Intermediate
Remedial Design Phase Submittal

U.S. Army
Corps of Engineers

Operable Unit 1, Phase I Design
Claremont Polychemical Corp.
Superfund Site
Old Bethpage, New York

Contract DACW 41-90-D-0009
Delivery Order No. 0002

Volume 3 of 4

Prepared for:

Department of the Army
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Kansas City Corps of Engineers
Kansas City, Missouri

February 12, 1993

SEC DONOHUE
Environment & Infrastructure

INTERMEDIATE DESIGN SUBMITTAL
CLAREMONT POLYCHEMICAL CORPORATION SUPERFUND SITE
OPERABLE UNIT 1
OLD BETHPAGE, NEW YORK

February 12, 1993

Prepared for:

U.S. ARMY CORPS OF ENGINEERS
KANSAS CITY DISTRICT
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RP/CPC65RDN/AE6

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PROPOSED SPECIFICATIONS LIST
CLAREMONT POLYCHEMICAL CORPORATION
Old Bethpage, New York

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TABLE 3-1

PROPOSED SPECIFICATIONS LIST
CLAREMONT POLYCHEMICAL CORPORATION
Old Bethpage, New York
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TABLE 3-1

PROPOSED SPECIFICATIONS LIST
CLAREMONT POLYCHEMICAL CORPORATION
Old Bethpage, New York
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TABLE 3-1

PROPOSED SPECIFICATIONS LIST
CLAREMONT POLYCHEMICAL CORPORATION
Old Bethpage, New York
(Continued)

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Section 13750	Building Decontamination
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TABLE 3-1

PROPOSED SPECIFICATIONS LIST
CLAREMONT POLYCHEMICAL CORPORATION
Old Bethpage, New York
(Continued)

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Section 15880	Air Distribution Systems
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Section 15950	Heating, Ventilating, and Air Conditioning HVAC Control Systems
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TABLE 3-1

PROPOSED SPECIFICATIONS LIST
CLAREMONT POLYCHEMICAL CORPORATION
Old Bethpage, New York
(Continued)

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Section 16935	Telephone Automatic Dialer System
Section 16936	Pilot and Miscellaneous Control Devices
Section 16938	Programmable Logic Controller
Section 16950	Electronic Transmitters
Section 16990	Electronic Analyzers/Detectors

BIDDING SCHEDULE

Item Number	Description	Estimated Quantity	Unit	Unit Price	Amount
1	Groundwater treatment facility, including grading, sitework, fencing, paving, utility extensions, extraction and reinjection wells, well transmission lines, and health and safety.	Job	L.S.	XXX	$_____
2	Chemical Data/Quality Control, Complete	Job	L.S.	XXX	$_____
3	**Soil excavation** including surveying, air monitoring, environmental controls, pretreatment stockpiling, pretreatment processing, verification sampling/surveying, and testing; **soil treatment system,** mobilization/demobilization, including temporary support, air emission controls, access, staging/ stockpiling facilities, utility extensions, approvals, project plans, and health and safety; **soil treatment** including post-treatment staging/ stockpiling and sampling and testing (chemical and geotechnical), residuals and over-sized material management; and **backfill** treated soil including preparation.	3,900 4,000 - 4,500 4,501 - 6,000	C.Y. C.Y. C.Y.	$_____ $_____ $_____	$_____ $_____ $_____
4	Borrow material, if necessary	TBD (in-place)	C.Y.	$_____	$_____
5	Decontamination building mobilization/demobilization including temporary support facilities, access requirements, equipment utility extensions, approvals, permits, plans, and health and safety.	Job	L.S.	XXX	$_____
6	Removal of asbestos containing material including removal, air monitoring, equipment, laboratory analysis, permits, disposal costs, and transportation.	2,600 L.F. pipe wrap 154 c.f. tank coating 200 s.f. spray on	C.Y.	$_____	$_____

BIDDING SCHEDULE

Item Number	Description	Estimated Quantity	Unit	Unit Price	Amount
7	Decontamination of dust collectors including equipment, monitoring, permits, dust/bag disposal costs, metal salvaging, safety equipment, laboratory analysis, and transportation.	10 C.Y. 6 6"x6' bags	L.S.	XXX	$_____
8	Trash/debris disposal inside building including equipment, laboratory analysis, staging requirements, disposal costs, and transportation.	10 C.Y. 5 Drums	C.Y. Drum	$_____ $_____	$_____ $_____
9	Salvageable material decontamination inside building including equipment, decontamination residual disposal, verification sampling, loading and transportation, staging requirements, and environmental protection.	30 C.Y.	C.Y.	$_____	$_____
10	Building decontamination including pretreatment, decontamination, condensor decontamination, laboratory chemical characterization, environmental protection, monitoring, residuals management, staging, verification sampling, transportation, and disposal.	60,000 161,600	gal sq ft	$_____ $_____	$_____ $_____
11	Salvageable material outside building including staging, equipment, transportation, disposal, and laboratory testing is required.	70	tons	$_____	$_____
12	Grading debris piles after removing salvageable material including equipment, mobilization/demobilization, health and safety, and testing if required.	500	C.Y.	$_____	$_____
13	Tank cleaning including removal of fluid in tank, fluid testing, fluid disposal, tank decontamination, residuals management, transportation, disposal, staging monitoring, and environmental management.	2 tanks 750 gal 300 gal	EA. gal gal	$_____ $_____ $_____	$_____ $_____ $_____

BIDDING SCHEDULE

Notes:

1. Unit price items are estimated quantities only and the respective unit prices will prevail in the event of an overrun or underrun.

2. Bid prices must be entered for all items of the schedule. Total amount bids submitted without bid prices being entered on individual items will be rejected. Extensions will be subject to verification by the Government. In case of variation between the unit prices and the extensions, the unit prices will be considered the bid. In case of variation between the individual bid item prices and the Total Amount, the individual bid prices will be considered the bid.

3. A modification to a bid which provides for a single adjustment to the total amount bid, should state the application of the price adjustment to each respective unit price and lump sum price affected. If the modification is not so apportioned, the single adjustment will be applied (on a pro rata basis to the lump sum prices).

4. Award will be made for one contract to the lowest responsible bidder whose bid price contains the option which is most beneficial to the Government.

S/CPCSPECO/AB8

BIDDING SCHEDULE

Notes:

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SECTION 01060
REGULATORY REQUIREMENTS

PART 1 GENERAL

1.1 GENERAL REQUIREMENTS

The Contractor is responsible for determining the applicability of, and for complying with, Federal, State and local regulatory requirements and ensuring that the construction schedule includes time for any regulatory requirements that specify a lead-time. Regulatory requirements listed below are the minimum the Contractor shall consider in conducting work. Guidance is listed as information recommended to review, but is not enforceable, as are regulations and permits.

1.1.1 Support Facilities/General Site Management

Regulatory requirements, permits and guidance for support facilities and general site management include, but are not limited to, the following:

1.1.1.1 Federal:

Occupational Safety and Health Act (OSHA) - Safety and Health Standards (29 CFR 1926)

OSHA - Record Keeping, Reporting, and Related Regulations (29 CFR 1904)

Resource Conservation and Recovery Act (RCRA) - Tank Systems - (40 CFR Subpart J)

1.1.1.2 State:

New York State Tank System Regulations (6 NYCRR 373-2.10)

1.1.1.3 Local:

Nassau County Department of Health, Bureau of Land Resources Management Requirements

Town of Oyster Bay Building Permit

1.1.2 Groundwater Treatment System

Regulatory requirements, permits and guidance for groundwater treatment system construction and operation include, but are not limited to, the following:

1.1.2.1 Federal:

Clean Water Act - Stormwater (40 CFR 122)

Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs) (40 CFR 141)

SDWA MCL Goals (40 CFR 141)

National Ambient Air Quality Standards (NAAQS) 40 CFR 50

OSHA - General Industry Standards (29 CFR 1910)

OSHA - Safety and Health Standards (29 CFR 1926)

OSHA - Record Keeping, Reporting, and Related Regulations (29 CFR 1904)

RCRA - Identification and Listing of Hazardous Waste (40 CFR 261 Subparts A, B, and C)

RCRA - Standards for Generators of Hazardous Waste (40 CFR 262.1) et seq.

RCRA - Standards for Transporters (40 CFR 236.11, 263.10-21, and 263.30-31)

RCRA - Standards for Owners/Operators of Permitted Hazardous Waste Facilities (40 CFR 264.10-264.18)

RCRA - Preparedness and Prevention (40 CFR 264.30 - 264.31)

RCRA Land Disposal Restrictions (LDR) (40 CFR 268)

RCRA - Use and Management of Containers (40 CFR Subparts I)

RCRA - Tank Systems - (40 CFR Subpart J)

SDWA - Sole Source Aquifer Regulations

U.S. Department of Transportation Requirements (49 CFR)

1.1.2.2 State:

Groundwater Quality, Regulations (6 NYCRR 703.5)

Ambient Water Quality Standards and Guidance Technical and Operations Guidance Series (TOGS) 1.1.1, April 1, 1987

New York State (NYS) Air Guide I 7/86 Guidance

NYS Ambient Air Quality Standards and Control Apparatus Permit Requirements (6 NYCRR 212)

New York Ambient Air Quality Standards (6 NYCRR 257)

New York State Department of Health (NYSDOH) Drinking Water Standards (10 NYCRR 5)

New York Solid Waste Management Facility Requirements (6 NYCRR Part 360)

New York Hazardous Waste Manifest System Rules (6 NYCRR 372)

Solid and Hazardous Waste Substances and Hauling Permits (6 NYCRR Part 364 and 370)

New York Identification and Listing of Hazardous Waste Requirements (6 NYCRR Part 371)

New York Hazardous Waste Treatment, Storage, and Disposal Facility Permitting Requirements (6 NYCRR 370 and 373)

New York Land Disposal Restrictions (6 NYCRR Part 376)

New York State Pollution Discharge Elimination System Requirements (SPDES) (6 NYCRR 750)

New York Groundwater Reinjection Guidance; New York TOGs 2.1.2 April 1987

New York Groundwater Quality Standards (6 NYCRR 703.5)

New York State Tank System Regulations (6 NYCRR 373-2.10)

New York State Guidelines for Soil Erosion and Sediment Control

New York State General Prohibition Fugitive Air Emissions (6 NYCRR 211)

1.1.2.3 Local:

Nassau County Department of Health, Bureau of Land Resources Management

Nassau County Department of Health, Bureau of Air Quality Process, Exhaust and/or Ventilation Application

1.1.3 Groundwater Extraction System

Regulatory requirements, permits and guidance for installation and operation of the groundwater extraction system include, but are not limited to, the following:

1.1.3.1 Federal:

Clean Water Act - Stormwater (40 CFR 122)

OSHA - General Industry Standards (29 CFR 1910)

OSHA - Safety and Health Standards (29 CFR 1926)

OSHA - Record Keeping, Reporting, and Related Regulations (29 CFR 1904)

U.S. Environmental Protection Agency (USEPA) Underground Injection Well (UIC) Program Requirements for Class 5 Injection Wells (40 CFR 144-147)

1.1.3.2 State:

NYSDEC Requirements for Well Installation and Well Discharge

New York Groundwater Reinjection Guidance; New York TOGs 2.1.2 April 1987

New York State Guidelines for Soil Erosion and Sediment Control

1.1.3.3 Local:

Nassau County Department of Health, Bureau of Land Resources Management Requirements

1.1.4 Excavation and Treatment of Contaminated Soil

Regulatory requirements, permits and guidance for excavation and treatment of contaminated soil include, but are not limited to, the following:

1.1.4.1 Federal:

Clean Water Act - Stormwater (40 CFR 122)

Clean Air Act - National Ambient Air Quality Standards (NAAQS) (40 CFR 50)

OSHA - General Industry Standards (29 CFR 1910)

OSHA - Safety and Health Standards (29 CFR 1926)

OSHA - Record Keeping, Reporting, and Related Regulations (29 CFR 1904)

RCRA - Identification and Listing of Hazardous Waste (40 CFR 261 Subparts A, B, and C)

RCRA - Standards for Generators of Hazardous Waste (40 CFR 262.1) et seq.

RCRA - Standards for Transporters (40 CFR 263.11, 263.10-21, and 263.30-31)

RCRA - Standards for Owners/Operators of Permitted Hazardous Waste Facilities (40 CFR 264.10-264.18)

RCRA - Preparedness and Prevention (40 CFR 264.30 - 264.31)

Land Disposal Restrictions (40 CFR 268)

RCRA - Use and Management of Containers (40 CFR Subparts I)

RCRA - Tank Systems - (40 CFR Subpart J)

U.S. Department of Transportation Requirements (49 CFR)

1.1.4.2 State:

NYS Air Guide I 7/86 Guidance

NYS Ambient Air Quality Standards and Control Apparatus Permit Requirements (6 NYCRR 212)

New York Ambient Air Quality Standards (6 NYCRR 257)

New York Hazardous Waste Manifest System Rules (6 NYCRR 372)

New York Solid Waste Management Facility Requirements (6 NYCRR Part 360)

Solid and Hazardous Waste Substances and Hauling Permits (6 NYCRR Part 364 and 370)

New York Identification and Listing of Hazardous Waste Requirements (6 NYCRR Part 371)

New York Hazardous Waste Treatment, Storage, and Disposal Facility Permitting Requirements (6 NYCRR 370 and 373)

New York Land Disposal Restrictions (6 NYCRR Part 376)

New York State Pollution Discharge Elimination System Requirements (SPDES) (6 NYCRR 750)

New York State Guidelines for Soil Erosion and Sediment Control

New York State General Prohibition Fugitive Air Emissions (6 NYCRR 211)

1.1.4.3 Local:

Nassau County Department of Health, Bureau of Land Resources Management Requirements

Town of Oyster Bay Building Dept. Excavation Permit

Nassau County Department of Health, Bureau of Air Quality Process, Exhaust and/or Ventilation Application

1.1.5 Building Decontamination

Regulatory requirements, permits and guidance for building decontamination include, but are not limited to, the following:

1.1.5.1 Federal:

Clean Water Act - Stormwater (40 CFR 122)

OSHA - General Industry Standards (29 CFR 1910)

OSHA - Safety and Health Standards (29 CFR 1926)

OSHA - Record Keeping, Reporting, and Related Regulations (29 CFR 1904)

RCRA - Identification and Listing of Hazardous Waste (40 CFR 261 Subparts A, B, and C)

RCRA - Standards for Generators of Hazardous Waste (40 CFR 262.1) et seq.

RCRA - Standards for Transporters (40 CFR 263.11, 263.10-21, and 263.30-31)

RCRA - Standards for Owners/Operators of Permitted Hazardous Waste Facilities (40 CFR 264.10-264.18)

U.S. Department of Transportation Requirements (49 CFR)

Safe Drinking Water Act - Underground Injection Control (UIC) (40 CFR 144-147)

RCRA Land Disposal Restrictions (LDR) (40 CFR 268)

RCRA - Use and Management of Containers (40 CFR Subparts I)

Clean Air Act - National Ambient Air Quality Standards (NAAQS) (40 CFR Part 50)

Clean Air Act - National Emissions Standards for Hazardous Air Pollutants (NESHAPS) (40 CFR Part 61)

1.1.5.2 State:

NYS Air Guide I 7/86 Guidance

New York Solid Waste Management Facility Requirements (6 NYCRR Part 360)

New York Hazardous Waste Manifest System Rules (6 NYCRR 372)

Solid and Hazardous Waste Substances and Hauling Permits (6 NYCRR Part 364 and 370)

New York Identification and Listing of Hazardous Waste Requirements (6 NYCRR Part 371)

New York Hazardous Waste Treatment, Storage, and Disposal Facility Permitting Requirements (6 NYCRR 370 and 373)

New York Land Disposal Restrictions (6 NYCRR Part 376)

New York State Pollution Discharge Elimination System Requirements (SPDES) (6 NYCRR 75)

New York Regulations on Asbestos Safety Programs - Dept. of Labor/Code Rule 56

1.1.5.3 Local:

Nassau County Department of Health, Bureau of Land Resources Management Requirements

Town of Oyster Bay Building Dept. Excavation Permit

Town of Oyster Bay Demolition Permit

* * * END OF SECTION * * *

SECTION 01155
HEALTH, SAFETY, AND EMERGENCY REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

The Claremont Polychemical Corporation (CPC) site is an abandoned production facility located in central Long Island in the village of Old Bethpage, Town of Oyster Bay, Nassau County, New York. The site occupies approximately 9.5 acres and includes a 35,000 square foot 2-story concrete building. The site was identified as requiring remedial action for contamination of soil and groundwater, and the decontamination of the building on-site. Contaminants on the site include volatile and semi-volatile organic compounds, inorganics, and asbestos containing material (ACM).

Information regarding constituents identified at the CPC site is presented in Appendix A, summary of Laboratory Analytical Data.

Activities to be conducted at the CPC site include the decontamination of the building structure including removal of debris and ACM, remediation of contaminated soil on-site, and the implementation of a groundwater extraction/treatment/and injection system. Asbestos and some other compounds found on-site are known or suspected human carcinogens. The United States Army Corps of Engineers (USACE) requires that work performed under this contract conform with the Hazardous Waste Operations and Emergency Response regulations of OSHA.

1.2 REFERENCES

1.2.1 The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

29 CFR 1910	Occupational Health and Safety Standards
29 CFR 1926	Safety and Health Regulations for Construction
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities

American National Standards Institute (ANSI) Publications

Z88.1	American National Standard Practices for Respiratory Equipment

Z358.1 Emergency Eyewash and Shower Equipment

U.S. Army Corps of Engineers

EM 385-1-1 Safety and Health Requirements Manual Dated April 1981, revised October 1987

U.S. Department of Human Services Publication

NIOSH/OSHA/USCG/EPA October 1985, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities.

EPA/600/2-85/028 Guide for Decontaminating Buildings, Structures, and Equipment at Superfund Sites, March 1985

1.3 RELATED SECTIONS

Section 01060 Regulatory Requirements
Section 01064 Environmental Protection
Section 01300 Submittals
Section 01405 Chemical Data Quality Management
Section 01561 Dust and Volatile Emissions Monitoring and Control Plan
Section 13700 Low-Temperature Thermal Desorption
Section 13750 Building Materials and Content Decontamination
Section 13800 Salvageable Material Removal
Section 13850 Removal and Disposal of Asbestos-Containing Material
Section 13900 Off-Site Transportation and Disposal

1.4 DEFINITIONS

To standardize contracting documents, the following definitions shall be used throughout the safety, health, and emergency response plan:

1.4.1 Contracting Officer (CO): Any person so designated such authority by the U.S. Army Corps of Engineers (USACE), who has responsibility for day-to-day field surveillance duties.

1.4.2 On-Scene Coordinator (OSC): Any person so designated by the State government. The Contractor shall only take direction from the CO. Any comment or directives written or otherwise from the OSC shall be directed to the CO.

1.4.3 On-site Personnel: The CO and designated representative, OSC and his representative, and Contractor personnel such as employees and Subcontractors.

1.4.4 Contractor Personnel: Includes Contractor employees and his representative, Subcontractor employees, and his representative.

1.4.5 Visitor: All others, except the on-site personnel.

1.4.6 Certified Industrial Hygienist (CIH): A person certified in the comprehensive practice or an aspect of industrial hygiene by and in good standing with the American Board of Industrial Hygiene. The Contractor will identify a CIH responsible for the development of the Safety, Health, and Emergency Response Plan (SHERP) for the project.

1.4.7 Custodian: The Contractors employee responsible for keeping all safety equipment and project facilities clean, properly equipped and maintained.

1.4.8 Security Officer: The Contractor's employee or an employee of the Subcontractor responsible for maintaining the security of the site.

1.4.9 Site: For the purpose of the SHERP, the site shall consist of; a Support Zone (SZ), Contamination Reduction Zone (CRZ), Exclusion Zone (EZ), and all the area within the limits of the Work Zone.

1.4.10 Monitoring: Indicates the use of direct reading field instruments or time integrated sampling equipment with laboratory analysis to provide information regarding the levels of noise, gases, vapors, and particulates released during remedial action.

1.4.11 Physician: A licensed medical doctor (MD), board certified or board eligible in occupational medicine, and provided by the Contractor.

1.4.12 Emergency Coordinator: The Contractor's employee or a Subcontractor who is responsible for potential emergencies. The SSHO may also be the Emergency Coordinator (EC). The EC shall report to the CIH in matters pertaining to emergency preparedness.

1.4.13 Site Safety and Health Officer (SSHO): The Contractor's employee or a subcontractor who is properly trained in health and safety and responsible for the daily implementation and enforcement of the SHERP. The SSO will be on-site at all times.

1.5 GENERAL REQUIREMENTS

1.5.1 Health and Safety Overview

1.5.2 The Contractor via the CIH shall be responsible for development and implementation of a site specific SHERP consistent with the requirements of:

1.5.3 Occupational Safety and Health Administration (OSHA) Standards and Regulations contained in Title 29, Code of Federal Regulations, Parts 1910 and 1926 (29 CFR 1910 and 1926).

1.5.4 U.S. Army Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1 April 1981, revised October 1987.

1.5.5 The SHERP, including the Air Monitoring Program, shall include but not necessarily be limited to, the following components:

Site Description and Evaluation.

Site specific chemicals and their associated Threshold Limit Values (TLV), Permissible Exposure Limits (PEL), physical properties, chemical reactions and chemical compatibilities.

Names of key personnel and alternate(s) responsible for site safety and health (responsibilities and chain of command).

Safety and health hazard assessment for each site task and operation.

Education and training requirements.

Personal Protective Equipment (PPE).

Medical Surveillance.

Air Monitoring (Environmental and Personal).

Standard Operating Procedures, Engineering Controls, and Work Practices.

Site Control Measures (Work Zones, communication, and security).

Personal Hygiene and Decontamination.

Equipment Decontamination.

Logs, report, and recordkeeping.

Emergency equipment and first aid requirements.

Emergency Response Plan and Contingency procedures.

Heat/Cold Stress Monitoring.

Confined Space Entry

Control of Hazardous Energy

1.5.6 The site specific SHERP shall be submitted to the CO within 30 calendar days after issuance of notice to proceed, in an acceptable format for review and approval prior to commencement of any on-site work.

1.5.7 Specifications delineated in this Section are in addition to or an amplification of procedures and requirements of the above referenced regulations and documents.

1.5.8 Should any unforeseen or site-specific safety related factor, hazard, or condition become evident during the performance of work at this site, it shall be the Contractor's responsibility to bring such to the attention of the CO (both verbally and in writing) as quickly as possible for resolution. In the interim, the Contractor shall take prudent action to establish and maintain safe working conditions and to safeguard employees, the public, and the environment.

1.5.9 Should the Contractor seek relief from, or substitution for, any portion or provision of the SHERP, such relief or substitution shall be requested of the CO in writing, and if approved, be authorized in writing.

1.5.10 Any disregard for the provision of the Health and Safety specifications shall be deemed just and sufficient cause for termination of contract or any subcontract without compromise or prejudice to the rights of the Contracting Officer.

1.5.11 The SHERP developed by the Contractor shall include provisions for work related to general site preparation prior to implementation of the facilities described in this Contract. Initially, the Contractor shall assume the entire site is an EZ, unless otherwise indicated. It shall be the responsibility of the Contractor to conduct whatever testing and monitoring is deemed necessary to assure a safe operation during the general site preparation work.

1.5.12 Any temporary facilities or special construction procedures required to construct the SZ and CRZ shall be the responsibility of the Contractor and shall be delineated in the SHERP.

1.5.13 Prior to the implementation of an operational change affecting on-site field work, the operational change shall be approved by the CO.

1.6 SUBMITTALS

Submit the following in accordance with Section 01300, "Submittals."

Refer to Section 01300, "Submittals."

Equipment
Site Safety, Health, and Emergency Response Plan
Site Safety and Health Officer
Certified Industrial Hygienist
Training Certificates
Medical Certificates
Material Safety Data Sheets
Spill Control Plan
Hazard Assessment and Risk Analysis
Bloodborne Pathogen Control Program
Site Safety, Health, and Emergency Response Plan

1.6.1 Health and Safety Plan

Within 30 days after Contract Award, the Contractor shall submit a detailed plan of the safety program and work procedures to be used to protect the health and safety of employees and the general public during all remediation activities at the site. The SHERP must be kept on-site, shall address the safety and health hazards of the site operation, and include the requirements and procedures for employee and personnel protection. The SHERP, as a minimum shall address the following: health risk or hazard analysis, training, personal protective equipment, medical surveillance, monitoring and sampling equipment including calibration and maintenance, site control, decontamination, emergency response, confined space entry, and spill containment. Safety requirements shall be written under the guidance of a CIH and reviewed by the Contracting Officer and/or his designate. The SHERP shall be conspicuously posted and distributed to all response employees and discussed with them prior to initiating work operations. This plan shall be periodically reviewed by the CIH and the Contracting Officer during work operations to keep it current and technically correct. Changes in the scope of work shall be reflected by revisions in this plan.

1.6.2 Training Records

The Contractor shall certify that all Contractor personnel, visitors, subcontractor, and lower tiered subcontracted personnel assigned to the site have received appropriate safety training in accordance with 29 CFR 1910.120. this includes all personnel entering the SZ for the purpose of performing or supervising work, for health, safety, security, or administrative purposes, for maintenance, or for any other site related function. No one else will be allowed on-site. Training for Contractor's personnel shall consist of a minimum of 24 hours class training and 1 day supervised field experience or 40 hours class training and 3 days supervised field experience. Training requirements will depend on the role of the worker and will adhere to 29 CFR 1910.120. Training requirements will be specified by task in the SHERP. In addition, all trained personnel will be or will have had 8-hour annual refresher training as required by OSHA each year following the initial 40- or 24-hour training. In addition, Contractor's and subcontractor's supervisory personnel shall have a minimum of 8 hours additional specialized training on managing hazardous waste operations. Documentation of such training shall be submitted to the CO before the employee is allowed in the contaminated area. The safety training program will include, at a minimum, training in the following areas:

Recognition of potential chemical and physical hazards.

Standard safety operating procedures.

Safety equipment to be used.

Personal protective equipment to be worn including care, use, and proper fitting.

Decontamination procedures.

Areas of restricted access and prohibitions in work areas.

Emergency procedures and plans

Respiratory protective equipment training and respirator fit testing protocols.

Use of the Self Contained Breathing Apparatus (SCBA) and other emergency respirators.

Relevant first aid procedures.

Internal and external communications.

Hazardous materials handling procedures.

Air monitoring program.

The "Buddy System" to be used at the site.

Contractor's and subcontractor's personnel will also complete a site-specific training course in length as designated by the Contractor's CIH. The agenda will be reviewed by the CO. The training will consist of the site specific operations to be conducted, the site-specific hazards to be encountered, and control procedures to be utilized on the site.

1.6.3 Medical Surveillance

All Contractor and subcontractor personnel involved in this project not already participating in a medical surveillance program shall be provided with medical surveillance within 30 days prior to commencing work, and within 30 days after the conclusion of the Contractor personnel's work. However, personnel currently participating in a medical surveillance program which meets the requirements of 29 CFR 1910.120 and this specification shall not be required to have additional medical surveillance. The Contractor shall utilize the services of a board certified/board eligible occupational medicine physician to provide examinations and surveillance specified herein. Evidence of the medical examination of Contractor and subcontractor personnel and written certification of fitness for work and ability to wear respiratory protection, if required, signed by the examining physician, shall be provided to the CO prior to assigning these personnel on-site. Copies of these records shall be maintained on-site, in accordance with 29 CFR 1910.20.

The entire medical surveillance program shall meet the requirements of OSHA standard 29 CFR 1910.120 (f). This includes the provision requiring the Contractor to obtain a physician's written medical opinion based on written documentation of the employees duties and other site specific information furnished by the Contractor. At a minimum the following protocol shall be considered by the physician:

Medical History

General Physical-Examination including evaluation of all major organ systems.

Electrocardiogram

Blood Chemistry Screening Profile (e.g. SMAC 21 and CBC)

Urinalysis

Pulmonary Function Testing (FEV 1.0 and FVC)

Chest X-ray*

Stress Test**

Exposure to hot and cold environments

Methemoglobin

Urine Heavy Metals

Visual Acuity

Otoscopic Exam

Audiometric Exam

Tetanus

* The need for and number of chest x-rays shall be at the discretion of the physician, based on the results of EKG/Pulmonary Function Testing.

** At the discretion of the physician based on results of EKG/Pulmonary Function Testing. At the discretion of the examining physician a stress test may be administered to any individual during any routinely scheduled examination.

Additional clinical tests may be included at the discretion of the physician performing the physical examination.

Periodic surveillance examinations shall be performed annually for all employees participating in medical surveillance program.

Periodic surveillance examinations shall be as specified above for medical surveillance except that the requirement for a chest x-ray and stress test shall be at the discretion of the physician performing the physical examination.

In addition, a non-scheduled medical examination shall be conducted under the following circumstances:

After acute exposure to any toxic or hazardous material.

At the discretion of the CO, the Contractor's CIH/SSHO or the consulting physician, when an employee has been exposed to elevated levels of toxic or hazardous materials.

1.6.4 Non-scheduled medical examinations shall include all items specified above for Periodic Surveillance Examinations, except that the chest x-rays and stress tests shall be at the discretion of the attending occupational physician performing the physical examination.

1.6.5 The ability of on-site personnel to wear respiratory protection during hazardous waste activities shall be certified by the physician. Cardiopulmonary system examination and pulmonary function testing are minimum requirements. A copy of the physician's certification shall be submitted to the Contracting Officer for each person required to enter the contaminated areas of the site prior to any on-site work.

1.6.6 Any employee who suffers a lost time injury or develops a lost time illness during the period of the contract must be evaluated by a qualified physician. The Contractor must be provided with a written statement indicating the employee's fitness signed by the physician prior to allowing the employee to reenter the work site. A copy of the written statement shall be submitted to the CO.

1.7 PROJECT CONDITIONS

1.7.1 Spatial Restrictions
Soil Characteristics
Treatment System Characteristics
Oversized Material
Unforeseen Conditions

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 HEALTH AND SAFETY PLAN

A Safety, Health, and Emergency Response Plan (SHERP) is required due to the potentially hazardous conditions at the Site. The Prime Contractor is required to provide a SHERP consistent with the minimum specifications outlined in this document for their on-site personnel. The Contractor will be responsible for developing his SHERP to meet all minimum regulatory requirements. The SHERP shall be submitted to and reviewed/approved by the Contracting Officer (CO) at least one week prior to the pre-work conference

before any work covered in the specific plan can be initiated. The approved SHERP, complete with all comments addressed, will be made a part of the Contracting Documents. The Contractor shall implement, maintain, and enforce the SHERP at the appropriate time prior to and during all phases of work.

3.2 WORK ZONES AND SITE CONTROL

3.2.1 EZs, CRZs, and SZs are to be designated according to the existing site conditions and the SHERP. A conceptual operational plan is provided in Sheet 2 of the Contract Drawings. The Contractor may wish to change or modify these zones with concurrence from the CO. The Contractor shall clearly lay out and identify these zones in the field, and shall limit equipment, operations, and personnel in the zones. The method of zone identification shall be specified in the SHERP and sufficient to identify to persons unfamiliar with hazardous waste operations the entry limits.

3.2.1.1 EXCLUSION ZONE (EZ): The initial minimum level of PPE required in the EZ shall be as stated in these specifications or as determined by the CIH and SSHO after monitoring and on-site evaluation. The level shall be stated in the SHERP. The EZ shall be marked in an easily recognized manner. The access route to the EZ shall be through the CRZ to allow for better access control.

3.2.1.2 CONTAMINATION REDUCTION ZONE (CRZ): The CRZ shall occur at the interface of the EZ and SZ and will provide for: 1) the transfer of materials to be used on-site from clean to site-dedicated; 2) the decontamination of waste transport vehicles prior to entering the SZ from the EZ; 3) the decontamination of personnel and clothing prior to entering the SZ from the EZ; and, 4) the physical segregation of the SZ and EZ. One person per shift will be stationed in this zone to assist in the removal of potentially contaminated PPE and to assist with the decontamination of equipment leaving the EZ. This person will also be responsible for ensuring the CRZ is kept in an orderly fashion and that decontamination liquids and solutions are maintained. This person will utilize at a minimum Modified Level D protection.

3.2.1.3 SUPPORT ZONE (SZ). The SZ shall be established on the Site and is defined as the area outside the zone of significant contamination and the CRZ. The SZ shall be clearly delineated and shall be secured against active or passive contamination from the work site. No contaminated clothing, personal protective equipment, sampling equipment, or heavy equipment will be allowed in this zone. The function of the SZ is to provide:

3.2.1.3.1 An entry area for personnel, material, and equipment into the EZ of site operations.

3.2.1.3.2 An exit area for decontaminated personnel, materials, and equipment from the EZ of site operations.

3.2.1.3.3 Location for support area facilities.

3.2.1.3.4 A storage area for clean safety and work equipment.

3.3 EMERGENCY EQUIPMENT AND FIRST AID REQUIREMENTS

3.3.1 Before, during, and after site activities, emergency first aid equipment must be readily available on-site. First aid and safety equipment must be accessible to all personnel.

3.3.1.1 Each active work area shall be provided with emergency eye wash and shower units approved in accordance with ANSI Standard Z358.1, and with dry chemical fire extinguishers meeting type 20A-80 B:C standards. These units may be portable. At least one fire extinguisher and eye wash shall be supplied and located in each active CRZ and at the first aid station.

3.3.1.2 The Contractor shall have at least two personnel certified in first aid and CPR on the site at all times during drilling activities. These persons may perform other duties but must be immediately available to render first aid when needed. The SSHO and security officer(s) will also be certified in first aid and CPR. Certification shall be by the American Red Cross (first aid) and/or the American Heart Association (CPR) or other equivalent agency approved by the CO. All Contractor, Subcontractor, and CO personnel shall be instructed in first aid procedures as well as OSHA's Bloodborne Pathogen Program by the SSHO or a designee. These procedures shall consist of, but not be limited to, the following:

3.3.1.2.1 Heat stress recognition and treatment.

3.3.1.2.2 Cold stress recognition and treatment.

3.3.1.2.3 Shock recognition and treatment.

3.3.1.2.4 Accident prevention.

3.3.1.2.5 Heart attack/stroke recognition and treatment.

3.3.1.2.6 Bloodborne pathogen protection and control.

3.3.1.3 All Contractor, Subcontractor, and low tiered subcontractor personnel shall know the locations of emergency equipment. At least one "industrial" first aid kit and stretcher shall be provided and maintained fully stocked at a central location. Should active work areas become isolated or separated as to make one first aid location impractical, then first aid stations shall be established as required in close proximity to the work, but not inside an CRZ or EZ. At least one oxygen resuscitator, emergency shower, and eye wash unit must be available at each first aid station.

3.3.1.3.1 First aid kit locations shall be specially marked, and provided with adequate water and other supplies necessary to cleanse and decontaminate burns, wounds, or lesions.

3.3.1.4 Dry chemical fire extinguishers meeting type 20A-80 B:C standards shall be provided at the CO's office, and at other site locations where flammable materials are used and present a fire risk.

3.3.1.5 A minimum of two self-contained breathing apparatus (SCBA) units dedicated for emergency use shall be maintained on-site at all times. These shall be located in the CRZ. The units shall be tested weekly.

3.4 EMERGENCY RESPONSE AND CONTINGENCY PROCEDURES

3.4.1 The Contractor shall include an emergency response and contingency plan for on-site and off-site emergencies, as specified in OSHA 29 CFR 1910.120(l) in the SHERP. Procedures and Contractor personnel responsibilities for potential emergencies shall be identified in the SHERP. The plan shall address at a minimum:

Pre-emergency planning

Personnel roles, lines of authority, training, and communication

Emergency recognition and prevention

Safe distances and places of refuge

Site security and control

Evacuation routes and procedures

Decontamination

Emergency medical treatment and first aid

Emergency alerting and response procedures

Critique of response and follow-up

PPE and emergency equipment.

3.4.2 In the event of any emergency associated with remedial action, the Contractor shall, without delay: 1) take diligent action to remove or otherwise minimize the cause of the emergency; 2) alert the CO; and, 3) institute whatever measures might be necessary to prevent any repetition of the conditions or actions leading to, or resulting in, the emergency. In the event of an emergency requiring the evacuation of the work area or the site (e.g., explosion or fire), the SSHO or designee shall sound a siren which will be mounted on top of the on-site trailer. This siren shall be tested daily at noon.

3.4.3 Emergency medical care services shall be prearranged at a nearby medical facility with established emergency routes. The staff at the facility shall be advised in writing prior to the initiation of site activities of the potential medical emergencies that might result and that the patients clothing and skin might be contaminated.

3.4.4 The Contractor shall establish emergency communications with health and emergency services. The names of these facilities, names of contact, emergency routes, and emergency communication arrangements shall be posted at the site. The posted list shall include the following minimum points:

Contractor physician name, address, and telephone number.

Ambulance service and fire department telephone numbers.

Procedure for prompt notification of the CO and EPA.

Location of emergency showers/eye wash units.

Location of emergency self-contained breathing devices.

Location of first aid kits and fire extinguishers.

Specific procedures for handling personnel with excessive exposure to chemicals or contaminated soil.

3.4.5 All emergency contact names and telephone numbers shall be posted at all project phones.

3.4.6 All site support vehicles shall be equipped with route maps providing directions to the off-site medical facility. All drivers of support vehicles shall become familiar with the emergency route and the travel time required.

3.4.7 In the event that an accident or some other incident (e.g., an explosion, a theft of any hazardous material, or an exposure to toxic chemical levels) occurs during the course of the project, the CO shall be telephoned immediately and receive a written notification within 24 hours. At a minimum, the report shall include the following items:

Name, organization, telephone number, and location of the Contractor.

Name and title of the person(s) reporting.

Date and time of accident/incident.

Location of accident/incident (i.e., site location, facility name).

Brief summary of accident/incident giving pertinent details including type of operation ongoing at time of accident.

Cause of accident/incident, if known.

Casualties (fatalities, disabling injuries).

Details of any existing chemical hazard or contamination.

Estimated property damage, if applicable.

Nature of damage; effect on contract schedule.

Action taken by Contractor to insure safety and security.

Other damage or injuries sustained (public or private).

3.4.8 Emphasis in the contingency planning section shall be placed on procedures. Contingency planning shall also include situations that will involve mobilization of the surrounding community. A meeting with the local emergency preparedness agency shall be scheduled by the Contractor's Emergency Coordinator (or SSHO if they are the same) before initiation of site activities to discuss the contingency measures that will be followed in the event of a major emergency that may affect off-site areas. Representatives of the EPA, the CO or his representative, the Emergency Coordinator, and the CIH will all be required to attend. It shall be the responsibility of the Contractor to prepare an agenda and chair this meeting. This agenda shall be sent to all participating parties prior to the scheduled meeting. At this meeting, the Contractor's suggested guidelines and requirements shall be presented for protecting local residents in the event of major fires and explosions and the off-site migration of chemicals. An attempt shall be made to confirm contingency procedures by consensus agreement of the attending parties. Elements of the discussion shall include:

Names, responsibilities, and authority of personnel assigned to implement emergency actions and contingency plans.

Procedures for detecting and quantifying airborne chemicals that may migrate off-site, in addition to air monitoring as required.

Site security in the event of an emergency.

Recordkeeping and reporting requirements.

Criteria for initiating the community contingency plan.

Discussion of the Emergency Response Procedures contained in the SHERP.

The conclusions to the meeting discussion shall be formally documented and appended to the SHERP (e.g., letters confirming agreements or detailed meetings notes). The contingency plan will be rehearsed quarterly using drills and mock situations.

3.5 PERSONNEL PROTECTIVE EQUIPMENT REQUIREMENTS

3.5.1 All visitors, USACE personnel, Contractor, and Subcontractor personnel shall use appropriate PPE while on-site. The Contractor shall provide and have available six complete sets of PPE for use by Government personnel. The Contractor's SSHO shall insure that all safety equipment and chemical protective clothing is kept clean and well maintained. The Contractor's CIH will establish upgrade/downgrade "action" levels from the specified minimum levels of protection based upon air monitoring results and

direct contact potential. Protocols formally changing the level of protection and the communication network for doing so shall be described in the SHERP. Any changes to the minimum level of protection shall be approved by the CIH, and project manager, with concurrence of the CO.

3.5.1.1 LEVELS OF PROTECTION FOR SPECIFIC SITE ACTIVITIES: Final determination of the appropriate level of worker safety equipment and procedures shall be made by the Contractor's CIH as a result of initial site survey, review of existing data and a continued safety and health monitoring program performed by the Contractor's SSHO and approved by the CO, in accordance with the requirements specified herein. The prescribed levels of protection will be detailed in the SHERP on a task by task basis. An initial list of minimum PPE requirements per task is provided as an example:

TASK	LEVEL OF PROTECTION
Site Reconnaissance	Level D+ (Exclusion Zone Only)
Building Reconnaissance,	Level C
Construct support facilities in all zones including Gravel Surfaces, Decontamination Facilities, and drainage pump stations.	Level D
Excavation	Level C
Construction of Treatment Facility	Level D
Equipment Decontamination in Contamination Reduction Zone	Level C
Soil Backfilling Operations	Level D
Removal of Temporary Facilities and Site Restoration	Level D
Well Installation	Level C

3.5.1.1.1 If two or more activities are being conducted on-site at the same time, the level of protection will be standardized according to the highest level of protection required by any one of the activities. Standardization will prevent the simultaneous use of different levels of protection at adjacent locations on the site.

3.5.1.2 Protection equipment shall be furnished to all visitors, USACE personnel, Contractor and Subcontractor personnel on-site. PPE shall include, but not be limited to, the following:

3.5.1.2.1 Chemical protective clothing, including suits, gloves, and boots.

3.5.1.2.2 Head protection.

3.5.1.2.3 All personnel must use the appropriate level of protection when entering the CRZ or EZ. Respiratory cartridges and face masks shall be supplied by the Contractor only to individuals who can show proof of medical ability to wear respiratory protection and who have been qualitatively fit tested by the SSHO.

3.5.1.2.4 CHEMICAL PROTECTIVE CLOTHING. All chemical protective clothing (CPC) shall be chemical-resistant. Saranex or equivalent suits will only be used when a splash hazard exists. Polyethylene coated tyvek will be used if exposure to contaminated soil is expected. Uncoated tyvek can be used for all other situations. Suits used for Levels B and C shall have attached chemical-resistant hoods giving protection to the back and sides of the head. Suits used for Level D+ (modified level D) protection do not require a hood. Hand protection shall consist of an inside glove liner and outer chemical-resistant gloves of material as prescribed by the CIH (neoprene or equivalent). Footwear used on-site shall be steeltoed, steel shank safety shoes and that are chemical-resistant. CPC must be used by all personnel who enter the CRZ or EZ, with the exception of vehicle operators who are not anticipated to remain in the EZ for extended periods of time and who are not expected to exit their cabs while in the EZ. Vehicles entering the CRZ or EZ must have enclosed cabs and be operated with the windows closed.

3.5.1.2.5 All CPC including work clothing and safety boots which have entered the CRZ or EZ (excluding that worn by vehicle operators whose work is performed in an enclosed cab) shall be properly disposed of or decontaminated before leaving the CRZ. Level D+ shall be the minimum level of protection set for all primary operations performed in the EZ, unless an upgrade is required. Level C shall be the minimum level of protection for all waste handling activities and decontamination of personnel using Level B and C protection. Section 3.5.2 outlines the levels of personal protection.

3.5.1.2.6 RESPIRATORY PROTECTION. A written respiratory protection program addressing site specific hazards shall be submitted as part of the SHERP. Programs for respiratory protection shall conform to OSHA 29 CFR 1910.134.

3.5.1.2.6.1 All on-site personnel unable to pass a qualitative respiratory fit test shall not enter or work in the EZ or CRZ. All workers using respirators shall have a current qualitative fit test record. In addition, each respirator shall be individually assigned and not interchanged between workers. Cartridges/canisters and filters shall be changed daily or upon breakthrough, whichever occurs first. A procedure for assuring periodic cleaning, maintenance and replacement of cartridge/canisters and filters shall be provided by the Contractor and addressed in the respiratory protection program. All prescription eyeglasses in use on-site shall be safety glasses. Prescription lens inserts shall be provided for full-face respirators. The use of contact lenses is prohibited on-site.

3.5.1.2.6.2 Air supplied for breathing purposes must meet Compressed Gas Association Standards for Grade D Breathing Air at the minimum. A certificate of the quality of the air must be provided with each delivery of air to the site.

3.5.2 LEVELS OF PERSONAL PROTECTION. All protective equipment shall be furnished for on-site personnel. The levels of personal protection will be classed as B, C, D+ (modified Level D) and D. The Contractor is responsible for identifying the equipment necessary for specific situations.

3.5.2.1 Level B

3.5.2.1.1 Pressure demand, full-face piece SCBA or pressure demand supplied air respirator with escape breathing apparatus.

3.5.2.1.2 Chemical-resistant suit with attached hood.

3.5.2.1.3 Latex inner gloves.

3.5.2.1.4 Chemical-resistant outer gloves as designated by the CIH.

3.5.2.1.5 Established communication system

3.5.2.1.6 Hard hat.

3.5.2.1.7 Long cotton underwear and gloves, if necessary.

3.5.2.1.8 Additional work clothes as dictated by weather.

3.5.2.1.9 Chemical resistant washable safety boots as designated by the CIH.

3.5.2.2 Level C

3.5.2.2.1 Full-face air purifying respirator with combination Organic vapor cartridges and High Efficiency Particulate Air (HEPA) filters.

3.5.2.2.2 Chemical-resistant suit with attached hood.

3.5.2.2.3 Latex inner gloves.

3.5.2.2.4 Chemical-resistant outer gloves as designated by the CIH.

3.5.2.2.5 Hard hat.

3.5.2.2.6 Long cotton underwear and gloves, if necessary.

3.5.2.2.7 Additional underwork clothes as dictated by weather.

3.5.2.2.8 Chemical-resistant washable safety boots as designated by the CIH.

3.5.2.3 Level D+

3.5.2.3.1 Work clothing as dictated by weather.

3.5.2.3.2 Coveralls (Tyvek or equivalent).

3.5.2.3.3 Latex inner gloves.

3.5.2.3.4 Chemical-resistant outer gloves as designated by the CIH.

3.5.2.3.5 Eye protection.

3.5.2.3.6 Hard hat.

3.5.2.3.7 Chemical-resistant washable safety boots as designated by the CIH.

3.5.2.4 Level D

3.5.2.4.1 Work clothes as dictated by the weather.

3.5.2.4.2 Eye protection.

3.5.2.4.3 Hard hat.

3.5.2.4.4 Safety shoes (boots).

3.6 PERSONAL HYGIENE AND DECONTAMINATION

3.6.1 Personnel performing or supervising remedial work within the EZ or CRZ or those workers exposed (or subject to exposure) to hazardous chemical vapors, liquids, or contaminated solids shall observe and adhere to the personal hygiene-related provisions of this paragraph. A detailed discussion of personnel decontamination protocols to be followed by site workers shall be submitted as part of the SHERP. Any personnel found to be disregarding the personal hygiene-related provisions of the SHERP shall be barred from the site. In addition, the following conditions and procedures shall be followed:

3.6.1.1 Contained storage and disposal for used disposable outerwear.

3.6.1.2 Shower facilities for all on-site personnel (at least one shower for each 10 workers). Separate showers may be required for male and female personnel. Workers will be required to shower and change to fresh clothing after each working shift, prior to leaving the site. The Contractor shall provide a minimum of two showers for emergency decontamination when protective clothing is damaged and has resulted in contamination, or when emergency decontamination is required for other reasons by the SSHO. All showers shall be inspected weekly to ensure they are clean and functioning properly.

3.6.1.3 Hand and face washing facilities.

3.6.1.4 A heated and cooled facility for changing into and out of and storing work clothing separate from street clothing.

3.6.1.5 A heated and cooled lunch and/or break room.

3.6.1.6 A smoking area.

3.6.1.7 Disposable outerwear shall not be reused, and when removed, shall be placed inside disposal containers provided for that purpose located in the CRZ.

3.6.1.8 Smoking and chewing shall be prohibited except in a designated smoking area, provided by the Contractor, in the SZ.

3.6.1.9 Eating and drinking shall be prohibited except in a designated lunch or break area, provided by the Contractor, in the SZ.

3.6.1.10 All outerwear shall be removed prior to entering the lunch area or smoking area, and prior to washing hands.

3.6.1.11 Contractor personnel shall be required to thoroughly cleanse their hands and other exposed areas before entering the smoking or lunch area.

3.7 EQUIPMENT DECONTAMINATION FACILITIES AND PROCEDURES

3.7.1 The Contractor will establish procedures for decontamination of all vehicles and equipment used in the EZ. These procedures shall be approved by the CIH with concurrence of the CO. The Contractor shall be responsible for monitoring all vehicle decontamination prior to exiting the site. Wash water and other liquid decontamination residues shall be conveyed to the on-site wastewater treatment facility.

3.7.1.1 In accordance with the Contractor's SHERP, personnel engaged in vehicle decontamination shall wear and use personal protective equipment including disposable clothing.

3.7.1.2 The Contractor shall provide an equipment decontamination station within the CRZ for removing soil from all equipment leaving the work area. As a minimum, this shall include a wash area for equipment and vehicles and a steam cleaning system for use after the mud and/or site material has been cleaned from the equipment. A special "clean area" shall be established for performing equipment maintenance. This area shall be used when personnel are required by normal practice to expose themselves to contact with ground soil, (e.g., crawling under a vehicle to change engine oil). Decontamination of heavy equipment shall adhere to the following minimum requirements. Heavy contamination such as soil, tar, etc. shall be physically removed through the use of shovels, scrapers, etc. The next step shall involve a high pressure detergent wash. If all visible contamination is not removed, repeat the first two steps. Equipment will then be steam cleaned, which will be followed by a final water rinse. Care must be taken to assure wheels and tracks are clean.

3.7.1.3 Maintenance such as greasing of heavy equipment need not require decontamination unless the job requires body contact with contaminated soil. Seats of equipment and vehicles used in the EZ shall not be cloth covered. They shall be free from cracks or holes that would allow dust to enter seat padding or shall be covered with a temporary sheet of vinyl covering.

3.7.1.4 In the remediation of source areas, should vehicles be required to transport contaminated materials over roadways traversed by local traffic passing in and out of the area, it is imperative that these roads be kept free of any contamination due to the Contractor's operations. To this end, all Contractor vehicles shall be carefully loaded to avoid contamination of exterior truck surfaces.

3.7.1.4.1 Trucks shall be carefully loaded to prevent spills on stabilized or uncontaminated areas. Truck contents shall be covered with tarpaulin, if necessary.

3.7.1.4.2 If spills (including transported waste water, if applicable) do occur, they shall be promptly cleaned up to the bare pavement with dedicated equipment and hand brooms. Spills will not be flushed with water as this will spread contamination. All efforts shall be at the Contractor's expense.

3.8 DECONTAMINATION ACTIVITIES SUPPORT PERSONNEL

3.9 AIR MONITORING

3.9.1 General Requirements

3.9.1.1 The Contractor's CIH shall design, develop, and implement an Air Monitoring program to detect and quantify any volatilization of soil contaminants or release of soil particles associated with remedial work. The program shall be submitted as part of the SHERP for review and acceptance by the CO.

3.9.1.2 Information gathered during the air monitoring program shall be used to determine appropriate environmental and personal protective measures to be implemented during the cleanup operations to document on-site employees' exposures, and to assess off-site migration of contaminants released during remedial activities so that appropriate control measures and/or contingency plans can be implemented.

3.9.1.3 Information gathered during the air monitoring program shall be catalogued according to document control, quality assurance/quality control and data archiving procedures.

3.9.2 General Responsibilities

3.9.2.1 The Contractor's CIH shall be responsible for establishing air monitoring strategies and protocols using real-time instrumentation and time integrated monitoring methods in order to characterize and quantify the airborne release and transport of contaminants during remediation work. These strategies and protocols shall address appropriate air monitoring for VOCs, asbestos, and toxic particulates in the active work zones of the site and at the active site perimeter. The Contractor's CIH shall utilize previous site characterization and sampling data summaries to initially develop the air monitoring protocols.

3.9.2.2 The Contractor shall be responsible for establishing and documenting baseline and background air quality conditions prior to commencement of work, for conducting continuous real-time air monitoring for the work day and for performing time weighted average (TWA) air sampling of on-site personnel and at perimeter air locations during on-site work.

3.9.2.3 All required air monitoring instrumentation and meteorological equipment shall be provided by the Contractor and shall be maintained and calibrated according to NIOSH and EPA sampling and analytical methods and/or the manufacturer's recommendations. Such maintenance and calibration data shall be recorded and included in the project documents. The Contractor shall provide a SOP for equipment operation that includes references to the equipment operating and calibration procedures.

3.9.2.3.1 The Contractor shall provide the support necessary for the sampling and analysis of all samples collected during the program, for the interpretation of the analytical results, and for the recording, presentation and documentation of all results.

3.9.2.4 All air monitoring and meteorological equipment shall be operated by personnel trained in their specific use (i.e., the SSHO). All necessary support equipment and supplies for operating, maintaining and calibrating air monitoring equipment shall be supplied by the Contractor.

3.9.2.5 The Contractor's CIH shall develop action levels based upon information published by recognized standards setting organizations such as the American Conference of Governmental Industrial Hygienists (ACGIH) and the Occupational Safety and Health Administration (OSHA) for personal samples and upon the New Jersey, the United States Environmental Protection Agency (USEPA), and the United States National Ambient Air Quality Standards and other appropriate federal air standards for perimeter samples. The action levels established in the Specifications shall be used as minimum values.

3.9.2.6 If it is discovered during the course of the project that unsuspected airborne hazards are present and that the established action levels do not provide adequate protection, the Contractor's CIH shall establish action levels which will provide adequate protection from the new hazards. Establishment of additional action levels shall be made with the concurrence of the CO. The Contractor shall base modifications to the action levels upon information published by recognized sources.

3.9.2.7 A data sheet shall be developed and implemented by the CIH upon which the following monitoring data will be recorded:

3.9.2.7.1 Hazard and/or compound(s) being monitored.

3.9.2.7.2 Monitoring Method.

3.9.2.7.3 Date and time of monitoring.

3.9.2.7.4 Air monitoring location and activity being monitored.

3.9.2.7.5 Instrument, model #, serial #.

3.9.2.7.6 Calibration/background levels.

3.9.2.7.7 Flow rates and sample volumes (for TWA samples).

3.9.2.7.8 Total sample time (for TWA samples).

3.9.2.7.9 Results of monitoring.

3.9.2.7.6 Safety and Health Specialist/Industrial Hygienist Technician Signature.

3.9.2.7.7 Interpretation of the data and any further recommendations by the CIH or the SSHO in consultation with the CIH.

3.9.2.7.8 These results shall be given verbally to the CO following each site scan that indicates volatile organic vapor concentrations in excess of the action levels, and documented in writing by the end of each work day with three (3) copies provided.

3.9.3 Meteorological Monitoring

3.9.3.1 The Contractor shall furnish and maintain a portable meteorological station for the continuous observation and recording of wind speed, wind direction, ambient air temperature, atmospheric pressure, atmospheric humidity, solar insulation and atmospheric precipitation. The equipment and its placement shall be in conformance with USEPA Ambient Monitoring Guidelines for Prevention of Significant Deterioration (PSD) Standards (for horizontal wind speed and direction) as specified on PSD regulations promulgated by EPA under the Clean Air Act Amendments of 1977 (Public Law (P.L.) 95-95) on August 7, 1980. The station shall also include a continuous readout temperature gauge and a rainfall gauge.

3.9.3.2 The meteorological station will be positioned by the SSHO to provide representative data on the overall atmospheric diffusion conditions at the site. Visual wind direction indicators will be established in a central location at each active work area.

3.9.3.3 The calibration, audit, data reduction and document control of meteorological equipment and meteorological data shall be specified by the Contractor. For the purposes of this document, it is to be assumed that hourly averages of all meteorological parameters during the entire air monitoring program will tabulated, verified and archived.

3.9.4 Perimeter Air Monitoring

3.9.4.1 To generate baseline background data prior to initiating any on-site activities, the Contractor shall perform real-time perimeter air monitoring for volatile organics and total dust at four perimeter locations established around the active work site. The Contractor shall perform

perimeter air monitoring around the perimeter of the active work area during active drilling operations. The Contractor shall furnish and maintain a minimum of four (4) real-time monitoring stations (one upwind and three downwind) along the perimeter of the active work site areas. The Contractor shall perform TWA perimeter sampling during active drilling operations. The Contractor shall provide a minimum of four (4) portable, fully equipped, monitoring stations for perimeter TWA sampling. Each station and portable unit shall provide for the equipment to be located at an elevation of greater than 5 feet and less than 15 feet above ground level. The locations of the monitoring stations shall be proposed by the Contractor's CIH and accepted by the Contracting Officer prior to the commencement of each day's work activities.

3.9.4.2 Perimeter TWA sampling shall be completed and analyzed using appropriate EPA analytical methods for total dust and for volatile organic compounds, with detection limits as specified in the methods.

Methods considered acceptable for air sampling and analysis include:

Analysis	Sampling Media	Method
Volatile Organic Scan Compounds	SUMMA^{R} Passivated Canisters	T014 (GC-MS-Model)
Total/Respirable Dust	Filters	IP10 (Real Time Aerosol Monitor)
Asbestos	Filters	2aCFR1926.5(F)

EPA T014 in the GC-MS-Scan mode will allow the quantitation and identification of all detected compounds.

3.9.4.3 Eight (8) hour background samples shall be obtained during projected working hours on three (3) separate days with the prevailing wind direction prior to the commencement of on-site work.

3.9.4.4 Real-time monitoring at each perimeter air monitoring station shall be performed a minimum of four times per shift. The real-time perimeter air monitoring stations, at a minimum, will include: an organic vapor monitor and a dust monitor. Other equipment required to complete real-time air monitoring, including all necessary calibration and auditing equipment and supplies, will be provided by the Contractor as necessary. All equipment shall be intrinsically safe.

3.9.4.4.1 The Contractor shall provide real-time monitoring for dust using a total airborne dust monitor.

3.9.4.4.2 The Contractor shall provide real-time air monitoring for volatile organic compounds. Equipment to be used for these activities will include, at a minimum, a photoionization detector (PID - HNU or equivalent) or a flame ionization detector (FID - Century Organic Vapor Analyzer or equivalent) and an explosimeter.

3.9.4.5 The Contractor is required to establish action levels for atmospheric concentrations of organic compounds and particulates. Action levels for perimeter concentrations shall be established based on baseline background data. Typical action levels are provided as example:

ACTION LEVELS

Contaminant	Concentration	Location	Response
Total Organic Vapor Level	1 ppm above ambient conditions	Site Perimeter	Stop work and implement engineering controls
Total Particulates	0.5 mg/m^3	Perimeter	
Asbestos	0.01 f/cc	Perimeter	Stop work and implement engineering controls Will require 2 hours or less turnaround time on or near the site.

3.9.4.5.1 Organic vapor concentration at any perimeter air monitoring station exceeding 1 ppm above background will require a second sample be taken within a time period of no less than five minutes but not more than 15 minutes.

3.9.4.5.2 If the real time perimeter level exceeds the action level, the work on-site will cease and procedures for reducing the on-site releases to acceptable levels will be initiated. Any departures from general background shall be reported to the SSHO and the CO who, under the advisement of the CIH, will determine when operations should be shut down, levels of protection upgraded, and/or emergency response/contingency plans initiated. In addition the SSHO shall inspect the site in an attempt to determine the cause of the elevated levels in the ambient air. The Contractor shall implement changes in operating procedures, if applicable, to reduce or eliminate the elevated levels.

3.9.4.6 Perimeter TWA sampling for total dust and volatile organics shall be conducted daily according to EPA analytical methods. At minimum, one sample per environmental station shall be analyzed per week (four samples). The day selected will represent the day when the heaviest activity occurred. If real time air monitoring at the site perimeter indicates elevated levels, those TWA samples collected for that day shall be analyzed. The laboratory shall have three (3) years experience with EPA Air protocols. In the event that the results of the analysis of the TWA samples indicate concentrations of organics and/or total dust in ambient air in excess of established background conditions at the perimeter stations, the Contractor shall notify the CO immediately.

3.9.5 Real Time and Personal Air Monitoring

3.9.5.1 To generate baseline background data prior to initiating any on-site activities, the Contractor shall perform real-time ambient air quality monitoring for volatile organics and total dust at the proposed location of on-site activities. The Contractor shall provide real-time air monitoring for employee exposures in the active work zone during excavation, staging or loading of potentially contaminated soils, handling of contaminated liquids and at other times when there is a potential for worker exposure. Sampling locations and times shall be specified in the SHERP. Real-time air monitoring shall also be performed during each soil excavation, at staging and loading areas when occupied and in contaminated liquids handling areas. This monitoring shall be performed in the breathing zone of the employee with the highest risk of exposure.

3.9.5.2 During active site work, the Contractor shall provide personal air sampling pumps and appropriate sampling media for conducting on-site TWA personal sampling at a minimum of one location in each exclusion zone. The employee expected to receive maximum exposure will be sampled with a personal sampling pump and appropriate collection media or by sampling adjacent to the immediate work area of the affected employee. During on-site activities, air monitoring for volatile organics, asbestos, and total dust in the air shall be conducted on a daily basis, or as otherwise stated in the SHERP or proposed by the CIH and approved by the CO.

3.9.5.3 On-site real-time monitoring frequency for organic vapor concentrations and total dust shall be every 30 minutes or less during on-site waste handling activities. During other times, the frequency shall be sufficient to limit personnel exposure. The monitoring frequency shall be stated in the Contractor's SHERP.

3.9.5.4 The Contractor is required to establish action levels for atmospheric concentrations of organic compounds, asbestos, and particulates. Action levels for personal exposures shall be established based on baseline background data. Typical action levels are provided as example:

ACTION LEVELS

Contaminant Total	Concentration	Location	Response
Total Organic Vapor	1-5 ppm Above Background	Active Work Area	Obtain a second sample within a time period of no less than 5 minutes but no more than 15 minutes; if the second sample reading exceeds 1 ppm above background, on-site workers wearing Level D+ shall upgrade to Level C protection.

			Take appropriate action as directed by the SSHO in accordance with the SHERP. Report reading to the CO.
	5-50 ppm Above Background	Active Work Area	Obtain a second sample within a time period of no less than 5 minutes but no more than 15 minutes. As early as possible in the sampling routine, the atmosphere will be characterized using chemical specific detector tubes while wearing Level C protection. Take appropriate action as directed by the SSHO in accordance with the SHERP. Report readings to the CO.
	50 ppm (Above Background) for two successive readings within a 15 minute period	Active Work Area	Stop work and determine if specific chemical exposure is due to benzene. If so, active work area shall be shut down and personnel evacuated upwind until Level B protection is implemented.
Asbestos	Not in excess of 2 fibers/cc (10 x PEL)	Active Work Area	Take appropriate action as directed by the SSHO in accordance with the SHERP.

3.9.5.4.1 Organic vapor concentrations within the exclusion or the contamination reduction zones exceeding 5 ppm above background will require a second sample be taken within a time period of no less than 5 minutes but not more than 15 minutes.

3.9.5.4.2 Should the organic vapor level in any active working location exceed 100 ppm for any 1-minute average reading, or 50 ppm for any two successive readings within a 15-minute period, or should the explosimeter indicate over 25 percent of the lower explosive limit on any single reading, then that work location shall be shut down and personnel evacuated and the CO shall be notified immediately. Work shall not resume until:

Appropriate corrective measures are implemented.

Authorization to continue work is given by the CO.

3.9.5.4.3 During such time that the organic vapor levels exceed the aforementioned limit in the Support Zone, personnel shall be notified and all personnel within this area shall don respiratory protective equipment as described by the SHERP.

3.9.5.4.4 All samples from daily personnel monitoring will be retained and initially the sample representing the location with the heaviest daily activity shall be analyzed. If the real-time monitoring shows on-site air contaminant levels exceeding any of the action levels, TWA samples will be analyzed for that day. The laboratory shall be accredited by the American Industrial Hygiene Association for the requested analyses.

3.9.5.4.5 The Contractor shall collect a duplicate sample for volatile organics and/or particulates at one of the employer exposure monitoring locations on a daily basis. These samples shall be given to a second commercial laboratory for analysis. In addition, the Contractor shall comply with the QA/QC requirements for air monitoring sampling as specified in Section 01561.

3.9.5.4.6 The Contractor shall provide verbal analytical results with interpretation of the data and the recommendation of the CIH, if any, to the CO for particulates and volatile organics within 48 hours of receipt of the sample results from the analytical laboratory. The results shall be confirmed in a written report with three copies provided to the CO within 24 hours of providing the verbal results.

3.10 LOGS, REPORTS, AND RECORDKEEPING

3.10.1 The Contractor shall maintain logs and reports covering the implementation of the SHERP including the Air Monitoring Program. The format shall be developed by the Contractor to include training logs, daily logs, weekly reports, and a phase-out report.

3.10.2 The training logs shall include off-site training, site specific training, and follow-up refresher training.

3.10.2.1 Site specific training.

3.10.2.1.1 Employee's or visitor's name (attendance check).

3.10.2.1.2 Time allocation in training session.

3.10.2.1.2.1 Topics covered.

3.10.2.1.2.2 Materials used.

3.10.2.1.2.3 Equipment demonstration.

3.10.2.1.2.4 Prohibitions covered.

3.10.2.1.2.5 Other.

3.10.2.1.2.6 Buddy System explanation.

3.10.2.1.3 Signature of trainer and date.

3.10.2.2 Refresher and Follow-up Training.

3.10.2.2.1 Employee's or visitor's name (attendance check).

3.10.2.2.2 Time allocation.

3.10.2.2.3 Topics presented.

3.10.2.2.4 Date and place.

3.10.2.2.5 Signature of trainer and date.

3.10.2.3 Off-site training.

3.10.2.3.1 Name of trainer, company and telephone number.

3.10.2.3.2 Date of training.

3.10.2.3.3 Copy of certificate.

3.10.3 A record of initial and refresher training shall be maintained on-site. This includes, but is not limited to, the following:

3.10.3.1 Daily Safety Logs:

3.10.3.1.1 Date.

3.10.3.1.2 Area (site specific) checked.

3.10.3.1.3 Employees in a particular area.

3.10.3.1.4 Equipment being utilized by employees.

3.10.3.1.5 Protective clothing being worn by employees.

3.10.3.1.6 Protective devices being used by:

3.10.3.1.6.1 Contractor's personnel.

3.10.3.1.6.2 Visitors.

3.10.3.1.6.3 Designated state and federal representatives.

3.10.3.1.7 Contamination Reduction Zone and decontamination procedures.

3.10.3.1.8 Shower and changing facilities.

3.10.3.1.9 Air Monitoring Data.

3.10.3.1.10 Air Quality Certification.

3.10.3.1.11 SSHO signature and date.

3.10.4 Employee's and Visitor's Log.

3.10.4.1 Date.

3.10.4.2 Name.

3.10.4.3 Address.

3.10.4.4 Representing Agency or Company.

3.10.4.5 Time entering site.

3.10.4.6 Time exiting site.

3.10.5 Weekly Reports.

3.10.5.1 Summary sheet covering the range of work being done.

3.10.5.2 Any incidents of:

3.10.5.2.1 Non-use of protective devices in an area where required.

3.10.5.2.2 Non-use of protective clothing.

3.10.5.2.3 Disregard of buddy system.

3.10.5.2.4 Violation of eating, smoking, and chewing in prohibited areas.

3.10.5.2.5 Misuse of any of the above.

3.10.5.2.6 Job-related injuries and illness.

3.10.5.3 SSHO signature and date.

3.10.5.4 Date specified for the Weekly Report to be in the CO's office.

3.10.5.5 Copies of daily logs attached.

3.10.6 Phase-out Report: At the completion of the work, the Contractor shall submit a phase-out report. The report shall include:

3.10.6.1 Final physical/medical certifications.

3.10.6.2 Final decontamination certifications including procedures and techniques used to decontaminate:

3.10.6.2.1 Equipment and vehicles.

3.10.6.2.2 Personnel decontamination facility.

3.10.6.2.3 Support Zone facilities.

3.10.6.2.4 Laundry facilities (if on-site).

3.10.6.3 Complete summary of monitoring accomplished on the job to include personnel/area air monitoring and decontamination verification.

3.10.6.4 Signed and dated by the Contractor 30 days prior to final acceptance of the work.

3.10.6.5 Shall be submitted to the CO 30 days prior to final acceptance of the work.

3.10.7 Employer Obligation: The Contractor shall be aware that Federal regulations such as OSHA (29 CFR 1910 and 29 CFR 1926) require that chemical exposure records and medical records be maintained by an employer for a specified length of time after the termination of job.

3.11 COMMUNICATIONS

3.11.1 The Contractor shall provide hardline telephone communication at his site field office and at the Contracting Officer's field office.

3.11.2 Emergency numbers, including police, fire, ambulance, hospital, poison control center, and EPA, shall be prominently posted near all on-site telephones.

3.11.3 The Contractor shall provide a PA system, fixed, hand-held, or mobile, adequate to cover the site.

3.11.4 The Contractor shall provide two-way radio site communication between the communication control center and each of the site activity areas; the SSHO/IHT; the Contracting Officer and staff; the Contractor's supervisory personnel; the laboratory; and security; and each active work location.

3.11.5 The Security Officer shall supervise site communications and manage the communication control center. The control center shall be located within the Security Officer's office.

3.11.6 The site crews will be in constant visual contact while working in the Exclusion Zones.

3.12 HEAT STRESS/COLD STRESS

3.12.1 HEAT STRESS: The climate, combined with the requirements for PPE, may create heat stress. The Contractor will establish specific protocols for mitigating heat stress. Standard heat stress monitoring techniques (e.g., Wet Bulb Globe Temperature Index [WBGT]) shall be used for workers not wearing CPC. Monitoring of personnel wearing impervious clothing shall commence when the ambient temperature is 70 degrees F or above. The use of standard heat stress techniques (e.g., WBGT) is not appropriate for monitoring workers in impervious clothing. Monitoring frequency shall increase as the ambient temperature increases or as slow recovery rates are observed. Monitoring shall be performed by a person with a current first aid certification who is trained to recognize and monitor the symptoms of heat stress. This person may be an IHT.

3.12.1.1 The Contractor shall mitigate heat stress monitoring for workers in impervious clothing. This monitoring may include:

3.12.1.1.1 Heart Rate and/or Body Temperature

3.12.1.1.2 Body Water Loss (using a scale with an accuracy of $\pm$0.25 lbs)

3.12.1.2 The Contractor's CIH shall specify the work cycle period and the rest period based on ambient temperature/humidity and heat stress monitoring. The action levels at which the corrective action shall be taken shall be addressed in the Contractor's SHERP.

3.12.2 COLD STRESS MONITORING: To guard against cold injury, the Contractor shall provide appropriate clothing, warm shelter for the rest periods, and shall monitor worker's condition using one or more of the following techniques. Workers who are exposed to equivalent wind chill temperatures below -10 degrees F shall be medically certified by the physician as suitable for such exposure. All workers certified as suitable for exposure shall adhere to the schedule as specified in the current Work/Warmup ACGIH-TLV Booklet for Physical Agents.

3.13 ACCIDENT PREVENTION PLAN

3.13.1 The Contractor shall submit for acceptance as part of the SHERP an Accident Prevention Plan (APP). The Contractor's APP shall be consistent with the Corps APP found in EM 385-1-1, Appendix Y, Suggested Contractor's Accident Prevention Plan Format. The approved APP shall be the accident prevention policy to be adhered to by the Contractor and his Subcontractors during construction and remedial activities. The Contractor shall be responsible for implementation of the APP by all personnel under his direction and Subcontractors. The APP shall address, at a minimum, the following items:

3.13.1.1 Hazards to be expected and preventive measures to be taken.

3.13.1.2 Personnel responsibilities.

3.13.1.3 Phase-specific safety procedures.

3.13.1.4 Subcontractor supervision.

3.13.1.5 Safety meetings.

3.13.1.6 Fire prevention and protection.

3.13.1.7 Site housekeeping.

3.13.1.8 Mechanical equipment inspection.

3.13.1.9 First aid and medical facilities.

3.13.1.10 Sanitation.

3.13.1.11 Accident reporting.

3.13.1.12 Daily safety inspections.

3.13.1.13 Activity Hazard Analyses (Phase Plans).

3.13.2 The Contractor shall perform daily safety inspections of the job site and the work in progress to ensure compliance with the Corps of Engineers Manual EM 385-1-1 and other occupational health and safety requirements of the contract. Daily safety logs, as required under paragraph 3.10, "Logs, Reports, and Recordkeeping", shall be used to document the inspection, noting safety deficiencies, and corrective actions taken. The Contractor shall use his designated quality control staff and/or health and safety staff to perform the required inspections and shall supplement the staff with additional personnel as required. Additional personnel shall be provided at no cost to the Government.

3.14 POSTED REGULATIONS

3.14.1 The Contractor shall develop a series of proposed regulations which shall be reviewed and approved by the Contracting Officer. These regulations shall address the on-site protocol regarding use of personal protective equipment, personal hygiene, and provisions for smoking and eating.

3.14.2 These protocols shall be posted on all on-site trailers, within the Contamination Reduction Zone, and at the entrance to the site and shall be reviewed with Contractor's personnel.

3.15 SITE GENERATED WASTE

3.16 SITE SPECIFIC TRAINING

3.16.2.1 Curriculum outline(s) shall be developed by the CIH for site specific training courses. The site specific training program shall address all elements of the SHERP. The site specific training sessions shall be conducted by the CIH or the SSHO. A weekly refresher training session will be conducted by the SSHO or CIH for all personnel assigned to work at the site during the following week.

3.16.2.2 Prior to being assigned to or entering the EZ or CRZ, all personnel shall complete an initial site specific training session of at least four hours to guarantee that all such personnel are familiar with potential site safety and health hazards, personal protective equipment, and site control procedures. Personnel assigned to the site but not entering the EZ or CRZ shall have at least one hour of initial site specific training. This one hour training shall emphasize response to site emergencies.

3.16.2.3 The Contractor shall notify the CO at least five (5) days prior to any initial site specific training session so that government personnel involved in the project may attend.

3.16.3 A minimum of two supervisors and managers per shift must have a valid standard first aid and CPR certificate (American Red Cross and/or American Heart Association or equivalent as accepted by the CO).

3.16.4 Should an operational change affecting on-site field work be made, prior to implementation of the change, a meeting shall be convened to explain health and safety procedures. Documentation of all on-site training shall be maintained on-site during activities.

3.16.5 The Contractor shall include a follow-up training schedule in the SHERP. This training shall be in addition to the weekly safety meetings and held, at a minimum, once every three months. The topics covered shall include practical hands-on training and shall consist of, at a minimum, the following:

3.16.5.1 First aid (heat and cold stress, shock, heart attack and stroke).

3.16.5.2 Accident prevention.

3.16.5.3 SCBA, escape respirators and APR use, including fit testing.

3.16.5.4 Emergency rescue and preparedness.

3.16.5.5 Fire emergencies.

3.16.5.6 Use of personal protective clothing.

3.16.5.7 Hazard Assessment.

3.16.5.8 Emergency communication (phone numbers, personnel rules, and evacuation routes).

3.16.6 All Contractor personnel shall receive a minimum of 8 hours per year of worker retraining as required by 29 CFR 1910.120. All personnel who act in a supervisory or management role must complete 8 hours per year of supervisor retraining as required by 29 CFR 1910.120. Documentation of refresher training shall be maintained on-site during activities.

3.16.7 Additionally, the Contractor shall be responsible for, and shall guarantee that, only personnel successfully completing the required training are permitted to enter contaminated areas of the site.

3.16.8 Any person visiting the site shall have training in hazards present, emergency preparedness, and site zones. Any personnel entering the CRZ or EZ, including visitors, shall have the appropriate site specific and hazardous work training.

3.17 DUST CONTROL

The Contractor shall conduct operations and maintain the project site so as to minimize the creation and dispersion of dust. Visible dust is not necessarily the criterion if hazardous wastes are involved.

3.18 MATERIAL SAFETY DATA SHEETS

The Contractor shall submit an inventory and a copy of the material safety data sheet for each hazardous or chemical substance supplied by the Contractor or Subcontractor(s) to the work site as well as those for on-site contaminants and abide by other applicable standards in accordance with 29 CFR 1910.1200 and 29 CFR 1926.59, Hazard Communication.

3.19 SPILL CONTROL PLAN

The Contractor shall submit within 30 days after Contract Award, a spill control plan which detail the spill prevention measures to prevent environmental releases of contaminated materials. This plan shall specify design and work practices to prevent such releases and mitigation measures to control and remediate releases. This plan shall address procedures for reporting spills and coordinating with local and state response agencies in the event of a spill or release. This plan shall specify the personnel roles and the training to be provided for implementation of this plan. As a minimum the contents of the Spill Control Plan shall meet the requirements of 29 CFR 1910.120(J).

SECTION 01405
CHEMICAL DATA QUALITY MANAGEMENT

PART 1 GENERAL

1.1 SCOPE

This section covers the Chemical Data Quality Management Program (CDQMP) requirements for sampling and analysis activities at the CPC site related to soil excavation, staging, and treatment, building decontamination, asbestos removal, equipment decontamination and removal, groundwater treatment, management of sidestreams and residuals, and air emissions control.

1.1.1 Purpose. The purpose for specifying a Chemical Data Quality Management Program is to ensure that the Contractor adequately addresses all chemical quality management details associated with this contract. The CDQMP shall ensure that all technical data generated are accurate, precise, comparable, sensitive, complete, and representative. The types and quality of the testing shall be based on the requirements set forth in these specifications.

Data shall be generated by the Contractor for the following sampling and analysis components:

Soil sampling and analysis on the sides and bottom of the excavation following removal of contaminated soils.

Sampling and analysis of feed material taken from select area of the excavation prior to low temperature enhanced volatilization (LTEV) treatment in order to document worst case contaminant concentrations in the feed that can be used to select operation parameters.

Sampling and analysis of LTEV System Performance Test residuals.

Sampling and analysis of oversized material in order to implement proper disposal.

Sampling and analysis of treated soil to determine if it meets treatment criteria and passes the Toxicity Characteristic Leaching Procedure (TCLP) standards prior to backfill.

Sampling and analysis of LTEV unit solid and liquid residuals in order to implement proper disposal.

Sampling and analysis of excavation, stockpile area, and LTEV air emissions in order to monitor the health and safety of site workers and the people in the surrounding community.

Sampling and analysis of ambient air conditions at the perimeter of the site and at the excavation face to ensure that ambient air meets ARARS.

Sampling and analysis of groundwater prior to treatment and following treatment to determine the effectiveness of the chemical precipitation system prior to reinjection.

Sampling and analysis of airborne contaminants during building and equipment decontamination in order to monitor the health and safety of site workers.

Sampling and analysis of wipe samples from the decontaminated building and equipment to determine if the cleanup goals have been achieved.

Sampling and analysis of material resulting from decontamination in order to implement proper disposal.

Sampling and analysis of tank contents and condensor liquids in order to implement proper disposal.

Sampling and analysis of the above-ground storage tanks outside the building following decontamination to confirm that cleanup goals have been met.

Sampling and analysis of decontamination fluids in order to implement proper disposal.

1.1.2 Quality Assurance Policy. The Quality Assurance procedures for the Project shall be described in detail in the Chemical Data Acquisition Plan. The Chemical Data Acquisition Plan shall include consideration of the technical specification requirements and contain provisions to assure identification and compliance with requirements of USEPA, USACE, and NYSDEC Regulations.

1.1.3 Responsibilities. Contractor's Chemical Data Quality Management program shall provide assurance that activities affecting the quality of sampling and analysis data are documented within the document control system and accomplished in accordance with written instructions. Provisions shall be established for communicating to all responsible individuals in Contractor's organization that Quality Assurance policies, plans, and procedures are mandatory requirements which shall be implemented.

1.1.3.1 Activities affecting data quality shall be accomplished under controlled conditions. Controlled conditions include the use of appropriate equipment, suitable environmental conditions for accomplishing the activity, adequate documentation that a specified decontamination procedure was followed, adequate laboratory facilities, and assurance that all prerequisites for the given activity have been satisfied.

1.1.3.2 Prior to the initiation of work, Contractor shall review drawings, specifications, applicable codes, standards, and other contract documents to assure proper knowledge of the contract requirements.

1.1.4 Quality Management Organization.

1.1.4.1 Contractor shall prepare and execute a Chemical Data Acquisition Plan which shall clearly define the organizational structure within which the Chemical Data Quality Management Program is to be planned, implemented, and executed.

1.1.4.2 The authority and responsibility of persons performing quality management activities shall be stated in the Chemical Data Acquisition Plan.

1.1.4.3 The Contractor's Quality Control Supervisory Engineer shall be responsible for overall management of the Chemical Data Quality Management program and have the authority to act in all chemical quality assurance/ quality control (QA/QC) matters for the Contractor. The Quality Control Supervisory Engineer for this contract shall have the ultimate responsibility to ensure compliance with the approved CDAP as well as be in charge of the Contractor's Quality Control Program. This person or his authorized assistants shall demonstrate their ability to perform correctly the duties required to the satisfaction of the USACE Contracting Officer and shall be physically at the project site whenever work is in progress and will be in charge of the Contractor's quality assurance program for this project. All the Contractor's submittals for approval shall be reviewed and modified or corrected as needed by him or his authorized assistants and approved prior to forwarding of such submittals to the Contracting Officer, as specified in Section 01110: Special Clauses.

The Contractor's Quality Control Supervisory Engineer may designate some of his responsibilities to another qualified person who shall be approved in advance by the Contracting Officer in the following situations:

When the Contractor's Quality Control Supervisory Engineer does not personally have the requisite skills.

When the Contractor's Quality Control Supervisory Engineer is unable to be physically present when tasks involving chemical sampling and analysis activities are being conducted on-site.

When deemed necessary by the Contracting Officer.

1.1.4.4 The Contractor's Chemical Data Acquisition Plan shall detail the names, qualifications, authorities, and responsibilities of all quality control personnel as well as the relationship and/or interrelationship with the overall project organization.

1.2 APPLICABLE PUBLICATIONS

1.2.1. U.S. Army Corps of Engineers, Environmental Regulation ER1110-1-263 "Engineering and Design Chemical Quality Management for Hazardous Waste Remedial Activities," October 1, 1990.

1.2.2. U.S. Army Corps of Engineers, "Interim Standard Air Monitoring guide for Hazardous Waste Sites," June 1984.

1.2.3. "Test Methods for Evaluating Solid Wastes - Physical/Chemical Methods," SW-846, Office of Solid Waste and Emergency Response, U.S. Environmental Protection Agency, Washington, DC 20460, 3rd Edition, 1986.

1.2.4. "USEPA Contract Laboratory Program, Statement of Work for Organic Analysis, Multi-Media, Multi-Concentration," Document Number OLM01.0-OLM01.8, Sample Management Office, P.O. Box 818, Alexandria, VA 22313.

1.2.5. "USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis, Multi-Media, Multi-Concentration," Document Number ILM02.0-ILM02.1, September 1991, Sample Management Office, P.O. Box 818, Alexandria, VA 22313.

1.2.6. "Handbook for Analytical Quality Control in Water and Wastewater Laboratories, EPA-600/4-79-019, Environmental Monitoring and Support Laboratory, U.S. Environmental Protection Agency, Office of Research and Development, Cincinnati, Ohio 45268, 1979.

1.2.7. "Characterization of Hazardous Waste Sites, A Methods Manual. Volume III. Available Laboratory Analytical Methods," U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory, Office of Research and Development, Las Vegas, Nevada 89114, 1984.

1.2.8. "Preparation of Soil Sampling Protocol Techniques and Strategies," EPA-600/4-83-020, PB83-206979, U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory, Office of Research and Development, Las Vegas, Nevada 98114, 1983.

1.2.9. "GC Screen, GC/MS Analysis of Organic Compounds," U.S. Environmental Protection Agency, Procurement Section A (PM-214-F) 401 M Street SW, Washington, DC 20460, 1983.

1.2.10. "Analytical Methods for CERCLA Hazardous Substances - Interim Report," EPA 600/X-83-071, U.S. Environmental Protection Agency, Environmental Monitoring Systems Laboratory, P.O. Box 15027, Las Vegas, Nevada 89114-5027, 1983.

1.2.11. "Methods for Chemical Analysis of Water and Wastes." EPA-600/4-79-020, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268, 1983.

1.2.12. "Field Manual for Grid Sampling of PCB Sites to Verify Clean-up" (Office of Toxic Substances, May 1986) EPA 560/5-86-017.

1.2.13. NIOSH Manual of Analytical Methods, 3rd Edition, February, 1984.

1.2.14. Compendium of Methods for Determination of Toxic Organic Compounds in Ambient Air, April 1984, EPA/600/4-84/041; Supplement September 1986. EPA/600/4-87/006; Second Supplement June 1988, EPA/600/4-89/017.

1.2.15 "Laboratory Data Validation Functional Guidelines for Evaluating Organics Analyses", February 1988, U.S. Environmental Protection Agency.

1.2.16. "Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses," February 1988, U.S. Environmental Protection Agency.

1.2.17 "Data Quality Objectives for Remedial Response Activities," March 1987, EPA 540/6-87/003.

1.3 CONTRACTOR REQUIREMENTS

1.3.1 As part of this project, the Contractor shall prepare and submit to the Contracting Officer at least one week prior to the pre-work conference a Chemical Data Acquisition Plan (CDAP). This CDAP shall provide the chemical quality assurance and quality control (QA/QC) procedures necessary for collection, transportation, analysis, and disposal of soil, water, air, and wipe samples performed in conjunction with the remediation activities. Characterization and quality sampling/testing shall be directed towards potentially contaminated soils. QA/QC procedures shall be in accordance with provisions of USACE, USEPA, NYSDEC, and NIOSH.

1.3.1.1 At a minimum, the following elements will be included in the order presented below. Each topic shall include information as specified in ER-1110-1-263, Appendix D.

1.3.1.1.1 Title page.

1.3.1.1.2 Table of contents shall include a serial listing and page location of the CDAP elements.

1.3.1.1.3 Project Description shall describe the work site and any unusual conditions, discuss past chemical data of significance, list the objectives of the sampling and analysis procedures, and present the sampling to be carried out in the present work effort.

1.3.1.1.4 Chemical Data Quality Objectives (DQO's). This section shall describe the data uses and data quantity objectives for all samples. Definition of data quality objectives shall be completed in conformance with the USEPA guidance document "Data Quality Objectives for Remedial Response Activities" (EPA 540/6-87/003).

1.3.1.1.5 The Contractor's (as well as that of any subcontractor) quality control organization, including names, qualifications, authorities, and responsibilities of all quality control personnel. A copy of the letter to the QC manager signed by an authorized official of the firm which describes the responsibilities and delegates the authorities of the QC manager shall also be included.

1.3.1.1.6 Provision for a properly equipped (certified) laboratory and experienced staff, including a description of facilities and instrumentation, and names and qualifications of analytical and technical personnel. A letter of commitment from the chemical laboratory facility to be used shall be submitted with the Bid.

1.3.1.1.7 Schedule of field and laboratory inspections.

1.3.1.1.8 Proposed sample locations, collection, custody, handling, preservation, storage, packing, transfer and recording procedures, and equipment.

1.3.1.1.9 A table showing sample containers, preservatives and holding times for each sample type.

1.3.1.1.10 Field equipment calibration procedures.

1.3.1.1.11 Field sampling and analysis documentation requirements.

1.3.1.1.12 Quality Control and Quality Assurance Field Samples. Indicate the type and number of QC and QA samples and blank samples to be collected and the laboratory that will perform the analysis. Prepare a table(s) listing the number of split samples, replicate samples, and blanks. The Chemical Data Acquisition Plan shall cite the matrix of each quality control sample as well as the frequency at which each quality control sample will be taken.

1.3.1.1.13 Field equipment decontamination procedures.

1.3.1.1.14 A table of analytical methods, including references, and laboratory quantitation limits.

1.3.1.1.15 A description or a standard method reference of the laboratory procedures used for calibration and frequency of checks shall be provided for each instrument or method.

1.3.1.1.16 The Quality Control Procedures shall be described including the number and types of internal quality control samples analyzed, procedure for handling out-of-control recoveries, designation of the corresponding matrix spike sample, retention time for all project raw data, and quality control checks.

1.3.1.1.17 The laboratory instruments, including manufacturer, model, accessories, and preventive maintenance schedule shall be described. Records of repairs, adjustments, and calibrations shall be maintained and available for inspection by USACE on request.

1.3.1.1.18 Plans for corrective actions to be taken when results appear unusual, questionable, or limits of acceptability are exceeded shall be included. When limits of recovery or precision are not met the problem shall be documented. Describe how re-establishment of control is demonstrated.

1.3.1.1.19 Procedures for data reduction, validation, and documentation. Equations, including units, required to calculate the concentration or value of the measured parameter, shall be included for all procedures. Describe the data management systems which collect raw data, store data, and document quality control data. Data validation procedures and organization shall be specified.

1.3.1.1.20 Format for reporting data. The Contractor shall describe the format for reporting data so that it is clear which laboratory samples are associated with QA laboratory samples. Report each method run and results for all analytes for each sample as their detected value or as less than the detection limit. Data that does not meet precision, accuracy, or completeness criteria will be reported with the appropriate qualifier. Results of analyses on solid samples shall be reported on a dry-weight basis with percent moisture also reported. The laboratory shall report dilution factors for each sample. The dates of extraction and analysis for each sample will be reported with the data package.

When the method requires surrogate spikes, the surrogate spike recoveries shall be reported. Also the control limits for the surrogate spike and the surrogate spike concentration will be reported. Matrix spike recoveries and the recovery control limits shall be reported for all organic and inorganic analyses.

Field duplicates and Field blanks will be reported as any other field sample with the addition of reporting the relative percent difference for the duplicates.

1.3.1.1.21 Describe who and at what frequency the contract laboratory will submit data to the QA laboratory for its review and information. This submittal should include all sample blank and internal quality control results such as spike and surrogate recoveries and agreement between replicate analyses.

1.3.1.1.22 Procedures used to assess data precision, accuracy, completeness, representativeness, comparability, and sensitivity of samples and data.

1.3.1.1.23 Protocol for corrective action.

1.3.1.1.24 Performance and system audits.

1.3.1.2 The Contractor shall revise the CDAP to address USACE, USEPA, and NYSDEC comments.

1.3.2 In addition, the Contractor shall completely fill out and submit the USEPA Brossman Work/QA Plan Short Form for the acceptance of the Contracting Officer. Copies of the form along with the guidance documents can be obtained from:

U.S. Environmental Protection Agency, Region II
26 Federal Plaza - Room 711
New York, NY 10278
Attention: Mr. Ronald Rusin
Regional Project Manager

1.3.2.1 The Contractor is responsible for obtaining and becoming familiar with the necessary documents from USEPA.

1.3.3 The Contractor shall provide and coordinate the services of an approved testing laboratory to perform specified services and analyses. Laboratory capabilities must be provided for the duration of the work. The facilities must meet the requirements of this specification and are subject to inspection and prior approval by the Contracting Officer (CO).

1.3.3.1 Commercial Laboratory Evaluation. The form titled "Evaluation of Commercial Laboratory" will be completed by the Contractor and submitted to the USACE, USEPA, and NYSDEC project managers for the laboratory approval process.

1.3.3.2 The Laboratory selected by the Contractor to perform the air sample analyses must be American Industrial Hygiene Association (AIHA) accredited, currently successfully participating in an appropriate National Institute of Occupational Safety and Health (NIOSH) proficiency test for volatile organic analyses, or pass an inspection by the USACE at the expense of the Contractor.

1.3.4 The Contractor shall submit the CDAP, the Brossman Short Form, and the Laboratory Evaluation Form for all subcontractor laboratories to the CO for acceptance by the CO. The CDAP shall be signed by a representative from each laboratory or firm involved in the analytical process including sampling and analysis. This is to ensure that these parties are both aware of and are agreeable to the quality requirements of the CDAP. The Contractor laboratory and all subcontractor laboratories shall also be inspected and approved by the QA Laboratory.

1.3.5 Daily Quality Control Report (DQCR). The DQCR shall be prepared daily, dated, signed by the field operations manager, and reported to USACE within two working days. The DQCR shall reflect the guidance elements in the following paragraphs or propose changes with reasons why the changes are appropriate.

1.3.5.1 Reference the sections in the Chemical Data Acquisition Plan for sampling and analysis.

1.3.5.2 Weather conditions.

1.3.5.3 Information concerning all field sampling, field samples, sample shipping.

1.3.5.4 Departures from approved Chemical Data Acquisition Plan.

1.3.5.5 Problems identified, corrective actions, and verbal/written instructions from USACE.

1.3.5.6 Documentation that the sampling,packaging, and shipping elements for samples were checked using the USACE "Cooler Receipt Form."

1.3.5.7 Indicate the person responsible for the DQCR and the method for forwarding the DQCR to the Government Project Manager or Government inspector.

1.3.5.8 Inspections made and the results.

1.3.5.9 Calibrations performed and calibration procedures for the field instrumentation used.

1.3.6 A Quality Control Summary Report (QCSR) shall be submitted to the USACE project manager at the end of the project. The QCSR shall reflect the guidance elements in 4.8.6.

1.3.6.1 Describe the Quality Control Summary Report's contents and the submittal date relative to the completion of the project chemical analyses.

1.3.6.1.1 An outline of QC practices employed by the Contractor including any problems and corrective actions taken.

1.3.6.1.2 Conclusions regarding the confidence level of the data relative to the Data Quality Objectives.

1.3.6.1.3 A consolidation and summary of the DQCRs.

1.3.7 The methods of analyses of soil and water shall be as described in EPA publication (SW-846) entitled, Test Methods for Evaluating Solid Waste Physical/Chemical Methods (November 1986). The method of analyses for the groundwater treatment influent and effluent quality shall be as described in EPA publication EPA 600/4-82-057, entitled, Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater. The methods of analyses for air quality shall be as described in EPA publication 600/4-84-041 entitled, Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air. Analyses are dependent on requirements of the disposal site. Analysis methods shall include but not be limited to the following: (Methods of analysis are specified in Paragraph 3.2, ANALYTICAL METHODS AND PROCEDURES.

1.3.7.1 Physical characteristics.

1.3.7.2 Chemical composition (inorganic and organic, including volatile organic compounds and acid, base, neutral compounds).

1.3.8 The Contractor shall be responsible for obtaining all waste compatibility and characterization analysis data required for the transporters and permitted disposal facilities, respectively.

1.3.9 The Contractor shall provide for prompt sampling for waste characterization and compatibility and turn-around of analysis results so as not to delay the project. A maximum turnaround of 40 days from time of collection of soil samples will be allowed.

1.4 Quality Management Objectives

1.4.1 The basic goal of a Chemical Data Quality Management Plan (CDQMP) is to assure that the chemical data collected is thoroughly documented, and legally and scientifically defensible. For this Contractor Quality Management Plan, the objectives are the following:

1.4.1.1 To provide the requirements upon which the Contractor shall submit a Chemical Data Acquisition Plan. Provisions for the development of the CDAP are based on COE Publication (ER 1110-1-263) Engineering and Design Chemical Quality Management-Toxic and Hazardous Wastes, October 1990, Appendix C: Guide to the Preparation of the Chemical Data Acquisition Plan.

1.4.1.2 To assure that all chemical samples are accurately and precisely collected, analyzed and documented so that proper treatment, disposal and/or discharge of soils, air, accumulated groundwater, precipitation and runoff and decontamination wash water is undertaken, and that cost incurred by the government for waste handling and/or disposal are correctly derived.

1.4.1.3 To ensure compliance with the Department of Transportation and other waste manifest regulations.

1.4.1.4 To ensure that samples are properly collected, analyzed, and documented to provide data as part of the Contractor Health and Safety Plan, and protect the governmental against claims related to exposure to hazardous chemicals, and to allow the government to file claims against potential responsible parties for cost recovery purposes, if possible.

1.5 Project Organization and QM Responsibilities

1.5.1 The Contractor shall provide details relative to the project organization and quality management (QM) responsibilities for the prime Contractor and any subcontractors to be involved in the completion of the proposed work. The CDAP will clearly define the project management assignments and responsibilities to ensure compliance with QA/QC protocols. The following items shall be provided in the CDAP:

1.5.1.1 Overall project organization which includes schematic diagram indicating key QC individuals for prime Contractor and any subcontractors and shows all Contractor-subcontractor interactions and responsibilities.

1.5.1.2 Listing of key QC individuals and descriptions of qualifications and experience relative to toxic or hazardous materials/wastes.

1.5.1.3 The minimum requirements for the chemical quality control officer and bench chemists shall be a B.S. in chemistry and one year of appropriate experience in preparations, testing, and analyses. In addition, the GC/MS Special Interpretation Expert which shall have three years minimum appropriate experience and the Gas Chromatograph Residue Analyses Expert shall have two years minimum appropriate experience. Technicians shall normally have a minimum of high school chemistry (Technicians shall work under the close and continuous supervision of a chemist and shall be used primarily for sample preparation.) Chronological resumes listing relevant education with exact disciplines and years of experience (including continuing education) shall be included for all chemical quality management personnel.

1.5.1.4 Designation of the Contractor Quality Control Officer who shall report directly to a responsible company senior officer, and who must have experience with chemical quality control, and sampling and analysis of toxic and hazardous chemicals. The QC Officer and subsequent chain-of-command must be mutually exclusive from the Contractor company project management chain-of-command.

1.5.1.5 Qualifications and certification of the Contractor's analytical laboratory and a description of the facility's analytical instrumentation. Personnel responsible for the performance of all laboratory analysis, including supervisors, chemists, and technicians shall be identified and their resume submitted with a description of experience and qualifications.

PART 2 RELATED SECTIONS

SECTION 01010 SUMMARY OF WORK
SECTION 01040 PROJECT OPERATIONS PLAN
SECTION 01060 REGULATORY REQUIREMENTS
SECTION 01064 ENVIRONMENTAL PROTECTION
SECTION 01110 SPECIAL CLAUSES
SECTION 01155 HEALTH, SAFETY, AND EMERGENCY REQUIREMENTS
SECTION 01400 CONTRACTOR QUALITY CONTROL
SECTION 01560 SPILL AND DISCHARGE CONTROL PLAN
SECTION 01561 DUST AND VOLATILE EMISSIONS MONITORING AND CONTROL PLAN
SECTION 01700 SITE CLOSURE PLAN
SECTION 02211 EXCAVATION AND BACKFILL
SECTION 02940 EXTRACTION AND INJECTION WELL PIPELINES
SECTION 11239 VOC AIR STRIPPING SYSTEM
SECTION 11240 GRANULAR ACTIVATED CARBON ADSORPTION SYSTEM
SECTION 11600 LABORATORY EQUIPMENT AND SUPPLIES
SECTION 13700 LOW-TEMPERATURE THERMAL DESORPTION
SECTION 13750 BUILDING MATERIALS AND CONTENT DECONTAMINATION
SECTION 13850 REMOVAL AND DISPOSAL OF ASBESTOS-CONTAINING MATERIAL
SECTION 13900 OFF-SITE TRANSPORTATION AND DISPOSAL
SECTION 13910 EXTRACTION WELL SYSTEM
SECTION 13920 INJECTION WELL SYSTEM

PART 3 FIELD EXECUTION

3.1 SAMPLING

3.1.1 Sampling Plan Overview. The Contractor shall prepare as part of the CDAP a field sampling plan that describes the field sampling procedures for each matrix described in 1.1.1. The plan will address procedures to obtain representative data. The plan shall contain descriptions of sampling, equipment, sample containers, sample sizes, sample preservation, sample shipment and handling and sampling program organization.

Sampling and sample custody procedures shall be consistent with USACE Sample Handling Protocols and EPA guidelines unless otherwise specified. In some cases alternate procedures may be used, but those procedures must be approved by the USACE Contracting Officer. The Contracting Officer shall have the right to direct modifications to the sampling methodology to ensure representative sampling.

3.1.2 Sampling Program Organization. The Contractor shall clearly specify in the field sampling plan the sampling program organization to be utilized during all field sampling efforts. The Contractor shall clearly identify whether individual Subcontractors will be responsible for specific sampling events. The CDAP shall identify all Subcontractors responsible for chain of custody transfers between sample collection and receipt by the laboratories.

3.1.3 Sample Types and Chemical Analyses. The following types of samples will be collected for chemical analyses. The sample matrix, analytical parameter, and sample frequency are included in Table 01405-1.

3.1.4 Sampling Plan. The Contractor shall describe in detail the locations, methods of collection, compositing schemes (if appropriate), and number of samples which will be collected in order to obtain a reliable and representative sample for all matrices described in Table 01405-1. The CDAP must include a detailed description of techniques used in selecting sampling sites. The sample frequencies specified in Table 01405-1 may be modified by the Contractor in the sampling section of the CDAP, but the Contractor must provide the justification for the frequency changes.

3.1.4.1 Soil and Other Solid Samples

3.1.4.1.1 The Contractor will collect soil samples following excavation in the spill area hotspot where soil is being excavated to 8 feet. The Contractor will develop a 10-foot grid on the bottom and sides of the excavation. Samples will be analyzed for Tetrachloroethylene (PCE) and any samples exceeding 200 ppb will indicate that additional soil must be excavated in the four grids surrounding the location where 200 ppb was exceeded. The Contractor will specify how much additional soil must be excavated before additional sampling occurs. Excavation and sampling will continue until all samples are below 200 ppb.

3.1.4.1.2 The Contractor will collect two samples prior to the LTEV System Performance Test. One sample will be collected during excavation of the hotspot. Based on previous investigations, the sample will be collected from the area believed to have the highest concentration of PCE. The second sample will be collected from the stockpiles in the staging area. Based on observations of sample handling from excavation to consolidation, the sample will have the least favorable process characteristics. The contractor shall document the reason for selecting each of the two samples. The samples will be analyzed for VOCs. The data will be used for comparison following the LTEV System Performance Test.

TABLE 01405-1

SAMPLE MATRICES, ANALYTICAL PARAMETERS, AND FREQUENCIES

Sample Matrix	Purpose	Analytical Parameters	Sample Frequency
Soil	Post-excavation confirmation	VOC	1 sample for each point of 10 ft. sample grid
Soil	Worst-case soils prior to System Performance Test	VOC	1 sample with high PCE concentration, 1 sample with least favorable process characteristics
Soil	Post LTEV System Performance Test residuals	VOC, SVOC, TCLP Metals	1 sample of each matrix
Soil	Post-treatment confirmation	VOC, SVOC, TCLP, Metals geotechnical	Sampling every 6 hrs, 4 samples composited for 1 analysis every 24 hours
Oversized Excavated Material	Off-site disposal	To be determined by Contractor based on facility requirements	Each material type
LTEV Lining Residuals	Off-site disposal	VOC, SVOC, TCLP	Every 10 ft. of unit
LTEV Liquid Residuals	Off-site disposal	VOC, SVOC, Metals	1 sample of each matrix in the tank (liquid, sludge)
Decontamination Fluids	Off-site disposal	VOC, SVOC, Metals	Each fluid type
Excavation Emissions	Monitoring	VOC	Continuous
Stockpile/Staging Emissions	Monitoring	VOC	Continuous
LTEV Emissions	Monitoring	VOC	Continuous
Site Perimeter Ambient Air	Monitoring	VOC	Continuous

TABLE 01405-1
(Continued)

SAMPLE MATRICES, ANALYTICAL PARAMETERS, AND FREQUENCIES

Sample Matrix	Purpose	Analytical Parameters	Sample Frequency
Building/Equipment Decontamination Emissions	Monitoring	ACM, Metals	Continuous
Tank Contents	Off-site disposal	VOC, SVOC, Metals	1 sample of each matrix (liquid, sludge)
Building/Equipment Decontamination Fluids/Solids	Off-site disposal	Metals	1 sample of each matrix (solid, liquid, sludge)
Tank Wipes	Post-decontamination confirmation	VOC, SVOC, Metals	2 samples/tank
Building/Equipment Wipes	Post-decontamination confirmation	Metals	To be determined by the Contractor
Groundwater Treatment System Influent	Pre-treatment characterization	VOC, Fe, Mn	To be determined by the Contractor
Groundwater Treatment System Effluent	Post-treatment confirmation	VOC, Fe, Mn	To be determined by the Contractor
Groundwater Jar Tests During Treatment	Process monitoring	pH, Conductivity	To be determined by the Contractor

LTEV = Low Temperature Enhanced Volatilization
VOC = Target Compound List Volatile Organic Compounds
SVOC = Target Compound List Semi-volatile Organic Compounds
TCLP = Toxicity Characteristic Leaching Procedure
ACM = Asbestos Containing Material
TCLP Metals = Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver
Metals = Target Analyte List Metals

3.1.4.1.3 During the LTEV System Performance Test, the Contractor will collect treated soil samples every six hours, composited once a day, and analyzed for VOCs, SVOCs, and TCLP metals. Samples that do not meet the performance criteria established in Section 13700 will indicate that the operating parameters must be adjusted and the System Performance Test conducted again. Samples will be collected for each Performance Test required.

3.1.4.1.4 During the LTEV system operation, the Contractor will collect treated soil samples every six hours, composited once a day, and analyzed for VOCs, SVOCs, and TCLP metals. One sample per day will be collected and analyzed for geotechnical parameters that show that the treated soil is suitable for backfill. The Contractor shall specify the geotechnical analyses that will be appropriate.

3.1.4.1.5 Each type of oversized material excavated from the spill area that cannot be processed through the LTEV system shall be sampled and analyzed to determine its content. The Contractor shall arrange for its disposal and shall select the appropriate analyses required to show that the material meets the requirements of the off-site facility.

3.1.4.1.6 The Contractor shall sample each type of solid residual resulting from operation of the LTEV system and analyze it for VOC, SVOC, and TCLP metals. If the solid meets the backfill criteria chemically, a second sample will be taken and analyzed for the geotechnical analyses selected under 3.1.4.1.4 to determine if the solid meets the geotechnical backfill criteria. If the solids do not meet the backfill criteria, then the Contractor shall arrange for its disposal and shall select the appropriate additional analyses, if any, required to show that the material meets the requirements of the off-site facility.

3.1.4.1.7 The Contractor shall sample each type of solid residual resulting from the building and equipment decontamination and shall select the appropriate analyses required to show that the material meets the requirements of the off-site facility that the Contractor selects for disposal.

3.1.4.2 Air Samples

3.1.4.2.1 The Contractor shall submit an Air Modeling and Monitoring Plan (Section 01561) that details the VOC emissions monitoring at the excavation, staging area, LTEV system, and site perimeter. The Contractor shall also develop an additional plan for monitoring ACM in the building during and following ACM removal. The Contractor shall establish corrective action criteria and procedures as a part of the VOC and ACM plans.

3.1.4.3 Wipe Samples

3.1.4.3.1 The Contractor shall develop a plan for taking wipe samples following building and equipment decontamination to show that, at a minimum, the building meets the cleanup criteria listed in Table 01405-2. The Contractor shall also develop criteria for determining that the above-ground storage tanks are clean following removal of their contents.

TABLE 01405-2

BUILDING DECONTAMINATION CRITERIA

Analyte	PPM per 135 square inch Wipe
Arsenic	0.0024
Cadmium	0.03
Beryllium	0.014
Nickel	0.11
Barium	0.24
Manganese	0.72
Iron	20.9
Copper	23.8

3.1.4.4 Groundwater and Other Liquid Samples

3.1.4.4.1 The Contractor shall develop a plan for sampling and analyzing the groundwater treatment system influent and effluent. At a minimum, the groundwater samples will be analyzed for VOCs, Iron, and Manganese.

3.1.4.4.2 The Contractor shall develop a plan for monitoring the groundwater treatment system that will include, at a minimum, pH and conductivity.

3.2 FIELD QUALITY ASSURANCE (QA) AND QUALITY CONTROL (QC)

3.2.1 Field Quality Control Samples. The Contractor shall be responsible for collecting internal quality control field samples and external quality assurance samples to be transmitted to the USACE laboratory. The internal quality control field samples shall be duplicates of actual field samples analyzed by the Contractor as part of his daily quality control program. The external quality assurance field samples shall be triplicate splits of actual field samples. The quality control samples to be collected shall be identified in the CDAP by the Contractor. The results of the internal quality control samples shall be used during the data validation process. The external quality assurance samples are a check by USACE on the Contractor's overall quality. The external quality assurance sample analysis costs shall be paid by the USACE whereas the cost of sampling will be borne by the Contractor.

Actual frequencies, analysis, and validation requirements specified by the Contractor in the CDAP are subject to review and approval of the Contracting Officer. The following type and frequency of samples should be included in the field quality control program at a minimum:

3.2.1.1 Duplicates: Duplicate samples at a frequency of one duplicate for each 10 or fewer samples (composites) from each matrix shall be collected at the same time and sample location and using the same sampling method used to collect the original sample. One internal quality control duplicate will be taken in per 10 or fewer analytical samples of each matrix. External quality assurance triplicate samples for analysis by USACE shall be taken at the frequency of once per 10 or fewer analytical samples of each matrix.

3.2.1.2 Field Blanks: One daily rinsate water blank will be collected during the duplicate sampling operations. The field blanks shall be analyzed for the same parameters for which the corresponding environmental samples are being analyzed.

3.2.1.3 Samples of excavated soil, treated soil, soil from the bottom and sides of the excavation, treatment unit side stream residues, and ambient air samples shall be considered as individual matrices to be duplicated for internal quality control samples and external quality assurance samples.

3.2.1.4 Provision must be made that for every 20 or fewer samples collected enough matrix be collected of one sample or all samples so that a matrix spike and a matrix spike duplicate (MS/MSD) or laboratory duplicate could be performed in the Contractor's laboratory. The collection and frequency of the MS/MSD or laboratory duplicate sample shall be specified by the Contractor in their Chemical Data Acquisition Plan.

3.2.1.5 Trip Blanks. At a minimum, there shall be one QC trip blank in each cooler containing samples to be analyzed for volatile organics (VOC samples). The trip blanks shall be prepared in the Contractor's laboratory and shall consist of VOC sample vials containing ASTM Grade IV (or better) deionized water. The trip blanks (filled vials containing no air bubbles) shall accompany VOC sample vials from the time they are shipped (empty) from the Contractor's laboratory, through sample collection, storage and transport, until they are analyzed at the Contractor's laboratory. Because the number of trip blanks shall equal the number of coolers containing VOC samples, the number of trip blanks depends upon the schedule of sample collection and transport. The Contractor shall reasonably schedule sample collection and transport to minimize the number of trip blanks required. For example, the simultaneous shipment of several coolers, each containing a few VOC samples and a trip blank, is not acceptable because the VOC samples could be placed in a single cooler with a single trip blank. Trip blanks are analyzed for VOCs only.

3.2.1.6 The external quality assurance samples shall be sent directly to the designated USACE laboratory. These samples are intended to serve as an external performance check. It is anticipated that the USACE laboratory will conduct the QA analyses.

3.2.2 Field Calibration Procedures and Frequency

3.2.2.1 A list of field instrumentation (including procedures used for calibration and frequency of calibration checks) shall be included in the CDAP. Measuring and testing devices shall be calibrated at established intervals against certified standards. All calibrations shall be consistent with the manufacturer's instructions. Calibration of sampling pumps used for air analyses shall be based on NIST standard rotometers. The Contractor shall maintain a record of all calibrations performed and shall note the date of most recent calibration on a label affixed to each instrument.

3.2.3 Preventive Maintenance Procedures and Schedules

3.2.3.1 A preventive maintenance system for field facilities and field instrumentation shall be described in the CDAP. Equipment maintenance procedures shall be documented for all testing and measuring instruments requiring routine maintenance. This equipment shall be tagged with maintenance labels indicating the date of required maintenance, the person maintaining the equipment, and the next maintenance date. Information pertaining to life histories of equipment maintenance shall be stored in individual Equipment History Logs for each on-site instrument requiring routine maintenance.

3.2.3.2 Routine maintenance should be performed according to the manufacturer's recommendations defined in the operation and maintenance manuals accompanying the instrument. Major field instrumentation must be maintained under service contracts with the respective manufacturers. Scheduled quarterly or semi-annual maintenance shall be performed by qualified personnel so that field instrumentation is maintained in good condition.

3.3 SAMPLE PREPARATION PROCEDURES

3.3.1 Sample Containers.

3.3.1.1 The Contractor must supply or make provisions for sample containers for all quality control samples and samples sent to each off-site laboratory along with coolers. The sample containers must come with analytical data that will meet USACE Sample Handling Protocol (ER 1110-1-263, Appendix E) and EPA guidelines shall be followed for sizes and types of containers, sample preservation, container identification, cleaning, storing, and labelling. The Contractor's Chemical Data Acquisition Plan shall indicate what Subcontractor is proposed to supply the sample containers.

3.3.1.2 The container cleanliness must be commensurate with the analytical protocol specified for the analysis. The Contractor shall obtain the containers for compendium methods for ambient air sampling and analysis (TO methods in Table 1405-4) from the laboratory subcontracted to perform the analysis. The remaining containers must be obtained from a supplier utilizing precleaned containers such as series 300 containers which have a certificate of analysis and QC lot number supplied with each lot, or the sample containers shall be cleaned using the following specified procedure: Decontamination Procedure for laboratory Sample Handling Apparatus, Reagent bottles and Sample Containers.

3.3.1.2.1 Wash and Scrub thoroughly using laboratory detergent and hot tap water to remove any particulate matter or surface film. When the apparatus/bottles/containers come in contact with samples that contain oil, greases, or other hard to remove materials, it may be necessary to rinse the items several times with pesticide grade acetone or methanol followed by hexane to remove materials prior to detergent wash.

3.3.1.2.2 Rinse thoroughly with tap water. Tap water means water obtained from any municipal water treatment system. The use of an untreated or non-potable water supply is not an acceptable substitute for tap water.

3.3.1.2.3 Rinse thoroughly or soak with 10% Nitric Acid Solution. Omit nitric acid rinse (and hydrochloric acid rinse if used) for decontamination of all metallic sample handling apparatus and whenever the analysis to follow only involves organic analysis.

3.3.1.2.4 Thoroughly rinse with deionized water.

3.3.1.2.5 Acetone only rinse or methanol followed by hexane rinse (all solvents must be pesticide grade or better).

3.3.1.2.6 Wrap apparatus/bottles/containers completely with solvent rinsed aluminum foil or otherwise protect from airborne contamination during storage.

3.3.1.2.7 Analyze one container per lot of 50 containers to verify cleanliness.

3.3.2 Sample Storage. At the completion of the soil remediation phases of the project, the Contracting Officer will decide on long term sample storage. Disposal of samples prior to project completion shall be at the direction of the Contracting Officer and shall be the responsibility of the Contractor.

3.3.3 Sample Preservation. The Contractor shall detail in the Chemical Data Acquisition Plan all sample preservation methods to be employed following sample collection. The Chemical Data Acquisition Plan shall include all chemical preservatives to be used, temperature samples are to be held at, and storage and shipment conditions. The holding times and preservation requirement shall be in accordance with USACE Protocol (ER 1110-1-263, Appendix D) or when not included in this reference, 40 CFR 136, October 26, 1984, shall be followed.

3.3.4 Sample Custody and Documentation Requirements. The Contractor shall supply sample chain of custody procedures and documentation requirements in the CDAP.

3.3.4.1 The Contractor shall label all containers with indelible ink and cover with clear tape which will not soak off. The Contractor shall use labels, tags, and seals as described below. Labels shall be affixed to the innermost sample container, not to exterior containers such as plastic bags, metal cans, or coolers. The Contractor shall include at least the following information of the label attached to the innermost sample container:

3.3.4.1.1 Unique, sequential sample number.

3.3.4.1.2 Date and time collected.

3.3.4.1.3 Site name.

3.3.4.1.4 Sampling station.

3.3.4.1.5 Name of individual performing sampling.

3.3.4.1.6 Type of sample (grab, composite, etc.).

3.3.4.1.7 Sample volume.

3.3.4.1.8 Analytes of interest.

3.3.4.1.9 Preservation/filtration.

3.3.4.2 Chain of Custody (COC). The Contractor shall describe in detail the chain of custody procedures and documentation that will be used to assure that every sample analysis yields results representative of the condition of the sample prior to sampling. The Contractor shall demonstrate in the CDAP the proposed COC procedures that record the following information at a minimum.

3.3.4.2.1 Sample matrix, sample number, grab sample or composite, data and time of collection, analysis to be performed and a signature of the collector.

3.3.4.2.2 Cooler number, place of origin, and date at time that cooler was sealed.

3.3.4.2.3 Signatures of persons in sample chains of possession.

3.3.4.2.4 Inclusive dates of possession of all individuals involved in sample possession.

3.3.4.2.5 Any additional remarks the sample handler may have had about the condition of the sample.

3.3.4.2.6 The Contractor shall describe in detail the method by which that COC information shall be stored during the duration of the project.

3.3.4.3 Sample Documentation. The Contractor shall maintain a permanently bound sample log for all samples of all media taken during the remedial action. The log book shall be written in indelible ink. All logbook pages shall be prepaginated. The Contractor shall provide the USACE access to the log at all times and turn it over to the USACE at the completion of the project. The data recorded in the permanent log shall also be placed in a computer file accessed only by the Contractor's Quality Control Supervisory Engineer and the USACE Contracting Officer.

3.3.4.3.1 The following information, at a minimum shall be recorded in the log book and computer file:

Sample identification

Sample volume

Sample location

Sample type

Analysis to be performed

Date/time of collection

Method of collection

Collector's name and initials

Field measurements, if applicable

Observations, if applicable

3.4 DECONTAMINATION

The Contractor shall submit a detailed decontamination procedure for all types of sampling equipment as part of the Chemical Data Acquisition Plan. Sampling methods and equipment shall be chosen so as to minimize decontamination requirements and the possibility of cross contamination. Any sampling equipment used must be decontaminated before use and be decontaminated between locations. Decontamination residues will be subjected to testing to determine if they can be put through the groundwater treatment plant or whether they must be incinerated. Decontamination procedures shall be consistent with USACE requirements. The recommended decontamination procedure for all sampling equipment is as follows and must be noted in the Chemical Data Acquisition Plan. Any proposed modifications to the specified decontamination procedure shall require the approval of the Contracting Officer.

3.4.1 Recommended Decontamination Procedure for Field Sampling Equipment.

3.4.1.1 Wash and scrub thoroughly using laboratory detergent and hot tap water to remove any particulate matter or surface film. When this sampling equipment is used to collect samples that contain oil, greases, or other hard to remove materials, it may be necessary to steam clean to remove materials prior to this step.

3.4.1.2 Rinse thoroughly with tap water. Tap water is defined as water from a municipal water treatment system. Untreated potable well water is not acceptable.

3.4.1.3 Rinse thoroughly with deionized water.

3.4.1.4 Hexane rinse (hexane must be pesticide grade or better).

3.4.1.5 Wrap equipment completely with solvent rinsed aluminum foil to prevent contamination during storage and/or transport.

3.5 CORRECTIVE ACTION

The Contractor shall identify a corrective action procedure in the CDAP for dealing with field sampling problems that prohibit adherence of the CDAP requirements. The corrective action procedure shall include responsibilities, actions, reporting, and documentation at a minimum.

PART 4 CHEMICAL TESTING LABORATORY SERVICES

4.1 GENERAL

4.1.1 The Contractor shall identify in advance the laboratory or Subcontractor laboratory in the CDAP. Each laboratory must have a documented Chemical Quality Assurance Plan. Changes such as the laboratory, instrumentation, personnel, or delegation of laboratory work must be approved by the Contracting Officer in advance after completion of necessary laboratory validation. The laboratory should provide lists of laboratory analytical instrumentation (manufacturer, model, year of purchase) and complete chronological resumes for supervisors, quality control personnel, chemists, and analysts listing all appropriate education (degree and discipline) and experience (years spent on an analytical technique). The Contractor is required to have a laboratory capable of 24-hour turnaround analysis. The laboratory may be off-site or on-site but must have similar capabilities, identified in the Chemical Data Acquisition Plan, and must be validatable by the U.S. Army Corps of Engineers as per USACE ER 1110-1-263 Appendix B. For analysis of samples required for EPA compliance (quarterly and semiannually), the laboratory must be, at a minimum, capable of performing analyses cited in Tables 01405-1.

4.2 INSPECTION AND APPROVAL

4.2.1 Representatives from USACE will inspect the Contractor's laboratory and organization if necessary. If the inspection reveals deficiencies, the Contractor shall rectify them. If necessary, additional inspections will be made. Government costs derived from additional inspections shall be paid by the Contractor. Performance audit samples are required for this project. The Contractor's laboratory and organization must be approved by the Contracting Officer prior to receiving site samples for analysis.

4.3 LABORATORY MANAGEMENT CAPABILITY

4.3.1 The Contractor laboratory must have an organization with well-defined responsibilities for each individual in the management system to ensure sufficient resources for this contract and to maintain a successful operation. To establish this capability, the Contractor shall designate personnel to carry out the following responsibilities for the contract. Functions include, but are not limited to, the following.

4.3.1.1 Technical Staff shall be responsible for all technical efforts for the laboratory analysis. Requirements for the technical staff are discussed in 4.4.

4.3.1.2 Project Manager shall be responsible for overall aspects of the contract (from sample receipt through data delivery) and shall be the primary contact.

4.3.1.3 Sample Custodian shall be responsible for receiving the samples (logging, handling, and storage).

4.3.1.4 Quality Assurance Officer shall be responsible for overseeing the quality assurance aspects of the data and reporting directly to upper management.

4.3.1.5 Data Reporting and Delivery Officer shall be responsible for all aspects of data deliverables organization, packaging, copying, and delivery.

4.4 LABORATORY PERSONNEL

4.4.1 General. The Contractor's laboratory organization shall be experienced in the type of testing to be performed. A representative of the laboratory shall be at the work site as necessary for sampling, inspection, and testing to control the quality of the work. The laboratory personnel will be evaluated and approved with reference to their education and related professional experience in the performance of specified analytical and quality control activities.

4.4.2 A GC/MS Laboratory Supervisor shall have a minimum of a bachelor's degree in chemistry or any physical science and at least three years of laboratory experience, including at least one year of supervisory experience.

4.4.3 A GC/MS Operator shall have a minimum of a bachelor's degree in chemistry or any physical science and one year of experience in operating and maintaining GC/MS/DS or 3 years of experience in operating and maintaining GC/MS/DS.

4.4.4 A Mass Spectra Interpretations Specialist shall have a minimum of a bachelor's degree in chemistry or any physical science, a training course(s) in mass spectral interpretation and a minimum of two years experience.

4.4.5 A GC Laboratory Supervisor shall have a minimum of a bachelor's degree in chemistry or any physical science and three years of laboratory experience, including at least one year of supervisory experience.

4.4.6 A Sample Preparation Laboratory Supervisor shall have a minimum of a bachelor's degree in chemistry or any physical science and three years of laboratory experience, including at least one year of supervisory experience.

4.4.7 An Extraction/Concentration Expert qualifications shall include a minimum of a high school diploma, knowledge of general chemistry and a minimum of one year of experience.

4.4.8 The Contractor laboratory shall have a minimum of one (1) chemist available at any one time of operation as a back-up technical person with a minimum of a bachelor's degree in chemistry or any physical science and a minimum of one year experience in each of the following areas: GC/MS operation and maintenance for volatiles and semivolatiles analyses; mass spectral interpretation; and extraction.

4.4.9 An Inorganics Laboratory Supervisor shall have a minimum of a bachelor's degree in chemistry or any scientific/engineering discipline and a minimum of three years of laboratory experience, including at least one year in a supervisory position.

4.4.10 An ICP Spectroscopist shall have a minimum of a bachelor's degree in chemistry or any scientific/engineering discipline, a specialized training in ICP Spectroscopy and a minimum of two years of applied experience with ICP analysis of environmental samples.

4.4.11 An ICP Operator shall have a minimum of a bachelor's degree in chemistry or any scientific/engineering discipline, a minimum of one year of experience in operating and maintaining ICP instrumentation, in conjunction with the educational requirements: or, in lieu of educational requirements, three additional years of experience in operating and maintaining ICP instrumentation.

4.4.12 An Atomic Absorption (AA) Operator shall have a minimum of a bachelor's degree in chemistry or any scientific/engineering discipline, a minimum of one year of experience in operating and maintaining AA instrumentation for each of the following AA techniques: (a) flame (if flame will be used), (b) graphite furnace, and (c) cold vapor, in conjunction with the educational requirements; or, in lieu of educational requirements, three additional years of experience in operating and maintaining AA instrumentation including flame, graphite furnace, and cold vapor techniques.

4.4.13 An Inorganic Sample Preparation Specialist shall have a minimum of high school diploma and a college level course in general chemistry or equivalent, and a minimum of six months of experience in an analytical laboratory.

4.4.14 The Contractor laboratory shall have a minimum of one (1) chemist available at all times as a back-up technical person with a minimum of a bachelor's degree in chemistry or any scientific/engineering discipline, and a minimum of one year of experience in each of the following areas: ICP operation and maintenance; AA operation and maintenance; classical chemistry analytical procedures; and sample preparation for inorganics analysis.

4.4.15 Additional analysis requiring personnel whose qualifications are not specified above will be required. In general, personnel should have a minimum of a bachelor's degree in chemistry and one or more years of experience with the analysis to be performed.

4.4.16 Training. The laboratory must have available documentation of all training. This will include the time of training, curriculum of material taught, the qualification of the trainers, and a testing procedure or method of documenting the learning progress.

4.5 LABORATORY FACILITIES

4.5.1 Certain basic facilities are necessary for the safe accurate timely analysis of the required samples. These include the following.

4.5.1.1 A sample receipt area providing adequate, contamination-free, well ventilated work space with chemical resistant bench tops for receipt and safe handling of samples.

4.5.1.2 A Storage Area with sufficient refrigerator space to maintain unused sample volume for 60 days after data submission and sample extracts for 365 days after data submission. NOTE: Volatiles, semivolatiles, extracts, and standards must each be stored separately.

4.5.1.3 A Sample Preparation Area shall have adequate, contamination-free, well-ventilated work space provided with: benches with chemical resistant tops, exhaust hoods, (Note: Standards must be prepared in a glove box or isolated area), source of distilled or demineralized organic-free water and analytical balance(s) located away from draft and rapid change in temperature.

4.6 LABORATORY INSTRUMENTATION

At a minimum the laboratory shall have the following instruments in operation at the time of the preaward site evaluation. The instruments must be committed for the full duration of the contract.

4.6.1 For volatile analysis a GC/MS with a purge and trap device shall be provided.

4.6.2 For semivolatile analysis a GC/MS/DS shall be provided.

4.6.3 As a backup for organic instrumentation the laboratory shall provide as a minimum one (1) GC with one (1) purge and trap device. In addition, the Contractor shall have an in-house stock of instrument parts and circuit boards to ensure continuous operation to meet contract-specified holding and turn-around times. If a mobile laboratory is used, the above mentioned backup equipment may be substituted with sufficient contingency to meet all analysis, detection limit, quality control and turnaround requirements.

4.6.4 For the TCLP ICP metals analysis an ICP emission spectrophotometer shall be provided.

4.6.5 For atomic absorption metals analysis an atomic absorption spectrophotometer with a graphite furnace atomizer shall be provided.

4.6.6 For TCLP mercury analysis a mercury cold vapor AA analyzer or AA instrument modified for cold vapor analysis shall be provided.

4.6.7 As backup for inorganic instrumentation the Contractor laboratory shall provide, one (1) graphite furnace atomic absorption spectrometer, and one (1) mercury cold vapor atomic absorption spectrometer. In addition, the Contractor shall have an in-house stock of instrument parts and circuit boards to ensure continuous operation to meet contract-specified holding and turn-around times. If a mobile laboratory is used the above mentioned back-up equipment may be substituted with sufficient contingency to meet all analysis, detection limit, quality control, and turnaround requirements.

4.7 ANALYTICAL METHODS AND PROCEDURES

4.7.1 General. The Contractor shall fully describe, and provide references where appropriate, the specific analytical methods and procedures which will be required to perform the determination of soil, water, and air quality. Standard methods presented in Table 01410-3 shall be used by the Contractor and Contractor's laboratory. Where alternate standard methods are available, the most cost effective method shall be used, provided it satisfies project requirements for precision, accuracy, and sensitivity. Alternative analytical methods proposed in the CDAP must be approved by the CO.

4.7.2 Analytical Instrumentation. The apparatus to be used for all analyses shall be identified in the Chemical Data Acquisition Plan including:

4.7.2.1 Specific field and laboratory instrumentation including manufacturer and model number.

4.7.2.2 Operating parameters.

4.7.3 Analytical Method Details. Published analytical methods in Table 01405-3 shall be properly referenced. Any analytical methods not published to be used for analysis shall be described in such detail as to provide the following information.

4.7.3.1 Detailed step by step method.

4.7.3.2 Applicability of method to specific analytes of interest or classes of analytes, concentration ranges and matrices to be analyzed.

4.7.3.3 Sensitivity and detection limits of the method.

4.7.3.4 Possible interferences due to the matrices or analytes known to be present.

4.7.3.5 Step by step procedure of analysis, including instrument calibration and maintenance.

4.7.3.6 Laboratory chemicals necessary to perform the analyses.

4.7.3.7 Standards to be used including those for calibration.

4.7.3.8 Procedures for analyzing internal quality control samples such as method blanks, calibration check samples, surrogate recoveries, reference standards, replicate analyses, split or spike samples used as QC checks (exclusive of field QC) as appropriate.

4.7.3.9 Procedures for preparation of samples including extractions, extract cleanup, digestion, or ashing.

4.7.3.10 Computations converting instrument responses into analyte concentration in the original sample matrices.

TABLE 01405-3

ANALYTICAL METHOD PRECISION, AND ACCURACY
OBJECTIVES FOR ANALYSES

Parameter	Method[1] (analysis/ preparation)	Instrument	OBJECTIVE Precision[2]	OBJECTIVE Accuracy[3]
WATER AND SOLIDS ANALYSES				
ORGANICS				
TCL Volatile Organics	8260/5030	GC/MS	±35	50-150
TCL Semi-Volatile Organics	8270/3540, 3520	GC/MS	±35	30-150
METALS				
Arsenic	6010,7060/ 3010,1311, 3050	ICP or Graphite Furnace AA	±20	75-125
Barium	6010/3010, 1311,3050	ICP	±20	75-125
Cadmium	6010/3010, 1311,3050	ICP	±20	75-125
Chromium	6010/3010, 1311,3050	ICP	±20	75-125
Lead	6010/3010, 1311,3050	ICP	±20	75-125
Mercury	7470/1311, 3050	Cold Vapor AA	±20	75-125
Selenium	6010,7740/ 3010,1311, 3050	ICP or Graphite Furnace AA	±20	75-125
Silver	6010/3010, 1311,3050	ICP	±20	75-125
Manganese	6010/3010, 3050	ICP	±20	75-125
Iron	6010/3010, 3050	ICP	±20	75-125

TABLE 01405-3
(continued)

ANALYTICAL METHOD REFERENCES, PRECISION, AND ACCURACY
OBJECTIVES FOR ANALYSES

			OBJECTIVE	
Parameter	Method[1]	Instrument	Precision[2]	Accuracy[3]
AMBIENT AIR ANALYSES				
VOC	TO-14	GC/MS	To Be Determined by the Contractor	

Notes:

1. "Test Methods for Evaluating Solid Waste (SW-846)," Third Edition, Office Of Solid Waste and Emergency Response, USEPA, November 1986; or "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air (EPA-600/4-84-041), USEPA, 1986.

2. Relative Percent Difference, which describes analytical precision, is discussed in 4.8.3.2.1.1. The numbers given are goals for the entire lists of compounds. It is recognized that individual compounds have different precision characteristics and are matrix dependent.

3. Percent Recovery, which describes analytical accuracy, is discussed in 4.8.3.2.2.1. The numbers given are goals for the entire list of compounds. It is recognized that individual compounds have different accuracy characteristics and are matrix dependent.

4.7.4 Detection Limits. The Contractor shall describe, in the CDAP, detection limits for all compounds analyzed, or appropriate methodology for determining detection limits.

4.7.4.1 The method detection limit for a given parameter is defined as the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the value is above zero. Detection limits shall be established at the start of the project by the Contractor laboratory for all components analyzed. The detection limit of all compounds shall be less than the appropriate action level, even when matrix interferences cause an increase in those detection limits.

4.7.5 Calibration Procedures. The Contractor shall describe in detail in the Chemical Data Acquisition Plan or provide references to the procedures for the calibration of all analytical equipment and instrumentation to be used (including frequency) to assure that the equipment is functioning optimally. The calibration procedures must be consistent with the sample analysis requirements and applicable to USEPA analytical methods, or be approved in the CDAP by USACE.

4.7.6 Preventive Maintenance. The Contractor shall provide a description in the Chemical Data Acquisition Plan for the preventive maintenance of all analytical equipment and instrumentation to be used in either the on-site or off-site analytical facilities. The Contractor shall also submit a description of the preventive maintenance for continuous reading instruments and or replacement of probes and backup instrumentation. Detailed records of the maintenance operations shall be maintained and must be available for inspection of the Contracting Officer on request. Maintenance must be performed by trained personnel whose experience and qualification are included in the Chemical Data Acquisition Plan.

4.7.7 Data Analysis and Reporting. The Contractor shall describe in the Chemical Data Acquisition Plan the specific system to be used in handling the raw data from the time of analysis to the time of reporting to the time of archival storage. At a minimum the Contractor shall address the following items for each analytical method and major measurement parameter.

4.7.7.1 The data collected from the Chain of Custody and field manuals.

4.7.7.2 Field manual notes.

4.7.7.3 The raw data collection system.

4.7.7.4 The final calculated data system.

4.7.7.5 The data storage system in its entirety including provision for security and prevention of data loss, backup systems.

4.7.7.6 Data quality assurance documentation including copies of any forms used.

4.7.7.7 Identification system for all data collected.

4.7.7.8 Identification of individuals involved in data management and reporting.

4.7.7.9 The data analysis system including units and equations required to convert instrument response into analyte concentrations.

4.7.7.10 Plans for identifying and testing questionable or incorrect data or inaccurate programming sequences.

4.8 LABORATORY QUALITY ASSURANCE/QUALITY CONTROL

4.8.1 The General Contractor's Laboratory must adhere to the provisions of the Chemical Data Acquisition Plan. the Contractor laboratory must conform to the quality control guidelines and practices described in "Handbook for Analytical Quality Control in Water and Wastewater Laboratories" (EPA-600/4-79-019) and "Report on Minimum Criteria to Assure Data Quality" (EPA/530-SW-90-021).

4.8.2 Evaluation and Validation

4.8.2.1 For laboratories that have previously been validated by USACE, the Contractor will only be required to provide the documentation supporting current validation for the project files. Requirements in 4.8.2.2 through 4.8.2.6 will be waived when that documentation is provided.

4.8.2.2 A submittal including the following information will accompany the form "Evaluation of Commercial Laboratory":

4.8.2.2.1 Lab name, address, phone number, lab age, number of employees, square footage.

4.8.2.2.2 Type of analytical work routinely performed.

4.8.2.2.3 Organizational chart and floor plan.

4.8.2.2.4 Special capabilities.

4.8.2.2.5 Previous evaluation/validation program and most recent results.

4.8.2.2.6 List the EPA and USACE contracts held in the last two years.

4.8.2.2.7 Copies of laboratory certificates for other environmental programs or states.

4.8.2.2.8 Chart of employees training and experience or chronological resumes.

4.8.2.2.9 Copies of QA manual and Laboratory Standard Operating Procedures (SOPs) for analyses to be conducted for the contract.

4.8.2.2.10 List of the instruments to be used for the contract and date of purchase.

4.8.2.3 Performance Audit.

4.8.2.3.1 The "Evaluation of Commercial Laboratory" form will be reviewed to determine the laboratory's capability to perform the contract work. If the Government determines, based on "Evaluation of Commercial Laboratory" that the contract laboratory is capable, the government will provide the contract laboratory with performance audit (PA) samples through USACE. The results will be submitted as directed within 30 calendar days after receipt of the PA samples. Failure to analyze these samples correctly and within the required time frame may result in termination of the validation process. If any of the results are unacceptable, a second set of PA samples may be allowed. The performance audit samples are method and matrix specific. The results are considered passing if a particular method has no results outside three standard deviations as determined by the USACE, and no more than two parameter outside two standard deviations. Often a laboratory will be contracted if problems such as dilution or calculation errors can be identified.

4.8.2.3.2 The Chemical Data Acquisition Plan shall indicate in detail, how the Contractor's laboratory will comply with performance audit requirements as established by the USACE. The Chemical Data Acquisition Plan shall delineate the numbers and types of samples to be supplied to the USACE laboratory, for external QA. The numbers and types of performance audit samples shall as a minimum be consistent with USACE guidelines.

4.8.2.4 Laboratory Inspection. When the "Evaluation of the Commercial Laboratory" and PA have been successfully completed, the USACE will conduct an approximately 6-hour on-site laboratory inspection. An exit interview will be held with laboratory personnel in which any problems encountered are discussed.

4.8.2.5 Approval. A letter and a copy of the inspection report will be sent to the USACE project manager and to the proposed contract laboratory. Ordinarily the letter will specify the methods and matrices, the project(s), and time period (usually 18 months) for which the validation is granted. Centralized records of validations and laboratory performances are kept at CEMRD-ED-GC. If a laboratory obtains a second contract within the 18-month period, previous performances will be checked. If different analytes/matrices are involved in the second contract, only those performance audit samples will be sent. If work done for the USACE by the laboratory has been satisfactory, no further action will be necessary. A validated laboratory may not subcontract USACE samples to a second laboratory without the knowledge and approval of the USACE and unless the second laboratory is validated for the parameters concerned.

4.8.2.6 Expiration of Validation. Towards the close of the 18-month period CEMRD-ED-GC will notify USACE users of laboratories of the pending expiration of validation. After considering use of the laboratory and previous performance, CEMRD-ED-GC will determine which of the validation steps are needed to revalidate the laboratory.

4.8.3 Internal Quality Control Checks.

To assure analytical accuracy and consistency, the Contractor shall require the analytical laboratory to perform, at a minimum, the following quality control checks:

4.8.3.1 Quality control samples to be analyzed at a minimum frequency of 5 percent, inclusive of all blanks, spikes and duplicates, of the total samples of each type analyzed.

4.8.3.2 Analysis of blank samples, duplicate or split samples (field and laboratory), matrix spikes/matrix spike duplicates, and instrument calibration verifications. Instrument calibrations shall be described by number and type of sample. Quantities or estimates and basis for estimates shall be addressed in the CDAP.

4.8.3.2.1 Analytical Precision. The Contractor's laboratory shall use the results of the analyses of QC duplicate samples to determine analytical precision. The Contractor shall describe in the CDAP how analytical precision will be calculated and shall indicate possible errors that may arise in determining precision.

4.8.3.2.1.1 Precision refers to the reproducibility of measurements of the same characteristics, usually under a given set of conditions. Precision will be assessed through the analysis of field duplicate samples, matrix spike/matrix spike duplicate samples, and laboratory duplicates. Precision is expressed in terms of relative percent difference (RPD) and is calculated using the following equation:

$$RPD = \frac{|C1-C2|}{1/2(C1+C2)} * 100$$

where:

C1 = concentration of analyte in the first analysis.
C2 = concentration of analyte in the replicate or duplicate.

4.8.3.2.2 Analytical Accuracy. The Contractor's laboratory shall use a method of spiking samples to calculate analytical accuracy for each parameter. The Contractor shall describe in the CDAP how analytical accuracy will be calculated and shall indicate possible errors that may arise in determining accuracy. Sample spike quality control limits shall be detailed in the CDAP. Suggested values for solid and liquid samples are included in Table 01405-3.

4.8.3.2.2.1 Accuracy is the degree of agreement of a measurement to the true value. The accuracy of a measurement system is impacted by errors introduced through the sampling process, field contamination, preservation, handling, sample matrix, sample preparation, analytical techniques, and analytical equipment. Accuracy will be assessed through the analysis of

samples spiked with a known quantity of the constituents of interest and will provide information on positive and negative bias. The difference in the concentration levels of the constituents of interest should equal the spike quantity added.

Results of spiked samples and reference standards will be expressed as percent recovery (%R) and is calculated using the following equation:

$$\%R = \frac{\text{Measured Spiked Value - Unspiked Value}}{\text{Known Spike Value}} * 100$$

4.8.3.2.3 Sensitivity. The Contractor shall include in the CDAP how sensitivity will be determined. The CDAP shall also contain possible causes for decreased sensitivity and methods for correction.

4.8.3.2.4 Surrogate Samples. The Contractor shall include in the CDAP methods for the addition and evaluation of surrogate standards, including proposed surrogates and acceptable percent recovery ranges. The Contractor shall also include methodology of when and how samples will be re-analyzed, if necessary.

4.8.3.2.5 Method Blank. The Contractor's laboratory shall analyze a laboratory method blank with each set of samples. Each method blank shall follow the analytical method, including all reagents and solvents in the quantity required by the method. The Contractor shall outline precautions and procedures in the CDAP for interferences associated with the method blank. The Contractor shall also describe the number of method blanks analyzed for each set of samples and the size of each set of samples in the CDAP.

4.8.3.2.6 Calibration Verification Samples. The CDAP shall include guidelines for calibration verification standard (CVS). A CVS shall be analyzed for each calibration curve, and every ten or fewer samples thereafter. The CVS shall be a USEPA QC sample or an independent standard, if a USEPA sample is not available. The CDAP shall establish each parameters' specific range of acceptability.

4.8.3.3 The CDAP shall also include a discussion of the corrective action to be taken if values are questionable or outside the established control limits.

4.8.3.4 The CDAP shall include a discussion of calibration procedures performed.

4.8.3.5 Reports shall be prepared on any significant problems with analytical procedures, instrument calibrations or project quality control, and must be delivered to the Contracting Officer within 48 hours of occurrence (or 24 hours if a safety problem is involved). These reports shall include a description of the problem along with the corrective actions that have been taken to rectify the problem.

4.8.4 External Quality Assurance Checks. The Contractor shall describe in the CDAP a system of external quality assurance checks that the USACE Laboratory can use to independently and systematically assess whether analytical data are within acceptable control limits. The following items shall be included in this section of the CDAP:

4.8.4.1 At the request of the USACE up to 10% of the total number of each type of samples collected or analyzed by the Contractor shall be submitted to the USACE for external QA checks. QA samples from each of the various sample matrices which are being analyzed (or up to 10% of total samples within each matrix) will be requested by USACE.

4.8.4.2 External field QA samples can consist of duplicate, split, and blank samples.

4.8.4.3 Normally the Contractor shall collect the field QA samples and ship them to the USACE laboratory. If the USACE laboratory elects to obtain their own field QA samples, pre-cleaned sample containers for any external quality assurance samples shall be provided by the Contractor. The USACE Field QA Sample Rates (ER 1110-1-263, Appendix E) for quality control samples shall be provided to the Contractor and shall be followed.

4.8.4.4 The Contractor shall analyze any additional audit samples as provided by a USACE or an EPA QA laboratory, as well as submit to any additional inspection(s), if the Contracting Officer considers it necessary.

4.8.4.5 Government Quality Assurance (QA) Laboratory Coordination. The Contractor shall coordinate with the designated USACE QA laboratory not less than 48 hours before sampling to assure that the QA laboratory is alerted to receive the QA samples and process them within the time limits specified by applicable EPA regulations and guidelines.

4.8.5 Corrective Action. The Contractor shall describe a protocol indicating the corrective actions to be taken by the Contractor should any analytical data fall outside of acceptable control limits. The following items shall be addressed in this section of the CDAP:

4.8.5.1 Limits of data acceptability for each analytical parameter and sample matrix along with the corrective action to be taken when these limits are exceeded.

4.8.5.2 Information regarding the poor precision shall be documented if limits are exceeded.

4.8.5.3 Personnel responsible for initiating and performing the corrective action shall be indicated.

4.8.6 Contractor Chemical Quality Control Summary Report. At the conclusion of the project, the Contractor shall submit a final Chemical Quality Control Summary Report. The report shall outline the practices

employed, problems encountered, and corrective action taken. A summary of the Contractor's Daily Construction Quality Control Reports and a discussion of significant data as related to the project scope shall be included.

4.8.6.1 The Chemical Quality Control Summary Report shall be submitted to the Contracting Officer. The Contracting Officer, with assistance from the QA laboratory, must approve the report before final payment is issued.

4.8.6.2 The report shall include the following elements:

4.8.6.2.1 Executive Summary. Includes a list of the Contractor's key personnel responsible for the approval of the report.

4.8.6.2.2 Project Description. A brief description of the site including the project name and site location. Briefly summarize which chemicals were detected in earlier studies, and list the parameters tested in this project.

4.8.6.2.3 Project Organization and Responsibility. The Contractor shall include:

4.8.6.2.3.1 Identification of the Contractor's key personnel, subcontractor key personnel, and the office locations and addresses.

4.8.6.2.3.2 The principal tasks of each of the key personnel involved with the project.

4.8.6.2.4 Quality Management Objectives. A summary of quality management objectives for project completion, project safety, and/or project efficiency. State the regulatory requirements and appropriate EPA requirements which were enforced and achieved during the project.

4.8.6.2.5 Data Collection. A compilation of actions taken to support the precision, accuracy, completeness, representativeness, and comparability of the data including:

4.8.6.2.5.1 Sampling procedures.

4.8.6.2.5.2 Sample handling and sample custody.

4.8.6.2.5.3 Equipment calibration and maintenance.

4.8.6.2.5.3.1 These procedures shall be described in detail in the CDAP. If alternate procedures are used, the Contractor shall describe in detail the alternate procedures used and discuss the reasons for the changes.

4.8.6.2.6 Analytical Procedures. If standard methods (USEPA, NIOSH, ASTM, etc.) are used, list the analytes tested and the method number used. If alternatives to the standard methods are used, the Contractor shall describe the alternate procedures in detail and discuss why the methods are altered.

4.8.6.2.6.1 If nonstandard methods are used, but not previously described in the CDAP, the detailed analytical procedure shall be placed in the appendices and discussed in the body of the Chemical Quality Control Summary Report. The following factors in this description shall be addressed in this description:

4.8.6.2.6.1.1 Applicability of the method, including specific chemicals or classes of chemicals and appropriate concentration ranges and matrices.

4.8.6.2.6.1.2 Sensitivity and detection limit of the method which must be sufficient for the purpose of each specific compound analyzed (normally ppb or ppm).

4.8.6.2.6.1.3 Interferences anticipated or encountered based on the method of analysis, matrix involved, and other chemicals known to be present.

4.8.6.2.6.1.4 Apparatus including instrumentation (make and model including detectors), operating parameters (if applicable), and chemicals (source purity).

4.8.6.2.6.1.5 Standards, including calibration standards.

4.8.6.2.6.1.6 Procedures for extracting the sample (if applicable), for analyzing the sample or its extract, and for validating the method for the matrices in questions (method blanks, calibration checks, recoveries, reference standards, replicate analyses, split samples, spiked samples, standard addition, etc.).

4.8.6.2.6.1.7 Calculations, including detailed descriptions of the manner in which the concentrations in the original matrix are calculated from the responses obtained in the analysis.

4.8.6.2.6.1.8 References for the methods used.

4.8.6.2.7 Data Storage. Furnish a list of all the data records and describe procedures for obtaining or reviewing the data. The USACE office responsible for storage and maintenance of project records shall be specified.

4.8.6.2.8 Data Analysis and Validation. Describe the statistical procedures used in the assessment of data, including the use of control limits, if applicable. Discuss outliners and how they are treated, and any results which seem to show bias or larger-than-expected standard deviations.

4.8.6.2.8.1 Compare the results of split and duplicate samples. Discuss how these results affect the validity of the project data.

4.8.6.2.9 Data Summaries. Summary of analytical results listing what chemicals are found at what concentration levels in various parts of the site and types of samples. Because air monitoring samples are time dependent, the range of these samples as a function of time, activities on-site, and location at the site should be reported to indicate potential exposures.

4.8.6.2.9.1 Summary of the Contractor laboratory's quality control results and how they affect the validity of the analytical results of the site samples.

4.8.6.2.10 System Audits. Report on any inspections performed, including when and by whom, any deficiencies encountered, and corrective action taken. Include the Contractor laboratory certification and date(s).

4.8.6.2.11 Reports. List all reports submitted, their distributions and parties responsible for review or concurrence.

4.8.6.2.12 Analytical and QA/QC Problems Encountered and Lessons Learned. Discuss the degree to which each analytical system meets or fails to meet the quality management objectives. Problems, especially those not anticipated in the CDAP, and their resolutions shall be noted. Examples shall include, but are not limited to, the following:

4.8.6.2.12.1 Additional chemicals which should have been analyzed.

4.8.6.2.12.2 Unexpected chemicals due to secondary reactions or degradation processes.

4.8.6.2.12.3 Safety problems which might have been avoided or reduced by better understanding of chemistry.

4.8.6.2.12.4 Analytical methods which did not work properly or required modification for certain types of samples.

4.8.6.2.12.5 Analytical results which showed greater than expected variability and the reasons for their variability.

4.8.6.2.12.6 Calibration or instrumentation breakdown problems and their resolution.

4.8.6.2.12.7 Specific QA/QC checks which should have been increased or decreased, e.g., more field blanks, etc.

* * * END OF SECTION * * *

SECTION 02211
EXCAVATION AND BACKFILL

1.1 SUMMARY

This section includes the requirements for excavation and backfilling of soils and other tasks associated with the "Spill Area" soils. Work includes:

1.1.1 Excavation of contaminated soils from areas identified on Contract Drawings.

1.1.2 Staging and preparation of debris and contaminated soils for decontamination, salvage or off-site disposal, or treatment.

1.1.3 Placement and compaction of treated soils and selected fill materials within the excavation limits.

1.2 REFERENCES

1.2.1 Draft Final Remedial Investigation Report, Claremont Polychemical Site, Ebasco Services, Inc., 1990.

1.2.2 Record of Decision, Claremont Polychemical Site, USEPA, 1990.

1.2.3 Draft Predesign Investigation Report, Claremont Polychemical Site, SEC Donohue., 1992

1.2.4 ANSI/ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.

1.2.5 ANSI/ASTM D698 - Test Methods for Moisture Density Relations of Soils and Soil-Aggregates Mixtures, Using 5.5 lb. (2.49 kg) Rammer and 12-inch (304.8mm) Drop.

1.3 RELATED SECTIONS

Section 01060 Regulatory Requirements
Section 01064 Environmental Protection
Section 01155 Health, Safety, and Emergency Requirements
Section 01300 Submittals
Section 01400 Contractor Quality Control
Section 01405 Chemical Data Quality Management
Section 01560 Spill and Discharge Control Plan
Section 01561 Dust and Volatile Emissions Monitoring and Control Plan
Section 02210 Site Grading
Section 02215 Structural Backfill and Grading
Section 13900 Off-Site Transportation and Disposal

1.4 DEFINITIONS

1.4.1 "Spill Area" is the location defined in the Record of Decision for the Claremont Polychemical Site requiring soil excavation and treatment.

1.4.2 "Contaminated" means that soils, debris, water, or material contains hazardous constituents to degree that it requires treatment, removal and disposal, or decontamination to an acceptable degree.

1.4.3 "Salvageable" refers to debris or material that is non-porous metallic in nature and may be sold for reuse.

1.4.4 "Treated" refers to soils or material that has been treated by Low Temperature Thermal Desorption to contain concentrations less than or equal to the cleanup goals defined in the Record of Decision.

1.5 GENERAL REQUIREMENTS

1.5.1 Identify and become familiar with the chemical and physical hazards present prior to performance of the excavation work in the "Spill Area". The Contractor shall be solely responsible for implementation of health and safety protocols.

1.5.2 Implement quality control measures associated with excavation of "Spill Area" soils necessary to prevent over-excavation and treatment of soils not requiring treatment. Excavation and treatment of non-contaminated soils shall be at the Contractors expense.

1.5.3 Implement excavation, staging, and transportation of contaminated soils and materials in a manner to minimize spills and cross-contamination. Excess material resulting from cross-contamination and spills shall be treated at the Contractors expense.

1.5.4 Implement dust control measures in accordance with requirements specified in SECTION 01561 Dust and Volatile Emissions Monitoring and Control Plan. Measures shall include but not be limited to water sprays, dust suppressing chemicals, or coarse aggregates.

1.5.5 Implement volatile emissions control measures based on monitoring results and action levels established in the Dust and Volatile Emissions Monitoring and Control Plan required in SECTION 01561. Measures shall include, but not be limited to minimizing excavation area, installing temporary soil cover, or applying vapor suppressing foam.

1.5.6 Implement erosion controls necessary to prevent cross-contamination of soils adjacent to stockpiles.

1.5.7 Implement stormwater run-on/runoff controls necessary to minimize infiltration of precipitation. Keep excavation dry and open.

1.6 SUBMITTALS

1.6.1 Excavation/Backfilling Plan

1.6.1.1 Prepare and submit for review, an Excavation/Backfilling Plan describing all phases of excavation and backfill work. The Excavation/Backfilling Plan shall include at a minimum:

1.6.1.1.1 Excavation Equipment
1.6.1.1.2 Staging/Stockpile Locations
1.6.1.1.3 Temporary and Permanent Erosion Control Measures
1.6.1.1.4 Backfill Placement and Compaction Methods
1.6.1.1.5 Excavation Shoring/Stabilization Techniques
1.6.1.1.6 Backfill Materials Testing and Analysis Methods
1.6.1.1.7 Surface and Subsurface Debris Segregation and Management
1.6.1.1.8 Work Area Requirements
1.6.1.1.9 Cover/Protection of Contaminated Soils from Precipitation
1.6.1.1.10 Stormwater Run-on/Runoff Control Measures
1.6.1.1.11 Excavation/Backfill Sequencing

1.6.2 Verification Sampling Plan

1.6.2.1 Prepare and submit for review, a Verification Sampling Plan detailing proposed sampling locations and analytical methods for verification of excavation bottom soils.

1.7 SITE CONDITIONS

1.7.1 Spatial Restrictions

1.7.1.1 Working area to perform the Spill Area remediation work is limited to the area shown on the Contract Drawings and areas designated by the Owner.

1.7.2 Soil Characteristics

1.7.2.1 The Spill Area soils are silty and clayey sand with 10 to 20 percent gravel. The natural moisture content ranges from 5 to 16 percent. Known physical characteristics are listed in the attached Table.

1.7.3 Surface Debris

1.7.3.1 Surface debris including soils and salvageable materials are present within areas to be excavated and shown on the Contract Drawings.

1.7.4 Subsurface Debris and Oversized Material

1.7.4.1 Subsurface debris and material exceeding maximum size for LTEV processing are expected to be present in small quantities in the Spill Area subsurface.

PART 2 PRODUCTS

2.1 TREATED SOIL BACKFILL

2.1.1 Excavated and subsequently treated soils approved as suitable fill by the Contract Officer that have been tested and confirmed that treatment criteria has been met.

2.2 OTHER BACKFILL

2.2.1 General fill - Soils from on-site or off-site sources, approved by the Contract Officer.

2.2.2 Structural Fill - Soils meeting specifications of SECTION 02221 for backfill under or adjacent to structures.

2.3 EROSION CONTROL

2.3.1 Fabric/Silt Fence

2.3.2 Plastic Sheeting, minimum 8mm thickness

2.4 SAFETY FENCE

2.4.1 Flexible high-density polyethylene day glow orange fence (minimum 4-foot height. Steel fence posts with anchors.

PART 3 EXECUTION

3.1 SITE PREPARATION

3.1.1 Examine and verify Spill Area and adjacent areas designated by Contract Officer and identified in Excavation/Backfilling Plan for use in performance of the required work.

3.1.2 Obtain the services of, or utilize a land surveyor registered as such in the state of New York and stake the vertical and horizontal excavation boundaries shown on the Contract Drawings.

3.1.3 Install and maintain construction safety fence around the "exclusion zone" boundary as shown on Contract Drawing.

3.1.4 Install erosion and stormwater controls at areas designated for staging/stockpiles.

3.2 SURFACE DEBRIS

3.2.1 Remove surface debris from Spill Area excavation zones.

3.2.2 Separate and stage salvageable materials in an area designated by Contract Officer and identified in the Excavation/Backfilling Plan.

3.2.3 Stage uncontaminated soils generated from surface debris removal in area designated by Contract Officer and identified in the Excavation/Backfilling Plan.

3.3 EXCAVATION

3.3.1 Excavation shall be performed in accordance with the Contractor's approved Excavation/Backfilling Plan.

3.3.2 Excavate TARGET CLEANUP CONCENTRATION AREA and TARGET CLEANUP DEPTH AREA to the target depths/concentrations specified on Contract Drawings.

3.3.3 Excavate soils at a rate/sequence to maintain three days of LTEV system feed volume.

3.3.4 Stage excavated soils for treatment at the PRETREATMENT STOCKPILING/STAGING AREA as specified in Section 13700.

3.4 VERIFICATION SURVEYING/SAMPLING

Verification surveying/sampling shall be performed in accordance with the Contractor's approved Verification Sampling Plan. A recommended approach is outlined in Paragraphs 3.4.1 and 3.4.2.

3.4.1 Verification Surveying

Obtain elevations of excavation bottom at TARGET CLEANUP CONCENTRATION AREA by survey. Survey a minimum 11 locations to include:

- The four corners.
- The center on both edges.
- The center of five evenly divided sections.

Obtain elevations of excavation BOTTOM at TARGET CLEANUP DEPTH AREA by survey. Survey a minimum 50 locations by establishing a 25-foot survey grid.

3.4.2 Verification Sampling

Establish 10 evenly divided sections at TARGET CLEANUP CONCENTRATION AREA.

Obtain with excavator, one soil sample from three evenly spaced intervals of each section and place sample in a clean container leaving 25% of empty container at the top. Place aluminum foil over sample container and allow a minimum 5 minutes for vapor in the container to reach equilibrium.

Measure volatile organic vapors with flame ionization detector (FID) or photoionization detector (PID) by penetrating aluminum foil cover and record peak deflection on FID/PID consistently.

Retain sample displaying highest FID/PID reading for chemical analysis specified in SECTION 01405. Retain section center (first priority), side (second priority), sample when FID/PID readings are nil or equal.

3.5 BACKFILL MATERIAL PREPARATION

3.5.1 Collect treated soil samples from POST-TREATMENT STOCKPILING AREA for geotechnical analysis at a frequency of one sample per 500 cubic yards.

3.5.2 Test treated soil samples as follows:

- Grain size as specified in 1.2.4
- Compaction as specified in 1.2.5

3.6 EXCAVATION BASE PREPARATION

3.6.1 Inspect and compact subgrade or excavation bottom to density requirements for subsequent backfill materials. Identify soft or areas unsuitable for specified fill compaction requirements and notify Contract Officer.

3.6.2 When authorized by Contract Officer, cut out unsuitable areas and backfill with suitable materials.

3.7 BACKFILLING

3.7.1 Upon authorization by Contract Officer, place and compact treated soil or other fill in accordance with fill requirements shown on Contract Drawings.

3.7.2 Execute excavation/backfill sequence required to accommodate LTEV treatment goals and in accordance with the approved EXCAVATION AND BACKFILLING PLAN.

3.7.3 Maintain separation distance between contaminated soils to be excavated and treated soils/backfill in excavation.

3.7.4 Provide physical separation barrier to prevent cross-contamination in excavation resulting from inclement weather.

3.8 PLACEMENT AND COMPACTION SCHEDULE

3.8.1 Footings, Foundations, Slabs, Storage Tanks:

3.8.1.1 Place in maximum 8-inch lifts and compact to 95% of Modified Proctor density.

3.8.2 Pavement - Sidewalks:

3.8.2.1 Place in maximum 12-inch lifts and compact top 90% of Modified Proctor density.

3.8.3 Landscaping, Lawn, Misc.:

3.8.3.1 Place in maximum 12-inch lifts and compact to 80% Modified Proctor density.

3.9 FIELD QUALITY CONTROL

3.9.1 Perform field testing in accordance with the provisions of SECTION 01400.

3.9.2 Perform field tests for general fill at a frequency of one (1) test per 75 cubic yards of material.

3.9.3 Perform compaction tests to conform with ANSI/ASTM methods specified in References.

* * * END OF SECTION * * *

SECTION 13700
LOW-TEMPERATURE ENHANCED VOLATILIZATION

PART 1 GENERAL

1.1 SUMMARY

This performance specification is provided to identify the minimum criteria for the successful removal of tetrachloroethene (PCE) from contaminated soils excavated from the Spill Area at the Claremont Polychemical Site. The Contractor shall provide all labor, utilities, equipment, and materials necessary to complete the following work related to the Low Temperature Enhanced Volatilization (LTEV) System.

1.2 REFERENCES

1.2.1 Regulatory Requirements

1.2.1.1 Refer to Section 01060, Regulatory Requirements.

1.2.2 Site-Specific Documents

1.2.2.1 Draft Final Remedial Investigation Report, Claremont Polychemical Site, Ebasco Services, Inc., 1990.

1.2.2.2 Record of Decision, Claremont Polychemical Site, USEPA, 1990.

1.2.2.3 Draft Predesign Investigation Report, Claremont Polychemical Site, SEC Donohue Inc., 1992.

1.3 RELATED SECTIONS

Section 01015 Contractor Use of Site
Section 01060 Regulatory Requirements
Section 01064 Environmental Protection
Section 01155 Health, Safety, and Emergency Requirements
Section 01400 Contractor Quality Control
Section 01405 Chemical Data Quality Management
Section 01500 Temporary Construction Facilities and Utilities
Section 01540 Security
Section 01560 Spill and Discharge Control Plan
Section 01561 Dust and Volatile Emissions Monitoring and Control Plan
Section 01700 Site Closure Plan
Section 01730 Project Record Documents
Section 01731 Operating and Maintenance Data
Section 02110 Clearing and Grubbing
Section 02150 Temporary Facilities
Section 02210 Grading
Section 02211 Excavation and Backfill
Section 02215 Structural Backfill and Grading

Section 02222 Excavation, Trenching, and Backfilling, for Utilities Systems
Section 02721 Site Utilities Systems
Section 02935 Site Restoration
Section 13750 Building Materials and Content Decontamination
Section 13800 Salvageable Material Removal
Section 13900 Off-Site Transportation and Disposal

1.4 DEFINITIONS

1.4.1 Volatile Organic Compounds (VOCs): Organic substances which have vapor pressures or sums of partial pressures of organic substances of 0.02 pounds per square inch (1 millimeter of mercury) absolute or greater at standard conditions. The primary VOC detected in Spill Area soil is tetrachloroethene (PCE).

1.4.2 Low Temperature Enhanced Volatilization System (LTEVS): The LTEVS is used to remove VOCs from the soil by a physical transfer process that uses air, heat, and/or mechanical agitation to volatilize contaminants into a gas stream where the contaminants are then subjected to further treatment. The LTEVS includes air emissions monitoring and control equipment and required instrumentation, utilities, and material handling equipment necessary to successfully operate the system in accordance with this specification.

1.4.3 Spill Area: Area requiring soil excavation and treatment as defined in the Record of Decision for the Claremont Polychemical Site. Refer to Drawing 03-CR-1.

1.4.4 Soil Remediation: Excavation and treatment of Spill Area soil and backfill of treated soil.

1.4.5 Treated Soil: Soil that has been treated by LTEV to the cleanup criteria specified in Paragraph 1.8.1.

1.4.6 Residuals: LTEVS by-products which may include, but are not limited to, condensed liquids; process water from scrubber blowdown, filter presses, condensed evaporate; sludge, including that from storage tanks, wastewater processes, condensate traps and reactors; drums, containers, and any other waste material used in the operation of the LTEVS; baghouse dust; and spent carbon filters or other filter material.

1.4.7 Action Level: Field instrument measurement/reading at which a control action must be implemented.

1.5 GENERAL REQUIREMENTS

1.5.1 LTEVS mobilization, setup, performance testing, standard operations, and demobilization shall be in compliance with federal, state, and local Applicable or Relevant and Appropriate Requirements (ARARs) as specified in Section 01060, Regulatory Requirements.

1.5.2 The Contractor shall provide a LTEVS that shall be capable of treating the quantities and types of materials listed in Section 01010, Summary of Work, and that shall have sufficient capacity to allow the Soil Remediation to be completed within the contract time, as specified in the Contract Award Document.

1.5.3 The Contractor shall comply with specifications listed in Paragraph 1.3, RELATED SECTIONS, during Soil Remediation activities.

1.5.4 The Contractor shall furnish, install, and operate an on-site LTEVS, complete in all respects. The LTEVS shall be capable of meeting all performance criteria listed in Paragraph 1.8, PERFORMANCE CRITERIA.

1.5.5 Waste materials generated by the Contractor as part of the Soil Remediation such as personnel protective equipment shall not be processed through the system at the expense of the Government. All process residual waste shall be disposed of by the Contractor in accordance with Section 13900, Off-Site Transportation and Disposal.

1.5.6 The LTEVS shall not be mobilized to the site until the Contractor has received approval from the Contracting Officer. The Contracting Officer shall require that the Contractor gain the State of New York's approval to operate the LTEVS prior to allowing the Contractor to mobilize to the site. Any delays that occur as a result of Contractor's efforts to obtain State approval to operate the LTEVS, before or after mobilization to the site, shall be the Contractor's responsibility and shall be for the Contractor's account; the Government shall not be held liable for any direct or indirect expenses arising from these delays.

1.5.7 The Contractor shall demonstrate, through performance testing, to the satisfaction of the Contracting Officer and the State of New York the operation of an LTEVS, complete in all respects, while operating at design parameters, including the removal of PCE from soils to acceptable concentrations and in accordance with air emission control requirements. Refer to Paragraph 3.1, PERFORMANCE TESTING.

1.5.8 The LTEVS shall be constructed, operated, and maintained to consider all community and environmental concerns related to the control of noise, odor, dust, litter, traffic, and hours of operation, and use and intensity of night lighting. The Contractor shall maintain environmental protection as specified in Section 01064, Environmental Protection.

1.5.9 The LTEVS shall be removed from the site at the conclusion of the remediation, so that the site can be restored as specified in Section 01565.

1.6 SUBMITTALS

1.6.1 LTEVS Operations Plan

The Contractor shall describe in a LTEVS Operations Plan all means and methods required to mobilize, set up, successfully operate, demobilize, and remove the LTEVS. Refer to Section 01300, SUBMITTALS. The plan shall also detail

provisions for pretreatment stockpiling/staging, pretreatment processing, post-treatment staging and sampling. In addition, the following submittals are required:

Contractor's spatial and utility requirements.

Documentation demonstrating that all necessary municipal, State, and Federal approvals and substantive permit requirements for LTEVS operation have been met.

One complete set of operation and maintenance manuals and control and instrumentation capabilities for the Contracting Officer's review.

The qualifications and experience of the operators of the LTEVS.

Backup, redundancy, and methods for handling emergency situations.

1.6.2 LTEVS Report

The Contractor shall submit (refer to Section 01300, SUBMITTALS) a LTEVS Report that shall include LTEVS specifications, details and drawings including cross sectional drawings of the LTEVS, method of heating, fuel storage, feed storage, preparation (pretreatment processing) and loading, and treated soil handling and staging/stockpiling. Details and drawings shall also include proposed ranges of capacities or flow rates of each LTEVS component, proposed arrangement of major pieces of equipment and general site layout, and materials of construction including thermal linings. Equipment specifications shall be provided for all major process units in the LTEVS (catalog cuts, flow rates, operating temperatures, pressures, and any other significant operating parameters).

The LTEVS Report shall include process flow diagrams and calculations showing the material and energy balances, residence times, flow rates and temperatures and pressures for the major gaseous, liquid, and solid material flows through the system, including SO_x, NO_x, organic compounds, and particulates in the emissions.

The LTEVS Report shall include process control and measurement instrumentation and instrument diagrams including pressure, temperature and flow instruments and continuous emission monitoring equipment (O_2, CO, CO_2, and HCl if secondary combustion is used) and a description of the control room instruments, alarms and calibration manuals, instruments, and alarms.

1.6.3 Performance Testing Plan

The Contractor shall submit a Performance Testing Plan. Refer to Section 01300, SUBMITTALS. The plan will include LTEVS performance testing protocols, including stack sampling protocols and operating protocols, which will be used to establish that the system will operate in accordance with the performance criteria and regulatory requirements.

1.6.4 Performance Testing Report

The Contractor shall submit documentation demonstrating that the LTEVS will meet the treatment criteria and all air emissions standards prior to beginning site operations. The Contractor shall submit a Performance Testing Report. Refer to Section 01300, SUBMITTALS. The report shall include a description of operating conditions and feed characteristics, all analytical results from the performance test, and an analysis of the results demonstrating that the LTEVS complied with the applicable regulatory requirements and met the treatment criteria specified in Paragraph 1.8.1. The documentation shall include a mass balance evaluation that accounts for all gases, liquids, and solids entering into or discharging from the process during performance testing. This balance shall document that all emissions from the system, including gaseous exhaust emissions, shall be in accordance with the requirements of this specification.

Stack sampling results and conclusions related to the performance testing shall be documented in accordance with the approved Performance Testing Plan and stack sampling protocols.

The report shall contain all operating parameters and documentation necessary to verify test conditions and shall be submitted within one month from the completion of performance testing.

1.6.5 Dust and Volatile Emissions Monitoring and Control Plan

The Contractor shall be required to submit a Dust and Volatile Emissions Monitoring and Control Plan and conduct air dispersion modeling. This Plan shall include protocols and provisions for all Soil Remediation activities. The Plan will detail the collection of background data, modeling protocol, site action level evaluation, model implementation, model results summary and evaluation, and ambient air monitoring requirements. The requirements of the Plan are specified in Section 01561. The requirements pertinent to LTEV treatment are summarized below.

The Plan shall include a Continuous Emissions Monitoring System (CEMS) protocol for the LTEVS. This protocol shall, at a minimum, include the following items:

a) CEMS Equipment Specification Proposal
b) CEMS Siting Proposal
c) CEMS Certification Procedures
d) Quality Assurance Procedures
e) Routine Maintenance Procedures
f) Recordkeeping and Data Storage Procedures

The Plan shall include perimeter air monitoring protocol for dust and volatile emissions during material handling activities associated with pretreatment stockpiling/staging, pretreatment processing, and post-treatment staging.

The action level evaluation shall be based on modeling results, applicable regulations, and on provisions specified in the Contractor's approved Health and Safety Plan (refer to Section 01155, Health, Safety, and Emergency Requirements).

The Plan shall include emissions control procedures that shall be implemented by the Contractor if perimeter air monitoring indicate that action levels are exceeded.

1.6.6 Residuals Management Plan

The Contractor shall submit a Residuals Management Plan. This Plan shall include protocols for on-site handling, storage, staging, and disposal of LTEVS residuals (refer to Paragraph 1.4.6) and oversized material removed from excavated soil during pretreatment. The Plan shall detail storage and staging facilities and locations and all equipment used in the on-site handling, storage, and staging of residuals.

1.6.7 Weekly Work Activity Summary Reports

The Contractor shall be responsible for all data recording, analysis, and report generation associated with Soil Remediation activities. The Contractor shall submit Weekly Work Activity Summary Reports that contain all the documentation necessary to verify all Soil Remediation work. The reports shall include, at a minimum:

LTEVS CEMS results and conclusions
Perimeter air monitoring results and conclusions
Treated soil sampling results and conclusions
Quantities of excavated soil
Quantities of treated soil
Quantities of treatment residuals
Manifest documents
Chain-of-custody documents
Daily inspection reports
Daily construction quality reports
Emergency response actions
Dust and emission control actions
Spill control actions
Safety and accident incident reports
Field changes of dimension and detail (drawings)

1.6.8 Spill and Discharge Control Plan

The Contractor shall submit a Spill and Discharge Control Plan. The Plan shall include contingency measures for potential spills and discharges resulting from the handling of LTEVS process liquids, excavation dewatering water (stormwater run-on), and LTEVS residuals. The requirements of the Plan are specified in Section 01560.

1.7 PROJECT CONDITIONS

1.7.1 Waste Characterization

Tetrachloroethene (PCE) is the only potential contaminant of concern in the Spill Area soil based on soil-to-groundwater leaching modeling. The treatment criteria is therefore based on a target treatment concentration for PCE. Several other VOCs (1,2-dichloroethene, trichloroethene, acetone, toluene, 2-butanone, xylenes and 4-methyl - 2-petanone) and some semi-volatile organic compounds (polynuclear aromatic hydrocarbons, phthalates, benzoic acid, 2-chloronaphtahlene and pentachlorophenol) were detected in Spill Area soil boring samples. Metals (arsenic, cadmium, copper, lead, magnesium, and selenium) exceeding typical background levels have also been detected in site soil.

The soil in the Spill Area is generally silty and clayey sand with approximately 10 to 20 percent gravel. The natural moisture content of subsurface soil generally ranges from about 5 to 16 percent. The results of physical properties testing of Spill Area soil are summarized in Section 02211.

The Spill Area soil does not appear to be listed or characteristic hazardous waste under the Resource Conservation and Recovery Act (RCRA). Design calculations indicate that Spill Area soil should not fail the toxicity characteristic leaching procedure (TCLP) for metals or for PCE.

Based on field observations during the Remedial Investigation and Predesign Investigation, subsurface debris is not anticipated; however, the Contractor shall provide provisions for managing this material (refer to Paragraph 1.6.6).

1.7.2 Utilities

It is the Contractor's responsibility to provide all utilities necessary to complete this project. Approximate utility locations for the site are shown on the Drawings. It is the Contractor's responsibility to verify locations of all utilities. Refer to Section 01500, Temporary Construction Facilities and Utilities.

1.7.3 Space Allotment

Drawing 03-CR-2 provides a suggested layout for Soil Remediation facilities. Space is limited due to constraints imposed by existing site buildings, site topography, and site property boundaries. An approximate area of 25,000 sf has been allotted for the LTEVS. This area shall also be used for related equipment such as a control trailer; an auxiliary generator; dewatering equipment; screening equipment; air emission controls and monitoring equipment; soil conveyance, preparation and loading equipment; and fuel tanks. Additional area is provided for staging/stockpiling of both untreated (4,400 sf for staging and stockpiling) and treated soils (6,800 sf for staging and 8,600 sf for stockpiling). The Contractor may modify the sizes of these LTEVS areas, with the approval of the Contracting Officer, to meet the needs of the LTEVS.

1.8 PERFORMANCE CRITERIA

The LTEVS shall be operated in such a manner as to attain the performance criteria.

1.8.1 Soil Treatment Criteria

The on-site LTEVS shall thermally treat excavated contaminated soils to a treatment target level for tetrachloroethylene (PCE) of 200 ug/kg.

1.8.2 Off-Gas Treatment Criteria

Off-gases generated by the LTEVS shall be treated to meet the air emissions standards listed in Section 01060, Regulatory Requirements.

1.8.3 System Criteria

1.8.3.1 The LTEVS shall thermally treat a minimum of 3,900 cubic yards of contaminated soils, measured in-place.

1.8.3.2 The Contractor shall process the contaminated soil in the LTEVS at a rate that is compatible with the rate of excavation and post-treatment sample analysis.

1.8.3.3 The Contractor shall pretreat the excavated soils in an appropriate manner, such that the resulting pretreated soils possess characteristics suitable for introduction into the LTEVS. Screening equipment shall remove debris which exceeds the size capacity of the LTEVS.

1.8.3.4 The LTEVS shall include particulate removal units (i.e., baghouse, electrostatic precipitator, etc.) capable of meeting the air emissions standards listed in Section 01060.

1.8.3.5 The LTEVS shall contain a unit process or processes to remove the VOCs from the exhaust gas to meet the air emissions standards listed in Section 01060.

1.8.3.6 The LTEVS shall contain a unit process or processes to remove HCl produced as a result of secondary combustion of gases if thermal oxidation of gases is used for emission control. Secondary combustion chambers (if used) shall operate in accordance with regulations listed in Section 01060.

1.8.3.7 The LTEVS shall include an induced draft fan that maintains a negative pressure through the system in order to minimize fugitive dust emissions.

1.8.3.8 Continuous Emission Monitors (CEM) shall be installed and operated in the exhaust stack for the LTEVS. The CEMs shall monitor oxygen, carbon monoxide, total hydrocarbons, and any other parameters required to meet the air emissions standards listed in Section 01060. These CEMs shall have detection limits acceptable to the state of New York.

1.8.3.9 The Contractor shall supply, maintain, and operate all controls and instrumentation associated with the operation of the LTEVS for the duration of this contract.

1.8.3.10 A control room shall be provided in a separate enclosure. Equipment in the control room shall include performance monitoring devices with continuous data recording. The control system must automatically switch to a back-up electrical power supply when an electrical power outage occurs.

1.8.3.11 The fuel system supplied by the Contractor shall provide storage capacity and feed capacity as required by the LTEVS. The Contractor shall only use "clean" fuels such as natural gas, propane, fuel oil, or electricity, as a source of heat for the LTEVS.

1.8.3.12 The LTEVS shall not use dampers to dilute the exhaust gas.

1.8.3.13 The Contractor shall control emissions from the conveyor portion of the LTEVS to meet the air emissions standards listed in Section 01060.

1.8.3.14 The LTEVS shall be operated with a system which can be used to automatically cut off waste feed when operating conditions deviate from limits established during performance testing. The LTEVS shall cease operation when changes in waste feed, or operating conditions exceed limits established during performance testing.

1.9 PERMITS

The Contractor shall be responsible for identifying and complying with the substantive requirements of all applicable municipal, State and Federal permits and regulations associated with the construction and operation of the LTEVS. The Contractor shall be responsible for all costs associated with identifying and meeting these requirements. Refer to Section 1060, Regulatory Requirements.

1.10 COORDINATION

The Contractor shall coordinate the processing of contaminated soils in the LTEVS with excavation (refer to Section 02211, Excavation and Backfill), off-site transportation and disposal (refer to Section 13900, Off-Site Transportation and Disposal) and building decontamination (refer to Section 13750, Building Materials and Content Decontamination) activities. The excavation, LTEV treatment and off-site disposal shall be coordinated to maintain the required LTEV treatment process rate, minimize material stockpiling and storage, and maintain the schedule.

The Contractor shall be responsible for coordinating permitting, inspections, test periods, and other preliminary activities such that these efforts are completed prior to the commencement of scheduled remedial actions.

1.11 MOBILIZATION

The Contractor shall be allowed a maximum of 30 calendar days for mobilization of the LTEVS. This mobilization period shall begin only after the Contracting Officer has given approval, and when all utilities, services, and site preparations required by the LTEVS are complete. Mobilization shall include, at a minimum, transporting all LTEVS equipment onto the site, setting up the LTEVS, and connecting all utilities, monitoring equipment, and emission controls.

1.12 DEMOBILIZATION

The Contractor shall be allowed a period of 30 calendar days for demobilization of the LTEVS. The LTEVS demobilization period shall begin only after all contaminated soil has been treated to satisfy all treatment criteria as required by this section. This demobilization period shall include, at a minimum, all disconnection of utilities, decontamination, disassembly, and removal of all LTEVS equipment, materials handling equipment, structures, and concrete pads related to the LTEVS. The demobilization period shall be considered complete when the Contractor and all LTEVS-related equipment leaves the site. Demobilization shall comply with the equipment decontamination protocols in the Contractor's Health and Safety Plan (requirements specified in Section 01155, Health, Safety and Emergency Requirements.

1.13 INCLEMENT WEATHER

The Contractor shall be responsible for maintaining project schedules for the LTEVS even in the event of rain, lightning, or other inclement weather events.

PART 2 PRODUCTS

(Not Used)

PART 3 EXECUTION

3.1 PERFORMANCE TESTING

Prior to the start of remediation work, the Contractor shall be required to demonstrate the performance of the LTEVS. The performance test shall be used to evaluate the ability of the LTEVS to meet the soil treatment criteria and emissions requirements and to establish a range of standard operating conditions. At a minimum, these performance criteria shall be demonstrated during the test:

- Treated soil residual PCE level less than 200 ppb.
- Minimum of two days of continuous treatment.
- Air emissions below required limits.
- Treated soil fulfills specified backfill criteria as specified in Section 02211, Excavation and Backfill.

The Contractor shall perform performance testing in accordance with the approved Performance Testing Plan protocols. Refer to Paragraph 1.6.3.

The results of the performance test shall be approved by Contracting Officer before standard operating procedures are permitted.

If the results indicate the remediation or emissions criteria were not met consistently under steady-state conditions, the Contractor shall submit revised operating protocols within three (3) days which demonstrate how the deficiencies will be corrected. This process shall be repeated until the Contractor has demonstrated the ability to consistently meet the performance criteria. If the Contractor fails 3 performance tests, the Contractor shall be declared in default of contract.

All costs associated with modifying the protocols, obtaining necessary approvals, performing additional performance tests, down time during the approval process, and all other direct and indirect costs related to the performance testing shall be the responsibility of the Contractor and shall be for the Contractor's account.

3.2 PRETREATMENT

3.2.1 Staging

The Contractor shall excavate and transfer soils from the Spill Area to the LTEVS Pre-Treatment Stockpiling/Staging Area only after receipt of Notice to Proceed from the Contracting Officer. Refer to Section 02211, Excavation and Backfill.

Prior to LTEV treatment, soils shall be placed on-site in the Pre-Treatment Stockpiling/Staging Area as per the Contractor's LTEVS Operations Plan. Refer to Drawing 03-CR-2.

The Contractor shall be responsible for the design and construction of the Excavated Soil Staging Area. The following minimum standards shall be incorporated into the design.

- A lined concrete pad, with lined sump, sized to accommodate a soil volume equal to a 3-day capacity of the LTEVS.
- A stockpile cover system to prevent surface water and precipitation from entering the storage area and to reduce air emissions.

3.2.2 Pretreatment Processing

The Contractor shall pretreat the excavated soils as necessary to make soil suitable for treatment in the LTEVS. Pretreatment shall be performed as per the Contractor's LTEVS Operations Plan. Pretreatment shall consist of screening and sorting or other processes to make the soils suitable for treatment in the LTEVS. Pretreatment shall also include blending of soil removed from the Target Cleanup Concentration Area with soil removed from the Target Cleanup Depth Area to provide a uniform feed concentration to the LTEVS.

3.3 TREATMENT

Operating conditions used during the successful performance test shall be the basis for establishing the acceptable range of operating requirements for the LTEVS during standard operations. The LTEVS Operations Plan shall detail the protocols used during LTEVS standard operating conditions.

The LTEVS shall be operated in such a manner as to attain performance criteria specified in Paragraph 1.8.

3.4 POST TREATMENT

3.4.1 Staging

Treated soil shall be placed on-site in the Post-Treatment Staging Area as per the Contractor's LTEVS Operations Plan. Refer to Drawing 03-CR-2.

The Contractor shall be responsible for the physical segregation of batches of treated soils pending receipt of post-treatment analytical results. Physical separation of batches could be accomplished with separate areas, bins, stalls, or roll-off containers. The Contractor shall collect samples of the treated soils and conduct analytical testing to ascertain their suitability for back-fill into the excavation.

Treated soil storage bins shall be covered at all times while in the staging area to minimize precipitation infiltration and wind erosion.

3.4.2 Sampling

The Contractor shall be responsible for post-treatment sampling and analysis. One random, discrete sample shall be collected every 24 hours and analyzed for VOCs in accordance with Section 01405, Chemical Data Quality Management to verify that the treatment criteria specified in Paragraph 1.8.1 is met.

3.4.3 Retreatment

The Contractor shall reprocess, retreat and reanalyze soils which do not meet the treatment criteria specified in Paragraph 1.8.1. The reprocessing and retreating of these soils shall be continued repetitively until analytical results indicate that treatment criteria have been met. All costs associated with reprocessing, retreating and reanalyzing shall be for the Contractor's account.

Soils requiring retreatment shall be segregated from treated soils. The quantity requiring retreatment shall be reported and subtracted from the daily production rate when calculating treatment volumes for the day.

3.4.4 Post-Treatment Stockpiling

Treated soil which meets the specified treatment criteria shall be transferred by the Contractor from the Post-Treatment Staging Area to the Post-Treatment Stockpile Area. The treated soil shall remain in the Post-Treatment Stockpile Area until it is backfilled into the Spill Area excavation (refer to Section 02211). Treated soil stockpiles shall have a cover system to prevent surface water and precipitation infiltration and wind erosion.

The Contractor shall collect samples for geotechnical analysis from the treated soil stockpiles to verify that the soil meets the specified backfill criteria. Refer to Section 02211, Excavation and Backfill.

3.5 AIR EMISSIONS MONITORING AND CONTROL

The Contractor shall monitor and control air emissions during soil treatment according to the Contractor's approved Dust and Volatile Emissions Monitoring and Control Plan. Refer to Paragraph 1.6.5.

3.5.1 LTEVS Emissions

The LTEVS emissions shall be monitored by a CEM system installed and operated in the stack. CEM system protocol shall be established based on applicable regulatory requirements, air modeling results, and results of LTEVS performance testing. The Contractor's approved Dust and Volatile Emissions Monitoring and Control Plan shall provide documentation that CEM protocols have been approved by the State of New York and that they meet all applicable regulatory requirements.

LTEVS emissions will be controlled by air emissions control equipment specified in Paragraph 1.8.4, System Criteria.

3.5.2 Material Handling Emissions

Dust and volatile emissions shall be monitored during pretreatment and post-treatment handling and staging of soils using protocols established by the State of New York based on air modeling results and the Contractor's Health and Safety Plan.

The Contractor shall implement dust and volatile emissions controls if perimeter air monitoring indicates that action levels, as specified in the Contractor's approved Dust and Volatile Emissions Monitoring and Control Plan and the Contractor's Health and Safety Plan, are exceeded. Emissions control methods may include, but are not limited to, water sprays, dust suppressing chemicals, and vapor suppressing foams.

3.6 RESIDUALS DISPOSAL

The Contractor is responsible for the removal, transportation, and off-site disposal of all LTEVS residuals and oversized materials removed from excavated soil during pretreatment.

The disposal of residuals shall comply with all applicable local, state, and Federal regulations governing the transportation and disposal of hazardous, industrial, and liquid wastes, as applicable. Residuals disposal shall be performed in accordance with Section 13900, Off-Site Transportation and Disposal.

Residuals handling, storage, and staging shall be performed in accordance with the Residuals Management Plan specified in Paragraph 1.6.6 and the Spill and Discharge Control Plan specified in Paragraph 1.6.8.

Residuals sampling and analysis will be performed in accordance with Section 01405, Chemical Data Quality Management, and the requirements of the disposal facility.

* * * END OF SECTION * * *

SECTION 13750
BUILDING DECONTAMINATION

PART 1 GENERAL

This section specifies requirements the Contractor shall meet for building decontamination activities beginning after ACM removal when analytical results from testing for asbestos fibers confirm that building decontamination activities may continue.

1.1 SUMMARY

The purpose of building decontamination is to meet requirements in the Contract for:

- Removing hazardous substances from the building
- Protecting human health and the environment
- Allowing unrestricted future use of the building

Materials for removal include asbestos containing material (ACM) and dust in and below the dust collectors. Trash and debris are porous building materials and other porous material which cannot economically be decontaminated. This material also will be disposed of.

Materials for decontamination include salvageable material such as metal inside the building. The interior building walls, roof, and floor will be decontaminated as will the fixed appurtenances such as condenser tanks, piping, and laboratory benches.

1.2 REFERENCES

- Draft Final Remedial Investigation Report, Claremont Polychemical Site, Ebasco Services, Inc., 1990.
- Record of Decision, Claremont Polychemical Site, USEPA, 1990.
- Draft Predesign/Investigation Report, Claremont Polychemical Site, SEC Donohue Inc., 1992.

1.3 RELATED SECTIONS

Section 01060 Regulatory Requirements
Section 13850 Removal and Disposal of Asbestos-Containing Material
Section 13900 Off-Site Transportation and Disposal
Section 01155 Health, Safety, and Emergency Requirements

1.4 DEFINITIONS

1.4.1 Asbestos-containing material (ACM): The term includes chrysolite, amosite, crocidolite, tremolite, anthophyllite, and actinolite and any of these minerals that have been chemically treated or altered. Materials are considered to contain asbestos. The asbestos content is at least one percent of the material by area.

1.4.2 Decontamination: Decontamination is the act or process of removing (physically or otherwise) hazardous substances in whole or in part from or with material such that when finished, laboratory analysis indicates a lack of presence of material that was formerly present.

1.5 GENERAL REQUIREMENTS

Decontaminate the building for unrestricted future use while protecting human health and the environment.

1.6 SUBMITTALS

Submit the following to the Contracting Officer in Accordance with Section 01300 Submittals.

1.6.1 Decontamination Work Plan. Submit to the Contracting Officer decontamination details, including, but not limited to, the following:

- Mobilization/Demobilization Procedures (see also Section 01562 Site Maintenance Plan and Section 01700 Site Closure Plan)
- Decontamination Approach and Objectives
- Method for determining what is hazardous and requires decontamination
- Equipment and Materials
- Method of Supplying Utilities for Decontamination (see also Section 01500 Temporary Construction Facilities and Utilities)
- Procedures for Equipment Utilization
- Layout/Setup for Staging, Segregation, Material Handling, Loading
- Equipment Decontamination Procedures
- Residuals Disposal
- Method to prevent decontamination waters from entering floor drains or from leaving the building.
- Collection and containment procedures for decontamination water.
- Copies of Data Forms (i.e. daily logs, data summaries, field change request forms, air emission monitoring logs, manifests, etc.)
- Schedule
- Key Contractor Personnel
- Subcontractor(s) and Their Roles
- Certification of Testing Laboratory
- Documentation of Approval from Off-Site Disposal Facility
- Notifications

1.6.2 Health and Safety Plan. Submit a plan in accordance with Section 01155 Health, Safety, and Emergency Requirements.

1.6.3 Quality Assurance Project Plan (QAPP). Submit a plan that meets requirements of the Contract, the off-site disposal facility, and Section 01405 Chemical Data Quality Management.

1.6.4 Sampling and Analysis Plan (SAP). Submit a plan specifying:

- Objective of collecting each sample (e.g. to meet disposal facility requirements or frequency of washwater sampling)
- Number of samples for each sample matrix (e.g. wipes, washwater, etc.)
- Sample number designation (sample coding system)
- General sampling equipment and procedures
- Decontamination of sampling equipment and personnel
- Waste disposal
- General analytical parameters, field measurements, preservation and bottle requirements, and sample documentation(refer to details in Section 01405 Chemical Data Quality Management)

1.6.5 Field Change Request Forms. Prior to performing work that deviates from the Decontamination Work Plan, the Contractor shall obtain the Contracting Officer's signature on a Field Change Request Form. This form may be faxed to the Contracting Officer.

1.6.6 Manifests. The Contractor shall provide copies of sample manifests for anticipated wastes and residues to be disposed of at off-site facilities, and submit them to the Contracting Officer.

1.7 PROJECT CONDITIONS

1.7.1 Spatial Restrictions. The Contractor shall work inside the building, outside the building within 15 feet of the outside walls, and within a 140-foot by 140-foot staging area on the west side of the building. Drawing No. 03-CR-4 in the Plans shows the rooms inside the building and the adjacent staging area.

1.7.2 Building Surface Characteristics. This subpart addresses surfaces of the building to be decontaminated to meet the objectives in subpart 1.1.

Ceilings are primarily metal, covering approximately 45,000 square feet (sf) of surface area.

Walls are primarily painted and unpainted concrete or masonry, covering a total of approximately 74,800 sf.

Floors are concrete, covering a surface area of approximately 45,000 sf.

The three dust collectors on the roof were accessible for sampling during the predesign and may have to be removed prior to decontamination. These dust collectors are made of metal, have dimensions of approximately 4 ft by 6 ft by 6 ft.

1.7.3 Surface Debris and Unsecured Material. This subpart addresses porous trash and debris other than ACM within the building. Sections 13850 and 13800 address ACM and nonporous (salvageable) materials, respectively. The following estimates of quantities are from the 65% design, Design Analysis Report.

- 10 cubic yards (cy) of dust in and below dust collectors
- 10 cy of trash in rooms

1.7.4 Utilities. The Contractor is responsible for electric, phone, sewer, water, gas and other utilities for performing the work described in this section (see also Section 01500 Temporary Construction Facilities and Utilities).

1.8 PERFORMANCE CRITERIA

1.8.1 Treatment Criteria. The action levels or goals for decontamination of building ceilings, floors, and dust collectors are:

Arsenic	0.0024 ug/135 sq. in. wiped/sample
Barium	0.24 ug/135 sq. in. wiped/sample
Beryllium	0.014 ug/135 sq. in. wiped/sample
Cadmium	0.03 ug/135 sq. in. wiped/sample
Copper	23.8 ug/135 sq. in. wiped/sample
Iron	20.9 ug/135 sq. in. wiped/sample
Manganese	0.72 ug/135 sq. in. wiped/sample
Nickel	0.11 ug/135 sq. in. wiped/sample

The unsecured material (trash and dust) does not have cleanup criteria, but requires the Contractor to determine whether or not it is hazardous, for proper subsequent disposal at a licensed permitted off-site disposal facility.

The Contractor is responsible for disposing of decontamination residuals (fluids, solids and contaminated PPE) at a licensed, permitted off-site disposal facility.

1.8.2 System Criteria. The Contractor is responsible for operation of equipment and staging areas, access control, emissions control, and all other aspects of systems involved in the work described in this section. Contractor's systems shall meet all applicable regulations in Section 01060 Regulatory Requirements, protect human health and environment, and conform to other applicable codes and guidelines.

1.9 COORDINATION

1.9.1 Other Contractors. Coordination of the work of Subcontractors shall be the Contractor's responsibility. The procedures are to be documented in the Decontamination Plan.

1.9.2 Off-Site Transportation and Disposal. Coordination of off-site disposal shall be the Contractor's responsibility. Disposal procedures are to be documented in the Decontamination Plan.

PART 2 PRODUCTS

2.1 WATER TREATMENT/ADDITIVES

Shall conform to current environmental standards. The water treatment or additive shall be managed in a way to prevent release to the environment and shall prevent personal exposure.

2.2 ABRASIVES

Abrasives are not anticipated to be used but may be required to decontaminate equipment inside the building for salvage. The abrasive materials shall be managed in accordance with all applicable regulations to prevent personnel and exposure and environmental release.

PART 3 EXECUTION

3.1 WORK ORDER

The work order is the responsibility of the Contractor who is also responsible for means and methods. This section identifies some of the actions that must be addressed by the Contractor.

3.2 PRETREATMENT

3.2.1 Staging

The staging area for equipment and residuals is on the west side of the building. The Contractor is required to coordinate with other contractors using the space. The space is to be used in a manner to minimize run-on and run-off of surface water. Any material staged in this area must be staged in a manner to prevent release to the environment.

3.2.2 Debris Removal

Debris removal from inside the building will be performed to prevent a release to the environment or personnel exposure. The uncontaminated debris will be managed to prevent a release to the environment and shall be staged in closed containers (rolloff boxes).

3.2.3 Protection of Work to Remain

The building will remain after decontamination and will be decontaminated in a manner which will allow unrestricted future use. The building and permanent contents will be protected to the extent possible while satisfying the requirements of this section.

3.3 TREATMENT/DECONTAMINATION

3.3.1 Treatment and decontamination will be performed in accordance with this and other applicable sections. Residuals will be treated at licensed off-site treatment/storage/disposal (TSD) facilities upon approval from the Contracting Officer. Salvageable materials from inside the building will be decontaminated and recycled at a licensed/permitted off-site disposal facility approved of by the Contracting Officer.

3.3.2 Decontamination of the building and salvageable material from inside the building will be performed in accordance with all applicable rules, regulations, and the applicable sections of these specifications. The building will be decontaminated in a manner to protect the public health and the environment and to allow for unrestricted future use of the building.

3.4 POST-TREATMENT

3.4.1 Staging

Materials and residuals from decontamination of the building will be staged in the staging area shown on Drawing 03-CR-4. The materials will be staged until laboratory analysis is complete to verify decontamination or until laboratory analysis is complete to identity chemical constituents for disposal requirements. Upon completion of laboratory analysis, the materials will be processed as needed and approval received from the Contracting Officer before off-site disposal. The staging area will be maintained in a manner to prevent a release to the environment or exposure to the public and other personnel.

3.4.2 Sampling and Testing

Sampling and testing of materials in the building and in the staging area will be performed by a licensed analytical laboratory in the State of New York. Samples will be performed to identify the chemical constituents of trash and debris inside the building before disposal. Sampling and analysis will be performed to verify removal of dust and ACM where required. Other analysis will be performed to confirm decontamination of the building and salvageable equipment. Laboratory testing of residuals from decontamination operations will be performed to identify chemical constituents in the residuals before off-site disposal. Other sampling and testing will be performed to meet health and safety requirements. All data will be managed in accordance with Section 01405, Chemical Data Quality Management.

3.4.3 Retreatment

Retreatment will be performed on all materials that are identified as contaminated based upon laboratory analysis. Additional removal of ACM will be performed if laboratory microscopy indicates the presence of ACM fibers.

3.4.4 Demobilization

Demobilization will not be performed until approval is received from the Contracting Officer. Demobilization will include all equipment, residuals, and personnel associated with performing the building decontamination. Demobilization will occur only after laboratory analysis shows the material is uncontaminated; and all residuals are disposed of off-site at a licensed facility approved of by the Contracting Officer. The building shall be clean and in a saleable condition for unrestricted future use.

3.5 MANAGEMENT OF NONTREATABLE RESIDUALS

Items which cannot be decontaminated shall be considered hazardous unless shown otherwise by laboratory analysis. The Contractor is responsible for disposing of items which cannot be decontaminated in a manner consistent with all applicable rules and regulations after receiving approval from the Contracting Officer.

3.6 MANAGEMENT OF TREATMENT RESIDUALS

Treatment residuals includes ACM, contaminated trash and debris from inside the building, decontaminated salvageable equipment from inside the building, uncontaminated salvageable material from outside the building, dust from the dust collectors, and solid and liquid residuals from the building decontamination.

All residuals shall be treated/disposed of in accordance with all applicable rules and regulations. Off-site disposal facilities shall meet all applicable rules and regulations and must be approved of by the Contracting Officer.

3.7 DATA MANAGEMENT

All data shall be managed in accordance with Section 01405, Chemical Quality Data Management. Data shall be from a New York State licensed laboratory. All data shall be submitted to the Contracting Officer for review within three (3) days of receipt by the contractor from the laboratory.

* * * END OF SECTION * * *

SECTION 13800
SALVAGEABLE MATERIAL REMOVAL

PART 1 GENERAL

1.1 SUMMARY

The work specified in this Section involves decontamination, transportation, and off-site disposition of salvageable materials from the Claremont Polychemical Site. These materials will originate from building decontamination and exterior surface debris.

1.2 REFERENCES

1.2.1 Site-Specific Documents:

1.2.1.1 Draft Final Remedial Investigation Report, Claremont Polychemical Site, Ebasco Services, Inc., 1990.

1.2.1.2 Record of Decision, Claremont Polychemical Site, USEPA, 1990.

1.2.1.3 Draft Predesign Investigation Report, Claremont Polychemical Site, SEC Donohue, Inc., 1992.

1.3 RELATED SECTIONS

Section 01015 Contractor Use of Site
Section 01300 Submittals
Section 01040 Project Operations Plan
Section 01060 Regulatory Requirements
Section 01155 Health, Safety, and Emergency Requirements
Section 01405 Chemical Data Quality Management
Section 01560 Spill and Discharge Control Plan
Section 01700 Site Closure Plan
Section 02935 Site Restoration
Section 13750 Building Materials and Content Decontamination
Section 13850 Removal and Disposal of Asbestos-Containing Material

1.4 DEFINITIONS

1.4.1 "Contaminated" means that waste or debris displays characteristics of a hazardous waste, is a listed hazardous waste, or contains some hazardous constituents in quantities greater than cleanup goals defined in the Record of Decision.

1.4.2 "Decontaminate" means to remove contamination from waste or debris by washing or other means. Decontamination renders the waste or debris non-hazardous.

1.4.3 "Salvageable materials" refers to metallic, wood or rubber materials which are non-hazardous and may be sold as scrap for reuse or recycling. This material may have been decontaminated, or may not require decontamination.

1.4.4 "Salvage facility" refers to a private facility which deals in scrap metals, or recycling of rubber or other materials.

1.5 SUBMITTALS

1.5.1 List of permitted/licensed salvage facilities.

1.5.2 Copy of facility permits/licenses.

1.5.3 Copy of facility disposal requirements.

1.5.4 Copy of disposal receipts.

1.5.5 Copy of transportation bill of lading.

PART 2 PRODUCTS

NOT USED

PART 3 EXECUTION

3.1 HAZARDOUS MATERIALS

3.1.1 CONTRACTOR shall assess material in the building to determine whether it can be decontaminated.

3.1.2 Salvageable material will be decontaminated in accordance with the Decontamination Work Plan, as described in Section 13750, Building Materials and Content Decontamination.

3.1.3 Material which can not be decontaminated will be placed in a covered container in the staging area. Section 13900, Off-site Transportation and Disposal, specifies additional requirements.

3.1.4 Decontamination residuals from salvageable materials will be disposed of in accordance with the Residuals Disposal Plan, described in Section 13750, Building Materials and Content Decontamination.

3.2 TREATMENT/DECONTAMINATION

3.2.1 Material which can be decontaminated will be decontaminated in accordance with Section 13750, Building Materials and Content Decontamination.

3.2.3 Salvageable material which has been decontaminated will be placed in the staging area.

3.2.4 The above-ground tanks will be drained of their contents and decontaminated. Contents of the tank will be sampled to identify contents and determine method of disposal. If regulatory restrictions are met, the contents will be recycled or sold as supplemental fuel. If regulatory restrictions are not met, the contents of the tanks will be disposed of as hazardous wastes, in accordance with Section 13900, Off-site Transportation and Disposal. Tanks will be removed under a Town of Oyster Bay Building Permit and other applicable regulations. Decontamination will take place in accordance with Section 13750, Building Materials and Content Decontamination.

3.2.5 Decontamination will be verified by sampling and testing and the data managed in accordance with the Chemical Data Acquisition Plan, described in Section 01405, Chemical Data Quality Management.

3.2.6 If verification sampling shows that the potential salvageable material still exhibits hazardous properties, the decontamination process will be repeated.

3.2.7 Verification testing of the second decontamination process will be undertaken. If this shows that the potential salvageable material is still contaminated, the item will be disposed of as hazardous waste.

3.2.8 If verification sampling shows the salvageable material is in accordance with applicable regulations, it will be recycled.

3.3 SURFACE DEBRIS

3.3.1 Salvageable materials found among the on-site surface debris will be placed in the staging area with other salvageable materials. Non-salvageable materials will be disposed of as non-hazardous wastes, in accordance with Section 13900 Off-site Transportation and Disposal, or stockpiled for grading, in accordance with Section 02211, Excavation and Backfill.

3.4 HEALTH AND SAFETY

3.4.1 Health and safety measures will be undertaken as described in Section 01155 Health, Safety, and Emergency Requirements.

3.5 TRANSPORTATION

3.5.1 Title to salvageable materials will be transferred to the salvage facility upon its receipt of the material.

3.5.2 Salvageable material will be weighed before removal from the site, and upon delivery to the salvage facility. CONTRACTOR shall be responsible for any discrepancy in the weight records.

3.5.3 Salvageable material will be transported as described in Section 13900 Off-site Transportation and Disposal.

3.5.4 Salvageable materials will be hauled via approved truck routes using a bill of lading.

3.6 DEMOBILIZATION

3.6.1 CONTRACTOR shall collect and properly dispose of all equipment and materials for which decontamination is not appropriate. All CONTRACTOR's equipment and tools, unused materials and supplies, temporary facilities, and temporary utility hookups must be removed from the site. Site must be left for unrestricted future use.

3.7 DOCUMENTATION AND DATA MANAGEMENT

3.7.1 CONTRACTOR shall prepare weight records for salvageable material removed from the site.

3.7.2 CONTRACTOR shall present the salvage facility with documentation, including sample analysis reports, of the decontamination of salvageable material.

3.7.3 CONTRACTOR shall obtain receipts from the salvage facility for material transferred to the facility and provide a copy to the contracting officer within three days of delivery to the salvage facility.

* * * END OF SECTION * * *

SECTION 13850
REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING MATERIAL

PART 1 GENERAL

1.1 SUMMARY

This specification covers safety procedures and requirements for the removal and disposal of friable material containing asbestos. Nonfriable asbestos containing materials normally do not require special handling. However, during demolition and removal of this material, dust and airborne asbestos fibers will sometimes be released. If the project contains nonfriable asbestos which may release fibers when demolished and removed, the nonfriable asbestos shall be removed in the same way as friable asbestos.

On small asbestos removal operations a full containment type asbestos control area may not be required. The location of the area, type of material, and potential hazard must be reviewed and a judgement made by the contractor as to whether or not "glovebag" or "outdoor" techniques may be safely and legally used.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI Z9.2	1979 Fundamentals Governing the Design and Operation of Local Exhaust Systems
ANSI Z88.2	1980 Respiratory Protection

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C 732	1982 (R 1987) Aging Effects of Artificial Weathering on Latex Sealants
ASTM D 522	1988 Mandrel Bend Test of Attached Organic Coatings
ASTM D 1331	1989 Surface and Interfacial Tension of Solutions of Surface-Active Agents
ASTM D 2794	1990 Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
ASTM E 84	1991 (Rev. A) Surface Burning Characteristics of Building Materials
ASTM E 96	1990 Water Vapor Transmission of Materials

ASTM E 119	1988 Fire Tests of Building Construction and Materials
ASTM E 736	1986 Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910.134	Respiratory Protection
29 CFR 1910.141	Sanitation
29 CFR 1910.145	Accident Prevention Signs and Tags
29 CFR 1910.1200	Hazard Communication
29 CFR 1926.58	Asbestos, Tremolite, Anthophyllite, Actinolite
40 CFR 61, SUBPART A	General Provisions
40 CFR 61, SUBPART M	National Emission Standards for Asbestos

ENVIRONMENTAL PROTECTION AGENCY (EPA)

EPA 560/5-85-024	Guidance for Controlling Asbestos Containing Materials in Buildings

UNDERWRITERS LABORATORIES INC. (UL)

UL 586	1990 High-Efficiency, Particulate, Air Filter Units

1.3 RELATED SECTIONS

01060	Regulatory Requirements
01064	Environmental Protection
01155	Health, Safety, and Emergency Requirements
01405	Chemical Data Quality Management
01560	Spill and Discharge Control Plan
01561	Dust and Volatile Emissions Monitoring and Control Plan
13750	Building Materials and Content Decontamination
13900	Off-Site Transportation and Disposal

1.4 DEFINITIONS

1.4.1 Action Level

An airborne concentration of asbestos fibers, in the breathing zone of a worker equaling 0.1 fibers per cubic centimeter of air calculated as an 8-hour time weighted average.

1.4.2 Amended Water

Water containing a wetting agent or surfactant with a surface tension of 29 dynes per square centimeter when tested in accordance with ASTM D 1331.

1.4.3 Area Sampling

Sampling of asbestos fiber concentrations within the asbestos control area and outside the asbestos control area which approximates the concentrations of asbestos in the theoretical breathing zone but is not actually collected in the breathing zone of an employee.

1.4.4 Asbestos

The term asbestos includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, and actinolite and any of these minerals that has been chemically treated or altered. Materials are considered to contain asbestos if the asbestos content is at least one percent of the material by area.

1.4.5 Asbestos Control Area

That area where asbestos removal operations are performed which is isolated by physical boundaries which assist in the prevention of the uncontrolled release of asbestos dust, fibers, or debris. Two examples of an asbestos control area are: a full containment and a "glovebag."

1.4.6 Asbestos Fibers

Those fibers having an aspect ratio of at least 3:1 and longer than 5 micrometers as determined by National Institute for Occupational Safety and Health (NIOSH) Method 7400.

1.4.7 Asbestos Permissible Exposure Limit

0.2 fibers per cubic centimeter of air as an 8-hour time weighted average as defined by 29 CFR 1926.58 or other federal legislation having legal jurisdiction for the protection of workers health.

1.4.8 Background

Normal airborne asbestos concentration in an area similar to the asbestos abatement area but in an uncontaminated (with asbestos) state.

1.4.9 Contractor

The Contractor is that individual, or entity under contract to the USACE to perform the herein listed work.

1.4.10 Encapsulants

Specific materials in various forms used to chemically entrap asbestos fibers in various configurations to prevent these fibers from becoming airborne. There are four types of encapsulants as follows which must comply with performance requirements as specified herein.

a. Removal Encapsulant (can be used as a wetting agent)

b. Bridging Encapsulant (used to provide a tough, durable surface coating to asbestos containing material)

c. Penetrating Encapsulant (used to penetrate the asbestos containing material down to substrate, encapsulating all asbestos fibers)

d. Lock-Down Encapsulant (used to seal off or "lock-down" minute asbestos fibers left on surfaces from which asbestos containing material has been removed)

1.4.11 Friable Asbestos Material

Material that contains more than one percent asbestos by area and that can be crumbled, pulverized, or reduced to powder by hand pressure when dry.

1.4.12 Glovebag Technique

Those asbestos removal and control techniques put forth in 29 CFR 1926.58 Appendix G, III-A, B, C, D.

1.4.13 HEPA Filter Equipment

High efficiency particulate air (HEPA) filtered vacuum and/or exhaust ventilation equipment with a filter system capable of collecting and retaining asbestos fibers. Filters shall retain 99.97 percent of particles 0.3 microns or larger as indicated in UL 586.

1.4.14 USACE Industrial Hygienist (IH)

The Industrial Hygienist employed by the USACE to monitor, sample, and/or inspect the work. The IH may be either a Federal civil servant or a private consultant as determined by the USACE.

1.4.15 Nonfriable Asbestos Material

Material that contains asbestos in which the fibers have been temporarily locked in by a bonding agent, coating, binder, or other material so that the asbestos is well bound and will not normally release asbestos fibers during any appropriate use, handling, storage or transportation. It is understood that asbestos fibers will be released under other conditions such as demolition or removal.

1.4.16 Personal Sampling

Air sampling to determine asbestos fiber concentrations within the breathing zone of a specific employee, performed in accordance with 29 CFR 1926.58.

1.4.17 Certified Industrial Hygienist (CIH)

That industrial hygienist hired by the Contractor to perform the herein listed industrial hygiene tasks and is certified in comprehensive practice or

an aspect by and is in good standing with the American Board of Industrial Hygiene. In some instances, the IH can perform this role vicariously through a trained subordinate, but only with the specific consent of the Contracting Officer.

1.4.18 TEM

Refers to Transmission Electron Microscopy

1.4.19 Time Weighted Average (TWA)

The TWA is an 8-hour time weighted average airborne concentration of asbestos fibers. At least three full shift samples per person are required to establish that person's TWA exposure.

1.4.20 Wetting Agent

That specific agent used to reduce airborne asbestos levels by physically bonding asbestos fibers to material to be removed. An equivalent wetting agent must have a surface tension of at least 29 dynes per square centimeter as tested in accordance with ASTM D 1331.

1.5 REQUIREMENTS

1.5.1 Description of Work

The work covered by this section includes the handling of asbestos containing materials which will be encountered during building demolition activities at Claremont Polychemical Corporation (CPC) and describes some of the resultant procedures and equipment required to protect workers and the public from contact with airborne asbestos fibers. The work also includes the disposal of the generated asbestos containing materials. More specific operational procedures will be outlined in the Asbestos Hazard Abatement Plan called for elsewhere in this specification. The asbestos work includes the demolition and removal of asbestos-contaiminated material located in the building structure at the Polychemical Corporation in Old Bethpage, New York. Under normal conditions non-friable or chemically bound materials containing asbestos would not be considered hazardous; however, this material will release airborne asbestos fibers during demolition and removal and therefore must be handled in accordance with the removal and disposal procedures as specified herein. The Contractor shall provide techniques as required by the applicable regulations.

1.5.2 Medical Requirements

29 CFR 1926.58.

Before exposure to airborne asbestos fibers, the Contractor shall provide workers with a comprehensive medical examination as required by 29 CFR 1926.58 or other pertinent state or local directives. This requirement must have been satisfied within the past year. The same medical examination shall be given on an annual basis to employees engaged in an occupation involving asbestos and within 30 calendar days before or after the termination of employment in such occupation. Specifically the Contractor or consulting physician shall identify x-ray films of asbestos

workers to the consulting radiologist and mark medical record jackets with the word "ASBESTOS."

The Contractor shall maintain complete and accurate records of employees' medical examinations, medical records, and exposure data for a period of 30 years or as specified by regulations after termination of employment and make records of the required medical examinations and exposure data available for inspection and copying to: The Assistant Secretary of Labor for Occupational Safety and Health (OSHA), or authorized representatives of them, and an employee's physician upon the request of the employee or former employee.

1.5.3 Training

Within one year prior to assignment to asbestos work, each employee shall be instructed by the PIH with regard to the hazards of asbestos, safety and health precautions, the use and requirements for protective clothing, equipment, and respirators, and the association of cigarette smoking and asbestos-related disease, and all additional requirements of 29 CFR 1926.58. The Contractor shall furnish each employee with a respirator fit test administered by the CIH as required by 29 CFR 1926.58. Engineering and other hazard control techniques and procedures shall be fully covered by the training. In addition, the Contractor shall train all personnel involved in the asbestos removal in accordance with United States Environmental Protection Agency (USEPA) or state criteria whichever is more stringent. The Contractor shall document the training by providing: dates of training, training entity, course outline, names of instructors, and qualifications of instructors upon request by the Contracting Officer.

1.5.4 Permits, Licenses, and Notifications

The Contractor shall obtain necessary permits and licenses in conjunction with asbestos removal, hauling, and disposition, and furnish timely notification of such actions required by Federal, state, regional, and local authorities. The Contractor shall notify the Regional Office of the United States Environmental Protection Agency (USEPA), state's environmental protection agency, local air pollution control district/agency, and the Contracting Officer in writing 10 days prior to the commencement of work in accordance with 40 CFR 61, SUBPART M.

1.5.5 Health and Safety

In addition to detailed requirements of this specification, the Contractor shall comply with those applicable laws, ordinances, criteria, rules, and regulations of federal, state, regional, and local authorities regarding handling, storing, transporting, and disposing of asbestos waste materials. The Contractor shall comply with the applicable requirements of the current issue of 29 CFR 1926.58, 40 CFR 61, SUBPART A, and 40 CFR 61, SUBPART M. In addition, the Contractor shall submit matters of interpretation of standards to the appropriate administrative agency for resolution before starting the work. Where the requirements of this specification, applicable laws, rules, criteria, ordinances, regulations, and referenced documents vary, the most stringent requirement as defined by the Contracting Officer shall apply. The following laws, ordinances, criteria, rules and regulations regarding removal, handling, storing,

transporting and disposing of asbestos materials apply:

a. OSHA: Occupational Exposure to Asbestos, Tremolite, Anthophollite, and Actinolite, Final Rules Title 29 CFR Part 1920.1001 and Title 29 CFR Part 1926.58.

b. DOT: Hazardous Substances, Title 49 CFR Parts 171 and 172.

c. EPA: National Emission Standards for Hazardous Air Pollutants (NESHAPS) National Emission Standard for Asbestos, Title 40 CFR Part 61 Subparts A and M.

Respiratory Protection Program

The Contractor shall establish and implement a respirator program as required by ANSI Z88.2 and 29 CFR 1910.134.

Industrial Hygienst

The Contractor shall conduct personal and area/environmental air sampling and training under the direction of a CIH. For the purpose of this contract, the Contractor shall retain the services of an industrial hygienist (CIH) to perform the Contractor's industrial hygiene tasks.

1.5.6 Hazard Communication

Adhere to all parts of 29 CFR 1910.1200 and provide the Contracting Officer with a copy of the Material Safety Data Sheets (MSDS) for all materials brought to the site.

1.6 SUBMITTALS

The Contractor shall submit the following in accordance with Section 01300, "Submittals."

Manufacturer's Catalog Data

a. Local exhaust equipment

b. Vacuums

c. Respirators

d. Pressure differential automatic recording instrument

e. Amended water

f. Glovebag

g. Material Safety Data Sheets (MSDS) for all materials proposed for transport to the project site

Statements

a. Asbestos hazard abatement plan

b. Testing laboratory

c. Industrial hygienist certification

d. Landfill approval

e. Employee training

f. Medical certification requirements

1.6.1 Asbestos Hazard Abatement Plan

The Contractor shall submit a detailed plan of the safety precautions and work procedures to be used in the removal of materials containing asbestos. The plan shall be prepared, signed, and sealed, including certification number and date, by the CIH. Such plan shall include but not be limited to the precise personal protective equipment to be used, the location of asbestos control areas including clean and dirty areas, buffer zones, showers, storage areas, change rooms, removal method, interface of other project teams involved in the building decontamination and the remediation sequencing of asbestos related work, disposal plan, type of wetting agent and asbestos sealer to be used, locations of local exhaust equipment, planned air monitoring strategies, and a detailed description of the method to be employed in order to control pollution. The plan shall also include (both fire and medical emergency) response plans. This plan must be approved in writing prior to the start of any asbestos work. The Contractor and CIH shall meet with the Contracting Officer prior to beginning work, to discuss in detail the asbestos plan, including work procedures and safety precautions. Once approved by the Contracting Officer, the plan will be enforced as if an addition to the specification. Any changes required in the specification as a result of the plan shall be identified specifically in the plan to allow for free discussion and approval by the Contracting Officer prior to the start of work.

1.6.2 Testing Laboratory

The Contractor shall submit the name, address, and telephone number of the testing laboratory selected for the analysis, and reporting of airborne concentrations of asbestos fibers along with certification that persons counting the samples have been judged proficient by successful participation within the last year in the American Industrial Hygiene Association (AIHA) Proficiency Analytical Testing (PAT) Program. Where analysis to determine asbestos content in bulk materials is required, submit evidence that the laboratory is accredited by the National Institute of Science and Technology (NIST) under National Voluntary Laboratory Accreditation Program (NVLAP) for asbestos analysis.

1.6.3 Industrial Hygienist Certification

The Contractor shall submit the name, address, and telephone number of the Industrial Hygienist (CIH) selected to prepare the Asbestos Hazard

Abatement Plan, direct monitoring and training, and documented evidence that the Industrial Hygienist is currently certified in comprehensive practice by the American Board of Industrial Hygiene, including certification number and date. Personnel performing any industrial hygiene function under the direction of the CIH shall be employed by the CIH's company.

1.6.4 Landfill Approval

The Contractor shall submit written evidence that the landfill for disposal is approved for asbestos disposal by the USEPA and state and local regulatory agency(s). The Contractor shall submit detailed delivery tickets, prepared, signed and dated by an agent of the landfill, certifying the amount of asbestos materials delivered to the landfill, within 3 days after delivery. In those states that require a hazardous waste manifest the Contractor shall submit, within 3 days, signed copies of such to the Contracting Officer.

Employee Training

The Contractor shall submit certificates signed by each employee indicating that the employee has received training in the proper handling of materials that contain asbestos; understands the health implications and risks involved, including the illnesses possible from exposure to airborne asbestos fibers; understands the use and limits of the respiratory equipment to be used; and understands the results of monitoring of airborne quantities of asbestos as related to health and respiratory equipment as indicated in 29 CFR 1926.58 on an initial and annual basis.

Medical Certification

The Contractor shall provide a written certification signed by a licensed physician that all workers and supervisors have met or exceeded all of the medical prerequisites listed herein and in 29 CFR 1926.58 and 29 CFR 1910.134.

Field Test Reports

a. Air sampling results

b. Pressure differential recordings for local exhaust system

c. Asbestos disposal quantity report

Air Sampling Results

The Contractor shall ensure the testing laboratory completes fiber counting and provides results to the CIH for review within 16 hours. The Contractor or CIH shall notify the Contracting Officer immediately of any airborne levels of asbestos fibers in excess of the acceptable limits. Sampling results shall be submitted to the Contracting Officer and the affected Contractor employees within 3 working days, signed by the testing laboratory employee performing air sampling, the employee that analyzed the sample, and the CIH.

1.6.4.1 Pressure Differential Recordings for Local Exhaust System

The Contractor shall provide a local exhaust system that creates a negative pressure of at least 0.02 inches of water relative to the pressure external of each enclosure and operate it continuously, 24 hours a day, until the enclosure of the asbestos control area is removed. Pressure differential recordings shall be submitted for each work day to the CIH for review and to the Contracting Officer within 24 hours from the end of each work day. The Contracting Officer and CIH shall be notified immediately of any variance in the pressure differential which could cause adjacent unsealed areas to have asbestos fiber concentrations in excess of 0.0 fibers per cubic centimeter or background whichever is higher. In no circumstance shall levels exceed 0.1 fibers per cubic centimeter.

Certificates

a. Vacuums

b. Water filtration equipment

c. Ventilation systems

d. Other equipment required to contain airborne asbestos fibers

e. Chemical encapsulants/sealers

Show compliance with ANSI Z9.2 by providing manufacturers' certifications.

Records

a. Notifications

b. Rental equipment

c. Respirator program records

Notifications

The Contractor shall notify the Contracting Officer in writing 10 working days prior to the start of asbestos work. The local fire department will be notified 3 days prior to removing fire-proofing material from the building including notice that the material contains asbestos.

Rental Equipment

The Contractor shall provide a copy of the written notification to the rental company concerning the intended use of the equipment and the possibility of asbestos contamination of the equipment.

Respirator Program Records

Records of the respirator program as required by ANSI Z88.2, 29 CFR 1910.134, 29 CFR 1926.58 shall be submitted.

PART 2 PRODUCTS

2.1 ENCAPSULANTS

Encapsulants selected for use by the Contractor shall conform to current USEPA requirements, shall contain no toxic or hazardous substances, no solvents, and shall conform to the following performance requirements.

Removal Encapsulants

Requirement	Test Standard
Flame Spread - 25, Smoke Emission - 50	ASTM E 84
Combustion Toxicity Zero Mortality	University of Pittsburgh Protocol
Life Expectancy - 20 years	ASTM C 732, Accelerated Aging Test
Permeability - Minimum 0.4 perms	ASTM E 96

Bridging Encapsulant

Requirement	Test Standard
Flame Spread - 25, Smoke Emission - 50	ASTM E 84
Combustion Toxicity Zero Mortality	University of Pittsburgh Protocol
Life Expectancy - 20 years	ASTM C 732, Accelerated Aging Test
Permeability - Minimum 0.4 perms	ASTM E 96
Cohesion/Adhesion Test - 50 pounds of force/foot	ASTM E 736
Fire Resistance - Negligible affect on fire resistance rating over 3 hour test (Classified by UL for use over fibrous and cementitious sprayed fireproofing)	ASTM E 119
Impact Resistance - Minimum 43 in/lb	ASTM D 2794 Gardner Impact Test
Flexibility - no rupture or cracking	ASTM D 522 Mandrel Bend Test

Penetrating Encapsulant

Requirement	Test Standard
Flame Spread - 25, Smoke Emission - 50	ASTM E 84
Combustion Toxicity Zero Mortality	University of Pittsburgh Protocol
Life Expectancy - 20 years	ASTM C 732 Accelerated Aging Test
Permeability - Minimum 0.4 perms	ASTM E 96
Cohesion/Adhesion Test - 50 pounds of force/foot	ASTM E 736
Fire Resistance - Negligible affect on fire resistance rating over 3 hour test (Classified by UL for use over fibrous and cementitious sprayed fireproofing)	ASTM E 119
Impact Resistance - Minimum 43 in/lb	ASTM D 2794 Gardner Impact Test
Flexibility - no rupture or cracking	ASTM D 522 Mandrel Bend Test

Lock-down Encapsulant

Requirement	Test Standard
Flame Spread - 25, Smoke Emission - 50	ASTM E 84
Combustion Toxicity Zero Mortality	University of Pittsburgh Protocol
Life Expectancy - 20 years	ASTM C 732 Accelerated Aging Test
Permeability - Minimum 0.4 perms	ASTM E 96
Fire Resistance - Negligible affect on fire resistance rating over 3 hour test (Tested with fireproofing over encapsulant applied directly to steel member)	ASTM E 119
Bond Strength - 100 pounds of force/ foot (Tests compatibility with cementitious and fibrous fire-proofing)	ASTM E 736

PART 3 EXECUTION

3.1 EQUIPMENT

The Contractor shall make available to the Contracting Officer two complete sets of personal protective equipment as required herein for entry to the asbestos control area at all times for inspection of the asbestos control area. Equivalent training shall be provided to the Contracting Officer or a designated representative as provided to Contractor employees in the use of the required personal protective equipment. Manufacturer's certificate of compliance for all equipment required to contain airborne asbestos fibers shall be provided.

3.1.1 Respirators

Respirators shall be selected from those approved by the National Institute for Occupational Safety and Health (NIOSH), Department of Health and Human Services.

Contractor personnel engaged in the removal and demolition of asbestos materials shall be provided with Type C supplied-air respirators, in the pressure/demand mode with an auxiliary self contained breathing apparatus. The use of any other type of respiratory protection must be requested in writing by the CIH. The request shall identify the specific type of respiratory protection requested and the reasoning behind the choice. The respirator selected or requested by the CIH will provide protection to limit the concentration of fibers as measured by Phase Contrast Microscopy to 0.01 f/cc inside the mask of an employee. The request shall be forwarded to the Contracting Officer who will provide a written response to the request. A different request shall be filed by the Contractor for each type of operation. All respiratory protection shall comply with the spirit and letter of 29 CFR 1926.58 and 29 CFR 1910.134. Use of other than Type C supplied-air respirators, in the pressure/demand mode with an auxiliary self contained breathing apparatus is prohibited unless approved by the Contracting Officer.

3.1.2 Whole Body Protection

Protective Clothing

The Contractor shall provide personnel exposed to asbestos with disposable protective whole body clothing, head coverings, gloves, and foot coverings. Disposable plastic or rubber gloves will be provided to protect hands. Cloth gloves may be worn inside the plastic or rubber gloves for comfort, but shall not be used alone. Sleeves will be secure at the wrists, foot coverings secure at the ankles, and clothing secure at the neck by the use of tape.

Work Clothing

The Contractor shall provide cloth work clothes for wear under the disposable protective coveralls and foot coverings and either dispose of or properly launder them as recommended by the CIH after use.

Decontamination Unit

A temporary, negative pressure unit with a separate decontamination locker room and a clean locker room with a shower that complies with 29 CFR 1910.141(d)(3) in between for personnel required to wear whole body protective clothing shall be provided by the Contractor. In addition, two separate lockers for each asbestos worker, one in each locker room will be provided. Street clothing and street shoes will be kept in the clean locker. Contaminated disposable protective clothing will be HEPA vacuumed and removed while still wearing respirators at the boundary of the asbestos work area and seal in impermeable bags or containers for disposal. Work clothing will not be worn between home and work. Showers will be located between the decontamination locker room and the clean locker room and all employees will be required to shower before changing into street clothes. Used shower water will be collected and filtered to remove asbestos contamination with an approved water filtration equipment. The Contractor shall dispose of filters and residue as asbestos waste. Filtered clean water will be discharged to the sanitary system. The Contractor shall dispose of asbestos contaminated work clothing as asbestos contaminated waste. Decontamination units shall be physically attached to the asbestos control area and shall include a personnel decontamination unit and an equipment decontamination unit.

Eye Protection

Personnel engaged in asbestos operations will be provided with eye goggles when the use of a full face respirator is not required.

3.1.3 Warning Signs and Labels

The Contractor will provide bilingual warning signs printed in English and Spanish at all approaches to asbestos control areas containing concentrations of airborne asbestos fibers. The signs shall be located at such a distance that personnel may read the sign and take the necessary protective steps required before entering the area. Labels will be provided and affixed to all asbestos materials, scrap, waste, debris, and other products contaminated with asbestos including waste containers and bags.

Warning Sign

Provide vertical format conforming to 29 CFR 1910.145(d)(4), and 29 CFR 1926.58(k) minimum 20 by 14 inches displaying the following legend in the lower panel:

Legend	Notation
Danger	1-inch Sans Serif Gothic or Block
Asbestos	1-inch Sans Serif Gothic or Block
Cancer and Lung Disease Hazard	1/4-inch Sans Serif Gothic or Block
Authorized Personnel Only	1/4-inch Gothic

Legend	Notation
Respirators and Protective Clothing are Required in this Area	1/4-inch Gothic

Spacing between lines shall be at least equal to the height of the upper of any two lines.

Warning Labels

Provide labels conforming to 29 CFR 1926.58(k) of sufficient size to be clearly legible, displaying the following legend:

DANGER

CONTAINS ASBESTOS FIBERS

AVOID CREATING DUST

CANCER AND LUNG DISEASE HAZARD

BREATHING ASBESTOS DUST MAY
CAUSE SERIOUS BODILY HARM

The Contractor shall provide a local exhaust system in the asbestos control area in accordance with ANSI Z9.2 and 29 CFR 1926.58 that will provide at least four air changes per hour inside of the containment. Local exhaust shall be operated 24 hours per day, until the asbestos control area is removed and shall be leak proof to the filter and equipped with HEPA filters. Local exhaust equipment shall be sufficient to maintain a minimum pressure differential of minus 0.02 inch of water column relative to adjacent, unsealed areas. Continuous 24-hour per day monitoring of the pressure differential with a pressure differential automatic recording instrument shall be provided. In no case shall the building ventilation system be used as the local exhaust system for the asbestos control area. Filters on exhaust equipment shall conform to ANSI Z9.2 and UL 586. The local exhaust system shall terminate out of doors.

Vacuums shall be leak proof to the filter and equipped with HEPA filters. Filters on vacuums shall conform to ANSI Z9.2 and UL 586. Power tools shall not be used to remove asbestos containing materials unless the tool is equipped with effective, integral HEPA filtered exhaust ventilation systems. All residual asbestos will be removed from reusable tools prior to storage or reuse.

3.1.4 Rental Equipment

If rental equipment is to be used, furnish written notification to the rental agency concerning the intended use of the equipment and the possibility of asbestos contamination of the equipment.

3.2 WORK PROCEDURE

3.2.1 Preparation of Work Areas

The Contractor shall perform asbestos related work in accordance with 29 CFR 1926.58 and as specified herein. The Contractor shall use wet removal procedures and full containment or glovebag techniques. Personnel shall wear and utilize protective clothing and equipment as specified herein. Eating, smoking, drinking, or applying cosmetics shall not be permitted in the asbestos work or control areas. Personnel of other trades not engaged in the removal and demolition of asbestos shall not be exposed at any time to airborne concentrations of asbestos unless all the personnel protection provisions of this specification are complied with by the trade personnel. The Contractor shall provide temporary heating and ventilation and air conditioning prior to the commencement of asbestos work. Existing electrical service will be disconnected when wet removal is performed and temporary electrical service provided prior to the use of any water. If an asbestos spill occurs outside of the asbestos control area, work will stop immediately, and the condition will be corrected to the satisfaction of the Contracting Officer including clearance sampling, prior to resumption of work.

3.2.2 Protection of Existing Work to Remain

Demolition work will be performed without damage or contamination of adjacent work or areas. Where such work is damaged or contaminated as verified by the Contracting Officer using visual inspection or sample analysis, it shall be restored to its original condition or decontaminated by the Contractor at no expense to the Government as deemed appropriate by the Contracting Officer. This includes inadvertent spill of dirt, dust, or debris in which it is reasonable to conclude that asbestos may exist. When these spills occur, work will stop immediately and the spill cleaned up. When satisfactory visual inspection and air sampling results are obtained from the CIH work may proceed as directed by the Contracting Officer.

3.2.3 Existing Items

Items and surfaces located in the asbestos work area are considered to be contaminated with asbestos fibers. The Contractor shall transfer these items to an area on site approved by the Contracting Officer, decontaminate (wet methods where possible), and then handle as specified in the Building Decontamination section of the project specification.

3.2.4 Precleaning

Wet wipe and HEPA vacuum all surface with asbestos debris prior to establishment of containment following procedures required in Section _____ Building Decontamination.

3.2.5 Asbestos Control Area Requirements

3.2.5.1 Full Containment

The Contractor shall block an seal openings in areas where the release of airborne asbestos fibers can be expected. An asbestos containment shall be established with the use of curtains, portable partitions, or other enclosures in order to prevent the escape of asbestos fibers from the contaminated asbestos work area. Containment development shall include protective covering of walls, and ceilings with a continuous membrane of two layers of minimum 4-mil plastic sheet sealed with tape to prevent water or other damage. The Contractor shall provide two layers of 6-mil plastic sheet over floors and extend a minimum of 12 inches up walls. Seal all joints with tape. A local exhaust system will be provided in the asbestos control area. Openings will be allowed in enclosures of asbestos control areas for the supply and exhaust of air for the local exhaust system. Filters will be replaced as required to maintain the efficiency of the system.

Use glovebag techniques will be allowed with approval from the Contracting Officer. Requests for the use of glovebags will be submitted in writing for approval as indicated in 29 CFR 1926.58 Appendix G, III-A, B, C, D and Figure G-1. The Contractor shall establish designated limits for the asbestos work area with the use of rope or other continuous barriers, maintain all other requirements for asbestos control areas except for local exhaust. Also, where an enclosure is not provided, area monitoring of airborne asbestos fibers will be conducted during the work shift at the designated limits downwind of the asbestos work area at such frequency as recommended by the CIH and conduct personal samples of each worker engaged in asbestos handling (removal, disposal, transport, and other associated work). If the quantity of airborne asbestos fibers monitored at the breathing zone of the workers or designated limits at any time exceeds background or 0.01 fibers per cubic centimeter whichever is lesser, work will stop and personnel in adjacent areas will be evacuated. This sampling may be duplicated by the USACE at the discretion of the Contracting Officer. If the are sampling results obtained by the USACE differ from those obtained by the Contractor, the USACE results shall prevail. If adjacent areas are contaminated as determined by the Contracting Officer, the Contractor shall clean the contaminated areas, monitor, and visually inspect the area as specified herein.

3.2.6 Asbestos Handling Procedures

General Procedures

Asbestos material shall be wetted with a fine spray of amended water during removal, cutting, or other handling so as to reduce the emission of airborne fibers. The Contractor shall remove material and immediately place it in 6 mil plastic disposal bags. If unusual circumstances prohibit the use of 6 mil plastic bags, the Contractor shall submit an alternate proposal for containment of asbestos fibers to the Contracting Officer for approval. For example, in the case where both piping and insulation are to be removed, the Contractor may elect to wet the insulation and wrap the pipes and insulation in plastic and remove the pipe by sections.

3.2.7 Air Sampling

Sampling of airborne concentrations of asbestos fibers shall be performed in accordance with 29 CFR 1926.58 and as specified herein by the CIH or designate under the direction of the CIH. Sampling performed for environmental and quality control reasons shall also be performed by the CIH. Unless otherwise specified, the Contractor shall use NIOSH Method 7400 for sampling and analysis. Monitoring may be duplicated by the USACE at the discretion of the Contracting Officer. If the air sampling results obtained by the USACE differ from those results obtained by the Contractor, the USACE results shall prevail.

Sampling Prior to Asbestos Work

Subcontractor shall provide area air sampling and establish the baseline one day prior to the masking and sealing operations for each removal site. The background will be established by performing area sampling in similar but uncontaminated sites in the building. Phase Contrast Microscopy will be utilized for sample analysis.

Sampling During Asbestos Work

The CIH shall provide personal and area sampling as indicated in 29 CFR 1926.58 and governing environmental regulations. Thereafter, provided the same type of work is being performed, the Contractor shall provide area sampling at least once every work shift close to the work inside the containment, outside the clean room entrance to the containment, and at the exhaust opening of the local exhaust system. If sampling outside the containment shows airborne levels have exceeded background or 0.01 fibers per cubic centimeter, whichever is greater, the Contractor will stop all work, correct the condition(s) causing the increase, and notify the Contracting Officer immediately. In areas where the construction of a containment is not required, after initial TWAs are established and provided the same type of work is being performed, the Contractor will provide sampling at the designated limits of the asbestos work area at such frequency as recommended by the CIH. Where glovebag methods are used, the Contractor will perform personal and area air sampling at locations and frequencies that will accurately characterize the evolving airborne asbestos levels.

Sampling After Final Clean-Up (Clearance Sampling)

The Contractor shall provide area sampling of asbestos fibers using aggressive air sampling techniques as defined in the EPA 560/5-85-024 and establish an airborne asbestos concentration of less than 0.01 fibers per cubic centimeter after final clean-up but before removal of the containment or the asbestos work control area. After final cleanup and the asbestos control area is dry but prior to clearance sampling, the CIH shall perform a visual inspection to insure that the asbestos control and work area is free of any accumulations of dirt, dust, or debris. The CIH will collect, at a minimum, 5 samples in each work area. The Contractor will use Transmission Electron Microscopy (TEM) for analyzing the samples. Each sample will total at a minimum 1300 liters of air. The asbestos fiber counts from these samples shall be less than 0.01 fibers per cubic centimeter or be not greater than the background, whichever is greater.

Should any of the final samples indicate a higher value, the Contractor shall take appropriate actions to re-clean the area and shall repeat the sampling and TEM analysis at the Contractor's expense.

3.2.8 Lock Down

Prior to removal of plastic barriers and after pre-clearance clean up of gross contamination, a visual inspection by the CIH, of all areas affected by the removal of the asbestos contaminated materials for any visible fibers, shall be conducted and approved by the CIH. A post removal (lock down) encapsulant shall then be spray applied to ceiling, walls, floors and other areas exposed in the removal area. The exposed area shall include but not be limited to plastic barriers, furnishings and articles to be discarded as well as dirty change room, air locks for bag removal and decontamination chambers.

3.2.9 Site Inspection

While performing asbestos removal work, the Contractor shall be subject to on-site inspection by the Contracting Officer who may be assisted by or represented by safety or industrial hygiene personnel. If the work is found to be in violation of this specification, the Contracting Officer or his representative will issue a stop work order to be in effect immediately and until the violation is resolved. Standby time required to resolve the violation shall be at the Contractor's expense.

3.3 CLEAN-UP AND DISPOSAL

3.3.1 Housekeeping

Essential parts of asbestos dust control are housekeeping and clean-up procedures. Surfaces of the asbestos control area will be maintained free of accumulations of asbestos fibers. Meticulous attention will be given to restricting the spread of dust and debris; and waste will be kept from being distributed over the general area. The Contractor shall use HEPA filtered vacuum cleaners. The Contractor will not blow down the space with compressed air. When asbestos removal is complete, all asbestos waste is removed from the work-site, and final clean-up is completed, the Contracting Officer will certify the area as safe before the signs can be removed. The Contracting Officer will visually inspect all surfaces within the containment for residual material or accumulated dust or debris. The Contractor shall re-clean all areas showing dust or residual materials. If re-cleaning is required, the Contractor shall reconduct air sample and establish an acceptable asbestos airborne concentration after re-cleaning. The Contracting Officer will certify that the area is safe in writing before unrestricted entry is permitted. The USACE shall have the option to perform monitoring to certify the areas are safe before entry is permitted.

3.3.2 Title to Materials

All materials resulting from demolition work, except as specified otherwise, shall become the property of the Contractor and shall be disposed of as specified in applicable local, state, and Federal regulations and herein.

3.3.3 Disposal of Asbestos

The Contractor shall collect asbestos waste, asbestos contaminated water, scrap, debris, bags, containers, equipment, and asbestos contaminated clothing which may produce airborne concentrations of asbestos fibers and place in sealed fiberproof, waterproof, non-returnable containers (e.g. double plastic bags 6 mils thick, cartons, drums or cans). Wastes within the containers must be wetted to insure the security of the material in case of container breeching. The Contractor shall affix a warning and Department of Transportation (DOT) label to each bag or use at least 6 mil thick bags with the approved warnings and DOT labeling preprinted on the bag. Waste asbestos material will be disposed of at an Environmental Protection Agency (EPA) or state-approved asbestos landfill off Government property. For temporary storage, sealed impermeable bags will be stored in asbestos waste drums or skids. An area for interim storage of asbestos waste-containing drums or skids will be assigned by the Contracting Officer or his authorized representative. Procedure for hauling and disposal shall comply with 40 CFR 61, SUBPART M, state, regional, and local standards. Sealed plastic bags may be dumped from drums into the burial site unless the bags have been broken or damaged. Damaged bags shall remain in the drum and the entire contaminated drum shall be buried. Uncontaminated drums may be recycled. Workers unloading the sealed drums shall wear appropriate respirators and personal protective equipment when handling asbestos materials at the disposal site.

The CIH will record and report, to the Contracting Officer, the amount of asbestos containing material removed and released for disposal. The report will be delivered for the previous day at the beginning of each day shift with amounts of material removed during the previous day reported in linear feet or square feet as described initially in this specification and in cubic feet for the amount of asbestos containing material released for disposal.

-- End of Section --

SECTION 13900
OFF-SITE TRANSPORTATION AND DISPOSAL

PART 1 GENERAL

1.1 SUMMARY

1.1.1 The work specified in this Section involves transportation and off site disposal of hazardous and non-hazardous materials from the Claremont Polychemical Site. These materials will originate from building decontamination, soil treatment, groundwater treatment, and surface debris. This section also addresses the transport and disposition of salvageable materials from the site.

1.2 REFERENCES

1.2.1 Regulatory Requirements:

1.2.1.1 Refer to Section 01060, Regulatory Requirements.

1.2.1.2 "Revised Procedures for Implementing Off-Site Response Actions" USEPA OSWER Directive No.9834.11, November 13, 1987.

1.2.1.3 "Off-Site Policy: RFA or Equivalent Investigation Requirements at RCRA Treatment and Storage Facilities" USEPA Memorandum from J.W. Porter, January 4, 1988.

1.2.2 American National Standards Institute (ANSI):

1.2.2.1 ANSI Z88.2 Respiratory Protection.

1.2.3 Site-Specific Documents:

1.2.3.1 Draft Final Remedial Investigation Report, Claremont Polychemical Site, Ebasco Services, Inc., 1990.

1.2.3.2 Record of Decision, Claremont Polychemical Site, USEPA, 1990.

1.2.3.3 Draft Predesign Investigation Report, Claremont Polychemical Site, SEC Donohue Inc., 1992.

1.3 RELATED SECTIONS

Section 01015 Contractor Use of Site
Section 01300 Submittals
Section 01040 Project Operations Plan
Section 01060 Regulatory Requirements
Section 01155 Health, Safety, and Emergency Requirements
Section 01405 Chemical Data Quality Management
Section 01560 Spill and Discharge Control Plan

Section 01700 Site Closure Plan
Section 02935 Site Restoration
Section 13700 Low-Temperature Enhanced Volatilization
Section 13750 Building Materials and Content Decontamination
Section 13800 Salvageable Material Removal
Section 13850 Removal and Disposal of Asbestos-Containing Material

1.4 DEFINITIONS

1.4.1 "Contaminated" means that waste or debris displays characteristics of a hazardous waste, is a listed hazardous waste, or contains some hazardous constituents.

1.4.2 "Decontaminate" means to remove contamination from waste or debris by washing or other means. Decontamination renders the waste or debris non-hazardous.

1.4.3 "Hazardous waste" means a waste which is listed in 40 CFR Part 261, or displays characteristics described in 40 CFR Part 261.

1.4.4 "Licensed hauler" means a waste transporter licensed to carry hazardous wastes under 6 NYCRR Part 364, 40 CFR Part 263, and 49 CFR Part 173.

1.4.5 "Treatment, storage, or disposal facility (TSDF)" means a facility which is licensed to treat, store, or dispose of hazardous wastes under 6 NYCRR Part 370 and 40 CFR Part 264.

1.5 SUBMITTALS

1.5.1 Waste and Debris Removal, Decontamination, and Disposal Plan

1.5.1.1 Prior to starting removal of materials from the site, submit, for approval by the Contracting Officer, Waste and Debris Removal, Decontamination and Disposal Plan, as described in Section 13750, Building Materials and Content Decontamination.

1.5.2 Manifests

1.5.2.1 Organize and maintain the material shipment records/manifests required under 40 CFR 264, 6 NYCRR Part 372, and the state where the TSDF is located.

1.5.2.2 Submit copies of each manifest to the Contracting Officer within 2 business days following shipment, and within 2 business days after notification of receipt by the TSDF.

1.5.2.3 Report any manifest discrepancies immediately to the Contracting Officer.

1.5.2.4 Resolve any manifest discrepancies in accordance with Section 01300, Submittals.

1.5.3 Letters of Commitment

1.5.3.1 Obtain letters of commitment from the licensed haulers and the TSDF(s) to haul and accept shipments. These letters of commitment will be used by the Contracting Officer to evaluate the acceptability of CONTRACTOR's proposed facility(ies) in accordance with "Revised Procedures for Implementing Off-Site Response Actions" (USEPA OSWER Directive No. 9834.11, November 13, 1987) and "Off-Site Policy: RFA or Equivalent Investigation Requirements at RCRA Treatment and Storage Facilities" (EPA Memorandum from J.W. Porter, January 4, 1988).

1.5.4 Accident Prevention Policy

1.5.4.1 Develop, document, and implement a policy for accident prevention.

1.6 GENERAL REQUIREMENTS

1.6.1 This Section is not intended to cover trash and debris generated by CONTRACTOR.

1.6.2 Any trash or debris which is not in contact with waste, contaminated soil or debris, or contaminated water is assumed to be nonhazardous. This includes surface debris found outside the building, except for the two above-ground storage tanks.

1.6.3 Debris in contact with waste, contaminated soil or contaminated water is assumed to be hazardous.

1.6.4 Debris from inside the building is assumed to be hazardous.

1.6.5 CONTRACTOR shall be held responsible for any and all actions necessary to remedy situations involving material spilled in transit. This cleanup shall be accomplished at the expense of CONTRACTOR.

1.6.6 CONTRACTOR shall be responsible for obtaining New York State Department of Transportation approval for all vehicle routes. CONTRACTOR is also responsible for inspecting the access routes for road conditions, overhead clearance, and weight restrictions, and shall provide traffic control when needed.

1.6.7 CONTRACTOR shall ensure that trucks are protected against contamination by properly covering and lining them with compatible material or by decontaminating them prior to leaving the site for his next job.

1.6.8 CONTRACTOR shall not combine contaminated materials from other projects with material from the Claremont Polychemical Site.

1.6.9 The Contracting Officer will provide a hazardous waste generator identification number for use on the manifest.

1.6.10 CONTRACTOR is responsible for insuring that all vehicles carrying wastes from the site are properly marked according to 6 NYCRR Part 364, and 40 CFR Part 263.

1.6.11 The Contracting Officer reserves the right to contact and visit the TSDF(s) and regulatory agencies to verify the agreement to accept the stated material and to verify any other information provided. This does not in any way relieve CONTRACTOR of his responsibilities under this contract.

PART 2 PRODUCTS

(NOT USED)

PART 3 EXECUTION

3.1 SAMPLING AND ANALYSIS

3.1.1 Determine whether debris is hazardous or nonhazardous, in accordance with Section 13750, Building Materials and Content Decontamination.

3.1.2 Sample and analyze assumed hazardous material in accordance with Section 01405, Chemical Data Quality Management.

3.2 DECONTAMINATION

3.2.1 Decontaminate debris, according to Section 13750, Building Materials and Content Decontamination.

3.2.2 Empty the above-ground tanks of their contents and decontaminate in accordance with Section 13750.

3.2.3 Remove the tanks under a Town of Oyster Bay Excavation Permit.

3.3 SEGREGATION OF MATERIALS TO BE DISPOSED

3.3.1 Stage materials in the decontamination/staging area, described in Section 13750, Building Materials and Content Decontamination.

3.3.2 Stage non-hazardous material in rolloff boxes for proper disposal as nonhazardous industrial solid waste.

3.3.3 Stage hazardous materials, including contaminated debris which can not readily be decontaminated, in a temporary storage area in compliance with 40 CFR Part 262.

3.3.4 Stage hazardous treatment residuals, such as those from Low-Temperature ~~Thermal Desorption~~ Enhanced Volatilization (Section 13700), in this facility.

3.3.5 Store liquid residuals, including decontamination water in tanks constructed and managed in accordance with 40 CFR 264, Subpart J and 6 NYCRR Part 363.

3.4 TRANSPORTATION

3.4.1 Non-hazardous Materials

3.4.1.1 Use only the hauler(s) identified in their plan for proposed transportation and disposal for the performance of the work. Substitutions or additions shall not be permitted without prior written approval from the Contracting Officer.

3.4.1.2 Coordinate vehicle inspection and recording of quantities leaving the site with the Contracting Officer.

3.4.1.3 Verify these quantities with recorded quantities at the disposal facility(ies).

3.4.1.4 Report any deviation between the two weight records immediately to the Contracting Officer.

3.4.2 Hazardous Materials

3.4.2.1 Use only the transporter(s) identified in the program for the performance of work. Any use of substitute or additional transporters must have previous written approval from the Contracting Officer.

3.4.2.2 Coordinate the schedule for truck arrival and material deliveries at the TSDF(s) to meet the approved project schedule. The schedule shall be compatible with the availability of equipment and personnel for material handling operations.

3.4.2.3 Coordinate vehicle inspection and recording of quantities leaving the site with the Contracting Officer.

3.4.2.4 Verify these quantities with recorded quantities at the TSDF(s).

3.4.2.5 Report any deviation between the two weight records immediately to the Contracting Officer.

3.4.2.6 Seal trucks containing liquids in a manner such that tampering with the contents cannot occur.

3.5 OFF-SITE DISPOSAL

3.5.1 Non-hazardous Materials

3.5.1.1 Use only the disposal facility(ies) identified in the plan for proposed transportation and disposal for the performance of work. Substitutions or additions shall not be permitted without prior written approval of The Contracting Officer.

3.5.1.2 CONTRACTOR shall be responsible for acceptance of the material at the disposal facility and for ensuring that the facility is properly licensed and permitted to accept the stated materials.

3.5.1.3 In the event that the identified and approved facility(ies) ceases to accept the materials or the facility(ies) ceases operations, it is the responsibility of CONTRACTOR to locate alternate approved and permitted facility(ies) for accepting materials.

3.5.1.4 CONTRACTOR is responsible for making the necessary arrangements to utilize the facility(ies), and the alternate facility(ies) must be approved in writing by the Contracting Officer in the same manner and with the same requirements as for the original facility(ies).

3.5.2 Salvageable Materials

3.5.2.1 Transport salvageable materials to an approved salvage facility, as discussed in Section 13800, Salvageable Material Removal.

3.5.3 Hazardous Materials

3.5.3.1 Use only the TSDF(s) identified in the plan for proposed transportation and disposal for the performance of the work. Substitutions or additions shall not be permitted without prior written approval from the Contracting Officer.

3.5.3.2 CONTRACTOR shall be responsible for acceptance of the specific material at an approved TSDF, for ensuring that the facility is properly permitted to accept the stated material, and that the facility provides the stated treatment and/or disposal services.

3.5.3.3 In the event that the identified and approved facility(ies) ceases to accept the stated materials or the facility(ies) ceases operation, it is CONTRACTOR's responsibility to locate an alternate approved and permitted facility(ies) for accepting materials.

3.5.3.4 CONTRACTOR is responsible for making the necessary arrangements, to utilize the facility(ies), and the alternate facility(ies) must be approved in writing by the Contracting Officer in the same manner and with the same requirements as for the original facility(ies).

3.6 DOCUMENTATION AND DATA MANAGEMENT

3.6.1 Obtain manifest forms and material code numbers, and complete the shipment manifest records as required by the appropriate regulatory agencies for verifying the material type (Code No.) and quantity of each load in unit of volume and weight.

* * * END OF SECTION * * *