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WORK PLAN FOR MONITORING WELL INSTALLATION AT TANK FARM 2 NS NEWPORT RI
7/1/2005
TETRA TECH EC



TETRA TECH EC, INC.

**Defense Energy Support Center
Contract No. SPO600-04-D-5403**

**Work Plan
for Monitoring Well Installation
Tank Farm 2**

**Defense Fuel Support Point – Melville
Portsmouth, Rhode Island**

July 2005

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Revision
1

Date
7/13/05

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Pages Affected
All

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ACRONYMS

DESC	Defense Energy Support Center
DFSP	Defense Fuel Support Point
DoD	U.S. Department of Defense
DOT	U.S. Department of Transportation
DRO	diesel range organics
EPA	U.S. Environmental Protection Agency
ESS	Site Environmental Safety Supervisor
FAR	Federal Acquisition Regulation
FID	flame ionization detector
HASP	Health and Safety Plan
LDR	Land Disposal Restriction
PESM	Program Environmental Safety Manager
RCRA	Resource Conservation Recovery Act
RIDEM	Rhode Island Department of Environmental Management
SPCC	Spill Prevention Control and Countermeasure
SVOC	semivolatile organic compound
TOC	top of casing
TtEC	Tetra Tech EC, Inc.
UST	underground storage tank
VOC	volatile organic compound

1.0 WORK DESCRIPTION

1.1 Introduction

1.1.1 Project Description

Tetra Tech EC, Inc. (TtEC) has prepared this Work Plan for the Defense Energy Support Center (DESC) for the Defense Fuel Support Point (DFSP) Melville – Tank Farm 2 located in Portsmouth, Rhode Island under Contract No. SPO600-04-D-5403. This Work Plan describes the activities associated with the installation and sampling of 20 groundwater monitoring wells surrounding the on-site underground storage tanks (USTs).

The Rhode Island Department of Environmental Management (RIDEM) has requested that an investigation be conducted of the subsurface conditions surrounding each of the site's 11 USTs. Large irregular-shaped holes were blasted out of the bedrock in order to place the tanks and a ring drain system below ground during construction in the 1940s. Once the tanks were constructed, the remaining annular space was backfilled with soil and blasted rock. The nature of the backfill and the influence of the ring drains located beneath each tank have created an irregular groundwater flow pattern around the tanks. The well installations will be placed in backfilled areas adjacent to the tanks and will be screened from below the elevation of the tank floor and ring drain to within 5 feet of the ground surface. These locations were chosen based on historical photographs indicating the location of the former tank excavations. The goal of the well installations is to assess groundwater conditions throughout the saturated zone surrounding the tanks for site closure. See Figure 1-1 for the site location.

1.1.2 Site Description

DFSP Melville was a fuel receipt, storage, and issue facility that provided fuel support to various authorized Department of Defense (DoD) customers. The facility occupies approximately 179 acres and consists of three tank farms (Tank Farms 1, 2, and 3) and a main terminal. The property is currently owned by the US Navy and has been inactive since 1995. In addition to these areas, DFSP Melville has a truck loading facility and a marine transfer pier. The terminal was operated by the U.S. Navy Supply System, Newport Naval Base, Rhode Island until 1974 when DESC assumed administrative control.

Tank Farm 2 consists of eleven 2.5 million-gallon USTs designated as Tanks 19 to 29. The tanks were previously used by DESC to store petroleum products including marine diesel and No. 5 fuel oil. All of the tanks in Tank Farm 2 are cylindrical in shape and are of concrete construction. The tanks have been cleaned, gas-free certified, and reballasted with clean water under previous contracts. Their dimensions are 116 feet in diameter and 33.5 feet deep and they are all constructed approximately 5 feet below grade. A ring drain system was also installed beneath the tank for groundwater suppression consisting of crushed stone and a sump pump station below the tank.

1.1.3 Project Management

The Project Management Team is configured such that one person, Edward Kurja, has overall administrative and technical responsibilities for this project. Mr. Kurja is responsible for planning and scheduling the field activities, ensuring project deliverables are submitted on a timely basis, tracking and managing budgets and schedules, and maintaining a safe work environment and a record of site activities. In the event that the Project Manager is unavailable, the Site Supervisor will have full authority to make time critical decisions.

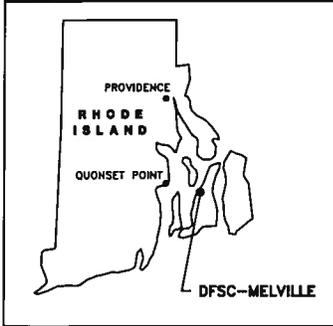
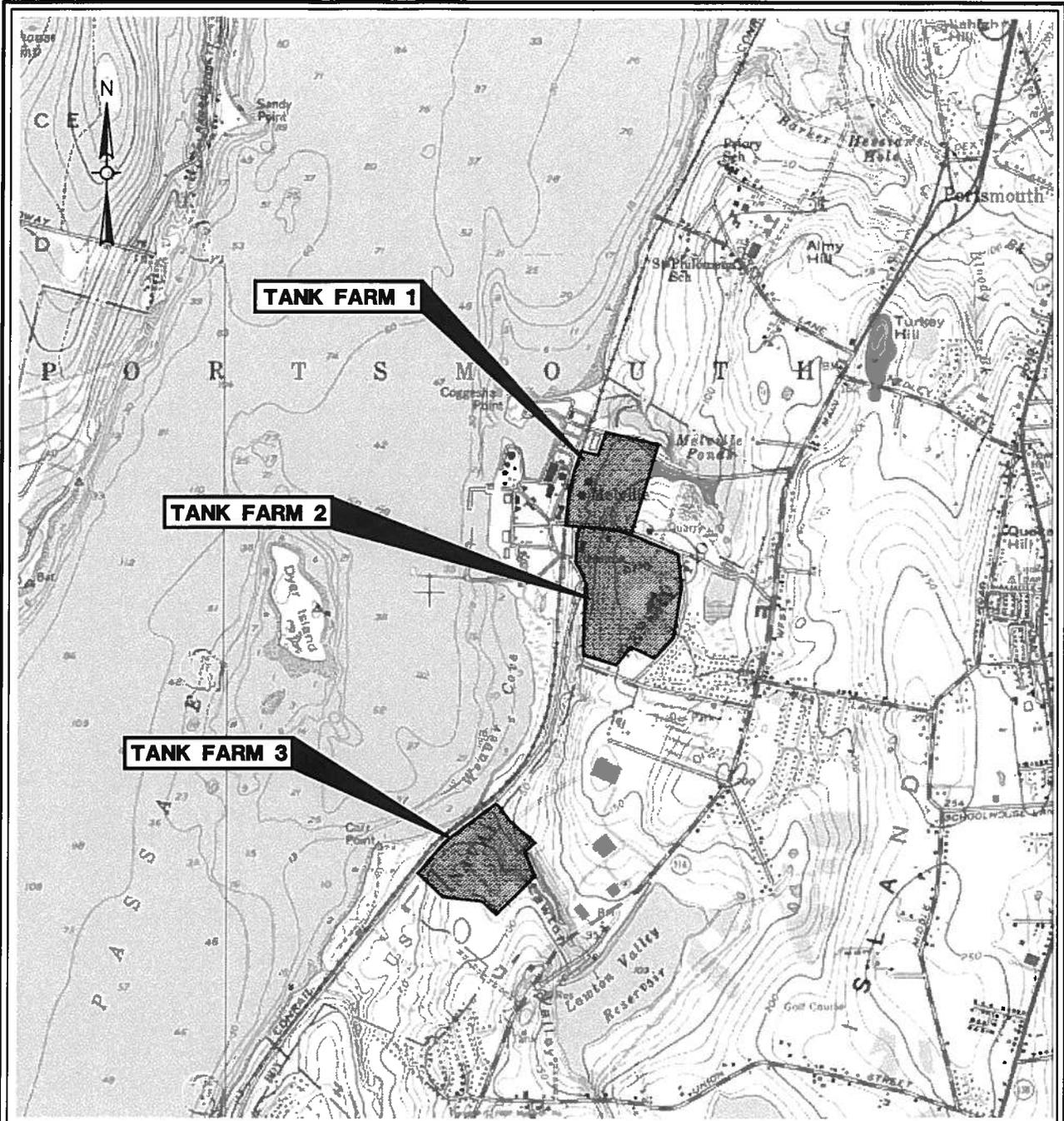


FIGURE 1-1
DEFENSE FUEL SUPPORT POINT MELVILLE
PORTSMOUTH, RHODE ISLAND
SITE LOCATION MAP
 SCALE: AS SHOWN

Paul Anderson will act as the Site Supervisor and will be responsible for managing and directing all on-site activities. These activities will include supervision of the Subcontractors, site procurement of materials, interfacing with the Naval Station Newport Environmental Protection Division and Public Works Division, and ensuring compliance with the monitoring well installation scope. Mr. Anderson will also perform the duties of the Site Environmental Safety Supervisor (ESS). As the ESS, Mr. Anderson will report to the Program Environmental Safety Manager (PESM), Mr. Grey Coppi.

TtEC will subcontract drilling services for monitoring well installation and development services.

During the site activities, field staff will receive assistance from procurement and project controls personnel. These personnel will provide part-time assistance to the site for field procurement, scheduling, status reports, and punch lists. Vanessa Paolini will be responsible for management of subcontracts and field accounting activities and for procurement of materials at the site. Dan Scully will provide project controls services on an as-needed basis. Once developed, the project controls function will include updating the cost tracking databases and preparing status reports and punch lists.

1.2 Work Approach

The goal of this Work Plan is to install and sample up to 20 monitoring wells to assess groundwater conditions surrounding the 11 underground storage tanks at Tank Farm 2.

1.2.1 Mobilization

The equipment required for the monitoring well installation includes a truck mounted drilling rig capable of installing wells using the drive and wash method and a support truck. TtEC currently has a site trailer, temporary utilities, portable facilities, and Connex box.

- TtEC will notify the Navy Public Works Department and coordinate utility locations prior to any intrusive work. All drilling locations will be marked out and cleared by Navy utilities personnel. Site preparation will occur in accordance with Section 8.0 of the Health and Safety Plan (HASp). Site zones will be used during drilling activities and pumping activities and are intended to control the spread of contamination throughout the site.
- The drilling subcontractor shall mobilize to the site all equipment and supplies needed to fulfill the scope of work. A decontamination pad will be constructed for the cleaning of drilling casing, rods, and tools between monitoring well installations. Rinse water from the decontamination activities will be pumped out of the pad and stored in drums for offsite disposal.
- Potable water for use in drilling and decontamination activities will be obtained from the nearby fire hydrants. TtEC will provide a double check valve backflow preventer to be placed on the hydrant prior to use.

1.2.2 Placement of Monitoring Wells around the Underground Storage Tanks.

Proper placement of the monitoring wells will require the positive identification of the underground storage tank perimeter and the locations of the edges of the buried tank cavity wall. Two of the existing monitoring wells on-site, GZ-225 and GZ-227, extend below the bottom of the tank and will be usable for assessing conditions along the full depth of the tanks they are associated with (see Table 1-1 for well depths and locations). Tanks 19 and 21 will require one additional well each to be placed directly opposite the existing wells. All other tanks on-site will require the installation of two new wells per tank, totaling 20 additional wells to be installed. TtEC has geo-referenced the blasted excavations for the construction of the tanks based on historical aerial photography. A global positioning unit will be used to locate the tank perimeter and wells will be installed within 5 feet of the exterior wall of each tank to be within the excavation zone. Well locations have been chosen biased towards downgradient areas, between the tank and previously observed product or in the absence of product, 180 degrees opposite the downgradient well (see Figure 1-2 for proposed and existing well locations).

**Table 1-1
Existing Site Monitoring Well Depths**

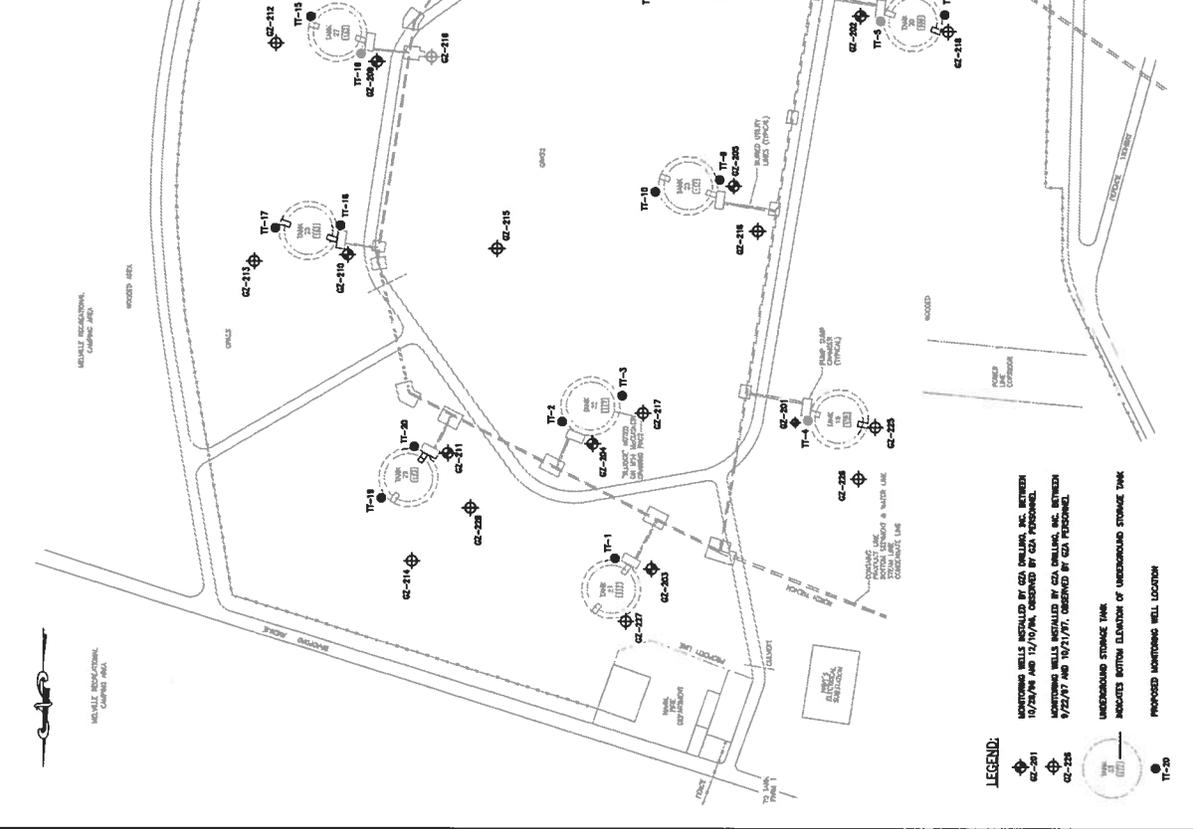
Well	Depth to Bedrock (ft)	Location
GZ-201	6	Tank 19
GZ-202	5	Tank 20
GZ-203	2	Tank 21
GZ-204	10	Tank 22
GZ-205	25	Tank 23
GZ-206	8	Tank 24
GZ-207	24	Tank 25
GZ-208	11	Tank 26
GZ-209	11	Tank 27
GZ-210	9	Tank 28
GZ-211	2.8	Tank 29
GZ-212	14.5	Tank 27
GZ-213	9	Tank 28
GZ-214	4	Tank 29
GZ-215	unknown	jp-5 piles
GZ-216	8	Tank 23
GZ-217	0.3	Tank 22
GZ-218	18	Tank 20
GZ-219	unknown	Pipeline assessment
GZ-220	8	Tank 24
GZ-221	unknown	Pipeline assessment
GZ-222	7.5	Tank 26
GZ-223	15	Tank 25
GZ-224	unknown	Pipeline assessment
GZ-225	44	Tank 19
GZ-226	13.5	Tank 19
GZ-227	39	Tank 21
GZ-228	2	Tank 29

DATE	DESCRIPTION	BY	APPROVED

NOTES:

1. BASE PLAN WAS DERIVED AND DICTATED BY TETRA TECH P.W. INC. IN JULY 1989 FROM DRAWING ENTITLED "PFS--TANK FARM 2 - SITE PLAN", PROJECT NO. 31288.15, FIGURE NO. 2, CMO FILE: 31288-15/00, DATED MARCH 1989, BY GZA ENVIRONMENTAL, INC.
2. ORIGINAL BASE PLAN WAS DEVELOPED FROM A PLAN PROVIDED BY THE NAVY ENTITLED "MASTER SMOKE STATION DEVELOPMENT PLAN PART IV SECTION 6 AREA DEVELOPMENT PLAN GAS & FUEL TANKS AND SUPPORT INFRASTRUCTURE", DRAWING NO. "100", DRAWING NO. 630010, AND FROM A 1989 AERIAL PHOTOGRAPH OF THE SITE, SCALE 1"=40'.

1. THE LOCATIONS OF THE MONITORING WELLS WERE APPROXIMATELY DETERMINED BY PACING FROM THE TANK FARM 2 STORAGE TANKS. THIS DATA SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.



ABBREVIATIONS

ND NOT DETECTED
 TPH TOTAL PETROLEUM HYDROCARBONS
 VOCs VOLATILE ORGANIC COMPOUNDS
 PNA POLYAROMATIC HYDROCARBONS



LEGEND:

- Monitoring wells installed by GZA MILWAUKEE, INC. BETWEEN 10/29/98 AND 12/10/98, OWNED BY GZA ENVIRONMENTAL
- Monitoring wells installed by GZA MILWAUKEE, INC. BETWEEN 8/22/97 AND 10/21/97, OWNED BY GZA ENVIRONMENTAL
- Underground Storage Tank
- Suggested Station Elevation of Underground Storage Tank
- Proposed Monitoring Well Location

DEFENSE FUEL SUPPORT POINT NAVAL AIR STATION, PORTSMOUTH, RHODE ISLAND
 TANK FARM 2 - PROPOSED GROUNDWATER MONITORING WELL LOCATIONS

TETRA TECH P.W., INC.
 80 FEDERAL STREET
 BOSTON, MASSACHUSETTS 02203
 TEL: (617) 657-8200

Date: JUNE 2005
 Scale: AS SHOWN
 Designed by: F. ANDERSON
 Drawn by: F. ANDERSON
 Checked by: E. KUBISA
 Approved by: E. KUBISA

P. C. SEALS

PROJECT NO. 3003.1004
 CONTRACT NO. 3003.1004
 DRAWING NO. 3003.1004.001
 SHEET 1 OF 1

1.2.3 Monitoring Well Installation

A minimum 5-inch OD temporary steel casing shall be advanced to the depth designated by TtEC. Target well depth is 40 feet to extend below the tank bottom and ring drain. Casing advancement shall be by the drive and wash method. Split spoon samples will be collected every 5 feet during casing advancement and screened for volatile organic compounds (VOCs) by headspace method. The sample with the highest reading from each borehole will be sent to an offsite laboratory for analysis of diesel range organic (DRO) compounds, VOCs, and semivolatile organic compounds (SVOCs) by EPA Methods 8015 diesel range organics, 8260 and 8270 respectively.

Monitoring well screen will be constructed of 2-inch diameter vertical slot, 0.010 slot and 2-inch PVC casing finished to just below the ground surface. A steel protective cover will be placed over the PVC well and set in a 2 foot by 2-foot concrete pad. A locking well cap will be supplied for the PVC well. The screen will be placed 5 feet below ground surface and extend to 5 feet below the bottom elevation of the UST into the ring drain area of the tank. The ring drain may be identified by a change in drilling spoils from crushed shale to crushed quarry stone, however, the exact construction of the ring drain is not known. Filter pack material surrounding the well screen will consist of #2 sands. Large pore spacing of these sands will increase product recovery rates. A 2-foot solid PVC sump will be placed at the bottom of the well screen. The filter pack will be placed to 1 foot above the top of the screen. A 2-foot thick bentonite pellet seal will then be placed on top of the filter pack. The well cover and concrete will fill the remaining 2 feet of borehole.

Wells will be developed no less than 48 hours after installation by the pump and surge method that will include the full screen. Development will continue until the purge water is visually free of fines. Drill cuttings will be placed in drums for future sampling and offsite disposal.

1.2.4 Sampling

Monitoring wells will be sampled one week after installation and development is completed. At that time, the wells will be gauged for free product levels and groundwater interface levels from the top of casing (TOC). Wells will be purged of three well volumes of water by bailing and sampled for laboratory analysis of DRO, VOCs and SVOCs by EPA Method 8015, 8260 and 8270 using dedicated bailers. If free product is encountered, groundwater will not be sampled, however a representative sample of the product will be collected for laboratory fingerprint analysis and the well will be fitted with a hydrophobic oil-collecting sock for oil removal. Recovered product will be stored in a 55-gallon drum located in the temporary waste storage area on-site for characterization based on disposal facility requirements. Waste handling procedures are outlined in Section 4.0 of this Work Plan.

2.0 FIELD SAMPLING AND LABORATORY TESTING

Sampling and analysis will be performed in support of monitoring well installation activities at the site. The sampling programs for this project will include the following:

- Real time air monitoring using a flame ionization detector (FID) for headspace screening of soil samples collected at 5-foot intervals.

-
- Collection of split spoon soil sample with highest headspace readings for shipment to an offsite laboratory for analysis of VOC, SVOC, and DRO compounds.
 - Groundwater sampling and analysis of VOCs, SVOCs and DRO compounds.

3.0 ENVIRONMENTAL PROTECTION

The purpose of this section is to identify the applicable environmental regulatory requirements relevant to TtEC during the tank cleaning and to establish the appropriate project controls to meet these requirements. This section also identifies TtEC's environmental compliance procedures and training requirements for this project. The Project Manager will be responsible for verifying that all project personnel are aware of the requirements outlined in this Work Plan.

3.1 Regulatory Drivers

TtEC will coordinate all fieldwork with Naval Station Newport Environmental Department. Any product removed is expected to contain only trace amounts of groundwater and will be disposed of at a licensed waste or recycling facility. Compliance with applicable federal, state, and local regulations will also be required.

3.2 Environmental Regulatory Compliance

3.2.1 Hazardous Waste

It is not anticipated that materials destined for off-site disposal in this project will be classified as a Resource Conservation Recovery Act (RCRA) hazardous waste (40 CFR 261). However, a representative sample of these waste streams will be collected for characterization in accordance with Section 2.0 of this Work Plan prior to transportation off-site to ensure that these materials are not a characteristic hazardous waste and that they are suitable for treatment at the disposal facility.

3.2.2 Transportation

Regulatory requirements pertaining to waste transportation are addressed in Section 4.0 of this Work Plan.

3.3 Release Reporting

An Emergency Response Plan is included in Section 12.0 of the HASP. The information contained in this section details how TtEC will address spill control, prevention, and emergency response activities on-site. TtEC will report all spills or releases to the Naval Station Newport Environmental Protection Division, who will notify the appropriate regulatory agencies.

3.4 Training and Certification Requirements for Project Personnel

As indicated in the HASP, and pursuant to 29 CFR 1910.120, site personnel performing any activities in an exclusion zone must have received a minimum of 40 hours of initial health and safety training for hazardous waste site operations. In addition to the required initial training, each employee must have received three days of directly supervised on-the-job training appropriate for the activities they will be required to perform. Annual 8-hour refresher training will be required of all hazardous waste site personnel in order to maintain their qualifications for fieldwork. The Site Supervisor will have received

24 hours of on-the-job supervised training, 8-hour supervisor training, and First Aid/CPR with blood borne pathogens training. All workers entering the tanks shall have received Confined Space Entry training in accordance with 29 CFR 1910.146 (g).

Pursuant to 40 CFR 172 Subpart H, TtEC site personnel involved in shipping any hazardous materials regulated by the U.S. Department of Transportation (DOT) will be trained per DOT regulations. However, it is currently anticipated that materials removed off-site will not meet the definition of DOT hazardous materials, therefore DOT training is not required at this time.

3.5 Inspection and Audit Procedures

3.5.1 Inspections by Regulatory Agencies

Site personnel will notify the Site Supervisor if contacted by a regulatory agency for a site inspection. The Site Supervisor/Project Manager will then notify the Naval Station Newport Environmental Protection Division Director and the TtEC Director of Regulatory Compliance. In the event of an unannounced inspection, the Naval Station Newport Environmental Protection Division Director and the TtEC Director of Regulatory Compliance will be contacted immediately.

3.5.2 Inspections by Third Parties

Any outside party requesting access to the site will be referred to the Site Supervisor/Project Manager who will initiate the appropriate notification of the Naval Station Newport Environmental Protection Division Director. TtEC personnel will not grant site access or answer questions for unauthorized personnel.

4.0 WASTE MANAGEMENT

4.1 Objective

The objective of this section is to facilitate the proper handling, on-site management, transportation, and disposal of hazardous and non-hazardous wastes generated during closure activities. This objective will be achieved through compliance with federal, state, and local regulations. This section identifies the waste streams and waste management responsibilities of TtEC, DESC, the Navy, transporters, and disposal facilities. This section also describes the equipment and waste management practices that will be implemented for sampling, analyzing, classifying, segregating, staging, storing, packaging, transporting, and disposing of the generated wastes.

4.2 DESC and Naval Assistance

The Site Supervisor will review all submittals designated for DESC and Navy approval. These submittals will include waste analysis and classifications, waste profile/approval forms, Land Disposal Restriction (LDR) certifications, manifests/shipping papers, and manifest discrepancy and exception reports. TtEC will rely on DESC and the Navy to provide approval of final waste characterizations and sign as the generator of all waste streams leaving the site.

4.3 Waste Streams

All wastes generated as a result of product recovery are assumed to be non-hazardous. However, as described previously under Section 3.2.1, specific testing of potentially hazardous waste streams is planned for confirmation of this assumption. The planned analyses of waste streams generated are presented in Section 2.0.

4.4 On-Site Waste Management

All waste streams will be evaluated prior to generation to determine the most cost-effective method of handling and storage. All containerized wastes will be stored in U.S. DOT UN specification containers, conforming to 49 CFR 178 performance-oriented packaging requirements (e.g., 1A1 or 1A2 drums). Bulk and non-bulk containers will be considered based on estimated volumes of waste to be generated.

4.5 Spill Prevention

Every effort will be made, through proper planning and management of the transportation process, to prevent the potential for a spill or release of hazardous substances. However, contingency measures will be in place in the case of such an occurrence. This includes providing personnel, equipment, and materials to control, contain, and clean up any spilled material that may adversely affect the health of the public or the environment. Transporters responsible for taking waste materials to the designated disposal facilities will be required to provide and implement their own Emergency Response Plan which will be reviewed and approved by TtEC prior to the start of work. In the event of a spill or release, TtEC will report it to the Naval Station Newport Environmental Protection Division.

The following equipment will be available at all locations at all times for quick response to unexpected spills:

- Sorbents and spill cleanup materials, including spill control pillows, absorbent booms, packs, and blankets
- 55-gallon containers
- Shovels, brooms, and similar hand tools

Additional information relative to spill response can be found in Section 12.0 of the HASP. A Spill Prevention Control and Countermeasure (SPCC) Plan, prepared according to 40 CFR Part 112, will not be required for this project.

5.0 SUBCONTRACTING

5.1 Subcontracting and Procurement

The acquisition of materials and services to support this project will be in conformance with the Federal Acquisition Regulations (FARs). The work has been divided into procurement efforts, which are identified in Table 5-1. For subcontract services, statements of work will be prepared by engineering staff to accompany the appropriate sections of the Navy Guide Specifications. These documents identify the scope of services required, schedule constraints, and submittal requirements. In addition, they provide a site background summary and health and safety requirements for site work. Procurement personnel will provide the contractual and administrative portions of the package for subcontract services.

Table 5-1
Procurement Summary

Subcontractor	Materials/Services	Contract	Procurement
Dragin Drilling Inc.	Monitoring well drilling, installation and development	FUR	Boston

Note: FUR = Fixed unit rate

Procurement of materials and equipment will be performed using purchase requisitions, to which the appropriate Navy Guide Specification sections will be attached. In addition to these procurements, local vendors will be identified and accounts established to supply commodity items such as office supplies, lumber, rental tools, building supplies, etc., to the site.