

\*\*\*\*\*  
USACE / NAVFAC / AFCEA / NASA UFGS-02 65 01.00 10 (April 2006)  
-----  
Preparing Activity: USACE Replacing without change  
UFGS-02115A (February 2002)

## UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated 9 October 2006

Latest change indicated by CHG tags

\*\*\*\*\*

### SECTION TABLE OF CONTENTS

#### DIVISION 02 - EXISTING CONDITIONS

##### SECTION 02 65 01.00 10

#### UNDERGROUND STORAGE TANK REMOVAL

04/06

#### PART 1 GENERAL

- 1.1 REFERENCES
- 1.2 MEASUREMENT AND PAYMENT
- 1.3 SUBMITTALS
- 1.4 QUALIFICATIONS
  - 1.4.1 Laboratory Services
  - 1.4.2 Support Staff
- 1.5 REGULATORY REQUIREMENTS
  - 1.5.1 Permits and Licenses
  - 1.5.2 Statutes and Regulations
- 1.6 PROJECT/SITE CONDITIONS
  - 1.6.1 Sequencing and Scheduling
  - 1.6.2 Work Plan

#### PART 2 PRODUCTS

- 2.1 BACKFILL MATERIAL

#### PART 3 EXECUTION

- 3.1 GENERAL REQUIREMENTS
  - 3.1.1 Safety Guidelines
  - 3.1.2 Burning and Explosives
  - 3.1.3 Protection of Existing Structures and Utilities
  - 3.1.4 Shoring
- 3.2 TANK CONTENTS VERIFICATION
  - 3.2.1 Sampling
  - 3.2.2 Analysis
  - 3.2.3 Characterization
- 3.3 CLEARING, GRUBBING AND REMOVALS
- 3.4 TOPSOIL
- 3.5 PREPARATIONS FOR EXCAVATION
  - 3.5.1 Removal of Product, Pumpable Liquids, and Sludge

- 3.5.2 Contaminated Water Disposal
  - 3.5.2.1 Sampling, Analysis, and Containment
  - 3.5.2.2 Treatment
- 3.6 PURGING AND INERTING
- 3.7 EXCAVATION
  - 3.7.1 Exploratory Trenches
  - 3.7.2 Tank Excavation
  - 3.7.3 Piping Excavation
  - 3.7.4 Open Excavations
  - 3.7.5 Stockpiles
- 3.8 REMOVAL OF PIPING, ANCILLARY EQUIPMENT, AND TANK
  - 3.8.1 Piping and Ancillary Equipment
  - 3.8.2 Tank
  - 3.8.3 Contaminated Soil, Tank and Piping Excavation Examination
- 3.9 TANK CLEANING
  - 3.9.1 Exterior
  - 3.9.2 Temporary Storage
  - 3.9.3 Interior
- 3.10 SOIL EXAMINATION, TESTING, AND ANALYSIS
  - 3.10.1 Tank Excavation Sampling Procedures
  - 3.10.2 Stockpiled Material Sampling
  - 3.10.3 Analysis
- 3.11 BACKFILLING
- 3.12 DISPOSAL REQUIREMENTS
  - 3.12.1 Treatment, Disposal, and Recycling
  - 3.12.2 Tank and Ancillary Equipment Disposal
  - 3.12.3 Transportation of Wastes
  - 3.12.4 Salvage Rights
  - 3.12.5 Records
  - 3.12.6 Hazardous/Special Waste Manifests
  - 3.12.7 Documentation of Treatment or Disposal
- 3.13 SPILLS
- 3.14 TANK CLOSURE REPORT

-- End of Section Table of Contents --

\*\*\*\*\*  
USACE / NAVFAC / AFCEA / NASA UFGS-02 65 01.00 10 (April 2006)  
-----  
Preparing Activity: USACE Replacing without change  
UFGS-02115A (February 2002)

# UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated 9 October 2006

Latest change indicated by CHG tags

\*\*\*\*\*

## SECTION 02 65 01.00 10

### UNDERGROUND STORAGE TANK REMOVAL 04/06

\*\*\*\*\*

NOTE: This guide specification covers the requirements for removal and disposal of underground, nonhardened tanks used to store petroleum products, waste oils or hazardous wastes.

Comments and suggestions on this guide specification are welcome and should be directed to the technical proponent of the specification. A listing of technical proponents, including their organization designation and telephone number, is on the Internet.

Recommended changes to a UFGS should be submitted as a Criteria Change Request (CCR).

Use of electronic communication is encouraged.

Brackets are used in the text to indicate designer choices or locations where text must be supplied by the designer.

\*\*\*\*\*

#### PART 1 GENERAL

\*\*\*\*\*

NOTE: The following information should be shown on the project drawings:

- (1) Overall installation plan which identifies tanks; borrow, disposal, and stockpile areas; special security areas; shoring requirements; and access routes.
- (2) Individual as-built site plans of tank locations which identify site features such as buildings, roads, utilities, topography, trees and shrubs, surface condition, etc. If as-built drawings are not available, a site investigation and site plans are required to show the general location

of existing tanks and site features. The Contractor will provide, as part of the Closure Report, a detailed map showing exact location of the tank prior to removal.

(3) Limits of pavement removal, fence removal, and the location of ancillary equipment to be removed.

Hardened tanks are deep buried tanks as would be found with some missile facilities. This should be noted in the contract as they require deeper excavations and possibly substantial demolition of concrete.

Tanks will not be abandoned in place unless a waiver is granted in accordance with state or local requirements, LEE HQ U.S. Air Force for Air Force Projects, and HQUSACE policy dated 31 July 1990, for Formerly Used Defense Sites. Waivers will be obtained prior to advertising the closure project. Exceptions will be granted when requested in writing on a case by case basis. Absence of contamination must still be verified prior to closure and prior to obtaining a waiver.

The designer must incorporate installation, state and local requirements into this specification, including the necessary approval processes, licensing, or having their representative on site during removal operations. In many cases, the state or local jurisdiction has final authority on approval of the Work Plan. While states often enforce petroleum tank removal regulations, counties and cities are sometimes delegated authority. Petroleum sludge and contaminated media are often considered "special wastes" and are subject to regulations enforced by the State Fire Marshals Office, local agencies, etc. Some states have adopted federal rules for management of petroleum waste.

State requirements usually involve testing, analysis, and a report. The review by the state may require additional testing or other work, and may take several months; therefore, the designer must be forewarned to investigate these requirements in advance. Areas most likely to be impacted are waste and tank disposal, tank cleaning, residue and soil sampling and analysis, contaminated soil disposal or remediation, reporting, and requirements for a clean closure.

Petroleum sites which are known to have extensive soil contamination or where groundwater contamination is a possibility, should have a Corrective Action Plan under Subtitle I of RCRA and applicable state and local regulations; refer to EM 1110-3-178, Removal of Underground Storage Tanks (USTs).

For sites where the tank contained a hazardous waste, remediation should occur under the RCRA Corrective Action requirements of 40 CFR 264, 40 CFR 265, and applicable state requirements.

Coordinate with the customer regarding possible designer's discussions with the regulators, and the existence of unique requirements. Some MACOMS require the Installation Project/Program Manager either be responsible for all coordination or be included on all contacts with the regulators. For projects not on an active installation the designer should discuss requirements with the regulators and omit references to the installation and the Installation Environmental Coordinator.

Include the applicable state and local regulatory references where appropriate in the body of the specification.

The following specifications must be used in conjunction with this section:  
Section 01 35 30 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW/UST)  
Section 01 32 01.00 10 PROJECT SCHEDULE  
Section 01 45 04.00 10 CONTRACTOR QUALITY CONTROL  
Section 02 81 00 TRANSPORTATION AND DISPOSAL OF HAZARDOUS MATERIALS  
Section 01 35 45.00 10 CHEMICAL DATA QUALITY CONTROL

\*\*\*\*\*

## 1.1 REFERENCES

\*\*\*\*\*

NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a RID outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

\*\*\*\*\*

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

AMERICAN PETROLEUM INSTITUTE (API)

API PUBL 2217A	(1997) Guidelines for Work in Inert Confined Spaces in the Petroleum Industry
API PUBL 2219	(1999) Safe Operation of Vacuum Trucks in Petroleum Service
API RP 1604	(1996; R 2001) Closure of Underground Petroleum Storage Tanks
API RP 2003	(1998) Protection Against Ignitions Arising out of Static, Lightning, and Stray Currents
API Std 2015	(2001) Requirements for Safe Entry and Cleaning of Petroleum Storage Tanks

ASTM INTERNATIONAL (ASTM)

ASTM D 1556	(2000) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	(2002e1) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu.m.))
ASTM D 2167	(1994; R 2001) Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D 2487	(2000) Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 2922	(2004) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 3017	(2004) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 266	Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities

40 CFR 268	Land Disposal Restrictions
40 CFR 279	Standards for the Management of Used Oil
40 CFR 280	Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)

## 1.2 MEASUREMENT AND PAYMENT

\*\*\*\*\*

NOTE: This paragraph will be deleted if the work is in one lump-sum contract price. If it is retained and more detail is needed, items of consideration may include: excavation, contaminated soil, clean backfill required, non-hazardous sludge, pumpable liquids, analytical (PCB & asbestos), analytical (contaminated water), remove piping, and remainder of work. Coordinate this paragraph with the bidding schedule.

\*\*\*\*\*

Compensation for removal of [contaminated soil] [and] [pumpable liquids] shall be paid as a unit cost. This unit cost includes testing, excavation, stockpiling, transportation and disposal of the contaminated soil and backfilling with non-contaminated soil. Payment for all other work shall be under the base bid for the tank removal and shall constitute full payment for all work defined in the contract documents including testing of the contents, excavation and disposal of the tank, and testing of the underlying soil.

## 1.3 SUBMITTALS

\*\*\*\*\*

NOTE: Review submittal description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project. Submittals should be kept to the minimum required for adequate quality control.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for

Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

Choose the first bracketed item for Navy, Air Force and NASA projects, or choose the second bracketed item for Army projects.

\*\*\*\*\*

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for [Contractor Quality Control approval.][information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

#### SD-03 Product Data

Work Plan[; G][; G, [\_\_\_\_]]..

The Work Plan within [30] [\_\_\_\_] days after notice to proceed. The Contractor shall allow [30] [\_\_\_\_] days in the schedule for the Government's review and approval. No adjustment for time or money will be made for resubmittals required as a result of noncompliance.

Qualifications[; G][; G, [\_\_\_\_]].

A document indicating that the Contractor meets the specified requirements.

Salvage Rights.

A record of the disposition of salvaged materials at the end of the contract.

#### SD-06 Test Reports

Backfill Material[; G][; G, [\_\_\_\_]].  
Tank Contents Verification[; G][; G, [\_\_\_\_]].  
Contaminated Water Disposal[; G][; G, [\_\_\_\_]].  
Soil Examination, Testing, and Analysis[; G][; G, [\_\_\_\_]].

Reports including the chain-of-custody records.

Backfilling[; G][; G, [\_\_\_\_]].

Copies of all laboratory and field test reports.

Tank Closure Report.

[\_\_\_\_] copies of the report for each UST site opened, prepared in a standard 3-ring binder, within 14 days of completing work at each site. Each binder shall be labeled with contract number, project name, location and tank number; each binder shall be indexed. A copy of the report shall be furnished to the Installation Environmental Coordinator.



#### 1.4 QUALIFICATIONS

\*\*\*\*\*

NOTE: Require certification for tank removals whenever work will be performed under a jurisdiction requiring certification.

The laboratory validation process for underground storage tank projects is addressed in EM 1110-3-178, Removal of Underground Storage Tanks, and EM 200-1-1, Validation of Analytical Chemistry Laboratories, dated 1 July 1994. This information should be included in Section 01 35 45.00 10 CHEMICAL DATA QUALITY CONTROL.

\*\*\*\*\*

The Contractor shall have a minimum of 2 years of tank removal experience and shall be certified by the State of [\_\_\_\_\_] for tank removal work.

##### 1.4.1 Laboratory Services

For laboratory services the Contractor shall be validated in accordance with state certification requirements and Section 01 35 45.00 10 CHEMICAL DATA QUALITY CONTROL.

##### 1.4.2 Support Staff

The Contractor shall identify all staff involved for the various components, including personnel collecting and shipping samples. The qualifications of these staff members shall be detailed by the Contractor.

#### 1.5 REGULATORY REQUIREMENTS

##### 1.5.1 Permits and Licenses

The Contractor, as required or as directed by the Contracting Officer, shall obtain local, state, or federal permits and licenses that directly impact the Contractor's ability to perform the work prior to commencing removal operations.

##### 1.5.2 Statutes and Regulations

Tank closures shall be carried out in accordance with 40 CFR 280, 40 CFR 262, 40 CFR 264, and 40 CFR 265 as well as the applicable local and State of [\_\_\_\_\_] regulations. Hazardous [material] [waste] shall be transported in accordance with Section 02 81 00 TRANSPORTATION AND DISPOSAL OF HAZARDOUS MATERIALS.

#### 1.6 PROJECT/SITE CONDITIONS

\*\*\*\*\*

NOTE: Include any pertinent information regarding the former uses of the area as a gas station or waste oil storage facility, any results of chemical analyses done on contents and/or soils, leak testing results, and any hazardous material that has been stored there, if it has been removed and any unusual site features that may be helpful to the bidders. Refer to EM 1110-3-178 for more information.

If waste oil tanks were included in the Installation Part B Permit, include that information in this paragraph.

Coordinate with state/local regulators, and EM 1110-3-178 for information regarding designation of non-contaminated waste oil or petroleum wastes as special wastes.

Edit the specification to reflect the implementing Agency (IA) requirements regarding Treatment, Storage, and Disposal (TSD) facilities.

\*\*\*\*\*

The work shall consist of removal, decontamination and disposal of [one] [\_\_\_\_], [\_\_\_\_] L gallon underground storage tank and associated piping and ancillary equipment. The [tank is] [tanks are] constructed of [steel] [fiberglass] [\_\_\_\_] and [is] [are] at [the location shown on the drawings] [the following location: [\_\_\_\_]]. The [\_\_\_\_] L gallon tank was used for storing [leaded gasoline] [unleaded gasoline] [fuel oil] [diesel fuel] [waste oil] [diesel oil] [hazardous waste] [\_\_\_\_] and was taken out of service in [\_\_\_\_]. Residue remaining in the tank is considered a [special] [hazardous] waste. Subsurface conditions are represented [herein] [on drawings] [in Appendix [\_\_\_\_]] [\_\_\_\_]. Existing native soils are predominantly [\_\_\_\_]. Available backfill material is typically [\_\_\_\_]. Groundwater [has been encountered within [\_\_\_\_] m feet of the surface] [is not expected to be encountered]. The Contractor shall verify the actual conditions prior to submitting a bid. The site [shall be treated as a hazardous waste site and] [is not a hazardous waste site but] shall be given special consideration due to the nature of the materials and hazards present until closure activities are complete.

#### 1.6.1 Sequencing and Scheduling

\*\*\*\*\*

NOTE: 40 CFR 280, RCRA Subtitle I closures are primarily performed on petroleum or chemical product tanks and require a minimum of 30 days notice prior to a change in service or closure.

The RCRA Subtitle C tank closures fit into three categories:

- a. Hazardous waste accumulation tanks as per 40 CFR 262.34(a)(1)(ii). These tanks store hazardous waste for less than 90 days.
- b. Tanks storing hazardous waste over 90 days without a permit (illegal storage).
- c. Part B permitted storage tanks.

The Installation Environmental Coordinator should decide who is responsible for contacting the Implementing Agency. Subtitle C tank closures should be accomplished in accordance with the closure plans previously prepared and approved, and other applicable regulatory standards including the

**Land Ban 40 CFR 268 requirements.**

\*\*\*\*\*

The Contractor shall notify the Installation Environmental Coordinator and the Contracting Officer [\_\_\_\_\_] days prior to tank removal. The [Contractor shall] [Contracting Officer will] [Installation Environmental Coordinator will] be responsible for contacting the Implementation Agency (IA) [\_\_\_\_\_] in accordance with the applicable reporting requirements.

1.6.2 Work Plan

The Contractor shall develop, implement, maintain, and supervise as part of the work, a comprehensive plan for tank removal and related operations. As a minimum the plan shall include, but not be limited to, excavation, removal, and ultimate disposal of the tank, its contents, and any contaminated materials. The Work Plan shall be based on work experience, on the requirements of this specification, and on the following references:

- a. API RP 1604.
- b. API Std 2015.
- c. API RP 2003.
- d. API PUBL 2217A.
- e. API PUBL 2219.

No work at the site, with the exception of site inspections and mobilization, shall be performed until the Work Plan is approved. At a minimum, the Work Plan shall include:

- a. Discussion of the removal approach, tank cleaning, and tank cutting procedures.
- b. A Sampling and Analysis Plan prepared in accordance with Section 01 35 45.00 10 CHEMICAL DATA QUALITY CONTROL.
- c. Methods to be employed for product, sludge, vapor, and pumpable liquid removal; purging and inerting; and storage methods proposed for control of surface water.
- d. Treatment options.
- e. Identification of waste, tank and contaminated soil transporters and means of transportation.
- f. Treatment, disposal, and alternate facilities, and means of treatment, disposal or remediation.
- g. Borrow source.
- h. Spill prevention plan.
- i. Spill contingency plan.
- j. Decontamination procedures, shoring plan, and safety measures in accordance with Section 01 35 30 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW/UST).

## PART 2 PRODUCTS

### 2.1 BACKFILL MATERIAL

\*\*\*\*\*  
NOTE: Part or all of this paragraph may be deleted  
if the subject is addressed in other sections.  
Refer to EM 1110-3-178 for special compaction  
requirements such as under pavements.  
\*\*\*\*\*

Backfill material shall be obtained from [the location indicated on the drawings] [off-site]. Backfill shall be classified in accordance with ASTM D 2487 as GW, GP, GM, GC, SW, SP, SM, SC, MH, CL, or CH and shall be free from roots and other organic matter, trash, debris, snow, ice or frozen materials. If off-site materials are used, soil classification test results shall be approved prior to bringing the material onsite. The testing frequency for backfill material shall be 1 per 1000 cubic meters yards or a minimum of 1 test. Non-contaminated material removed from the excavation shall be used for backfill in accordance with Paragraph BACKFILLING.

## PART 3 EXECUTION

### 3.1 GENERAL REQUIREMENTS

#### 3.1.1 Safety Guidelines

Personnel shall abide by the safety guidelines specified in Section 01 35 30 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW/UST).

#### 3.1.2 Burning and Explosives

Use of explosives or burning debris will not be allowed.

#### 3.1.3 Protection of Existing Structures and Utilities

The Contractor shall take all necessary precautions to avoid damage to existing structures, their appurtenances, monitoring wells, or utilities that may be affected by work activities. Any damage to [utilities] [monitoring wells] resulting from the Contractor's operations shall be repaired at no expense to the Government. The Contractor shall coordinate with the installation to locate underground utilities prior to beginning construction. Utilities encountered which were not previously shown or otherwise located shall not be disturbed without approval from the Contracting Officer.

#### 3.1.4 Shoring

Shoring requirements shall be provided in accordance with Section 01 35 30 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW/UST).

### 3.2 TANK CONTENTS VERIFICATION

Sampling and analysis shall be conducted in accordance with the approved Sampling and Analysis Plan and Section 01 35 45.00 10 CHEMICAL DATA QUALITY CONTROL.

### 3.2.1 Sampling

\*\*\*\*\*

NOTE: If the contents have been properly characterized or already removed and disposed, delete the non-applicable portions of the specification.

The designer will detail the sampling requirements (number of samples and analytical methodology) based on the state/local regulations and EM 1110-3-178 (i.e. tank contents, contaminated water (pumpable liquids and sludges), stockpiled soils, and in situ soils).

If the Government is to perform sampling and analyses, specify what data will be available from the Government. This will enable the Contractor to ascertain if additional analysis will be required by the TSD facility and should be reflected in the bid.

See EM 200-1-3, Requirements for Preparation Sampling and Analysis Plans, for additional information.

\*\*\*\*\*

Tank [product,] [pumpable liquids,] [tank coatings] [and] [sludge] [shall] [shall not] be sampled by the Contractor. If the data is not adequate, additional sampling and analysis to the extent required by the approved [off-site] [permitted treatment, storage or disposal (TSD)] facility receiving the material shall be the responsibility of the [Contractor] [Government]. Meeting all regulatory requirements, including the preparation of hazardous materials and waste for transportation shall be the responsibility of the Contractor.

### 3.2.2 Analysis

\*\*\*\*\*

NOTE: The designer will consult the state/local regulations and EM 1110-3-178 for assistance in determining the appropriate analytical parameters for tank contents samples. Analytical protocol will also be based on historical records of tank usage and/or tank contents testing and defined in Section 01 35 45.00 10 CHEMICAL DATA QUALITY CONTROL. The designer will ensure that the Contractor addresses the specific laboratory preparation and analytical methods to be employed, especially variations in fuel related analyses.

\*\*\*\*\*

Tank contents shall be tested by the [Government] [Contractor] for the parameters listed herein. Analyses shall include [total petroleum hydrocarbons (TPH)] [benzene, ethylbenzene, toluene and xylene (BETX)] [lead] [\_\_\_\_\_].

### 3.2.3 Characterization

\*\*\*\*\*

NOTE: Regarding "in a special manner", some states require that petroleum contaminated soils (special wastes) be disposed of in specially designated landfills.

Refer to EM-1110-3-178 for additional information.

\*\*\*\*\*

[Prior to removing any of the tank contents, the contents shall be characterized to determine if the tank contents must be disposed [as a [hazardous] [special] waste] [in a special manner] based on local, state, and Federal disposal regulations. [Tank product] [Tank product, pumpable liquids, and sludge] shall be characterized in accordance with 40 CFR 261 and 40 CFR 279. The waste contents determination and accompanying test results for each phase present in the tank shall be submitted to the Contracting Officer.] [The following analyses will be performed by the Government prior to removing the tank contents: [\_\_\_\_\_]. The Contractor shall be responsible for any additional requirements identified by the disposal facility. The tank contents shall not be removed until approval is given by the Contracting Officer.]

### 3.3 CLEARING, GRUBBING AND REMOVALS

\*\*\*\*\*

NOTE: If underground storage tank removal is part of a larger project which contains Section 31 11 00 CLEARING AND GRUBBING, use it instead of this paragraph. Otherwise edit this paragraph as needed.

\*\*\*\*\*

[Clearing and grubbing shall be in accordance with Section 31 11 00 CLEARING AND GRUBBING.] [Areas designated for clearing and grubbing [as shown on the drawings] [as required and directed by the Contracting Officer] shall be cleared of all trees, stumps, down timber, brush, rubbish, roots larger than 75 mm 3 inches in diameter, and matted roots prior to commencing operations. Concrete or asphalt pavement shall be saw cut at the limits of removal, broken and removed with the resulting debris disposed [off Government Property] [at the location shown on the drawings]. Chain link fence shall be [removed and salvaged for reuse] [disposed of off-site].]

### 3.4 TOPSOIL

\*\*\*\*\*

NOTE: If underground storage tank removal is part of a larger project which contains Section 31 00 00 EARTHWORK, use it for topsoil requirements instead of this paragraph. Otherwise edit this paragraph as needed.

\*\*\*\*\*

[Topsoil shall meet the requirements in Section 31 00 00 EARTHWORK.] [Uncontaminated topsoil shall be stripped and stockpiled separately for reuse [at the location shown] [at a location approved by the Contracting Officer] if it meets the requirements of clean fill given in Paragraph BACKFILLING.] [Additional topsoil in excess of that produced by excavation shall be obtained [off-site] [from designated location onsite].] [All areas disturbed by tank removal operations, other than areas to receive pavement or similar surface under this contract, shall be topsoiled.]

[Topsoil shall be used wherever shown or stated on the drawings.]

### 3.5 PREPARATIONS FOR EXCAVATION

Before excavating, the Contractor shall [drain product piping back to the tank] [remove residual liquids trapped in the product lines] [and] remove all product from the tank; and the tank shall be purged and vented in accordance with **API RP 1604**, and as specified herein.

#### 3.5.1 Removal of Product, Pumpable Liquids, and Sludge

\*\*\*\*\*

**NOTE:** See EM 1110-3-178 for the analytical parameters required for recyclability, reusability and disposal consistent with characterization of tank contents.

If the Defense Re-utilization and Marketing Office (DRMO) is unwilling to take the wastes, delete reference to delivery inside the installation. Early in the design stage coordinate with the DRMO to ensure their capabilities are used to the maximum benefit of the Government and on approved containers that might be available or required by the DRMO. The bid documents must have a letter of waste acceptance attached thereto to be considered a responsive bid. Coordinate with the state regulatory personnel. Other options are addressed in EM 1110-3-178.

Petroleum contaminated water disposal is addressed in EM 1110-3-178.

TSD facilities appropriate to accept the wastes generated by this project may be identified. If an analysis is available, bid acceptance may be subject to the bidders having a signed letter of acceptance from a permitted TSD attached to the bid; otherwise the bid should be declared nonresponsive.

\*\*\*\*\*

[Tank product, pumpable liquids, and sludge shall be contained, and stored onsite, prior to disposal. Contaminated water shall be treated as specified. Tank product, pumpable liquids, and sludge shall be analyzed and segregated to recover reusable products by the [Government] [Contractor] prior to being transported to the [designated location] [treatment, storage and disposal (TSD) facility.]] [Tank product, pumpable liquids, and sludge shall be removed and disposed of by the Contractor. No Government facilities shall be used for permanent storage or disposal of the wastes. Temporary storage on Government facilities will be allowed only until testing is complete, manifests (if necessary) are complete, and transportation is arranged.] The Contractor shall be responsible for obtaining all required permits. Usable product shall be the property of the [Government] [Contractor]. The Contractor shall provide approved containers, vehicles, equipment, labor, signs, labels, placards and notifications, necessary for accomplishment of the work, including materials necessary for cleaning up spills that could occur from tank removal operations.

### 3.5.2 Contaminated Water Disposal

#### 3.5.2.1 Sampling, Analysis, and Containmentment

\*\*\*\*\*  
NOTE: The designer will detail the analytical parameters for contaminated water and treated effluent, treated onsite or off-site, according to the state regulations, the requirements of the recycler and/or TSD facility, and EM 1110-3-178. Sampling and analysis are to be conducted for parameters consistent with characterization of tank contents.  
\*\*\*\*\*

Contaminated water shall be sampled and analyzed both prior to and after treatment. [Contaminated water produced from excavation operations and tank pumping treated onsite, shall be analyzed for pH; benzene, ethylbenzene, toluene, and xylene (BETX); total lead; oil and grease; total petroleum hydrocarbons (TPH); and [\_\_\_\_]]. Sampling and analysis shall be performed prior to [discharge to the installation sanitary sewer] [disposal] for every [\_\_\_\_] [200,000] L [\_\_\_\_] [50,000] gallons of contaminated water treated.] [Analysis for contaminated water to be taken to an off-site treatment facility shall conform to the requirements of the treatment facility with documentation of all analyses performed furnished to the Contracting Officer in accordance with paragraph RECORDS. Contaminated water shall be contained, stored onsite, and analyzed [prior to being transported to the approved treatment, storage and disposal facility] [and disposed of by the Contractor in accordance with applicable Federal and state disposal regulations].] The Contractor shall provide approved containers, vehicles, equipment, labor, signs, labels, placards and manifests and associated land disposal notices and notifications, necessary for accomplishment of the work. Sampling and analyses of contaminated water and treated water and the Contractor and laboratory quality assurance program shall be in accordance with Section 01 35 45.00 10 CHEMICAL DATA QUALITY CONTROL.

#### 3.5.2.2 Treatment

Contaminated water shall be treated [onsite] [off-site] by [oil water separation] [\_\_\_\_] [filtering] [air stripping] [and] [activated carbon] or other means as approved by the Contracting Officer. If contaminated water is to be treated onsite, the proposed treatment shall be specified in the Work Plan and submitted for approval. Temporary storage and treatment equipment shall be installed [in the general vicinity of the tanks] at a location approved by the Contracting Officer. Treated effluent shall be sampled and analyzed and the results approved by the Contracting Officer before discharge to [the sanitary sewer] [the surface] [\_\_\_\_]. Effluent shall be treated and discharged in accordance with the discharge permit.

### 3.6 PURGING AND INERTING

\*\*\*\*\*  
NOTE: Coordinate explosive limits with health effects, especially for BTEX (benzene, toluene, ethylbenzene, xylene) containing mixtures. Coordinate with EM 1110-3-178, health and safety specialists or industrial hygienists.  
\*\*\*\*\*



\*\*\*\*\*

After the tank and piping contents have been removed, but prior to excavation beyond the top of the tank, the Contractor shall disconnect all the piping (except the piping needed to purge or inert the tank). Flammable and toxic vapors shall be purged from the tank or the tank made inert in accordance with API RP 1604, with the exceptions that filling with water shall not be used and, if dry ice is employed, the Contractor shall use a minimum of 1.8 kg per 500 L 3 pounds per 100 gallons of tank volume. The tank atmosphere shall be continuously monitored for combustible vapors if the tank is purged, or continuously monitored for oxygen if the tank is inerted.

### 3.7 EXCAVATION

\*\*\*\*\*

NOTE: Some states may require the use of VOC emission suppression protocols during excavation, stockpiling, and transportation operations for VOC contaminated soil. The designer may need to include requirements for submittals of VOC suppression products (polyethylene sheeting, foam, or liquid VOC suppressants) and use field demonstrations to show there are no interferences from the suppression technology used with field screening devices. Approval from state/local regulators may be required prior to usage of these products and the designer should specify accordingly.

\*\*\*\*\*

Excavation areas, as well as work near roadways, shall be marked in accordance with Section 01 35 30 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW/UST).

#### 3.7.1 Exploratory Trenches

Exploratory trenches shall be excavated as necessary to determine the tank location, limits and the location of ancillary equipment.

#### 3.7.2 Tank Excavation

Excavation around the perimeter of the tank shall be performed limiting the amount of potentially petroleum contaminated soil that could be mixed with previously uncontaminated soil. Petroleum contaminated soil shall be segregated in separate stockpiles. The Contractor shall maintain around the tank an excavation of sufficient size to allow workers ample room to complete the work, but also protect the workers from sliding or cave-ins. Sheet piling, bracing, or shoring shall be installed in the absence of adequate side slopes if there is a need for workers to enter the excavated area. Surface water shall be diverted to prevent direct entry into the excavation. Dewatering of the excavation may require a discharge permit by the State and shall be limited to allow adequate access to the tank and piping, to assure a safe excavation, and to ensure that compaction and moisture requirements are met during backfilling. Dewatering may result in the production of petroleum contaminated water and/or free product. Free product shall be recovered from the groundwater only as part of necessary dewatering.

### 3.7.3 Piping Excavation

Excavation shall be performed as necessary to remove tank piping and ancillary equipment in accordance with paragraphs: Shoring, Tank Excavation, and Open Excavations.

### 3.7.4 Open Excavations

\*\*\*\*\*

NOTE: The time that tank excavations are left open depends on a variety of factors, a major one being the capability of the Contractor's lab to provide analyses within the specified turnaround time. Since short turnaround time adds cost, carefully evaluate the need for short turnarounds to avoid unnecessary costs.

If the excavation cannot be left open, it should be lined with a geomembrane and backfilled. This will aid excavation if test results reveal further contamination. However, placing a geomembrane in the excavation prior to backfilling may interfere with future in-situ remediation (e.g. soil vapor extraction, bioventing, etc.) and should only be allowed after careful consideration.

\*\*\*\*\*

Open excavations and stockpile areas shall be secured while awaiting confirmation test results from the soil beneath the tank. The excavation shall be backfilled as soon as possible after tank and contaminated soil removals have been completed and confirmation samples have been taken. The Contractor shall divert surface water around excavations to prevent water from directly entering into the excavation.

### 3.7.5 Stockpiles

\*\*\*\*\*

NOTE: Soils characterized or contaminated by a listed hazardous waste and not excluded by 40 CFR 261.4(b)(10) cannot be stockpiled unless the area has been designated by the state RCRA office as a corrective action management unit (CAMU); stockpiling of hazardous waste soil constitutes storage in a waste pile and requires a RCRA permit; placing hazardous waste contaminated soil onto plastic still constitutes a waste pile; therefore, except as stated above, all hazardous waste soils must be placed into containers such as drums, roll-offs or dumpsters.

If analytical tests have not been taken before editing of this specification, historical data may be used to assume whether a tank contained petroleum waste only or hazardous waste, until analytical test results are in and contents are verified. If the historical information indicates that a tank did not contain hazardous waste (as defined by the state), and there is no reason to believe the tank ever contained hazardous waste, the soil may be

stockpiled until analytical test results required of the Contractor are received. If at that time the results indicate the presence of hazardous waste, the contaminated soil must be managed according to RCRA: no stockpiles unless they are designated CAMUs. If historical data indicates the presence of hazardous waste, or if there is no historical data, the specification should be edited to assume that the contaminated soil is hazardous and should be containerized.

\*\*\*\*\*

Uncontaminated excavated soil and petroleum contaminated soil that is not a state-regulated hazardous waste shall be [stockpiled and used for backfill in the tank excavation prior to using borrow material] [disposed of in the area designated on the drawings] [disposed of off-site] [\_\_\_\_\_]. Excavated material that is regulated by the state as a hazardous waste [which is visibly stained] [for which real time vapor monitoring instrument readings exceed [\_\_\_\_\_] for volatile and possibly semi-volatile hydrocarbons depending on the performance criteria for the field screening method] [and] [which has an obvious petroleum odor] [or as required by the State of [\_\_\_\_\_] or implementing agency] shall be considered contaminated and shall be [stockpiled if the site is a RCRA-designated CAMU] [placed in containers such as drums, roll-offs or dumpsters] for sampling in accordance with paragraph Stockpiled Material Sampling. Uncontaminated soil shall be stockpiled separately from the contaminated soil, a safe distance away from, but adjacent to, the excavation. [Allowable stockpiles of contaminated soil shall be placed on an impermeable geomembrane a minimum of 3 layers, each [0.152] [0.762] [\_\_\_\_\_] mm [6] [30] [\_\_\_\_\_] mils thick, and covered with a [0.152] [0.254] [\_\_\_\_\_] mm [6] [10] [\_\_\_\_\_] mils sheet of geomembrane [as detailed on the drawings] [as specified]. The geomembrane shall be placed to prevent the stockpiled soil from coming into contact with surface water run-off.] The [geomembrane] [container] cover shall prevent rain or surface water from coming into contact with the contaminated soil, as well as limit the escape of the volatile constituents in the [container] [stockpile].

### 3.8 REMOVAL OF PIPING, ANCILLARY EQUIPMENT, AND TANK

\*\*\*\*\*

**NOTE:** The state regulators must be consulted by the designer to determine how the state views tank and ancillary equipment transportation, disposal and salvage rights, and what state requirements for cleaning are applicable. Depending on tank material and contents, permits and manifests and other documentation may be required.

\*\*\*\*\*

#### 3.8.1 Piping and Ancillary Equipment

All piping and ancillary equipment shall be disconnected from the tank. The piping shall be removed [completely (interior and exterior of the tank)] [to the exterior surface of the tank, where it shall be capped and abandoned in place] [as shown on the drawings] [or] [as directed by the Contracting Officer]. All tank ancillary equipment and piping connections shall be capped, except those connections necessary to inert the tank within the excavation zone. The piping exterior and ancillary equipment shall be cleaned to remove all soil and inspected for signs of corrosion

and leakage. The Contractor shall ensure no spillage of the piping contents occurs, as specified in the Work Plan, and as required in paragraph SPILLS. If the soil under and around the tank pad is [contaminated, the tank pad shall be removed and disposed of off-site at an approved [non-hazardous] [hazardous] waste facility.] [not contaminated, the tank pad shall remain in place.]

### 3.8.2 Tank

The tank shall be removed from the excavation and the exterior cleaned to remove all soil and inspected for signs of corrosion, structural damage, or leakage. All materials coming into contact with the tank, or in the vicinity of the excavation such as shovels, slings and tools shall be of the non-sparking type. After removal from the excavation, the tank shall be placed on a level surface [adjacent to the tank excavation] [at an approved location] [at the location shown on the drawings] and secured with wood blocks to prevent movement.

### 3.8.3 Contaminated Soil, Tank and Piping Excavation Examination

\*\*\*\*\*

NOTE: The designer shall determine the appropriate field-screening instruments for health and safety monitoring; methods should be based on historical records of tank contents testing and age of release; refer to EM 1110-3-178 for selection. The designer should also consider the use of immunoassay field kits to save time and money. Separate immunoassay field kits sensitive to the light and heavy fuel fractions are available; these kits will not be used as real time health and safety monitoring devices.

Include the Coordinator's Name, Office, and Phone Number.

If contamination is expected, the state may request to be present onsite to oversee contaminated soil excavation and supervise sampling efforts. The designer's or Environmental Coordinator's experience at the site or similar sites may provide a basis for estimating the amount of contaminated soil.

If USACE labs are expected to perform analysis, coordinate with them early on to verify they have the adequate resources to accomplish the work.

\*\*\*\*\*

After the tank has been removed from the ground, the adjacent and underlying soil shall be examined for any evidence of leakage. The soil shall be visually inspected for staining after removal of all obviously contaminated soil, then screened for the presence of [volatile and/or semi-volatile] [\_\_\_\_\_] contamination using [a real time vapor monitoring instrument] [immunoassay field kits]. Uncontaminated soil or petroleum contaminated soil not regulated by the state as hazardous waste shall be [stockpiled onsite per paragraph Stockpiles] [transported off-site for disposal]. Contaminated soil or suspected contaminated soil shall be containerized, or, if the site is a RCRA-designated CAMU, stockpiled until further disposition. The [Contracting Officer] [State of [\_\_\_\_\_] inspector] shall determine the extent of the contaminated soil to be

removed from each site but shall not exceed [\_\_\_\_\_] [cubic meters cubic yards] [kg tons] per site. The Contractor shall report any evidence indicating that the amount of contaminated soil may exceed the individual site limit specified, to the [Installation's Environmental Coordinator] [Contracting Officer] [\_\_\_\_\_] the same day it is discovered. If minimal additional excavation is required, the Contracting Officer may allow the Contractor to proceed. If extensive contamination is encountered, the excavation shall be sampled and backfilled in accordance with paragraph BACKFILLING. After the known contaminated soil is removed, the excavation shall be sampled and analyzed in accordance with Section 01 35 45.00 10 CHEMICAL DATA QUALITY CONTROL.

### 3.9 TANK CLEANING

#### 3.9.1 Exterior

Soil shall be removed from the exterior of the tank, piping, and associated equipment to eliminate soil deposition on roadways during transportation to a temporary storage area, ensure markings will adhere to the surfaces, and simplify tank cutting. Soil shall be removed using non-sparking tools. Removed uncontaminated soil and soil not regulated by the state as a hazardous waste shall be recovered [and used as backfill in the former tank excavation] [and] [or] [disposed of onsite]. Soil believed to be contaminated shall be removed and containerized, or if the site is a RCRA designated CAMU, collected on 3 layers of [0.152] [0.762] [\_\_\_\_\_] mm [6] [30] [\_\_\_\_\_] mil impermeable geomembrane and stockpiled with other contaminated soil removed from the excavation.

#### 3.9.2 Temporary Storage

\*\*\*\*\*  
**NOTE: Add any special state/local regulatory requirements.**  
\*\*\*\*\*

If the tank is stored after the tank exterior is cleaned and ancillary equipment is removed, and prior to being cut into sections, the tank shall be labeled as directed in API RP 1604, placed on blocks, and temporarily stored [on a flat area adjacent to the excavation] [at the location indicated on the drawings] [in the area of the existing tank site]. Prior to cleaning the tank interior the tank atmosphere shall be monitored for combustible vapors and purged or inerted if combustible vapors are detected.

#### 3.9.3 Interior

\*\*\*\*\*  
**NOTE: In lieu of eliminating any sheen, many states require a triple rinse. Coordinate with the appropriate regulators to ascertain what "clean" is, regarding tank interiors and to determine cleaning requirements for the piping and ancillary equipment; cleaning operations are highly dependent upon tank material and contents, and which state requirements are applicable. Often the state fire inspector's office has been tasked with Subtitle I program implementation; hence the following NFPA and API standards may be used to a greater degree than in situations in which another office of state government has been tasked with enforcing the UST**

regulations.

NFPA-30 Flammable and Combustible Liquids Codes

NFPA-327 Standard Procedure for Cleaning or  
Safeguarding Small Tanks and Containers

NFPA-329 Recommended Practice for Handling  
Underground Leakage of Flammable and Combustible  
Liquids

API Std 2015 Cleaning Petroleum Storage Tanks

If API Std 2015 is used, flooding the tank should  
not be used in any circumstances.

\*\*\*\*\*

The tank interior shall be [cleaned using a high pressure (greater than 3.45 MPa 500 psi), low volume (less than 0.13 L/s 2 gpm) water spray] [or] [steam cleaned] until all loose scale and sludge is removed, and contamination, in the form of a sheen, is no longer visible in the effluent stream. The interior surfaces of piping shall also be cleaned, to the extent possible, using the same method used for cleaning the tank. Contaminated water generated from interior cleaning operations (of both piping and tank) shall not exceed the following quantities for each UST cleaned:

UST VOLUME (LITERS)	PERCENT OF UST VOLUME
3,785 or less	5
37,850 or less	5 or 378 L, whichever is less
75,700 or less	1 or 568 L, whichever is less
greater than 75,700	1 or 946 L, whichever is less

  

UST VOLUME (GALLONS)	PERCENT OF UST VOLUME
1,000 or less	5
10,000 or less	5 or 100 gal., whichever is less
20,000 or less	1 or 150 gal., whichever is less
greater than 20,000	1 or 250 gal., whichever is less

All contaminated water resulting from cleaning operations shall be [collected and stored on site] [discharged to the installation sanitary sewer after passing through an oil water separator] [handled in accordance with paragraph Contaminated Water Disposal]. Cleaning shall be accomplished eliminating, to the greatest extent possible, the need for personnel to enter the tank. Cleaning shall be done using specially designed tank cleaning equipment which allows the tank to be cleaned prior to cutting into sections without requiring personnel to enter the tank or, if less specialized equipment is used, the tank shall be partially dissected to overcome confined space entry hazards. This work shall be accomplished in accordance with Section 01 35 30 SAFETY, HEALTH, AND EMERGENCY RESPONSE (HTRW/UST).

### 3.10 SOIL EXAMINATION, TESTING, AND ANALYSIS

#### 3.10.1 Tank Excavation Sampling Procedures

\*\*\*\*\*

NOTE: The designer will detail the confirmation soil sampling requirements and analytical parameters, including pipe trenches and near pump islands, based on the state/local regulations, EM 1110-3-178 and EM 200-1-3.

In most cases, a 72-hour turnaround-time (TAT) is appropriate to avoid excessive downtime or remobilization of the Contractor; determine if a quicker TAT is warranted for the off-site analytical.

If the State will have an individual onsite to oversee sampling and/or excavation operations, the following may be substituted for the first sentence: "After soil known to be contaminated has been removed, soil samples shall be collected and analyzed by the Contractor as directed by the Contracting Officer in consultation with [\_\_\_\_]."

A backhoe should be used for soil sampling to eliminate the need to have personnel enter the excavation.

If the regulators do not specify the number of samples required, use a minimum of 2 samples at the bottom of the tank excavation zone, with one in the center of the tank excavation and one where the highest instrument reading was obtained or where contamination is most likely to occur.

If additional samples will likely be required, it may be best to include additional testing as a separate bid item so a credit can be easily obtained if the additional tests are not required.

If there is evidence of spillage around the tank or the possibility of horizontal movement of leaked material, the following requirement can be added: "A sample shall be obtained from each of the 4 walls of the excavation at [[600] [\_\_\_\_] mm [2] [\_\_\_\_] foot vertical intervals] [approximately 2/3 of the total depth of the excavation] and [composited] [tested as individual samples]."

\*\*\*\*\*

After soil known to be contaminated has been removed or after soil excavation is complete, the excavation shall be sampled with procedures, number, location, and methodology in accordance with state regulations and Section 01 35 45.00 10 CHEMICAL DATA QUALITY CONTROL. Samples [shall] [may] be obtained from the pits using a backhoe with a Shelby tube attached to the bucket. Sample preservation and analytical procedures shall conform to Section 01 35 45.00 10 CHEMICAL DATA QUALITY CONTROL.

### 3.10.2 Stockpiled Material Sampling

\*\*\*\*\*

NOTE: The designer will detail the sampling requirements and include unique stockpile segregation procedures required by the implementing

agency in the body of the specification. Analytical testing of stockpiled soils will be based on visual observation, knowledge of tank contents records and testing of tank contents.

Soil that is a hazardous waste will not be allowed to be stockpiled. Unless this is a designated corrective action management unit, stockpiling of hazardous waste will require a permit. The designer must coordinate with the state on Subtitle C tanks.

\*\*\*\*\*

[Stockpiled contaminated soil shall be sampled and preserved in accordance with the approved Sampling and Analysis Plan, and Section 01 35 45.00 10 CHEMICAL DATA QUALITY CONTROL.] [Sampling locations, number and specific procedures shall be as required by the [State of [\_\_\_\_]] [implementing agency] and the disposal facility.]

### 3.10.3 Analysis

\*\*\*\*\*

NOTE: Hydrocarbon tests may vary vastly from state to state. Designer should consult the latest state requirements for the appropriate hydrocarbon test methods and coordinate with Section 01 35 45.00 10 CHEMICAL DATA QUALITY CONTROL.

The designer will take into consideration that testing of stockpiled soils and testing of the excavation pit to confirm "clean closure" may require different testing. Stockpiled materials testing is performed relative to disposal criteria, confirmation soil testing from the pit is tested to demonstrate clean closure.

\*\*\*\*\*

Soil samples from the excavation and stockpiled material shall be tested in accordance with the approved Sampling and Analysis Plan, and Section 01 35 45.00 10 CHEMICAL DATA QUALITY CONTROL for the following parameters: [total petroleum hydrocarbon (TPH)] [benzene, ethylbenzene, toluene, xylene (BETX)] [toxicity characteristic leaching procedure (TCLP)] [the following constituents: [\_\_\_\_]]. Copies of all test results shall be provided to the Contracting Officer.

### 3.11 BACKFILLING

\*\*\*\*\*

NOTE: Coordinate with the IA regarding the maximum contaminant levels allowable for clean closure, and if waste from one stockpile can be used as backfill for another. Coordinate with the user concerning preferences in regard to leaving excavations open pending lab results, state inspector's evaluations, road closures and other factors. Lab turnaround time plays a critical role in the duration of excavations left open and times must be coordinated. If field analysis is allowed by the state inspector, this would reduce or eliminate turnaround time concerns.



If the Government or state will analyze samples, revise this paragraph and give the length of time the Contractor should expect the excavation to be open.

If additional constituents require analyses to meet state/local closure requirements, include the appropriate limits in this paragraph and include the same limits in the definition for clean fill.

Add applicable requirements for backfilling the excavation in this section or revise the reference to the appropriate section of the specifications; see EM 1110-3-178 for guidance.

\*\*\*\*\*

The tank area and any other excavations shall be backfilled [as soon as possible after tank and contaminated soil removals have been completed and confirmation samples have been taken] [only after the soil test results have been approved]. Contaminated soil removal shall be complete after [the bottom of the tank excavation is determined to have soil contamination levels below the state standards of [100] [\_\_\_\_\_] ppm TPH] [approval by the [state inspector] [Contracting Officer]]. The excavation shall be dewatered if necessary. Stockpiled material subjected to chemical confirmation testing shall be used as backfill if it is found to [conform to the requirements of clean fill per appropriate [state] [local] regulations] [contain less than [100] [\_\_\_\_\_] ppm of total petroleum hydrocarbons (TPH)] [contain less than [10] [\_\_\_\_\_] ppm of BETX] [\_\_\_\_\_] . Backfill consisting of clean fill shall be placed in layers with a maximum loose thickness of [\_\_\_\_\_] [200] mm [\_\_\_\_\_] [8] inches, and compacted to [90] [\_\_\_\_\_] percent maximum density for cohesive soils and [95] [\_\_\_\_\_] percent maximum density for cohesionless soils. Density tests shall be performed by an approved commercial testing laboratory or by facilities furnished by the Contractor. Test results shall be attached to Contractor's Quality Control Report. A minimum of 1 density test shall be performed on [each] [\_\_\_\_\_] lift. Laboratory tests for moisture density relations shall be determined in accordance with ASTM D 1557, Method B, C, or D, or ASTM D 3017. A mechanical tamper may be used provided that the results are correlated with those obtained by the hand tamper. Field in-place density shall be determined in accordance with ASTM D 1556, ASTM D 2922, or ASTM D 2167.

### 3.12 DISPOSAL REQUIREMENTS

#### 3.12.1 Treatment, Disposal, and Recycling

\*\*\*\*\*

NOTE: List approved facilities in the area of the project.

Many IA's allow contaminated soil treatment onsite and the specification revised accordingly with potential IA approval of a work plan. The approval process should be started by the designer, if possible, to ensure IA approval does not cause project delays.

Supply the EPA hazardous waste number in accordance

with 40 CFR 261.

\*\*\*\*\*

Disposal of [hazardous] [or] [special] wastes shall be in accordance with all local, State, and Federal solid and hazardous waste laws and regulations; the RCRA; Section 02 81 00 TRANSPORTATION AND DISPOSAL OF HAZARDOUS MATERIALS; and conditions specified herein. This work shall include all necessary personnel, labor, transportation, packaging, detailed analyses (if required for disposal, manifesting or completing waste profile sheets), equipment, and reports. Product and pumpable liquids removed from the tank shall be recycled to the greatest extent practicable. The tanks removed shall be disposed of at one of the following state approved facilities: [\_\_\_\_]. Each tank disposed of in this manner shall be manifested as required by the State of [\_\_\_\_] to document delivery and acceptance at the disposal facility.

### 3.12.2 Tank and Ancillary Equipment Disposal

After the tank, piping, and ancillary equipment have been removed from the excavation and the tank cleaned, the tank shall be cut into sections with no dimension greater than [1500] [\_\_\_\_] mm [5] [\_\_\_\_] feet. Tank and piping sections shall be [recycled] [disposed of [in a State approved off-site disposal facility] [or] [in a salvage yard] [at the Defense Reutilization and Marketing Office (DRMO)] [at the location shown on the drawings]]. The tank shall be cut into sections prior to being taken [off Government property] [from the tank removal site]. The Contractor shall not sell the tank intact. Ancillary equipment shall be [recycled] [disposed of at [an approved off-site disposal facility] [a salvage yard] [the DRMO]] Piping shall be disconnected from the tank and [removed] [grouted full of a portland cement and water slurry consisting of 22.7 L 6 gallons of clean water per 42.6 kg 94 pound sack of portland cement, thoroughly mixed and free of lumps] unless otherwise indicated.

### 3.12.3 Transportation of Wastes

Transportation shall be provided in accordance with Department of Transportation (DOT) Hazardous Material Regulations and State and local requirements, including obtaining all necessary permits, licenses, and approvals. Evidence that a State licensed [hazardous waste] [waste] transporter is being used shall be included in the SUBMITTALS.

### 3.12.4 Salvage Rights

The Contractor shall retain the rights to salvage value of recycled or reclaimed product and metal not turned in to the DRMO or otherwise identified, so long as the requirements of 40 CFR 266 and 40 CFR 279, or the applicable State requirements are met. At the end of the contract, the Contractor shall provide documentation on the disposition of salvaged materials.

### 3.12.5 Records

\*\*\*\*\*

**NOTE: Manifests are required only when the tank contents are a RCRA regulated hazardous waste. If the tank contents are a DOT hazardous material but not a RCRA regulated hazardous waste, there are Bill of Lading requirements. Edit this paragraph accordingly.**

\*\*\*\*\*

Records shall be maintained of all waste determinations, including appropriate results of analyses performed, substances and sample location, the time of collection, and other pertinent data as required by 40 CFR 280, Section 74 and 40 CFR 262 Subpart D, and Section 01 35 45.00 10 CHEMICAL DATA QUALITY CONTROL. Transportation, treatment, disposal methods and dates, the quantities of waste, the names and addresses of each transporter and the disposal or reclamation facility, shall also be recorded and available for inspection, as well as copies of the following documents:

- a. Manifests.
- b. Waste analyses or waste profile sheets.
- c. Certifications of final treatment/disposal signed by the responsible disposal facility official.
- d. Land disposal notification records required under 40 CFR 268 for hazardous wastes.

Records shall be provided in accordance with Section 02 81 00 TRANSPORTATION AND DISPOSAL OF HAZARDOUS MATERIALS. Following contract close out, the records shall become the property of the Government.

#### 3.12.6 Hazardous/Special Waste Manifests

Manifesting shall conform to the requirements specified in Section 02 81 00 TRANSPORTATION AND DISPOSAL OF HAZARDOUS MATERIALS.

#### 3.12.7 Documentation of Treatment or Disposal

The wastes, other than recyclable or reclaimable product or metal, shall be taken to a treatment, storage, or disposal facility which has EPA or appropriate state permits and [hazardous] [or special] waste identification numbers and complies with the provisions of the disposal regulations. [Documentation of acceptance of special waste by] [The original return copy of the hazardous waste manifest, signed by the owner or operator of] a facility legally permitted to treat or dispose of those materials shall be furnished to the Contracting Officer not later than [5] [\_\_\_\_\_] working days following the delivery of those materials to the facility; and a copy shall be included in the Tank Closure Report. A statement of agreement from the proposed treatment, storage or disposal facility and certified transporters to accept [hazardous] [or special] wastes shall be furnished [in the Work Plan] [to the Contracting Officer not less than 14 days before transporting any wastes]. If the Contractor selects a different facility than is identified in the [contract] [Work Plan], documentation shall be provided for approval to certify that the facility is authorized and meets the standards specified in 40 CFR 264.

#### 3.13 SPILLS

Immediate containment actions shall be taken as necessary to minimize effect of any spill or leak. Cleanup shall be in accordance with applicable Federal, State, local laws and regulations, and district policy at no additional cost to the Government. Refer to Section 02 81 00 TRANSPORTATION AND DISPOSAL OF HAZARDOUS MATERIALS for spill response and reporting requirements.

### 3.14 TANK CLOSURE REPORT

\*\*\*\*\*

NOTE: Subtitle C tank closures shall be done in accordance with previously prepared closure plans and 40 CFR 264, Section 197. Some states have forms and/or requirements that must be included.

The number of copies required is dependent on how many the state requires, what the installation requires, and what the Government wants. To avoid additional printing costs to the Government for unforeseen copies, the designer must get a realistic number.

Subtitle I closures shall be performed in accordance with 40 CFR 280 as well as applicable state regulations.

\*\*\*\*\*

Tank Closure Reports shall include the following information as a minimum:

- a. A cover letter signed by a [responsible company official] [Professional Engineer registered in the State of [\_\_\_\_]] certifying that all services involved have been performed in accordance with the terms and conditions of this specification.
- b. A narrative report describing what was encountered at each site, including:
  - (1) condition of the UST.
  - (2) any visible evidence of leaks or stained soils.
  - (3) results of vapor monitoring readings.
  - (4) actions taken including quantities of materials treated or removed.
  - (5) reasons for selecting sample locations.
  - (6) sample locations.
  - (7) collection data such as time of collection and method of preservation.
  - (8) reasons for backfilling site.
  - (9) whether or not groundwater was encountered.
- c. Copies of all analyses performed for disposal.
- d. Copies of all waste analyses or waste profile sheets.
- e. Copies of all certifications of final disposal signed by the responsible disposal installation official.
- f. Information on who sampled, analyzed, transported, and accepted all wastes encountered, including copies of manifests, waste

profile sheets, land disposal restriction, notification and certification forms, certificates of disposal, and other pertinent documentation.

- g. Copies of all analyses performed for confirmation that underlying soil is not contaminated, with copies of chain-of-custody for each sample. Analyses shall give the identification number of the sample used. Sample identification numbers shall correspond to those provided on the one-line drawings.
- h. Scaled one-line drawings showing tank locations, limits of excavation, limits of contamination, underground utilities within 15 m 50 feet, sample locations, and sample identification numbers.
- i. Progress Photographs. The Contractor shall take a minimum of 4 views of the site showing such things as the location of each tank, entrance/exit road, and any other notable site condition before work begins. After work has been started at the site, the Contractor shall photographically record activities at each work location daily. Photographs shall be 76.2 x 127.0 mm (3 x 5 inches) 3 x 5 inches and shall include:
  - (1) Soil removal, handling, and sampling.
  - (2) Unanticipated events such as discovery of additional contaminated areas.
  - (3) Soil stockpile area.
  - (4) Tank.
  - (5) Site or task-specific employee respiratory and personal protection.
  - (6) Fill placement and grading.
  - (7) Post-construction photographs. After completion of work at each site, the Contractor shall take a minimum of four (4) views of the site. Prints shall illustrate the condition and location of work and the state of progress. The photographs shall be mounted and enclosed back-to-back in a double face plastic sleeve punched to fit standard three ring binders. Each color print shall show an information box, 40 x 90 mm 1-1/2 x 3-1/2 inches. The information box for the 76.2 x 127.0 mm (3 x 5 inch) 3 x 5 inch photographs shall be scaled down accordingly, or taped to the bottom of the photo. The box shall be typewritten and arranged as follows:

Project No.

Contract No.

Location

Contractor/Photographer

Photograph No.

Date/Time:

Description

Direction of View

-- End of Section --