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Kerr-McGee Chemical, LLC
Oklahoma City, Oklahoma

100 PERCENT FINAL DESIGN REPORT FOR TREATMENT OF SOILS USING LOW-TEMPERATURE THERMAL DESORPTION (LTTD) SYSTEM

Moss-American Site
Milwaukee, Wisconsin

7 April 2000

WESTON®
MANAGERS DESIGNERS/CONSULTANTS

Kerr-McGee Chemical, LLC
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100 Percent Final Design Report
Treatment of Soil Using Low Temperature Thermal Desorption (LTTD) System
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Milwaukee, Wisconsin

This document represents the 100 percent final design report for work involving treatment of contaminated soil using the LTTD system at the Moss-American site in Milwaukee, Wisconsin. The document is accompanied by the bid specifications presented in Appendix A and discusses the following topics:

- Schedule.
- Excavation Areas and Volumes.
- Management of Excavated Soil prior to Treatment.
- Water Management.
- Soil Treatment.
- Management of Treated Soil.

1. SCHEDULE

Kerr McGee Chemical, LLC (KMC)/Roy F. Weston's (WESTON) anticipated schedule is to finalize the technical specifications including stipulations regarding the required efficiency and/or operating conditions and send out bid packages to vendors within 30 days of approval of the final technical memorandum. The vendors will be requested to submit their bids within 30 days of receipt; however, this schedule may be extended if vendors request samples of the soil in order to characterize the material and refine their cost estimates. KMC/WESTON will select a vendor within three weeks of receiving the bids. A preliminary schedule has been included in Attachment A. This schedule is not final and could change due to constraints such as availability of suitable vendors and/or equipment. An updated schedule will be provided after a vendor selection has been made.

To date, approximately 24,600 cubic yards (CY) of soil requiring treatment has been excavated to facilitate installation of the groundwater treatment system and is currently stockpiled on-site. Based on the excavation volumes experienced during the groundwater treatment system installation, an additional 17,000 to 41,000 CY of soil is anticipated to be excavated on the

future. Depending on the total volume of soil anticipated to require treatment (42,000 to 66,000 CY), using a soil density of 1.6 tons/CY and a feed rate of 30 tons/hour, the estimated duration of the treatment phase will be between 116 to 183 days. This estimate assumes that the LTTD system will be operated 24 hours/day at an on-line efficiency of 80 %. The bidders will be required to include the anticipated downtime for their treatment system into their estimated costs.

The duration of the treatment phase may change if the actual feed rate is significantly different than the assumed feed rate. Also, the estimate of the duration of the treatment phase does not account for the time required for excavating the contaminated soil, backfilling treated soil, or installing an appropriate cover over disturbed areas.

2. EXCAVATION AREAS AND VOLUMES

Soil exceeding the concentrations of the Constituents of Concern (COC's) listed below will be excavated and treated using the LTTD system.

Scenario 1 – Deed Instruments and Maintenance Agreements in Place

a. Soils that exceed the Wisconsin Department of Natural Resources (DNR) generic migration to groundwater residential contaminant levels (RCLs) for the following constituents:

- Benzene – 0.0055 mg/kg
- Ethylbenzene – 2.9 mg/kg
- Toluene – 1.5 mg/kg
- Xylene – 4.1 mg/kg
- Benzo(a)pyrene – 48 mg/kg
- Fluorene – 100 mg/kg
- Naphthalene – 100 mg/kg

NOTE: The 100 mg/kg RCL for naphthalene indicated above is not a generic migration to groundwater RCL. The numeric value indicated is a performance-based interim RCL that KMC and U.S. EPA anticipate will facilitate attainment of the groundwater preventative action limit (PAL) for naphthalene at the site. Therefore, soil with a naphthalene concentration under 100 mg/kg will not be

excavated (other than as overburden material), provided that the PAL for naphthalene is achieved over time.

b. Soils that have a total carcinogenic polynuclear aromatic hydrocarbon (CPAH) concentration of greater than 78 mg/kg.

c. Soils with free product present.

Scenario 2 – Deed Instruments and Maintenance Agreements not in Place

All of the following on the RR and County Property in and out of the little Menomonee River 100-year Floodplain:

a. Soils that exceed DNR migration to groundwater RCLs listed above under scenario 1 (a).

b. Soils that have a total CPAH concentration of greater than 78 mg/kg.

c. Soils that exceed residential use direct contact RCL 1.9 mg/kg for total CPAHs.

d. Soils with free product present.

Excavated soil that will require treatment includes (assuming deed instruments & maintenance agreements are in place):

- Soil that contains free product.
- Soil that exceeds the RCL of 78 mg/kg for total CPAHs.
- Soil that exceeds the generic migration to groundwater RCLs for the following constituents:
    - Benzene – 0.0055 mg/kg
    - Ethylbenzene – 2.9 mg/kg
    - Toluene – 1.5 mg/kg
    - Xylene – 4.1 mg/kg
    - Benzo(a)pyrene – 48 mg/kg
    - Fluorene – 100 mg/kg
    - Naphthalene – 0.4 mg/kg (excavated soil only)

Contaminated soil that will require treatment is expected to be generated due to the following activities:

- Excavation of Areas T1 through T11.
- Installation of Treatment Gates TG1 through TG6.
- Installation of groundwater monitoring and free-product extraction wells.
- Installation of underground piping.

Areas of the site containing soils requiring treatment via thermal desorption are shown in Figure 1. Location of Gates TG1 through TG2 are shown in Figure 2. It is estimated that approximately 17,000 to 41,000 cy of soil will require excavation and treatment, in addition to the approximately 24,600 cy of soil requiring treatment that was already excavated during installation of the groundwater remedial system. Based on the volume of soil requiring treatment that is already stockpiled, KMC/WESTON anticipates excavation of the in-situ soil requiring treatment (indicated as Areas T-4 through T-11 on Figure 1) during operation of the LTTD system. All estimated soil volumes are ex-situ volumes and include a 25 % swell factor.

3. MANAGEMENT OF EXCAVATED SOIL PRIOR TO TREATMENT

Soils other than clean soil will require management that is consistent with the cleanup standards and remedial alternatives established in the amended Record of Decision (ROD) for the site. Consequently, all excavated soil will be classified as:

- Soil that will require treatment.
- Soil that will not require treatment but will require an appropriate cover consistent with the amended ROD requirements (i.e., soil that exceeds the direct contact values for total CPAHs).
- Clean soil (i.e., soil that meets all the soil cleanup standards).

Characterization sampling will be necessary to segregate the soils that are generated. In addition to the soil requiring treatment, debris (i.e., oversized material, railroad ties), and soil that exceeds various land use based direct contact values for total CPAHs (benzo(a)pyrene equivalent or

actual concentrations depending on the location outside or within the floodplain, respectively) would be generated. The amended ROD requires that soil exceeding direct contact risk levels for total CPAH concentrations corresponding to specific land uses (i.e., recreational, industrial, etc.) be appropriately capped. Soils that do not require treatment, and do not exceed the direct contact RCLs for total CPAHs will be backfilled into excavation areas T-1 through T-11 and covered with 6 inches of vegetated topsoil.

Debris as well as soil that contains free-product will be immediately transferred to the existing asphalt storage pad. It is assumed that soil containing free-product will require treatment; therefore, this soil will undergo neither preliminary screening nor characterization sampling. The rest of the soil will be preliminary screened with a photoionization detector (PID) and using visual and olfactory observations. Soil will be considered potentially contaminated if any of the following conditions occur:

- The PID readings are 10 units above background.
- The soil is observed to be stained (criteria will be worked out with U.S. EPA and WDNR).
- The soil is odorous.

Verification sampling will be conducted to verify that all soil requiring treatment has been removed from open excavations. Soil sampling procedures, analytical parameters, analytical method, sampling frequencies and the quality control and quality assurance (QA/QC) requirements associated with characterization and verification sampling will be in accordance with the Quality Assurance Project Plan (QAPP) that was used during the installation of the groundwater remedial system.

Debris as well as soil that contains free-product will be immediately transferred to the existing asphalt storage pad. Based on the results of the preliminary screening, excavated soil will be segregated into soil that appears contaminated (i.e., soil which is stained and/or is odorous) and soil that appears clean. These soils will be stored in separate stockpiles and will undergo further characterization.

In order to characterize the excavated soil, analytical results of the samples will be compared to the appropriate soil cleanup standards established for the site. Results of this comparison will be used to classify the soil as stated previously. Soil that will require treatment will be staged on the existing asphalt pad and will undergo treatment via LTTD. Soil that will not require treatment but exceeds direct contact values for total CPAHs (benzo[a]pyrene equivalent or otherwise) will be staged in the area shown in Figure 1 for future management consistent with the requirements of the amended ROD. Clean soil (i.e., soil that meets all the soil cleanup standards) will be used as backfill material and covered as specified in the 30 September 1998 ROD Amendment.

Debris excavated will be staged on the asphalt pad prior to decontamination. Any free product and all attached soil will be removed from the debris. All decontaminated debris will be managed in a manner which is similar to the treated soil. Depending upon the quantity of soil generated, geometry of the excavations, and amount of railroad ties generated, decontaminated railroad ties may be disposed of off-site at a local, licensed Subtitle D landfill in lieu of being managed with treated soil.

4. WATER MANAGEMENT

Contaminated water resulting from infiltration of groundwater or precipitation entering the excavations, or precipitation that contacts the stockpiled contaminated soil will be collected, treated and discharged to the Milwaukee Metropolitan Sewerage District (MMSD).

Contaminated water present within the excavations, resulting from groundwater infiltration or precipitation will be treated within an on-site treatment system. The on-site storage tanks from the free-product recovery system will be utilized as holding tanks prior to the treatment of the water. In addition, portable storage tanks will be used, if necessary.

The on-site treatment system will be skid-mounted and will consist of the following major components: oil/water separator, bag filters, and activated carbon treatment adsorbers.

Prior to discharge, all samples will be analyzed for parameters that will satisfy MMSD's discharge requirements. Parameters will include volatile organic compounds (VOCs), total metals including cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc, and total suspended solids (TSS). All analytical methods will be in accordance with the requirements of the MMSD. Sampling procedures, sampling frequencies and the QA/QC procedures will be in accordance with the QAPP that was used during the installation of the groundwater remedial system.

Following treatment, the water will be pumped to tanker trucks for transportation and discharge to the sanitary sewer located along Granville road. A temporary discharge permit will be obtained from the Milwaukee Metropolitan Sewerage District by the contractor.

5. SOIL TREATMENT

Soil requiring treatment will be treated in a LTTD system. A Proof of Performance (POP) Test Program, as it relates to the operation of the thermal desorption system, will be conducted the Moss-American site. The POP Test Program will include 3 test runs. Operating temperatures, gas residence times, material feed rates, and emission control equipment will be evaluated and the effective operating limits/conditions will be identified during the POP test.

Stack gases will be tested for PAHs of concern (i.e., acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g,h,i)perylene, chrysene, dibenzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, phenanthrene, and pyrene), BTEX (benzene, toluene, ethylbenzene, and xylene), particulates, hydrogen chloride, nitrous oxides, sulfur dioxide, carbon monoxide, and opacity.

The POP Test Program will be conducted while feeding a "worst case" waste feed mixture to the LTTD system. The worst case mixture will consist of excavated soils that contain the highest concentrations of PAHs, based on review of existing site data.

KMC believes that a destruction and removal efficiency (DRE) demonstration will not be required since the LTTD technology has been selected by the EPA as a presumptive remedy for wood treatment sites and since the emission limits in Table 1 will be achieved. In addition, KMC will submit data in accordance with NR 665.06(1)(e).

The primary components of the LTTD system will consist of a rotary dryer thermal desorber and an air pollution control system including a thermal oxidizer, a baghouse and a continuous emissions monitoring (CEM) system. Detailed information regarding the LTTD system will be provided after a vendor has been selected.

Prior to treatment, soil staged on the asphalt pad may be blended to ensure that the feed material is uniform. Supplements such as pea gravel or other coarser grained soil [Note: The Unified Soil Classification System (USCS) identifies coarse-grained soil as soil in which more than 50% of the particles are 0.005 inch (0.127 mm) in diameter] are sometimes used to assist in the material handling of the waste (e.g., to break up clay or soil clumps). The feed rate of supplements can range up to 5% by weight. Use of supplements or amendments to assist thermal treatment will be at the discretion of the Thermal Subcontractor. The blended soil from the asphalt pad will be transported with a front-end loader to the feed unit of the LTTD system. The feed system will be capable of weighing and recording the instantaneous and cumulative weight of the soil as well as regulating the feed rate of the soil.

From the feed unit the soil will enter the thermal desorber. The thermal desorber will volatilize the moisture and organic constituents from the soil. Treatment achieved by the thermal desorber is dependent on several factors such as soil characteristics and concentration levels of COCs. Both, the feed rate (and consequently the residence time) and the operating temperature will be varied to achieve the desired soil treatment standards. Soil exiting the thermal desorber will be cooled, discharged and stockpiled.

The air stream exiting the thermal desorber will contain particulates, moisture, and volatilized organics. This stream will be treated to remove the particulate and organic matter to achieve the

air emission standards established under State of Wisconsin's NR 400 regulations. These air emission standards are shown in Table 1.

The air stream from the desorber will first enter the baghouse consisting of two or more filter bags. Particulates in the air stream will be removed in the baghouse. Air from the baghouse will enter the thermal oxidizer. Dust collected in the baghouse will be transferred to the thermal desorber for further treatment.

After removal of particulates, the air stream will enter the thermal oxidizer. Oxidation of organics will occur in the oxidizer. The oxidizer will be sized to provide sufficient retention time, temperature, and turbulence required to oxidize the organics. After the organics are oxidized, the clean gases will be discharged to the atmosphere via a stack.

The clean stack gases will be monitored using a CEM system. The CEM system will be equipped with a oxygen and carbon monoxide monitors.

The thermal desorber portion of the LTTD system will meet the design and operating requirements of State of Wisconsin's NR 670 regulations. The thermal oxidizer portion of the LTTD system will meet the design and operating requirements of State of Wisconsin's NR 665 regulations.

6. MANAGEMENT OF TREATED SOIL

Treated soil from the LTTD system will be staged in stockpiles. Samples of treated soil will be collected from these stockpiles at a frequency of one sample per 200 cubic yards. These samples will be analyzed for parameters listed under the treatment standards below. If the sample from a specific stockpile fails to meet the treatment standards discussed below, the entire stockpile will undergo a second round of treatment in the LTTD system. The treatment standards for the soil will be consistent with the amended ROD and are as follows:

Scenario 1 – Deed Instruments and Maintenance Agreements in Place

a. DNR generic groundwater RCLs for the following constituents:

- Benzene – 0.0055 mg/kg
- Ethylbenzene – 2.9 mg/kg
- Toluene – 1.5 mg/kg
- Xylene – 4.1 mg/kg
- Benzo(a)pyrene – 48 mg/kg
- Fluorene – 100 mg/kg
- Naphthalene – 0.4 mg/kg

b. Industrial use direct contact RCL of 3.1 mg/kg total CPAHs.

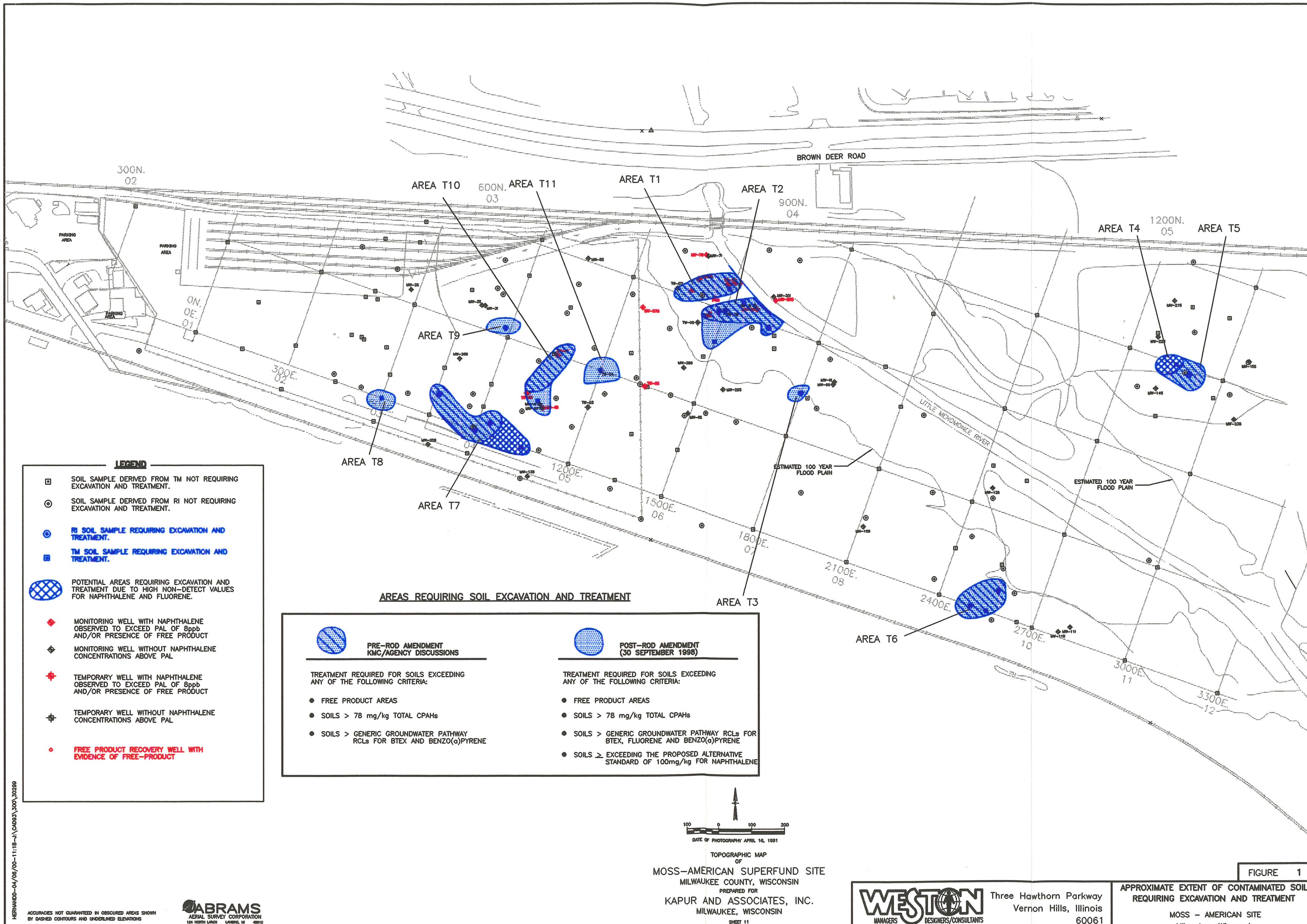
Scenario 2 – Deed Instruments and Maintenance Agreements not in Place

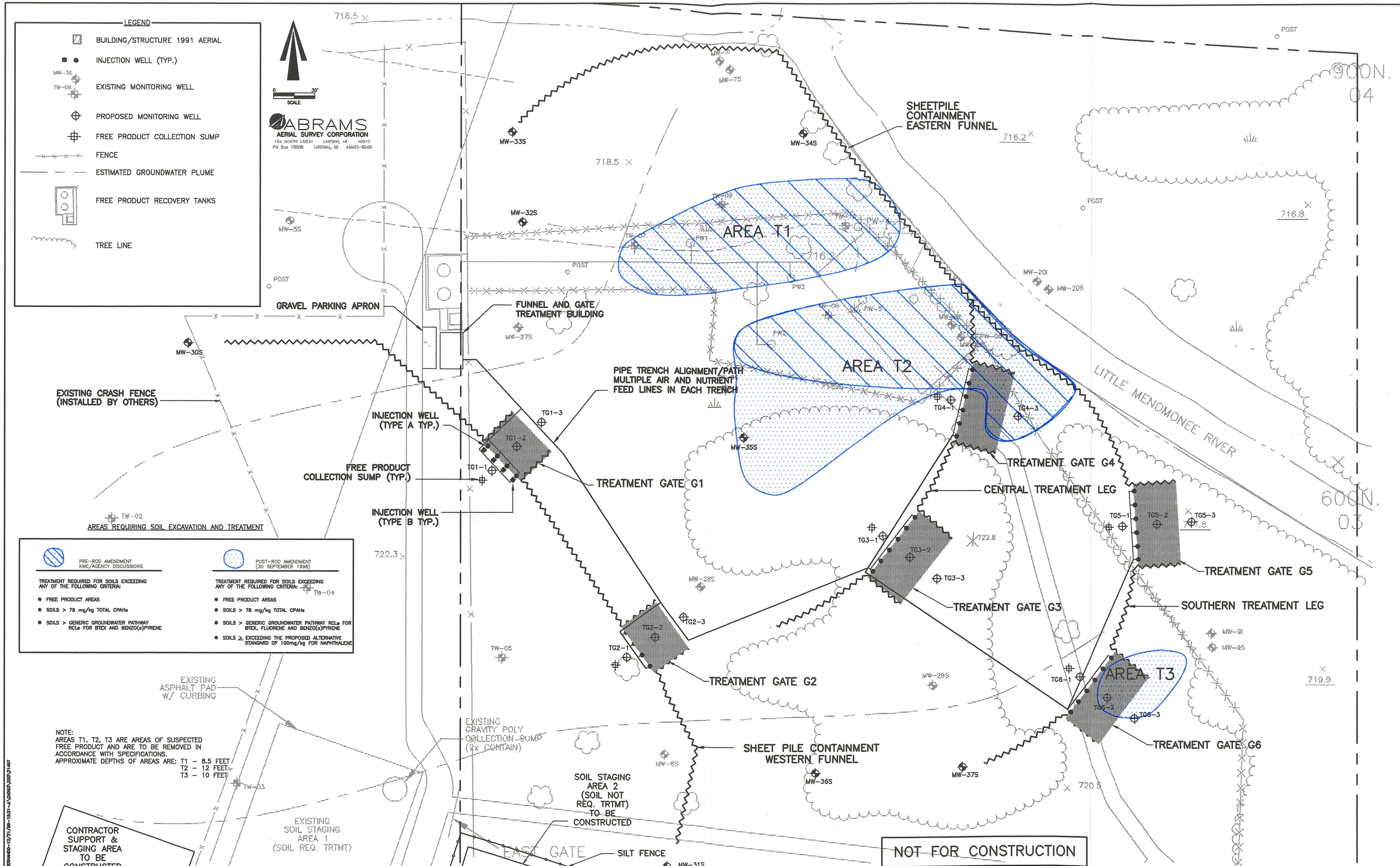
a. DNR generic groundwater RCLs for the following constituents:

- Benzene – 0.0055 mg/kg
- Ethylbenzene – 2.9 mg/kg
- Toluene – 1.5 mg/kg
- Xylene – 4.1 mg/kg
- Benzo(a)pyrene – 48 mg/kg
- Fluorene – 100 mg/kg
- Naphthalene – 0.4 mg/kg

b. Residential use direct contract RCL of 1.9 mg/kg of total CPAHs.

Soil that meets all the treatment standards will be segregated for further management consistent with the amended ROD requirements.


BROWN DEER ROAD
AREA T1
AREA T2
AREA T3
AREA T4
AREA T5
AREA T6
AREA T7
AREA T8
AREA T9
AREA T10
AREA T11
LITTLE MENOMONEE RIVER
ESTIMATED 100 YEAR FLOOD PLAIN
ESTIMATED 100 YEAR FLOOD PLAIN
PARKING AREA
PARKING AREA
PARKING AREA
LEGEND
SOIL SAMPLE DERIVED FROM TM NOT REQUIRING EXCAVATION AND TREATMENT.
SOIL SAMPLE DERIVED FROM RI NOT REQUIRING EXCAVATION AND TREATMENT.
RI SOIL SAMPLE REQUIRING EXCAVATION AND TREATMENT.
TM SOIL SAMPLE REQUIRING EXCAVATION AND TREATMENT.
POTENTIAL AREAS REQUIRING EXCAVATION AND TREATMENT DUE TO HIGH NON-DETECT VALUES FOR NAPHTHALENE AND FLUORENE.
MONITORING WELL WITH NAPHTHALENE OBSERVED TO EXCEED PAL OF 8ppb AND/OR PRESENCE OF FREE PRODUCT
MONITORING WELL WITHOUT NAPHTHALENE CONCENTRATIONS ABOVE PAL
TEMPORARY WELL WITH NAPHTHALENE OBSERVED TO EXCEED PAL OF 8ppb AND/OR PRESENCE OF FREE PRODUCT
TEMPORARY WELL WITHOUT NAPHTHALENE CONCENTRATIONS ABOVE PAL
FREE PRODUCT RECOVERY WELL WITH EVIDENCE OF FREE-PRODUCT
AREAS REQUIRING SOIL EXCAVATION AND TREATMENT
PRE-ROD AMENDMENT KMC/AGENCY DISCUSSIONS
TREATMENT REQUIRED FOR SOILS EXCEEDING ANY OF THE FOLLOWING CRITERIA:
FREE PRODUCT AREAS
SOILS > 78 mg/kg TOTAL CPAHs
SOILS > GENERIC GROUNDWATER PATHWAY RCLs FOR BTEX AND BENZO(a)PYRENE
POST-ROD AMENDMENT (30 SEPTEMBER 1998)
TREATMENT REQUIRED FOR SOILS EXCEEDING ANY OF THE FOLLOWING CRITERIA:
FREE PRODUCT AREAS
SOILS > 78 mg/kg TOTAL CPAHs
SOILS > GENERIC GROUNDWATER PATHWAY RCLs FOR BTEX, FLUORENE AND BENZO(a)PYRENE
SOILS ≥ EXCEEDING THE PROPOSED ALTERNATIVE STANDARD OF 100mg/kg FOR NAPHTHALENE
DATE OF PHOTOGRAPHY APRIL 16, 1991
TOPOGRAPHIC MAP OF
MOSS-AMERICAN SUPERFUND SITE
MILWAUKEE COUNTY, WISCONSIN
PREPARED FOR
KAPUR AND ASSOCIATES, INC.
MILWAUKEE, WISCONSIN
SHEET 11
ACCURACIES NOT GUARANTEED IN OBSCURED AREAS SHOWN BY DASHED CONTOURS AND UNDERLINED ELEVATIONS
ABRAMS AERIAL SURVEY CORPORATION
WESTON
MANAGERS DESIGNERS/CONSULTANTS
Three Hawthorn Parkway
Vernon Hills, Illinois
60061
FIGURE 1
APPROXIMATE EXTENT OF CONTAMINATED SOIL REQUIRING EXCAVATION AND TREATMENT
MOSS – AMERICAN SITE
Milwaukee, Wisconsin
HERNANDO-04/05/00-11:18-J:\04093\300\30299


LEGEND
BUILDING/STRUCTURE 1991 AERIAL
INJECTION WELL (TYP.)
EXISTING MONITORING WELL
PROPOSED MONITORING WELL
FREE PRODUCT COLLECTION SUMP
FENCE
ESTIMATED GROUNDWATER PLUME
FREE PRODUCT RECOVERY TANKS
TREE LINE
SCALE
ABRAMS
AERIAL SURVEY CORPORATION
AREAS REQUIRING SOIL EXCAVATION AND TREATMENT
PRE-ROD AMENDMENT KMC/AGENCY DISCUSSIONS
TREATMENT REQUIRED FOR SOILS EXCEEDING ANY OF THE FOLLOWING CRITERIA:
FREE PRODUCT AREAS
SOILS > 78 mg/kg TOTAL CPAHs
SOILS > GENERIC GROUNDWATER PATHWAY RCLs FOR BTEX AND BENZO(a)PYRENE
POST-ROD AMENDMENT (30 SEPTEMBER 1998)
TREATMENT REQUIRED FOR SOILS EXCEEDING ANY OF THE FOLLOWING CRITERIA:
FREE PRODUCT AREAS
SOILS > 78 mg/kg TOTAL CPAHs
SOILS > GENERIC GROUNDWATER PATHWAY RCLs FOR BTEX, FLUORENE AND BENZO(a)PYRENE
SOILS ≥ EXCEEDING THE PROPOSED ALTERNATIVE STANDARD OF 100mg/kg FOR NAPHTHALENE
NOTE:
AREAS T1, T2, T3 ARE AREAS OF SUSPECTED FREE PRODUCT AND ARE TO BE REMOVED IN ACCORDANCE WITH SPECIFICATIONS.
APPROXIMATE DEPTHS OF AREAS ARE: T1 - 8.5 FEET
T2 - 12 FEET
T3 - 10 FEET
GRAVEL PARKING APRON
FUNNEL AND GATE TREATMENT BUILDING
EXISTING CRASH FENCE (INSTALLED BY OTHERS)
PIPE TRENCH ALIGNMENT/PATH MULTIPLE AIR AND NUTRIENT FEED LINES IN EACH TRENCH
INJECTION WELL (TYPE A TYP.)
FREE PRODUCT COLLECTION SUMP (TYP.)
INJECTION WELL (TYPE B TYP.)
SHEETPILE CONTAINMENT EASTERN FUNNEL
AREA T1
AREA T2
AREA T3
TREATMENT GATE G1
TREATMENT GATE G2
TREATMENT GATE G3
TREATMENT GATE G4
TREATMENT GATE G5
TREATMENT GATE G6
CENTRAL TREATMENT LEG
SOUTHERN TREATMENT LEG
SHEET PILE CONTAINMENT WESTERN FUNNEL
LITTLE MENOMONEE RIVER
EXISTING ASPHALT PAD W/ CURBING
EXISTING GRAVITY POLY COLLECTION SUMP (2x CONTAIN)
SOIL STAGING AREA 2 (SOIL NOT REQ. TRTMT) TO BE CONSTRUCTED
EXISTING SOIL STAGING AREA 1 (SOIL REQ. TRTMT)
CONTRACTOR SUPPORT & STAGING AREA TO BE CONSTRUCTED
EAST GATE
SILT FENCE
MW-33S
MW-34S
MW-32S
MW-30S
MW-27S
MW-35S
MW-28S
MW-29S
MW-36S
MW-37S
MW-31S
MW-5S
MW-6S
TW-02
TW-03
TW-04
TW-05
TG1-1
TG1-2
TG1-3
TG2-1
TG2-2
TG2-3
TG3-1
TG3-2
TG3-3
TG4-1
TG4-3
TG5-1
TG5-2
TG5-3
TG6-1
TG6-2
TG6-3
718.5
716.2
716.8
722.3
722.8
720.5
719.9
900N. 04
600N. 03
POST
NOT FOR CONSTRUCTION

NO.	DATE	APPR.	REVISION
	2/98		FINAL DESIGN SUBMITTAL

MOSS - AMERICAN SITE
Milwaukee, Wisconsin

WESTON
MANAGERS DESIGNERS/CONSULTANTS
VERNON HILLS ILLINOIS

CHECKED | DATE | CLIENT APPROVALS | DATE
DES. ENG.
PROJ. ENG.
PROJ. MGR.
APPROVED
APPROVED | ISSUED FOR | DATE

SITE PLAN
FUNNEL AND GATE TREATMENT SYSTEM

DRAWN	DATE	DWG. NO.	REV. NO.
D.C.H.	JULY 99	2	

SCALE	W.O. NO.	SHT.
1" = 30'	02687007002002200	3 OF 13

APPENDIX A

BID SPECIFICATIONS

Kerr-McGee Chemical Corporation
Oklahoma City, Oklahoma

TREATMENT OF SOILS USING LOW-TEMPERATURE THERMAL DESORPTION (LTTD) SYSTEM

Moss-American Site
Milwaukee, Wisconsin

REQUEST FOR PROPOSAL

April 2000

TREATMENT OF SOILS USING LOW-TEMPERATURE THERMAL DESORPTION (LTTD) SYSTEM MOSS-AMERICAN SITE MILWAUKEE, WISCONSIN

TABLE OF CONTENTS

SECTION 00020

INSTRUCTION TO BIDDERS

PART 1 GENERAL

1.01 DEFINED TERMS

Terms used in this Instruction to Bidders have the meanings assigned to them in the Subcontract Documents. The term "Bidder" refers to a subcontractor who submits a Bid directly to Roy F. Weston, Inc. (Contractor), as distinct from a sub-bidder, who submits a bid to a Bidder. The term "Successful Bidder" means the responsible bidder to whom the Contractor makes an award. The term "Owner" refers to Kerr-McGee Chemicals, LLC (KMC), to whom the Contractor is contracted. The Bid Documents for the Bidder shall include the following:

A. Bid solicitation cover letter

B. Low-Temperature Thermal Desorption (LTTD) System specifications with attachments

C. Any written Bid Addenda issued by the Contractor

D. Completed and Signed Bid Proposal

E. Bidder's proposed schedule

F. Any bonds required for award of contract

G. Any permits and their requirements

H. Subcontract Agreement and Terms and Conditions

1.02 COPIES OF SUBCONTRACT DOCUMENTS

A. Complete sets of Subcontract Documents shall be used in preparing bids. The Contractor does not assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Subcontract Documents.

B. The Contractor, in making copies of Subcontract Documents available on the above terms, do so only for the purpose of obtaining Bids on the work and do not confer a license or grant for any other use.

1.03 RECEIPT OF BID PROPOSALS

A. All bids shall be submitted in sealed envelopes clearly labeled "Bid Proposal Documents" along with the name of Bidder and Address, and name of the Project and the Contractor as it appears on Subcontract Documents. Bids forwarded by mail shall comply with the above, but shall be forwarded to the mailing address indicated in the invitation, and shall be enclosed in another outer envelope properly addressed for mailing.

B. The time scheduled for the receipt of Bid proposals shall be in accordance with the invitation.

C. The Contractor reserves the right to reject a bid proposal at any time.

1.04 PREPARATION OF BID PROPOSAL

A. The Bid Form is included with the Subcontract Documents. The Bidder is required to use this form and submit the complete bid proposal sealed and intact to the Contractor.

B. An original and three copies of the bid proposal shall be submitted. All blank spaces must be filled in as noted in ink. Bids must give the prices proposed in figures with amounts extended and totals given in both figures and words where required. No changes shall be made to the forms or to the items mentioned therein. Erasures and other changes in the Bid shall be explained or noted over the initials of the Bidder. In the event of any discrepancy between the written amounts and the figures, the written amounts shall govern.

C. The Bidder shall sign his proposal in the blank space provided for this purpose in the Bid Proposal (Section 00030). If the proposal is made by a partnership or corporation, the name and address of the partnership or corporation shall be indicated, together with the names and addresses of the partners or officers. If the proposal is made by a partnership, it shall be acknowledged by one of the partners; if made by a corporation, by one of the officers.

D. Bidders shall furnish with their Bid proposals the following documents <u>presented in the order shown</u> below:

<u>PART A</u>

1. Bid Proposal and Price Schedule (forms included with Subcontract Documents).

2. Corporate Bidders shall submit a duly executed and attested resolution, marked with the corporate seal, that the Bid was authorized by the corporation.

3. Acknowledgment of receipt of all Addenda.

4. A separate narrative detailing any items and associated costs that the Bidder believes are not identified in the Price Schedule.

5. A schedule of rates for labor, equipment, and materials to serve as the basis for establishing an adjusted Contract price as a result of change in the required Work. For the purposes of this schedule, Bidders shall provide rates for work conducted without respiratory protection. The schedule of rates shall also include any premium on labor rates for work in level C and B respiratory protection. Each rate shall be deemed to include an amount for Contractor's overhead, indirect costs, and profit for each separately defined item.

PART B

1. A Statement of Bidders Qualifications and relevant experience. Statements of Qualifications and experience shall also be provided for all subcontractors and major vendors who will be engaged in work on the site. Include information on past maintenance frequency, recent compliance status on other similar jobs, and overall ability to supply reliable emission control equipment. Each such statement shall not exceed 10 pages in length.

2. A statement of the proposed site Project Manager's and Site Superintendent's experience on similar projects, with the names of three different clients, contact persons and respective telephone numbers.

3. A statement of the proposed on-site Health and Safety Officer's experience on similar projects.

PART C

1. Current Certification of Insurance evidencing the required coverage.

2. Bid Bond

3. Current financial report.

4. A Statement of Bidder's litigation history relating to work performed over the past five years.

5. Bidder's Safety Record, Experience Modification Rate (EMR), and OSHA recordables for the past 3 years.

6. Summary of Bidder's Safety and Drug Awareness and Testing programs.

PART D

1. A detailed narrative describing the methods proposed to conduct the work.

2. A brief conceptual Proof of Performance (POP) Test Plan and Air Monitoring Plan (1 to 2 pages each)

3. A description of any innovative techniques, methods, or materials proposed.

4. A description of health and safety procedures.

5. A list of all subcontractors and major vendors and prior work experience with the named subcontractors and vendors.

6. A list of all major items of equipment, including make, model, capacity, and age, which Bidder proposes to employ on-site in performing the work.

7. A detailed schedule.

PART E

1. Each bid shall state any assumptions or limitations, including any proposed exceptions to contract terms and conditions, that the Bidder believes are necessary to clarify the bid. Bidders are advised that failure to thoroughly list all proposed exceptions to the Subcontract Documents and to the Contract Terms and Conditions could be cause for rejecting any Bid Proposal or for terminating any contract negotiation or award.

1.05 OBLIGATION OF BIDDER

A. Each Bidder is presumed to have thoroughly and completely inspected the Site, and to have read and to be thoroughly familiar with the Subcontract Documents (including all Addenda). The failure or omission of any Bidder to receive or examine any form, instrument, or document, or to inspect the Site, shall in no way relieve any Bidder from any obligation with respect to his Bid.

B. Each Bidder shall attend the mandatory pre-bid conference and visit the Site before bidding in order to be familiar with the existing conditions. Verbal statements or comments discussed at this meeting or subsequently shall not, in any way, modify the Subcontract Documents.

C. Each Bidder shall make himself fully informed of the conditions relating to the construction and labor under which the work will be performed, including all applicable Federal, state and local laws and regulations. Failure to do so will not relieve the Successful Bidder of his obligations to furnish all material and labor necessary to carry out the provisions of the Subcontract Documents and to complete the contemplated

work for the consideration set forth in his Bid. The Bidder in carrying out his work shall employ such methods or means as will not cause any interruption of, or interference with, the work of any other contractor or the safety or convenience of the public.

1.06 SUBMISSION OF BID PROPOSALS

A. Bid Proposals shall be submitted no later than the time specified in the Invitation to Bidders, unless the time for the submission of Proposals has been extended by means of a formal Addendum to the Subcontract Documents. Addenda, if any, will be forwarded by fax transmission, the U.S. Mail, or any express mail service.

1.07 SUBCONTRACTORS

A. Bidder agrees to bind specifically each of its subcontractors and vendors to the applicable terms and conditions of the Subcontract Documents.

B. Bidder shall have full directing authority over the performance of and full responsibility for all acts and omissions of his subcontractors or vendors and of persons and organizations directly or indirectly employed by them and of persons and organizations for whose acts any of them may be liable to the same extent that he is responsible for the acts and omissions of persons directly employed by him.

C. The Bidder is specifically advised that any person, firm or other party to whom it is proposed to award a subcontract or purchase order under this Agreement must be fully acceptable to the Contractor and that acceptance of the proposed subcontract award cannot be given by the Contractor unless and until the Successful Bidder submits all information and evidence to the Contractor regarding the proposed subcontractor or vendor as is required in Subcontract Documents.

1.08 WITHDRAWAL OF BID PROPOSALS

Any proposal may be withdrawn by the Bidder prior to the scheduled time for the receipt of bids or authorized postponement thereof provided the Bidder's written request for withdrawal is delivered to the Contractor before the deadline for the submission of proposals. No Bidder may withdraw his proposal after that time.

1.09 CHANGES TO SPECIFICATIONS

The Bidder shall not make any changes in the Specifications. Bidders, however, may make any explanations they wish in Part E of their Bid Proposal. Any proposed modifications to the Agreement shall also be submitted in Part E of the Bid Proposal. No alterations, erasures, or

additions are to be made to the typewritten matter. No acceptance will be given for any "or equal" materials, equipment or systems, prior to the award of the Contract.

1.10 AWARD OF CONTRACT

A written Notice of the Award of this Bid will be mailed, transmitted by fax, or delivered by the Contractor to the successful Bidder. The successful Bidder shall submit (6) originals of the signed Agreement, one original each of the Performance and Payment Bonds and Certificates of Insurance to the Contractor, and one certified copy of all insurance policies to the OWNER.

All insurance and bonds offered in compliance with these Subcontract Documents shall be written by a surety company authorized, and who shall be an admitted carrier, in the State of Wisconsin. Failure to comply with this requirement shall be grounds for disqualification of the Bidder.

The Contractor shall not incur any obligation as a result of any work performed by any Bidder or Bidding Contractor prior to execution of a written Agreement and issuance of Notice to Proceed from the Contractor.

1.11 QUALIFICATIONS OF BIDDERS

The Contractor may make such investigation and inquiry as it deems necessary to determine the ability of the Bidder to perform the work, and the Bidder shall furnish to the Contractor all such information and data for this purpose as the Contractor may request. The Contractor reserves the right to reject any Proposal if the evidence submitted by or investigation of such Bidder fails to satisfy the Contractor that such Bidder is properly qualified to carry out the obligations of the Agreement and to complete the Contractor contemplated therein or has previously failed to properly perform or complete any contract on time. Conditional bids will not be accepted.

1.12 RIGHT TO REJECT BID PROPOSALS

The Contractor reserves the right to reject Proposals that contain irregularities and to reject Proposals of Bidders who are not responsive or responsible. The Contractor reserves the right to waive minor irregularities in proposals, at its sole discretion. The Contractor reserves the right to reject any Bids which in its opinion are obviously unbalanced. The Contractor reserves the right to cancel or postpone the work or to re-solicit bids at any time. Any proposals that are submitted or received after the scheduled closing time for the receipt of proposals may be rejected and returned at the Contractor's option.

1.13 REQUIREMENT OF BONDS

A. Bidders shall submit with their bid a bid bond executed by the bidder as Principal and having as surety thereon a surety company lawfully doing business in the State of Wisconsin. Such bid bond shall be in an amount not less than five percent of the total

maximum amount of the bid price on the Price Schedule. Bonds shall name Roy F. Weston, Inc. as Obligee.

B. Prior to, or upon the signing of the Agreement, and if required by the Contractor, the Bidder shall furnish to the Contractor a Performance Bond and a Payment Bond, in accordance with the Subcontract Documents if the Contractor elects to require and pay for these Bonds. Bidders shall provide a firm fixed lump sum price for Performance and Payment Bonds on the Price Schedule as an optional line item to be exercised at the discretion of the Contractor.

1.14 INSURANCE

The Bidder shall maintain in force during the performance of the work all insurance policies as described in the Subcontract Documents. Original policies, or properly executed conformed copies, evidencing the fact that the Bidder has procured the required insurance shall be filed with the Contractor at the time of the execution of the Agreement along with Certificates of Insurance. As described in the Supplementary General Conditions, certified copies of policies are also required. Submission solely of Certificates of Insurance will not fulfill this requirement.

1.15 FAILURE TO EXECUTE CONTRACT

If the successful Bidder fails to furnish the required bonds or insurance policies, or to execute the Agreement in accordance with instructions contained in the Notice of Award, he shall be deemed to have refused to enter into the Agreement and to have waived all claim to the work; and he shall pay the Contractor all damages sustained by the OWNER resulting from his failure to enter into the Agreement, including all loss from delay and interference with the Contractor's construction program and the difference between the amount of the successful Bidder's proposal and the amount for which the Contractor's may contract with another subcontractor to perform the work covered by the said proposal, if the latter is in excess of the former. The surety on the Performance bond shall be liable for such damages to the extent of the principal amount of the Performance bond.

1.16 CORRECTIONS, ERRORS, ADDENDA, AND INTERPRETATION

A. Corrections by erasures or other changes in the Bid Form shall be explained or noted over the signature of the Bidder.

B. If a Bidder finds any omissions, discrepancies or errors in the Subcontract Documents, he shall immediately notify the Contractor who may correct the documents. If he fails to notify the Contractor, he will be held to the Contractor's interpretation of the Drawings and Specifications after the Agreement is executed. The Contractor will notify all Bidders by Addendum, of such corrections prior to the time for acceptance of bids.

C. No Bidder shall rely upon any interpretation of the meaning of the Drawings, Specifications or other Subcontract Documents, except as provided herein. Every request for an interpretation shall be in writing, by mail and fax transmission, addressed to the Contractor, and shall be received no later than fourteen calendar days prior to final bid deadline. Any and all such interpretations and any supplemental instructions will be in written Addenda to the Subcontract Documents and will be sent by fax transmission, U.S. Mail, or express mail service to all prospective Bidders (at the respective addresses furnished for such purposes) prior to the date fixed for the opening of bids. It shall be the Bidder's responsibility to contact the Contractor to verify receipt of all Addenda issued.

D. All Addenda shall become part of the Subcontract Documents. Bidders must acknowledge receipt of all Addenda in the Bid Proposal. Failure to acknowledge receipt of all Bid Addenda shall render a Bid Proposal non-responsive, and the Contractor reserves the right to reject such bids.

1.17 CONDITIONS OF WORK

A. The quantities given in the Subcontract Documents are approximate only, and are given as a basis for the uniform comparison of Bids, and the Contractor does not expressly or by implication agree that the actual amount of work will correspond therewith.

B. Each Bidder shall provide for each Lump Sum price work, a proposed contract price determined on the basis of the description provided for each Lump Sum item. Each Lump Sum price shall be deemed to include an amount for expenses, overhead, profit and indirect costs for each Lump Sum item.

C. Each Bidder shall provide, for Unit Price work, a proposed contract price determined on the basis of estimated quantities required for each item. The estimated quantities of items are not guaranteed and are solely for the purpose of comparing Bids. Each such unit price shall be deemed to include an amount for expenses, overhead, profit and indirect costs for each separately defined item.

D. An increase or decrease in the quantity for any unit price item shall not be regarded as sufficient grounds for an increase or decrease in the unit price of the item, nor in the time allowed for the completion of the work, except as provided in the Subcontract Documents.

E. It shall be the responsibility of the Bidder to become familiar with the Site prior to the date for submission of Bids, and to appraise the accuracy of the Contractor's estimate and all of the actual conditions and requirements under which the work specified in the Contract is to be performed. The Bidder shall not, at any time after the submission of a Bid, dispute or make any claim regarding such statement or estimate of the Contractor,

nor assert that there has been any misunderstanding in regard to the nature or amount of the work to be done.

1.18 CONTRACT TIME AND LIQUIDATED DAMAGES

The anticipated dates on which the work is to commence, the TDS is to be physically constructed, the TDS operations are to be performed, and Demobilization is to be completed are as proposed in Attachment A—Construction Schedule. The schedule in Attachment A is provided to Bidders for informational purposes only, since the variable TDS performance rates of the different Bidders' equipment will result in different treatment durations. The schedule submitted by a Bidder with Bidder's proposal and agreed upon by the Contractor, subject to authorized adjustments by the Contractor for increases in estimated quantities, shall be utilized for the establishment of the Contract Time. Since the Contractor's personnel, facilities, and other subcontractors would incur additional costs by delays in TDS operations extending beyond the allotted Contract Time, liquidated damages, in the amount of $1,500.00 per day plus any third party subcontractors delay/standby charges resulting from the delayed TDS operation, shall be deducted from payment due to the Bidder for unauthorized delays of TDS operations that extend beyond the Contract Time.

1.19 COMPLIANCE WITH LAWS

A. All applicable Laws and Regulations, including municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the Agreement, even if such regulations are not explicitly referenced within the Subcontract Documents.

B. The Bidder shall take steps to understand all applicable laws relating to the work being proposed prior to submission of bid.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 00030

BID PROPOSAL

_____
Name of Bidder

PROJECT IDENTIFICATION:

Treatment of Contaminated Soil Using
Low-Temperature Thermal Desorption (LTTD) System
Moss-American Superfund Site
Milwaukee, Wisconsin

OWNER:

Kerr-McGee Chemical, LLC
Oklahoma City, Oklahoma

THIS BID IS SUBMITTED TO:

Roy F. Weston, Inc. (Contractor)
Attn: Mr. Tom Graan
Suite 400
3 Hawthorn Parkway
Vernon Hills, Illinois 60061

1.01 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with the Contractor in the form included in the Subcontract Documents to perform and furnish all work as specified or indicated in the Subcontract Documents for the Contract Sum and within the Contract Time indicated in this Bid and in accordance with other terms and conditions of the Subcontract Documents.

1.02 Bidder accepts all of the terms and conditions of the agreement, except as specifically noted herein. The Bidder will sign the Agreement within 10 days after receipt of the Agreement and other Subcontract Documents from the Contractor and submit the Bonds and other documents as required by the Bidding Documents.

1.03 In submitting this Bid, the Bidder represents, as more fully set forth in the Agreement, that:

A. Bidder has examined copies of all the Bidding Documents and the associated addenda.

B. Bidder has familiarized itself with the nature and extent of the Subcontract Documents, work, site, locality, and all local conditions and laws and regulations that in any manner may affect cost, progress, performance, or furnishing of the work.

C. Bidder has studied carefully all related site information which is identified in the Subcontract Documents.

D. Bidder has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all relevant site information (in addition to or to supplement those referred to in (c) above) which pertains to the soil characteristics or physical conditions at the site or otherwise may affect the cost, progress, performance or furnishing of the work as Bidder considers necessary for the performance of furnishing of the work at the Contract Sum, within the Contract time, and in accordance with the other terms and conditions of the Subcontract Documents. No information or data are or will be required by Bidder for such purposes.

E. Bidder has correlated the results of all relevant site information with the terms and conditions of the Subcontract Documents.

F. Bidder has given to the Contractor written notice of all conflicts, errors or discrepancies that it has discovered in the Subcontract Documents and the written resolution thereof by the Contractor is acceptable to Bidder.

G. This Bid is genuine and not made in the interest or on behalf of any undisclosed person, firm or corporation; and is not submitted in conformity with any agreement or rules of any group, association, organization, or corporation; the Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false Bid; the Bidder has not solicited or induced any person, firm or corporation to refrain from Bidding; and the Bidder has not sought by collusion to obtain for itself any advantage over any other Bidder or over the Contractor.

1.04 The Bidder accepts all requirements, schedules, and penalties applicable to the Work set forth in the Subcontract Documents. The following statement should be submitted with the bid proposal:

We propose to furnish all personnel, supervision, services, field labor, materials, tools, equipment, supplies and all things necessary to properly complete the work in strict accordance with the Subcontract Documents and hereby submit our bid. All prices are presented on the attached Price Schedule.

Price Schedule
Low-Temperature Thermal Desorption (LTTD) System
Moss-American Site
Milwaukee, Wisconsin

Item No.	Description	Quantity	Units	Unit Price ($)	Extension ($)
1	Submittals	1	Lump Sum		
2	Health & Safety Plan Preparation/Implementation	1	Lump Sum		
3	Permit Acquisitions	1	Lump Sum		
4	Mobilization / Demobilization	1	Lump Sum		
5	Site Preparation/Startup	1	Lump Sum		
6	Management of FSPA	1	Lump Sum		
7	Proof of Performance Test	1	Lump Sum		
8	Quality Control	1	Lump Sum		
9	**Preparation, Treatment, and Post-Treatment Management of Type I Soils (approximately 27,000 CY or 40,500 tons)**				
9(a)	Soils with moisture content[a] of 7.0% to 12.0%	1	Ton		
9(b)	Soils with moisture content[a] of 12.1% to 17.0%	1	Ton		
9(c)	Soils with moisture content[a] 17.1% to 22.0%	1	Ton		
9(d)	Soils with moisture content[a] of 22.1% to 27.0%	1	Ton		
9(e)	Soils with moisture content[a] of 27.1% to 32.0%	1	Ton		
9(f)	Soils with moisture content[a] of 32.1% to 37.0%	1	Ton		
9(g)	Soils with moisture content[a] 37.1% to 40%	1	Ton		
10	**Treatment of Type II Soils[b] (approximately 21,000 CY or 31,500 tons)**				
10(a)	Soils with moisture content[a] of 7.0% to 12.0%	1	Ton		
10(b)	Soils with moisture content[a] of 12.1% to 17.0%	1	Ton		
10(c)	Soils with moisture content[a] 17.1% to 22.0%	1	Ton		
10(d)	Soils with moisture content[a] of 22.1% to 27.0%	1	Ton		
10(e)	Soils with moisture content[a] of 27.1% to 32.0%	1	Ton		
10(f)	Soils with moisture content[a] of 32.1% to 37.0%	1	Ton		
10(g)	Soils with moisture content[a] 37.1% to 40%	1	Ton		
11	**Treatment of Type III Soils[b] (approximately 18,000 CY or 27,000 tons)**				
11(a)	Soils with moisture content[a] of 7.0% to 12.0%	1	Ton		
11(b)	Soils with moisture content[a] of 12.1% to 17.0%	1	Ton		

Price Schedule
Low-Temperature Thermal Desorption (LTTD) System
Moss-American Site
Milwaukee, Wisconsin
(Continued)

Item No.	Description	Quantity	Units	Unit Price ($)	Extension ($)
11(c)	Soils with moisture content[a] 17.1% to 22.0%	1	Ton		
11(d)	Soils with moisture content[a] of 22.1% to 27.0%	1	Ton		
11(e)	Soils with moisture content[a] of 27.1% to 32.0%	1	Ton		
11(f)	Soils with moisture content[a] of 32.1% to 37.0%	1	Ton		
11(g)	Soils with moisture content[a] 37.1% to 40%	1	Ton		
BID TOTAL[c]					
Supplemental Bid Items					
i)	Performance and Payment Bonds	1	Lump Sum		
Ii)	Standby Charges	0	Hours		

[a] Based on ASTM 2216 Method.
[b] These soils may or may not require treatment.
[c] Bid Total shall be calculated as follows:
Sum of Cost associated with Items 1 through 8 + Unit Price of Item 10(d) * 40,500 tons + Unit Price of Item 11(d) * 31,500 tons + Unit Price of Item 12(d) * 27,000 tons.

This Bid is valid for a period of 120 days from the date of Bid opening.

_____
Full Name of Firm (printed)

_____
Street Address

_____

_____
City, State, Zip

_____
Phone

_____
Fax

_____
Bidder's Name and Title (printed)

_____
Bidder's Signature

_____
Date

SECTION 00040

SUMMARY OF WORK

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Treat approximately 27,000 cubic yards of Type I soil. Type I soils contain total CPAHs in excess of 78mg/kg, visible free product and naphthalene in excess of 100 mg/kg. Treatment of contaminated soil shall be accomplished on-site using a mobile Low-Temperature Thermal Desorption (LTTD) system.

B. If required, treat approximately 21,000 cubic yards of Type II soils. Type II soils contain up to 100 mg/kg naphthalene and 3.1 mg/kg total CPAHs.

C. If required, treat approximately 18,000 cubic yards of Type III soils. Type III soils contain up to 100 mg/kg naphthalene and 10 mg/kg total CPAHs.

D. Specifically, the scope of work includes, but is not limited to:

1. Conducting all work only in areas designated in Drawing 1 (Attachment B).

2. Providing office and decontamination trailers with all necessary utility hookups.

3. Obtaining permits and required inspections for all temporary utility service which includes electricity, water, sanitary service, telephone and natural gas, if required.

4. Obtaining necessary permits for construction and operation.

5. Preparing and, upon approval of Contractor and the regulatory agencies, implementing the submittals detailed in Section 00100—Submittals.

6. Preparing and implementing, if necessary, all other submittals specified in these Contract Documents.

7. Providing all necessary temporary utilities required for this project. Remove and/or replace existing utilities whenever these utilities interfere with or may be damaged by the treatment activities.

8. Mobilizing, installing, operating, maintaining, and demobilizing a LTTD system, including foundations, all structural components, and utility hookups, for treating contaminated soil

9. Developing and performing a Proof of Performance (POP) Test for the LTTD system in accordance with the approved POP Test Plan and applicable local, State of Wisconsin regulations and Federal regulations.

10. Processing and treating the required volume of contaminated soil using the LTTD system.

11. Managing and disposing of in accordance with all local, state, and federal regulations all contaminated surface water, decontamination water, and all other treatment residuals.

12. Restoring all areas disturbed by treatment activities to original conditions.

13. Unless otherwise specified, providing, installing, and paying for:

    a. Labor, materials, and equipment.

    b. Tools, construction equipment, and machinery.

    c. Water, heat, and utilities required for operation of the LTTD system, including sewerage.

    d. Coordination and supervision of all activities.

    e. Other facilities and services necessary for proper execution and completion of the project, including testing of all equipment supplied.

    f. Security of the LTTD system operating area.

E. The Scope of Work, as described in this section, is summarized solely for the convenience of the Thermal Subcontractor. The Thermal Subcontractor shall include in the total project cost any item of work included in the contract documents that is not included in a lump sum or a unit price item of work. All materials and equipment shall be supplied by the Thermal Subcontractor to complete the Scope of Work.

1.02 PERFORMANCE STANDARDS

A. Treatment standards for contaminated soil are dependent on whether deed instruments and maintenance agreements are in place. Contaminated soil should

be treated to the treatment standards provided in Tables 00040-1 and 00040-2, as follows:

- Table 00040-1 for Scenario 1 – Deed Instruments and Maintenance Agreements in Place

- Table 00040-2 for Scenario 2 – Deed Instruments and Maintenance Agreements Not in Place

TABLE 00040-1
TREATMENT STANDARDS FOR
SCENARIO 1
DEED INSTRUMENTS AND MAINTENANCE AGREEMENTS IN PLACE

TREATMENT STANDARDS:

- **WDNR generic groundwater RCLs, as follows:**

PARAMETER	WDNR GENERIC GROUNDWATER RCL
Benzene	5.5 ug/kg
Ethylbenzene	2.9 mg/kg
Toluene	1.5 mg/kg
Xylene	4.1 mg/kg
Benzo(a)pyrene	48 mg/kg
Fluorene	100 mg/kg
Naphthalene	0.4 mg/kg

- **Industrial use direct contact RCLs as follows:**

PARAMETER	INDUSTRIAL USE DIRECT CONTACT RCL
Total CPAHs[1]	3.1 mg/kg

[1] CPAHs include benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g.h,i)perylene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

TABLE 00040-2
TREATMENT STANDARDS FOR
SCENARIO 2
DEED INSTRUMENTS AND MAINTENANCE AGREEMENTS NOT IN PLACE

TREATMENT STANDARDS:

- **WDNR generic groundwater RCLs, as follows:**

PARAMETER	WDNR GENERIC GROUNDWATER RCL
Benzene	5.5 ug/kg
Ethylbenzene	2.9 mg/kg
Toluene	1.5 mg/kg
Xylene	4.1 mg/kg
Benzo(a)pyrene	48 mg/kg
Fluorene	100 mg/kg
Naphthalene	0.4 mg/kg

- **Residential use direct contact RCLs as follows:**

PARAMETER	RESIDENTIAL USE DIRECT CONTACT RCL
Total CPAHs[1]	1.9 mg/kg

[1] CPAHs include benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(g.h,i)perylene, chrysene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene.

B. The LTTD system shall comply with the applicable performance standards under RCRA, the federal Clean Air Act and the State of Wisconsin's Air Pollution Control regulations, and all other applicable regulations.

1.03 SITE LOCATION AND DESCRIPTION

A. The Moss-American site is located in the northwest section of the City of Milwaukee, County of Milwaukee, State of Wisconsin, at the southeast corner of the intersection of Brown Deer and Granville Roads. The site address is 8716 Granville Road, Milwaukee, Wisconsin.

B. The site consists of the former Moss-American wood-preserving plant and approximately 5 miles of the Little Menomonee River.

1.04 DEFINITION OF TERMS

A. Contractor—WESTON is the Contractor and is responsible for designing and overseeing the remediation.

B. Thermal Subcontractor—the Thermal Subcontractor shall be the successful bidding Subcontractor and shall include all subcontractors and vendors acting on behalf of the Thermal Subcontractor in completion of this work.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 00050

SPECIAL REQUIREMENTS

PART 1 GENERAL

A. The Thermal Subcontractor shall have in his possession, at all times, valid identification for all his employees and subcontractors.

B. The Thermal Subcontractor shall exercise extreme care to prevent damage, movement, settlement, or collapse of structures, roadways, above-grade and below-grade utilities, or other features not associated with the work. The Thermal Subcontractor shall assume the liability from any and all said damage, movement, settlement, or collapse, and promptly repair same at no cost to the Contractor.

C. The Thermal Subcontractor shall protect all permanent survey controls and wells during the work. The Thermal Subcontractor shall assume the liability for disturbance or damage and promptly replace same at no cost to the Contractor.

D. The Thermal Subcontractor shall give all notices and comply with all laws, ordinances, rules, and regulations bearing on the conduct of the work specified. If the Thermal Subcontractor performs any work contrary to such laws, ordinances, rules and regulations, it shall bear all costs arising therefrom.

E. Storage and security of materials are the sole responsibilities of the Thermal Subcontractor. It is the Thermal Subcontractor's responsibility to ensure steady execution of the work within the project time limit. Material will be stored at areas approved by the Contractor.

F. Progress payments shall be invoiced by the Thermal Subcontractor on a monthly basis. Payment terms will be as defined in the Subcontract Agreement issued to the Successful Bidder. Progress payments on lump sum items will be based on the percent complete as determined by the Contractor.

G. Pre-Final Inspection will be held by the Contractor at the point of substantial completion, as determined by the Contractor. At that time, a list of unfinished and/or unacceptable work items (i.e., "punch list") will be furnished for the Thermal Subcontractor to correct. This punch list will be periodically checked by the Contractor prior to the final acceptance of the Project. The punch list must be completed and a Certificate of Final Inspection must be issued by the Contractor before final payment is made.

H. The test boring logs and laboratory test results indicating subsurface conditions at and near the Moss-American site have been attached herein (Attachment C). These data are strictly for the purposes of preparing this bid. Moisture content of

the soil at the site is anticipated to differ from the data presented in Attachment C. Contractor shall also collect a daily composite soil sample prior to its treatment and analyze for moisture content using the ASTM 2216 analytical method. Payment for treating soil will be based on the moisture content of soil being fed to the LTTD system and the corresponding unit prices provided by the Thermal Subcontractor. Maintenance of the soil stockpiles in the FSPA are the responsibility of the Thermal Subcontractor. The moisture content for payment shall not be higher than the moisture content of delivered soil.

I. The Thermal Subcontractor shall have no claim for delay or for extra compensation or damages against the Contractor on account of the incorrectness of information given, or on account of the insufficiency or absence of information.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 00100

SUBMITTALS

PART 1 GENERAL

1.01 SUMMARY

The Thermal Subcontractor shall be responsible for data collection, development, review, editing and preparing submittals to satisfy the requirements of this section and each specific section of the Subcontract Documents.

1.02 SUBMITTAL REQUIREMENTS

A. Submittals shall be scheduled and coordinated with the Contractor. Major submittal dates shall be identified on the Thermal Subcontractor's construction schedule.

B. Whenever possible, the schedule for submission of submittals shall be arranged so that related items are submitted concurrently. The Contractor may require changes to the submittal schedule to permit concurrent review of related equipment.

C. The Thermal Subcontractor shall prepare a submittal log to track the submittal, proposed submittal date, the actual submittal date, the acceptance date, indication if there are deviations from the Thermal Subcontract, current status, and remarks. The Thermal Subcontractor shall maintain an updated, accurate log and shall bring this to each scheduled progress meeting with the Contractor. The submittal log shall contain a brief description and a unique file number for use in tracking the status of submittals. Deviations shall be described in the Remarks column. The Contractor reserves the right to rescind inadvertent approval of submittals containing unnoted deviations.

D. Five copies of each submittal shall be submitted within a time period required to prevent delay of the work.

E. The Thermal Subcontractor shall respond to required submittals with complete information and accuracy to achieve required acceptance within two submissions (one original and one revision). All costs to the Contractor associated with reviewing subsequent submissions of shop drawings, samples, or other submittals requiring acceptance will be backcharged to the Thermal Subcontractor by deducting such costs from payments due for work completed. If an approved item is requested by the Thermal Subcontractor to be changed or substituted for, all costs associated with the review and acceptance process may be backcharged to the Thermal Subcontractor.

1.03 FORMAT

A. A transmittal cover sheet shall accompany each submittal containing the following information:

1. Project Name

2. Submittal Title

3. Reference Section

4. Date

3. Name of Thermal Subcontractor, sub-subcontractor, supplier or manufacturer.

4. Deviations from Subcontract Documents.

7. Identification of revisions on submittals.

8. A blank space for Contractor's stamp.

9. Thermal Subcontractor's stamp, initialed or signed, certifying review of submittal.

1.04 REVIEW MARKINGS AND RESUBMITTAL REQUIREMENTS

A. Thermal Subcontractor's submittals will be returned stamped with one of the following classifications:

1. APPROVED—No corrections, no marks.

2. APPROVED AS NOTED—A few minor corrections. All items may be fabricated/installed as marked without further resubmission.

3. APPROVED AS NOTED—RESUBMIT—Minor corrections required. Items not noted to be revised and corrected may be fabricated. Resubmit a revised submission with the noted corrections.

4. REJECTED—Requires corrections or is otherwise not in accordance with the Subcontract Documents. No items shall be fabricated or installed. Resubmit a revised submittal.

5. INFORMATION ONLY—Items not reviewed or items for which submittals are not required.

The Contractor's approval of submittals shall not be construed as a complete check, but rather will indicate only that the general method of construction, materials, detailing, and other information are satisfactory. Approval will not relieve the Thermal Subcontractor of the responsibility for any error that may exist.

The Thermal Subcontractor shall make all corrections required by the Contractor or regulatory agencies. If the Thermal Subcontractor considers any correction indicated on the submittals to constitute a change to the subcontract, a notice in accordance with the Subcontract Clause entitled "Changes" shall be given to the Contractor.

B. The Thermal Subcontractor shall make corrections or changes to the submittals as required by the Contractor and resubmit until approved.

C. Submittal revisions shall be accompanied by a transmittal letter. The transmittal letter shall show the number assigned to the original submittal.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.01 MAJOR SUBMITTALS

The Thermal Subcontractor shall provide the resources (personnel, materials, supplies, and training) necessary to prepare, submit, and, upon acceptance of the Contractor and the applicable regulatory agencies, implement the following major stand-alone submittals:

A. A LTTD system Work Plan consisting of the following Subsections:

1. Mobilization.
2. Equipment Description
3. Soil Handling.
4. Dust, Vapor, and Odor Control.
5. Erosion and Sediment Control.
6. Operation and Maintenance Plan
7. Demobilization.
8. Waste Material Disposal.
9. Decontamination.

B. A Site Health and Safety Plan.
C. A Contractor Quality Control Plan.
D. An Air Quality Monitoring Plan.
E. A Sampling and Analysis Plan (SAP) consisting of:

1. Quality Assurance Project Plan (QAPP).
2. Field Sampling Plan (FSP).

F. Feasibility and Plan of Operations Report (FPOR).

1. LTTD system Proof of Performance (POP) Test Plan and Procedures (including a POP Test QAPP).

The Thermal Subcontractor shall be responsible for revising the aforementioned documents at no additional cost until they are approved by the Contractor and the regulatory agencies.

END OF SECTION

SECTION 00200

HEALTH AND SAFETY

PART 1 GENERAL

At all times, the Thermal Subcontractor shall conduct construction work safely and in accordance with applicable local, State, and federal requirements concerning construction health and safety. This specification provides a framework for preparation of a detailed site-specific Health and Safety Plan (HASP) that shall be submitted to the Contractor for approval prior to the start of any construction activities.

1.01 WORK INCLUDED

A. Health and Safety Requirements for the Thermal Subcontractor. Health and safety is the sole responsibility of the Thermal Subcontractor. The Thermal Subcontractor shall take precautions to prevent damage, injury, or loss to all employees on the work site and to other persons who may be affected by such incidents.

B. Principal Work Items.

1. Project-specific HASP development and implementation.
2. Adherence to Owner's Contractor Safety Requirements (attached herein).

1.02 REFERENCES

A. The site-specific HASP shall be consistent with the requirements of:

1. 29 Code of Federal Regulations (CFR) 1926 Safety and Health Regulations for Construction, latest version.

2. 29 CFR 1910 Occupational Safety and Health Standards (General Industry).

3. 29 CFR 1910.120 Hazardous Operations and Emergency Response.

B. Requirements for Worker Health and Safety included in the National Oil and Hazardous Substances Contingency Plan (40 CFR 300.38).

C. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, NIOSH Publication No. 85-115, October 1985.

D. The Standard Operating Safety Guidelines, EPA, November 1984.

E. Site-specific analytical data results from the Remedial Investigation are included in Section 01020, "Subsurface Exploration," as general information on the extent of contamination present at the site.

1.03 SUBMITTALS

A. The Thermal Subcontractor shall submit the proposed HASP within 10 working days from the date of the Pre-Construction Meeting and prior to conducting any mobilization or related site work.

B. The HASP shall include, at a minimum:

1. Name, qualifications, and telephone number of Thermal Subcontractor's physician.

2. Employee training documentation.

3. Employee compliance agreements.

4. Logs and Reports.

a. Safety Inspection Log.
b. Weekly Health and Safety Report.
c. Check In/Check Out Log for the site.

5. Qualifications of Health and Safety Officer (HSO).

6. Qualifications of Site Safety Officer.

7. Overall site operations safety plan.

8. Emergency and contingency plans.

C. Specific plan requirements are listed in Part 3 of this Specification "Execution."

1.04 SITE SAFETY REGULATIONS

A. The Thermal Subcontractor shall report any suspected contaminated material to the Prime Contractor upon discovery.

B. Contact with contaminated or suspected contaminated surfaces should be avoided.

C. Alcoholic beverages and controlled substances shall not be allowed on- site.

D. A site HASP shall be developed for all phases of site operations and shall be made available to all personnel.

E. All personnel shall be familiar with standard operating safety procedures and any additional instructions and information contained in the site HASP.

F. All personnel shall adhere to the site HASP. Personnel entering the site will be required to read and sign the HASP, demonstrating their concurrence with the requirements and their understanding of the safety procedures of the plan.

G. All personnel going on-site shall be adequately trained and thoroughly briefed on anticipated hazards, safety equipment to be employed, safety practices to be followed, emergency procedures and communications, and responsible safety personnel on-site.

H. Entrance and exit locations shall be designated and posted, and emergency escape routes shall be delineated. Warning signals for site evacuation must be established and communicated to all personnel.

1.05 MEDICAL CARE

Medical care is divided into routine health care and emergency medical care and treatment.

A. Routine Health Care. Routine health care shall provide special pre-assignment and periodic medical examinations.

Any special tests needed depend on the chemical substance to which the individual could be or has been exposed, as recommended by the physician.

Care and counseling in the case of potential, known, or suspected exposure to toxic substances shall also be provided.

B. Emergency Medical Care and Treatment. The Medical Program shall address emergency medical care and the treatment of project personnel. The medical program shall include:

1. The posted name, address, and telephone number of the nearest medical facility with a map, the travel time, and the directions from each job site.

2. An investigation of local emergency organizations to respond to potential emergencies at the site. If local organizations are unable to adequately respond, other emergency prearrangements shall be made.

3. Arrangements shall be made to quickly obtain emergency services. Telephone numbers and procedures shall be posted.

4. Local Medical Facility:

Community Memorial Hospital
Menomonee Falls, WI
(414) 251-1000

1.06 PERSONNEL

A. HSO

1. Qualifications.

a. Two or more years' relevant experience.

b. HSO Certified Safety Professional (CSP) or a Certified Industrial Hygienist (CIH).

c. Management/supervisor training course completed in accordance with 29 CFR 1910.120(e)(4).

2. Responsibilities.

a. Develop, submit, and implement HASP.
b. Conduct site inspections to monitor compliance with HASP.
c. Provide and coordinate training sessions.
d. Conduct incident investigations and follow-up.

3. Authority.

a. Suspend work as necessary, due to HASP violations, health-related incidents, and other increased risk situations.

b. Remove personnel from site if construction activities endanger.

c. Authorize personnel to enter the site.

B. Site Safety Officer.

1. Qualifications.

a. One or more years' relevant experience.

b. Current certification in First Aid and CPR procedures.

c. Management/supervisor training course completed in accordance with 29 CFR 1910.120(e)(4).

2. Responsibilities.

a. Direct health and safety activities on-site.

b. Report safety-related incidents to HSO and fill out incident forms as required.

c. Implement HASP.

d. Maintain health and safety equipment.

e. Perform air monitoring as required by the HASP under the supervision of the HSO.

3. Authority.

a. Suspend field activities if health and safety of personnel are endangered.

b. Suspend an individual from field activities for infractions of the HASP.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.01 GENERAL

A. The written Health and Safety Program shall contain and/or address:

1. An organizational structure.

2. A comprehensive work plan.

3. Project-Specific HASP.

4. Health and Safety Training Program.

5. The Medical Surveillance Program.

6. Standard Operating Procedures (SOPs).

7. Any necessary interface between general program and site-specific activities.

B. The Thermal Subcontractor shall be solely responsible for ensuring the Health and Safety Program meets all requirements of 29 CFR 1910.120(b).

3.02 HEALTH AND SAFETY PLAN

A. General.

1. Minimum requirements for the HASP are presented in this section. The Thermal Subcontractor shall develop the HASP using these elements as a basis, adding additional requirements as deemed necessary by the Contractor. The Thermal Subcontractor shall not commence work prior to the Contractor's review of the HASP.

2. The HASP shall establish guidelines for the safety of personnel during the conduct of work. The Thermal Subcontractor shall make available a copy of the HASP to each employee. All employees shall be required to read and understand the HASP, to sign a compliance agreement, and to abide by all provisions of the HASP. Plan may be modified by the HSO, with written review and comments from the Contractor, in response to site conditions.

3. The HASP shall include:

a. A Site Description. Physical description of site and site conditions. Site-specific data pertaining to hazards. Identifies hazards known at time. If additional hazards are discovered, they should be added to this section by Plan revision.

b. A Project Description. Project-specific description of work to be performed.

c. A Hazard Assessment. Hazard assessment shall include a task-by-task risk assessment that provides strategies for protection of workers against the following hazards:

1. For activities that involve no hazardous material contact, primary hazards are physical hazards associated with construction, use of heavy equipment, and fire hazards.

2. For activities that involve only limited hazardous material contact or the potential for hazardous material contact, the following hazards shall be appropriately protected against:

a. Physical hazards associated with construction, use of heavy equipment, and fire hazards.

b. Heat stress/cold stress.

c. Inhalation of contaminants.

d. Skin or eye contact with contaminants.

e. Ingestion of contaminants.

3. For activities that involve direct contact with hazardous materials, the following hazards shall be appropriately protected against:

a. Physical hazards associated with construction, use of heavy equipment, and fire hazards.

b. Heat stress/cold stress.

c. Inhalation of contaminants.

d. Skin or eye contact with contaminants.

e. Ingestion of contaminants.

d. List of Key Personnel. The HASP shall identify key personnel responsible for site safety. A list of the names, telephone numbers, organizations, and addresses of these individuals shall be conspicuously posted at the site.

e. Personnel/Work Area Air Monitoring Program.

1. The HASP shall designate the personnel responsible for implementing the personnel/work area air monitoring program.

2. The Site Safety Officer shall be responsible for enforcing established Air Action Levels.

3. The Personnel/Work Area Air Monitoring Program shall be described in detail in the HASP and, at a minimum, shall include:

a. Work Area Monitoring Program during remediation activities.

b. Personnel monitoring, as appropriate.

4. During construction and remediation activities, a Work Area Monitoring Program shall be implemented, including surveys of

work areas and vicinity using at least the following instruments:

a. Combustible Gas Indicator (CGI).

b. Photoionization Detector (PID).

c. Detector tubes for periodic measurements of specific compounds, as appropriate.

5. Action Levels.

a. CGI measurements are applicable to confined spaces on the site.

i. The CGI shall measure concentrations of flammable gases in the air as a percentage of the Lower Explosive Limit (LEL).

ii. Action Level:

- 0 to 1% LEL – continue to work; continue monitoring;
- 1 to 10 percent of the LEL – continue to work with EXTREME caution;
- Greater than 10% LEL – stop work and evacuate confined space; evaluate and correct situation; all ignition sources shall be shut off and personnel shall be restricted from the affected area.

b. PID readings. The HSO shall use data from the Site Characteristics Summary to determine known and suspected air contaminants and to establish level of protection upgrade/downgrade action levels to be based on PID readings.

f. Emergency Response Procedures.

1. Emergency Response Procedures shall be included in the HASP.

2. Response actions to control releases of contaminants shall be included in the HASP.

g. Decontamination Procedures

Decontamination procedures shall be developed and implemented for all appropriate phases of work.

h. Confined Space Entry Procedures

Confined space entry procedures shall be developed and implemented in accordance with the 14 January 1993 Final Rule of 129 CFR 1910.146.

i. Spill Containment Program

Where spills may occur, a spill containment program shall be implemented to contain and isolate the entire volume of the potentially hazardous material, liquid, etc.

j. Personal Protective Equipment

A written personal protective equipment program (which is part of the Health and Safety Program) shall be implemented to address the protective equipment requirements for each of the site tasks and operations to be conducted.

k. Site Control Measures

A site control program and appropriate procedures shall be implemented to control employee exposure to hazardous substances as part of the Health and Safety Program.

3.03 TRAINING REQUIREMENTS

A. The Thermal Subcontractor shall provide training that complies with the requirements of 29 CFR 1926.21 and other applicable portions of 29 CFR 1910 and 1926 to all of its employees and its subcontractors that will be assigned to the project. Training shall cover (at a minimum):

1. Names of personnel and alternates responsible for site health and safety.

2. Health and safety hazards present on-site.

3. Personal protective equipment use, care, and limitations.

4. Work practices that minimize risks from hazards.

5. Safe use of engineering controls and equipment on-site.

6. Hazard Communication (Right-To-Know program).

7. Site control measures.

8. Site SOPs.

9. Contingency plan.

10. Confined space entry procedures.

11. Identification and avoidance of harmful plants/animals and related first aid procedures.

In addition, employees who are responsible for responding to emergency situations shall be trained in how to respond to any anticipated emergency conditions.

B. Emergency Response Training.

1. Site Evacuation Drill. One site evacuation drill shall be conducted during the first full week of work to test the effectiveness of evacuation protocols.

2. Fire Extinguisher Training. At least one member of each crew shall be trained in the use of portable fire extinguishers, in accordance with 29 CFR 1910.157(g).

C. Visitor Training. The Thermal Subcontractor shall be responsible for training visitors to the site to make them aware of hazards associated with the site and to explain emergency procedures.

3.04 STANDARD OPERATING PROCEDURES

The Thermal Subcontractor shall develop and implement SOPs. At a minimum, the following SOPs shall be written:

A. Heat Stress/Cold Stress Prevention Plan.
B. Respiratory Protection Plan.
C. Hearing Conservation Plan
D. Bloodborne Pathogens Exposure Control Plan
E. Incident/Accident Reporting Procedures.
F. Site Control Procedures.

1. Security procedures.
2. Communication procedures.
3. Site layout.
4. Work zones.

5. Documentation of site access.

G. Emergency Preparedness.

1. Procedures to address the following emergency situations:

a. Medical emergencies.
b. Fires.
c. Spills.
d. Accidents.
e. Safety equipment problems.

2. Provisions for emergency equipment, such as (at a minimum):

a. First aid kits.
b. Fire extinguishers.
c. Splints.
d. Blankets.
e. Eyewashes and emergency showers.
f. Bloodborne pathogens kits (biohazard cleanup).
g. Confined Space Procedures.
h. Lockout/Tagout Procedures.
i. High Temperature Equipment/Materials.

3.05 INSPECTIONS

It shall be the responsibility of the Thermal Subcontractor to determine and document that the Health and Safety Program is being followed in accordance with minimum requirements of this Specification and any additional requirements of the Contractor HASP. This shall be accomplished through the use of inspections and audits conducted by the Site Safety Officer and staff on a daily basis and by the HSO, as required.

3.06 RECORD-KEEPING

The Thermal Subcontractor shall maintain, at a minimum, the records specified in this section and any additional records required to develop, implement, and maintain the requirements of the HASP.

3.07 REPORTING

A. The Thermal Subcontractor shall provide submittals in accordance with Item 1.03 of this section.

B. The Thermal Subcontractor shall notify the Contractor when work may affect adjacent properties. All damage, injury, or loss of any property caused by the work shall be remedied by the Thermal Subcontractor at no additional cost to the Contractor.

PART 4 PAYMENT

4.01 GENERAL

A. Payment for all work necessary for preparing implementing and managing a Health and Safety Program, including preparation of a site-specific HASP, shall be considered incidental to the Contract and shall be included in the appropriate lump sum and unit prices, as stated in the bid schedule.

END OF SECTION

SECTION 00250

CONTRACTOR'S QUALITY CONTROL

PART 1 GENERAL

1.01 SUMMARY

A. This section includes general requirements related to the Thermal Subcontractor's responsibility for quality control involving inspections, tests, certificates, and reports. This section also details the requirements for preparing a Construction Quality Control (CQC) Plan.

B. The specific quality control testing requirements are contained in the specification governing that portion of the work.

1.02 INSPECTIONS

A. The Contractor has the right to inspect all materials and equipment at all stages of development or fabrication, and shall be allowed access to the site and to the Thermal Subcontractor's Shops to conduct such inspections. On-site work will be subjected to continuous inspection. Inspection by the Contractor will not release the Thermal Subcontractor from responsibility or liability with respect to material or equipment.

B. When local codes or laws require approval and inspection of the work by other agencies or organizations before installation or operation, the Thermal Subcontractor shall obtain such approval and submit one signed original and three copies of the approval to the Contractor.

1.03 CONSTRUCTION QUALITY CONTROL TESTING

A. All quality control testing during the LTTD system operations shall be completed by the Thermal Subcontractor in accordance with the methods and frequencies stated in the specifications and in the approved CQC Plan.

B. During the LTTD system operations, the frequency of testing may increase as a result of the following conditions:

1. Adverse weather conditions.
2. Breakdown of equipment.
3. Failure of material to meet specifications.
4. Reduction of work area.

1.04 REPORTS

A. Where transcripts or certified test reports are required by the Contract documents, they shall meet the following requirements:

1. The Thermal Subcontractor shall submit for approval by the Contractor required transcripts, certified test reports, certified copies of the reports of all tests required in referenced specifications or specified in the Contract documents, and have subsequent approval of the Contractor before delivery of materials. The testing shall have been performed in an approved independent laboratory within six months of submittal of the reports for approval. Transcripts of test reports shall be accompanied by a notarized certificate in the form of a letter from the manufacturer or the supplier certifying that the tested material meets the specified requirements or is of the same type, quality, manufacturer, and make as that specified. The certificate shall be signed by an officer of the laboratory or of the manufacturer or supplier.

B. At the option of the Contractor, or where specified, the Thermal Subcontractor may, in lieu of the specified tests and other tests required in the various reference documents, submit for approval a notarized Certificate of Compliance in the form of a letter from the manufacturer. The Certificate shall state, as necessary the following:

1. Manufacturer has performed all required tests.

2. Materials supplied meet all test requirements.

3. Tests were performed within six months of submittal of the Certificate.

4. Materials that were tested are of the same type, quality, manufacture, and make as those specified.

The certificate shall include an identification of the materials. The Certificate shall be signed by an officer of the manufacturer. Materials shall not be delivered until written approval of the Certificate by the Contractor.

1.05 CONSTRUCTION QUALITY CONTROL PLAN

A. The Thermal Subcontractor shall prepare and submit a CQC Plan for approval prior to beginning site activities.

B. The CQC Plan shall include a statement and description of the Thermal Subcontractor's overall quality control program, to include procedures for all stages of remediation, including mobilization, site preparation, operation, demobilization, document control, etc.

C. Specifically, the CQC Plan shall, at a minimum, include:

1. A description of the Thermal Subcontractor's quality control organization, including a chart showing lines of authority, and an acknowledgement that the quality control staff will conduct inspections for all aspects of the work specified.

2. The name, qualifications, responsibilities, and authority of each person assigned to a quality control function.

3. A copy of a letter to the CQC Manager, signed by an authorized official of the firm, which describes the responsibility and delegates authority to the CQC Manager.

4. Procedures for scheduling and managing submittals, including those of subcontractors, fabricators, suppliers, and manufacturers.

5. Control procedures for laboratory and field sampling.

6. Procedures for reporting testing results and for maintaining records during construction.

7. A list of all specified tests and the frequency of their performance and verification that the procedures are in accordance with the Contract requirements.

8. A method of notification for deficient work and procedures for correcting deficiencies or replacing work at the sole expense of the Thermal Subcontractor.

1.06 EQUIPMENT CALIBRATION

A. All field test equipment will be kept under control of the Thermal Subcontractor's CQC System Manager. The CQC System Manager will be fully trained in the use of equipment, test procedures, and the interpretation of results for each piece of test equipment. A copy of the Calibration Certificate will be kept by the Quality Control Officer and supplied to the Contractor.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 00300

PERMIT ACQUISITIONS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. The WDNR Air Management Program does not require an air emissions permit for this federal-lead Superfund activity; therefore, the Thermal Subcontractor will not be required to obtain an air emissions permit for the on-site LTTD system.

B. The Thermal Subcontractor shall be responsible for application for and acquisition of a discharge permit for any discharged stormwater, treatment liquids, or any other liquids utilized or encountered as required for operation of the TDS in accordance with all applicable local, state, and federal regulations. The Thermal Subcontractor shall make schedule allowances for any waiting period or inspections required for permit acquisition. Operation of the TDS cannot commence until the discharge permit has been submitted to, and reviewed by, the Contractor and then submitted and approved by the local, State, and Federal authorities.

NOTE: The Milwaukee Metropolitan Sewer District (MMSD) has previously allowed discharge of treated groundwater (generated during the installation of the groundwater treatment system) to an on-site sanitary sewer manway. Bidders may consider the sanitary sewer as a disposal alternative for treated water generated during the treatment phase, provided MMSD approves of the discharge and MMSD's discharge criteria is met.

C. In addition, the Thermal Subcontractor shall identify and acquire any other pertinent permits that may be required, covering items such as construction, Hot Work, Burning, Temporary Utilities, Grading/Erosion Control, etc. No additional consideration and/or compensation will be granted for impacts and/or delays associated with acquisition of these permits.

D. Payment for all work associated with applications, fees, and inspections for permits shall be included in the lump sum price as stated in the Price Schedule under Line Item #3—Permit Acquisitions. No additional consideration will be granted for delays associated with delays in obtaining the required permits.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 00400

MOBILIZATION/DEMOBILIZATION

PART 1 GENERAL

1.01

A. Mobilization shall include, but is not limited to, the purchase of contract insurance and bonds, transportation of personnel, materials, equipment, and operating supplies to the site, and performance of site work in preparation for TDS operations. It shall include the construction and installation of all treatment units and all site work required to provide an operable work area and to produce a stable foundation for the LTTD system. The Thermal Subcontractor shall construct access roads and provide parking areas, support facilities, treatment pad/area, treated soil staging area, and all temporary utilities for the LTTD system and support facilities within the confines of the limits of work. The Thermal Subcontractor shall verify locations and depths of existing utilities that could be affected by the work and notify the Contractor immediately if unknown utilities are evidenced or encountered during execution of the work. Utilities shall be removed and replaced at the Thermal Subcontractor's expense should the Contractor determine that such utilities interfere with or may be damaged by the treatment activities.

B. The Thermal Subcontractor shall provide his own on-site administrative office, clean break room/trailer, showers/locker rooms, portable toilets, electric and phone service, etc., separate from those of the Contractor.

C. The Contractor will schedule and administer a pre-construction conference, monthly progress meetings, and specially called meetings throughout progress of the work. The Thermal Subcontractor shall be required to attend these meetings. Attendees of the pre-construction conference shall include the Thermal Subcontractor's Project Manager, Project Superintendent, CQC System Manager, and major subcontractors. The Thermal Subcontractor shall provide the Contractor with a construction schedule, schedule of values, and required submittals prior to the pre-construction conference. The Contractor will hold weekly progress meetings on site that will require attendance of the Thermal Subcontractor's Site Superintendent and CQC System Manager.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.01 MOBILIZATION PLAN

The Thermal Subcontractor shall prepare and submit to the Contractor a Mobilization Plan as part of the LTTD Work Plan Submittal. Mobilization shall not begin until relevant submittals are approved. The Mobilization Plan shall provide the following information:

A. Sequence, schedule, and narrative description of LTTD activities required to complete site mobilization, including mobilization of the LTTD system from transportation to the site through construction, commissioning, and startup on clean material.

B. Description of features that will be used to provide protection of human health and the environment during mobilization, including stormwater runon and runoff control features, construction, decontamination, erosion control structures, site control, etc.

C. Documentation of arrangements made with local police, fire, hospital, and emergency response teams.

D. A narrative description of structures, equipment, equipment storage facilities, maintenance facilities, and other ancillary facilities including capacities, use, materials of construction dimensions, etc.

E. Utility layout plans and specifications, including description of tie-ins, reliability data, and any special arrangements with utility suppliers.

F. The Thermal Subcontractor shall prepare a site plan indicating the proposed locations and approximate dimensions of facilities in any area to be used by his operations, along with identifying staging areas, avenues of ingress/egress to the areas, drainage patterns, and other details necessary to clearly identify project facilities. For noncontiguous areas, separate site plans shall be provided for each site. The plans shall clearly delineate contamination control areas.

3.02 SUPPLEMENTAL REQUIREMENTS

A. Mobilization shall be considered complete when all buildings, process equipment, and the LTTD system have been electrically, mechanically, and operationally checked-out and started up with clean material, and the LTTD system is ready for shakedown with contaminated soil.

B. The Thermal Subcontractor shall, at all times, keep the premises free from the accumulation of water, materials, or rubbish caused by his operations. At the completion of the work, the Thermal Subcontractor shall remove all equipment,

tools, foundations, and surplus materials and shall completely demobilize from the premises, removing and disposing of all debris and rubbish. All areas disturbed by the Thermal Subcontractor and LTTD system operations shall be restored to original conditions.

C. Upon demobilizing from the Site, the Thermal Subcontractor shall disconnect and remove all utilities, utility distribution systems, and tie-ins, and shall leave distribution feeder tie-ins in a condition suitable to the supplier, unless otherwise directed by the Contractor.

D. Baseline sampling of operational areas after grading but before they are exposed to contaminated materials shall be performed by others. The Thermal Subcontractor shall notify the Contractor when areas are ready for pre-operational sampling. After LTTD system operations are complete, closure verification sampling of operational areas shall be performed by others to assure that underlying soil is not contaminated. The Thermal Subcontractor shall notify the Contractor when areas are ready for post-operational sampling. Samples shall be analyzed for the contaminants of concern listed in Attachment D. Areas with contaminant levels in excess of baseline will be remediated at the Thermal Subcontractor's expense by methods approved by the Contractor.

E. Payment for Mobilization and Demobilization shall be included in the lump sum prices stated on the Price Schedule under Line Item #4—Mobilization and Line Item #12—Demobilization. The Mobilization line item shall be no greater than 15% of the total Bid amount. The Demobilization line item shall be no less than 5% of the total Bid amount.

END OF SECTION

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SECTION 00500

WASTE FEED MANAGEMENT

PART 1 GENERAL

1.01 SUMMARY

The waste feed management system shall consist of:

A. Waste Feed System.
B. Feed Storage and Preparation Area (FSPA).

The Thermal Subcontractor shall supply and operate a waste feed system for feeding the contaminated soil to the LTTD system. The FSPA will be constructed by others prior to mobilization by the Thermal Subcontractor.

The Thermal Subcontractor shall utilize the FSPA for staging and storing wastes generated during the LTTD system operations. The Thermal Subcontractor shall segregate wastes generated during the LTTD system operations from the contaminated soil by proper markings.

1.02 SUBMITTALS

After award of the contract, the Thermal Subcontractor shall make submittals as required below. All submittals shall be made to the Contractor. A list of other related submittals required by the specifications is given in Section 00100—Submittals. ARARs applicable to this section are addressed in Attachment F—List of ARARs. The Thermal Subcontractor shall document compliance with the ARARs in the appropriate submittal plans and documents.

A. The Thermal Subcontractor shall submit information on the function, design capacity, and expected operational capacity for the LTTD system waste feed system equipment. This information shall be included in the Work Plan and engineering description section of the POP Test Plan.

B. The Thermal Subcontractor shall submit detailed data on the LTTD system waste feed system equipment controls, sensors, alarms, and safety interlocks. This information shall be included in the Work Plan and engineering description section of the POP Test Plan.

C. The Thermal Subcontractor shall include in the LTTD system Demobilization Plan specific procedures and schedule for decontamination test methods for verification of decontamination, disconnection of utilities, and disassembly and removal of the system components andd other structures.

D. The Thermal Subcontractor shall include data on the LTTD system dimensions and locations of the FSPA and TDS waste feed system equipment, and barriers, capacities and placement of the stockpiles. All layout drawings shall be to scale.

E. A summary report of the FSPA operating record for the preceding calendar month shall be submitted to the Contractor by the 10th of the month following the reporting period. The summary report shall show the quantity and description of wastes received at the FSPA and the wastes fed to the LTTD system. All FSPA operating records shall be submitted to the Contractor at the completion of the treatment activities.

F. The Thermal Subcontractor shall maintain daily operating records that show the quantity and description of wastes received at the FSPA and the wastes fed to the LTTD system. These operating records shall be submitted to the Contractor at the completion of the treatment activities.

G. Flow information on the LTTD system waste feed system shall include feed rate monitoring, integration and totalizing. Disk copies shall be made available to the Contractor upon request. Copies of the waste feed system operating log shall be maintained and copies shall be made available to the Contractor upon request.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.01 OPERATIONS AND PERFORMANCE REQUIREMENTS

A. FSPA Management.

1. Any liquid drainage from the FSPA must be collected, utilized, stored, and handled by the Thermal Subcontractor in accordance with all applicable regulations, laws, and permits.

2. The FSPA must be covered or have equivalent provisions for stockpile protection. All stockpiles must be covered or otherwise designed and/or managed such that wind dispersal is controlled.

3. Temporary soil erosion and sedimentation control features shall be placed to minimize the potential for erosion.

B. LTTD system Waste Feed System Requirements.

1. The waste feed system designed by the Thermal subcontractor shall be capable of safely feeding the contaminated soil to the LTTD system consistent with the LTTD system throughput requirement.

2. The LTTD waste feed system shall be equipped with a totalizing automatic weighing conveyor to determine mass feed rate to the LTTD system for process control purposes, and total waste feed to the LTTD system with an accuracy of plus or minus two percent of true weight. The weighing conveyor shall be certified monthly.

3. The waste feed system shall be equipped with automatic waste feed cutoff (AWFCO) controls to stop waste feed immediately when the approved LTTD system operational limits are exceeded or a LTTD process upset occurs. Local emergency stop buttons, alarms, and warning lights on all rotating and moving equipment to alert operators as to the equipment operational mode shall be provided.

3.02 SAMPLING, MONITORING, AND INSPECTIONS

A. The Thermal Subcontractor shall be responsible for waste feed sampling as outlined in the POP Test Plan. The minimum waste feed sampling and analyses required during the POP Test Program shall be detailed in the Thermal Subcontractor's POP Test Plan and shall be subject to the acceptance of the Contractor and regulatory agencies.

B. The FSPA and LTTD waste feed system shall be visually inspected for signs of tampering or mechanical failure at least daily. Inspections must be documented in the Daily Inspection Log and made available to the Contractor upon request.

3.03 MATERIAL HANDLING AND OPERATIONS

A. The Thermal Subcontractor shall operate and maintain the FSPA to control runoff, runon, and airborne emissions, and to maintain the integrity of building structures, equipment, and containment systems. The FSPA must be operated and maintained to prevent release of hazardous constituents to the environment. Any degradation or release from the unit, or any material collected in the leachate detection system must be immediately reported to the Contractor and repaired as soon as possible. At the discretion of the Contractor, the system must be taken out of service until the repair or corrective action is implemented at no additional cost to the Contractor.

B. All moving equipment contained shall be provided with emergency stop buttons and alarms or warning lights to alert operators as to equipment operational mode.

C. The FSPA shall be operated and maintained to provide for safe egress at all times.

D. The FSPA shall be inspected daily for malfunctions and deteriorations, operator errors, malfunction, and discharges which may cause a release of hazardous waste constituents or their potential release to the environment or a threat to human health. Inspections shall be documented in the daily inspection log.

E. The Thermal Subcontractor shall remedy any deterioration or malfunction of equipment or structures which the inspection reveals, on a schedule which ensures that the problem does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action must be taken by the Thermal Subcontractor immediately.

F. Adequate aisle space shall be provided to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of FSPA operations in an emergency.

G. Collection and holding facilities (e.g., tanks or basins) associated with the runon and runoff control systems must be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system.

H. For the Post- POP Test Program phase, the Thermal Subcontractor shall operate the LTTD waste feed management system within the approved operating limits.

I. The Thermal Subcontractor shall develop and implement standard operating procedures (SOPs) to prevent cross contamination.

J. Personnel shall enter and exit from the operating areas via a controlled access area. The names of personnel, and their dates and times of entry and exit from the FPSA shall be recorded in a permanent log book. Personnel dressing areas for donning protective clothing shall be provided by the Thermal Subcontractor. Personnel exit shall include facilities for decontamination, doffing protective clothing, personal hygiene showers (if required), and dressing areas.

K. Equipment shall enter and exit from the operating areas via a controlled access area. Equipment shall be decontaminated before exiting. Any residual material and decontamination media generated during the decontamination of the equipment shall be collected, tested and disposed of by the Thermal Subcontractor in accordance with applicable Federal, state and local requirements.

L. The waste feed system totalizing automatic weighing conveyor shall be calibrated monthly and certified accurate to plus or minus two percent of true weight.

M. Demobilization shall be completed in accordance with the approved Demobilization Plan.

END OF SECTION

SECTION 00550

TREATED SOIL MANAGEMENT

PART 1 GENERAL

1.01 SCOPE OF WORK

As part of the Low-Temperature Thermal Desorption (LTTD) system, the Thermal Subcontractor shall construct and operate a Treated Materials Handling Area (TMHA) for the treated soil. The components comprising the treated materials management system shall include a treated materials rehydration and conveying system and a treated material handling area. The TMHA shall be constructed, operated, and maintained by the Thermal Subcontractor within the Limit of Work Area associated with the LTTD system.

1.02 SUBMITTALS

After award of the contract, the Thermal Subcontractor shall make submittals as required below. All submittals shall be made to the Contractor in accordance with Section 00100 Submittals. ARARs applicable to this section are addressed in Attachment F—List of ARARs. The Thermal Subcontractor shall document compliance with the ARARs in the appropriate submittal plans and documents.

A. The Thermal Subcontractor shall submit information on the treated materials handling system structures and equipment operational layout, treated materials storage capacities, treated materials handling procedures, precipitation runon/runoff controls, treated materials runon/runoff controls, and fugitive emissions (dust) controls and/or procedures. Structure specifications identifying materials of construction, dimensions, and load design limitations shall be included. Equipment information shall include the function, design capacity, and expected operational capacity for the treated materials conveying and handling systems. This information shall be included in the Work Plan and engineering description section of the POP Test Plan.

B. The Thermal Subcontractor shall submit data on the treated materials handling system equipment controls, sensors, alarms, and safety interlocks. This information included in the Work Plan and engineering description section of the POP Test Plan.

C. With the exception of the POP Test Program, the Contractor will be responsible for collection of samples of treated materials to verify that the treated materials meet the specified treatment criteria. The Thermal Subcontractor shall provide access for sample collection.

D. The TMHA closure plan to be prepared and submitted by the Thermal Subcontractor shall include specific procedures and schedule for decontamination of the TMHA

and treated materials management system equipment components, disconnection of utilities, disassembly and removal of the system components (unless otherwise directed by Contractor), test methods for verification of decontamination, and filling, grading and revegetation of the TMHA area.

E. The Thermal Subcontractor shall include in the LTTD system layout drawings of the TMHA layout showing dimensions and locations of the treated materials handling system equipment, barriers, capacities, and placement of the stockpiles. All layout drawings shall be to scale.

F. A summary report of the TMHA operating record for the preceding calendar month shall be submitted to the Contractor by the 10th of the month following the recording period. The summary report shall include the results of treated materials analyses. All TMHA operating records shall be submitted to the Contractor at the completion of the treatment activities.

G. The Thermal Subcontractor shall maintain a daily operating record of the TMHA. This operating record shall be available for inspection by the Contractor or the regulatory agencies. The record shall include the results of treated materials analyses performed and the disposition of treated materials that satisfied the treatment criteria.

2.0 NOT USED

3.01 PERFORMANCE REQUIREMENTS

A. TMHA.

1. The base of the management areas shall be sloped so as to preclude standing water and shall be provided with a sump and drainage system capable of collecting water for use or disposal by the Thermal Subcontractor in accordance with applicable regulations, laws, and permits.

2. All batch management areas shall be physically segregated by berms, curbing, retainer walls, etc., as necessary to prevent cross contamination or blending of the various treated materials.

3. The TMHA shall either be provided with an overhead cover or be capable of containing a 25-year, 24-hour storm event.

4. All rotating equipment in the treated material management areas shall be provided with emergency stop buttons, alarms, and warning lights to alert operators as to the equipment operational mode.

5. The treated materials management systems control shall include automatic waste feed cut-off (AWFCO) interlocks to stop contaminated material feed when the treated material conveying system stops or malfunctions.

6. The treated materials conveying system shall:

   a. Be capable of removing and handling treated soil as discharged from the LTTD system.

   b. Include provisions for rehydration of the treated material for temperature and dust control.

   c. Include provisions that allow for the collection of samples for contaminant concentration determination.

   d. Include other provisions as necessary for the control of fugitive dust emissions.

3.02 TREATED MATERIALS HANDLING CONSIDERATIONS

A. Partial rehydration of thermally treated materials is necessary to reduce their temperature for safe handling and for reducing fugitive emissions. Treated material management must include physical controls and operational procedures to prevent cross contamination of the various treated material categories: accumulated materials; materials awaiting confirmation analysis results; and materials awaiting removal from the LTTD system site or retreatment in the LTTD system. The holding areas' sizing shall be consistent with the LTTD system throughput.

B. Each batch of treated materials shall be sampled by the Contractor. The size of each batch shall be 200 cubic yards. Certificates of analysis will be provided to the Thermal Subcontractor by the Contractor and must be received before any treated materials are removed from the LTTD system site.

C. The Thermal Subcontractor shall be paid on the basis of processing the waste materials only one time through the LTTD system. Any retreatment cost shall be borne by the Thermal Subcontractor. The Thermal Subcontractor is therefore directed to limit the capacity of individual batch storage areas to no more than one day's production. Any batch failing to meet the treatment criteria shall require that the entire batch be retreated.

D. Separate storage areas shall be used for each category of treated material. The individual storage areas shall be designed to allow cleaning out of one category of treated material before accepting another category of treated material.

3.03 DEMOBILIZATION

As part of LTTD system demobilization, the TMHA shall be decontaminated, removed and backfilled on-site at the end of the project. Any other TMHA structures shall be demolished or dismantled and removed. The underlying soil will be sampled for PAHs by others. The Thermal Subcontractor shall notify the Contractor when the TMHA area is ready for sampling. The Thermal Subcontractor shall remediate the TMHA to pre-construction conditions, if contaminants are identified in excess of pre-construction levels, at no additional cost to the Contractor.

END OF SECTION

SECTION 00600

PROOF OF PERFORMANCE (POP) TEST

PART 1 GENERAL

1.01 SUMMARY

The Thermal Subcontractor shall conduct POP Testing of the LTTD system using contaminated soil and in compliance with NR 665 Regulations.

1.02 PERFORMANCE REQUIREMENTS

The Thermal Subcontractor shall design and execute a POP Test of this LTTD system that:

A. Demonstrates that the hydrogen chloride (HCl) emission rate is less than 1.8 kilograms per hour (4 pounds per hour); or demonstrates 99.99 percent DRE of HCl if the HCl emission rate exceeds 1.8 kilograms per hour (4 pounds per hour).

B. Demonstrates particulate emissions are in accordance with the formula specified in NR 665.09 (13) and less than 180 mg/dscm (corrected to 7% oxygen).

C. Demonstrates that emissions of nitrous oxides are less than the National Ambient Air Quality Standards (NAAQS).

D. Demonstrates that emissions of sulfur dioxide are less than the NAAQS.

E. Demonstrates that carbon monoxide emissions measured using the CEM system are less than 100 ppm.

F. Demonstrates that opacity emissions are less than 10%.

This demonstration shall be performed using contaminated soils. The POP Test shall consist of three sampling runs.

1.03 SUBMITTALS

After award of the contract, the Thermal Subcontractor shall make submittals as required below. All submittals shall be made in accordance with Section 00100—Submittals. ARARs applicable to this section are addressed in Attachment F—List of ARARs. The Thermal Subcontractor shall document compliance with the ARARs in the appropriate submittal plans and documents.

A. Feasibility and Plan of Operation Report.

The Thermal Subcontractor shall submit a feasibility and plan of operation report in accordance with NR 680.05(1) and 680.06(3) regulations and shall contain, at a minimum, the following information:

1. A map or aerial photograph of the area showing land use and zoning within 400 meters (1/4 mile) of the site. The map or aerial photograph shall be of sufficient scale to show all homes, industrial buildings, roads and other applicable details and the details shall be identified and indicated on the map or aerial photograph.

2. A plot plan of the LTTD system including means of limiting access such as fencing, gates, natural barriers; method of acceptably screening the facility from the surrounding area; general layout of equipment and flow pattern; road access; and location of existing and proposed utilities serving the incinerator.

3. A report which shall include the following:

   a. Population, area and entities to be served by the LTTD system.

   b. Persons responsible for LTTD system construction and operation.

   c. Estimated quantities and characteristics of wastes resulting from facility operations and methods for their treatment or disposal.

   d. Names and locations of all hazardous waste disposal sites and facilities at which hazardous and solid wastes resulting from the LTTD system and supporting operations shall be disposed.

   e. LTTD system specifications including the manufacturer, model, capacity, LTTD system dimensions, expected combustion temperature, the flue gas flow rate, monitoring methods used to comply with NR 665.09(13) and any air pollution control devices that shall be used.

   f. Expected operating schedule.

B. POP Test Plan.

For the purpose of determining the feasibility of compliance with the performance standards and determining adequate operating conditions, the Thermal Subcontractor shall submit, as part of the feasibility and Plan of Operations Report, a POP Test plan, which includes the following information:

1. An analysis of each waste or mixture of waste to be burned during the POP Test and during normal operation which includes:

a. Heat value of the waste in the form and composition in which it shall be burned.

b. Viscosity, if applicable, or description of physical form of the waste.

c. Composition and quantity of hazardous waste or mixtures of hazardous waste to be treated. The composition of each waste or mixture of wastes shall include an analysis for heating value, chlorine, sulfur content, ash content and any hazardous constituent listed in NR 605, Appendix IV.

d. An identification of any hazardous organic constituents listed in NR 605, Appendix IV, which are present in the soil to be treated.

2. An approximate quantification of the hazardous constituents identified in the waste.

3. A detailed engineering description of the LTTD system including:

a. Manufacturer's name and model number of LTTD system, if available.

b. Type of LTTD system.

c. Linear dimensions of the LTTD system including the cross sectional area of the desorption chamber.

d. Description of the auxiliary fuel system type/feed.

e. Capacity and type of prime mover.

f. Description of automatic waste feed cut-off systems.

g. Stack gas monitoring and pollution control equipment.

h. Nozzle and burner design.

i. Construction materials.

j. Location and description of temperature, pressure and flow indicating and control devices.

4. A detailed description of sampling and monitoring procedures, including sampling and monitoring locations in the system, sampling and monitoring

equipment to be used, sampling and monitoring frequency and planned analytical procedures for sample analysis.

5. A detailed test schedule for each waste for which the POP Test is planned including dates, duration, quantity of waste to be burned and other relevant factors.

6. A detailed POP Test protocol, including for each waste identified, the ranges of combustion temperature, waste feed rate expected, carbon monoxide level in the exhaust gas, combustion gas velocity, use of auxiliary fuel and any other relevant parameters that shall be varied to affect the destruction and removal efficiency of the LTTD system.

7. A description of, and planned operating conditions for, any pollution and emission control equipment which shall be used.

8. Procedures for rapidly stopping waste feed, shutting down the LTTD system and controlling emissions in the event of equipment malfunction.

9. Names and qualifications of persons who:

   a. Conduct the on-site sampling and monitoring during testing.

   b. Perform the analysis of the samples.

   c. Review analytical results and other pertinent data, and will perform a technical evaluation for the Thermal Subcontractor of the effectiveness of the POP Test .

10. A detailed stand-alone quality assurance project plan (QAPP) prepared in accordance with "Quality Assurance/Quality Control (QA/QC) Procedures for Hazardous Waste Incinerators" (EPA 625/6-89/023). The QAPP shall identify QA/QC procedures and objectives for all POP Test sampling and analyses.

11. Any other relevant factors required by NR 665 Regulations.

12. In lieu of the POP Test requirements, the Thermal Subcontractor shall submit a POP Test and post--POP Test data from previous similar projects to support the contention that a POP Test is not needed. The Thermal Subcontractor shall be responsible for all negotiations with the regulatory agencies and costs, and shall obtain the acceptance in a timely manner.

C. POP Test Report.

After the completion of the POP Test, the Thermal Subcontractor shall submit a POP Test report meeting requirements of NR 665 Regulations.

D. POP Test Failure Notification and Corrective Action Plan.

In the event that the LTTD system fails to meet the performance objectives, the Thermal Subcontractor shall immediately notify the regulatory agencies and the Contractor as soon as such information is known by the Thermal Subcontractor. Allowing continued operation of the LTTD system after failing the POP Test testing shall be at the discretion of the regulatory agencies and the Contractor. Shutdown of the LTTD system can be ordered by the Contractor should there be reasonable suspicion that continued operation of the LTTD system without correction of the deficiency(s) causing the unit not to meet the POP Test performance objectives presents undue risk to human health and the environment.

For LTTD system equipment or operational modifications, the Thermal Subcontractor shall submit a corrective action plan which identifies the proposed modifications to the LTTD system or its operation so that it will meet the performance objectives set forth in these specifications. If the failure of the POP Test is related to the failure to meet POP Test QA/QC objectives for sampling and analysis and such failure nullifies the POP Test results or results in questionable data, the Thermal Subcontractor shall submit an action plan for POP Test retesting including procedural modifications to mitigate the previous errors.

Any costs resulting from the necessity to retest, or losses in production or schedule slippage due to the ordered shutdown by the Contractor for failure of the POP Test, or for process or operational changes to the LTTD system, shall be borne by the Thermal Subcontractor.

E. The Thermal Subcontractor shall address, at no additional cost to the Contractor, Notices of Deficiency (NODs) received from the regulatory agencies and the Contractor. The Thermal Subcontractor shall address the NODs by reviewing and resubmitting the submittals until approved by the regulatory agencies and the Contractor.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.01 SHAKEDOWN OPERATIONS

The purpose of the Shakedown phase is to bring the LTTD system to the point of operational readiness for the POP Test. During this 720-hour processing time, the Thermal Subcontractor shall conduct pre–POP Test testing.

3.02 PRE-POP TEST TESTING

Pre-POP Test testing is defined as operating the LTTD system for the purposes of performing stack emissions and process sampling to determine the operational readiness of the LTTD system prior to proceeding to the formal POP Test. The Pre-POP Test testing shall be performed using contaminated soil. Time to conduct the Pre-POP Test time using contaminated soil shall count as part of the 720-hour shakedown allotment. The Pre-POP Test shall consist of one test run at the conditions expected for the POP Test. The sampling and analysis program for the Pre-POP Test shall be identical to that of the POP Test. Pretest data will be used by the Contractor to perform an initial assessment of the LTTD system emissions relative to the performance standards.

3.03 POP TEST

A. POP Test Performance Requirements.

After mobilization and shakedown of the LTTD system, and upon acceptance of the POP Test Plan, the Thermal Subcontractor shall conduct a POP Test. The Thermal Subcontractor will provide all equipment, supplies, and labor required to conduct the POP Test. The POP Test will be conducted in accordance with the approved POP Test Plan and NR 665 Regulations. The POP Test shall consist of three sampling and analysis runs. The process and stack sampling program shall be the same for all three runs. The three soil runs shall be replicate runs for establishing the LTTD system limiting operating conditions.

B. The POP Test shall, at a minimum, meet the sampling frequency and analytical parameters required by NR 665 Regulations.

C. In the event that the LTTD system does not meet the performance objectives, the Thermal Subcontractor shall, at his own expense, be required to modify and retest the system. If the Thermal Subcontractor fails the POP Test, the Contractor has the right to terminate the contract.

D. For the period immediately following the completion of the POP Test and only for the minimum period sufficient to allow sample analysis, data computation, submission of the POP Test results by the Thermal Subcontractor, review of the POP Test results by the regulatory agencies and the Contractor, and development of final approved operating conditions, the Thermal Subcontractor will be allowed to process material under conditions, as determined by the regulatory agencies and the Contractor, which will most likely ensure compliance with all applicable performance standards. The Thermal Subcontractor shall propose interim operating conditions based on the results of the Pre-POP Test. Proposed conditions will be reviewed and revised or approved by the Contractor and regulatory agencies.

3.04 POST-POP TEST OPERATIONS

A. The Thermal Subcontractor shall operate and maintain the LTTD system to process the contaminated soil as designated in these specifications. The operation and maintenance shall, at a minimum, be in accordance with the requirements of NR 665 Regulations.

B. During this period, the LTTD system shall be operated within the operating limits set by the regulatory agencies.

C. Fugitive emissions must be controlled in accordance with all applicable regulations.

D. The LTTD system must be operated with a functioning AWFCO system which immediately stops waste feed to the unit when operating conditions deviate from limits established above.

E. The minimum sampling and analysis requirements during Post-POP Test operations shall be in accordance with NR 665 Regulations.

END OF SECTION

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SECTION 00800

ANALYTICAL SAMPLING AND TESTING

PART 1 GENERAL

1.01 SUMMARY

This section describes the minimum specification requirements for sampling and laboratory services to be provided by the Thermal Subcontractor in support of the field sampling and analysis program. The Thermal Subcontractor shall be responsible for all aspects of the POP Test Program, wastes requiring off-site disposal, stormwater samples, delineated wastes, residuals, etc. The Thermal Subcontractor shall provide access to all streams required for sample collection by the Contractor.

The Thermal Subcontractor shall submit a Field Sampling Plan and Quality Assurance Project Plan for those streams for which the Thermal Subcontractor is responsible.

The scope of services to be provided by the Thermal Subcontractor includes the resources (i.e., personnel, materials, supplies, transportation, and equipment) necessary to sample, analyze, evaluate, and manage their sampling program. Requirements for the POP Test Program are contained in Section 00600.

The Thermal Subcontractor shall document requirements for this chemical data management program in a Sampling and Analysis Plan (SAP). In the implementation of this section, if a conflict arises between differing guidance, the more stringent requirement will apply.

After award of the contract, the Thermal Subcontractor shall make submittals for sampling and analysis as required by Section 00100—Submittals. Requirements for deliverables such as Laboratory Data Reports and Quality Control Summary Reports are also outlined in Section 00100—Submittals.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.01 CHEMICAL DATA QUALITY RESPONSIBILITIES

A. The Thermal Subcontractor is responsible for implementing the sampling/analytical services requirements of this section. The Thermal Subcontractor shall be responsible for certification of all chemical sample analysis

results submitted as a requirement of these Specifications with regard to data quality and representativeness. The analytical results of samples collected by the Thermal Subcontractor must be submitted to the Contractor.

B. The Contractor will review all technical submittals and will review the analytical results for all samples. The Contractor reserves the right to perform site inspections, take samples, and perform audits at any time during the project.

C. The Contractor will make a determination for acceptance (e.g., release of treated materials from the LTTD system) within 24 hours following receipt of complete analytical documentation. The Contractor will provide the determination to the Thermal Subcontractor within 96 hours of sample collection (or in the case of composite samples, within 96 hours of collection of the last grab sample). If the analytical QA/QC data presented in reports supporting an acceptance/release request is found to be unacceptable when compared to individual analytical method QA/QC requirements or external QA sample results, the Contractor may require resampling and analyses.

3.02 CHEMICAL DATA ACQUISITION

The Thermal Subcontractor shall be responsible for implementing its SAP. The Thermal Subcontractor shall obtain prior written acceptance from the Contractor before any changes are made to its SAP, or any analytical or sampling SOPs (including SOPs for one-time or special analyses). The Thermal Subcontractor shall maintain an up-to-date SAP and shall maintain copies of outdated material, including a revision history log.

The following types of samples shall be collected by the Thermal Subcontractor for chemical analysis during this program. The Thermal Subcontractor shall propose analytical methods and scheduled sample collection in accordance with federal and state requirements. The sampling and analytical requirements specified below are inclusive to the subject line item. Other sampling and analysis requirements are outlined in line Sections 00400, 00600, and 00700.

A. Samples required for characterization for off-site disposal (e.g., LTTD system residues including, but not limited to, baghouse dust, blowdown water, condensate, and spray tower dust) must be sampled and evaluated separately from other materials in accordance with applicable regulations, laws, and permits. These wastes are considered incidental to the work and therefore no separate payment will be granted for the management and proper disposal of these wastes. The Contractor reserves the right to ensure proper management of all residual waste at no additional cost.

B. Stormwater shall be collected and handled by the Thermal Subcontractor in accordance with applicable regulations, laws, and permits. Stormwater is defined

as any waters which fall within the footprint of the LTTD system. Management of stormwater is considered incidental to performance of LTTD system operations and shall be performed at no additional cost to the Contractor.

C. During the LTTD treatment activities, certain wastes may be identified that are not specific "delineated wastes." These wastes include those generated incidentally to the project such as sampling wastes, solvents, etc. There are no project specific analytical requirements for these wastes. However, the Thermal Subcontractor shall properly characterize such waste for off-site treatment, storage, or disposal, as necessary, to comply with Federal, state and local regulatory requirements. These wastes are considered incidental to the work and therefore no separate payment will be granted for the management, characterization, and proper disposal of these wastes. The Contractor reserves the right to ensure proper management of all residual waste.

3.03 FIELD QA/QC SAMPLES

The Thermal Subcontractor shall be responsible of the collection and analysis of QA/QC samples as part of the overall field sampling program. All QA/QC samples to be collected, their frequencies, and tolerance limits shall be identified by the Thermal Subcontractor in its FSP and/or QAPP.

At a minimum, the following types of QA/QC samples shall be included in the field sampling program:

A. Duplicates—Duplicate analysis shall be collected in accordance with Federal and state requirements (5 percent). The duplicate analysis need not be a separate field sample, but may require additional sample volume. The designation of samples requiring duplicate analysis may be performed as either a field or laboratory function.

B. Splits—Blind field splits shall be collected in accordance with Federal and state requirements. The splits shall be taken at the same time as duplicates.

C. The Thermal Subcontractor shall prepare split samples as requested by the Contractor and the regulatory agencies.

3.04 SAMPLE CONTAINERS AND DECONTAMINATION

This section specifies information that the Thermal Subcontractor shall include in the field sampling program regarding sample containers and sampling equipment decontamination.

A. Sample Containers—All sample containers shall be supplied by the Thermal Subcontractor. Numbers and types of containers for all samples shall be specified

by the Thermal Subcontractor. Sample containers shall be obtained, pre-cleaned, from a source approved by EPA for use on Superfund sites. The sizes and types of containers, sample preservation, container identification, labeling, and sample storage, shall meet the analytical method requirement.

B. Disposal of unanalyzed samples shall be the responsibility of the Thermal Subcontractor.

C. Decontamination—The Thermal Subcontractor shall submit a detailed decontamination procedure for field sampling equipment as part of the FSP. Sampling methods and equipment shall be chosen to minimize field decontamination requirements and the possibility of cross contamination. Any sampling equipment used at more than one sampling location shall be decontaminated between locations. Decontamination procedures shall be consistent with Federal and state regulatory requirements.

3.05 SAMPLE PRESERVATION METHODS

The Thermal Subcontractor shall use and specify in the QAPP and FSP all sample preservation methods to be employed following sample collection. All chemical preservatives to be used, physical conditions of storage and shipment, and holding times shall be in accordance with Federal and state regulator requirements.

3.06 SAMPLE TRANSPORTATION REQUIREMENTS

The Thermal Subcontractor shall comply with all appropriate Federal, state, and other regulations regarding sample shipment. The Thermal Subcontractor shall identify in the FSP how compliance with all appropriate transportation regulations will be accomplished.

3.07 SAMPLE CUSTODY AND DOCUMENTATION REQUIREMENTS

This section of the FSP shall identify COC and documentation required by the Thermal Subcontractor in the field sampling program.

A. The Thermal Subcontractor shall assure that any sample that is analyzed will yield results representative of the sample's condition prior to sampling. The COC procedures shall conform to federal and state regulatory requirements.

COC procedures shall adequately record, for evidence, at a minimum the following information:

1) Initial sample type, date and time of collection and signature of the collector.
2) Signatures of persons involved in sample chain-of-custody possession.

3) Inclusive dates of possession of all individuals involved in sample possession.

B. The Thermal Subcontractor's laboratory shall hold and make available all project raw data for a period of three years after Final Project Close-out. Within 5 calendar days, the Thermal Subcontractor's laboratory shall supply any analytical data upon request by the Contractor.

C. The Thermal Subcontractor shall maintain permanently bound sample log books in which all sampling activities are recorded. The log book shall be filled out in indelible ink. All log book pages are to be pre-numbered. The Contractor shall have access to all log books, which shall be turned over to the Contractor in good condition at the completion of the work. The following information, at a minimum, shall be recorded in the log book.

1) Sample identification.
2) Sample location and description (type, form, approximate quantity, etc.).
3) Field observations.
4) Compositing procedure (if applicable).
5) Provisions for sample preservation.
6) Analysis(es) to be performed.
7) Date/time of collection.
8) Collector name(s).
9) Sample container number.

3.08 ANALYTICAL METHODS AND PROCEDURES

The Thermal Subcontractor shall fully describe in the QAPP, and provide appropriate references for, the specific analytical methods and procedures which will be required to perform all soil, water, air and other waste chemical analyses associated with this project. Appropriate precision, accuracy, instrumental sensitivity and interlaboratory comparison data shall be provided to support validation of substitution methods. The following information relating to analytical methods and procedures shall be provided:

A. Analytical Instrumentation.
B. Analytical Methodology Details.
C. Analytical Institutional Control Parameters.
D. Internal QC checks.
E. External QA checks.
F. Corrective Actions when the analytical data falls outside of acceptable control limits.
G. Calibration Procedures.
H. Preventive Maintenance.

I. Data Analysis.

3.09 DATA VALIDATION

The Thermal Subcontractor shall be responsible for validating all laboratory-generated data. Data validation shall be conducted in accordance with applicable federal and state requirements.

END OF SECTION

SECTION 01000

SOIL PREPARATION

PART 1 GENERAL

1.01 SCOPE OF WORK

A. The Thermal Subcontractor will be required to mechanically screen and/or condition the excavated soil, as the subcontractor deems necessary to meet the treatment criteria, prior to introduction into the LTTD system.

B. This mechanical conditioning may be performed with a Read screen or other applicable screening devices that perform both segregation and size reduction. Size reduction is not specified, although the size of soil particles must be reduced to a dimension which allows the LTTD system to achieve clean up levels throughout each particle's entire dimension. Soil shall be prepared to create as homogeneous a mixture as possible. Soil shall be handled, and stockpiles protected, in such a way as to minimize moisture content. If additive or bulking agents are used, the true weight of those agents, as delivered to the site shall be documented and subtracted from the weight of material processed for payment.

C. If clean up levels are found to be inadequate with a particular soil particle size, the soil will be returned to the soil preparation area, reduced in particle size and treated until the clean up levels have been achieved at no additional cost to the Contractor. Once the optimum particle size has been determined, all soil will be mechanically conditioned to the determined size.

D. Moisture content of soil entering the LTTD system shall in no way be adjusted to a moisture level higher than that of the soil received at the FSPA area.

E. Any oversized debris or objects not treatable by the LTTD system such as large rocks, roots, wood, concrete, etc. (not including clods or clumps of clay or soil), generated during the screening process must be cleaned of any visible soil at no expense to the Contractor. Oversized debris that exhibits the presence of free product shall be transported to the Asphalt Pad staging area for decontamination. Oversized objects exhibiting the presence of free product will be decontaminated on the asphalt pad adjacent to the water collection sump with water and surfactants (as needed). Decontamination water that accumulates in the sump shall be transferred to on-site holding tanks and treated in the on-site wastewater treatment system prior to discharge. All decontaminated debris will be staged and managed with the treated soil. Decontaminated railroad ties may be disposed of off-site by others.

F. Clay/soil clods or clumps shall be mechanically worked to reduce to a treatable size at no additional cost to the Contractor.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

END OF SECTION

SECTION 01100

TREATMENT OF SOILS

PART 1 GENERAL

1.01 SCOPE OF WORK

The Thermal Subcontractor shall supply, operate, and maintain a LTTD system to treat contaminated soils at the Moss-American Site. The components comprising the LTTD system shall include but not be limited to the following:

A. A waste feed system.

B. A rotary drum desorber.

C. An air pollution control (APC) system.

D. A dust handling and conveying system.

E. A treated material handling and conditioning system.

F. Continuous Emission Monitoring System for total hydrocarbons, oxygen, and carbon monoxide.

G. Residuals (condensate, blowdown, etc..) handling and management system.

As referred to in this scope of work, the LTTD system considered for this work shall be only those unit(s) which have the ability to destroy the contaminants in the soil and meet the requirements of these specifications and applicable regulations. The LTTD system and its support facilities shall be mobilized and demobilized with minimal damage to the existing environment. The LTTD system and its support facilities shall be capable of year-round operation. This section is supported by other specifications that address specific LTTD system requirements.

1.02 SUBMITTALS

After award of the contract, the Thermal Subcontractor shall make submittals as required below. These submittals shall in no way relieve the Thermal Subcontractor of his obligation to obtain the relevant and applicable regulatory agency acceptances, permits and licenses. The submittals shall be made in accordance with Section 00100—Submittals. ARARs applicable to this section are addressed in Attachment E—List of ARARs. The Thermal Subcontractor shall document compliance with the ARARs in the appropriate submittal plans and documents.

A. Feasibility and Plan of Operation Report as specified in Section 00600 Proof of Performance (POP).

B. The Thermal Subcontractor shall submit documentation of firm's history of obtaining relevant operating permit equivalents for the LTTD system to be used and firm's history of operating the LTTD system. The proposed LTTD system or its equivalent design shall have passed a RCRA Trial Burn POP Test or equivalent and shall have operated under permit equivalent conditions for the duration of project. Documentation shall include the following:

1. Type of waste treated.

2. Primary regulation.

3. POHC(s) used.

4. Permitted conditions:

   a. Treatment rate (tons/hour).
   b. Operating temperatures.

5. Name of site(s), location, point of contact and phone number of the customer.

C. All coordination activities with the various utility suppliers for connection of utilities (fuel oil, electricity, water, and sanitary wastewater disposal) are the responsibility of the Thermal Subcontractor. Refer to Section 00400—Mobilization and Demobilization.

D. As part of the Mobilization, the Thermal Subcontractor shall submit a section specifically covering the procedures and requirements for on-site placement of the LTTD system and its support systems, including the location of all LTTD system components and all on-site improvements. The LTTD system section may be submitted as a stand-alone document. An approved Mobilization Plan is required prior to LTTD system mobilization or initiation of associated on-site improvements.

E. The Thermal Subcontractor shall submit a Startup Plan identifying the sequence of mechanical equipment startup and checkout, and the instruments requiring calibration and their required calibration procedures and tolerances. The plan shall describe procedures to demonstrate the function and testing of the LTTD system and subsystems.

F. The Thermal Subcontractor shall submit and obtain the acceptance of the Contractor and the regulatory agencies of a POP Test Plan, referenced in Section 0600—POP Test.

G. The Thermal Subcontractor shall submit an Operations Plan for the Post-POP Test phase that includes specific, detailed procedures, based on anticipated POP Test results, for continued operation of the LTTD system. These procedures shall address adjustments to variations in the waste feed materials. This information shall be included in the engineering description and planned operating conditions sections of the POP Test Plan.

H. The Thermal Subcontractor shall submit a Demobilization Plan detailing specific procedures and schedule for decontamination of LTTD system components, test methods for verification of decontamination, disconnection of utilities, disassembly and removal of LTTD system equipment and structures. The Thermal Subcontractor shall remove concrete pads and foundations, and fill, grade, and revegetate the LTTD system site.

I. The Thermal Subcontractor shall submit detailed Process Flow Diagrams (PFDs) which include as a minimum:

1. Overall facility PFDs identifying waste material flow through the LTTD process.

2. Symbolic representations of major LTTD process equipment (e.g., pumps, blowers, kiln, valves and other in-line devices, major duct work, stack, APC units, etc.). Each major piece of equipment, and flows streams into, between, and from these components shall be identified by a unique number. Flow lines shall be designated by arrows denoting the direction and designation of the flow. The PFDs shall show all waste stream flows as appropriate.

J. The Thermal Subcontractor shall submit detailed Process and Instrumentation Diagrams (P&IDs) indicating:

1. All process equipment.

2. Instrumentation and control equipment (including sensors, process controllers, control operators, valves, interlocks, alarms, and AWFCO systems).

3. Piping and ductwork.

4. Stacks, vents, and dampers.

The P&IDs shall include labels and other necessary information to correlate to the PFDs.

K. The Thermal Subcontractor shall provide a labor loaded LTTD system Post-POP Test Schedule defining starting dates and durations for the following LTTD treatment events and/or activities:

1. Mobilization.

2. Startup.

3. Shakedown and Pre-POP Test.

4. POP Test.

5. Interim Operations.

6. Post-POP Test Operations.

7. Demobilization.

An approved Project Schedule is required prior to the beginning of any site activity.

L. During the startup phase, the Thermal Subcontractor shall brief the Contractor, as necessary on startup activities. The daily briefing shall provide the Contractor an understanding of the activities completed the previous day and planned for that day.

M. During the Shakedown and Pre-POP Test phase, the Thermal Subcontractor shall brief the Contractor daily on phase activities. Written bi-weekly (twice per week) progress reports containing a summary of Shakedown and Pre-POP Test activities shall also be submitted during this phase. The bi-weekly report shall detail progress to date for completing equipment shakedown, planned activities, projections for the upcoming work, and target dates for the Pre-POP Test by the Thermal Subcontractor. The Pre-POP Test of the LTTD system conducted before the formal POP Test be performed and the results reported to the Contractor in summary format. The Pre-POP Test shall consist of one test run and shall include the same parameters as the POP Test. The pre-POP Test report shall include a summary of the test results and interpretation of test results. Requests by the Thermal Subcontractor for modifications to the approved POP Test Plan must be submitted in writing at this time and supported by test or operational data which justifies the change(s).

N. Beginning with the Shakedown and Pre-POP Test phase, and through the Post-POP Test phase, the Thermal Subcontractor shall maintain a written operating log record of the LTTD system operation in accordance with NR 665 Regulations. LTTD system operating parameter data shall be maintained in magnetic (computer disk) format. Disk copies of this data shall be provided to the Contractor daily for the preceding day's LTTD system operation. This submittal requirement does not relieve the Thermal Subcontractor from maintaining LTTD system operating data for retrieval upon request by the Contractor or the regulatory agencies. Daily operating logs shall be submitted to the Contractor upon completion of the LTTD treatment operations.

O. Beginning with the Shakedown and Pre-POP Test phase and through the Post-POP Test phase, the Thermal Subcontractor shall submit a monthly report which summarizes the operating record of the LTTD system in accordance with NR 665 Regulations. This monthly report shall be submitted no later than the 10th of the month following the reporting period.

1.03 SEQUENCING AND SCHEDULING

Documentation of successful accomplishment of the objectives of each phase of operations is required prior to acceptance to begin the next phase of operations.

A. Mobilization. Permits and permit equivalents are required prior to mobilization. Mobilization shall include transportation of the equipment to the site, equipment erection and installation, but not operation.

B. Startup. Startup phase begins with the operational testing of the LTTD system and its subcomponents. Startup phase terminates when the Thermal Subcontractor has completed the 24-hour "Hot Checks" using clean feed material borrowed from the site and notifies the Contractor in writing that the LTTD system is ready to proceed to the Shakedown and Pre-POP Test phase using contaminated soil. During Readiness Testing, the system shall be operated for 24 consecutive hours under the operating conditions proposed in the POP Test Plan, with no more than 30 minutes of downtime caused by a malfunction or shutdown related to the Thermal Subcontractor's equipment. All continuous emissions monitoring systems shall be functional throughout the entire 24 hour period. The Readiness Testing shall be performed using clean soil. The Shakedown Period shall begin after the 24 hour continuous operations test is complete. Results of the Readiness Testing shall be documented in the Thermal Subcontractor's Daily Operating Logs.

C. Shakedown and Pre-POP Test Test. The Shakedown and Pre-POP Test phase commences with the acceptance of the Contractor and the regulatory agencies allowing the introduction of contaminated soil into the LTTD system. This phase terminates at the completion of a successful POP Test or until 720 hours of actual waste processing time has been exhausted, whichever occurs first. A maximum of 720 hours of actual waste processing time shall be allowed to bring the LTTD system to the point of operational readiness for the formal POP Test. The POP Test need not be completed within the 720 hours allotted for actual waste feed shakedown. However, if the Thermal Subcontractor completes the POP Test before the 720 hours of actual waste operations have been completed, the remaining hours of operation shall be forfeited.

D. The formal POP Test shall be conducted in accordance with the approved POP Test Plan. The Interim Operations phase commences at the completion of the POP Test and terminates upon acceptance of the POP Test report by the Contractor and the regulatory agencies. The Thermal Subcontractor will be allowed to continue processing contaminated soil during this interim period under LTTD system interim

operating conditions approved by the Contractor and regulatory agencies. The Interim Operations phase shall continue for the total number of calendar days allowed for preparation and submittal of the POP Test Report and its review and acceptance by the Contractor and the regulatory agencies. The Thermal Subcontractor shall indicate the number of calendar days required for preparation and submission of the POP Test Summary Report.

E. The Post-POP Test phase commences with the issuance of final operating conditions for the LTTD system by the Contractor and the regulatory agencies, and terminates with the completion of contaminated soil treatment.

F. Demobilization. Demobilization shall be in accordance with NR 665 Regulations. Demobilization shall be considered complete when the LTTD system and related equipment have been removed from the site and the area has been restored to its original condition.

1.04 TREATMENT RESIDUALS

A. Liquid wastes from the APC system and decontamination activities shall be collected, treated to the satisfaction of regulatory limits, tested, and reused for ash conditioning (rehydration) or combustion gas cooling to the maximum extent possible when approved by the Contractor and regulatory agencies.

B. Solids residuals from the APC system shall be collected, sampled, and handled in the same manner as treated soil or disposed off-site if they cannot be backfilled.

1.05 OPERATIONS

LTTD system operators must have a minimum of 2 years experience operating RCRA-permitted or CERCLA-demonstrated LTTD systems. Documentation of experience will be provided in the proposal.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.01 DESIGN CONDITIONS

A. Waste Characterization and Quantities.

Refer to Attachment E.

B. LTTD System Utility Requirements.

The Thermal Subcontractor shall make arrangements for utility tie-ins as applicable. The Thermal Subcontractor and the operation of the LTTD system shall comply with the requirements of his insurer and the following safety codes and standards as appropriate:

- National Fire Protection Institute (NFPI).
- National Electrical code (NEC).
- Underwriters Laboratory (UL).
- National Electrical Manufacturers Association (NEMA).
- Occupational Safety and Health Administration (OSHA).
- National Electrical Safety Code (NESC).
- American Petroleum Institute (API).
- Instrument Society of America (ISA).

The following industry, association, and government codes and standards should be followed by the Thermal Subcontractor in the design, fabrication, assembly, operation, and testing of all equipment furnished:

- American National Standards Institute (ANSI).
- American Society of Mechanical Engineers (ASME).
- American Society of Testing and Materials (ASTM).
- American Welding Society (AWS).
- Department of Transportation (DOT).
- UL.
- ISA.
- OSHA.

3.02 DESIGN AND PERFORMANCE REQUIREMENTS

The LTTD system shall meet the requirements of NR 665 Regulations and the following performance requirements.

A. The LTTD system shall have a minimum waste feed throughput capacity as necessary to meet the project completion date per the contract. This capacity shall be based on the soil characteristics presented in Attachment C. This minimum capacity may be achieved by a single unit or multiple units.

B. The LTTD system shall thermally treat PAH contaminated soils and meet the treatment criteria specified in Attachment E.

C. The LTTD system shall meet the performance requirements of NR 665 Regulations.

D. The LTTD system shall meet all state and local noise pollution control requirements. Noise levels from individual sources should not exceed 85 dBA at a distance of 3 feet from the source. At a minimum, the LTTD system shall meet OSHA noise requirements (40 CFR Part 1910.95).

E. The LTTD system and all ancillary facilities shall be designed in accordance with all Federal, state, and local design requirements, whichever is more stringent.

3.03 FACILITY LAYOUT

A. The size of the LTTD system work area shall not be increased without acceptance of the Contractor. Costs associated with any area increase shall be borne by the Thermal Subcontractor, including costs of construction, demolition and site restoration.

B. The area indicated in the site map provided in Attachment B (titled "Approximate Extent of Contaminated Soil Requiring Excavation & Treatment") shall be used for primary LTTD system equipment and related support equipment such as an auxiliary generator; material preparation equipment; air emission controls and monitoring equipment; contaminated material conveyance, preparation and loading equipment; fuel tanks; Feed Storage and Preparation Area (FSPA); and Treated Materials Handling Area (TMHA).

3.04 SAMPLING, MONITORING AND INSPECTIONS

A. The minimum sampling and analyses required during the POP Test and Post-POP Test phase shall be in accordance with the POP Test Plan and SAP, as reviewed and approved by the Contractor and the regulatory agencies.

B. Additional Sampling. Upon request of the regulatory agencies, the Contractor may require that the Thermal Subcontractor conduct additional sampling of the contaminated material feed for compliance with the approved operating conditions, or the treated material to demonstrate that treatment criteria are being met, at no additional cost to the Contractor.

C. The LTTD system and associated equipment (pumps, valves, conveyors, pipes, etc.) shall be subjected to thorough daily visual inspections for leaks, spills, fugitive emissions, and signs of tampering or mechanical failure.

D. The interlocks, AWFCO and associated alarms shall be tested in accordance with NR 665 Regulations.

E. Routine and POP Test calibrations shall be performed in accordance with NR 665 Regulations.

3.05 DATA

Data from sampling, inspections and tests shall be recorded and the records placed in the operating log as required by NR 665 Regulations and as specified. The field log book shall describe calibration procedures conducted and results obtained. Logs shall be maintained throughout the duration of operations and shall be made available for inspection upon request by Contractor and/or regulatory personnel.

3.06 SOIL MOISTURE CONTENT

Moisture content of the soil is expected to vary depending on soil location. Moisture samples, taken by the Contractor for determination of the appropriate unit rate of payment under Line Item 11, will be collected at a rate of one composite sample per day of soils to be treated. This sample shall be collected after the soils have been mechanically conditioned but prior to the soil entering the LTTD system. Samples may be split with the Thermal Subcontractor for verification of moisture. Moisture samples will be analyzed using ASTM 2216 at a geotechnical laboratory.

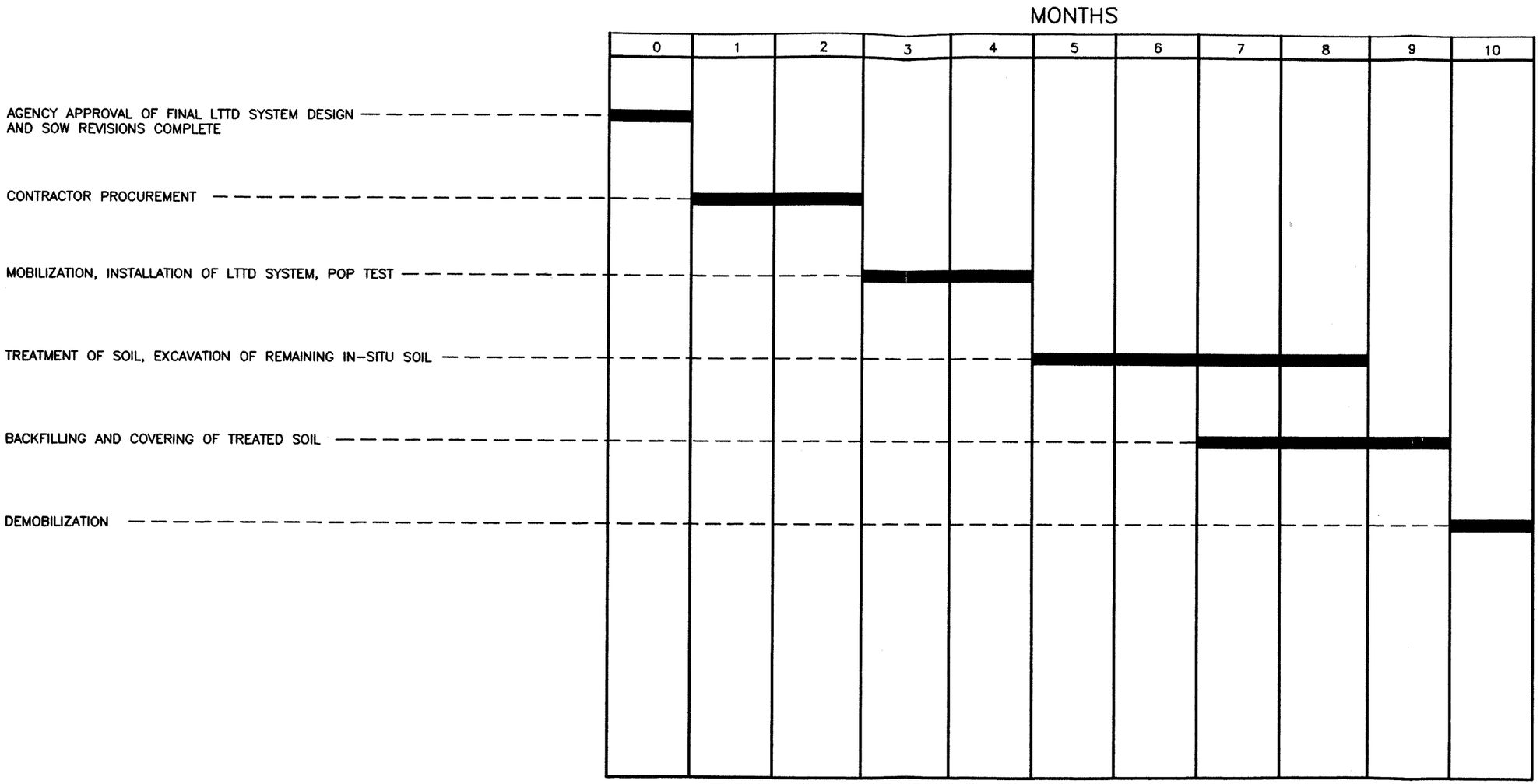
3.07 TREATED SOIL WEIGHT AND MEASUREMENT

Except where noted otherwise, all soils will be weighed for payment after mechanical conditioning is complete but prior to entry into the LTTD system. If additive or bulking agents are used, the true weight of those agents, as delivered to the site shall be subtracted from the weight of material processed for payment. Weigh scales shall be calibrated and certified to be accurate by an independent scale company. A copy of the scale certification must be supplied to the Contractor. The Contractor reserves the right to request recalibration of the scales at any time at no additional cost.

END OF SECTION

ATTACHMENT A

CONSTRUCTION SCHEDULE



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(REVISED ON 7 APRIL 2000)

FIGURE 1

WESTON MANAGERS DESIGNERS/CONSULTANTS

Three Hawthorn Parkway
Vernon Hills, Illinois
60061

ANTICIPATED PROJECT SCHEDULE FOR
LTTD TREATMENT OF SOIL
MOSS – AMERICAN SITE
Milwaukee, Wisconsin

ATTACHMENT B

APPROXIMATE EXTENT OF CONTAMINATED SOIL REQUIRING EXCAVATION AND TREATMENT

ATTACHMENT C

SUBSURFACE SOIL CONDITIONS/SOIL BORING DATA

GEOLOGIC DRILL LOG

PROJECT NAME AND LOCATION: Kerr-McGee Moss-American Site, Milwaukee, WI

PAGE NO.: 1 of 1 | HOLE NO.: MA-08

START	FINISH	DRILLER	DRILL METHOD	BOREHOLE DIAMETER	WELL DIAMETER	TOTAL DEPTH
6/14/94	6/14/94	MES	3.25" ID HSA	6.00"	NA	8.00'

LOGGER	TOP of CASING ELEV.	GROUND ELEVATION	DEPTH/ELEVATION GROUNDWATER - DATE MEASURED
R. B. Schultz	NA		/'

Coordinate: 0 N.-600 E.

SAMPLE NO.	SAMPLE TYPE	RECOVERY "	SAMPLE BLOWS*	ELEV	DEPTH	GRAPHIC LOG	WELL CONSTRUCTION	CLASS-IFICATION	SAMPLE INTERVAL	DESCRIPTION	OVM readings (in units) BZ: Breathing Zone BH: Borehole SP: Sample HS: Headspace
1	SS	14	4 4 4 3		1			FL CL		**ASPHALT**: approximately 2.5". **CLAY**: slightly silty; dry to slightly moist; trace fine grained gravel; no odor.	SP=0.0
2	SS	6	1 3 4 5		2 3			CL		As above; gray-green stained; trace fine-grained gravel; visible evidence of creosote; odor; slightly moist .	SP=4.0
3	SS	18	3 6 9 12		4 5			CL		As above; creosote in pore spaces; odor; moist but not wet.	SP=5.0, CT=6.0
4	SS	20	5 5 8 13		6 7			CL		As above; groundwater at 6.5'; creosote in pore spaces to 7.8' then no evidence of further contamination.	SP=10.0 SP=0.0, BZ=0.0
					8					END OF BORING AT 8.0'.	

*ASTM D1586 ST = SHELBY TUBE
SS = SPLIT SPOON C = CORE CS = CONTINUOUS SAMPLER
D = DENNISON CT = CUTTINGS BA = BUCKET AUG.

GEOLOGIC DRILL LOG

PROJECT NAME AND LOCATION: Kerr-McGee Moss-American Site, Milwaukee, WI

PAGE NO.: 1 of 1 | HOLE NO.: MA-10

START	FINISH	DRILLER	DRILL METHOD	BOREHOLE DIAMETER	WELL DIAMETER	TOTAL DEPTH
6/13/94	6/13/94	MES	3.25" ID HSA	6.00"	NA	8.00'

LOGGER	TOP of CASING ELEV.	GROUND ELEVATION	DEPTH/ELEVATION GROUNDWATER - DATE MEASURED
R. B. Schultz	NA		/'

Coordinate: 0 N.-900 E.

SAMPLE NO.	SAMPLE TYPE	RECOVERY "	SAMPLE BLOWS*	ELEV	DEPTH	GRAPHIC LOG	WELL CONSTRUCTION	CLASS-IFICATION	SAMPLE INTERVAL	DESCRIPTION	OVM readings (in units) BZ: Breathing Zone BH: Borehole SP: Sample HS: Headspace
1	SS	1	7 4 3 4		1			GM		**GRAVEL**: pushed rock; only some surface gravel material; fine to medium grained; white; no odor.	SP=0.0
2	SS	6	50/6"		2 3			CL		**SILTY CLAY**: dark brown to black; odor of creosote; no product; some staining in soil. *Because of refusal will auger to 4' then drive split spoon 4-6'.	SP=8.0
3	SS	8	7 14 11 9		4 5			CL		**SILTY CLAY**: tan to brown; slight odor of creosote; dry to slightly moist.	SP=5.0, BZ=0.0, CT=0.0 SP=0.0
4	SS	16	6 4 7 9		6 7			CL		As above; more moist downward; trace creosote at 7.2'; slight odor; groundwater at 7.8'; slight odor near groundwater and below; gray silty clay at base.	SP=1.0
					8					END OF BORING AT 8.0'.	SP=0.0

*ASTM D1586
SS = SPLIT SPOON
D = DENNISON
ST = SHELBY TUBE
C = CORE
CT = CUTTINGS
CS = CONTINUOUS SAMPLER
BA = BUCKET AUG.

Kerr-McGee Moss-American Site
Milwaukee, WI

PAGE NO.: 1 of 1 | HOLE NO.: MA-10

GEOLOGIC DRILL LOG

PROJECT NAME AND LOCATION	PAGE NO.	HOLE NO.
Kerr-McGee Moss-American Site, Milwaukee, WI	1 of 1	MA-80

START	FINISH	DRILLER	DRILL METHOD	BOREHOLE DIAMETER	WELL DIAMETER	TOTAL DEPTH
6/22/94	6/22/94	MES	3.25 ID HSA	6.00"	NA	12.00'

LOGGER	TOP of CASING ELEV.	GROUND ELEVATION	DEPTH/ELEVATION GROUNDWATER - DATE MEASURED
D. A. Wardwell	NA		/'

Coordinate: 0 N. - 1050 E.

SAMPLE NO.	SAMPLE TYPE	RECOVERY "	SAMPLE BLOWS*	ELEV	DEPTH	GRAPHIC LOG	WELL CONSTRUCTION	CLASS-IFICATION	SAMPLE INTERVAL	DESCRIPTION	OVM readings (in units) BZ: Breathing Zone BH: Borehole SP: Sample HS: Headspace
1	SS	14	12 3 6 4		1			FL		**FILL**: silty; trace small gravel; trace granular slag fill; dusky yellow-brown; wet.	SP=0.0
2	SS	16	3 4 4 4		2 3 4			OL		**SILT**: organic; black; trace rootlets; damp; freeproduct in fractures.	SP=2.0
3	SS	20	2 1 1 2		5			SC		**SILTY CLAY**: trace gravel; soft; saturated; contamination in water.	SP=0.0
4	SS	0	2 2 2 2		6 7			SC			
5	SS	20	2 1 1 6		8 9			SC		As above; soft; freeproduct in till fractures.	SP=20.0
6	SS	6	6 7 10 22		10 11 12			ML		**SILT**: compact; pale yellow-brown; clean; no visible contamination or odor.	SP=0.0
										END OF BORING AT 12'.	

*ASTM D1586
SS = SPLIT SPOON ST = SHELBY TUBE
D = DENNISON C = CORE CS = CONTINUOUS SAMPLER
CT = CUTTINGS BA = BUCKET AUG.

Kerr-McGee Moss-American Site
Milwaukee, WI

PAGE NO. 1 of 1 | HOLE NO. MA-80

GEOLOGIC DRILL LOG

PROJECT NAME AND LOCATION	PAGE NO.	HOLE NO.
Kerr-McGee Moss-American Site, Milwaukee, WI	1 of 1	MA-76

START	FINISH	DRILLER	DRILL METHOD	BOREHOLE DIAMETER	WELL DIAMETER	TOTAL DEPTH
6/22/94	6/22/94	MES	3.25 ID HSA	6.00"	NA	8.00'

LOGGER	TOP of CASING ELEV.	GROUND ELEVATION	DEPTH/ELEVATION GROUNDWATER - DATE MEASURED
D. A. Wardwell	NA		/'

Coordinate: 0 N. - 2500 E.

SAMPLE NO.	SAMPLE TYPE	RECOVERY "	SAMPLE BLOWS*	ELEV	DEPTH	GRAPHIC LOG	WELL CONSTRUCTION	CLASS-IFICATION	SAMPLE INTERVAL	DESCRIPTION	OVM readings (in units) BZ: Breathing Zone BH: Borehole SP: Sample HS: Headspace
1	SS	18	4 7 5 10		1			TS FL		**TOPSOIL**: silty; sandy; trace gravel. **FILL**: silty; sandy; granular fill; creosote odor; damp.	SP=0.0
2	SS	20	9 10 8 5		2 3			CL		**SILT**: with clay; olive gray; damp; no odor or visible contamination.	SP=0.0
3	SS	13	4 4 4 4		4 5			CL			SP=0.0
4	SS	12	2 2 3 2		6 7			CL			SP=0.0
					8					END OF BORING AT 8'.	

*ASTM D1586
SS = SPLIT SPOON ST = SHELBY TUBE
D = DENNISON C = CORE CS = CONTINUOUS SAMPLER
CT = CUTTINGS BA = BUCKET AUG.

Kerr-McGee Moss-American Site
Milwaukee, WI

PAGE NO. 1 of 1 HOLE NO. MA-76

GEOLOGIC DRILL LOG

PROJECT NAME AND LOCATION					PAGE NO.	HOLE NO.
Kerr-McGee Moss-American Site, Milwaukee, WI					1 of 1	MA-20
START	FINISH	DRILLER	DRILL METHOD	BOREHOLE DIAMETER	WELL DIAMETER	TOTAL DEPTH
6/21/94	6/21/94	MES	3.25" ID HSA	6.00"	NA	10.00'
LOGGER	TOP of CASING ELEV.	GROUND ELEVATION	DEPTH/ELEVATION GROUNDWATER - DATE MEASURED			
D. A. Wardwell	NA		/'			

Coordinate: 0 N.-2650 E.

SAMPLE NO.	SAMPLE TYPE	RECOVERY "	SAMPLE BLOWS*	ELEV	DEPTH	GRAPHIC LOG	WELL CONSTRUCTION	CLASS-IFICATION	SAMPLE INTERVAL	DESCRIPTION	OVM readings (in units) BZ: Breathing Zone BH: Borehole SP: Sample HS:- Headspace
1	SS	12	5 7 7 8		1			FL		**FILL**: silt; sand; gravel; trace slag fill; brown silty clay; pale yellow brown; dry.	SP=0.0
2	SS	2	3 6 9 10		2 3					In fill area; on top of large buried material; railroad ties.	SP=0.0
3	SS	12	1 1 2 3		4 5			CL		**SILTY CLAY**: pale-yellow brown.	SP=0.0
										SILT: organic; dusky yellow brown; wet.	
4	SS	14	2 2 2 3		6 7			MH			SP=0.0
5	SS	24	1 2 3		8 9 10			OH		**MARL**: soft; silty; trace sand; gray; saturated; no visible contamination or odor.	SP=0.0
										END OF BORING AT 10'	

*ASTM D1586
SS = SPLIT SPOON ST = SHELBY TUBE
D = DENNISON C = CORE CS = CONTINUOUS SAMPLER
CT = CUTTINGS BA =BUCKET AUG.

GEOLOGIC DRILL LOG

PROJECT NAME AND LOCATION	PAGE NO.	HOLE NO.
Kerr-McGee Moss-American Site, Milwaukee, WI	1 of 1	FPB-18

START	FINISH	DRILLER	DRILL METHOD	BOREHOLE DIAMETER	WELL DIAMETER	TOTAL DEPTH
6/16/94	6/16/94	MES	3.25" ID HSA	6.00"	2.00"PVC	18.00'

LOGGER	TOP of CASING ELEV.	GROUND ELEVATION	DEPTH/ELEVATION GROUNDWATER - DATE MEASURED
D. A. Wardwell			/'

Coordinate: 150 N. - 1050 E., TW-01.

SAMPLE NO.	SAMPLE TYPE	RECOVERY "	SAMPLE BLOWS*	ELEV	DEPTH	GRAPHIC LOG	WELL CONSTRUCTION	CLASS-IFICATION	SAMPLE INTERVAL	DESCRIPTION	OVM readings (in units) BZ: Breathing Zone BH: Borehole SP: Sample HS: Headspace
1	SS	14	5 7 9 10		1			FL		**ROADFILL**: large white angular gravel; dry; with silt and sand. **FILL**: granular slag fill; glass fragments; sand; silt; slight creosote odor; dry to moist; dirty fill.	SP=0.0
2	SS	12	8 5 3 3		2 3			FL			SP=0.0
3	SS	20	1 2 3 5		4 5			SC		**SILTY CLAY**: glacial till; large angular rock fragments; mottled olive green; moist; creosote contamination in clay fractures.	SP=20.0
4	SS	20	3 5 8 10		6 7			SC			SP=15.0
5	SS	24	3 5 5 6		8 9			SC		As above; evidence of creosote contamination.	SP=20.0
6	SS	20	5 10 11 16		10 11			SC		As above; evidence of creosote contamination.	SP=15.0
7	SS	18	9 12 30 30		12 13			SC		As above; evidence of creosote contamination.	SP=20.0
8	SS	0	8 16 22 19		14 15			SC		No recovery.	
9	SS	24	9 31 33 36		16 17			SC		**SILTY CLAY**: glacial till trace rock fragments; no visible contamination.	SP=0.0
					18					END OF BORING AT 18'. BACKFILL TO 13.0' AND SET WELL.	

*ASTM D1586
SS = SPLIT SPOON ST = SHELBY TUBE
D = DENNISON C = CORE CS = CONTINUOUS SAMPLER
CT = CUTTINGS BA =BUCKET AUG.

GEOLOGIC DRILL LOG

PROJECT NAME AND LOCATION	PAGE NO.	HOLE NO.
Kerr-McGee Moss-American Site, Milwaukee, WI	1 of 1	FPB-23

START	FINISH	DRILLER	DRILL METHOD	BOREHOLE DIAMETER	WELL DIAMETER	TOTAL DEPTH
6/17/94	6/17/94	MES	3.25" ID HSA	6.00"	2.00"PVC	12.00'

LOGGER	TOP of CASING ELEV.	GROUND ELEVATION	DEPTH/ELEVATION GROUNDWATER - DATE MEASURED
D. A. Wardwell	NA		/'

Coordinate: 300 N.- 1050 E., TW-02.

SAMPLE NO.	SAMPLE TYPE	RECOVERY "	SAMPLE BLOWS*	ELEV	DEPTH	CLASS-IFICATION	SAMPLE INTERVAL	DESCRIPTION	OVM readings (in units) BZ: Breathing Zone BH: Borehole SP: Sample HS: Headspace
1	SS	16	6 8 9 10		1	FL		**TOPSOIL**: silty; sandy. **FILL**: gravel road fill As above; granular slag fill; black; dry.	SP=0.0
2	SS	20	15 16 7 9		2 3	SC		**SILTY CLAY**: with clay; dark black to dark green with depth; slightly mottled; damp.	SP=0.0
3	SS	6	12 13 18 22		4 5	GM		**GRAVEL, SAND, SILT**: with some silty clay; saturated at 6'; creosote odor but no visible contamination.	SP=0.0
4	SS	6	16 17 19 20		6 7	GM			SP=0.0
5	SS	24	8 12 14 20		8 9	SC		**SILTY CLAY**: trace contamination in fractures; pale yellow brown 10 YR 6/2; softer; saturated.	SP=0.0
6	SS	16	17 19 21 24		10 11	CL SC		**SILT**: with fine sand; tight; no clay; saturated. **SILTY CLAY**: glacial till; trace angular rock fragments.	SP=0.0
					12			END OF BORING AT 12'	

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GEOLOGIC DRILL LOG

PROJECT NAME AND LOCATION	PAGE NO.	HOLE NO.
Kerr-McGee Moss-American Site, Milwaukee, WI	1 of 1	FPB-16

START	FINISH	DRILLER	DRILL METHOD	BOREHOLE DIAMETER	WELL DIAMETER	TOTAL DEPTH
6/15/94	6/15/94	MES	3.25" ID HSA	6.00"	2.00"PVC	14.00'

LOGGER	TOP of CASING ELEV.	GROUND ELEVATION	DEPTH/ELEVATION GROUNDWATER - DATE MEASURED
D. A. Wardwell			/'

Coordinate: 300 N. - 1200 E., TW-04

SAMPLE NO.	SAMPLE TYPE	RECOVERY "	SAMPLE BLOWS*	ELEV	DEPTH	GRAPHIC LOG	WELL CONSTRUCTION	CLASS-IFICATION	SAMPLE INTERVAL	DESCRIPTION	OVM readings (in units) BZ: Breathing Zone BH: Borehole SP: Sample HS: Headspace
1	SS	10	1 2 2 2		1			TS OH		**TOPSOIL**: in wetland area; dessication cracks; silt; sand; dried out and hard.	SP=0.0
										SILTY CLAY: black; organic; rootlets; dry.	
2	SS	24	3 4 4 4		2			SC			SP=0.0
					3					As above; fine; pale brown; very damp at 3.8'.	
3	SS	24	2 3 3 4		4			SC			SP=20.0
					5						
4	SS	22	4 3 5 9		6			SC		As above; saturated; creosote in clay fractures; creosote contamination from 6-9'.	SP=20.0
					7						
5	SS	22	5 10 9 10		8			SC			
					9					As above; glacial till; hard; damp; trace angular rock fragments; no visible contamination observed.	SP=0.0
6	SS	12	17 10 14 17		10			SC		As above.	
					11						
					12					END OF BORING AT 12'. OVERDRILLED TO 14' AND SET WELL.	

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C = CORE
CT = CUTTINGS
CS = CONTINUOUS SAMPLER
BA = BUCKET AUG.

GEOLOGIC DRILL LOG

PROJECT NAME AND LOCATION	PAGE NO.	HOLE NO.
Kerr-McGee Moss-American Site, Milwaukee, WI	1 of 1	FPB-27

START	FINISH	DRILLER	DRILL METHOD	BOREHOLE DIAMETER	WELL DIAMETER	TOTAL DEPTH
6/20/94	6/20/94	MES	3.25" ID HSA	6.00"	NA	14.00'

LOGGER	TOP of CASING ELEV.	GROUND ELEVATION	DEPTH/ELEVATION GROUNDWATER - DATE MEASURED
D. A. Wardwell	NA		/

Coordinate: 500 N. - 1500 E.

SAMPLE NO.	SAMPLE TYPE	RECOVERY "	SAMPLE BLOWS*	ELEV	DEPTH	GRAPHIC LOG	WELL CONSTRUCTION	CLASS-IFICATION	SAMPLE INTERVAL	DESCRIPTION	OVM readings (in units) BZ: Breathing Zone BH: Borehole SP: Sample HS: Headspace
1	SS	14	1 2 2 2		1			FL		**TOPSOIL**: sandy; silty; brown. **FILL**: granular slag fill; black; brown. **SILT**: organics; wood fragments; rootlets; pale yellow brown; 10 YR 6/2; soft; moist.	SP=0.0
2	SS	14	4 4 5 5		2 3			MH			SP=0.0
3	SS	14	7 10 13 16		4 5			GM		**GRAVEL, SAND, SILT**: large angular gravel pieces >1"; creosote contamination; 4-10'. As above.	SP=0.0
4	SS	14	8 11 14 17		6 7			GM		As above; odor.	SP=20.0
5	SS	18	10 22 27 32		8 9			GM		As above; odor.	SP=20.0
6	SS	0	5 5 5 4		10 11			GM		No recovery	SP=0.0
7	SS	10	5 8 9 11		12 13 14			CL		**SILTY CLAY**: glacial till; soft; saturated; pale yellow brown 10 YR 2/2. END OF BORING AT 14'	SP=0.0

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SS = SPLIT SPOON C = CORE CS = CONTINUOUS SAMPLER
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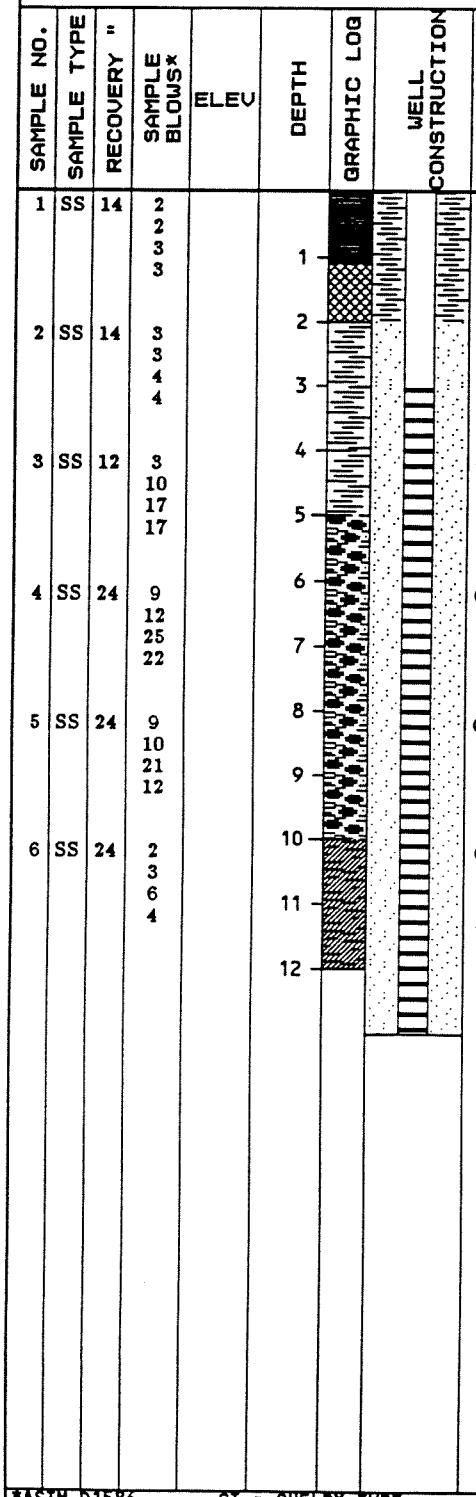
GEOLOGIC DRILL LOG

PROJECT NAME AND LOCATION	PAGE NO.	HOLE NO
Kerr-McGee Moss-American Site, Milwaukee, WI	1 of 1	FPB-0

START	FINISH	DRILLER	DRILL METHOD	BOREHOLE DIAMETER	WELL DIAMETER	TOTAL DEPTH
6/14/94	6/14/94	MES	3.25" ID HSA	6.00"	2.00"PVC	13.00'

LOGGER	TOP of CASING ELEV.	GROUND ELEVATION	DEPTH/ELEVATION GROUNDWATER - DATE MEASURED
D. A. Wardwell			/'

Coordinate: 600 N.- 1350 E., TW-07.



SAMPLE NO.	SAMPLE TYPE	RECOVERY "	SAMPLE BLOWS*	ELEV	DEPTH	CLASS-IFICATION	SAMPLE INTERVAL	DESCRIPTION	OVM readings (in units) BZ: Breathing Zon BH: Borehole SP: Sample HS: Headspace
1	SS	14	2 2 3 3		1	FL		**TOP SOIL**: silty; brown; trace rootlets; trace sand; moist.	SP=0.0
								FILL: granular slag fill; black and orange; dry.	
2	SS	14	3 3 4 4		2 3	OL		**SILT**: soft; organic; black; fragments of red-orange wood; black to gray with depth; grades into marl; trace rootlets; damp to wet.	SP=0.0
3	SS	12	3 10 17 17		4 5	GM			SP=0.0
								GRAVEL, SAND, AND SILT: coarse-grained angular gravel; poorly sorted; gray; saturated; creosote contamination from 7.0' to 10.0'.	
4	SS	24	9 12 25 22		6 7	GM		As above	SP=5.0
5	SS	24	9 10 21 12		8 9	GM		As above.	SP=9.0
6	SS	24	2 3 6 4		10 11 12	OH		**SILTY CLAY**: glacial till; soft; trace rock fragments; pale yellow brown; 10YR 2/2; saturated.	SP=0.0
								END OF BORING AT 12.0'. OVERDRILLED TO 13.0' AND SET WELL.	

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SS = SPLIT SPOON C = CORE CS = CONTINUOUS SAMPLER
D = DENNISON CT = CUTTINGS BA = BUCKET AUG.

GEOLOGIC DRILL LOG

PROJECT NAME AND LOCATION: Kerr-McGee Moss-American Site, Milwaukee, WI

PAGE NO.: 1 of 1 | HOLE NO.: FPB-12

START	FINISH	DRILLER	DRILL METHOD	BOREHOLE DIAMETER	WELL DIAMETER	TOTAL DEPTH
6/15/94	6/15/94	MES	3.25" ID HSA	6.00"	2.00"PVC	14.00'

LOGGER	TOP of CASING ELEV.	GROUND ELEVATION	DEPTH/ELEVATION GROUNDWATER - DATE MEASURED
D. A. Wardwell			/'

Coordinate: 600 N. - 1500 E., TW-08

SAMPLE NO.	SAMPLE TYPE	RECOVERY "	SAMPLE BLOWS*	ELEV	DEPTH	GRAPHIC LOG	WELL CONSTRUCTION	CLASS-IFICATION	SAMPLE INTERVAL	DESCRIPTION	OVM readings (in units) BZ: Breathing Zone BH: Borehole SP: Sample HS: Headspace
1	SS	12	3 3 3 2		1					**TOPSOIL**: silty; sandy; brown; many rootlets.	SP=0.0
										FILL: granular slag fill; sand; silt; trace organics; moist.	
2	SS	14	2 1 2 2		2					**SILTY CLAY**: fine; organic; dusky yellow brown (10YR 2/2); trace wood fragments; damp.	
					3						SP=3.0
3	SS	20	1 3 4 10		4					**MARL**: gray silt; contaminated with creosote; not saturated; presence of free product; only slight contamination.	SP=3.0
					5						
4	SS	18	10 17 22 28		6					**GRAVEL SAND AND SILT**: angular gravel fragments; poorly sorted; evidence of free product contamination; saturated.	SP=4.0
					7						
5	SS	24	9 27 31 35		8					As above.	SP=10.0
					9						
6	SS	16	15 13 5 5		10					**SILTY CLAY**: glacial till; trace rock fragments; pale yellow brown (10YR 6/2); saturated.	SP=2.5
					11						
7	SS	16	3 5 6 4		12					As above.	SP=2.0
					13						
					14					END OF BORING AT 14'.	

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GEOLOGIC DRILL LOG

PROJECT NAME AND LOCATION	PAGE NO.	HOLE NO.
Kerr-McGee Moss-American Site, Milwaukee, WI	1 of 1	FPB-08

START	FINISH	DRILLER	DRILL METHOD	BOREHOLE DIAMETER	WELL DIAMETER	TOTAL DEPTH
6/14/94	6/14/94	MES	3.25" ID HSA	6.00"	2.00"PVC	14.00'

LOGGER	TOP of CASING ELEV.	GROUND ELEVATION	DEPTH/ELEVATION GROUNDWATER - DATE MEASURED
D. A. Wardwell			/'

Coordinate: 650 N. - 1400 E., TW-09.

SAMPLE NO.	SAMPLE TYPE	RECOVERY "	SAMPLE BLOWS*	ELEV	DEPTH	GRAPHIC LOG	WELL CONSTRUCTION	CLASS-IFICATION	SAMPLE INTERVAL	DESCRIPTION	OVM readings (in units) BZ: Breathing Zone BH: Borehole SP: Sample HS: Headspace
1	SS	3	1 1 1 1		1			OL		**SILTY CLAY**: very organic; friable near surface; then pale brown (5Y 5/2); trace rootlets; soft; damp.	SP=0.0
2	SS	20	3 3 3 4		2 3			SC		As above; soft; gray (N 5); marl; increasing grain size with depth; trace clay.	SP=0.0
3	SS	18	2 2 3 5		4 5			SC		As above.	SP=0.0
4	SS	20	9 6 5 5		6 7			GC		**GRAVEL SAND AND SILT**: gray (N 5); large angular gravel; poorly sorted; trace clay; free product saturation.	SP=9.0
5	SS	12	2 3 5 6		8 9 10			OH		**SILTY CLAY**: soft; glacial till; silty; saturated; pale yellow brown (10YR 6/3).	SP=0.0
										END OF BORING AT 10'. OVERDRILLED TO 13.0' AND SET WELL.	

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D = DENNISON CT = CUTTINGS BA = BUCKET AUG.

GEOLOGIC DRILL LOG

PROJECT NAME AND LOCATION	PAGE NO.	HOLE NO.
Kerr-McGee Moss-American Site, Milwaukee, WI	1 of 1	FPB-24

START	FINISH	DRILLER	DRILL METHOD	BOREHOLE DIAMETER	WELL DIAMETER	TOTAL DEPTH
6/20/94	6/20/94	MES	3.25" ID HSA	6.00"	2.00"PVC	13.00'

LOGGER	TOP of CASING ELEV.	GROUND ELEVATION	DEPTH/ELEVATION GROUNDWATER - DATE MEASURED
D. A. Wardwell	NA		/'

Coordinate: 665 N.- 1490 E., TW-10

SAMPLE NO.	SAMPLE TYPE	RECOVERY "	SAMPLE BLOWS*	ELEV	DEPTH	GRAPHIC LOG	WELL CONSTRUCTION	CLASS-IFICATION	SAMPLE INTERVAL	DESCRIPTION	OVM readings (in units) BZ: Breathing Zone BH: Borehole SP: Sample HS: Headspace
1	SS	2	4 2 2 2		1					**TOPSOIL**: silty; sandy; brown. **FILL**: granular slag fill; trace large slag pieces; dry.	SP=0.0
2	SS	2	3 3 3 2		2 3			MH		**SILT**: trace gravel; rootlets; fill; wood fragments; dusky yellow brown 10 YR 2/2; damp.	SP=0.0
3	SS	16	2 3 4 4		4 5			GM		**GRAVEL, SILT, SAND**: coarsening downward from silt to sand to large angular gravel; creosote contamination from 6.8'-9.5'; saturated at 6.8'.	SP=0.0
4	SS	20	4 10 14 22		6 7			GM		As above.	SP=13.0
5	SS	16	14 11 8 6		8 9			GM		As above.	SP=13.0
6	SS	16	2 3 3 3		10 11 12			SC		**SILTY CLAY**: with clay; no angular rock fragments; odor but no visible contamination.	SP=0.0
										END OF BORING AT 12' OVERDRILLED TO 13.0' AND SET WELL.	

*ASTM D1586
SS = SPLIT SPOON ST = SHELBY TUBE
D = DENNISON C = CORE CS = CONTINUOUS SAMPLER
CT = CUTTINGS BA = BUCKET AUG.

ATTACHMENT D

CONTAMINANTS OF CONCERN WITH CONCENTRATIONS AND TREATMENT STANDARDS FOR POLYCYCLIC AROMATIC HYDROCARBONS

Appendix D

Maximum Contaminant Concentrations in Soil
and Maximum Allowable Contaminant Concentrations in Treated Soil
Moss-American Site
Milwaukee, Wisconsin

Constituent	Maximum Soil Concentration[a], mg/kg	Required Concentration After Treatment, mg/kg
Benzene	5.3	0.0055
Toluene	2.0	1.5
Ethylbenzene	4.1	2.9
Total Xylenes	17.0	4.1
Benzo(a)pyrene	300	48
Naphthalene	3200	0.4
Fluorene	3800	100
Total CPAHs[b]	481	3.1 or 1.9[c]

NOTE:
a - Based on RI and TM data and excavated soil analyses.
b - Total CPAHs include: benzo(a)anthracene
benzo(a)pyrene
benzo(b)fluoranthene
benzo(g,h,i)perylene
benzo(k)fluoranthene
chrysene
dibenzo(a,h)anthracene
indeno(1,2,3-cd)pyrene
c - Standard of 3.1 mg/kg applicable if deed restrictions and maintenance agreements in place, otherwise soil must meet 1.9 mg/kg.

ATTACHMENT E

LIST OF ARARs

Appendix E
Potential ARARs
Moss-American Site
Milwuakee, Wisconsin

Potential ARAR	Description/Comments
Potential Federal ARAR	
Floodplains	Executive Order 11988 – protection of floodplains; 40 CFR 6, Appendix A; 40 CFR 18(b).
Wetlands	Executive Order 11990 – protection of wetlands; 40 CFR 6, Appendix A.
Clean Air Act, Section 101	Regional air pollution program addressing emissions during remediation.
Land Disposal Restrictions	40 CFR 268 – on-site management of materials would be handled in a CAMU.
Potential State ARAR	
NR 108	Requirements for Plans and Specifications Submittal for Reviewable Projects and Operations of Community Water Systems, Sewerage Systems and Industrial Wastewater Facilities
NR 116	Wisconsin's Floodplain Management Program
NR 140	Groundwater Quality
NR 406	Construction Permits
NR 415	Control of Particulate Emissions
NR 419	Control of Organic Compound Emissions
NR 440	Standards of Performance for New Stationary Sources
NR 445	Control of Hazardous Pollutants
NR 605	Identification and Listing of Hazardous Waste
NR 620	Transporter Standards and Licensing Requirements
NR 630	Storage, Treatment and Disposal Facility General Standards
NR 665	Incinerator Standards
NR 670	Miscellaneous Unit Standards
NR 675	Land Disposal Restrictions
NR 720	Soil Cleanup Standards

ATTACHMENT F

SAMPLE TERMS AND CONDITIONS OF SUBCONTRACT AGREEMENT

WESTON GENERAL TERMS AND CONDITIONS

1. **Parties.** References herein to **WESTON** mean the entity, division, affiliate or subsidiary corporation of ROY F. WESTON, INC. (**WESTON®**) identified in the Proposal to which these General Terms and Conditions are attached or have been incorporated by reference therein.

2. **Definitions.**

Agreement - The Agreement consists of the Contract Documents as described in Article 3 below.

Access Agreements - All necessary approvals, permits, licenses, easements and consents that relate to or are necessary for performance of **WESTON's** services.

Change Order - **CLIENT's** written request for services differing from the services described in the Scope of Work.

Modification - A written amendment to the Agreement modifying the Scope of Work, the compensation and/or the terms and conditions of the Agreement signed by **CLIENT** and **WESTON**.

Days - A day as used herein means a business day unless otherwise described.

Project Records - Information in documentary, electronic medium or other form relating to performance of **WESTON's** obligations under this Agreement.

Proposal - The letter or document, signed by **WESTON**, to which these General Terms and Conditions are attached or made a part of and which sets forth WESTON's technical and/or cost proposal for the Work.

Scope of Work or Work - The services and products **WESTON** has agreed in its Proposal to provide to **CLIENT** pursuant to this Agreement.

Underground Facilities - Equipment and material beneath the ground surface including but not limited to buried or concealed pipes, tanks, cables, instruments, utilities, and other man-made objects which may affect or be affected by **WESTON's** services.

3. **Contract Documents/Order of Precedence.** The Contract Documents include Modifications, Proposal, WESTON General Terms and Conditions, Scope of Work, Special Terms and Conditions, Specifications and Drawings. In the event of any ambiguity, inconsistency, or conflict between or among the respective Contract Documents, the Contract Documents shall govern in the following descending order of precedence:

(a) Modifications.
(b) Proposal.
(c) Special Terms and Conditions.
(d) General Terms and Conditions.
(e) Scope of Work.
(f) Specifications and Drawings.

In the event of any ambiguity and/or inconsistency between or among Contract Documents having the same caption, a later dated document will take precedence over an earlier dated document.

4. **Changes. CLIENT,** by Change Order furnished to **WESTON,** may request changes within the general scope of the Agreement in the Work to be performed. In order to be an effective request for such a change, any oral request for change in the Work must be confirmed in writing by a Change Order. If any such changes cause an increase in **WESTON's** costs and/or increase the time required for, or the nature of performance of the Agreement, **WESTON** shall so notify **CLIENT** within a reasonable time following receipt of the Change Order and an equitable adjustment in compensation shall be made through a Modification. **WESTON** shall have no obligation with respect to such changes, nor will **WESTON** be considered to be in default for failure or refusal to proceed with such changes until agreement on such cost or time impact has been incorporated into a signed Modification. In the event the Parties fail to agree upon an equitable adjustment to price or schedule resulting from changes sought by **CLIENT** in the Scope of Work, **WESTON** may at its sole option cease the Work without liability, or terminate or suspend this Agreement should **WESTON** determine that it would not be in its best interest to agree to such changes.

5. **Excluded Services. CLIENT** acknowledges that the services and/or products to be provided by **WESTON** under this Agreement include only those services and/or products that are expressly listed in the Scope of Work. **WESTON** shall have no responsibility to provide any services and/or products that are not expressly listed in the Scope of Work. **CLIENT** has made its own determination that any services and/or products that are not listed in the Scope of Work are either unnecessary or will be obtained by **CLIENT** from sources other than **WESTON**.

6. **Force Majeure. WESTON** will not be responsible for delays, such as, but not limited to, those attributable to acts of God, acts of the **CLIENT** or third Parties, weather, intervention of public authorities, work stoppages, changes in applicable laws or regulations after the date of commencement of performance hereunder or any other acts or omissions or events which are beyond the reasonable control of **WESTON**. Costs and schedule commitments shall be subject to renegotiation for unreasonable delays caused by **CLIENT's** or third Party's failure to provide specified facilities or information. The time for performance shall be equitably adjusted in the event **WESTON** is delayed in the performance of this Agreement by such causes and an equitable adjustment in compensation shall be made in accordance with the provisions of Article 4 hereof.

7. **Invoices.**

(A) Invoices will be submitted on **WESTON's** standard invoice format periodically (customarily on a monthly basis), and terms are net cash in U.S. dollars, due and payable upon **CLIENT's** receipt of each invoice.

(B) When the contract payment is based on a cost reimbursement, time and material, labor hour, or fixed rate schedule, the following provisions shall apply:

(i) Where applicable, rental charges will be applied to the Project to cover the cost of pilot-scale facilities, equipment, apparatus, instrumentation or other technical machinery. When such charges are applicable, **CLIENT** will be advised at the start of an assignment, task or phase.

Analyses performed in **WESTON's** laboratories will be billed in accordance with the laboratory's standard billing practices unless specified otherwise in the Agreement.

(ii) Reimbursable expenses shall include but are not limited to: travel and subsistence expenses of personnel (which may be charged on a per diem basis) when away from their home office on business directly or indirectly connected with the Project; identifiable communication, shipping, printing, and reproduction costs; subcontractors; identifiable drafting and stenographic supplies; computer time and software; and expendable materials and supplies purchased specifically for the Work. A ten percent (10%) handling and administrative charge will be added to each reimbursable expense item (as more fully described in **WESTON's** Hourly Charge Rates, if applicable). When **WESTON**, after commencement of the Work, determines that specialized equipment is needed to perform the services, it will notify **CLIENT** of such requirement and purchase the equipment for **CLIENT** as a reimbursable expense.

(iii) Invoices will be submitted on **WESTON's** standard invoice format which will state labor hours worked and total expenses, but will not include original documentation (such as time sheets and expense receipts). If additional detail or actual invoice documentation is requested by **CLIENT**, the labor and expenses associated with retrieval, gathering, sorting, highlighting, mailing and copying supporting documentation will be paid by **CLIENT** and will be billed to **CLIENT** on subsequent invoice(s).

(C) When the method of contract payment is based on a fixed price/lump sum Agreement, invoices will be submitted based on the billing schedule proposed by **WESTON** and agreed to by the Parties.

8. **Payments.** Time is of the essence in the payment of invoices. Timely payment of invoices is a material part of the consideration of the Agreement and failure to pay invoices shall therefore constitute a material breach. Invoices not paid within thirty (30) calendar days of receipt by **CLIENT** are considered overdue and shall be subject to an interest charge at a rate equal to the greater of one and one-half percent (1-1/2%) per month on the overdue balance or the maximum charge permitted by applicable law. **CLIENT** agrees that in the event litigation is instituted by **WESTON** for payment of its invoices, **WESTON** shall be entitled to receive, in addition to all unpaid invoice amounts, interest at the above rate, filing and service costs and reasonable attorney's fees and expenses. In addition, **CLIENT** agrees that **WESTON** may, after giving ten (10) days written notice to **CLIENT**, suspend services without liability until **CLIENT** has paid in full all amounts due **WESTON** on account of services rendered and expenses incurred, including interest on overdue invoices. Invoices shall not be subject to any discount.

Invoice amounts in dispute hereunder shall not affect **CLIENT's** obligation to pay remaining invoice charges and **CLIENT** shall not offset or deduct from amounts payable hereunder any amounts for the purpose of satisfying any other claims **CLIENT** may have against **WESTON** under this or any other Agreement.

9. **Payment of Invoices. CLIENT** shall remit all invoices for more than twenty-five thousand dollars ($25,000.00) through electronic wire transfer of funds to **WESTON's** bank account. Necessary information, such as bank name and account number, may be obtained from WESTON's Project Manager.

CLIENT may remit payment of invoices for less than twenty-five thousand dollars ($25,000.00) to **WESTON's** lockbox account identified below:

Roy F. Weston, Inc.
P. O. Box 62055
Baltimore, MD 21264-2055

10. (A) **Termination for Default.**

Either Party ("Terminating Party") may terminate this Agreement, in writing, if the other Party ("Breaching Party") fails to fulfill its obligations under the Agreement ("breaches") through no fault of the Terminating Party. In such event the Terminating Party may, after giving the Breaching Party an opportunity to cure (as described in the next sentence of this Article 10(A)), declare the Breaching Party in default by issuing a Declaration of Default and terminate the Agreement for cause. Before issuing such Declaration of Default, the Terminating Party shall advise the Breaching Party that a Declaration of Default is imminent by sending the Breaching Party a written notice ("Notice of Imminent Default") by registered or certified mail, return receipt requested, including a description of the conditions constituting breach of the Agreement and providing the Breaching Party a period of time of not less than five (5) days and not more than twenty (20) days within which to correct such conditions to the satisfaction of the Terminating Party. In the event that the Breaching Party does not correct such conditions contained in the Notice of Imminent Default to the satisfaction of the Terminating Party within the designated period of time, the Terminating Party may issue a Declaration of Default and terminate the Agreement effective on the date specified in the Declaration of Default (the "Effective Date"). Disputes arising under this Article, including final payment to **WESTON,** if unresolved amicably, shall proceed in accordance with Article 25 hereof. In the event this Agreement is terminated for default, the Parties shall comply with the Orderly Transfer of responsibility provisions contained in Article 10(C) below.

(B) **Termination/Suspension for Convenience of CLIENT.** The Work may be terminated or suspended by **CLIENT** in accordance with this Article 10(B) when **CLIENT** determines that such termination or suspension is in **CLIENT's** best interests. Any such termination or suspension shall be instituted by delivery to **WESTON** of a written Notice of Termination/Suspension for Convenience specifying the Agreement is being terminated or suspended for the convenience of **CLIENT** and directing **WESTON** to cease the performance of services under the Agreement upon the date of **WESTON's** receipt of such notification (the "Effective Date"). After receipt of the Notice of Termination/Suspension for the Convenience of **CLIENT, WESTON** shall upon the Effective Date cease performing services under the Agreement and as soon as practicable thereafter, **WESTON** shall:

(1) Terminate or suspend all orders and subcontracts to the extent that they relate to the performance of the Work terminated or suspended by the Notice of Termination/Suspension for Convenience.

(2) Assign to **CLIENT** all of **WESTON's** rights, title and interest under the orders and subcontracts so terminated or suspended.

(3) Transfer to **CLIENT** (and **CLIENT** will accept responsibility for) the obligation to satisfy all outstanding liabilities and all unresolved claims arising out of termination/suspension of orders and subcontracts associated with such termination or suspension; **CLIENT** shall release **WESTON** from all such outstanding liabilities and unresolved claims, and **CLIENT** shall indemnify, hold harmless and defend **WESTON** from all losses, costs, damages and expenses, including attorneys' fees and expenses, arising out of or in connection with such outstanding liabilities and unresolved claims.

(4) Transfer the responsibility for site management from **WESTON** to **CLIENT** in accordance with Article 10(C) below.

(5) Submit to **CLIENT** and **CLIENT** shall pay **WESTON's** termination or suspension invoice including, but not necessarily limited to, the total of:

(a) The cost and fees associated with such Work.
(b) The cost of settling and paying claims arising out of the termination or suspension of Work under subcontracts or purchase orders.
(c) Reasonable demobilization costs.
(d) A reasonable allowance for profit.
(e) All costs incurred under Article 10(C) below.

(C) **Orderly Transfer of Responsibility.** To the extent the Work involves **WESTON**-directed activity on site and the Work is terminated or suspended, whether for Convenience of **CLIENT** or for Default, the Parties hereto understand and agree that certain steps (hereinafter referred to as "Orderly Transfer") must be taken to properly implement the termination or suspension. **CLIENT** agrees that all costs of the Orderly Transfer will be borne by **CLIENT**.

Upon notification of termination or suspension, **WESTON** will prepare a memorandum of Orderly Transfer, which will advise **CLIENT** of the steps necessary to shut down the job site or otherwise effect a transition.

Upon completion of the Orderly Transfer, **WESTON** will provide written notification to **CLIENT**. Upon notification by **WESTON, CLIENT** agrees to accept all responsibility for the Work and site, including but not limited to, continued maintenance and protection of the Work and site in accordance with all federal, state, and local laws and regulations.

In the event of termination or suspension of Work under this Agreement, whether for convenience, for default or as otherwise specifically permitted under this Agreement, **CLIENT** accepts full responsibility for continuing operations on the site and to the fullest extent permitted by law, **CLIENT** shall indemnify, hold harmless and defend **WESTON** and its agents and employees from and against any and all claims, liabilities, costs, losses, damages and expenses, including attorneys' fees and expenses, arising out of or resulting from site maintenance, protection and operation of the site following the Orderly Transfer in accordance with this Article 10(C).

11. **Health and Safety.** **WESTON** has established and maintains a Health and Safety program for its employees. A copy of this Health and Safety plan is available for review upon request from **CLIENT. WESTON** specifically disclaims any authority or responsibility for general job site safety and health and safety of persons who are not **WESTON's** employees. Unless otherwise specifically included in the Scope of Work, **WESTON** is not responsible for the work site safety or the safety of any persons on the project site other than **WESTON's** employees.

12. **Standard of Care.** When **WESTON** serves as the professional representative of **CLIENT** or provides any professional services to **CLIENT** under this Agreement, **WESTON** will endeavor to do so in accordance with generally accepted professional standards and practices as applied to similar projects performed under similar conditions prevailing in the community where services are rendered at the time such advice, consultation and/or services are provided by **WESTON.**

The Parties intend that the duty owed by **WESTON** is solely for the benefit of the **CLIENT** and that there is no other Party contemplated to benefit from the Work performed hereunder.

13. **Independent Contractor.** Unless provided otherwise elsewhere in this Agreement, **WESTON** shall provide its services under this Agreement as an independent contractor and its employees shall not be considered to be employees of **CLIENT** in any respect or for any purpose whatsoever.

14. **No Warranty/Guarantee.** Estimates of cost, approvals, recommendations, opinions and decisions by **WESTON** are made on the basis of **WESTON's** experience, qualifications and professional judgment and are not nor should they be considered or construed as warranties or guarantees. **WESTON MAKES NO WARRANTY OR GUARANTEE, EXPRESSED OR IMPLIED, REGARDING THE WORK TO BE PROVIDED UNDER THIS AGREEMENT.**

15. **Hazardous Materials.** **CLIENT** bears full responsibility and liability for the creation, existence or presence of any toxic, hazardous, radioactive, infectious or other dangerous substances existing at the site at the time **WESTON** commences performance of services at the site. **CLIENT** recognizes that when it is known, assumed or suspected that hazardous materials exist on or beneath the surface of the site of the Project or within any structure thereon, certain sampling materials or residues, such as drill cuttings and drilling fluids or asbestos removed for sampling, should be handled as if hazardous or contaminated and **CLIENT** shall so notify **WESTON** and all appropriate federal, state and local public agencies in writing as required that such materials or residues may present a potential danger to the public health, safety and/or the environment. Accordingly, when sampling is included in the Scope of Work and when determined by **WESTON** in its sole discretion to be necessary based on **WESTON's** assessment of the degree of contamination, hazard and risk, **WESTON** will promptly inform **CLIENT** that containerization and labeling of wastes or residues will be performed. **WESTON** will appropriately containerize and label such materials and will leave such containers on the site for proper and lawful removal, transport and disposal by **CLIENT. CLIENT** waives any claim against **WESTON** and agrees to indemnify, defend and hold **WESTON** harmless from any claim, cost, loss, damage, expense or liability, including attorneys' fees and expenses, which may arise as a result of or in connection with the drill cuttings, drilling fluids or

other assumedly hazardous materials being left on the site of the Project after containerization by **WESTON** except where due solely to **WESTON's** negligent acts or omissions. The Parties do not intend for **WESTON** to take title to, control or have final authority with respect to the disposition of any hazardous substance or waste. Accordingly, **WESTON** will not be considered to be a generator, arranger, storer, transporter, operator or disposer of hazardous substances or wastes as a result of activities performed in connection with this Agreement. **CLIENT** shall select and arrange for lawful disposal of any hazardous substance, including but not limited to, samples obtained in connection with work under this Agreement. **WESTON** may execute any manifests or forms in connection with such activity in the name of and on behalf of **CLIENT**.

If and to the extent that **WESTON** is notified of claims in connection with or arising out of the handling, transportation, treatment, storage or disposal of hazardous substances or wastes in connection with the performance of this Agreement, **CLIENT** shall defend, indemnify and hold **WESTON** harmless from and against any and all such claims and any liabilities, costs, losses, damages and expenses, including attorneys' fees and expenses, for or associated with such claims.

16. **Insurance.** **WESTON** agrees to maintain, at its own expense, Worker's Compensation, Commercial General Liability, Automobile Liability, and Professional Liability insurances as follows:

Types of Insurance	Limits of Liability
Worker's Compensation Employer's Liability	Statutory Worker's Compensation $1,000,000 Employer's Liability
Commercial General Liability	$1,000,000 each occurrence $2,000,000 aggregate
Automobile Liability	$1,000,000 each accident or loss All vehicles including hired and non-owned
Professional Liability (including Pollution Errors and Omissions)	$1,000,000 per single claim/aggregate
Contractor Pollution Liability Insurance	$1,000,000 per single claim/aggregate

WESTON will, upon request, furnish appropriate insurance certificates to **CLIENT**. **WESTON** agrees to indemnify **CLIENT** for the hazards covered by **WESTON's** insurance subject to the limitation of liability contained in Article 18. **WESTON** agrees to purchase such additional insurance as may be requested by **CLIENT** (if such insurance is available), provided the costs (including **WESTON's** administrative costs) for such additional insurance are reimbursed by **CLIENT**.

17. **Indemnity.** Subject to the Limitation of Liability contained in Article 18 of this Agreement, **WESTON** shall defend, indemnify and hold **CLIENT** harmless from liability for claims, liabilities, losses, costs, damages and expenses, including attorneys' fees and expenses, for bodily injuries or death, property loss or damage, caused solely by the negligent acts or omissions or willful misconduct of **WESTON**, provided that **WESTON** shall not be responsible for and **CLIENT** shall defend, indemnify and hold **WESTON** harmless from any such claims, liabilities, losses, costs, damages and expenses, including attorneys' fees and expenses, arising from the negligence, acts or omissions of **CLIENT**, or **CLIENT's** agents, representatives or employees.

CLIENT shall defend, indemnify and hold **WESTON** harmless from all liability, claims, losses, costs, damages and expenses, including attorneys' fees and expenses, for personal injuries, including death, property loss or damage, injuries to others (including employees of **CLIENT**, **WESTON**, and their subcontractors), and air, water or ground pollution or environmental impairment arising out of or in any manner connected with or related to the performance of the Agreement, unless such injury, loss or damage is caused solely by the negligent acts or omissions or willful misconduct of **WESTON**. **CLIENT** shall indemnify, defend, and hold **WESTON**, its subsidiaries and affiliates, its employees and agents harmless against all claims, liabilities, losses, costs, damages and expenses, including attorneys' fees and expenses (other than liability caused solely by **WESTON's** negligent acts or willful misconduct) arising from or in connection with the violation or alleged violation of **CLIENT's** or any third Party's trade secrets, proprietary information, trademark, copyright or patent rights in connection with the performance of the Work hereunder. **CLIENT's** obligation to indemnify, defend and hold harmless **WESTON** or any employee or agent under this or any other provision of this Agreement will survive the expiration or termination of this Agreement. **WESTON** shall promptly notify **CLIENT** of any third Party claim known to **WESTON** and **CLIENT** may, at its option, participate in the defense of any such third Party action and **WESTON** shall cooperate with such defense.

Claims against **WESTON** under this Indemnity provision are considered disputes and shall be subject to Article 25 hereunder.

18. **Limitation of Liability.** Notwithstanding any other provision of these General Terms and Conditions, and unless a higher limit of liability is expressly provided elsewhere in this Agreement in a provision making specific reference to this Article 18, **WESTON's** total liability to **CLIENT** for any loss or damage from claims under, arising out of or in connection with this Agreement from any cause, matter or event, including but not limited to **WESTON's** strict liability, breach of contract, tort or professional negligence, errors or omissions and/or any other basis, shall not exceed the lesser of (a) the total amount paid by **CLIENT** to **WESTON** under this Agreement or (b) the proceeds, if any, available from **WESTON's** liability insurance as specified in Article 16 hereof. **CLIENT** hereby releases **WESTON** from any liability exceeding such limited amount. In no event shall either Party be liable to the other for special, indirect, punitive, incidental or consequential damages whether or not such damages were foreseeable at the time of the commencement of the Work.

19. **WESTON Employees.** During the term of this Agreement and for a period of six (6) months after completion or termination of this Agreement, **CLIENT** shall not offer to employ or actually employ any **WESTON** employee assigned to the Work. **CLIENT** agrees that **WESTON** may utilize employees of any of **WESTON's** subsidiary companies and affiliates in the performance of this Agreement.

20. **Site Conditions/Site Access.** **CLIENT** will provide **WESTON** access to the site. Before the start of work, **CLIENT** shall provide **WESTON** or advise **WESTON** of the location of any and all existing environmental information, including but not limited to, studies, reports, laboratory analyses and underground facilities known to **CLIENT** or in **CLIENT's** possession or control or which it has reason to believe exist which may be pertinent to the Work. **WESTON** shall not be liable for damage, or bodily injury or death arising from damage, to subterranean structures (e.g., pipes, tanks, cables, etc.) when such structures are not called to **WESTON's** attention and/or accurately shown on plans furnished to **WESTON** by **CLIENT** in connection with the Work performed under this Agreement. **CLIENT** represents that it has obtained or will obtain permission on behalf of **WESTON** to enter all property required for inspection and performance of **WESTON's** services hereunder, including any access agreements, from all necessary Parties before start of the Work on such property.

21. **Confidentiality.** **WESTON** shall maintain as confidential and not disclose to others without **CLIENT's** prior written consent, any information or documents obtained from **CLIENT** expressly designated by the **CLIENT** in writing to be "CONFIDENTIAL." The provisions of this Article shall not apply to information in any form which (a) is published or comes into the public domain, (b) is already known to or by the receiving Party, (c) is furnished by or obtained from a third Party which is under no obligation to keep the information confidential, or (d) is required to be disclosed by law or pursuant to a court order or subpoena of a court, administrative agency or other authority with proper jurisdiction.

Notwithstanding anything to the contrary set forth herein, it is understood by **CLIENT** that **WESTON** is or may be subject to certain legal and ethical considerations and obligations depending upon the nature and Scope of Work rendered hereunder which may require **WESTON** to disclose facts observed by **WESTON** to third Parties. In such event, **WESTON** shall advise **CLIENT**, but shall, subject to any legal or professional obligation as determined by **WESTON's** counsel to immediately disclose such facts, refrain from making any such disclosure until **WESTON** and **CLIENT** have conferred with respect to such facts. If for any reason the Parties are unable to confer or if **WESTON** believes on the advice of counsel that it must disclose such facts, **WESTON** shall notify **CLIENT** of its intention to disclose such information prior to actual disclosure to third Parties. Any such disclosure shall not be deemed a violation or breach of this Agreement and **CLIENT** agrees that **WESTON** shall be and is hereby released from any liability, claim or cause of action whatsoever with respect to such disclosure.

CLIENT agrees that **WESTON** may use and publish **CLIENT's** name and a general description of **WESTON's** services with respect to the Work in describing **WESTON's** experience and qualifications to other clients and potential clients.

WESTON's technical and pricing information contained in the Proposal or Agreement is considered confidential, proprietary information constituting a trade secret and is not to be disclosed or otherwise made available to third Parties without the prior written consent of **WESTON**.

22. **Use of Project Records.** All Project Records, including but not limited to, drawings and specifications, prepared or furnished by **WESTON** (including **WESTON's** independent professional associates, consultants and subcontractors) pursuant to this Agreement are instruments of service regarding the Work. **CLIENT** may make and retain copies for information and reference in connection with the Work; however, Project Records are not intended or represented to be suitable for any use other than the use specified in the Contract Documents. Any reuse of Project Records without prior written verification or adaptation by **WESTON** for the specific purpose intended in this Agreement will be at **CLIENT's** sole risk and exposure and without liability or legal exposure to **WESTON**, or to **WESTON's** independent professional associates, consultants or subcontractors. **CLIENT** shall indemnify, defend and hold harmless **WESTON** and **WESTON's** independent professional associates, consultants and subcontractors from and against any and all claims, liabilities, losses, costs, damages and expenses whatsoever, including attorneys' fees and expenses, arising out of or resulting from reuse of any such Project Records without **WESTON's** express, prior written approval of reuse. Any verification or adaptation agreed to by **WESTON** will entitle **WESTON** to compensation at rates to be agreed upon by **CLIENT** and **WESTON** at that time.

23. **Records Retention.** It is **WESTON's** practice and policy to retain Project Records including reports, drawings and correspondence developed during performance of the Agreement for a period of three (3) years after project completion. Such records may be maintained on electronic or other media, as **WESTON** may deem appropriate. In the event **CLIENT** desires Project Records to be maintained for an additional period of time or in specific media, upon **CLIENT's** written request to **WESTON**, such records shall either (a) be delivered to **CLIENT** or (b) be retained by **WESTON** for additional period(s) of time for a reasonable additional charge.

24. **Services.** It is understood and agreed that the Work performed and related products furnished to **CLIENT** under this Agreement are not subject to any provision of any Uniform Commercial Code.

25. **Disputes.** Unless the law provides a shorter limitations period (in which event that shorter limitations period shall apply), all disputes between the Parties arising out of or in connection with this Agreement must be brought within three (3) years of the commencement of the Work hereunder. All disputes between the Parties arising out of or in connection with this Agreement shall be resolved by submission to Mediation and Arbitration in Philadelphia, PA, or such other place as otherwise agreed in writing by the Parties as described below:

(A) **Mediation**

The Parties shall attempt in good faith to mediate each dispute and use their best efforts to reach agreement on the matters in dispute. Either Party may make written request for non-binding mediation, which shall specify in reasonable detail the facts of the dispute, and within ten (10) days from the date of delivery of the demand, the matter shall be submitted to Mediation in accordance with the American Arbitration Association Construction Industry Mediation Rules. The Mediator shall hear the matter and, if requested by the Parties, provide an informal opinion and advice, none of which shall be binding upon the Parties, but is expected by the Parties to help resolve the dispute. Said informal opinion and advice shall be submitted to the Parties within twenty (20) days following written request for same. The Mediator's fee shall be shared equally by the Parties. If the dispute has not been resolved within 120 days of submission of the request for Mediation, the matter shall then be submitted to Arbitration in accordance with Article 25(B) below:

(B) **Arbitration**

All claims, counterclaims, disputes and other matters in dispute between the Parties hereto arising out of or relating to this Agreement or the breach thereof not otherwise resolved in accordance with Article 25(A) hereof shall be decided by Arbitration in Philadelphia, PA, or such other places as otherwise agreed in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then obtaining, subject to the limitations and restrictions stated in Article 25(B)(1) and Article 25(B)(2) below. This Agreement to so arbitrate and any other agreement or consent to arbitrate will be specifically enforceable under the prevailing arbitration law by any court having jurisdiction.

(1) Notice of demand for arbitration must be filed in writing with the other Party or Parties to this Agreement and with the American Arbitration Association. The demand must be made within a reasonable time after the claim, dispute or other matter in question has arisen. In no event may the demand for Arbitration be made after the time when institution of legal or equitable proceedings, based on such claim, dispute or other matter in question, would be barred by this Agreement or by the applicable statute of limitations or statute of repose.

(2) No arbitration arising out of or relating to this Agreement may include, by consolidation, joinder or in any other manner, any person or entity who is not a Party to this Agreement.

(3) Only by written consent signed by all the Parties to this Agreement and containing a specific reference thereto, may the limitations and restrictions contained in Article 25(B)(1) and Article 25(B)(2) be waived in whole or in part as to any claim, counterclaim, dispute or other matter.

(4) The award rendered by the arbitrators will be final, not subject to appeal, and judgment may be entered upon it in any court having jurisdiction thereof.

(5) In the event of any disputes between the Parties to this Agreement the Arbitrator shall award the prevailing party, in addition to all other appropriate relief, its reasonable costs and attorney's fees.

26. **No Third Party Beneficiary.** **WESTON's** services are performed for the sole and exclusive benefit of **CLIENT**. This Agreement does not create, and is not intended to create, any right or benefit for anyone other than **CLIENT** and **WESTON**.

27. **Sales and Use Tax.** Pending a final ruling by appropriate tax authorities with respect to the imposition of a State Sales and Use Tax applicable to **WESTON's** professional services, **CLIENT** acknowledges that the obligation to pay sales and use tax, if ruled applicable to **WESTON's** services, is **CLIENT's** obligation as purchaser. **CLIENT** agrees to pay such sales and use tax and hereby releases, indemnifies and holds **WESTON** harmless from any and all claims related to sales and use tax as it applies to **WESTON's** professional services provided under this Agreement.

28. **Severability/Savings.** The provisions of this Agreement shall be deemed severable and the invalidity or unenforceability of any of the provisions hereof shall not affect the validity and enforceability of the other provisions hereof. If any provision of this Agreement is unenforceable, for any reason whatsoever, such provision shall be appropriately limited and given effect to the extent that it may be enforceable.

29. **Assignment.** Neither Party shall assign, or otherwise transfer this Agreement or any rights or obligations hereunder to a subsidiary, successor, affiliate or any third Party, except as expressly provided herein, without the prior written consent of the other Party. Any attempted assignment will be null and void and without force and effect. Nothing hereunder shall prevent **WESTON** from employing such professional associates, subcontractors and consultants as **WESTON** deems appropriate to assist **WESTON** in the performance of services.

30. **Litigation Services.** **CLIENT** and **WESTON** agree that the Work performed hereunder may involve some form of legal process or proceedings during or after performance of the project. Such legal process or proceedings may include production of records, forms of discovery such as depositions and interrogatories, filings and court testimony.

CLIENT agrees that if **WESTON** is required to participate in or otherwise respond to such legal process or proceedings in which **WESTON** is not a Party, **CLIENT** shall compensate **WESTON** for its efforts in so doing, including but not limited to, expenses, labor, document reproduction costs, travel expenses, legal fees, etc., reasonably incurred in connection with its efforts in responding to such legal process or proceedings.

31. **Governing Law.** The interpretation and enforcement of this Agreement is to be governed by and construed in accordance with the laws of the Commonwealth of Pennsylvania.

32. **Entire Agreement.** This Agreement represents the entire and integrated Agreement between the Parties and supersedes all other prior negotiations, representations or agreements, either written or oral.

Any terms and conditions set forth in **CLIENT's** purchase order, requisition, or other notice of authorization to proceed are inapplicable to the Work, except when specifically provided for in full on the face of such purchase order, requisition, or notice or authorization and specifically accepted in writing by **WESTON**. **WESTON's** acknowledgment of receipt of any purchase order, requisition, notice or authorization or **WESTON's** performance of Work subsequent to receipt thereof does not constitute acceptance of any terms or conditions other than those set forth in this Agreement.

ATTACHMENT G

ADHERENCE TO OWNER'S CONTRACTOR SAFETY REQUIREMENTS

CONTRACTOR SAFETY AND HEALTH PROGRAM (SUPPLEMENT)

A. MINIMUM SAFETY AND HEALTH GUIDELINES FOR CONTRACTORS

Safety and health guidelines for contractor employees performing work on Kerr-McGee premises are based on the nature of the work to be performed and the associated potential hazards. Recommended guidelines for different types of contractors, contract work and work locations are categorized and defined in this document.

For contractor employees covered by policy 50.07, orientation and training for site-specific hazards, procedures and rules should be required. While it is the contractor's responsibility to provide or obtain the necessary training for each contractor employee prior to starting work on Kerr-McGee property, Kerr-McGee should verify contractor's training status. In some cases, Kerr-McGee may agree to provide certain site-specific orientation and training.

The requirements of Corporate Policy No. 50.07 do not necessarily apply to contractor employees who, in the judgment of the operating unit head or his designee, have little or no exposure to worksite hazards. Such exemption may be applied to certain short-term, minimal-risk contractors usually working one day or less. Visitor safety and health rules in effect at the respective worksite should apply at all times when the worksite is entered.

For purposes of this guideline, contractors covered by the policy are classified into three categories; Low-Risk Contractor, Stand-Alone Contractor, and Process/Maintenance Contractor. Each category represents incremental levels of perceived risk and requires more stringent guidelines. If the appropriate contractor category is in doubt, the more stringent category should apply.

Recommended guidelines for the three contractor categories are as follows:

1. LOW RISK CONTRACTORS - Contractors in this category include those who, by the nature, location and duration of the work to be performed, are limited to low hazard exposure risks that can affect themselves or Kerr-McGee employees.

   Low risk contractors should:

   a. Have a written, executed contract.

   b. Comply with facility access control procedures (sign in/out procedures or other notification procedures acceptable to Kerr-McGee).

c. Limit travel on company premises and facilities to that necessary for performing the work or services contracted.

d. Comply with the substance abuse policies in effect for the organization or facility at which the work or services are performed.

e. Become familiar with the physical characteristics of the worksite, including familiarization with emergency evacuation procedures.

f. Provide safe, functional equipment - including approved personal protective equipment and clothing appropriate for the type of work and work location and maintain such equipment in good working condition.

g. Be subject to Kerr-McGee inspection, testing and acceptance of contractor-provided equipment.

h. Obtain Kerr-McGee approval of subcontractors before utilization on company premises. Subcontractors should meet the same safety and health requirements and provide the same information to Kerr-McGee as required of contractors.

i. Report all worksite accidents, injuries and occupational illnesses to the appropriate Kerr-McGee personnel in accordance with the applicable regulatory recordkeeping guidelines.

2. STAND-ALONE CONTRACTORS - Stand-alone projects (typically new site construction) are those contracted projects which are neither subject to hazards from Kerr-McGee operations nor capable of causing contributory risk to Kerr-McGee employees, operations or processes. However, contract employees are subject to risk from the job being preformed by the contractor. For stand-alone projects, contractors should comply with all requirements for Low-Risk Contractors, applicable regulations and company safety rules pertaining to their work, and:

a. Provide to Kerr-McGee a completed Contractor Safety and Health Screening Questionnaire (Form KM-5963).

b. Provide documentation that appropriate credentials, permits or licenses are in order for performing the contracted work, e.g. licensed electrician, certified crane operator, certified welders, certified hazardous waste removal, etc.

c. Provide documentation that contractor employees have been trained and properly fitted for all personal protective equipment required to perform the contract work or services, including respirator fit testing and medical clearance for each contractor employee whose work will require regular use of respiratory protection.

d. Provide documentation pertaining to inspections and certification of contractor construction equipment where required by law or company contract provision.

e. Promptly notify appropriate company personnel of any regulatory agency inspection of contractor activities while on company property.

3. PROCESS/MAINTENANCE CONTRACTORS - This category includes contractors who are typically involved with day-to-day process operations, maintenance, construction, or major plant modifications with existing facilities, or whose work activity and location creates potential hazard exposure to themselves as well as Kerr-McGee employees, facilities and processes.

In addition to compliance with the requirements of the provisions of the previous two categories, contractors in this category should:

a. Comply with the safety and health rules and procedures in effect for the facility, activity or process where the contract work is to be performed, including use of appropriate personal protective equipment and clothing. For specialized contract work such as asbestos removal, or major contract projects such as maintenance "turnarounds," appropriate requirements shall be specified in the contract.

b. Obtain prior authorization from Kerr-McGee, including appropriate work permits where required by company procedures or regulation for work involving hazardous areas, confined spaces, hot work, high voltage electrical, pressure testing, line breaking, ground breaking, excavations and trenches, elevated work, or other work on active processes or energized systems.

c. Follow company procedures in effect for notification and exchange of information regarding known hazards created during the performance of work.

B. CONTRACTOR SCREENING/SELECTION REQUIREMENTS

1. Prospective contractors whose work will categorize them as stand-alone or process/maintenance contractors should complete and submit a Kerr-McGee Contractor Safety and Health Screening Questionnaire (Form KM-5963). Within 24 months of the effective date of policy 50.07, contractors should not be considered for work on Kerr-McGee premises unless it is verified that:

   a. The prospective contractor's Experience Modification Rate (EMR) for the previous year is no higher than 1.00, or the previous three-year average does not exceed 1.20, and;

   b. The prospective contractor's three-year average injury incidence rates for cases involving days away from work and total recordable cases are not greater than the most current corresponding national industrial rates for the Standard Industrial Classification (SIC) in which the contractor works.

      These rates may be determined from the most recent edition of the U.S. Bureau of Labor Statistics publication "Occupational Injuries and Illness in the United States by Industry". These are available from the Corporate Safety Division.

EXEMPTIONS: In extraordinary circumstances, contractors not meeting either of the above requirements may be allowed to work on company property provided they are acceptable to - and a specific exemption is granted by - the organizational unit head or designee.

2. Bid invitation "packages" provided to prospective contractors by Kerr-McGee shall include safety and health requirements for the work to be contracted.

3. The Contractor Safety and Health Screening Questionnaire may be used for development of a "pre-qualified" list of acceptable contractors. Once pre-qualified, these contractors may perform work requiring immediate attention, provided a current contract, Master Work or Service Agreement for each contractor is on file.

4. Pre-qualified contractors and supporting Master Work or Service Agreements should be reviewed by the appropriate operating unit personnel at least annually for determination that the contractor continues to qualify, and that the Master Work or Service Agreement continues to reflect applicable safety and health requirements.

5. Outstanding Contracts, Master Work or Service Agreements in force on the effective date of this policy should be reviewed for compliance with this policy at the earliest date possible, compatible with the terms of the contract. Thereafter, all existing and prospective contractors should be subject to this safety and health evaluation and selection process.

6. At the discretion of the Unit Head or his designee, Kerr-McGee may agree to provide specialized safety and health training to certain small contractors (<10 employees) to ensure compliance with this policy. In these cases, the completion of the Contractor Safety and Health Screening Questionnaire is optional.

C. CONTRACT PROVISIONS

1. The contractor should provide Kerr-McGee with written verification that contract safety and health requirements have been reviewed with contractor employees and that those employees understand the requirements.

2. All construction or service work should be represented by an approved, written, executed Master Work or Service Agreement, Construction or Field Services Agreement, or job-specific Contract appropriate to the work to be performed.

3. Anticipated safety and health requirements shall be addressed in all agreements. Contract addenda should be used when necessary for clarification.

   a. Guidelines appropriate to the contractor category (as described in Section A) should be included. Safety and health protection appropriate to the potential hazards associated with the location, methods, materials, and processes, shall be specific. Some examples of work requiring specialized provisions include asbestos removal, hazardous waste operations, working in hazardous atmospheres, and confined-space entry. Contract requirements for this type of specialized work should be developed by the project manager with the assistance of corporate, organizational unit, and facility support groups.

   b. Contracts or addenda should contain requirements for reporting to Kerr-McGee contractor accidents, injuries and illness, in accordance with the applicable regulatory recordkeeping guidelines. Contractor employee hours worked while on company premises shall also be reported, or estimated when not available. This information will be submitted to the Corporate Safety Division each month by the operating unit, as received from the contractor.

c. Contracts or addenda should require the contractor to obtain company approval of prospective subcontractors before such subcontractors are allowed on company premises.

d. Safety and health requirements contained in Master Work or Service Agreements and Construction or Field Services Agreements shall be reviewed for appropriateness and revised as necessary prior to contract renewal. Responsibility for contract review and revision should rest with the project manager under the direction of the facility manager or organizational unit head or their designees. Corporate, organizational unit and facility support groups should promptly provide information to the project manager regarding changes in safety and health requirements when they occur.

4 A checklist should be used to review all contract requirements for completeness. Each operating unit should determine the appropriate checklist elements for its specific program and the criteria that determine the acceptability or disqualification of a contractor.

D. CONTRACT ADMINISTRATION

Knowledgeable staff should be assigned before any contract is executed to properly define the work and outline necessary safeguards for its performance. Similarly, adequate attention must be given to oversight of the actual work performed once the contract has been executed.

In developing the operating unit's Contractor Safety and Health Program, the unit head should designate resources sufficient to perform all of the required functions of contract execution, administration and enforcement.

Shown below is a list of administrative functions that should be considered when developing Contractor Safety and Health programs. This list should be used a guide only and is not intended to be appropriate for all contract situations.

1. Evaluate and select contractors.

2. Conduct pre-startup meeting(s) with contractor (when needed).

3. Ensure that contractor has a clear understanding of Kerr-McGee's safety and health requirements.

4. Verify that all necessary contract documents are in order, properly executed, distributed and filed.

5. Monitor contractor's performance to ensure that contractor complies with agreed-upon safety and health requirements.

6. Conduct routine inspections of contractor performance.

7. Ensure that necessary work permits for jobs such as hot work, confined space, pressure testing and opening of lines are properly issued and complied with.

8. Determine if and when corrective action is needed and (in conjunction with operating unit management) provide counseling and/or take disciplinary action as required.

9. Ensure that require documentation is retained in accordance with Corporate Policy 30.02.

CONTRACTOR SAFETY AND HEALTH SCREENING QUESTIONNAIRE [illegible]

Please complete this form and return it to the undersigned at your earliest convenience. This information will be used in the evaluation of contractors for our various projects.

SEND COMPLETED QUESTIONNAIRE TO:

Obtain from your insurance agent (or state fund, if applicable) your workers compensation insurance experience modification rate (EMR) for the three rating periods and complete the following:

	POLICY YEAR	EMR
Most recent policy year		
1 year prior		
2 years prior		

If your EMR is exactly 1.0 for any policy year, is it because your firm is (or was) too new or too small to have an EMR calculated? ☐ YES ☐

We require verification for the above information. Any of the following methods will be acceptable:

a. Furnish a letter from your insurance agent, insurance carrier, or state fund (on their letterhead) verifying the EMR data listed above; or

b. Provide a copy of the last three years' "Experience Rating Calculation Sheets," which your insurance carrier should forward to you annually; or

c. Provide a copy of the page of your last three years' insurance policies that show the experience modification rate and the coverage period.

If you were required to complete OSHA 200-S reports for the last three years, please attach copies. If you were not required to complete OSHA 200-S reports, please provide the following information:

Three previous calendar years	19___	19___	19___
Number of employees			
Number of medical-treatment cases*			
Number of lost-workday cases**			
Number of fatalities			
Exposure hours***			
Number of lost workdays****			

DEFINITIONS

* Medical Treatment Case — A case resulting from a work accident or illness that does not result in lost-time or restricted work where contractor employee receives medical treatment administered by a physician or by registered personnel under the standing orders of a physician. Medical treatment does not include first-aid cases, even though first aid is administered by a physician or registered professional personnel, but does include loss of consciousness or incidents that require more than one dose of prescription medicine.

** Lost-workday case — Any injury or illness that results in the employee being unable to work the next scheduled shift, and any injury or illness where the employee, following medical treatment, is:

- assigned to a temporary job,
- working at a permanent job less than full time, or,
- working at a permanently assigned job but unable to perform all duties normally required.

*** Exposure hours — Number of actual hours worked by employees during the calendar year.

**** Lost workdays — Number of days injured or ill employees were scheduled to work but could not.

☐ Non-Residential Building (SIC 15) ☐ Heavy (Non-Highway) Construction (SIC 16) ☐ Contractors (SIC 17) ☐ (Explain)

ARE INJURY AND ILLNESS REPORTS OR REPORT SUMMARIES SENT TO THE FOLLOWING?	CHECK ONE YES	NO	HOW OFTEN
Field Superintendent			
Vice-President of Construction			
President of Firm			

SAFETY OFFICER/DEPT. IN COMPANY ☐ Yes ☐ No | IF YES, GIVE NAME, TITLE AND TELEPHONE

PROJECT SAFETY AND HOUSEKEEPING INSPECTIONS CONDUCTED ☐ Yes ☐ No | IF YES, INSPECTIONS CONDUCTED BY (NAME AND TITLE) | HOW OFTEN

List names and expected positions of key supervisory personnel planned for work in Kerr-McGee facilities.

NAME	POSITION

WRITTEN SAFETY PROGRAM AVAILABLE ☐ Yes ☐ No | SITE SAFETY MEETINGS HELD BY FIELD SUPERVISORS ☐ Yes ☐ No | IF YES, HOW OFTEN

SAFETY AND HEALTH TRAINING PROGRAM AVAILABLE FOR NEW EMPLOYEES ☐ Yes (See Below) ☐ No

IF YES, DOES IT INCLUDE INSTRUCTIONS ON THE FOLLOWING?	OSHA* 29 CFR 1926	CHECK ONE YES	NO	MEETS OSHA REQUIRE YES	
General Safety and Health Provisions	Subpart C				
Occupational Health and Environmental Controls	Subpart D				
Personal Protective and Life Saving Equipment	Subpart E				
Fire Protection and Prevention	Subpart F				
Signs, Signals and Barricades	Subpart G				
Tools - Hand and Power	Subpart I				
Welding and Cutting	Subpart J				
Electrical	Subpart K				
Ladders and Scaffolding	Subpart L				
Cranes, Derricks, Hoists, Elevators, Conveyors	Subpart N				
Motor Vehicles, Mechanized Equipment, Marine Operations	Subpart O				
Excavations, Trenching and Shoring	Subpart P				
Concrete, Concrete Forms and Shoring	Subpart Q				
Steel Erection	Subpart R				
Tunnels and Shafts, Compressed Air	Subpart S				
Demolition	Subpart T				
Blasting and Use of Explosives	Subpart U				
Power Transmission Distribution	Subpart V				

DO YOU CONDUCT?	CHECK ON YES	
Pre-employment physicals		
a. Pulmonary function tests		
b. Respirator use medical clearance		
Drug Screening for new employees (If yes, furnish a copy of the program)		

* If applicable

IF YES, DOES IT INCLUDE THE FOLLOWING?	YES	NO
Safe work practices		
Inspection techniques		
Toolbox safety meetings		
Emergency procedures		
First-aid procedures		
Accident prevention		
Fire protection and prevention		
Prework orientation		
Post construction clean-up and orientation		
Hazard communication		

QUESTIONS	CHECK ONE YES	NO
Have you ever been inspected by OSHA or MSHA?		
If yes, have citations been issued in last 3 years? (Attach copies of citations)		
Do you conduct inspections and tests of construction equipment, for example: slings, cranes, hand and power tools, electrical supply, ground fault circuit interrupters?		
Are records prepared and maintained as required by federal and state laws?		

If operators of equipment are certified, enter name of person/organization/consultant providing certification for:

CRANES

MOBILE EQUIPMENT

FORK LIFT TRUCKS

COMMENTS

QUESTIONNAIRE COMPLETED BY

NAME | TITLE

COMPANY

ADDRESS

TELEPHONE | DATE

This evaluation form is to be completed and [illegible] by [illegible] (Form KM-5963), following review.

This document is confidential and shall not be given to prospective contractors.

CONTRACTOR/COMPANY NAME

The average Workers' Compensation Experience Modification Rate (EMR) is 1.0. Less than 1.0 is better than average. An EMR equal to or greater than 1.2 for any single year requires further investigation, and an exception must be granted by the Organizational Unit Head or his designee.

COMMENTS

From the information provided in the Safety and Health Screening Questionnaire (KM-5963), or OSHA 200-S reports, calculate an annual all injury incidence rate for each calendar year indicated.

Incidence Rate = $\frac{200{,}000 \times \text{Total number of medical treatment cases, lost workday cases, fatalities}}{\text{Total number of employee exposure hours}}$

Incidence Rate for 19 _____ = _____ 19 _____ = _____ 19 _____ = _____

INDUSTRY OR SIC CODE | MOST CURRENT NATIONAL AVERAGE ALL INJURY INCIDENCE RATE FOR SIC CODE LISTED *

* Contact your local Safety department or Corporate Safety for national average all injury incidence rates and acceptable contractor incidence rates.

COMMENTS

Prospective contractor responses to contractor safety and health training program questions in form KM-5963 should be "yes" to indicate the presence of an ideal contractor safety program. Any "no" response should be evaluated further and considered in the selection process.

COMMENTS

EVALUATION (Check One)

☐ The information submitted by the contractor indicates acceptable safety performance as experienced by the particular industry. A basic safety program appears to be in place.

☐ The information submitted indicates the contractor has unacceptable safety performance or does not appear to have a basic s[illegible] program in place.

NAME (PRINT)

SIGNATURE | DATE

ATTACH TO CONTRACTOR SAFETY AND HEALTH SCREENING QUESTIONNAIRE (KM-5963)

EXAMPLE

CONTRACTOR SAFETY AND HEALTH PROGRAM CHECKLIST

A. CONTRACTS	YES	NO
1. Has a Master Service Agreement, Master Work Agreement for construction or Field Services, or a specific job contract been prepared and executed for all contractors on company property?	____	____
2. Has an evaluation been conducted and a Contractor Questionnaire Evaluation (Form KM-5964), completed and signed by the appropriate company representative prior to contract execution?	____	____
3. Are the following contractor documents in order?		
State license?	____	____
Specialized work license (if applicable)?	____	____
Current insurance certificate?	____	____
Performance bond (if required)?	____	____
4. As part of the executed contract, have site-specific safety and health rules been identified to the contractor?	____	____
5. Does the contractor:		
a. Have a copy of applicable federal, state, and local safety and health regulations?	____	____
b. Conduct inspections & tests and maintain records? (GFCI's, slings, cranes, PPE, etc.)	____	____
c. Have access to injury reporting and recordkeeping requirements?	____	____
d. Conduct new-hire safety and health orientation?	____	____
e. Hold contractor employee safety meetings?	____	____
f. Conduct safety and housekeeping inspections?	____	____
g. Schedule required inspections and tests of contractor equipment?	____	____
h. Provide proof of certification training for crane and mobile equipment operators as appropriate?	____	____
i. Provide a liaison with company project/plant management?	____	____
j. Employ a full-time safety officer on large projects?	____	____

CONTINUED

	YES	NO
k. Conduct pre-employment physicals?	____	____
l. Utilize a substance abuse program?	____	____
m. Have a respiratory protection program?	____	____
n. Have a hearing conservation program?	____	____
o. Have a confined space entry/lockout procedure?	____	____
p. Have a hazard communication program?	____	____
q. Comply with hazardous waste regulations?	____	____
r. Have a current inventory list of all hazardous materials?	____	____
6. If contractor does not comply with the items in No. 5 above, have arrangements been made with Kerr-McGee to provide necessary training and/or assistance?	____	____

B. KERR-McGEE REQUIREMENTS

1. Has the contractor's written safety and health program been received and evaluated by the appropriate company representative?	____	____
a. Has the evaluation been included in contractor selection?	____	____
b. Is the necessary documentation being retained?	____	____
2. Are the following items to be furnished to the contractor:		
a. Contractor safety orientation/training?	____	____
b. Facility or operating unit safety handbook or copies of applicable local safety rules?	____	____
c. Independent Contractor Safety Handbook?	____	____
d. Applicable local or facility procedures such as lockout/tagout, hot work permit system, confined space entry?	____	____
e. Description of noise and respiratory protection areas on premises?	____	____
f. Information on areas of premises containing asbestos or other fibers?	____	____
g. Hazard Communication information on chemicals encountered on premises?	____	____
h. Fire protection system information?	____	____
i. Emergency response information such as alarm system description, evacuation procedures, etc.?	____	____