

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Environmental Cleanup and Brownfields

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TITLE: Storage Tank Modification and Maintenance Issues

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AUTHORITY: The Storage Tank and Spill Prevention Act, P.L. 169, No. 32 of 1989, as amended (Tank Act), and 25 Pa. Code, Chapter 245 (Storage Tank Regulations).

POLICY: It is the policy of the Department of Environmental Protection (DEP) to carry out the provisions of the Tank Act and related regulations.

PURPOSE: This guidance specifies the classification of various storage tank system modification and maintenance activities and when certified installers/inspectors are required.

APPLICABILITY: This guidance is primarily applicable to certified companies, inspectors, and installers, and it may be helpful to owners and operators of aboveground storage tank (AST) and underground storage tank (UST) systems or storage tank facilities.

DISCLAIMER: The policies and procedures outlined in this guidance are intended to supplement existing requirements. Nothing in the policies or procedures shall affect regulatory requirements.

The policies and procedures herein are not an adjudication or a regulation. DEP does not intend to give this guidance that weight or deference. This document establishes the framework, within which DEP will exercise its administrative discretion in the future. DEP reserves the discretion to deviate from this policy statement if circumstances warrant.

PAGE LENGTH: 10 pages

MODIFICATION AND MAINTENANCE ISSUES

DEFINITIONS: The following definitions are found in 25 Pa. Code § 245.1 and are provided here with added guidance for clarification where noted.

Ancillary Equipment – Electrical, vapor recovery, access, or other systems and devices, including, but not limited to, devices, piping, fittings, flanges, valves, and pumps used to distribute, meter, monitor, or control the flow of regulated substances to or from a storage tank system.

Containment Structure or Facility – Anything built, installed, or established and designed to contain regulated substances that are spilled, leaked, emitted, discharged, escaped, leached, or disposed from a storage tank or storage tank system, including a vault, a dike, a wall, a building, or a secondary containment.

Emergency Containment – A containment structure which serves to convey, capture, and contain the total volume of an anticipated release of regulated substance from an AST or UST system and which is expeditiously emptied.

Excavation Zone – The volume containing the tank system and backfill material bounded by the ground surface, walls, and floor of the pit and trenches into which the UST system is placed at the time of installation.

Maintenance – The normal operational upkeep to prevent a storage tank system or storage tank facility from releasing regulated substances if the activity involved is not a major modification or minor modification.

Major Modification –

- (i) An activity to upgrade, repair, refurbish, or restore all or any part of an existing storage tank system or storage tank facility which:
 - (A) Alters the design of that storage tank system or storage tank facility.
 - (B) May affect the integrity of that storage tank system or storage tank facility.
- (ii) The term includes an activity directly affecting the tank portion of the storage tank system or an activity directly affecting an underground component of the storage tank system.

Minor Modification –

- (i) An activity to upgrade, repair, refurbish, or restore all or part of an existing storage tank system or storage tank facility which does not alter the design of that storage tank system or storage tank facility, but which may affect the integrity of that storage tank system or storage tank facility.
- (ii) The term does not include an activity directly affecting the tank portion of the storage tank system or an activity directly affecting an underground component of the storage tank system.

Storage Tank Facility – One or more stationary tanks, including associated intrafacility pipelines, fixtures, monitoring devices, and other equipment. A facility may include ASTs, USTs, or a combination of both. For the purposes of the act and this part, the associated intrafacility pipelines,

fixtures, monitoring devices, and other equipment for an AST shall be that which lies within the emergency containment area. The term storage tank facility does not encompass portions of a facility that do not contain storage tank systems.

Storage Tank System – All or part of an UST or AST, associated underground or aboveground piping directly serving that storage tank, and one or more of the following which are directly associated with that storage tank:

- (i) Ancillary equipment.
- (ii) Foundation.
- (iii) Containment structure or facility.
- (iv) Corrosion protection system.
- (v) Release detection system.
- (vi) Spill and overflow protection system.

Tank Handling Activities – Activities to install, modify, perform change-in-service, or close all or part of a storage tank system or storage tank facility. The term does not include maintenance activities.

TECHNICAL GUIDANCE:

The terms “Major Modification,” “Minor Modification,” and “Maintenance” are defined in 25 Pa. Code, Chapter 245. Activities performed to upgrade, repair, refurbish, or restore an existing storage tank system or storage tank facility can be categorized under one or more of these definitions. Both major modification and minor modification activities fall within the definition of tank handling activities, while maintenance activities do not.

When performing a major modification, the underground component can only be accessed by breaking ground – which may include breaking and/or removing concrete or backfill material. However, this does not include the displacement or removal of backfill material by hand – within the extent of the tank and piping installation excavation. For minor modifications, the term may include an activity only affecting ancillary equipment, which is below grade (ground surface), but is readily accessible from aboveground through a manhole or containment sump opening. No excavation is involved in minor modifications except – the displacement or removal of backfill material by hand – when the activity does not involve the tank or alter the tank system design, as indicated in this guidance.

Tank handling activities must be performed by or under the direct, onsite supervision and control of a DEP certified installer – meaning the certified installer must be present throughout the duration of any tank handling activity – except the modification of an aboveground nonmetallic storage tank which may be performed by the tank manufacturer (see § 245.21(a)). Tank handling activities conducted on any field-constructed storage tank or on a large AST (tank having a capacity greater than 21,000 gallons) must also be inspected by a DEP certified inspector, except in the case of minor modification activities or tank removal activities (see § 245.21(b)). Modification inspections require the inspector to be involved prior to tank handling activity and to be present at critical times during the work. Facility owners, installers, and inspectors should discuss the scope of the tank handling activity prior to commencement to determine at what times the inspector should be present. For information on which certification categories are required for specific tank handling or related inspection activities, refer to Storage Tank Program Fact Sheet 2630-FS-DEP1647 “Understanding the Certification Categories” and see § 245.110 or § 245.112, respectively. Additionally, see § 245.106 for conflict of interest provisions that are applicable to certified inspectors for tank handling activities.

Figure 1 depicts a decision chart to assist with determining whether an activity is a major or minor modification or maintenance activity.

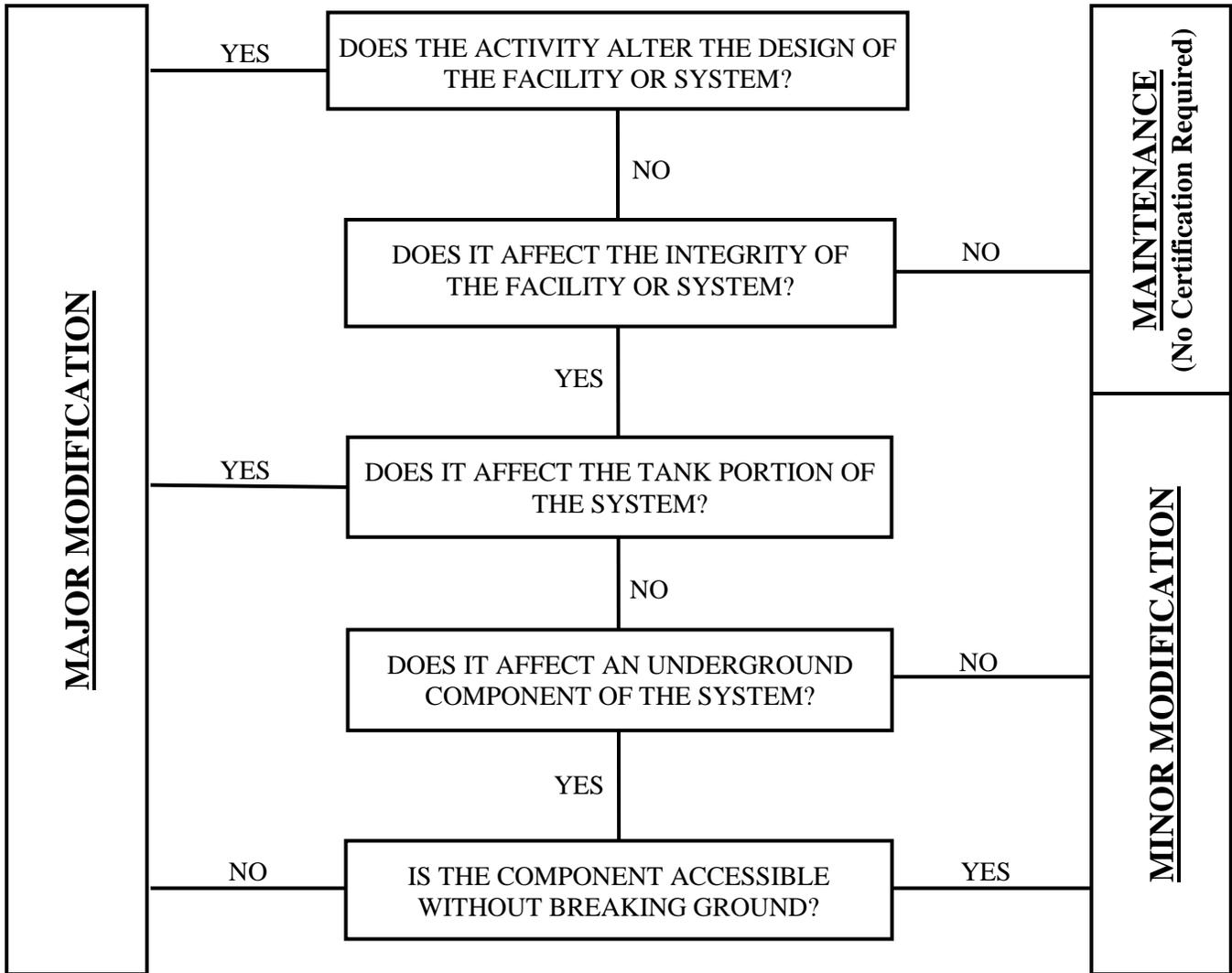


Figure 1 – Storage Tank System Modification/Maintenance Activity Decision Chart

An activity that directly affects the tank portion of an existing storage tank system is, generally, a major modification. Activities affecting the associated piping or other components of an existing storage tank system or storage tank facility may affect both the design and integrity of the storage tank system. Factors considered in classifying an activity as a modification or maintenance activity include: the position of the component on the storage tank system; the accessibility of the component; the function of the component relative to the storage tank system; and the nature of the activity and method(s) by which it is conducted.

For AST systems see the depictions in **Figure 2** (below), and **Figure 3** and **Figure 4** on page 5.

Major modifications to AST systems include:

- Replacement or repair of welded lines or fittings, manways, hot taps, welds on the tank, or tank shell penetrations, or other tank shell openings up to the first control valve. Typically, any hot work upstream of the first control valve is considered a major modification.
- Installation of new or additional piping runs within the emergency containment.

Minor modifications include:

- Initial installation of all piping, valves, pumps, gauges, and vents for which the tank was designed, and for which fittings exist on the tank.
- Replacement, repair, cutting, torching, or welding of piping or fittings, downstream from and including the first control valve, and within the emergency containment.

Maintenance activities include, when no cutting or welding is involved as part of the activity:

- Direct replacement (with like kind and function) or repair of threaded lines and fittings, flanged lines and fittings, pumps, valves, or other tank appurtenances downstream of the first tank control valve.
- Direct replacement of gauges and vents for which the tank was designed and for which fittings exist on the tank.

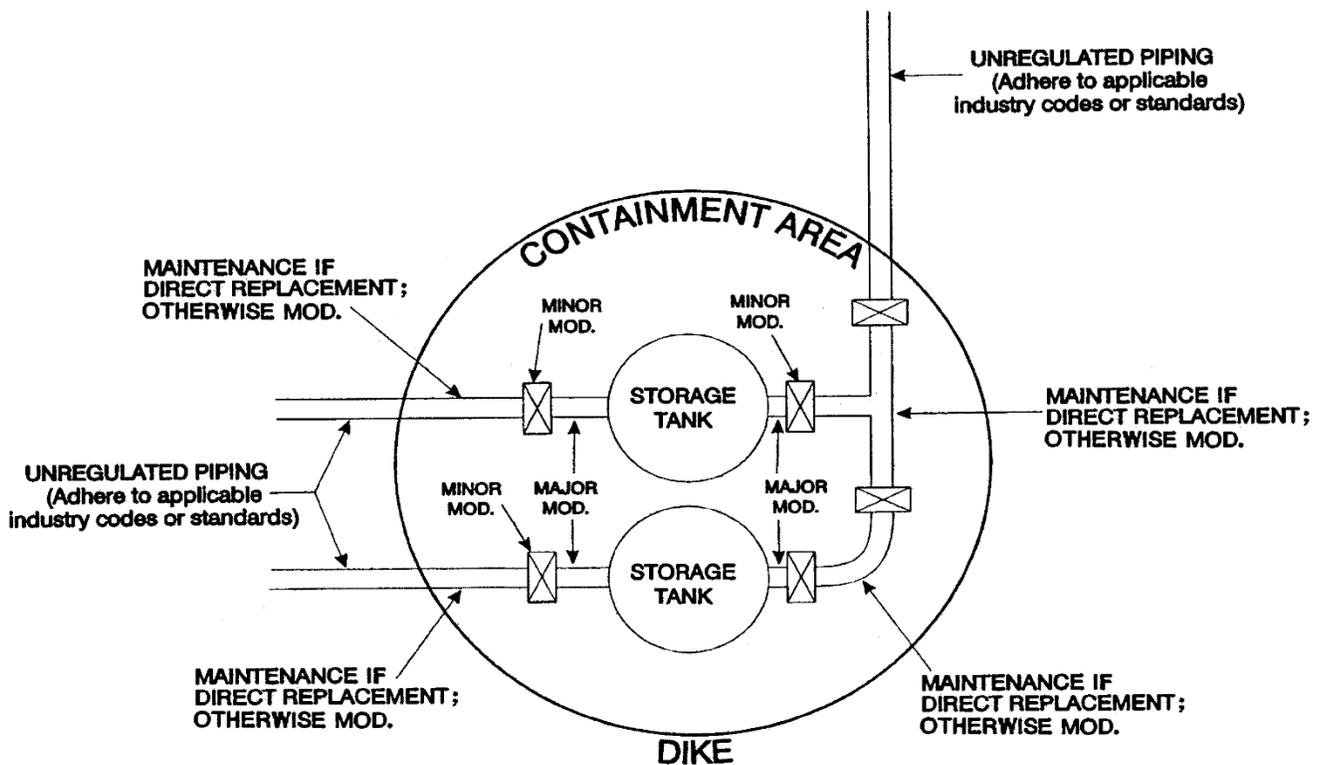


Figure 2 – Aerial view of example AST Systems within emergency containment.

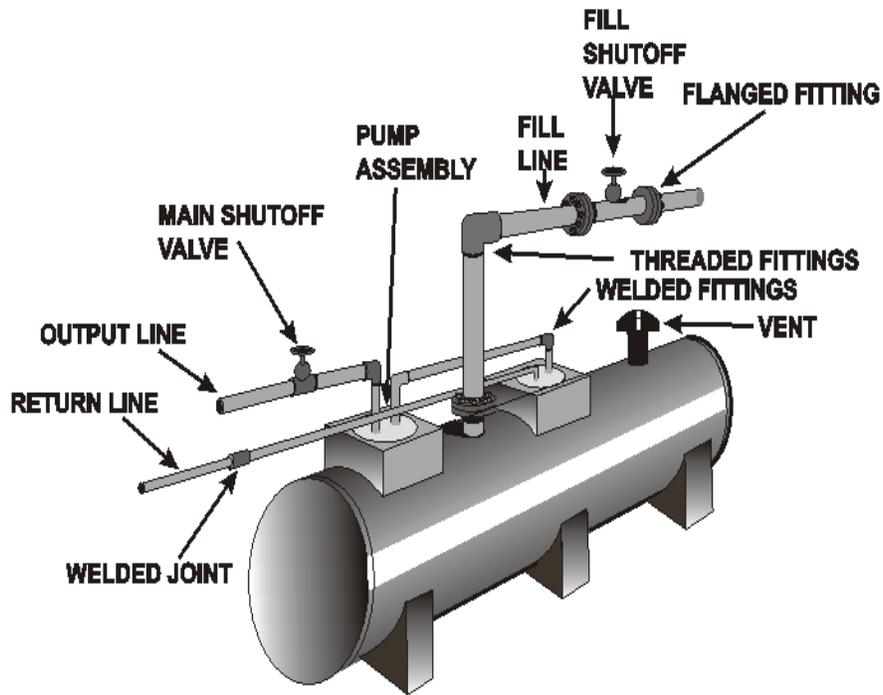


Figure 3 – Small Manufactured AST System (example area shown is within emergency containment)

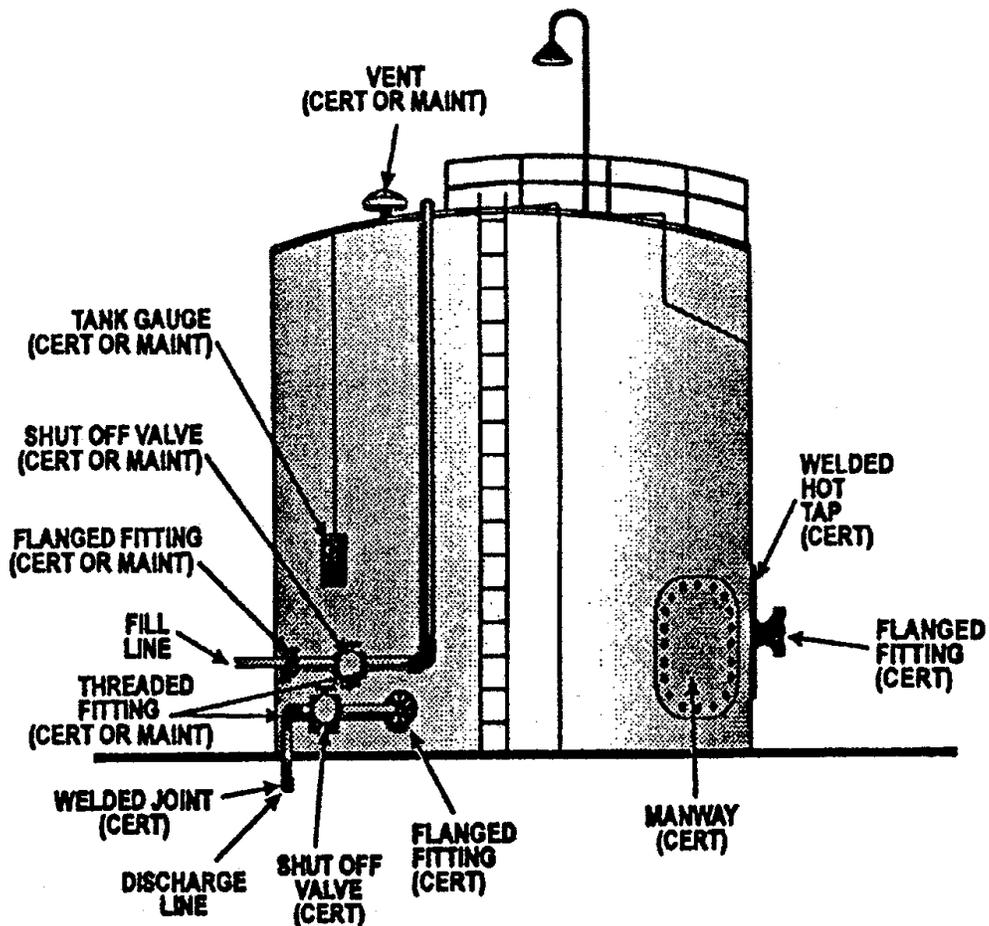


Figure 4 – Field-Constructed AST System (example area shown is within emergency containment)

For UST systems, modification activities involving the removal of an existing dispenser may require the installation of under-dispenser containment. Under-dispenser containment is required when a dispenser is replaced with another dispenser and all equipment at or below the shear valve needed to connect the dispenser to the UST system's main product piping is replaced. It is also required when a major modification is performed in the area of the dispenser involving excavation beneath the dispenser. For additional information, see § 245.422(e) and Storage Tank Program Fact Sheets 2630-FS-DEP4175 "Underground Storage Tank Dispenser Containment" and 2630-FS-DEP4176 "Containment Testing for Underground Storage Tanks."

Whether for AST or UST systems, modification activities and inspections must be properly documented on the appropriate form(s), which must be submitted to DEP. See the following Storage Tank Program forms and accompanying instructions for their completion and submittal requirements:

- 2630-FM-BECB0575 "Underground Storage Tank Modification Report"
- 2630-FM-BECB0151 "Aboveground Storage Tank Modification Report"
- 2630-FM-BECB0601 "Aboveground Storage Tank Modification Inspection Summary"

Modification activities may involve or be performed in conjunction with storage tank cleaning activities and/or a partial storage tank system closure. For storage tank cleaning activities, see Storage Tank Program guidance number 263-0900-012 "Storage Tank Cleaning Activities." For removal or partial closure of a storage tank system, see guidance number 263-4200-001 "Closure Requirements for Aboveground Storage Tank Systems" and guidance number 263-4500-601 "Closure Requirements for Underground Storage Tank Systems."

Equipment manufacturers may require trained or manufacturer-licensed technicians to perform certain types of testing, modification, or maintenance activities on specific equipment or system components. Always check the equipment manufacturer warranties and maintenance manuals or equipment performance publications to prevent voiding warranties or performing improper maintenance. All maintenance activities should be performed by someone with appropriate knowledge of the storage tank system and experience in performing required maintenance, and in adherence to occupational safety practices.

These definitions, technical guidance, figures, and examples are used to determine under which term an activity is classified. This will assist in determining when a certified installer is required to perform the activity and when a certified inspector is required for field-constructed tanks or large AST major modification activities. For additional information on UST maintenance and UST system depictions, see U.S. Environmental Protection Agency (EPA) publications 510-R-05-001 "UST Systems: Inspecting And Maintaining Sumps And Spill Buckets – Practical Help And Checklist" and 510-B-05-002 "Operating And Maintaining Underground Storage Tank Systems: Practical Help And Checklists" at EPA's website (www.epa.gov/ust/). See also the Petroleum Equipment Institute's (PEI) recommended practices (RP) PEI/RP900 "Recommended Practices for the Inspection and Maintenance of UST Systems" and PEI/RP1200 "Recommended Practices for the Testing and Verification of Spill, Overfill, Leak Detection and Secondary Containment Equipment at UST Facilities."

EXAMPLES: These examples of major modification, minor modification, and maintenance activities on AST and UST systems and storage tank facilities may not be all-inclusive, but rather reflect most frequently asked questions.

Major Modification Activities:

These activities alter the design of a storage tank system or storage tank facility and may affect the integrity of the storage tank system or storage tank facility. These activities may involve excavation during their performance.

AST Systems

The following activities performed on field-constructed or large AST systems require per 245.21(b) modification inspections by third-party inspectors appropriately certified by DEP.

- Replacement or addition of a tank shell plate or plates.
- Repair or replacement of the tank bottom or any partial repair or replacement of the tank bottom.
- Installation, repair, or replacement of interior (internal) tank lining or coating.
- Installation, replacement, or structural repair of the tank integral roof or of an internal floating roof.
- Installation, replacement, or repair of seals associated with a floating roof system.
- Initial penetrations of the tank shell, roof, or bottom.
- Addition, repair, or replacement of pipes directly between the tank shell, bottom, or roof, and the first control valve outside the tank.
- Repair or replacement of welds on the tank.
- Installation or addition of equipment or appurtenances such as spill or overfill protection, tank gauging, stairways, platforms, walkways, or other similar additions that may put additional loads or stress on the tank shell and were not part of the overall design considerations.
- Installation of new or additional piping runs within the emergency containment.
- Installation of corrosion protection systems or anodes on cathodic galvanic (sacrificial) and impressed current systems.
- Installation of new emergency or secondary containment structures, including changing the construction of an existing containment structure such as earthen to geotextile lined.

UST Systems

The following activities performed on field-constructed underground storage tanks require modification inspections by third-party inspectors appropriately certified by DEP.

- Repairing, removing, or replacing any part of the tank.
- Replacing or repairing tank system components (including ancillary equipment and primary or secondary containment structures) when excavation is required.
- Replacement of a complete dispensing unit when excavation is required (requires liquid tight under-dispenser containment and includes partial system closure activity that must be performed or overseen by a UMR).
- Adding ancillary equipment.
- Installation, repair, or replacement of internal tank lining or coating for product compatibility.
- Installation or replacement of corrosion protection systems – including the addition or replacement of anodes on cathodic galvanic (sacrificial) and impressed current systems – except when installing anode bags or spike anodes to only piping connectors, and excavation is only performed by hand (considered a minor modification).

Minor Modification Activities:

These activities *do not* alter the design of the storage tank system or storage tank facility but may affect the integrity of the storage tank system or storage tank facility. These activities generally may not (except as noted below) involve excavations during their performance.

AST Systems

- Excavations within the emergency containment, but not under the tank or piping supports.
- Modifying or repairing emergency or secondary containment structures.
- Installation of equipment or appurtenances such as spill containment, tank gauging, and vents for which the tank was designed when fittings exist on the tank shell or roof.
- Repairs involving cutting or welding on aboveground piping including the first control valve and aboveground piping downstream of the first control valve, and within the emergency containment.

UST Systems

- Staking and placing of concrete forms, and assurance of proper concrete or grade slab installation, over the tank field and piping runs.
- Replacement, repair, or removal of aboveground piping associated with the system (excluding dispenser components).
- Replacement of a complete dispensing unit, without excavation.
- Replacement, repair, or removal of the check valve in a suction system.
- Replacement or removal of submersible pump manifold assembly.
- Replacement, removal, or disconnection of any piping fitting or section of piping, such as a flexible connector, which interconnects regulated piping.
- Replacement, removal, or disconnection of emergency shutoff (impact) valves.
- Replacement or removal of primary piping through extraction from the secondary piping or double walled piping systems or double wall piping from a tertiary conduit when accessible from aboveground or through manholes (not involving an excavation).
- Repairs to cathodic protection systems that only involve replacement of a rectifier unit and/or the reconnecting of wires, so long as the only excavation involved is performed by hand.
- Installation or replacement of anode bags or spike anodes to piping connectors, so long as the only excavation involved is performed by hand.
- Installation or replacement of piping isolation boots, so long as the only excavation involved is performed by hand.
- Initial installation of a line leak detector.
- Changing the type of line leak detector, such as mechanical to electronic.
- Installation, repair, replacement, or removal of overfill prevention devices.
- Installation, repair, or replacement of spill containment devices, including the installation or replacement of drain valves or plugs – without excavation.
- Initial installation or complete replacement of an automatic tank gauging system, or the replacement of an automatic tank gauge console.
- Repairs to primary or secondary containment structures – including the installation or repair of containment sump entry fittings – without excavation.
- The decommissioning of a Stage II vapor-recovery system involving the replacement, removal, or disconnection of Stage II vapor-recovery piping – without excavation.

Maintenance Activities:

The normal operational upkeep to prevent a storage tank system or storage tank facility from releasing regulated substances if the activity involved is not a major or minor modification. These activities *may not* involve excavations during their performance.

AST and UST Systems

- Painting the tank system exterior (except where excavation is required).
- Painting, caulking, or minor surface repair to an emergency containment structure.
- AST cleaning not performed as part of a tank closure activity, and which does not involve the removal of any lining.
- Replacing the tank gauge on an AST when the gauge brackets already exist on the tank.
- Replacement of flame arrestors, pressure relief valves, or conservation vents on ASTs.
- Replacing product high-level sensors on an AST.
- Repair or direct replacement of threaded or flanged ancillary equipment located downstream of first control valve of an AST system.
- Repair or replacement of the tank pump or submersible turbine (with extractable column) if accessible through the manhole or tank riser sump (not involving removal or disconnect of manifold assembly or piping below the ground or grade surface).
- Repair or replacement (with like kind devices) of line leak detectors or other metering devices when accessible from aboveground or through manholes.
- Replacement of automatic tank gauge in-tank probes.
- Replacement of containment sump sensors.
- Replacement of tank interstitial sensors.
- Changing or replacing product dispenser components above the emergency shut off (impact) valve (not involving piping disconnect at or below the valve).
- Emptying spill containment buckets and sumps.
- Repairing or replacing small copper lines or tubing accessible from aboveground or a sump.
- Repair and recalibration of the metering controls or automated console.
- Testing of the cathodic protection system (requires a qualified cathodic protection tester).
- Adjustments to rectifier settings (requires evaluation and adjustment determination by a corrosion expert or corrosion engineer).
- Repairing electrical connections.
- Changing electronic circuit boards.
- Changing filters.
- Gauging tanks.
- Checking the monitoring or observation wells.