Underground Storage Tanks

The Basics

A resource for small and medium-sized businesses in Orange County

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Environmental Health Division

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Underground Storage Tanks ... The Basics

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Underground Storage Tanks ... The Basics

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Chapter 1 Introduction

Owning and operating an underground storage tank (UST) system within the state of California is a sophisticated operation. As you know, there are numerous regulations regarding the installation, maintenance and operation of your system. Over time, these regulations have grown in number and complexity. Understanding these requirements is critical to maintaining compliance. The Orange County Health Care Agency (OCHCA) is committed to providing you with the tools necessary to do just that…own and operate an underground storage tank system in compliance with the rules and regulations enforced by OCHCA.

UST systems may also be subject to regulations enforced by other agencies (CARB, AQMD, etc.) not covered in this guidebook.

It was with you in mind that UST – The Basics was written. As we see it, we are your partner in regulatory compliance. While it is the role of this Agency to enforce the rules and regulations, it is also our responsibility to inform and assist tank owners with their compliance issues. It is our hope that this manual provides critical information in a format that is easier to understand than that found in typical regulatory documents. We hope you find this information useful. Of course, not every subject could be covered in this manual. If you have additional questions or require clarification regarding any compliance issue, please do not hesitate to contact your inspector directly.

Authority

The Orange County Health Care Agency serves as the CUPA for this geographic region. The CUPA, or Certified Unified Program Agency, is tasked by the Secretary for Environmental Protection to implement and enforce the underground storage tank codes set forth in Chapter 6.7 of the California Health & Safety Code. These regulations are further interpreted and made specific by the State Water Resources Control Board in Title 23 of the California Code of Regulations (CCR). In addition to these two documents, the Water Board periodically issues Local Guidance (LG) Letters. The letters are issued to clarify regulatory issues and provide guidance to regulators. The information contained in these documents, along with agency-specific requirements, comprise the content of this manual.

Link to Health and Safety Code and Title 23: www.waterboards.ca.gov/water_issues/programs/ust/regulatroy/

Link to LG Letters: www.waterboards.ca.gov/water_issues/programs/ust/leak_prevention/lgs

Tank Overview

Before we discuss UST compliance, we must first have an understanding of what a UST is and what it is not.

Simply put, a UST system is used to store hazardous substances underground. The term “system” not only refers to the tank itself, but also to the connected piping and associated equipment (monitoring system, etc.). While these systems are commonly associated with gas stations, there are many other

applications for UST systems. Examples include: emergency generator systems, waste oil tanks, chemical storage tank systems and hydraulic systems.

According to the California Health & Safety Code, an underground storage tank is defined as:

Health and Safety Code Section 25281 (y) (1)

"…any one or combination of tanks, including pipes connected thereto, that is used for the storage of hazardous substances and that is substantially or totally beneath the surface of the ground."

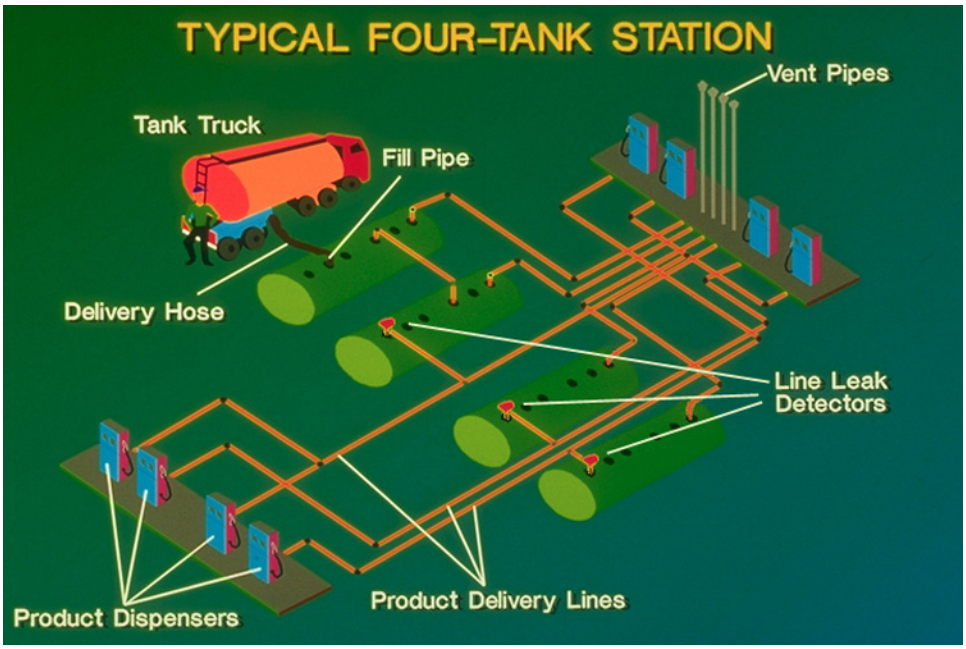
CCR Title 23 Section 2611

To determine if this is applicable to your system, we need to understand what "substantially" means. According to the Health and Safety code, "substantially" means having at least 10% of the UST system volume, including piping, below ground.

Health and Safety Code Section 25281 (y) (1)

Although they may meet the above definition, the following systems are exempt from UST regulations:

- Tanks with a capacity of 1,100 gallons or less located on a farm and used for the storage of motor vehicle fuel for the primary purpose of agricultural use
- Sumps, separators, storm drains, catch basins, oil field gathering lines, refinery pipelines, lagoons, separation sumps, lined and unlined pits, sumps and lagoons
- Hydraulic fluid tanks that use compressed air or hydraulic fluid to operate lifts, elevators, or similar devices



Now that we have established the definition of an underground storage tank, we can begin our discussion of the construction and monitoring requirements for these systems. There is, however, one fundamental distinction that drives many of these construction and monitoring requirements. The difference between a “new” and “existing” underground storage tank is the determining factor. By definition, an existing UST is one installed prior to January 1, 1984. These tanks are only required to have primary, or single-walled, containment. Tanks installed on or after January 1, 1984 are required to have secondary containment. Secondary containment provides a means for capturing spillage of the stored hazardous substance in the event of a primary containment failure. These double-walled systems dramatically changed how UST systems were constructed and also revolutionized leak detection monitoring methods. This will be discussed in greater detail in Chapter 3.

It should be noted that existing systems requiring replacement of some or all of the primary piping may be required to upgrade to double-walled components as part of the construction.

Contact Information

It is our desire to assist you in your compliance effort. If you have questions that are not addressed in this manual or would like additional information regarding underground storage tank systems, please contact us directly at:

Environmental Health
1241 East Dyer Road, Suite 120
Santa Ana, CA 92705
(714) 433-6000
Fax (714) 754-1768
www.occupainfo.com/hazardous-specialist.pdf

Chapter 2 Permitting

All underground storage tanks must be issued a permit to operate by the local agency, or CUPA. Annual permits are issued to all compliant underground storage tank systems for the period of July 1 through June 30 of the following year. Initial permits to operate are issued upon completion of installation or change of ownership.

In order to be issued an annual permit to operate, a facility must be in compliance with the laws and regulations specified in Chapter 6.7 of the Health and Safety Code and Title 23 of the California Code of Regulations. Payment of annual UST fees is also required before the CUPA can issue the annual permit.

Contractors commonly use the term "permit" and "plan check" interchangeably for the UST system repair approval process. For the purpose of this manual the term "plan check" is used.

For new tank installations, the following documents are required in order for the construction plan check to be completed and an initial permit to operate to be issued. A brief narrative describing each form can also be found below:

- **Plan check construction documents**
  - The tank operator should maintain a copy of all submitted documents

- **Installation/Certificate of Compliance (Form C)**
  - Description of work being performed
  - Installer's certification of completion
  - Signed by owner or owner's agent

- **Operating Permit Application – Facility Information Form (Form A)**
  - The name, location, mailing address and telephone number where the underground storage tank is located, and type of business involved, if any
  - Identifies property and tank owner and tank operator
  - Requires Board of Equalization UST Storage Fee Account Number

- **Operating Permit Application – Tank Information/Piping Form (Form B)**
  - A description of the underground storage tank including, but not limited to, the underground storage tank manufacturer, date of installation and tank capacity
  - Construction details of the underground storage tank and any auxiliary equipment including, but not limited to, type of primary containment, type of secondary containment (if applicable), spill and overfill prevention equipment, interior lining, and corrosion protection (if applicable)

Additional information regarding plan check documents can be found in the Tank Installation, Repair and Upgrade Section

All forms are available on the web at: http://www.occupainfo.com/forms.htm

  - A description of the piping including, but not limited to, the type of piping system, construction, material, corrosion protection and leak detection

- **Business Activities Form**
  - A brief description of the hazardous materials maintained on-site, storage methods and quantity
  - Checklist format

- **Owner and Operator Identification Form**
  - Identification of the business, business owner, environmental contact, and site emergency contacts

- **Certification of Financial Responsibility Form**
  - Documentation to demonstrate compliance with state and federal financial responsibility requirements applicable to underground storage tanks containing petroleum
  - Supporting documents may need to be submitted or maintained on site

- **Underground Storage Tank Monitoring Plan**
  - Describes the type of monitoring equipment and testing frequency for the USTs
  - This plan will be further discussed in the Tank Monitoring chapter

- **Facility Diagram**
  - Required as part of the monitoring plan
  - A scaled diagram or drawing which indicates the location of the underground storage tanks, piping, and monitoring system components

- **Underground Storage Tanks Response Plan**
  - Identifies spill control methods, equipment, and responsible persons

- **Owner/Operator Agreement (if required)**

For UST sites that are undergoing a change of ownership, the new owner must apply to the CUPA for a permit to operate within 30 days of the transfer. The permit application must include the following forms, which are mentioned above: Operating Permit Application (Form A and B), Business Activities, Owner and Operator Identification, Certification of Financial Responsibility, Underground Storage Tank Monitoring Plan, Facility Diagram, Underground Storage Tanks Response Plan, and Owner/Operator agreement (if applicable).

Annual Fees

The CUPA is a self-funded program. In other words, the program is solely funded by fees collected from the regulated UST community. The program fee schedule is designed such that the CUPA does not incur a profit or a loss. No tax revenue is utilized to fund the program. Funding sources include the following:

- **Annual Permit to Operate Fees**
- **Facility Modification Fees**
- **Tank Installation Fees**
- **Enforcement Fees**
- **Additional Inspection Fees**

A current schedule of fees can be found at: www.ochealthinfo.com/docs/regulatory/fees/haz_waste_ust.pdf

Chapter 3 Tank Monitoring

All underground storage tanks must be monitored in order to alert the tank operator to the presence of a leak in the system. The type of monitoring is dependent on the type of system installed. Double-walled tanks and piping are monitored differently than single-walled components. In this section, we will describe the different monitoring methods approved for your system.

New Tanks

Monitoring

For double-walled tanks, monitoring typically consists of a non-visual method. Non-visual methods rely upon a monitoring system to detect leaks in the underground tank system. As with single-walled tanks, visual monitoring is an option, however, it is not practical for most applications.

Non-visual tank monitoring consists of a sensor installed at the lowest part of the tank between the primary and secondary tank walls. You might also hear this space between the tank walls referred to as the tank "interstitial space" or tank "annular space." Any liquid escaping from the primary tank will be detected by the sensor and cause the monitor to alarm. Similarly, if the integrity of the outer wall is compromised, any liquid entering from outside of the system will be detected.

Secondarily-contained, or double-walled, piping also requires continuous monitoring. Gravity is used to help with this method. All underground storage tank piping is oriented so that it slopes back to a monitored sump, or low point. A sensor is installed in each sump. A leak in any portion of the primary piping will flow down through the secondary piping to the monitored sump. Once in the sump, the liquid will be detected by the sensor and cause the monitor to alarm, thereby alerting the operator of the leak.

Monitoring Equipment and Programming

Sensors used to monitor pressurized piping are only required to cause an audible and/or visual alarm. For these systems, an annual pipe integrity test is required. Many monitoring systems, however, can be programmed to satisfy this requirement. Most monitoring systems are programmed to shut off product flow when a leak is detected. This is known as "positive shut-down." If the monitoring system is also programmed with "fail safe" logic, the annual line test requirement is satisfied. "Fail safe" means that a monitoring system will halt the flow of product in the event a loss of power to the monitoring system or a system malfunction.

The sensor must be positioned in the tank-top sump to detect a piping leak as early as possible. In order to do this, the sensor must be located at the low point in the sump closest to the piping penetration. The photo at below depicts a correctly positioned sensor.

"Positive Shut-down" is an alarm condition that stops the flow of product.

A "Fail Safe" system will shut down the turbine if there is a loss of power or the system fails.

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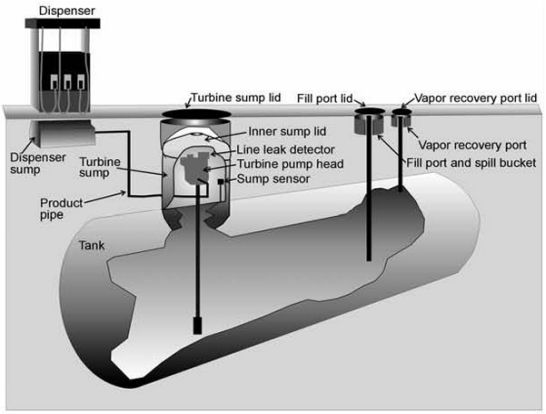
Under - Dispenser Containment (UDC)



The under-dispenser containment, or UDC, is a sump located under each dispenser. It is also considered to be part of the secondary containment. This is because the secondary piping terminates shortly after entering the UDC, leaving the primary piping exposed to travel up into the dispenser. The under dispenser containment is designed to contain leakage from the primary piping that may occur within the UDC/dispenser area. A monitoring device must be installed in the UDC to detect the presence of a leak.

There are several types of sensors that are approved for UDC monitoring. The two common types are electronic and mechanical. Although they may function differently, both will stop flow of product at the dispenser when a leak is detected.

These systems, manufactured by Bravo Industries, are often referred to as "Bravo Boxes."

Monitoring the UDC

Electronic under-dispenser sensors that communicate with the monitoring system typically shut down the turbine and trigger an audible and/or visual alarm. Some electronic sensors, also known as "stand-alone" sensors, operate by shutting down the power to the affected dispenser, thereby stopping product flow.

Mechanical sensors function by using a float mechanism. As the liquid level in the UDC increases, a float rises. This float assembly "trips" the shear valve thereby stopping product flow.

Line Leak Detectors

A line leak detector must be installed in all pressurized piping. The leak detector must be capable of detecting a 3.0 gallon per hour leak. These detection devices are installed in the piping, typically on the turbine head, which can be found in the turbine sump.

Line leak detectors can be one of two types: mechanical or electronic. A mechanical line leak detector will restrict the flow of product if a leak is detected. An electronic line leak detector is wired into the monitoring system. These detectors will stop the flow of product by shutting down the turbine. An electronic detector will also create an audible and/or visual alarm if a leak is detected.

The difference between a monitoring system for a SWT and a DWT are no annular sensor and Continuous System Leak Detection (CSLD) for SWTs.

Contact your inspector to discuss whether SIR is appropriate for your site.

Existing Tanks

Monitoring

Existing, or single-walled tanks, can be monitored either visually or non-visually. Visual monitoring requires daily inspection of all exterior tank surfaces. For most applications, this is not a practical monitoring method. In this case, a non-visual monitoring method must be utilized.

For non-visual monitoring, the following methods may be used: automatic tank gauging (ATG) or statistical inventory reconciliation (SIR). SIR is relatively uncommon in Orange County and will not be discussed in the manual.

Monitoring Equipment and Testing Requirements

Automatic tank gauging consists of a probe mechanism that records tank volume readings in order to detect an unexpected decrease in volume. The ATG also measures liquid temperature and the level of water in the tank, if present. The probe is typically found in an access riser that is attached to the top of the tank. The ATG extends from the riser down to the bottom of the tank. Readings are taken as the probe moves up and down with the changing tank liquid volume. These readings are then relayed to the monitoring system for evaluation.

Monitoring requirements for sites using an ATG for tank monitoring include the following:

- Monthly 0.2 gallon per hour test
- Monthly tank test results must be printed out by the monitoring systems and be available for review

There are several monitoring systems that are approved for ATG monitoring. Each monitoring system has different capabilities and options. Some systems conduct a monthly test, while others use continuous-in-tank-leak-detection (CITLD).

Single-Walled Piping Requirments
Single-walled piping has its own specific requirements. For pressurized piping systems, a line leak detector must be installed. This device is installed in the primary piping, typically at the turbine head. It must be capable of detecting a 3.0 gallon per hour leak. If a leak is detected, the leak detector will completely stop the flow of product through the piping. The monitoring requirements for the sites with single-walled piping are as follows:

- Installation of an electronic line leak detector, which must have an annual 0.1 gph pipe integrity test (also referred to as a “line test”) or 0.2 gph monthly test

VPH Systems

Health and Safety Code Section 25290.2 (d)

Background
For tanks installed on or after July 1, 2004, additional tank monitoring is required. The requirements set fourth in Assembly Bill 2481 (AB 2481) have mandated that continuous monitoring be implemented for both the primary and secondary containment. These state-of-the-art systems are designed to detect a leak before tank contents can enter the environment. These systems are also capable of detecting water intrusion into the secondary containment.

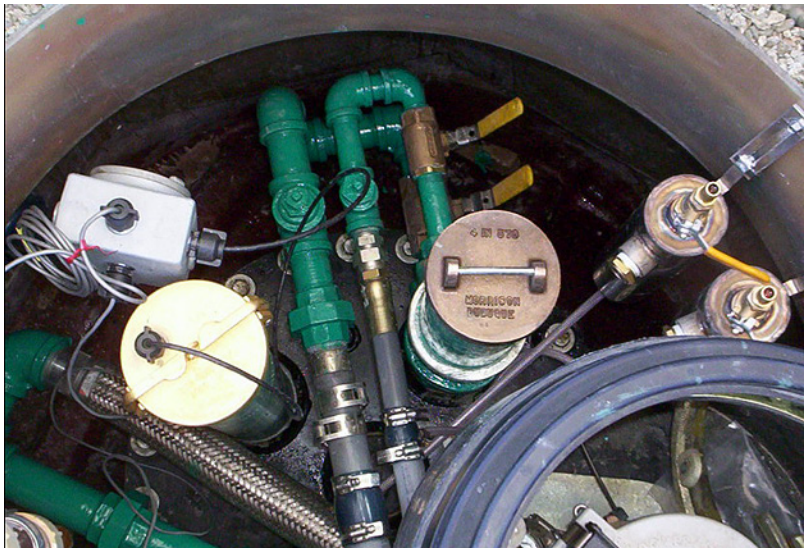
Monitoring
This additional monitoring is achieved through the use of an approved Vacuum, Pressure, or Hydro-Static system. VPH is the acronym that refers to the methods of continous monitoring of the space between the primary and secondary containment structures. These modes are as follows:

- Vacuum – Interstitial space is placed under continuous vacuum and monitored for loss of vacuum pressure
- Pressure – Interstitial space is placed under continuous pressure and monitored for loss of pressure

- Hydrostatic – Interstitial space is filled with brine solution and monitored for loss or gain in solution volume

Testing

Before these systems are put into operation, a one-time Enhanced Leak Detection (ELD) test is required.



Chapter 4 Testing: Notification and Reporting Requirements

As we have discussed, the components installed in your UST system are quite sophisticated. Complex design and engineering solutions have provided us with containment systems that afford redundant levels of protection. As advanced as these systems are, they must be periodically tested to ensure that they function properly.

Monitor Certification

All monitoring equipment described in the preceding section must be tested on an annual basis. The annual certification is designed to demonstrate that the equipment is functioning according to the manufacturer's specifications. This includes testing the operational capabilities of all electronic and mechanical sensors, automatic tank gauges, overfill prevention equipment, line leak detectors, and the monitoring system control panel. The annual certification allows for the identification of components which require replacement, repair, and/or calibration.

The common elements of a certification:

- Station shut-down (approximately 2 to 6 hours)
- Monitor programming review
- Sumps and UDCs opened
- Sensors tested
- Line leak detectors tested
- Frequent audible and visual alarms

The Monitor Certification must be completed by a certified service technician. This service technician must meet the following requirements:

- Have or be employed by a person or company that has the appropriate Contractors License

or

- Have a Tank Testers License

In addition to the above, this individual must also:

- Have a current ICC Service Technician License, or work under the direct supervision of someone who does possess it

- Obtain periodic certification on the testing or monitoring equipment being used

Be aware that the UST owner is responsible for ensuring that this test is performed. Additionally, owners are liable for contamination caused by their systems. With this in mind, it is imperative that a reputable contractor is hired to conduct this and all other UST testing and certifications. It is the responsibility of the tank owner and operator, not the technician, to ensure the following:

- Proper notification is made to the local agency. This notification must be received at least 48 hours prior to testing
- All equipment is tested at required intervals. As discussed, monitoring systems must be tested annually
- Testing is performed according to manufacturer's specifications
- Test reports are accurate and submitted to the local agency within 30 days of testing
- A copy of the Monitoring System Certification is maintained on-site

Many contractors that work in Orange County are familiar with these requirements. Please discuss these requirements with the contractor that you have chosen to ensure that the elements of the testing event meet the minimum requirements. Failure to meet these standards may necessitate a retest.

Inspection staff from the local agency will periodically observe the monitor certification and other UST testing. It is for this reason that proper notification is of the utmost importance.

Secondary Containment Testing

In an effort to further reduce the possibility of groundwater contamination from underground storage tank systems, the requirement for secondary containment testing was added to the regulations. These regulations were introduced with Senate Bill 989 (SB 989). As a result, this testing is often referred to as "SB 989" or simply, "989" testing.

The integrity of the secondary containment components is required to be tested every three years. The testing is conducted to demonstrate that the system remains as "tight" as it was at installation. During installation, the secondary containment was exposed and able to be visually inspected during testing. Now these same systems are covered over with concrete. To avoid the removal of tons of concrete and pea gravel, an alternative testing protocol has been developed to compensate for the lack of the visual inspection component.

This testing protocol typically contains the following elements:

- Tank Annular Testing
  - Typically 1 hour at 10" HG or 5 psi
- Piping Annular
  - 1 hour at 5 psi
- Tank-Top Sumps and UDCs
  - Two consecutive 15-minute hydrostatic tests using equipment capable of 0.002" accuracy
- What you will see
  - Station will likely be closed or have restricted access for 2-10 hours
  - Sumps opened and water added
  - UDCs opened and water added
  - Water removed, either left on-site or taken by tester
  - Water left on-site after testing may be hazardous. It is the responsibility of the owner/operator to make this waste determination and manage it properly
- Spill Bucket Testing (see page 16)

Contractor certification and licensing requirements are the same as those discussed in the Monitor Certification section. Like the monitor certification, it is the responsibility of the tank owner and operator, not the technician, to ensure the following:

Testing times are dependent on a variety of conditions which may include:

- *Number of USTs, pipelines, and UDCs*
- *UST system access*
- *UST system condition*
- *Contractor capability*
- *Weather conditions*
- *Other factors*

- Proper notification is made to the local agency. This notification must be received at least 48 hours prior to testing
- All system components are tested at required intervals
- Testing is performed according to manufacturer's specifications
- Reporting is accurate and submitted to the local agency within 30 days of testing

For systems that contain single-walled and double-walled components, only the double-walled components must be tested.

AB 2481 compliant systems still require annual spill bucket testing

As previously discussed, UST systems installed on or after July 1, 2004 are compliant with AB 2481. These systems require continuous monitoring of all secondary containment using one of the approved VPH monitoring systems. Since these systems are constantly monitored for leaks entering secondary containment, they are not subject to secondary containment testing.

Additionally, many tanks installed prior to AB 2481 have hydrostatically monitored secondary containment. The annular spaces of these tanks are filled with a brine solution that provides continuous monitoring of the tank secondary containment. Because of this continuous monitoring, secondary containment testing is not required for the tank portion of these systems. Secondary containment components of these systems that are not continuously monitored (piping, sumps, UDC's, etc.) are still subject to SB 989 testing.

Spill Bucket Testing

Spill buckets are designed to temporarily store product that may be released during the fuel delivery process. This can occur when a delivery driver disconnects the fuel hose from the fill pipe. These buckets must be tested annually to ensure that they are watertight. The testing is not required to be performed by a certified Service Technician, however, most tank owners contract this to be performed during the annual monitor certification.

For spill buckets that are installed in a tank-top sump, a simple visual or “lake” test, can be performed. During this test, the bucket is filled with water and allowed to rest for a 30-minute test period. The water level is measured at the beginning and end of the test. Any observable drop in the water level constitutes a failed test. A more precise test is required every three years. The precision test entails the use of a more sophisticated electronic level-measuring device that is accurate to 0.002”. For this method, a spill bucket must pass two consectutive two 15-minute test periods.

For those systems which have direct-bury spill buckets, a precision test is required every year.

The local agency (OCHCA) must be notified at least 48 hours prior to conducting a spill bucket test. The UST owner must also submit the required test results within 30 days.

Enhanced Leak Detection (ELD)

Enhanced Leak Detection is a test method used to determine if a UST system is liquid and vapor tight. The test is conducted by adding “tracer” elements to the UST system. A tracer element is a unique chemical that is introduced into the UST system to identify possible leaks. For sites with more than one tank, different chemicals are used for each individual tank system. After an operating period of 1 to 3 weeks, the area surrounding the entire tank system is tested for the presence of the tracer elements. Any tracer element detected indicates a possible leak in the corresponding tank system.

An Enhanced Leak Detection test is required:

- Once for new installations
- Every three years for single-walled tanks within 1,000’ of a public drinking water well

Line Testing

In some instances a pipeline integrity test or "line test," may be required. A line test is typically conducted by placing the piping under pressure. The test method must be capable of detecting a release equivalent to 0.1 gph at 150% of the line's normal operating pressure.

A line test is required:

- Annually – If the system is not programmed with the "positive shut-down" and "fail safe" provisions discussed in Section 3.1. Acceptable test methods are found in Local Guidance Letter 113 (LG 113).

- After Construction – If primary piping is opened and/or compromised as part of a system modification

Chapter 5 Releases: Suspected or Confirmed

Owner Requirements

As an owner or operator of a UST, you must be prepared to respond to a release before one occurs. Proper preparation and due diligence can help avoid releases, but accidents do happen. The following release preparedness/ response steps should be taken to minimize damage to the public, environment, and business:

- Be prepared! The following steps should be taken before a release occurs:
  - Make sure employees know the location of the Emergency Shut-off (ESO) switch.
  - Keep spill response equipment and supplies on-site
  - Maintain personal protective equipment (PPE) on-site and ensure employees know how to properly use it

Release preparedness and response should be discussed during the annual Designated Operator Facility Employee Training

- Major Release:
  - Activate the Emergency Shut-off (ESO) switch
  - Call 911
  - Secure the affected area / evacuate customers
  - Wear proper PPE
  - Minimize the release: Cover storm drains and use absorbent, as necessary

- Minor Release:
  - Stop/minimize release
  - Cover (bag) nozzle, if necessary
  - Wear proper PPE
  - Contain the release and clean up, when possible, with absorbent material

Another key to being prepared is having the right equipment for the job. Due to the constant possibility of a spill, it is important to maintain emergency materials at your site. This will maximize containment of spills and overfills until emergency response personnel can respond to the incident. We suggest that the following supplies and equipment be maintained on-site at all times:

- Containment devices, such as containment booms, dikes, and pillows
- Absorbent material, such as kitty litter, sand, and sawdust. (Be sure you properly dispose of used absorbent materials.)

- Mats or other material capable of keeping spill or overfill out of nearby storm drains
- Spark-free flash light
- Spark-free shovel
- Buckets
- Reels of “caution tape,” traffic cones, or other warning signs
- Personal protective gear such as gloves, suits and boots

Recording

In some cases, an unauthorized release does not need to be reported to the local agency. Certain types of releases require only that the condition be documented in the operator’s monitoring report. In order for an unauthorized release to be considered recordable only, it must meet all of the following:

- The release remains within secondary containment
- Any spillage is cleaned up within 8 hours of discovery, or within 8 hours of when it should have been discovered
- The release does not damage the secondary containment
- The release does not increase the likelihood of fire or explosion

Reporting

If you observe any of the following conditions, you will need to contact the local agency within 24 hours and submit a written report within 5 days:

Health and Safety Code Section 25295(a)(1)

- Any spill or overfill that is not contained by secondary containment
- Any released regulated substances at the UST site or in the surrounding area — such as the presence of liquid petroleum, soil contamination, surface water or groundwater contamination; or petroleum vapors in sewer, basement, or utility lines
- Any unusual operating conditions you observe — such as erratic behavior of the dispenser, a sudden loss of product, or an unexplained presence of water in the tank. However, you are not required to report if:
  - The system equipment is found to be defective, but not leaking, and is immediately repaired or replaced

    Note: see Chapter 8 for guidance regarding repairs.
- Results from your release detection system indicate a suspected release. However, you are not required to report if:

- The monitoring device is found to be defective and is immediately repaired, recalibrated, or replaced and further monitoring does not confirm the initial suspected release, or

- In the case of inventory control, a second month of data does not confirm the initial result

The incidents listed above must be reported via the Unauthorized Release Reporting (URR) form provided by the State Water Resources Control Board (SWRCB). If you are unsure whether you are required to report a suspected or actual release to the local Agency, please review your UST leak response plan for additional information or contact this Agency.

URR form can be found at: www.waterboards.ca.gov/water_issues/programs/ust/forms/

With any hazardous substance release, safety is the primary concern. While it is important to make every effort to stop the release and perform the actions discussed earlier, do not delay notification of the fire department.

Chapter 6 The Designated Operator

CCR Title 23
Section 2715 (a-f)

In an effort to further prevent releases from underground storage tanks, the California State Legislature passed additional rules that set a minimum training standard for all UST owners, operators, service technicians, installers, and inspectors. This means that all UST sites must have a "Designated Underground Storage Tank Operator," more commonly known as a "Designated Operator," or just "DO."

The Designated Operator is an individual selected by the owner that has passed the California UST System Operator Exam. The selected individual(s) can include the facility owner, operator, employee, or third party contractor. The exam is administered by the International Code Council, or ICC. Only individuals that possess this certification can act as a Designated Operator. The Designated Operator must renew the certification every two years by successfully passing the exam again.

The tank owner must notify the local agency of their Designated Operator selection. The owner may choose as many qualified individuals as necessary for this purpose. If the facility owner changes Designated Operators, the local agency must receive written notification from the owner within 30 days of the change.

The duties of the Designated Operator include monthly facility inspections, annual employee training, and review of findings with tank owner and/or operator. A Designated Operator that fully executes their or her duties can help keep your tank system in compliance and operating properly.

Monthly Visual Inspection

The Designated UST Operator must conduct a monthly inspection at the facility. The inspection includes the following activities:

- Review of the monitoring system alarm history or log.
  - If there were any monitoring system alarms, the DO will review maintenance and repair documentation to verify that the condition(s) responsible for the alarms have been handled appropriately. This documentation should be attached to the monthly report.
  - If there is no record of a response to the alarm, the DO must inspect the monitoring equipment in that sump to ensure that it is placed in a location that will detect a leak at the earliest opportunity.

- Inspection of all spill buckets to make sure they are clean and dry. The spill buckets should be maintained so they are free of water, fuel, and/or debris.

- Inspection of all under dispenser containment areas to make sure they are clean and dry. The UDCs should be maintained so they are free of water, fuel, and/or debris. Also, the DO must verify that the monitoring devices are placed in such a manner as to detect a leak at the earliest possible time.

- Confirmation of the test dates for all required testing:
  - Monitoring system: annual
  - Spill bucket testing: annual
  - Secondary containment testing: every three years
  - Line test: annual, if required

- Confirmation that all employee training is current

- Preparation of a report that is given to the owner

- Alerting the owner of any conditions requiring follow-up activity

The owner must maintain a copy of the monthly inspection records, including attachments, for the previous twelve months. These records must be kept on site and made available for review during inspection.

Annual Employee Training Requirement

The Designated Operator is required to provide training to facility employees every 12 months, or within 30 days of assignment for new employees. The training should include the following elements:

• Best management practices, which are effective and practical methods the employee can use to prevent or reduce the possibility of a release from the underground storage tank system

• Components of the monitoring system and monitoring plan for which they are responsible

• Responsibility with regard to releases and the spill response plan

• Contact information in the event of releases or other emergencies

During normal operating hours, the facility must always have at least one trained employee on-site. An alternative training program may be implemented, with prior Agency approval, at sites that are not routinely staffed.

The owner/operator shall maintain a list of employees trained by the designated operator. The list must be maintained on-site and include the following:

- Employee name
- Date of training
- Date of hire for all new employees

Chapter 7 Preparing for Inspections

OCHCA is required to inspect every underground tank system within its jurisdiction at least once every year. Upon completion of the inspection, a compliance report will be provided to the owner and/or operator. In most instances, the report is left on-site at the conclusion of the inspection. Alternatively, the report can be mailed to the owner and/or operator. The inspection typically includes the following:

- Verification of monitor function
- Document review
- Observation of UST testing, as appropriate

At a minimum the following documents must be maintained on-site:

- A copy of the Permit to Operate
- Agency-approved Monitoring Plan (including a facility diagram)
- Leak Response Plan
- Annual Monitoring System Certification reports
- Secondary Containment Test reports
- Spill Bucket Test report
- Designated Operator monthly inspection reports
- Designated Operator training records
- Other test reports, as required
- Maintenance and repair records and reports
- Certification of Financial Responsibility

Common UST Violations

At OCHCA, it is our desire to assist you in meeting all requirements for operating your UST system. To help illustrate common problems that UST owners face, we have reviewed our records to determine the “10” most common UST violations cited by our inspection staff. It is our hope that awareness of these violations will help you achieve compliance. The following are the most commonly cited UST violations:

1. Financial Responsibility has not been submitted to the CUPA annually
2. Yearly employee training is not conducted by Designated Operator and/or training records are not maintained
3. Monitoring plan has not been submitted and/or is not current
4. Designated Operator monthly inspections are not conducted, are incomplete, inconclusive, and/or documentation is not available
5. Secondary containment components did not pass testing
6. Designated Operator owner statement has not been submitted and/or is not current
7. Monitor certification did not pass testing. This includes individual sensors or other components
8. Maintenance and testing records are not available in sufficient detail
9. Monitor system has not been certified annually
10. Spill bucket did not pass testing

Although the violations related to failed testing are virtually unavoidable, you can see that some of these violation can be easily prevented.

Chapter 8 UST System Installation, Repairs and Upgrades

Before a tank system can be installed, modified, or removed, the plans describing the work must be approved by this Agency. Plans for installations and modifications are reviewed by the inspection staff. The purpose of the plan check process is to verify that the components being installed meet regulatory standards and will prevent unauthorized releases of hazardous substances. Tank removal plans are reviewed by the Local Oversight Program (LOP) staff. The amount of time it takes for Agency staff to review and approve a plan check may vary depending on the scope of work proposed and quality of the plan check documents submitted. Plan checks are often referred to as "permits," and this Agency does use the terms interchangeably (see chapter 2 for permitting requirements).

Agency Requirements

		Plan Check	No Plan Check
Tanks	Tank Installation	X	
	Tank Removal	X	
	Installation/Inspection of Tank Lining	X	
Sumps	Installation or replacement	X	
	Modification or repair	X	
	Installation of penetration boot	X	
	Tightening of band clamp		
	Repair/replacement of top hats or sump lids		X
Piping	Installation or replacement	X	
	Modification or repair	X	
	Installation of penetration boot	X	
	Installation of test boot		X
	Tightening of band clamps		X
	Replacement of flex hoses (within sump)		X
Under Dispenser Containment (UDC)	Installation or replacement	X	
	Modification or repair	X	
	Installation of penetration boot	X	
	Installation of test boot		
	Repair/replacement of float-chain mechanism		X
	Installation/replacement of dispenser		X
Monitoring	New monitoring system	X	
	New software that affects monitoring plan	X	
	New software that requires cold start		X
	Minor software upgrade or reprogramming		X

Facility Modification Form may be found on the web at: www.ochealthinfo.com/docs/regulatory/cupa/UST-modification-form.pdf

Monitoring	Sensor replacement: same model		X
	Sensor replacement: different model	X	
	Leak detector replacement: same type		X
	Leak detector replacement: different type	X	
	Installation of overfill or high-level alarm	X	
	Installation of ATG probe: same type		
	Installation of ATG probe: different type		
Spill buckets	Repair/replacement of spill buckets in fill sump		X
	Repair/replacement of direct-bury spill bucket	X	

For repairs and/or modifications that do not require a plan check, OCHCA still requires written notification within five working days of work to be performed. The notification must include scope of work, and the manufacturer and type of equipment installed. If you are unsure whether a plan check is required, please contact your inspector for additional information. A list of inspectors can be found online at www.occupainfo.com.

Plan Check Submittals
A plan check submitted for Agency approval should include the following:

- Facility modification application (FMA)
- Site diagram indicating area of work and major structures (4 copies)
- Scope of the work to be performed (4 copies)
- Fees (Visit www.occupainfo.com for current fee schedule)
- Copy of contractor's license and certifications (4 copies, must be received prior to start of work)

The additional copies of the scope of work, site diagram, and contractor's information will be needed for submittal to other regulatory authorities, depending on the scope of work and jurisdiction. The plan check fee includes plan review, site visits, testing, and coordination with contractors. Additional fees may be assessed for plans requiring over 5 total hours of staff time.

Contractor Requirements
As with UST testing, it is important that owners carefully select a properly certified contractor to perform system modifications. The selected contractor must:
- Have the appropriate Contractors License
- Have the appropriate ICC certifications (one or both depending on scope of work): UST Installer / Retrofitter Certification or/and UST Service Technician
- Have current training by the equipment manufacturer

Chapter 9 Tank Closure

Temporary Closure

Owners and/or operators of UST systems submit plans for temporary closure for various reasons. If you decide this is appropriate for your facility, the following requirements must be met:

- All residual liquid, solids, or sludges must be removed.
- The underground storage tank must be inerted to levels that will prevent an explosion, or to lower levels as required by OCHCA.
- The underground storage tank may be filled with a noncorrosive liquid that is not a hazardous substance. This liquid will be tested and the test results submitted to OCHCA prior to removal from the underground storage tank at the end of the temporary closure period.
- Except for required venting, all fill and access locations and piping must be sealed using locking caps or concrete plugs.
- Power service must be disconnected from all pumps associated with the use of the underground storage tank, unless the power services some other equipment which is not being closed.
- Quarterly inspections must be completed to ensure temporary closure requirements continue to be met.

At the end of the temporary closure period, which is typically 12 months, the UST must be returned to service. All compliance and testing requirements will be enforced prior to completion of temporary closure.

Guidelines for Temporary Closure can be found in www.ochealthinfo.com/docs/regulatory/cupa/UST-Temporary-Closure-Guidelines.pdf

Permanent Closure

If it is determined that a tank is to be permanently removed from service, these requirements must be met:

- All residual liquid, solids, or sludges shall be removed and handled as hazardous wastes or recyclable materials.

- If the underground storage tank contained a hazardous substance that could produce flammable vapors at standard temperature and pressure, it must be inerted to levels that will prevent explosion, or to lower levels as required by OCHCA.

- When a UST is removed and disposed of, the owner or operator shall document to OCHCA that proper disposal has been completed. This documentation shall be submitted within the time frame specified by OCHCA.

- An owner or operator of a UST system that is destined for a specific reuse shall advise the local agency, within the time frame specified by that agency, of all of the following:

  - The name of the new owner and new operator of the underground storage tank

  - The location of intended use and

  - The nature of intended use

- A plan check is required to be submitted for permanent closure and tank removal. This plan check will be referred to OCHCA's Local Oversite Program for review. A pre-removal inspection of all the piping and UDC containment is typically required and soil sampling might be conducted at this time.

Abandonment In-Place

The last option for decommissioning is abandonment in-place. This is relatively rare and allowed only when the removal of the tank may cause damage to existing structures. Please contact your inspector for questions regarding tank or piping abandonment.

Sampling & Reporting

Part of the requirements for the closure of a UST is that the owner must demonstrate to the satisfaction of OCHCA that no unauthorized release has occurred. This should be based on soil sample analysis and/or water analysis, if water is present in the excavation.

This analysis must be performed during or immediately after closure activities. If you have questions regarding this process, please contact this Agency. Following sampling, a tank closure report must be submitted to OCHCA.

Chapter 10 Noncompliance

As an Agency, we hope to work closely with you to ensure that you are compliant with all current rules and regulations. One way we are able to do this is through inspections. Inspections can be a positive tool and a way that you can verify that all of your hard work to minimize potential risks to human health and the environment are working. At the completion of an inspection, a report will be issued to you by your inspector. The report includes the inspector contact information, site information, observations, violations, and steps to correct the violations. While it is our goal to obtain compliance from each business through education and inspection oversight, there are times when enforcement actions are necessary to achieve compliance through the correction of violations.

Notice of Violation (NOV)

Serious violations that are observed during an inspection may result in a Notice of Violation (NOV) being sent to the owner and/or operator. A NOV may also be sent if outstanding violations are not corrected in an acceptable timeframe. The purpose of the NOV is to make the owner and/or operator aware that OCHCA has serious concerns about the facility compliance. Continued noncompliance may result in an increase of enforcement activity, which can include civil and/or criminal penalties.

Red Tag Authority

If a significant violation is discovered and it poses an imminent threat to human health or safety or the environment, OCHCA is authorized to immediately affix a red tag to the fill pipe of the noncompliant underground storage tank system. This will prevent new product deliveries to the site.

Immediately after affixing a red tag, OCHCA will notify the operator and inform them of the significant violation and why the red tag was issued.

It is the responsibility of the owner to correct the violation and notify the local agency. The local agency will inspect the facility within 5 business days of the correction of the violation. Once the violation has been verified corrected, the Agency will remove the red tag and allow the facility to receive fuel deliveries.

Administrative Enforcement Order (AEO)

The goal of an Administrative Enforcement Order is to return a facility to compliance in a timely manner, eliminate the economic benefit of noncompliance and create a deterrence against future noncompliance. Each CUPA is required to include and implement Administrative Enforcement Order procedures within their CUPA Inspection and Enforcement Plan, and to take formal enforcement actions against serious violations as specified under the Health and Safety Code.

The first step in this process is usually a Show Cause letter, which details the specific facility violations. This is followed by a meeting between facility representatives and CUPA staff to discuss and agree upon a compliance schedule and penalties.

If no agreement is reached during the meeting, the CUPA will issue an Administrative Order. The Administrative Order specifies the compliance activities, timelines, and penalties that must be met. Unlike the Show Cause procedure and meeting, the compliance conditions and penalties are set solely by the CUPA. The business may opt to contest the Administrative Order, in which case the business representatives must appear before an administrative law judge to defend their position.

Appendix A

Glossary

Air Quality Management District (AQMD) – Orange County falls within the jurisdiction of South Coast AQMD, or SCAQMD. The SCAQMD is responsible for reducing emissions from stationary sources, such as gas stations, for the purpose of achieving specific health-based air quality standards.

Automatic Tank Gauge (ATG) – An electronic device that measures liquid level and calculates liquid volume in an underground storage tank. By monitoring the liquid level, the ATG can conduct leak tests of the underground storage tank.

Ball-Float Valve (BFV) – An overfill prevention device that operates by restricting the vent opening in an underground storage tank, thus limiting the flow of fuel into the tank. It is used in conjunction with an external alarm that alerts the operator when the tank is at 90% capacity.

California Air Resources Board (CARB) – CARB is the "clean air" agency for the state of California. Stated goals of the agency include protecting the public from exposure to toxic air contaminants, maintaining healthy air quality, and developing rules and regulations to ensure that these goals are met. The regulations regarding emissions from vehicles, such as cars and trucks, are established by CARB.

Cathodic Protection – A method of protecting underground metal structures, typically, single-walled steel tanks, from corrosion. Two basic types of cathodic protection include:

- **Galvanic cathodic protection** – A system designed to protect the metal of the UST system by directing the corrosion to a metal anode, commonly called a "sacrificial anode".
- **Impressed-current cathodic protection** – A system that uses a power source, or rectifier, and buried anodes to create an electric current that protects buried metal from corrosion.

Containment Sump / Tank-Top Sump – A tank-top containment device used to protect system components. These sumps are typically used to house the turbine head and piping, as well as the fill tube riser and automatic tank gauge (ATG). They are usually easily located because they are protected by manhole or manway covers. This device is also used to secondarily contain leaks with the UST piping.

Continuous Interstitial Monitoring – An approved method for double-walled tank leak detection. The space between the primary and secondary containment is continuously monitored for the presence of leakage.

CUPA – An acronym for Certified Unified Program Agency. Orange County Environmental Health has been certified by the California Environmental Protection Agency (CalEPA) to coordinate the regulation of six environmental programs for all of Orange County with the exception of Anaheim. County and City Fire Agencies within Orange County have joined the CUPA, as

Participating Agencies, to form a partnership with the County's Unified Program. In most cities, Environmental Health administers the Hazardous Waste, Underground Storage Tank and Aboveground Storage Tank programs while the Fire Agencies generally administer Hazardous Materials Disclosure, Business Plan and CalARP with some exceptions.

Fuel Dispenser – A device that measures and transfers liquid fuel from a UST system into a motor vehicle.

Designated Operator – One or more individuals designated by the owner to have responsibility for conducting monthly visual inspections and training facility employees at an underground storage tank facility.

Drop Tube Shut-off Valve / Flapper Valve – A mechanism installed in a drop tube designed to prevent the overfill of an underground storage tank. The valve is designed to shut off product delivery when the tank is nearly is nearly full.

Emergency Shut-off Switch (ESO) – An outside master pump shut-off switch that should be visible from all pumps. It is typically required by state fire code.

Existing Tank – A UST installed prior to January 1, 1984. An existing tank is also a UST installed before January 1, 1987 and which is located on a farm, has a capacity greater than 1,100 gallons, and stores motor vehicle fuel used mainly for agricultural purposes and not for resale.

Fail Safe – A monitoring system that will shut down the turbine pump in the event of a power outage, or when the monitoring system fails or is disconnected.

Fill Cap – A round, removable device that latches to the fill adaptor and is used to seal the fill-pipe opening when a delivery is not in progress.

Fill (or Drop) Tube – A tube that extends from the surface to the bottom of the tank. It creates a passage between the fuel delivery hose and the tank, allowing for introduction of fuel into the UST. It often is protected by the fill sump and is equipped with a spill bucket. A flapper valve (shut-off valve) may be an integrated part of the fill tube.

Flapper Valve – A mechanism installed in a fill tube to prevent the overfill of an underground storage tank. The valve is designed to stop flow of product at 95% tank capacity and meets state overfill prevention requirements.

Impact/Shear/Emergency Shut-off Valve – A spring-loaded device that is installed on the product piping directly under the dispenser. It is designed to automatically stop flow of product in the event of dispenser impact or fire.

Interstitial Space / Annular Space – The gap between the inner and outer walls of a double-walled tank or double-walled piping.

Leak Detection / Release Detection – Any procedure or equipment that can be used to determine whether an underground storage system is unexpectedly releasing product to the outside of the primary containment. Leak detection methods include inventory control, tank and line testing, and interstitial monitoring.

Line-Leak Detector – A device used to detect a loss of pressure in the primary piping, possibly indicating a piping leak. Can be electronic or mechanical.

Manhole/Manway – A surface opening allowing access to below-grade equipment or tank systems. It is typically protected with a manhole cover.

Material Safety Data Sheet (MSDS) – A standard form providing data regarding a particular substance or chemical. It includes information of safety procedures for substance handling, physical data, hazardous properties, first aid, storage, spill handling, and most typically provided by substance supplier.

Monitoring Well – A slotted pipe, typically made of PVC plastic, which is positioned vertically in the ground. It is used to obtain groundwater samples in order to assess the extent of groundwater contamination.

New Tank – A UST which is not an existing tank.

Overfill Alarm – An outdoor audible and visual warning device that alerts a fuel-delivery operator that a storage tank is nearly full and the delivery must be stopped.

Penetration Fitting – A fitting designed to provide a liquid-tight seal around piping or conduit that passes through the wall of a containment sump.

Personal Protective Equipment (PPE) – Equipment designed to protect workers from workplace injuries or illness as a result of contact with chemical, physical, electrical, mechanical, or other workplace hazards. (i.e. safety shoes, hard hats, safety glasses, coveralls, gloves, high-visibility vests, hearing protection and respirators)

Positive Shut-down – an alarm condition that stops the flow of product at the product pump(s).

Pressurized Piping System – A fuel delivery system that uses a submersible pump located near the bottom of a storage tank to push fuel to the dispensing device(s).

Primary Piping – The piping used to convey the fuel from the tank to the dispenser. For sites with single-walled piping, this is the only piping. For systems with double walled piping, this is the inner piping that comes in contact with the fuel.

Safe / "European" Suction – A suction pumping system that contains one check valve located immediately below the pump. Fuel in the line drains back to the tank when not in use.

Secondary Piping – Piping that envelopes the primary piping from the sump to the dispenser. It is designed to prevent leakage from the primary piping from entering the environment.

Sensor – An electronic device used to detect the presence of liquid in the tank annular, turbine sump, fill sump, or under dispenser containment. Sensors used to monitor brine-filled tank annulars can detect liquid loss or gain.

Spill Bucket – A liquid tight container located at the top of the fill pipe of an underground storage tank. It is designed to capture small spills that might occur during delivery. It must be corrosion protected, have a minimum capacity of 5 gallons, and allow for drainage into the tank.

Stage I Vapor Recovery – A system of piping and hoses designed to transfer gasoline vapors from an underground storage tank to a delivery truck as product is transferred from the truck to the tank.

Stage II Vapor Recovery – A system of piping, hoses, and nozzles designed to transfer gasoline vapors from a vehicle fuel tank to an underground storage tank as fuel is transferred from the underground storage tank to the vehicle.

Submersible Turbine Pump (STP) – A pump that rapidly delivers fuel to the dispenser(s). It is installed to create systems that have pressurized piping.

Tank Gauge Stick – A long wooden stick with 1/8-inch markings clearly visible along its length. Tank gauge sticks are manually inserted in the fill pipe of an underground tank to measure the depth of product or water present in the tank.

Test Boot – A flexible device used to seal the space between the primary and secondary piping. It is used during the secondary containment testing (SB-989 testing) to maintain conditions required by the test procedure.

Under-Dispenser Containment (UDC) – The UDC is a containment sump located immediately below the dispenser. The primary function of the UDC is to capture any leakage that may occur within the dispenser. The UDC is continuously monitored for the presence of liquid by a mechanical or electronic device.

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