GENERAL OVERVIEW OF UNDERGROUND STORAGE TANK (UST) CONTAINMENT AND MONITORING REQUIREMENTS

The attached tables outline tank system requirements in general terms, and are not meant to detail all requirements. References to the Health and Safety Code and the California Code of Regulations throughout this Overview are intended to be useful but are not necessarily exhaustive of all legal references that might apply or be relevant to a specific requirement. Laws and regulations are subject to change, so the references contained herein may not be up to date. For more specific information or details on UST system components, monitoring options, etc., you will need to refer to the relevant statutes and regulations (Health and Safety Code, Division 20, Chapter 6.7 and Title 23, California Code of Regulations, Division 3, Chapter 16).

ACRONYMNS

ATG: automatic tank gauge	*SW: single-walled*
DW: double-walled	*SIR: statistical inventory reconciliation*
CITLD: continuous in-tank leak detection	*UDC: under-dispenser containment*
GW: groundwater	*VPH: vacuum, pressure, hydrostatic*
LLD: line leak detector	

General Requirements for all USTs

Corrosion Protection	Spill Buckets	Overfill Options	UDC
• All USTs shall be resistant to corrosion or have corrosion protection. **OR** • Components must be isolated from the backfill, including turbines, risers, and spill buckets. *40 CFR 280.31, 280.70; CCR 2635 (a)(2); 2636 (b), 2662(c)*	Required on all USTs. • Minimum 5 gallon capacity. *CCR 2635(b)(1)(B)* • Resistant to galvanic corrosion • Method to remove liquid from the bucket. *CCR 2635(b)(1)(C)* • Required to be tested annually. *HSC 25284.1, 25284.2* *Also See LG-166*	Required on all USTs. No manual override and meets one of the following options: • Device activates at 90%; restricts flow or triggers audible and visual alarm. *(Devices such as ATG OR Ball float/vent valve may be used to fulfill this requirement.)* *CCR 2635(b)(2)(A)* **OR** Device activates at 95%; restricts flow and activates audible alarm five minutes before overfill. *(Devices used in conjunction with each other such as ball float/vent valves, ATG's, and external audible and visual alarms may be used to fulfill this requirement.)* *CCR 2635(b)(2)(B)* ***OR*** Device activates at 95%; provides positive shutoff of flow to the tank. *(Devices such as drop tubes/flapper valves may be used to fulfill this requirement.)* *CCR 2635(b)(2)(C)* **OR** • Device activates before fittings are exposed to product and provides positive shutoff. *(Devices such as drop tube/flapper valves may be used to fulfill this requirement.)* *CCR 2635(b)(2)(D)* • Requirement may be waived by local agency if all of the following conditions are met: -Inlet exists in observable area. -Spill container adequate to collect any overfill. -Tank system filled by no more than 25 gallons at one time. *CCR 2635 (b)(3). Also see LG-150*	<u>If tank system constructed Pre- July 1, 2003</u> • SW UDC construction with continuous monitoring. *CCR 2636(g)(C)* • Testing required every three years. *HSC 25284.1; CCR 2637* <u>If tank system constructed on or after July 1, 2003</u>: • Must be liquid and vapor tight. • For monitoring of UDC see "Monitoring of Double-walled Piping Installed Before July 1, 2004". *HSC 25290.2* <u>If tank system constructed on or after July 1, 2004:</u> • Must be liquid and vapor tight. • Required construction depends on piping configuration. • For monitoring of UDC see "Monitoring of Double-walled Piping Installed after July 1, 2004". *HSC 25290.1*

Tank Containment and Monitoring

Year of Tank Installation	Construction Type	Tank Monitoring Options	Other
On or before January 1, 1984	Motor Vehicle Fuel Tanks • SW fiberglass. • SW steel w/ internal lining or bladder. • Corrosion Protection. *CCR 2662(c)*	SIR and Tank testing every two years. *CCR 2643(b)(3)* **OR** ATG 0.2 gph Monthly. *CCR 2643(b)(1)* **OR** CITLD 0.2 gph Continuous. *CCR 2643(B)(5)* **OR** Manual tank gauging for tanks <= 1000 gallons. *CCR 2645* **OR** GW Monitoring. *CCR 2644; 2648* **OR** Vadose Zone Monitoring. *CCR 2644; 2647*	• Internally lined tanks must be recertified 10 years after lining and every 5 years, thereafter. *CCR 2663(h)* • If *these tanks have DW components installed, the DW components must be monitored according to the DW requirements for that component.*
On or before January 1, 1984	Hazardous substance tanks must have been upgraded or replaced to meet secondary containment requirements. *CCR 2662(b)*	• Continuous Interstitial w/ audible and visual alarm. **AND** • Secondary Containment testing every three years. *CCR 2637*	
After January 1, 1984 to June 30, 2003	• Primary containment product tight (liquid). *HSC 25291(a)(1)* • Secondary Containment required. *HSC 25291; CCR 2631*	• Continuous Interstitial w/ audible and visual alarm. **AND** • Secondary Containment testing every three years. *CCR 2637*	
On or After July 1, 2003 to June 30, 2004	• Product tight (liquid and vapor). *HSC 25290.2 (a)* • Secondary Containment required. *HSC 25290.2 (c) ; CCR 2631* • Designed to prevent water intrusion.[1] *HSC 25290.2 (c)(3)*	• Continuous Interstitial w/ audible and visual alarm. **AND** • Secondary Containment testing every three years. *CCR 2637*	
On or After July 1, 2004	• Product tight (liquid and vapor). *HSC 25290.1(a)* • Secondary Containment required. *HSC 25290.1(c) ; CCR 2631* • Designed to prevent water intrusion.[1] *HSC 25290.1(c)(3)*	Monitored by continuous VPH methods connected to audible and visual alarm. *HSC 25290.1(d)*	

[1] Intrusion caused by precipitation, infiltration or surface runoff.

Piping Containment and Monitoring

Year of Tank Installation	Product Piping Construction Type	Turbine Containment	Fill Riser Containment	Vent and Vapor Piping
On or before January 1, 1984 **Existing piping only.**	Motor Vehicle Fuel Tanks: SW Construction • Fiberglass reinforced plastic. *HSC 25292(e)(2)* • Steel with corrosion protection for all steel/metal **OR** DW Construction *HSC 25292(e)(1)*	Not required, but turbine and riser required to have corrosion protection.	Requirement depends on overfill method.	SW
After January 1, 1984-July 1, 1987	DW **OR** SW *(if certain conditions are met.)* *HSC 25291(a)(7); CCR 2636(a)(3)(b)*	• Required. • SW Construction. *CCR 2636*	Requirement depends on overfill method. • Remote fill piping may be SW if sloped to the tank.	SW
After July 1, 1987-June 30, 2003	DW Construction, unless connected to suction dispensing system that meets safe-suction requirements. *HS 25291(a); CCR 2636(a)*	• Required. • SW Construction. *CCR 2636*	Requirement depends on overfill method. *See LG-150*	SW *CCR 2636(a)(1)* **OR** DW (if designed to contain liquid-phase product) *CCR 2636(a)(2)*
July 1, 2003-June 30, 2004	DW *HSC 25290.2(c)*	• Product-tight (liquid and vapor) required. *HSC 25290.2(a)* **OR** SW DW Construction [2]	Secondary Containment required. *HSC 25290.2(c)*	• Secondary Containment required. *HSC 25290.1(c)* • Liquid and vapor tight. *HSC 25290.1(a)*
On or After July 1, 2004	DW *HSC 25290.1(c)*	• Product-tight (liquid and vapor) required. *HSC 25290.1(a)* **OR** SW DW Construction [2]	Secondary Containment required. *HSC 25290.1(c)*	• Secondary Containment required. *HSC 25290.1(c)* • Liquid and vapor tight. *HSC 25290.1(a)*

[2] Depends on piping configuration within the sump.

Monitoring Requirements of Single-walled Piping Types

Pressurized	Emergency Generator System	Suction (Conventional)	Safe Suction	Gravity
• An automatic line leak detector that detects a 3.0 gph leak. The automatic line leak detector shall be capable of shutting off the pump when a release occurs and shall shut down the pumping system automatically if the automatic line leak detector fails or is disconnected. *CCR 2643(c); 2666* **AND** 0.2 gph monthly line test. *CCR 643(c)(2)* **OR** 0.1 gph annual line test. *CCR 2643(c)(3), 2666*	**Pressurized:** • An automatic line leak detector that detects a 3.0 gph leak. The automatic line leak detector must be connected to an audible and visual alarm to indicate a release malfunction of the system. *CCR 2643(c)(1); 2666* **AND** 0.2 gph monthly line test. *CCR 2643(c)(2)* **OR** 0.1 gph annual line test. *CCR 2643(c)(3)* **Suction:** • 0.1 gph triennial line test **AND** • Daily or monthly visual monitoring of the suction system for presence of air. *(Inspection log required.)* *CCR 2643(d)*	• 0.1 gph triennial line test; **AND** • Daily visual monitoring of suction system for presence of air. *(Inspection log required.)* *CCR 2643(d)*	No requirements if all criteria are met: • *below-grade piping operates at less than atmospheric pressure.* *CCR 2636(a)(3)(A)* • *below-grade piping is sloped so the contents drain back into tank if suction is released.* *CCR 2636(a)(3)(B)* • *No valves or pumps installed below grade in suction line.* *CCR 2636 (a)(3)(C)* • *Only one check valve installed directly below and as close as practical so suction pump.* *CCR 2636 (a)(3)(C)* • *is inspected by method that readily demonstrates that requirements are met.* *CCR 2636(a)(3)(D)*	• 0.1 gph triennial line test. *CCR 2643(e)*

Monitoring Requirements of Double-walled Piping Installed Before July 1, 2004

Pressurized	Pressurized (Continued)	Emergency Generator System	Suction	Gravity
Secondary Containment shall be equipped with Continuous monitoring system that activates an audible and visual alarm. *CCR 2636(f)(1)* **OR** Continuous monitoring system that stops the flow of product at the dispenser when a leak is detected; *CCR 2636(f)(1)* **AND** • A 3.0 gph LLD; *CCR 2636(f)(2)* **AND** • An annual 0.1 gph piping test. *CCR 2636(f)(4)*	The following may be conducted in lieu of the 0.1gph piping test • Continuous monitoring system shuts down the pump or stops the flow of product at the dispenser when a leak is detected in the UDC; *CCR 2636(f)(5)(A)* **AND** • Continuous monitoring system for all product piping located outside the UDC is fail safe and shuts down the pump when a leak is detected. *CCR 2636(f)(5)(B)*	Continuous monitoring system that activates an audible and visual alarm. *CCR 2636(f)(6)* **OR** Continuous monitoring system that stops the flow of product when a leak is detected. *CCR 2636(f)(6)* **AND** • Continuous monitoring system checked at least daily (maintain inspection log); *CCR 2636(f)(6)* **AND** • An annual 0.1 gph piping test. *CCR 2636(f)(4)*	Continuous interstitial monitoring for piping and UDC that activates an audible and visual alarm. **OR** Continuous monitoring for both the piping and UDC Stops the flow at the dispenser when a leak is detected. *CCR 2636(f)(1)*	Continuous monitoring for piping and UDC that activates an audible and visual alarm. **OR** Continuous monitoring for both the piping and UDC stops the flow at the dispenser when a leak is detected. *CCR 2636 (f)(1)*

Monitoring Requirements of Double-walled Piping Installed On or After July 1, 2004

Option 1	Option 2	Option 3
• The entire piping length, including piping within sumps or UDC's, must be monitored using vacuum, pressure, or interstitial liquid level measurement methods; **AND** • Sumps and UDC's require sensors capable of detecting liquid and vapor releases from the primary containment; **AND** • 3.0 gph LLD for pressurized piping. *HSC 25290.1*	• The interstitial space between the primary containment (i.e., single-walled transition pipe or fill piping) and secondary containment (i.e., sump or UDC) must be continuously monitored using vacuum or pressure; **AND** • No sensors in sumps and UDC's required; **AND** • 3.0 gph LLD for pressurized piping. *HSC 25290.1*	• The single-walled transition pipe or fill piping must be contained within a double-walled sump and/or double-walled UDC that either: extends to the surface, or has a double-walled product tight lid that is continuously monitored using vacuum, pressure, or interstitial liquid level measurement methods; **AND** • Sumps and UDC's required to have sensors that are capable of detecting liquid releases; **AND** • 3.0 gph LLD for pressurized piping. *HSC 25290.1*

Enhanced Leak Detection (ELD) Testing

Notification	Single-walled Component Systems	Double-walled Component Systems
Enhanced leak detection testing must be conducted if notified by the State Water Resources Control Board, and are located within 1000 feet of a public drinking water well.	Must conduct testing every three years.	Must conduct a one-time test.