



**ARIZONA DEPARTMENT
Of
ENVIRONMENTAL QUALITY**



**UNDERGROUND STORAGE TANKS
PERMANENT CLOSURE and CHANGE-IN-SERVICE
GUIDANCE DOCUMENT**

Updated: August 2017

**Waste Programs Division
UST-LUST Section**

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This document outlines underground storage tank (UST) permanent closure and change-in-service (CIS) procedures so that human health, safety and the environment are adequately protected. UST permanent closure and CIS processes are defined by Arizona Revised Statutes (A.R.S.) Title 49, Chapter 6, Article 1, Section 49-1008, and the Arizona Administrative Code (A.A.C.) Title 18, Chapter 12, Article 2, Sections R18-12-271 through 274. This document does not take the place of state and federal closure, and CIS regulations.

This document outlines general guidance for permanent closure and change in service activities only. Other activities related to USTs such as installation, modification, interior lining and emergency modification/closure are incorporated for reference only.

Definitions & General Overview

The permanent closure of an UST system is the removal of the UST system from the ground (preferred method). Closure-in-place is filling the UST with an inert solid material. CIS is defined as changing the use of an UST system from the storage of a regulated substance to the storage of a non-regulated substance.

All activities must be performed or supervised by an individual who has been certified by ADEQ as an UST Service Provider in the category of decommissioning. A list of individuals certified by ADEQ as UST Service Providers can be found here: http://static.azdeq.gov/ust/ust_cert_listing.pdf The list is updated on a monthly basis.

General Information for UST Plan Review Form Submittal

A completed ADEQ Underground Storage Tank (UST) Plan Review Form is required for the following activities: Installation, Modification, Interior Lining, **Closure**, and Emergency Modification/Closure. Additional information and the link to UST Plan Review Forms can be found here: <http://www.azdeq.gov/ust-plan-review-installation-modification-closure>.

With each UST Plan Review Form submittal, provide a site map to include at a minimum:

- Lot dimensions
- Tank, piping, and dispenser location (existing and new, if applicable)
- Distance to buildings, power lines, property lines, utilities, drinking water wells, drywells, waterways, roads, rail lines and other features

Note: The ADEQ UST Plan Review process is required for all areas of the State of Arizona. Additional requirements apply to locations which fall under the jurisdiction of the Tucson Fire Department. Contact the Tucson Fire Department directly for permitting and inspections for the following activities: Installation, Modification, Permanent Closure, Interior Lining, and Emergency Modification. For UST permanent closures in locations covered by the Tucson Fire Department, an UST Plan Review Form for Closure must be submitted to ADEQ; however, permitting and inspection scheduling must be made through the Tucson Fire Department Fire Prevention Office (520.791.4502)

Local Fire and Building Authorities

As part of the UST Plan Review Form submittal, the appropriate local fire and building authorities must be contacted to determine what additional regulatory, permitting and fee requirements, if any, are required for UST related activities. *Please note that some local jurisdictions may have restrictions regarding UST interior linings and closure-in-place.*

UST Plan Review for Closure

- Upon completion, submittal and approval of the UST Plan Review Form for Closure, an ADEQ Plan Review number will be assigned to the project. *Note: The plan review number replaces the commonly referenced "closure number" historically issued by ADEQ.*
- If the UST is closed in place, provide a description of the process and materials that will be used.
- The ADEQ certified service provider (certified in the specific category of work that is being conducted) identified on the UST Plan Review Form must be onsite with the approved UST Plans during site operations. Closures must meet the requirements in Arizona Administrative Code (A.A.C.) R18-12-270 through R18-12-274 including the requirements for release reporting and corrective action.

Inspection Scheduling

Once the UST Plan Review is complete and the plan review number is received. Use the email, USTPlanReview@azdeq.gov to schedule an inspection. Reference the UST Plan review number in the email to schedule. When scheduling an inspection, allow at least thirty (30) days for installations and closures. An inspection may not be required for emergency repair situations, please call ADEQ 602.771.4273 as soon as possible to provide notice of the emergency repair.

Note: Permitting and inspection scheduling for areas covered by the Tucson Fire Department must be made through the Tucson Fire Department Fire Prevention Office (520.791.4502).

UST Registration Requirements: Unknown/Unregistered USTs

If during the permanent closure of a regulated UST system, an unregistered, previously unknown UST system is discovered, it is not required that ADEQ be notified at the time of discovery. The UST owner or volunteer may choose to proceed with permanent closure activities of the newly discovered UST system. Registration of the newly discovered UST(s) shall be documented on the *UST Notification for Underground Storage Tanks Form* and *UST Permanent Closure Assessment Report Form* and submitted within thirty (30) calendar days of permanent closure or Change-in-Service (CIS) activities.

The UST Notification for Underground Storage Tanks Form and UST Permanent Closure Assessment Report Form can be found here: <http://www.azdeq.gov/UST>

Sample Requirements

At the time of permanent closure and/or before a CIS, a closure site assessment must be performed to determine if a release has occurred. The closure assessment shall document the environmental condition of the UST facility and the presence or absence of any contamination resulting from UST operation at the site through laboratory analysis performed on samples of native soil, and ground water, if encountered during the UST permanent closure assessment.

Specific locations for the required sampling shall be determined by the location where contamination would most likely occur. The presence of stained soils, odors, vapors, free product, or other evidence may indicate that a release has occurred. Obtaining samples must be accomplished as follows:

- A minimum of two distinct soil samples shall be taken from native soils beneath each UST that has a capacity to hold greater than 550 gallons. Samples shall be collected in native soil two (2) or three (3) feet below the base of the UST excavation beneath each end of each UST. In cases where fiberglass USTs are being permanently closed or the fill pipe is located above the center of the UST(s), an additional sample shall be taken from beneath the center of the UST. If the capacity of the UST is 550 gallons or less, one (1) sample shall be taken from native soils beneath the center of the UST. Additional samples shall be collected in excavated areas that appear to have had a release. In addition, for USTs being closed-in-place, ADEQ recommends that sampling be completed prior to filling with an inert solid material.
- **ADEQ recommends collecting soil samples from multiple depths (at least two) at each sampling location when permanently closing a UST system. This additional data may be used by ADEQ and the environmental professional to evaluate if the release can be closed without additional samples being required from the UST owner during another investigative field event.**
- If water is present above the floor of the excavation at the time an UST is removed, distinct samples of native soils shall be collected from the walls of the excavation at the soil-water interface at both ends of the UST excavation. In addition, ADEQ recommends a third sample be collected from the wall in the middle of the excavation at the soil-water interface in cases where fiberglass USTs are being permanently closed. Water samples from the excavation shall also be collected for analysis. If a sheen or free product is identified on the water, attempt to collect a water sample from beneath the product, and further UST reporting and investigation shall be conducted in accordance with A.A.C. R18-12-260 through A.A.C. R18-12-264, and perform corrective action as required under A.R.S. §§ 49-1004 and 49-1005.

- If native soil cannot be sampled due to the presence of cobbles, boulders, granite, stiff clay, etc. or, if the UST excavation was constructed in bedrock, samples must be collected from the excavation backfill material located beneath the UST in the same manner as described above. If the backfill material cannot be sampled, contact ADEQ for further instruction.
- If a concrete slab is encountered under a tank, collect native soil samples by either:
 - Collecting native soil samples at each corner or side of the slab, or
 - Removing the concrete slab, and sample native soils below.

Note – The concrete slab does not have to be removed as part of the tank closure. If there are cracks in the concrete slab that appear to go through the entire thickness of the slab, a sufficient number of samples should be collected to adequately assess the native soil beneath the slab cracks. The soil samples from beneath the cracks in the concrete slab would be in addition to the four corner soil samples referenced above. It may be necessary to core the concrete slab to gain access to the native soil.

- For UST system related piping that has been permanently closed (i.e., flushed then capped and closed-in-place or removed from the ground), distinct soil samples must be collected every twenty (20) linear feet beneath the piping in native soils. In addition, distinct soil samples shall be collected from native soils beneath elbows, joints, fittings, dispensers, ancillary equipment and areas of corrosion. If the dispensers and associated product piping being removed are located directly above the USTs, the samples specific to those dispensers and associated piping do not need to be collected; however, this needs to be documented in the closure form submittal.
- Native soils that are excavated shall be stockpiled in a manner to prevent the migration of contaminants to the air, soil and water. Discrete samples of excavated soils that are not used to backfill the excavation must be collected to determine if the soil is a special waste (A.R.S. §49-851 et seq.). Include documentation in the closure form submittal.
- If sampling difficulties are encountered during field activities, call the UST hotline at (602) 771-0333.

All samples shall be collected and analyzed, at minimum, in accordance with the Sampling Guidelines set forth in Attachment A & B of this document.

Release Reporting

ADEQ must be notified within 24 hours of release discovery. The release should be reported by emailing a completed UST Release 24-Hour Notification/Release Notification Form to USTCAS@azdeq.gov. Discovery includes, free product, saturated soil from regulated substance, and verified analytical results.

The UST 24-Hour Notification Form may be found here: <http://azdeq.gov/forms>

Closure Documentation Requirements

Within 30 days after permanent closure or a Change-in-Service the following documents at a minimum shall be submitted to ADEQ:

- A revised *Notification for Underground Storage Tanks Form* reflecting the updated status of the permanently closed or CIS USTs;
- The completed *UST Permanent Closure Assessment Report Form*, which establishes a standardized format for the submittal of technical data collected during permanent closure and CIS activities.; including the stamp of a qualified environmental professional with appropriate Arizona technical registration.
- Tabulated analytical results including: sample ID number, sample date, sample depth, lithology, field screening results and sample results. Sample results must be reported numerically, (a sample table is included as Attachment C), copies of the final laboratory analytical reports with Quality Assurance/Quality Control (QA/QC) information, and chain-of-custody documentation (refer to ASTM Standard D 4840-99(2010) for chain-of-custody procedures);
- Photographs taken during the closure with a photo log identifying the date, time and subject of each photo;

- A scaled site plan with direction orientation indicated, that accurately depicts the locations of all pertinent site features, (i.e. USTs, piping, dispensers, remote fills, excavation area(s), sample locations, etc.). In addition, ADEQ recommends including release areas (current and previous, if any), location(s) of stockpiled petroleum-contaminated soil, buildings, and cross streets on the site map indicated above.

ADEQ requires the following additional information be submitted with the documents referenced above:

- A copy of the UST Closure Inspection Report and the UST Plan Review documents;
- Certificate(s) of UST destruction; and
- Liquid rinsate disposal information.

Document Submittal Information

The hard copy of closure documentation shall be submitted by mail or in person:

Arizona Department of Environmental Quality
UST-LUST Section
1110 West Washington Street
Phoenix, Arizona 85007

ATTACHMENT A - SAMPLING GUIDELINES

The following guidelines apply to all soil samples collected during permanent closure of the UST and/or system components:

- It is recommended that the UST owner hire a qualified environmental professional with appropriate Arizona technical registration (P.E., R.G. or Certified Remediation Specialist) to assure that the soil samples are collected in the appropriate locations and manner. Any interpretation of subsurface conditions requires the stamp of an Arizona registrant on the submitted document. The Arizona Board of Technical Registration (BTR) can be contacted to verify technical registration requirements and identify individuals that are actively registered by clicking on the following link: <https://btr.az.gov/>
- ADEQ requires further investigation at locations where the concentration of regulated petroleum substances exceeds the UST Release Confirmation Levels (RCLs) which are found by clicking on the following link: <http://www.azdeq.gov/substantivepolicy?page=0%2C4>. ADEQ recommends that an additional soil sample(s) be collected below the primary (closure) sample(s) at the time of permanent closure of the UST and/or system components to assist the UST owner in characterizing any releases during the same field event. This additional data may be used by ADEQ to evaluate if the release can be closed without additional samples being required from the UST owner during another investigative field event.
- All sampling equipment must be decontaminated using the procedures set forth by the American Society for Testing and Materials (ASTM) Standard D 5088-02(2008). In addition, all soil samples must be obtained with minimal loss of volatile regulated substances. (ASTM Standard D 4547-15 and ASTM Standard D 4700-15). ADEQ may approve, prior to sample collection, other sampling procedures which have been determined by ADEQ to result in analytical data representative of the concentrations and compositions of any regulated substances in the soil.
- All soil samples collected for volatile organic compounds (VOC) must be collected and preserved using methanol extraction according to EPA Method 5035 or by using an EnCore™. The samples shall be taken from undisturbed soils or from the backhoe or track hoe bucket immediately after the soil is removed from the excavation. The upper few inches in the bucket shall be scraped aside so that fresh material near the center of the bucket may be sampled. If the material in the bucket contains too many cobbles, that soil interval is inappropriate for laboratory analysis for VOCs.
- Discrete samples from the stockpile of excavated soil must be collected using the same method as identified above. Methodology is to be discussed and documented in the closure submittal.
- The sample(s) must be labeled immediately, placed in a sealable plastic bag, and put in a cooler on ice. (ASTM Standard D 4547-15 and ASTM Standard D 4700-15). "Blue ice" should not be used unless required for shipping purposes.
- Field measurements and the lithologic description shall be completed with the remainder of the recovered samples and the results included with the tabulated analytical data. ASTM Standard D 2488-09a or a comparable standard must be used when classifying soil lithology.
- Compositing soil samples are not acceptable for closure assessment activities.

ATTACHMENT B – ANALYTICAL METHODS

Be advised that a laboratory must be licensed by the Arizona Department of Health Services (ADHS) to perform analytical test methods that are approved in accordance with A.A.C. Title 9, Chapter 14, Article 6, with the exception of specialty analytical methods. A list of environmental laboratories and the analytical test methods they are certified for is available by contacting the ADHS Laboratory Licensure Section at 602.364.0720 or by clicking the following link: <https://app.azdhs.gov/BFS/LABS/ELBIS/ArizonaCertifiedLabs/LabSearchContentPage.aspx>.

The regulated substance stored in an UST over its lifetime dictates what laboratory analyses are required. The table below indicates the recommended analytical tests based on the regulated substance stored. This table is designed to illustrate what test methods satisfy the UST closure requirements consistent within the UST Program.

For UST systems containing petroleum-based substances, all soil samples must be analyzed for VOCs and PAHs. Organic lead and/or metals analysis is identified as needed in the table below.

A sample suspected of having mixed petroleum products may require more than one of the tests in the referenced table.

ADEQ requires further investigation at locations where the concentration of regulated petroleum substances exceeds the applicable RCL, Aquifer Water Quality Standards (AWQS) and/or Residential Soil Remediation Levels (rSRL) limits.

Check the ADEQ webpage for the most recent analytical methods, field procedures and laboratory requirements in the *Analytical Data Information* document by clicking the following link: <http://www.azdeq.gov/UST>

Test Method	Analysis and Test Methods for Soil or Groundwater			
	VOCs	PAHs	Tetraethyl lead (organic lead)	Metals (RCRA 8)
	8260B plus TICs ¹	8270C-SIM or equivalent	California HML- 939M, 8270D-SIM or equivalent ³	6000/7000 Series
Unleaded Gasoline includes all Oxygenated Gasoline using either MTBE or Ethanol	•	•	• ³	
Regular (Leaded) Gasoline	•	•	•	
Diesel & Biodiesel	•	•		
Jet Fuel	•	•		
Aviation Gas	•	•	•	
Used Oil	•	•		•
New Oil & Heating Oil	•	•		
Kerosene	•	•		
Solvents	•			
Hazardous Substance ²				
Unknown	•	•	•	•

If a soil sample contains concentrations of VOCs, PAHs, TEL and/or metals greater than applicable RCL, AWQS and/or rSRL is indicative of a release. ADEQ must be notified within 24 hours.

¹EPA Method 8260 B Volatile Organic Compounds- the entire list is to be reported by the laboratory including the tentatively identified compounds (TICs) as listed in the ADEQ UST Program Analytical Data Information Sheet.

²Analyze for compounds specific to the hazardous substance(s) released.

³If an UST system storing gasoline was put into service prior to 1996, the soil and/or groundwater samples must be analyzed for Tetraethyl lead.

ATTACHMENT C – Sample Table

**TABLE 1
SUMMARY OF SOIL SAMPLE LABORATORY ANALYTICAL DATA - VOC and TEL**
Facility Name
Facility Address

Sample Identification	Sample Date	Sample Depth (feet bgs)	Sample Location	Lithology	PID Readings (ppm)	Benzene	1,2-Dichloroethane	n-Butylbenzene	sec-Butylbenzene	tert-Butylbenzene	Carbon disulfide	Cyclohexane	EDB	1,2-DCA	Dichlorodifluoromethane	Ethylbenzene	4-Ethyltoluene	n-Hexane	Isopropylbenzene (Cumene)	p-Isopropyltoluene (p-Cymene)	MTBE	Methyl Cyclohexane	Naphthalene	Propylene (P ropene)	n-Propylbenzene	Toluene	1,2,4-TMB	1,3,5-TMB	Total Xylenes	Other VOC Detected	TEL	
						EPA Method 8260B																										EPA Method 8270 SIM
ADEC Release Confirmation Levels (RCL) for Soil						0.25	0.50	0.25	0.25	0.25	0.44	0.50	0.25	0.25	0.50	0.50	0.50	0.50	0.50	0.25	0.25	0.25	0.50	0.25	0.50	0.25	0.25	0.25	0.25	0.50	NE	NE
ADEC Residential Soil Remediation Levels (rSRL)						0.65	0.58	240	220	390	360	140	0.29	2.8	0.54	400	NE	110	92	NE	320	230	56	NE	240	650	52	21	270	Various	0.0061	
ADEC Non-Residential Soil Remediation Levels (nrSRL)						1.4	1.2	240	220	390	720	140	0.63	6.0	1.8	400	NE	110	92	NE	710	230	190	NE	240	650	170	70	420	Various	0.062	
D9-1	11/16/2016	1	Northeast master dispenser	Well graded sand	11.6	<0.00840	<0.0473	<0.00945	<0.00945	<0.0210	<0.0210	<0.0105	<0.0210	<0.00315	<0.0105	<0.00840	NP	<0.0158	<0.0105	<0.0315	<0.0210	<0.0210	<0.0210	NP	<0.00840	<0.0315	<0.00945	<0.0210	<0.0105	None	<0.00133	
D9-3	11/16/2016	3	Northeast master dispenser	Sandy clay	38.6	0.0601	<0.0622	2.53	1.84	1.92	<0.0276	0.622	<0.0276	<0.00414	<0.0138	3.58	7.66	0.191	0.985	1.39	<0.0276	2.58	0.148	NP	2.21	<0.0414	16.8	2.76	5.06	1,1,1,2-Tetrachloroethane 0.131 1,1,2-Trichloroethane 0.360 1,2,3-Trichloropropane 0.329 1,2-Dibromo-3-chloropropane 0.262 1,2-Dichloropropane 0.0359 2-Butanone 0.0691 2-Chlorotoluene 1.02 2-Hexanone 0.323 4-Chlorotoluene 0.269 4-Methyl-2-Pentanone 0.0753 Bromomethane 0.238 Chlorobenzene 0.0283	<0.00133	
D10-1	11/16/2016	1	Northeast satellite dispenser	Well graded sand	6.7	<0.00858	<0.0483	0.180	0.145	<0.0215	<0.0215	<0.0107	<0.0215	<0.00322	<0.0107	<0.00858	0.0231	<0.0161	0.0392	0.122	<0.0215	0.0617	0.0740	NP	0.0821	<0.0322	0.459	0.0333	<0.0107	None	<0.00132	
D10-3	11/16/2016	3	Northeast satellite dispenser	Sandy clay	7.3	<0.00901	<0.0507	0.0473	0.0372	<0.0225	<0.0225	<0.0113	<0.0225	<0.00338	<0.0113	<0.00901	0.0490	<0.0169	<0.0113	<0.0338	<0.0225	<0.0225	<0.0225	NP	<0.00901	<0.0338	0.134	<0.0225	<0.0113	None	<0.00133	

Notes:

- VOC - Volatile organic compounds.
- TEL - Tetraethyl lead
- bgs - Below ground surface.
- PID - Photoionization detector.
- ppm - Parts per million.
- EDB - Ethylene dibromide (1,2-dibromoethane)
- 1,2-DCA - 1,2-dichloroethane
- MTBE - Methyl tert butyl ether
- TMB - Trimethylbenzene
- EPA - Environmental Protection Agency
- ADEC - Arizona Department of Environmental Quality
- NE - Not established.
- UST - Underground storage tank.
- <0.0212 - Compound not detected above specified minimum laboratory method detection limit.
- NP - Tentatively identified compound not present.
- Bold** - Concentration equals or exceeds ADEC RCL. RCL are only applicable to the shallow "primary" samples.
- Bold** - Concentration equals or exceeds ADEC established rSRL.
- Bold** - Concentration equals or exceeds minimum laboratory method detection limit.

**TABLE 2
SUMMARY OF SOIL SAMPLE LABORATORY ANALYTICAL DATA - PAH**

Facility Name
Facility Address

Sample Identification	Sample Date	Sample Depth (feet bgs)	Sample Location	Lithology	PID Readings (ppm)	Anthracene	Acenaphthene	Benzo(a)anthracene	Benzo(b)pyrene	Benzo(k)fluoranthene	Benzo(e)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Pyrene	Other PAH Detected
						All results reported in milligrams per kilogram (mg/kg).													
ADEQ Release Confirmation Levels (RCL) for Soil						0.20	0.40	0.04	0.01	0.04	0.04	0.04	0.04	0.04	0.04	0.02	0.20	0.04	NE
ADEQ Residential Soil Remediation Levels (rSRL)						22,000	3,700	6.9	0.69	6.9	69	680	0.69	2,300	2,700	6.9	56	2,300	NE
ADEQ Non-Residential Soil Remediation Levels (nrSRL)						240,000	29,000	21	2.1	21	210	2,000	2.1	22,000	26,000	21	190	29,000	NE
D10-1	11/16/2016	1	Northeast satellite dispenser	Well graded sand	6.7	< 0.00832	0.152	0.00969	< 0.00832	< 0.00832	< 0.00832	0.0164	< 0.00832	0.0277	0.394	< 0.00832	< 0.00832	0.159	Phenanthrene 0.939
D10-3	11/16/2016	3	Northeast satellite dispenser	Sandy clay	7.3	< 0.00831	0.0209	0.000897	< 0.00831	< 0.00831	< 0.00831	0.00182	< 0.00831	0.00259	0.0539	< 0.00831	0.00279	0.0126	Phenanthrene 0.134

Notes:

- PAH - Polynuclear aromatic hydrocarbons.
- bgs - Below ground surface.
- PID - Photoionization detector.
- ppm - Parts per million.
- EPA - Environmental Protection Agency
- ADEQ - Arizona Department of Environmental Quality
- NE - Not established.
- UST - Underground storage tank.
- <0.00831 - Compound not detected above specified minimum laboratory method detection limit.
- Bold** - Concentration equals or exceeds ADEQ RCL. RCL are only applicable to the shallow "primary" samples.
- Bold** - Concentration equals or exceeds ADEQ established rSRL.
- Bold** - Concentration equals or exceeds minimum laboratory method detection limit.