



TCEQ REGULATORY GUIDANCE

Remediation Division

RG-411

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Investigating and Reporting Releases from Petroleum Storage Tanks (PSTs)

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Abbreviations and Acronyms

AL—action level
APAR—affected property assessment report
AST—aboveground storage tank
CAPM—corrective action project manager
CAS—see “RCAS”
COC—chemical of concern
DUS—data usability summary
Eco Checklist—TRRP Tier 1 Ecological Exclusion Criteria Checklist
EPA—U.S. Environmental Protection Agency
IR—incident report
LOSS—licensed on-site supervisor
LPST—leaking petroleum storage tank
LRC—laboratory review checklist
LPST—leaking petroleum storage tank
MDL—method detection limit
SQL—method quantitation limit
NAPL—nonaqueous phase liquid
NFA—no further action
NOD—notice of deficiency
PAH—polycyclic aromatic hydrocarbon
PCL—protective concentration level
PST—petroleum storage tank
RCAS—registered corrective action specialist
RDR—release determination report
SIN—self-implementation notice
SPLP—synthetic precipitation leaching procedure
SQL—sample quantitation limit
TCEQ—Texas Commission on Environmental Quality
TNRCC—Texas Natural Resource Conservation Commission
TPH—total petroleum hydrocarbon
TRRP—Texas Risk Reduction Program
TSP—TRRP screening process
USGS—United States Geological Survey
UST—underground storage tank
VOC—volatile organic compound

Introduction

The purpose of this guidance is to explain the requirements of the Texas Commission on Environmental Quality (TCEQ) for investigating and reporting releases from underground and aboveground storage tanks. This document replaces all release determination guidance previously issued by the Petroleum Storage Tank (PST) Program.

Who Should Read This Guide?

Environmental professionals seeking PST Program release investigation and reporting information should read this guide. Environmental professionals include registered corrective action specialists (RCASs), corrective action project managers (CAPMs), and tank contractors (licensed on-site supervisors, or LOSSs). The guidance will also help owners and operators understand and oversee release investigation activities conducted at their storage tank sites, should such activities become necessary.

Contact Information

Report all nonemergency releases, both suspected and confirmed, to the TCEQ PST Responsible Party Remediation (PST-RPR) Section in Austin within **24 hours** of discovery. The PST-RPR Section may be notified by:

- Phone: 512/239-2200
- Fax: 512/239-2216
- E-mail: pstrpr@tceq.state.tx.us

Use the *Texas Petroleum Storage Tank Program—Incident Report (IR) Form* (TCEQ-20097) for the initial release notification. Fax or mail the completed IR form to the PST-RPR Section. The mailing address is:

PST-RPR, Mail Code (MC) 137
TCEQ
P.O. Box 13087
Austin, Texas, 78711

If you are notifying the PST-RPR Section by telephone or e-mail, please assemble all of the information on the IR form before calling or e-mailing. All PST Program guidance and forms are available on the Web at: www.tnrcc.state.tx.us/permitting/remed/rpr/download.html.

For emergency situations such as fire, explosion, or vapor hazards, call the statewide Environmental Release Hotline at 1-800-832-8224, or call local emergency response personnel by dialing 911.

Questions about this document may be directed to the PST-RPR Section at 512/239-2200, or to the e-mail address previously listed.

Where to Get More Information

Rules for all TCEQ programs are included in Title 30 of the Texas Administrative Code (TAC). Chapter 334 covers the PST Program and Chapter 350 covers the Texas Risk Reduction Program (TRRP). All rules can be downloaded from the Web at: www.sos.state.tx.us/tac/index.shtml.

You may also visit the TRRP information Web page at: www.tnrcc.state.tx.us/permitting/trrp.htm, or the TRRP guidance page at www.tnrcc.state.tx.us/permitting/remed/techsupp/guidance.htm.

For more information on the PST Program in general, visit: www.tnrcc.state.tx.us/permitting/remed/rpr, or call PST-RPR at 512/239-2200.

Texas PST Program Overview

The Texas PST Program is a comprehensive regulatory program for underground storage tanks (USTs), and to a lesser extent, aboveground storage tanks (ASTs). Regulated USTs are subject to extensive TCEQ administrative and technical standards, including requirements for registration, installation, upgrades, repairs, removals, release reporting, corrective action, financial assurance, fees, contractor registration, reporting, and record keeping. Regulated ASTs are subject to registration, fees, release reporting, corrective action, record keeping, and other reporting requirements. The statute creating and governing the Texas PST Program is the Texas Water Code, Chapter 26, Subchapters I and K.

The PST Program regulates USTs and ASTs containing petroleum or hazardous substances. This guidance document is written primarily to address the most common type of PST release, which is a release from a petroleum UST system. Figures 1, 2, and 13 illustrate the process of release determination in the PST Program.

What Rules Apply?

Petroleum storage tank releases reported to the agency before September 1, 2003, are subject to 30 TAC Chapter 334, Underground and Aboveground Storage Tanks. Releases reported to the agency on or after September 1, 2003 are subject to:

- 30 TAC Chapter 334—excluding Sections 334.78 through 334.81—and potentially to:
- 30 TAC Chapter 350, the Texas Risk Reduction Program (TRRP) rule.

Whether a complete site assessment using the TRRP rule will have to be conducted for a given release reported to the TCEQ on or after September 1, 2003 will depend on the extent and magnitude of contamination, presence or absence of human and ecological receptors, and the results of the TRRP screening process, which is described in a subsequent section. On or after September 1, 2003, newly discovered releases at existing 30 TAC Chapter 334 leaking petroleum storage tank (LPST) sites (whether the LPST is open or closed) continue to be subject to Chapter 334 alone, **if** the person demonstrates to the satisfaction of the TCEQ, that **both** of the following conditions apply:

- The newly discovered release is clearly attributable to the old or existing release. See “Assessments at Preexisting LPST Sites” for more information.
- There is no commingling with a Chapter 350 release. If a Chapter 334 and a Chapter 350 release become commingled, Chapter 350 will apply to the commingled portion. See *Information from the TCEQ Remediation Division on Application of TRRP to LPST Cases* (July 2003), available on the TRRP information Web page referenced previously.

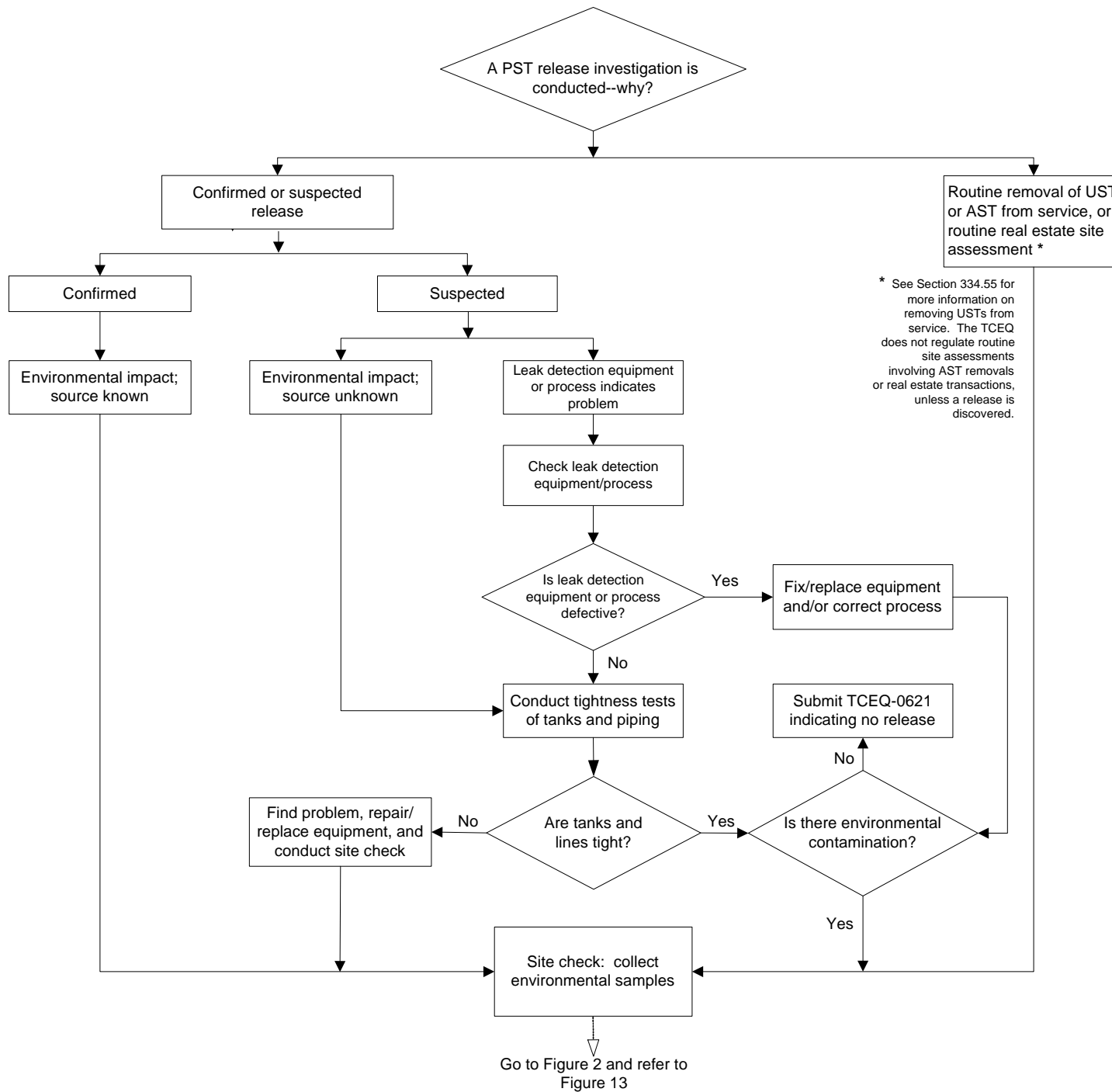
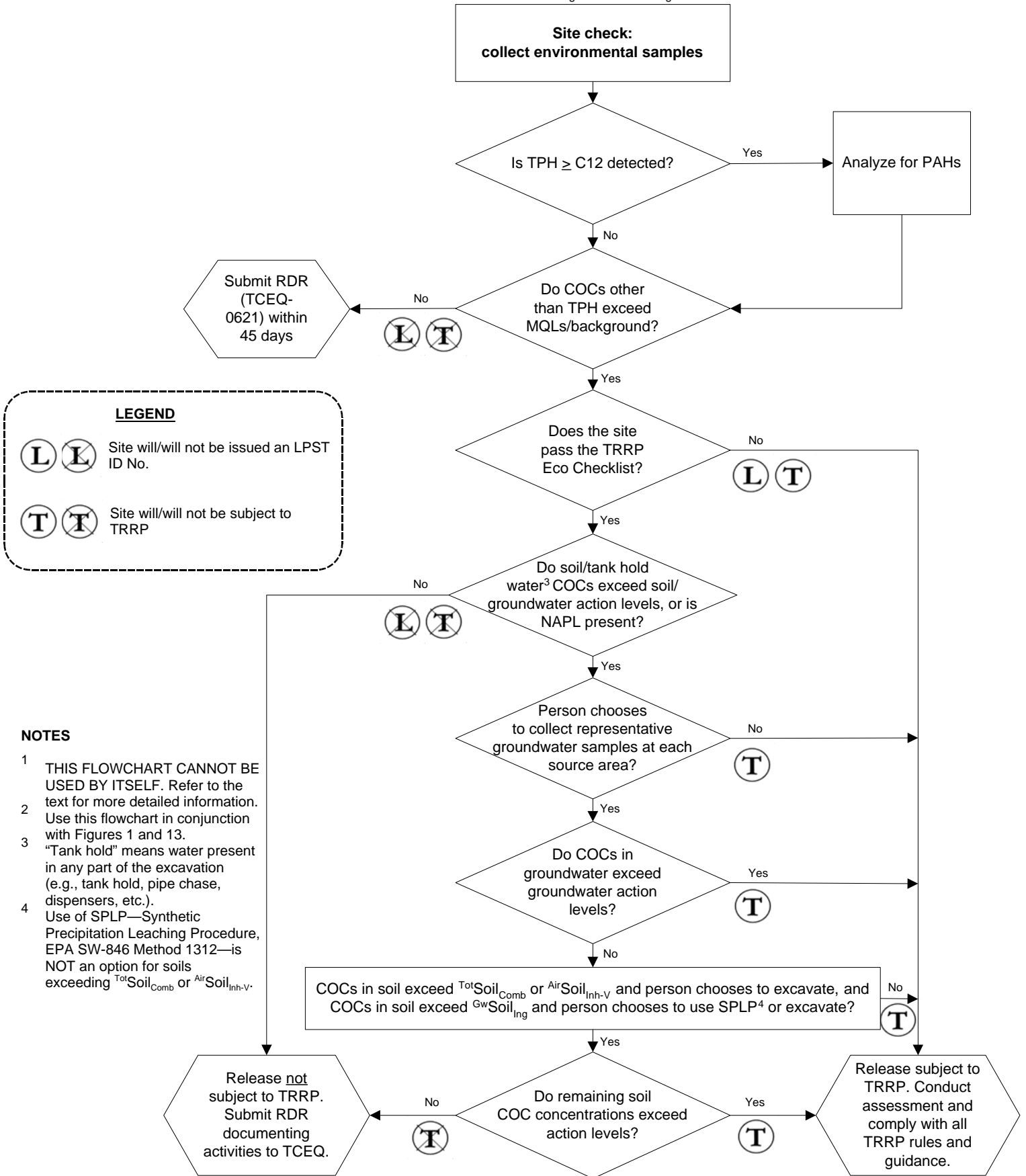


Figure 1. PST Release Investigation—Initial Steps

Continued from Figure 1. See also Figure 13.



LEGEND

- L** **L** Site will/will not be issued an LPST ID No.
- T** **T** Site will/will not be subject to TRRP

NOTES

- 1 THIS FLOWCHART CANNOT BE USED BY ITSELF. Refer to the text for more detailed information.
- 2 Use this flowchart in conjunction with Figures 1 and 13.
- 3 "Tank hold" means water present in any part of the excavation (e.g., tank hold, pipe chase, dispensers, etc.).
- 4 Use of SPLP—Synthetic Precipitation Leaching Procedure, EPA SW-846 Method 1312—is NOT an option for soils exceeding $TotSoil_{Comb}$ or $AirSoil_{Inh-v}$.

ADAPTED FROM DETERMINING WHICH RELEASES ARE SUBJECT TO TRRP, October 21, 2003

Figure 2. PST Release Investigation—TRRP Screening Process^{1,2}

Action and Screening Levels

The PST Program has established action and screening levels for PST chemicals of concern (COCs), to help determine whether sites must be assigned an LPST number and/or be subject to TRRP. **Action levels** are not cleanup levels but rather, are concentrations of COCs that, if exceeded, signal a need for further investigation and potentially, corrective action. **Screening levels** apply only to total petroleum hydrocarbon (TPH), and are used to indicate whether additional analyses for polycyclic aromatic hydrocarbons (PAHs) are required, as discussed below.

Table 1 summarizes the action levels for the most common PST constituents. These action levels apply to releases reported to the TCEQ on or after September 1, 2003. The action level for each COC is the **lowest applicable TRRP Tier 1 residential protective concentration level (PCL)** for that COC, assuming a 0.5-acre source area and Class 1 groundwater.

The lowest soil PCLs for most, but not all, PST COCs are the PCLs for surface and subsurface soil to protect groundwater ($^{GW}Soil_{Ing}$). For some PAHs—for example, benzo(a)anthracene and indeno(1,2,3-cd)pyrene—the lowest soil PCL may be the $^{Tot}Soil_{Comb}$ PCL for surface (0–15 ft) soil, or the $^{Air}Soil_{Inh-v}$ PCL for subsurface soil (>15 ft).

For COCs not listed in Table 1 (for example, hazardous substance COCs), consult the TRRP Tier 1 residential PCL tables to determine the appropriate action levels.

When comparing a particular COC analytical result to an action level, note that both the method quantitation limit (MQL) and the sample quantitation limit (SQL) used in the analysis must be less than or equal to the action level. For more information on MQLs and SQLs, refer to the “Analytical Requirements” section of this guidance.

To use the TPH screen for PAHs, analyze the samples for TPH using the TX1005 method (see www.tnrcc.state.tx.us/permitting/analysis.htm for more information about the method). If the analytical results show *any* detection of TPH in the carbon chain range of C12 and above (for example, C12–C28, C12–C35), additional analysis for PAHs must be conducted at the rate of **one PAH analysis per source area** (see the discussion of “source area” in a subsequent paragraph of this section). If more than one TPH sample in a source area shows detections in the $\geq C12$ carbon chain range, analyze for PAHs in the sample with the highest TPH concentration. Then, compare the PAH results to the PAH action levels.

Note that an LPST number will not be assigned based solely on the presence of TPH. If TPH $\geq C12$ is detected but subsequent PAH analysis shows no PAHs are present above action levels, an LPST number will not

be assigned. If TPH is detected and subsequent analysis shows PAHs to be present above action levels, an LPST number *will* be assigned and the release will be subject to TRRP, unless it can screen out by using the TRRP screening process, which is discussed in the next section.

Source areas are generally areas located in the vicinity of or below primary release sources such as leaking piping, tanks, or dispensers. Note that there may be more than one source area at any given tank system or PST site. Use your best professional judgment to identify, assess, and characterize each source area as applicable.

TRRP Screening Process

Overview

The TRRP screening process applies to all TCEQ Remediation Division programs—including PST—that deal with releases potentially subject to TRRP. The main purpose of the screening process is to allow persons with releases that are relatively minimal and that do not impact water resources or ecological receptors, the opportunity to demonstrate that the triggering of TRRP is not warranted.

The TRRP screening process is completely defined in *Determining Which Releases are Subject to TRRP* (October 21, 2003), available at www.tnrcc.state.tx.us/permitting/trrp.htm. While the highlights of the process relative to the PST Program are discussed in this document (RG-411), it is strongly recommended that you read the entire original document, as well as this guidance, before using the process.

The following four assumptions must *all* be true before the TRRP screening process can be used:

- The person has notified the TCEQ of the release, in accordance with the Texas Water Code and applicable program rules.
- All potential COC source areas are adequately identified.
- Properly collected samples are analyzed for all target COCs, using analytical detection limits that are sufficient to measure COCs at or below the applicable action levels.
- Representative groundwater sampling (not tank hold water sampling), when required, is sufficient to characterize COC concentrations in the uppermost saturated zone at all source areas.

If any of the four assumptions are invalid for a particular release, the TRRP screening process cannot be used and the release will be subject to TRRP.

How the Screening Process Works

After samples are properly collected from all source areas and are analyzed, compare the analytical results to the Table 1 action and screening levels, and use Figures 2 and 13 to guide you through the process. Figure 2 is adapted for the PST Program from the previously referenced *Determining Which Releases are Subject to TRRP*. Note that Figure 2 can be used only in conjunction with the text in this guidance or the original TRRP screening guidance—it cannot be used alone. Report the complete results of all TRRP screening activities to the TCEQ within **60 days** of the date the release was originally reported to the agency.

If there are no COCs present above MQLs or background, a TRRP Tier 1 Ecological Exclusion Criteria Checklist (“Eco Checklist”) does not have to be completed, the release will not be assigned an LPST number, and it will not be subject to TRRP. If, however, there are COCs present above the higher of MQLs or background, complete the Eco Checklist. The Eco Checklist is Figure 30 TAC Section 350.77(b) in the TRRP rule. For convenience, it has been included as a stand-alone document in Appendix A of this guidance. Note that even if a release does not have COCs above action levels, if it does not pass the checklist, it will be assigned an LPST number and will be subject to TRRP.

If the release passes the Eco Checklist, the next step depends on whether COCs in soil or tank hold water (if present) exceed applicable action levels, and whether nonaqueous phase liquid (NAPL) is present. If the answer is no to all, the site will not receive an LPST number and will not be subject to TRRP.

If soil or groundwater action levels are exceeded in native soils, backfill, or tank hold water; or if NAPL is present in native soils, backfill, or tank hold water, the site will be issued an LPST number, and the person then has the option to do **either** of the following:

- Go directly into TRRP, beginning with conducting a complete assessment according to Chapter 350.
- Continue with the TRRP screening process by collecting and analyzing a representative groundwater sample from the uppermost groundwater zone at each potential source area, to demonstrate that groundwater is not contaminated. One representative groundwater sample per source area (area of action level exceedance) is required.

If NAPL is present on or in the groundwater, or if representative groundwater sample concentrations exceed action levels, the screening process is no longer an option and the release becomes subject to TRRP. If, however, COC concentrations in the groundwater do *not* exceed action levels—but soil concentrations do—the person may either (1) choose to be subject to TRRP, or (2) continue with the screening process by conducting

either or both of the following actions within 60 days of when the release was reported, as applicable:

- Excavate contaminated soils to below action levels. Note that excavation is available only for on-site soils in the vadose (unsaturated) zone.
- Demonstrate, through use of the synthetic precipitation leaching procedure (SPLP) test (U.S. Environmental Protection Agency—EPA—method SW-846 1312), that contamination from soil remaining in place is not likely to leach unacceptably into groundwater in the future. Be aware that the **SPLP option is available only for soils exceeding action levels based on ^{GW}Soil_{Ing} PCLs** (see Table 1). To make the demonstration, compare the soil SPLP test results to the groundwater action levels. Note that soils exceeding action levels based on ^{GW}Soil_{Ing} PCLs (only) can also be excavated until the SPLP results are favorable.

Releases will become subject to TRRP when the contaminated soil cannot be excavated sufficiently, and/or where SPLP testing cannot be completed successfully within the 60-day time frame. Releases will *not* be subject to TRRP when groundwater is below action levels and excavation and/or SPLP testing is successfully completed (that is, contaminated soils removed or demonstrated not to be a threat to groundwater) within the stated time frame.

Summary

Releases at PST sites reported to the TCEQ on or after September 1, 2003, will be assigned an LPST ID number when NAPL is present, or when there is soil or groundwater contamination present above action levels. A site will be assigned an LPST number—and be subject to TRRP—if it does not pass the Eco Checklist, even if soil and groundwater are below action levels.

Other cases in which leaking PST sites reported to the agency on or after September 1, 2003, will be assigned an LPST number and be subject to TRRP include:

- The soil contains NAPL, or is otherwise contaminated above action levels, but is not addressed (not excavated to below action levels, or is not demonstrated, through SPLP testing, to be unlikely to leach unacceptable amounts of contamination into groundwater).
- Contaminated soil *is* addressed, but a representative groundwater sample is not collected from each source area.
- Representative groundwater exceeds action levels.
- NAPL is found to be present on or in the groundwater.

Leaking PST sites reported to the agency on or after September 1, 2003, can potentially screen out of TRRP if all of the following are true:

- No NAPL is present on or in the groundwater, and any dissolved groundwater contamination is less than action levels.
- Soil contamination present above action levels is removed (excavated), or is shown, through SPLP testing, to not be likely to leach to groundwater in the future.
- The site passes the Eco Checklist.

Remember that all excavation and subsequent testing activities, if conducted, must be completed within 60 days of the report of the initial release.

Table 1. PST Program Action and Screening Levels ^{1,2}

CONSTITUENTS	ACTION LEVELS		
	SOIL (mg/kg) ³		GROUNDWATER (mg/L)
	Surface (0 - 15 ft)	Subsurface (>15 ft)	
Volatile Organic Compounds (VOCs)			
Benzene	0.026	0.026	0.005
Ethylbenzene	7.6	7.6	0.7
Toluene	8.2	8.2	1
Total xylenes	120	120	10
Oxygenates			
MTBE (methyl tert-butyl ether)	0.62	0.62	0.24
Total Petroleum Hydrocarbons (TPH) No action level for TPH. TPH is used only to screen for PAHs. See Notes. ⁴			
Polycyclic Aromatic Hydrocarbons (PAHs)			
Acenaphthene	240	240	1.5
Anthracene	6900	6900	7.3
Acenaphthylene	410	410	1.5
Benzo(a)anthracene	5.7	18	0.0013
Benzo(a)pyrene	0.56	7.6	0.0002
Benzo(b)fluoranthene	5.7	60	0.0013
Benzo(g,h,i)perylene	1800	46000	0.73
Benzo(k)fluoranthene	57	620	0.013
Chrysene	560	1500	0.13
Dibenz(a,h)anthracene	0.55	15	0.0002
Dibenzofuran	33	33	0.098
Fluoranthene	1900	1900	0.98
Fluorene	300	300	0.98
Indeno(1,2,3-cd)pyrene	5.7	170	0.0013
Naphthalene	31	31	0.49
Phenanthrene	420	420	0.73
Pyrene	1100	1100	0.73

NOTES:

¹ Action levels are based on the lowest applicable TRRP Tier 1 residential assessment protective concentration level (PCL), assuming Class 1 groundwater and a 0.5-acre source area. This table lists action levels for typical PST chemicals of concern (COCs). For COCs not listed in this table, refer to the TRRP PCL tables.

² The listed action levels do not apply when surface water is impacted or threatened by the release; a water well or surface water intake is impacted or threatened; buildings or utilities are impacted with vapors; nuisance conditions such as odors, discoloration, or taste degradation to water supplies are known or suspected; or nonaqueous phase liquid (NAPL) is present in groundwater. In any such instances, the site will be designated an LPST site (ID number assigned) and will also be subject to TRRP.

³ Action levels for surface soil (0-15 ft) are based on the lowest of the ^{GW}Soil_{ing} or ^{Tot}Soil_{comb} PCLs. Action levels for subsurface soil (>15 ft) are based on the lowest of the ^{GW}Soil_{ing} or ^{Air}Soil_{inh-v} PCLs.

⁴ TPH testing is required for all initial PST Program release determination activities. The TPH analytical results are used only to screen for PAHs—there is no TPH “action level,” and an LPST ID no. will not be assigned based on TPH alone. For each separate source area where TPH of C12 or greater is detected (present above the method detection limit—MDL), the single highest concentration sample must also be tested for PAHs.

Release Investigation

Paragraph 334.74(2) of the PST rules requires the collection of environmental media samples when investigating a suspected PST release, and Subsection 334.55(c) requires the collection of environmental media samples when permanently removing a UST from service, to investigate whether a release has occurred.

Samples may also be collected when conducting a routine site assessment for a real estate transaction (property transfer or refinancing), or when removing an AST from service. While the TCEQ does not have the same detailed technical specifications for AST operation and removal as it does for USTs, if an AST release is discovered, corrective action requirements under Chapter 350, or Chapters 334 and 350, depending on the tank characteristics, will still apply. Also, any person desiring written concurrence from the TCEQ that no release has occurred must follow this guidance.

Flowchart 1 shows the general process for investigating and reporting suspected and confirmed releases, and for reporting releases discovered during routine tank closures or site assessments.

Suspected and Confirmed Releases

According to Chapter 334, a suspected release occurs when (1) there is an indication of a release, but there is no environmental evidence; or (2) there is environmental evidence, but the source is unknown. A confirmed release is when there is both environmental evidence and a known source.

Suspected Releases

Evidence

A suspected release occurs when:

- a PST system exhibits unusual operating conditions (for example, erratic dispenser behavior, sudden loss of product, or appearance of tank water); or
- release detection monitoring triggers an alarm, or otherwise indicates a potential problem; or
- there is direct visual or olfactory observation of released product in the environment (for example, sheen on surface water, or product or vapors in a utility conduit), but the product source is unknown.

What Action to Take

Investigate suspected releases to determine whether there has actually been a release, or to determine the source of the release if the source is unknown. Investigation activities may include checking and repairing equipment, conducting tank and piping tightness tests, and/or conducting environmental sampling, which is also known as a “site check.” The

process for investigating suspected releases is detailed further in the PST rules, Section 334.74.

If you discover that only the system equipment or monitoring method or device is at fault, repair or otherwise address these items.

If no environmental contamination is found after making repairs, testing the tanks and lines, and/or conducting sampling, complete a *Release Report* form (TCEQ-0621) to indicate this outcome, and submit it to the agency within 45 days of the initial suspected release occurrence.

Report suspected releases to the agency within 24 hours of discovery, and fully investigate them within 30 days of discovery (Section 334.74).

If you find environmental contamination at any step in the investigation of a suspected release, or if you determine the source of a previously discovered release, then the suspected release becomes a confirmed release. More on confirmed releases follows.

Confirmed Releases

Evidence

A confirmed release occurs when environmental contamination is present, and the source of the contamination is known, as demonstrated in the following examples:

- Product (NAPL) is discovered in observation wells, the tank hold, or in other portions of the PST system.
- Analytical results of samples collected during a routine tank system removal from service or during a routine real estate transfer assessment show the presence of contamination.
- Environmental contamination is found in the course of investigating a suspected release, or the source of a previously discovered unknown release is identified.

What Action to Take

Unless directed otherwise by the agency, owners and operators must do the following when a release is confirmed:

- Stop the release and attempt to prevent further movement into the environment.
- Monitor and mitigate any fire or safety hazards posed by vapors or NAPL.
- Take the leaking system out of service until it can be repaired.
- Remove NAPL (if present) to the extent practicable.
- Report the release to the agency within 24 hours.

Removing an Underground Storage Tank from Service

The three ways a UST can be permanently removed from service are:

- physical removal of the UST from the site,
- abandonment in place, or
- permanently changing the status of the UST system to “exempt” or “excluded.”

An owner or operator who intends to permanently remove a UST system from service must ensure that the procedures used minimize any threat to human health, safety, and the environment. Also, the procedures used should be in compliance with TCEQ PST rules (Chapter 334, Subchapters A, C, D, and I), industry standards, and applicable federal, state, and local governmental regulations.

Things to Prepare in Advance

A completed *Construction Notification Form* (TCEQ-0495) must be submitted to the TCEQ Registration and Self-Certification Team by the registered contractor at least 30 days in advance of any pending tank removal activity. The owner, operator, or designated agent (owner/operator) should also call the appropriate TCEQ regional office 24 to 72 hours in advance of initiating construction activities. (To locate the appropriate regional office, go to www.tceq.state.tx.us, choose the “Contact Us” navigation link, and then “Maps of TCEQ Locations.”) This advance notice allows agency personnel to inspect the construction activity as their schedule permits. The owner/operator must also notify and obtain necessary permits from local governments such as the city, the county, and the local and state fire marshal.

Physical Removal

The removal of underground storage tank systems can be performed only by qualified UST contractors who possess a valid Class B license and are registered with the TCEQ. However, the owner/operator ultimately is responsible for knowledge of and compliance with all applicable federal, state, and local governmental regulations. A current list of registered contractors may be obtained at www.tnrcc.state.tx.us/enforcement/csd or by calling the TCEQ Operator Licensing Section at 512/239-6139.

The following steps are suggested prior to initiating removal of a UST from a site. These steps do not require TCEQ notification and do not require the use or presence of a registered UST contractor or licensed UST on-site supervisor.

- Locate all underground and aboveground utilities.
- Remove any pavement over USTs.
- Remove soil and backfill down to the top of the UST.
- Relocate affected objects and structures, such as driveway canopies.

- Assemble a sufficient quantity of plastic sheeting—6 millimeter (mm) polyethylene is recommended—to be placed both under and over any excavated soil or backfill, to prevent the movement of contamination into underlying soil or groundwater, into the air as vapor, or off site.
- Research the site enough to know whether you're likely to encounter groundwater or bedrock, so you can plan accordingly.

The following guide describes the steps to take for a routine UST removal. Detailed TCEQ regulatory requirements are found in Section 334.55 of the PST rules.

Tank Preparation

Clean out and/or remove all regulated substances and accumulated sludges or residues, from the tank, piping, and ancillary equipment in accordance with accepted industry practices. Vent lines should be left in place. Be aware that product, sludges, residues, and wash water may be classified as hazardous waste. Proper disposal of any of these substances must be in compliance with TCEQ and any federal regulations.

Purge the tank of all flammable vapors in accordance with accepted industry procedures. Local fire or building codes may require verification by local authorities of proper purging before work proceeds. Once the tank has been completely purged of all flammable vapors, all holes and openings must be properly plugged or capped, except for one 1/8-inch diameter vent hole positioned at the top of the tank.

Tank Removal

Physically remove the tank from the ground. After removal, tanks must be transported from the site within 24 hours, unless prior approval of a longer on-site storage period has been obtained in advance from the appropriate TCEQ regional office.

Store tanks on site for 24 hours or less, in a designated area. The tanks should be an adequate distance from known ignition sources, and clearly identified with appropriate barriers and warning signs to restrict access by unauthorized people.

On-site storage of removed tanks for more than 24 hours, and off-site storage for any period of time, is allowed only in locked, securely fenced, or similarly restricted areas where unauthorized people will not have access.

No later than 24 hours after removal, all removed tanks (regardless of condition) must be legibly and permanently labeled (in letters at least 2 inches high) with the following information:

- the name of the former contents,
- a flammability warning (if applicable), and

- a warning that the tank is unsuitable for the storage of human or animal drinking water or food products.

Residual vapor levels in any removed tank must be maintained at nonexplosive and nonignitable levels at all times.

Sampling Activities

After the tanks are removed, native soil in the tank hold, pipechases, dispenser, remote fill pipe area (if present), and the backfill must be checked (sampled) for the presence of a release. Environmental samples of soil and/or tank hold excavation water should be collected from any excavated areas as soon as possible after first exposure to the atmosphere. Please see the “Sampling Requirements” section in this guidance for more detailed information on sample collection.

Tank Transportation

The methods and procedures used for the handling and transporting of any removed underground storage tanks and tank parts must always be protective of human health, safety, and the environment, and must be in accordance with all applicable federal, state, and local regulations.

Tank Storage, Disposal, and Reuse

Removed tanks and parts of tanks which have been emptied, thoroughly cleaned of all substances and residues, and permanently purged of vapors, may be appropriately disposed of by scrapping, junking, or reusing for purposes unrelated to the underground storage of regulated substances (as long as it is not storage of food or water for humans or animals).

Regardless of where a tank is stored, not later than 10 days after the tank has been removed from the ground, all residual liquids or vapors must be permanently removed to render the tank nonignitable and nonexplosive.

Remember that people are killed every year by the explosion of flammable substances (sludges, liquids, vapors) left in tanks.

Backfilling After Removal

For safety considerations, backfill the excavated areas to grade as soon as possible after the tank system is removed. Backfill material from the original excavation may be used; however, be aware that placing contaminated material back into the excavation may trigger TRRP. See the “Sampling Requirements” section for more information.

Abandonment in Place

Procedures for abandonment in place are similar to removal from the ground, except there is no physical removal of the tank system. Tanks and piping must be emptied, cleaned out, and purged, and the tanks must be filled with a solid inert material, such as sand, cement, gravel, or concrete. Typically, this will require excavation to the top of the tank and removal

of a portion of the tank top to allow the tank cavity to be filled completely with the solid inert material. Piping must be cleaned out, then removed or plugged.

Change to Exempt or Excluded Status

Change in status can occur when the purpose of the UST is changed, and it will no longer contain a regulated product. The owner/operator must first determine if the current or anticipated use will allow reclassification to exempt (Section 334.3) or excluded (Section 334.4) status. If the answer is yes to either, then you must determine if a prior release has occurred. Refer to “Release Determination and Reporting” below.

Report Registration Change to TCEQ

Within 30 days after a UST has been removed, abandoned in place, or its status has been changed to exempt or excluded, Section 334.7 requires that the tank owner/operator provide written notice to the TCEQ that such a change has occurred. The required forms for updating registration changes are *UST Registration & Self-Certification Form* (TCEQ-0724) and *Aboveground Storage Tank Registration Form* (TCEQ-0659).

Release Determination and Reporting

As previously mentioned, owner/operators permanently removing an underground storage tank system from service must determine whether a release of a stored regulated substance has occurred.

Begin by conducting a visual, olfactory, and field instrument vapor survey to check for obvious signs of a release. Obvious signs include stained soil, presence of product, odors, high vapor readings, and piping or tank corrosion holes or cracks. Collect soil samples if indications of contamination are present. Whether there are obvious indicators or not, one of the two following methods must also be used to determine whether there was a release:

- Performance of a comprehensive site assessment, as defined in Section 334.56(c). Conduct a comprehensive site assessment according to industry standards, utilizing qualified contractors or environmental professionals licensed by the TCEQ, such as RCASs, CAPMs, or LOSSs. Current lists of RCASs, CAPMs, and LOSSs may be obtained at www.tnrcc.state.tx.us/enforcement/csd or by calling the TCEQ Operator Licensing Section at 512/239-6139. Qualified personnel should sample for releases at locations where contamination is most likely to be present. Refer to the information presented in the “Sampling Requirements” section of this guidance for more information.
- Review the **records of continual operation for the entire life of the system** of one or more of the following external release monitoring or detection systems operated in accordance with Sections 334.50(d)(5) to (10): vapor monitoring, groundwater monitoring, interstitial monitoring

for double-walled UST systems, monitoring of UST systems with secondary containment barriers, statistical inventory reconciliation with inventory control, or alternative release detection methods, as previously approved by the TCEQ.

Assemble and submit documentation of tank removal and release determination—including the details of all excavation, removal, and sampling activities—to the TCEQ using the PST Program *Release Determination Report* form (TCEQ-0621). Follow the timetable shown in Table 2.

Owner/Operator Records

The owner/operator must keep a record of the removal in a secure location, either on the premises of the facility or at an alternate site. Regardless of where it is kept, the record must be readily accessible for reference and use by the UST system operator and readily available for inspection by TCEQ personnel. This record must contain:

- prior location of the tank;
- date of removal;
- substance previously stored;
- method of conditioning the tank for removal;
- methods of handling, transporting, storing, and disposing of the tank;
- names, addresses, and telephone numbers of the individuals conducting the activities; and
- all information regarding any known releases from the tank.

This record must be maintained for as long as any UST remains in service at the facility, or for five years after the only (or last) UST is permanently removed from service.

Assessments at Preexisting LPST Sites

Tank removals and assessments at preexisting LPST sites (whether open or closed) should be conducted according to the guidelines in this document. If contamination is discovered, it may be part of the preexisting release, or it may be a new release. Report information on new releases according to Table 2 and information in this guidance.

To document that contamination is **not** a new release, provide the following information:

- Discuss the regulatory history of the site. Describe when and why all preexisting LPST ID numbers were originally issued, and include the media affected (soil, groundwater). List the date(s) of closure (if closed), and provide copies of the TCEQ LPST closure letters (if any).
- Discuss the operational history of the site. Include a map showing the locations of all tank systems, past and present. Include the tank holds,

the individual tanks, the piping, and the dispensers installed at the site. Describe the substances they contained, the dates they were installed, the years they were in operation, and the dates they were taken out of service.

- Compare and contrast the new and preexisting laboratory analytical data relative to contaminant locations, concentrations, and extent. Discuss the affected media (soil, groundwater) and the presence/absence of NAPL. If the LPST site has been closed, discuss why you think the closure conditions and any assumptions made at the time of original closure, are still valid.

If there is contamination present and it is found to be part of the known, preexisting contamination, the site will continue to be subject to corrective action under the prevailing rule in place at the time of LPST ID number assignment. If a new release is determined to have occurred, a new LPST ID number will be assigned and the release will be subject to Chapter 350 (TRRP). Remember that the area of the new release, plus any areas where new and old releases are commingled, will all be subject to Chapter 350.

You can expedite TCEQ review and possible concurrence (if concurrence is appropriate) with any assertion that contamination is not a new release by providing the following information up front:

- old and new site maps and depicting historical soil contamination locations and concentrations,
- analytical data summary tables for both old and new data,
- groundwater contaminant concentration and potentiometric surface maps if groundwater is/was contaminated, and
- preexisting LPST site closure letters (if any).

Release Reporting Schedule

If visual observation or sample analysis indicates that a release of a regulated substance has occurred, complete the IR form (TCEQ-20097) and contact the TCEQ PST-RPR Section by phone, fax, or e-mail within 24 hours of the release discovery. See the “Contact Information” section at the beginning of this document for more information. The initial TCEQ notification must be followed up with submittal of the *Release Determination Report* (RDR) form (TCEQ-0621), according to the schedule shown in Table 2.

Table 2. PST Release Reporting Schedule Summary

Time Frame	Required Report or Form	Scenario/Description
Within 24 hours of release discovery	<i>PST Program Incident Report</i> form (TCEQ-20097)	Report all suspected and confirmed releases to the TCEQ.
Within 20 days of release discovery	<i>PST Release Determination Report</i> form (TCEQ-0621)	Report releases above action levels where TRRP screening process will not or cannot be used (site directly subject to TRRP).
Within 45 days of release discovery	<i>PST Release Determination Report</i> form (TCEQ-0621)	Report (1) release below action levels ^a , or (2) investigation of suspected release where ultimately, no release was found
Within 60 days of release discovery	<i>PST Release Determination Report</i> form (TCEQ-0621)	Report releases above action levels and the complete results of the TRRP screening process .
Within 180 days of receiving LPST ID No.	<i>Affected Property Assessment Report (APAR)</i> form (TCEQ-10325) or <i>TRRP Self-Implementation Notice</i> (TCEQ 10323/SIN) ^b	Site subject to TRRP. Comply with all requirements of Chapter 350

Notes

^a Assumes affected property passes the *Tier 1 Ecological Exclusion Checklist*

^b Refer to Chapter 350 for details.

Sites that do not receive an LPST number, or that receive an LPST number but are not subject to TRRP, have no additional reporting requirements.

Sampling Requirements

The Importance of Representative Samples

The importance of collecting samples that are representative of site conditions cannot be overstated. Since gasoline and some of the other common PST substances consist largely of volatile organic compounds (VOCs), special care in collecting samples is required. The agency strongly recommends, and will eventually require, collection of soil VOC samples using EPA method SW-846 5035. If you use this method, use the version modified (and preferred) by the agency, available at: www.tnrcc.state.tx.us/permitting/analysis.htm.

Because compositing of samples in the field does not yield sample results that are representative of site conditions, **sample compositing is not allowed for release determination**. Only discrete grab samples are acceptable for this purpose.

When and Where to Collect Samples

Samples collected during a release determination activity at a PST site must be obtained as soon as possible after the soil (or water) is exposed to the atmosphere. Any water present in the tank hold must be sampled. Preexisting tank hold observation wells may be sampled instead of sampling water in the open excavation. Whether the tank hold water or observation well water is “true” groundwater is not relevant to the release determination process at this point.

If, for safety reasons, a backhoe is used to collect soil samples in a tank hold during a tank removal, the same criteria applies: immediately upon removal from the excavation, collect discrete grab samples from 1 foot into the (relatively) unexposed soil in the backhoe bucket.

Always collect samples at locations where contamination is most likely to be present. In selecting sample types, locations, and analytical testing methods, consider the nature of the stored substance, the type of initial release detection alarm or cause for suspicion (if any), the type of backfill, the depth to groundwater, and any other factors appropriate for identifying the presence and source of a release. Because a tank system can fail at any point, the entire system—fill pipes, tanks, piping, and dispensers—must be carefully assessed.

Always give preference to collecting discrete grab samples of soil in areas where:

- there are obvious visual, olfactory, or field instrument indications that contamination is present; and
- the tank or piping material may have failed (leaked), such as at corrosion holes or cracks.

In general, you must always sample the tank hold, piping trenches, dispenser areas, and backfill. If there is a remote fill pipe, sample that area as well. Sample locations for a typical UST site are shown in Figure 12. Descriptions of default sampling areas and numbers of samples that should be collected at each location are detailed in Table 3 and Figures 3 through 11.

Table 3. PST Soil and Water Sample Numbers and Locations^{a, b}

Tank Hold			
<i>Water Not Present</i>			
Length of Tank (ft)	Minimum No. of Soil Samples per Tank	Minimum Sample Locations	
≤ 5	1	Under fill port	
>5 to 20	2	Under tank ends	
>20	3	Under fill port and tank ends. If fill port is within 3 ft of tank end, collect third sample from middle of tank instead.	
<i>Water Present^c</i>			
Length of Tank (ft)	Minimum Soil Samples		Minimum No. of Water Samples^c
	No. Per Tank Hold	Locations	
≤ 10 (single tank)	2	Immediately above soil-water interface, at tank ends	1
> 10 (single tank or multiple tanks)	4	Immediately above soil-water interface at 4 walls of tankhold	1
Piping Trenches			
Recommend that all piping be exposed. Collect 1 discrete grab sample from native soil under each connector, elbow, bend, etc. Collect a minimum of 1 grab sample per 20 linear feet of trench.			
Dispensers			
Take 1 discrete grab sample per dispenser. Collect samples from native soil below piping under dispenser, on supply side. If 2 dispensers are located within 5 ft of each other, collect 1 sample in between, at midpoint.			
Backfill			
Take 1 discrete grab sample for each 50 cu yds of backfill. All backfill types must be sampled, including pea gravel. Also, sample backfill to be disposed off site according to requirements of receiving facility.			
Sampling Locations for Tank Systems Remaining in Place^d			
<p><i>Tank hold:</i> Beginning at one corner, drill and sample one boring every 25 linear ft (±) around the tankhold excavation boundary, within 3–5 ft of tanks (Fig. 5). Angle borings in toward tanks, if possible. Boring total depths must be 1 ft deeper than the bottom of the tank hold excavation. Collect 2 samples from each boring as follows. Collect 1 sample from the interval with the greatest visual, olfactory, or field screening instrument indication of contamination; or if no indication, (1) immediately above the water table if groundwater is encountered, or (2) between tank midpoint and total depth (TD). Collect a second sample at TD. Install and sample temporary or permanent monitoring wells if groundwater is encountered.</p> <p><i>Piping trenches and dispensers:</i> Same as above, except depths relative to pipe chase excavations.</p>			

NOTES:

- ^a The locations given in this table are primarily for UST systems; however, the same general locations can be used for routine AST system removals and routine environmental site assessments (ESAs). Always give priority to sampling in areas displaying obvious visual, olfactory, or field instrument indications of contamination.
- ^b Discrete grab samples are required for all sampling. Collect tank hold, pipe chase, dispenser, and remote fill port samples from 1 ft into native soil. Any water present in the tank hold must be sampled. Tank hold monitoring wells, if present, may be sampled instead of open tank pit water.
- ^c “Water present” in this case means water that completely covers the tank hold floor. If water covers only a portion of the tankhold floor, sample according to “Water present” in the areas where there is water, and sample according to “Water not present” in the areas where there is no water.
- ^d Tank systems may be abandoned in place [§334.55(c)]. Also, ESAs may be conducted at properties where tanks will remain active.

Tank Hold

Tank hold sample locations depend upon the size (length) and number of tanks in the system, and whether bedrock, a concrete slab, or water are present. If water is not present in the tankhold, collect grab samples of native soil from approximately 1 foot into the floor of the tankhold. The number of floor samples depends on the length of the tanks, as shown in Table 3.

If there are concrete slabs or “deadman” anchors in the bottom of the tankhold, sample native soil at the edges of the slabs and anchors, at locations based on the number and lengths of tanks (Table 3), to the extent possible.

If bedrock is present in the tankhold floor and/or walls, first try to obtain samples from the floor or walls, depending on the presence or absence of water. If the bedrock is completely unweathered and samples cannot be collected, sample native soil from 1 ft into the sidewalls, immediately above the soil-bedrock interface. Include in the RDR the depth below ground surface from which samples were collected, and describe the width, length, and approximate numbers of any bedrock fractures present.

If water is present in the tank hold, collect soil samples from immediately above the soil-water interface, 1 foot into the sidewalls, in numbers according to Table 3. Note in the RDR the depth below ground surface from which the sidewall samples were collected. If water is present over only a portion of the tank hold floor, collect samples according to the “Water present” and “Water not present” categories in Table 3, as appropriate. Also, sample any water present in the open tank hold or in tank hold observation wells, as applicable.

Include photographs of the excavated tank hold bottom and walls in the release report submitted to the TCEQ to document the conditions encountered.

Figures 3 through 7 illustrate the recommended sampling locations for tanks of various sizes, with and without water in the tank hold.

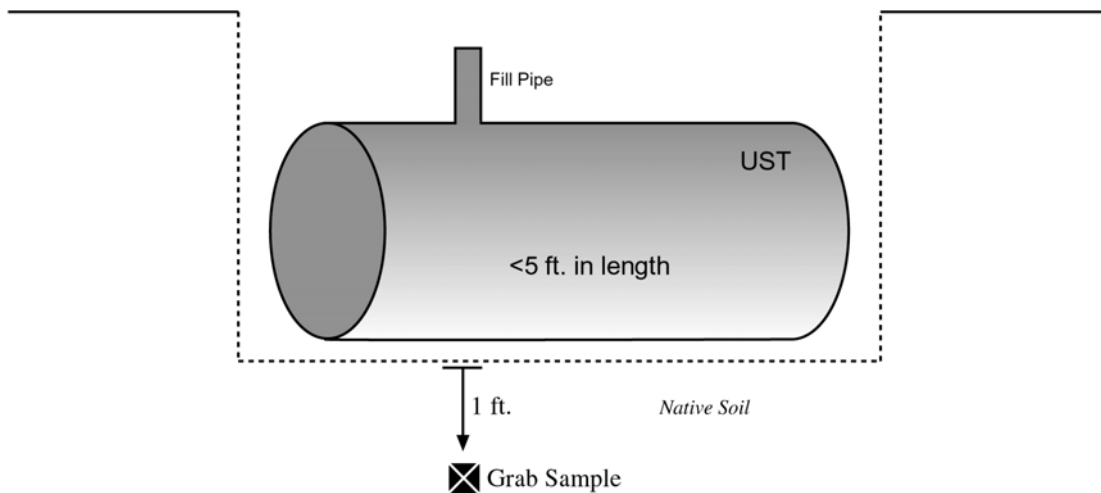


Figure 3. Tank Hold Sampling Locations: No Water Present, Tanks Up to 5 Feet in Length

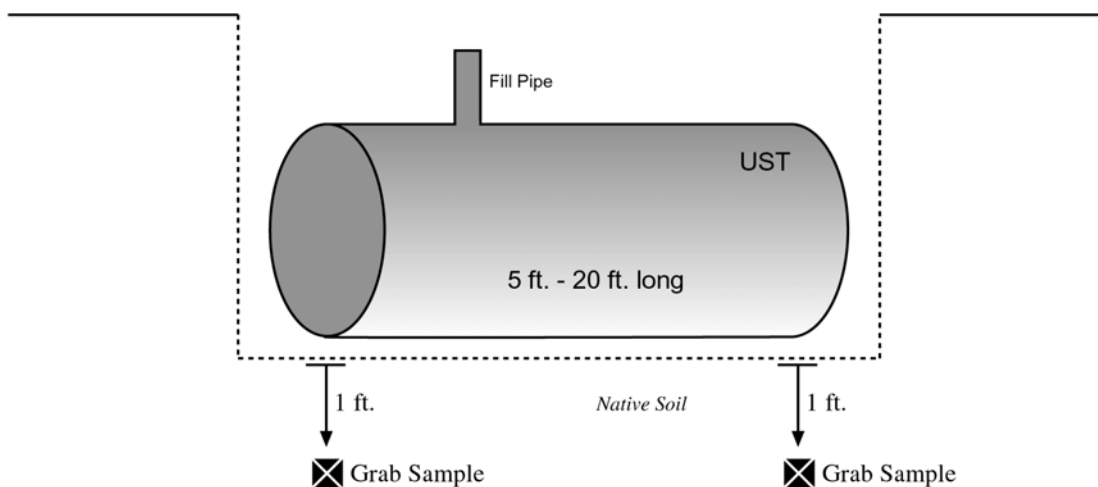


Figure 4. Tank Hold Sampling Locations: No Water Present, Tanks Greater Than 5 to 20 Feet Long

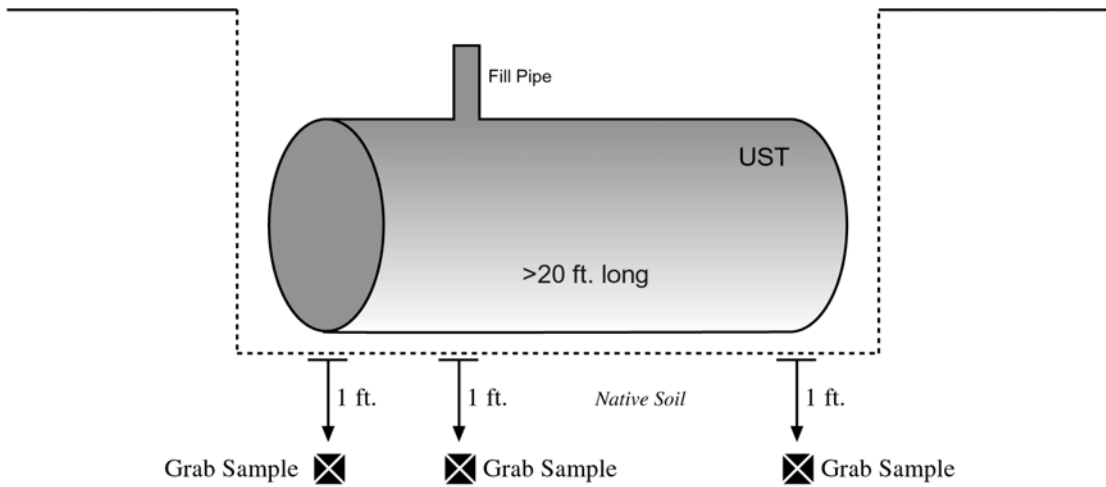


Figure 5. Tank Hold Sampling Locations: No Water Present, Tanks Greater Than 20 Feet Long

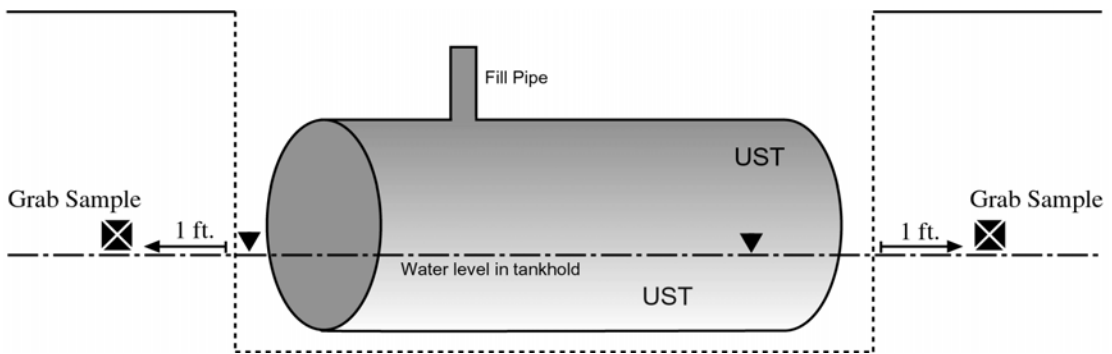


Figure 6. Tank Hold Sampling Locations: Water Present (Cross Section)

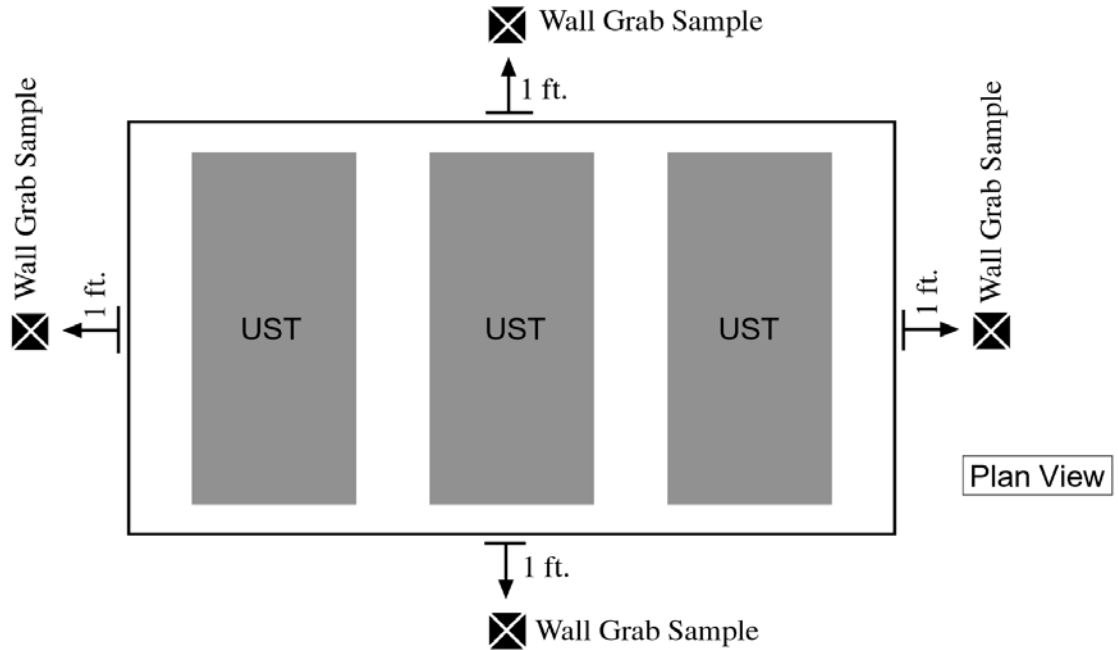


Figure 7. Tank Hold Sampling Locations: Water Present (Plan View)

Piping Trenches

Studies from various sources, including the EPA, have shown that leaks from piping are the most common UST leak source. Therefore, before sampling, use as-built drawings, remote sensing techniques, or excavation to locate all piping. Completely expose the piping, if possible, to better see where the joints, bends, and connectors are located. Collect grab samples from native soil under the piping, approximately 1 foot below the trench bottom, in locations such as elbows (where the piping changes direction), connectors, and joints; and adjacent to any corrosion holes or other evidence of potential contamination.

Collect at least one native soil sample per 20 feet of piping. If the dispenser(s) are located over the tanks, and there is no remote fill port, you do not have to collect separate piping samples. If a piping run contains more than one product line, or if lines are within 5 feet of each other, collect only one sample for every 20 linear feet of the piping group. Figures 8 and 9 show locations of the required piping run samples.

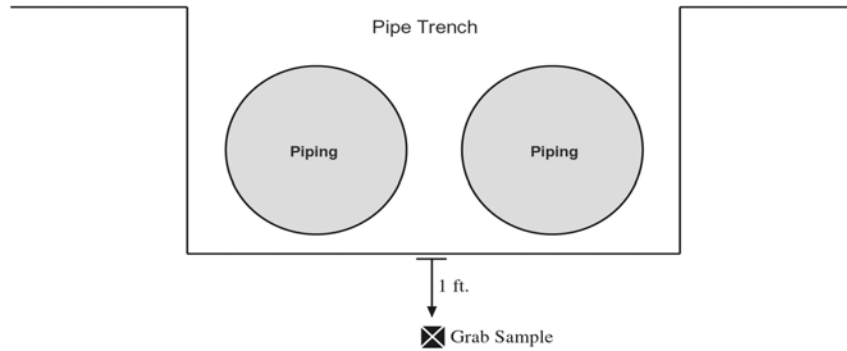


Figure 8. Pipe Trench Sampling Location (Cross Section)

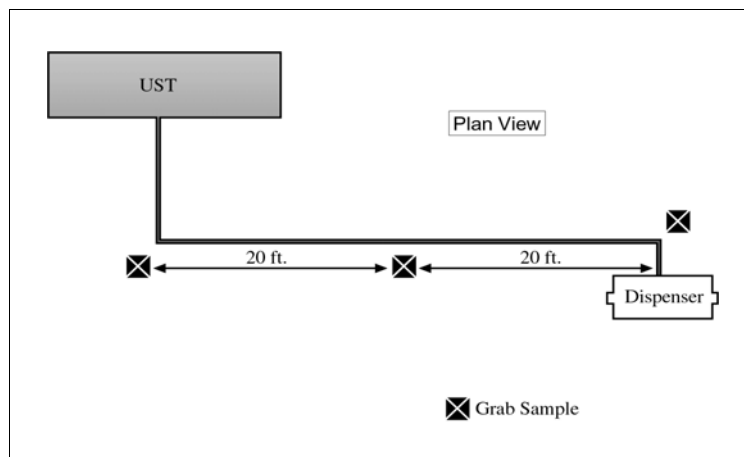


Figure 9. Pipe Trench Sampling Locations (Plan View)

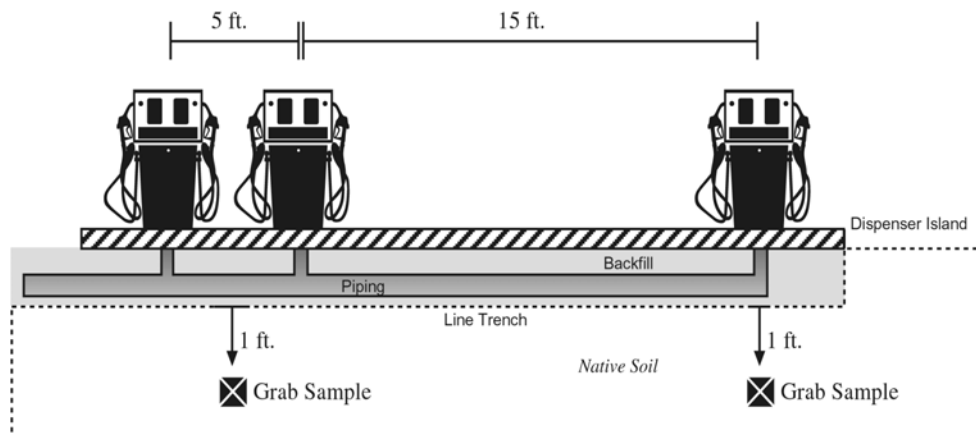


Figure 10. Dispenser Sampling Locations

Dispensers

Collect one sample from the supply side of each dispenser, 1 foot into the native soil under the dispenser piping. For dispensers located within 5 feet of each other, you may collect only one sample, halfway between the two dispensers. For dispensers located directly over the tank hold, you do not have to collect separate dispenser samples. Figure 10 shows the locations of required dispenser samples.

Backfill

Sample backfill at the rate of one discrete grab sample per 50 cubic yards of backfill. Collect the grab samples from at least a 1-foot depth into the backfill stockpile, in areas that look, smell, or yield a field instrument reading that is potentially indicative of contamination. Note that backfill of all types (for example, pea gravel, sand, fill dirt) must be characterized by sampling.

Backfill to be disposed of off site must also be characterized according to the permitted disposal facility's requirements. Meeting these requirements are between you and the facility; however, after disposal is complete, you must provide the waste manifests signed by the receiving facility in your RDR submittal.

Backfill removed from the tank hold or other parts of the tank system should be placed on plastic sheeting—6 mm polyethylene is recommended—while you wait for receipt of analytical results and/or off-site disposal. If the backfill will remain on site for longer than 24 hours, or if precipitation is likely to occur, cover the backfill stockpile with the plastic sheeting and anchor it securely in place until the backfill is either placed back into the excavation or disposed offsite.

Groundwater

Measure for the presence of a release where contamination is most likely to be present, taking into account factors such as the nature of the stored substance, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence and source of the release.

It is strongly recommended that before you conduct any release investigation activity, you assemble information on local groundwater conditions (for example, depth to water, formation type). Potential sources of this information may include:

- UST tank hold observation wells (if any),
- TCEQ regional inspectors familiar with the area,
- state records on adjacent LPST sites or nearby water supply wells,
- water well drillers familiar with the area,
- local county extension agents,
- city utility offices,

- U.S. Geological Survey (USGS) topographic maps, and
- published regional or local groundwater reports. The Texas Water Development Board (TWDB) and the Texas Bureau of Economic Geology (BEG) are often good sources of this type of information.

If water is encountered in the tank hold—even if it is not believed to be “true” groundwater—collect a representative sample as soon as possible after it is exposed to the atmosphere, and have it analyzed for the appropriate COCs. Preexisting tank hold observation wells, if any, may be sampled instead of collecting open excavation water samples. If the tank hold water analytical results exceed a groundwater action level, you must then collect a representative groundwater sample from a well installed in the uppermost water-bearing zone. This step is a requirement for those who wish to screen out of TRRP by demonstrating that groundwater has not been affected (see “TRRP Screening Process”).

To obtain a groundwater sample representative of in-situ conditions, install a temporary or permanent monitoring well or well point that is appropriately screened and sand-packed across the zone of concern. Develop the well to minimize turbidity, and purge it properly prior to sample collection. The wells or well points can be of any diameter and can be installed by direct-push methods or by other well installation methods such as hollow-stem auger.

The length of screen used generally should be 10 feet or less. If a longer screen length is used, provide an explanation for the need. Position the screen at the vertical location within the water column that is most likely to intercept the contaminants of concern—typically at or near the top of the water table for PST contamination). Use care to:

- seal off the outside of the well or wellpoint at the ground surface to prevent intrusion of surface runoff, and
- drill and install the sampling point in such a way so as to prevent contamination from upper zones being dragged vertically downward.

While the TCEQ recommends low-flow purging before sampling, and filtering of groundwater samples with a 10 micrometer (micron) pore size (or larger), these procedures were not mandatory as this document went to press (December 2004). The purpose of low-flow sampling and filtering is to minimize turbidity and to ensure collection of a representative sample. More information on these procedures can be found in the July 1998 memo from the TCEQ Remediation Division Director to staff—*Implementation of the Existing Risk Reduction Rule, Section IV.2.2*—available at www.tnrcc.state.tx.us/permitting/rrr.htm.

Note that purging by vacuum truck is *not* an acceptable method of purging before sampling.

Sampling at Tank Systems Remaining in Place

Tank systems may be abandoned in place and may also remain operational during both change-in-service activities and real estate assessments. These situations affect the areas that may be easily sampled.

For tank systems that remain in place, start soil borings at one corner of the tank hold and install them about every 25 feet around the tank hold perimeter, as shown in Figure 11. Locate the borings within 3 to 5 feet of the tanks (Figure 11), and angle them in toward and under the tanks, if possible. Drill and sample piping trenches and dispenser islands in a similar manner: one boring along every 20 linear feet of pipe trenching and dispenser island.

The total boring depths must be about 1 foot deeper than the bottom of the tank hold, pipe chase, or dispenser excavation. Collect two samples from each tank hold boring, as follows: collect the first sample at the interval with the highest indication of contamination (staining, odors, field instrument reading). If no obvious contamination is present, collect a sample from just above the soil-water interface if water is present; or between the midpoint of the maximum tank diameter and total depth (TD). Collect a second sample at boring TD. If water is encountered, at least one well or other sampling point must be installed, developed, purged, and sampled.

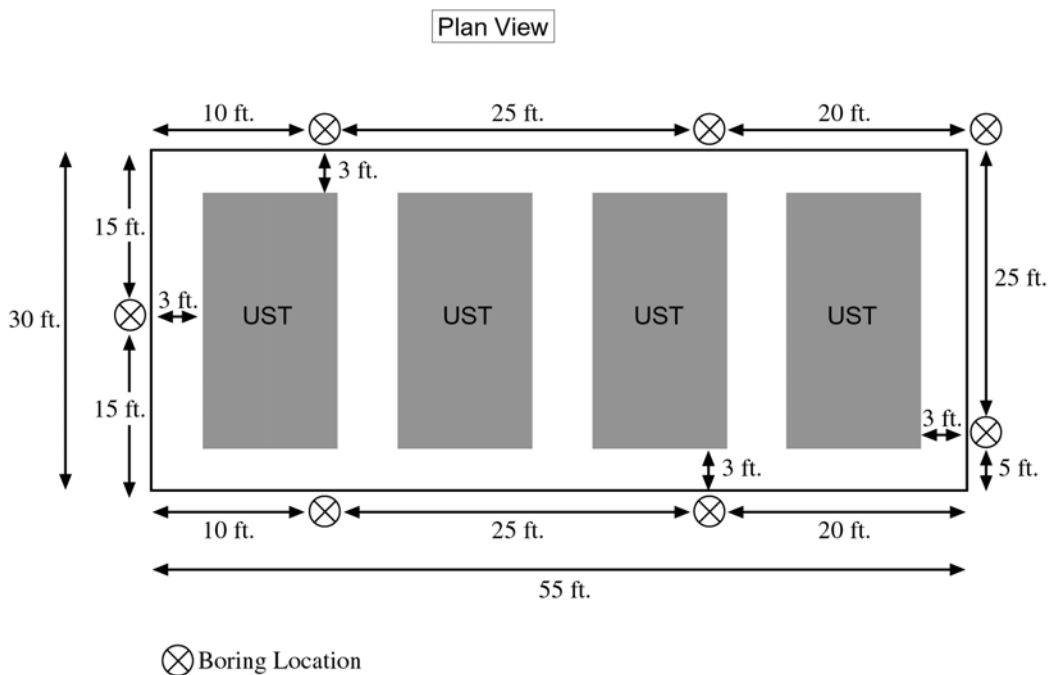


Figure 11. Tank Hold Sampling Locations for Tank Systems Remaining in Place

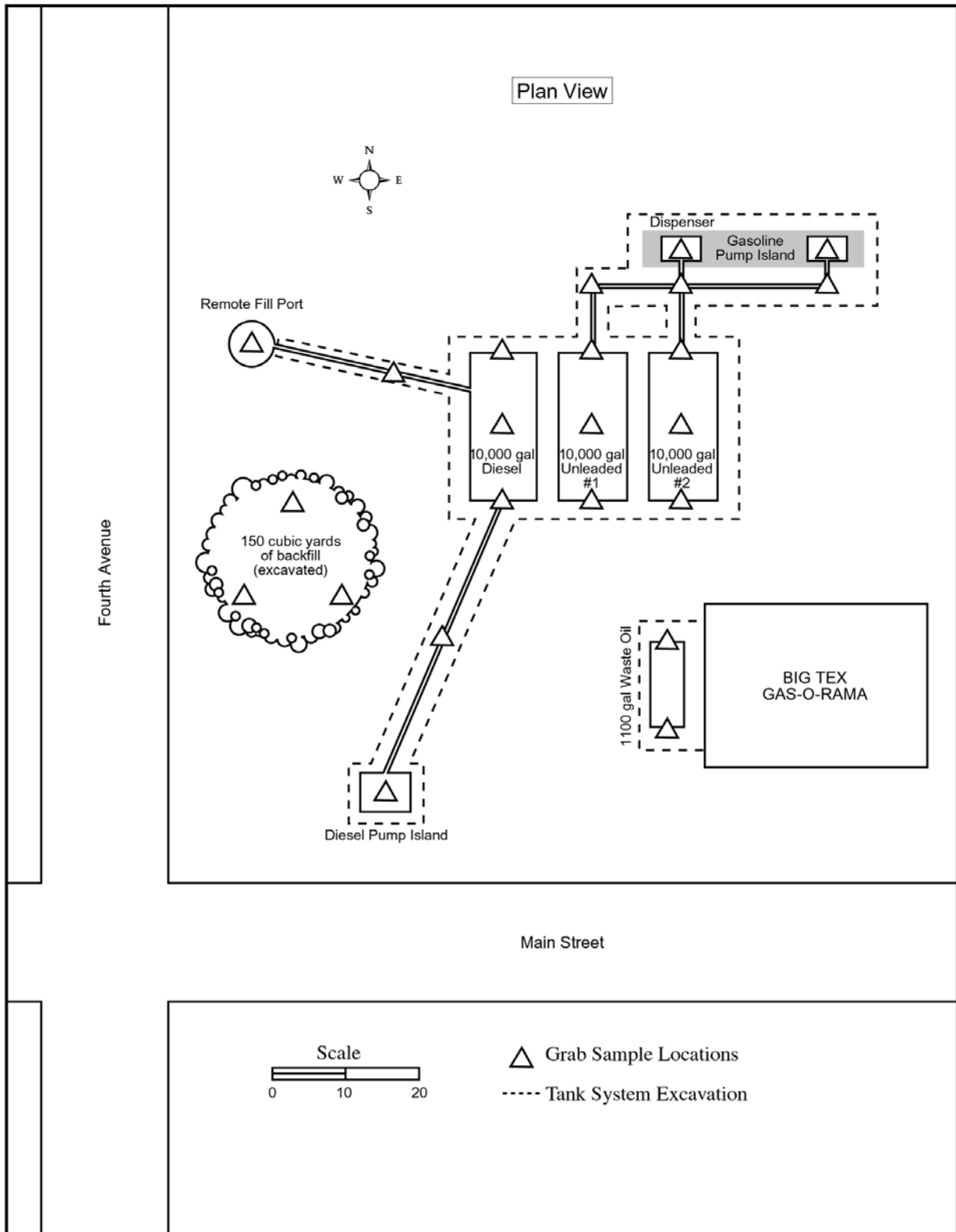


Figure 12. Typical Sampling Locations at Tank System Removal (Plan View—No Water Present)

Analytical Requirements

General

The PST Program has established requirements for analytical data submitted for release determination purposes. The purpose is to facilitate the TCEQ's review process toward determining whether a release has occurred. These release determination or "pre-TRRP" requirements are similar to, but less stringent than, those for TRRP sites.

Two requirements for both TRRP and pre-TRRP sites are:

- The person¹ providing data to the agency is responsible for, and must have an understanding of, the quality of the data being provided.
- The data provided must be of sufficient and documented quality to meet the program and project objectives.

The person submitting PST release determination information to the TCEQ has the choice of following either one of the following sets of requirements:

- the full TRRP analytical data requirements as set forth in the TRRP rule and in *Review and Reporting of COC Concentration Data*, (RG-366/TRRP-13); or
- the pre-TRRP requirements described in this section.

Sample Handling, Analysis, and Reporting

Table 4 summarizes the sample analyses, preservatives, and holding times required for the most common PST substances. The constituents to be analyzed depend on the type of regulated substance stored and/or released, and on the medium (soil or water) sampled. If the potential release source or substance is unknown, the required analytical suite is more extensive to ensure identification of all possible COCs.

Analytical methods other than those listed may be acceptable. Call the TCEQ's PST-RPR Section at 512/239-2200 to obtain approval of any alternate methods before you mobilize for the field sampling event.

In addition to the standard laboratory method holding times listed in Table 4, be aware that the TCEQ requires all soil and water samples collected for a demonstration of regulatory compliance (such as release determination) to be received by the laboratory within two days of sample collection, unless this requirement is waived in writing by the TCEQ prior

¹ The TRRP rule refers to the responsible party performing a remedial action as "the person" (refer to paragraph 350.4(a)(62) for the full definition).

Table 4. Summary of PST Constituents and Analytical Methods ¹

Substance Stored	Constituents	Analytical Methods ²	Sample Media ³	Preservative	Holding Time ⁴	Comments
Gasoline, diesel, jet fuels, and Nos. 1, 2, and 4 fuel oils	BTEX & MTBE	8021B or 8260B	Water	Cool to 4°C and adjust pH to < 2 with H ₂ SO ₄ , HCl, or solid NaHSO ₄	14 days (7 days if sample is not preserved)	Method 8260B is preferred—but not required—for initial release characterization, because it is better than 8021B at identifying COCs.
			Soil	Cool to 4°C. Hold at -12°C at lab before analysis.	14 days	
	TPH	TX1005	Water	Cool to 4°C and adjust pH to < 2 with H ₂ SO ₄ , HCl, or solid NaHSO ₄ . After extraction, hold in lab at -12°C.	If pH adjusted, extract within 14 days. If pH NOT adjusted, extract within 7 days. Analyze within 14 days of extract.	Report the results of the following ranges: nC ₆ to nC ₁₂ >nC ₁₂ to nC ₂₈ nC ₆ to nC ₂₈
			Soil	Cool to 4°C immediately upon collection. Hold at -12°C at lab before and after extraction.	Extract within 14 days of collection and analyze within 14 days of extraction.	
	PAHs if TPH ≥nC12 detected ⁵	8310 or 8270 ⁶ (if applicable)	Water	Cool to 4°C and use amber glass sample containers.	Extract within 7 days of collection. Analyze within 40 days of extraction.	If analytical interference is observed or suspected, sample extract should undergo cleanup; for example, using Method 3611B.
			Soil	Cool to 4°C.	Extract within 14 days of collection. Analyze within 40 days of extraction.	
Waste oil or unknown petroleum products	VOCs (including BTEX and MTBE)	8260B	Water	Cool to 4°C and adjust pH to < 2 with H ₂ SO ₄ , HCl, or solid NaHSO ₄	14 days (7 days if sample is not preserved)	Include all solvent-type volatile chemicals and BTEX and MTBE in the initial 8260B analyses. Other methods, such as Methods 8011 or 8021B, can be used during corrective action activities, if desired.
			Soil	Cool to 4°C. Hold at -12°C at lab before analysis.	14 days	
	TPH	TX1005	Water	Cool to 4°C and adjust pH to < 2 with H ₂ SO ₄ , HCl, or solid NaHSO ₄ . After extraction, hold in lab at -12°C.	If pH adjusted, extract within 14 days. If pH NOT adjusted, extract within 7 days. Analyze within 14 days of extract.	Report the results of the following ranges: nC ₆ to nC ₁₂ >nC ₁₂ to nC ₂₈ >nC ₂₈ to nC _{35 or 36} nC ₆ to nC _{35 or 36}
			Soil	Cool to 4°C immediately upon collection. Hold at -12°C at lab before and after extraction.	Extract within 14 days of collection and analyze within 14 days of extraction.	
	PAHs if TPH ≥nC12 detected ⁵	8310 or 8270 ⁶ (if applicable)	Water	Cool to 4°C and use amber glass sample containers.	Extract within 7 days of collection. Analyze within 40 days of extraction.	If analytical interference is observed or suspected, sample extract should undergo cleanup; for example, using Method 3611B.
			Soil	Cool to 4°C	Extract within 14 days of collection. Analyze within 40 days of extraction.	

Continued . . .

Table 4. Summary of PST Constituents and Analytical Methods ¹ (continued)

Substance Stored	Constituents	Analytical Methods ²	Sample Media ³	Preservative	Holding Time ⁴	Comments
Hydraulic fluid, Lubricating oils, No. 6 Fuel Oil	TPH	TX1005	Water	Cool to 4°C and adjust pH to < 2 with H ₂ SO ₄ , HCl, or solid NaHSO ₄ . After extraction, hold in lab at -12°C.	If pH adjusted, extract within 14 days. If pH NOT adjusted, extract within 7 days. Analyze within 14 days of extraction.	Report the results of the following ranges: nC ₆ to nC ₁₂ >nC ₁₂ to nC ₂₈ >nC ₂₈ to nC _{35 or 36} nC ₆ to nC _{35 or 36}
			Soil	Cool to 4°C immediately upon collection. Hold at -12°C at lab before and after extraction.	Extract within 14 days of collection and analyze within 14 days of extraction.	
	PAHs if TPH ≥ nC12 detected ⁵	8310 or 8270 ⁶ (if applicable)	Water	Cool to 4°C and use amber glass sample containers.	Extract within 7 days of collection. Analyze within 40 days of extraction.	If analytical interference is observed or suspected, sample extract should undergo cleanup; for example, using Method 3611B.
			Soil	Cool to 4°C	Extract within 14 days of collection. Analyze within 40 days of extraction.	
Hazardous substances	Refer to EPA publication SW-846 for the appropriate test methods for the constituent(s) of concern.					

NOTES

- ¹ Note that for PST Program release determination purposes, it is critical that the method quantitation limits (MQLs) and the sample quantitation limits (SQLs) for all analyses are **less than or equal to the action levels shown in Table 1** of this guidance. The MQL for a chemical is the lowest nonzero standard used in the laboratory's initial calibration curve, as described in SW846-8000B. The SQL is the method detection limit (MDL) adjusted to reflect sample-specific characteristics, preparation, and/or analytical adjustments. The term "SQL" as used in TRRP is analogous to the sample-specific detection limit.
- ² EPA SW-846 methods, except where noted
- ³ The water sample protocols summarized in the table assume that the water has no residual free chlorine. For water samples **with** residual chlorine (e.g., collected from a public chlorinated supply), free chlorine must be removed with appropriate addition of Na₂S₂O₃.
- ⁴ Holding time assumes preservation as noted, unless otherwise indicated.
- ⁵ Method quantitation limits (MQLs) for TPH must be less than or equal to 50 mg/kg (soil) or less than or equal to 5 mg/L (water) for each carbon range (e.g., nC6 to nC12, >nC12 to nC28, >nC28 to nC35 or 36). Analytical responses detected above the laboratory's method detection limit (MDL) (i.e., observed above the MDLs and meeting the qualitative identification criteria specified either in the analytical method used, or in the laboratory's standard operating procedure) should be reported as detected results. If the response is detected below the MQL but above the MDL, the results should be reported at the concentration estimated by the laboratory and flagged with a qualifier (e.g., "J") to indicate the value reported is an estimate.
- ⁶ Method 8270 using select ion monitoring (SIM) or using a low-level PAH approach is recommended because it minimizes false-positive detections of PAHs. Regardless of the method used, the MQL of the method must be less than or equal to the respective PST Program action level.

to the sample collection event. For additional information, refer to the July 31, 2003, TCEQ Remediation Division Interoffice Memorandum, *Sample Handling and Preservation Procedures* (applicable to both soil and water samples) and *the Collection Procedures for Groundwater Samples*, available at www.tnrcc.state.tx.us/permitting/remed/rpr/download.html.

Before You Mobilize to the Field

Important Analytical Terms

The person is responsible for the quality of the data submitted to the TCEQ; therefore, it is highly recommended that both the person and the person's representative (RCAS, CAPM, LOSS) that will be dealing with the samples and laboratory become familiar with the following three analytical measurement terms:

- The method detection limit (MDL) is the minimum concentration at which the laboratory can detect a chemical in a clean, unadulterated laboratory-grade sample.
- The method quantitation limit (MQL) is the lowest concentration the lab can detect—and quantify—a particular chemical, under standard analytical method conditions.
- The sample quantitation limit (SQL) is the lab's MDL for a specific COC in a particular sample, after adjustments have been made for sample-specific factors such as moisture content or dilution. As noted in the TRRP definition of this term—350.4(a)(78)—the SQL is analogous to the sample-specific detection limit for the COC in that sample.

Refer to TRRP subsection 350.4(a) for more information on these terms.

Key Items to Discuss with Your Lab

The following items should be discussed with your lab prior to field mobilization.

- The MQLs for all analytical methods used must be less than or equal to the action levels listed in Table 1 of this guidance.
- Nondetected results for any COC must be reported as less than the value of the SQL—for example “<0.005 mg/kg” when the SQL is 0.005 mg/kg (do not write “ND”). All detected and nondetected analytical results will be compared to the PST Program action levels shown in Table 1 of this guidance; therefore, **all SQLs must be less than the PST action levels**. If an SQL is above the PST action level but the COC is detected, the data are considered acceptable and no special action is required. If, however, an SQL is above the action level for a nondetected COC, you cannot determine if the release must be reported to the agency, and the TCEQ cannot make a “no release” determination. Refer to “Lab Analysis Problems—What to Do” for more information on what to do if this happens.
- All COCs with analytical responses greater than the MDL must be reported as being detected. For detected results greater than the MDL

but less than the MQL, the laboratory should estimate the concentration of the COC in the environmental sample, report the estimated value, and qualify the value with a flag such as “J” to indicate the fact that the value is estimated.

- Adjust both detected results and nondetected results for sample-specific factors such as percent moisture for soils, laboratory preparations and cleanups, dilutions, and any other laboratory adjustments.
- All soil results must be reported on a dry-weight basis.
- Ask your laboratory to compare all detected and nondetected results to the action levels as soon as it has analyzed your samples. If any SQLs are greater than their corresponding action levels, or if there are any other irregularities that may affect data usability, your lab should contact you immediately so you can work together to begin to resolve the problem (see “Lab Analysis Problems—What to Do”).

What to Submit to the TCEQ

The following table summarizes two of the analytical data items that must be included with the *Release Determination Report* form (TCEQ-0621), in order to facilitate the TCEQ’s review of whether a release has occurred.

Table 5. Items to Include in *Release Determination Report*

Item	Description	Who Generates
Laboratory data package	Field chain-of-custody forms, sample receipt documentation, certificates of analysis including QA/QC sample analysis, list of MQLs, and laboratory case narrative (see additional information below).	Laboratory
Data review summary	Discussion as to whether the data are (or are not) of sufficient quality to meet the program and project objectives. Documents that the laboratory data package was reviewed.	Person or representative independent of the laboratory

These items are discussed in more detail below.

Laboratory Data Package

The following items must be included in the data package provided by the laboratory:

1. Completed field chain-of-custody form(s) including:
 - a. date and time of sample collection,
 - b. date and time of sample receipt by the laboratory,
 - c. temperature of samples as received by the laboratory, and
 - d. field identification number for each sample.
2. Cross-reference between the field identification number and the laboratory identification number assigned to each sample.

3. Analytical test reports (certificates of analysis) for each environmental sample, including:
 - a. the information listed in National Environmental Laboratory Accreditation Conference (NELAC) Standard 5.13 (available at www.epa.gov/nerlesd1/land-sci/nelac/index.html); and
 - b. the analytical data reported as (1) the measured or estimated concentration for detected results, and as (2) less than the SQL for nondetected results.

4. QA/QC data, including:
 - a. Test reports for laboratory blank samples and laboratory control samples.
 - b. The surrogate recovery data for each environmental, laboratory control, and laboratory blank sample, as applicable to the analytical method used. Include the percent recovery and the laboratory's quality control limits for surrogate recovery for the method used. The surrogate recovery data can be submitted in the data package on a standard form used by the laboratory, or on the test report for each sample.
 - c. Matrix spike/matrix spike duplicate (MS/MSD) sample, if the sample used for the MS/MSD analysis was from the site of concern. The MS/MSD results should include the percent recovery and relative percent difference for the COC in the environmental medium.
 - d. Laboratory duplicates, if performed by the laboratory.

5. A list of the MQLs. Note that a new list of MQLs does not necessarily have to be generated for each sample analysis—the list can be a copy of the laboratory's standard analyte list with current MQLs for the analytical method.

6. A laboratory case narrative, or laboratory review checklist (LRC), that:
 - a. documents the laboratory's technical review of all of the data it generated;
 - b. notes any problems or anomalies observed in the receipt, handling, preparation, and/or analysis of the samples; and
 - c. discusses possible effects any such problems may have on the quality of the data generated for each sample.

If the lab chooses to provide a TRRP LRC, it may use the example form included in *Review and Reporting of COC Concentration Data* (RG-366/TRRP-13).

Data Review Summary

The person (or the person's representative independent of the laboratory), prepares the data review summary. The summary is prepared by first reviewing the laboratory data package and associated case narrative or LRC for any problems in the analytical data. Compare the detected and nondetected results to the action levels. Overall, the review should focus on whether the data can be used to demonstrate a release has *not* occurred.

Discuss—at a minimum—the following items in the data review summary:

- Were any problems or anomalies observed in the data by the lab or by the person?
- What actions (if any) did the lab take to resolve problems or anomalies?
- Is the quality of the data sufficient for making a release determination?

While the data review summary for release determination is not as extensive as the data usability summary (DUS) required for TRRP sites, the DUS guidance in TRRP-13, Appendix B, might be helpful in preparing the required data review summary for a release determination report.

Lab Analysis Problems—What to Do

One of the most common pre-TRRP laboratory data problems the PST Program encounters is when the SQL for a COC reported as “nondetected” exceeds the applicable PST Program action level. When this happens, it is not possible to determine whether there has been a release that requires action on the part of the TCEQ and the person. This problem is illustrated in the following example.

Soil Sample A is collected during a routine tank removal and is analyzed within proper holding times for benzene. The analysis results show that no benzene was detected, and the result is correctly reported as “<0.05 mg/kg” because the SQL was 0.05 mg/kg. But the action level for benzene is 0.026 mg/kg, which is lower than what the analysis was able to “see” down to (0.05 mg/kg). Therefore, since the presence/absence of benzene in the 0.026 - 0.05 mg/kg is unknown, whether a release above action levels has occurred cannot be determined.

Elevated SQLs could be due to sample interferences or to lab problems (or to both). If TPH is present in the carbon range of concern, but all individual COCs in the same carbon range are nondetected, the problem may be due to sample interferences. In this case, direct the lab to take the following steps to achieve a lower SQL: (1) reevaluate the chromatogram; (2) reanalyze the sample using the same method, with attention paid to the qualitative aspects of the analysis; (3) reanalyze the sample using a different method, such as gas chromatography/mass spectrometry in the select ion monitoring mode (GC/MS-SIMs); and (4) clean the sample (if possible) and reanalyze with a focus on lowering the SQL.

If TPH is not present in the carbon range of concern, it is possible that the elevated SQLs are due to lab problems. Therefore, advise the lab to: (1) review their analytical processes to determine the cause of the elevated SQL(s); (2) submit a revised test report with an explanation of the problem and the corrective action taken; and (3) resample and analyze the sample with the improved analytical/review process.

Table 6 and Figure 13 provide information that can help you work with your lab to resolve any data problems encountered. If the problems cannot be resolved, resampling and reanalysis may ultimately be required to finalize the release determination.

Note that most analytical data problems can be avoided by making sure you have good communication with your lab prior to field mobilization.

Table 6. TCEQ Response Matrix for Analytical Data Issues in PST Release Determination Submittals

Analytical Data Results				TPH Present in Carbon Range of Concern? ⁶	Actions to Take On Analytical Data Issues ²	Release?	Actionable ³ Release?	LPST No. Assigned?	Type of Letter Issued by TCEQ
SQL(s) ¹ for nondetected results		Detected COCs							
≤AL(s)	>AL(s)	≤ALs	>ALs						
✓		✓		NA	None	Y or N	N	N	NFA
✓			✓	NA	None	Y	Y	Y	Directive to complete TSP ⁴ or go into TRRP
	✓		✓	NA	None	Y	Y	Y	Directive to complete TSP ⁴ or go into TRRP
	✓	✓		Y	Elevated SQLs could be due to sample interferences. Work with lab to resolve. Refer to “Lab Analysis Problems—What to Do.”	Unk	Unk	Unk ⁵	NOD
	✓	✓		N	Elevated SQLs could be due to laboratory problems. Work with lab to resolve. Refer to “Lab Analysis Problems—What to Do.”	Unk	Unk	Unk ⁵	NOD

NOTES

¹ SQL = sample quantitation limit. The definition of the term “SQL” used in this guidance and in TRRP—paragraph 350.4(a)(78)—is analogous to the sample-specific detection limit.

² Addressing other deficiencies in the RDR submittal may also be required.

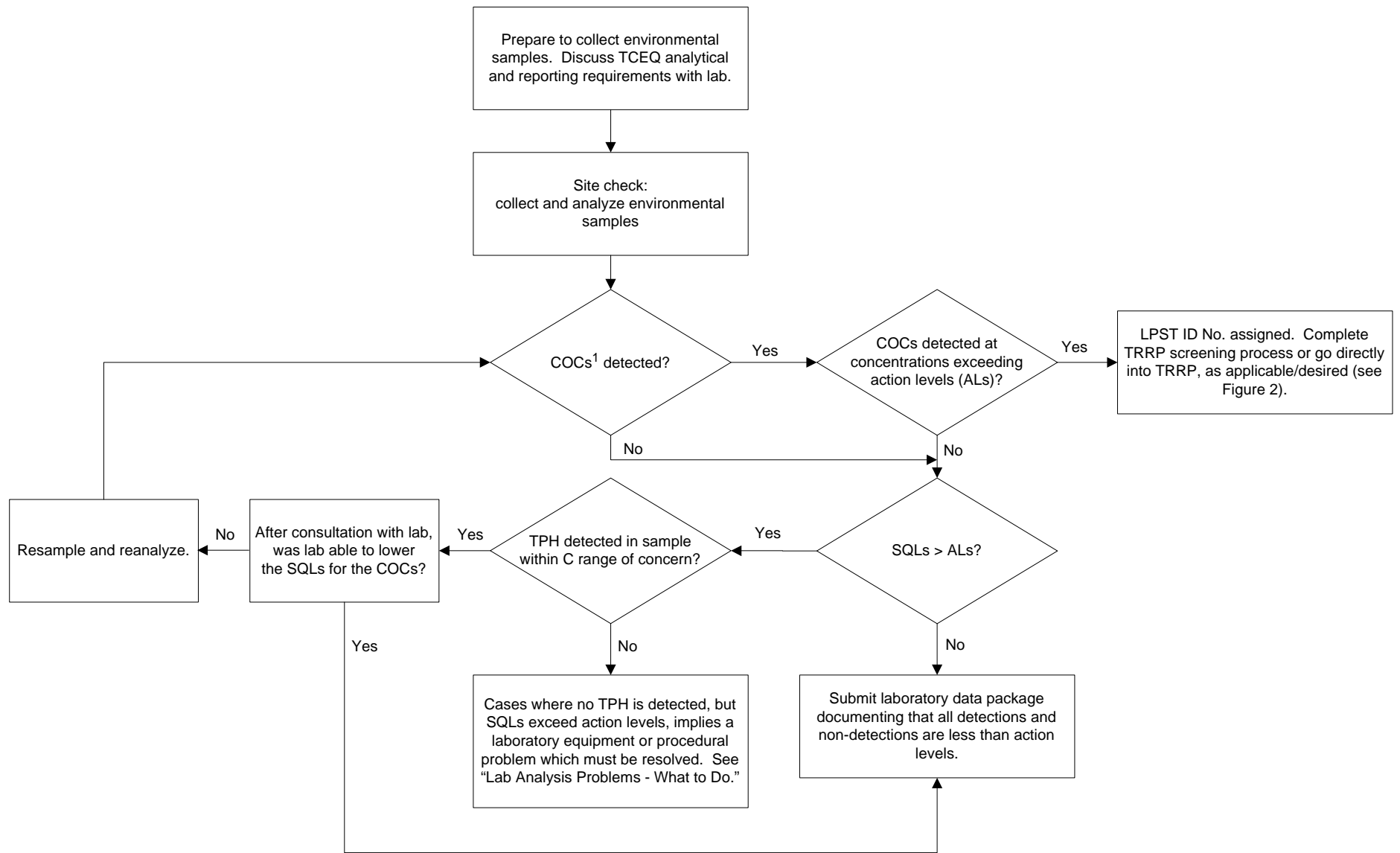
³ “Actionable” means triggers a TCEQ action, such as issuing an LPST ID no., notifying the person to either complete the TRRP screening process or proceed right into TRRP, etc.

⁴ Complete TRRP screening process or go directly into TRRP; see Figure 2.

⁵ Release status unknown.

⁶ For example, if there is a problem with the benzo(a)pyrene SQL in a sample (SQL > AL), look at TPH in the ≥C12 range. For a problem with benzene, look at TPH in the C6 to C12 range.

Abbreviations: AL = action level COC = chemical of concern NA = not applicable NFA = No Further Action NOD = Notice of Deficiency
 SQL=Sample quantitation limit TPH = total petroleum hydrocarbons TRRP = Texas Risk Reduction Program
 TSP = TRRP screening process Unk = unknown



¹ "COCs" as used in this figure refers only to individually identifiable chemical compounds (not TPH).

Figure 13. TRRP Screening Process—Analytical Considerations¹

**APPENDIX A—TRRP Tier 1 Ecological
Exclusion Checklist**

Note: The following *Tier 1 Ecological Exclusion Checklist* is Figure 30 TAC Section 350.77(b) in the TRRP rule. This checklist must be completed in certain cases as explained in the TCEQ Remediation Division interoffice memorandum (IOM) entitled *Determining Which Releases Are Applicable to TRRP* (October 21, 2003).

TIER 1: Exclusion Criteria Checklist

This exclusion criteria checklist is intended to aid the person and the TNRCC in determining whether or not further ecological evaluation is necessary at an affected property where a response action is being pursued under the Texas Risk Reduction Program (TRRP). Exclusion criteria refer to those conditions at an affected property which preclude the need for a formal ecological risk assessment (ERA) because there are **incomplete or insignificant ecological exposure pathways** due to the nature of the affected property setting and/or the condition of the affected property media. This checklist (and/or a Tier 2 or 3 ERA or the equivalent) must be completed by the person for all affected property subject to the TRRP. The person should be familiar with the affected property but need not be a professional scientist in order to respond, although some questions will likely require contacting a wildlife management agency (i.e., Texas Parks and Wildlife Department or U.S. Fish and Wildlife Service). The checklist is designed for general applicability to all affected property; however, there may be unusual circumstances which require professional judgement in order to determine the need for further ecological evaluation (e.g., cave-dwelling receptors). In these cases, the person is strongly encouraged to contact TNRCC before proceeding.

Besides some preliminary information, the checklist consists of three major parts, **each of which must be completed unless otherwise instructed**. PART I requests affected property identification and background information. PART II contains the actual exclusion criteria and supportive information. PART III is a qualitative summary statement and a certification of the information provided by the person. **Answers should reflect existing conditions and should not consider future remedial actions at the affected property**. Completion of the checklist should lead to a logical conclusion as to whether further evaluation is warranted. Definitions of terms used in the checklist have been provided and users are strongly encouraged to familiarize themselves with these definitions before beginning the checklist.

Definitions²

Affected property - The entire area (i.e., on-site and off-site; including all environmental media) which contains releases of chemicals of concern at concentrations equal to or greater than the assessment level applicable for residential land use and groundwater classification.

Assessment level - A critical protective concentration level for a chemical of concern used for affected property assessments where the human health protective concentration level is established under a Tier 1 evaluation as described in Section 350.75(b) of this title (relating to Tiered Human Health Protective Concentration Level Evaluation), except for the protective concentration level for the soil-to-groundwater exposure pathway which may be established under Tier 1, 2, or 3 as described in §350.75(I)(7) of this title, and ecological protective concentration levels which are developed, when necessary, under Tier 2 and/or 3 in accordance with §350.77(c) and/or (d), respectively, of this title (relating to Ecological Risk Assessment and Development of Ecological Protective Concentration Levels).

Bedrock - The solid rock (i.e., consolidated, coherent, and relatively hard naturally formed material that cannot normally be excavated by manual methods alone) that underlies gravel, soil or other surficial material.

Chemical of concern - Any chemical that has the potential to adversely affect ecological or human receptors due to its concentration, distribution, and mode of toxicity. Depending on the program area, chemicals of concern may include the following: solid waste, industrial solid waste, municipal solid waste, and hazardous waste as defined in Texas Health and Safety Code, §361.003, as amended; hazardous constituents as listed in 40 Code of Federal Regulations Part 261, Appendix VIII, as amended; constituents on the groundwater monitoring

¹These definitions were taken from 30 TAC Section 350.4 and may have both ecological and human health applications. For the purposes of this checklist, it is understood that only the ecological applications are of concern.

list in 40 Code of Federal Regulations Part 264, Appendix IX, as amended; constituents as listed in 40 CFR Part 258 Appendices I and II, as amended; pollutant as defined in Texas Water Code, §26.001, as amended; hazardous substance as defined in Texas Health and Safety Code, §361.003, as amended, and the Texas Water Code §26.263, as amended; regulated substance as defined in Texas Water Code §26.342, as amended and §334.2 of this title (relating to Definitions), as amended; petroleum product as defined in Texas Water Code §26.342, as amended and §334.122(b)(12) of this title (relating to Definitions for ASTs), as amended; other substances as defined in Texas Water Code §26.039(a), as amended; and daughter products of the aforementioned constituents.

Community - An assemblage of plant and animal populations occupying the same habitat in which the various species interact via spatial and trophic relationships (e.g., a desert community or a pond community).

Complete exposure pathway - An exposure pathway where a human or ecological receptor is exposed to a chemical of concern via an exposure route (e.g., incidental soil ingestion, inhalation of volatiles and particulates, consumption of prey, etc).

De minimus - The description of an area of affected property comprised of one acre or less where the ecological risk is considered to be insignificant because of the small extent of contamination, the absence of protected species, the availability of similar unimpacted habitat nearby, and the lack of adjacent sensitive environmental areas.

Ecological protective concentration level - The concentration of a chemical of concern at the point of exposure within an exposure medium (e.g., soil, sediment, groundwater, or surface water) which is determined in accordance with §350.77(c) or (d) of this title (relating to Ecological Risk Assessment and Development of Ecological Protective Concentration Levels) to be protective for ecological receptors. These concentration levels are primarily intended to be protective for more mobile or wide-ranging ecological receptors and, where appropriate, benthic invertebrate communities within the waters in the state. These concentration levels are not intended to be directly protective of receptors with limited mobility or range (e.g., plants, soil invertebrates, and small rodents), particularly those residing within active areas of a facility, unless these receptors are threatened/endangered species or unless impacts to these receptors result in disruption of the ecosystem or other unacceptable consequences for the more mobile or wide-ranging receptors (e.g., impacts to an off-site grassland habitat eliminate rodents which causes a desirable owl population to leave the area).

Ecological risk assessment - The process that evaluates the likelihood that adverse ecological effects may occur or are occurring as a result of exposure to one or more stressors; however, as used in this context, only chemical stressors (i.e., COCs) are evaluated.

Environmental medium - A material found in the natural environment such as soil (including non-waste fill materials), groundwater, air, surface water, and sediments, or a mixture of such materials with liquids, sludges, gases, or solids, including hazardous waste which is inseparable by simple mechanical removal processes, and is made up primarily of natural environmental material.

Exclusion criteria - Those conditions at an affected property which preclude the need to establish a protective concentration level for an ecological exposure pathway because the exposure pathway between the chemical of concern and the ecological receptors is not complete or is insignificant.

Exposure medium - The environmental medium or biologic tissue in which or by which exposure to chemicals of concern by ecological or human receptors occurs.

Facility - The installation associated with the affected property where the release of chemicals of concern occurred.

Functioning cap - A low permeability layer or other approved cover meeting its design specifications to minimize water infiltration and chemical of concern migration, and prevent ecological or human receptor exposure to chemicals of concern, and whose design requirements are routinely maintained.

Landscaped area - An area of ornamental, or introduced, or commercially installed, or manicured vegetation which is routinely maintained.

Off-site property (off-site) - All environmental media which is outside of the legal boundaries of the on-site property.

On-site property (on-site) - All environmental media within the legal boundaries of a property owned or leased by a person who has filed a self-implementation notice or a response action plan for that property or who has become subject to such action through one of the agency's program areas for that property.

Physical barrier - Any structure or system, natural or manmade, that prevents exposure or prevents migration of chemicals of concern to the points of exposure.

Point of exposure - The location within an environmental medium where a receptor will be assumed to have a reasonable potential to come into contact with chemicals of concern. The point of exposure may be a discrete point, plane, or an area within or beyond some location.

Protective concentration level - The concentration of a chemical of concern which can remain within the source medium and not result in levels which exceed the applicable human health risk-based exposure limit or ecological protective concentration level at the point of exposure for that exposure pathway.

Release - Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, with the exception of:

(A) A release that results in an exposure to a person solely within a workplace, concerning a claim that the person may assert against the person's employer;

(B) An emission from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel, or pipeline pumping station engine;

(C) A release of source, by-product, or special nuclear material from a nuclear incident, as those terms are defined by the Atomic Energy Act of 1954, as amended (42 U.S.C. §2011 et seq.), if the release is subject to requirements concerning financial protection established by the Nuclear Regulatory Commission under §170 of that Act;

(D) For the purposes of the environmental response law §104, as amended, or other response action, a release of source, by-product, or special nuclear material from a processing site designated under §102(a)(1) or §302(a) of the Uranium Mill Tailings Radiation Control Act of 1978 (42 U.S.C. §7912 and §7942), as amended; and

(E) The normal application of fertilizer.

Sediment - Non-suspended particulate material lying below surface waters such as bays, the ocean, rivers, streams, lakes, ponds, or other similar surface water body (including intermittent streams). Dredged sediments which have been removed from below surface water bodies and placed on land shall be considered soils.

Sensitive environmental areas - Areas that provide unique and often protected habitat for wildlife species. These areas are typically used during critical life stages such as breeding, hatching, rearing of young, and overwintering. Examples include critical habitat for threatened and endangered species, wilderness areas, parks, and wildlife refuges.

Source medium - An environmental medium containing chemicals of concern which must be removed, decontaminated and/or controlled in order to protect human health and the environment. The source medium may be the exposure medium for some exposure pathways.

Stressor - Any physical, chemical, or biological entity that can induce an adverse response; however, as used in this context, only chemical entities apply.

Subsurface soil - For human health exposure pathways, the portion of the soil zone between the base of surface soil and the top of the groundwater-bearing unit(s). For ecological exposure pathways, the portion of the soil zone between 0.5 feet and 5 feet in depth.

Surface cover - A layer of artificially placed utility material (e.g., shell, gravel).

Surface soil - For human health exposure pathways, the soil zone extending from ground surface to 15 feet in depth for residential land use and from ground surface to 5 feet in depth for commercial/industrial land use; or to the top of the uppermost groundwater-bearing unit or bedrock, whichever is less in depth. For ecological exposure pathways, the soil zone extending from ground surface to 0.5 feet in depth.

Surface water - Any water meeting the definition of surface water in the state as defined in §307.3 of this title (relating to Abbreviations and Definitions), as amended.

Name of Facility:

Affected Property Location:

Mailing Address:

TNRCC Case Tracking #s:

Solid Waste Registration #s:

Voluntary Cleanup Program #:

EPA I.D. #s:

PART I. Affected Property Identification and Background Information

- 1) Provide a description of the specific area of the response action and the nature of the release. Include estimated acreage of the affected property and the facility property, and a description of the type of facility and/or operation associated with the affected property. Also describe the location of the affected property with respect to the facility property boundaries and public roadways.

Attach available USGS topographic maps and/or aerial or other affected property photographs to this form to depict the affected property and surrounding area. Indicate attachments:

Topo map Aerial photo Other _____

- 2) Identify environmental media known or suspected to contain chemicals of concern (COCs) at the present time. Check all that apply:

Known/Suspected COC Location
 Soil ≤ 5 ft below ground surface
 Soil >5 ft below ground surface
 Groundwater
 Surface Water/Sediments

Based on sampling data?
 Yes No
 Yes No
 Yes No
 Yes No

PART II. Exclusion Criteria and Supportive Information

Subpart A. Surface Water/Sediment Exposure

1) Regarding the affected property where a response action is being pursued under the TRRP, have COCs migrated and resulted in a release or imminent threat of release to either surface waters or to their associated sediments via surface water runoff, air deposition, groundwater seepage, etc.? Exclude wastewater treatment facilities and stormwater conveyances/impoundments authorized by permit. Also exclude conveyances, decorative ponds, and those portions of process facilities which are:

- a. Not in contact with surface waters in the State or other surface waters which are ultimately in contact with surface waters in the State; and
- b. Not consistently or routinely utilized as valuable habitat for natural communities including birds, mammals, reptiles, etc.

Yes No

Explain:

If the answer is Yes to Subpart A above, the affected property does not meet the exclusion criteria. However, complete the remainder of Part II to determine if there is a complete and/or significant soil exposure pathway, then complete PART III - Qualitative Summary and Certification . If the answer is No, go to Subpart B.

Subpart B. Affected Property Setting

In answering “Yes” to the following question, it is understood that the affected property is not attractive to wildlife or livestock, including threatened or endangered species (i.e., the affected property does not serve as valuable habitat, foraging area, or refuge for ecological communities). (May require consultation with wildlife management agencies.)

1) Is the affected property wholly contained within contiguous land characterized by: pavement, buildings, landscaped area, functioning cap, roadways, equipment storage area, manufacturing or process area, other surface cover or structure, or otherwise disturbed ground?

Yes No

Explain:

If the answer to Subpart B above is Yes, the affected property meets the exclusion criteria, assuming the answer to Subpart A was No. Skip Subparts C and D and complete PART III - Qualitative Summary and Certification. If the answer to Subpart B above is No, go to Subpart C.

Subpart C. Soil Exposure

1) Are COCs which are in the soil of the affected property solely below the first 5 feet beneath ground surface **or** does the affected property have a physical barrier present to prevent exposure of receptors to COCs in surface soil?

- Yes No

Explain:

If the answer to Subpart C above is Yes, the affected property meets the exclusion criteria, assuming the answer to Subpart A was No. Skip Subpart D and complete PART III - Qualitative Summary and Certification. If the answer to Subpart C above is No, proceed to Subpart D.

Subpart D. *De Minimus* Land Area

In answering “Yes” to the question below, it is understood that all of the following conditions apply:

- ❖ The affected property is not known to serve as habitat, foraging area, or refuge to threatened/endangered or otherwise protected species. (Will likely require consultation with wildlife management agencies.)
- ❖ Similar but unimpacted habitat exists within a half-mile radius.
- ❖ The affected property is not known to be located within one-quarter mile of sensitive environmental areas (e.g., rookeries, wildlife management areas, preserves). (Will likely require consultation with wildlife management agencies.)
- ❖ There is no reason to suspect that the COCs associated with the affected property will migrate such that the affected property will become larger than one acre.

1) Using human health protective concentration levels as a basis to determine the extent of the COCs, does the affected property consist of one acre or less and does it meet all of the conditions above?

- Yes No

Explain how conditions are met/not met:

If the answer to Subpart D above is Yes, then no further ecological evaluation is needed at this affected property, assuming the answer to Subpart A was No. Complete PART III - Qualitative Summary and Certification. If the answer to Subpart D above is No, proceed to Tier 2 or 3 or comparable ERA.

PART III. Qualitative Summary and Certification (Complete in all cases.)

Attach a brief statement (not to exceed 1 page) summarizing the information you have provided in this form. This summary should include sufficient information to verify that the affected property meets or does not meet the exclusion criteria. The person should make the initial decision regarding the need for further ecological evaluation (i.e., Tier 2 or 3) based upon the results of this checklist. After review, TNRCC will make a final determination on the need for further assessment. **Note that the person has the continuing obligation to re-enter the ERA process if changing circumstances result in the affected property not meeting the Tier 1 exclusion criteria.**

Completed by:

_____ (*Typed/Printed Name*)

_____ (*Title*)

_____ (*Date*)

I believe that the information submitted is true, accurate, and complete, to the best of my knowledge.

_____ (*Typed/Printed Name of Person*)

_____ (*Title of Person*)

_____ (*Signature of Person*)

_____ (*Date Signed*)