

Instructions for Conducting Sampling During Underground Storage Tank Closure

Permitting and Compliance Assistance Program

Division of Waste Management

Florida Department of Environmental Protection

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INSTRUCTIONS FOR CONDUCTING SAMPLING DURING CLOSURE OF UNDERGROUND STORAGE TANKS

INTRODUCTION

This document establishes procedures for conducting sampling during closure and reporting storage tank system closures to meet the requirements of Chapter 62-761, Florida Administrative Code (F.A.C.), Underground Storage Tank Systems.

As an integral part of a system or a system component closure performed at an underground storage tank facility, a Closure Report or a Limited Closure Report, as applicable, shall be prepared and submitted to the Department or contracted County program as required in Rule 62-761.800, F.A.C. The report is to describe the work that was performed at the facility during the system or system component closure, and summarize any data collected at that time.

A Site Assessment in accordance with Rule 62-780.600, F.A.C., conducted and approved by the Department will satisfy the requirements of this guideline. However, compliance with these guidelines do not meet the criteria to qualify as a Site Assessment under Rule 62-780.600, F.A.C., or for the issuance of a Site Rehabilitation Completion Order (SRCO) as specified in Chapter 62-780, F.A.C., Contaminated Site Cleanup Criteria. If the intent is to demonstrate that all No Further Action requirements of Chapter 62-780, F.A.C., have been met, a Closure Report which meets the Site Assessment requirements of Chapter 62-780, F.A.C., must be prepared and submitted, and the report must be signed and sealed by a PE or a PG licensed in the State of Florida.

A. Closure Report

In cases where an investigation is required at the time of closure in accordance with this document, and as specified in Rule 62-761.800, F.A.C., a Closure Report with the following elements and documentation shall be prepared and submitted in writing or electronic format to the County within 60 days of completion of closure:

1. Summary Narrative

The Closure Report shall summarize closure actions and provide:

- a. Information on the procedures (soil field screening procedures, analytical sample collection, etc.) followed during closure;
- b. Information on the dimensions of the excavation(s), depth to groundwater, volume of soil excavated, and disposal method for the excavated soil;
- c. Disposition of excavated contaminated soil;

- d. Disposition of removed system components;
- e. Disposition of accumulated sludge / liquids removed from system components; and,
- f. Recommendation for no additional actions or for continued site assessment under Chapter 62-780.600, F.A.C.

2. Supporting Documentation

- a. A scaled site map showing the area(s) excavated and approximate locations of all samples collected;
- b. Table(s) summarizing all field and analytical results obtained, listing the approximate depth at which each sample was collected;
- c. DEP Form 62-761.900(2) "Storage Tank Facility Registration Form" (due within 10 days after closure);
- d. DEP Form 62-761.900(5) "Underground Storage System Installation and Removal Form for Certified Contractors" (due no later than 21 days after removal of a storage tank system, storage tank or integral piping); and,
- e. Copies of laboratory reports that are in compliance with Chapter 62-160, F.A.C. (i.e., SOP Forms - <https://floridadep.gov/dear/quality-assurance/content/sop-forms>, Electronic Data Deliverable (EDD) in ADaPT (Automated Data Processing Tool), chain of custody, and disposal/transportation certification/manifest).

B. General Sampling Guidelines

All samples must be analyzed using approved methods listed in Chapter 62-780, F.A.C., or methods approved through protocols described in Chapter 62-160, F.A.C. Throughout this document, department "approved methods" means the methods approved in Chapter 62-780, F.A.C., or the methods approved through protocols described in Chapter 62-160, F.A.C.

Composite soil samples cannot be used to meet the requirement of Closure Investigation sampling. Soil samples collected during Closure Investigation must be discrete grab samples. Composite samples are only allowed for analysis of contaminated soil for the purposes of disposal.

Benzo(a)pyrene equivalents must be calculated for soil samples as there are no longer individual direct exposure Cleanup Target Levels (CTLs) for several of the Polycyclic Aromatic Hydrocarbons (PAHs).

Soil samples for volatile analyses must be collected pursuant to EPA Method 5035A, incorporated by reference in

Rule 62-160.800, F.A.C. However, if the substrate to be sampled consists of large particles such as pea gravel, contains debris or is consolidated, soil samples for volatile analyses may be collected in a bulk jar.

Note¹: Chapter 62-780, F.A.C., allows Level 1 Risk Management alternative closure options for both the total recoverable petroleum hydrocarbons (TRPH) CTLs and leachability CTLs, and in accordance with these procedures, further analysis of the soil sample can be run. As such, enough soil should be collected during sampling efforts so that the laboratory can perform additional tests on that soil if necessary. The laboratory should be advised that in the event that contamination is detected which exceeds the TRPH “Direct Exposure – Residential” CTL or TRPH “Leachability Based on Groundwater Criteria” CTL specified in Table II of Chapter 62-777, F.A.C., TRPH fractionation using either the Massachusetts method or the Working Group method should be performed on that soil sample. The laboratory should also be advised that in the event that contamination is detected that exceeds the Department’s “Leachability Based on Groundwater Criteria” CTLs specified in Table II of Chapter 62-777, F.A.C., for any other contaminant of concern, a Synthetic Precipitation Leaching Procedure (SPLP) extraction and analysis of that soil sample should be performed. Additionally, the acceptable holding times for the soil samples need to be met.

Note²: If alternative sampling protocols are requested, a proposal under subsection 62-761.850(1), F.A.C., Alternative Procedures, may be submitted to the Department on [Form 62-761.900\(4\)](#), for approval under this subsection.

1. Gasoline and Kerosene Analytical Groups

a. Soil Samples

Soil samples obtained during closure of a storage tank system are to be screened in the field using an Organic Vapor Analyzer (OVA), Photo Ionization Detector (PID), or other acceptable method approved by the Department. A sample from the location in each source area (tank farm, integral piping, individual spill containment system, dispenser island¹), that yields the highest hydrocarbon measurement is to be analyzed for volatile organic aromatics (VOAs), PAHs and TRPHs. If no positive screening results are obtained, one analytical sample, from each source area, is to be collected from the location within each source area believed to most likely have contamination, such as next to a fill port. If verification of an initial analytical laboratory result exceeding the CTLs was obtained, the option exists to collect a subsequent verification sample upon further excavation and soil removal. If the subsequent verification sample does not exceed the CTLs and the results are supported by laboratory Quality Assurance/Quality Control (QA/QC) data, then there is no confirmed discharge. If the subsequent verification sample

¹ Each island is considered a source area. If there are five islands with two dispensers on each island, five samples are to be collected.

exceeds the CTLs, then a discharge would be confirmed requiring the facility to begin the site assessment initiation phase as prescribed in Chapter 62-780, F.A.C. If soil samples cannot be collected due to high water table, then groundwater samples must be collected in accordance with B.1.b.

- (1) If an organic vapor analysis instrument with a Flame Ionization Detector (FID) or a PID is used, it must be in the survey mode. PIDs should not be used in situations where humidity will interfere with the instrument's sensitivity (i.e., during rainy periods, measuring moist or wet soil). Readings must be obtained from the headspace of samples in half-filled, 8-ounce or 16-ounce jars. Each soil sample should be obtained from the vadose zone (the area above the water table), brought (if necessary) to a temperature of between 20°C (68°F) and 32°C (90°F), and the reading obtained five to thirty minutes thereafter. If an FID is used, each soil sample must be split into two jars, and one of the readings must be obtained with the use of an activated charcoal filter unless the unfiltered reading is 10 parts per million (ppm) or less. The total corrected hydrocarbon measurement must be determined by subtracting the filtered reading from the unfiltered reading. Analytical instruments must be calibrated in accordance with the manufacturer's instructions.
- (2) If soil that yields positive field screening results (hydrocarbon measurements greater than 10 ppm) is identified and remains on-site, a grab sample from the location in each source area that yields the highest hydrocarbon measurement must be analyzed for VOAs, PAHs and TRPHs. If the evidence suggests that products from both the Gasoline Analytical Group and Kerosene Analytical Group were released at different locations within a source area, then the sample from each distinct product area with the highest hydrocarbon measurement is to be collected for laboratory analyses.
- (3) If contaminated soil is identified and excavated, a minimum of four or five samples (at least one from the bottom of the excavation if the water table was not reached and at least four from the walls of the excavation) are to be obtained for field screening. The sample that yields the highest hydrocarbon measurement is to be analyzed for VOAs, PAHs and TRPHs. If no positive screening results are obtained, the sample is to be collected from the location believed to be most likely to have contamination. This sampling is in addition to the sampling required in B.1.a., above.

Removal of soil greater than 20 feet of depth and/or in a 20-foot radius laterally from the edge of excavation is allowable provided that an Interim Source Removal Report is submitted in accordance with the requirements of Rule 62-780.525, F.A.C., and is signed and sealed by a PE or PG.

- (4) DEP Standard Operating Procedures pursuant to Rule 62-160.800, F.A.C., provide guidance for soil sampling.

b. Groundwater Samples

Groundwater samples obtained during closure of a tank must be analyzed for all parameters specified in Table C of Chapter 62-780, F.A.C. DEP Standard Operating Procedures pursuant to Rule 62-160.800, F.A.C., provide guidance for groundwater sampling.

2. Used Oil

a. Soil Samples

- (1) Soil samples obtained during closure of a used oil tank are to be inspected for signs of staining or discoloration. If the tank appears to have discharged or if soil contaminated or saturated with used oil is identified and remains on-site, a sample that represents the location believed to be most likely to have contamination must be analyzed for all parameters specified for used oil in Table D of Chapter 62-780, F.A.C.
- (2) If soil visually stained or saturated with used oil is identified and excavated, at least one sample is to be obtained from the bottom of the excavation if the water table was not reached and at least one sample is to be obtained from the wall of the excavation at an equivalent depth of the soil visually stained or saturated with used oil that was removed, and analyzed for those contaminants detected in the sample collected from the most visibly stained area or during pre-burn analyses.
- (3) DEP Standard Operating Procedures pursuant to Rule 62-160.800, F.A.C., provide guidance for soil sampling.

b. Groundwater Samples

Groundwater samples must be analyzed for all parameters specified for used oil in Table D of Chapter 62-780, F.A.C. DEP Standard Operating Procedures pursuant to Rule 62-160.800, F.A.C., provide guidance for groundwater sampling.

C. Sampling Requirements for Storage Tank Removals [see Section E and F for requirements during closure of individual system components]

1. Gasoline and Kerosene Analytical Groups

a. Soil Samples

During the removal of an underground storage tank system, field screening of soils in accordance with B.1.a. above shall be conducted inside the area of the tank pit. The field screening locations should be collected at the four sidewalls and the bottom of the excavation, and should also be taken laterally in a five-foot grid pattern throughout the entire excavated area with soil collection from ground surface at discrete points at a depth of two feet and five feet below land surface (bls), then continuing at five-foot intervals to 20 feet bls, unless groundwater is encountered. If groundwater is encountered prior to

reaching 20 feet bls, then groundwater samples should be collected in accordance with C.1.b. Excavated soils shall not be returned to the excavation without confirmation screening.

DEP Standard Operating Procedures pursuant to Rule 62-160.800, F.A.C., provide guidance for soil sampling.

b. Groundwater Samples

Groundwater samples must be obtained from a properly constructed temporary monitoring well or a direct push well as discussed below whenever the depth to the groundwater table is less than 20 feet. If the depth to the groundwater table is greater than 20 feet, a groundwater sample is not required if:

- the screening and laboratory results indicated that contaminated soil was not present, or
- contaminated soil was identified and was left in place requiring the discharge to be reported and a site assessment to be conducted in accordance with Rule 62-780.600, F.A.C., or
- contaminated soil was identified, excavated and results demonstrated that groundwater should not have been affected based on the:
 - degree of contamination,
 - horizontal and vertical extent of contamination in the excavated soil,
 - type of product believed to have been discharged, and
 - site stratigraphy.

Subsequent to backfilling, the temporary monitoring well is to be installed in the area that represents the location believed to be most likely to have contamination as determined by the soil field screening results. If no soil contamination is found, the well is to be installed near the center of the former tank location. Minimum well construction details for a temporary monitoring well require a sand pack placed around the well screen prior to sampling and the well screen intercepting the groundwater table.

DEP Standard Operating Procedures pursuant to Rule 62-160.800, F.A.C., provide guidance for groundwater sampling.

2. Used Oil

a. Soil Samples

When a used oil tank is being removed, a visual inspection of the excavation, of the tank condition and of the removed soil is to be performed to document the integrity of the tank. If the tank appears to have discharged or if soil staining is documented, a soil sample is to be obtained in accordance with Section

B.2.a., above.

DEP Standard Operating Procedures pursuant to Rule 62-160.800, F.A.C., provide guidance for soil sampling.

b. Groundwaters Samples

Groundwater sampling is not required if visual observations or laboratory results from sampling indicate that contaminated soil is not present. However, if the tank appears to have discharged or if soil staining is documented, and the depth to the groundwater table is less than 20 feet, a temporary monitoring well is to be installed in the area that represents the location believed to be most likely to have contamination as determined by the visual observations of the soil samples. If the depth to the groundwater table is greater than 20 feet, a groundwater sample is not required if:

- the visual observations or laboratory results from sampling indicated that contaminated soil was not present, or
- contaminated soil was identified and was left in place requiring the discharge to be reported and a site assessment to be conducted in accordance with Rule 62-780.600, F.A.C., or
- contaminated soil was identified, excavated and results demonstrated that groundwater should not have been affected based on the:
 - degree of contamination,
 - horizontal and vertical extent of contamination in the excavated soil,
 - type of product believed to have been discharged, and
 - site stratigraphy.

DEP Standard Operating Procedures pursuant to Rule 62-160.800, F.A.C., provide guidance for groundwater sampling.

D. Sampling Requirements for Storage Tanks Closed in Place [see Section E and F for requirements during closure of individual system components]

1. Gasoline and Kerosene Analytical Groups

a. Soil Samples

A minimum of four soil borings must be placed around each underground storage tank, with a maximum distance of 20 feet between borings. Each boring is to be placed as close to the tank as possible, with one of the borings placed as close to the fill port as possible while still being beyond the edge of the tank so

that the boring can continue to the groundwater table or 20 feet, whichever is less. Soil must be screened at two-foot intervals to a depth of 10 feet below land surface and then at 5-foot intervals to the groundwater table, or to a depth of 20 feet below land surface if the water table is not encountered. If groundwater is encountered prior to reaching 20 feet bls, then groundwater samples should be collected in accordance with D.1.b.

DEP Standard Operating Procedures pursuant to Rule 62-160.800, F.A.C., provide guidance for soil sampling.

b. Groundwater Samples

Groundwater samples must be obtained whenever the depth to the groundwater table is less than 20 feet. If the depth to the groundwater table is greater than 20 feet, a groundwater sample is not required if:

- the screening and laboratory results indicated that contaminated soil was not present; or
- contaminated soil was identified and was left in place requiring the discharge to be reported and a site assessment to be conducted in accordance with Rule 62-780.600, F.A.C.; or
- contaminated soil was identified, excavated and results demonstrated that groundwater should not have been affected based on the:
 - degree of contamination,
 - horizontal and vertical extent of contamination in the excavated soil,
 - type of product believed to have been discharged, and
 - site stratigraphy.

When compliance monitoring wells are present, one sample can be obtained from each compliance monitoring well (if only one tank of 2,000-gallon capacity or less is being closed in place, only two temporary monitoring wells are to be installed, at locations suspected to be downgradient and upgradient from the tank). If it is determined that the construction of the compliance wells is not adequate (that is, if the water table does not intersect the screened interval), temporary monitoring wells are to be installed, as specified below.

If there are no compliance monitoring wells present, four temporary monitoring wells are to be installed around the tank field and sampled (if only one tank of 2,000-gallon capacity or less is being closed in place, only two temporary monitoring wells are to be installed, at locations suspected to be downgradient and upgradient from the tank). Minimum well construction details for a temporary monitoring well require a sand pack placed around the well screen prior to sampling and that the

screened interval intercepts the groundwater table.

DEP Standard Operating Procedures pursuant to Rule 62-160.800, F.A.C., provide guidance for groundwater sampling.

2. Used Oil

a. Soil Samples

Sample as specified in Section D.1.a., above, with the samples visually inspected to determine if the tank appears to have discharged. If the tank appears to have discharged or if soil staining is documented, a soil sample is to be obtained in accordance with Section B.2.a., above.

DEP Standard Operating Procedures pursuant to Rule 62-160.800, F.A.C., provide guidance for soil sampling.

b. Groundwater Samples

If the depth to the groundwater table is less than 20 feet, a temporary monitoring well is to be installed in the area that represents the location believed to be most likely to have contamination as determined by the visual observations of the soil samples. If no soil staining is documented, the temporary monitoring well is to be installed next to the tank, as close to the fill port as possible. If the depth to the groundwater table is greater than 20 feet, a groundwater sample is not required if:

- visual observations or laboratory results indicated that contaminated soil was not present; or
- contaminated soil was identified and was left in place requiring the discharge to be reported and a site assessment to be conducted in accordance with Rule 62-780.600, F.A.C.; or
- contaminated soil was identified, excavated and results demonstrated that groundwater should not have been affected based on the:
 - degree of contamination,
 - horizontal and vertical extent of contamination in the excavated soil,
 - type of product believed to have been discharged, and
 - site stratigraphy.

DEP Standard Operating Procedures pursuant to Rule 62-160.800, F.A.C., provide guidance for groundwater sampling.

E. Sampling Requirements for Closure of Integral Piping in Contact with Soil

1. Soil Samples

One soil boring must be placed approximately every 20 feet of product transfer line (piping), with the spacing determined by any evidence of contamination and location of potential sources of leaks, such as fixtures, connections and joints, unless there are elbow or bends greater than 45 degrees for closure of integral piping. An additional sample is required at any elbow joint with bends greater than 45 degrees for closure of integral piping. The boring(s) is/are to be located as close to the transfer line as possible, with the sampling point one foot below the line level, or immediately above the groundwater table, whichever is first encountered. If groundwater is encountered and a soil sample cannot be collected, then groundwater samples should be collected in accordance with E.2.

DEP Standard Operating Procedures pursuant to Rule 62-160.800, F.A.C., provide guidance for soil sampling.

2. Groundwater Samples

A groundwater sample is not required if:

- the screening and laboratory results indicated that contaminated soil was not present; or
- contaminated soil was identified and was left in place requiring the discharge to be reported and a site assessment to be conducted in accordance with Rule 62-780.600, F.A.C.; or
- contaminated soil was identified, excavated and results demonstrated that groundwater should not have been affected based on the:
 - degree of contamination,
 - horizontal and vertical extent of contamination in the excavated soil,
 - type of product believed to have been discharged, and
 - site stratigraphy.

If the results cannot demonstrate that groundwater should not have been affected, then a temporary monitoring well is to be installed in the area that represents the location believed to be most likely to have contamination as determined by the soil samples.

DEP Standard Operating Procedures pursuant to Rule 62-160.800, F.A.C., provide guidance for groundwater sampling.

F. Sampling Requirements for Closure of Piping Sumps, Spill Containment Systems, and Dispenser Sumps

1. Soil Samples

- a. One soil boring must be placed next to each piping sump and each individual spill containment system.

Samples for field screening are to be collected approximately every two feet below land surface until the top of the storage tank, or the groundwater table, whichever is first encountered.

- b. A minimum of one soil boring must be placed directly under each product dispenser sump or less than three feet from each product dispenser sump. Samples for field screening are to be obtained approximately every two feet below land surface to a minimum depth of four feet, or to the groundwater table, whichever is first encountered (if the appropriate District or contracted County program determines based on screening results that there is a need to extend any boring below 10 feet, subsequent samples may be collected every five feet). The depth of the soil boring(s) will be dependent upon the hydrocarbon vapors encountered. The ideal location for evaluating soil conditions is directly under the dispenser if the dispenser has been removed and the area is large enough to be accessible. If groundwater is encountered and a soil sample cannot be collected, then groundwater samples should be collected in accordance with F.2.
- c. DEP Standard Operating Procedures pursuant to Rule 62-160.800, F.A.C., provide guidance for soil sampling.

2. Groundwater Samples

A groundwater sample is not required if:

- the screening and laboratory results indicated that contaminated soil was not present; or
- contaminated soil was identified and was left in place requiring the discharge to be reported and a site assessment to be conducted in accordance with Rule 62-780.600, F.A.C.; or
- contaminated soil was identified, excavated and results demonstrated that groundwater should not have been affected based on the:
 - degree of contamination,
 - horizontal and vertical extent of contamination in the excavated soil,
 - type of product believed to have been discharged, and
 - site stratigraphy.

If the results cannot demonstrate that groundwater should not have been affected, then a temporary monitoring well is to be installed in the area that represents the location believed to be most likely to have contamination as determined by the soil samples.

DEP Standard Operating Procedures pursuant to Rule 62-160.800, F.A.C., provide guidance for groundwater sampling.

G. Discharge Reporting Requirements during a Petroleum/Product Tank System Closure

The Department must be notified by the facility owner or operator of the discovery of an unreported discharge on the Discharge Report Form [Department Form 62-761.900(1)] within 24 hours of the discovery or before the close of the Department's next business day. If any one of the following reporting criteria is met, then the Closure Investigation may be terminated, a Closure Report (prepared according to the requirements in Section A – Documentation Requirements, describing the work that was performed at the site and summarizing the data collected at that time) is to be submitted and a formal site assessment initiated in accordance with Chapter 62-780, F.A.C.:

1. Soil contaminated with products classified in the Gasoline Analytical Group or in the Kerosene Analytical Group, that exceeded the default soil CTLs specified in Chapter 62-777, F.A.C., remains on-site; or
2. Soil contaminated with used oil, that exceeded the default soil CTLs specified in Chapter 62-777, F.A.C., remains on-site; or

Note: For G.1. and G.2. above, a DRF does not need to be submitted when the default soil CTLs are exceeded while level 1 alternative closure options (Fractionation and SPLP) are being evaluated. Once the evaluation is complete, if it is demonstrated that the soil is contaminated, then a DRF must be submitted;

3. Free product or a sheen of petroleum products is detected in a monitoring well or in the tank or tank system components excavation area; or
4. Any of the groundwater CTLs specified in Chapter 62-777, F.A.C., has been exceeded.

H. Hazardous Substance and Other Pollutant Storage Tank Systems

Owners or operators of hazardous substance USTs and other pollutant USTs are required to perform a Closure Investigation. The Closure Report must address the regulated substance stored in the storage tank system. Sampling methodology must be submitted to the District or contracted County program for approval 30 days before the storage system closure. If the sampling methodology proposed by the Owner or Operator will accurately detect any discharges that may have occurred, the District or contracted County program will notify the owner or operator of the approval within 14 days of receipt of the sampling methodology. Closure Investigation may be conducted in accordance with existing Department-approved closure evaluation protocols and related corrective action protocols approved under other Department programs such as Chapters 62-777, and 62-780, F.A.C. [e.g., *Heavy Fuel Oil Discharge Response Actions* (FDEP May 2016)].