UST Permanent Closure Requirements & Guidance:

SAFE CLOSURE IS A MUST

PEOPLE WHO DO NOT FOLLOW STANDARD SAFETY PRACTICES ARE KILLED OR INJURED EVERY YEAR WHILE CLOSING OR REMOVING UNDERGROUND STORAGE TANKS. FOR A SAFE CLOSURE, YOU SHOULD USE QUALIFIED PROFESSIONALS WHO WILL USE STANDARD SAFETY PRACTICES.

For more information on standard safety practices, UST owners and closure contractors should refer to "Closure of Underground Petroleum Storage Tanks," API Recommended Practice 1604 (1996), which is available from the American Petroleum Institute, 1220 L Street, NW, Washington, DC 20005, or call (202) 682-8000 for assistance. You can also visit the American Petroleum Institute at http://www.api.org/

Any owner or operator that hires a contractor for a fee must use a **Nevada Certified Tank Handler** for UST closure and removal (NAC 459.9719). Any owner or operator that hires a consultant for a fee to manage hazardous waste, perform a site investigation, collect samples, or handle corrective action pertaining to a hazardous substances must use a **Nevada Certified Environmental Manager.** Nevada certified individuals are listed at: http://ndep.nv.gov/bca/cem_list.htm

Disclaimer:

The Nevada Division of Environmental Protection (NDEP) has provided the following document as guidance to owners and operators to summarize procedures necessary to permanently close an UST system. It does not provide a full account of federal and state regulations, nor is it to be substituted for local government codes and requirements. It is the owner and operator's responsibility to familiarize themselves with all rules and regulations pertaining to the property on which the UST system(s) is to be permanently closed. NDEP strongly recommends contacting local fire, building, and environmental departments prior to proceeding with tank closure. Furthermore, it is the owner and operator's responsibility to hire trained professionals or review and follow standard safety practices when permanently closing a petroleum / hazardous substance UST system.

Reporting:

40 CFR 280.71 - Owners and operators must notify the implementing agency 30-days prior to permanently closing an underground storage tank (UST).

Implementing Agencies: NDEP for rural counties; Southern Nevada Health District (SNHD) for Clark County; and Washoe County District Health Department (WCDHD) for Washoe County. Contact

information is listed at:
http://ndep.nv.gov/bca/ust_home.htm

Remove Petroleum Substances from Tank System:

Drain all product piping back into the tank.

- Pressurized Piping – Remove or open fully the functional element check valve at the submersible turbine pump.
- Suction Piping – There may be a check valve (footer valve) located at / or within the tank in addition to the one directly under the suction pump. If so, you may not be able to drain the lines until you have excavated to the top of the tank and removed the check valve. Safe Suction piping should have only one check valve located at the suction pump.
- Use small amounts of water to flush the product piping. Use no more than 1 gallon of water for every 10 feet of 1 ½ inch pipe; 2 gallons of water for 10 feet of 2 inch pipe.
- You can also flush the pipe with an inert gas such as nitrogen, which would be more expensive but would generate less waste that has to be removed from the tank.
- Avoid spilling fuel in the excavation area.

Remove all liquids and residue from the tank.

- Use explosion-proof or air-operated pumps. If you rinse the tank with water, you'll be able to remove more of the residue; however, don't add more than 1 inch of water to the tank.
- Be careful while pumping residue product / water from the tank. It is likely that fresh air will enter the tank and bring the atmosphere inside the tank into the flammable range. Ground all pump motors and suction hoses to prevent a buildup of static electricity. You must ground your equipment to the tank, but it is also a good idea to ground to the earth as well.
- You may have to use a hand pump to remove the last few inches of liquid from the tank bottom.
- If you use a vacuum truck, the area around the truck must be vapor-free. Locate the truck upwind of the tank. The suction hose must be grounded. The vacuum pump exhaust gases must be vented through a line of adequate size and at least 12 feet above ground surface. The vacuum vent should be located downwind of the truck and tank area.
- All removed liquids and sludges must be disposed / recycled in accordance with federal, state, and local regulations.

Electrical Safety:

Disconnect all electrical service going to, under or through the UST area.

- Turn off all switches.
- Pull the breakers.
- Use your voltmeter to confirm power is no longer present.
- Consider using a licensed electrician to do all electrical work, including disconnects. Check with local authorities.

Excavation:

- Remove the concrete and / or asphalt cover over the tank.
- Excavate to the top of the tank.
- Remove all tank-top equipment including the fill pipe, drop tube, automatic tank gauge equipment and riser, vapor recovery equipment, and submersible turbine pump.
- Remove all piping and conduit that is accessible and uncovered, **except the vent line**. The vent line must remain connected until the tank is purged or inerted of flammable vapors.
- Plug all other tank openings as you remove the tank-top equipment and risers. This will force the vapors to exit through the vent during the purging process. Keep in mind that you are creating an atmosphere that is more explosive than normal while you're purging the tank.

The objective at this stage of the project is to access and remove everything possible before continuing the excavation. This will avoid having to put personnel inside the excavation during any part of the removal project.

Purging or Inerting the Tank to Reduce Fire and explosions Hazards:

Purging is the removal of flammable vapors from a tank (should be handled by trained professionals).
Inerting is the removal or displacement of oxygen from a tank.

CAUTION must always be exercised when handling or working around tanks that have stored flammable or combustible liquids. Immediately before beginning work in the tank area or on the tank, check for vapor concentrations with a combustible gas indicator (CGI). Even after purging or inerting, a tank can regenerate flammable vapors. Check them often.

Both purging and inerting methods cause flammable vapors to be expelled from the tank. Vent all vapors at least 12 feet above grade and 3 feet above any adjacent roof lines. Keep the work area free of all sources of ignition. Never enter a tank that has been inerted with carbon dioxide (CO_2) or nitrogen (N_2). Either of these methods depletes the oxygen.

- Ground all equipment and use low air or gas pressures to prevent a buildup of static electricity.

- NEVER discharge a CO2 fire extinguisher into tanks containing a flammable vapor-air mixture.
- If a tank has been inerted, a combustible gas indicator may be misleading. Most CGI's require 10% by volume oxygen to operate properly. Use an oxygen indicator to assess a tank that has been inerted.
- Never let the pressure inside a tank exceed 5 pounds per square inch gauge (psig) when introducing compressed air or gases. Pressure gauges are most reliable in their mid-range. When working in the 5 pound range, you should use a gauge with a maximum range of 15 pounds.

One of the most-widely used methods of inerting a tank is by adding Dry Ice, which is carbon dioxide in solid (frozen) form. API recommends adding **1-½ to 2 pounds of Dry Ice per 100 gallons** of tank capacity. *Use caution when handling Dry Ice. The temperature of Dry Ice is -109.3° F (-78.5° C). Skin contact can produce severe burns.*

- Plan to pick up your Dry Ice as close as possible to the time you will need it. Avoid opening and closing the container as much as possible. Do not store Dry Ice in an air-tight container without proper ventilation. The container may explode.
- Dry Ice should be shaved or crushed, and it must be distributed evenly over the greatest possible area of the tank. It should at least be inserted through tank openings at each end and in the center.
- Tank openings (**except vent lines**) should be plugged immediately after inserting the Dry Ice. As the Dry Ice vaporizes, flammable vapors will be expelled from the tank and be introduced into the surrounding atmosphere. Remember to vent all vapors at least 12 feet above grade (most tank vent lines are adequate).
- Make sure that all of the Dry Ice has evaporated and oxygen levels are sufficiently depleted before proceeding with the tank removal.

Closure in Place:

Local authorities must be consulted prior to closing a tank in place. Although allowed by the federal UST regulations, other state, city and county programs may not allow closure of a UST in place. To permanently close a UST in place, owners / operators must:

- Fill the tank with an inert solid material such as sand, slurries, expandable foams, and concrete. Be advised that once a tank is filled with a solidifying substance such as concrete, it will be extremely difficult to remove at a later point in time should the need arise.
- Once the tank is filled with an inert solid, disconnect the vent line if accessible. If the vent line is not accessible, disconnect the line at the ground surface. Fill the underground portion of the line with the same solid used to fill the tank and secure the line with a cap.

Tank Removal:

After a tank has been purged or inerted of flammable vapors, but prior to removal, plug or cap all accessible holes (including the vent line). One plug must have an 1/8 inch hole to serve as a vent, which will allow for expansion and contraction of remaining air-vapor mixture in the tank.

- Excavate around the sides and ends of the tank.
- Use equipment large enough and structurally sound enough to lift the tank out of the excavation pit.
- Set tank on transport trailer or ground. Use blocks to keep the tank from shifting.
- Label the tank in the following manner using spray paint: "TANK HAS CONTAINED GASOLINE (OR DIESEL) – NOT VAPOR FREE – NOT SUITIBLE FOR FOOD OR LIQUIDS INTENDED FOR HUMAN OR ANIMAL CONSUMPTION. DATE OF REMOVAL: MONTH / DAY / YEAR

Site Assessment:

40 CFR 280.72 & NAC 459.9972 – The owner or operator shall provide a site assessment to the implementing agency prior to permanent closure (includes both system removal and closure in place).

- Soil samples must be obtained from opposite ends of each tank. Samples shall be taken from native soils not more than 2 feet from the bottom of the storage tank.
- Product piping should be sampled in locations where a release is most likely to be present (i.e. beneath dispensers, joint locations, turbine sump, etc.)
- Soil samples must be analyzed using EPA test method 8015 (modified for petroleum hydrocarbons) and other constituents as required by the implementing agency.
- Samples must be analyzed by a laboratory certified by NDEP
- Any sampling results in excess of 100 mg/Kg total petroleum hydrocarbons (TPH) must be reported to the NDEP spill line (775-687-9485) within 24 hours.
- Waste oil / used oil tanks must also test for TCLP metals.

Disposal / Re-Use:

Removed USTs should be destroyed / recycled at suitable facilities. If a tank is to be reused to store a regulated substance, the tank must be re-certified by the original manufacturer for the intended use.

Closure Records:

Pursuant to permanent closure of an UST, a detailed report of removal activities, a map of the site showing tank system locations, site assessment sampling activities, sample results, product disposal, and tank disposal must be submitted to the implementing agency. NDEP further requests that a closure UST notification form (EPA 7530-1) be submitted.

40 CFR 280.74 - Records that demonstrate compliance with closure requirements and results of the site assessment must be maintained for at least 3-years by one of three mechanisms:

1) By the owners and operators that permanently closed the UST(s), or
2) By the current owners and operators of the UST system site, or
3) By mailing the records to the implementing agency if they cannot be maintained at the closed facility.

References:

1) Code of Federal Regulations: Title 40, Part 280 (40 CFR 280)
2) Nevada Administrative Code (NAC), Chapter 459: Storage Tanks
3) "UST Removal Guidebook (July 2004)," Oklahoma Corporation Commission - Petroleum Storage Tank Division, http://www.occ.state.ok.us/Divisions/PST/Forms/Compliance%20Forms/ustremovalguidebook.pdf
4) EPA Office of Underground Storage Tanks (OUST) website, http://www.epa.gov/OUST/ustsystm/close.htm
5) "Closure of Underground Petroleum Storage Tanks," American Petroleum Institute (API) Recommended Practice 1604, Third Edition, March 1996