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REMEDICATION WORK PLAN PANAMA CITY TASK 1 SITE 325 NSA PANAMA CITY FL
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BECHTEL ENVIRONMENTAL, INC

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REMEDIATION WORK PLAN

PANAMA CITY TASK 1

SITE 325

Prepared for

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION
NAVAL FACILITIES ENGINEERING COMMAND

Under Contract No. N62467-93-D-0936

Prepared by

BECHTEL ENVIRONMENTAL, INC.
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FOREWORD

This Remediation Work Plan (RWP) has been prepared to describe the scoping and planning for Initial Remedial Action (IRA) activities being performed by the U.S. Navy at Coastal Systems Station (CSS), Panama City, Florida.

Three major environmental investigations have been conducted under the Navy's Installation Restoration Program (NIRP) to support the decision-making process for evaluating interim measures and remedial action alternatives. The three investigations are: (1) the Initial Assessment Study (IAS); (2) the Verification Study (VS); and (3) the Confirmation Study (CS).

A Petroleum Contamination Agreement and Site Management Plan cover remediation activities for CSS Panama City under the Florida Administrative Code (FAC), Section 62-770 for investigation and remediation of above ground and underground storage tanks (USTs) and related piping systems.

Remedial action is necessary in selected areas identified in the UST Program for the protection of human health and the environment. This RWP describes the approach that will be used to conduct IRA activities at Site 325 under the UST Program.

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ACRONYMS AND INITIALS

ABB	ABB Environmental Services
BEI	BEI Environmental, Inc.
bls	below land surface
DO	Delivery Order
DQO	Data Quality Objective
CSS	Coastal Systems Station
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FID	Flame Ionization Detector
IAS	Initial Site Assessment Study
IR	Installation Restoration
IRA	Interim Remedial Action
NIRP	Navy's Installation Restoration Program
NRDP	Navy's Release Detection Program
PID	Photo Ionization Detector
PSC	Potential Sources of Contamination
PSHP	Program Safety and Health Plan
QC	Quality Control
QCP	Quality Control Plan
QCPA	Quality Control Plan Addendum
ROICC	Resident Officer in Charge of Construction
RWP	Remediation Work Plan
SMP	Site Management Plan
SOUTHDIVNAVFACENGCOM	Southern Division, Naval Facilities Engineering Command
SSHP	Site Safety and Health Plan
SSHR	Site Safety and Health Representative
TRPH	Total Recoverable Petroleum Hydrocarbons
UST	underground storage tank
VOA	volatile organic aromatics
VOC	Volatile Organic Compounds
VOH	Volatile Organic Halocarbons
VS	Verification Study

1.0 INTRODUCTION

The U.S. Navy is conducting environmental programs at CSS Panama City, Florida, through the Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) and has adopted the format of the IR program, an environmental program conducted at military installations nationwide to address areas of potential sources of contamination (PSC) from past operations. A separate UST program addresses sites related to petroleum USTs. The purpose of the IR Program is to define these areas and remediate them to current acceptable standards. BEI Environmental, Inc. (BEI), the Environmental Response Action Contractor, will perform Initial Remedial Action (IRA) on selected UST Program sites.

This Remediation Work Plan (RWP) documents the scope of the remediation effort and the procedures to be used to perform an IRA at Site 325, CSS Panama City, Florida, under the UST Program. This RWP has been prepared by BEI for Southern Division, Naval Facilities Engineering Command, under contract N62467-93-D-0936.

The activities described in this Plan are based on the following:

- Letter Report, Technical Memorandum for Site 325, Coastal Systems Station (CSS), Panama City, Florida, as prepared by ABB-ES, dated June 1, 1994.
- Technical Memorandum, Draft Initial Remedial Action Sites 325 and 278, Coastal Systems Station (CSS) Panama City, Florida, as prepared by ABB-ES, dated August 26, 1994

BEI will supply qualified personnel and equipment to the project; coordinate, manage, and supervise construction activities onsite and ensure compliance with contract and regulatory requirements. Documentation provided to the Navy will include a summary of the services provided and a project completion summary for each of the sites where work is performed. The approach to complete these tasks is presented in the following sections of this Plan. The remainder of Section 1.0 provides general site information and the justification and objectives for the proposed remediation. Included in Appendix A is the Responsibility Assignment Matrix for CSS Panama City and a schedule for the IRA's to be conducted at Site 325.

1.1 GENERAL SITE INFORMATION

CSS Panama City is located on St. Andrew Bay in Bay County, Florida and consists of two operational areas known as the laboratory and ordnance areas which encompass about 660 acres (Figure 1-1). The laboratory area, situated north of Alligator Bayou (an inlet to St. Andrew Bay), covers 360 acres and houses research facilities and various support activities and tenants. The ordnance area, south of Alligator Bayou, covers 300 acres and is used primarily for ordnance storage and limited research. CSS Panama City is bounded by U.S. Highway 98 to the north, St. Andrew Bay to the east, State Road 392B (Magnolia Beach Road) to the south, and State Road 392 (Thomas Drive) to the west.

Site 325 is located at the southern portion of CSS Panama City in the laboratory area, situated immediately south of the heliport area. Three 20,000 gallon fiberglass tanks, which were used to store JP-5 jet fuel along with one 300 gallon waste oil tank are to be removed along with their

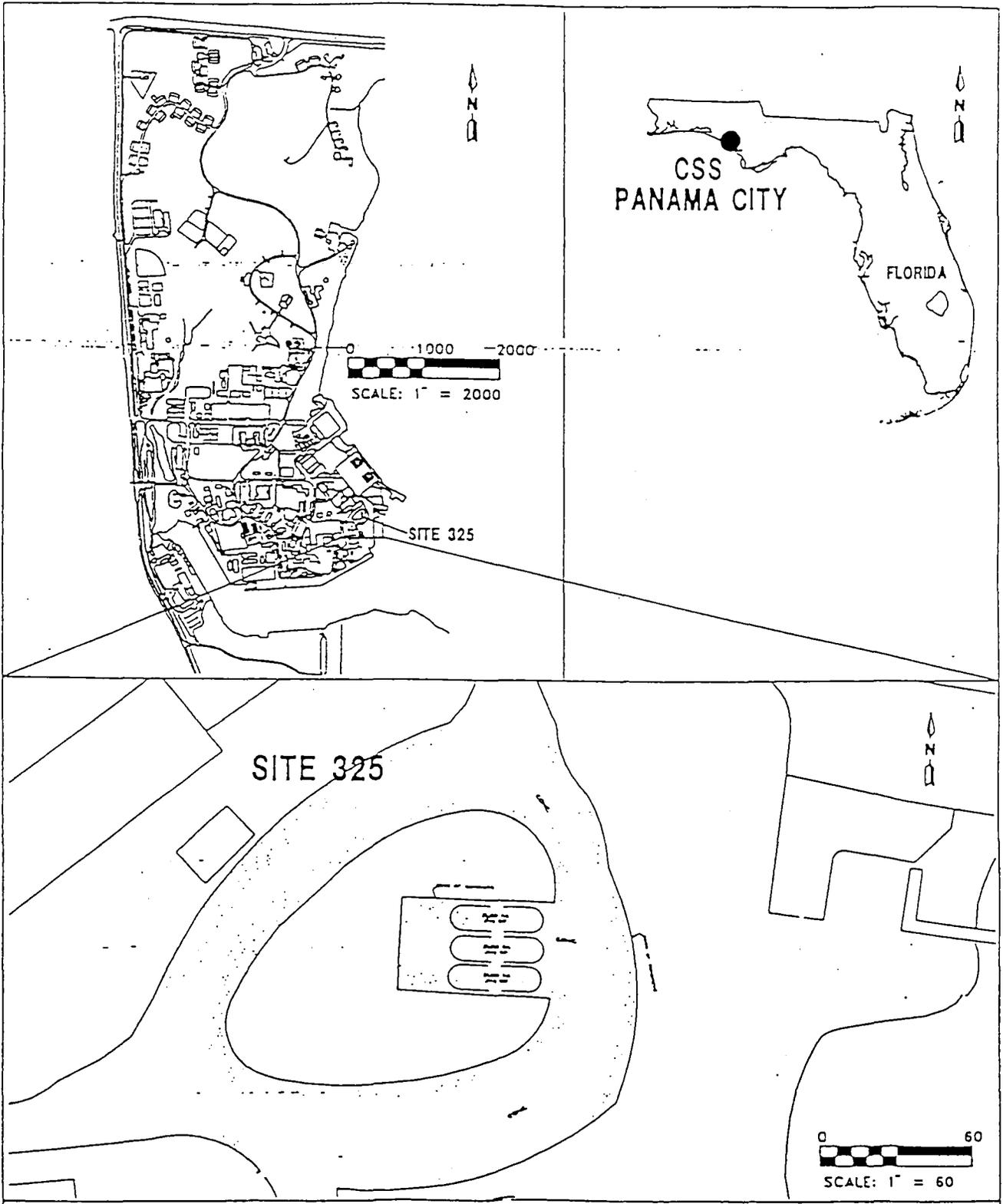


Figure 1-1
CSS PANAMA CITY LOCATION MAP
PANAMA CITY, FLORIDA

associated distribution piping. The underground tanks and distribution piping are buried beneath reinforced concrete. The excavated soil will be treated onsite using thermal treatment and returned to the excavated area. Clean fill material will be used as required, the concrete which is removed from the driveway area will be replaced with a 6-in. concrete surface. Closure assessment activities and additional contamination assessment (CA) activities will be performed by ABB-ES.

1.2 JUSTIFICATION AND OBJECTIVES FOR THE PROPOSED ACTION

As part of the Navy's Release Detection Program, four monitoring wells were installed around the vicinity of the tanks located at Site 325 in 1989. During well installation, petroleum odors were detected within the soils. A CA was performed for the site in 1992 which confirmed the presence of elevated levels of hydrocarbons within the soil and groundwater. Free product was identified in some of the monitoring wells located at the site. The presence of free product was confirmed during an investigation performed in August 1994 by ABB-ES.

The primary threat to human health and environment associated with Site 325 is related to the contamination of the groundwater from high levels of petroleum hydrocarbons adsorbed to the underlying soil in the vicinity of the USTs and distribution piping. The goal of the IRA for Site 325 is the removal and disposal of the USTs and their associated piping as well as initiating free product recovery in accordance with the Technical Memorandum for Initial Remedial Action at Sites 278 and 325 prepared by ABB-ES in August 1994. After the USTs and free product have been removed, it is anticipated that additional CA activities will be necessary in order to define the extent of both the soil and groundwater contaminant plumes previously identified.

2.0 ORGANIZATION AND RESPONSIBILITIES

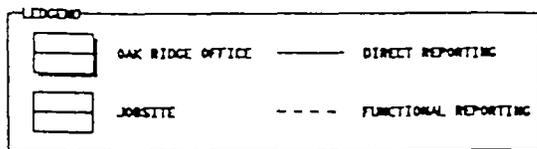
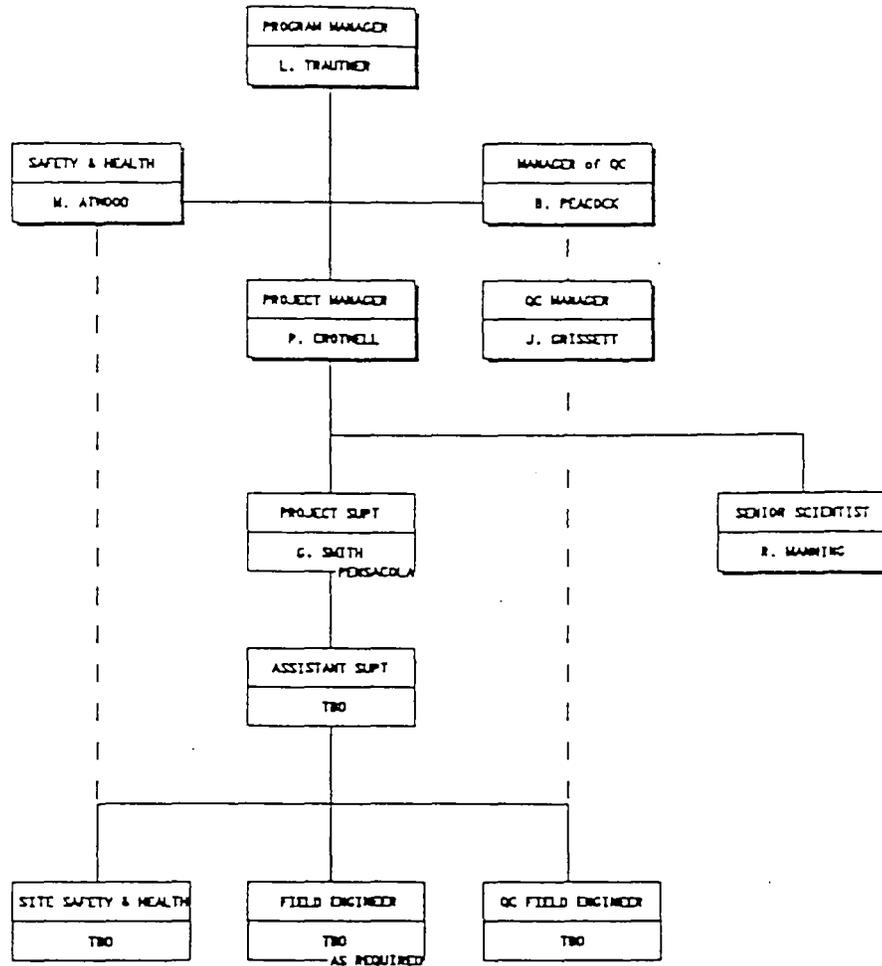
2.1 PROJECT ORGANIZATION

BEI provides leadership for project execution and acts as prime contractor for the various phases of work. BEI's project is the Environmental Response Action Contractor for navy installations at CSS, Panama City, Florida. An organization chart is provided in Figure 2-1.

2.2 COORDINATION AND RESPONSIBILITIES FOR FIELD WORK

As the Environmental Response Action Contractor for the Navy, BEI is responsible for implementation and management of remedial action field activities, which includes all activities necessary to implement field work delineated in the work plan. Typically, these activities include development and procurement of subcontract services; materials; development, implementation, and overview of plans; collection and review of data, including sampling results, quality assurance/quality control submittals, and sample tracking and custody; technical guidance to onsite personnel; report preparation; cost management; schedule control; and safety and health.

The BEI program manager is responsible to the Navy for the completion of all aspects of the work. The program manager is supported by representatives from engineering, construction, environmental safety and health, contract administration, quality control, project administration, and project controls. A brief description of the responsibilities of the project manager and each



2-1 Organization Chart

key member of BEI's project team is described below.

2.2.1 Project Manager

- Responsible for accomplishing all aspects of the work on time and within budget, while meeting high standards of quality
- Interfaces directly with Navy Remedial Project Manager to implement directions on a site-specific basis
- Manages a team of professionals from each of the disciplines described below
- Implements overall guidance provided by the BEI program manager

2.2.2 Senior Scientist

- Develops information required for technology selection
- Develops work plans for remedial action
- Provides technical specifications and drawings
- Develops scopes of work and technical specifications for subcontracted work
- Provides engineering and geotechnical home office and field support to remedial action efforts
- Provides interface/coordination with regulatory agencies and regulatory compliance
- Provides onsite waste management and identification
- Manages and evaluates chemical and radiological data obtained during remedial action activities

2.2.3 Project Superintendent

- Responsible for successful execution of the work at the site
- Responsible for health, safety, and environmental compliance in all site operations
- Manages subcontractors to complete work plans
- Directs crafts to implement work plans
- Serves as primary point of contact with the station and Resident Officer in Charge of Construction (ROICC) during construction

2.2.4 Certified Industrial Hygienist

- Develops requirements and plans for all safety and health matters
- Advises and assists the Project Manager and Project Superintendent with respect to health and safety matters
- Ensures that all applicable federal, state, and local regulatory requirements are met
- Provides a site safety and health representative (SSHR)
- Provides site-specific safety and health training
- Performs audits of site activities to ensure implementation of the Site Safety and Health Plan (SSHP) and to assess the effectiveness of the program

2.2.5 Contract Administration Manager

- Identifies bidders for subcontract work
- Prepares bid packages
- Manages subcontract bid and award process
- Administers subcontracts and subcontract modifications
- Ensures compliance with Prime Contract

2.2.6 Quality Control Manager

- Prepares site-specific quality control (QC) plan
- Implements the QC plan
- Audits quality assurance system and performance
- Conducts periodic reviews of program plans

2.2.7 Project Controls Manager

- Provides cost and schedule support, including budgeting, monitoring, and cost trends
- Provides site automation services

3.0 SITE BACKGROUND AND SETTING

CSS Panama City was first established in 1942 as a safe harbor for World War II convoy ships and as a liaison with a nearby shipyard. It later became an amphibious landing craft operations school. Research and development began in 1945 with the establishment of the U.S. Navy Mine Countermeasures Station. A research and development program for the use of helicopters for mine countermeasure operations was started at CSS Panama City in 1952. In November 1967, the laboratory became an activity of the Naval Ship Research and Development Center, based in Carderock, Maryland. The activity was redesignated as the Naval Coastal Systems Center in 1978. In January 1992, the name of the activity was changed to Coastal Systems Station. Though its mission, activities, and name have changed over time, the center has continuously provided technology of mine and undersea countermeasures, special and amphibious warfare, diving, and other naval coastal missions. In order to meet its mission objectives, CSS Panama City performs a variety of operations, some requiring the use, handling, storage, or disposal of hazardous waste.

3.1 SITE 325

Site 325, shown in Figure 3-1, is the inactive fuel storage and pumping facility associated with the helipad refueling area. The site covers approximately 2700 ft² and is covered with reinforced concrete. Three 20,000 gallon USTs were installed at the site in 1976 but these USTs were not operational until 1983. As part of the Navy's Release Detection Program (NRDP), monitoring wells were installed around the USTs in 1989. During the installation of the monitoring wells, petroleum odors were detected in the soil.

In 1992 a CA was performed at the site by ABB-ES. Results of the CA indicated that elevated levels of petroleum hydrocarbons were present within the soil and groundwater at levels which exceeded the Florida Department of Environmental Protection (FDEP) guidelines, free product was detected in some of the groundwater monitoring wells. During the CA, it was thought that a possible upgradient source may have been responsible for the contaminants encountered at Site 325. A resampling of all Site 325 wells was performed in order to verify previous analytical results. The USTs and distribution lines were tightness tested in April 1993. The results indicated that the distribution line for UST Number 2 was not tight. The line was excavated and repaired but failed the subsequent tightness test.

In November 1993, CSS Panama City personnel decided to abandon the present UST system and replace it with a system which utilizes above ground distribution piping and to initiate a free product recovery procedure in accordance with FDEP guidelines.

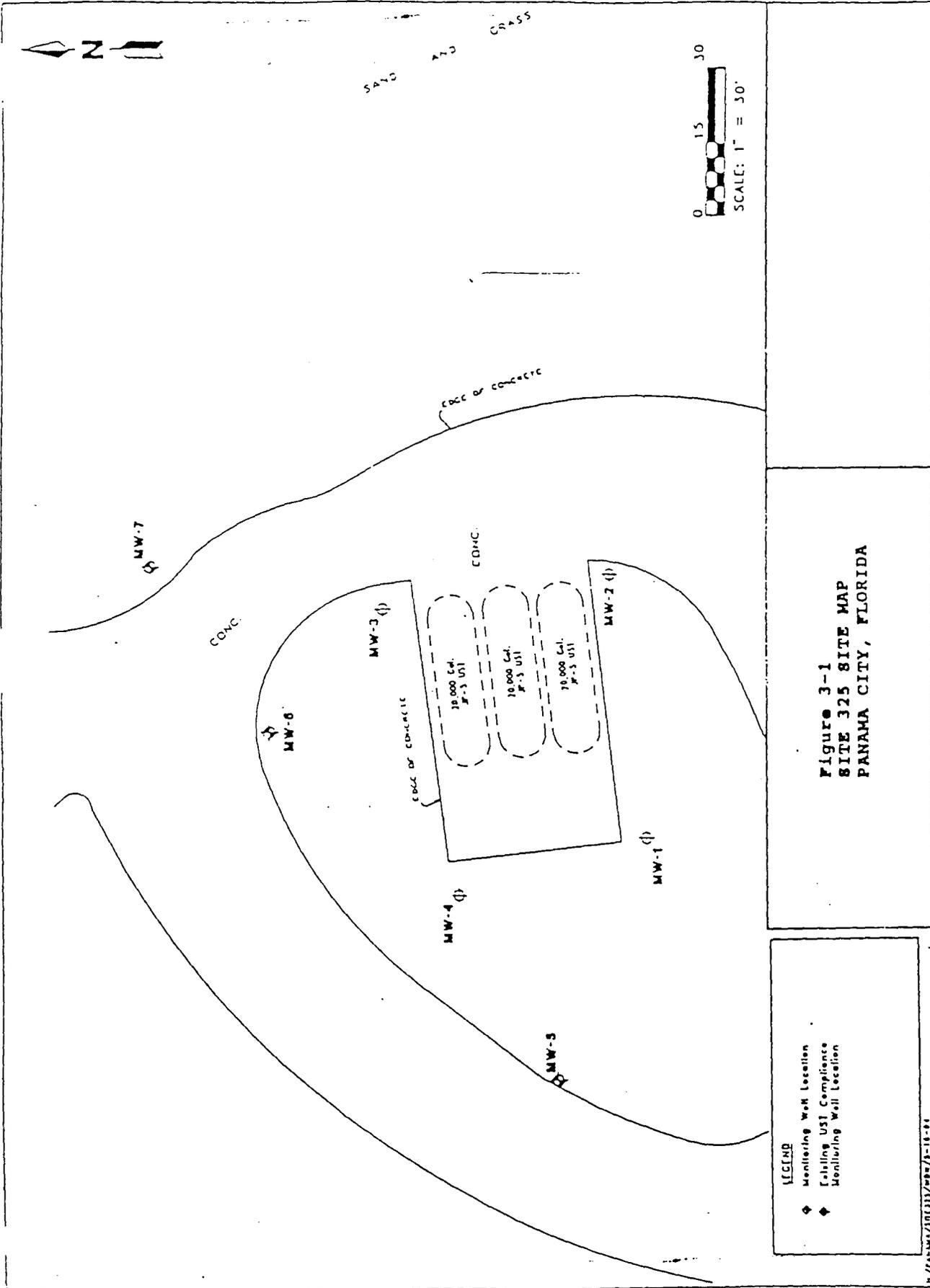


Figure 3-1
SITE 325 SITE MAP
PANAMA CITY, FLORIDA

LEGEND

- ◆ Monitoring Well Location
- ◻ Existing USJ Compliance Monitoring Well Location
- ◻ Monitoring Well Location

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4.0 SCOPE OF WORK

The Objective at CSS Panama City is to perform an IRA before additional remedial actions are performed at Site 325. IRA activities will consist of the removal and disposal of existing USTs and their associated distribution piping, excavation and thermal treatment of contaminated soil, salvaging the former fuel filtering system used in association with the USTs at Site 325, and free product recovery from the excavated area. It is assumed that free product recovery can be completed by removal of floating product from the surface of groundwater in the open excavation during UST removal, and that it will not be necessary to provide for continued free product recovery after backfill of the excavation.

To accomplish this objective, the following services will be performed:

- mobilization
- tank removal and disposal
- excessively contaminated soil excavation with thermal treatment
- free product recovery and disposal
- demolition of concrete and piping
- backfill and compaction
- replacement of concrete pavement at helipad
- removal and salvage of fuel filtration system
- safety and health
- quality control
- waste management

A detailed scope for Site 325 is provided in Section 4.1. Sections 4.2 through 4.8 provide a description of the services to be performed.

4.1 SITE 325

Three 20,000-gal fiberglass tanks with associated distribution piping will be excavated and removed from the site along with two 300-gal waste oil tanks. Based on available information the USTs are approximately 3 to 4 ft below land surface (bls) and buried to a depth of approximately 15 ft bls (three 20,000 fiberglass tanks) and 9 ft bls (two 300-gal waste oil tanks). It is assumed that the tanks will be empty to the maximum extent practicable when turned over to BEI. When the top of the tanks have been exposed, they will be ballasted with potable water to help keep the USTs in place while they are being removed. The water used to ballast the tanks will be disposed of in accordance with all local, state, and federal guidelines. After removal the USTs and associated piping will be disposed of off site in accordance with local, state, or federal guidelines. It is assumed that the USTs are ballasted with a concrete slab or similar concrete weights. The concrete anchors used to hold the tanks in place will be abandoned in place. Technical Specifications for removal and disposal of USTs and associated piping are included in Appendix B. The sections of concrete removed from the concrete drive area will be replaced with 6-in. concrete pavement.

A recirculating fuel filtration system is also located at Site 325. This filtration system was used in conjunction with previous refueling activities associated with Site 325. This system will be dismantled, palletized, and removed from the site and turned over to the ROICC for salvaging.

Free product recovery will be performed at the site during and following removal of the USTs. After the USTs have been removed the tank pit will remain open for a period of time to allow free product to flow into the excavated area. Free product recovery will be considered complete when free product has been removed to the maximum extent practicable. As free product enters into the excavated area, a vacuum truck will be used to recover the free product. Free product will be removed from the excavated area and disposed of in the most economical way possible using onsite or offsite facilities in accordance with appropriate local, state, and federal requirements.

Approximately 160 ft of piping from the USTs to the truck fueling station, including all supply and return lines (three each), shall be removed as part of this scope of work. An additional approximately 550 ft of piping from the truck fueling station to the helicopter fuel station, including both the supply and return lines, shall be removed as part of this scope of work. Any piping that is determined to be not in the scope will be left in place and capped with an appropriate mechanical fitting. Underground piping will be cut off 12 in. above land surface. The dispenser station at the helicopter pad shall be removed along with the fuel lines and the 300-gal oily water tank at that location.

4.2 MOBILIZATION

Mobilization will include delivering to the jobsite all construction equipment, tools, materials, supplies and miscellaneous articles, and established work force sufficient to commence and sustain construction activities as required.

As part of the mobilization, BEI will establish one onsite personnel office trailer. Setup of this trailer will include electrical, sewer, and water connections.

4.3 EARTH WORK CONSTRUCTION/DEMOLITION

The public works department will be contacted prior to beginning excavations to check for buried utilities. Earthwork construction will consist of general excavation and backfilling. Demolition activities will consist of removing the reinforced concrete slab covering the USTs and associated piping; sawcutting and removal of 8 in. reinforced concrete helipad as required to remove piping from the 550 foot long trench from the UST site to the helipad fueling station; and removing the former fuel filtering system for salvaging purposes. All earthwork construction and demolition services will be performed in accordance with the Technical Specifications for Uncontaminated Earthwork as Appendix C and Technical Specifications for Contaminated Materials and Miscellaneous Demolition included in Appendix D.

4.3.1 Limits of Excavation

The limits of excavation for Site 325 will be determined in the field. The vertical limit of excavation is defined by the existing water table. All field screening activities will be performed

by ABB-ES on a continuous basis, as required to support the excavation of soil and construction debris. A Flame Ionizing Detector (FID) will be used to guide the excavation of contaminated soil. While performing excavation of the JP-5 pipeline and trench, soils with 50 ppm or greater concentrations of VOCs will be excavated to the local water table. While performing removal of contaminated soils from the former UST and pit locations, soils with greater than 50 ppm VOC concentrations will also be excavated to the local water table. If onsite thermal treatment is used, Bechtel will perform field screening of treated soil as required. Section 5.0 describes the field sampling plan for this task.

Crushed stone will be used to fill the UST pits to just above the water table to avoid having to depress the water table level to place the backfilled soil with the proper compaction. The backfill will be placed on top of the crushed stone.

4.3.2 Soil Stockpile Construction

Contaminated soil excavated from Site 325 will be temporarily stored onsite until treated. The area designated for temporary storage will be cleared graded and bermed as required. An engineering-specified liner will be placed to contain the material within the bermed area. Additionally, a daily cover liner will be provided to totally contain the contaminated soil stockpile. The cover is to be in place at the end of daily operations, and removed prior to the start of activities the following day.

The contaminated soil stockpile will be sized to provide containment for approximately 50 percent of the excavated soil. It is assumed that as material is being excavated, previously excavated soil is being removed for treatment in the thermal unit. Sampling requirements for contaminated soil prior to treatment are provided in Section 5.0.

If onsite thermal treatment is used, contaminated soil that has been successfully treated using the thermal treatment unit will be placed in the clean soil stockpile area. The area designated for clean soil stockpiling will be graded as required and underlain with an engineering specified liner to contain the material. The clean soil stockpile will also be protected with a daily liner. The clean stockpile area will be sized so that approximately 100 percent of the successfully treated soil can be contained. Units of thermally treated soil for which representative samples have been taken will be stockpiled. When sampling results indicate that particular units of soil have successfully been treated, the material will be used to backfill the open excavation for Site 325. Requirements for soil sampling of treated soil are defined in Section 5.0.

Sampling results for thermally treated soil will be compared to those criteria listed in Table 5-3. If particular results indicate that a unit of soil does not meet the clean criteria for total volatile organic aromatics (VOAs) and total recoverable petroleum hydrocarbons (TRPH), the soil will be returned to the thermal treatment unit for additional treatment.

4.4 THERMAL TREATMENT

Thermal treatment of contaminated soil will be performed at the site or off site as part of the IRA. Thermal treatment operations will consist of treating contaminated soil from the excavated area in accordance with FAC 62-775. If onsite treatment is used the treated soil will be placed back into the excavated area.

BEI will issue a subcontract for offsite thermal treatment or to provide and operate a mobile low temperature thermal treatment unit at Site 325. The thermal treatment unit will be licensed and permitted in the state of Florida. The subcontract will be administered and controlled by the BEI project superintendent. If onsite, the thermal treatment unit will be set up in an area to be determined by the BEI site superintendent as directed by the ROICC.

Technical specifications and site specific scope of work for the low temperature thermal treatment unit are provided in Appendix E. Sampling will be performed in accordance with the sampling and analysis plan described in Section 5.0 of the RWP and will conform to requirements specified in F.A.C. Chapter 62-775.

4.5 SITE CONTROL

The area will be surrounded by safety barricades and barrier tape to maintain access control of the remediated area. An exclusion zone and contamination reduction zone with a decontamination pad will be provided for the thermal treatment activities.

4.6 WASTE MANAGEMENT

Hazardous waste storage, transportation, and disposal will be coordinated through the CSS, Panama City, environmental coordinator. The hazardous waste management plan for the SOUTHDIVFACENGCOM will be used as guidance for all hazardous waste management activities. Accountability of the waste is required from the time of containerization until disposal. A waste inventory will be maintained, packaged waste will be marked with labels, and relevant data entered into the data collection system.

The Hazardous Waste Management Plan described in Section 6.0 establishes guidelines and minimum programmatic requirements by which all waste will be managed. BEI will provide support for waste management by performing waste sampling and analyses, arranging waste disposal, and coordinating the loading and transporting of waste to the disposal facility.

5.0 SAMPLING AND ANALYSIS PLAN

This section describes the sampling and analysis requirements for field screening, excavation, and low temperature thermal treatment of contaminated soils at Site 325 of the Coastal Systems Station (Site 325). Sampling methodology and procedures described in this Sampling and Analysis Plan (SAP) are based on Florida Department of Environmental Protection (FDEP) requirements as found in the FDEP *Standard Operating Procedures for Laboratory Operations and Sample Collection Activities* (DERQA-001/92) and *Quality Assurance Standard Operating Procedures for Petroleum Storage System Closure Assessments*.

As outlined in FDEP's *Quality Assurance Standard Operating Procedures for Petroleum Storage System Closure Assessments*, field screening techniques (EPA DQO Level I) using a flame ionization detector (FID) will be used to delineate the area where soil remediation is required. EPA DQO Level III data will be required for post-excavation and low temperature thermal treatment sampling, to determine that remediation and/or treatment goals have been achieved.

BEI will conduct confirmatory sampling for evidence of work completion. Verification sampling will be conducted by independent contractors to document waste cleanup.

5.1 SAMPLING PROTOCOL

(Note: Only comes into play if on-site or off-site thermal treatment is performed and pre-treatment samples are collected.)

5.1.1 Decontamination

Sampling equipment will be decontaminated prior to collection of each sample. Decontamination will be completed in accordance with Project Procedure # 6024 which addresses the necessary steps for decontamination of field sampling equipment. Used decontamination fluids will be containerized, stored, and disposed of as directed by the Navy Public Works Department.

5.1.2 Collection

(Bechtel employee oversees sample collection; lab is GEL or other FDEP + NAVY approved lab).

Soil sample collection, with the exception of field screening, will be performed in accordance with Project Procedure # 6025 "Soil Sampling". Field screening samples will be collected in accordance with Section IV, "Field Measurements," of FDEP's *Quality Assurance Standard Operating Procedures for Petroleum Storage System Closure Assessments*.

5.1.3 Sample Identification

Sample identification will be in accordance with NAVRAC Project Procedure 6003, "Sample Identification and Data Encoding."

5.1.4 Logbooks

Field logbooks will be used for recording all field activities. Entries will include sufficient detail to reconstruct all significant activities. Logbook entries will be completed in accordance with Project Procedure # 6004, "Field Logbooks".

5.1.5 Chain-of-Custody Records

In order to maintain sample traceability, each sample for offsite analysis will be properly documented on a chain-of-custody record. Chain-of-custody documentation will be completed in accordance with Project Procedure # 6005, "Chain-of-Custody Record Procedure".

5.1.6 Packaging and Holding Times

Sample volume, container, and QC requirements, preservation techniques, and minimum holding times are given in Table 5-1. The Bechtel Field Engineer or designated person is responsible for ensuring that a sufficient volume of each sample is collected and placed in the appropriate container with the proper preservation.

The preparation of all sampling containers and general container types, preservatives, and holding times are specified in Project Procedure # 6010, "Sample Container, Preservation, and Aliquot Requirements", and Project Procedure # 6011, "Sample Preservation, Packaging, and Shipment Offsite". Sample containers will meet all specifications outlined in the above-mentioned procedures.

Table 5-1
Data Requirements for Site 325
Soil Sampling

Sample Event	Analytical Method	DQO Level	Sample Volume	Sample Container	Preservative	Holding Time	QC Samples Required ¹
Field Screening Sampling							
TVOC ²	Head Space	I	fill jar 1/2 full	16 oz. canning jar	None	Analyze immediately following temperature equilibration	Dup: 1/10
Post-Excavation Confirmatory Soil Sampling							
TRPH ³ (< or > 50 ppm)	EPA 418.1	III	fill container	Glass, 4 oz. widemouth w/Teflon lined cap	Cool @ 4°C	14 days	Dup: 1/20 (TRPH) RB: 1/20 or weekly
Thermal Treatment Sampling							
Pre-treatment Soil Samples							
VOA ⁴	EPA 5030/8020	III	fill container	Glass, 4 oz. widemouth w/Teflon/silicone septum	Cool @ 4°C	14 days	TB: 1/cooler shipment Dup: 1/20 RB: 1/20 or weekly MS/MSD: 1/20
TRPH	EPA 418.1	III	fill container	Glass, 4 oz. widemouth w/Teflon/silicone septum	Cool @ 4°C	14 days	Dup: 1/20 RB: 1/20 or weekly MS/MSD: 1/20
VOH ⁵	EPA 5030/8010	III	fill container	Glass, 4 oz. widemouth w/Teflon/silicone septum	Cool @ 4°C	14 days	TB: 1/cooler Dup: 1/20 RB: 1/20 or weekly
total metals	EPA 3050/6010 and 3050/7471 (Hg only)	III	fill container	Glass or plastic, 8 oz. widemouth w/Teflon lined cap	Cool @ 4°C	6 months (28 days for Hg)	RB: 1/20 or weekly Dup: 1/20 MS/MSD: 1/20
TCLP metals ⁶	EPA	III	fill container	Glass or plastic, 8 oz. widemouth w/Teflon lined cap	Cool @ 4°C	6 months (28 days for Hg)	

Table 5-1
Data Requirements for Site 325
Soil Sampling

Sample Event	Analytical Method	DQO Level	Sample Volume	Sample Container	Preservative	Holding Time	QC Samples Required ¹
Post-treatment soil samples							
VOA ⁴	EPA 5030/8020	III	fill container	Glass, 4 oz. widemouth w/Teflon/silicone septum	Cool @ 4°C	14 days	TB: 1/cooler shipment Dup: 1/20 RB: 1/20 or weekly MS/MSD: 1/20
TRPH	EPA 418.1	III	fill container	Glass, 4 oz. widemouth w/Teflon/silicone septum	Cool @ 4°C	14 days	Dup: 1/20 RB: 1/20 or weekly MS/MSD: 1/20
VOH ⁵	EPA 5030/8010	III	fill container	Glass, 4 oz. widemouth w/Teflon/silicone septum	Cool @ 4°C	14 days	
PAH ⁷	EPA 8270	III	fill container	Glass, 8 oz. widemouth w/teflon lined cap	Cool @ 4°C	14 days	
total metals	EPA 6010 and 7471 (Hg only)	III	fill container	Glass or plastic, 8 oz. widemouth w/Teflon lined cap	Cool @ 4°C	6 months (28 days for Hg)	RB: 1/20 or weekly Dup: 1/20 MS/MSD: 1/20

NOTE: Samples for volatile organic analyses shall not be homogenized (mixed) prior

¹ Generic QC sample types will include the following; TB: Trip Blank, RB: Equipment Rinsate Blank, FB: Field Blank, Dup: Duplicate, MS/MSD: Matrix Spike/Matrix Spike Duplicate

² TVOCs: Total volatile organic compounds

³ TRPH: Total recoverable petroleum hydrocarbons

⁴ VOA: Volatile organic aromatics

⁵ VOH: Volatile organic halocarbons

⁶ TCLP analysis for metals shall not be required if total metals analyses do not indicate the potential for toxic leachate concentrations as shown in Table 5-3.

⁷ If the TRPH results are greater than 10 and less than 50 ppm, soil shall be analyzed for VOH and PAH and the results shall comply with Table 5-3.

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5.1.7 Data Verification

All low thermal treatment soil sample data will be subject to a 100 percent verification. This includes data generated by field activities or as a result of laboratory analyses. The verification process will begin with manual entry or electronic loading of the data. Printouts of this information from the project database will be compared with the original hard copy of the data and resolved.

Documentation of all verification activities will be performed by the individual performing the verification. This documentation will consist of a signature of the person who performed the verification in the hard copy printouts from the project database. These signed verification printouts will be forwarded to the database manager or designee.

5.2 FIELD SAMPLING AND ANALYSIS

Sampling protocol for samples identified in this section will be in accordance with Section 4.3.4, "Soil Sampling Procedures" outlined in FDEP's *Standard Operating Procedures for Laboratory Operations and Sample Collection Activities*. Analysis of these samples will be in accordance with Sections 5 through 10 of FDEP's *Standard Operating Procedures for Laboratory Operations and Sample Collection Activities*. Table 5-1 provides a summary of the data requirements for Site 325.

A summary of all field sampling activities is required to be included in the monthly report to SOUTHNAVFACENGCOM.

5.2.1 Field Screening Sampling

Field screening of samples for the volatile organic compounds (VOCs) will be used to guide remediation activities. Soil samples will be collected and analyzed using a flame ionization detector (FID) in accordance with Section IV, "Field Measurements," of FDEP's *Quality Assurance Standard Operating Procedures for Petroleum Storage System Closure Assessments*. Each sample will be collected from the vadose zone and screened with and without a carbon filter to determine whether naturally occurring organic (methane) vapors are affecting FID measurements. A photoionization detector (PID) may be used after a determination is made of that instrument's equivalent response to a FID.

Field screening will be performed at locations as specified in Section 4.3.1 to guide excavation of contaminated soil. Soil will be excavated from areas identified as contaminated with greater than 50 ppm VOCs and as discussed in Section 4.3.1. After initial excavation is completed field screening will be used to guide any additional excavation activities.

5.2.2 Post-Excavation Confirmatory Soil Sampling

To confirm that soils contaminated with greater than 50 ppm VOCs have been excavated, confirmatory soil sampling will be conducted. Samples will be collected from the sidewalls of the excavation above the water table and from the floor of the excavation. Collection of these

samples will be performed in accordance with Project Procedure # 6025, "Soil Sampling". Samples will be analyzed for the parameters listed in Table 5-1.

For confirmatory sampling, a total of 10 samples will be required (5 from the estimated 600 ft² of sidewalls above the water table and 5 samples from the estimated 1,600 ft² of the excavation floor), *Michigan Department of Natural Resources, Guidance Document for Verification of Soil Remediation*, April 1994). A biased approach, based on the source areas and preferential pathways of contamination, will be used to select sampling locations. Using this approach, samples will be collected where VOC contamination exceeding 50 ppm will most likely be encountered. This will minimize the number of samples necessary to verify the site is remediated.

5.2.3 Low Temperature Thermal Treatment Sampling

Thermal treatment sampling includes samples collected prior to and following low temperature thermal treatment of contaminated soil.

Prior to thermal treatment, a composite soil sample will be collected in situ before soil excavation begins in accordance with Project Procedure # 6025, "Soil Sampling". The frequency with which composite samples are to be collected is based on the expected quantity of material to be treated (see Table 5-2). The composite samples will be analyzed for volatile organic aromatics (VOAs), total recoverable petroleum hydrocarbons (TRPHs), volatile organic halocarbons (VOHs), and metals in accordance with FAC 62-775.410(3) as outlined in Table 5-1. Each composite sample will consist of soil samples collected from a minimum of four locations, with the exception of VOAs, for which composite samples will not be collected. Each sample shall be collected from locations equally distributed throughout the soil surface area and from a depth of at least 6 in. bls.

After thermal treatment, a soil sample will be collected at least hourly and composited over an eight operational hour maximum time interval or at a minimum of once every 400 tons, whichever is less. Each composite sample will be analyzed for parameters listed in Table 5-1. This procedure and analyses are in accordance with FAC 62-775.410(5) and FAC 62-775.400, with the exception that TRPH will be analyzed using EPA Method 418.1 instead of EPA Draft Method 9073. Table 5-3 provides the criteria for acceptance of the treated soil as clean.

Table 5-2
Composite Samples Quantities Prior to Thermal Treatment

Amount of Soil		Quantity of Composite Samples
by Volume (cubic yards)	by Weight (tons)	
Less than 100	Less than 140	1
100 to 500	140 to 700	3
500 to 1000	700 to 1400	5
For each additional 500	For each additional 700	1

Source: FAC 62-775.410, Table II

Table 5-3
Criteria for Thermally Treated Clean Soil

Parameter	Cleanup Level	
Total Volatile Organic Aromatics	0.1 mg/kg	
Total Recoverable Petroleum Hydrocarbons	10 mg/kg or if exceeded ^a	
Metals	TCLP^b	Total^c
Arsenic	5 mg/l	10 mg/kg
Barium	100 mg/l	4940 mg/kg
Cadmium	1 mg/l	37 mg/kg
Chromium	5 mg/l	50 mg/kg
Lead	5 mg/l	108 mg/kg
Mercury	0.2 mg/l	23 mg/kg
Selenium	1 mg/l	389 mg/kg
Silver	5 mg/l	353 mg/kg

Source: FAC 62-775.400(1),(2)(a),(2)(b), and FAC 62-775.400 Table I

^a If exceeded, then the Total Recoverable Petroleum Hydrocarbons will not exceed 50 mg/kg (EPA Draft Method 3540/9073) provided the total of the Polynuclear Aromatic Hydrocarbons does not exceed 1 mg/kg (EPA Method 8100, 8250, 8270, or 8310) and the total of the Volatile Organic Halocarbons does not exceed 50 mg/kg (EPA Method 5030/8021 or 5030/8010).

^b Toxicity Characteristic Leaching Procedure

^c The acid digestion procedure by EPA Method 3050 will be used to prepare soil samples for total metal analyses except mercury, and the extraction procedure by EPA Method 1311 TCLP will be used to determine leachability characteristic of metals.

6.0 WASTE MANAGEMENT

Waste management practices, as defined in the Program Hazardous Waste Management Plan, will be used as guidance and appropriately followed for this work. Waste management will be performed according to our plan and coordinated with the ROICC, as appropriate.

Waste minimization practices will be implemented during operations to minimize the amounts of materials that must eventually be eliminated. These practices will include, but not be limited to:

- No extraneous materials taken into contamination control areas
- Decontamination and free release of equipment used to support onsite activities, to the extent practicable
- Use of consumables that can be compacted or otherwise volume reduced, to the extent practicable

Personal protective equipment (PPE) that is not visibly soiled will be disposed of as conventional waste. Contaminated portions of PPE will be managed as hazardous waste.

All soils and other materials that are generated during the remediation activities that are thermally treated and meet cleanup standards and comply with 40 CFR 268 will be redeposited into the excavated areas at Site 325.

All water recovered from the excavations and the 'ballast water' from the tanks during the remediation activity will be tested and treated if necessary to allow discharge to the POTW.

Hazardous waste will be identified and managed in accordance with RCRA, 40 CFR Parts 260, 261, 262, 264, 265, 270, and 271. As directed by the Navy, an EPA identification number, received from the EPA Region IV Administrator, will be obtained from the Navy before treatment, storage, disposal, or transportation of hazardous wastes. In addition, hazardous waste will not be offered to any transporters or treatment, storage, or disposal facilities that do not have an EPA identification number.

Following coordination with the ROICC, all hazardous waste will be packaged, labeled, marked, and transported offsite in accordance with applicable Department of Transportation hazardous material shipping regulations (49 CFR 171-179). Proper manifest documentation will be required at the time of shipping per 40 CFR 262.

All nonhazardous solid waste that is generated as a result of mobilization and clearing activities will be properly disposed onsite or offsite as directed by the Navy. Any petroleum hydrocarbon contaminated debris and waste that cannot be treated onsite to specified cleanup levels will be analyzed for hazardous waste characteristics, packaged, labeled, and handled in accordance with approved procedures. All waste material will be packaged in U.N. Class 1A2 55 gallon drums and labeled with the container's contents, date generated, and location from where it was derived.

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7.0 SAFETY AND HEALTH

A Program Safety and Health Plan (PSHP) defines policies for work on the Navy RAC Project. A Site Safety and Health Plan (SSHP) has been prepared for the Navy RAC Bases. Addendum No. 14 to the SSHP defines task specific requirements for remediation at CSS Panama City.

8.0 QUALITY CONTROL

The Quality Control Plan (QCP) and the Quality Control Plan Addendum have been prepared and describe the quality control (QC) activities that will be implemented for work associated with Delivery Order (DO) No. 0007 for CSS Panama City. The QCP provides a detailed description of the QC requirements for Navy RAC program. The QCPA provides additional site-specific requirements. Both documents will be used to ensure that the QC requirements of the BEI and Navy RAC Program associated with this RWP are met.

9.0 REGULATORY REQUIREMENTS AND PROJECT PROCEDURES

The scope of work for this Remediation Work Plan is being conducted as an Interim Remedial Action under authority of the Navy's Underground Storage Tank Program. As such, Florida regulations for USTs and petroleum cleanup standards apply.

9.1 UNDERGROUND STORAGE TANK SYSTEMS

FAC 62-761 provides for the removal and disposal of UST systems, which consist of USTs and their onsite integral piping systems and associated release detection systems. These regulations apply to USTs storing regulated substances and which have individual storage tank capacities greater than 110 gal.

9.2 FLORIDA PETROLEUM CLEANUP REGULATIONS

When it has been determined that a UST site has been contaminated with petroleum as defined in the cleanup regulations, then the provisions of FAC 62-770 must be met. FAC 62-770 contains procedures for detecting and determining the extent of any contamination, as well as procedures for determining that any contamination present has been remediated.

Part of the scope of work for this site is recovery of free petroleum product associated with the USTs and UST piping. An Initial Remedial Action Report, detailing the initial remedial action will be prepared pursuant to the provisions of FAC 62-770.

9.3 FLORIDA SOIL THERMAL TREATMENT FACILITIES

Sites contaminated solely with petroleum product may be remediated by excavating the contaminated soil and thermally treating it. If the soil meets post-treatment standards as provided in the regulations, then the treated soil may be placed back in the excavated location.

9.4 APPLICABLE NAVY RAC PROJECT PROCEDURES

The procedures listed below are the key procedures which the field team must know to properly execute this task. However, this is not the complete list of all project procedures which may be applicable to support functions such as procurement, safety and health, project controls, or administrative services.

<u>Procedure Number</u>	<u>Procedure Name</u>
Navy RAC PP1005	Project Completion Reports
Navy RAC PP1007	Employment Conditions
Navy RAC PP3406	Subcontract Administration
Navy RAC PP5003	Trend Program
<u>Procedure Number</u>	<u>Procedure Name</u>
Navy RAC PP6003	Sample Identification and Data Encoding
Navy RAC PP6004	Field Logbooks
Navy RAC PP6005	Chain-of-Custody Record Procedure
Navy RAC PP6006	Sample Tracking
Navy RAC PP6010	Sample Container, Preservation, and Aliquot Requirements
Navy RAC PP6011	Sample Preservation, Packaging, and Shipment Offsite
Navy RAC PP6024	Decontamination of Field Sampling Equipment
Navy RAC PP6025	Soil Sampling
Navy RAC PP7001	Daily QC Reports
Corporate QA PP1.6	Audits
Corporate QA PP1.7	Surveillance
Corporate QA PP1.8	Corrective Action
Corporate QA PP1.9	Stop Work
Corporate QA PP2.2	Auditor/Lead Auditor Qualification and Certification
S&H SOP 2.1.10-A	Site Worker Orientation
S&H SOP 2.1.15	Hazardous Communications Program
S&H SOP 2.1.15-B	Lead Protection Requirements
S&H SOP 2.1.16	Job Hazard Analysis
S&H SOP 2.1.17	Hazardous Work Permit
S&H SOP 2.1.17-A	Utility Clearance
S&H SOP 2.1.17-C	Excavations and Trenches
S&H SOP 2.1.17-D	Confined Space Entry
S&H SOP 2.1.20-B	Project Exposure Limits
S&H SOP 2.1.24-A	Fire Protection and Prevention
S&H SOP 2.1.40	Site Control
S&H SOP 2.1.40-A	Vehicle and Heavy Equipment Safety
S&H SOP 2.1.60-A	Personal Protective Equipment

Corporate Mgmt Control 4.10 Quantity Tracking
Corporate Mgmt Control 5.10 Subcontract Schedules

Corporate Administrative 1.4 Document Control

Task-specific Documents

Remediation Work Plan for Task 1 at Coastal Systems Station, Panama City, Florida

Environmental Protection Plan, Delivery Order No. 0007, CSS Panama City, Florida

Addendum to the Quality Control Program Plan, Delivery Order 0007, CSS Panama City, Florida

Addendum No. 14 to the Task-specific Safety and Health Plan

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APPENDIX A

**RESPONSIBILITY ASSIGNMENT MATRIX AND
SCHEDULE FOR INITIAL REMEDIAL ACTION
FOR SITE 325**

TASK	ABB-ES	BEI	SOUTHDIV	ACTIVITY	REGULATOR	ROICC
------	--------	-----	----------	----------	-----------	-------

Initial Remedial Action (IRA) Plan	I	L	R	S & I	R & A	S
IRA Implementation (Free Product Recovery)	S	L	S	S	R	S
Work Plan	R	L	A	I	NA	R
Submittal(s) Review	S	S	L	I	NA	R & A
Remediation	S	L	R & A	S	NA	R & A
Sampling (Pre & Post)	L	S	S	S	S	S
Contamination Assessment Report (CAR)	L	I	R	S	R & A	NA
Remedial Action Plan (RAP)	L	S	R	S	R & A	NA
RAP Implementation	S	L	S	S	R & A	NA
Closure Report	L	S	R	I	R & A	NA

I = Information
 L = Lead Responsibility
 S = Supporting Responsibility
 R = Review Responsibility
 A = Approval
 NA = Not Applicable

ABB-ES = ABB Environmental Services, Inc.
 BEI = Bechtel Environmental, Inc.
 SOUTHDIV = Southern Division NAVFACENGCOM
 ACTIVITY = Facility Personnel
 REGULATOR = USEPA or State Agency
 ROICC = Resident Officer in Charge of Construction

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APPENDIX B

**TECHNICAL SPECIFICATIONS FOR
REMOVAL AND DISPOSAL OF UNDERGROUND STORAGE TANKS
AND ASSOCIATED PIPING**

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DEPARTMENT OF THE NAVY

SOUTHERN DIVISION

TECHNICAL SPECIFICATION

FOR

REMOVAL AND DISPOSAL OF UNDERGROUND STORAGE TANKS
AND ASSOCIATED PIPING

FOR

CSS PANAMA CITY

0	3/9/95	Issued for use	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
REV	DATE	REVISION	BY	CHK'D	SUPV	PE
ORIGIN		REMOVAL OF UNDERGROUND STORAGE TANK AND ASSOCIATED PIPING at CCS PANAMA CITY	JOB NO. 22567			
			TECHNICAL SPECIFICATION			REV.
			421-SP329-001			0
			SHEET 1 OF 9			

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Technical Specification
22567-421-SP329-001
Revision 0

**TECHNICAL SPECIFICATION
FOR
REMOVAL OF UNDERGROUND STORAGE TANK AND ASSOCIATED PIPING**

1.0 GENERAL

Not all activities defined herein will be required. Only those activities required in the applicable Subcontract Scope of Work and Engineering Drawings for specific services shall apply.

2.0 ABBREVIATIONS

The abbreviations listed below, where used in this specification shall have the following meaning:

API	American Petroleum Institute
ASTM	American Society for Testing and Materials
CFR	Code of Federal Regulations
EPA	Environmental Protection Agency
FDEP	Florida Department of Environmental Protection
DNS	Department of the Navy's Specification

3.0 QUALITY STANDARDS

Unless otherwise specified or shown, the following code and standard of the latest issue at time of bid shall apply to the extent indicated herein.

API RP 1604	Removal and Disposal of Underground Petroleum Storage Tanks
API Publication 1628	Assessment and Remediation of Underground Petroleum Releases
API Publication 2015	Safe Entry and Cleaning of Petroleum Storage Tanks
API Publication 2015 A	Controlling Lead Hazards Associated with Tank Entry and Cleaning
ASTM D 4397	Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications
40 CFR 280 G	Out of Service UST Systems and Closure
EPA SW846	1986 Evaluations Solid Waste
EPA 660-4-79-20	1976 Contaminant Monitoring
DNS 13219	Cleaning Petroleum Storage Tanks

4.4 REPORTS AND PERMITS

Reports which describe the field activities during the tank removal process are to be submitted by the Subcontractor. These reports should contain the following information:

- Letter report with identification of tank(s) removed, describing method of destruction (scrapping) or other approved disposition of USTs.

Records to be submitted will consist of the following:

- Building or inspection permits and other permits necessary for underground tank removal.
- Tank disposal paperwork such as the UST Removal Notification Form and the method used for conditioning the tank for disposal in accordance with FAC 62-761.900(6).
- A copy of PSSSC contractor's license.

5.0 MATERIALS

5.1 PLASTIC SHEETING

Plastic sheeting used during the excavation, removal, storage, and transportation of excavated soil, tanks, and piping will conform to ASTM D 4397 specifications.

6.0 EQUIPMENT

The Subcontractor shall maintain sufficient equipment, materials, parts, tools, and supplies to meet the requirements of the work. Excavation equipment shall be subject to inspection by Bechtel and, if deemed unsatisfactory, shall be removed from the site and replaced by satisfactory equipment.

7.0 FIELD OPERATIONS

7.1 TRAINING

Prior to starting any onsite work, an onsite safety and health training class shall will be conducted by Bechtel to discuss the implementation of the Site Safety and Health Plan. The class will discuss activities which are to be followed during the actual site work in accordance with the Site Safety and Health Plan as well as other training requirements as deemed appropriate by Bechtel.

7.2 HEALTH AND SAFETY PROCEDURES

Onsite activities must conform to health and safety guidelines and site specific standards identified in the site specific Safety and Health Plan. These standards include but are not limited to:

OSHA 29 CFR 1910	Occupational Safety and Health Regulations for General Industry
OSHA 29 CFR 1910.120	Hazardous Waste Operations and Emergency Response
OSHA 29 CFR 1910.146	Permits Required for Confined Spaces
OSHA 29 CFR 1926	Occupational Safety and Health Regulations for Construction

7.3 TANK CONTENTS REMOVAL

Liquid tank contents at the time of removal will be considered contaminated or waste fuel. Remaining liquid, if any, will be pumped from its respective tank into either 55-gal drums or other suitable containers for disposal in accordance with local, state, or federal guidelines. All drums, tanks, or other containers used to store removed fuel or waste sludge and residue will be properly marked in the field. An example for identifying drums or tanks used to store waste material is provided below.

Drum or Tank No.	Product	Hazardous Waste, Status, Type, and Basin Known
1	MOGAS	Sludge and sandblasted residue

7.4 EXCAVATION

The Subcontractor must notify the Bechtel Site Superintendent at least 48 hr prior to beginning any tank removal work. Operations shall be staged to minimize the time the tank excavation is open and the time that contaminated soil is exposed to weather. Excavation will be performed in accordance with Technical Specification 22567-001-SP000-005, "Contaminated Earthwork and Miscellaneous Demolition" and Technical Specification 22567-001-SP000-006, "Uncontaminated Earthworks."

7.4.1 Excavation Procedures

Prior to beginning excavation, the Department of Public Works or other appropriate agencies shall be notified to determine the location of any subgrade utilities which may affect the excavation, and obtain any required permits.

The Fire Marshall or other local fire protection authority shall be notified at least 3 days before beginning excavation.

The Subcontractor shall excavate as required around the tanks and piping as necessary for removal. Excavated soil will be placed within a temporary containment area as described in Section 7.5. Excavated soils will be monitored onsite using a Flame Ionization Detector (FID) to determine the presence or absence of petroleum compounds above the allowable levels according to local, state, and federal guidelines. Excavation shall be classified as contaminated earth work unless otherwise specified by Bechtel.

The sequence for excavation shall consist of the following:

- Perform required notifications.
- Define the exclusion zones per the site safety and health plan.
- Perform initial excavation to indicated lines as indicated on engineering drawings.
- Continue excavation as directed by Bechtel. Excavation is to consist of removing only that soil which is deemed necessary to remove the underground tanks and associated lines unless otherwise directed by Bechtel.
- Cease excavation upon direction of Bechtel or upon encountering unexpected conditions.
- Periodically load and transport, and segregate if necessary, the excavated material to the predetermined temporary containment area as directed by Bechtel.

The Subcontractor is responsible for selecting methods and equipment to remove soil to minimize disturbance to areas beyond the limits of the excavation area. Material that becomes contaminated as a result of the contractor's negligence shall be removed and disposed of at no additional cost to the Government or Bechtel. Where excavation extends into groundwater, dewatering methods will be employed on a localized basis to facilitate excavation operations with prior approval of Bechtel. Water generated by dewatering during excavation required for removal of tanks or piping, surface water collected in open excavation, or water used for washing bituminous surfaces shall be collected and tested as described in Section 8.0. Disposal of water which contains levels of contaminants above the locally acceptable levels shall be disposed of in accordance with all local, state, or federal guidelines. Water that is determined not to be contaminated will be disposed of onsite in accordance with all applicable local, state, and federal regulations.

7.5 TEMPORARY CONTAINMENT OF EXCAVATED SOIL

During excavation, the Subcontractor is to provide temporary containment of excavated soil. The temporary containment area will be located within close proximity of the excavation area. The

excavated soil is to be placed on 20-mil or heavier polyethylene sheeting which will be draped over a perimeter berm built of straw bales. At the completion of each work day, the excavated soil shall be covered with 6-mil or heavier polyethylene sheeting. The edges will be secured to keep the polyethylene sheeting in place. The Subcontractor may submit an alternative plan for temporary containment of excavated soil, however, this plan must be in accordance with Navy requirements and local, state, and federal guidelines and is subject to approval by Bechtel.

7.6 CONTAMINATION CONTROL

Dust generated during construction shall be controlled by water spraying with potable water or other approved methods.

7.7 DECONTAMINATION

Equipment that has been in contaminated areas shall be decontaminated. The decontamination facility shall be used only for light and final decontamination and not for operations that would require gross decontamination (i.e., removal of most visible materials by scrapers, brushes, etc). Gross decontamination, if required, will be conducted as part of the specified earthwork at the area where trucks are loading or unloading. Decontamination shall be repeated as required.

7.8 REMOVAL OF UNDERGROUND STORAGE TANKS AND ASSOCIATED PIPING

7.8.1 Preparation

Tank and dispenser line removal will be performed in accordance with API RP 1604 as well as applicable local or State agency requirements.

Prior to removal of the tank, remove the fill pipe, gage pipe, vapor recovery truck connection, submersible pumps, and drop tube. Cap or remove non-product piping, except vent piping. Plug tank openings so that vapors will exit through vent piping during the vapor freeing process (API Publication 2015). Product lines are to be drained back into the tanks prior to removal. After lines have been drained they will be capped prior to removal.

7.8.2 Purging

Remove flammable vapors in accordance with API Publication 2015. Tanks shall be verified as "vapor free" prior to further work. Oxygen content must be 19.5 percent or greater; gas content cannot be greater than 20 percent of the lower explosive limit and no toxic materials can be present.

7.8.3 Cleaning and Testing

Cleaning and tank atmosphere testing shall be in accordance with API Publication 2015. Distribution piping shall be cleaned and removed. The tank atmosphere and excavation area must

be monitored for flammable or combustible vapor concentrations, with a combustible gas indicator until the tank is removed from the excavation and from the site.

7.8.4 Tank Removal

Prior to removing the tank, plug or cap accessible holes. One plug shall have a minimum 1/8-in. vent hole. Excavate around the tank to uncover it for removal. Remove the tank from the excavation and place it on a level surface and render it useless in accordance with API Publication 1604. Provide warning labels on a tank that has contained leaded fuels. After the tank has been made unusable for future use, transport and dispose of the tank in accordance with all local, state, or Federal guidelines deemed applicable.

7.9 SPILLS OF CONTAMINATED SOILS

Use appropriate vehicles and operating practices to prevent spillage or leakage of contaminated materials from occurring during operations. Vehicles leaving the area are to be inspected to ensure that no contaminated materials adhere to the wheels or undercarriage.

7.10 SECURITY

When applicable and practical, as determined by Bechtel, work areas will be secured using barriers (e.g., rope, snow fence, chain link fence, etc.) to prevent inadvertent entry to work areas and exclusion zones.

7.11 BACKFILL

The Subcontractor is to provide backfill, compaction, and grading of the area in accordance with Technical Specification 22567-001-SP000-006, "Uncontaminated Earthwork."

8.0 SAMPLING AND ANALYSIS

Soil and groundwater samples associated with UST removal will be collected and analyzed in accordance with FAC 62-761, 62-762, and 62-775, unless otherwise directed by Bechtel. When UST removals are performed as part of an approved cleanup program (IRA, CAR, RAP, RA, etc.) the sampling and analysis requirements may be modified in the site specific scope of work.

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APPENDIX C

**TECHNICAL SPECIFICATION FOR
UNCONTAMINATED EARTHWORK**

0015659

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION

STANDARD SPECIFICATION
FOR
UNCONTAMINATED EARTHWORK

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PART 1.0 GENERAL

1.1 SCOPE

Perform excavation of uncontaminated materials.

1.2 WORK INCLUDED

- 1.2.1 Furnishing labor, materials, tools and equipment.
- 1.2.2 Installing and maintaining dust, sediment and erosion control.
- 1.2.3 Performing soil testing
- 1.2.4 Providing shoring as needed.
- 1.2.5 Securing area (temporary barriers) as needed.
- 1.2.6 Excavating and backfilling uncontaminated material.

1.3 RELATED WORK NOT INCLUDED

- 1.3.1 Establishing limits of excavation and backfill.
- 1.3.2 Clearing and grubbing is included in Technical Specification 001-SP000-002.

1.4 REFERENCED CODES AND STANDARDS

Unless otherwise specified or shown, the latest edition of the following Codes and Standards at the time of bid shall apply to the extent indicated herein.

1.4.1 American Society for Testing and Materials (ASTM)

- ASTM D 1556 Density of Soil In-Place by the Sand-Cone Method
- ASTM D 1557 Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb (4.54-kg) Rammer and 18-in. (457-mm) Drop
- ASTM D 2167 Density and Unit Weight of Soils In-Place by the Rubber Balloon Method
- ASTM D 2216 Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures
- ASTM D 2487 Classification of Soils for Engineering Purposes
- ASTM D 2922 Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth)

- ASTM D 3017 Water Content of Soil and Rock In-Place by Nuclear Methods (Shallow Depth)
- ASTM D 4253 Maximum Index Density of Soils Using a Vibratory Table
- ASTM D 4254 Minimum Index Density of Soils and Calculation of Relative Density
- ASTM D 4318 Liquid Limit, Plastic Limit, and Plasticity Index of Soils

1.4.2 Occupational Safety and Health (OSHA)

- 29 CFR 1910 Occupational Safety and Health Regulations for General Industry
- 29 CFR 1926 Occupational Safety and Health Regulations for Construction

1.5 SUBMITTALS

Not all submittals defined herein may be required. Only engineering document requirements as summarized in Exhibit F (Attachment A), "Subcontractor Submittal Requirements Summary" (SSRS), shall apply. Submittals identified shall meet the detailed requirements herein. Bechtel will determine if documentation is complete as submitted and reserves the right to require the resubmittal of any submittals that do not meet specified requirements.

1.5.1 Testing Reports

Submit two unbound copies of testing results, including calibration curves and calibration results within 24 hours of conclusion of physical tests.

1.5.2 Testing Laboratory Certifications and Qualifications

Submit qualifications and requested certifications of the commercial testing laboratory. Include resumes of key personnel, client references from previous work of similar scope and laboratory capabilities.

1.5.3 List of Equipment

Submit a list of equipment proposed for use. Include type, size, and rating of equipment proposed to be used. For compactive rollers, include the weight, drum, or wheel size and cleat size, if any.

1.5.4 Onsite Borrow Pit Operations

Submit proposed operations plans for any onsite borrow pit(s). Include proposed procedures and plans for control of water, erosion and dust, access road construction and maintenance, and borrow excavation. Bechtel will provide the information on onsite borrow pit location and available test reports on the borrow material.

1.5.5 Offsite Borrow Pit Operations

Submit proposed offsite borrow information to include: borrow pit location and address, owner's name and state permit/licensing number, and the ASTM test reports required to satisfy the requirements listed in the "2.0 PRODUCTS" section of this specification.

1.5.6 Aggregate Source

Submit proposed offsite aggregate source information to include aggregate source location and address, owner's name and state permit/licensing number, and ASTM test reports required to satisfy the requirements listed in the "2.0 PRODUCTS" section of this specification.

1.5.7 Protection of Existing Foundations

Submit proposed modifications to protect existing foundations in accordance with this specification.

1.5.8 Shoring Design and Calculations

Submit proposed shoring design and engineering calculations or alternate slope protection measures in accordance with Subpart P, OSHA 29 CFR 1926. Design shall be signed and stamped by a Professional Engineer licensed in the state where the work is performed.

1.5.9 Soils Laboratory Test Results

Submit soil classification test results and relative density or compaction curve test results, as appropriate.

1.5.10 Drainage Design

Submit proposed drainage design prior to drainage system construction not indicated on engineering drawings. Design shall be signed and stamped by a Professional Engineer licensed in the state where the work is performed.

1.5.11 Excavation Daily Inspections

Submit daily inspections of the excavation areas in accordance with OSHA 29 CFR 1910 and 1926 prior to commencing work each day.

1.5.12 Shoring Inspector

Submit resume of the shoring inspector to be provided for bid evaluation. Inspector shall be qualified in accordance with Subpart P, OSHA 29 CFR 1926.

1.5.13 Professional Engineer's License

Submit copy of Professional Engineer's license for bid evaluation (for the state where work is performed) for Professional Engineer(s) used for the shoring and drainage designs.

1.6 QUALITY STANDARDS

Perform the work and control the quality of items and services to meet the requirements of this specification, subcontract documents, and applicable codes and standards.

1.7 DEFINITIONS

1.7.1 Unstable Material

Materials too weak, as determined by Bechtel, to properly support the utility pipe, conduit or appurtenant structure.

1.7.2 Rock

Material that (1) measures approximately 1/2 cubic yard or more and cannot be removed without systematic drilling and blasting, such as rock material in ledges, bedded deposits, unstratified masses, and conglomerate deposits or (2) is below-grade concrete or masonry structures, exceeding 1/2 cubic yard in volume and greater than 9 in. in thickness. Asphaltic or portland cement pavements is not considered rock.

PART 2.0 PRODUCTS

2.1 BACKFILL

2.1.1 General

Cohesive or cohesionless well-graded materials free of contamination, trash, debris, roots or other organic matter, frozen material, stones, or other material larger than 3 in. in any dimension, with a plasticity index (PI) \leq 20.

2.1.2 Structural

Structural fill shall meet the requirements of general fill (Section 2.1.1) but shall have a PI of \leq 15.

2.2 BEDDING MATERIALS

Bedding material shall consist of well-graded sand, gravel, or slag composed of hard, tough, and durable particles and shall contain not more than 10 percent by weight of material passing a No. 200 sieve and no less than 95 percent by weight, passing the 1-in. sieve or the maximum size recommended by the pipe manufacturer, whichever is smaller.

Bedding materials shall be free from rocks 2 in. or larger in any dimension or free from rocks of such size as recommended by the pipe manufacturer, whichever is smaller. Bedding material, for pipes coated or wrapped for corrosion protection, shall be free of stones larger than 1 in. in any dimension, or as recommended by the pipe manufacturer, whichever is smaller.

2.3 AGGREGATE BASE

Aggregate base shall be in accordance with state transportation requirements.

2.4 TEMPORARY SEDIMENT BARRIERS

Materials used for sediment barriers shall consist of straw bales, hay bales, geotextile filter fabric made expressly for use as a silt screen, or other materials approved by Bechtel prior to their use. Straw and hay bales shall not be used for permanent sediment barriers unless approved by Bechtel.

2.4.1 Baled hay or straw shall be laid end to end such that no gap exists between bales. Reinforcing bars shall be #4 bar and a minimum of 2½ ft long.

2.4.2 Filter fabric shall be a material made expressly for the purpose of sediment control such as Exxon GTF 101S Silt Screen or approved equal.

2.5 EROSION CONTROL BLANKETS

Erosion control blankets shall be Curlex Blankets manufactured by American Excelsior Company or approved equal.

2.6 PLASTIC MARKING TAPE

Plastic marking tape shall be of a type specifically manufactured for marking and locating underground utilities. It shall contain acid- and alkali-resistant polyethylene film and integral wires, foil backing, or other means to enable detection by a metal detector when the tape is buried in soil up to 3 ft deep. The metallic core of the tape shall be encased in a protective jacket or provided with other metallic core type to protect it from corrosion. The plastic marking tape shall have the following properties:

<u>Properties</u>	<u>Value</u>
Thickness (min.)	0.004-in.
Width	6-in.
Strength (min.)	
lengthwise	1750 psi
crosswise	1500 psi

<u>Properties</u>	<u>Value</u>
Color	Utility line type
Red	Electric
Yellow	Gas, Oil, Dangerous materials
Orange	Telephone, Telegraph, Television, Police, Fire, Communication
Blue	Water
Green	Sewer

PART 3.0 EXECUTION

3.1 PRE-EARTHWORK EVALUATION

Prior to performing any earthwork, examine the work area to identify pre-existing conditions (e.g. overhead power lines, access, etc.) that could impact the performance and completion of work. Bechtel will provide available information on the location of underground utilities. Verify these locations, provide structural support to utility lines, and coordinate inspection with and provide support to utility companies. Unless directed otherwise, the services of all underground utilities encountered during any earthwork shall be restored to their original condition. Applicable permits shall be obtained prior to commencing work unless directed otherwise.

3.2 EROSION AND SEDIMENT CONTROL

Temporary sediment barriers shall be installed in accordance with the subcontract documents and maintained during construction until permanent sediment barriers are in place.

Erosion and sediment shall be controlled by the following techniques subject to Bechtel review on a case-by-case basis:

- covering with synthetic liner material
- covering with uncontaminated soil material
- sediment barriers

3.3 DUST CONTROL

Dust shall be controlled by the following techniques subject to Bechtel review on a case-by-case basis:

- wetting with water
- wetting with a synthetic dust suppressant
- establishing temporary vegetative cover
- compaction
- sealing by rolling with a smooth drum

3.4 DRAINAGE, DEWATERING, AND STREAM DIVERSION

3.4.1 Drainage

Surface water shall be directed away from excavation and construction areas. Diversion ditches, check dams, dikes, and/or grading shall be developed and maintained during construction.

Excavated slopes and backfill surfaces shall have a minimum 3% slope to promote runoff and shall be protected from erosion and sloughing. Excavation slopes shall conform to Subpart P, "Excavation, Trenching, and Shoring," of OSHA 29 CFR 1926.

3.4.2 Dewatering

Unless noted otherwise, all excavations shall be kept in a dewatered condition. Groundwater flowing toward or into excavations shall be controlled to prevent sloughing of excavation slopes and walls; boils, uplift, and heave in the excavation; and to eliminate any interference with excavation progress.

3.4.3 Stream Diversion

Stream diversion(s) shall be developed as shown on the engineering drawings or Scope of Work.

3.5 BLASTING

Blasting is not permitted.

3.6 EXCAVATION

3.6.1 General

Excavation shall conform to the lines, grades, and depths identified on the engineering drawings or Scope of Work, and field-verified by Bechtel in accordance with OSHA regulations. Excavated areas shall be maintained in a clean condition, free from leaves, brush, trash and other debris. They shall be inspected and documented daily, prior to commencing work, in accordance with OSHA 29 CFR 1910 and 1926.

3.6.2 Shoring

Shoring, including temporary sheet piling, shall be furnished and installed as necessary to protect workers, slopes, adjacent paving, structures, and utilities. Shoring, bracing, and sheeting shall be removed as excavations are backfilled to prevent cave-ins. Alternate methods (e.g. benching, sloping, trench boxes, etc.) may be used where applicable. They shall be developed in accordance with Subpart P, OSHA 29 CFR 1926.

3.6.3 Foundation Excavation

Excavations shall extend a sufficient distance from walls and footings to allow for placement and removal of forms. Excavation to final grade shall be performed within 48 hours of subsequent concrete placement. Only excavation methods that will leave the foundation soils in a solid condition shall be used. Excavation shall be inspected and approved by Bechtel prior to placement of rebar.

3.6.4 Utility Excavation

Trench Excavation

Trench walls below the top of utility lines (pipe or conduit) shall be sloped or made vertical as recommended by the manufacturer. Installation shall be in accordance with OSHA 2207. Trench walls more than five ft deep shall be shored, cut back to a stable slope at least equal to the angle of repose, or provided with equivalent means of protection for employees who may be exposed to moving ground or cave-in. Special considerations shall be given to slopes that may be adversely affected by construction erosion or sloughing. Remove and handle any additional material caused by erosion or sloughing.

Excavation Widths

The trench width below the top of pipe shall not exceed 24 in. plus pipe or conduit outside diameter (O.D.) for pipes or conduits of less than 24 in. inside diameter (I.D.), and 36 in. plus pipe O.D. for pipes larger than 24 in. I.D. Where recommended trench widths are exceeded, redesign a stronger pipe or conduit, or utilize special installation procedures.

Rock

Rock in either ledge or boulder formation shall be replaced with suitable materials to provide a compacted earth cushion having a thickness between unremoved rock and the pipe or conduit of at least 9 in. Where bell-and-spigot pipe or slip-jointed conduit is used, the cushion shall be maintained under the joint as well as under the straight portion of the pipe or conduit. Rock faces shall be cleaned of loose debris and cut to a firm surface either level, stepped, or serrated, as shown on the engineering drawings or as directed by Bechtel. Loose disintegrated rock and thin strata shall be removed.

Appurtenances

Excavation for manholes, catch basins, inlets or similar structures shall be sufficient to leave at least 12 in. clear between outer structure surfaces and the face of the excavation or support members. Removal of unstable/unyielding material (e.g., loose disintegrated rock and thin strata, etc.) shall be removed as specified herein. When concrete or masonry is to be placed in an excavated area, special care shall be taken not to disturb the bottom of the excavation.

Trench Bottoms

Trench bottoms shall be accurately graded to provide uniform bearing and support for the bottom quadrant of each section of pipe.

Replacement of Unstable/Unyielding Material

Where unstable and/or unyielding material is encountered in the trench bottom, such material shall be removed as required herein or as directed by Bechtel and replaced with bedding material.

3.7 OVEREXCAVATION

Overexcavation shall be backfilled to design grade with general backfill and compacted to a density equal to or greater than that required for the subsequent fill material.

3.8 DITCHES, GUTTERS, AND CHANNELS

Ditches, gutters, and channel changes shall be cut accurately to the cross sections and grades indicated on the engineering drawings or as directed by Bechtel. All roots, stumps, rock, and foreign matter in the sides and/or bottom of ditches, gutters, and channel changes shall be trimmed and dressed or removed to conform to the slope, grade and shape of the section indicated.

3.9 STOCKPILING

Excavated material satisfying the requirements for backfill in this specification shall be either transported and placed in designated fills or stockpiled at onsite locations as determined by Bechtel. All materials to be stockpiled shall be placed in areas that have been cleared and grubbed.

Stockpiles shall be kept in a neat and well-drained condition. Excavated backfill material and unsatisfactory materials shall be stockpiled separately. Stockpiles of satisfactory materials shall be protected from contamination. If the material in the stockpile becomes unsatisfactory for use as backfill such material shall be removed and replaced with satisfactory material from sources approved by Bechtel.

3.10 SUBGRADE PREPARATION

Subgrades in structural areas shall be proof-rolled prior to placement of fill. Unsatisfactory material identified by proof-rolling shall be removed and replaced with general backfill and compacted in accordance with this specification.

Subgrades and compacted lifts for backfills shall be either scarified 2 in. prior to placement of the subsequent lift or compacted by sheepsfoot roller or similar equipment designed to compact the lift from the bottom to the top.

3.11 BORROW AND AGGREGATE SOURCES

Unless directed otherwise, borrow material shall be obtained from onsite areas designated by Bechtel. Borrow areas shall be cleared, grubbed, disposed of debris, and surface water flow and erosion controlled. This work shall be considered operation related to onsite borrow excavation and shall be performed in accordance with this specification. If directed by Bechtel, the borrow and/or aggregate sources shall be identified and certification provided to Bechtel that the borrow/aggregate materials meets the requirements of this specification and transport material to the fill area. No offsite borrow and/or aggregate shall be brought onsite without prior written approval by Bechtel.

3.12 BACKFILLING

3.12.1 General

General backfill shall be used for bringing fill and excavations to the lines and grades identified by Bechtel, and for replacing unsatisfactory subgrade materials. Compaction shall be accomplished by rollers and other equipment accepted by Bechtel suited to the type of material being compacted. Backfill shall be placed in horizontal layers not exceeding 8 in. in loose thickness when using conventional compaction equipment or 6 in. when using hand-operated compaction equipment. Backfill shall not be placed on unsatisfactory materials.

3.12.2 Placement and Compaction Requirements

Compacted subgrades damaged during performance or work shall be repaired to the required density prior to further construction at no expense to Bechtel. Each lift shall be moisture conditioned or aerated as necessary and compacted to not less than the percentage of maximum density specified below:

- The relative compaction (RC) and relative density (RD) of pipe or conduit bedding material shall be 90 percent and 70 percent respectively.
- In unpaved areas, general backfill shall be used and compacted to 85 percent RC and 50 percent RD.
- In areas to receive structures, general backfill shall be placed to 2 ft below footing depth and compacted to 90 percent RC, 70 percent RD. Structural fill, placed at 95 percent RC, 80 percent RD shall be used in the top 2 ft.
- In areas to receive paving, general backfill shall be placed to 6 in. below subgrade elevation, and compacted to 90 percent RC, 70 percent RD. Structural fill, placed at 95 percent RC, 80 percent RD shall be used in the top 6 in.

Backfilling adjacent to structures shall be placed and compacted uniformly to prevent wedging action or eccentric loading upon or against the structure. Backfill shall not be placed against concrete or masonry foundation wall prior to 7 days after completion of the walls.

Additional Requirements for Trench Backfilling

Damaged pipes, conduits, culverts, or storm drains damaged from the performance of work shall be repaired or replaced at no expense to Bechtel.

Bedding material shall be in accordance with Part 2, "Products." Care shall be taken to ensure the bedding under the haunches of the pipe or conduit are compacted. The bedding shall be placed and compacted with approved tampers to a height of 1 ft above the utility line or as specified on the engineering drawings or as directed by Bechtel. The bedding surface for the line shall provide a firm foundation of uniform density throughout the entire length of the line. The joints and/or couplings shall be left uncovered during pressure tests.

Final backfill shall not be placed above the top of the pipe or conduit until all tests are satisfactorily performed. The remainder of the trench shall be filled with general or structural backfill and compacted to grade in accordance with this specification.

Manholes, catch basins, inlets, or similar structures shall be placed in such a manner that the structure will not be damaged by the shock of falling earth while backfilling. Backfill material shall be deposited and compacted as specified for final backfill and shall be brought up evenly, as practical, on all sides of the structure to prevent eccentric loading and stress.

Plastic marking tape as specified in Part 2, "Products," shall be installed 18 in. directly above the utility line.

3.13 AGGREGATE BASES

Aggregate bases shall be constructed under pavements and placed directly on the subgrade. The aggregate base shall be placed in 4-in. lifts and compacted with a minimum of two passes of a hand-operated plate-type vibratory compactor or equivalent compactive effort. The material shall be compacted to 95 percent RC.

3.14 FINISH GRADING

Graded areas shall be constructed true-to-grade, shaped to drain, and maintained free of trash and debris until final inspection is completed and the work is accepted. The embankment and excavation surfaces shall be finished to a smooth and compact surface in accordance with the lines, cross-sections or elevations and grades shown on the engineering drawings. Unless indicated otherwise, tolerances for graded areas shall be ± 0.1 ft.

3.15 PROTECTION OF WORK

Settlement or erosion that occurs in backfilled, filled, graded, or topsoiled areas prior to acceptance of the work shall be repaired to the required conditions at no expense to Bechtel.

3.16 SECURITY

When necessary and practical, as determined by Bechtel, work areas shall be secured using barriers (e.g., rope, snow fence) to prevent inadvertent entry to work areas.

3.17 QUALITY CONTROL AND VERIFICATION

- 3.17.1 Testing shall be performed by a commercial testing laboratory approved by Bechtel. Verification that the placement of backfill meets the requirements of this specification shall be submitted via testing reports. Testing shall be considered part of earthwork.
- 3.17.2 Test results shall be submitted for review prior to placement of the next lift above that area.
- 3.17.3 Table 3-1 shows the tests to be performed, test specifications, and test frequencies to verify that the backfill meets specification requirements. Additional tests shall be performed if the material or compaction requirements of this specification are not met.

Table 3-1
 Backfill Testing Specifications

<u>Test Name</u>	<u>Test Specification</u>	<u>Test Application</u>	<u>Test Frequency</u>
Moisture-Density Relation	ASTM D 1557 or ASTM D4253 and ASTM D 4254	Each type of material or source of material to determine optimum moisture and laboratory maximum density values	a) one representative test per 2,000 cy of fill and backfill or when any change in material occurs that may affect the optimum moisture content or laboratory maximum density.
In-Place Moisture Content and In-place Density	ASTM D 3017 ASTM D 2216 ASTM D 2922 ASTM D 1556 or ASTM D 2167	ASTM D 3017 is for determining moisture content of soil backfill. ASTM D 2216 is for checking accuracy of ASTM D 3017 ASTM D 2922 is for determining field in-place density (see Note 1 under "Test Frequency"). ASTM D 1556 or ASTM D 2167 are for checking accuracy or ASTM D 2922.	a) one test per 20,000 sf or one test per lift, whichever is greater, for general backfill areas compacted by other than hand or hand-operated machines. b) one test per 10,000 sf or minimum of one test per lift, whichever is greater, for general backfill areas compacted by hand or hand-operated machines. c) one test per 2,000 sf or minimum of two tests per lift, whichever is greater, for structural backfill areas compacted by other than hand-operated machines. d) one test per 1,000 sf or minimum of two tests per lift, whichever is greater, for structural backfill areas compacted hand-operated machines. e) one test per each area less than 1,000 sf or one test for each 100 lf of length, whichever is greater, for trenches, pits, building perimeters, or other structures or areas less than 10 ft in width and compacted by hand-operated machines.

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Table 3-1
Backfill Testing Specifications (continued)

<u>Test Name</u>	<u>Test Specification</u>	<u>Test Application</u>	<u>Test Frequency</u>
Accuracy Tests			<p>Accuracy Test: One ASTM D 2216 test for every ten ASTM D 3017 tests performed.</p> <p>Accuracy Test: One ASTM D 1556 of ASTM D 2167 test for every 20 ASTM D 2922 tests performed.</p> <p>Note 1: The calibration curves for ASTM D 2922 shall be checked and adjusted per ASTM D 2922, "Adjusting Calibration Curve". Both the calibration curves furnished with the moisture gauges and density calibration curves shall also be checked per ASTM D 3017. Calibration checks of the density and moisture gauges shall be made at the beginning of a job on each different type of material encountered and at the beginning and end of each day that the equipment is used.</p>

APPENDIX D

**TECHNICAL SPECIFICATION FOR
CONTAMINATED EARTHWORK AND
MISCELLANEOUS DEMOLITION**

015659

DEPARTMENT OF THE NAVY

SOUTHERN DIVISION

TECHNICAL SPECIFICATION

FOR

CONTAMINATED EARTHWORK AND MISCELLANEOUS DEMOLITION

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PART 1 GENERAL

1.1 SCOPE

This Specification provides the technical requirements for the excavation of contaminated material and miscellaneous demolition. Not all work defined herein is necessarily required; reference is directed to the Scope of Work and engineering drawings for specific services required.

1.2 WORK INCLUDED

- 1.2.1 Furnishing labor, materials, tools and equipment.
- 1.2.2 Installing and maintaining dust, sediment and erosion control.
- 1.2.3 Demolishing existing concrete and asphalt surfaces.
- 1.2.4 Providing shoring as needed.
- 1.2.5 Securing area (temporary barriers) as needed.
- 1.2.6 Excavating contaminated material.
- 1.2.7 Decontaminating subcontractor-supplied equipment.

1.3 WORK NOT INCLUDED

- 1.3.1 Establishing limits of excavation.
- 1.3.2 Sampling and testing excavated material.
- 1.3.3 Backfilling
- 1.3.4 Treating contaminated material.
- 1.3.5 Loading and transporting contaminated material.
- 1.3.6 Clearing and grubbing is included in Technical Specification 001-SP000-002.
- 1.3.7 Operations of decontamination facility, other than that required for subcontractor equipment decontamination.

1.3.8 Temporary storage/placement of contaminated material.

1.3.9 Disposal of decontamination water.

1.4 REFERENCED CODES AND STANDARDS

Unless otherwise specified or shown, the latest edition at the time of bid of the following Codes and Standards shall apply to the extent indicated herein:

OCCUPATIONAL SAFETY AND HEALTH (OSHA)

29 CFR 1910 Occupational Safety and Health Regulations for General Industry

29 CFR 1926 Occupational Safety and Health Regulations for Construction

The Subcontractor shall comply with all federal, state, local, and facility codes and standards applicable to the propose work.

1.5 SUBMITTALS

Not all submittals defined herein may be required. Only engineering document requirements as summarized in Exhibit F (Attachment A), "Subcontractor Submittal Requirements Summary" (SSRS), shall apply. Submittals identified shall meet the detailed requirements defined herein. Bechtel will determine if documentation is complete as submitted and reserves the right to require the resubmittal of any submittals that do not meet specified requirements.

1.5.1 Equipment List

Submit list of equipment for use in contaminated earthwork. The list shall include the type, size, and rated capacity of the equipment proposed.

1.5.2 Drainage, Dewatering, and Stream Diversion Design

Submit proposed drainage, dewatering, and stream diversion design prior to construction not indicated on engineering drawings. Design shall be signed and stamped by a Professional Engineer licensed in the state where the work is performed.

1.5.3 Shoring Design and Calculations

Submit proposed shoring design and engineering calculations or alternate slope protection measures in accordance with Subpart P, OSHA 29 CFR 1926. Design shall be signed and stamped by a Professional Engineer licensed in the state where the work is performed.

1.5.4 Excavation Daily Inspections

Submit daily inspections of the excavation areas in accordance with OSHA 29 CFR 1910 and 1926 prior to commencing work each day.

1.5.5 Shoring Inspector

Submit name and resume of the shoring inspector to be provided for bid evaluation. Inspector shall be qualified in accordance with OSHA 29 CFR 1926, Subpart P.

1.5.6 Professional Engineer's License

Submit copy of Professional Engineer's license for bid evaluation (for the state where work is performed) of Professional Engineer(s) used for the shoring and drainage designs.

1.5.7 Alternate Methods

Submit copy of alternate shoring method when applicable at least one week prior to use. Design shall be signed and stamped by a Professional Engineer licensed in the state where the work is performed.

1.5.8 Temporary Decontamination Facility Plan

Submit plans for a temporary decontamination facility at least one week prior to mobilization.

1.5.9 Sediment Barriers

Submit copy of materials and plan for sediment barriers prior to use.

1.5.10 Erosion Control Blankets

Submit product data sheet for erosion control blankets prior to use.

1.6 QUALITY STANDARDS

Perform the work and control the quality of items and services to meet the requirements of this specification, subcontract documents, and applicable codes and standards.

PART 2 PRODUCTS

2.1 SEDIMENT BARRIERS

Materials used for sediment barriers shall consist of straw bales, hay bales, geotextile filter fabric made expressly for use as a silt screen, or other materials approved by Bechtel prior to their use. Straw and hay bales shall not be used for permanent sediment barriers unless approved by Bechtel.

2.1.1 Baled hay or straw shall be laid end to end such that no gap exists between bales. Reinforcing bars shall be #4 bar and a minimum of 2½ feet long.

2.1.2 Filter fabric shall be a material made expressly for the purpose of sediment control such as Exxon GTF 101S Silt Screen or approved equal.

2.2 EROSION CONTROL BLANKETS

Erosion control blankets shall be Curlex Blankets manufactured by American Excelsior Company or approved equal.

PART 3 EXECUTION

3.1 PRE-EARTHWORK EVALUATION

Prior to performing any earthwork, examine the work area if possible depending on the site conditions as determined by Bechtel, to identify pre-existing conditions (e.g. overhead power lines, access, etc.) that could impact the performance and completion of work. Bechtel will provide available information on the location of underground utilities. Verify these locations, provide structural support to utility lines, and coordinate inspection with and provide support to utility companies. Unless directed otherwise, the services of all underground utilities encountered during any earthwork shall be restored to their original condition. Applicable permits shall be obtained prior to commencing work unless directed otherwise.

3.2 EROSION AND SEDIMENT CONTROL

3.2.1 Potentially contaminated material shall be prevented from being eroded or transported into an uncontaminated area or an area with a lower level of contamination.

3.2.2 Temporary sediment barriers shall be installed in accordance with the subcontract documents and maintained during construction until permanent sediment barriers are in place.

3.2.3 Erosion and sediment shall be controlled by the following techniques subject to Bechtel review on a case-by-case basis:

- covering with synthetic liner material
- covering with uncontaminated soil material
- sediment barriers

3.3 DUST CONTROL

Dust shall be controlled by the following techniques subject to Bechtel review on a case-by-case basis:

- wetting with water
- wetting with a synthetic dust suppressant
- establishing temporary vegetative cover compaction
- sealing by rolling with a smooth drum
- maintaining slopes of exposed surfaces within defined limits

3.4 DRAINAGE, DEWATERING, AND STREAM DIVERSION

3.4.1 Drainage

Surface water shall be directed away from excavation and construction areas. Diversion ditches, check dams, dikes, and/or grading shall be developed and maintained during construction.

Excavated slopes and backfill surfaces shall have a minimum 3 percent slope to promote runoff and shall be protected from erosion and sloughing. Excavation slopes shall conform to Subpart P, "Excavation, Trenching, and Shoring," of OSHA 29 CFR 1926.

3.4.2 Dewatering

Unless noted otherwise, all excavations shall be kept in a dewatered condition. Groundwater flowing toward or into excavations shall be controlled to prevent sloughing of excavation slopes and walls; boils, uplift, and heave in the excavation; and to eliminate any interference with excavation progress. Water, which has come in contact with contaminated material, shall be collected and transported to an offsite location, which is not within the scope of this specification.

3.4.3 Stream Diversion

Stream diversion(s) shall be developed as shown on the engineering drawings or Scope of Work, and maintained to prevent the spread of contamination.

3.5 BLASTING

Blasting is not permitted.

3.6 EXCAVATION

3.6.1 General

Excavation shall conform to the lines, grades, and depths identified on the engineering drawings or Scope of Work, and field-verified by Bechtel. Excavated areas shall be maintained in a clean condition, free from leaves, brush, trash and other debris. They shall be inspected and documented daily in accordance with OSHA 29 CFR 1910 and 1926 prior to commencing work.

Rocks, 6 inches or greater in any dimension, shall be separated from the soil and cleaned of most soil material by scrapers, brushes, etc. These rocks shall be left in the excavation area.

3.6.2 Contamination Control

Excavation shall be performed such that the spread of contamination is prevented. Unless indicated otherwise, the cutting edge of the excavator(s) shall be toothless and the excavation performed in the direction of surface run-off (i.e., from high to lower elevation). Contamination spread through the improper execution of the subcontract documents shall be cleaned up to the satisfaction of Bechtel at no expense to Bechtel.

3.6.3 Shoring

Shoring, including temporary sheet piling, shall be furnished and installed as necessary to protect workers, slopes, adjacent paving, structures, and utilities. Shoring, bracing, and sheeting shall be removed as excavations are backfilled to prevent cave-ins. Alternate methods (e.g. benching, sloping, trench boxes, etc.) may be used where applicable. They shall be developed in accordance with OSHA 29 CFR 1926, Subpart P.

Care shall be taken to minimize exposure of shoring or other slope protection devices to contamination. These items shall not be released from the site until they have been decontaminated in accordance with this specification.

3.6.4 Excavation Sequence

The sequence for the excavation of contaminated material shall be as follows:

- (1) Define and isolate exclusion zones identified on the engineering drawings, Scope of Work, or as directed by Bechtel.
- (2) Construct haul road identified on the engineering drawings, Scope of Work or as directed by Bechtel.
- (3) Perform initial excavation to the lines and grades identified on the engineering drawings, Scope of Work or as directed by Bechtel.
- (4) Allow excavated area to be sampled to determine if the area meets remedial cleanup standards.
- (5) Continue excavation as directed by Bechtel. Allow area to be resampled after each lift of material is removed.
- (6) Cease excavation upon direction by Bechtel.

3.7 DEMOLITION OF CONCRETE AND ASPHALT SURFACES

- 3.7.1 Demolition shall consist of demolishing, rubblizing, scabbling and/or disposing of asphalt, concrete, or bituminous concrete surfaces within the limits to be excavated as identified on the engineering drawings, Scope of Work and/or as directed by Bechtel.
- 3.7.2 Construction joints shall be saw cut in existing concrete or asphalt, where new concrete or asphalt will be placed.
- 3.7.3 Reinforcing bars encountered during concrete removal shall be cut with a method approved by Bechtel.
- 3.7.4 Daily inspections shall be performed in accordance with OSHA 29 CFR 1910 and 1926 when fuel powered tools are used indoors. Inspections shall include the review and documentation of administrative and engineering controls and measurement of air quality in confined spaces. No personnel shall enter the work area until required corrective measures are completed.

3.8 EQUIPMENT DECONTAMINATION

- 3.8.1 The equipment decontamination facility shall have a 30-mil plastic liner and be bermed to provide containment of decontamination water.
- 3.8.2 All equipment and tools used in contaminated areas shall be decontaminated to remove all adhering dirt and mud.
- 3.8.3 Authorization shall be obtained from Bechtel before entering or exiting the decontamination facility.
- 3.8.4 Bechtel is not responsible for the operations of the decontamination facility.
- 3.8.5 Equipment that has been in contaminated areas shall be decontaminated. The decontamination facility shall be used only for light and final decontamination and not for operations that would require gross decontamination (i.e., removal of most visible materials by scrapers, brushes, etc). Gross decontamination, if required, shall be performed as part of the specified earthwork at the area where trucks are loaded or unloaded. Decontamination shall be repeated as required. Following decontamination, all equipment shall be made available for inspection by Bechtel. Equipment shall be cleaned to the satisfaction of Bechtel.
- 3.8.6 Written approval from Bechtel shall be obtained prior to removing equipment from the site.
- 3.8.7 The decontamination water shall be containerized in 55-gallon drums, which is not within the scope of this specification.

3.9 PROTECTION OF WORK

Settlement or erosion that occurs in compacted materials prior to acceptance of the work shall be repaired to required conditions at no expense to Bechtel.

3.10 SECURITY

Work areas shall be secured using barriers (e.g., rope, snow fence) to prevent inadvertent entry to work areas as determined by Bechtel.

APPENDIX E
TECHNICAL SPECIFICATION FOR
THERMAL TREATMENT

015659

DEPARTMENT OF THE NAVY
 SOUTHERN DIVISION
 TECHNICAL SPECIFICATION
 FOR
 THERMAL TREATMENT SERVICES

0	1/30/95	Issued for use	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>	<i>[Signature]</i>
NO.	DATE	REASON FOR REVISION	BY	CHECK	EGS	PE
ORIGIN		THERMAL TREATMENT SERVICES	JOB NO. 22567			
			TECHNICAL SPECIFICATION			REV
			400-SP147-001			0
			SHEET 1 OF 10			

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Technical Specification
Spec. No. 400-SP147-001
Rev No. 0

**TECHNICAL SPECIFICATION
FOR
THERMAL TREATMENT SERVICES**

1.0 GENERAL

This specification and the attached information together with the Scope of Work, presents the requirements for the furnishing of thermal treatment services. This specification is intended to give a general description of the services and equipment required; it does not, however, cover all details of the equipment, which may vary with the supplier or manufacturer. All components and functions required for thermal treatment services specified herein shall be furnished by the Subcontractor who shall be responsible for the proper functioning of the equipment and the execution of the scope of work to achieve the treatment criteria contained herein.

1.1 REFERENCES

1.1.1 Codes and Standards

The Codes and Standards referenced below are minimum requirements and are not intended to be a comprehensive list. Some standards may not apply to all situations. Other codes and standards may be required by Federal, State, or local regulations. The Subcontractor is required to comply with all applicable codes and standards regardless of their listing in this section.

The equipment furnished under this specification shall conform to the latest editions, including any current addenda, of the following Codes and Standards unless otherwise noted:

American National Standards Institute (ANSI)

ANSI B16.5 Steel Pipe Flanges, Flanged Valves and Fittings
ANSI B31.3 Chemical Plant and Petroleum Piping

American Petroleum Institute (API)

API 5-L Lined Pipe

American Society of Mechanical Engineers (ASME)

ASME Boiler and Pressure Vessel Code, Section VIII, Division 1
ASME Boiler and Pressure Vessel Code, Section X

American Society for Testing Materials (ASTM)

ASTM A-36 Standard Specification for Structural Steel
ASTM A-366 Steel, Sheet, Carbon, Cold Rolled Commercial Quality

ASTM C-27 Fireclay and High- Alumina Refractory Brick
 ASTM C-401 Alumina and Alumina-Silicate Castable Refractory
 ASTM C-612 Mineral Fiber Block and Board Thermal Insulation

American Welding Society (AWS)

AWS B2-1 Welding Procedures and Performance Qualifications
 AWS D1-1 Structural Welding Code-Steel

National Electrical Manufacturers Association

NEMA ISC-1 Industrial Controls and Systems
 NEMA ISC-6 Enclosures for Industrial Control and Systems
 NEMA MG-1 Motors and Generators

National Fire Protection Association

NFPA 30 Flammable and Combustible Liquids
 NFPA 54 National Fuel Gas Code
 NFPA 70 National Electrical Code
 NFPA 85A Prevention of Furnace Explosions in Fuel Oil-Fired and Natural Gas-Fired
 Single Burner Boiler-Furnaces
 NFPA 85B Prevention of Furnace Explosions in Gas-Fired Multiple Burner Boiler-
 Furnaces
 NFPA 85D Prevention of Furnace Explosions in Fuel Oil-Fired Multiple Burner Boiler-
 Furnaces
 NFPA 211 Chimneys, Fireplaces, Vents and Solid Fuel Burning Appliances

Underwriters Laboratories

UL-296 Oil Burners

1.1.2 Regulatory Requirements

The Subcontractor shall supply services in compliance with applicable federal, state, and local regulations. The following listing of regulations is intended to list potentially applicable regulations for a variety of thermal treatment systems treating a wide range of waste types. This listing may not be complete for all situations. The Subcontractor is required to meet all applicable regulations and requirements regardless of their listing in this section.

Federal Requirements

29 CFR 1910 Occupational Safety and Health (OSHA)
 40 CFR 50 National Ambient Air Quality Standards (NAAQS)

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40 CFR 60	Air Quality Test Methods
40 CFR 61-63	National Emission Standards for Hazardous Air Pollutants (NESHAP)
40 CFR 260-271	Resource Conservation and Recovery Act (RCRA)
40 CFR 370,372	Emergency Preparedness and Community Right to Know
40 CFR 761,763	Toxic Substances Control Act (TSCA)
49 CFR 171-180	Transportation of Hazardous Materials

State Regulations

See Attachment 1

Local and County Regulations

See Attachment 1

1.2 SUBMITTALS

The submittals required for thermal treatment systems vary with regulatory requirements and site-specific requirements. A general and comprehensive list of submittals for thermal treatment systems is included in this section. Not all of the submittals listed below may be required of a Subcontractor for this particular application of thermal treatment services. The engineering documentation and submittals shown in Exhibit F, "Subcontractor Submittal Requirements Summary," are minimum submittal requirements for this procurement activity. Bechtel will determine if Subcontractor documentation is complete and reserves the right to reject submittals and require the resubmittal of any submittals or documents that do not meet the Subcontractor requirements.

- Thermal Treatment Services Organizational Structure
- Detailed Schedule of Thermal Treatment Activities
- Quality Assurance/Quality Control Plan
- Sampling and Analysis Plan
- Health and Safety Plan
- Contingency Plan
- Mobilization and Demobilization Plan
- Data Management Plan
- Fugitive Emissions and Odor Control Plan
- Description of Safety Features
- Decontamination Procedures
- Evidence of Licenses, Permits, and Certifications
- Description of Noise Abatement Controls
- Listing of Regulatory Reporting Requirements
- Subcontractor Equipment Data Sheets
- Resumes of Key Personnel Responsible for Installation, Startup, and Operation
- Personnel Training Requirements and Certifications

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- Description of System Downtime, Failures, and Releases
- HAZOPS Analysis and Failure Mitigation Measures

As a minimum, the following engineering documentation shall be supplied. Diagrams and balances shall cover the equipment operating range from maximum capacity to minimum turndown of the system. The performance and acceptance test plan criteria will be specified by Bechtel based on the contents of the Subcontractor's engineering document submittals.

- Process Flow Diagrams (PFDs)
- Piping and Instrumentation Diagrams (P&IDs)
- Heat and Material Balances
 - Fugitive Emissions Estimates
 - Process Emissions Estimates
- Utility Descriptions and Interface Requirements
- Performance and Acceptance Test Plan
 - Previous Test Results
- Trial Burn Plan
 - Previous Trial Burn Results
- Standard Operating Procedures (SOPs)
 - Startup and Shutdown Procedures
 - Emergency Operating Procedures
- Detailed Engineering Description of the Thermal Treatment Unit, Including:
 - Manufacturer's Name and Model Number
 - Type of Thermal Treatment Unit
 - Linear Dimension of the Thermal Treatment Unit/Combustion Chamber Cross sectional Area
 - Description of Fuel Systems
 - Burner Design
 - Construction Materials
 - Location and Description of Temperature, Pressure, and Flow Indicating and Control Devices
- Equipment and Outline Drawings Including Weights
- Layout Plan and Elevation Drawings
- Equipment List
- Connected Electrical Loads
- Description of the Process Control System
- Instrumentation List
- Description of Continuous Emission Monitors (CEMs)
- Instrumentation Calibration and Maintenance Procedures
- Equipment Inspection, Repair, and Maintenance Procedures
 - Spare Parts Inventory

1.3 DELIVERY AND STORAGE

The Subcontractor shall be responsible for delivery of all equipment and accessories in accordance with the schedule. The Subcontractor shall be responsible for all packing and delivery so that the equipment shall reach the site in proper operating condition.

2.0 PRODUCTS

2.1 MATERIAL AND EQUIPMENT REQUIREMENTS

2.1.1 General

The Subcontractor shall supply the materials and equipment necessary to perform the services described in this specification.

The equipment shall be trailer mounted or skid mounted for minimal completion assembly on site. The Subcontractor shall describe any site work required to accommodate the Subcontractor's equipment.

Equipment shall be furnished free of contamination as complete units that require minimum field erection and assembly consistent with shipping and handling restrictions.

The Subcontractor shall design, fabricate, and furnish all materials, appurtenances, and accessories as specified herein to constitute a complete system.

The Subcontractor shall provide drawings of the completed assembly and data sheets containing the technical engineering specifications of the system.

2.1.2 Mechanisms

All mechanisms shall be designed to operate continuously.

All parts of the mechanisms shall be designed to withstand all stresses that could occur during operation and any additional stresses that might occur during fabrication, shipment, or erection.

2.1.3 Thermal Treatment Unit

The unit shall be energy efficient to the maximum extent practical, to minimize the quantity of fuel required.

The unit is to be designed to maximize reliability, availability, and maintainability, and shall be capable of operating continuously 24 hours per day.

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Auxiliary systems that operate continuously or are essential to thermal treatment unit operation shall be designed to have redundant capability for operation provided by a off-line backup or a rapidly replaceable spare part. Generally, a backup component shall be started automatically on loss of the primary system, or on indication of degraded primary component performance.

The thermal treatment system shall be designed to have an availability of 80%. Availability is defined as follows:

$$A = (T - PO - UO) / T$$

where A is Availability
 T is 8760 hours per Year
 PO is Hours of Planned Outages per Year
 UO is Hours of Unplanned Outages per Year

2.2 ELECTRICAL REQUIREMENTS

Electrical motor-driven equipment required shall be provided complete with motors, motor starters, and controls. Motors shall conform to the NEMA MG 1 with enclosures. Electrical characteristics shall be specified by the Subcontractor. Motor starters shall be provided complete with thermal overload protection and other appurtenances necessary for the motor control supplied. Manual or automatic control and protective or signal devices specified by the manufacturer shall be provided.

2.3 OPERATING AND PERFORMANCE REQUIREMENTS

2.3.1 Operation

The Subcontractor shall incorporate operating procedures or equipment designed to minimize startup and shutdown time and off specification discharges.

2.3.2 Feed Conditions

The feed to the thermal treatment system shall have characteristics as shown in the attached data sheet.

2.3.3 Performance

The performance and acceptance of the thermal treatment system will be subject to a formal test as outlined by Bechtel based on engineering documents supplied by the Subcontractor. The test criteria will be specified such that a minimum level of performance is available to treat the waste streams listed in the attached data sheet to this specification. The Subcontractor may submit previous testing information of high quality for consideration. If the information is adequate, the data may be accepted in lieu of performing this performance test.

2.4 CONSTRUCTION

The equipment shall be constructed in accordance with minimum engineering standards as specified in Section 1.1.

Equipment shall be of high quality for superior performance in an environment associated with hazardous materials.

2.5 AUXILIARY EQUIPMENT AND SERVICES

Auxiliary equipment and services furnished by the Subcontractor shall include, but not be limited to, those listed below.

- Ash Handling
- Communications Equipment
- Continuous Emission Monitoring Equipment
- Decontamination Equipment
- Gas Cleaning System Equipment
- Instrument Calibration Equipment
- Mobilization and Demobilization Equipment
- Personal Protective Equipment
- Process Chemicals and Utilities
- Process Sampling Equipment
- Safety Equipment
- Spare Parts
- Waste Feeding
- Waste Pretreatment
- Waste Staging

2.6 INSTRUMENTATION AND CONTROLS

The instrumentation and control system supplied will be an integrated system of centralized control, data management, and data reporting. The system will provide the control elements required for the immediate system needs and be capable of expansion.

Locally mounted, key-operated local-off-remote switches will be utilized to select local or automatic control mode of operation.

All instruments and controls shall be state-of-the-art, accessible for testing, calibration, and servicing, and they must be readily accessible for maintenance procedures. The design of the equipment shall be such that testing, calibration, and servicing procedures may be carried out with a minimum of disruption of plant operations. The instruments and controls shall be designed for outdoor usage and shall be NEMA 3/3R.

2.7 OPERATING TOOLS

All necessary tools and spare parts that are required for routine maintenance and adjustment shall be provided by the Subcontractor and kept at the site for ready access.

2.8 EQUIPMENT APPEARANCE

The equipment shall be furnished in a neat and professional appearance, free of contamination, and fully ready to operate.

3.0 EXECUTION

The Subcontractor shall execute these specified services in accordance with the associated scope of work and following the plans submitted by the Subcontractor in section 1.2 of this specification.

3.1 INSTALLATION

The Subcontractor shall be required to mobilize and demobilize the thermal treatment system and accessories to and from the site. The Subcontractor shall decontaminate the unit prior to demobilization.

The Subcontractor shall restore the area to a satisfactory condition during demobilization.

3.2 ADJUSTING AND TESTING

The Subcontractor shall be responsible for all inspection, testing, and continuous operations of the thermal treatment system.

The Subcontractor shall be required to take samples at periodic intervals during the operation. The samples shall be collected at the locations indicated on the Subcontractor's drawings and at a frequency provided in the attached data sheet (Attachment 2). Analyses shall be in accordance with methods defined in the data sheet. Bechtel personnel shall have access to sampling points for the purpose of performing independent performance tests and collecting environmental data for emissions reporting.

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ATTACHMENT 1
STATE AND LOCAL REGULATIONS

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STATE REGULATIONS (FLORIDA)

⁶²
FAC ~~17~~-2 Air Permits
FAC ~~17~~-5.510 General Permit
FAC ~~17~~-775 Soil Thermal Treatment Facilities

LOCAL AND COUNTY REGULATIONS

To Be Determined (Reserved)

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ATTACHMENT 2
SOIL ANALYSIS

SERVICE: Thermal Treatment		MANUFACTURER:						
EQUIPMENT NOS:		P&I DIAGRAM NO:						
Location								
Type of Treatment Unit								
Skid or Trailer Information*		Length	Width	Height	Weight			
1								
2								
3								
4								
Dimensions of Assembled Unit*								
Waste Quantity to be Treated		TBD						
Waste Form		Petroleum Hydrocarbon Contaminated Soil						
Contaminants of Concern		TRPH						
Maximum Concentration		TBD by Contractor by field scening						
Other Contaminants		TBD						
Environmental Interface Requirements		Treated Soil	Flue Gas			Water		
VOC		100 ppb (Note 2)	***			NA		
TRPH		10 ppm (Note 3)				NA		
Metals		See attached sheets, Attachment 3				NA		
NO _x					***		NA	
HCl					***		NA	
CO					***			
Organic Compounds					***			
Metals					***			
Utility Requirements**								
Sampling Frequency		See SOW						
Methods of Analysis		See SOW						
*Subcontractor supplied information								
**All utilities are to be provided by the Subcontractor								
***Subcontractor to provide predicted performance								
Note 1: Estimated value based on known source of contamination.								
Note 2: Use the analysis identified in Rule 17-775.410(1)(a), F.A.C.								
Note 3: Use the analysis identified in Rule 17-775.410(1)(b), F.A.C.								
		THERMAL TREATMENT DATA SHEET				Job No. 22567		
						Specification		REV
						400-SP147-001		0
						Sheet 1 of 1		

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ATTACHMENT 3
SOIL TREATMENT CRITERIA

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Table 5-3
 Criteria for Thermally Treated Clean Soil

Parameter	Cleanup Level	
Total Volatile Organic Aromatics	0.1 mg/kg	
Total Recoverable Petroleum Hydrocarbons	10 mg/kg or if exceeded ^a	
Metals	TCLP^b	Total^c
Arsenic	5 mg/l	10 mg/kg
Barium	100 mg/l	4940 mg/kg
Cadmium	1 mg/l	37 mg/kg
Chromium	5 mg/l	50 mg/kg
Lead	5 mg/l	108 mg/kg
Mercury	0.2 mg/l	23 mg/kg
Selenium	1 mg/l	389 mg/kg
Silver	5 mg/l	353 mg/kg

Source: FAC 17-775.400(1),(2)(a),(2)(b), and FAC 17-775.400 Table I

^aIf exceeded, then the Total Recoverable Petroleum Hydrocarbons will not exceed 50 mg/kg (EPA Draft Method 3540/9073) provided the total of the Polynuclear Aromatic Hydrocarbons does not exceed 1 mg/kg (EPA Method 8100, 8250, 8270, or 8310) and the total of the Volatile Organic Halocarbons does not exceed 50 mg/kg (EPA Method 5030/8021 or 5030/8010).

^bToxicity Characteristic Leaching Procedure

^cThe acid digestion procedure by EPA Method 3050 will be used to prepare soil samples for total metal analyses except mercury, and the extraction procedure by EPA Method 1311 TCLP will be used to determine leachability characteristic of metals.

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EXHIBIT E
THERMAL TREATMENT

LIST OF DRAWINGS

DRAWING TITLE

DRAWING NO.

Site Plan

22567-402-SITE

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APPENDIX F

**TECHNICAL SPECIFICATION FOR
TRANSPORTATION OF CONTAMINATED MATERIAL**

DEPARTMENT OF THE NAVY

SOUTHERN DIVISION

TECHNICAL SPECIFICATION

FOR

TRANSPORTATION OF CONTAMINATED MATERIALS

No.	Date	REASON FOR REVISION	BY	CHECK	SUPV	PE
1	10/6/94	Revised Notice to Transporter Concerning Lead Time	<i>J.D.</i>	<i>KCN</i>	<i>KCN</i>	<i>JRM</i>
0	8/2/94	Issued for Use	KCN			
ORIGIN		Transportation of Contaminated Material	JOB NO. 22567			
			TECHNICAL SPECIFICATION		REV.	
			001-SP000-003		1	
			SHEET 1 OF 20			

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TECHNICAL SPECIFICATIONS FOR TRANSPORTATION OF CONTAMINATED MATERIALS

1.0 GENERAL

1.1 PURPOSE

This Specification addresses requirements and conditions that apply to transportation of hazardous material(s) (HM), hazardous waste(s) (HW), and contaminated material(s) (CM) at U.S. Department of Navy sites under the Naval Facilities Engineering Command, Southern Division. The Subcontractor, Common Motor Carrier (if different), and motor vehicle operator(s) shall be knowledgeable of and comply with Federal Department of Transportation (DOT) regulations (49 CFR), and Environmental Protection Agency (EPA) regulations (40 CFR). Not all transport operations defined herein may be required. Reference is directed to applicable Subcontract Scope of Work and Design Drawings for specific services required.

1.2 ABBREVIATIONS

The abbreviations listed below, when used in this Specification, have the following meanings:

AAR	Association of American Railroads
BEI	Bechtel Environmental, Inc.
CDL	Commercial Driver's License
CFR	Code of Federal Regulations
CM	Contaminated Material
COFC	Container on flat car
DOT	Department of Transportation
EPA	Environmental Protection Agency
FHWA	Federal Highway Administration
HM	Hazardous Material
HW	Hazardous Waste
ICC	Interstate Commerce Commission
ISO	International Standards Organization
LSA	Low Specific Activity
OSHA	Occupational Safety and Health Administration
PCB	Polychlorinated Biphenyl
RCRA	Resource Conservation and Recovery Act
RQ	Reportable quantity
TSCA	Toxic Substance Control Act
TSDF	Treatment, Storage, and Disposal Facility

1.3 QUALITY STANDARDS

The quality standards, as defined by Bechtel Environmental, Inc. (BEI) and Federal DOT and EPA regulations [i.e., Code of Federal Regulations (CFRs)] applicable to this Specification are identified herein and are applicable directly or indirectly to:

- roll-on/roll-off bimodal containers
- transporting vehicle (also referred to as motor vehicle)
- rail cars (flat, box, gondola)
- equipment and material
- packaging, labeling, marking, placarding, handling, and transporting of HM, HW, and CM
- qualifications of Subcontractor provided personnel.

The following CFRs, which are a codification of the general and permanent rules published in the Federal Register by the Executive departments and agencies of the Federal Government, are identified in this Specification for the purpose of quality standards. Failure to identify an applicable CFR does not imply elimination of required Subcontractor knowledge and compliance.

Title	No.	CFR Regulations Title
40	262	"Standards Applicable to Generators of Hazardous Waste"
40	263	"Standards Applicable to Transporters of Hazardous Waste"
40	761	"Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions"
49	171	"General Information, Regulations and Definitions"
49	172	"Hazardous Materials Table, Special Provisions, Communications, Emergency Response Information and Training Requirements"
49	173	"Shippers - General Requirements for Shipments and Packagings"
49	174	"Carriage by Rail"
49	177	"Carriage by Public Highway"
49	178	"Specifications for Packagings"
49	215	"Railroad Freight Car Safety Standards"
49	383	"Commercial Driver's License Standards; Requirements and Penalties"
49	385	"Safety and Fitness"
49	387	"Minimum Levels of Financial Responsibility for Motor Carriers"
49	391	"Qualifications of Drivers"

Title	No.	CFR Regulations	Title
49	392	"Driving of Motor Vehicles"	
49	393	"Parts and Accessories Necessary for Safe Operation"	
49	395	"Hours of Service of Drivers"	
49	396	"Inspection, Repair, and Maintenance"	
49	397	"Transportation of Hazardous Materials; Driving and Parking Rules"	
49	1300	"Passenger and Freight Tariffs and Schedules (of Subtitle B, "Other Regulations Relating to Transportation"; Subchapter D, "Tariffs and Schedules")"	

Quality, where standards are not identified in this Specification, will be reviewed by BEI for approval on a case-by-case basis. Replacement of material, equipment, or personnel (including time lost) due to failure to meet the Subcontract specified quality standards, or BEI approval when standards are not identified, shall be at the Subcontractor's expense. When requested, and at no cost to BEI, the Subcontractor shall provide material samples, manufacturer specifications, and documentation in support of quality standards.

1.4 EQUIPMENT, MATERIAL, AND PERSONNEL REQUIRED

Equipment, material, and personnel provided to BEI by the Subcontractor shall be as follows:

1.4.1 Transportation by Highway

- Transport vehicles (e.g., dry van, flatbed, roll-off, lowboy, and ocean style trailers; truck tractors; and roll-off and ocean style containers) that meet the requirements of Title 49 CFR 393 and 396.
- Securement systems, especially tiedown assemblies (e.g., chains, cables, steel straps, and fiber webbing); load binders and hardware (e.g., hooks, bolts, welds, or other connectors); and winches or other fastening devices that are without visual damage from wear or misuse and that meet the requirements of Title 49 CFR 393, Subpart I.
- Weatherproof tarpaulins that are without visual damage from wear or misuse and of a quality highly resistant to tears, rips, snags, punctures, abrasion, cracking, peeling, weathering, and that are suitable for use as an external cargo wrap.
- Side boards that are suitable as a frame for use with tarpaulins to form a closed transport vehicle.
- Motor vehicle operators who meet the requirements of Title 49 CFR 383, 391, 392, 395, 397, and 172 Subpart H, and 177. A signed affidavit stating that all vehicle operators handling Navy

waste are HAZMAT trained in accordance with 49 CFR Part 172, Subpart H; and an outline of the course program may be submitted.

1.4.2 Roll-On/Roll-Off Bimodal Containers

Delivery

The Subcontractor shall deliver to Navy job sites roll-on/roll-off bimodal containers for BEI use. BEI will order containers through use of work releases which identify the job site, delivery rate (e.g., two per day), and the date of the first delivery. Every effort will be made by BEI to give at least 10 work days of advance notice to the Subcontractor; however, some instances may occur where only 2 days notice will be provided.

Design, Construction, and Testing

All Subcontractor roll-on/roll-off bimodal containers provided for BEI use shall be designed, constructed, and tested in accordance with the Association of American Railroads (AAR) Specification M-930-90 and shall be capable of meeting the DOT requirements as a strong-tight container. Each container offered to BEI shall be identified with a certification plate as prescribed in Section 6.13 of AAR Specification M-930-90. The Subcontractor shall provide BEI with a drawing of the roll-on/roll-off bimodal container that displays the materials of construction, door closure and fastener details, and hold down and lifting pad details.

Size of Roll-On/Roll-Off Bimodal Containers

The roll-on/roll-off bimodal container to be provided by the Subcontractor shall be either 20 cubic yard or 25.5 cubic yard capacity. Quantity and identification of container size shall be identified in the work release. The Subcontractor shall provide BEI, on the same drawing identified in 1.4.2.2, the external and internal dimensions and the tare weight and gross weight rating of the container.

Condition of Containers

At the time of delivery, the Subcontractor shall provide containers janitorially clean (broom clean), free of extraneous debris, and free of excess scale and corrosion which could be an impediment to decontamination in the event the containers should become contaminated.

Liners

The Subcontractor shall provide polyethylene bag liners that have a polyethylene nominal thickness of at least 6 mils. The polyethylene used in fabrication of the liner shall be prime virgin resins. The bag liner shall be fabricated to fit squarely in the corners to virtually eliminate tearing on filling and shall be watertight. The Subcontractor shall provide manufacturer's data sheets and certifications that bag liners provided meet the Specification's requirements.

Alternate materials and thicknesses for the liner may be offered by the Subcontractor, but the proposed change must be approved in advance by BEI as an equivalent bag liner.

The Subcontractor shall provide written procedures for the bag liner installation and proper assembly of roll-on/roll-off bimodal containers to meet DOT requirements as strong-tight containers during transport.

1.4.3 Rail Freight Cars and Siding Requirements

Defects and Restrictions

The Subcontractor shall provide BEI with rail freight cars consisting of mainly gondola cars, some flat cars, and a few box cars. All rail freight shall be in good order and shall contain no defects in accordance with 49 CFR Part 215, Subpart B, or any restrictions at time of delivery as defined in 49 CFR Part 215, Subpart C.

Freight Car Load Ratings

The Subcontractor shall provide rail freight cars having a load capacity of not less than 75 tons nor more than 100 tons. The ratings of the rail gondola cars shall be mainly 95- and 100-ton cars. Written approval, in advance, shall be obtained from BEI in order to supply rail gondola cars having a load capacity rating of less than 90 tons.

Qualification of Rail Transportation Crew

All Subcontractor personnel who handle and process BEI loaded rail freight cars and intermodal packages shall be HAZMAT trained in accordance with 49 CFR 172.700, Subpart H. A signed affidavit stating that all railroad crew members handling rail freight cars containing Navy waste are HAZMAT trained and an outline of the course program may be submitted.

Freight Car Cleanliness

The rail freight cars provided by the Subcontractor shall be free of loose debris and be janitorially clean (broom clean).

Rail Gondola Car

The Subcontractor shall provide to BEI rail gondola cars that are free of internal appurtenances which could affect the integrity of sift-proof liners that BEI will provide and install.

The Subcontractor-provided rail gondola cars shall have an internal height of not less than 4.5 feet nor greater than 5.75 feet.

The Subcontractor shall provide cars whose internal surfaces, in BEI's opinion, are free of major rust or scale which could affect the ability to easily decontaminate the car in the event it became contaminated.

Rail Siding Maintenance

Subcontractor provided rail sidings (i.e., frogs, switches, ballast, crossties, rails, fastenings) shall be maintained to at least a Class 1 standard throughout any shipping campaign in accordance with 49 CFR Part 213. The Subcontractor shall notify BEI in writing of the names and qualifications of persons designated to inspect track.

1.5 PACKAGING, LABELING, MARKING, AND PLACARDING

1.5.1 Transportation by Highway

Packaging, labeling, marking, and placarding will be performed by BEI [or Treatment, Storage, and Disposal Facility (TSDF)] in compliance with Title 49 CFR 172, 173, 178, and Title 40 CFR 262, 263, and 761. The motor vehicle operator(s) shall perform an inspection to verify, based on his training in accordance with Title 49 CFR 172, Subpart H, and experience, the packaging, labeling, marking, and placarding are in accordance with the requirements listed above and the accompanying shipping documents. Upon acceptance of the load for transport, the Subcontractor shall be responsible for maintaining the integrity of BEI's packaging, labeling, marking, placarding, and the accompanying shipping documents in compliance with 49 CFR 177.800, Subpart A. BEI shall be notified immediately (see Section 6.0, Accidents Involving Transport Vehicles, for notification procedures) upon the Subcontractor's discovery of a change in the condition of BEI's packaging, labeling, marking, or placarding (e.g., changes due to equipment failure, packaging failure, accident, adverse weather conditions, vandalism, or theft). Concerns or questions related to the inspection, maintenance, or notification procedures are to be addressed to the BEI site manager or his designee prior to the motor vehicle operator's load acceptance.

1.5.2 Roll-On/Roll-Off Bimodal Containers

BEI will inspect the roll-on/roll-off bimodal container in accordance with the Specification at the time of Subcontractor delivery and, upon acceptance, will direct where to place the container.

BEI may elect to survey the roll-on/roll-off bimodal container at the time of delivery for the presence of hazardous materials. BEI will install the Subcontractor provided bag liner, fill the container, and seal it for shipment in accordance with Subcontract provided packaging procedures. BEI will mark, label, placard, certify the packaging, and prepare required shipping documents in accordance with DOT requirements.

1.5.3 Rail Freight Cars

BEI will offer strong-tight packages to be used for packaging of some waste. These packages will be designed to meet AAR Specification M-930-90, "Closed Van-Type Dry Cargo Containers for Domestic Container-on-Flat-Car (COFC) Service." BEI will mark, label, certify, and provide shipping papers describing the packaged container contents in full compliance with 49 CFR Parts 171, 172, and 173. These containers will be turned over to the Subcontractor for loading and shipment.

Schedule adjustments shall be made by BEI, when needed, that result from weather conditions that prevent loading of Navy waste into or onto rail freight cars. The BEI Site Superintendent or designee will notify the Subcontractor of all necessary schedule adjustments due to inclement weather.

The Subcontractor shall provide equipment, such as but not limited to, clevis, slings, cranes and bridges, lifting and handling procedures, training of workers and supervision in order to transfer BEI packages to rail flat cars and to provide blocking, bracing, and load securement for the packages such that the packages will not move or fall during conditions normally incident to transportation.

The Subcontractor shall provide BEI copies of the latest certification of load testing of all lifting equipment used for COFC services for BEI packages. The Subcontractor shall also provide BEI with copies of each load test of the equipment and reason for load test (e.g., maintenance repair, periodic retest).

BEI shall placard the rail freight cars and intermodal packages in accordance with 49 CFR Part 172, Subpart F. Subcontractor rail crew members shall replace placards and car certificates that become lost in transit at the next inspection point in accordance with 49 CFR Part 174.59.

2.0 MOTOR VEHICLE REQUIREMENTS

2.1 GENERAL

The Subcontractor shall provide equipment that is appropriate to accomplish successful transportation of HM, HW, or CM either from Navy sites or to or from the TSDF. Motor vehicles shall be maintained and operated in accordance with the manufacturer's recommendations, Occupational Safety and Health Administration (OSHA) requirements, federal regulations as specified in Title 49 CFR 393, 396, and 397, and applicable state and local regulations. The Subcontractor shall take all precautions necessary for safe operation of his equipment/vehicle and to safeguard the public and the environment from injury or accidental release of HM, HW, or CM.

The Subcontractor shall provide to BEI a list of the transport vehicles to be used, broken down by identification number, type, and size.

2.2 MOTOR VEHICLE INSPECTIONS

All vehicles shall be inspected by the Subcontractor in accordance to Title 49 CFR 393, "Parts and Accessories Necessary for Safe Operation," and shall conform to all applicable local, state, and federal requirements for registration, insurance, inspection, certification, and performance.

All motor vehicle inspections shall be performed by qualified inspectors as required by Title 49 CFR 396.19, "Inspector Qualifications." The Subcontractor shall submit a copy of the current certificate of commercial motor vehicle inspection and the inspector's certificate of training to BEI prior to any transportation activities (or may provide a statement certifying that all motor vehicles supplied to BEI have been inspected in accordance with the requirements of Title 49 CFR 396.17, 396.19, and 396.23).

Brake inspections shall be performed by a certified brake inspector for commercial motor vehicles as described in Title 49 CFR 396.25, "Qualifications of Brake Inspectors." The Subcontractor shall submit a copy of the current certificate of brake inspection and the inspector's certification of training to BEI prior to transportation activities (or may provide a statement certifying that all motor vehicles supplied to BEI have been inspected in accordance with the requirements of Title 49 CFR 396).

Prior to being placed into use, and at least once each day, in accordance with the requirements of Title 49 CFR 396.11, "Driver Vehicle Inspection Report," and 396.13, "Driver Inspection," the motor vehicle operator shall perform a safety inspection of the motor vehicle. The vehicle operator upon arrival, shall provide BEI with a copy of the current signed daily safety inspection report. BEI will confirm that the transporting vehicle has been inspected in accordance with 49 CFR 396, "Inspection, Repair, and Maintenance."

All motor vehicles (and equipment) provided to BEI shall be subject to a quality surveillance by BEI prior to loading to determine that the motor vehicle (and equipment) in accordance with Title 49 CFR 393 and 396. Such inspection and approval shall not relieve the Subcontractor of responsibility for the use of proper equipment. **INSPECTION OF VEHICLES BY BEI DOES NOT IMPLY CERTIFICATION.** The Subcontractor shall allow six hours for motor vehicle inspection, loading/unloading, and release from a BEI site (or TSDF).

Motor vehicles determined by BEI to be potentially unsafe and/or unsuitable for their intended use shall be removed from the site until repaired by the Subcontractor at his expense or replaced with a different motor vehicle. Repaired or replaced motor vehicles will receive new inspections to determine if repairs are correct and meet inspection standards. Time lost due to reinspection shall be at the Subcontractor's expense.

3.0 MOTOR VEHICLE OPERATOR REQUIREMENTS

3.1 QUALIFICATION OF MOTOR VEHICLE REQUIREMENTS

Before transportation services are rendered, motor vehicle operators (drivers) shall meet the requirements, including all required endorsements (and shall provide evidence of such) specified in Title 49 CFR 383, " Commercial Driver's License Standards: Requirements and Penalties"; 391, "Qualifications of Drivers"; and 172, Subpart H, "Training."

The following information must be submitted to BEI prior to any transportation activity:

- A medical examiner's certificate, or a legible photographic copy of a certificate, or a statement attesting to a record on file with the Subcontractor of a medical examiner's certificate on each motor vehicle operator's physical qualifications to operate a motor vehicle in accordance with Title 49 CFR 391.43, "Medical examination; Certification of Physical Examination," and Title 49 CFR 391.41, "Physical Qualifications for Drivers."
- A statement certifying the Subcontractor, at least once every 12 months, reviews the driving record of each motor vehicle operator it employs in accordance with Title 49 CFR 391.25, "Annual Review of Driving Record." Included in this review shall be a list of all violations of motor vehicle traffic laws in accordance with Title 49 CFR 391.27, "Record of Violations."
- A valid commercial driver's license (CDL) for each motor vehicle operator provided to BEI (and a legible photographic copy of the CDL to be retained by BEI).

3.2 MOTOR VEHICLE OPERATORS NOT QUALIFIED

Motor vehicle operators may not be deemed qualified or acceptable in accordance with Title 49 CFR 391.51, "Disqualification of Drivers." Motor vehicle operators deemed not acceptable for transporting HW, HM, or CM shall be replaced at Subcontractor's expense, including time lost.

4.0 OTHER REQUIREMENTS

4.1 MOTOR VEHICLE WEIGHT REQUIREMENTS

Prior to arrival for loading, all Subcontractor motor vehicles provided to BEI, shall be weighed at an offsite certified (certified calibrated) scale. Upon arrival for loading, each vehicle operator shall provide BEI a legible copy of the certified tare (light) weight receipt for that motor vehicle.

Prior to releasing the loaded motor vehicle for transport, BEI will verify motor vehicle and load weight by requiring all loaded motor vehicles (truck, trailer, and load) to be weighed at an offsite certified scale located within 30 miles of the Navy site. The Subcontractor shall provide BEI with a legible copy of the certified loaded weight receipt for each motor vehicle.

BEI will only accept certified tare and loaded weight receipts containing the following information:

- Motor Vehicle identification number
- Date motor vehicle was weighed
- Name, address, and telephone number of offsite certified scale
- Weigh master's signature

Gross weight of loaded motor vehicles (tractor, trailer, and load) released from the site(s) shall not exceed 80,000 pounds (except for BEI authorized permitted over-dimension/over-weight shipments). If a motor vehicle (tractor, trailer, and load) exceeds 80,000 pounds, or the maximum axle weight limits, the motor vehicle is to return to the site to off-load the excess weight.

4.2 TRANSPORTATION SAFETY RATING

The Subcontractor shall submit to BEI a current copy of his Federal Motor Carrier Safety Rating assigned by the Federal Highway Administration (FHWA) as set forth in Title 49 CFR 385, "Determination of Safety Rating." A Subcontractor receiving notification by the FHWA of a "conditional" or "unsatisfactory" rating will be ineligible to transport HM, HW, or CM for BEI.

4.3 CONTROLLED SUBSTANCE TESTING

The Subcontractor shall submit to BEI proof of compliance with Title 49 CFR 391, Subpart H, "Controlled Substance Testing." (The Subcontractor may provide an affidavit attesting that in compliance with Title 49 CFR 391, Subpart H, a controlled substance testing program is in place with a copy of the program available to BEI by request.)

4.4 TRANSPORTER EPA ID NUMBER

The Subcontractor shall submit to BEI his EPA ID number and the EPA ID numbers of each railroad it is subcontracting with, if applicable, as specified per the Toxic Substances Control Act (TSCA) or Resource Conservation and Recovery Act (RCRA). If polychlorinated biphenyls (PCBs) are being transported, the Subcontractor is also required to have submitted a separate "Notification of PCB Activity" Form 7710-53 to the EPA as required by Title 40 CFR 761.202 and 761.205. A legible copy shall be provided to BEI prior to BEI's release of the load.

4.5 CARRIER SURETY BOND OR POLICIES OF INSURANCE

The Subcontractor shall submit to BEI proof of insurance on DOT Form MCS-82 or MCS-90, as required in Title 49 CFR 387.

4.6 TRANSPORTATION REPRESENTATIVE

The Subcontractor shall designate a competent, authorized representative, acceptable to BEI, that is knowledgeable in DOT hazardous materials regulations to represent and act for the Subcontractor.

The Subcontractor shall inform BEI in writing of the name and address of such a representative. A background statements of the representative's qualifications, along with copies of training certificates or any other documented source of training or establishment of knowledge of the DOT hazardous materials regulations, shall be submitted to BEI in writing.

4.7 REQUIRED PERMITS AND LICENSES

The Subcontractor shall obtain all required permits and/or licenses and shall make all required notifications for transporting HM, HW, or CM from Navy sites to the TSDF (or to another Navy site), including any over-dimension/over-weight permits and/or notifications. The Subcontractor shall submit to BEI a legible copy of all required permits, licenses, and/or notifications made (or the Subcontractor may provide an affidavit attesting that all permits, licenses, and/or notifications shall be obtained or made with copies available at BEI's request).

4.8 DOCUMENTATION

The Subcontractor shall be responsible for all documents/shipping papers provided by BEI prior to shipment in accordance with 49 CFR 177.817 or 49 CFR 174.24, "Shipping Papers." The Subcontractor shall comply with the directions provided by BEI prior to shipment regarding documents/shipping papers. All documents/shipping papers shall be kept with BEI's shipments at all times. BEI documents will include the following when applicable:

- Signed Uniform Hazardous Waste Manifest/Bill of Lading
- Exclusive Use Control Instruction
- Vehicle Survey Release Form (completed at the site prior to vehicle release)
- TSDF specific forms
- Emergency Response Guide Information

A copy of the signed Bill of Lading, the Uniform Hazardous Waste Manifest (when required), and any TSDF specific forms shall be included with the Subcontractor's invoice for payment of transportation services.

4.9 TRANSPORTATION ROUTES AND EMERGENCY RESPONSE PLAN

4.9.1 Transportation by Highway

The Subcontractor shall meet all existing federal, state, and local regulations for traffic control and motor vehicle operation for transportation of HM, HW, or CM on public roads and highways.

The Subcontractor shall submit a written transportation Emergency Response Plan, which includes instructions for compliance with Title 49 CFR 171.15, "Immediate Notice of Certain Hazardous Materials Incidents," and 172, Subpart G, "Emergency Response Information." The plan shall include all aspects and considerations for HM, HW, or CM transportation hazards that may arise

during transportation operations, and shall be submitted to BEI for review ten working days prior to any waste hauling. The plan shall include, at a minimum:

- Procedures for incident response
- Methods to contain and clean up releases
- Details of manpower and equipment available
- The coordination necessary to mobilize the above forces in an emergency
- Traffic maintenance/warning procedures
- List of emergency numbers for information and notification on HM, HW, or CM for each applicable state
- Name of emergency response coordinator

The Subcontractor shall notify BEI immediately upon learning that a transportation-related accident has occurred as stated in Section 6.0, "ACCIDENTS INVOLVING TRANSPORT VEHICLES" of this Specification.

The Subcontractor shall be responsible for providing BEI with the proposed transportation route that is in compliance with Title 49 CFR 397, "Transportation of Hazardous Materials; Driving and Parking Rules [397.9, "Routes," and 397, Subpart D, "Routing of Class 7 (Radioactive) Materials"] to be used between the Navy site (or TSDF) and TSDF (or another Navy site) prior to transport. Except for authorized deviations due to city hazardous material by-pass routes or detours mandated by powers of authority (e.g., detours due to construction, emergency situations, or inclement weather conditions), deviations from the submitted routes are not permitted without prior written approval by BEI. Transportation routes may be shown on BEI Design Drawings, when drawings are provided.

The cleanup cost for any release of HM, HW, or CM by the Subcontractor shall be the responsibility of the Subcontractor. The cleanup operations shall be performed at the expense of the Subcontractor. Cleanup shall be performed immediately.

A shipment that is designated by BEI to be a RCRA HW will require the Subcontractor to submit to BEI a current EPA ID# as proof of being an EPA-approved transporter of RCRA waste.

4.9.2 Railroad Routing Map

The subcontractor shall provide to BEI a map showing the proposed routing of rail freight cars from point of origin to the disposal facility. The routing map should identify all utilized railroads and indicate key milestones expressed in travel days from the time leaving the point of origin.

4.10 TRACKING AND NOTIFICATION

4.10.1 Transportation by Highway

The Subcontractor shall have in operation a satellite tracking system to be used on all BEI shipments. At least once a day, the motor vehicle/load shall be located with the time and location recorded. In conjunction with the satellite tracking system, the Subcontractor shall implement a procedure for daily contact with the motor vehicle operator. BEI will not consider messages forwarded, left with answering services, or on answering machines as daily contact. As an alternative, the Subcontractor may implement a scheduled daily telephone call-in/call-back location verification system and the call-in/call-back system require the Subcontractor to notify BEI immediately if the Subcontractor is unable to verify the motor vehicle/load location, or if the motor vehicle operator fails to make scheduled daily contacts. Motor vehicle/load location verification and motor vehicle operator daily contact information must be made available to BEI by telephone or facsimile transmittal with one hour of request. A written description of the tracking and notification system shall be submitted to BEI for approval.

The Subcontractor shall provide the capability to recall or reroute a shipment due to unforeseen events which may require the motor vehicle/load to return to the origination point or be rerouted to an alternate TSDF. This capability may be provided through the use of the satellite tracking/daily call-in system or the telephone call-in/call-back system. BEI shall be notified immediately if the Subcontractor is unable to recall or reroute a shipment.

The Subcontractor shall notify BEI immediately upon learning that a scheduled time of arrival, at either the TSDF or at a Navy site, has changed. BEI shall be notified immediately if the Subcontractor's motor vehicle is delayed due to equipment failure, accident, inclement weather, or any condition that prevents the motor vehicle/load from continuing on the approved route and/or transportation schedule. BEI shall be informed of the exact location and condition of the Subcontractor's motor vehicle and of BEI's load when a change of schedule or delay as described above occurs.

The Subcontractor shall contact the TSDF, or other destination, 24 hours in advance to schedule an arrival time. The Subcontractor shall be responsible for contacting the pickup and destination facilities before shipments begin, to identify appropriate procedures at the individual facilities (i.e., opening and closing times, pass requirements, etc.). Any cost incurred due to failure to comply with these procedures, or due to lack of appropriate planning, shall be the responsibility of the Subcontractor. The contact and telephone number for the pickup and destination facilities will be provided with the Work Release or as otherwise provided. BEI shall be notified within 24 hours of the scheduled delivery date if the shipment was not delivered to the TSDF on the scheduled delivery date.

If, during BEI's business day, the Subcontractor becomes aware of an inability to track, recall, or reroute BEI loads, or that the Subcontractor's motor vehicle is unable to maintain the approved transportation route and/or schedule, the Subcontractor shall notify BEI immediately, and if initially

unsuccessful, shall continue to attempt to notify BEI. If, after the close of BEI's business day, the Subcontractor becomes aware of a condition as described above, notification of such condition shall be made at the start of BEI's next business day. BEI will provide a contact telephone number for such notification prior to each shipment.

In addition to immediate notification by telephone, the Subcontractor shall submit to BEI within five days of loss of verified daily contact with the motor vehicle/load, a written report which shall include:

- Time, date, and location of last daily contact.
- Time, date, location, and condition of the motor vehicle/load when contact was reinstated.
- A description of the methods/agencies used to reinstate contact and to verify location of the motor vehicle/load.
- A description of the methods used to reinstate transportation services, if an interruption of services occurred.
- Any additional pertinent information concerning the incident.

4.10.2 Transportation by Rail

The Subcontractor shall notify BEI of any abnormal occurrences identified in the following subsections or any similar, but not identified, occurrences.

Location Tracking and Notification

The Subcontractor shall have in operation a system which identified the location of each BEI rail freight car grouping in transit from the Navy site to the designated TSDf. At least once per work day, the Subcontractor shall notify BEI as to the location of each rail freight car grouping. This may be accomplished by facsimile.

The Subcontractor system may be automated using bar coding reader stations, satellite tracking, or manual telephone call-in/call-back systems. Daily location verification information must be made available to BEI by telephone, computer, or facsimile transmittal within one hour of request.

The Subcontractor shall contact the disposal site 24 hours in advance of the scheduled arrival time.

Movement of Defective Cars for Repair

The Subcontractor shall notify BEI as soon as practical whenever a loaded rail freight car has been determined to have a defective component. The Subcontractor shall relay to BEI's Subcontractor

Administrator the related information and restrictions imposed by the designated inspector in accordance with 49 CFR Part 215.9.

Reporting Hazardous Material Incidents and Abnormal Occurrences

The term *abnormal occurrences* means any of, or similar to, the following conditions noted during transport of hazardous materials, substances, or wastes:

- failure of the watertight, sift-proof liner
- broken tamper-indicating devices or package seals
- deviation from the designated routing maps
- any transportation condition that is not normally incident to transportation

As soon as practical, the Subcontractor shall notify BEI of an incident which occurs during transportation in which Navy wastes are involved, whether a report is or is not required by 49 CFR Parts 171.15 and 171.16.

Leaking Rail Freight Cars and/or Intermodal Packages

The Subcontractor shall notify BEI immediately of any noted leakage of Navy waste material from any rail freight car or intermodal package during transportation.

Emergency Response Plan

The Subcontractor shall submit a written transportation Emergency Response Plan. The plan shall include instructions for compliance with 49 CFR Part 171.15, "Immediate Notice of Certain Hazardous Material Incidents." The plan shall include all aspects and considerations arising from transport incidents involving hazardous substances, materials, or wastes. The plan shall be submitted to BEI for review at least 10 working days in advance of any waste transportation as scheduled. The plan shall include the name of the Subcontractor emergency response coordinator.

4.11 PUBLISHED TARIFF RATES

The Subcontractor shall submit to BEI proof that each subcontracted item listed in Part III, Pricing and Data, b. Schedule of Quantities and Prices, of the Subcontract has been submitted and published through the Interstate Commerce Commission (ICC) tariff system as defined in Title 49 CFR 1300 through 1319.

4.12 ADDITIONAL REQUIREMENTS FOR LOOSE CONVEYANCE LOADS

Vehicles used for loose conveyance transport of soil shall meet the following requirements:

- (1) The truckbed shall be free of drain holes, cracks, or other conditions that may allow leakage of soil.

- (2) If the vehicle has a tailgate for dumping, the Subcontractor vehicle operator shall demonstrate to the BEI site superintendent or designee that the tailgate can maintain a seal. A vehicle that cannot maintain a seal will be repaired or replaced by the Subcontractor before being placed into service. If seals fail after the vehicle is placed into service, they are to be repaired immediately, and BEI shall be notified.
- (3) Vehicles are not to be equipped with side boards while transporting loose conveyances.
- (4) Material shall not be loaded higher than one foot below the top of the vehicle side walls.
- (5) Tarpaulin covers shall be installed and used on all vehicles. Before being installed, sharp objects and/or protrusions are to be eliminated to prevent cutting or puncture of the tarpaulin.
- (6) Tarpaulins are to be firmly secured over the soil with sufficient overlap so that the material will not be blown from the vehicle during transport. BEI will inspect the tarpaulin for adequate installation.

5.0 MOTOR VEHICLE LOADING AND UNLOADING OPERATIONS

All areas and buildings of the Navy sites (or TSDF) are off limits to Subcontractor motor vehicles (and motor vehicle operators) except those areas and buildings designated by BEI (or TSDF). Motor vehicle operators will be supervised by BEI (or TSDF) at all times while at BEI (or TSDF) sites and shall remain inside the tractor cab at all times, unless directed otherwise by BEI (or TSDF).

All Subcontractor motor vehicles will be monitored by BEI for external contamination prior to being allowed onto Navy sites. Subcontractor motor vehicles shall arrive at the site sufficiently clean to allow accurate monitoring. Motor vehicles shall be free of dried mud, dirt, grease, or other accumulations. If accurate monitoring is unsuccessful, due to excess mud, dirt, grease, or other accumulations, the motor vehicle shall be removed from the site and cleaned. Motor vehicle cleaning and time lost will be at the Subcontractor's expense. Only motor vehicles determined to be free of contamination will be allowed onto Navy sites.

Loading and unloading operations will be the responsibility of BEI (or TSDF) and will be conducted in a highly controlled manner that prevents contamination of motor vehicles. BEI (or TSDF) will verify that motor vehicles are free of contamination before their release from the loading/unloading area. Subcontractor motor vehicles will be checked for contamination as appropriate prior to leaving the loading/unloading area.

Motor vehicles that become contaminated during loading/unloading operations will be decontaminated by BEI (or TSDF). After decontamination, the motor vehicle will be checked again by BEI (or TSDF) to verify that it is free of contamination prior to its release for transport.

Load configurations shall be a joint effort of BEI and the motor vehicle operator(s). After loading, and prior to leaving the site (or TSDF), the motor vehicle operator(s) shall perform an inspection

to verify the load is arranged and secured properly (based on experience and training, and in accordance with Title 49 CFR 393, Subpart I, "Protection Against Shifting or Falling Cargo," and 392.9, "Safe Loading").

Upon acceptance of the load for transport, the Subcontractor shall be responsible for maintaining the integrity of the load, the load arrangement, and any security seals. The motor vehicle operator shall examine and periodically reexamine the load (load inspections during transit do not apply to sealed trailers, only to the inspection of security seals) and its load-securing devices as may be necessary to maintain the integrity of the load and the load arrangement in accordance with Title 49 CFR 392.9.

The Subcontractor shall be in compliance with the requirements of Section 6.0, "Accidents Involving Transport Vehicles," of the Specification upon discovery of a change in the condition of BEI's load, load arrangement, or security seals (e.g., changed due to equipment/packaging failure, motor vehicle accident, adverse weather conditions, vandalism, or theft) which involves a release of HM, HW, or CM.

6.0 ACCIDENTS INVOLVING TRANSPORT VEHICLES

In the event of an accident, the Subcontractor shall follow the procedures outlined in his Emergency Response Plan and shall be in compliance with the requirements of Title 49 CFR 390.15, "Assistance in Investigations and Special Studies, Subpart E, Accidents and License Revocation: Duties of Driver," and 172, Subpart G, "Emergency Response Information."

In the event of an accident involving a release of HM, HW, or CM, the Subcontractor shall notify BEI immediately upon learning of the accident, and if initially unsuccessful, will continue to attempt to contact BEI. The Subcontractor shall use a 24-hour telephone contact number for accident notification, when notification attempts are outside BEI's business day. BEI will provide the 24-hour telephone contact number for such notification prior to each shipment.

Notification of an accident shall include location, date and time of the accident, resultant damage or injury, person(s) involved, probable cause, condition of the load, if HM, HW, or CM was released and the amount, and any other pertinent information concerning the accident. Also to be included if applicable, are weather conditions, distance to water sources, government agencies on the scene and a telephone number where communications can be maintained.

The motor vehicle operator shall comply with all directions provided by BEI, unless counter to FHWA regulations, and/or the laws and ordinances of the jurisdiction in which the motor vehicle was in operation at the time of the accident. BEI will issue instructions regarding continued transportation of the load. The motor vehicle operator shall remain with the motor vehicle until assistance arrives or until otherwise directed.

The Subcontractor shall submit to BEI within five days of an accident or incident involving a release of HM, HW, or CM a written report which shall include the location, date and time of the accident

or incident, resultant damage or injury, person(s) involved, probable cause, the amount of HM, HW, or CM released, government agencies involved, and any other pertinent information concerning the accident or release. In addition, when an accident or incident occurs involving the release of HM, HW, or CM, the Subcontractor shall submit to BEI copies of any accident/incident reports required by State or other governmental entities.

7.0 SUBMITTALS

BEI engineering documentation requirements are summarized in the Subcontractor Submittal Requirements Summary of the issued Subcontract package. BEI will determine if documentation is complete as submitted by the Subcontractor, and reserve the right to reject and require resubmittal of any submittal that in BEI's opinion does not meet the Subcontract requirements.

Submittals that are specific to each individual motor vehicle operator (e.g., Brake Inspection Certificate, Brake Inspector's Certification, copy of CDL, Medical Examiner's Certificate) must be received and accepted by BEI within five working days of BEI's notification to the Subcontractor for motor vehicles. Nonshipment specific submittals (e.g., Motor Carrier Safety Rating, Carrier Surety Bond, or Policies of Insurance) required upon acceptance of the Subcontract award, must be received within five working days from time of Subcontract award notification and acceptance. Status of the submittals will be made to the Subcontractor by BEI within three working days following the receipt of required submittals. Rejected submittals must be corrected and received by BEI within three working days of notification of submittal rejection. All submittals must be accepted by BEI prior to the start of onsite work.

Affidavits submitted in lieu of specific Subcontract submittal certificates, licenses, or permits must be signed using the Subcontractor representative's full name and his/her company title. The affidavit must be dated, notarized, and have a reference to the submittal number found in BEI's Subcontractor Submittal Requirements Summary. The CFR number, if applicable, must be referenced with its relationship to the specific submittal requirement. The affidavit must be in statement form with an explanation of how the affidavit fulfills the submittal requirement. Acceptance of an affidavit in lieu of certificates, licenses, or permits is at the direction of BEI.