

LOS ANGELES FIRE DEPARTMENT UNDERGROUND STORAGE TANK PROGRAM ABANDONMENT OF UNDERGROUND STORAGE TANKS

FPB REQUIREMENT NO. 41

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I. REFERENCE

- A. Los Angeles Fire Code, Division 5 and 31
- B. California Health and Safety Code, Chapter 6.7
- C. California Code of Regulations, Title 23, Division 3, Chapter 16
- D. California Code of Regulations, Title 8, Section 5156, 5157, 5158

II. APPLYING FOR A DIVISION 5 PERMIT TO ABANDON AN UNDERGROUND STORAGE TANK

- A. Division 5 Permit issued by the Los Angeles Fire Department (LAFD) is required when abandoning a tank in the City of Los Angeles.
 - 1. Apply at the Bureau of Fire Prevention, Environmental/ Plan Check Unit located at: 221 North Figueroa Street, 15th floor, Room #1500.
- B. Submit the following items in order to obtain; (1)approval to take the soil samples, (2) final approval to remove or abandonment in place any underground storage tank.
 - 1. A completed application with check for permit fees.
 - 2. Proof of tank registration from the Data Management Unit, at (213) 978-3680.
 - 3. Three sets of scaled plot plans, 11x17.
 - a. Show location of underground storage tank(s), dispensers and piping on property.
 - b. Indicate property lines, streets, and structures (include dimensions)
 - c. Provide specific distances to tanks (i.e.: Tank #1 15’ W. of Elm, 20’ N. of Main) from two opposing directions.
 - d. Specify Tank(s) size, contents, and monitoring status.
 - e. Indicate boring location(s) for samples.
 - (1) An L.A.F.D. Fire Inspector shall witness sampling for the removal of, or abandoning in place of, underground storage tanks.

- C. To abandon the tank(s) and piping in place, justification shall be provided to the LAFD:
 - 1. The Structural Engineer’s Stability Report **and**
 - 2. The Site Assessment report.
 - 3. **ALL REQUESTS FOR ABANDONMENT IN PLACE SHALL BE SUBJECT TO A FIELD INSPECTION FOR APPROVAL**

- D. Soil sample analysis reports shall be submitted prior to the issuing of the final permit to abandon in place.

- E. Los Angeles City Business Tax Registration Certificate - The contractor who is removing the tank(s) shall have a proper and current Los Angeles City Business Tax Registration Certificate.
 - 1. For City Business Tax Certificate, apply at the Office of Finance, located at 201 North Figueroa Street, Room 300, LA, and CA. 90012.

- F. Appropriate State of California Contractor’s License (copy required to be submitted).
 - 1. Refer to State of California State Water Resources Control Board **LG-48-5 “Licensing for Installation and Removal of Underground Storage Tanks”**.
 - *General Engineering Contractor A
 - *General Building Contractor B
 - *Plumbing Contractor C-36
 - *Limited Specialty Contractor C-61-D-40
 - *Hazardous Waste Contractor

- Call the Contractors State License Board at (916) 366-5206 for further information.

- G. Environmental Protection Agency (EPA) Identification Number:
 - 1. The site owner shall provide a Hazardous Waste Site Generator’s Identification Number.
 - 2. Call the State Department of Health Services at **(916) 324-1826** to obtain the identification number.

- H. The owner and contractor are responsible for obtaining any additional permits or licenses that are applicable to the abandonment of an underground tank.

Example: A grading permit is typically required from the Grading Section of the Los Angeles Department of Building and Safety (LADBS) 1-800-LABUILD.

- I. If the contents of the tank(s) are unknown, a sample shall be drawn and analyzed. A copy of the report shall be provided to the LAFD, delineating the contents of the tank.

- J. LAFD Plan Check personnel shall make a notation on the Division 5 Permit application that the contractor does possess the above described licenses and identification number. A copy of the analysis of the product shall be included in the Division 5 permit folder, if applicable.

III. METHODS FOR UNDERGROUND STORAGE TANK ABANDONMENT

- A. An underground storage tank may be abandoned either by removing it from the ground, or in unusual cases by filling it in place with an approved cement or slurry mixture. Abandoning the tank in place will only be permitted if there is no physically practical means of abandoning the tank(s) by removal (a Structural Engineers certification is required for this).
- B. ABANDONMENT BY REMOVAL
1. Preparing Underground Tanks for Removal
 - a. No on-site work shall begin until all the requirements on Page 1 and 2 for a Division 5 Permit have been met, and the approved permit issued.
 - b. If the tank is not empty, remove the product. If the product is:
 - (1) **Flammable or combustible** - a Division 5 Permit must be obtained to transfer the product from the underground tank to a tank truck. Applications are available at the **Bureau of Fire Prevention, CUPA office at 200 North Main Street, Los Angeles, City Hall East, Suite 1740.**
 - (2) **Hazardous Waste** - Any hazardous waste removed from the site shall be manifested and transported to a licensed hazardous waste disposal site or a licensed treatment, storage, and disposal facility (TSDF) by a licensed hazardous waste transporter, subject to all applicable government regulations.
 - c. If only residue remains in the tank- remove it by utilizing an approved vacuum truck and hose. The residue is hazardous waste, and must be manifested and transported to a licensed hazardous waste disposal site or a licensed TSDF, by a licensed hazardous waste transporter, subject to all applicable government regulations.
 - d. Electric lines, piping, and other tank appurtenances shall be isolated or disconnected. **All piping shall be left intact until the tank is exposed and ready to be removed.** Barriers and signs shall be installed where necessary, and any source of ignition shall be at least 25 feet away from the excavation. Signs shall state "NO SMOKING OR OPEN FLAMES."
 - e. Prior to excavation, place a minimum of 20 pounds of dry ice per 1,000 gallons capacity into the tank at least TWO HOURS PRIOR to any further work being performed. If dry ice is to be inserted into the fill opening, remove the fill line drop tube and/or sleeve from the interior of tank prior to inserting ice.
 - f. Begin the excavation work in cooperation with the owner and all concerned government agencies. Expose the tank and associated piping.
 - g. Disconnect and remove all electrical lines and in-tank pumps, but leave on site.
 - h. No cutting torch, open flame, or spark producing equipment shall be used on the tanks or piping.
 - i. Call the Underground Tank Enforcement Unit Inspector, (213) 978-3710 **at least two weeks** prior to start of work. Arrange a mutually agreed upon appointment date and time with the district Fire Inspector to be on-site to witness the abandonment.

IV. REMOVAL OF UNDERGROUND STORAGE TANK(S) AS HAZARDOUS WASTE

A. A Fire Inspector **shall witness** steps 1 through 7 and complete step 8.

1. Check the tank for an explosive atmosphere utilizing a combustible gas indicator. If the atmosphere inside the tank is found to be above 20 percent of the lower explosive limits (LEL), the tank **shall** be re-inerted. The atmosphere shall be brought below 20% of the LEL. Re-inert the tank with a minimum of 20 pounds of dry ice per 1,000 gallons of capacity.
2. Lift the tank from the excavation and inspect for signs of leakage then secure it on an appropriate transport vehicle with its openings at the top. Underground storage tanks shall be removed intact. Tanks shall not be punctured or crushed on-site.
3. All tank identifications shall remain on the tank. Do not remove the Underwriter's Laboratory tag or any other identification from the tank.
4. Plug all tank openings with a pliable material (i.e., paper, cloth, or rags).
5. The licensed hazardous waste transporter shall prepare a Uniform Hazardous Waste Manifest and transport the tank to a licensed hazardous waste disposal site, subject to all applicable government regulations.
6. The Fire Inspector witnessing the abandonment shall be given a copy of the manifest, and shall be given the address as to where the tank will be transported.
7. Soil samples shall be obtained from beneath the tank, piping, spoils pile, and dispensers at the direction of the Fire Inspector.
8. When this operation is completed, the Fire Inspector shall have the following items in the completed Division 5 folder:
 - a. Division 5 Permit application package.
 - b. Division 5 Permit – stamped approved, signed and dated.
 - c. One set of plans.
 - d. A completed Hazardous Waste Manifest for the tank(s).
 - e. A copy of the analysis report shall be included, if the contents of the tank were unknown.
 - f. Clean Certificate from the Marine Chemist or Industrial Hygienist.
9. Soil analysis results from a state certified laboratory with chain of custody is required to be submitted to the Fire Department within 30 days of taking samples.

- V. REMOVAL OF UNDERGROUND STORAGE TANKS CERTIFIED CLEAN “ON SITE”**
- A. A combustible gas indicator (properly calibrated) is mandatory on the job site during the entire operation.
 - B. The tank shall be checked for an explosive atmosphere with a combustible gas indicator.
 - C. Air purging of the tank shall be initiated whenever the atmosphere inside the tank is above 20 percent of the lower explosive limits (LEL) and shall continue until the readings are at or below 5 percent LEL or 700 ppm (AQMD).
 - 1. Air purging, vacuuming, and high-pressure water rinsing equipment **shall** be bonded and grounded to prevent the accumulation of static electricity. Metal underground tanks shall be bonded to the above-described equipment. When working on fiberglass tanks the equipment shall be properly grounded.
 - D. The following requirements shall apply to bonding and grounding devices:
 - 1. Bonding and grounding devices shall be stranded wire not smaller than 8 AWG (American Wire Gauge) with appropriate connections at each end.
 - 2. Secure metal-to-metal contact shall be made between the tank and equipment or the equipment and ground.
 - 3. When grounding equipment, secure the end of the grounding device that is not attached to the equipment to an adequate ground, i.e., metal water pipe, metal drainage or sewer pipe that originates or terminates in the soil. If a ground (as described above) is not available, a metal rod driven into the soil to a depth no less than 3 feet shall serve as a ground.
 - 4. The bonding and grounding device shall be connected to the following equipment as described below:
 - a. Air purging equipment - The device shall be connected to the appliance where the air is discharged, i.e., at the venturi cone.
 - b. Vacuuming equipment - The device shall be connected to the equipment where the liquid is being discharged, i.e., the vacuum truck.
 - c. High-pressure water rinsing equipment - The device shall be connected to the appliance where the water is discharged, i.e., the wand or nozzle.
 - E. If there is no installed man-way on the tank, a cold cutting tool shall be used to cut a man-way. Only non-sparking tools shall be used. The dimensions of the man-way shall not be less than 24” X 24” at the appropriate location to facilitate cleaning and visual inspection of the tank interior. Large tanks may require multiple man-ways to insure that all interior areas of the tank are visible for inspection.
 - F. If a high-pressure water rinse is used for the tank interior, a minimum of 2,000 psi and detergent (if necessary) is required. Other cleaning methods as per NFPA Standard 326 may be allowed. Vacuuming shall remove loose scale, sludge, and rinse water. When the sludge and other debris have been removed and the LEL is zero percent throughout the tank, the washing may cease.

- G. All interior rinse water and sludge shall be manifested and transported to a licensed hazardous waste disposal site or licensed TSD by a licensed hazardous waste transporter, subject to all applicable governmental regulations.
 - 1. A copy of this manifest shall be provided to the Fire Inspector witnessing the abandonment.
- H. Certification that the underground tank is clean* shall be made by one of the following:
 - 1. Certified Industrial Hygienist
 - 2. Certified Safety Professional
 - 3. Certified Marine Chemist**
 - 4. A technician working under the direct supervision of one of the above-referenced individuals.

* The term “clean” shall mean that the inside of the tank shall be void of all visible deposits, sludge, foreign materials, and flammable hazards.

** A Certified Marine Chemist certifies tanks for “Hot Work”. If the “Hot Work” is going to be performed at another location, a Certified Marine Chemist shall certify that the tank is clean and vapor free prior to transport.

NOTE: A copy of the “Clean Certificate” shall be provided to the Fire Inspector.

- I. The Division 5 Permit number and the letters LAFD shall be painted on the tank.
 - 1. If the tank was certified clean and vapor free by the Certified Marine Chemist and “Hot Work” is performed after being transported, the Marine Chemist shall paint his certification number on the tank under the Division 5 Permit number and LAFD letters. **No other numbers shall be affixed to the tank.**
- J. All tank identifications shall remain on the tank. The removal of the Underwriters Laboratory tag or any other identification from the tank is prohibited.
- K. The Fire Inspector shall witness the following:
 - 1. Removal of the clean tank and or piping from the excavation.
 - 2. The collection of soil samples.

VI. POST REMOVAL AND SOIL SAMPLING PROCEDURES

- A. Soil samples shall be obtained from beneath the tank, piping, spoils pile, and dispensers at the direction of the Fire Inspector.
- B. Soil sampling shall be performed by a Professional Geologist, Civil Engineer, or Engineering Geologist who is registered or certified by the State of California. A trained technician shall be deemed qualified to take soil samples if they have a letter in their possession certifying their training and experience in taking soil samples and are under the supervision of one of the aforementioned professionals (a copy of the letter shall be provided to the L.A.F.D. Fire Inspector).

- C. A California State Certified Chemical Laboratory shall analyze all products that have been stored in the underground storage tank.
- D. If the product(s) are suspected of altering their chemical structure while in the soil, the analysis shall include the new substances.
- E. Soil samples **shall** be collected from natural soil, two feet in depth, where the bottom of the tank rested in the excavation, **not** backfill material. If tank is less than 1,000 gallons capacity, a minimum of one soil sample shall be taken from under the center of the tank.
- F. Tanks of greater capacity than 1,000 gallons shall have samples taken from the ends of the tanks. In no case shall samples be taken more than 20 feet apart.
- G. Soil sample locations from beneath piping shall start at the dispenser, taken at a maximum of 20' distance intervals of straight piping, each 45-degree turn, 90-degree turn, and coupling.
- H. All excavated soil (from the unearthing of an underground storage tank) must be retained on site and covered until determination of contamination and disposal has been made. Soil may be removed only with approval from the Chief.
- J. When the soil samples are analyzed, a report of the results shall be sent to the Fire Inspector who witnessed the removal. The report shall comply with the "UST Site Assessment – Report General Guidelines". The report shall include a statement verifying that the licensed professional in charge and responsible for the project, supervised or personally conducted all work associated with the project within the purview of the professional, as defined in the Professional Engineers Act or the Registered Geologists Act of the California Code of Regulations. A wet ink signature (in blue ink) and seal of the professional, including the expiration date of the license, shall be on the report at the end of the statement required above.
- K. The Fire Inspector present during the removal shall provide a business card to the soil sample collector and inform that person to send the complete soil report to their attention at the address on the business card within 30 days.
- L. Soil samples shall be collected from underneath the dispenser pit.
 - 1. Compliance with LAFD requirements does not preclude the necessity for complying with the regulations and requirements of other authorities and licensing agencies. For additional information, contact the Underground Tank Unit, FPB, Monday through Friday, 7 a.m. to 4 p.m., at 213-978-3700.

VII. ABANDONMENT OF UNDERGROUND STORAGE TANKS BY FILLING

- A. Filling a tank in place will only be considered if there is no practical means of abandoning the tank by removal, such as a tank located beneath a building. The following procedure shall be used.
1. A wet ink signed (in blue ink) letter from a Structural Engineer stating the reasons that the tank should be abandoned in place shall be provided. The Structural Engineer's official stamp and expiration date shall also be on the letter (the letter does not guarantee approval). The letter shall include but not be limited to:
 - a. Justification for abandoning in place
 - b. The slurry mixture to be used based on needs for stability:
 - i. Minimum of 100 E 100
 - ii. 95% or greater in strength
 - iii. The statement "NO COMPACTION PERMITTED"
 2. All abandonment in place shall be subject to approval by field inspection prior to issuing final permit.
 3. No on-site tank work shall be initiated until:
 - a. All the requirements set forth on Page 1 and 2 for a Division 5 Permit have been met.
 - b. Items B1-3 have been submitted in a report format to the Fire Inspector. The report shall comply with the "SITE ASSESSMENT WORK-PLAN REQUIREMENTS"
 - c. The approved permit is issued.
 - d. Items B1-10 below shall be witnessed by a Fire Inspector.
- B. Prior to the issuance of the final permit:
1. Soil samples shall be obtained from beneath the tank and piping.
 2. Soil sampling shall be performed by a Professional Geologist, Civil Engineer, or Engineering Geologist who is registered or certified by the State of California. A trained technician shall be deemed qualified to take soil samples if they have a letter in their possession certifying their training and experience in taking soil samples and are under the supervision of one of the aforementioned professionals.
 - a. Soil sampling shall be done in the presence of the LAFD Inspector.
 - b. The onsite Fire Inspector shall determine the quantity and locations of the soil sampling.
 3. Collect and analyze soil samples in accordance with Section 2645, Article 4, Subchapter 16, Title 23, Waters, California Code of Regulations. A State Certified Laboratory shall perform the analysis. A copy of the report must be provided to the LAFD Inspector who witnessed the sampling when applying for a Division 5 Permit to abandon an underground tank by filling.

EXCEPTION: Where it is not possible or practical to obtain soils samples, the contents of the tank shall be sampled, verified, and analyzed in accordance with this item# 3. In addition, a tank integrity test shall be performed to verify any possible leakage.

4. Remove the tank's product if it has not already been previously removed and if the product is:
 - a. **Flammable or combustible** - A Division 5 Permit must be obtained to transfer flammable or combustible product from the underground tank to a tank truck. Apply for this permit at the **Bureau of Fire Prevention, Bureau of Fire Prevention, CUPA office at 200 North Main Street, Los Angeles, City Hall East, Suite 1740.**
 - b. **Hazardous Waste** - Any hazardous waste removed from the site shall be manifested and transported to a licensed hazardous waste disposal site or a licensed treatment, storage, and disposal facility (TSDf) by a licensed hazardous waste transporter, subject to all applicable government regulation.
5. **If only residue remains** in the tank, remove it utilizing an appropriate vacuum truck and hose. The residue shall be considered a hazardous waste. It must be manifested and transported to a licensed hazardous waste disposal site or a licensed TSDf by a licensed hazardous waste transporter, subject to all applicable government regulations.
6. All electric lines, piping, and appurtenances associated with the tank shall be isolated or disconnected. Where possible, remove the tank vent lines at ground level (leave all product and vent lines in place until verified by Fire Inspector). All segments of pipe, which remain attached to the tank, shall have any open ends plugged with a pliable material. Barriers and signs shall be installed where necessary. Any source of ignition shall be at least 25 feet away from the tank. Signs shall state **“NO SMOKING OR OPEN FLAMES.”**

NOTE: No cutting torch, open flame or spark producing equipment shall be used on the tanks or piping.

7. On tanks equipped with fill pipes extending below the tank top, remove the piping, which extends into the tank.
8. Call the Underground Tank Enforcement Unit at least TWO WEEKS prior to start of work. Arrange a mutually agreed upon appointment date and time for the Fire Inspector to be on-site to witness the abandonment.
9. The tank interior shall be washed and made as liquid and deposit free as possible. The tank shall be washed in accordance with the instructions provided by the LAFD when the Division 5 Permit was issued.
10. The concrete slurry mix to be used to fill the tank shall be in accordance with:
 - a. Structural Engineer's report for stability
 - b. Minimum of 100 E 100
 - c. 95% or greater in strength
 - d. The following may be used as a reference:
 - (1) Greenbook: "Standard Specifications for Public Works Construction" Section 201, Table 201-1.1.2a, Trench Backfill 100 E 100

VIII. METHOD OF MIXING AND PUMPING

- A. The equipment used to move the fill mixture into the tank shall be positive displacement pump of the type and design used for hydraulically moving concrete.
- B. Attach the pump hose connection to the tank fill pipe by means of the pipe threads or a suitable adaptor.
- C. Attach drain hoses to the tank vents by tight fitting or threaded connections. The drain hoses shall terminate in containers provided for the specific purpose of collecting any residual liquids, which are forced out of the tank during the filling operation. Any liquids collected shall be manifested and transported to a licensed hazardous waste transporter, subject to all applicable government regulations. A copy of the manifest shall be provided to the Fire Inspector witnessing the tank abandonment.
- D. Pump the fill mixture into the tank until it flows out of the vent lines. The Fire Inspector shall determine that the tank is full and shall direct any other operations required to properly complete the abandonment procedure. If the piping is physically impractical to remove, as determined by the Fire Inspector, fill the piping with the approved fill mixture in a like manner.
- E. Any underground tank-monitoring well that is no longer required shall be destroyed or filled so it will not produce water or act as a means for groundwater contamination.

IX. CONFINED SPACE REQUIREMENTS

- A. Prior to any employee entering a tank they shall comply with the following:
 - 1. California Code of Regulations, Title 8, Section 5156, 5157, 5158

X. CONCLUSION

- A. When the abandonment operation is completed, the owner is required to provide the following items in the completed Division 5 Permit folder:
 - 1. Properly completed Division 5 Permit application.
 - 2. Division 5 Permit with approval stamp, signature and date.
 - 3. One set of plans.
 - 4. Copy of the Hazardous Waste Manifest for the cleaning solution and residue.
 - 5. Copy of the "Clean Certificate".
 - 6. Copy of the soils analysis report with chain of custody.
 - 7. Tank Time Survey.
 - 8. If the contents of the tank were unknown, a copy of the analysis report shall be included.
 - 9. Copy(s) of slurry receipts.
 - 10. Structural Engineer letter (when abandoning in place).

NOTE: The LAFD does not have a temporary abandonment policy, any tank(s) that have not been in service for a period of 90 days or more, shall be permanently abandoned by one of the above approved methods.

If you require additional information from the LAFD, contact the **Environmental Unit Plan Check at 213-482-7115.**