnel shall be restricted to the minimum necessary to complete the required work as an administrative control to limit personnel exposures to potential site chemical, physical and biological hazards.

All project and subcontractor personnel assigned to this project are responsible for following this SSHP unless modified in the subcontracting special conditions document, for using safe practices, and for wearing the PPE specified by the MK SSHO. Project personnel shall report hazards and unsafe conditions and practices to the MK SSHO. All federal, state and local occupational health and safety regulations must be complied with by project personnel. Violations of project procedures may include disciplinary measures up to and including termination.

8.2 RULES AND PROCEDURES

- The Subcontractor shall have available a 40-lb rated ABC multipurpose dry chemical fire extinguisher (or two 20 lb ABC's); first aid kit including CPR kit (Pocket Mask) and biohazards control kit; emergency eyewash and drench; and spill response equipment available at every controlled work location. Also, the Subcontractor shall complete the Work Zone Map and post it at each work site including emergency phone numbers and hospital route map. Work zone signs shall be posted in accordance with the requirements of Section 9.1.4 of this SSHP.
- Avoid driving over dry grass that is higher than the ground clearance of the vehicle. Catalytic converters on the undercarriage of vehicles are sufficiently hot to ignite dry prairie grass. Never allow a vehicle with a warm undercarriage to sit in a stationary location over dry grass or other combustible materials.
- Do not eat, drink, smoke, take medications, chew gum or tobacco, or put objects in mouth while in the exclusion zone and contamination reduction zone or when handling samples.

- After handling samples, thoroughly wash hands and, if necessary, face, before eating or putting anything in mouth (i.e., avoid hand-to-mouth contamination).
- At a minimum, wear hard hats, safety glasses and steel-toed boots when inside the work boundaries.
- Remain a safe distance from the excavation equipment when not involved in operation or monitoring activities.
- Do not under any circumstances enter or ride in or on any backhoe/excavator bucket, materials hoist or any other device not specifically designed for carrying human passengers.
- Remain aware of your own and other's positions with regard to rotating equipment and be extremely careful when assembling, lifting and carrying items that may cause pinch point injuries and collisions.
- Be alert to the symptoms of fatigue, heat stress and cold stress and their effect on the normal caution and judgment of personnel.
- Use explosion proof sampling equipment and tools.
- Use ground fault circuit interrupters (GFCI) with all electrical tools and equipment.
- Stand clear of trenches during excavation. Always approach the excavation from upwind.
- Stand upwind, whenever possible, of excavations and other sites where the soil has been disturbed.
- Be alert to potentially changing exposure conditions as evidenced by perceptible odors, unusual appearance of excavated soils, oily sheen on water, or other evidence of possible contamination.

- Do not enter any excavation or trench greater than five feet in depth unless authorized by the MK SSHO or designee (excavation competent person).
- Keep hand tools off the ground and centrally located on a plastic cover or area of no contamination whenever possible to avoid tripping hazards and the spread of contamination.
- Use the buddy system at all times while working at the site in controlled work zones. No one is to work alone in the Exclusion Zone or Contamination Reduction Zone without permission from the MK SSHO and MK General Superintendent.
- Minimize truck tire disturbance of all stabilized sites and areas beyond the work area boundaries.
- Cease all work operations on the site at sunset unless the control zone is adequately illuminated with artificial lighting.
- Subcontractor Job Supervisors shall attend the POD meeting prior to the start of the work and conduct pre and post entry briefs with all affected workers. All personnel shall sign and record the time in and out of all Exclusion Zones.
- Avoid direct contact with contaminated materials unless necessary for sample collection or required observation. PPE shall be worn at all times, as required.
- Remove disposable clothing and follow decontamination procedures.
- Always use an appropriate level of personal protection as assigned in this SSHP. Lesser levels of protection can result in otherwise preventable exposure.
- Maintain a high level of awareness of the limitations in mobility, dexterity and visual impairment inherent in the use of Level B and Level C PPE.

- Establish prearranged hand signals or other means of emergency communication when wearing respiratory equipment, since this equipment impairs speech communication.
- Wear hearing protection if you have to shout to communicate at a distance of three feet in steady-state (continuous) noise or when you expect loud impact noise from certain activities. The MK SSHO will assess potential noise exposure and provide recommendation on correct hearing protection.

9.0 SITE CONTROL MEASURES

9.1 SITE WORK ZONES

Where a potential for worker exposure to potentially hazardous substances and physical hazards, work zones will be established and the flow of personnel and equipment will be controlled. The establishment of work zones will ensure that personnel are properly protected against hazards present in the work area, work activities and contamination are confined to the appropriate areas, and personnel can be located and evacuated in an emergency.

Prior to the commencement of field activities, Work Zones shall be established by the CTD Subcontractor with the approval of the MK SSHO as necessary to meet operational and safety objectives. These work zones will be depicted on Work Zone Maps that are field prepared by the Subcontractor to be posted by the Subcontractor Job Supervisor near the entrance to the work area. In addition to the zones, these maps should show assembly points; evacuation routes; location of first aid equipment, fire extinguisher(s), eye wash/drench and spill containment equipment; and emergency communications equipment. One copy of the work zone maps and all revisions shall be delivered to the MK SSHO by the Subcontractor Job Supervisor to be retained by the MK SSHO in Attachment B of the field master copy SSHP. Posted with the Work Zone Map shall be the list of emergency phone numbers and route map to hospital. The Subcontractor shall maintain a sign-in and sign-out log at the entrance to the CRZ for personnel entering the Exclusion Zone (EZ).

9.1.1 Exclusion Zone

The EZ is the designated area where hazardous substances are present or expected to be encountered during remedial construction activities. Entry into this area is limited to personnel required to perform the work and who are wearing the specified PPE and have attended a Pre-Entry Briefing. Everyone entering the EZ shall have completed the required health and safety training and participate in the medical surveillance program. The boundary of the EZ will be determined for each activity and may change depending on activities and conditions.

An EZ will be established to encompass the excavation area and drum/debris staging area. For this job, the EZ for each excavation area will consist of the immediate in process excavation and drum/debris staging area extending outward for approximately 20 feet if space allows or the size necessary to meet safety and health objectives. Additionally, any stockpiled excavated soil classified as potentially contaminated will be included in the EZ.

The EZ will be clearly delineated through the use of fences with appropriate signs, or other suitable means. Access control points into the contamination reduction zone will be established to regulate the flow of personnel and equipment in and out of the zone and to help verify that proper procedures for entry and exit are followed. PPE levels in the EZ are initially scoped as either Level C and Level B depending on the task to be completed (see Table 5 of this SSHP). Decontamination will follow guidelines established in Section 10 noting gross contamination of both personnel and equipment will be removed in the EZ followed by additional decontamination in the CRZ. The boundary line from the EZ to the CRZ will be based on the following criteria:

- a) Approximately 20 feet outward from contaminated work area or as much as necessary to include the heavy equipment operating in the zone and the temporary staging of any materials.
- b) Perimeter air monitoring for VOCs reads no increase in ppm-equivalents above background. Levels for background are those obtained from a Support Zone location not likely to be affected by any of activity ongoing in the EZ.

9.1.2 Contamination Reduction Zone (CRZ)

The CRZ is the transition area between the contaminated area, the EZ and the clean area, the Support Zone (SZ). While designed primarily to reduce the possibility of the support zone becoming contaminated or affected by EZ activities, the CRZ is also used for decontamination of personnel and equipment. No personnel or equipment will be allowed to exit the contamination reduction and exclusion zones without being properly decontaminated except in emergency situations. The immediate area around the EZ extending outward as much as necessary to accommodate the complete length of the longest piece of heavy equipment will be designated the CRZ. Used PPE will be removed and stored in properly marked plastic lined 55-gallon drums or other containers for later disposal. A sign-in and sign-out log sheet shall be maintained by the Subcontractor at the CRZ and all personnel entering the EZ must sign in and out. Copies of the completed log sheet shall be distributed to the MK SSHO by the Subcontractor Job Supervisor or Subcontractor SSHO on a weekly basis.

9.1.3 Support Zone (SZ)

The SZ consists of all areas outside the exclusion and contamination reduction zones. These areas are used for all site activities which are not limited to the EZ or CRZ equipment and material storage, offices, parking, etc. The SZ will also serve as the staging area for all activities to be conducted.

9.1.4 Work Zone Controls

Before site operations begin, the SZ MK site office and Subcontractor offices shall be identified with signs identifying as such. The CTD Subcontractor shall post signs at entrances to the CRZ and EZ stating the following or equivalent:

**HAZARDOUS AREA KEEP OUT
DANGER
AUTHORIZED PERSONNEL ONLY
PERSONAL PROTECTIVE EQUIPMENT IS REQUIRED IN THIS AREA**

The CTD Subcontractor shall post signs at the entrance to the CRZ before operations begin, stating:

NO SMOKING, DRINKING OR EATING BEYOND THIS POINT

10.0 PERSONNEL AND EQUIPMENT DECONTAMINATION AND HYGIENE PROCEDURES

10.1 GENERAL

All personnel, clothing and equipment leaving an exclusion zone (contaminated or potentially contaminated area) shall be inspected and, if necessary, decontaminated to remove any potentially harmful substances that may have adhered to them. Some equipment/clothing may be disposed of rather than decontaminated. In this case, the used PPE and/or equipment (e.g. disposable sampling equipment) will be stored in properly marked, plastic lined 55-gallon drums in the CRZ. A main Decontamination Facility and individual personnel decontamination stations will be constructed for personnel decontamination and for equipment decontamination. This section gives guidelines regarding the decontamination procedures to be implemented.

10.2 PERSONNEL DECONTAMINATION

Personnel decontamination (decon) stations shall be established in the contamination reduction zone. The decon stations will consist of the following, as appropriate:

- Equipment drop to include used respirator receptacle.
- Boot wash station with boot pick for cleaning initial mud cakes from boots (a tub of water and detergent (Alconox®) with brushes for cleaning and another tub of water for rinsing).
- Outer Glove wash station when reusable (similar to boot wash station).
- Sampling equipment wash station (similar to boot wash station).

- Disposable clothing drop. All contaminated or potentially contaminated disposable clothing shall be placed into labeled 6-mil plastic bags within a 55-gallon drum for disposal.

Note: Ergonomic attributes shall be built into the individual decontamination station(s) consisting of handrails for leaning against and portable chairs for sitting when removing PPE.

10.3 EMERGENCY PERSONNEL DECONTAMINATION

Based on the type of emergency that is postulated, the following types of response actions are anticipated for personnel emergencies within the exclusion zone.

A. Critical Triage Condition (life threatening) - Emergency evacuation or extrication from the exclusion zone to contamination reduction zone where emergency medical treatment and stabilization will be attempted until arrival of first responding medical unit. Or, emergency medical treatment and stabilization will be completed in the exclusion zone till arrival of first responding medical unit. In either case, gross decontamination will be completed to the extent possible by removal PPE, wiping patient down to remove contamination and/or wrapping patient to prevent spread of contamination.

B. Marginal Triage Condition (non life threatening) - patient will be evacuated from exclusion zone and treated in the contamination reduction zone followed by decontamination and patient preparation for transport to emergency medical facility. Decontamination could occur first followed by medical treatment in selected scenarios.

10.4 EQUIPMENT DECONTAMINATION

All equipment/tools used in the exclusion zone will be inspected for contamination prior to removal from the site. Any equipment/tools with visible contamination will be cleaned prior to removal from the site at the personnel decontamination stations or at the Decontamination Facility. A high pressure low volume water and detergent solution will be used for contaminated equipment, followed by a high-pressure water rinse if necessary. Steam cleaning is an acceptable alternative and will be used at the Subcontractors discretion. All water used during decontamination will be contained for disposal. Construction and field equipment along with

uncovered debris will be decontaminated at the temporary decontamination facility. The Decontamination Facility will be centrally located for each particular work site.

10.5 DECONTAMINATION WASH WATER

Equipment and personnel decontamination areas will be designed to allow for collection of all wash/rinse waters into 55-gallon drums or a larger temporary storage container. Regardless of the container used, it shall be labeled for hazard communication purposes.

10.6 PERSONAL HYGIENE AND SANITATION

Personnel exiting the CRZ are required to thoroughly wash their hands and face prior to eating, drinking, smoking, or using toilet facilities. A hand and face washing facility shall be made available in or near the CRZ consisting of water, towels and soap for personnel. Washing facilities shall be conveniently located to the portable toilet facilities. Lunchroom facilities free of contaminants shall be made available by the Subcontractor in accordance with EM 385-1-1 Section 2. A Shower/Change Room Facility shall be provided in a convenient location to the work area. It is not required to be located in the CRZ. This facility shall have available a sink to wash and disinfect respirators and a clean cabinet suitable for air drying the respirators.

11.0 ON-SITE FIRST AID AND EQUIPMENT

11.1 FIRST AID AND MEDICAL FACILITY REQUIREMENTS

At a minimum, 16-unit first aid kits shall be maintained by MK in their office trailer and each of the Subcontractors shall maintain a first aid kit at their office trailer and have sufficient supply of kits for each of the work sites. The location of the first aid equipment shall be communicated to project personnel as part of the site-specific and pre-entry brief training. Included with the first aid kit shall be a CPR Pocket Mask and a biohazards control kit (used to clean up incidents involving body fluid's). The MK SSHO can require upgrades to the first aid equipment requirements as deemed necessary for this job.

An emergency eyewash/drench kit, fire extinguisher(s) and spill control kit shall be available at each controlled work area. The Subcontractor is responsible for furnishing their office trailers

and each controlled work location with this equipment as stated in Section 8.2 of this SSHP. The emergency phone number list and route map to medical facilities shall be posted at each office trailer and at each controlled work zone as part of the Subcontractor prepared Work Zone Map.

11.2 REPORT OF FIRST AID CASES

All first aid cases, accidents and incidents including equipment damage incidents shall be promptly reported to the MK SSHO. The MK SSHO shall immediately notify the Navy Technical Representative (NTR) or the Navy Resident Officer in Charge of Construction (ROICC) of all injuries even if preliminary information is only available. The MK SSHO and MK PM shall follow the guidance presented in MK NAVFAC SOUTHDIV Procedure PHSP-04.1 titled Incident Reporting dated 9/13/95. The MK Charleston Project Management Office (PMO) should be notified shortly after notification to the Navy's designated authority. If an on-site official cannot be reached, the MK Charleston PMO still should be promptly notified at (803) 554-0100.

A written report of the injury must be provided to the ROICC and MK Charleston PMO within 24 hours of the incident via memo form. This report is to include as attachments:

- a. Employer's First Report of Injury (Workman's Comp Insurance Form)
- b. Supervisor's Accident Investigation Report (MK Form CAS 24/77)
- c. Accident Data Report (MK Form 6783/91)
- d. Any records provided by the Medical Service Provider such as 1) Hospital Emergency room Report, 2) Examining Physician's designation of work restriction, and 3) Examining Physician's Work Release.

Near miss incidents shall be investigated by the Subcontractor Job Supervisors, MK General Superintendent and MK SSHO. The MK SSHO shall record findings and corrective action in his log book. This data should be included in the safety and health project completion report (Section 13.5).

12.0 EMERGENCY RESPONSE PLAN AND CONTINGENCY PROCEDURES

12.1 GENERAL

This section describes a contingency plan to be implemented in the event of injuries, illnesses, accidents, and fires. The contingency plan provides guidelines for the proper response to emergency situations, however the actual response will depend on the situation.

In the event of an emergency, the MK SSHO, MK General Superintendent and/or Subcontractor Job Supervisors will direct all personnel to take appropriate action which could include any or all of the following:

- Evacuate all personnel involved to a safe place of refuge.
- Notify emergency services: BASE FIRE DEPT AT 601-871-2333 OR 911; BASE SECURITY AT 601-871-2222
- Initiate emergency response action.

12.2 PRE-EMERGENCY PLANNING

During mobilization activities for this project, the MK Project Manager, MK General Superintendent, and the MK SSHO shall review the NAVFAC SouthDiv Project Procedure PHSP 02.1 and execute the steps necessary to assure effective emergency response requirements and resources are established for this project.

In addition to the guidance provided in this document and the preconstruction meeting, all safety meetings and pre-entry briefs shall include emergency response preplanning specific to each task and work site as a topic area. This training will include:

- **Assembly Points.** If the work activity may result in a release of hazardous substances, more than one assembly point will be specified to ensure that at least one upwind assembly point is accessible. This also pertains to fires and sites subjected to adverse weather conditions. Information must be included on the Work Zone Maps to be completed by the CTD Subcontractors.

- Emergency Response Coordinator. The MK SSHO, as the onsite emergency response coordinator, will contact the emergency response providers, account for individuals at the assembly point, and plan the appropriate response.
- Evacuation Routes. Routes will be specified as needed. Information must be included on the Work Zone Maps.
- Means of Evacuation. The number of personnel that may be evacuated from the work site by various routes will be evaluated by the MK SSHO.
- Means of Communication. This will include the means of alerting personnel to an emergency at all points in the work site and should consider the sound screening potential of hearing protection, distance and noisy equipment when specifying the use of alarms, horns and sirens. The means of communication with emergency response providers will be considered. Information must be included on the Work Zone Maps.
- Designation of a location for first aid services, fire extinguisher(s) and spill control equipment. Information must be included on the Work Zone Maps.
- Procedures to be followed by employees who remain to manage critical operations to insure safe shutdown.

12.3 RESPONSIBILITIES

The following is a description of personnel roles, lines of authority, and the emergency response communication/notification responsibilities for site personnel.

12.3.1 Project Personnel

It is the responsibility of all project personnel to recognize conditions that have the potential for resulting in a personal injury or damage to property, and to report the condition immediately to their supervisor or the MK SSHO.

12.3.2 MK Project Manager (PM)

The MK PM is responsible for assuring adherence to the administrative elements and implementation of the Emergency Response Plan (THIS SECTION OF THE SSHP), as referenced in this document. He will evaluate the site's preparedness for emergency responses and identify special conditions which may require additional preparations. He will ensure that necessary equipment and facilities are provided to support this plan.

12.3.3 MK Certified Industrial Hygienist (CIH)

The CIH is responsible for preparing the Emergency Response Plan (this section of the SSHP). The CIH will develop and review the Emergency Response Plan, evacuation plans, and oversee implementation at the site. The CIH will ensure that supervisors and employees meet the training requirements of the plan and approve the equipment used in the plan. The CIH may designate duties on site to the MK SSHO. The CIH is the designated Health and Safety Manager based in Boise, ID.

12.3.4 MK Site Safety and Health Officer (SSHO)

The MK SSHO is responsible for directing response actions to emergency situations. He will coordinate with project management to ensure the availability of response equipment and supplies, and initiate drills. Emergency response plans will be evaluated over the course of the project by the MK SSHO to keep them up-to-date and to ensure that they are applicable and relevant to emergency response organizations.

12.3.5 Subcontractors

All MK and Subcontractor personnel will comply with the provisions of this plan and participate in training as required to implement response procedures. All personnel will be cognizant of their work areas and notify their supervisors and the MK SSHO of hazards at the site.

12.4 EMERGENCY RECOGNITION AND PREVENTION

Site personnel shall be apprised of hazards and life-threatening emergency situations during site-specific training to include the project kickoff site specific training, safety meetings and briefs. Means to control hazards and mitigate emergency situations will be addressed at that time.

12.5 SAFETY ZONES

Suitable assembly points will be established at the start of the project for each work site. These assembly points will provide a safe point of refuge for site personnel. Additional information will be provided in the site briefing concerning other hazards that may arise at the site. Safety Zones or assembly points must be included on the Work Zone Map.

12.6 SITE SECURITY AND CONTROL

At all times, site personnel working in an area in the near vicinity of an emergency situation shall be apprised of the emergency as soon as possible. Only authorized personnel shall be allowed into the emergency area. As necessary, the emergency area may be cordoned off and access restricted by MK and the Subcontractors.

12.7 EVACUATION ROUTES

Evacuation routes will be established based on scope of work, location of work and atmospheric conditions. Evacuation routes shall be posted in various locations on the site if necessary and included on the Work Zone Map. All site personnel will be made aware of evacuation procedures during site-specific training especially pre entry briefings. Topography, layout and prevailing wind conditions shall be considered in establishing evacuations routes and assembly points.

12.8 EMERGENCY DECONTAMINATION

In the event an employee is injured or becomes ill and requires hospital treatment, the extent of decontamination to be performed will be assessed based on severity of the injury or illness and time delay that decontamination may cause. If the employee has any signs of contamination, the ambulance and hospital staff will be notified of this and the nature of the contamination. Reasonable

effort will be expended to decontaminate the victim prior to removal from the site, refer to Section 10.3 of this plan. The medical facilities shall be notified by the MK SSHO of the intended scope of work and the potential for contaminated personnel. The medical facilities will receive copies of all the Material Safety Data Sheets (MSDSs) and/or NIOSH Pocket Guides applicable to this project. The MK SSHO shall visit the medical facility to establish a contact person for the necessary information.

12.9 EMERGENCY MEDICAL TREATMENT AND FIRST AID

Basic first aid kits and a eyewash/drench will be available at each work location. Basic first aid and life support shall be administered only by persons trained in this activity.

12.10 COMMUNICATIONS

The MK SSHO, the MK General Superintendent and the Subcontractor Job Supervisor(s) at each work site area shall be equipped with two-way radios for communications on site as warranted. Additional communications with outside emergency services will be accomplished through the use of cellular telephones if necessary. Both two way radios and cellular phones are to be used for emergency's only. In the radios will be used for standard field construction communication, then the MK SSHO shall establish strict protocols for radio communication and insure all personnel who carry radios understand the protocols.

12.11 CRITIQUE OF RESPONSE AND FOLLOW-UP

All actual emergencies shall be critiqued and follow-up corrective actions shall be implemented as needed. Drills and exercises if completed shall also be critiqued. The critique will be conducted as part of a safety meeting first by supervisory personnel and second with all MK and Subcontractor personnel.

12.12 INITIAL REPORTING AND MANAGEMENT OF INCIDENTS

All emergencies will be promptly reported to the Emergency Response Number x-2345 or 911 on site and to the MK SSHO. The MK SSHO will assure that the Navy designated authority is notified promptly and directing initial emergency response actions until the arrival of the Base designated

authority. The designated authority can include the officer in charge of security, fire department and/or ambulance services.

The following contains the initial response actions to be taken by MK personnel and subcontractors at the work site for the type of incident incurred.

A. Incident Type: Accident involving vehicles and mobile equipment, process equipment and support structures.

Response Actions:

1. Notify the BASE FIRE DEPT AT 601-871-2333 OR 911, include the following information:
 - A. Name and phone number of person calling;
 - B. Location of incident;
 - C. Type of incident;
 - D. Is anyone injured or trapped and potential material release or spill conditions.
2. MK SSHO, MK General Superintendent or Subcontractor Job Supervisor(s) designates one person to meet the emergency response units at the nearest road where the units will be approaching.
3. MK SSHO, MK General Superintendent or Subcontractor Job Supervisor(s) assumes initial command of the situation and directs personnel to do one of the following either separately or concurrently:
 - A. Emergency shutdown of process equipment or mobile equipment, evacuate the work zone or immediate area to a safe place of refuge and meet the incoming response units and provide all available information.
 - B. If fire is present, initiate initial fire attack and knockdown using available fire extinguishing equipment followed by evacuating the work zone or immediate area.

B. Incident Type: Preparation for adverse weather condition to include high winds, tornado, heavy rains, severe lightning.

Response Actions:

1. MK SSHO, MK General Superintendent or Subcontractor Job Supervisor(s) notify the BASE SECURITY AT 601-871-2222, and include the following information:
 - A. Name and phone number of person calling;
 - B. Location of work site(s);
 - C. Preparation for adverse weather condition has begun;
 - D. Permanent structure location where personnel will be relocating to on Base.
2. MK SSHO, MK General Superintendent or Subcontractor Job Supervisor(s) direct personnel to shutdown operations, secure loose materials, park and secure mobile equipment. Personnel shall be directed to a permanent building after completing decontamination procedures.
3. MK SSHO, MK General Superintendent or Subcontractor Job Supervisor(s) complete accountability and await clearance from Base Security to resume operations or take other action.
4. MK SSHO, MK General Superintendent or Subcontractor Job Supervisor(s) shall inspect all offices, trailers, mobile equipment, work sites for damage or downed power lines.
5. Designated excavation Competent Person shall inspect all excavations for faulting, flooding, or cave in potential prior to restart of any work in that area.

C. Incident Type: Medical and Rescue Emergencies.

Response Actions:

1. Notify the BASE FIRE DEPT AT 601-871-2333 OR 911, include the following information:

- A. Name and phone number of person calling;
 - B. Location of incident;
 - C. Type of incident;
 - D. Person(s) injured or trapped and if exposure to hazardous material.
2. MK SSHO, MK General Superintendent or Subcontractor Job Supervisor(s) designates one person to meet the emergency response units at the nearest road where the units will be approaching.
 3. MK SSHO, MK General Superintendent or Subcontractor Job Supervisor(s) assumes initial command of the situation and completes or directs personnel to do one or both of the following:
 - A. Emergency shutdown of process equipment or mobile equipment and any other necessary action to mitigate or control the incident.
 - B. Initiate emergency first aid actions until arrival of emergency units.
 4. For Confined Space Rescue, only emergency rescue units trained in confined space rescue shall enter the confined space. The Designated Attendant for that work space must never enter the space as a rescue attempt unless relieved of attendant duties and assigned as a member of the trained rescue team by either the MK SSHO or the responsible supervisor for the confined space entry. The Base Fire Department shall be notified at least two hours in advance by the MK SSHO or MK General Superintendent of any permit required confined space entry on site.

D. Incident Type: Underground Utility Struck by Heavy Equipment

Response Actions:

1. Operator re-positions bucket away from the contacted utility and shuts down equipment.
2. Notify the BASE FIRE DEPT AT 601-871-2333 OR 911, include the following information:

- A. Name and phone number of person calling;
 - B. Location of incident;
 - C. Type of incident;
 - D. Person(s) injured; sparks or fire conditions; release of natural gas or other process fluids
2. MK SSHO, MK General Superintendent or Subcontractor Job Supervisor(s) designates one person to meet the emergency response units at the nearest road where the units will be approaching.
 3. MK SSHO, MK General Superintendent or Subcontractor Job Supervisor(s) assumes initial command of the situation and completes or directs personnel to do one or both of the following:
 - A. Emergency shutdown of all process equipment or mobile equipment and any other necessary action to mitigate or control the incident.
 - B. Initiate emergency first aid actions if necessary.
 4. For Natural Gas leaks, an initial 100 foot circumference shut down and evacuation zone shall be established.
 5. MK General Superintendent and Subcontractor shall have readily available the utility location work maps showing primary and secondary shut down locations. This information shall be consulted by involved parties for safe shutdown.

13.0 LOGS, REPORTS, AND RECORDKEEPING

13.1 SAFETY AND HEALTH LOGBOOK

The MK SSHO shall maintain a Project Safety and Health Logbook for the duration of work activities at the site. Entries in the logbook shall be time sequenced. The entries must be written neatly in ink and the bottom of each page must be signed. The logbook shall be hard bound. No pages will be removed from the log book. Corrections must be lined out and initialed. The logbook will contain specific information on safety and health activities and to further describe or clarify information recorded on the Figure 6, the SSHP Daily Logbook Report form. The Subcontractor SSHO shall be directed to provide a daily report to the MK SSHO using Form 6 or equivalent.

A separate file folder shall be maintained for Figure 6. Additional forms supporting Figure 4 shall be attached to Figure 6 and held in file folder. Separate file folders shall be established for this SSHP; calibration data sheets if not attached to Figure 6; safety and IH instrument serial numbers and shipping papers; field specific safety and health procedures; all safety and health related permits; and weekly safety inspections. Records of training and site orientations; briefings including pre entry briefs; Subcontractor prepared equipment inspection sheets and exclusion zone sign-in and sign-out logs shall also be maintained in file folders by the MK SSHO. In addition, the MK SSHO shall copy and file all receipts for MK equipment rentals and consumables upon delivery to the site and the inventory shall be verified as acceptable.

13.2 REPORTS

A weekly site safety and health inspection report shall be prepared by the MK SSHO. This report shall identify work activities, safety and health-related deficiencies, and corrective measures. As a minimum, the checklist shown in Figure 7 shall be completed by the MK SSHO.

13.3 FIELD MASTER COPY OF SSHP

The MK SSHO shall maintain a field master copy of this SSHP document to include all redlines and the completed work zone maps. An electronic copy of the SSHP is available through the Cleveland Office. The field master copy SSHP shall be properly filed with project records at the completion of the project to be sent to MK PMO office in Charleston.

13.4 RECORDKEEPING

The MK SSHO shall maintain records of all injuries and illnesses for "MK employees only" in accordance with 29 CFR 1904. Accidents and Incidents data reporting requirements shall be managed in accordance with MK NAVFAC SOUTH DIV Procedure PHSP-04.1.

The MK SSHO shall receive copies of all records for injuries and illnesses of Subcontractors incidental to the work, including copies of the Worker's Compensation First Report of Injury. These records will be maintained on the Subcontractors OSHA 200 Log. Per the contract General Conditions (GC) 13(c), the Subcontractor shall provide a monthly project safety review form and attach with it a copy of its OSHA 200 Log specific to this project. A record of all first aid treatments not otherwise recordable shall be maintained and furnished to the Navy's designated authority upon request. Monitoring and sampling results shall be managed as stated in Section 7.4 of this plan.

13.5 SAFETY AND HEALTH PROJECT COMPLETION REPORT

The MK SSHO shall complete a safety and health project completion report at the conclusion of the field work. The purpose of the report is to a self assessment summarizing effectiveness of the safety and health program implemented in the field; lessons learned and suggestions for program improvement; accident and incidents; air monitoring and sampling results including ratings on instrument useability; and how well the original prepared Activity Hazards Analysis (AHA) worksheets reflected field conditions. The report shall be directed to the MK SouthDiv Program Health and Safety Manager within ten working days after project demobilization.

14.0 ON-SITE WORK PLANS

A Site-Specific Work Plan of which this document is designated Appendix A was developed to define the work tasks and identify the work objectives. The means and personnel required to complete the task is identified along with consideration for methods, logistics, quality control/assurance and resources.

15.0 COMMUNICATION PROCEDURES

15.1 RADIO COMMUNICATION, TELEPHONE, ALARMS AND DRILLS/EXERCISES

Two way radios when used for emergency communication shall be capable of reaching a base station who in turn relay's the proper call. Cellular telephones shall be selected as a secondary choice of emergency communication when a Base telephone is not located close to the actual work site. An emergency alarm, such as an air horn, shall be available if necessary at each major work site to warn personnel of an emergency. Personnel shall be trained on what actions they are to take if the alarm is sounded to include evacuation routes and assembly points. Drills and exercises shall be conducted to ensure that communication methods are adequate. The MK SSHO shall test all two way communication (especially two way radios and cellular phones) for confirmation of emergency communication using CBC Gulfport protocols.

16.0 SPILL CONTAINMENT PLAN

16.1 GENERAL

Spill and release accident scenarios during remediation could occur and involve residue process material and reinstates from decontamination activities. The following information will be used by project personnel to respond to and mitigate any releases on the project site. In the event of a spill or release, the MK SSHO, MK General Superintendent and/or Subcontractor Job Supervisors will direct all personnel to take appropriate action which could include any one or all of the following:

- Initiate spill response action.
- Notify the BASE FIRE DEPT AT 601-871-2333 OR 911.
- Evacuate the work zone to a safe place of refuge.

16.2 PREPLANNING FOR SPILL CONTROL

Remedial construction or removal activities shall be reviewed for release potential during Plan of the Day and Pre Entry Briefs. Base personnel will be contacted to determine their capability to respond to various releases.

During mobilization activities for this project, the MK Project Manager, MK SSHO, and the MK General Superintendent shall review the NAVFAC Project Procedure PHSP 03.1 and execute the steps necessary to assure effective spill response planning requirements and resources are established for this project. MK will cooperate with the base; other site contractors; and federal, state and local directors of emergency preparedness and response to ensure a coordinated effort in preparing for a spill emergency, with response plans that are compatible and integrated. Prior to the start of work, MK will review any site specific requirements and meet with site representatives on spill control to insure this SSHP section is consistent with site requirements for spill control. Specific roles and responsibilities will be reviewed for MK and Navy personnel. The Base Fire Department will be notified of any spills classified above incidental and will assist in spill containment. The Base Fire Department will provide overall command and control of the clean-up activity for spills classified above incidental until relieved by a higher authority.

16.3 SPILL AND FIRE CONTROL MATERIALS AND EQUIPMENT

When planning to move or handle drums (or other containers) containing hazardous or special waste materials, the following shall be kept available in areas where spills, leaks or ruptures may occur: 1) salvage drums and container overpacks; 2) suitable quantities of proper absorbent materials; 3) portable containing material; 4) neutralizing agents, both acid and caustic 5) fire extinguisher(s); 6) emergency eyewash/drench station; and 7) spill pallets or platforms for secondary containment.

Drums and containers used during a clean-up will be appropriate to the hazardous substances they are meant to contain, and will meet the regulations promulgated by DOT, 49 CFR Parts 171-179, OSHA 29 CFR 1910.120, and EPA 40 CFR 262. Drums and containers shall be inspected for defects and their integrity assured prior to being filled with any non-solid hazardous or special waste substance.

A spill of material can be contained with porous or absorbent barriers. Absorbent materials can take several configurations (pillows, sheets, booms, loose chips, particle beads, and fibers) that may be set in place, or scattered by hand. Preferred sorbents are inert nonreactive clay minerals (neutralizing agents may be added), or specific formulations which provide automatic neutralization or vapor control.

16.4 SPILL CONTROL MEASURES

Stopping the leak or spill at its source may involve turning off pumps or closing valves. Returning a container to an upright position, transferring wastes to other containers, or moving containers to less dangerous locations may, in some circumstances, be possible, but should not be attempted if the identification of the substance is not known unless Level B Protection is worn and decontamination stations have been established. Similarly, the patching of an active leak is not advised until an initial "Size-Up" of the situation is made and guidance established in Section 16.6 has been followed.

16.5 DRUM, CONTAINER, AND TANK HANDLING AND MOVING PROCEDURES

Drums, containers, and/or tanks of hazardous or special waste substances will not be moved until the requirements for preparation have been completed (i.e., all required equipment and materials are at the work site ready for use, and the employees have been familiarized with their responsibilities,

the emergency response procedures, and the potential hazards associated with the contents of the drums and containers).

Work site operations will be organized to minimize the amount of drum or container movement. Each drum or container will be inspected before it is moved to ensure that it can be handled without suffering a rupture or puncture, and relocated without having the contents spill or leak.

Unlabeled or unmarked drums and containers will be considered to contain hazardous substances and handled accordingly until the contents are positively identified and labeled. Drums and containers under pressure, as evidenced by bulging or swelling, will not be moved until such time as the cause for excess pressure is determined and appropriate containment procedures have been implemented to protect employees from explosion.

Equipment used to handle the drums and containers will be selected, positioned, operated, and maintained to minimize any contact that could rupture, puncture, dent, or drop drums and containers holding hazardous or special waste substances, and the potential for equipment ignition sources to ignite vapors released from ruptured drums or containers shall be controlled. Drums and containers that cannot be moved without rupture, leakage or spillage will be transferred to a sound container using a device specified for the material being transferred. During liquid transfer of flammable or combustible liquids, bonding and grounding equipment shall be utilized.

16.6 INITIAL REPORTING AND MANAGEMENT OF INCIDENTS

All spill emergencies initially classified above an incidental release shall be promptly reported to the BASE FIRE DEPT AT 601-871-2333 OR 911.

Incidental Release (defined) - a release of hazardous material where the substance can be absorbed, neutralized, or otherwise controlled at the time of release by employees in the immediate release area, or by maintenance personnel. In addition, the quantity of released material does not exceed EPA Reportable Quantities.

The MK SSHO, the MK General Superintendent and the Subcontractor Job Supervisor(s) are responsible for directing initial emergency response actions until the arrival of the FIRE DEPT. The

following contains the initial response actions to be taken by MK personnel and subcontractors at the work site for spill and release emergencies.

A. Spill Response Actions:

1. Classify spill as Incidental or an Emergency
2. If operational (as defined above): 1) notify immediate supervisor; 2) assess hazard potential, establish precautions and PPE requirements; 3) begin clean-up of spill.
3. If Emergency, initiate response action in accordance with the following steps:
 - a. Quickly assess probability of safely stopping spill. If physical, chemical, or biological health hazards exist, immediate evacuate the area to a safe distance upwind and upgrade from the spill.
 - b. Notify the BASE FIRE DEPT and provide the following information:
 1. Name and phone number of person calling;
 2. Location of incident;
 3. Type of incident;
 4. Is anyone injured or trapped and estimated volume of material released.
 - c. MK SSHO, MK General Superintendent or Subcontractor Job Supervisor(s) designates one person to meet the emergency response units at the nearest road where the units will be approaching.
 - d. MK SSHO, MK General Superintendent or Subcontractor Job Supervisor(s) assumes initial command of the situation and directs personnel to do one of the following:
 1. Emergency shutdown of process equipment or mobile equipment, evacuate the work zone or immediate area to a safe place of refuge and meet the incoming response units and provide all available information.

2. Initiate initial spill response using available spill response equipment only for small operational spills where personnel are trained to mitigate. Evacuate the work zone or immediate area if there are any health threats or risks to personnel.

17.0 CONFINED SPACES

Permit required confined space entry "may" be encountered on this project with entry into excavations greater than 5 feet in depth and atmospheric conditions are less than acceptable. Entry shall be treated initially as a permit required confined space until (1) atmospheric monitoring is completed and an (2) assessment of physical (e.g. excavation stability) and (3) stored energy hazards (buried containers or drums) has been documented by a competent person. With documentation of safe atmospheric conditions and controlled physical hazards, the space may be downgraded to alternate entry confined space or non-permit required confined space. Air monitoring shall be continuous unless specified otherwise by the MK SSHO. Engineering controls shall be in place to safeguard any excavation from collapse and verified daily by the competent person in excavation. Any confined space entry must follow the MK Procedure 9.0 found in the Industrial Hygiene Procedures Manual which is based 29 CFR 1910.146. Refer to Section 4.3 for training requirements and 7.2.4 for air monitoring requirements.

Adequate provisions for rescue and emergency medical care must be made prior to entry. Initial emergency rescue response will be provided by the Base Fire Department. The Base Fire Department shall be notified at least two hours in advance by the MK SSHO or MK General Superintendent of permit required confined space entry.

TABLES

TABLE 1: POTENTIAL CONTAMINANTS

Potential Contaminant	Description	Exposure Limits	Signs and Symptoms	First Aid
Chromium detected in sediments and groundwater. Valence not known at this time.	Blue white to steel gray, lustrous, brittle, hard solid. Dissolved chromium compounds, hexavalent forms are carcinogenic in humans.	TLV 0.5 mg/m ³ for elemental and inorganics. TLV 0.05 mg/m ³ for water soluble Cr IV. TLV 0.01 mg/m ³ for insoluble Cr VI compounds.	Histologic fibrosis of lungs by inhalation. Causes sensitive dermatitis. Poison by ingestion.	Irrigate eyes immediately with water. Soap wash skin. Provide respiratory support. Seek medical attention immediately.
Inorganic Lead detected in groundwater and sediments (Site 5 only)	A heavy, ductile, soft grey solid. Noncombustible solid. (May be in soil as a biodegraded product of leaded gasoline.	OSHA PEL 50 ug/m ³ as 8 Hr. TWA	Weakness, lassitude, and insomnia. Facial pallor, anorexia, low weight, and malnutrition. Constipation, abdominal pain and colitis. Anemia, gingival lead line, tremor, Encephalopathy, Nephropathy. Irritant to eyes. Hypertension.	Irrigate eyes immediately with water. Soap wash skin promptly. Provide respiratory support. Seek medical attention immediately.
Methyl Ethyl Ketone (MEK) 2-butanone. Probably all Sites.	Colorless liquid with a moderately sharp, fragrant, mint or acetone like odor. Class IB flammable liquid.	OSHA PEL 200 ppm as 8 Hr. TWA	Irritant to eyes, nose and throat; can cause dizziness and vomiting.	Irrigate eyes immediately with water. Soap wash skin promptly. Provide respiratory support. Seek medical attention immediately.

TABLE 1: POTENTIAL CONTAMINANTS

Potential Contaminant	Description	Exposure Limits	Signs and Symptoms	First Aid
Methylene Chloride, not reported as a contaminant but possible.	Colorless liquid with a chloroform-like odor. Combustible liquid.	OSHA PEL 500 ppm as 8 Hr. TWA ACGIH TLV 50 ppm as 8 Hr. TWA	Irritation to eyes and skin. fatigue, weakness, somnolence, lightheadedness, numbness, tingle limbs, nausea, potential occupational carcinogen.	Irrigate eyes immediately with water. Soap wash skin. Provide respiratory support. Seek medical attention immediately.
Trichloroethylene, Trichloroethene (TCE). Not reported as contaminant but probable.	Colorless liquid with a sweet chloroform-like odor. Class IC flammable liquid, but burns with difficulty.	OSHA PEL 50 ppm as 8 Hr. TWA OSHA 15-min STEL 200 ppm	Eye and skin irritant. Headache, vertigo, visual disturbance, tremors, somnolence, nausea, liver injury, vomiting, , dermatitis, cardiac arrhythmia, potential occupational carcinogen.	Irrigate eyes immediately with water. Wash skin promptly with soap and water. Provide respiratory support. Seek medical attention immediately.
Chloroform (methane trichloride, trichloromethane), detected in groundwater.	Colorless liquid with pleasant odor.	OSHA Ceiling of 50 ppm	Irritant to eyes and skin, may cause dizziness, headache and fatigue.	Irrigate eyes immediately with water. Wash skin promptly with soap and water. Provide respiratory support. Seek medical attention immediately.

TABLE 1: POTENTIAL CONTAMINANTS

Potential Contaminant	Description	Exposure Limits	Signs and Symptoms	First Aid
DDT (dichlorodiphenyltrichloroethane) Site 5 only.	Colorless crystals or off white powder with a slight aromatic odor (pesticide)	OSHA PEL of 1 mg/m ³ with skin notation.	Irritant to eyes and skin; causes paralysis of tongue, lips, and face; causes tremors, apprehensiveness, dizziness, confusion and malaise, headache and fatigue	Irrigate eyes immediately with water. Wash skin promptly with soap and water. Provide respiratory support. Seek medical attention immediately.
Chlorobromomethane (syn with dichlorobromomethane)	Colorless to pale-yellow liquid with a chloroform like odor, non combustible.	OSHA PEL of 200 ppm.	Irritant to eyes, skin and throat; causes confusion and dizziness, CNS depressant; associated with pulmonary edema	Irrigate eyes immediately with water. Wash skin promptly with soap and water. Provide respiratory support. Seek medical attention immediately.
1,1,1-Trichloroethane (Methyl Chloroform)	Colorless liquid with a mild chloroform-like odor. Combustible liquid, but burns with difficulty.	OSHA PEL 350 ppm as 8 Hr. TWA OSHA 15-min STEL 450 ppm	Eye and skin irritant. Dizziness, headache, lassitude, CNS depression, poor equilibrium, dermatitis, liver damage, potential occupational carcinogen.	Irrigate eyes immediately with water. Wash skin promptly with soap and water. Provide respiratory support. Seek medical attention immediately.
Toluene	Colorless liquid with a sweet, pungent, benzene like odor. Class IB Flammable liquid.	OSHA PEL 100 ppm as 8 Hr. TWA. STEL 150 ppm OSHA Ceiling of 300 ppm, 500 Peak ACGIH TLV of 50 ppm as 8 Hr. TWA.	Fatigue and weakness. Confusion, euphoria, dizziness, and headache. Dilated pupils and water eyes.	Irrigate eyes immediately with water. Soap wash skin promptly. Provide respiratory support. Seek medical attention immediately.

TABLE 1: POTENTIAL CONTAMINANTS

Potential Contaminant	Description	Exposure Limits	Signs and Symptoms	First Aid
Ethylbenzene	Colorless liquid with an aromatic odor. Class IB Flammable Liquid.	OSHA PEL 100 ppm as 8 Hr. TWA OSHA 15-min STEL 125 ppm	Irritant to eyes, nose and respiratory system. Headache, dermatitis and narcosis.	Irrigate eyes immediately with water. Soap wash skin. Provide respiratory support. Seek medical attention immediately.
1,2-Dichloroethene, not reported as contaminant but possible.	Colorless liquid with a slightly acrid, chloroform-like odor. Class IB flammable liquid.	OSHA PEL 100 ppm as 8 Hr. TWA, Ceiling of 100 ppm.	Irritation to eyes and respiratory system. Central nervous system depression.	Irrigate eyes immediately with water. Soap wash skin. Provide respiratory support. Seek medical attention immediately.
1,2-Dichloroethane	Colorless, oily liquid with a chloroform-like odor. Class IB flammable liquid.	OSHA PEL 100 ppm as 8 Hr. TWA, ACGIH 30-MIN EXCURSION LIMIT 300 ppm	Skin irritant, CNS depression, liver, kidney, and lung damage.	Move to fresh air and call emergency medical care. Irrigate eyes or skin immediately with water. Remove and isolate clothing and shoes at site. Provide respiratory support if necessary.
Benzene, not reported as contaminant but possible based on spent fuels, solvents and thinners.	Colorless to light-yellow liquid with an aromatic odor. Class IB Flammable liquid.	OSHA PEL 1 ppm as 8 Hr. TWA OSHA 15-min STEL 5 ppm	Irritant to eyes, nose, and respiratory system. Giddiness, headache, nausea, and staggered gait. Fatigue, anorexia and lassitude. Dermatitis. Bone marrow depression.	Irrigate eyes immediately with water. Wash skin promptly with soap and water. Provide respiratory support. Seek medical attention immediately.

TABLE 1: POTENTIAL CONTAMINANTS

Potential Contaminant	Description	Exposure Limits	Signs and Symptoms	First Aid
Dioxin and Furans	Thought to be incinerator ash remains brought in from other locations on site. Reported in ppb levels, will be sampled for.	None established. Literature recommends picogram per meter cubed quantities.	Irritant to eyes and skin, allergic dermatitis, chloracne, GI distress. Potential human carcinogen.	Irrigate eyes immediately with water. Soap wash skin promptly. Provide respiratory support. Seek medical attention immediately.
Vinyl Chloride, not reported as contaminant but possible as breakdown product of solvents and fuels.	Colorless gas or liquid below 56 °F with a pleasant odor at high concentrations. Human carcinogen, flammable gas	OSHA PEL 1 ppm, Ceiling 5 ppm requires compliance with 29 CFR 11910.1017 for 0.5 ppm (TWA) exposure.	Weakness, abdominal pain and pallor skin color.	Provide respiratory support and immediate medical attention.
Tetrachloroethene (PCE), not reported as contaminant but possible.	Colorless liquid with a mildly sweet chloroform-like odor. Noncombustible liquid, but decomposes in a fire to hydrogen chloride and phosgene.	OSHA PEL 100 ppm as 8 Hr. TWA ACGIH TLV of 50 ppm as 8 Hr. TWA	Eye, nose, and throat irritant. Nausea, flushed face, vertigo, dizziness, incoherence, headache, skin erythema, liver damage, Potential occupational carcinogen.	Irrigate eyes immediately with water. Soap wash skin promptly. Provide respiratory support. Seek medical attention immediately.

TABLE 2: PERSONNEL NAMES AND TELEPHONE NUMBERS

<u>Contact</u>	<u>Person or Agency</u>	<u>Telephone</u>
Law Enforcement	Base Security	(601) 871-2222
Fire Dept	Base Fire Dept	(601) 871-2333 or 911
Ambulance Service	Contract Ambulance Service	(601) 871-2333 or 911
Robert Hlavacek	MK Program Manager	(803) 554-9367
Scott Newman	MK Senior Project Manager	(803) 554-9369
XXX XXX	Site Project Manager	Office: (601) xxx-xxxx
XXX XXX	MK Site Safety and Health Officer	Office: (601) xxx-xxxx
Han Maung	MK Project Engineer	Office: (216) 523-3422
XXX	MK Project Controls onsite	
XXX	MK Quality Control onsite	
XXX	MK General Superintendent	
William Piispanen	MK Health and Safety Program Manager	(208) 386-5930
Art Conrad	SouthDiv Project Manager	(803) 743-0520
Gordon Crane	Environmental Programs Manager	(601) 871-2485
Poison Control Center	National Poison Control Center	(800) 492-2414
CHEMTRAC	Chemical spill or leak emergencies	(800) 424-9300
National Response Center	National Response Center	(800) 424-8802
Regional USEPA	USEPA Region IV, USEPA	(404) 347-4727
RCRA Hotline		(800) 424-9346
Hospital	Gulfport Memorial Hospital	(601) 863-1441

TABLE 3: TRAINING REQUIREMENTS

Identifier	Location	40 Hr. Haz. Waste	Haz. Waste Annual Ref.	Haz. Waste Supervisor	Safety Mtg.	Haz. Com.	CPR First Aid	Respiratory Protection	Confined Space	Site Specific	POD, Pre & Post Entry Brief	Other
Excavation and Drum/Debris Removal.	Sites 1, 4 and 5	Y	Y	Y	Y	Y	Y	Y	Y ¹	Y	Y	Y ^{2,3}
Drum/Debris Handling and Sampling and Soil Sampling and Analysis	Sites 1, 4 and 5	Y	Y	Y	Y	Y	Y	Y	Y ¹	Y	Y	Y ^{2,3}
Surveying	Sites 1, 4 and 5	24 hour only	N	N	N	Y	N	N	N	Y	N	N
Transport and Disposal	Sites 1, 4 and 5	N	N	N	N	Y	N	N	N	Y	N	Y ³

Y = Yes, N = No

Notes: 1 - Excavations greater than 5 feet in depth should be treated as permit required confined spaces until initial atmospheric monitoring proves it can be downgraded to non permit required confined space and engineering controls on excavation design are in place.

2 - Competent person per 29 CFR 1926, Subpart P, Excavations.

3 - 49 CFR Part 172 Subpart H for personnel required to classify, mark, select packaging, inspect, load and transport hazardous materials.

TABLE 4: SELECTION OF PERSONAL PROTECTIVE EQUIPMENT

PPE	Level D	Modified Level D	Level C	Level B
Coveralls or other approved working apparel	Yes	Optional*	Optional	Optional
Chemical-resistant clothing (coveralls; hooded, one- or two-piece chemical-resistant coveralls)		Yes		
Chemical-resistant clothing (coveralls; hooded one- or two-piece chemical splash suit; chemical-resistant hood and apron; disposal chemical-resistant coveralls)			Yes	
Chemical-resistant clothing (coveralls and long-sleeved jacket; one- or two-piece chemical splash suit; disposal chemical-resistant one-piece suit)				Yes
Boots, leather or chemical resistant, steel protective toe (29 CFR 1926.28, 1910.136 and ANSI Z41-1991).	Yes			
Boots (inner), chemical resistant, steel protective (29 CFR 1926.28, 1910.136 and ANSI Z41-1991).		Yes	Yes	Yes
Boot covers (outer), chemical resistant (disposable)		Optional	Optional	Optional
Safety glasses or chemical splash goggles (29 CFR 1910.133, ANSI Z87.1-1989, and 1926.102)	Yes	Yes	Yes *1	
Face shield (29 CFR 1910.133, ANSI Z87.1-1989, and 1926.102)	Optional	Optional	Optional	Optional
Gloves (cotton/leather)	Optional			
Gloves (inner), chemical resistant or liners		Optional	Yes	Yes
Gloves (outer), chemical resistant		Yes	Yes	Yes
Long underwear		Optional	Optional	Optional
Hardhat (29 CFR 1926.100, 1910.135, ANSI Z89.1-1969 and ANSI Z89.2-1971)	Yes	Yes	Yes	Yes
Positive pressure, full-facepiece with nose cup, self-contained breathing apparatus (SCBA) or positive pressure, supplied-air respirator with escape SCBA (MSHA or NIOSH approved) (Note: escape SCBA may not be required)				Yes
Air-purifying respirator, half-face or full face with suitable cartridge (MSHA or NIOSH approved)			Yes	

* Optional requirements to be determined by MK SSHO based on Activity Hazard Analysis (AHA).

*1 - not required with full face APR

**TABLE 5: MINIMUM PERSONAL PROTECTIVE EQUIPMENT
REQUIREMENTS BY TASK**

Site	Activity	PPE
Sites 1,4 and 5 Soil Boring and Sampling	Push sampling using geoprobe or equivalent.	1. Modified Level D.
Sites 1, 4 and 5 Excavations	<ol style="list-style-type: none"> 1. Configure and set up work areas. 2. Clearing and grubbing; clear surface debris. 3. Clear 2 foot depths with probe and metal detector. 4. Excavate cleared 2 foot zone (hand and mechanical). 5. Excavate to uncover confirmed drum or large debris. 	<ol style="list-style-type: none"> 1. Level D, modify where necessary 2. Level D, modify where necessary 3. Level C, modify where necessary based on air monitoring and visual inspection. 4. Level C, modify where necessary based on air monitoring and visual inspection. 5. Level B, Use Level C for mechanical excavation.
Sites 1, 4 and 5 Drum and Debris Removal	<ol style="list-style-type: none"> 1. Hand excavate to expose drum/debris, Check integrity of drums or containers. 2. Attach clamping device, place in overpack container. 3. Place on spill pallet and transfer to temporary staging. 	<ol style="list-style-type: none"> 1. Level B, downgrade if material contents identified and Level C is acceptable protection. 2. Level B, downgrade per 1 above. 3. Level B, downgrade per 1 above.
Sites 1, 4 and 5 Drum and Debris Processing	<ol style="list-style-type: none"> 1. Sample Drums and Debris. 2. Segregate Drums and Debris. 3. Transport for Disposal. 	<ol style="list-style-type: none"> 1. Level B. 2. Level C, modify depending on sample results. 3. Level D.
Decontamination	Spray and wash at Decon facility	Level C
Site 1, 4 and 5, Surveying	Conduct land surveys before excavation; at completion of excavation; and at completion of backfilling and compaction	Level D, no modifications anticipated as necessary
Sites 1, 4 and 5 Soil Sampling, Backfill, and Site Restoration.	<ol style="list-style-type: none"> 1. Sample excavated soil and bottom of excavations. 2. Backfill and site restoration. 	<ol style="list-style-type: none"> 1. Modified Level D, modify where necessary. 2. Level D.

Note: 1) Level C APR = HEPA/Organic Vapor Cartridges; 2) Level B outer gloves = Viton gloves; 3) Level B disposable coveralls = Saranex laminated or equivalent; 4) Level B boots = PVC nitrile or neoprene II. Level C PPE = Polycoated tyvek, nitrile outer gloves, chemical resistant boots (PVC nitrile or neoprene), disposable latex may be satisfactory during initial excavation to expose contact.

TABLE 6: AIRBORNE CONTAMINANT RESPONSE CRITERIA

Contaminant or Chemical	Level	PPE	Monitoring Frequency	Actions Taken
Volatile organic compounds	No more than 5 ppm above background, no benzene or vinyl chloride detected above 0.5 ppm (Action Level).	Level D or Modified Level D. See Table 5 for PPE requirements by task.	Prior to each shift and reentry following 30 minute vacancy or as described in Section 7 of this plan.	Continue periodic monitoring or maintain continuous monitoring dependent on task.
	Greater than 5 ppm above background but less than 10 ppm above background. No benzene or vinyl chloride detected above 0.5 ppm (Action Level).	Level D or Modified Level D. See Table 5 for PPE requirements by task.	At least once every hour, when change in operation occurs or as described in Section 7 of this plan.	Monitor for benzene and vinyl chloride, continue periodic monitoring or maintain continuous monitoring dependent on task.
	Greater than 10 ppm above background or benzene and/or vinyl chloride detected greater than 0.5 ppm or action level exceeded for any organic.	Level C or B PPE as specified by MK SSHO. See Table 5 for PPE requirements by task.	Continuous.	Stop work, evacuate exclusion zone and notify MK SSHO. Size up situation and re-evaluate re-entry requirements.

TABLE 6: AIRBORNE CONTAMINANT RESPONSE CRITERIA

Contaminant or Chemical	Level	PPE	Monitoring Frequency	Actions Taken
Oxygen	Less than 19.5% or greater than 22%	Level B per concurrence by MK SSHO.	Prior to each shift and reentry following 30 minute vacancy or as described in Section 7 of this plan.	Stop work, evacuate exclusion zone and notify MK SSHO. Size up situation and re-evaluate re-entry requirements.
% LEL	Equal to or greater than 10%.	Level B PPE per concurrence by MK SSHO.	Prior to each shift and reentry following 30 minute vacancy or as described in Section 7 of this plan.	Stop work, evacuate exclusion zone and notify MK SSHO. Size up situation and re-evaluate re-entry requirements.

**TABLE 7: SUGGESTED FREQUENCY OF PHYSIOLOGICAL MONITORING FOR
FIT AND ACCLIMATIZED WORKERS**

ADJUSTED TEMPERATURE^b	IMPERMEABLE ENSEMBLE
90°F (32.2°C) or above	After each 15 minutes of work
87.5°-90°F (30.8°-32.2°C)	After each 30 minutes of work
82.5°-87.5°F (28.1°-30.8°C)	After each 60 minutes of work
77.5°-82.5°F (25.3°-28.1°C)	After each 90 minutes of work
72.5°-77.5°F (22.5°-25.3°C)	After each 120 minutes of work

For work levels of 250 kilocalories/hour.

^b Calculate the adjusted air temperature (ta adj) by using this equation:

$$ta \text{ adj } ^\circ F = ta^\circ F + (13 \times \% \text{ sunshine}).$$

Measure air temperature (ta) with a standard mercury-in-glass thermometer, with the bulb shielded from radiant heat. Estimate percent sunshine by judging what percent time the sun is not covered by clouds that are thick enough to produce a shadow.

(100 percent sunshine = no cloud cover and a sharp, distinct shadow: 0 percent sunshine = no shadows.)

TABLE 8: AIR MONITORING AND SAMPLING REQUIREMENTS

Site	Activity	Monitor					Sample
		VOC	Oxygen and, % LEL	Perimeter (VOCs)	Noise	Heat & Cold Stress	VOC
Sites 1, 4 and 5 Excavations	1. Configure and set up work areas.	1.O	1.N	1.N	1.N	1.O	1.N
	2. Clear and grubbing; surface debris.	2.O	2.O	2.N	2.O	2.O	2.N
	3. Clear 2 foot depths with probe and metal detector.	3.Y	3.Y	3.N	3.O	3.O	3.O
	4. Excavate cleared 2 foot zone (hand and mechanical).	4.Y	4.Y	4.O	4.O	4.O	4.O
	5. Excavate to uncover confirmed drum or large debris.	5.Y	5.Y	5.O	5.N	5.O	5.O
Sites 1, 4 and 5 Drum and Debris Removal	1. Hand excavate to expose drum/debris, Check integrity of drums or containers.	1.Y	1.Y	1.O	1.N	1.O	1.O
	2. Attach clamping device, place in overpack container.	2.O	2.O	2.N	2.O	2.O	2.O
	3. Place on spill pallet and transfer to temporary staging.	3.O	3.O	3.N	3.N	3.O	3.O

TABLE 8: AIR MONITORING AND SAMPLING REQUIREMENTS

Site	Activity	Monitor					Sample
		VOC	Oxygen and, % LEL	Perimeter (VOCs)	Noise	Heat & Cold Stress	VOC
Sites 1, 4 and 5 Drum Processing	1. Sample Drums.	1.Y	1.Y	1.N	1.N	1.O	1.O
	2. Segregate Drums.	2.N	2.N	2.N	2.N	2.O	2.N
	3. Transport for Disposal.	3.N	3.N	3.N	3.N	3.O	3.N
Sites 1, 4 and 5 Soil Sampling, Backfill and Site Restoration	1. Sample excavated soil and bottom of excavations.	1.Y	1.Y	1.N	1.N	1.O	1.N
	2. Backfill and site restoration.	2.N	2.N	2.N	2.O	2.O	2.N

Y = Yes, O = Optional at discretion of MK SSHO, N = Not required

Notes: 1 = When obtaining soil samples in excavations deeper than 5 feet, treat the excavation as permit required confined space until it has been assessed by atmospheric monitoring that the atmosphere is safe and it can be downgraded to non permit required confined space. Engineering controls must be in place to safeguard excavation from collapse.

Note 2 = no air monitoring is anticipated as necessary for demolition, structure relocation and land surveying.

FIGURES

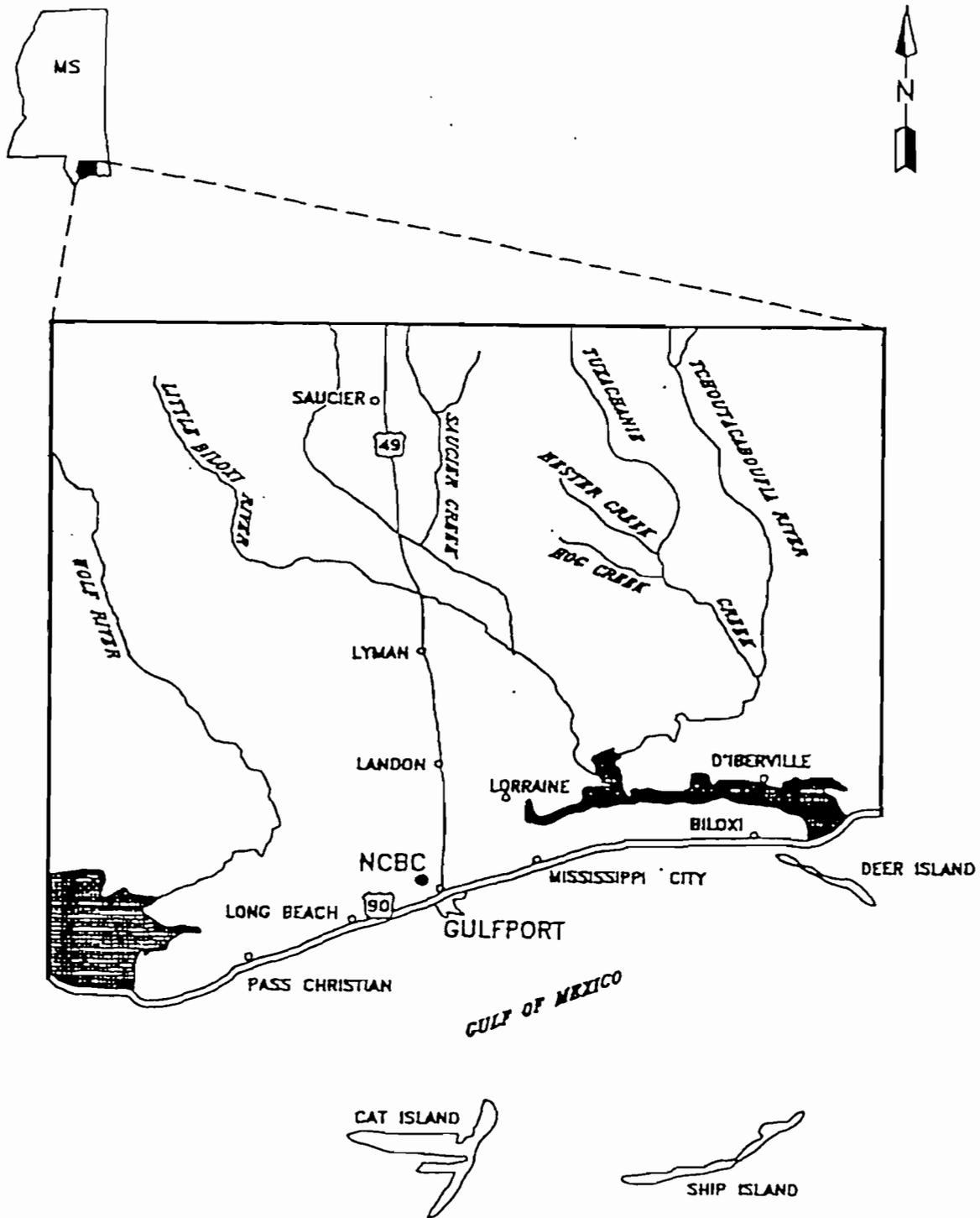


FIGURE 1
CBC GULFPORT VICINITY MAP

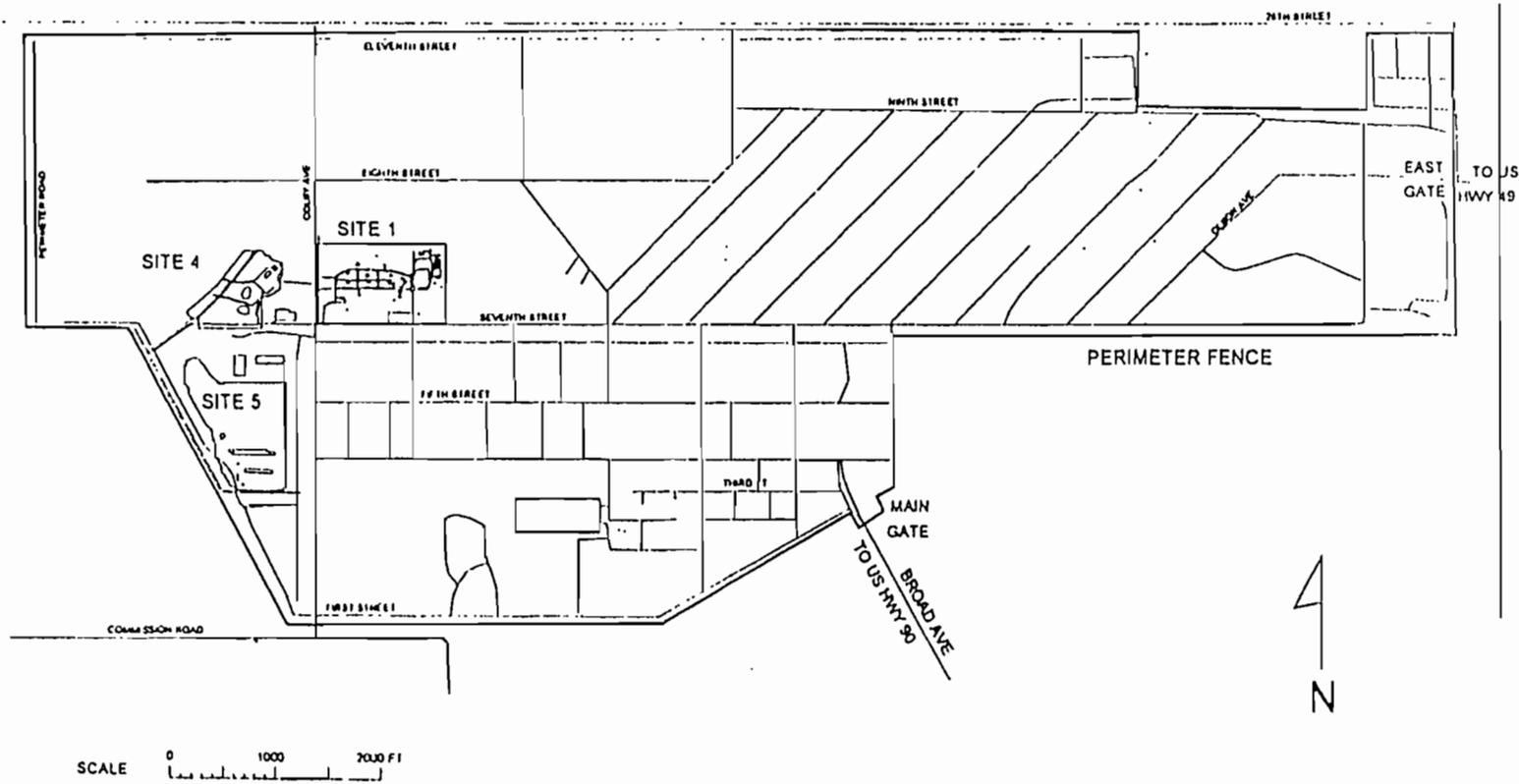


FIGURE 2
CBC GULFPORT SITE MAP

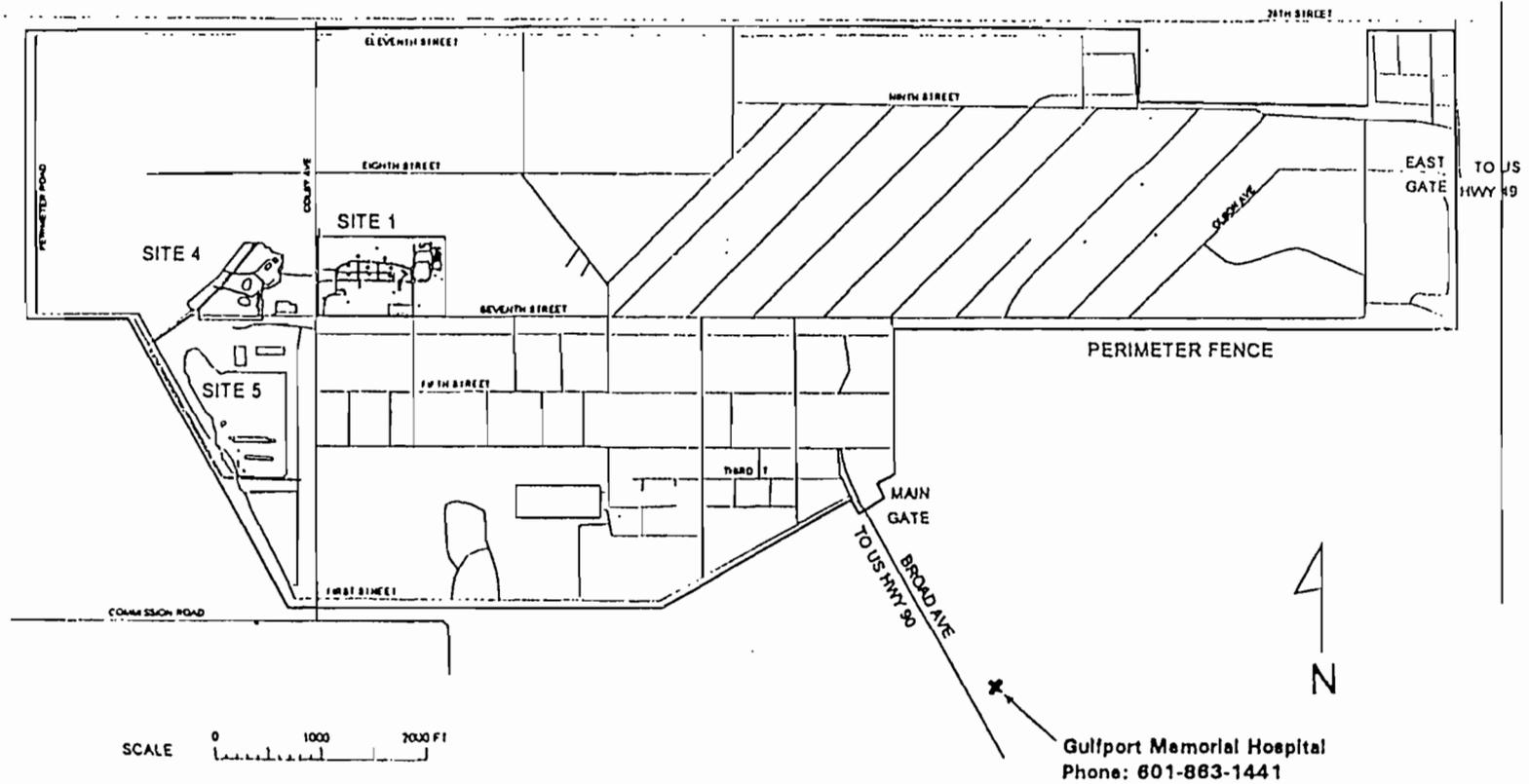


FIGURE 3.
HOSPITAL ROUTE MAP

FIGURE 6: SSHO DAILY LOGBOOK REPORT

Date _____ Report Number _____

Location(s) Work Activity and # Employees: _____

Weather: Wind speed _____ Wind direction _____
Temp. & Pressure _____ Precipitation _____
Amount sun _____

Monitoring conducted:

<u>Location</u>	<u>Sampled for</u>	<u>Instrument used</u>	<u>Results</u>	<u>Sampled By/Time</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Levels of Protection: _____

Problems or Unusual Situations: _____

Correspondence: _____

Other Comments: _____

MK SSHO Printed Name: _____ Signature _____ Date _____

FIGURE 7: SSHP WEEKLY INSPECTION CHECKLIST

SURVEILLANCE NO. _____

SURVEILLANCE NO:		ACTIVITY:				PROJECT NO:	
DATE:		LOCATION:				SURVEYED ORGANIZATION:	
		SITE/AREA CONTACT:		RESPONSIBLE MANAGER:		PRIME:	
						SUBTIER:	
ITEM NO.	DESCRIPTION OF SURVEYED ITEMS	N/A SAT UNSAT	DESCRIPTION OF DISCREPANCY/ NON- COMPLIANCE	ACT OR COND	CAT	REQUIRED ABATEMENT DATE	CORRECTIVE ACTION TAKEN AND DATE ABATEMENT COMPLETED
	Section 1						
1	Scope of work and site contaminants accurately described?						
	Section 2						
2	Activity hazard analysis prepared for each major work phase? (EM 385-1-1, Section 01.A.09)						
3	All hazards including chemical and physical adequately described?						
	Section 3						
4	Roles and responsibilities described and personnel roster up-to-date?						
	Section 4						
5	All site personnel completed required training?						
6	Training documented and records on site?						
	Section 5						
7	All site personnel completed initial medial qualification?						
	Section 6						

FIGURE 7: SSHP WEEKLY INSPECTION CHECKLIST

SURVEILLANCE NO. _____

ITEM NO.	DESCRIPTION OF SURVEYED ITEMS	N/A SAT UNSAT	DESCRIPTION OF DISCREPANCY/ NON- COMPLIANCE	ACT OR COND	CAT	REQUIRED ABATEMENT DATE	CORRECTIVE ACTION TAKEN AND DATE ABATEMENT COMPLETED
8	PPE available and in good condition?						
9	PPE work per SSHP and/or MK SSOH direction?						
10	Personnel trained in proper use, limitations, and inspection of PPE?						
11	PPE inspected per SSHP?						
12	PPE donning/doffing procedures in place?						
13	Written SOP available describing respirator selection and use?						
Section 7							
14	Air monitoring conducted per SSHP?						
15	Monitoring equipment properly maintained and calibrated?						
16	Employees notified of monitoring results?						
17	Chain of custody prepared and maintained for all samples?						
Section 4 and 8							
18	Weekly safety meeting held?						
19	Pre entry briefs held? and signature sheet completed?						
20	Haz Com programs in place?						
21	Competent person evaluates excavation?						
22	Personnel responsible for work maintain control of area?						
Section 9							
23	Work zone maps prepared and updated?						

FIGURE 7: SSHP WEEKLY INSPECTION CHECKLIST

SURVEILLANCE NO. _____

ITEM NO.	DESCRIPTION OF SURVEYED ITEMS	N/A SAT UNSAT	DESCRIPTION OF DISCREPANCY/ NON- COMPLIANCE	ACT OR COND	CAT	REQUIRED ABATEMENT DATE	CORRECTIVE ACTION TAKEN AND DATE ABATEMENT COMPLETED
24	Maps posted near work area and stored in field master copy of SSHP						
25	Traffic patterns established and rules observed?						
Section 10							
26	Inspections performed of all personnel, clothing and equipment leaving exclusion zone?						
27	All materials decontaminated prior to existing contamination reduction zone?						
28	Decon stations properly established?						
29	Proper personal hygiene practices observed?						
30	Decon solutions collected and properly disposed of?						
Section 4 and 11							
31	At least two employees on each shift trained in CPR and first aid and blood borne pathogens?						
32	First aid kit, biohazards control kit and eyewash/drench at each work site?						
33	All first aid and medical cases promptly reported to MK SSHO?						
Section 12							
34	All personnel trained on Emergency Response Plan and Contingency Procedures?						
35	Emergency pre-planning addressed in safety meeting?						

FIGURE 7: SSHP WEEKLY INSPECTION CHECKLIST

SURVEILLANCE NO. _____

ITEM NO.	DESCRIPTION OF SURVEYED ITEMS	N/A SAT UNSAT	DESCRIPTION OF DISCREPANCY/ NON- COMPLIANCE	ACT OR COND	CAT	REQUIRED ABATEMENT DATE	CORRECTIVE ACTION TAKEN AND DATE ABATEMENT COMPLETED
36	List of emergency services/contact is up to date and posted?						
37	Assembly points identified and communicated to employees?						
38	Evacuation routes established and communicated to employees?						
39	Communication methods are adequate						
40	All drills, exercises, and emergencies critiqued?						
41	All emergencies promptly reported to MK SSHO?						
Section 13							
42	MK SSHO maintains project log book?						
43	Daily reports completed by MK SSHO?						
44	Daily inspections completed by MK SSHO?						
45	Weekly reports prepared by MK SSHO?						
46	Records of all injuries and illnesses maintained by SSHO?						
Section 14							
47	Work plans available and up to date?						
48	SOPs developed as needed?						
Section 15							
49	Two-way radios available per SSHP?						
50	Cellular telephone available as needed?						
51	Emergency alarms available and personnel trained on what actions to take?						

FIGURE 7: SSHP WEEKLY INSPECTION CHECKLIST

SURVEILLANCE NO. _____

ITEM NO.	DESCRIPTION OF SURVEYED ITEMS	N/A SAT UNSAT	DESCRIPTION OF DISCREPANCY/ NON- COMPLIANCE	ACT OR COND	CAT	REQUIRED ABATEMENT DATE	CORRECTIVE ACTION TAKEN AND DATE ABATEMENT COMPLETED
52	Drills and exercises conducted to test communication methods?						
Section 16							
53	Spill response measures reviewed with personnel?						
54	Suitable quantities of spill supplies available?						
55	Spills promptly reported to MK SSHO?						
56	Operations arranged to minimize spills?						
Section 17							
57	Confined space requirements of 385-1-1, Section 06.0.01 followed? Personnel trained?						

Inspection Performed By: _____ Date: _____

Abatement Accepted By: _____ Date: _____

ATTACHMENT - A

ACTIVITY HAZARD ANALYSIS (AHA)

ACTIVITY HAZARD ANALYSIS (AHA)

Activity: Configure and set up work areas, clearing and grubbing.		Analyzed By/Date: Frank J. Petrik 10/17/95	Reviewed By/Date: _____
1.0 Principal Steps	Potential Hazards	Recommended Controls	
<p>1.1 Walk area down, establish work zone and laydown areas.</p> <p>1.2 Clearing and grubbing, and clear surface debris.</p>	<p>1.1a.Struck by and struck against physical objects during loading and unloading operations and setup.</p> <p>1.1b.Biological; weeds, snakes, spider's; other plant life.</p> <p>1.1c.Contact by inhalation, direct contact or ingestion of chemical contaminants.</p> <p>1.2a.Struck by and struck against physical objects during clearing and grubbing, and clearing debris. Ergonomic injuries resulting from debris handling.</p> <p>1.2b.Contact with debris resulting in inhalation, direct contact or ingestion of chemical contaminants.</p>	<p>1.1a.Preplan work layout (Work Zone Map completed and posted by Subcontractor, also emergency numbers and hospital map). Backup alarms on all motorized heavy equipment. Use correct hand and power tools for job and good housekeeping practices.</p> <p>1.1b. MK SSHO to assess Work Zone for any specific biological hazards and communicate findings at POD and/or Pre Entry Briefs.</p> <p>1.1c. Level D PPE expected. MK SSHO to visually inspect area for evidence of chemical contaminants and conduct general area scans for VOCs using PID and FID.</p> <p>1.2a. Preplan work layout (Work Zone Map completed and posted by Subcontractor). Backup alarms on all motorized heavy equipment. Use correct handtools and power equipment for the job. MK SSHO and MK General Superintendent shall review EM 385-1-1 Section 31 on safeguards and recommended practices where applicable and communicate requirements at POD and/or Pre-Entry Briefs. Insure safe lifting and handling procedures, mechanize where possible. Insure adequate number of personnel assigned on manual lifting and moving operations.</p> <p>1.2b. Level D PPE (modify where necessary) for clearing surface debris if necessary. MK SSHO to visually inspect area for evidence of chemical contaminants and conduct general area scans for VOCs using PID/FID.</p>	
1.3 Equipment to be Used	Inspection Requirements	Training Requirements	
<p>1.4 Heavy equipment for loading and hauling. Hand and power tools.</p>	<p>Daily inspection by Sub, prior to use per manufacturer's recommendation. Initial safety inspection of all Subcontractor equipment to be completed by MK SSHO.</p>	<p>OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs and OSHA Hazard Communication.</p>	

ACTIVITY HAZARD ANALYSIS (AHA)

Activity: Clear two foot depths and excavate.		Analyzed By/Date: Frank J. Petrik 10/17/95	Reviewed By/Date:
2.0 Principal Steps	Potential Hazards	Recommended Controls	
2.1. Clear two foot depths. 2.2. Initial excavations completed by hand to locate underground debris/drums and containers 2.3. Mechanical excavation.	Contact with underground utilities, and other objects not expected in the burial area. Inhalation, direct contact or ingestion of chemical, biological and physical agents. (Physical includes ionizing radiation) Struck by and struck against physical objects during excavations.	Base Excavation and Trenching permit required. Confirm and mark location of underground utilities in excavation areas. Use metal detectors to estimate size and depth of buried containers and drums if determined to be necessary. Emergency procedures and equipment checked and in place. Level C PPE during initial clearance checks and excavation, upgrade per MK SSHA direction. MK SSHA to conduct periodic air monitoring for VOCs, combustible gas and oxygen. Personnel to use non sparking probes and non sparking shovels. Maintain clear area around heavy equipment and fit employees working near heavy equipment with high visibility vests. Competent person shall inspect excavation on a periodic basis.	
2.4 Equipment to be Used	Inspection Requirements	Training Requirements	
2.5 Non sparking probes, non sparking shovels, heavy equipment and handtools, metal detector.	Daily by Sub, prior to use per manufacturer's recommendation.	OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication, Respirator and Operator Training.	

ACTIVITY HAZARD ANALYSIS (AHA)

Activity: Handling and Staging of Debris		Analyzed By/Date: Frank J. Petrik 10/17/95	Reviewed By/Date:
3.0 Principal Steps	Potential Hazards	Recommended Controls	
3.1 Complete final clean-off of debris. 3.2 Load debris onto staging area.	Physical hazards related to the lifting, moving and loading of debris. Direct contact with any contaminated material not readily removable from surface.	Preplan the staging area layout and flow of material. Competent person shall preplan all lifts if necessary and verify safe loading factors and correct rigging for equipment. Hoisting, rigging and lifting equipment inspected prior to use. Level C PPE, upgrade or downgrade per MK SSHO direction.	
3.3 Equipment to be Used	Inspection Requirements	Training Requirements	
3.4 Heavy equipment, slinging and rigging, overpack containers, handtools.	Daily by Sub, prior to use per manufacturer's recommendation.	OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication and Respirator.	

ACTIVITY HAZARD ANALYSIS (AHA)

Activity: Drum and debris removal from excavation.		Analyzed By/Date: Frank J. Petrik 10/17/95	Reviewed By/Date:
4.0: Principal Steps	Potential Hazards	Recommended Controls	
<p>4.1. Hand excavate to expose drum/debris. Check for identification and integrity of drums or containers.</p> <p>4.2. Attach clamping device, lift and place in overpack containers, place on spill pallet and transfer to temporary staging.</p>	<p>Inhalation, direct contact or ingestion of chemical, biological and physical agents. (Physical includes ionizing radiation). Fire, pressurized release of drum contents, or explosion.</p> <p>Struck by and struck against physical objects during drum/container removal.</p>	<p>Preplan the staging area layout and flow of material. Switch to Level B once contact with confirmed underground anomaly. MK SSHO to conduct periodic or continuous air monitoring for VOCs, combustible gas and oxygen. MK SSHO may need to survey object for ionizing radiation, although this is unlikely. Personnel to use non sparking probes and non sparking shovels. Faceshield required if container has evidence of bulging or pressurization. Eyewash/drench in place.</p> <p>Competent person shall preplan all lifts if necessary and verify safe loading factors and correct rigging for equipment. Hoisting, rigging and lifting equipment shall be inspected prior to use by competent.</p> <p>Maintain clear area around heavy equipment and fit employees working near heavy equipment with high visibility vests. Competent person shall inspect excavation stability on a minimum daily basis.</p>	
4.3: Equipment to be Used	Inspection Requirements	Training Requirements	
4.4 Non sparking probes, non sparking shovels, heavy equipment and handtools, metal detector.	Daily by Sub, prior to use per manufacturer's recommendation.	OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication, Respirator and Operator Training.	

ACTIVITY HAZARD ANALYSIS (AHA)

Activity: Decontamination Facility Operations.		Analyzed By/Date: Frank J. Petrik 10/17/95	Reviewed By/Date:
5.0 Principal Steps	Potential Hazards	Recommended Controls	
<p>5.1 Receive and place material at facility.</p> <p>5.2 Decontaminate Equipment using high pressure wash or hand scrubbing.</p>	<p>5.1. Struck by and struck against. Material handling concerns.</p> <p>5.2. Contact with contaminated material and cross contamination; inhalation of airborne aerosols; contact with high pressure wash stream; unexpected movement of material to be decontaminated.</p>	<p>5.1. Site Decontamination Facility to provide isolation and controlled access. MK SSHO and Project Supervisor(s) to review material handling procedures to insure good practices and approved equipment is used which conforms to OSHA and EM-385 Section 28.1 requirements.</p> <p>5.2. Level C PPE with faceshield to include waterproof clothing and boots, modify per MK SSHO review. Secure items to be decontaminated. Visual inspect integrity of Facility's containment liners and containers used for waste waters. Equipment and provisions for personnel decontamination shall be included at this facility.</p> <p>Note: Facilities and procedures for personnel respirator cleaning, drying and storage shall be provided and approved by MK SSHO.</p>	
5.3 Equipment to be Used	Inspection Requirements	Training Requirements	
<p>5.4 High pressure wash with soap solution; other decontamination solutions; steam cleaner; scrub brushes; material handling equipment and securing equipment.</p>	<p>Before use per manufacturers recommendation. Inspect containment integrity daily before use.</p>	<p>OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication, and Respirator.</p>	

ACTIVITY HAZARD ANALYSIS (AHA)

Activity: Backfilling and Site Restoration.		Analyzed By/Date: Frank J. Petrik 7/27/95	Reviewed By/Date:
6.0	Principal Steps	Potential Hazards	Recommended Controls
6.1	Offload, spread, compact and reseed area.	6.1a. Contact with airborne material, may present a biological hazard. 6.1b. Struck by and struck against physical objects during offloading and spreading material.	6.1a. Dust Controls required to include wetting fill material. Level D PPE expected, upgrade if necessary. Dust controls and respirator (dust mask) recommended during spreading and covering with cover material (spray on straw or other material). 6.1b. Preplan work layout. Backup alarms on all motorized equipment. Keep area clear around heavy equipment. Personnel shall wear high visibility vests when working around heavy equipment and/or traffic areas.
6.2	Equipment to be Used	Inspection Requirements	Training Requirements
6.3	Heavy equipment, handtools, sodding equipment if applicable, and straw spreader.	Daily, prior to use per manufacturer's recommendation.	OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication, Respirator.

ACTIVITY HAZARD ANALYSIS (AHA)

Activity: Field Sampling Activities for Soil.		Analyzed By/Date: Frank J. Petrik 7/27/95	Reviewed By/Date:
7.0. Principal Steps	Potential Hazards	Recommended Controls	
7.1. Hand augering (in excavations)	7.1. Collapse of excavation, entrance and egress, contaminated soil contact, contact with underground utility or piping/ mechanical system.	7.1. Sampler requires approval from competent person to enter excavation if deeper than 5 foot. Atmospheric conditions in excavation checked prior to and during sampling. Modified Level D PPE expected, upgrade per MK SSHO assessment. Analyze for potential contact with any underground utility or mechanical service. Note: Excavation Permit must be valid. Review Field Sampling Kit MSDSs if applicable.	
7.2. Hand augering (non excavated areas)	7.2. Contaminated soil contact, contact with utility or piping/ mechanical system.	7.2. Analyze for potential contact with any underground utilities or mechanical services. Modified Level D PPE expected, upgrade per SSHO review. Review Field Sampling Kit MSDSs if applicable.	
7.3. Containerized Liquids Sampling (known contents)	7.3. Contaminated liquid contact.	7.3. Modified Level D PPE or as appropriate for content hazards.	
7.4. Sampling Equipment Decontamination	7.4. Contact with contaminated material, also direct contact with decontamination solutions (weak nitric acid and acetone)	7.4. Modified Level D PPE with chemical goggles and gloves.	
7.5 Equipment to be Used	Inspection Requirements	Training Requirements	
7.6. Soil auger, stainless steel spoons, buckets, field sampling kits and decontamination solutions.	Per manufacturers recommendation. Core drilling equipment if used must be inspected daily. Preplan waste handling.	OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication, Respirator. DOT 181 certification for person supervising the preparation of contaminated materials for offsite shipment.	

ACTIVITY HAZARD ANALYSIS (AHA)

Activity: Drum and container sampling and disposal of "identifiable" drums and containers.		Analyzed By/Date: Frank J. Petrik 10/17/95	Reviewed By/Date:
8.0 Principal Steps	Potential Hazards	Recommended Controls	
<p>8.1 Conduct visual inspection of drum. 8.2 Prepare for sampling. 8.3 Open drum. 8.4 Obtain sample. 8.5 Secure drum and stage. 8.6 Load for final disposition.</p>	<p>8.1 Inhalation or direct contact with contaminants if drum breached. Unintentional drum movement. 8.2 None identified. 8.3 Inhalation or direct contact with drum contents, sparks and static electricity. 8.4 Same as 8.3. 8.5 Same as 8.3 plus loss of drum containment during transport onsite. Physical hazards during manual movement of drums. 8.6 Physical hazards during movement of drums.</p>	<p>8.1 Establish protocol for conducting visual inspection of drum, scan immediate area around drum with PID and FID and CGI/O₂ direct reading instruments and GM Survey instrument if necessary. No drum movement permitted. Insure drum has secondary containment. Level B PPE. 8.2 Preplan staging area and handling methods. Stage spill prevention equipment (adsorbent, pigs, temporary containment, overpack) and fire extinguisher(2) and eyewash/drench. 8.3 Reverify drum is not candidate for remote opening. Use non sparking tools. Assume Level B PPE, downgrade per known characterization data and MK SSHO concurrence. Monitor near drum opening using PID and FID and CGI/O₂ direct reading instruments. 8.4 Same as 8.3. Lowest downgrade on PPE is Modified Level D, chemical resistant gloves and faceshield required during sampling. Sample technique and equipment in accordance with Sampling and Analysis Plan. Grounding and bonding required on sampling equipment or per manufacturers recommendation. 8.5 Same as 8.3 during securing (closing up) of drum. Drum movement, use remote drum handling equipment when possible. Drum transport, use approved carrying platforms and secure all loads. Use approved manual moving equipment. Hoisting and rigging equipment shall be inspected by a competent person before use. 8.6 Dispose of drum per Sampling and Analysis Plan. Review material handling practices and insure all loads are secure.</p>	
8.7 Equipment to be Used	Inspection Requirements	Training Requirements	

ACTIVITY HAZARD ANALYSIS (AHA)

Activity: Drum and container sampling and disposal of "identifiable" drums and containers.		Analyzed By/Date: Frank J. Petrik 10/17/95	Reviewed By/Date:
8.8 Hand tools (non sparking type), drum handling equipment, motorized and non-motorized. Monitoring and sampling equipment.	Daily by Sub, prior to use per manufacturers recommendation including all breathing air cylinders, air supplied respirators and emergency escape cylinders.	OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication, and Respirator and/or SCBA. DOT 181 certification for person supervising the preparation of contaminated materials for offsite shipment.	

ACTIVITY HAZARD ANALYSIS (AHA)

Activity: Drum and container sampling and disposal of "unidentifiable" drums and containers.		Analyzed By/Date: Frank J. Petrik 10/17/95	Reviewed By/Date:
9.0 Principal Steps	Potential Hazards	Recommended Controls	
<p>9.1 Conduct visual inspection of drum. 9.2 Move drum to Staging Area, prepare for sampling. 9.3 Open drum. 9.4 Obtain sample. 9.5 Secure drum and stage. 9.6 Load for final disposition.</p>	<p>9.1 Inhalation or direct contact with contaminants if drum breached. Unintentional drum movement. 9.2 Loss of drum containment initiated during movement and transport onsite to Staging area. Physical hazards during manual movement of drums. Inhalation or direct contact with contaminants if containment breached. 9.3 Inhalation or direct contact with drum contents, sparks and static electricity. 9.4 Same as 9.3. 9.5 Same as 9.3 plus loss of drum containment and movement during transport onsite. Physical hazards during manual movement of drums. 9.6 Physical hazards during movement of drums.</p>	<p>9.1 Establish protocol for conducting visual inspection of drum, scan immediate area around drum with PID and FID and CGI/O₂ direct reading instruments. Complete general area survey using GM-Survey Meter if necessary. No drum movement permitted. Level B PPE (Faceshield and chemical resistant protective clothing). Secondary containment shall be inspected. 9.2 Preplan staging area and handling methods. Stage spill prevention equipment (adsorbents and pigs) and fire extinguisher and eyewash/drench. For drum movement, use remote drum handling equipment when possible. For drum transport, use approved carrying platforms and secure all loads. Use approved manual moving equipment. Level B PPE. 9.3 Reverify drum is/is not candidate for remote opening. Use non sparking tools and explosive-resistant shield. Assume Level B PPE, downgrade per known characterization data and MK SSHO concurrence. Monitor near drum opening using PID and FID and CGI/O₂ direct reading instruments. 9.4 Same as 9.3. Lowest downgrade on PPE is Modified Level D, chemical resistant gloves and faceshield required during sampling. Sample technique and equipment in accordance with Sampling and Analysis Plan. Grounding and bonding required or per manufacturers recommendation. 9.5 Same as 9.3 during securing (closing up) of drum. Drum movement, use remote drum handling equipment when possible. Drum transport, use approved carrying platforms and secure all loads. Use approved manual moving equipment. 9.6 Dispose of drum per Sampling and Analysis Plan. Review material handling practices and insure all loads are secure.</p>	

ACTIVITY HAZARD ANALYSIS (AHA)

Activity: Drum and container sampling and disposal of "unidentifiable" drums and containers.		Analyzed By/Date: Frank J. Petrik 10/17/95	Reviewed By/Date:
9.7 Equipment to be Used	Inspection Requirements	Training Requirements	
9.8 Hand tools (non sparking type), drum handling equipment, motorized and non-motorized. Monitoring and sampling equipment.	Daily, prior to use per manufacturers recommendation including all breathing air cylinders, air supplied respirators and emergency escape cylinders.	OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory. 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, OSHA Hazard Communication and Respirator and/or SCBA. DOT 181 certification for person supervising the preparation of contaminated materials for offsite shipment.	

ACTIVITY HAZARD ANALYSIS (AHA)

Activity: Soil Boring using Geo Probe or equivalent.		Analyzed By/Date: Frank J. Petrik 5/31/96	Reviewed By/Date:
10.0 Principal Steps	Potential Hazards	Recommended Controls	
10.1. Establish locations and make penetrations. Obtain samples and manage any potentially contaminated soil or other waste.	<p>Contact with underground utilities and/or process piping.</p> <p>Inhalation, direct contact or ingestion of chemical, biological and physical agents possible, but not anticipated to be a concern.</p> <p>Struck by and struck against physical objects during penetrations.</p>	<p>MK Excavation and Trenching permit required. Confirm location of underground utilities in penetration areas. Emergency procedures and equipment checked and in place prior to starting work.</p> <p>Modified Level D during initial penetrations, upgrade per MK SSOH direction. Review manufacturers recommendation for face shields on operators. MK SSOH and Subcontractor to conduct periodic air monitoring for VOCs.</p> <p>Maintain clear area around soil boring equipment, barricade if necessary. Maintain good housekeeping and storage practices; load any potentially contaminated soil in approved, labeled containers and stage appropriately.</p>	
10.2 Equipment to be Used	Inspection Requirements	Training Requirements	
10.3 Soiling boring using Geoprobe or equivalent, heavy equipment and handtools.	Daily, prior to use per manufacturers recommendation. Punch equipment checks to include structural damage; loose nuts and bolts; proper tension in drives; loose and/or missing guards and covers; fluid leaks; and damaged hoses, pressure gauge and/or relief valves. Check and test all safety devices including proper function of gauges, indicator lights and control levers.	OSHA 1910.120 40-Hour Training, 3 day OJT, 8 hours Supervisory, 8 hour Refresher, Site Safety and Health Plan (Project Kickoff), POD, Pre and Post Entry Briefs, and OSHA Hazard Communication. Operators shall be trained and certified on soil boring equipment.	

ATTACHMENT - B

WORK ZONE MAPS

Note: Work Zone Maps are field prepared by the CTD Subcontractor and approved by the MK SSHO. The Excavation Subcontractor will deliver one set of the Work Zone Maps to the MK SSHO who will insert copies of the map(s) into the field master copy of this SSHP.

APPENDIX B

QUALITY CONTROL PLAN

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0.1 INTRODUCTION

The Quality Control requirements for the removal action activities associated with CBC Gulfport Delivery Order No. 0002, Statement of Work No. 09, are presented in two primary areas:

- The physical construction/removal action activities covered under this Quality Control Plan (QCP); and
- Sampling and analysis quality requirements covered under the Chemical Data Acquisition Plan (CDAP), Appendix C of the Work Plan.

0.1.1 Quality Control Plan

The QCP presented herein is structured to implement the procedures necessary to achieve and maintain a consistently high level of quality in removal action activities performed for the U. S. Navy, Naval Facilities Engineering Command Southern Division. This consistency will be accomplished through the standardization and thorough documentation of field techniques and activities for each Definable Feature of Work. This QCP is presented in a format specified by the Navy and is intended to be a working document that provides the structure for achieving a high level of confidence in the quality of Delivery Order work activities.

Definable Features of Work

The definable features of work identified for the removal action under Statement of Work #09 are presented here. They include:

- Mobilization and demobilization;
- Soil boring;
- Decontamination;
- Clearing and grubbing;
- Test trenching;
- Sampling and analysis;
- Site restoration; and
- Reports.

The Site Quality Control Supervisor (SQCS) will perform the Three Phases of Control inspections for each definable feature of work. The Testing Plan and Log, presented in Section 4.0 of this QCP, is structured to ensure that preparatory, initial and follow-up inspections are completed for each definable feature as it is performed in an area.

Preconstruction/Quality Control Meetings

To ensure that all parties performing work at CBC Gulfport fully understand the Quality

requirements established for this Delivery Order, a Coordination and Mutual Understanding Meeting will be held prior to the start of construction/removal action activities. Attendees at the meeting include the Contracting Officer (CO), or designee, the MK Project Manager, the MK Site Superintendent, and the MK SQCS. Any and all "Navy/Base" representatives that wish to attend will be afforded the opportunity to do so. Minutes of the meeting shall be prepared by the MK SQCS and signed by all meeting attendees. A copy of the meeting minutes are then provided to the Navy and MK Charleston Project Management Office (PMO).

After construction/removal action activities commence, the MK SQCS will conduct *QC Meetings* at least once every week or more frequently if appropriate. QC Meetings will be held with the MK Project Manager and superintendents, foreman, or managers responsible for upcoming work. This QC meeting may be held concurrently with the weekly construction meeting. The purpose of the QC Meeting is to review the minutes of the previous meeting, the schedule, the status of submittals, the work to be accomplished in the next two weeks and to plan any testing and documentation required, resolve any QC and production problems, and address any items that may require revising the QCP. QC Meetings will be documented, with a copy of the minutes of the meeting provided to the CO within two working days after the meeting.

Three Phases of Control

This QCP integrates the Navy's Quality Control system of the *Three Phases of Control*. These phases - Preparatory, Initial, and Follow-up - represent a logical and systematic approach to assuring the control and the quality of the remediation work processes. Integration of the Three Phases of Control is accomplished by the performance of Preparatory, Initial, and Follow-up inspections at representative points in the removal action work process. Details of these inspections are contained in the Field Inspection Checklist (see Attachment - A).

At each phase, Quality Control verification activities may be supplemented by the performance of detailed inspections of a particular activity. In these cases, Field Inspection Checklists have been generated to assure a thorough verification of the work process. The use of Field Inspection Checklists is detailed in the Testing Plan and Log, Section 4.0 of this QCP. Copies of the specified Field Inspection Checklists are provided in Attachment A of this QCP. When utilized, the completed Field Inspection Checklist is attached to the combined *Contractor Production Report/Contractor Quality Control Report (Form 01400-1)*.

Quality Records

Records generated as a result of analytical sampling activities are Quality Records and will be processed in accordance with the requirements of this QCP. Documents such as Chain of Custody Records, analytical testing results, and other required laboratory deliverables are

essential documents necessary to ensure the integrity and defensibility of data used to make decisions in the remediation process. Further, Quality Records provide the documented evidence of events that have occurred for all features of the work and their adequate generation, review, protection, and submittal is essential to the success of the project.

0.1.2 Sampling and Analysis Plan

Part III of the CDAP is structured to establish the precision, accuracy, representativeness, completeness and comparability requirements of environmental monitoring and measurement data associated with sampling and analysis quality requirements.

Data Quality Objectives

All analytical sampling at CBC Gulfport (*i.e.*, waste sample characterization) will be classified as Level E per NEESA 20.2-047B. The parameters to be analyzed and associated detection limits are outlined in the CDAP. The CDAP also provides requirements for field sampling and testing, and provides the details for decontamination of sampling equipment, sample packaging and preservation, transportation, sample numbering, chain of custody, and documentation requirements. Samples will be collected in the field and submitted to laboratories to perform the required analyses. SW-846 Methods will be used for this project. Duplicate samples will be used to develop estimates of the accuracy and precision of the analytical data. Field surveillance of sampling, field measurements, and chain of custody procedures will be used to verify that proper techniques are being followed.

1.0 QUALITY CONTROL PERSONNEL

This section of the QCP sets forth the duties, responsibilities and authorities of Quality Control Personnel executing tests and inspections in support of Delivery Order No. 0002, Statement of Work #09, CBC Gulfport, Gulfport, Mississippi.

The Quality Control organization supporting Delivery Order work at CBC Gulfport will consist of the following positions:

Program Quality Control Manager

The Program Quality Control Manager (PQCM) is responsible for assuring the implementation of the Three Phases of Control quality control system, for ensuring observation by MK inspection personnel of designated Inspection/Test points, for coordinating Client Inspection/Test points, and for verifying Subcontractor compliance.

Site Quality Control Supervisor

The SQCS appointed for the execution of Delivery Order 0002, Statement of Work 09, CBC Gulfport has not been determined. The name and qualification of the SQCS will be submitted under separate cover to the CO. The SQCS is responsible for overall implementation of this QCP at the project site and has the authority to act independently in all Quality Control matters. The SQCS will report to the PQCM based in the MK PMO. The SQCS reports directly to the PQCM, interfacing on a day-to-day basis with the site Project Manager. The SQCS has the authority to halt work if it is found to be nonconforming and if further processing may result in an inability to resolve the identified condition. The SQCS is responsible for the following activities:

- Implementing the Delivery Order QCP;
- Performing required tests and inspections, as specifically assigned in the QCP according to the Three Phases of control;
- Site supervision of the Quality staff, as applicable;
- Assisting the PQCM in the submittals process;
- Regular and timely reporting of inspection/test results;
- Certifying completed work, invoices, and reports as may be designated in writing;
- Stopping of work that does not comply with requirements established contractually;
- Managing the performance of all on-site and off-site inspections and testing;
- Evaluating the results of the inspections and testing;
- Maintaining the Testing Plan and Log status provided in Section 4.0 of this QCP;
- Performing Preparatory, Initial, and Follow-Up Inspections per the schedule provided in Section 8.0 of this plan;
- Documenting results of inspection and testing activities on the Contractor Quality Control Report provided in Section 6.0 of this QCP;
- Maintaining the status of the Rework Items List per Section 5.0 of this QCP; and

- Ensuring that sample custody requirements are maintained.

Laboratory Quality Control Personnel

Laboratory Quality Control personnel will perform the laboratory tests as specified to generate the QC analytical data. Laboratory QC personnel will be qualified by training and experience in accordance with the selected laboratory's Quality Assurance/Quality Control Manuals.

2.0 SUBMITTALS

Submittals relating to this Delivery Order are processed in accordance with this section of the QCP. There are two primary areas of submittal activity: the Work Plan and related documents, including supporting plans such as this QCP and the subcontractor submittals review and approval. The subcontractor submittals are discussed below:

The SQCS will develop and maintain submittal registers for each subcontractor selected to support the remediation work at CBC Gulfport. The submittal register will list the contractually required submittals based on the Vendor Data Schedule developed in the subcontract package and indicate submittal approval authorities. These authorities will include the MK Project Engineer and the SQCS. Other submittals may require review by the Southern Division Resident Officer in Charge of Construction (ROICC). Once the submittal register is developed, the SQCS submits it to the ROICC who will indicate which submittals require Navy review and approval.

A Submittal Register will be used to track progress of submittals as they are processed. A Submittal Register is provided in this section.

SUBMITTAL REGISTER (PART A)							SUBMITTAL REGISTER (PART B)							
Contract No. H62467 93 D 1106			Morrison Knudsen Corporation N. Charleston, SC				Page 1 of 1							
Project Title			U.S. Navy SOUTH DIV ERAC Region II											
Delivery Order	Submittal No.	Sequence No.	Submittal Type	WBS No.	Submittal Description									
0002	SD 08	001	SD	33 01 03 14	Remedial Action Plan - NCBC Gulfport		f:\submittal\do0002.xls							
Spec Section No (a)	Material or Product (b)	Spec Para No (c)	Class/ Appr by CO (d)	Govt or A/E Reviewer (e)	Trans Control No (f)	Planned Submittal Date (g)	(h)	(i)	Date Submitted To PQM (j)	Date Submitted To CO (k)	Date Received By CO (l)	Action By CO (m)	Date Action by CO (n)	Date Received by MK (o)
Delivery Ord #002, SOW #001	Work Plan, Rev 0 (DRAFT)	Delivery Order 002	G	CO	4324 94 096	12/27/94			12/22/94	12/27/94	12/27/94	R&R	1/30/95	2/02/95
Delivery Ord #002, SOW #001	Site Safety & Health Plan, Rev 0 (DRAFT)	Delivery Order 002	G	CO	4324 94 096	12/27/94			12/22/94	12/27/94	12/27/94	R&R	1/30/95	2/02/95
Delivery Ord #002, SOW #001	Quality Control Plan Rev 0 (DRAFT)	Delivery Order 002	G	CO	4324 94 096	12/27/94			12/22/94	12/27/94	12/27/94	R&R	1/30/95	2/02/95
Delivery Ord #002, SOW #001	Work Plan Rev 0 (2/15/95)	Delivery Order 002	G	CO	4324 94 199	2/21/95			2/17/95	2/21/95	2/21/95	R&R	3/21/95	3/21/95
Delivery Ord #002, SOW #001	QC Plan Rev 0 (2/15/95)	Delivery Order 002	G	CO	4324 94 199	2/21/95			2/17/95	2/21/95	2/21/95	R&R	3/21/95	3/21/95
Delivery Ord #002, SOW #001	Work Plan Rev 0 (4/14/95)	Delivery Order 002	G	CO	4324 94 270	4/25/95			4/25/95	4/25/95	4/25/95	Approval	4/27/95	4/27/95
Delivery Ord #002, SOW #001	Site Safety & Health Rev 1 (5/01/95)	Delivery Order 002	G	CO	4324 94 430	5/11/95			5/11/95	5/11/95	5/11/95	Record		
DO 0002 SOW 001	SD 19 Operations & Maintenance Manual Rev 0 (10/4/95)	DO 0002	G	CO	4324 94 580	10/12/95			10/09/95	10/13/95	10/13/95	Approval		
DO 0002 SOW 001	SD 18 Construction Completion Report Draft (11/2/95)	DO 0002	G	CO	4324 94 676	11/21/95			11/13/95	11/17/95	11/17/95	Approval		
DO 0002 SOW 009	SD 08 Work Plan Rev A (1/10/96)	DO 0002	G	CO	4324 94 756	1/22/96			1/22/96	1/23/96	1/23/96	Review & Comment		
DO 0002 SOW 009	SD 08 Site Safety and Health Plan Rev A (1/10/96)	DO 0002	G	CO	4324 94 756	1/22/96			1/22/96	1/23/96	1/23/96	Review & Comment		
DO 0002 SOW 009	SD 08 Quality Control Plan Rev A (1/10/96)	DO 0002	G	CO	4324 94 756	1/22/96			1/22/96	1/23/96	1/23/96	Review & Comment		
DO 0002 SOW 009	SD 08 Chemical Data Acquisition Plan Rev A (1/10/96)	DO 0002	G	CO	4324 94 756	1/22/96			1/22/96	1/23/96	1/23/96	Review & Comment		
DO 0002 SOW 009	SD-08 Waste Management Plan Rev A (1/10/96)	DO 0002	G	CO	4324 94 756	1/22/96			1/22/96	1/23/96	1/23/96	Review & Comment		
DO 0002 SOW 009	SD 08 Environmental Protection Plan Rev A (1/10/96)	DO 0002	G	CO	4324 94 756	1/22/96			1/22/96	1/23/96	1/23/96	Review & Comment		
DO 0002 SOW 009	SD 08 Technical Specifications Rev A (1/10/96)	DO 0002	G	CO	4324 94 756	1/22/96			1/22/96	1/23/96	1/23/96	Review & Comment		

3.0 INSPECTION SYSTEM

QC Personnel

QC Personnel are responsible for conducting assigned inspections in accordance with the technical requirements provided in the applicable specifications and drawings, as well as for documenting the results of these inspections, tests, and observations in accordance with this QCP.

Inspection/Test Point

An Inspection or Test Point is that point in a work process where an inspection or test is to be performed. Inspection and Test Points are designated in Section 4.0, Testing Plan and Log contained in this QCP.

Conduct of Inspections

Specific types and frequencies of tests are detailed in the Testing Plan and Log contained within Section 4.0 of this QCP. Inspections will be performed utilizing inspection checklists as specified in the Testing Plan and Log.

Preparatory Inspection

The CO or the CO's designated representative will be notified at least two working days in advance of each preparatory phase. The preparatory phase inspection will be conducted with the superintendent and the foreman responsible for the definable feature of work. The results of the preparatory phase actions will be documented in the daily Contractor Quality Control Report. Prior to beginning work on each definable feature of work, the following will be performed:

- Review each paragraph of the applicable specification sections;
- Review the contract drawings;
- Verify that appropriate shop drawings and submittals for materials and equipment have been submitted and approved. Verify receipt of approved factory test results, when required;
- Review the testing plan and ensure that provisions have been made to provide the required QC testing;
- Verify that the appropriate disposal analysis requirements have been submitted to determine waste characterization analysis;
- Examine the work area, including the decontamination facility, to ensure that the required preliminary work has been completed and safety precautions have been taken;

- Examine the required materials and equipment and sample work to ensure that materials and equipment are on hand and conform to the approved shop drawings and submitted data;
- Review the Health and Safety Plan and appropriate activity hazard analysis to ensure that applicable safety requirements are met and that required Material Safety Data Sheets (MSDS) are submitted; and
- Discuss construction methods.

Initial Inspection

At the initiation of a representative sample of the given features of work, the SQCS will verify that the work meets the applicable quality requirements. The following items will be verified during Initial Inspection:

- The workmanship meets the established quality requirements;
- Configuration and construction methods, equipment, and tools appear to be effective;
- Calibration of measurement and test equipment;
- Materials and articles used are as specified;
- Adequacy of inspection/testing methods;
- Adequacy of applicable drawings; and
- Adequacy of safety and environmental precautions.

Follow-Up Inspection and Surveillance

The following will be performed daily for ongoing work, or more frequently as necessary, until the completion of each definable feature of work and documented in the daily Contractor quality control report:

- Ensure the work is in compliance with contract requirements;
- Maintain the quality of workmanship required;
- Ensure that testing is performed;
- Ensure that rework items are being corrected; and
- Ensure that the decontamination facility is in sound working order.

QCP Inspections

The SQCS will perform follow-up inspections based on the Inspection Plan and Log in Section 4.0 of this QCP. The SQCS will document the results of each day's inspection on the Contractor Quality Control Report. Completed Contractor Quality Control Reports shall be submitted to the Program Quality Manager as a record.

Documentation

Contractor Quality Control Reports are required to be completed for each day that work is performed and for every seven consecutive calendar days of no-work, on the last day of that no-work period. Each calendar day will be accounted for throughout the life of the project. The reporting of work shall be identified by terminology consistent with the construction schedule. Contractor quality control reports are to be prepared, signed, and dated by the MK SQCS and shall contain the following information:

- a) Identify the control phase and the definable feature of work.
- b) Results of the preparatory phase meetings held, including the location of the definable feature of work and a list of personnel present at the meeting. Verify in the report that for this definable feature of work, the drawings and specifications have been reviewed, and work methods and schedule have been discussed.
- c) Results of the initial phase meetings held, including the location of the definable feature of work and a list of personnel present at the meeting. Verify in the report that for this definable feature of work the preliminary work was done correctly, samples have been prepared and approved, the workmanship is satisfactory, test results are acceptable, work is in compliance with the contract, and the required testing has been performed, and include a list of who performed the tests.
- d) Results of the follow-up phase inspections held, including the location of the definable feature of work. Verify in the report for this definable feature of work that the work complies with the contract as approved in the initial phase, required testing has been performed, and include a list of who performed the tests.
- e) Results of the three phases of control for off-site work, if applicable, including actions taken.
- f) List rework items identified, but not corrected by close of business.
- g) As rework items are corrected, provide a revised rework items list along with the corrective action taken.
- h) Include a "Remarks" section in this report which will contain pertinent information including directions received, QC problem areas, deviations from the QCP, construction deficiencies encountered, QC meetings held, acknowledgment that as-built drawings have been updated, corrective direction given by the QC manager, and corrective action taken by the Contractor.
- i) Contractor quality control report certification.

Testing Plan and Log

As tests are performed, the SQCS shall record on the testing plan and log the date the test was conducted, the date the test results were forwarded to the CO, and any remarks and acknowledgment that an accredited or CO approved testing laboratory was used. The SQCS will attach a copy of the updated testing plan and log to the last daily Contractor Quality Control Report of each week. This log may be maintained as a computer file for ease of update, which will allow its use as a final testing summary report.

Rework Items List

The MK SQCS shall maintain a list of work that does not comply with the contract, identifying what items need to be reworked, the date the item was originally discovered, and the date the item was corrected. There is no requirement to report a rework item that is corrected the same day it is discovered. The SQCS will attach a copy of the MK rework items list to the last daily Contractor Quality Control Report of each week. The SQCS shall be responsible for including on this list items needing rework including those identified by the CO. This log may be maintained as a computer file for ease of update, which will allow its use as a final testing summary report.

As-Built Records

The SQCS is required to review the as-built records required by contract to ensure that as-built records are kept current on a daily basis and marked to show deviations which have been made from the contract drawings. The SQCS shall initial each deviation or revision. Upon completion of work, the SQCS shall submit a certificate attesting to the accuracy of the as-built records prior to submission to the CO.

Report Forms

Inspection and test results will be summarized daily on the "Contractor Quality Control Report", and supported by completed inspection/test checklists for the activity. Completed checklists are included in the Closure Report at project completion.

Reports shall be submitted daily to the CO, with a copy sent to the PQCM in the PMO.

SUMMARY OF INSPECTION APPROACH: CBC GULFPORT DELIVERY ORDER 0002

Project Component	Required Inspection/Test	Applicable Procedures	Preparatory Inspection	Initial Inspection	Follow-up Inspection
Site 1 Soil Boring, Drum Removal, Excavation and Backfill	Soil Boring Drum Removal Sampling and Analysis Waste Removal and Manifests	QEP 8.1 QEP 13.1 CDAP	Document on CQCR Form 1400-1	Document all Initial Inspections on CQCR Form 1400-1	Document on CQCR Form 1400-1
Site 4 Soil Boring, Drum Removal, Excavation and Backfill	Soil Boring Drum Removal Sampling and Analysis Waste Removal and Manifests	QEP 8.1 QEP 13.1 CDAP	Document on CQCR Form 1400-1	Document all Initial Inspections on CQCR Form 1400-1	Document on CQCR Form 1400-1
Site 5 Soil Boring, Drum Removal, Excavation and Excavation	Soil Boring Drum Removal Sampling and Analysis Waste Removal and Manifests	QEP 8.1 QEP 13.1 CDAP	Document on CQCR Form 1400-1	Document all Initial Inspections on CQCR Form 1400-1	Document on CQCR Form 1400-1

4.0 TESTING PLAN AND LOG

A Testing Plan and Log has been prepared and included in this section of the QCP. The Testing Plan and Log delineates the required tests and inspections applicable to a definable feature of work. It also identifies the project component, the specific inspection or test to be performed, the frequency of such testing or inspection, and lists the governing standard which governs the methodology to be employed. Qualitative and quantitative acceptance criteria is provided, either through an actual listing of the criteria or by reference to a supporting checklist, work plan element, or a governing regulation or standard.

The Testing Plan and Log is intended to serve as a living document to be utilized to record, in the field, the status of sampling and inspection performed in support of the Delivery Order work. The Log contains sections for the entry of work to be performed as specified in the Remedial Action Plan, inspection, testing activities, and relevant comments.

The Testing Plan and Log reflects the application of the Three Phases of Control to the definable features of work for each area. Where multiple areas will be worked at one time, the preparatory, initial and follow-up inspections may be combined. It is not necessary to generate a separate checklist for each area; however, it is necessary to perform the three phases of control for each activity in each area. As inspections are completed, the SQCS will record the date that the inspections occurred in the appropriate sections of the Testing Plan and Log. Results of the inspections will also be maintained.

TESTING PLAN AND LOG

CONTRACT NO./TITLE: MK SOUTHDIV ERAC

DELIVERY ORDER NO: 0002, CBC Gulfport, Statement of Work #09

Definable Feature of Work	Inspection Checklist	Three Phases of Control (Enter Dates that Inspections are Performed)			Test or Inspection Results	Comments
		Preparatory	Initial	Follow-up		
Mobilization and Decontamination	MD-01					
Soil Boring	SB-01					
Decontamination	DE-01					
Clearing and Grubbing	CG-01					
Test Trenching	EB-01 DD-01					
Sampling and Analysis	SA-01					
Site Restoration	SR-01					

5.0 REWORK PROCEDURES

The SQCS is responsible for ensuring that deviating items are reported, tracked, and resolved. *MK Quality Execution Procedure (QEP) 13.1* establishes the requirements and responsibilities associated with the identification, reporting, and correction of deviating items. A deviating item is one that has departed from established requirements, which may be corrected through rework of the item or may result in a more formally documented solution requiring engineering evaluation. Deviations are usually identified by inspectors during routine inspections or tests; however, deviations may be identified at any time by anyone involved with the work and reported to the applicable inspector or SQCS.

Identified deviations shall be incorporated on the Rework Items List. The form for Rework Items List is provided in QEP 13.1 and shall be maintained current throughout the work process.

6.0 REQUIRED QC DOCUMENTATION

This section of the QCP delineates the required Quality Control documentation that is to be completed to support the CBC Gulfport Delivery Order work. Table 6-1 provides a listing of the required checklists to be completed when performing inspections, and specific forms to be used for activities such as sample chain of custody. Samples of these forms are included in Attachment A of this QCP.

TABLE 6-1: REQUIRED DOCUMENTATION		
Document Name	Document Number	Completed By
Contractor Production Report	Form 01400-1	MK Production Supervision
Contractor Quality Control Report	Form 01400-1	MK Quality Control
Chain of Custody Form	Form 1799a/88	MK Sampling Technician/Project Eng.
Rework Items List	N/A	MK Quality Control
Field Inspection Checklist: Mobilization and Demobilization	MD-01	MK Quality Control
Field Inspection Checklist: Soil Boring	SB-01	MK Quality Control
Field Inspection Checklist: Decontamination	DE-01	MK Quality Control
Field Inspection Checklist: Clearing and Grubbing	CG-01	MK Quality Control
Field Inspection Checklist: Drum Removal	DO-01	MK Quality Control

TABLE 6-1: REQUIRED DOCUMENTATION

Document Name	Document Number	Completed By
Field Inspection Checklist: Excavation and Backfill	EB-01	MK Quality Control
Field Inspection Checklist: Sampling and Analysis	SA-01	MK Quality Control
Field Inspection Checklist: Site Restoration	SR-01	MK Quality Control
Subcontractor Submittal Register	N/A	MK Quality Control

7.0 LABORATORY QUALIFICATION PACKAGE

Analytical testing will be performed on all wastes prior to disposal. Sample integrity will be maintained from collection to disposal through chain of custody procedures. Samples will be identified as discussed in the CDAP. Custody seals will be affixed to all shipping containers. Completed chain-of-custody documents are retained as quality assurance records and maintained in accordance with the Quality Assurance Program. Records generated as a result of analytical sampling activities are Quality Assurance Records and will be processed in accordance with the requirements of this QCP.

At the time of generation of this QCP, the analytical laboratory has not been selected for the testing to be performed at CBC Gulfport. Laboratory services will be procured on a competitive basis after pre-qualifying. Work will only be awarded to those laboratories that meet the qualification requirements.

For analytical sample testing, the selected laboratory must meet, as a minimum, NEESA 20.2-047B requirements and shall have obtained NEESA or equivalent approval as detailed in the subject document.

The following listing provides general requirements that must be considered when procuring the services of an analytical laboratory.

ANALYTICAL LABORATORY CHECKLIST		
No.	Description	Checked by/Date
1	Provide sample jars, labels, coolers, coolant, packing material, trip blank samples and decontamination fluid.	
2	Turn-around time for samples will begin upon receipt of samples by laboratory.	
3	Turn-around time will include weekend days when specified.	
4	Provide a contact, alternate contact, and an after hours/weekend contact.	
5	Provide the name of the laboratory quality assurance (QA) manager.	
6	Submit a copy of the QA plan.	
7	Provide preservation requirements and quantity of sample material.	
8	Provide maximum daily capacity for each analytical method.	
9	Capability to perform analyses in accordance with approved methods.	
10	Perform analyses within method holding times.	
11	Provide preliminary analytical results by facsimile and final results by overnight mail.	

Material Testing Laboratories

Material testing laboratories shall be evaluated by MK in accordance with this plan to ensure that the laboratory is qualified to perform testing in support of SOUTHDIV ERAC program requirements. The following list provides general requirements for the material testing laboratory.

MATERIAL TESTING LABORATORY CHECKLIST		
No.	Description	Checked by/Date
Accredited Laboratories		
1	National Institute of Standards and Technology (NIST),	
2	National Voluntary Laboratory Accreditation Program (NVLAP),	
3	American Association of State Highway and Transportation Officials (AASHTO) Program, or	
4	American Association of Laboratory Accreditation (AALA) Program	
Non-accredited Laboratories		
1	Work to be performed under the direction of a registered P.E. with at least 5 years of relevant experience.	
2	Testing of concrete and concrete aggregates shall meet the requirements of ASTM C 1077.	
3	Testing of bituminous paving materials shall meet the requirements of ASTM D 3666.	
4	Testing of soil and rock shall meet the requirements of ASTM D 3740.	
5	Nondestructive testing (NDT) shall meet the requirements of ASTM E 543.	

Prior to using any non-accredited testing laboratory, the CO shall be notified by MK and afforded the opportunity to inspect the proposed testing laboratory's facilities and records. Records subject to inspection include equipment inventory, equipment calibration dates and procedures, library of test procedures, audit and inspection reports by agencies conducting laboratory evaluations and certifications, testing and management personnel qualifications, test report forms, and the laboratory's internal QC procedures.

MK and the Navy CO have the right of access to testing laboratories performing work in support of the SOUTHDIV ERAC. This includes the right to check laboratory equipment in the laboratory and the laboratory technician's testing procedures, techniques, and other items pertinent to testing, for the purpose of ensuring compliance to testing requirements established in the contract.

Test Results

Test results shall be signed by a testing laboratory representative authorized to sign certified test results. All test results shall contain the following, as a minimum:

- A reference to applicable contract requirements, tests, or analytical procedures used;
- Actual test results; and
- A statement that the item tested or analyzed conforms or fails to conform to specified requirements. The cover sheet for each report shall be stamped in large red letters "**CONFORMS**" or "**DOES NOT CONFORM**" to the specification requirements, whichever is applicable.

8.0 INSPECTION/PROGRESS SCHEDULE

The inspections outlined in the Testing Plan and Log follow the definable features of work outlined in Section 0.1, Introduction, of this QCP. Each definable feature of work is subject to preparatory, initial, and follow-up inspections of the work activity. Therefore, the schedule of inspections to be performed will mirror the removal action schedule for Delivery Order 0002, SOW 09.

9.0 REFERENCED PROCEDURES

The following QEP are referenced in the body of the QCP.

- **QEP 8.1** - "Conduct and Control of Inspections"
- **QEP 13.1** - "Identification and Control of Deviations"

QEPs are program procedures issued to the project team. Copies of the pertinent QEPs will be available on site.

ATTACHMENT A
INSPECTION DOCUMENTATION

**MORRISON KNUDSEN CORPORATION**

Engineering, Construction, & Environmental

FIELD INSPECTION CHECKLIST

Checklist Title

Mobilization and Demobilization

Checklist Number

MD-01

Revision Date

Nov 1995

Checklist

Page 1 of 1ITEM
NO.

ITEM CHECKED

Accept/
Reject

REMARKS

VERIFIED BY/
DATE

Preparatory Inspection

1	Schedule a pre-construction meeting prior to construction activities.			
2	Verify that excavation and other permits required by CBC Gulfport have been obtained.			
3	Verify that a visual site inspection and evaluation of environmental conditions have been performed.			

Initial and Follow-Up Inspections

1	Verify that all equipment mobilized to the site has been steam cleaned and inspected prior to shipment.			
2	Verify that all equipment has been inspected upon arrival at site for general conditions to assure that all safety systems and alarms are functional and tested.			
3	Verify that equipment has been set-up at designated area.			
4	Verify that work zones and access routes have been established and signs barricades and tapes have been placed to limit access.			
5	Verify that storm water and erosion control measures have been implemented to control run-on, run-off and to prevent erosion.			
6	Verify that the site has been cleaned upon completion of work. All equipment, unused materials, temporary facilities, and miscellaneous materials have been removed from the site.			

ADDITIONAL NOTES OR COMMENTS:

Specific Item Identification or Location, as applicable

MK Project CBC Gulfport	Delivery Order Number 0002, SOW #09	Checklist Title Mobilization and Demobilization MD-01	Page 1 of 1
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**MORRISON KNUDSEN CORPORATION**

Engineering, Construction, & Environmental

FIELD INSPECTION CHECKLIST

Checklist Title

Soil Boring

Inspection Code

SB-01

Revision Date

July 1996

Checklist

Page 1 of 1

ITEM NO.	ITEM CHECKED	Accept/ Reject	REMARKS	VERIFIED BY/ DATE
Preparatory Inspection				
1	Schedule a preparatory phase inspection prior to initiating soil boring.			
2	Verify required drilling permits have been obtained.			
3	Verify that the Work Zone is clearly delineated and the area is cleared and grubbed.			
4	Verify that a review of safety requirements is performed as a part of the preparatory phase inspection. (Briefing by the Site Safety & Health Officer)			
5	Verify completion of required initial surveys.			
Initial Inspection				
1	Ensure that the soil boring grids are laid-out as per the Work Plan.			
2	Ensure that screening, sampling and classification of soil is performed according to the Work Plan			
Follow-up Inspection				
1	Verify that drilling activities progresses as per the Work Plan.			

ADDITIONAL NOTES OR COMMENTS

Specific Item Identification or Location, as applicable:

MK Project CBC Gulfport	Delivery Order Number 0002, SOW #09	Checklist Title Soil Boring SB-01	Page 1 of 1
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Checklist Title Decontamination Actions	Inspection Code DE-01	Revision Date Nov 1995	Checklist Page 1 of 1
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ITEM NO.	ITEM CHECKED	Accept/Reject	REMARKS	VERIFIED BY/DATE
Preparatory Inspection				
1	Schedule a preparatory phase inspection of decontamination preparedness prior to initiating decontamination actions.			
2	Review the requirements of construction and inspection regarding establishment of the decontamination facility.			
3	Verify that the decontamination facility is constructed of materials as specified, and in an area approved by the Project Manager.			
Initial Inspection				
1	Verify that decontamination facilities are delineated with orange fencing and appropriate signage as part of the contamination reduction zone.			
2	Perform an initial inspection of the decontamination facility liner for the following attributes: evidence of tears and holes; evidence of seepage; that the sheeting is adequately fastened to the side walls; that the liner adequately covers the straw bales at the end sections and is secured by sandbags; that expected quantities of generated liquids can be contained until collected for disposal.			
2	Verify that records are established that specify decontamination facility construction materials and methods, disposition of liquids, and any repairs and/or breaches of liner integrity.			
3	Verify decontamination activities are performed in accordance with the specified procedures.			
Follow-up Inspection				
1	Monitor on-going decontamination operations to verify compliance.			
2	Perform daily inspections of the decontamination facility liner for the following attributes: evidence of tears and holes; evidence of seepage; that the sheeting is adequately fastened to the side walls; that the liner adequately covers the straw bales at the end sections and is secured by sandbags; that expected quantities of generated liquids can be contained until collected for disposal. Note: Document on Contractor Quality Control Report.			
3	Verify that records of any breaches and/or repairs to the liner are documented.			
4	Verify, upon dismantlement of the decontamination facility, that underlying material is not contaminated. Potentially contaminated soil will be sampled by MK and analyzed prior to removal and managed per the Sampling and Analysis Plan.			

ADDITIONAL NOTES OR COMMENTS

Specific Item Identification or Location, as applicable



Checklist Title

Clearing and Grubbing

Inspection Code

CB-01

Revision Date

Nov 1995

Checklist

Page 1 of 1

ITEM NO.	ITEM CHECKED	Accept/Reject	REMARKS	VERIFIED BY/DATE
Preparatory Inspection				
1	Schedule a preparatory phase inspection of areas requiring clearing and grubbing.			
Initial Inspection				
1	Verify that trees and vegetation to be left standing are protected from damage incident to clearing, grubbing, and construction operations by the erection of barriers or by such other means as the circumstances require.			
Follow-up Inspection				
1	Verify that trees, stumps, roots, brush, and other vegetation are cut off flush with or below the original ground surface.			
2	Verify that material to be grubbed, together with logs and other organic or metallic debris not suitable for foundation purposes, are removed to a depth of not less than 18 inches below the original surface level of the ground in areas indicated to be grubbed and in areas indicated as construction areas, such as areas for buildings, and areas to be paved.			
3	Ensure that depressions made by grubbing are filled with suitable material and compacted to make the surface conform with the original adjacent surface of the ground.			
4	Verify that logs, stumps, roots, brush, rotten wood, and other refuse from the clearing and grubbing operations are disposed of at an off-site facility.			

ADDITIONAL NOTES OR COMMENTS

Specific Item Identification or Location, as applicable:

MK Project CBC Gulfport	Delivery Order Number 0002, SOW #09	Checklist Title Clearing and Grubbing CB-01	Page 1 of 1
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Checklist Title Excavation and Backfill		Inspection Code EB-01	Revision Date Nov 1995	Checklist Page 1 of 1
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ITEM NO.	ITEM CHECKED	Accept/Reject	REMARKS	VERIFIED BY/DATE
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Preparatory Inspection

1	Review specification and drawings to understand the scope of excavation and backfill.			
2	Ensure that permits and notifications are in-place.			

Initial Inspection

1	Verify that work areas have been located with the limits of work clearly established (stakes, lines and monuments).			
2	Identify existing improvements and items that are to remain and verify arrangements to protect these items from damage (such as trees, utilities, buildings, fences and piping).			
3	Verify that shoring have been approved, as required, and provisions have been made for safety barricades.			

Follow-up Inspection

1	Verify topsoil is stripped and stored for re-use.			
2	Verify that soil excavation is performed in accordance with specification and within established bounds.			
3	Verify that drainage and de-watering confirms to specifications.			
4	Ensure that backfill materials are placed, compacted, inspected and tested in accordance with the specifications. Maintain required reports.			

ADDITIONAL NOTES OR COMMENTS

Specific Item Identification or Location, as applicable

MK Project CBC Gulfport	Delivery Order Number 0002, SOW #09	Checklist Title Excavation and Backfill EB-01	Page 1 of 1
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Checklist Title

Drum and Debris Removal

Inspection Code
DD-01

Revision Date
Nov 1995

Checklist
Page 1 of 1

ITEM NO.	ITEM CHECKED	Accept/Reject	REMARKS	VERIFIED BY/DATE
Preparatory Inspection				
1	Review specifications to understand the scope of buried drum and debris removal.			
Initial Inspection				
1	Verify that staging areas have been constructed in accordance with specifications.			
2	Verify that soil around each drum is excavated using non-sparking shovels.			
3	Verify that exposed drums and debris are inspected prior to removal.			
Follow-up Inspection				
1	Verify that buried drums and debris are removed and transferred to storage areas in accordance with specifications.			
2	Verify that drums are sampled and categorized.			
3	Verify that debris are sorted and segregated as recyclable/salvageable materials and solid non-hazardous waste.			
4	Verify that recyclable/salvageable metal objects are decontaminated.			
5	Verify that drums and other disposable material are disposed of at an off-site facility in accordance with specifications. Maintain records.			

ADDITIONAL NOTES OR COMMENTS

Specific Item Identification or Location, as applicable

MK Project
CBC Gulfport

Delivery Order Number
0002, SOW #09

Checklist Title
Drum and Debris Removal DD-01

Page 1 of 1



Checklist Title

Field Analytical Sampling Overview

Checklist Number

SA-01

Revision Date

Nov 1995

Checklist

Page 1 of 2

ITEM NO.	ITEM CHECKED	Accept/Reject	REMARKS	VERIFIED BY/DATE
Preparatory Inspection				
1	Schedule preparatory phase meeting prior to initiating field analytical sampling activities.			
2	Verify that analytical laboratory services have been procured by the PMO.			
3	Verify that sample containers, coolers, chain-of-custody records, labels, seals, and all necessary sampling equipment is present.			
4	Verify that field sampling personnel have completed training as required by the Chemical Data Acquisition Plan.			
5	Ensure that the requirements of the Sampling and Analysis Plan have been reviewed with the Project Team.			
Initial and Follow-Up Inspections				
1	Ensure that sampling locations are properly selected per the CDAP.			
2	Ensure that sampling locations are adequately documented in a field log book. Drums have been properly numbered and recorded.			
3	Verify that any field instruments utilized are properly calibrated and that calibrations are recorded in a field log book.			
4	Verify that sampling equipment is properly protected from possible contamination prior to sample collection.			
5	Verify that the sampling technician wears clean, disposable latex or vinyl gloves during sample collection.			
6	Verify that the sampling technician changes gloves for each sample location.			

ADDITIONAL NOTES OR COMMENTS:

Specific Item Identification or Location, as applicable:

MK Project	Delivery Order Number	Checklist Title	Page 1 of 2
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Checklist Title Field Analytical Sampling Overview	Checklist Number SA-01	Revision Date Nov 1995	Checklist Page 2 of 2
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ITEM NO.	ITEM CHECKED	Accept/Reject	REMARKS	VERIFIED BY/DATE
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Initial and Follow-Up Inspections

7	Verify that proper field sampling equipment cleaning procedures are used per the CDAP.			
8	Verify the collection of equipment rinsate blanks after field cleaning per the CDAP.			
9	Verify that correct sample containers were used for the collection of samples.			
10	Ensure that the correct frequency of duplicate samples is collected per the CDAP.			
11	Verify that samples are properly field preserved per the CDAP.			
12	Ensure that field and/or trip blanks are utilized per the CDAP.			
13	Ensure that sample containers are properly identified with labels.			
14	Verify proper security measures are taken to ensure custody of the samples after collection per the sample custody procedures contained in the CDAP.			
15	Ensure that chain-of-custody and receipt for samples forms are properly completed.			
16	Verify correct frequency of collection and preparation of matrix spike/matrix spike duplicates (MS/MSD) per the CDAP.			
17	Verify that three times the necessary sample volume for the field duplicate sample identified for QC sampling is collected for MS/MSD sample aliquot.			
18	Verify that no homogenization of samples collected for Volatile Organic Compounds occurs.			

ADDITIONAL NOTES OR COMMENTS:

Specific Item Identification or Location, as applicable:

MK Project CBC Gulfport	Delivery Order Number 0002, SOW #09	Checklist Title Field Analytical Sampling Overview SA-01	Page 2 of 2
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**MORRISON KNUDSEN CORPORATION**

Engineering, Construction, & Environmental

FIELD INSPECTION CHECKLIST

Checklist Title

Site Restoration

Checklist Number

SR-01

Revision Date

Nov 1995

Checklist

Page 1 of 1

ITEM NO.	ITEM CHECKED	Accept/ Reject	REMARKS	VERIFIED BY/ DATE
Preparatory Inspection				
1	Verify that the subcontractor provides a Site Restoration Plan (SRP) in accordance with the specifications. Ensure that the SRP is reviewed and approved by the PM.			
Initial Inspection				
1	Verify inventory of existing conditions and surface features that will affect site restoration.			
Follow-up Inspections				
1	Verify that the site is restored in accordance to the specification and the SRP.			
2	Verify continued maintenance of grass and plant life. Replaced or replenish, if required.			

ADDITIONAL NOTES OR COMMENTS

Specific Item Identification or Location, as applicable:

MK Project

CBC Gulfport

Delivery Order Number

0002, SOW #09

Checklist Title

Site Restoration SR-01

Page 1 of 1

APPENDIX C
CHEMICAL DATA ACQUISITION PLAN

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ATTACHMENTS

A Field Data Sheets

I. INTRODUCTION AND OBJECTIVES

1.0 INTRODUCTION

The Chemical Data Acquisition Plan (CDAP) summarizes both field procedures as well as quality assurance objectives and procedures for data collection. This document is designed to support the Work Plan.

This CDAP is written in support of visual verification action to be undertaken at CBC Gulfport, Sites 1, 4 and 5. Activities will be conducted at three sites:

Site 1 - Training Area: Materials disposed at this site include drums of paint, oils, solvents, paint strippers and cleaning compounds. Drums previously excavated at this site contained xylene, toluene and 1,2-dichloroethane.

Site 4 - Golf Course Area: Materials disposed at this site include solid and liquid wastes. Liquid wastes included fuel, oil, solvents, paints and paint thinners. Solvents are thought to include toluene, xylene and methyl ethyl ketone (MEK).

Site 5 - Heavy Equipment Training Area: Materials disposed at this site include buried containerized and noncontainerized chemicals including paint, paint thinner, solid waste and DDT. Liquid wastes include fuels, oils, MEK, toluene and xylene.

Locations of each of the three sites, at CBC Gulfport, are provided in Figure C-1.

Information on site geology and geophysical study results are provided in the Work Plan. Anomalies found are summarized in Figures C-2 through C-4.

2.0 OBJECTIVES

The overall objective of this visual verification action is to evaluate the site to better define future remedial action and verify the presence of drums by excavation. Potential areas to be excavated for buried drums are depicted in Figures C-2 through C-4.

Once drums are uncovered, the following sampling events will be performed:

- Install and sample soil borings within each excavation area to initially delineate limits of excavation and determine if dioxin is present in subsurface soils.
- Field screen and make visual observations of unopened drums.
- Open drums and describe contents. Collect samples for compatibility testing/hazardous cataloging (HazCat) by a mobile laboratory.
- Based on field characterization results and compatibility testing, combine drum contents, if possible.

- Collect individual or composite samples for hazardous waste characterization parameter analysis (for disposal) by an offsite laboratory.
- Visual observation and photoionization detector (PID) measurements will be used to determine if further excavation is required at each site.
- Complete waste profiles for the drum contents based on the offsite laboratory results.
- Support health and safety requirements.

If no drums are discovered, sources of the anomalies will be documented and sampled, as possible. Health and safety measurements will be collected throughout the project, as described in the Site-specific Health and Safety Plan (SSHP). Data collection objectives are summarized in Table C-1.

3.0 ORGANIZATION OF DOCUMENT

The Chemical Data Acquisition Plan is divided into three parts:

- I. Introduction and Objectives
- II. Sampling and Analysis Plan
- III. Quality Assurance Requirements

Part II includes all procedures to be used in the field, including sampling, documentation, decontamination, maintenance and calibration of equipment. Part III includes a discussion of data quality objectives (DQOs), aspects of data validation and quality control in the laboratory.

II. SAMPLING AND ANALYSIS PLAN

The objective of this sampling event is to collect a representative sample, from which data can be used to make management decisions regarding, at a minimum, chemical nature of the contaminant, source area delineation, and waste soil and wastewater characterization. The procedures below and in Part III, are designed for this purpose.

1.0 PREPARATION FOR SAMPLING

Prior to sample collection, the following tasks will be completed:

1. Review any information (such as previous waste analyses, disposal records, etc.) to gain general knowledge of the potential materials to be encountered. Ground water levels will be measured or previous data will be reviewed to determine depth of soil borings and sample collection.
2. Ensure that appropriate staging areas, decontamination pads and holding areas have been properly constructed. Sufficient room should be allowed for exclusion zones, contaminant reduction zones and support zones around staging areas where drums will be opened and sampled or where drum contents are bulked. Access to support vehicles, office trailers, etc. should not be affected by excavation activities. Verify that digging permits have been obtained or approved. Verify if drilling permits are required for borehole installation.
3. Carefully review the SSHP. All field personnel will attend a Health and Safety training meeting at the beginning of each task. Field personnel will be asked to document that training was completed, and that they will abide with the provisions stated in the Plan.
4. Establish an equipment locker or staging area. Inventory all supplies and maintain careful records of initial and continuing calibration for all monitoring equipment. Check supply lists daily to determine if additional items will be needed.
5. Collect the applicable health and safety and sample collection equipment for drum sampling and borehole sampling. Other support equipment is provided in Table C-2.
 - a. Health and Safety equipment will include, but not be limited to, a combustible gas indicator, PID or OVM, Draeger tubes, and personal air monitors. Drum sampling will be conducted in Level B (full face mask with SCBA or airline) protective clothing. Consult the SSHP for specific details including calibration procedures and action levels.
 - b. Liquid samples will be collected using a coliwasa or equivalent equipment.

- c. Sludge and moist powdery samples will be removed from the drums using a trier or sludge judge. A larger trier will be used to collect large-grained solids.
 - d. Decontamination equipment will include analyte-free water,alconox, nitric acid and isopropanol solutions, which may be provided by the offsite analytical laboratory. Decontamination procedures are outlined in Section 5.
 - e. Hand augers, stainless steel trowels, bowls and spoons will be used to collect discrete and composite soil samples from stockpiled soil and debris removed from the drum excavation area.
6. Obtain all necessary documentation materials, including field data logging forms, field logbooks, sample labels and chain-of-custody forms, etc. Become familiar with calibration procedures for the PID or OVM and CGI.
 7. Prepare for arrival of mobile lab/HazCat (Hazardous category) and drilling field crews at the site. Provide a set-up area convenient for electrical and water hookups. If such a site is not available, locate nearest power and potable and fire water supplies. Work with the Subcontractors to assure that utilities have been cleared, prior to all excavation work. If this data was collected during the geophysical work, obtain approval from the Project Manager and the Navy for clearance of utilities.

The HazCat field crew will mobilize from site to site (for sites 1, 4 and 5) depending on the schedule for drum removal.

2.0 DRUM MANAGEMENT OVERVIEW

The purpose of this section is to provide a brief step-by-step procedure for drum sampling from the point a drum is excavated to the point it is shipped. This procedure may be revised depending on actual field conditions.

1. Excavate to expose drum.
2. If the drum is not bulging but is deteriorated and may collapse if moved, its contents will be transferred to a sound container, or the drum will be placed in an overpack container. The overpack container will be placed on a spill pallet and moved to a temporary staging area (TSA) for sampling.
3. If the drum is bulging or shows signs of potential explosive rupture, it will be moved to an explosion-proof box and opened using automatic piercing equipment. The pierced drum will be placed in an overpack container and moved to the TSA for sampling.

4. If the drum is leaking but is removable from the excavation, it will be placed in an overpack container on the spill pallet at the edge of the excavation, moved to the TSA and opened for sampling.
5. If the drum is not leaking or bulging and does not show any other signs of instability, it will be placed directly on the spill pallet, moved to the TSA and opened for sampling.
6. Drums to be opened at the TSA will not be stored with previously opened drums. An area in the TSA will be designated for opening drums to minimize or prevent interaction between drum contents.
7. Description of drum contents will be as comprehensive as possible, yet concise enough to minimize exposure of the field team to contaminants. Criteria are provided in Section 3, Procedure 3.1.
8. Once opened drums have been sampled, they will be marked and moved to a holding area pending results of HazCat parameter testing/compatibility testing by the mobile laboratory.
9. Following completion of field characterization and HazCat testing, the drum or container will be moved from the holding area to a final staging area for bulking, if possible. Like wastes will be bulked and stored. Following combining of like wastes, composite samples will be collected from drums or bulk containers and submitted for offsite laboratory analysis for disposal parameters.
10. Following receipt of analytical data and evaluation, waste profiles for the drums and containers stored in the final staging area will be finalized and the waste will be shipped to a disposal facility. Further detail on waste disposal documentation and shipment is provided in the Waste Management Plan.

3.0 DATA COLLECTION AND SAMPLING PROCEDURES

Procedures for the sampling activities are summarized below in tabular format. Objectives, equipment, methods, documentation and QA/QC are covered in each table. Information on number of samples to be collected is provided in Table C-3. Analytical method requirements are provided in Table C-4. The data collection procedures include:

- Procedure 3.1: Soil Boring (Direct Push) Sampling Procedure
- Procedure 3.2: Drum Inspection and Initial Screening
- Procedure 3.3: Drum Opening and Sampling
- Procedure 3.4: On-site Waste Characterization and Bulking
- Procedure 3.5: Disposal Sampling - Incidental Soil, Excavated (and Backfill) Soil, Debris, and Bulked Drum Contents

- Procedure 3.6: Disposal Sampling - Decontamination Fluids and Incidental Water in Excavation

As drums are excavated, they will be characterized using the Drum Characterization Data sheet found in Attachment A. Upon completion of the HazCat tests, the HazCat Results will be entered on the Field Data sheet 2, or equivalent form (Attachment A). Soil boring data will be entered on Field Data Sheet 1.

The following assumptions have been made in developing these procedures:

- Based on site records, no radioactive materials were introduced to the site.
- "Drums" described below refer to stable, non-leaking, non-bulging drums removed from the excavation. "Containers" refer to overpacked, slightly unstable drums or repacked drum contents removed from deteriorated drums.
- Ordnance is not present at the site; and a UXO survey will not be required.

Procedure 3.1. Soil Boring (Direct Push) Sampling Procedure

Objectives:

- Verify horizontal and vertical extent of contamination
- Delineate extent of excavation required

Sampling Equipment:

- Drill rig (i.e. Geoprobe or other direct push) rig and sampling assembly (including a minimum of three split spoons)
- sample extruder
- folding tables and plastic sheeting
- stainless steel trowel, spoons, putty knife
- PID/FID
- drive sampler and brass sleeves with endcaps
- miscellaneous supplies (Table C-2)

Method:

Borings will be installed at each excavation area to delineate the vertical and horizontal extent of excavation required. Final locations will be resolved in the field, based on current site operations, proximity to buildings and utilities, and historical data review. The initial frequency is defined in Table C-3.

Use the following steps to sample each soil boring:

1. Be sure that all down-hole tools and sampling equipment has been decontaminated prior to work, and between borings.
2. Collect a surface soil sample (one 4-ounce container for VOCs, four 8-ounce containers for dioxins/furans, semivolatiles, pesticides/PCBs, and metals). Use the following procedure:
 - VOCs: a. Fit a drive sampler with a clean brass sleeve.
 - b. Clear the ground surface of debris and vegetation.
 - c. Insert the sampler approximately six inches below ground surface.
 - d. Upon removal, check to see that the sleeve is full and trim off excess soil.
 - e. If recovery is poor, widen the hole using a stainless steel trowel and use a stainless steel spoon to remove fresh soil from the hole to fill sample containers.

Procedure 3.1. Soil Boring (Direct Push) Sampling Procedure

Method (continued):

Other analyses:

- a. Using a clean shovel, clear a one-foot by one-foot area of vegetation, debris and gravel.
- b. Remove the upper six inches of soil using a clean stainless steel trowel.
- c. Using a clean stainless steel spoon, fill the sample container(s).

Label the sample as described in Section 5.0.

3. Set up the rig over the borehole location. Fit the sampling device with a decontaminated split spoon or similar container.
4. Advance the sampling probe slowly to the first depth to be sampled. For Site 5, samples will be collected at the top of native soil (below the fill) and just above ground water. For Sites 1 and 4, samples will be collected at ground surface, midway to ground water and just above the water table. If the water table is shallow (less than 5 feet below ground surface), collect two samples, one at the surface and one above the water table.
5. Remove the sample tube and extrude the sample. Immediately screen the contents for VOCs using a PID. Record the results in the field logbook. Collect the VOCs sample first followed by the additional bottles for other analyses (see Table C-5).
6. Provide a brief description of soil type or types encountered during drilling, including grain size, color, moisture content, presence of odor or staining. Record on Field Data Sheet 1 (Attachment A).
7. Once sampling is completed, backfill the boring with bentonite cement slurry or concrete. Note the location of the boring with respect to a permanent feature (i.e. building or fence line).
8. Label and package samples to be sent offsite as described in Section 7.2 and 8.0.
9. Do not advance borings beyond 20 feet or the water table (whichever is encountered first) unless authorized by the Project Manager.

QA/QC:

1. Calibrate all field equipment per manufacturer's guidelines. Record calibration data, including make and model of equipment in the field logbook.
2. Collect field duplicates at the rate of 1 in 20 samples, or one duplicate per excavation area, per site, at a minimum.
3. If volatile organic compound samples are collected, submit a trip blank with the shipment.
4. Collect field blanks from the source water used in decontamination and analyze for associated parameters.
5. Collect rinsate blanks on a daily basis. Analyze at a frequency determined by the Project Chemist or designee.

All QA/QC will be finalized by the Project Manager or designee.

Procedure 3.2: Drum Inspection and Initial Screening (Page 1 of 1)

Objectives:

Drums that will be excavated during the removal action may contain liquids, solids or sludges. Due to the unknown nature of the contents of the drums, inspection and screening will be performed immediately upon removal of the drum from the excavation area.

Equipment:

-PID, Draeger tubes, CGI

Method:

Each drum or overpack container will be placed on a spill pallet and moved to the temporary staging area (TSA). The TSA will be lined with plastic and will be bermed on all sides. If a drum is discovered to be leaking or deteriorating in the excavation, it will be overpacked, prior to being moved to the TSA.

Prior to opening each drum, check the following items. Data will be recorded on the drum characterization data sheets (Field Data sheet 2).

- Symbols, words or other marks on drum indicating contents;
- Signs of deterioration such as corrosion or rust;
- Evidence of previous leakage;
- Swelling or bulging;
- Presence of crystals along edges of drum top;
- Drum type (polyethylene, steel, aluminum, etc.);
- Drumhead configuration (open, closed);
- Presence of explosive atmosphere around the drum; and
- Presence of organic vapors.

Based on initial screening data, if there is concern with opening a drum using manual techniques, move the drum to the explosion-proof box for opening.

Documentation: Drum characterization data sheets (Field Data sheet 2); field logbook

QA/QC: All equipment will be calibrated daily per manufacturer guidelines. Calibration data, including make and model of equipment, will be recorded in the field logbook.

Procedure 3.3: Drum Opening and Sampling (Page 1 of 2)

Objective:

1. Open each drum in a safe manner.
2. Collect a representative sample for on-site laboratory characterization (HazCat).
3. Record visual observations of drum contents.

Equipment:

- drum sampling equipment (drum thief, coliwasa, etc., as applicable)
- 100 mL (or 4-ounce) glass jars
- PID, CGI
- drum wrench, wedge
- stainless steel bowls and spoons

Method:

Once a drum has been screened as described in Procedure 3-1, the drum will be opened and sampled using the following methods. These steps are for manual opening unless otherwise noted.

For closed-top drums:

1. Position the container with the opening in an upright position.
2. Slowly loosen the closure. Use a nonsparking drum wrench on closures allowing any gas pressure to release. The sampler shall be in a position to minimize the potential for danger from exposure or sudden pressure release. If the closure cannot be opened, open the drum using a remote mechanical opening device.
3. Remove the closure and collect a sample through the opening with a disposable glass tube, coliwasa, peristaltic pump or vacuum sampler by inserting the equipment to the bottom of the drum to ensure a representative sample.
4. Ensure that all elements of a particular drum or liquid container are sampled, i.e. check for phases.
5. If the coliwasa contains more than one liquid type, attempt to sample both liquids.
6. Samples that can be visually determined to be homogeneous may be sampled with a coliwasa. A dipper or peristaltic pump may be used. Contents may be poured, if less than 6 inches of materials are present, or sampling is not possible with the drum in an upright position.
7. Transfer the sample to a certified clean sample container provided by the laboratory.
8. Clean the exterior of the sample and ensure that the container is tightly sealed before applying the sample label.

Procedure 3.3: Drum Opening and Sampling (Page 2 of 2)

Method (continued):

For open-top drums:

1. Open the container slowly to minimize the generation of airborne particles. Loosen and remove the lid bolt. Carefully stretch the top ring and lift it away from the lid. Take care not to tip the drain or pull the lid off too quickly. Use a nonsparking wedge to loosen and remove the lid.
2. Using a trier, scoop or dipper, collect a representative sample from the container by sampling through the depth of the drum; if it is not possible to obtain a single sample, sample at least five locations within the container and composite the samples. Samples for organics testing will be collected and immediately placed into certified clean jars. No compositing will be done for organics test samples. If more than one phase is present, attempt to collect a sample of each phase. Note special labeling instructions in Section 7.2.

Note: When sampling solid materials, consideration must be given in situations where the material has changed state (i.e. decomposed). For example, water reactive metals will hydrolyze in the presence of moist air.

3. A stainless steel or polyethylene spoon may be used to mix the sample to improve homogeneity.
4. Transfer the sample to a certified clean 100 mL or equivalent sample container. Samples will be taken to the mobile laboratory area for testing. A summary of analytical parameters for mobile laboratory characterization analysis is provided in Procedure 3.3.
5. Clean the exterior of the sample container and ensure that the container is tightly sealed before applying the sample label.

During sample collection, the field team will record observations of the drum contents. These observations include, but are not limited to, the following items. This information will be recorded on the drum characterization data sheets.

- Color, Viscosity
- Air reactivity (foaming, bubbling, evaporation, changes in state)
- Drum content amount
- Combustible Gas Indicator (CGI) readings
- Organic Vapor Monitor (OVM) readings

Documentation: Drum Characterization Data Sheet (Field Data Sheet 2); field logbook

QA/QC: All monitoring equipment will be calibrated per manufacturer's specifications. Calibration information, including make and model of each piece of equipment will be recorded in the field logbook.

Procedure 3.4: On-site Waste Characterization and Bulking (Page 1 of 2)

Objective:

1. Perform hazardous category (HazCat) tests to characterize drum contents and determine the appropriate disposition of the wastes, either as nonhazardous or hazardous.

Equipment:

-On-site laboratory fully capable of performing all HazCat tests
-HazCat results form (Field Data sheet 3)

Method:

HazCat tests require sufficient laboratory bench space, as well as adequate ventilation, regulated temperature, dry conditions and controlled test space (i.e. hood). Laboratory procedures, including test data sheets, will be reviewed for each of the above tests prior to the start of work. Samples will be labeled as described in Section 7.

1. The mobile laboratory or HazCat field crew will conduct HazCat tests for samples collected from each drum (one per container or drum). The list of criteria includes:

- Moisture Content
- Acidic/Caustic (pH)
- Specific Gravity, Viscosity
- Air Reactivity
- Water Reactivity
- Water Bath Organic Vapor Analysis
- Combustibility
- PCB Field Screening (by field test kit, optional test)
- Pesticide Field Screening (by field test kit, required at Site 5)
- Presence of Halides
- Presence of Inorganics (metals, metals compounds, based on results of other tests)
- Presence of Organics (organic functionality)
- Presence of Cyanide
- Flammability Tests
- Oxidizing/Reducing Capacity
- Inert or other criteria (color, odor)

Results will be recorded on Field Data Sheet 3 (HazCat Results).

Procedure 3.4: On-site Waste Characterization and Bulking (Page 2 of 2)

Method (continued):

2. All visual observations and mobile laboratory data will be reviewed to determine if the drum contents can be bulked into one of four major categories:
 - Hazardous Liquids
 - Hazardous Solids/Sludge
 - Non-hazardous Liquids
 - Non-hazardous Solids/Sludge
3. Bulking of materials will be performed at the final staging area pending the results of field characterization. Bulking will be in compliance with 40 CFR 265, Appendix V (Examples of Incompatible Waste).
4. The following procedures are from Chapter 11, "Handling Drums and Other Containers," from **Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities**. (October 1985). Health and Safety monitoring will be conducted during bulking as described in the Site Safety and Health Plan.
 - a. Inspect each tank or bulking drum and remove any residual materials from the interiors prior to transferring any bulked materials.
 - b. To move hazardous liquids, use pumps that are properly rated (see NFPA 70 Articles 500-503 and NFPA 497M) and that have a safety relief valve with a splash shield. Make sure the pump hoses, casings, fittings, and gaskets are compatible with the material being pumped.
 - c. Inspect hose lines before beginning work to ensure that all lines, fittings, and valves are intact with no weak spots.
 - d. Take special precautions when handling hoses as they often contain residual material that can splash or spill. Protect lines from vehicular and pedestrian traffic.
 - e. Store flammable liquids in approved containers.
 - f. Bulking must be completed prior to waste haulers entering the site.
5. Within each of the four major categories, segregate drums or bulk containers using chemical categories (acids, heavy metals, pesticides, etc.) as determined by field/mobile laboratory testing. This segregation will be finalized following offsite analysis of hazardous waste characterization samples.

Documentation: Field Data Sheet 3 (HazCat Results); field logbook

QA/QC: The laboratory will submit a quality assurance plan for conducting the compatibility tests. This plan will include calibration requirements and other QA/QC controls for the on-site lab. The laboratory will be responsible for meeting all QA/QC requirements, and will be subject to review or audit throughout the life of the project.

Procedure 3.5: Disposal Sampling - Incidental Soil, Excavation (and Backfill) Soil, Debris, and Bulked Drum Contents (Page 1 of 3)

Objectives:

1. Collect representative samples for disposal characterization.

Equipment:

- drum and tank sampling equipment (weighted bottle sampler, coliwasa, etc.)
- sample containers (as defined in Table C-5)
- stainless steel spoons and bowls for compositing

Method:

Following completion of field characterization, all wastes, bulked and drummed, will be sampled and analyzed for RCRA characteristics. Composite samples will be collected, where possible, to characterize bulked materials.

Samples will be collected from drummed or containerized solids, drummed liquids, tanks of bulked liquid, rolloff or stockpiled incidental soil and/or debris and oil containers. Table C-5 includes the hazardous waste characteristic tests for each medium to be sampled. The analytical data from the tests will be provided to the disposal facility receiving the waste. The list of methods in Table C-5 may be revised, at the discretion of the Project Manager, for acceptance criteria to be met.

A. Containerized Solids - Drum, Overpacks

1. For groups of 10 or less containers in each chemical category within the non-hazardous group, collect one grab sample from each container.
2. Combine grab samples in a stainless steel bowl. Remove large pieces of debris or rock.
3. Fill sample containers in the order listed on Table C-5.
4. For TCLP-volatiles samples, choose a drum potentially contaminated with VOCs. Collect a discrete sample from the drum, using a hand auger. Immediately place contents of the sample bucket into a 4-ounce jar, leaving no headspace.
5. Follow guidelines for sample documentation, packaging and shipping provided in Sections 7 and 8. Analytical parameters are provided in Table C-5.
6. Repeat the entire procedure for groups of 10 or less containers in the "hazardous" group. Note that results may dictate organizing the drums/containers a different way prior to final processing and disposal to an offsite facility.

Procedure 3.5: Disposal Sampling - Incidental Soil, Excavation (and Backfill) Soil, Debris, and Bulked Drum Contents (Page 2 of 3)

Method (continued):

B. Containerized Liquids - Drum, Overpack

1. For liquids contained in individual drums (non-bulked), samples will be collected from each container, within a particular chemical category, in the nonhazardous or hazardous group.
2. Samples collected for VOC analysis will be collected midway between the liquid surface and the container bottom.
3. A weighted bottle sampler or coliwasa will be used to extract each sample, including VOA samples.
4. VOA vials will be filled slowly, from the bottom up, until a meniscus is formed at the top of the bottle.
5. The cap will be filled with a few drops of liquid. The bottle will be carefully capped, to assure no headspace remains.
6. The bottle will be inverted and tapped to check for air bubbles. If air bubbles exist, repeat step 4 once. If air bubbles are still present, discard the sample and repeat steps 2-5.
7. The remaining samples containers will be filled in the order shown on Table C-5. Follow sample documentation, packaging and shipment procedures as described in Section 7 and 8.

C. Bulked Liquids - Tank

1. Divide the liquid surface into two parts. Collect one sample each from the upper, middle and lower portion of each part with a weighted bottle sampler, coliwasa, or equivalent.
2. Composite the samples in one container (containers are listed in Table C-5).
3. A sample can be obtained through a bottom valve if no other access point is available. In some instances, such a sample must be documented that it may not be representative of the overall container contents.
4. VOA samples will be collected as described in Part B, steps 2-5.
5. Follow sample documentation packaging and shipment procedures as described in Section 7 and 8.

D. Stockpile Sampling

Incidental soil or debris removed during drum excavation will be placed in a stockpile. The stockpile bed will be lined with plastic and bermed, as described in the Work Plan. Each stockpile will consist of 200 cubic yards of material. A waste management area will be designated for soil stockpiles. Waste will be stored in this area for a period not to exceed 90 days.

Samples will be collected from each 200 cubic yard stockpile using the following procedure. Soil screening levels (SSLs) listed in Table C-6 will be compared to sample results to determine if excavated soil may be returned to the excavation as backfill or placed in rolloffs for disposal offsite.

1. Divide the stockpile into approximately four equal sectors.
2. Using a hand auger and sample bucket, collect a grab sample from each sector, and one grab sample from the center of the roll-off or pile. The hand auger should be inserted approximately 6 inches into the soil.
3. Calibrate the PID and record the results, make and model number. Collect soil from the hand auger and place in an 8-ounce glass jar. Cover the jar with aluminum foil and allow the container to reach room temperature. Pierce the foil with the detector probe tip and record the concentration of organics present in the headspace (in ppm). Repeat steps 2 and 3 for each of the five grab samples unless otherwise directed by the Project Manager. Composite the five grabs in a stainless steel bowl. Fill containers for offsite analysis (non-volatiles) from this mixture.
4. Samples to be tested for Volatile Organic Compounds (VOCs) will not be composited. Use a single grab sample from the center of the rolloff or pile or from an area potentially high in contamination (based on visual observation or on headspace levels).
5. Transfer the sample to be submitted for analysis into a certified clean sample container. The VOA samples should be tightly packed into sample containers, leaving no headspace.

Procedure 3.5: Disposal Sampling - Incidental Soil, Excavation (and Backfill) Soil, Debris, and Bulked Drum Contents (Page 3 of 3)

Method (continued):

D. Stockpile Sampling (continued)

6. Clean the exterior of the sample container and ensure that the container is tightly sealed before applying the sample label.
7. Submit samples for analyses listed in Table C-5. Follow sample documentation, packaging and shipment procedures as described in Section 7 and 8.

Oil Sampling

It is anticipated that little oil will be recovered from excavated drums. Oil discovered will be placed in polyethylene containers. Oil will not be bulked. One sample of oil will be collected per drum or container and submitted for analysis as described in Table C-5.

Documentation: field logbook (sample information); chain-of-custody forms and sample labels

QA/QC:

1. QA/QC samples will be submitted as shown in Table C-4. Each sample type is discussed in Section 4.
2. Non-dedicated, non-disposable sampling equipment will be decontaminated using procedures in Section 5.

Procedure 3.6: Disposal Sampling: Decontamination Fluids, Incidental Water (Page 1 of 1)

Objective: To collect representative samples and obtain data necessary to properly dispose of wastewater generated during site activities.

Equipment:
-bulk liquid sampling equipment (see Procedure 3.4)

Method:

During remedial activities, surface water may infiltrate into the excavation. This water will be pumped from the excavation and into a tank. Following solids settling, 1-2 water samples will be collected from the tank.

1. If the tank is not fitted with a valve, a submersible pump or pump tubing will be lowered midway between the water surface and tank bottom. Care will be taken not to disturb the settled solids at the tank bottom.
2. Water will be pumped from the tank at a low rate (200 mL/min for VOCs) and 5 gpm or less for other containers. Sample bottles will be filled and submitted for analysis of VOCs, metals and disposal parameters (Table C-5), as dictated by an offsite disposal facility.
3. For other sample analyses, divide the water surface into two parts. Divide the liquid surface into two parts. Collect one sample each from the upper, middle and lower portion of each part. A coliwasa or other equivalent sampler may be used in place of the peristaltic pump and tubing if tank depth is shallow and the liquid surface is accessible.
4. Composite the samples in one container (containers are listed in Table C-5).
5. A sample can be obtained through a bottom valve if no other access point is available. In some instances, such a sample must be documented that it may not be representative of the overall container contents.

Wastewater will be generated during decontamination of excavation equipment, sampling equipment and tools. This water will be stored in 55-gallon drums or polyethylene tanks and sampled as described above. Disposal options for decontamination fluids and groundwater are detailed in the Waste Management Plan.

Documentation: field logbook (sample information); chain-of-custody forms and sample labels

QA/QC:

1. QA/QC samples will be submitted as shown in Table C-4. Each sample type is discussed in Section 4.
2. Non-dedicated, non-disposable sampling equipment will be decontaminated using procedures in Section 5.

4.0 QA/QC SAMPLES

Quality control samples will be collected in the field to enable identification of field and/or laboratory conditions that may affect data quality and data usability. Field quality control samples to be collected as part of the CBC Gulfport sampling activities include trip blanks, equipment rinsate blanks, field blanks, field duplicates and matrix spike/matrix spike duplicates, as applicable.

4.1 TRIP BLANKS

Trip blanks consist of two 40-mL glass volatile organic analysis (VOA) vials containing analyte-free water taken from the laboratory, shipped to the sampling site with the sample containers and returned to the laboratory with the VOC samples. One trip blank will accompany each cooler containing samples for VOC analysis throughout the field storage, shipping, laboratory storage and analytical process. Trip blanks are only analyzed for VOCs and indicate when cross-contamination may occur due to atmospheric conditions within the cooler, during shipment or within the laboratory.

4.2 EQUIPMENT RINSATE BLANK

Sampling equipment rinsates are collected to ensure that sampling equipment is clean and that the potential for cross-contamination has been minimized or prevented. Sampling equipment rinsate blanks are collected from the final reagent grade water rinse used in sample equipment decontamination. Sampling equipment rinsate blanks will be collected early in the day on a daily basis and analyzed at a frequency determined by the Project Chemist or designee. A reduction in the frequency of equipment rinsate samples may be deemed justifiable by the Project Chemist based on review of analytical results which would need to show no discernable evidence of introduction of cross-contamination due to inadequate equipment cleansing.

The equipment rinsate is obtained by first decontaminating the sampling device and then pouring reagent grade (ultrapure) water over the device. The rinsate water is collected either in a decontaminated stainless steel bowl and then transferred to the sample bottles or by direct collection into the sample bottles. The rinsate samples are analyzed for the same constituents as the related samples. The results will be used to flag or assess the levels of analytes in the samples and evaluate the effectiveness of sampling equipment decontamination.

4.3 FIELD BLANKS

Field blanks will consist of the source water used in decontamination and steam cleaning. At a minimum, one field blank from each event and each source of water must be collected and analyzed for the same parameters as the related samples.

4.4 DUPLICATE SAMPLES

Duplicate samples will be collected to allow determination of analytical and sampling precision. One duplicate sample in every ten (10) environmental samples will be collected and submitted for the identical parameters as the regular samples.

4.5 MATRIX SPIKE SAMPLES

Matrix spike/matrix spike duplicates (MS/MSD) samples will also be submitted as further QC checks, if necessary. These samples will be spiked at the laboratory. These will be collected at the frequency of one MS and MSD for every twenty (20) field samples (including trip blanks, field blanks and blind duplicates) or every other day, whichever is the greater frequency. These will allow accuracy of the analytical method to be determined. Precision will also be assessed by comparison of matrix spike duplicate recoveries and field sampled duplicates. The purpose of these laboratory spikes is to monitor any possible matrix effects specific to samples collected from the site. The addition of known concentrations of compounds/ constituents to the sample also monitors extraction/digestion efficiency.

Matrix spike/matrix spike duplicate sample aliquots will be acquired by providing triple the necessary sample volume for the location identified for these QC samples. Matrix spike/matrix spike duplicate sample aliquots for solid/soil analyses will be split from the designated sample location at the laboratory. The laboratory will select aliquots that are as homogeneous with respect to one another as possible to avoid precision problems related to sample homogeneity. The specific sample location which will be used for matrix spikes and blind duplicates will be chosen by the Project Chemist. Homogenizing volatile fractions is discouraged prior to splitting duplicates to avoid the loss of volatile organic compounds.

5.0 DECONTAMINATION PROCEDURES

A permanent decon station will be placed as close as possible to the contamination reduction zone at each site (Sites 1, 4 and 5). The station will have containment for the collection of washwater and be protected from the rain. The decon facility will be adequate in size to decontaminate all excavation and sampling equipment.

A mobile decon station will be used, as practical, for decontamination of all non-disposable equipment (*i.e.*, triers, spoons and stainless steel bowls) and small tools. The procedure for decon of sampling equipment is given below:

- Wash with Alconox™ solution
- Tap water rinse
- Methanol or isopropanol rinse

- Reagent grade (organic/inorganic free) water rinse
- Nitric Acid (<10%) rinse (metals)
- Reagent grade (organic/inorganic free) water rinse

All excavation equipment will be decontaminated using high-pressure/ low volume water or steam with detergent. The equipment will be inspected for signs of contamination and screened by MK for organic vapors with a PID. If levels of organic vapors greater than background are measured, the cleaning procedure will be repeated until the screening criteria for cleanliness have been met. Results of decon activities will be summarized in the field logbook.

6.0 CALIBRATION AND MAINTENANCE OF FIELD INSTRUMENTS

Measurements that affect the quality of an activity or operation will be taken only with instruments, tools, gauges, or other measuring devices that are controlled, calibrated, adjusted and maintained at predetermined intervals to a specified accuracy. The calibration and maintenance of field equipment and instrumentation will be in accordance with manufacturer's specifications or applicable test specifications, and shall be documented in the Daily Activity or Site Safety and Health Logbooks, as applicable. The calibration program described in the Contractor Quality Control Plan will be followed for all instruments requiring calibration. Air monitoring equipment used for personnel exposure monitoring will be calibrated daily, or after long periods of non-use during the day.

Preventive maintenance programs will, as a minimum, be established for equipment that would otherwise be subject to breakdown, when the breakdown could lead to safety hazards, environmental contamination, or loss of completeness and accuracy in data. The program will include a schedule of the important preventative maintenance tasks that will be carried out to minimize downtime of measurement systems, and a list of any critical spare parts that need to be on hand to minimize downtime.

7.0 FIELD DOCUMENTATION

The designated field task leader will maintain a Field Activity Logbook (a.k.a. field logbook). In this bound logbook, the field team leader will record the on-site activities in real time, including all individuals on-site and sampling information, such as sample location, sample number, number of bottles collected, etc. If multiple activities are taking place at one time, and more than one sampling team is used, the field task leader will assign a backup logbook to record activities completed by the second team. The task leader will be responsible for keeping records in order. Recorded information will include, as a minimum, the following:

- Date, site name and crew initials (top of every page)
- Daily tasks and objectives
- Names, titles and purpose of visit for all site visitors
- Ambient weather conditions

- Instrument calibration data
- Results of air monitoring and personal protective equipment levels
- Sample locations, sample numbers and depths
- Sample collection method
- Sketch or grid defining soil sampling locations
- Sample identification number, number/type of containers, sample time and date
- Analyses requested and laboratory assignments
- Samplers name and signatures
- Type of sample collected
- Chain-of-custody form numbers used
- Decontamination activities
- Location and depths of duplicate samples
- Deviations from the CDAP
- Other notes and information, as required

7.1 DRUM LABELING

After containers/drums are sampled for disposal parameters, and prior to shipment, they will be labeled with the date of generation, the Subcontractor's name, a contact phone number (CBC GULFPORT), the term "pending analysis," the identification number of the sample taken from the container or drum and the area the drum was excavated. Prior to shipment, and after results on disposal characterization have been returned, the Subcontractor shall label all containers containing hazardous waste soil and hazardous waste liquids with labels specified for the material in 49 CFR 172.101, Hazardous Material Table and in Subpart E and Subpart F.

7.2 SAMPLE DOCUMENTATION

Samples will be labeled, preserved, and properly packaged for shipment to the offsite analytical laboratory. Information on the sample label will include:

- Sample identification number;
- Initials of the individual collecting sample;
- Date and time of sampling;
- Place of collection;
- Preservatives added, if any; and
- Analytical parameter(s).

Sample identification numbers will provide for a tracking procedure allowing information on a particular sample location to be easily and accurately retrieved. This system also ensures that each sample is unique identified and not confused with any other sample. The sample identification number consists of a prefix "GPT" and eight alpha/numeric characters (i.e. GPT12345678) that represent the following information:

- Project Name
- Site Name
- Sampling Event
- Sample Matrix
- Sample Number
- QC sample type (when applicable)

7.2.1 Site Name

The first two digits indicate the site and excavation area name. Each site consists of several areas to be excavated. They are designated as follows:

- Site 1 (5 areas): 11, 12, 13, 14 and 15 (The second digit represents the excavation area number)
- Site 4 (4 areas): 41, 42, 43 and 44
- Site 5 (3 areas): 51, 51, and 53

The sample identification number now consists of the three digit base identifier (GPT) and a two-digit sample site number (i.e. 11):

GPT-11-XX-XX-XX

7.2.2 Sampling Event

Samples will be collected and analyzed for one of two purposes: Hazardous Category (onsite characterization of drums) and Disposal Characterization (to determine ultimate disposition of wastewater, waste soil or drum wastes). These events are designated by a two-letter identifier:

- HC = hazardous category characterization
- DC = disposal characterization
- SB = soil boring

This identifier is placed after the site name in the sample's identification number:

GPT-11-SB-XX-XX
 GPT-11-HC-XX-XX
 GPT-11-DC-XX-XX

7.2.3 Sample Matrix

7.2.3.1 HazCat Samples

Drum samples collected and analyzed on-site for HazCat parameters may consist of solids,

liquids or oil. To distinguish the sample matrix, the following identifiers will be used:

- DL = drummed/containerized liquids
- DS = drummed solids
- DO = drummed/containerized oil
- DU = drummed/containerized suspension or other material

This identifier is placed after the sampling event in the sample's identification number:

GPT-11-HC-DL-XX
GPT-11-HC-DS-XX
GPT-11-HC-DO-XX
GPT-11-HC-DU-XX

7.2.3.2 Disposal Characterization Samples

Several waste streams, including incidental soil removed with the drums, excavation soils, decontamination water and incidental water in the excavation, will be generated during site activities. These waste streams will be sampled to determine proper disposition. They are represented by the following identifiers:

- IS = incidental soil (soil present alongside the drums in the excavation, considered hazardous)
- ES = excavated soil (soil removed during all other general excavation activities)
- DW = decontamination water
- IW = incidental water found in the excavation and removed (most typically storm runoff)

Prior to ultimate disposal, the drum contents, either in original containers or in bulked containers will be sampled. These materials include the following:

- BS = bulked solids (ready for disposal)
- BL = bulked liquids (ready for disposal)
- BO = bulked oil (in some cases oil will be sampled directly from the original containers)
- BU = bulked suspensions or other unknown material

Each of the above eight pairs of letters will be placed after the letters "DC" in the sample identification number. For example:

GPT-11-DC-BS-XX
GPT-11-DC-IW-XX

7.2.4 Sample Number

7.2.4.1 HazCat Samples

At each excavation area, within each of the three sites (1, 4 and 5), each drum/overpack container excavated will be numbered consecutively (i.e. at Site 1, excavation area 1, drums will be numbered 1, 2, 3, 4...; at Site 1, excavation area 2, drums will be numbered 1, 2, 3, 4... and so on.) The numbering will be unique to each excavation area.

For HazCat samples, the individual drum/overpack container number will be placed after the 2-letter identifiers described in Section 7.2.3.1 (DS, DL, DO or DU). For example:

- GPT-11-HC-DS-20 (This solids sample was collected from drum #20 excavated at Site 1, area 1, for the purpose of HazCat analysis.)
- GPT-11-HC-DL-21 (This liquid sample was collected from drum #21 excavated at Site 1, area 1, for the purpose of HazCat analysis.)
- GPT-12-HC-DS-20 (This solids sample was collected from drum #20 excavated at Site 1, area 2, for the purpose of HazCat analysis.)

7.2.4.2 Disposal Samples

The last two digits in the sample identification number for disposal samples will be a sample number. These numbers will be ordered consecutively for each excavation area within each site. For example:

- GPT-11-DC-IW-01 (This was the first sample of incident water which was present in excavation area 1, of Site 1)
- GPT-11-DC-DW-02 (This was the second sample of decontamination water generated during activities at Site 1, excavation 1)
- GPT-11-DC-BS-01 (This was the first sample of bulked solids collected at Site 1, excavation area 1. The solids were bulked from one or more containers excavated from this area. The source containers will be listed in the field book, in association with this sample.)

7.2.5 Special Case for Soil Borings

Samples collected from soil borings will be identified as follows:

GPT-11-SB-XX-XX, with SB = soil boring

The remaining digits stand for the boring number (two digits) and the depth (two digits). For example:

GPT-11-SB-01-05 represents a soil sample collected from Site 1, Excavation Area 1, soil boring

1, at a depth of 5 feet.

7.2.6 Duplicate Sample Notation

For all duplicate samples, the first digit of the sample number will be replaced by a "D." The second digit will indicate the number of duplicate (1, 2, 3, etc.). For example:

GPT-11-DC-BS-D1 (This is a duplicate sample of a regular bulked solids sample collected at Site 1, excavation area 1. The associated bulk solids container(s) will be listed in the field book.)

7.2.7 QA/QC Sample Notation

Additional QA/QC samples are numbered by replacing the first digit of the sample number with the proper QC sample code, listed below:

- F - Field Blank
- E - Equipment Rinsate
- T - Trip Blank
- M - Matrix Spike

The identification number of the last sample collected just before the blank sample was collected will be modified. For example:

GPT-11-DC-BS-01 was collected just before an equipment rinsate blank sample was collected. Thus, the identification number for the equipment rinsate blank will be GPT-11-DC-BS-E1.

7.3 CHAIN-OF-CUSTODY FORMS

All sample shipments will be accompanied by a chain-of-custody (COC) record, which will include the following information:

- Sample identification numbers;
- Site name;
- Date and time of sample collection;
- Analytical tests for each sample;
- Project Manager name or designated field manager and phone number;
- Project number;
- COC number;
- Name of sampler(s);
- Analytical lab;
- Turn-around time (very critical);

- Indicator if potentially "high" level of contamination is in sample;
- Sample type (*i.e.*, grab, composite);
- Matrix samples designation;
- Preservatives;
- FedEx airbill tracking number;
- Signatures for transfer of custody; and
- Bottle quantity for analysis.
- Sample depth (if applicable)
- Designated MS/MSD samples

The chain-of-custody record will be completed with information and wording consistent with information and wording reported on sample labels and seals.

When transferring custody the sampler will record the time and date and sign the chain-of-custody form in the "relinquished by" block. The receiver will sign "received by" block upon sample receipt. The original chain-of-custody record will accompany the shipment, and a copy will be retained by the Project Manager or designee. A signed chain-of-custody record will be obtained from the laboratory custodian after the samples have been received and their condition checked.

8.0 SAMPLE PREPARATION, PRESERVATION AND PACKAGING AND SHIPMENT

Immediately after collection, samples will be transferred to properly labeled sample containers with all necessary preservatives added. Table C-5 lists the proper container material, volume requirements, and preservation needed for the sampling effort. Samples requiring refrigeration for preservation will be immediately transferred to coolers packed with ice or ice packs. Proper chain-of-custody documentation will be maintained as discussed in Section 7.3 - Documentation and Chain-of-Custody Procedures.

Packaging and shipping procedures will vary depending upon sample media, potential contaminant concentration, preservation technique, and sample container. A waterproof metal or equivalent strength ice chest or cooler is suitable for packaging and shipping samples not considered "Dangerous Goods" by the U.S. Department of Transportation (USDOT). The person packaging the samples is responsible for ensuring that the cooler is in suitable condition for shipping. In the event a concern arises regarding whether a sample shipment is a USDOT "Dangerous Good" or is potentially in violation of international transportation regulations, the Project Engineer or Project Manager will be consulted.

Sample packaging should ensure that the chance of breakage is minimized and that, in the event a sample container breaks or leaks, it will not impact the integrity of other samples in the shipment. Also, samples should be protected from ice melt. Each sample container should be placed in a ziploc-type bag, and packing material such as bubble wrap or comparable shock-

absorbing materials should be used when shipping glass containers to avoid breakage. Adequate ice, contained in double ziploc-type bags, or blue ice must be included with each cooler shipment so that the contents are maintained at four degrees celsius until receipt at the laboratory. A chain-of-custody record, protected from moisture by enclosure in a ziploc-type bag, must accompany each cooler shipped. The cooler lid should be secured using packing tape around the outside of the cooler.

III. QUALITY ASSURANCE PROCEDURES

1.0 INTRODUCTION

This portion of the CDAP describes those activities necessary to generate a data set that is defensible, traceable, and usable for decision-making. Chemical data for the CBC Gulfport, Sites 1, 4 and 5 project will be obtained from:

Field Screening/Characterization of:

- Contents of excavated drums to determine material compatibility; and

Off-site Laboratory Analysis of:

- Incidental water and decon water samples for the purpose of disposal characterization;
- Incidental soil, debris and drum waste, both bulked and drummed, for disposal; and
- QA/QC samples, as described in the Part II, Sampling and Analysis Plan.

2.0 DATA QUALITY OBJECTIVES

DQOs are qualitative and quantitative statements that specify the quality of the data required to support decisions concerning remediation. DQOs are determined based on the end uses of the data and are established prior to data collection. DQOs help to ensure that all data collected are legally and scientifically defensible.

2.1 DATA QUALITY OBJECTIVES PROCESS

The DQO process consists of three stages:

- Stage 1: Identify Decision Types;
- Stage 2: Identify Data Uses/Needs; and
- Stage 3: Design Data Collection Program.

Stage 1 of the DQO process defines the types of decision that will be made by identifying data users, evaluating available data, developing a conceptual model, and specifying objectives for the project. Identified data users include federal, state and local (if applicable) regulatory agencies, and SOUTHDIV representatives for this project. Evaluation of available data include summarizing the existing data for input to the site conceptual model and using the existing data for design of the additional work envisioned for this facility. The site conceptual model will be developed by utilizing the existing data to formulate hypotheses regarding the nature and extent of contamination, the site-specific fate and transport mechanisms as well as available remedial alternatives. From the developed site conceptual model and the available remedial alternatives, specific objectives (*i.e.*, performance goals) will be developed for this facility.

Stage 2 of the DQO process identifies the data uses and data needs for this project. The data uses center around three concepts. The first is collection of screening data used to determine which, if any, of the contents of excavated drums may be safely bulked to facilitate ultimate disposition off site. The second data use is waste characterization for identification of disposal options. Finally, the third is collection of field data to define the limits of excavation.

Stage 3 of the DQO process involves design of the data collection program. This stage results in analytical method specification, as well as determinations of the quality and quantity of data necessary in order to make the appropriate decisions.

2.2 CHEMICAL DATA QUALITY OBJECTIVES

Field screening methods will be used to ascertain if further excavation is required at each site. Each method provides both quantitative and qualitative data to address this issue.

The analytical laboratory selected for this project must meet, as a minimum, NEESA 20.2-047 B requirements, or equivalent, before samples are submitted for chemical analyses. Table C-4 details the analytical program for this project. The objectives of the chemical data are to, within the defined uncertainties of the data set, enable decisions regarding disposal.

2.3 PHYSICAL DATA QUALITY OBJECTIVES

Physical features of the site will be verified (if mapped during previous studies) or determined in the field. Screening soil sample locations will be documented on the site map. Locations will be measured from a permanent feature (i.e. buildings, fences).

2.4 ANALYTICAL DATA QUALITY OBJECTIVES

DQOs for analytical data will be defined through assessment of the precision, accuracy, representativeness, completeness, and comparability.

2.4.1 Precision

Precision is the degree to which the measurement is reproducible. This will be determined by comparison of sample duplicates or designated laboratory matrix spike/ matrix spike duplicates. Precision will be calculated as the relative percent difference (RPD) between these duplicates according to the procedures. RPD is calculated using the following equation:

$$RPD = \frac{|V_1 - V_2|}{(V_1 + V_2)/2} \times 100$$

Where: RPD = Relative Percent Difference
V₁ = Value of the first duplicate
V₂ = Value of the second duplicate

RPD values will be finalized prior to the start of the project by the Project Manager and/or the Project Chemist. A value of 30% for RPD will be used initially.

2.4.2 Accuracy

Accuracy will be expressed as the percent recovery of a compound from a sample spiked with known concentrations of target compounds for each analytical method. The determination of the accuracy of a measurement requires a knowledge of the true or accepted value for the parameter being measured and the value of the parameter for the unspiked sample. Accuracy will be monitored for each matrix type and analytical method and is calculated as follows:

$$\text{Percent Recovery} = \frac{C_{SMS} - C_s}{TC} \times 100$$

Where: C_{SMS} = Concentration of sample matrix spike
C_s = Concentration found in non-spiked sample
TC = Target concentration spiked into sample

Accuracy determination will be based on the contract laboratory quality control/assurance spikes for a given method. These accuracy determinations are lab, method and analyte specific and will be evaluated through the use of control charts, method accuracy determinations and/or other reasonable standards. Therefore, no specific acceptance criteria will be established in this document and analytical data will be evaluated as it is received and documented in the data verification package.

2.4.3 Representativeness

The representativeness of the data is the degree to which data represent a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Data are considered representative if the sampling is in accordance with the sampling procedures defined in Part II, Sampling and Analysis Plan and sample analysis methods are standard and complied with. Field duplicate samples and rinse blanks will be collected and analyzed as a means to assess field representativeness. Trip blanks also will be included with each groundwater sample shipment to evaluate potential cross-contamination during transport and storage which may impact data representativeness.

Rinse blanks, field blanks, and trip blanks should be free of target compound contamination,

however, in some instances this criteria may not be possible and/or relevant. No specific criteria is required for this parameter, however, qualitative statements regarding this parameter should be made at project closure by the Project Manager.

2.4.4 Completeness

Completeness is a measure of the amount of valid data obtained from an analytical data set compared with the amount that would be expected to be obtained under normal sampling and analytical conditions. Completeness is based on only those samples collected and submitted for laboratory analysis and has been established at 90 percent for this project. Percent completeness will be calculated as follows:

$$\text{Completeness} = \frac{\text{Amount of Valid Data}}{\text{Total Samples Analyzed}} \times 100$$

Completeness goals for this project have been established at 90%, unless otherwise defined by the Project Chemist.

2.4.5 Comparability

Comparability expresses the confidence with which one data set can be compared to another. Samples from the same media (i.e., soil water) will be considered comparable if the procedures for collecting and analyzing the samples are complied with and consistent.

Comparability is assured through the use of established and approved analytical methods and protocols. The laboratory's quality control program is designed to establish consistency in the performance of the analytical process. The program includes traceability of measurements to standardized reference materials to establish comparability with other laboratory results, and internal controls to verify consistency of the contract laboratory's performance. Standard reporting units (e.g., mg/kg, ug/L) will be used for reporting the various parameter results.

Precision and accuracy criteria may be used for indicating comparability to previous sampling events. If other criteria will be used for comparability determination, they must be approved by the Project Chemist.

3.0 DATA VALIDATION/VERIFICATION

Data validation is a systematic procedure of reviewing a body of data against a set of established criteria to provide a specified level of assurance of its validity prior to use. Organics and metals data resulting from offsite chemical analysis will be validated at NEESA Analytical Level E, as this data is for disposal purposes. Data verification will involve review of:

- Duplicate field sample analysis
- Instrument calibrations
- Reporting limits
- Holding times
- Database entry accuracy
- Data outliers

The laboratory will review the data prior to submittal, and provide internal data validation according to the laboratory's QA/QC guidelines. MK will review the data submitted and provide validation as defined in *Sampling and Chemical Quality Assurance Requirements for the Navy Installation Restoration Program (NEESA 20.2-047B)*.

4.0 LABORATORY ANALYTICAL PROCEDURES

The most current version of "Test Methods for Evaluating Solid Waste Physical/Chemical Methods" (SW-846) and/or "Methods for the Chemical Analyses of Water and Waste, EPA 600.1982" will be used for field screening and waste characterization. The EPA Contract Laboratory Program "Statement of Work for Organic Analysis" will be used by the off-site laboratory for the organic analysis of soil samples. ASTM methods for flashpoint, BTU and total chlorine (D-93, D-240-76 and D-808-81, respectively) will also be used.

4.1 ANALYTICAL METHODOLOGY

The analytical methodology for this project is largely based on utilization of an off-site laboratory. The off-site laboratory will conduct analyses for organic and inorganic parameters as listed in Table C-4. The off-site laboratory will produce a complete set of deliverables as defined in Table 7.6 of NEESA. The analytical data will be used for disposal characterization of drummed and bulk wastes.

All samples collected and submitted for offsite analysis during this project will be for disposal characterization only, for an interim removal action (non-closure). Disposal samples will be validated at a rate of 1 in 10 using Level E validation protocol. Data produced for all samples will be verified.

4.2 REPORTING LIMITS

Reporting limits (ug/L) for the RCRA metals to be analyzed will be those for TAL metals, as defined in the U.S. EPA Contract laboratory Program (CLP) Statement of Work for Inorganics. (March 1990 or latest revision).

Reporting limits for volatile organics analysis for water samples will be 10 ug/L for each organic. Reporting limits for semivolatile organics and pesticides will be the required quantitation limits provided in the U.S. EPA CLP SOW for organics. All other reporting limits will be equivalent to the practical quantitation limits (PQLs) specified or obtainable by standard SW-846 methods. Methods are listed in Table C-5.

Reporting limits for soil samples will fall below risk-based concentrations (screening levels) listed in Table C-6.

4.3 SAMPLE CONTAINERS, PRESERVATION AND HOLDING TIMES

All sample containers will be provided by the analytical laboratories. The containers will be cleaned according to EPA protocol and either pre-preserved or the necessary amount of preservative will be provided by the laboratory in a separate container.

All samples collected during the field investigation and submitted to laboratories for chemical analyses will be preserved according to EPA standards. Sample preservation and temperature shall be checked immediately upon receipt of samples at the laboratory. The results of these checks will be recorded on the corresponding chain-of-custody form.

4.4 QUALITY CONTROL SAMPLES

Field blanks, field duplicates, equipment rinse blanks, trip blanks and MS/MSD samples, as needed, will be collected in the field as specified in Part II, Sampling and Analysis Procedures. Laboratory QC samples will be analyzed, where appropriate, and will include method blanks, standard matrix spikes and sample duplicates. These will be analyzed concurrently with the analytical batch to which they are assigned.

4.5 METHOD SPECIFIC DATA QUALITY OBJECTIVES

The method specific data quality objectives will be provided in the Quality Assurance Plan submitted by the approved laboratory performing the chemical analyses on the sample collected for this project.

5.0 QUALITY CONTROL CHECKS

5.1 SAMPLE HANDLING IN THE LABORATORY

Upon receipt, all samples will proceed through an orderly processing sequence (as defined in the laboratory QA/QC Plan) specifically designed to ensure continuous integrity of both the sample and other pertinent information to the analysis.

All samples will be carefully checked and verified for proper chain-of-custody (COC) records, preservation, broken or leaking sample containers, proper label identification, and any associated discrepancies. These items will be documented by use of a laboratory receipt form. If any samples arrive leaking or broken, or the custody seal on the shipment coolers is not intact, the Project Chemist will be notified of the problem(s) immediately.

If no discrepancies are identified, the sample COC record will be signed, and the samples will subsequently be assigned a unique laboratory identification number by the laboratory for tracking and filing. The laboratory QA system and the use of an internal COC procedure will ensure that the samples are appropriately tracked from storage through the laboratory until the analytical process is complete.

Analytical and procedural information and activities will be documented with the use of Standard Operating Procedures (SOPs), a laboratory data management system, laboratory benchsheets, laboratory notebooks, and orderly project files containing any information pertinent to the analysis or integrity of the results.

The contracted laboratory will provide a written QA/QC program which discusses rules and guidelines to ensure the reliability and validity of all analytical work conducted in their laboratory. Compliance with the QA/QC program is coordinated and monitored by designated laboratory quality assurance personnel.

The laboratory will document, in each data package provided, that both initial and ongoing instrument and analytical QC functions have been met. Corrective action will be initiated on any samples analyzed in non-conformance with the QC criteria.

5.2 METHOD SPECIFIC QUALITY CONTROL

Method quality control checks will be analyzed as outlined in the individual methods for each analysis performed.

6.0 DATA REDUCTION AND VALIDATION

The laboratory will perform in-house analytical data reduction and review of chemical analyses under the direction of the laboratory's technical staff, Laboratory QA Officer, and Laboratory

Project Manager for this project. These individuals are responsible for evaluating the quality of the data and indicating which, if any, data may be listed as "unacceptable" and/or which should be considered potentially unreliable. A report by the personnel assessing data quality will be submitted to the Laboratory Project Manager or designee with every data package prior to transmittal to the client.

Data reduction, review, and reporting by the laboratory will include the following:

- Raw data produced by the analyst are reduced and checked by the analyst following laboratory SOPs and the analytical methodology.
- A data review specialist will independently review the data to check that quality control criteria have been attained.
- Upon acceptance of the data package by the independent reviewer, a report is generated and sent to the Laboratory Project Manager.
- The laboratory QA/QC director or his/her designee randomly reviews, at a minimum, five percent of all project reports produced by the laboratory.
- Data packages will be prepared and submitted to the MK Project Chemist on an ongoing basis by the laboratory. The Project Chemist will verify the data and submit a copy to the site.

Complete data reduction and reporting procedures will be those specified by the laboratory Quality Assurance Project Plan.

7.0 PREVENTIVE MAINTENANCE AND CALIBRATION

The approved laboratory will be responsible for the maintenance of laboratory instruments and equipment. Instruments and measurements made as part of the analytical methodology will be as specified in the method, without modification. The laboratory's QA program ensures that only trained personnel perform routine maintenance on all major instruments and that repairs are performed by trained laboratory personnel or service technicians employed by the instrument manufacturer or representative. Instrument maintenance will be appropriately documented through the use of instrument logs which will be included in the laboratory project file.

8.0 CORRECTIVE MEASURES

When errors, deficiencies or out-of-control situations exist, the laboratory QA program provides systematic procedures, called corrective actions, to resolve problems and restore proper functioning to the analytical system.

The Laboratory Operations Manager or designee will review the data generated to ensure that all quality control samples have been analyzed as specified in the protocol. Where sample results fall outside of the acceptable ranges for accuracy and precision, deficiencies will be reported to the MK Project Chemist, who will immediately report the discrepancies to the Project Manager. Corrective actions will be defined by the MK Project Chemist in conjunction with the Laboratory Project Manager and documented appropriately.

The laboratory will follow the procedures in the respective method for performing corrective action and reporting the data with qualifiers, if appropriate. MK will evaluate the effect of any deviations in relation to the project DQOs. Corrective action may include, but is not necessarily limited to:

- Re-analyzing suspect samples
- Re-sampling and analyzing
- Evaluating and amending sampling and/or analytical procedures
- Accepting data with an acknowledged level of uncertainty
- Discarding the data

9.0 LABORATORY DATA REPORT

Laboratory data reports will be issued for each work order generated by the laboratory. A work order is generated for a single client's samples, received by the laboratory on the same day. The deliverable components of the data report are listed below:

- Cover sheet listing the samples included in the report and narrative comments describing problems encountered during analysis;
- Analytical results for field blanks, method blanks, surrogate recoveries, initial and continuing calibration forms, verifications of standards and blanks, internal standard data, ICP Interference Check Samples, ICP Serial Dilutions, Method of Standard Additions, and laboratory control samples;
- Case Narrative/Data Flags
- Data Package Checklist
- Sample Delivery Group Worksheet
- Data Report (analyte, method, reporting limit, date and time of analysis and results for each sample)
- Method Blank Summary
- Surrogate Recovery Information
- Field and Laboratory Blank Summaries
- Deficient Incident Report

- Dilution Factors
- Chain-of-Custody Records
- Cooler Receipt Forms
- Laboratory Sample Preparation Data Sheets
- Extraction/Digestion Logs
- Photocopies of laboratory notebooks relevant to the analytical data set.
- Standard Preparation Logs
- Instrument tuning and calibration summaries
- Instrument Printouts
- Raw data and chromatograms

As appropriate, each of these deliverable components are given for each of the types of analyses that are conducted.

10.0 QUALITY ASSURANCE PROGRAM

10.1 SYSTEM AUDITS

System audit(s) may be performed by the MK Project Chemist or designee during the course of the field activities. Evaluations will be made of ongoing field work, as well as any other activity affecting the quality. The primary purpose of the system audit is to verify and document that field activities are being performed efficiently and in conformance with approved standards and procedures, federal and state regulatory requirements, sound engineering and environmental practices, and contract requirements.

The audits will include: an objective examination of work areas, activities, and processes; review of documents and records; interviews with project personnel; and review of procedures associated with the project. Audit results will be documented and the audit report submitted to the Project Manager for action. The Project Manager will investigate any adverse audit findings, determine the root cause (if necessary), schedule corrective action, and respond in writing to the report as requested. The Project Manager will report periodically on the status of corrective actions taken, until all required actions are completed.

10.2 SURVEILLANCES

Quality assurance surveillances will be performed as necessary, using performance-based concepts for monitoring and/or observing activities, to verify conformance to specified program requirements. Surveillances are considered to be snap-shots of compliance during a given time and generally focus on one specific area of review, rather than entire program effectiveness. Surveillances will be conducted at the discretion of the Data Quality Manager and may be initiated when the quality of an activity appears to be in jeopardy due to noncompliance with the applicable project plans; an overview less formal than an audit is desirable; or formal audits of an activity, project subcontractor, etc., may not be required.

10.3 LABORATORY EVALUATION

Any laboratory performing chemical analysis will provide a list of certifications and approvals for review. MK will utilize a laboratory which has previously performed or are currently performing work in support of the Navy's Installation Restoration Program (IRP) per NEESA. As an alternate to previous NEESA approval, MK may utilize a laboratory which has undergone successful reviews by other DOD agencies, including: AFCEE (Air Force Center for Environmental Excellence) Installation Restoration Program U.S. Air Force; DERP (Defense Environmental Restoration Program) U.S. Army Corps of Engineers; and/or MRD (Missouri River Division) U.S. Army Corps of Engineers. Previous experience in CLP methodology will also be required as NEESA requires all GC/MS methods be performed using CLP methods. Other relevant federal agency reviews or approvals other than those listed may be considered, but require Contracting Officer approval.

The Project Chemist will assure that the laboratory has a current validation for all analyses and matrices specific to this project. MK will obtain a copy of the laboratory's Quality Assurance Plan and evaluate its experience, capability, and adequacy prior to sending of samples. This evaluation will be conducted and retained in project files. System audits may be performed by the MK Project Chemist or designee during the course of the field activities.

10.4 CORRECTIVE ACTION PROGRAM

A corrective action program will be implemented to ensure that conditions adverse to quality are identified promptly and corrected as soon as practical. In the case of significant conditions adverse to quality, the root cause of the condition will be determined, and corrective action taken to preclude recurrence. These actions will be documented and reported to appropriate levels of management.

Corrective actions may be the result of internal audits and surveillances or when laboratory analytical results appear unusual, questionable, or quality control criteria are exceeded. When quality control criteria are exceeded, information justifying poor recovery or precision will be requested from the laboratory and documented. Follow-up action will be taken to verify implementation of all corrective actions.

10.4.1 Reporting and Resolution of Quality Problems

Significant quality problems and conditions will be identified, reported and corrected in accordance with the following requirements:

- Existing, developing, or potentially out-of-control quality conditions will be promptly reported to the Project Manager for evaluation and action. These reports will include identification of the problems and corrective actions taken.
- Reports documenting quality problems and their resolution, including lessons learned

from significant quality problems and adverse conditions, will be routinely disseminated to all affected project personnel.

10.4.2 Laboratory Corrective Action

The MK Project Chemist or designee will review the data generated to ensure that all quality control samples have been analyzed as specified in the methods. This review will include calibration procedures, frequency, and results. Instrument maintenance logs also may be checked. Recoveries of laboratory matrix spike/matrix spike duplicate samples and surrogates will be checked for consistency with method accuracy. RPDs of laboratory matrix spike/matrix spike duplicates will be checked for consistency with method precision. Corrective actions will be defined by the Project Chemist in conjunction with the Project Quality Manager and documented appropriately.

The contracted laboratory will have an internal quality assurance corrective action program which includes verification that QC data are not outside acceptable windows for precision and accuracy, blanks or control samples do not contain contaminants above acceptable levels, undesirable trends detected in spike recoveries or RPDs between duplicates are corrected, there are no unusual changes in detection limits, and holding times have not been exceeded. If deficiencies are identified by the laboratory QA department during internal or external audits, or from results of performance evaluation samples, actions will be taken as previously described in Section 8.0

10.4.3 Recurring Conditions Adverse to Quality

For recurring quality problems where corrective actions have not been effective, the Project Manager, as needed, will do the following:

- Determine the events leading to the occurrence of the quality problems.
- Develop an understanding of the technical and work activities associated with the quality problems.
- Ascertain the implications of the quality problem.
- Determine the extent to which similar quality problems (or precursors to the problems) have been recognized by the responsible task manager, the effectiveness of any corrective actions that were taken, and impacts on completed work.
- Consider stopping work associated with the applicable activity.
- Recommend actions that can be taken by the responsible task manager to preclude recurrence.

TABLE C-1. SUMMARY OF DATA COLLECTION ACTIVITIES.

Activity	Methods/Equipment Used	Data Collected	Data Use/Objectives	QA/ QC Level
Field Screening - unopened drums	<ul style="list-style-type: none"> -Combustible Gas Indicator (CGI) -Organic Vapor Monitor (OVM) - Draeger Tubes -Visual Observation 	<ul style="list-style-type: none"> -Presence of explosive atmospheres -Concentration of organic vapors -Evidence of leakage, bulging or deterioration -Symbols or other marking identifying drum contents 	<ul style="list-style-type: none"> -Health and Safety Monitoring -Determine method of opening drum -Initial characterization data 	Field Level
Field Screening - opened drums	<ul style="list-style-type: none"> -Combustible Gas Indicator (CGI) -Organic Vapor Monitor (OVM) - Draeger Tubes -Visual Observation 	<ul style="list-style-type: none"> -Presence of explosive atmospheres -Concentration of organic vapors -Color, viscosity, amount in drum -Air reactivity (foaming, bubbling, etc.) 	<ul style="list-style-type: none"> -Health and Safety Monitoring -Initial data for mobile laboratory (need for dilution?) -Information for temporary storage 	Field Level
Drum Sampling	<ul style="list-style-type: none"> -OVM, Draeger Tubes -wrenches, non-sparking equipment for lid removal -trier, sludge judge, coliwasa, dipper, or equivalent 	<ul style="list-style-type: none"> -Drum samples for field characterization -Organic vapor presence in samples 	<ul style="list-style-type: none"> -Initial data for mobile laboratory (need for dilution?) -Representative samples for mobile lab characterization 	Field Level
Sample Characterization by Mobile Laboratory	<ul style="list-style-type: none"> -Field Screening Tests 	<ul style="list-style-type: none"> -Acidic/Caustic (pH) -Air/ Water reactivity -Water Bath Organic Vapor Emissions -Combustibility/Flammability -Presence of PCBs/halides/Pesticides -Presence of inorganics/organics -Presence of cyanide -Presence of oxidizers 	<ul style="list-style-type: none"> -Compatibility of drum contents for bulking -Preliminary (field) data for disposal -Guidance in defining hazardous waste characteristic parameters (combine with guidance from disposal facility) 	Field Level

TABLE C-1. SUMMARY OF DATA COLLECTION ACTIVITIES.

Activity	Methods/Equipment Used	Data Collected	Data Use/Objectives	QA/ QC Level
Soil Boring Sampling	-Drilling rig (i.e. Geoprobe) -Sampling equipment (3 splitspoons, sample extruder, stainless steel trowel, spoons, putty knife) -drive sampler and attachments	-presence/non presence of dioxin, , VOCs, SVOCs and metals	-Delineate extent of horizontal and vertical excavation.	Level C QA/QC for validation
Sampling for disposal parameters (after bulking)	-trier, sludge judge, coliwasa, dipper, ponar dredge or equivalent -stainless steel bowls, spoons, trowels for compositing	-Bulk container samples for disposal characterization	-Meet requirements of disposal/receiving facility -Proper documentation of drum contents and labeling -Proper naming and disposition of waste as defined by RCRA and CERCLA	Level E QA/QC for validation
Soil Sampling (incidental and excavation soil and debris for disposal)	-hand auger, stainless steel bowls, spoons, trowels -OVM	-Presence of organic vapors in excavation or in samples -Samples for offsite laboratory analysis	-Health and Safety Monitoring -Determine if residual contamination exists from drum burial -Disposal Characterization of incidental debris and soil removed	Level E QA/QC for validation
Water Sampling (for disposal of incidental and decontamination water)	-bulk containers (i.e. Baker tanks) -disposable bailer or peristaltic pump -OVM	-Presence of organic vapor in tank, above fluid line -Visual characteristics of water removed from excavation	-Disposal characterization -Proper disposition of water	Level E QA/QC for validation

TABLE C-1. SUMMARY OF DATA COLLECTION ACTIVITIES.

Activity	Methods/Equipment Used	Data Collected	Data Use/Objectives	QA/ QC Level
QA/QC Samples	<ul style="list-style-type: none"> -Trip blanks (provided by laboratory) -Analyte-free water (provided by laboratory) -Decontaminated equipment -Source water for decontamination procedures (potable water used during steam cleaning, analyte-free water used during sampling equipment decon) 	<ul style="list-style-type: none"> -Presence and concentration of residual organic contamination introduced during shipment -analytical data for duplicate sample -analytical data for rinsate -analytical data for water used during decontamination 	<ul style="list-style-type: none"> -Properly qualify sample organic data based on trip blank results -Measure and document analytical precision of the laboratory -Measure effectiveness of decontamination procedures -Measure purity of analyte-free water and other water sources used during decontamination 	Level E QA/QC for validation

Table C-2. Field Equipment List (master)

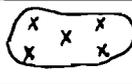
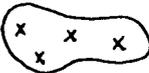
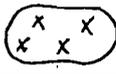
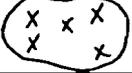
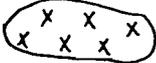
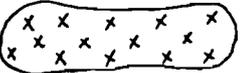
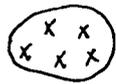
Category/item	Quantity	Collected	Category/item	Quantity	Collected
Soil Sampling			Miscellaneous		
small stainless steel spoons			sample containers		
large stainless steel spoons			paper towels		
stainless steel bowls			clear plastic cups		
stainless steel trowel			large garbage bags		
shovel			ziploc bags (gallon and quart)		
hand auger and attachments			scissors		
drums for cuttings			tools (pliers, wrenches)		
drive sampler and attachments			steel tape/measuring tape		
brass sleeves and endcaps			grey tape		
direct push drill rig/ split spoons/tubes			ruler		
teflon tape			stopwatch		
Water Sampling			5-gallon bucket		
disposable bailers			camera and film		
fishing line (30+ pound test)			surveyor tape		
cord reel			cellular phone/2-way radio		
centrifugal pump and tubing			extra batteries for meters		
car battery			aluminum foil		
garden hose _____ feet					
flow regulator (valve)			Sample Shipping		
purge water storage container			coolers from lab		
VOA bottom emptying devices			ice		
extra bottle preservative			ziploc bags		
pH paper			bubble wrap		
			strapping tape		
			fed ex airbills and envelopes		
Drum/tank Contents			thermometer, if requested		
coliwasa					
stainless steel bailer			Documentation		
weighted bottle sampler			field logbook or diary		
pinpoint sampler			sharpies		
drum thief			sample labels		
phase indicator			sample seals (CLP)		
Decontamination			custody seals		
distilled water			sample logbook		
reagent grade water (from lab)			soil logging guidelines		
10% nitric acid solution (from lab)			Chemical Data Acquisition Plan		
_____% isopropanol solution			map of sampling locations		
____gallon tubs			Site Safety and Health Plan		
brushes			digging permits		
pipe cleaner brushes			Quality Control Plan		
alconox			hot work permit		
spray bottles			drilling permits, if required		
chemical rinse tub					

Table C-2. Field Equipment List (master)

Category/item	Quantity	Collected	Category/item	Quantity	Collected
Health and Safety			Health and Safety		
(rentals)			(consumables)		
OVM or PID			CPR Pocket Masks		
Combustible Gas Indicator (CGI)			Dual station/eyewash station		
Isobutylene or other cal gas (PID)			Moist towelettes		
Methane (FID, CGI)			UL listed hazardous locations		
regulator (ask rental place)			Smoke Alarms		
Dust Monitor (mini-ram)			(support documents)		
Draeger tubes and handpump			copy of MK Safety manual		
(consumables)			(SouthDiv specific)		
Kimwipes (medium/large)			Copy of MK Industrial Hy-		
Respirators (note size)			giene Procedures Manual		
Chemical cartridges			Copy of MK Safety and		
HEPA cartridges			Health Program Desc. for		
Cleaner/sanitizer for respirators			Haz. Waste Site Operations		
PPE Covering Size: _____ :			Copy of MK Accident Prev.		
Type: _____ Size: _____ :			Plan for SouthDiv Contract		
PPE gloves; Size: _____ Type: _____			OSHA posters/ 2 OSHA		
PPE foot protection Size: _____ :			200 forms		
Foam earplugs			Tool Box Talks (orange book)		
Safety Glasses			EM 85-1-1 Corps Safety Man.		
Silver cloth duct tape			Signed off SSHP/Work Plan		
Personal first aid kit			MK Accident Data Report		
Reflective safety vests			Form # 678/91		
Yellow "Caution" tape			MK Supervisor Accident In-		
PID Lamp Cleaner bottles			vestigation Report Form #		
Two 10-foot tygon tubing:			CAS 24/77		
10 feet - 0.25 inch I.D.			MK Daily Logbook Report		
10 feet - 0.125 inch I.D.			from SSHP		
Two 20lb. ABC dry chemical fire			MK Weekly Inspection		
extinguishers			Checklist forms from SSHP		
Bloodborne pathogen kits			PMO project procedures:		
			PHSP 001.1, 002.1, 003.1,		
			004.1, 005.1		
			Hardhats		
			29 CFR 1910, 29 CFR 1926		

Notes:

TABLE C-3. SUMMARY OF SOIL BORINGS

Site	Excavation Area	Number of Borings	Sketch of Proposed Locations
1	1	5	 75 ft. x 75 ft. (approx.)
1	2	5	 65 ft. x 100 ft. (approx.)
1	3	3	 40 ft. x 80 ft. (approx.)
1	4	4	 variable
1	5	3	 variable
4	1	4	 50-ft. x 100 ft. (approx.)
4	2	4	 50 ft. x 100 ft. (approx.)
4	3	5	 variable
4	4	3	 variable
5	1	6	 50 ft. x 150 ft.
5	2	14	 50 ft. x 200 ft.
5	3	5	 variable

10

16

25

Notes:

X = boring location

1. Location of each boring will be finalized and surveyed in the field with respect to permanent features.
2. All dimensions are estimated.

TABLE C-4. DATA COLLECTION LOCATIONS

Medium	Test Parameters	Number of Samples or Locations	QA/QC Samples ¹				Purpose
			TB ²	ERB ³	FD ⁴	FB	
Field Measurements							
Field Screening of drums (outside and inside)	residual organic vapor, presence of explosive atmospheres	per drum (assume for estimating purposes: 200)	N/A	N/A	N/A	N/A	Initial screening data to support health and safety requirements and characterize drums
Drum Contents	hazardous category/ compatibility criteria	per drum (assume for estimating purposes: 200)	N/A	N/A	1 per 20 drums	N/A	Compatibility of drum contents for bulking; prelim. data for disposal characterization
Analytical (offsite) laboratory testing							
Bulked drum contents - solids	VOCs, SVOCs, RCRA Metals, Pesticides (Site 5 only), dioxin/furans	TBD (est. 24)	3	2	2	1	Disposal Characterization
	paint filter, ignitability, corrosivity, reactivity, full TCLP	TBD (for estimating purposes: 12)	0	1	1	0	Disposal characterization ⁵
Bulked drum contents - liquids	VOCs, SVOCs, pesticides (Site 5 only - 16 samples), RCRA metals, ignitability, corrosivity, reactivity, dioxin/furans	TBD (for estimating purposes: 47)	4	0	3	0	Disposal characterization ⁵
Bulked drum contents - oil	Brus, total chlorine, PCBs, fuel fingerprint, dioxin/furans	TBD (for estimating purposes: 30)	0	0	2	0	Disposal characterization ⁵

TABLE C-4. DATA COLLECTION LOCATIONS

Medium	Test Parameters	Number of Samples or Locations	QA/QC Samples ¹				Purpose
			TB ²	ERB ³	FD ⁴	FB	
incidental soil/debris -hazardous	VOCs, SVOCs, RCRA Metals	TBD (est. 10)	2	1	1	0	Disposal Characterization
	paint filter, ignitability, corrosivity, reactivity, full TCLP	TBD (for estimating purposes: 10)	0	1	1	0	Disposal characterization ⁵
Soil boring samples	dioxin (method 8290), VOCs, SVOCs, RCRA metals	TBD (est. Site 1: 60 Site 2: 48 Site 5: 50)	5	11	Site 1:5 Site 4:5 Site 5:5	2	Extent of Excavation; Presence of dioxin
excavation soil	VOCs, SVOCs, RCRA metals, pesticides (Site 5 only), dioxin/furans	TBD (est. 215)	10	10	10	0	Disposal characterization
decon water, incidental water in excavation	VOCs, SVOCs, pesticides (Site 5 only - 5 samples plus duplicate), RCRA metals, ignitability, corrosivity, reactivity, dioxin/furans	TBD (for estimating purposes: 15)	2	0	1	0	Disposal characterization ⁵

TBD = to be determined (estimated totals are subject to change +/- 100%)
¹QA/QC samples include trip blank (TB), equipment rinsate blanks (ERB), field duplicate (FD) and field blank (FB). For estimating purposes, five MS/MSD samples will be analyzed for bulked solids/soil.
²Trip blanks will be analyzed for VOCs only.
³Rinsate blanks will be collected once daily, following completion of decontamination procedures. Blanks will be analyzed for associated parameters sampled for that day. N/A = not applicable
⁴Field duplicates will be collected at a rate of 1 per 20 (or less) samples collected (for estimating purposes).
⁵Disposal parameters will be finalized pending discussion with the disposal facility.

**TABLE C-5
SAMPLING PARAMETERS**

Analyte	Analytical Method	Sample Container	Preservation	Holding Time
Water Samples (incidental water, decon water)				
Volatile Organics	CLP SOW for organics	3 40-mL glass vials	HCL to pH < 2, Ice to 4°C	10 days
Dioxin/furans	8290 (high resolution)	2 1-liter amber glass jars	Ice to 4°C	7 days until extraction
Pesticides ⁵	8080A or 8081	2 1-liter amber glass	Ice to 4°C	extract in 7 days
Semivolatile Organic Compounds (SVOCs)	CLP SOW	3 1-liter amber glass	Ice to 4°C	Extract in 5 days after receipt
RCRA Metals	6010A ¹ , 7470A	1 500-mL plastic (metals)	H ₂ SO ₄ to pH < 2, Ice to 4°C	180 days
		1 500-mL plastic (mercury)	H ₂ SO ₄ to pH < 2, Ice to 4°C	28 days
Ignitability	1010	1 1-liter plastic	None	ASAP ³
Corrosivity-pH	9040B	1 1-liter plastic	Ice to 4°C	ASAP ³
Sulfide Reactivity	SW-846 Methods: Volume C, Section 7.3.4.1	1 1-liter plastic	Ice to 4°C	7 days
Cyanide Reactivity	SW-846 Methods: Volume C, Section 7.3.3.2	1 1-liter plastic	Ice to 4°C	14 days

**TABLE C-5
SAMPLING PARAMETERS**

Analyte	Analytical Method	Sample Container	Preservation	Holding Time
Soil and Solids Testing				
Paint Filter Test	9095	1 8-ounce glass jar	none	N/A
Ignitability	1010	1 8-ounce glass jar	none	ASAP ³
Corrosivity-pH	9045C	1 8-ounce glass jar	Ice to 4°C	ASAP ³
Sulfide Reactivity	SW-846 Methods: Volume C, Section 7.3.4.1	1 8-ounce glass jar	Ice to 4°C	7 days
Cyanide Reactivity	SW-846 Methods: Volume C, Section 7.3.3.2	1 8-ounce glass jar	Ice to 4°C	14 days
Volatile Organics	CLP SOW	1 4-ounce glass jar	Ice to 4°C	10 days
Semivolatile Organics	CLP SOW	1 8-ounce glass jar	Ice to 4°C	10 days until extraction
RCRA Metals	6010/7471A	1 8-ounce Jar	Ice to 4°C	180 days (6010 Metals) 28 days for Mercury (7471)
Pesticides	8080	1 8-ounce glass jar	Ice to 4°C	14 days until extraction

**TABLE C-5
SAMPLING PARAMETERS**

Analyte	Analytical Method	Sample Container	Preservation	Holding Time
Dioxin/Furans	8290	1 8-ounce glass jar	Ice to 4°C	14 days until extraction
TCLP - Organics and extraction (Method 1311)	8240	1 4-ounce glass jar	Ice to 4°C	14 days
	8270	2 8-ounce glass jars	Ice to 4°C	7 days until extraction
	8080A or 8081 (pesticides only)	1 8-ounce glass jar	Ice to 4°C	7 days until extraction
TCLP - inorganics	1311 (extraction), 6010A, 7470A (mercury)	2 8-ounce glass jars	Ice to 4°C	Mercury: 28 days; Metals: 180 days
Drum Samples (Oil - non-CLP)				
Flashpoint	ASTM D-93	1-250 mL glass	N/A	30 days
BTU	ASTM D-240-76	1-100 mL glass	N/A	ASAP ³
PCBs	8080A or 8081	1 50-mL glass	none	7 days
Fuel Fingerprint	8015A ⁴	1 100-mL glass	N/A	7 days
Total Chlorine	ASTM D 808-81	1 4-ounce glass jar	Ice to 4°C	28 days
Dioxin/furans	8290	1 8-ounce glass jar	Ice to 4°C	14 days until extraction

**TABLE C-5
SAMPLING PARAMETERS**

Analyte	Analytical Method	Sample Container	Preservation	Holding Time
Drum Samples (Liquids)				
Volatile Organics	CLP SOW	3 40-mL glass vials	HCL to pH < 2, Ice to 4°C	10 days
Semivolatile Organics	CLP SOW	3 1-liter amber glass	Ice to 4°C	extract in 5 days after receipt
Pesticides ⁵	8080A or 8081	2 1-liter amber glass	Ice to 4°C	extract in 7 days
Dioxin/furan	8290	2 1-liter amber glass	Ice to 4°C	extract in 7 days
RCRA Metals	6010A, 7470A	1 500-mL plastic (metals)	H ₂ SO ₄ to pH < 2, Ice to 4°C	180 days
		1 500-mL plastic (mercury)	H ₂ SO ₄ to pH < 2, Ice to 4°C	28 days
Ignitability	1010	1 1-liter plastic	N/A	ASAP ³
Corrosivity - pH	9040B	1 1-liter plastic	N/A	ASAP ³
Sulfide Reactivity	SW-846 Methods: Volume C, Section 7.3.4.1	1 1-liter plastic	Ice to 4°C	7 days
Cyanide Reactivity	SW-846 Methods: Volume C, Section 7.3.3.2	1 1-liter plastic	Ice to 4°C	14 days

**TABLE C-5
SAMPLING PARAMETERS**

Analyte	Analytical Method	Sample Container	Preservation	Holding Time
Water Samples (Rinsate Blanks)				
Ignitability	1010	1 1-liter plastic	N/A	ASAP ³
Corrosivity - pH	9040B	1 1-liter plastic	N/A	ASAP ³
Sulfide Reactivity	SW-846 Methods: Volume C, Section 7.3.4.1	1 1-liter plastic	Ice to 4°C	7 days
Cyanide Reactivity	SW-846 Methods: Volume C, Section 7.3.3.2	1 1-liter plastic	Ice to 4°C	14 days
Volatile Organics	CLP SOW	3 40-mL glass vials	HCL to pH < 2, Ice to 4°C	10 days
Semivolatile Organics	CLP SOW	3 1-liter amber glass	Ice to 4°C	extract 5 days after receipt
Pesticides ⁵	8080A or 8081	2 1-liter amber glass	Ice to 4°C	extract in 7 days

**TABLE C-5
SAMPLING PARAMETERS**

Analyte	Analytical Method	Sample Container	Preservation	Holding Time
Mercury	7470A	1 500-mL plastic	H ₂ SO ₄ to pH < 2, Ice to 4° C	28 days
RCRA Metals	6010A, 7470A	1 500-mL plastic (metals)	H ₂ SO ₄ to pH < 2, Ice to 4° C	180 days

Notes:

1. Graphite Furnace methods may be used to meet reporting limits.
2. CLP SOW = Contract Laboratory Program Statement of Work. Reference is "Statement of Work for Organic Analysis" USEPA Contract Laboratory Program, Latest version.
3. "ASAP" indicates the sample must be analyzed as soon as possible. The sample will be shipped the day it is collected. Actual holding times will be provided by the lab.
4. The fuel fingerprint method will not use purge and trap methods.
5. Pesticides analysis will be conducted for Site 5 Samples only.

**TABLE C-6
SCREENING LEVELS FOR SOIL ANALYSES¹**

Compound	Risk Based Concentration mg/kg	Compound	Risk Based Concentration mg/kg
<i>Volatile Compounds- TCL (Methods 8240/8260)</i>			
Acetone	7,800	Tetrachloroethylene	12
Benzene	22	Toluene	16,000
Bromodichloromethane	5	1,1,1-Trichloroethane ²	7,000
Bromoform	81	1,1,2-Trichloroethane	11
Bromomethane	110	Trichloroethylene	58
2-Butanone ²	47,000	Vinyl Chloride	0.3
Carbon disulfide	7,800	Total Xylenes	160,000
Carbon tetrachloride	5	Vinyl Acetate	78,000
Chlorobenzene	1,600		
Chlorodibromomethane	8		
Chloroform	110		
1,1-Dichloroethane	7,800		
1,2-Dichloroethane	7		
1,1-Dichloroethylene	1		
cis-1,2-Dichloroethylene	780		
trans-1,2-Dichloroethylene	1600		
1,2-Dichloropropane	9		
1,3-Dichloropropene	4		
Ethylbenzene	7,800		
4-Methyl-2-pentanone ²	6,300		
Methylene Chloride	85		
Styrene	16,000		
1,1,2,2-Tetrachloroethane	3		
<i>Dioxins/Furans</i>			
2,3,7,8-TCDD	4 x 10 ⁻⁶	All other dioxins/furans will be based on equivalency factors	

**TABLE C-6
SCREENING LEVELS FOR SOIL ANALYSES¹**

Compound	Risk Based Concentration mg/kg	Compound	Risk Based Concentration mg/kg
<i>Semivolatile Organics (TCL) - Method 8270</i>			
Acenaphthene	4700	2,4-Dimethylphenol	1,600
Anthracene	23,000	Dimethylphthalate	780,000
Benzo(a)anthracene	0.9	Di-n-butylphthalate	7,800
Benzo(b)fluoranthene	0.9	2,4-Dinitrophenol	160
Benzo(k)fluoranthene	9	2,4-Dinitrotoluene	160
Benzo(a)pyrene	0.09	2,6-Dinitrotoluene	78
Benzoic Acid	310,000	Di-n-octylphthalate	1600
Butanol	7,800	bis(2-ethylhexyl)phthalate	46
Butyl benzyl phthalate	16,000	Fluoranthene	3,100
Carbazole	32	Fluorene	3,100
4-Chloroaniline	310	Hexachorobenzene	0.4
bis(2-Chloroethyl)ether	0.6	Hexachorobutadiene	8
2-Chlorophenol	390	Hexachlorocyclopentadiene	550
Chrysene	88	Hexachloroethane	46
Dibenzo(a,h)anthracene	0.09	Indeno(1,2,3-c,d)pyrene	0.9
o-Dichlorobenzene	7,000	Isophorone	670
p-Dichlorobenzene	27	2-Methylphenol	3,900
3,3'-Dichlorobenzidine	1	Naphthalene	3,100
2,4-Dichlorophenol	240	Nitrobenzene	39
Diethyl phthalate	63,000	N-nitroso-di-n-propylamine	0.09

**TABLE C-6
SCREENING LEVELS FOR SOIL ANALYSES¹**

Compound	Risk Based Concentration mg/kg	Compound	Risk Based Concentration mg/kg
<i>Semivolatile Organics (TCL) - Method 8270</i>			
N-nitrosodiphenylamine	130	Pyrene	2,300
Pentachlorophenol	3	1,2,4-Trichlorobenzene	780
Phenol	47,000	2,4,6-Trichlorophenol	58
		2,4,5-Trichlorophenol	7,800
<i>PCBS/Pesticide Compounds - Method 8080</i>			
Aldrin	0.04	Dieldrin	0.04
alpha-BHC	0.1	Endosulfan	470
beta-BHC	0.4	Endrin	23
gamma-BHC (Lindane)	0.5	Heptachlor	0.1
Chlordane	0.5	Heptachlor epoxide	0.07
4,4'-DDD	3	Methoxychlor	390
4,4'-DDE	2	Toxaphene	0.6
4,4'-DDT	2		
Total PCBS	1		
<i>Metals² - Methods 6010/7471</i>			
Arsenic (as a carcinogen)	0.4	Lead	400
Barium	5,500	Mercury	23
Cadmium	39	Selenium	390
Chromium (Total)	390	Silver	390
¹ Levels taken from USEPA document EPA/540/R-94/101 "Soil Screening Guidance" December, 1994. Note that this list is preliminary and includes organic compounds found in the Soil Screening Guidance, the RCRA metals and two ketones (2-Butanone and MIBK). All of the organic compounds listed may be found in the TCL with the exceptions of Butanol, Benzoic Acid and Chlorodibromomethane. Site specific information or field conditions may result in an abbreviated list of compounds. ² Value taken from USEPA memo EPA Region III Risk-Based Concentration Table by Roy L. Smith, October 20, 1995. ³ RCRA metal only.			

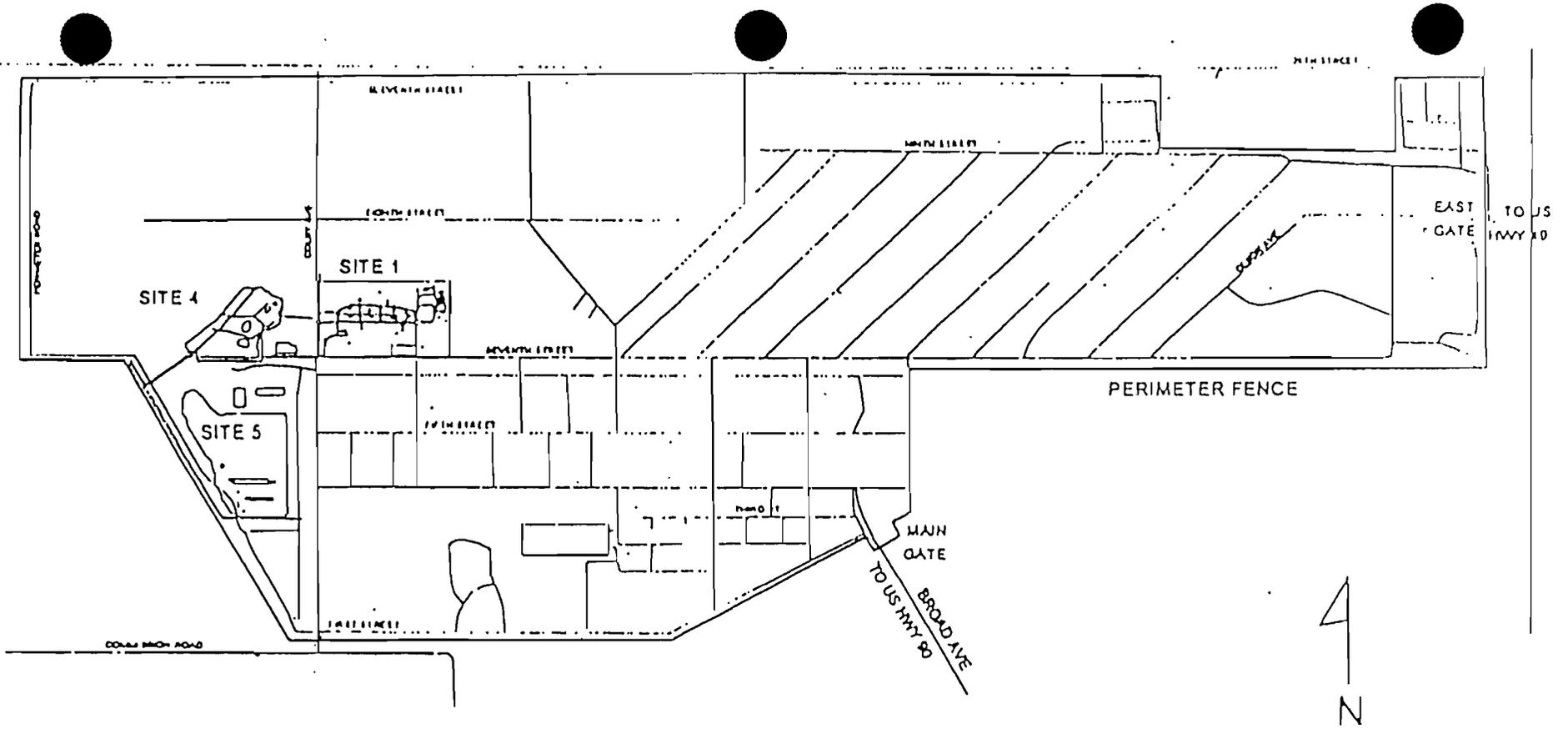
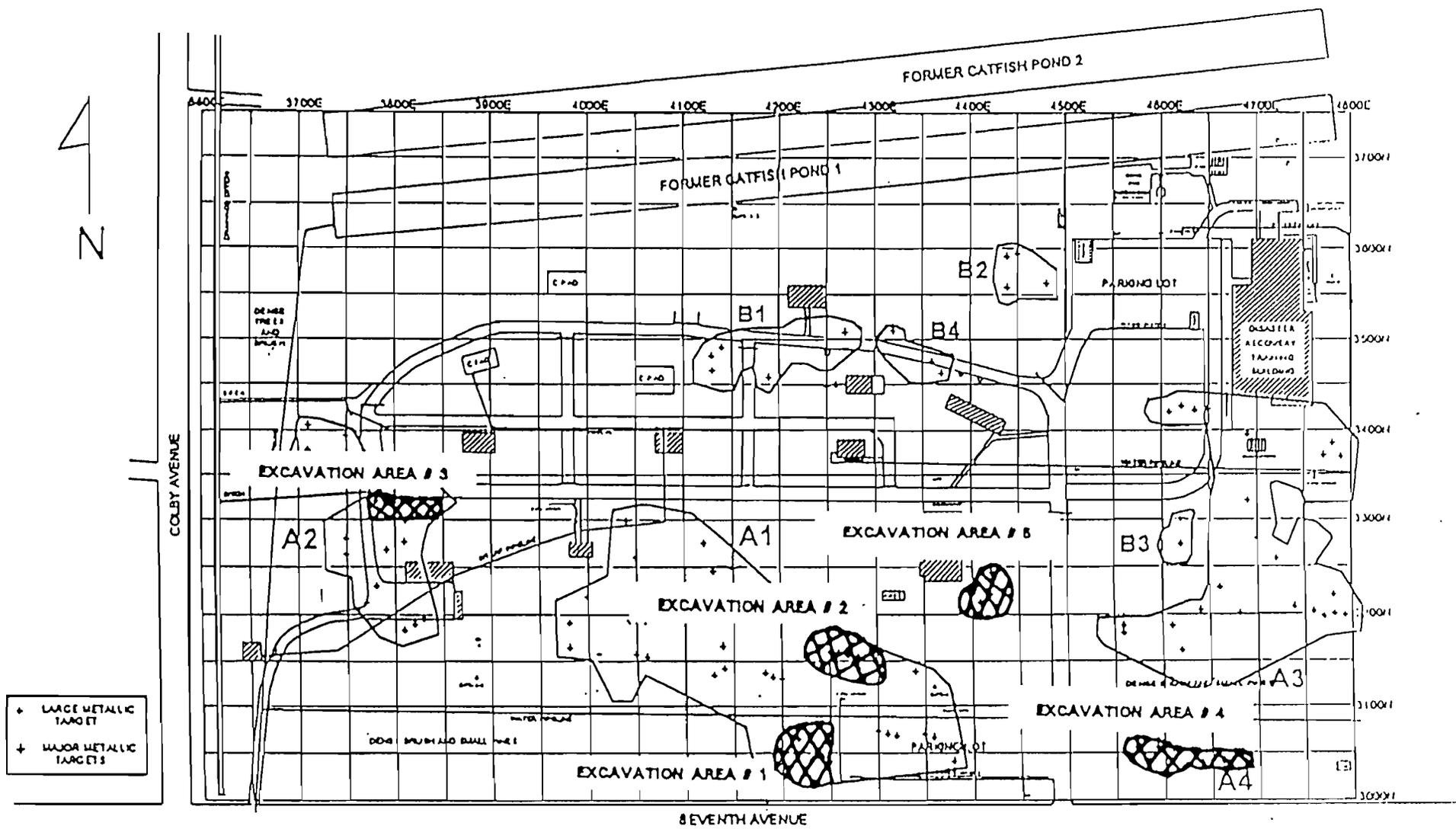


FIGURE C-1 GENERAL SITE LOCATION MAP	NCBC GULFPORT, MISSISSIPPI
SCALE 0 1000 2000 FT SOURCE: GEOSPHERE MIDWEST 7-22-95	LOCATION OF SITES 1, 4 & 5 FOR GEOPHYSICAL SURVEY

Figure C-1
General Site Location Map



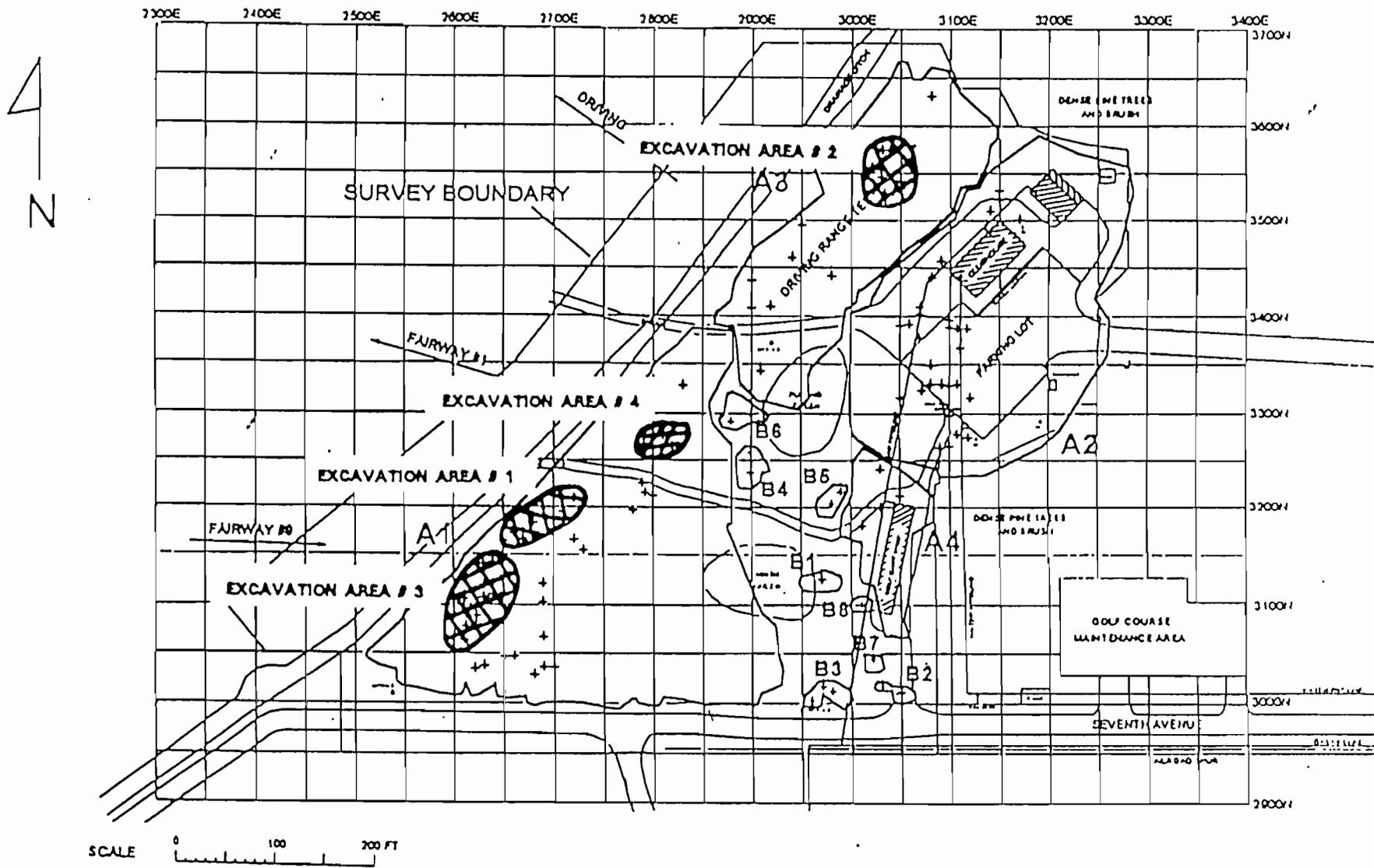
+ LARGE METALLIC TARGET
 * MAJOR METALLIC TARGETS

ANOMALY MAP
 B1 SECONDARY ANOMALY AREA
 A1 PRIMARY ANOMALY AREA

LEGEND
 ○ 1/8" ANOM. POLE
 ⊙ 3/8" ANOM. POLE
 — LARGE METAL POLE
 — CULVERT
 ⊕ MON. FOR WELL
 [] CONCRETE PAD WITH REBAR
 [] BUILDINGS

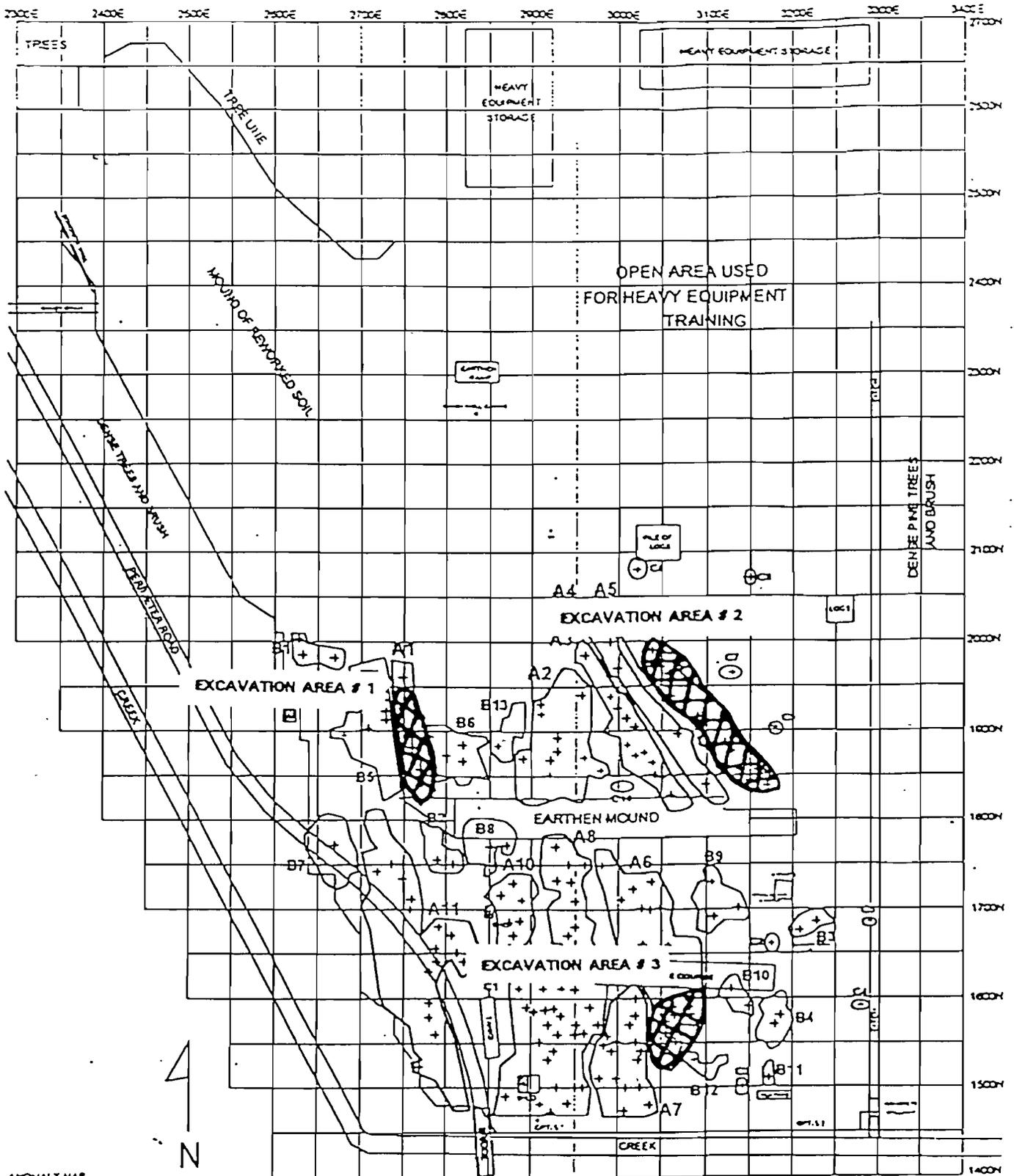
SCALE 0 100 200 FT

Figure C-2
 Site 1, Excavation Areas



ANOMALY MAP		LEGEND	
	B1 SECONDARY METAL TARGET AREA		TELEPHONE POLE
	A1 PRIMARY METAL TARGET AREA		CAVERN
			MONITOR WELL
			BUILDING

Figure C-3
Site 4, Excavation Areas



ANOMALY MAP

C1 LARGE METAL TARGET
 B1 SECONDARY ANOMALY AREA
 A1 PRIMARY ANOMALY AREA

LEGEND

○ TELEPHONE POLE
 ○ WITH WIRE MONITOR WELL
 [Hatched Box] SANDMOUND

Figure C-4
 Site 5, Excavation Areas

ATTACHMENT A

Field Data Sheet 1 - Soil Boring Log
Field Data sheet 2 - Drum Characterization Sheet
Field Data sheet 3 - HazCat Results

**Field Datasheet 2 -- Drum Characterization Sheet
CBC Gulfport**

Site:		Date:
Excavation Area #:		Field Crew Initials:
Drum I.D.:		

Exterior Data

Labels/Markings Present?	Yes <input type="checkbox"/>	No <input type="checkbox"/>
---------------------------------	------------------------------	-----------------------------

Label information:

	Yes	No	Observations
Corrosion			
Cracks			
Bulges/creases			
Stains			
Crystals present			

other (describe):

Drum Type:	polyethylene: <input type="checkbox"/>	steel: <input type="checkbox"/>	aluminum: <input type="checkbox"/>
Size:	55 gal. <input type="checkbox"/>	30 gal. <input type="checkbox"/>	other: <input type="checkbox"/> unknown: <input type="checkbox"/>
Lid Type:	Open: <input type="checkbox"/>	Closed (bung): <input type="checkbox"/>	
Locking Mechanism:	Bolt top: <input type="checkbox"/>	Close and lock: <input type="checkbox"/>	

Screening Measurements (Exterior)

Time	PID (PPM)	CGI (%LEL)	Draeger Tube Type (if used)	Draeger Measurement (ppm)

Interior Data (Drum Contents)

Method of opening:

Color:

Viscosity:

Number of phases present: Liquid: Solid: Suspension:

Air Reactive? Yes No

Clarity/turbidity:

Percentage of Drum filled: **Approximate thickness (or volume):**

Screening Measurements (Interior/contents)

Time	PID (PPM)	CGI (%LEL)	Draeger Tube Type (if used)	Draeger (ppm)	pH

Other Observations:

**Field Datasheet 3 -- HazCat Results
CBC Gulfport**

Site:	Date:
Excavation Area:	Drum I.D.:

Test	Criteria/ Method	Result	Not Tested	Comments
pH	pH units (acidic if pH<=2; caustic if pH>=12)			
specific gravity	ASTM D 854-91			
viscosity	(visual description)			
air reactive?	increase in temp. when exposed to air			
water reactive?	increase in temp. when exposed to water			
water soluble?	dissolves in water			
water bath OVM	when heated, emits organic vapors at ___ ppm			
flammable?	combustible and setaflash <= 140 deg. F			
combustible?	catches fire when torched in water bath			
PCBs present	field test kit			
Pesticides present	DDT field test kit, if used			
Halides present?	green flame when heated with copper			
Inorganics present?	(determination based on other HazCat tests)			
Organics present?	water bath OVM			
Cyanide present?	draeger tube test			
Oxidizer?	starch iodine paper shows positive reaction			
moisture content (%)	ASTM D 2216-90			

Other tests:

Notes on color changes:

Notes on odor:

APPENDIX D
WASTE MANAGEMENT PLAN

APPENDIX D WASTE MANAGEMENT PLAN

1.0 INTRODUCTION

This section describes methods to manage and dispose the various waste streams generated during the life of this project.

MK is responsible for:

- ensuring that all waste streams are managed in accordance with the procedures in this plan;
- providing field oversight and ensuring subcontractor compliance with the procedures in this plan;
- ensuring that appropriate waste containers and secondary containment are provided,
- preparing, for CBC Gulfport authorized signature, all required paperwork and documentation, including manifests, for all wastes generated during the removal activities within the designated notification time;
- ensuring all waste containers are properly managed in accordance with state and federal laws and regulations; and
- maintaining waste records for the field effort.

2.0 RESPONSIBILITIES AND TRAINING REQUIREMENTS

2.1 Personnel Responsibilities

Hazardous Waste Disposal Coordinator (HWDC): The MK Site Environmental Specialist will act as the HWDC responsible for arranging and coordinating the safe and proper completion of the tasks required for disposal of a hazardous waste as previously defined. These tasks include but are not limited to:

- ensuring proper handling, packaging, and labeling of hazardous wastes; and
- coordinating all hazardous waste documentation, including all shipping papers and manifests, chain-of-custody, Land Disposal Restriction (LDR) forms and variances, sample and waste inventory tracking, etc.

Project Manager: The project manager's responsibilities include coordination of the project resources to assure compliance with the appropriate plans, procedures, and regulatory requirements for hazardous waste material handling, packaging, labeling, etc.

2.2 Training Requirements

HWDC: The HWDC performing the shipment shall be trained as described in the SSHP and as a minimum in accordance with the following criteria:

- 49 CFR 172.700 (Subpart H) - Hazmat Employee Training
- 29 CFR 1910.120 - OSHA 40 Hour Health and Safety Training

Field Personnel: All personnel performing any activity that may cause exposure to hazardous materials shall be trained as described in the Site Safety and Health Plan and as a minimum in accordance with the following criteria:

- 29 CFR 1910.120 - OSHA 40 Hour Health and Safety Training

3.0 WASTE STREAMS

Waste streams expected to be generated during the life of the project include:

- produced ground water,
- excavated soil,
- general debris and drums,
- decontamination water,
- disposable personnel protective equipment and clothing,
- inert wastes (wood, HDPE, etc.)
- drummed and bulked hazardous wastes, and
- sludges.

Work will be performed in such a way as to minimize the amount of solid waste generated by activities performed. This goal will be achieved by implementing remediation techniques, technologies, and approaches that yield the least amount of hazardous waste.

3.1 Produced Ground Water

Excavations are planned not to proceed below ground water table. Therefore, ground water produced for the project are expected to be minimal. Potentially contaminated produced ground water will be pumped from the excavation if required for drum removal. Pumped ground water will be collected at each excavation site, sampled for characterization, and transported off site for

ultimate disposition.

3.2 Excavated soil

Excavated soil may be directly loaded into trucks or roll-off boxes, if soil is stained or shows elevated field screening readings. Other excavated soils will be temporarily stockpiled on a 6-mil polyethylene liner surrounded by straw bale berms. A stockpiling plan will be developed for each area, detailing planned locations for individual stockpiles and protective measures that will be used for protection of human health and the environment. Surface water run-on and run-off control measures will be employed. These include construction of ditches, berms and filter fences. The stockpiled soil will be covered to minimize erosion.

Prior to disposal, soil will be characterized to determine their ultimate disposition. Characterization of soils will occur according to the procedures found in CDAP. The following table provides the disposal criteria and the option:

Test Criteria	Disposal Option
Contaminant concentrations are less than the risk-based concentration.	Use soil as a backfill at the excavation site.
Contaminant concentrations are greater than or equal to the risk-based concentration.	Dispose of soil at an off-site TSDF.

3.3 Debris and Inert Wastes

All debris (defined in 40 CFR 268 as material greater than 60 mm) will be collected, sorted, and disposed of as either hazardous waste or nonhazardous waste.

Empty drums and containers will be disposed as nonhazardous waste in accordance with 40 CFR 261.7. Inert wastes will be disposed of as construction debris.

3.4 Decontamination Water

Decontamination water is generated during steam cleaning or high pressure wash of debris and excavation equipment, and during decontamination of personnel and sampling equipment. All water used in decontamination will be collected in 55-gallon drums or portable storage tanks.

Since the decontamination water is expected to contain low concentrations of the contaminants potentially found at the site, it will be collected and treated in the on-site ground water treatment facility, if the current permit allows, or it will be characterized and transported to an off-site treatment facility.

3.5 Disposable Personal Protective Equipment (PPE)

Waste PPE includes disposable Tyvek® suits, gloves, boots, and visquene. The quantity of PPE generated depends upon the schedule and number of times PPE is discarded daily. Contaminated PPE will be placed in a plastic lined 55-gallon drum immediately after use. Drums will be transported to an off-site landfill for ultimate disposal.

3.6 Spill Prevention and Control

MK will meet with the Navy and CBC Gulfport prior to starting work and will discuss the facility's procedures for handling spills (CBC Gulfport Spill Prevention Plan). If a spill or release of hazardous materials occurs in the work area, the Contracting Officer's representative will be notified. MK will follow the facility's instruction for mitigating spills and packaging and disposing of clean-up materials. If a spill occurs, the Site Fire Department will be notified and MK will assist in initial spill containment. The Site Spill Response Team handles all command and control and initiates clean-up activities. The SSHP (Appendix A of the Work Plan), contains a list of safety and spill control equipment available on site in the event of an emergency.

4.0 IDENTIFICATION AND LISTING OF HAZARDOUS WASTE

40 CFR 261 specifies that a solid waste is hazardous if it is not excluded from regulation as a hazardous waste and it meets the following conditions: exhibits any of the characteristics of a hazardous waste; has been named as a hazardous waste and listed as such in regulations; is a mixture containing a listed waste and a nonhazardous solid waste; or is a waste derived from the treatment, storage or disposal of a listed waste.

Each listed hazardous waste has a single letter indicator called a Hazard Code. A waste stream may have one or more of these codes. These single letter indicators are:

- (I) For those wastes that are listed due to their ignitability properties,
- (C) For those wastes that are listed due to their corrosivity,
- (R) For those wastes that are listed due to their reactivity;
- (E) For those wastes that are listed because they contain levels of contamination over the Toxicity Characteristic levels;
- (H) For those wastes that have been found to be acutely toxic; and
- (T) For those waste that have been found to be toxic.

Use the flowcharts in Figures D-1 and D-2 to determine if a waste is hazardous and what codes apply during a source removal activity. This approach methodically evaluates the type of waste and if a waste code or group of codes may apply to a waste. It is mandatory that the reader continue through the entire flowchart from beginning to end. Skipping around may cause an incorrect identification of a waste stream.

4.1 Flowchart Process for Waste Numbers

The "Is Source or Nature of Waste Known?" question refers to:

- a) **Unused, off specification or primary active ingredient.**
 - Determine whether or not waste is a commercial chemical product and if so, what kind. If not listed as a commercial chemical product follow the flowchart.
 - If waste is listed as commercial chemical product and if the EPA has determined the material to be toxic or acutely toxic, the product will be listed in 40 CFR 261 on either the U or P tables (look at both). Example, the waste could be a drum of DDT.
- b) **Non-Specific or Specific source determination**
 - If the waste has been used, therefore not an unused, off-specification, or primary active ingredient, then determine if the waste was listed due to the process or industry the waste is generated from. If the answer is yes determine the F or K numbers from 40 CFR 261. Example, petroleum refining is an industry that is defined by the EPA as a specific industry.
- c) **Exhibiting Characteristics**
 - Does the waste exhibit one or more of the characteristics of Ignitability, Corrosivity, Reactivity, or Toxicity? If so, then the D numbers apply.

Once you have determined all of the waste codes that apply, list them and you have a Federally regulated material. If no waste numbers applied, then the waste is not Federally regulated waste under RCRA.

5.0 HAZARDOUS WASTE

5.1 Preparation for Shipment

The following prerequisites shall be met prior to shipping Hazardous Materials by any conveyance on the public highway, by vessel or rail or by air.

- The material must be identified by the most appropriate Proper Shipping Name in accordance with the Hazardous Materials Tables of 49 CFR 172.
- If the material is a Hazardous or Mixed Waste, the material must be identified by the most appropriate USEPA Waste Code in accordance with 40 CFR 261.
- The generator, transporter, and disposer of Hazardous Waste shall have valid EPA

Identification Numbers and all EPA Permits (Generator Permits, Transporter Permits, TSD Permits, etc.), as appropriate. The generator shall also provide evidence that the waste stream(s) being shipped is acceptable at the receiving facility in accordance with all permit requirements.

- The Generator of Hazardous Waste (or his representative) shall have completed all notifications and certifications for the waste material subject to the LDR in accordance with 40 CFR 268 and the latest rules, specifically Final Rule (FRL-5028-9) Land Disposal Restrictions Phase II-Universal Treatment Standards and Treatment Standards for Organic Toxicity Characteristic Wastes and newly Listed Wastes effective December 19, 1994. The following certification forms shall be prepared for Navy signature as applicable:
 - Notification From Generator to Treatment Facility That Wastes Do Not Meet Treatment Standards
 - Generator Notification and Certification To Treatment, Storage, and Disposal (TSD) Facility for Wastes Meeting The Treatment Standards
 - Generator Notification and Certification To TSD Facility for Restricted Wastes with Variances, Extensions, or Exemptions
 - Treatment Facility Notification To TSD Facility That Treated Waste Meets Treatment Standards.
- Hazardous Materials not shipped as waste shall be shipped in such a manner as to conform to all federal, state and local ordinances. The Customer offering the material for transport shall make available the Material Safety Data Sheets. Non-waste Radioactive Materials shall only be shipped to a facility upon provision of evidence, by the customer, that the material is acceptable at the receiving facility.
- Prior to shipment of waste to a hazardous or waste disposal facility, the receiving facility must be approved by MK and the Navy.
- The HWDC shall complete the Manifest Signee Certification Checklist, provided in Attachment B, for each shipment of hazardous materials.
- The HWDC shall obtain Manifest Numbers, Manifest and shipping documentation, and signatures from the Navy (the waste owner) for all hazardous waste shipments.

5.2 Storage and Control of Hazardous Waste

5.2.1 Containers

If a container holding hazardous waste is not in good condition per 49 CFR 173.24, or if it begins to leak, MK (or its representative) shall transfer the hazardous waste from the leaking container to a container that is in good condition or manage the waste in some other way.

The generator must use a container made of or lined with material which will not react with, and are otherwise compatible with, the hazardous waste to be stored, so that the ability of the container to contain the waste is not impaired.

The container holding hazardous waste must always be closed during storage, except when it is necessary to add or remove waste. A container holding hazardous waste must not be opened, handled, or stored in a manner which may rupture the container or cause it to leak. The container holding hazardous waste must always display the proper marking and labeling per 49 CFR 172 if waste is to be transported to a storage or treatment facility.

Incompatible wastes, or incompatible wastes and materials, must not be placed in the same container, unless the requirements of 40 CFR 265.17(b) are complied with.

Hazardous waste must not be placed in an unwashed container that previously held an incompatible waste or material unless the requirements of 40 CFR 265.17(b) are complied with.

5.2.2 Inspections

The waste generator is required to inspect the waste stored at the hazardous waste storage area on project sites on a weekly basis to the requirements of a RCRA temporary accumulation area (per 40 CFR 265.174). When MK's field personnel are at the base and the waste is under MK's control, MK will perform the required inspections on behalf of the base. All accumulation, transfer, and storage areas will be identified in the site specific Work Zone Maps and designed and constructed in accordance with the requirements of 40 CFR 265. The wastes generated by MK on behalf of the customer are limited to a 90 day RCRA storage time for a temporary accumulation area (per 40 CFR 262.34).

5.2.3 Storage Area

Containers storing ignitable or reactive waste must be located at least 50 feet from the facility's property line.

A storage container holding a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers, piles, open tanks, or surface impoundments must be separated from the other materials or protected from them by means of a dike, berm, wall, or other device.

All waste containers will be assigned an inventory number from the waste tracking log. Each container will be inventoried on a monthly basis. Waste will be stored on site for no more than 90 days.

6.0 TOOLS, MATERIALS, AND EQUIPMENT

Unless provided by the customer, the HWDC will be required to provide all tools, administrative forms, survey instruments, labels, markings, and placards for each shipment of materials.

Special care must be taken by the HWDC to ensure that an adequate supply of such materials is maintained. A Field Kit Materials List is provided as Attachment A of this procedure.

7.0 DETAILED INSTRUCTIONS

7.1 Procedure for Material Preparation

All hazardous materials or waste shipped by MK or its subcontractors shall be in strict adherence to the requirements of 49 CFR 170 through 180, Mississippi Hazardous Waste Management Regulations, and all other applicable federal, state, and local regulations.

1). PACKAGING

Materials shall be packaged and the packaging inspected in accordance with the requirements of 49 CFR 173 for the Proper Shipping Name and USDOT Subtype of the material being offered for transport.

2). MARKS/LABELS

All packages offered for transport shall be properly marked and labeled in accordance with the requirements of 49 CFR 172 prior to shipment. Any old, worn, torn, or otherwise illegible labels and/or marks shall be replaced as soon as practical after they are discovered. Labels shall not be modified or corrected once they are affixed to drums.

3). SHIPPING PAPERS

Shipping Papers will be prepared for shipments as follows:

- All hazardous materials (unless otherwise excepted) shall have USDOT hazardous materials shipping papers prepared in accordance with 49 CFR 172.200 - 172.205.
- All hazardous waste shall, in addition to USDOT hazardous materials shipping papers, shall have a Uniform Hazardous Waste Manifest selected and prepared in accordance with 49 CFR 262.20 or the appropriate state specific hazardous waste manifest form.
- Additional forms shall be prepared as may be required by federal, state, and local ordinance, and by receiving site license or acceptance criteria.

7.2 Procedure for Material Loading

With the exception of common carrier shipments of hazardous materials, the following procedure shall be followed when loading material for transportation:

The CBC Gulfport Personnel will be notified for inspection and manifest signature prior to

loading transport vehicle.

- 1) Conduct and document a visual inspection of the conveyance and ensure any discrepancies are repaired prior to loading.
- 2) If the vehicle floor shows evidence of moisture, the floor shall be wiped as dry as possible and the condition of the floor and action taken noted on the shipping papers. The consignee shall also be notified prior to shipment.
- 3) The HWDC and the CBC Gulfport representative shall inspect all packages as they are loaded to ensure that the packages are in full compliance with all the requirements set forth in this procedure. Incompatible materials shall be segregated as required by 49 CFR.

Special care will be taken to ensure that all strong tight containers used for transport are completely sealed to the maximum extent practical. This includes the use of sealant on seams of metal boxes. Special care will also be taken to ensure that all specification packages are properly prepared for transport and in pristine condition prior to transport. Contact the HWDC or the project manager for all questionable packages.

- 4) Upon completion of loading, visually verify that all packages are loaded.
- 5) Verify the proper use of blocking, bracing, dunnage, and tie-down, as appropriate.
- 6) Verify the conveyance is properly placarded, as applicable.
- 7) Seal the vehicle/conveyance if required.
- 8) Obtain CBC Gulfport authorized representative signature on the waste shipping manifest.

7.3 POST LOADING REQUIREMENTS

- 1) Have the driver (or transporter's representative) and shipper (or shipper's agent) sign all required forms.
- 2) Review all paperwork to ensure legibility.
- 3) Copy and Distribute all paperwork. Uniform Hazardous Waste Manifests (Form 8700-22 and 87-22A if necessary) shall be distributed in accordance with 40 CFR 262 and the Mississippi Hazardous Waste Management Regulations as indicated in the Distribution Checklist provided as Attachment B.
- 4) Verify that the driver (transporter's representative) understands all special instructions such as the maintenance of exclusive use and prior notification requirements. The shipment may now be released for transport.

5) Notify the Project Manager of a shipment in progress.

8.0 RECORDS

8.1 Hazardous Waste Disposal Coordinator

The HWDC shall retain copies of records, forms, and shipping papers generated as a result of this procedure until written acknowledgment is received from the consignee for all waste shipments or telephone acknowledge is received for all non-waste shipments.

All facilities that ship for disposal/treatment more than 1000 kilograms of hazardous waste per month shall receive a signed copy of the disposal manifest from the TSD facility within 35 days after shipment of waste. If a copy of the signed manifest is not received, the shipper must contact the transporter or operator of the designated facility to determine the status of the waste. If a copy of the manifest with the handwritten signature of the owner or operator of the designated facility is not received within 45 days of the date the waste was accepted by the initial transporter an Exception Report to the EPA shall be initiated per 40 CFR 264.42(a)(2).

All facilities that ship for disposal/treatment more than 100 kilograms of hazardous waste per month but less than 1000 shall receive a signed copy of the disposal manifest from the TSD facility within 60 days of the date the waste was accepted by the initial transporter an Exception Report to the EPA shall be initiated per 40 CFR 264.42(b).

8.2 PROJECT RECORDS

All shipping papers shall be retained as part of a permanent project file for each project.

8.3 GENERATOR

The generator of waste shall be provided with their copy of the shipping papers.

Source Removal Activities Flow Diagram

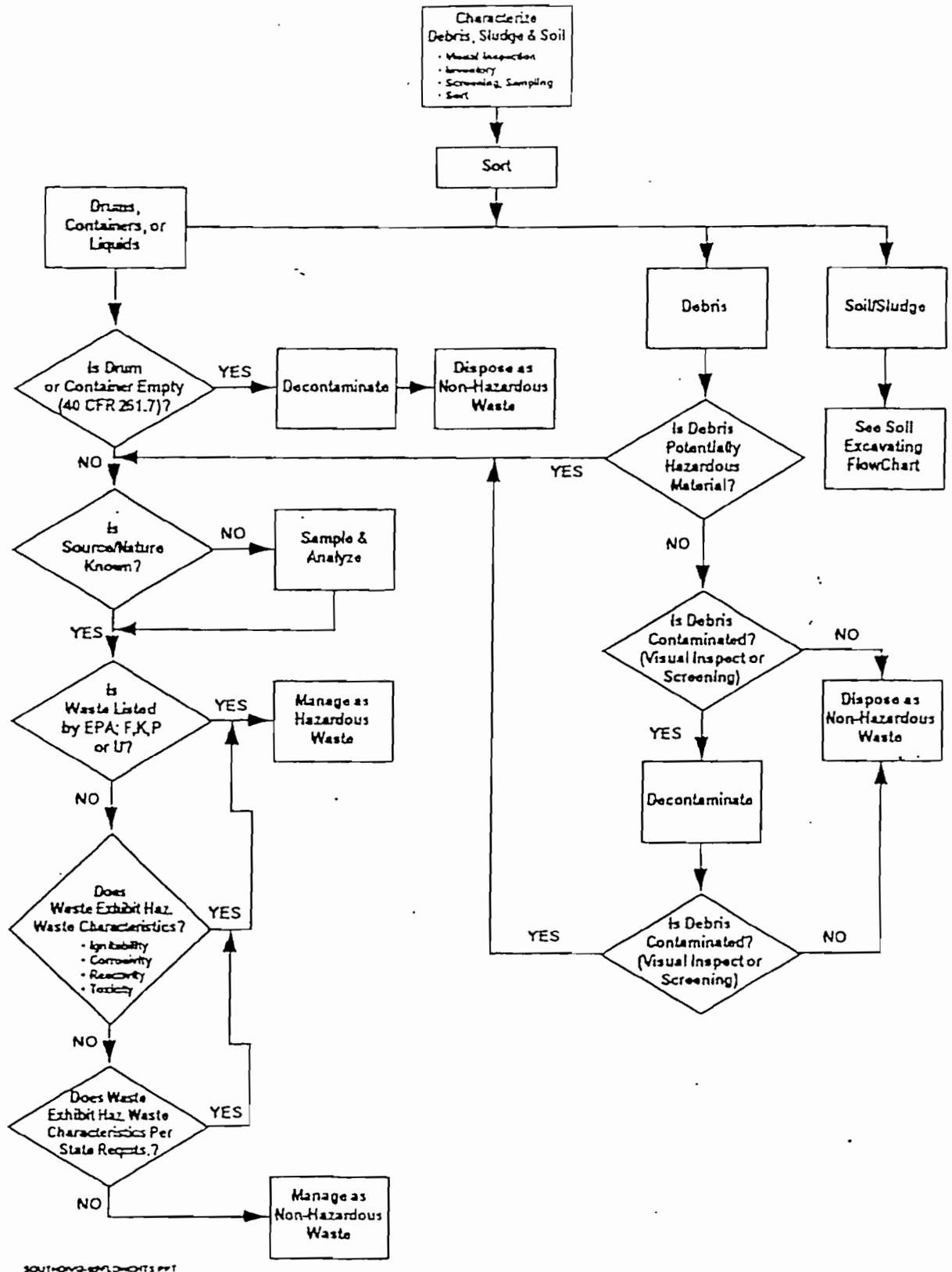
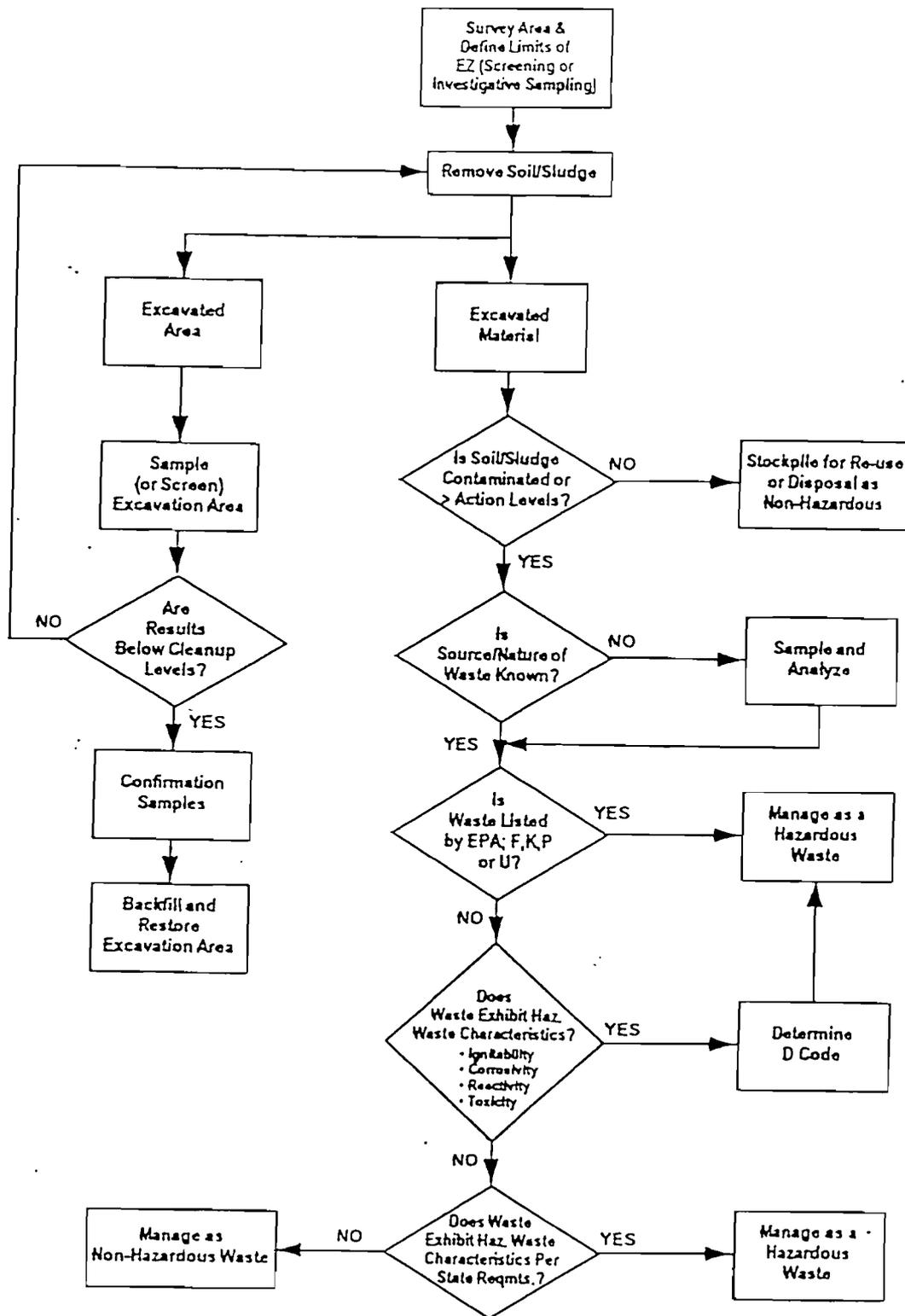


FIGURE D-1
SOURCE REMOVAL ACTIVITIES FLOW DIAGRAM

Soil Excavating Flow Diagram



SOUTH02-ENV0007'S PART

FIGURE D-2
SOIL EXCAVATING FLOW DIAGRAM

ATTACHMENT A
HWDC FIELD KIT MATERIAL LIST

HWDC FIELD KIT MATERIAL LIST

I. PROCEDURES AND REFERENCES

- 1) MISSISSIPPI HAZARDOUS WASTE MANAGEMENT REGULATIONS;
- 2) MISSISSIPPI NONHAZARDOUS WASTE MANAGEMENT REGULATIONS;
- 3) 49 CFR 100-177;
- 4) 40 CFR 260-299;
- 5) ALL APPLICABLE PROJECT SPECIFIC RULES, REGULATIONS, AND LICENSES.

II. PAPERWORK

- 1) BLANK BILLS OF LADING;
- 2) BLANK US EPA UNIFORM HAZARDOUS WASTE MANIFESTS AND STATE MANIFESTS AS APPLICABLE;
- 3) ALL PROJECT SPECIFIC PAPERWORK (STATE OF INDIANA HAZARDOUS WASTE MANIFESTS, WASTE CERTIFICATION FORMS, PRIOR NOTIFICATION FORMS, ETC.).

III. LABELS AND MARKINGS

- 1) WASTE CLASS AND STABILITY STICKERS;
- 2) ITEM NO. AND WEIGHT STICKERS;
- 3) HAZARDOUS MATERIALS LABELS;
- 4) "7A TYPE A" STICKERS;
- 5) HAZARDOUS WASTE CONTAINER LABELS;
- 6) PERMANENT MARKERS (2) AND PENS (2);
- 7) HAZARDOUS MATERIALS PLACARDS;
- 8) PROJECT SPECIFIC MARKINGS AND LABELS AS REQUIRED.

IV. TOOLS AND MATERIALS

- 1) 12" CRESCENT WRENCH (1);
- 2) 15/16" COMBINATION WRENCH (2);
- 3) HALF ROUND NEOPRENE GASKETS AND SILICONE GREASE (IF SHIPPING DRUMS);
- 4) OTHER TOOLS, MATERIALS, AND INSTRUMENTATION AS REQUIRED BY PROJECT.

**ATTACHMENT B
WASTE MANAGEMENT CHECKLISTS**

**COPY DISTRIBUTION CHECKLIST
HAZARDOUS WASTE**

UHWM**	Disposal Site (Base)	Shipper	Carrier	Van Copy*	Pro. Mgr.	HWDC	Mail*
Land Ban (LDR) Certificate	original	original	original	copy	copy	copy	N/A
Bill of Lading	original	original	original	copy	copy	copy	N/A
Driver Instruction	copy	copy	original	copy	copy	copy	N/A
Inventory Sheet	N/A	copy	N/A	copy	copy	original	N/A
Admin. Info	N/A	N/A	N/A	N/A	copy	original	N/A
Coord. Checklist	N/A	N/A	N/A	N/A	copy	original	N/A
Emergency Action	copy	copy	original	copy	copy	copy	N/A

* IF APPLICABLE BY STATE AND LOCAL REGULATIONS

** ADDITIONAL DISTRIBUTION AS REQUIRED BY STATE (FOLLOW FORM INSTRUCTIONS)

ORIG - 1st Original

2 ORIG - 2nd Original

3 ORIG - 3rd Original

4 ORIG - 4th Original Procedure

NOTE: Items 1 through 16 and Items A through K correspond to Uniform Hazardous Waste Manifest Blocks with the same designations. Items A through K are optional on Federal and some State Forms.

RESPONSIBILITY/INITIALS

Before Pickup:

- | | | | | | |
|-----|-------|-------|-----|----|---|
| 1. | _____ | _____ | YES | NO | Is the Federal Uniform Hazardous Waste Manifest being used? (Or the State form if the State has one)(More than one manifest may be required if the waste is transported through other States(s) having their own manifest). |
| | _____ | _____ | YES | NO | Has the generator's ID Number been identified? |
| | _____ | _____ | YES | NO | Has a Manifest Number been established by the generator? |
| 2. | _____ | _____ | YES | NO | Is each page of the Manifest numbered? |
| 3. | _____ | _____ | YES | NO | Has the name and address of the generator been used? (This should be the location which will manage the returned Manifest forms). |
| 4. | _____ | _____ | YES | NO | Has the phone number of the generator been used? (This should again be the location which will manage the returned Manifest forms). |
| 5. | _____ | _____ | YES | NO | Is the transporter's name on the Manifest? |
| 6. | _____ | _____ | YES | NO | Is the transporter's EPA Id Number on the Manifest? |
| 7. | _____ | _____ | YES | NO | If a second or alternate transporter has been arranged for, is this second/alternate transporter's name on the Manifest? |
| 8. | _____ | _____ | YES | NO | Is the second or alternate transporter's EPA ID Number on the Manifest? |
| 9. | _____ | _____ | YES | NO | Is the treatment/storage /disposal facility's (TSDf) name and address on the Manifest? |
| 10. | _____ | _____ | YES | NO | Is the TSDf's EPA Id Number on the Manifest? |
| A. | _____ | _____ | YES | NO | Is the State Manifest Document Number reprinted on the Manifest? |
| B. | _____ | _____ | YES | NO | Is the generator's State ID Number on the Manifest? |
| C. | _____ | _____ | YES | NO | Is the Transporter's State ID Number on the Manifest? |
| D. | _____ | _____ | YES | NO | Is the transporter's phone number on the Manifest? |
| E. | _____ | _____ | YES | NO | If a second or alternate transporter has been arranged for, is this second/alternate transporter's State ID Number on the Manifest? |
| F. | _____ | _____ | YES | NO | Is the second/alternate transporter's phone number on the Manifest? |
| G. | _____ | _____ | YES | NO | Is the TSDf's State ID Number on the Manifest? |
| H. | _____ | _____ | YES | NO | Is the TSDf's phone number on the Manifest? |

RESPONSIBILITY/INITIALS

Before Pickup:

- | | | | | | |
|-----|-------|-------|-----|----|---|
| 11. | _____ | _____ | YES | NO | Does the Manifest include for each waste stream the Department of Transportation (DOT) proper Shipping Name, Hazard Class, ID Number, Packaging Group, and EPA Waste Codes? Does it also include "RQ" for wastes having CERCLA Reportable Quantities (RQ's)? |
| 12. | _____ | _____ | YES | NO | Does the manifest include the number and type of container for each waste stream? (Abbreviations for container type are listed on the Manifest Instructions). |
| 13. | _____ | _____ | YES | NO | For each waste stream, does the Manifest include a numerical quantity for that waste? |
| 14. | _____ | _____ | YES | NO | For each waste stream, does the Manifest include the units associated with the quantity given above? (Abbreviations for units are listed on the Manifest Instructions). |
| I. | _____ | _____ | YES | NO | If that State issues one, does the Manifest include a State Waste Code Number for each waste stream? |
| J. | _____ | _____ | YES | NO | Are any additional descriptions for the waste streams included on the Manifest as necessary? |
| K. | _____ | _____ | YES | NO | Are handling codes for the waste streams included on the Manifest as necessary? |
| 15. | _____ | _____ | YES | NO | Are special handling instructions and additional information (If Any) included on the Manifest? |
| 16. | _____ | _____ | YES | NO | Has the generator's signee printed, signed and dated the generator's Certification Statement essentially attesting to the full and accurate manifest form completion, regulatory compliant preparation of waste for transport and to having a programming place to reduce the volume and toxicity of waste generated to the degree economically practicable, and to selecting the practicable method of the treatment storage or disposal which minimizes threat to human health and the environment. |
| 17. | _____ | _____ | YES | NO | Has the hazmat employee (The manifest signee would qualify as such here) completed original and refresher DOT oriented courses required by DOT regulations? (OSHA 1910.120 training would suffice). |
| 18. | _____ | _____ | YES | NO | Has the compliance status of the transporter and the TSDF been verified? |
| 19. | _____ | _____ | YES | NO | Is there adequate 40 CFR 262.11 documentation of the waste's hazardous characteristics/listings (with hazardous constituent concentrations)? |

RESPONSIBILITY/INITIALS

Before Pickup:

- | | | | | | |
|-----|-------|-------|-----|----|--|
| 20. | _____ | _____ | YES | NO | Have the appropriate Land Disposal Restriction (LDR) Notification/Certification forms been prepared and included with the Manifest? Does the form agree with the waste stream documentation? |
| 21. | _____ | _____ | YES | NO | Have wastes been packaged in accordance with Department of Transportation (DOT) requirements; placed in containers compatible with the waste and dated/identified/labeled RCRA? |
| 22. | _____ | _____ | YES | NO | Are there hazardous Waste Profile Sheets for each of the wastes (IF required by the TSDF) in the format specified by the TSDF? |
| 23. | _____ | _____ | YES | NO | Is all back-up information available for review? (Work Plans, Test Results, RCRA regs, DOT Regs, etc.) |
| 24. | _____ | _____ | YES | NO | Is the generator's signee aware of what parties are involved with signing the Manifest and keeping copies? |
| 25. | _____ | _____ | YES | NO | Is the TSDF permitted to accept your specific type waste(s)? |
| 26. | _____ | _____ | YES | NO | Are emergency contacts and procedures in place to deal with an emergency in the event of one? |
| 27. | _____ | _____ | YES | NO | Has the waste been staged at the agreed pick-up location? |
| 28. | _____ | _____ | YES | NO | Does the generator's signee have on hand a letter which authorizes signature on the Manifest as the generator? |

During Pick-Up:

- | | | | | | |
|-----|-------|-------|-----|----|---|
| 29. | _____ | _____ | YES | NO | Is transport truck placarded per DOT requirements? |
| 30. | _____ | _____ | YES | NO | Are Manifest signatures legible on all copies of the Manifest? |
| 31. | _____ | _____ | YES | NO | Is the appropriate copy of the Manifest retained prior to letting the transporter leave the site? |
| 32. | _____ | _____ | YES | NO | Is the generator's signee on-site (waste location) when signing the Manifest? |
| 33. | _____ | _____ | YES | NO | Did the transporter sign the Manifest at the time of pick-up? |

After Pick-UP:

- | | | | | | |
|-----|-------|-------|-----|----|--|
| 34. | _____ | _____ | YES | NO | Is the generator's signee aware of the procedure for return of the Manifest copy to the generator? (Generator to start tracking if not returned in 35 days, exception reporting by day 45, etc.) |
|-----|-------|-------|-----|----|--|

RCRA Compliance Issues:

RESPONSIBILITY/INITIALS

Before Pickup:

- | | | | | | |
|-----|-------|-------|-----|----|--|
| 35. | _____ | _____ | YES | NO | Is the generator status known? (Federal status could be large quantity [HW>1,000 KG/Month], small quantity [100 KG/month<QTY<1,000/month], or conditionally exempt small quantity [QTY<100 KG/Month]; State definition may be different entirely) |
| 36. | _____ | _____ | YES | NO | Is the date of hazardous waste generation noted on the waste container/tank unless the waste is at a 55 gallon or less satellite accumulation area? |
| 37. | _____ | _____ | YES | NO | Is the waste being managed in accordance with applicable regulations while on site? (RCRA regulations will be applicable in many cases). |
| 38. | _____ | _____ | YES | NO | Are 40 CFR 265.16 training records (going back 3 years) available for personnel managing hazardous wastes at 90-Day Accumulation and Permitted Hazardous Waste Storage areas? |
| 39. | _____ | _____ | YES | NO | Are record keeping requirements being satisfied? (Training, Manifest # tally, outstanding and returned manifests, LDR forms, Exception Reports, Disposal Certificates, HW generated Annual Reports). Is signee aware of the process by which each will be created and executed as well as the location of the records? |

APPENDIX E
ENVIRONMENTAL PROTECTION PLAN

APPENDIX E

ENVIRONMENTAL PROTECTION PLAN

1.0 INTRODUCTION

This Section describes the environmental protection measures to be used during excavation and removal activities. All work will be performed in such a manner as to minimize pollution air, water and land. Within applicable regulatory requirements, noise and the disposal of solid waste materials and other pollutants will be controlled.

2.0 MEASURES FOR PROTECTING NATURAL RESOURCES

2.1 LAND PROTECTION

Except for any work or storage areas and access routes specifically assigned for use under this project, the land areas will be preserved in their present condition to the extent possible. If trees are required to be removed in excavation areas, a site walk will be performed prior to removal and all trees greater than six inches in diameter will be flagged. MK will obtain approval from the ROICC prior to removal of the flagged trees.

2.1.1 Protection of Trees

All trees which are to remain at the sites that could be injured during operations will be protected by placing boards, planks or poles around them. No ropes, cables or guys will be attached or fastened to nearby trees for anchorage.

2.1.2 Restoration of Damaged Trees

Any trees or landscape features which are removed, scarred or damaged during system installation will be replaced with undamaged trees (saplings) and landscape features. The Contracting Officer's approval will be obtained prior to replacing trees.

2.1.3 Protection of Water Resources

The following surface water bodies are located adjacent to the sites:

- Catfish ponds - north of Site # 1,
- Drainage canal - west of Site # 4, and
- Drainage canals - west and south of Site # 5.

The surface water bodies at Sites 1 and 5 are not adjacent to the proposed excavation areas, and will not be impacted by the excavation activities. Excavation at Site # 4 will be performed with extreme caution to prevent any release from entering the drainage canal. Ditches and berms or

dikes will be constructed to control surface water run-on or run-off. Straw bale filter fences will be constructed to control erosion.

Any ground water or surface water entering the excavations will be pumped into a storage tank. The collected water will be transported off-site to a permitted wastewater treatment facility.

2.2 REMOVAL OF TEMPORARY CONSTRUCTION FACILITIES

Once the removal action is completed, all temporary facilities will be removed. All excavations in the paved area of the site will be repaved. All affected unpaved areas will be re-seeded or otherwise returned to their pre-construction condition. As discussed above, areas where brush and trees have been removed will be replanted with new brush or saplings.

2.3 PROTECTION OF FISH AND WILDLIFE RESOURCES

This work will not disturb fish or wildlife, alter water flows or otherwise significantly disturb the native habitat on or adjacent to the project.

2.4 WETLAND PROTECTION

A wetland area is located to the northeast of Site # 4, as identified by the U.S. Army Corps of Engineers in April 1990 (ABB, 1993). However, the wetland is not near the proposed excavation areas. Therefore, the wetland area will not be impacted by the removal activities.

2.5 HISTORICAL AND ARCHEOLOGICAL RESOURCES

Although no historical and archeological items or human skeletal remains are expected to be found, the ROICC will be notified immediately in the event any archeological items are encountered. Any items discovered will be carefully preserved and work stopped in the area until direction is received from the ROICC to resume work.

2.6 DUST CONTROL

MK will maintain all excavations, stockpiles, access roads and other work areas free from excess dust to avoid causing a hazard. Dust control at the site will be accomplished by wetting the soil or structure with a wetting spray.

2.7 EROSION CONTROL

Straw bale and filter fences will be constructed to control erosion. Erosion control measures undertaken will ensure that no sediment is carried away from the excavation areas. The amount of bare soil exposed at any one time will be minimized and the excavation covered when work is not in progress.

3.0 REQUIRED REPORTS

The MK Project Manager, or his representative, will complete the following reports as required:

- Contractor Production Report - See Appendix B QCP, Section 6.0
- Contractor Quality Control Report - See Appendix B QCP, Section 6.0
- Weekly Safety Report - See Appendix A SSHP, Section 13.2
- Construction Completion Report - See Work Plan, Section 4.2.7.

APPENDIX F
TECHNICAL SPECIFICATIONS

APPENDIX F TECHNICAL SPECIFICATIONS

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SECTION 01566 - SURFACE WATER AND EROSION CONTROL

SECTION 02105 - CLEARING AND GRUBBING

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SECTION 02225 - BURIED DEBRIS REMOVAL

SECTION 02960 - SITE RESTORATION

SECTION 01015

WASTE TRANSPORTATION AND DISPOSAL

PART 1 GENERAL

Unless otherwise specified, the Subcontractor shall furnish and assume full responsibility, including security, for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, and all other incidentals necessary for the furnishing, performance, and completion of the Work, in strict accordance with the Specifications, Schedules and Drawings forming parts of this Subcontract.

1.1 Description

The work shall consist of the transportation and disposal of generated wastes in accordance with applicable federal, state and local regulations and completion of all required documentation, including preparing manifests, for all wastes generated during activities performed by subcontractor and others at site.

1.2 Related Documents

- A. Section 01010 - Statement of Work
- B. Section 01500 - Decontamination
- C. Section 02210 - Excavation
- D. Section 02215 - Drum Removal
- E. Section 02225 - Buried Debris Removal

1.3 References

- A. Title 49, Code of Federal Regulations, Transportation;
- B. Title 40, Code of Federal Regulations, Protection of Environment Parts 260 and 261, 262, 263, 264, 265, 268 and 761 (if necessary);
- C. Mississippi Hazardous Waste Regulations
- D. Mississippi Nonhazardous Waste Regulations

1.4 Submittal

- A. Submit a Waste Disposal Plan within 10 days after notice to proceed for review and approval by the Contractor. The Waste Disposal Plan shall include procedures to handle and segregate different types of wastes, transportation, and off-site disposal.
- B. Prior to shipment of waste to a waste treatment, storage or disposal facility (TSDf), that facility must be approved by the Contractor. Submit a list of the TSDf to the Contractor at least 30 days prior to disposal. The list shall include the name and address of the TSDf, proposed types of waste to be treated or disposed, regulatory status including EPA Identification number, if applicable, EPA permit, and any constraints including schedule.

PART 2 PRODUCTS

2.1 Packaging Containers

- A. Subcontractor shall place excavated soils in lined 20 cubic yard roll off boxes or containers.
- B. Subcontractor shall provide plastic lined 55-gallon drums for disposal of PPE. The drums shall be labeled per 49 CFR 1910.1200 "Used PPE" or equivalent.
- C. Subcontractor shall furnish containers for collection of decontamination water.
- D. Subcontractor shall furnish containers for collection of produced water from the excavation.

PART 3 EXECUTION

3.1 Waste Management and Disposal

- A. Waste streams include drums and drummed waste, excavated debris, bulk soils, ground water, decontamination water and inert wastes that are generated in the performance of the soil boring, excavation, sampling and bulking of buried drums. Sampling of waste streams shall be performed by the Subcontractor and analyses will be performed by others. Allow a minimum of three weeks from sampling for receipt of sample results and review by the Contractor. Depending upon the analytical results, these waste streams shall be disposed of on-site or at off-site facilities approved

by the Contractor.

- B. Not all of the excavated soil are expected to be hazardous, although they will be tested to verify that they may be replaced in the excavation or disposed of at an approved off-site facility as hazardous waste.
- C. When directed by the Contractor, ground water shall be collected at each excavation site, stored according to the approved Waste Disposal Plan and treated at an approved off-site treatment facility.
- D. Decontamination water generated during steam cleaning of excavation equipment, cleaning tanks and during manual decontamination of sampling equipment shall be collected, stored according to the approved Waste Disposal Plan and treated at an approved off-site treatment facility.
- E. Waste personal protective equipment (PPE) includes disposable Tyvek[®] suits, gloves, and boots. Contaminated PPE shall be placed in a plastic lined 55-gallon drum immediately after use. Transport and dispose of drums containing PPE at an approved off-site facility.

3.2 Transportation

A. Prerequisites

The following prerequisites must be met prior to any individual shipping or assisting in the shipment of Hazardous Materials by any conveyance on the public highway, by vessel or rail, or by air:

1. The Subcontractor performing the shipment, as a minimum shall be trained in accordance 49 CFR 172, Subpart H.
2. The individual performing the shipment shall ensure that administrative requirements, such as Contractor's approval, have been met prior to shipment of materials.
3. The material must be identified by the most appropriate Proper Shipping Name in accordance with the Hazardous Materials Tables of 49 CFR 172.
4. If the material is Hazardous, the material must be identified by the most appropriate USEPA Waste Code in accordance with 40 CFR 261.
5. The generator, transporter, and disposer of Hazardous Materials shall have valid EPA Identification Numbers and all EPA Permits

(Generator Permits, Transporter Permits, TSD Permits, etc.), as appropriate. The subcontractor shall also provide evidence that the waste stream(s) being shipped is acceptable at the receiving facility in accordance with all permit requirements.

6. The Generator of Hazardous Materials shall have completed all notifications and certifications for the waste material subject to the land disposal restrictions in accordance with 40 CFR 268.
7. Hazardous Materials not shipped as waste shall be shipped in such a manner as to conform to all federal, state and local ordinances. The Subcontractor offering the material for transport shall make available the Material Safety Data Sheets. Waste Materials shall only be shipped to a facility upon provision of evidence, by the subcontractor, that the material is acceptable at the receiving facility.
8. Prior to shipment of waste to a hazardous or waste disposal facility, that facility must be approved by the Contractor and the Navy. All waste manifests and profile sheets shall be submitted to Contractor for review and approval before the Generator will be asked (by Contractor) to sign. Allow at least five work days for this cycle.

B. Procedure for Material Preparation

1. All materials shipped by the Subcontractor shall be in strict adherence to the requirements of 49 CFR and all other applicable federal, state, and local regulations.
2. Materials shall be packaged and the packaging inspected in accordance with the requirements of 49 CFR 173 for the Proper Shipping Name and USDOT Subtype of the material being offered for transport.
3. All packages offered for transport shall be properly marked and labeled in accordance with the requirements of 49 CFR 172 prior to shipment. Any old, worn, torn, or otherwise illegible labels and/or marks shall be replaced as soon as practical after they are discovered. Labels shall not be modified or corrected once they are affixed to drums.
4. Shipping Papers will be prepared for shipments as follows:
 - 1) All hazardous materials (unless otherwise excepted) shall have USDOT hazardous materials shipping papers prepared

in accordance with 49 CFR 172.200 - 172.205.

- 2) All hazardous waste shall have a Uniform Hazardous Waste Manifest selected and prepared in accordance with 40 CFR 262.20 or appropriate state specific hazardous waste manifest form.
- 3) Additional forms shall be prepared as may be required by Federal, State, and local ordinance, and by receiving site license or acceptance criteria.

C. Procedure for Material Loading

With the exception of common carrier shipments of hazardous materials, the following procedure shall be followed when loading material for transportation:

1. Subcontractor shall conduct and document a visual inspection of the conveyance and ensure any discrepancies are repaired prior to loading. If the vehicle floor shows evidence of moisture, the floor shall be wiped as dry as possible and the condition of the floor and action taken noted shall be on the shipping papers. The consignee shall also be notified prior to shipment.
2. Subcontractor shall inspect all packages as they are loaded to ensure that the packages are in full compliance with all the requirements set forth in this procedure. Incompatible materials shall be segregated as required by 49 CFR.

NOTE: SPECIAL CARE SHALL BE TAKEN TO ENSURE THAT ALL STRONG TIGHT CONTAINERS USED FOR TRANSPORT ARE COMPLETELY SEALED TO THE MAXIMUM EXTENT PRACTICAL. THIS INCLUDES THE USE OF SEALANT ON SEAMS. SPECIAL CARE SHALL ALSO BE TAKEN TO ENSURE THAT ALL SPECIFICATION PACKAGES ARE PROPERLY PREPARED FOR TRANSPORT AND IN PRISTINE CONDITION PRIOR TO TRANSPORT. CONTACT THE CONTRACTOR FOR ALL QUESTIONABLE PACKAGES.

3. Upon completion of loading, Subcontractor shall visually verify that all packages are loaded.
4. Subcontractor shall verify the proper use of blocking, bracing, dunnage, and tie-down, as appropriate.

5. Subcontractor shall also verify the conveyance is properly placarded, as applicable, and in accordance with DOT
6. The Subcontractor shall seal the vehicle/conveyance, as required.

D. Post Loading Requirements

1. The Subcontractor shall have the driver (or transporter's representative) and shipper (or shipper's agent) sign all required forms.
2. The Subcontractor shall review all paperwork to ensure legibility. Contractor shall also review before Navy signature and release.

PART 4 QUALITY CONTROL

4.1 Shipping Errors

If the responsibilities of the Subcontractor are improperly executed and/or negligence is shown on the part of the Subcontractor, the Subcontractor shall be suspended from all shipping activities until the error is investigated and appropriate corrective action determined. Reinstatement shall be made only after any required retraining or recertification is completed. No payment will be made for any delays due to Subcontractor's negligence.

4.2 Records

- A. The Subcontractor shall retain copies of records, forms, and shipping papers generated as a result of this procedure until written acknowledgment is received from the consignee for all waste shipments.
- B. The Subcontractor must also prepare and submit to the Contractor daily logs of waste transported and its storage location. Submit copies of all results of inspections, analytical data, and all approval certifications from disposal facilities.
- C. The subcontractor shall provide a copy of all manifests to the Contractor.
- D. A copy of the original manifest shall be retained by the disposal facility as required by law.

END OF SECTION 01015

SECTION 01410

MATERIAL TESTING SERVICES

PART 1 GENERAL

1.1 Summary

- A. Subcontractor shall provide material testing services by an independent testing laboratory for determination of backfill compaction. The Work includes laboratory testing to develop standard Proctor curves for various soil types and on-site testing of compacted backfill to monitor compliance with compaction requirements. The Work includes the furnishing of all materials, equipment, tools, labor, transportation and services necessary to accomplish these activities in a competent professional manner and in accordance with all subcontract requirements.

1.2 Related Documents

- A. Section 01010 - Statement of Work
- B. Section 02210 - Excavation
- C. Section 02224 - Backfilling

1.3 References

- A. American Association of State Highway and Transportation Officials (AASHTO)
- B. American Society for Testing and Materials (ASTM)
- C. United States Environmental Protection Agency (USEPA)
- D. Any reference to standards of any society, institute, association or governmental agency shall be the edition in effect as of the date of this specification, unless stated otherwise.

1.4 General Procedures

- A. Laboratory Qualification Requirements: Independent testing laboratories shall be evaluated by Contractor in accordance with this specification to ensure that the laboratory is qualified to perform testing in support of SOUTHDIV ERAC program requirements.
 - 1. Independent testing laboratories that are accredited shall comply with the following accreditation programs, as applicable:

- a. National Institute of Standards and Technology (NIST)
 - b. National Voluntary Laboratory Accreditation Program (NVLAP)
 - c. American Association of State Highway and Transportation Officials (AASHTO) Program
 - d. American Association for Laboratory Accreditation (AALA) Program
2. A copy of the independent testing laboratory certificate of accreditation, the scope of accreditation, and the latest directory of the accrediting organization for accredited laboratories shall be furnished to Contractor for subsequent submittal to the Navy Contracting Officer. The scope of an independent laboratory's accreditation shall include the test methods required by subcontract documents.
 3. Independent testing laboratories that are not accredited per the above, shall prepare certified statements, signed by an official of the testing laboratory, and shall be submitted to Contractor for approval and attest that the proposed laboratory meets or conforms to the following requirements:
 - a. Sampling and testing shall be under the technical direction of a registered professional engineer (P.E.) with at least 5 years of experience in sampling and testing;
 - b. Laboratories engaged in testing of concrete and concrete aggregates shall meet the requirements of ASTM C 1077, 1990;
 - c. Laboratories engaged in testing of bituminous paving materials shall meet the requirements of ASTM D 3666, 1990 (Rev. A);
 - d. Laboratories engaged in testing of soil and rock, as used in engineering design and construction, shall meet the requirements of ASTM D 3740, 1988;
 - e. Laboratories engaged in nondestructive testing (NDT) shall meet the requirements of ASTM E 543, 1989 (Rev. A).
 4. Prior to utilization of any non-accredited testing laboratory, Contractor shall be notified and afforded the opportunity to inspect the proposed testing laboratory's facilities and records. Records subject to inspection include equipment inventory, equipment calibration dates and procedures, library of test procedures, audit and inspection reports by agencies conducting laboratory evaluations and certifications, testing and management personnel qualifications, test report forms, and the laboratory's internal QC procedures.
 5. Contractor and the Navy Contracting Officer have the right of access to testing laboratories performing work in support of the SOUTHDIV ERAC. This includes the right to check laboratory equipment in the laboratory and the laboratory technician's testing procedures, techniques, and other items pertinent to testing, for the purpose of ensuring compliance to testing requirements established in the contract. Contractor's Quality Control representative may perform an evaluation of the laboratory, which typically involves an evaluation performed at the laboratory facility.

1.5 Submittals

- A. Provide copies of any Material Safety Data Sheets (MSDSs) for chemicals to be used during work activities.

PART 2 PRODUCTS

Not Applicable.

PART 3 EXECUTION

3.1 Sampling

- A. Logs shall be kept for each sample location recording the following information:
 1. Project name
 2. Subcontractor's name
 3. Date of sample
 4. Sample location number
 5. Time of sample and weather conditions
 6. Location of sample
 7. Approximate relative ground elevation of in-situ density tests
 8. Equipment used
 9. Material other than rock shall be classified according to kind, color, moisture and compaction in accordance with ASTM D3017/2922.

B. Testing Requirements:

MATERIAL TESTING SUMMARY		
Area	Test Method	Criteria
Backfill in unimproved areas	Lab: ASTM D698 Standard Proctor Field: ASTM D3017 Moisture; ASTM D2922, ASTM D1556, or ASTM D2167 Density	85% of Laboratory Maximum Density
Backfill in improved areas near structures	Lab: ASTM D698 Standard Proctor Field: ASTM D3017 Moisture; ASTM D2922, ASTM D1556, or ASTM D2167 Density	90% of Laboratory Maximum Density
Backfill for roads, parking lots, structures and underground sewer lines	Lab: ASTM D698 Standard Proctor Field: ASTM D3017 Moisture; ASTM D2922, ASTM D1556, or ASTM D2167 Density	95% of Laboratory Maximum Density

3.2 Laboratory Testing

- A. Laboratory testing shall be done in accordance with appropriate ASTM and/or AASHTO standards.
- B. Tests shall be made on appropriate samples obtained from the construction or borrow sites.
- C. Test required: Standard Proctor in accordance with ASTM D698.

3.3 Report

- A. Three copies of a report must be submitted each month with the request for payment summarizing the results of tests made that month.
- B. At a minimum, the report shall contain the following information and data:
 - 1. Title page
 - 2. Letter of transmittal
 - 3. Table of Contents
 - 4. Site information
 - a. Location of test sites
 - b. Existing structures
 - c. Brief discussion of other conditions and/or features that are pertinent
 - 5. Sampling and testing program with a discussion of the results

6. The final report shall be signed and sealed by a Registered Professional Engineer licensed in the State of Mississippi.

END OF SECTION 01410

SECTION 01500

DECONTAMINATION

PART 1 GENERAL

1.1 Summary

- A. This Section specifies the requirements for providing decontamination services, including:
 - 1. Construction of a decontamination facility,
 - 2. Decontamination of equipment and debris, and
 - 3. Handling of decontamination water.

1.2 Related Sections

- A. Section 01010 - Statement of Work
- B. Section 01503 - Temporary Facilities
- C. Section 02210 - Excavation
- D. Section 02215 - Drum Removal

1.3 Submittals

- A. Subcontractor shall submit a decontamination plan within ten days after notice to proceed for review and approval of the Contractor.

PART 2 PRODUCTS

2.1 Decontamination Facility

Construct a decontamination facility of a single sheet of 60-mil high-density polyethylene (HDPE), sandbags, wood frame side walls and a container to collect decontamination water. The HDPE liner shall be placed over sand bedding material. The sides shall be constructed of the liner draped over sandbags. The decontamination facility shall be sloped to a sump or collection area. A single sheet of HDPE shall cover the base of the decontamination facility. If the ground is too soft to support the decontamination pad, plywood shall be used as a base for support.

2.2 Equipment Decontamination Products

All excavation equipment, tools, and other construction equipment shall be decontaminated prior to exiting the work area utilizing a high pressure, low volume washer and detergent.

PART 3 EXECUTION

3.1 Decontamination Facility

- A. The decontamination facility shall be located adjacent to the excavation area where excavation, removal and backfilling work is in progress. Subcontractor shall move the decontamination facility between excavation areas as required.
- B. Inspect the decontamination facility daily
 - 1. for evidence of tears and holes in the liner
 - 2. for evidence of seepage
 - 3. to ensure that the sheeting is adequately fastened to the side walls
 - 4. to ensure that the liner adequately covers the sand bags at the end sections
 - 5. to ensure that generated liquids can be contained until collected for disposal.
- C. If damaged liners are detected, they shall be repaired or replaced before further use.
- D. The inspection shall be recorded and the records shall be maintained specifying decontamination facility construction materials and methods, disposition of liquids, and any repairs and/or breaches of liner integrity.
- E. The remaining decontamination facility construction materials and washed residue shall be characterized and transported for disposal. When the decontamination facility is dismantled, the underlying material shall be visually inspected. Visibly contaminated material shall be removed and managed as a contaminated waste according to Local, State, and Federal regulations.
- F. Collect decontamination water in a temporary storage tank.

3.2 Decontamination

- A. Construction and Field Equipment

1. Construction and field equipment that have come into contact with any potentially contaminated material shall be decontaminated. Affected equipment shall be transported to the decontamination facility. At the decontamination facility, exposed surfaces shall be decontaminated using a solution of high-pressure/low-volume water or steam with detergent. The equipment shall be visually inspected for signs of contamination and screened for organic vapors with a flame ionization detector (FID) or PID. If elevated levels, defined as greater than 10 ppm above environmental background, are measured with either instrument, the cleaning procedure shall be repeated until the screening criteria have been met. The subcontractor shall decontaminate all equipment when removing it from the exclusion zone and at the end of the job before leaving the base.
2. Pumping equipment and associated hoses, including vacuum truck hoses, shall be flushed with water and detergent followed by a water rinse.

B. Subsurface Debris

1. Subsurface debris, such as metal parts and tires, that will be disposed at an off-site facility will be decontaminated at the decontamination facility. The exposed surfaces shall be decontaminated using a solution of high-pressure/low-volume water or steam with detergent. The equipment shall be visually inspected for signs of contamination and screened for organic vapors with a flame ionization detector (FID) or PID. If elevated levels, defined as greater than 10 ppm above environmental background, are measured with either instrument, the cleaning procedure shall be repeated until the screening criteria have been met.

END OF SECTION 01500

SECTION 01503

TEMPORARY FACILITIES

PART 1 GENERAL

This section specifies the requirements for furnishing and installing temporary facilities necessary for execution of the Work, including: furnish, set up, service and maintain temporary toilet and washing facilities, showers and change rooms for site workers where directed by Contractor. The subcontractor shall be responsible for all utility usage and shall provide meters to monitor utility usage. The subcontractor shall coordinate all activities through the Contractor.

1.1 Related Sections

- A. Section 01010 - Statement of Work
- B. Section 01015 - Waste Transportation and Disposal

PART 2 PRODUCTS

2.1 Toilet Facilities

Portable Self-contained Toilet Units complete with entry doors capable of being locked from the outside. Padlocks and keyed lock-sets are both acceptable. The doors shall also be capable of being secured from the inside during usage.

2.2 Shower/change Room Facilities

- A. Provide electrical lighting.
- B. Provide electrical heating/cooling to maintain comfort level between 65° and 85°F.
- C. Provide exhaust fan.
- D. Provide showers.
- E. Provide adequate hot water for two 4-minute showers per worker per day at a flow rate of 3 gallons per minute.
- F. Provide all shower/change room facilities with entry doors capable of being locked from the outside. Padlocks and keyed lock-sets are both acceptable.

- G. Provide a sink to wash respirators and a clean cabinet for air drying respirator units.
- H. Showers and changing room(s) shall be arranged to accommodate all workers but not necessarily all at the same time.

2.3 Washing Facilities

- A. Locate in vicinity of toilets so that workers can wash hands before and after using toilets.
- B. Provide hot and cold water.

2.4 Waste Water Collection and Holding Facilities

Keep sanitary waste streams from toilet facilities completely separate from shower and wash facility waste streams.

PART 3 EXECUTION

3.1 Waste Disposal

- A. Pump contaminated waste water from temporary decontamination unit to decontamination water storage tank provided by Subcontractor.
- B. Remove sanitary wastes from site. Dispose of wastes at a location acceptable to State and local authorities after approval by Contractor.
- C. Replenish water, chemical solution, toilet paper, and paper hand towels as required.
- D. Do not locate restroom facilities in the construction work zone decontamination unit.
- E. Sort, package, and transport all trash and debris from temporary decontamination facilities operation separately so it can be tracked by Contractor.
- F. Separate disposed personnel protective equipment (PPE) generated during temporary decontamination unit operation, package and dispose of properly.

3.2 Installation

- A. Install all temporary facilities as approved by Contractor.
- B. Block and tie down trailer units.

- C. Install OSHA approved steps and handrails. Install portable fire extinguishers per NFPA 10 and exit signs per NFPA 101.

3.3 Maintenance

- A. Maintain facilities in a clean and sanitary condition. When facilities are in use, mop floors, clean showers and toilets daily. Empty waste receptacles daily.
- B. Maintain fixtures so they are serviceable at all times.
- C. Pay all fees and utility bills required to maintain the temporary facilities.

END OF SECTION 01503

SECTION 01565

DUST CONTROL

PART 1 GENERAL

1.1 Summary

- A. This Section specifies the requirements for fugitive dust control during excavation, drum removal and construction activities. Nuisance or fugitive dust concentrations shall be maintained at or below 1 mg/m³ total dust, unless otherwise specified by the Contractor.

1.2 Related Sections

- A. Section 02210 - Excavation
- B. Section 02224 - Backfilling

PART 2 PRODUCTS

2.1 Water

- A. Water is generally acceptable for fugitive dust suppression. Water shall not be used if Contractor determines it creates hazardous or objectionable conditions such as flooding, or uncontrolled contaminant migration.

2.2 Wetting Agents

- A. Wetting agents (surfactants) may be used to reduce the effective water volume with Contractor's approval.

PART 3 EXECUTION

3.1 Minimize Fugitive Dust

- A. Use water sprinkling and other methods that have received prior approval from Contractor to limit the amount of fugitive dust. Do not allow water to puddle.
- B. Furnish required equipment, additives, accessories, and incidentals wherever and as often as necessary to reduce fugitive dust.
 - 1. Apply water by pressure distributors, pipelines equipped with a spray distribution system, or hoses with nozzles that will ensure a uniform

- application of water.
2. Equip all devices used for the application of water with a positive means of shutoff, an anti-siphon valve, and a means to control the water pressure, volume or spray pattern to prevent airborne dust generation from the water application process.

END OF SECTION 01565

SECTION 01566

SURFACE WATER AND EROSION CONTROL

PART 1 GENERAL

1.1 Summary

- A. This section specifies the requirements to supply surface water control systems, including run-on and run-off protection and erosion control during excavation work.

1.2 Related Sections

- A. Section 02210 - Excavation
- B. Section 02224 - Backfilling

1.3 Submittals

- A. Submit a Storm Water, Run-On and Run-Off Control Plan two weeks prior to start of excavation for Contractor's review and approval.

PART 2 PRODUCTS

2.1 Filter Fence

- A. Straw bales used for filter fence shall be made of tightly baled straw bound with at least two individual strands of a poly-type twine. Bale dimensions shall be at least 1.5 feet by 1.5 feet by 2.5 feet in length. Anchors for straw bales shall be wood stakes.

PART 3 EXECUTION

3.1 Surface Water and Erosion Control

- A. Control surface water run-on to, surface water run-off, and erosion from excavations and material stockpiles as needed.

3.2 Waterways or Diversions

- A. Minimize water ponding during operations. Construct rough grading or temporary drainage ditches if necessary to ensure drainage.
- B. Construct ditches and berms or dikes if required to control surface water run-on and runoff. Do not overexcavate ditches. Maintain ditches as necessary.

3.3 Filter Fence

- A. Straw Bale Filter Fences - Sheet Flow Applications:
 - 1. Place bales in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another.
 - 2. Install bales so that bindings are oriented around the sides rather than along the tops and bottoms of the bales to prevent deterioration of the bindings.
 - 3. Place straw bales in vegetated areas directly on top of the ground surface.
 - 4. Entrench and backfill bales on bare ground where there is no vegetation. Excavate trench the width of a bale and the length of the proposed barrier to a minimum depth of 6 inches. Backfill excavated soil against the barrier after the bales are staked and chinked. Conform backfill soil to the ground level on the downhill side and build it up to 4 inches against the uphill side of the barrier.
 - 5. Securely anchor each bale with a minimum of two stakes driven through the bale. Drive the first stake in each bale toward the previously laid bale to force the bales together. Drive stakes deep enough into the ground to securely anchor the bales.
 - 6. Chink the gaps between bales (filled by wedging) with straw to prevent water from escaping between the bales.

3.4 Surface Restoration

- A. Restore all embankments, roads, drainage ditches, or other surfaces, which have been broken or damaged by the installation of the new work.

3.5 Maintenance

- A. General: Inspect and maintain all installed control facilities each day during the work.
 - 1. Remove and replace bales if the bales appear to be decomposing or become ineffective.

2. Remove straw bales and dispose of off-site in accordance with local, state and federal regulations.

END OF SECTION 01566

SECTION 02105

CLEARING AND GRUBBING

PART 1 GENERAL

1.1 Summary

- A. This section covers the requirements for clearing and grubbing for the project site, including the borrow source.

1.2 Related Sections

- A. Section 01010 - Statement of Work
- B. Section 02100 - Excavation
- C. Section 02960 - Site Restoration

1.3 Definitions

- A. Clearing: Clearing shall consist of the felling, trimming, and cutting of trees into sections and the satisfactory disposal of the trees and other vegetation designated for removal, including down timber, snags, brush, and rubbish occurring in the areas to be cleared.
- B. Grubbing: grubbing shall consist of the removal and disposal of stumps, roots larger than 3 inches in diameter, and matted roots from the designated grubbing areas.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 General

- A. All areas requiring fill, subgrade preparation, excavation, or as indicated by Contractor shall be cleared and grubbed.

3.2 Clearing

- A. Trees, stumps, roots, brush, and other vegetation in areas to be cleared shall be cut off flush with or below the original ground surface. Trees and vegetation to be left standing shall be protected from damage incident to clearing, grubbing, and construction operations by the erection of barriers or by such other means as the circumstances require.

3.3 Grubbing

- A. Material to be grubbed, together with logs and other organic or metallic debris not suitable for foundation purposes, shall be removed to a depth of not less than 18 inches below the original surface level of the ground in areas indicated to be grubbed and in areas indicated as construction areas under this contract, such as areas for buildings, and areas to be paved. Depressions made by grubbing shall be filled with suitable material and compacted to make the surface conform with the original adjacent surface of the ground.

3.4 Disposal of Materials

- A. Logs, stumps, roots, brush, rotten wood, and other refuse from the clearing and grubbing operations shall be disposed of at an off-site landfill. Subcontractor shall comply with all State or local regulations pertaining to transportation and disposal of these materials.
- B. No burning of the material will be allowed at the site.

END OF SECTION 02105

SECTION 02210

EXCAVATION

PART 1 GENERAL

1.1 Summary

- A. This section specifies the excavation requirements for the work.
 - 1. Excavating.
 - 2. Contractor will provide direction to Subcontractor for excavation and special handling requirements if necessary.

1.2 Related Sections

- A. Section 01010 - Statement of Work
- B. Section 01500 - Decontamination
- C. Section 01565 - Dust Control
- D. Section 02215 - Drum Removal
- E. Section 02224 - Backfilling
- F. Section 02225 - Buried Debris Removal

1.3 Submittals

- A. If Subcontractor elects to use equivalent, alternate excavation and backfill method to that defined by Contract Documents, provide work plan indicating proposed alternate excavation and backfill methods for review and approval by Contractor.
- B. Submit a stockpiling plan to the Contractor two weeks prior to excavation for each excavation area. The stockpiling plan shall show planned locations

for individual stockpiles and protective measures including erosion control that will be used for protection of human health and the environment. Visibly contaminated soil shall be stockpiled separately from other excavated soil.

- C. Subcontractor shall perform surveying and submit as follows:
1. A map of each excavation area prior to excavation showing the boundary of proposed excavation areas.
 2. A map of each excavation area after excavation is completed showing
 - 1) boundary of actual excavation areas at ground surface,
 - 2) boundary and elevations of pit bottoms, and
 - 3) bank cubic yards of soil excavated from each area.

1.4 Protection

- A. Protect the following:
1. Benchmarks and monuments, monitoring wells, existing structures, roads, fences, walks, pavings, curbs, etc. from equipment and vehicular traffic damage.
 2. Perimeter of excavation to prevent surface water entering excavations, and erosion from material stockpiles.
 3. Finished work.
 4. Existing features, such as buildings, power poles and overhead transmission lines not part of this Subcontract.
 5. Existing water and sewer lines during excavation from breakage, and have supplies on hand for rapid field grouting or plugging of these lines if they are broken and under pressure.

1.5 General Procedure

- A. The Subcontractor shall excavate to the lines shown on the drawings and as directed by Contractor. Contractor may decide to cease or limit the amount of excavation any time. Contractor may also decide to continue excavation beyond the lines shown on the drawings any time during the

excavation process.

- B. Perform soil excavation one area at a time.
- C. Soil excavations shall be performed to ground-water table. Any drum, container, debris and visually contaminated soil encountered during the excavation shall be removed.
- D. If soil encountered is oily or it's natural coloring changed, stop further excavation and immediately notify Contractor. Visually contaminated excavated soil shall be managed separately from other excavated soil and disposed of at an approved off-site facility.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 Work Zones and Access Zones

- A. Establish the following work zones: the Exclusion Zone, the Contamination Reduction Zone with decontamination stations, the Support Zone and access routes.
- B. Mark boundaries of the zones with signs, barricades and tapes to limit access.

3.2 Soil Excavation

- A. Prior to excavation:
 - 1. Use metal detectors to determine the possibility of buried drums and other metallic objects. The metal detector shall provide audio and digital signal patterns and shall be capable of locating buried steel

- drums to a depth of 8 feet.
2. If drums or other metallic objects are detected, the soil around the object shall be excavated sufficiently for proper inspection and removal.
- B. Carefully excavate with a backhoe or trackhoe starting with a test pit and enlarging the pit progressively.
- C. Stockpile excavated soil in accordance with approved stockpiling plan. Each stockpile shall be limited as follows:
1. Existing fill material (to a depth of 5 feet) at Site 5 to 500 cubic yards.
 2. Soil below existing fill material at Site 5 and all excavated soil from Sites 1 and 4 to 200 cubic yards.
- D. Collect soil samples from the each stockpile when directed by Contractor.
- E. Contractor may collect additional soil samples. Continue excavation after allowing Contractor to collect and field screen soil samples.
- F. Locate, mark, identify and notify Contractor of all buried utilities or underground facilities encountered in the course of the work.
- G. Removing Materials:
1. Stockpile excavated soil on a 6 mil polyethylene liner. Berm and cover to protect from the elements.
 2. Provide access so that excavated soils may be continuously monitored and sampled by Contractor to establish levels of contamination.
 3. Containerize and remove the excavated materials in accordance with Section 01015.
- H. Screening Excavation Bottoms:
1. The bottom of the excavation shall be screened with metal detector prior to backfilling.
 2. Potential drum locations shall be noted and recorded in the as-built

drawings.

- I. Overexcavation:
 - 1. Notify Contractor if materials are removed below required elevations, through Subcontractor error.
 - 2. Receive preapproval from Contractor for overexcavation performed for the convenience of Subcontractor.

- J. Exercise sound engineering and construction practices, including shoring, during excavation so that no damage occurs to adjacent facilities because of soil movement. If, as a result of excavation, there is a disturbance of the ground that endangers or damages another facility or utility, take immediate corrective action to correct the problem and repair the damage. The cost of this repair is incidental to the unit price for the excavation unless the cause is a latent physical condition.

3.3 Excavations Encountering Groundwater

- A. Stop further excavation and immediately notify Contractor if ground water is encountered.

- B. Dewater excavations, if required to remove drums and containers, and handle produced water in accordance with Section 01015.

- C. Contractor will determine if continued excavation is required. Obtain approval from the Contractor prior to continuing the excavation.

END OF SECTION 02210

SECTION 02215

DRUM REMOVAL

PART 1 GENERAL

1.1 Summary

- A. This section specifies the buried drum removal requirements for the work.
 - 1. Drum removal and temporary storage.
 - 2. Contractor will provide specific and timely direction to Subcontractor for special handling requirements of buried drums.

1.2 Related Sections

- A. Section 01010 - Statement of Work
- B. Section 01015 - Waste Transportation and Disposal
- C. Section 01500 - Decontamination
- D. Section 02210 - Excavation

1.3 Plan of Work

- A. Carefully plan the drum removal activities to avoid risks associated with excavating and handling drums with unknown contents.
- B. Submit a Drum Staging Plan including detail drawings and proposed location of the Main Staging Area and Temporary Storage Area to the Contractor for review and approval at least 5 days prior to construction of these facilities.

PART 2 PRODUCTS

2.1 Main Staging Area (MSA) and Temporary Storage Area (TSA)

- A. Construct an MSA for the project and TSAs adjacent to each excavation, as follows:
 - 1. An impervious base and side containment.
 - 2. The volume contained within the walls should be sufficient to contain 110% of the volume of the containers or the volume of the largest container, whichever is greater.
 - 3. The walls must be joined to the base and sealed to prevent any releases from

- migrating between the base and the walls.
4. Obtain Contractor's approval prior to using the MSA and TSA.

PART 3 EXECUTION

3.1 Drum Removal

- A. To the extent possible, handle all drums with a remote handling equipment.
- B. Remove buried drums as follows:
 1. Excavate the last one feet of soil around each drum by using non-sparking shovels to prevent puncturing the drum. Remove the drum using one of the appropriate methods below (Step 2, 3, 4).
 2. If drum is structurally sound, **remove the drum**, remove the excavated drums by using a clamping device around the center of the drum. The clamping device shall not attach to the top of the drum. Place each drum on a spill pallet and transfer to the TSA.
 3. If the drum is deteriorated, **overpack the drum** and remove the excavated drums by using a clamping device around the center of the drum. The clamping device shall not attach to the top of the drum. Place each drum on a spill pallet and transfer to the TSA.
 4. If the drum containing liquid is damaged and can not be moved without spilling the contents, **pump out the contents** into a new 55-gallon drum. Place the new drum on a spill pallet prior to pumping and transfer to the TSA.
 5. Any drum found bulging due to internal pressure shall be placed in a container designed for depressurization operation. The drum shall then be depressurized by mechanical means by using a remote drum punch.

3.2 Organization and Storage

- A. Drums in the TSA.
 1. Do not stack the drums. Leave sufficient aisle space to allow access for sampling.
 2. When directed by Contractor, remove drum bung or ring tops with non-sparking tools.
 3. If sample access ports are to be made, use non-sparking punch attached to a backhoe or other similar equipment.
- B. Once sampling is complete at the TSA, label the drum as "sampled".
- C. Review the visual inspection information and on-site laboratory test data with the Contractor to determine how the drums will be categorized. Following this evaluation, **move the drums (intact or placed in overpacks) to the MSA and**

place into one of four major categories:

- Hazardous liquids (including liquid decanted off of solids)
- Hazardous solids
- Non-hazardous liquids
- Non-hazardous solids

Bulking will be performed at the MSA on the basis of the results of field characterization. Bulking will be in compliance with 40 CFR 265, Appendix V (Examples of Incompatible Waste).

Use the following procedures for bulking.

1. Inspect each tank trailer or bulking drum and remove any residual materials from the interiors prior to transferring any materials being bulked.
 2. To move hazardous liquids, use pumps that are properly rated (see NFPA 70 Articles 500-503 and NFPA 497M) and that have a safety relief valve with a splash shield. Make sure the pump hoses, casings, fittings, and gaskets are compatible with the material being pumped.
 3. Inspect hose lines before beginning work to ensure that all lines, fittings, and valves are intact with no weak spots.
 4. Take special precautions when handling hoses as they often contain residual material that can splash or spill. Protect lines from vehicular and pedestrian traffic.
 5. Store flammable liquids in approved containers.
- D. Within each of these four categories (hazardous liquids, hazardous solids and nonhazardous liquids and solids), segregate drums or bulk containers into chemical categories (acids, heavy metals, pesticides, etc.) as determined by characterization.
- E. Carefully maintain records and update drum inventories and field characterization data files.

3.3 Drum and Waste Disposal

- A. The following practices shall be used for disposition:
1. If practical, drummed liquid wastes shall be pumped into a bulk tanker for shipment off-site for treatment and/or disposal.
 2. Empty drums shall be shipped off-site for disposal at a landfill licensed to dispose of these drums.
 3. If bulking of liquids and/or solids is not practical, the drummed liquids and/or solids shall be prepared for shipment in approved DOT containers, properly labeled and shipped off-site for treatment and/or disposal.
 4. If practical, drummed solid wastes shall be opened and placed into rolloffs for shipment off-site for treatment and/or disposal.
 5. All packaging, manifests and shipping papers, use of licensed transporters and disposal facilities, waste characterization, and verification of delivery, treatment, and/or disposal shall be accomplished in accordance with the requirements detailed in Section 01015.
 6. Remove and dispose of the MSA and TSA at an off-site facility at the end of the project. Restore the MSA and TSA areas back to the pre-construction condition.

END OF SECTION 02215

SECTION 02224

BACKFILLING

PART 1 GENERAL

1.1 Summary

- A. This section specifies the backfilling requirements for the work.
 - 1. Backfill and compaction.
 - 2. Contractor will provide direction to Subcontractor for backfilling and special handling requirements if necessary.

1.2 Related Sections

- A. Section 01010 - Statement of Work
- B. Section 01410 - Material Testing Services
- C. Section 01500 - Decontamination
- D. Section 01565 - Dust Control
- E. Section 02210 - Excavation

1.3 References

- A. ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb (2.49 Kg) Rammer and 12 inch (304.8 mm) Drop.
- B. ASTM D2922 - Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
- C. ASTM D3017 - Test Method for Moisture Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).
- D. ASTM D1556 - Test Methods for Density of Soil In Place by the Sand Cone Method.
- E. ASTM D2167 - Test Methods for Density and Unit Weight of Soil In Place By the Rubber Balloon Method.

1.4 Submittals

- A. Backfill Material Samples: Submit in air-tight containers, 10 lb sample of each type of fill from off-site source to Contractor.
- B. Name and location of the off-site backfill source and a statement that the source is not a contaminated site.
- C. If Subcontractor elects to use equivalent, alternate backfill method to that defined by Contract Documents, provide work plan indicating proposed alternate backfill methods for review and approval by Contractor.

PART 2 PRODUCTS

2.1 Backfill Material

- A. Subsoil Type - A
 - 1. Excavated soil that has been sampled, tested and passed a risk based criteria. The Contractor will determine which of the stockpiles sampled by the Subcontractor has passed the criteria. Allow at least four weeks between sampling and the determination by Contractor.
- B. Subsoil Type - B
 - 1. Imported borrow from off-site source.
 - 2. Free of lumps larger than 3 inches, rocks larger than 2 inches and debris.

PART 3 EXECUTION

3.1 Backfill

- A. Each excavation area shall be backfilled with the stockpiled soil from the same area. Soil from other excavation areas shall not be used.
- B. Subsoil Type - A shall be used as much as possible. Subsoil Type - B shall be used only if required.
- C. Receive approval from Contractor prior to backfilling an excavated area.
- D. After obtaining Contractor approval, place and compact backfill material in equal continuous layers not exceeding 12 inches of compacted lifts.
- E. Compact to a density of 85 percent for unimproved areas, 90 percent for improved areas near the structures (minimum of five feet) and utilities (minimum of two feet), and 95 percent to a distance of five feet under roads, parking lots and

structures per ASTM D698. The frequency of field compaction test shall be a minimum of one per lift.

- F. Employ a placement method that does not disturb or damage other work.
- G. Maintain optimum (± 3 %) moisture content of backfill materials to attain required compaction density.
- H. Make gradual grade changes. Blend slope into level areas.
- I. Remove surplus backfill materials from site.
- J. Leave fill material stockpile areas free of excess fill materials.

3.2 Field Quality Control

- A. Perform compaction testing in accordance with ASTM D 1556, ASTM D 2167, ASTM D2922 and ASTM D3017.
- B. If tests indicate Work does not meet specified requirements, remove Work, and replace.

END OF SECTION 02224

SECTION 02225

BURIED DEBRIS REMOVAL

PART 1 GENERAL

1.1 Summary

A This section specifies the buried debris removal requirements for the work.

1. Buried debris removal.
2. Sorting of debris.
3. Contractor will provide specific and timely direction to Subcontractor for special handling requirements of buried debris.

1.2 Related Sections

A Section 01015 - Waste Transportation and Disposal

B Section 01500 - Decontamination

C Section 02210 - Excavation

D Section 02215 - Drum Removal

E Section 02224 - Backfilling

1.3 Definition

Debris consists of both natural and man-made materials including metal objects, concrete and scrap wood. The exact quantities of debris to be excavated, sorted and disposed are unknown. The exact contents of the dump sites are unknown and the possibility exists that hazardous waste shall be encountered.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 Debris Removal

- A Excavate soil around debris as specified in Section 02210.
- B After soil excavation, the debris shall be inspected to determine if any hazards are visible. The most likely hazard are drums or containers filled with a hazardous substance. Asbestos may also be present in the form of asbestos tiles, insulation or other asbestos containing materials from building demolition.
- C Drum removal shall be performed as specified in Section 02215.

3.2 Sorting and Disposal of Debris

- A Debris shall be segregated as follows and as directed by Contractor.
 - 1. Recyclable/salvageable materials, and
 - 2. Solid non-hazardous waste/construction debris.
- B Recyclable/salvageable material shall consist mostly of metal objects. Decontaminate metal objects at the decontamination facility as specified in Section 01500. The metal may be cut into smaller pieces for handling or to reduce the volume. Metal scrap shall be sent to a recycling center for reuse. Appliances used for cooling purposes (such as freezers, refrigerators, air conditioners or dehumidifiers) are assumed to contain freon. The subcontractor shall properly dispose of the refrigerant at a licensed facility.
- C Solid non-hazardous waste/construction debris shall include concrete and scrap wood. Contractor may elect to use concrete as part of backfill material. When directed by Contractor, Subcontractor shall crush concrete to pieces smaller than three inches in diameter. Floor tiles and other suspect materials shall be sampled for asbestos prior to removal. Asbestos containing waste shall be disposed of as a special waste in a licensed facility. Debris that does not contain asbestos shall be disposed of along with soil as specified in Section 01015.

END OF SECTION 02225

SECTION 02960
SITE RESTORATION

PART 1 GENERAL

1.1 Summary

- A. This specification section covers site restoration including:
 - 1. Seeding and landscaping, and
 - 2. Planting tree saplings.

1.2 Related Sections

- A. Section 01010 - Statement of Work
- B. Section 01565 - Dust Control
- C. Section 01566 - Surface Water and Erosion Control
- D. Section 02105 - Clearing and Grubbing
- E. Section 02210 - Excavation
- F. Section 02224 - Backfilling

1.3 Warranty

- A. Provide one year warranty.
- B. Warranty: Include coverage for one continuous growing season; re-seed, replace dead or unhealthy plants.
- C. Replacements: Plants of same size and species as specified, planted in the next growing season, with a new warranty commencing on date of replacement.

PART 2 PRODUCTS

- A. All materials required to finish the work. Ensure that existing materials are replaced by new materials of equal or greater value.

PART 3 EXECUTION

3.1 Pre-Construction Inspection

- A. Prior to excavation, inspect each excavation area and tag each tree greater than 6" in diameter. Prepare an inventory, including:
 - 1. Type, number and location of trees.
 - 2. Extent and type of landscape.
 - 3. Other surface features that will affect site restoration or as directed by Contractor.
- B. Obtain Contractor's approval of the inventory at least five days prior to start of excavation.
- C. Update the inventory during construction and obtain Contractor's approval.

3.2 Site Restoration Plan

- A. Submit a written Site Restoration Plan (SRP) to Contractor at least five days prior to site restoration. Obtain approval from Contractor prior to start of site restoration. The SRP shall describe how the Subcontractor plans to return each excavation area to its pre-construction conditions, including:
 - 1. The elements specified in Para 3.3 of this Section, and
 - 2. Products and materials to be used.

3.3 General Procedure

- A. Site 1
 - 1. Seed with native grasses and fertilize soil when required and as directed by Contractor. Ensure that new grass matches with the existing grass.
 - 2. Replace each tree removed with a sapling.
- B. Site 4
 - 1. Restore affected Golf Course area. Use similar products and materials as the existing ones.
- C. Site 5
 - 1. Restore site with existing surficial fill materials.

3.4 Maintenance Service

- A. Maintain grass and plant life for six months after Date of Substantial Completion.
- B. Grass and Lawn Maintenance:
 - 1. Mow grass at regular intervals to maintain at a maximum height of 2-1/2 inches. Do not cut more than 1/3 of grass blade at any one mowing.
 - 2. Neatly trim edges and hand clip where necessary.
 - 3. Immediately remove clippings after mowing and trimming.
 - 4. Water to prevent grass and soil from drying out.
 - 5. Roll surface to remove minor depressions or irregularities.
 - 6. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.
 - 7. Immediately reseed areas which show bare spots.
 - 8. Protect seeded areas with warning signs during maintenance period.
- C. Maintenance of plants:
 - 1. Cultivation and weeding plant beds and tree pits.
 - 2. Applying herbicides for weed control in accordance with manufacturer's instructions. Remedy damage resulting from use of herbicides.
 - 3. Remedy damage from use of insecticides.
 - 4. Irrigating sufficient to saturate root system.
 - 5. Pruning, including removal of dead or broken branches, and treatment of pruned areas or other wounds.
 - 6. Disease control.
 - 7. Replacement of mulch.

END OF SECTION 02960