



# A General Guide For Replacing Single-Wall USTs with ASTs/ C-2/4



Presented by

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**Virtual Conference**



[www.calcupa.org](http://www.calcupa.org)



# Presenters

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-Compliance Manager



- Robert de los Santos  
-Project Engineer



- Michelle Chan  
-Designated Operator Manager



# Single-walled USTs Closure

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- Single-walled (SW) USTs poses a danger to the environment
- SW USTs Deadline for Closure December 31, 2025
- After 2025 SW tanks will be subjected to red tag by the State Water Board
  - Fines of \$500-\$5000 each day per a violation.



# Leaking UST

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# Programs

- Replacing, Removing, or Upgrading Underground Storage Tanks (RUST) Program
  - -Provides grants and loans to small business UST owners and operators
- Underground Storage Tank Cleanup Fund
- More information about the programs can be found here:  
<https://www.waterboards.ca.gov/>

**RUST** Replacing Underground Storage Tank Loan Program

Up To  
**\$750,000**

Fixed Annual Interest Rate  
10 or 20 Years to Repay  
2.00% Loan Fee

The advertisement features a night-time photograph of a gas station with a sign that reads 'ORISKANY'. The background shows snow-capped mountains under a dark sky. The text is overlaid on the top half of the image.

CA .GOV IBank California Infrastructure and Economic Development Bank SMALL BUSINESS DEVELOPMENT

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# 2025 Deadline

- Don't procrastinate – it could cost you
- SW UST Closure will be more expensive.
- Many owner and operators will be looking to close their SW UST right before the deadline
- It may be difficult to find qualified contractors



# Finding a Qualified Contractor

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- ICC Certification
- Licensed Contractor
  - A, B, C -36, C61/D40
  - Hazardous Substance Certification
- Business License
- Workers Compensation Coverage
- Where can you find Contractors?



# Planning Steps

Find a Contractor

Define Project Scope/ Design

Scheduling & Planning

Site Plans/ Drawings/ Specifications

Permits

Site Specific Health & Safety Plan

Execution





# Permitting

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- Permit Agencies
- Depends on local (City and County) requirements.
- Permit Fees
- Notify authority having jurisdiction (AHJ) prior to start of work



# Permanent Closure

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## ➤ Removal

- **Physical removal of the storage tank**
  - Health & Safety Code (H&SC) Section 25295
  - California Code of Regulations (CCR) Title 23, Division 3, Chapter 16, Articles 5, 7, & 11

## ➤ Closure In Place

- **Not typically recommended**
- Permanently removing the UST from service
  - Filling the tank with an inert material to prevent future use
  - CCR Title 23, Division 3, Chapter 16, Section 2672(c)



# Closure In Place Considerations

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## ➤ Closure-In-Place

- Local Regulatory Approval
- Typically Requires an Engineer's Assessment
- When is Closure-In-Place Appropriate?
  - Case by Case Basis
  - Compromise Building Foundation
  - Undermine Utilities or Other Infrastructure
  - Future Site Development Considerations
  - Arborist Concerns



# Closure In Place Steps

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- Receive Approval for Closure-In-Place
- Draining/Cleaning the Tank
- Remove/Disposal of Associated Equipment & Piping
- Confirmation Sampling (Soil / Groundwater)
- Create Openings in the Tank
- Fill UST with Inert Material
- Backfill
- Resurface
- Submit Closure Report



# Closure In Place – Confirmation Sampling

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- Do I Need To Collect Samples If My Tank is Closed In Place?
  - CCR Title 23, Division 3, Chapter 16, Article 7 states that “if a [UST] or any portion thereof is **NOT REMOVED**, at least one boring shall be taken as close as possible to the midpoint beneath the tank using a slant boring... or other appropriate method...as approved by the local [regulatory] agency.”
  - Single Tank: Two borings – One at each end.
  - Multiple Tanks: Borings placed at 20’ intervals around tank cluster.
  - Depth: 2’ below backfill/pea gravel





# Example of Closure In Place



# UST Removal

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- Approved Permits and Scope
- SAFETY
- Utility Locator / 811
- Mobilization & Secure Jobsite
- Empty Tank Contents
  - Including fuel found in piping and equipment
- Disconnect/Removal of Equipment
- Rinse & Clean UST
  - Disposal of Rinseate & Sediment
- Demolish & Excavate tank top covering
- Stockpile backfill material for re-use.
  - Collect composite sample of backfill planned for reuse.
- Schedule Tank Removal







# Tank Removal Day

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- Verify Tank is ready for removal
  - Safe for removal and transportation
- Hazardous waste tank closure certification
- Remove Tank From Excavation
- Load and Ready Tank for Transport
  - Cap/Plug openings (except one vent)
  - Label Tank
  - Inspect & Document damage
  - Secure Tank to Truck/Trailer











# Disposal

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- Manage & Dispose of Tank and Associated Piping as Hazardous Waste unless Rinsed, Confirmed Clean, and Certified as Non-Hazardous.
  
- Qualified Professionals:
  - Certified Industrial Hygienist (CIH)
  - Certified Safety Professional
  - Certified Marine Chemist
  - Registered Professional Engineer (PE)
  - Registered Environmental Health Specialist (REHS)
  - Registered Environmental Assessor (REA), Class II
  - Contractor licensed by the Contractor's State License Board (CSLB) who holds a Hazardous Substance Removal Certificate issued by the CSLB.



# Verification/Confirmation Sampling

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## ➤ Why Collect Samples?

- Because it's required!

- California Health and Safety Code [H&SC] Division 20, Chapter 6.7, Section 25298

## ➤ How Many & Where to Sample?

- CCR Title 23, Division 3, Chapter 16, Article 7



# Sampling - Water Is Not Present

➤ Table 12-1: Summary of Sampling Recommendations at UST Sites: Water Is Not Present

- Collect samples at a minimum of 2 vertical feet into native soil.
- If areas of obvious contamination are observed, they are to be sampled.

Tank Size	Minimum No. of Samples	Location of Soil samples
Less than 12,000 gallons	2 per tank	One from directly below each opposite end of the tank
Equal or Greater Than 12,000 gallons	3 per tank	One from below the center of the tank and one from directly below each end of the tank
Connected Piping	1	Every 20 linear feet, and under pipe fittings
Dispensers	1	Below each removed dispenser



# Sampling - Water Is Present

## ➤ Table 12-2: Summary of Sampling Recommendations at UST Sites: Water Is Present

- The tank pit may be purged and allowed to refill before sampling
- The water sample is to be representative of water in the pit.

Tank Size	Minimum No. of Soil Samples	Location of Soil samples	Minimum No. of Water Samples
Less than 12,000 gallons	2 per tank	One from side wall next to opposite ends of the tank, at the soil/groundwater interface	1
Equal or Greater Than 12,000 gallons	3 per tank	One from side wall next to each end of the tank, at the soil/groundwater interface	1
Connected Piping	1	Every 20 linear feet, and under pipe fittings	N/A
Dispensers	1	Below each removed dispenser	N/A





# Sampling Equipment



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# Sample Analysis

- The table below is intended to comply with the requirements of California Code of Regulations Title 23, Division 3, Chapter 16, Article 7 and Health and Safety Code Division 20, Chapter 6.7.

SUBSTANCE	COMPONENT	ANALYTICAL METHOD
Gasoline	TPH as Gasoline	TPH-G, EPA 8015 or EPA 8260B/C
	BTEX, Fuel Oxygenates, Naphthalene, EDB and EDC, and Ethanol Add Lead and Lead Scavengers for tanks older than 1992	EPA 8260B/C
	Organic Lead	DHS LUFT
Diesel, Jet Fuel, Kerosene, and Fuel/Heating Oil (Excluding Bunker Fuel)	TPH as specific to known fuel (e.g., TPH as Diesel)	TPH-D, EPA 8015
	BTEX, Fuel Oxygenates, <sup>1</sup> Naphthalene, EDB and EDC, <sup>2</sup> and Ethanol	EPA 8260B/C

- BTEX = Benzene, Toluene, Ethylbenzene, and total Xylenes Fuel Oxygenates = Methyl tert-Butyl Ether (MTBE), tert-Butyl Alcohol (TBA), di-Isopropyl Ether (DIPE), tert-Amyl Methyl Ether (TAME)



# UST Removal Completion

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## Removal Only

- Reuse backfill if approved
- Backfill Excavation Pit
- Compact backfill
- Resurface Area

## UST Replacement

- Receive Sample Results
- Continue Excavation per plans for New UST(s).
- Continue with Installation Scope

## AST Replacement

- Reuse of backfill if approved
- Backfill Excavation Pit
- Prepare for AST Pad
- Continue with Installation Scope



# Tank Closure Report

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## ➤ Contractor to Provide/Submit UST Closure Report

- Prepared in accordance with Federal, State, & Local Agency requirements; including but not limited to:

- site description
- tank removal activities
- a plan sketch of the location
- Permits
- closure documents
- laboratory analytical report and chain of custody
- tank and contents disposal manifest
- photos.



# Benefits of Installing an AST instead of a UST

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- Cost Efficiency
- Repairs
- Inspections can be completed in-house
- No certified technician



# AST Design Considerations

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- Capacity, Shape, Orientation
- Installation Location
  - Indoors – Clearances, accessibility, pipe routing
  - Outdoors – Setbacks, protection
- Usage
  - Fleet vehicles & equipment - canopy
  - Standby power
  - Petroleum storage
- SPCC Plan





# Before AST Installation

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- Permitting Agencies
  - Building, CUPA/Environmental Health, Air, Fire
- Foundation Design
  - Backfill materials
  - Tank pad
  - Seismic anchorage
- Containment Structures (berm, vault, drain, curb)





# AST Tank Design

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## ➤ Underwriters Laboratory Tank Standards for Flammable & Combustible Liquids

### UL-142

- Single or Double Wall
- Gasoline (Class IB)
- Diesel (Class II)
- Motor Oil (Class IIIB)

### UL-2085

- Double Wall
- Protected Tank
  - 2-Hr Fire Rating
  - Resistant to projectiles, vehicle impact, and fire hose stream impact.

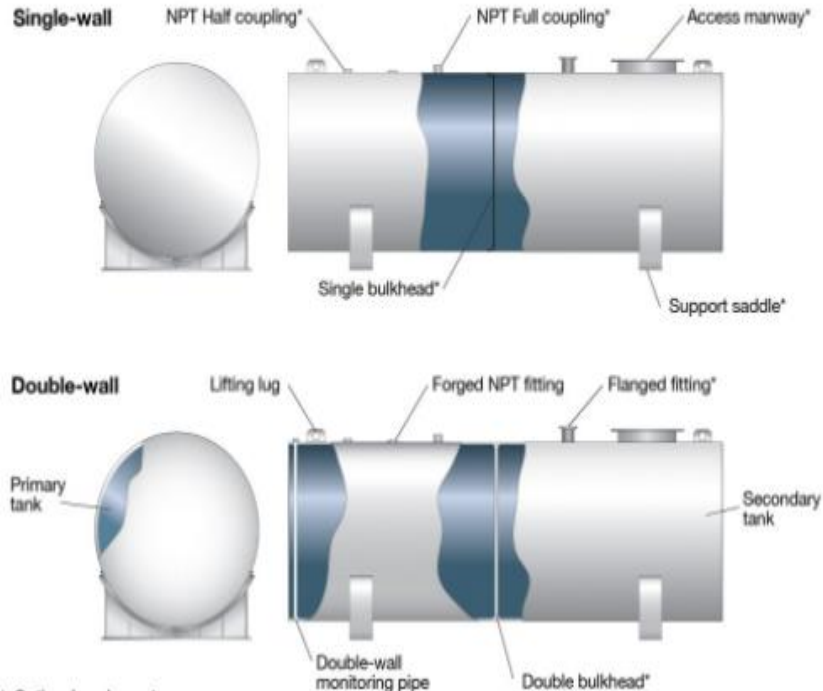


# UL-142 Tanks

## UL-142 Aboveground Horizontal Tanks

### Aboveground Horizontal UL-142

Single-wall or double-wall steel tanks for safe storage of flammable and combustible liquids. 185 to 60,000 gallon capacities, customized to your application and location.



# UL 2085 tank



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# AST Equipment

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- Standard AST Equipment
  - Fill Port Spill Containment
    - Tanktop or Remote Fill (minimum 5 gallon capacity)
    - Vapor Recovery (gasoline tanks only)
  - Overfill Prevention
    - High product level shutoff, audible/visual alarm
  - Product Level or Clock Gauges, Product Level Sensors
  - Pump (STP or Suction System)
  - Secondary Containment Leak Gauges or Sensors
  - Venting
    - Primary Working Vent
    - Emergency Vents (Primary and Secondary Compartments)







DIESEL  
NO SMOKING  
COMBUSTIBLE

1 3 0

GASOLINE  
NO SMOKING  
FLAMMABLE

DIESEL #2  
Gallons  
3  
DIESEL

GASOLINE  
Gallons  
1  
UNLEADED



# Electrical Considerations

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- Provide grounding for tanks subject to lightning hazard.
- Identify Hazard Classification Areas as Defined by NEC. Follow NEC standards for installation of electrical hardware.
- Emergency Shutoffs should be installed 20-100 feet from tanks, dispensers, equipment.



# Aboveground Piping

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- Primary Containment
  - Schedule 40 Steel – threaded, flanged or welded connections
    - Gasoline – Black, Stainless, Galvanized Steel
    - Diesel – Black Steel, Stainless Steel
    - Motor Oil – Black, Stainless, Galvanized Steel
- Secondary Containment
  - Schedule 10 Steel - welded connections
  - Painted Fiberglass
- Specialty Aboveground Flex Pipe
  - Integral Secondary Containment
- Fire Protection for Indoor Piping (Confirm with AHJ)









# Underground Piping

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- Fiberglass Primary + Secondary Containment
- Provide proper support and protection around pipe during backfill + compaction.
- Ensure piping is sloped to a low point within a sump.
  - Utilize leak sensors within sumps as appropriate
- Flex pipe with Integral Secondary Containment



# Maintenance and Upkeep

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- Periodic Inspections
  - Tank Exterior, Floor Surrounding Tank
  - Piping Exterior, Floor Below Piping
  - Sumps
- According to Manufacturer's Recommendations, SPCC, or STI Standard
  - Maintain Records for Minimum 3 Years
    - Daily (for hazardous waste tanks)
    - Monthly
    - Annual



# Maintenance and Upkeep

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- Regulatory Testing
  - Leak Detection Equipment
  - Overfill Prevention Equipment
  - Vapor Tightness (Gasoline Storage)
  
- Monitoring Equipment
  - Interstitial Space Leak Gauge or Sensor
  - Electronic Automatic Tank Gauging
  - Sump Leak Sensor (Fuel Pipe Monitoring)



# Special Considerations

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- Vapor Recovery Regulation for Gasoline Dispensing Facility (applies to vessels with > 250 gal. capacity)
  - Phase I EVR – Product Fill & Vapor Recovery
  - Phase II EVR – Transfer to Vehicles
    - Vapor Processing Equipment for New Installations
    - ORVR Exemption for fleet fueling facilities
      - Check with local Air Quality Jurisdiction for applicability



# APSA Regulation

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- Aboveground Petroleum Storage Act (APSA)
  - For facilities with aggregate aboveground petroleum storage capacities of 1,320 gallons or more.
  - Spill Prevention, Control, and Countermeasures (SPCC) Plan
  - Submit facility petroleum inventory information to California Environmental Reporting System (CERS)





# SPCC Requirements

Tier I	Tier II
10,000 gallons or less of aggregate (total) aboveground storage capacity	
Within any 12-month period, three years prior to Plan certification date, has had: <ul style="list-style-type: none"> <li>No single discharge of oil to navigable water or adjoining shoreline exceeding 1,000 gallons; or</li> <li>No two discharges of oil to navigable water or adjoining shoreline each exceeding 42 gallons</li> </ul>	
No individual/single aboveground storage tank greater than 5,000 gallon capacity	Has individual/single aboveground storage tank greater than 5,000 gallon capacity
<b>Then...SPCC Plan Requirements:</b>	
Complete, self-certify and implement the SPCC Plan template (Appendix G to 40 CFR 112) in lieu of a full PE-certified Plan.	Prepare and implement a self-certified SPCC Plan in accordance with all applicable requirements of 40 CFR 112.6 and 112.7 and subpart B.



# SPCC Plan Program

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- SPCC plan is specific to the facility, however the plan must include the following items:
  - Oil handling operations at the facility
  - Spill prevention practices
  - Discharge or drainage controls
  - Personnel, equipment, and resources at the facility used to prevent oil spills.



# Any Questions?



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# References:

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- California Code of Regulations: Title 23, Division 3, Chapter 16, Underground Storage Tank Regulations
- California Health and Safety Code Chapter 6.7, Underground Storage of Hazardous Substances
- PEI/RP1700-18 (Recommended Practices for the Closure of Underground Storage Tank and Shop-Fabricated Aboveground Storage Tank Systems)
- California State Water Resources Control Board Leaking Underground Fuel Tank Guidance Manual September 2012 (Revised December 2015)
- [http://www.unidocs.org/master\\_list.html#Closure\\_UST](http://www.unidocs.org/master_list.html#Closure_UST)
- PEI/RP200-19 (Recommended Practices for Installation of Aboveground Storage Systems for Motor Vehicle Fueling)
- <https://www.waterboards.ca.gov/ust/>
- Pictures: Leaking UST: <https://www.commtank.com/news/single-wall-undeground-storage-tank-laws/>  
<https://www.csu.edu/cerc/documents/LUSTThreattoPublicHealth.pdf>
- UL142 Tank: <https://www.highlandtank.com/aboveground-horizontal-ul-142/>