DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

DIVISION OF AIR AND WASTE MANAGEMENT

TANK MANAGEMENT BRANCH

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PROPOSED

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1351 Regulations Governing Underground Storage Tank Systems

PART B: Requirements For Installation, Operation And Maintenance Of Underground Storage Tank Systems Storing Regulated Substance Excluding Consumptive Use Heating Fuel UST Systems or Hazardous Substance UST Systems

1.0. Installation, Operation and Maintenance Requirements For UST Systems Storing Regulated Substance Excluding Consumptive Use Heating Fuel or Hazardous Substance Installed After ~~The Effective Date Of These Regulations~~ January 11, 2008

1.1 General Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.1.1 Owners and Operators shall ensure that all UST Systems storing Regulated Substances shall be designed, constructed, installed and operated in accordance with manufacturer's specifications, and accepted engineering practices and procedures; and in a manner which will prevent Releases of Regulated Substances to the ground waters, surface waters or soils of the State due to corrosion, structural failure, manufacturing defects, and spills and overfills for the Operational Life of the Underground Storage Tank System.

1.1.2 The material used in the construction and lining of the UST System shall be Compatible with the substances to be stored in the UST System.

1.1.3 Components of the UST System shall be approved by Underwriters Laboratories or equivalent third party certified.

1.1.4 All UST Systems installed after ~~the Effective Date of these Regulations~~ January 11, 2008 shall be designed and installed in accordance with the secondary containment requirements in accordance with §1.4 of this Part, except where specifically exempted.

1.1.5 Bare steel UST Systems or steel UST Systems coated with asphalt are prohibited.

1.1.6 Owners and Operators shall install, operate and maintain all equipment such that manufacturer's warranties are not voided.

1.1.7 Regulated Substance shall not be deposited into an UST System that is not in compliance with the Financial Responsibility requirements of Part F of these Regulations.

1.1.8 Dispenser hoses shall be a maximum of eighteen (18) feet in length unless otherwise approved by the Department. When not in use, hoses shall be reeled, racked or otherwise protected from damage.

1.2 General Installation Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.2.1 Prior to the installation of any UST System a site survey shall be initiated by the Facility Owner and Operator. The pre installation site survey shall be conducted to determine the locations of nearby buildings, underground utilities and sewer lines.

1.2.2 Private~~/~~ and public drinking water wells, rivers, streams, lakes, canals, and other environmentally sensitive locations shall be recorded and incorporated into the design of the UST System Facility.

1.2.3 UST System Owners and Operators shall notify the Department at least thirty (30) days prior to installation of all UST Systems. Notice shall include a site plan, the scale of which shall be one inch to ten feet or less (1 inch 10ft.), and which shall at a minimum include the following:

1.2.3.1 The information determined from the pre-installation site survey in §1.2.1 of this Part; and

1.2.3.2 Size and location of Tanks including Tank dimensions, depth of cover, empty Tank weight, Tank manufacturer and Tank type; and

1.2.3.3 The ~~Tank~~ UST System installation location, streets, roads, other properties bordering the construction site; and

1.2.3.4 Piping dimensions and layout; and

1.2.3.5 Dimensions and locations of vents; and

1.2.3.6 Type of Regulated Substance to be stored; and

1.2.3.7 Location of dispensers; and

1.2.3.8 Location of overfill device, spill prevention system and monitoring devices including dimensions of spill containment devices and sumps when applicable; and

1.2.3.9 Materials of construction for Tank(s), ~~lines~~ Pipings and associated appurtenances, including manufacturer name, model numbers and any manufacturers catalog information requested by the Department; and

1.2.3.10 Location of and access to check valves, antisiphon valves, automatic ~~l~~Line leak detectors, and flexible connectors; and

1.2.3.11 Location of Cathodic Protection components and test stations; and

1.2.3.12 Location of utilities (both above and underground); and

1.2.3.13 Location of electrical service components; and

1.2.3.14 Details and dimensions of anchoring method including hold down pads, cover pads or deadmen and electrical isolation methods associated with the anchoring system if applicable. Indicate on plan if area is subject to vehicle traffic; and

1.2.3.15 ~~Location of nearby private/public drinking water wells and surface water bodies.~~ Map with the distance clearly labeled in feet from the UST System to all Domestic and Industrial wells and surface water bodies within a one hundred and fifty feet (150) radius of the UST System.

1.2.4 After the Effective Date of these Regulations new UST Systems shall not be installed within a minimum distance of a one hundred and fifty (150) foot radius from a Public or Industrial well, unless otherwise approved by the Department. A Replacement, Retrofit or Upgrade of an UST System shall not be considered a new installation for the purposes of this section.

1.2.5 After the Effective Date of these Regulations new UST Systems shall not be installed within a minimum distance of a one hundred (100) foot radius from a Domestic well, unless otherwise approved by the Department. A Replacement, Retrofit or Upgrade of an UST System shall not be considered a new installation for the purposes of this section.

1.3 UST System Design Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.3.1 Acceptable designs for UST System construction include:

1.3.1.1 Secondarily contained Cathodically Protected Steel; or

1.3.1.2 Secondarily contained Fiberglass Reinforced Plastic; or

1.3.1.3 Secondarily contained Steel with Non-Metallic or Coated Outer Shell; or

1.3.1.4 Other equivalent design approved by the Department.

1.3.2 UST Systems shall be installed in accordance with these Regulations, the manufacturer's specifications, accepted engineering practices and the following industry standards:

1.3.2.1 PEI RP100, *Recommended Practices For Installation Of Liquid Storage Systems*.

1.3.2.2 NFPA 30, *Flammable and Combustible Liquids Code*.

1.3.2.3 NFPA 30A, *Motor Fuel Dispensing Facilities and Repair Garages*.

1.3.2.4 OSHA, 29 CFR, 1926 Subpart P, *Excavations*.

1.3.3 All Tanks shall be equipped with a strike plate located beneath all Tank openings.

1.4 Secondary Containment Design Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.4.1 The Department reserves the right to require Secondary containment or equivalent protection on any portion of the UST System where aquifers underlying the UST Facility are determined to need such protection, or where groundwater below the UST Facility is within a well head protection area, or where groundwater is susceptible to contamination in order to protect the safety, health, welfare, ~~and/~~or environment of the State.

1.4.2 Secondary containment systems shall be designed, constructed and installed to:

1.4.2.1 Contain the Regulated Substances released from the UST System until they are detected and removed; and

1.4.2.2 Prevent the Release of Regulated Substance to the environment at any time during the Operational Life of the UST System; and

1.4.2.3 Be checked for evidence of a Release at least once every thirty (30) calendar days.

1.4.3 Secondary containment systems shall include the following:

1.4.3.1 Double-walled Tank; and

1.4.3.2 Double-walled Regulated Substance and vapor return Piping and, where required, vent Piping; and

1.4.3.3 Containment Sumps at the Tank top and under each dispenser that meet the requirements of §1.25 of this Part; and

1.4.3.4 Tanks and Piping shall have interstitial monitoring that shall be checked for evidence of a Release at a minimum of once every (30) thirty calendar days and shall comply with the preventative maintenance program requirements of §1.9.4.5 of this Part; or

1.4.3.5 Other equivalent technology approved by the Department.

1.4.4 All Secondary containment systems shall be constructed in accordance with acceptable engineering practice and industry standards and shall have Release Detection in accordance with §1.9 of this Part.

1.5 Double Walled UST Design Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.5.1 Acceptable UST System designs in §1.3 of this Part shall be fabricated in double walled construction for Tanks and Piping in accordance with accepted engineering practice and industry standards.

1.5.2 A double walled Tank which is designed and manufactured in accordance with the following requirements satisfies the requirements for Secondary containment in §1.4 of this Part:

1.5.2.1 The interstitial space of the double walled Tank can be monitored for Releases; and

1.5.2.2 Outer jackets made of steel shall be coated as prescribed in §1.6.2 of this Part; and

1.5.2.3 There are no penetrations of any kind through the jacket to the Tank except top entry manholes and fittings; and

1.5.2.4 The outer jacket shall cover the entire circumference of the Tank; and

1.5.2.5 The jacket shall be able to contain a liquid or be able to contain a vacuum from the time of manufacture completion until the time of installation.

1.6 Cathodically Protected Steel UST Design Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.6.1 Cathodically Protected steel UST Systems shall be designed, constructed, installed and tested in accordance with NACE RP 0285, *Corrosion Control of Underground Storage Tank Systems by Cathodic Protection* and the applicable industry standards, including but not limited to the following:

1.6.1.1 UL 58, *Standard for Steel Underground Tanks for Flammable and Combustible Liquids.*

1.6.1.2 UL 1746, *Standard for Safety: External Corrosion Protection Systems for Steel Underground Storage Tanks.*

1.6.1.3 STI-P3, *Specification for sti-P3® System for External Corrosion Protection of Underground Steel Storage Tanks.*

1.6.1.4 STI F-841, *Standard for Dual Wall Underground Steel Storage Tanks*.

1.6.1.5 STI R-972, *Recommended Practice for the Addition of Supplemental Anodes to sti-P3® USTs.*

1.6.2 The Tank shall be coated with a suitable Dielectric Material in accordance with NACE RP 0285, *Corrosion Control of Underground Storage Tank Systems by Cathodic Protection*.

1.6.3 Field-installed Cathodic Protection systems shall be designed, constructed, installed and tested in accordance with manufacturer's specifications, accepted engineering practice and the requirements listed in this Section.

1.6.4 Each Cathodic Protection system shall include sufficient monitoring stations to enable Owners and Operators to check on the adequacy of the Cathodic Protection system.

1.6.5 UST Systems that are protected by Sacrificial Anodes shall be electrically insulated from the Piping system with dielectric fittings, bushings, washers, sleeves or gaskets which are chemically stable when exposed to Regulated Substances, additives, corrosive soils or groundwater.

1.7 Fiberglass Reinforced Plastic UST Design Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.7.1 Fiberglass reinforced plastic UST Systems shall be designed, constructed, installed and tested in accordance with the following industry standard:

1.7.1.1 UL 1316, *Standard for Glass-Fiber-Reinforced Plastic Underground Storage Tanks for Petroleum Products, Alcohols and Alcohol-Gasoline Mixtures.*

1.7.2 Fiberglass reinforced plastic UST Systems shall be of sufficient structural strength to withstand normal handling and underground use and shall be Compatible with the Regulated Substance and additives stored, corrosive soils and groundwater. UST System construction materials shall be of sufficient density and strength to form a hard impermeable shell which will not crack, wick, wear, soften or separate under normal service conditions.

1.7.3 Fiberglass reinforced plastic Tanks shall be tested for deflection in accordance with the manufacturer's requirements at the time of installation.

1.8 Steel with Non-Metallic or Coated Outer Shell UST Design Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.8.1 Steel with Non-Metallic or Coated Outer Shell UST Systems shall be designed, constructed, installed and tested in accordance with the following industry standards, as applicable:

1.8.1.1 UL 1746, *Standard for Safety: External Corrosion Protection Systems for Steel Underground Storage Tanks.*

1.8.1.2 UL 58; *Standard for Steel Underground Tanks for Flammable and Combustible Liquids.*

1.8.1.3 STI F-922, *Specification for Permatank®.*

1.8.1.4 STI F-894, ACT-100® *Specification for External Corrosion Protection of FRP Composite Steel Underground Storage Tanks.*

1.8.1.5 STI F-961, ACT-100U® *Specification for External Corrosion Protection of Composite Steel Underground Storage Tanks.*

1.8.1.6 STI F-841, *Standard for Dual Wall Underground Steel Storage Tanks.*

1.8.2 The coating shall not corrode under adverse underground electrolytic conditions and shall be Compatible with the Regulated Substances and additives stored.

1.8.3 The coating shall be factory inspected for air pockets, cracks, blisters, pinholes and electrically tested by a ten thousand (10,000) volts holiday test performed over 100 percent of the surface for coating short circuits or coating faults or in accordance with the manufacturer's specifications.

1.8.4 Any defects shall be Repaired in accordance with standard engineering practice and the manufacturer's requirements.

1.9 Release Detection Requirements for Underground Storage Tanks Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.9.1 General Requirements

1.9.1.1 Owners and Operators of UST Systems shall provide a method, or combination of methods of Release Detection on all UST Systems that meets the following requirements:

1.9.1.1.1 Can detect a Release from any portion of the Tank and the connected underground Piping that routinely contain Regulated Substance; and

1.9.1.1.2 Is installed, calibrated, operated, and maintained in accordance with the manufacturer's specifications, including routine Maintenance and service checks for operability or running condition; and

1.9.1.1.3 Meets the performance standards for Release Detection in this Section, with any performance claims and their manner of determination described in writing by the equipment manufacturer or installer. The method shall be capable of detecting the leak rate or quantity specified for ~~p~~Precision ~~tank~~ ~~t~~Testing, automatic tank gauging, ~~l~~Line leak detectors, and ~~l~~Line tightness testing methods specified in these Regulations with a probability of detection of at least 0.95 and a probability of false alarm no greater than 0.05; and

1.9.1.1.4 Is operational prior to Regulated Substance being placed in the UST System.

1.9.1.2 Owners and Operators shall implement the indicated Release investigation procedures in Part E of these Regulations if the Release Detection equipment or method shows indication of a Release.

1.9.1.3 Failure by Owners and Operators to maintain records of required Release Detection monitoring and inspection may be cause for the Department to require ~~Tank~~ UST System

tightness test(s) and inspection(s) of the UST Facility and a Release investigation in accordance with Part E of these Regulations at the expense of Owners and Operators.

1.9.2 Methods of Release Detection for Underground Storage Tanks

1.9.2.1 Owners and Operators shall monitor UST Systems for Releases through the use of inventory control procedures and at least one of the following Release Detection methods:

1.9.2.1.1 Continuous ~~I~~interstitial ~~M~~monitoring; or

1.9.2.1.2 Automatic ~~T~~ttank ~~G~~ggauge performing ~~monthly~~ Tank tightness testing at a minimum of once every thirty (30) calendar days; or

1.9.2.1.3 Department ~~A~~approved ~~A~~alternative ~~M~~method.

1.9.3 Inventory Control Require ments

1.9.3.1 Inventory control procedures shall meet the following requirements:

1.9.3.1.1 Every Owner and Operator shall perform inventory control procedures and shall maintain inventory control records for each Tank containing a Regulated Substance. Records shall be kept for each Tank, or cluster of Tanks if they are interconnected, and shall include measurements of bottom water levels, sales, use, deliveries, inventory on hand and losses or gains. Reconciliation of records shall be kept current, shall account for all variables which could affect an apparent loss or gain and shall be in accordance with generally accepted practices. The data shall be accumulated for each day a Tank has Regulated Substance added or withdrawn but not less frequently than once ~~a week~~ every seven (7) calendar days, and shall include as a minimum:

1.9.3.1.1.1 Description and amount of Regulated Substance in the Tank measured in ~~gallons~~ inches to the nearest one-eighth (1/8") of an inch. The equipment used shall be capable of measuring the level of Regulated Substance over the full range of the Tank's height to the nearest one eighth (1/8") of an inch. These measurements shall be converted from inches to gallons and these measurements and conversions shall be performed daily; and

1.9.3.1.1.2 Inputs and outputs of Regulated Substance in gallons recorded daily; and

1.9.3.1.1.3 All deliveries and measurements shall be made through a drop tube that extends to within 5.9 inches of the Tank bottom; and

1.9.3.1.1.4 Regulated Substance dispensing equipment is metered and recorded within the local standards for meter calibration or an accuracy of six (6) cubic inches for every five (5) gallons of Regulated Substance withdrawn; and

1.9.3.1.1.5 Weekly assessment of the amount of water in UST Systems storing non-ethanol Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance or other UST Systems with prior Department approval. The measurement of water level in the bottom of the Tank shall be made to the nearest one eighth (1/8") of an inch. If the measurement is two (2) inches or more of water, the water shall be removed from the Tank within seven (7) days. Water shall be properly disposed in accordance with all local, state and federal requirements; and

1.9.3.1.1.6 Daily assessment of the amount of water in UST Systems storing ethanol blended Regulated Substance. The measurement of water level in the bottom of the Tank shall be made to the nearest one eighth (1/8") of an inch; and

1.9.3.1.1.7 For UST Systems storing ethanol blended Regulated Substance with a storage capacity of eight thousand (8000) gallons or less, if the measurement is one (1) inch or more of water, the water shall be removed from the Tank within seven (7) days. Water shall be properly disposed in accordance with all local, state and federal requirements; and

1.9.3.1.1.8 For UST Systems storing ethanol blended Regulated Substance with a storage capacity greater than eight thousand (8000) gallons, if the measurement is two (2) inches or more of water, the water shall be removed from the Tank within seven (7) days. Water shall be properly disposed in accordance with all local, state and federal requirements; and

1.9.3.1.1.9 Daily reconciliation of the amount of Regulated Substance added to and removed from the Tank. Recommended procedures for Tank inventory and reconciliation procedures are detailed in API RP 1621, *Bulk Liquid Stock Control at Retail Outlets*, and shall include at a minimum:

1.9.3.1.1.9.1 Losses or gains from each day's inventory shall be reconciled ~~once during~~ at the end of each calendar month; and

1.9.3.1.1.9.2 For any day in which there is a loss of five percent (5%) or more of the ~~Regulated Substance~~ calculated daily inventory in gallons, or for any month in which there is a significant loss or gain of Regulated Substance that meets or exceeds one percent (1%) of the total monthly throughput plus one hundred thirty (130) gallons, or any month in which there is an unexplainable consistent negative trend, the Release investigation procedure in Part E of these Regulations shall be followed; and

~~1.9.3.1.1.9.3~~ 1.9.3.2 Tanks equipped with automatic inventory control systems or continuously operating automatic in tank gauging systems may use these devices to perform inventory reconciliation procedures.

1.9.3.3 All automatic systems utilized for performing inventory procedures shall comply with the preventative maintenance program requirements of §1.9.5.3 of this Part.

1.9.3.2~~4~~4 The Department may, at its discretion, approve other types of inventory control methods or a combination of methods or devices not specified in this section upon a determination that the proposed method or combination of methods is no less protective of human health, safety or the environment than the above requirements.

1.9.3.3~~5~~5 Failure to maintain and reconcile inventory control records may be cause for the Department to require ~~Tank~~ UST System tightness test(s) and inspection(s) of the UST Facility at the expense of Owners and Operators.

1.9.4 Interstitial Monitoring Release Detection Requirements for Tanks

1.9.4.1 All interstitial monitoring devices shall be designed, constructed, installed and maintained to continuously detect a leak from any portion of the Tank that routinely contains Regulated Substance.

1.9.4.2 At a minimum of once ~~during each calendar month~~ every thirty (30) calendar days, Owners and Operators shall inspect all interstitial monitoring devices utilized for Release Detection for evidence of a Release from the UST System and shall record the results.

1.9.4.3 The interstitial monitoring equipment shall be capable of producing a record of Release Detection monitoring results.

1.9.4.~~3~~4 Owners and Operators shall maintain records of the ~~monthly~~ interstitial Release monitoring inspections for the life of the UST System.

1.9.4.~~4~~5 Owners and Operators shall have all interstitial monitoring equipment inspected by a certified technician once every twelve (12) months as part of a preventive Maintenance program to minimize in-service failures. Any equipment malfunctions identified as a result of the inspection shall be rectified immediately. The inspection shall at a minimum include:

1.9.4.~~4~~5.1 Inspection of the console for printer operation if so equipped; and

1.9.4.~~4~~5.2 Verification of the system setup values and battery backup; and

1.9.4.~~4~~5.3 Verification of the test programming; and

1.9.4.~~4~~5.4 Verification of the operability of all warning and alarm indicator lights and audible alarms; and

1.9.4.~~4~~5.5 Inspection and testing of all probes and interstitial sensors in accordance with the manufacturer's specifications or as directed by the Department to verify proper probe and sensor operation; and

1.9.4.~~4~~5.6 Inspection of all cables that are visible during normal operating conditions for any cracking or swelling; and

1.9.4.~~4~~5.7 Correction of any problems found as a result of the required inspection.

1.9.4.~~5~~6 Owners and Operators shall maintain records of the annual inspections of the interstitial monitoring equipment and any Repairs performed as a result of the inspection for the life of the UST System.

1.9.5 Automatic Tank Gauge Release Detection Requirements for Tanks

1.9.5.1 ~~Monthly~~ Tank tightness testing using Automatic tank gauging (ATG) equipment shall meet the following requirements:

1.9.5.1.1 The ATG equipment can detect a 0.1 gallons per hour leak rate from any portion of the Tank that routinely contains Regulated Substance; and

1.9.5.1.2 The ATG equipment shall be capable of producing a record of Release Detection test results; and

1.9.5.1.3 At a minimum of once ~~during each calendar month~~ every thirty (30) calendar days the ATG equipment shall perform a Release Detection test for each Tank and shall produce a record of such test; and

1.9.5.1.4 Owners and Operators shall maintain records of the ATG Release Detection tests for the life of the UST System; and

1.9.5.1.~~4~~5 If used for inventory control, the ATG equipment shall be capable of conducting inventory control in accordance with §1.9.3 of this Part.

1.9.5.2 Owners and Operators shall maintain a record of all Release Detection tests performed by the ATG equipment for the life of the UST System.

1.9.5.3 Owners and Operators shall have all ATGs inspected by a certified technician once every twelve (12) months as part of a preventive Maintenance program to minimize in-service failures. Any equipment malfunctions identified as a result of the inspection shall be rectified immediately. The inspection shall at a minimum include:

1.9.5.3.1 Inspection of the ATG console for proper printer operation ~~if so equipped~~; and

1.9.5.3.2 Verification of the system setup values and battery backup; and

1.9.5.3.3 Verification of the test programming; and

1.9.5.3.4 Verification of the operability of all warning and alarm indicator lights and audible alarms; and

1.9.5.3.5 Inspection and testing of the probes and sensors in accordance with the manufacturer's specifications or as directed by the Department to verify proper probe and sensor operation; and

1.9.5.3.6 Inspection of all cables that are visible during normal operating conditions for any cracking or swelling; and

1.9.5.3.7 Correction of any problem noted as a result of the required inspection.

1.9.5.4 Owners and Operators shall maintain records of the annual inspections of the ATG and any Repairs performed as a result of the inspection for the life of the UST System.

1.9.6 Alternative Release Detection Methods for Tanks

1.9.6.1 Release Detection methods not specified in this Section will be considered an alternative by the Department. A written request detailing the method or combination of methods proposed shall be submitted to the Department prior to installation for approval. Alternative methods shall meet the following requirements:

1.9.6.1.1 The method can detect a 0.1 gallon per hour leak rate or a Release of seventy-five (75) gallons within a month with a probability of detection of 0.95 or greater and a probability of false alarm of 0.05 or less; or

1.9.6.1.2 The method or a combination of methods or devices can detect a Release as effectively as any of the Release Detection methods allowed in §1.9.2 of this Part. If the method or a combination of methods or devices is approved, Owners and Operators shall comply with any conditions imposed by the Department on its use to ensure the protection of human health, safety or the environment.

1.10 Anchoring Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.10.1 Support and anchorage shall be provided for all new installations to avoid Tank flotation and shall be installed in accordance with the PEI RP 100, *Recommended Practices for Installation of Underground Liquid Storage Systems.*

1.10.2 One or more of the following methods of anchorage shall be utilized:

1.10.2.1 Reinforced concrete deadmen anchors; or

1.10.2.2 Bottom hold-down pad which consists of eight inches of reinforced concrete that extends eighteen (18) inches beyond the Tank sides and twelve (12) inches beyond each end; or

1.10.2.3 Reinforced concrete slab over the Tank.

1.10.3 All exposed metallic components of hold down systems shall be Electrically Isolated and Cathodically Protected when the hold down system is required by the Department.

1.10.4 The backfill depth shall be consistent with the requirements in PEI RP100, *Recommended Practices for Installation of Underground Liquid Storage Systems.*

1.11 Backfill Material Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.11.1 Backfill material shall consist of sand, crushed rock or pea gravel. The material shall be clean, washed, inert, free flowing, homogeneous, well granulated, non corrosive, and free of debris, rock, ice, snow or organic material. Particle length of crushed rock or pea gravel shall be no less than 1/8 inch and no more than 3/4inch in size. Backfill material shall comply with the Tank manufacturer's specifications. Mixing of backfill with native soil ~~and/~~or foreign objects is prohibited.

1.11.2 The backfill depth shall be consistent with the requirements in PEI RP100, *Recommended Practices for Installation of Underground Liquid Storage Systems.*

1.12 Installation of an UST System Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance In An Existing UST Field Requirements

1.12.1 If an UST System shall be installed in or near a previous UST System Facility, Owners and Operators shall provide a means of Release Detection that will, at a minimum, detect any future Release from any portion of the UST System.

1.13 Tank and Piping Installation, Inspection and Testing Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.13.1 Prior to installation Tank system materials and equipment shall be inspected for flaws, surface cracks, holes, large scrapes, blisters, indentations and other indications of damage. All defects and repairs to the UST System shall be recorded and the record submitted with a site completion report to the Department.

1.13.2 UST(s) shall be pressure tested according to the manufacturer's specifications prior to installation of the UST(s) into the excavation. The installer shall soap the exterior, particularly its seams and fittings, and pressure test the UST(s) using the manufacturer's specifications to locate and correct defects. Tank and interstitial space testing shall be conducted according to the manufacturer's recommendations and accepted engineering practices.

1.13.3 After installation all Piping, including all interstitial spaces, shall be pressure tested according to the manufacturer's specifications prior to backfilling the excavation.

1.13.4 After installation of the Tank and integral Piping is complete and prior to the initial use of the UST System, the entire system shall be tested in accordance with current industry standards and practices and in the following manner to ensure the system is tight:

1.13.4.1 All testing of UST Systems shall be accomplished by the Precision Test method described in NFPA 329, *Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases*, or other test approved by the Department which is of equivalent or superior accuracy; and

1.13.4.2 All testing of UST Systems shall be able to account for the effects of thermal expansion or contraction of the Regulated Substances, vapor pockets, Tank deformation, evaporation or condensation, temperature stratification in the UST and the location of the water table; and

1.13.4.3 The required Precision Tests shall be conducted by a person trained and certified in the correct use of the necessary equipment, and shall be performed in accordance with the testing procedures and requirements established by the test system manufacturer and current industry standards and practices.

1.13.5 The Department reserves the right to request confirmatory system tightness tests to verify any test results submitted by an Owner, Operator, or contractor.

1.13.6 Owners and Operators shall permit periodic inspection of the UST System installation by the Department.

1.13.7 During the installation of all new Underground Storage Tank Systems, every stage of the construction shall be documented with photographs to demonstrate that the UST System was installed in compliance with the requirements for new UST Systems. Upon completion of the installation, copies of the photographs, as built plan, and required certification(s) as required in Part A §§4.6.11. and 4.6.12. of these Regulations shall be submitted to the Department within thirty (30) days of the completion of the installation. The Facility Owner and Operator shall keep copies of all documents and photographs on file for the life of the UST Facility.

1.14 General Piping Installation Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.14.1 Piping shall be installed in accordance with the manufacturer's specifications.

1.14.2 The Piping layout shall be designed to minimize crossed lines and interference with conduit and other UST System components. If crossing of lines is unavoidable, clearance shall be provided to prevent contact of the pipes.

1.14.3 All Regulated Substance, vent and vapor return Piping shall slope back to the Tank with a minimum slope of one-eighth (1/8") inch per foot.

1.14.4 The pipe joints shall be cut and deburred according to manufacturer's specifications to provide liquid tight seals.

1.14.5 When rigid Piping is used, flexible connector(s) shall be installed at the Tank end of each Regulated Substance ~~line~~ Piping, vent ~~line~~ Pipe and vapor recovery ~~line~~ Pipe as well as at the base of each dispenser and vent riser on all new installations. Double elbow swing joints are prohibited.

1.14.6 All underground metal fittings, flexible connectors, joints, and pipes shall be isolated from contact with the soil.

1.15 UST Piping Design Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.15.1 Underground Piping shall be protected from corrosion in accordance with accepted corrosion engineering practices and shall be designed, constructed, installed and tested in accordance with the following industry standards, as applicable:

1.15.1.1 NFPA 30, *Flammable and Combustible Liquids Code.*

1.15.1.2 NFPA 30A, *Motor Fuel Dispensing Facilities and Repair Garages.*

1.15.1.3 NFPA 329, *Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases.*

1.15.1.4 UL Standard 971, *Standard for Nonmetallic Underground Piping for Flammable Liquids.*

1.15.1.5 UL Standard 567, *Standard for Emergency Breakaway Fittings, Swivel Connectors and Pipe-connection Fittings for Petroleum Products and LP-Gas.*

1.15.1.6 PEI RP 100, *Recommended Practices for Installation of Underground Liquid Storage Systems.*

1.15.2 All integral Piping systems shall be designed, constructed, and installed in a manner which will permit periodic tightness testing of the entire Piping system without the need for excavation.

1.15.3 Acceptable designs for Underground Piping construction include fiberglass reinforced plastic and flexible plastic Piping.

1.16 Fiberglass Reinforced Plastic and Flexible Plastic Piping Design Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.16.1 Fiberglass reinforced plastic and flexible plastic Piping shall be designed, constructed, installed and tested in accordance with the manufacturer's specifications.

1.16.2 Fiberglass reinforced plastic and flexible plastic Piping shall be designed, constructed, installed and tested in accordance with the following industry codes, as applicable:

1.16.2.1 UL 971, *Standard for Nonmetallic Underground Piping for Flammable Liquids.*

1.16.2.2 UL 567, *Standard for Emergency Breakaway Fittings, Swivel Connectors and Pipe-connection Fittings for Petroleum Products and LP-Gas.*

1.16.2.3 NFPA 329, *Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases.*

1.16.2.4 NFPA 30, *Flammable and Combustible Liquids Code.*

1.16.2.5 NFPA 30A, *Motor Fuel Dispensing Facilities and Repair Garages.*

1.16.2.6 PEI RP 100, *Recommended Practices for Installation of Underground Liquid Storage Systems.*

1.16.3 The construction materials, joints and joint adhesives of all Fiberglass reinforced plastic and flexible plastic Pipes shall be Compatible with the Regulated Substance and additives stored, soil and groundwater.

1.16.4 Pipes, fittings and adhesives shall be designed, fabricated, and factory tested in accordance with generally accepted structural, material and performance standards for underground Piping systems.

1.16.5 All underground Piping systems shall be designed, constructed and installed with access ports to permit ~~l~~Line tightness testing without the need for extensive excavation.

1.17 Suction Piping Design Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.17.1 Suction Piping shall operate at less than atmospheric pressure and shall be designed, constructed, and installed to meet the requirements of §1.17.1.1 or §1.17.1.2 of this Part:

1.17.1.1 Safe suction Piping systems shall be designed and constructed in accordance with the following requirements:

1.17.1.1.1 The below grade Piping shall be constructed so that if suction is released the contents of the pipe will drain back into the Tank; and

1.17.1.1.2 Only one (1) check valve shall be included in each suction ~~line~~ Pipe; and

1.17.1.1.3 The check valve shall be located directly below and as close as practical to the suction pump.

1.17.1.2 Suction Piping systems with a foot valve (U.S. Suction) shall be designed and constructed in accordance with the following requirements:

1.17.1.2.1 The below grade Piping shall be constructed so that the Piping slopes back to the Tank; and

1.17.1.2.2 A foot valve is installed at the ~~storage~~ Tank.

1.18 General Release Detection Requirements for UST Piping for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.18.1 Owners and Operators shall equip all underground Piping that routinely contains Regulated Substances with a method, or combination of methods of Release Detection that can detect a Release from any portion of the underground Piping that routinely contains Regulated Substance.

1.18.2 UST Piping interstitial and sump monitoring systems shall be designed, constructed installed and maintained to detect a Release from any portion of the Piping that routinely contains Regulated Substance.

1.18.3 Release Detection methods not specified in this Section will be considered an alternative by the Department. A written request detailing the method or combination of methods proposed shall be submitted to the Department prior to installation for approval. Alternative methods shall meet the following requirements:

1.18.3.1 The method can detect a 0.1 gallon per hour leak rate or a Release of seventy five (75) gallons within a month with a probability of detection of 0.95 or greater and a probability of false alarm of 0.05 or less; or

1.18.3.2 The method or a combination of methods or devices can detect a Release as effectively as any of the Release Detection methods allowed in §1.19. of this Part. If the method or a combination of methods or devices is approved, Owners and Operators shall comply with any conditions imposed by the Department on its use to ensure the protection of human health, safety or the environment.

1.18.4 Owners and Operators shall implement the indicated Release investigation procedure in Part E of these Regulations if the Piping Release Detection equipment or method shows indication of a Release.

1.19 Pressurized Piping Release Detection Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.19.1 Line Leak Detector Requirements

1.19.1.1 Underground Piping that conveys Regulated Substances under pressure shall be equipped with an automatic ~~l~~Line leak detector.

1.19.1.2 The automatic ~~l~~Line leak detector shall alert the Owner and Operator to the presence of a Release by restricting or shutting off the flow of the Regulated Substance.

1.19.1.3 Mechanical and Electronic automatic ~~l~~Line leak detectors shall be capable of reacting to leaks of three (3) gallons per hour at ten (10) pounds per square inch line pressure within one (1) hour.

1.19.1.4 Owners and Operators shall conduct an annual test of the operation of the automatic ~~l~~Line leak detector ~~in accordance with the manufacturer's test protocols~~ while installed in the UST System and under normal operating conditions. All Mechanical and Electronic automatic line leak detectors shall pass a function test at least once every twelve (12) months at three (3) gallons per hour (gph) at ten (10) pounds per square inch line pressure within one (1) hour.

1.19.2 Tightness Test Requirements

1.19.2.1 Owners and Operators shall conduct an annual tightness test of the entire pressurized underground Piping system, including the primary and secondary Piping, in accordance with NFPA 329, *Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases.*

1.19.2.2 Owners and Operators of UST Systems with underground pressurized Piping systems shall use a ~~p~~Piping tightness test method designed to detect a Release from any portion of the underground Piping system that routinely contains Regulated Substances.

1.19.2.3 Owners and Operators of UST Systems with underground pressurized Piping systems constructed of double wall design may utilize continuous interstitial monitoring systems to comply with the annual Piping tightness test requirements in §1.19.2.1 of this Part if the following requirements are met:

1.19.2.3.1 All interstitial monitoring devices shall be designed, constructed, installed and maintained to continuously detect a Release from any portion of the Piping that routinely contains Regulated Substance; and

1.19.2.3.2 At a minimum of once every thirty (30) calendar days, Owners and Operators shall provide proof via the interstitial monitoring equipment that the interstitial monitoring device is functioning in accordance with the manufacturer's specifications; and

1.19.2.3.3 Owners and Operators shall maintain records of the ~~monthly~~ interstitial Release Detection automatic tank gauge records for the life of the UST System; and

1.19.2.3.4 The interstitial monitoring system shall be designed and maintained to alert the Owner and Operator to the presence of a Release by shutting off the flow of the Regulated Substance; and

1.19.2.3.5 All sump and interstitial sensors shall comply with the testing and monitoring requirements of §1.27 of this Part; and

1.19.2.3.6 All Containment Sumps shall comply with the testing and monitoring requirements of §1.25 of this Part.

~~1.19.3 Line Leak Detector and Tightness Test Requirements for Double Wall Piping Systems~~

~~1.19.3.1 Owners and Operators of UST Systems with underground pressurized Piping systems constructed of double wall design may utilize continuous interstitial monitoring systems to comply with the line leak detector requirements of §1.19.1 of this Part and the piping tightness test requirements in §1.19.2 of this Part if the following requirements are met:~~

~~1.19.3.1.1 All interstitial monitoring devices shall be designed, constructed, installed and maintained to continuously detect a Release from any portion of the Piping that routinely contains Regulated Substance; and~~

~~1.19.3.1.2 The system shall be designed and maintained to ensure that the delivery system will automatically shut off if a Release is detected; and~~

~~1.19.3.1.3 At a minimum of once during each calendar month, Owners and Operators shall provide proof via the automatic tank gauge record that the interstitial monitoring device is functioning in accordance with the manufacturer's specifications; and~~

~~1.19.3.1.4 Owners and Operators shall maintain records of the monthly interstitial Release Detection ATG records for the life of the UST System; and~~

~~1.19.3.1.5 All sump and interstitial sensors shall comply with the testing and monitoring requirements of §1.27 of this Part; and~~

~~1.19.3.1.6 All tank top containment sumps containing the interstitial monitoring device shall be tested once every twelve (12) calendar months.~~

1.20 Suction Piping Release Detection Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.20.1 Release Detection is not required for suction Piping that is designed and constructed to meet the requirements of §1.17.1.1 of this Part.

1.20.2 Suction Piping designed and constructed to meet the requirements of §1.17.1.2 of this Part shall have Release Detection in accordance with §1.18 of this Part.

1.20.3 Owners and Operators of UST Systems with underground suction Piping systems constructed of double wall design may utilize continuous interstitial monitoring systems to comply with the Release Detection requirements of §1.18 this Part if the following requirements are met:

1.20.3.1 All interstitial monitoring devices shall be designed, constructed, installed and maintained to continuously detect a Release from any portion of the Piping that routinely contains Regulated Substance; and

1.20.3.2 At a minimum of once every thirty (30) calendar days, Owners and Operators shall provide proof via the automatic tank gauge record that the interstitial monitoring device is functioning in accordance with the manufacturer's specifications; and

1.20.3.3 Owners and Operators shall maintain records of the ~~monthly~~ interstitial Release Detection ~~automatic tank gauge~~ interstitial monitoring records for the life of the UST System; and

1.20.3.4 All sump and interstitial sensors shall comply with the testing and monitoring requirements of §1.27 of this Part; and

1.20.3.5 All Containment Sumps shall comply with the testing and monitoring requirements of §1.25 of this Part.

1.21 Spill ~~Protection~~ Prevention Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.21.1 No Person shall construct, install, use, or maintain any UST Facility without providing a reliable means of ensuring that Releases due to spilling do not occur.

1.21.2 To prevent spilling associated with Regulated Substance transfer to the UST System, Owners and Operators shall comply with the requirements of ~~one of~~ the following industry standards:

1.21.2.1 NFPA 30, *Flammable and Combustible Liquids Code*; or

1.21.2.2 NFPA 385, *Standard for Tank Vehicles for Flammable and Combustible Liquids*; or

1.21.2.3 API RP 1621, *Bulk Liquid Stock Control at Retail Outlets.*

1.21.3 Owners and Operators shall equip all UST Systems with impervious spill containment devices that form a liquid tight seal around the fill pipe connection and the Stage I vapor recovery connections, where applicable.

1.21.4 All spill containment devices around the fill pipe shall have a minimum containment capacity of fifteen (15) gallons or be of a design that provides equivalent environmental protection.

1.21.5 Owners and Operators shall immediately remove water, Regulated Substance or debris that accumulates in any spill containment device Owners and Operators shall maintain spill containment devices to be capable of containing a spill of the containment design capacity at all times.

1.21.6 All precautions shall be taken to prevent Tank overfilling, spilling and dripping.

1.21.7 Owners and Operators shall test spill containment devices once every twelve (12) ~~calendar~~ months for tightness, or in accordance with the manufacturer's specifications, or when deemed necessary by the Department to determine if a threat to human health, safety or the environment exists.

1.21.8 Spill containment devices of double wall design with continuous monitoring of the interstitial space and the interstitial sensors are tested in accordance with §1.27 of this Part are exempt from the testing requirements of §1.21.7 of this Part. ~~Owners and Operators shall maintain records of the continuous interstitial monitoring of the spill containment device.~~

1.21.9 Owners and Operators shall report, investigate, and clean up any spills and overfills in accordance with Part E of these Regulations.

1.22 Overfill ~~Protection~~ Prevention Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.22.1 No Person shall construct, install, use, or maintain any UST Facility without providing a reliable means of ensuring that Releases due to overfilling do not occur.

1.22.2 The Person In Charge of the transfer of Regulated Substance to the UST shall adhere to proper safety precautions and procedures for transfer as found in NFPA 385, *Standard for Tank Vehicles for Flammable and Combustible Liquids* and API RP 1621, *Bulk Liquid Stock Control at Retail Outlets* and shall comply with the following:

1.22.2.1 The Person In Charge of the transfer operation shall first check the UST to ensure that the volume available in the UST is greater than the volume of Regulated Substance to be transferred to the UST before the transfer is made; and

1.22.2.2 During the transfer, the Person In Charge shall continuously monitor the transfer operation to prevent an Overfill Release; and

1.22.2.3 At the conclusion of the transfer, the Person in Charge shall collect any Regulated Substance that remains in the transfer hose ~~in a container~~ and shall ensure it is properly managed and does not reach the environment; and

1.22.2.4 The Person in Charge shall take all reasonable precautions to prevent spilling and dripping.

1.22.3 Owners and Operators shall install and maintain overfill ~~protection~~ prevention equipment that shall:

1.22.3.1 Automatically shut off the flow into the UST when the UST is no more than ninety five (95%) percent full; or

1.22.3.2 Alert the transfer operator when the UST is no more than ninety (90%) percent full by restricting the flow into the UST or triggering a high-level alarm; or

1.22.3.3 Restrict flow 30 minutes prior to overfilling, alert the Operator with a high level alarm one minute before overfilling, or automatically shut off flow into the UST so that none of the fittings located on top of the Tank are exposed to Regulated Substance due to overfilling; or

1.22.3.4 Be an automatic partial flow shut off float vent or vapor valve installed inside the UST~~(s)~~ set to restrict flow when the UST is no more than ninety (90%) full. Vent or vapor

restriction devices shall not be installed in UST Systems that are equipped with suction pumps, remote fill ~~lines~~ Piping, remote vapor ~~lines~~ Piping or receive pressurized deliveries.

1.22.4 UST Systems that receive pressurized deliveries require a high level alarm that is triggered at no more than ninety (90%) percent full for overfill ~~protection~~ prevention or an automatic flow shut-off valve designed for pressurized deliveries.

1.22.5 Owners and Operators shall report, investigate, and clean up any spills and overfills in accordance with Part E of these Regulations.

1.23 Fill Line Protection Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.23.1 Owners and Operators shall clearly mark all fill ~~l~~Lines for UST Systems to indicate the size of the Tank and the type of Regulated Substance stored. These markings shall be as follows:

1.23.1.1 A label or permanent tag at the fill connection which states the size of the UST and the specific type of Regulated Substance stored; and

1.23.1.2 A color symbol system implemented according to the following requirements:

1.23.1.2.1 All fill and vapor recovery covers shall be marked consistent with API RP 1637, *Using the API Color-Symbol System to Mark Equipment and Vehicles for Product Identification at Service Stations and Distribution Terminals* or API IP 1542, *Identification Markings for Dedicated Aviation Fuel Manufacturing and Distribution Facilities, Airport Storage and Mobile Fuel Equipment*; and

1.23.1.2.2 A different color symbol shall be used for each type of Regulated Substance or grade of Regulated Substance being stored at the Facility.

1.23.2 Pipes and other openings not used for transfer of Regulated Substance at the UST Facility shall not be painted any color which would be associated with the color symbol designated for marking the Regulated Substance stored at the Facility. It is particularly important that openings with access to soil and ground water, such as Monitor Wells, not be confused with Regulated Substance fill ~~l~~Lines.

1.24 Corrosion Protection Operation and Maintenance Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.24.1 General Requirements

1.24.1.1 Owners and Operators of steel UST Systems with corrosion protection systems shall operate and maintain the system in accordance with the following industry standards:

1.24.1.1.1 NACE RP 0285, *Corrosion Control of Underground Storage Tank Systems by Cathodic Protection*.

1.24.1.1.2 NACE TM0101, *Measurement Techniques Related to Criteria for Cathodic Protection on Underground or Submerged Metallic Tank Systems*.

1.24.1.1.3 NFPA 30, *Flammable and Combustible Liquids Code* ;

1.24.1.1.4 NFPA 30A, *Motor Fuel Dispensing Facilities and Repair Garages*.

1.24.1.2 Owners and Operators of steel UST Systems with corrosion protection systems shall maintain and operate the corrosion protection system to continuously provide corrosion protection to the metal components of the UST System that routinely contain a Regulated Substance and are in contact with the ground to ensure that Releases due to corrosion are prevented for the life of the UST System.

1.24.1.3 Cathodic Protection systems shall be designed and installed to allow determination of the current operating status.

1.24.2 Sacrificial Anode Cathodic Protection System Operation and Maintenance Requirements

1.24.2.1 Owners and Operators shall test all UST Systems equipped with Sacrificial Anode Cathodic Protection systems for proper operation using standard corrosion engineering practices and in accordance with the following requirements:

1.24.2.1.1 Testing procedures shall be done in accordance with NACE RP 0285, *Corrosion Control of Underground Storage Tank Systems by Cathodic Protection* and the manufacturer's specifications and shall include the following:

1.24.2.1.1.1 A minimum of three (3) voltage readings along the center line for UST Systems less than twenty thousand (20,000) gallons and a minimum of five (5) voltage readings along the center line for UST Systems greater than or equal to twenty thousand (20,000) gallons; and

1.24.2.1.1.2 A minimum of one (1) voltage reading for every ten (10) feet of Piping.

1.24.2.2 All Sacrificial Anode Cathodic Protection systems that protect underground Facility components shall be tested by an individual certified by a nationally recognized industry standard setting organization, and in accordance with Department standards, within six (6) months of installation and at least once every twelve (12) months thereafter.

1.24.2.3 The Sacrificial Anode Cathodic Protection system shall be tested by an individual certified by a nationally recognized industry standard setting organization, and in accordance with Department standards, within six (6) weeks after underground work is performed at or near a site with a Sacrificial Anode Cathodic Protection system and once every twelve (12) months thereafter.

1.24.2.4 Owners and Operators shall Repair or replace the Sacrificial Anode Cathodic Protection system in accordance with NACE RP 0285, *Corrosion Control of Underground Storage Tank Systems by Cathodic Protection* and the requirements of §1.6 of this Part if the Sacrificial Anode Cathodic Protection system is not operating in accordance with the manufacturer's specifications and the requirements of these Regulations. This includes but is not limited to failure to register a negative voltage of at least 0.85 volts for each UST. An individual certified by a nationally recognized industry standard setting organization shall determine the cause of the failure and make the necessary Repairs within sixty (60) days of the discovery of the failure of the corrosion protection system.

1.24.2.5 UST System Owners and Operators shall notify the Department within forty-eight (48) hours of the discovery of the failure of a Sacrificial Anode Cathodic Protection system.

1.24.2.6 The Department shall approve, either verbally or in writing, all Cathodic Protection Repair or replacement plans prior to work commencing.

1.24.2.7 ~~The Department shall review the Release Detection and Cathodic Protection records of the UST System and based upon this information may require that Owners and Operators determine the current integrity of the UST System if the Cathodic Protection system is not operating in accordance with the manufacturer's specifications and the requirements of these Regulations prior to making Repairs to the corrosion protection system.~~ If the Cathodic Protection system is not operating in accordance with the manufacturer's specifications and the requirements of these Regulations, the Department shall review the Release Detection and Cathodic Protection records of the UST System prior to repair or replacement of the Cathodic Protection system. The Department may require that Owners and Operators determine the current integrity of the UST system.

1.24.2.8 The following information shall be submitted to the Department prior to Repair or replacement of the Sacrificial Anode Cathodic Protection system:

1.24.2.8.1 Results of one of the following:

1.24.2.8.1.1 The two (2) most recent Sacrificial Anode Cathodic Protection system tests including the failed test, or

1.24.2.8.1.2 The results of an internal assessment, or

1.24.2.8.1.3 The results of a third party approved integrity assessment.

1.24.2.8.2 Records of the Tank Release Detection method from the date of the most recent passed Sacrificial Anode Cathodic Protection test.

1.24.2.9 If the tank has an internal lining, no internal assessment results will be accepted for the purpose of determining the current integrity of the UST System.

1.24.2.~~8~~10 Impressed current Cathodic Protection systems shall not be utilized as a Repair, Upgrade or Replacement for a failed Sacrificial Anode Cathodic Protection system after ~~the Effective Date of these Regulations~~ January 11, 2008.

1.24.2.~~9~~11 The use of alternate methods of monitoring shall be those described in NACE RP 0285, *Corrosion Control of Underground Storage Tank Systems by Cathodic Protection*, and shall only be used with prior written approval from the Department.

1.24.2.~~10~~12 Owners and Operators shall maintain a record of the operation of Sacrificial Anode Cathodic Protection systems to demonstrate compliance with the requirements of this Section. These records shall be retained in a permanent record and shall at a minimum provide the following information:

1.24.2.~~10~~12.1 The results of all tests and inspections of the Sacrificial Anode Cathodic Protection system.

1.25 Containment Sump Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.25.1 All dispenser, Tank top, transition and any other Containment Sumps of single wall design shall be Product Tight and shall be tested for Product tightness once every thirty-six (36) months, or in accordance with the manufacturers' specifications, or when deemed necessary by the Department to determine if a threat to human health, safety or the environment exists.

1.25.2 All dispenser, Tank top, transition and any other Containment Sumps of double wall design with continuous monitoring of the interstitial space and the interstitial sensors are tested in accordance with §1.27 of this Part are exempt from the testing requirements of §1.25.1 of this Part.

1.25.3 All dispenser, Tank top, transition and any other Containment Sumps tightness testing methods utilized shall be in accordance with the manufacturer's specifications or approved by the Department.

1.25.4 All access manholes associated with Containment Sumps shall be sized such that the manhole skirt is sufficiently larger than the Containment Sump lid to allow adequate access to the sump and allow for surface water drainage.

1.25.5 All dispenser Containment ~~s~~Sumps shall be installed and maintained as to be capable of being visually inspected at all times for evidence of a Release and shall not be filled with any material such as pea gravel or native soil, or the dispenser Containment ~~s~~Sump shall be continuously monitored for Releases.

1.25.6 Owners and Operators shall immediately upon discovery remove water, Regulated Substance or debris that accumulates in any Containment Sump.

1.26 Dispenser Sump Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.26.1 Dispenser sumps shall be designed and installed such that any Regulated Substance accumulating within the sump is contained and conveyed to the Tank top sump via the Piping interstitial space where it can be monitored and detected.

1.26.2 If equipped with a dispenser sump sensor, the sensor shall be equipped with an automatic audible or visual Release Detection alarm system.

1.27 Testing and Monitoring Procedures for Sump and Interstitial Sensors for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.27.1 All sensors utilized for Release Detection shall be equipped with an automatic audible ~~and~~ or visual alert system and shall shut down the UST System in the event of an alarm.

1.27.2 Owners and Operators shall ~~inspect and~~ perform a functionality test of all sump and interstitial sensors at a minimum of once every twelve (12) months in accordance with the manufacturer's specifications or as directed by the Department to verify proper sensor operation.

1.27.3 All sensors installed in a sump for the purpose of detecting a Release from the UST System shall be installed no more than one inch (1") from the bottom of the sump such that the sensor is capable of detecting any accumulation of Regulated Substance.

1.28 Repair, Upgrade and Retrofit Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.28.1 All Repairs, Upgrades, Retrofits and replacements to UST Systems shall meet the applicable design, installation, maintenance and operational standards in Part B, §1 of these Regulations.

1.28.2 ~~Documentation of Repair completion shall be submitted to the Department in accordance with Part E, §2.2.2 of these Regulations.~~ Owners and Operators shall report any abnormal operating conditions to the Tank Management Branch in accordance with the requirements of Part E, §1.2 of these Regulations.

1.28.3 All equipment installed after ~~the Effective Date of these Regulations~~ January 11, 2008 shall be installed, operated and maintained such that manufacturer's warranties are not voided.

1.28.4 Owners and Operators shall ensure that Repairs, Upgrades or Retrofits will prevent Releases due to structural failure or corrosion as long as the UST System is used to store Regulated Substance.

1.28.5 Owners and Operators shall test the Cathodic Protection system in accordance with §1.24 of this Part within six (6) weeks and every twelve (12) months thereafter following the Repair of any Cathodically Protected UST System, to ensure it is operating properly.

1.28.6 Owners and Operators shall maintain records for each Repair, Retrofit and Upgrade for the Operational Life of the UST System.

1.28.7 After any Repair, Retrofit or Upgrade to an UST System, Owners and Operators shall have the applicable portions of the UST System tested for tightness in accordance with ~~§§1.13.4 of this Part~~ these Regulations or as directed by the Department before the UST System is placed into service.

1.28.8 Repairs to fiberglass reinforced plastic Tanks may be made only by the manufacturer or by its authorized representatives.

1.28.9 Owners and Operators may not Repair holes in Piping and fittings, but shall replace any piece of such Piping or fittings from which a Release has occurred. Replacement Piping and fittings shall meet all applicable Piping requirements in §1 of this Part. Loose fittings and joints in Piping that have been tightened to eliminate leakage may be put back into service.

1.28.10 At any time during the course of a Repair, Retrofit or Upgrade when there is an indication of a Release the requirements of Part E of these Regulations shall be followed.

1.28.11 At any time excavation of soil or removal of concrete, asphalt or other cover is required during the course of a Repair, Retrofit or Upgrade, Owners and Operators shall perform a Site Assessment to measure for the presence of a Release where contamination is most likely to be present at the UST site. In selecting sample types, sample locations and measurement methods, Owners and Operators shall consider the nature of the stored substance, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence of a Release. The Site Assessment shall be completed within ten (10) days of the Repair, Retrofit or Upgrade of the UST System.

1.28.12 Within sixty (60) days of completion of a Repair, Retrofit or Upgrade of an UST System Owners and Operators and UST Contractors shall submit documentation to the Tank Management Branch including but not limited to the following:

1.28.12.1 Repair, Retrofit or Upgrade completion documentation; and

1.28.12.2 Results of sampling required in Part E of these Regulations or §1.28.10 of this Part; and

1.28.12.3 Results of any UST System tests required by the Department.

1.29 Used Oil Underground Storage Tank Systems Requirements

1.29.1 General Requirements

1.29.1.1 Owners and Operators of UST Systems used solely for the storage of Used Oil shall comply with all the requirements of these Regulations except where modifications are specifically listed in this Section.

1.29.2 Release Detection Requirements for Used Oil UST Systems

1.29.2.1 Owners and Operators shall monitor ~~all~~ Used Oil UST Systems for Releases through the use of one of the inventory control procedures in §1.29.3 of this Part and at least one of the following Release Detection methods:

1.29.2.1.1 Continuous ~~I~~interstitial ~~M~~monitoring as prescribed in §1.9 of this Part; or

1.29.2.1.2 Automatic ~~T~~tank ~~G~~gauge performing ~~monthly~~ Tank tightness testing at a minimum of once every thirty (30) calendar days as prescribed in §1.9 of this Part; or

1.29.2.1.3 Manual ~~T~~tank ~~G~~gauging as prescribed in §1.29.4 of this Part; or

1.29.2.1.4 Department ~~A~~approved ~~A~~alternative ~~M~~method.

1.29.~~2.2~~3 Inventory Control Requirements for Used Oil UST Systems

1.29.~~2.2~~3.1 Owners and Operators of UST Systems used solely for the storage of Used Oil ~~shall comply~~ may utilize inventory control procedures performed in accordance with the ~~I~~inventory control ~~R~~requirements of §1.9.3 of this Part to comply with inventory control requirements; or~~.~~

1.29.~~2.2~~3.2 Owners and Operators of UST Systems with a storage capacity less than or equal to two thousand (2,000) gallons~~,~~ and used solely for the storage of Used Oil, may utilize manual ~~T~~tank gauging performed in accordance with the requirements of §1.29.4 to comply with inventory control requirements~~.~~; or

1.29.3.3 Owners and Operators of UST Systems used solely for the storage of Used Oil may utilize modified inventory control procedures performed in accordance with the requirements of §1.29.5 of this Part to comply with inventory control requirements.

1.29.~~2.3~~4 ~~Methods of Release Detection for Used Oil UST Systems~~ Manual Tank Gauging Requirements for Used Oil UST Systems

1.29.~~2.3~~4.1 Owners and Operators of UST Systems with a storage capacity of one thousand (1,000) gallons or less~~,~~ and used solely for the storage of Used Oil, may utilize manual ~~T~~tank gauging to comply with Release Detection requirements when used in conjunction with inventory control.

1.29.~~3~~4.2 Owners and Operators of UST Systems, used solely for the storage of Used Oil, shall not utilize manual ~~T~~tank gauging to simultaneously comply with both Release Detection and inventory control requirements.

1.29.4.3 Owners and Operators shall utilize ~~M~~manual ~~T~~tank gauging test procedures that meet the following requirements:

1.29.4.3.1 Once every seven (7) days the Used Oil UST System shall be tested. No ~~Regulated Substance~~ Used Oil shall be added to or removed from the Used Oil UST during the prescribed test period in Table 1 of this Part~~.~~; and

1.29.4.3.2 At the beginning and at the end of the test period the liquid level in the Used Oil UST shall be measured twice consecutively to the nearest one-eighth (1/8) inch and the average of the two measurements shall be recorded~~.~~; and

1.29.4.3.3 At the end of each seven (7) day test period the change in Tank volume shall be calculated from the difference in the average beginning and average ending liquid level measurements and compared to the weekly test standard in Table 1 of this Part.; and

1.29.4.3.4 At a minimum of once every thirty (30) calendar ~~month~~ days the ~~monthly cumulative~~ four (4) most recent change in ~~T~~tank volume numbers calculated in §1.29.4.3.3 of this Part shall be averaged and this test average shall be compared to the monthly test standard in Table 1 of this Part.; and

1.29.4.3.5 If at any time the weekly or monthly change in Tank volume test average exceeds the test standard in Table 1 of this Part, Owners and Operators shall notify the Department of an indicated Release within twenty-four (24) hours of the end of the test period.; and

1.29.4.3.6 Owners and Operators shall keep all manual tank gauging records utilized to comply with inventory control requirements on file for a minimum of three (3) years and shall make the records available to the Department ~~upon~~ within ten (10) days of the Department's request.; and

1.29.4.3.7 Owners and Operators shall keep all manual tank gauging records utilized to comply with Release Detection requirements on file for the life of the UST System and shall make the records available to the Department within ten (10) days of the Department's request.

Table 1

Tank Size	Minimum Duration of Test	Weekly Standard (1 test)	Monthly Standard (4-test average)
Up to 550 gallons	36 hours	10 gallons	5 gallons
551-1,000 gallons (when Tank diameter i~~f~~s64")	44 hours	9 gallons	4 gallons
551-1,000 gallons (when Tank diameter is 48")	58 hours	12 gallons	6 gallons
1,001 -2,000 gallons (also requires 2nd Release Detection method)	36 hours	26 gallons	13 gallons

1.29.5 Modified Inventory Control Requirements for Used Oil UST Systems

1.29.5.1 Owners and Operators shall utilize modified inventory control procedures that meet the following requirements:

1.29.5.1.1 The Regulated Substance level shall be measured in inches to the nearest one-eighth (1/8") of an inch and shall be recorded each day that an UST has Used Oil added to or withdrawn from the UST, or at least once every seven (7) days; and

1.29.5.1.2 The water level shall be measured in inches to the nearest one-eighth (1/8") of an inch and shall be recorded at least once every seven (7) days. If the water level changes

two (2) inches or more from the last measurement the Owner or Operator must contact the TMB within 24 hours.

1.29.5.1.3 The amount of Used Oil removed from the UST shall be recorded, and receipts for Used Oil removal shall be maintained and made available to the Department upon request; and

1.29.5.1.4. If there is an unexplainable consistent negative trend in any given month, or if the amount of Used Oil removed from the UST is less than the amount indicated by the modified inventory control, the Department shall be notified, and the Release investigation procedures in Part E of these Regulations shall be followed; and

1.29.5.1.5 Failure to maintain modified inventory control records for Used Oil UST Systems may be cause for the Department to require Tank tightness test(s) and inspection(s) of the UST Facility at the expense of Owners and Operators

1.29.~~5~~6 Overfill Requirements for Used Oil UST Systems

1.29.~~5~~6.1 Owners and Operators of Used Oil UST Systems shall comply with the overfill requirements in §1.22 of this Part or shall have a written standard operating procedure that includes the following minimum requirements:

1.29.~~5~~6.1.1 Determine and record the maximum gallons allowable such that the UST shall not be more than ninety percent (90%) full; and

1.29.~~5~~6.1.2 The level of Used Oil shall be measured each day an UST has Used Oil added to or withdrawn from the UST to determine the current amount of ullage space available; and

1.29.~~5~~6.1.3 The amount of Used Oil added ~~or removed from the UST shall be recorded~~ shall be such that the UST is not more than ninety percent (90%) full; and

1.29.6.1.4 The amount of Used Oil removed from the UST shall be recorded; and

1.29.~~5~~6.1.~~4~~5 Receipts for Used Oil removal shall be maintained and made available to the Department upon request to ensure that the UST is not filled beyond ninety percent (90%) capacity.

1.29.~~6~~7 Spill ~~Protection~~ Prevention Requirements for Used Oil UST Systems

1.29.~~6~~7.1 No Person shall construct, install, use or maintain an UST storing Used Oil without providing a reliable means of ensuring that Releases due to spilling do not occur.

1.29.~~6~~7.2 Owners and Operators shall equip ~~all~~ Used Oil UST Systems with an impervious spill containment device that forms a liquid tight seal around any pump out location.

1.29.~~6~~7.3 All spill containment devices shall have a minimum containment capacity of fifteen (15) gallons or be of a design that provides equivalent environmental protection.

1.29.~~6~~7.4 Owners and Operators shall immediately upon discovery remove water, Used Oil or debris that accumulates in the spill containment device. Owners and Operators shall maintain spill containment devices to be capable of containing a spill of the containment design capacity at all times.

1.29.~~6~~7.5 All precautions shall be taken to prevent Tank overfilling, spilling and dripping.

1.29.~~6~~7.6 Owners and Operators shall test spill containment devices shall once every twelve (12) months for tightness in accordance with the manufacturer's specifications or as directed by the Department to determine if a threat to human health, safety or the environment exists.

1.29.7.7 Spill containment devices of double wall design with continuous monitoring of the interstitial space are exempt from the testing requirements of §1.29.7.6 of this Part.

1.29.~~6~~7.~~7~~8 Owners and Operators shall report, investigate and clean up any spills and overfills in accordance with Part E of these Regulations.

1.30 Emergency Generator Underground Storage Tank Systems Requirements

1.30.1 Owners and Operators of UST Systems used solely for the storage of Regulated Substance to power emergency generation equipment shall comply with all the requirements of these Regulations except where modifications are specifically listed in this Section.

1.30.2 Owners and Operators of UST Systems used solely for the storage of Regulated Substance to power emergency generation equipment are exempt from the inventory control Requirements of §1.9.3 of this Part.

1.30.3 Owners and Operators of UST Systems used solely for the storage of a Regulated Substance to power emergency generation equipment may utilize annual ~~T~~tank tightness testing as a method of Release Detection for the life of the UST provided the ~~T~~tank tightness testing is performed in accordance with the ~~T~~tank tightness test requirements in §2.9.7 of this Part, or may utilize a method in §1.9 of this Part.

1.30.4 Owners and Operators of UST Systems used solely for the storage of a Regulated Substance to power emergency generation equipment shall not utilize an annual Line tightness test to comply with the pressurized Piping Release Detection tightness test requirements of §1.19.2 of this Part. Owners and Operators shall utilize interstitial monitoring in accordance with the requirements of §1.19.2.3 of this Part to comply with the pressurized Piping Release Detection tightness test requirements of §1.19.2 of this Part.

1.31 Routine Inspection for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.31.1 Owners and Operators shall conduct an inspection at an interval no less frequently than once every twenty-eight (28) to thirty-one (31) calendar days ~~once during each calendar month~~ to monitor the condition of the UST System including but not limited to all dispensers, dispenser sumps, access ports, spill containment devices, sumps and Containment Sumps. The routine inspection shall ~~include~~ at a minimum include the following:

1.31.1.1 The removal of all dispenser covers and visual inspection for any evidence of a Release of Regulated Substance and inspection of all fittings, couplings and filters; and

1.31.1.2 The removal of all Containment Sump and sump covers and visual inspection of the sump for any evidence of a Release of Regulated Substance or intrusion of water; and

1.31.1.3 The inspection of all access ports to make sure that the covers, caps and adaptors are tightly sealed; and

1.31.1.4 The removal of all spill containment device covers and inspection to ensure all spill containment devices are empty and free of debris, water or Regulated Substance; and.

1.31.1.5 All product shear valves shall be manually opened and loosened to prevent gum deposit build-up and other conditions that may affect the operation of the valve.

1.31.2 A record of all routine inspections shall be kept on file by Owners and Operators for a minimum of three (3) years and shall be made available to the Department upon request. The records shall at a minimum include the results of all inspections including any Repairs made.

1.31.3 If at any time during a routine inspection evidence of a Release of Regulated Substance is discovered Owners and Operators shall follow the investigation requirements of Part E of these Regulations.

1.32 Internal Lining Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

1.32.1 An internal lining may be added to UST Systems to improve the ability of an UST System to prevent the release of Regulated Substance.

1.32.2 An internal lining shall not be utilized to meet corrosion protection requirements after ~~the Effective Date of these Regulations~~ January 11, 2008.

1.32.3 The internal lining installation, operation and maintenance shall meet the following requirements:

1.32.3.1 The lining shall be installed in accordance with the following industry standards:

1.32.3.1.1 API RP 1631, *Interior Lining and Periodic Inspection of Underground Storage Tanks.*

1.32.3.1.2 NLPA Standard 631, Chapter A, *Entry, Cleaning, Interior Inspection, Repair, and Lining of Underground Storage Tanks.*

1.32.3.1.3 NLPA Standard 631, Chapter B, *Future Internal Inspection Requirements for Lined Tanks.*

1.32.3.2 The lined Tank shall be tested for tightness in accordance with §2.9.7 of this Part and found to be tight before the Tank is put back into service; and

~~1.32.3.3 Within ten (10) years after lining, and every five (5) years thereafter, Owners and Operators shall conduct an internal inspection of the lined Tank in accordance with NLPA Standard 631, Chapter A, Entry, Cleaning, Interior Inspection, Repair, and Lining of Underground Storage Tanks and Chapter B, Future Internal Inspection Requirements for Lined Tanks, and API RP 1631, Interior Lining and Periodic Inspection of Underground Storage Tanks. At the time of the inspection, the lined Tank shall be structurally sound and comply with the original design specifications. If any damage is found, Repairs shall be made in accordance with standard engineering practice, industry standards and the requirements of these Regulations or the Tank shall be replaced in accordance with the requirements in §1 of this Part.~~

2.0 Installation, Operation and Maintenance Requirements for UST Systems Storing Regulated Substance Installed Prior to January 11, 2008, Excluding Consumptive Use Heating Fuel or Hazardous Substance ~~Installed Prior To The Effective Date Of These Regulations~~

2.1 General Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.1.1 Owners and Operators shall ensure that all UST Systems shall be designed, constructed, installed and operated in accordance with manufacturer's specifications, and accepted engineering practices and procedures; and in a manner which will prevent Releases of Regulated Substances to the ground waters, surface waters or soils of the State due to corrosion, structural failure, mechanical defects, spills and overfills for the Operational Life of the Tank. The material used in the construction and lining of the Tank shall be Compatible with the substances to be stored in the UST System. All UST Systems installed prior to ~~the Effective Date of these Regulations~~ January 11, 2008 shall meet the requirements of this Section.

2.1.2 Bare steel UST Systems or steel UST Systems coated with asphalt are prohibited.

2.1.3 Owners and Operators shall replace all double elbow swing joints with flexible connectors installed in accordance with Part B, §1.14 of these Regulations not later than January 1, 2011.

2.1.4 Dispenser hoses shall be a maximum of eighteen (18) feet in length unless otherwise approved by the Department. When not in use, hoses shall be reeled, racked or otherwise protected from damage.

2.2 General Installation Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.2.1 Prior to the installation of any UST System a site survey shall be initiated by the Facility Owner and Operator. The pre installation site survey shall be conducted to determine the locations of nearby buildings, underground utilities and sewer lines.

2.2.2 Private~~/~~ and public drinking water wells, rivers, streams, lakes, canals, and other environmentally sensitive locations shall be recorded and incorporated into the design of the UST System Facility.

2.2.3 Owners and Operators shall submit a written plan of the ~~Tank~~ UST System Facility to the Department and to any designated state or local government agency for approval thirty (30) days before the installation. The scale of the plan shall be one inch to ten feet or less (1 inch 10ft. or less) and shall include the following:

2.2.3.1 Size and location of Tanks; and

2.2.3.2 Piping dimensions and layout; and

2.2.3.3 Dimensions and locations of vents, Observation Tubes, Monitoring Wells, vadose zone vapor detection tubes, U tubes, gauges and monitoring devices; and

2.2.3.4 Type of Regulated Substance to be stored; and

2.2.3.5 Location of dispensers; and

2.2.3.6 Location of overfill device, spill prevention system and monitoring device; and

2.2.3.7 Materials of Tank(s) and ~~lines~~ Piping construction; and

2.2.3.8 Location of and access to check valves, flexible connectors, swing joints, etc. and

2.2.3.9 Location of Cathodic Protection components and test stations; and

2.2.3.10 Location of utilities (both above and underground); and

2.2.3.11 Location of electrical service components; and

2.2.3.12 Details of hold-down pads or anchoring; and

2.2.3.13 Location of nearby private~~/public~~ drinking water wells and surface water bodies; and

2.2.3.14 Survey results from §2.2.1 of this Part.

2.3 UST System Design Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.3.1 Acceptable designs for UST System construction include:

2.3.1.1 Cathodically Protected Steel; or

2.3.1.2 Fiberglass-Reinforced Plastic; or

2.3.1.3 Steel Fiberglass Reinforced Plastic Composite; or

2.3.1.4 Composite Coated; or

2.3.1.5 Cathodically Protected Double-walled Steel; or

2.3.1.6 Double-walled Fiberglass-Reinforced Plastic; or

2.3.1.7 Other equivalent design approved by the Department.

2.3.2 UST Systems shall be installed in accordance with these Regulations, the manufacturer's specifications, accepted engineering practices and the following industry standards:

2.3.2.1 PEI, RP 100, *Recommended Practices for Installation of Liquid Storage Systems*.

2.3.2.2 NFPA 30, *Flammable and Combustible Liquids Code*.

2.3.2.3 NFPA 30A, *Motor Fuel Dispensing Facilities and Repair Garages*.

2.4 Secondary containment Design Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.4.1 The Department reserves the right to require Secondary containment or equivalent protection on any portion of the UST System where aquifers underlying the UST Facility are determined to need such protection, or where groundwater below the UST Facility is within a well head protection area, or where groundwater is susceptible to contamination in order to protect the safety, health, welfare ~~and/~~or environment of the State.

2.4.2 Secondary containment systems shall be designed, constructed and installed to:

2.4.2.1 Contain the Regulated Substances Released from the UST System until they are detected and removed; and

2.4.2.2 Prevent the Release of Regulated Substance to the environment at any time during the Operational Life of the UST System; and

2.4.2.3 Be checked for evidence of a Release at least once ~~during each calendar month~~ every thirty (30) calendar days.

2.4.3 Secondary containment systems may consist of one of the following:

2.4.3.1 A cathodically protected double walled steel Tank and double walled Piping; or

2.4.3.2 A double walled fiberglass reinforced plastic Tank and double walled Piping; or

2.4.3.3 A double walled fiberglass reinforced plastic composite Tank and double walled Piping; or

2.4.3.4 A single wall Tank placed within a cut-off wall, an excavation liner or trough liner made of material impervious to the Regulated Substance stored; or

2.4.3.5 A vault constructed to meet the following requirements:

2.4.3.5.1 The vault shall be water tight, impervious to leakage of Regulated Substances and able to withstand chemical deterioration and structural stresses from internal and external causes; and

2.4.3.5.2 The vault shall be a continuous structure with a chemically resistant water stop used at any joint; and

2.4.3.5.3 There shall be no drain connections or other entries through the vault other than top entry manholes and other top openings for filling and for emptying the Tank, venting and for monitoring and pumping of Regulated Substance which may leak into the vault; and

2.4.3.5.4 The Tank or Tanks within the vault shall be encased or embedded in a manner consistent with acceptable engineering practices; or

2.4.3.6 A cut off wall constructed to meet the following:

2.4.3.6.1 A cut off wall may be used where groundwater levels are above the bottom of the Tank excavation; and

2.4.3.6.2 A cut off wall shall consist of an impermeable barrier which has a permeability rate with respect to water equal to or less than 1 x 10 7 cm/sec. It shall not deteriorate in an underground environment or in the presence of Regulated Substances; and

2.4.3.6.3 A cut off wall shall extend around the perimeter of the excavation and to an elevation above the mean high groundwater level; and

2.4.3.6.4 If a synthetic membrane is used for a cut-off wall, any seams, punctures or tears in the membrane shall be Repaired and made leak tight prior to backfilling. No penetrations of the cut-off wall will be permitted; or

2.4.3.6.5 Other equivalent technology approved by the Department.

~~2.4.4 If the Secondary containment system consists of a double walled Tank, the Tank shall be constructed in accordance with acceptable engineering practice and industry standards and shall have a Release Detection system in accordance with §1.9 of this Part.~~

2.5 Double Walled UST Design Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.5.1 Any of the acceptable UST System designs in §2.3 of this Part may be fabricated in double walled construction in accordance with accepted engineering practice and industry standards.

2.5.2 A double walled Tank which is designed and manufactured in accordance with the following requirements satisfies the requirements for Secondary containment in §2.4 of this Part and the requirements for Release Detection set forth in §2.9 of this Part:

2.5.2.1 The interstitial space of the double walled Tank can be monitored for Releases; and

2.5.2.2 Outer jackets made of steel shall be coated as prescribed in §2.6.2; and

2.5.2.3 There are no penetrations of any kind through the jacket to the Tank except top entry manholes and fittings; and

2.5.2.4 The outer jacket shall, at a minimum, cover the bottom eighty (80) percent of the UST; and

2.5.2.5 The jacket shall be able to contain a liquid or be able to contain a vacuum from the time of manufacture completion until the time of installation; and

2.5.2.6 All Tanks shall be equipped with a strike plate located beneath all Tank openings.

2.6 Cathodically Protected Steel UST Design Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.6.1 Cathodically protected steel UST Systems shall be designed, constructed, installed and tested in accordance with NACE RP 0285, *Corrosion Control of Underground Storage Tank Systems by Cathodic Protection,* and the applicable industry standards, including but not limited to the following:

2.6.1.1 API RP 1632, *Cathodic Protection of Underground Petroleum Storage Tanks*.

2.6.1.2 NACE RP 0285, *Corrosion Control of Underground Storage Tank Systems by Cathodic Protection.*

2.6.1.3 UL 58, *Standard for Steel Underground Storage Tanks for Flammable and Combustible Liquids.*

2.6.1.4 UL 1746, *Standard for Safety: External Corrosion Protection Systems for Steel Underground Storage Tanks.*

2.6.1.5 STI, S*pecification for sti-P3® System for External Corrosion Protection of Underground Steel Storage Tanks.*

2.6.2 The Tank shall be coated with a suitable Dielectric Material in accordance with NACE RP 0285, *Corrosion Control of Underground Storage Tank Systems by Cathodic Protection.*

2.6.3 Field-installed Cathodic Protection systems shall be designed and installed in accordance with manufacturer's specifications, accepted engineering practice and the requirements listed in this Section.

2.6.4 Each Cathodic Protection system shall include sufficient monitoring stations which enable Owners and Operators to check on the adequacy of the Cathodic Protection system.

2.6.5 UST Systems that are protected by Sacrificial Anodes (sti-P3® Tanks) shall be electrically insulated from the Piping system with dielectric fittings, bushings, washers, sleeves or gaskets which are chemically stable when exposed to Regulated Substances, additives, corrosive soils or groundwater.

2.6.6 UST Systems not protected by Sacrificial Anodes shall be factory coated with a material which will provide equivalent protection and corrosion resistance. The minimum finished coating thickness shall be consistent with applicable UL standards. Defects and any inadequacies in the coating shall be Repaired in accordance with the manufacturer's instructions and standard engineering practice.

2.7 Fiberglass Reinforced Plastic UST Design Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.7.1 Fiberglass reinforced plastic UST Systems shall be designed, constructed, installed and tested in accordance with the following industry standard:

2.7.1.1 UL 1316, *Standard for Glass-Fiber-Reinforced Plastic Underground Storage Tanks for Petroleum Products, Alcohols and Alcohol Gasoline Mixtures.*

2.7.2 Fiberglass reinforced plastic UST Systems shall be of sufficient structural strength to withstand normal handling and underground use and shall be compatible with the Regulated Substance and additives stored, corrosive soils and groundwater. Tank construction materials shall be of sufficient density and strength to form a hard impermeable shell which will not crack, wick, wear, soften or separate under normal service conditions.

2.7.3 Fiberglass reinforced plastic Tanks shall be tested for deflection in accordance with the manufacturer's requirements at the time of installation.

2.8 Steel with Non-Metallic Outer Shell UST Design Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.8.1 Steel Fiberglass Reinforced Plastic UST Systems shall be designed, constructed, installed and tested in accordance with the following industry standards, as applicable:

2.8.1.1 UL 1746, *Standard for Safety: External Corrosion Protection Systems for Steel Underground Storage Tanks.*

2.8.1.2 UL 58; *Standard for Steel Underground Tanks for Flammable and Combustible Liquids.*

2.8.1.3 STI F-922, *Specification for Permatank*®.

2.8.1.4 STI F-894, ACT-100® *Specification for External Corrosion Protection of FRP Composite Steel Underground Storage Tanks.*

2.8.1.5 STI F-961, ACT -100U® *Specification for External Corrosion Protection of Composite Steel Underground Storage Tanks.*

2.8.1.6 STI F-841, *Standard for Dual Wall Underground Steel Storage Tanks.*

2.8.2 The coating shall not corrode under adverse underground electrolytic conditions and shall be Compatible with the Regulated Substance and additives stored.

2.8.3 The coating shall be factory inspected for air pockets, cracks, blisters pinholes and electrically tested by a ten thousand (10,000) volts holiday test performed over 100 percent (100%) of the surface for coating short circuits or coating faults or in accordance with the manufacturer's specifications.

2.8.4 Any defects shall be repaired in accordance with standard engineering practice and manufacturer's requirements to assure compliance with industry standards.

2.9 Release Detection Requirements for Underground Storage Tanks Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.9.1 General Requirements for Tank Release Detection

2.9.1.1 Owners and Operators of UST Systems shall provide a method, or combination of methods of Release Detection on all UST Systems that:

2.9.1.1.1 Can detect a Release from any portion of the Tank and the connected underground Piping that routinely contain Regulated Substance; and

2.9.1.1.2 Is installed, calibrated, operated, and maintained in accordance with the manufacturer's specifications, including routine maintenance and service checks for operability or running condition; and

2.9.1.1.3 Meets the performance standards for Release Detection in this section, with any performance claims and their manner of determination described in writing by the equipment manufacturer or installer. The method shall be capable of detecting the leak rate or quantity specified for ~~p~~Precision ~~Tank t~~Testing, automatic tank gauging, ~~l~~Line leak detectors, and ~~l~~Line tightness testing methods specified in these Regulations with a probability of detection of at least 0.95 and a probability of false alarm no greater than 0.05; and.

2.9.1.1.4 Is operational prior to Regulated Substance being placed in the UST System.

2.9.1.2 Owners and Operators shall implement the Indicated Release investigation procedure in Part E of these Regulations if the Release Detection equipment or method shows indication of a Release.

2.9.1.3 Failure by Owners and Operators to maintain records of required Release Detection monitoring and inspection may be cause for the Department to require Tank tightness test(s) and inspection(s) of the UST Facility and a Release investigation in accordance with Part E of these Regulations at the expense of Owners and Operators.

2.9.2 Methods of Release Detection for Tanks

2.9.2.1 Owners and Operators shall monitor UST Systems for Releases through the use of inventory control procedures and at least one of the following Release Detection methods:

2.9.2.1.1 Interstitial Monitoring; or

2.9.2.1.2 Automatic Tank Gaug~~ing~~e performing Tank tightness testing at a minimum of once every thirty (30) days; or

2.9.2.1.3 Observation Tubes; or

2.9.2.1.4 Tank Tightness Test; or

2.9.2.1.5 Monitoring Wells; or

2.9.2.1.6 Vadose Zone Vapor Detection Tubes; or

2.9.2.1.7 U-Tubes; or

2.9.2.1.8 Department Approved Alternative Method.

2.9.3 Inventory Control Requirements

2.9.3.1 Inventory control procedures shall meet the following requirements:

2.9.3.1.1 Every Owner and Operator shall perform inventory control procedures and shall maintain inventory control records for each Tank containing a Regulated Substance. Records shall be kept for each Tank, or cluster of Tanks if they are interconnected, and shall include measurements of bottom water levels, sales, use, deliveries, inventory on hand and losses or gains. Reconciliation of records shall be kept current, shall account for all variables which could affect an apparent loss or gain and shall be in accordance with generally accepted practices. The data shall be accumulated for each day a Tank has Regulated Substance added or withdrawn but not less frequently than once ~~a week~~ every seven (7) calendar days, and shall include as a minimum:

2.9.3.1.1.1 Description and amount of Regulated Substance in the Tank measured in ~~gallons~~ inches to the nearest one-eight (1/8") of an inch. The equipment used shall be capable of measuring the level of Regulated Substance over the full range of the Tank's height to the nearest one eighth (1/8") of an inch. These measurements shall be converted from inches to gallons and these measurements and conversions shall be performed daily; and

2.9.3.1.1.2 Inputs and outputs of Regulated Substance in gallons recorded daily; and

2.9.3.1.1.3 All deliveries and measurements shall be made through a drop tube that extends to within 5.9 inches of the Tank bottom; and

2.9.3.1.1.4 Regulated Substance dispensing equipment is metered and recorded within the local standards for meter calibration or an accuracy of six (6) cubic inches for every five (5) gallons of substance withdrawn; and

2.9.3.1.1.5 Weekly assessment of the amount of water in UST Systems storing non-ethanol blended Regulated Substances excluding Consumptive Use Heating Fuel or Hazardous Substance or other UST Systems with prior Department approval. The measurement of the water level in the bottom of the Tank shall be made to the nearest one eighth (1/8") of an inch. If the measurement is two inches or more of water, the water shall be removed from the Tank within seven (7) days. Water shall be properly disposed in accordance with all local, state and federal requirements; and

2.9.3.1.1.6 Daily assessment of the amount of water in UST Systems storing ethanol blended Regulated Substance. The measurement of water level in the bottom of the Tank shall be made to the nearest one eighth (1/8") of an inch.

2.9.3.1.1.7 For UST Systems storing ethanol blended Regulated Substance with a storage capacity of eight thousand (8000) gallons or less, if the measurement is one (1) inch or more of water, the water shall be removed from the Tank within seven (7) days. Water shall be properly disposed in accordance with all local, state and federal requirements.

2.9.3.1.1.8 For UST Systems storing ethanol blended Regulated Substance with a storage capacity greater than eight thousand (8000) gallons, if the measurement is two (2) inches or more of water, the water shall be removed from the Tank within seven (7) days. Water shall be properly disposed in accordance with local, state and federal requirements.

2.9.3.1.1.9 Daily reconciliation of the amount of Regulated Substance added to and removed from the Tank. Recommended procedures for Tank inventory and reconciliation procedures are detailed in API RP 1621, *Bulk Liquid Stock Control at Retail Outlets*, and shall include at a minimum:

2.9.3.1.1.9.1 Losses or gains from each day's inventory shall be reconciled ~~once during~~ at the end of each calendar month; and

2.9.3.1.1.9.2 For any day in which there is a loss of five percent or more of the ~~Regulated Substance~~ calculated daily inventory in gallons, or for any month in which there is a significant loss or gain of Regulated Substance that meets or exceeds one percent plus one hundred and thirty (130) gallons of the total monthly throughput, or any month in which there is an unexplainable consistent negative trend, the Release investigation procedure in Part E of these Regulations shall be followed; and

2.9.3.~~1.1.9.3~~2 Tanks equipped with automatic inventory control systems or continuously operating automatic in tank gauging systems may use these devices to perform inventory reconciliation procedures.

2.9.3.3 All automatic systems utilized for performing inventory procedures shall comply with the preventative maintenance program requirements of §2.9.5.1.5 of this Part.

2.9.3.~~2~~4 The Department may, at its discretion, approve other types of inventory control methods or a combination of methods or devices not specified in this section upon a determination that the proposed method or combination of methods is no less protective of human health, safety or the environment than the above requirements.

2.9.3.~~3~~5 Failure to maintain and reconcile inventory control records may be cause for the Department to require Tank tightness test(s) and inspection(s) of the UST Facility at the expense of Owners and Operators.

2.9.4 Interstitial Monitoring Release Detection Requirements for Tanks

2.9.4.1 Interstitial monitoring between the UST System and a secondary barrier immediately around or beneath it may be used, but only if the system is designed, constructed and installed to detect a leak from any portion of the Tank that routinely contains Regulated Substance and also meets one of the following requirements:

2.9.4.1.1 For double walled UST Systems, the sampling or testing method can detect a Release through the inner wall in any portion of the Tank that routinely contains Regulated Substance.

2.9.4.1.2 For UST Systems with a secondary barrier within the Excavation Zone, the sampling or testing method can detect a Release between the UST System and the secondary barrier.

2.9.4.1.3 The secondary barrier around or beneath the UST System consists of artificially constructed material that is sufficiently impermeable (at least 1 x 10 7 cm/sec for the Regulated Substance stored) to direct a Release to the monitoring point and permit its detection.

2.9.4.1.4 The barrier is compatible with the Regulated Substance stored so that a Release from the UST System will not cause deterioration of the barrier allowing a Release to pass through undetected.

2.9.4.1.5 For Cathodically Protected Tanks, the secondary barrier shall be installed so that it does not interfere with the proper operation of the Cathodic Protection system.

2.9.4.1.6 Ground water, soil moisture, or rainfall will not render the testing or sampling method used inoperative so that a Release can go undetected for more than thirty (30) days.

2.9.4.1.7 The site is assessed to ensure that the secondary barrier is always above the ground water and not in a 25 year flood plain, unless the barrier and monitoring are designed for use under such conditions.

2.9.4.1.8 For Tanks with an internally fitted liner, an automated device may be used to detect a Release between the inner wall of the Tank and the liner, and the liner shall be Compatible with the substance stored.

2.9.4.2 At a minimum of once every thirty (30) calendar days, Owners and Operators shall inspect all interstitial monitoring devices utilized for Release Detection for evidence of a Release from the UST System and shall record the results.

2.9.4.3 Owners and Operators shall maintain records of the ~~monthly~~ interstitial Release monitoring inspections for the life of the UST System.

2.9.4.4 Owners and Operators shall have all interstitial monitoring equipment inspected by a certified technician once every twelve (12) months as part of a preventive Maintenance program to minimize in-service failures. The inspection shall at a minimum include:

2.9.4.4.1 Inspection of the console for printer operation if so equipped; and

2.9.4.4.2 Verification of the system setup values and battery backup; and

2.9.4.4.3 Verification of the test programming; and

2.9.4.4.4 Verification of the operability of all warning and alarm indicator lights and audible alarms; and

2.9.4.4.5 Inspection and testing of all <u>probes and</u> interstitial sensors in accordance with the manufacturer's specifications or as directed by the Department to verify proper sensor operation; and

2.9.4.4.6 Inspection of all cables that are visible during normal operating conditions for any cracking or swelling; and

2.9.4.4.7 Correction of any problems found as a result of the required inspection.

2.9.5 Automatic Tank Gauging Release Detection Requirements for Tanks

2.9.5.1 ~~Monthly~~ Tank Tightness Testing using Automatic Tank Gauging (ATG) shall meet the following requirements:

2.9.5.1.1 The ATG equipment can detect a 0.2 gallon per hour leak rate from any portion of the Tank that routinely contains Regulated Substance; and

2.9.5.1.2 The ATG equipment shall be capable of producing a record of Release Detection test results; and

2.9.5.1.3 At a minimum of once ~~during each calendar month~~ every thirty (30) calendar days the ATG equipment shall perform a Release Detection test for each Tank and shall produce a record of each such test; and

2.9.5.1.4 If used for inventory control, the ATG equipment shall be able to conduct inventory control in accordance with §2.9.3. of this Part.

2.9.5.1.5 Owners and Operators shall have all ATG equipment inspected by a certified technician once every twelve (12) months as part of a preventive Maintenance program to minimize in-service failures. The inspection shall at a minimum include:

2.9.5.1.5.1 Inspection of the ATG console for proper printer operation if so equipped; and

2.9.5.1.5.2 Verification of the system setup values and battery backup; and

2.9.5.1.5.3 Verification of the test programming; and

2.9.5.1.5.4 Verification of the operability of all warning and alarm indicator lights and audible alarms; and

2.9.5.1.5.5 Inspection and testing of the magnetostrictive probes and sensors in accordance with the manufacturer's specifications or as directed by the Department to verify proper probe and sensor operation; and

2.9.5.1.5.6 Inspection of all cables that are visible during normal operating conditions for any cracking or swelling; and

2.9.5.1.5.7 Correction of any problems found as a result of the required inspection.

2.9.5.2 Owners and Operators shall maintain a record of all Release Detection tests performed by the ATG equipment for the life of the UST System.

2.9.6 Observation Tube Release Detection Requirements for Tanks

2.9.6.1 Observation Tubes shall be designed, constructed, installed and maintained to detect a Release from any portion of the Tank that routinely contains Regulated Substance.

2.9.6.2 A network of Observation Tubes shall be placed within the excavation of the Tank field without the use of conventional well drilling methods during the installation of an UST and without the need for the installer to obtain a water well contractor's license, pay a monitoring well permit fee, obtain a monitoring well permit, or submit a well completion report to the Department as required in the Delaware *Regulations Governing the Construction and Use of Wells*. The Observation Tube however, shall meet the remaining standards set forth in the Department's *Regulations Governing the Construction and Use of Wells* including the requirement for installation of the tube to a depth of at least five (5) feet below the water table. This exception from the standard monitoring well construction criteria pertains only to Observation Tubes placed within the UST excavation pit.

2.9.6.3 The minimum number of Observation Tubes within an UST System excavation pit shall be:

2.9.6.3.1 Four Observation Tubes shall be installed for one UST.

2.9.6.3.2 Six Observation Tubes shall be installed for two to three USTs.

2.9.6.3.3 Eight Observation Tubes shall be installed for four to five USTs.

2.9.6.3.4 Ten or more Observation Tubes shall be installed for six or more USTs.

2.9.6.4 Observation Tubes shall be clearly marked and secured to avoid unauthorized access and tampering.

2.9.6.5 Observation Tubes may only be used if the following conditions are met:

2.9.6.5.1 The Regulated Substance stored is immiscible in water and has a specific gravity of less than one; and

2.9.6.5.2 Ground water is never more than twenty (20) feet from the ground surface and the hydraulic conductivity of the soil(s) between the UST System and the Observation Tubes is not less than 1 x 10 2 cm/sec (e.g., the soil should consist of gravels, coarse to medium sands, coarse silts or other permeable materials); and

2.9.6.5.3 The continuous monitoring devices or manual methods used can detect the presence of at least one eighth of an inch of ~~Free Product~~ LNAPL on the top of the ground water on the Observation Tubes; and

2.9.6.5.4 The level of background contamination will not interfere with the method used to detect Releases from the UST System.

2.9.6.6 Owners and Operators shall test all Observation Tubes for evidence of a Release from the UST System by:

2.9.6.6.1 Monitoring with a continuously functioning Release Detection device; or

2.9.6.6.2 Testing at least once every thirty (30) calendar days with a portable device inserted into the tube; or

2.9.6.6.3 Sampling at least once every thirty (30) calendar days with the removal of at least eight (8) ounces of fluid from the tube, using a bailer or a sampler of similar design. The fluid shall be taken from the surface of the water table unless otherwise directed by the Department. The fluid shall:

2.9.6.6.3.1 Be tested on site for the presence of Regulated Substance using portable devices; or

2.9.6.6.3.2 Be sent to an independent certified laboratory and analyzed for the presence of the Regulated Substance(s) stored at the Facility and the laboratory results reported to the Owner or Operator within a minimum of twenty-one (21) calendar days.

2.9.6.7 Owners and Operators shall record the results of the testing required in §2.9.6.6. of this Part and the records shall be maintained for the life of the UST System.

2.9.6.8 Observation Tubes shall not be used to comply with the Release Detection requirements of §2.9. of this Part after January 1, 2013.

2.9.7 Tank Tightness Test Release Detection Requirements for Tanks

2.9.7.1 Owners and Operators implementing this Release Detection option shall conduct a separate tightness test for each UST System. The test shall be conducted at least once every twelve (12) months until December 22, 1998 or for (10) years after UST installation, whichever is later. Tank tightness testing shall not be utilized as a primary method of Release Detection after December 31, 2008.

2.9.7.2 All testing of UST Systems shall be conducted in accordance with the Precision Test methods and procedures specified in NFPA 329, *Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases*, or other test approved by the Department which is of equivalent or superior accuracy.

2.9.7.3 Testing of UST Systems shall utilize a method capable of detecting a Release of a Regulated Substance at a rate of 0.1 gallons per hour with a probability of detection of 0.95 and a probability of false alarm of 0.05 from any part of the Tank which routinely contains Regulated Substance. These methods are limited to those tests that account for the following, if applicable:

2.9.7.3.1 The presence of vapor pockets;

2.9.7.3.2 The expansion or contraction of the Regulated Substance, which include any density considerations;

2.9.7.3.3 Temperature stratification in the Tank;

2.9.7.3.4 Evaporation;

2.9.7.3.5 Pressure variations in the Tank;

2.9.7.3.6 Deflection of the Tank ends; and

2.9.7.3.7 The location of the water table.

2.9.7.4 These tests shall be conducted by a person trained and certified in the correct use of the necessary equipment, and shall be performed in accordance with the testing procedures and requirements established by the test system manufacturer. The person performing the test shall certify that the test procedure utilized takes into account the variables specified in §2.9.7.3 of this Part.

2.9.7.5 Owners and Operators shall retain a copy of the results of the Tank tightness tests for the life of the UST System.

2.9.7.6 If the UST System fails NFPA 329, *Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases,* criteria Owners and Operators and the UST System test contractor shall report tank test failure to the Department within twenty-four (24) hours and shall submit a paper copy of the test results to the Department within seven (7) days of the test failure. The test results shall include at a minimum the following information:

2.9.7.6.1 The procedures used including any deviations from those recommended by the developer of the test procedure for the Release Detection method; and

2.9.7.6.2 The name of the company performing the test; and

2.9.7.6.3 The method used; and

2.9.7.6.4 The results of the test.

2.9.8 Monitoring Well Release Detection Requirements for Tanks

2.9.8.1 Monitoring Wells shall be designed, constructed, installed and maintained to detect a Release from any portion of the Tank that routinely contains Regulated Substance.

2.9.8.2 Monitoring Wells shall be designed, constructed and installed in accordance with the Delaware *Regulations Governing the Construction and Use of Wells*.

2.9.8.3 A network of a minimum of four (4) monitoring wells shall be placed immediately outside of the excavation around the Tank.

2.9.8.4 Monitoring wells shall be clearly marked and secured to avoid unauthorized access and tampering.

2.9.8.5 Monitoring wells may be used only if the following conditions are met:

2.9.8.5.1 The Regulated Substance stored is immiscible in water and has a specific gravity of less than one; and

2.9.8.5.2 Ground water is never more than twenty (20) feet from the ground surface and the hydraulic conductivity of the soil(s) between the UST System and the monitoring wells or devices is not less than 1 x 10 2 cm/sec (e.g., the soil should consist of gravels, coarse to medium sands, coarse silts or other permeable materials); and

2.9.8.5.3 The continuous monitoring devices or manual methods used can detect the presence of at least one eighth of an inch of ~~Free Product~~ LNAPL on the top of the ground water in the monitoring wells; and

2.9.8.5.4 The level of background contamination will not interfere with the method used to detect Releases from the UST System.

2.9.8.6 Owners and Operators shall test all Monitor Wells for evidence of a Release from the UST System by:

2.9.8.6.1 Monitoring with a continuously functioning Release Detection device; or

2.9.8.6.2 Test~~ed~~ing at a minimum of once every thirty (30) calendar days with a portable device inserted into the Monitor Well; or

2.9.8.6.3 Sampl~~ed~~ing at least once every thirty (30) calendar days with the removal of at least eight (8) ounces of fluid from the well, using a bailer or a sampler of similar design. The fluid shall be taken from the surface of the water table unless otherwise directed by the Department. The fluid shall:

2.9.8.6.3.1 Be tested on site for the presence of Regulated Substance using portable devices; or

2.9.8.6.3.2 Be sent to an independent certified laboratory and analyzed for the presence of the Regulated Substance(s) stored at the Facility and the laboratory results reported to the Owner or Operator within a minimum of twenty-one (21) calendar days.

2.9.8.7 Owners and Operators shall record the results of the testing required in §2.9.8.6 ~~monthly~~ of this Part and the records shall be maintained for the life of the UST System.

2.9.8.8 Monitor Wells shall not be used to comply with the Release Detection requirements of §2.9. of this Part after January 1, 2013.

2.9.9 Vadose Zone Vapor Detection Tubes Release Detection Requirements for Tanks

2.9.9.1 Vadose Zone Vapor Detection Tubes shall be designed, constructed, installed and maintained to detect a Release from any portion of the Tank that routinely contains Regulated Substance.

2.9.9.2 A network of vadose zone vapor detection tubes shall be placed within the excavation pit. These tubes shall extend from the surface of the ground to the water table or to a position at least two feet below the Tank bottom whichever is less. If the vapor detection tube is installed within a Tank excavation pit lined for Secondary containment, the tube shall extend to within six (6) inches of the bottom of the Tank excavation.

2.9.9.3 For UST Systems with vadose zone vapor detection tubes installed after July 12, 1985 the minimum number of vadose zone vapor detection tubes within an UST System excavation pit shall be:

2.9.9.3.1 Four vapor detection tubes shall be installed for a single UST;

2.9.9.3.2 Six vapor detection tubes shall be installed for two to three USTs;

2.9.9.3.3 Eight vapor detection tubes shall be installed for four to five USTs;

2.9.9.3.4 Ten vapor detection tubes shall be installed for six or more USTs.

2.9.9.4 UST Systems with vadose zone vapor detection tubes installed prior to July 12, 1985 shall have a minimum of four vapor detection tubes within the UST System excavation pit.

2.9.9.5 Vapor detection tubes shall be clearly marked and secured to avoid unauthorized access and tampering.

2.9.9.6 Owners and Operators shall test all vadose zone vapor detection tubes for evidence of a Release from the UST System by:

2.9.9.6.1 Monitoring with a continuously functioning Release Detection device; or

2.9.9.6.2 Testing at least once every thirty (30) calendar days with a portable device inserted into the tubes.

2.9.9.7 The presence or odor of a Regulated Substance or a signal from a Release Detection device shall be prima facie evidence of a Release unless Owners and Operators affirmatively demonstrate that no Release has occurred.

2.9.9.8 All operating Release Detection devices shall be equipped with an automatic audible or visual alert system. Owners and Operators shall inspect all continuously operating Release Detection devices at least once every thirty (30) calendar days to verify proper sensor operation.

2.9.9.9 Vadose Zone Vapor Detection Tubes may only be used if the following conditions are met:

2.9.9.9.1 The materials used as backfill are sufficiently porous (e.g., gravel, sand, crushed rock) to readily allow diffusion of vapors from the Regulated Substance into the excavation area; and

2.9.9.9.2 The Regulated Substance stored, or tracer compound placed in the ~~Tank s~~UST System, is sufficiently volatile (e.g., gasoline) to result in a vapor level that is detectable by the monitoring devices located in the Excavation Zone in the event of a Release from the Tank and Piping system; and

2.9.9.9.3 The measurement of vapors by the monitoring device is not rendered inoperative by the ground water, rainfall, or soil moisture or other known interferences so that a Release could go undetected for more than thirty ~~one~~ (3~~1~~0) days; and

2.9.9.9.4 The level of background contamination in the Excavation Zone will not interfere with the method used to detect Releases from the Tank; and

2.9.9.9.5 The vapor monitors are designed and operated to detect any significant increase in concentration above background levels of the Regulated Substance stored in the ~~Tank s~~UST ~~S~~System, a component of that substance, or a tracer compound placed in the Tank system; and

2.9.9.9.6 In the UST Excavation Zone, the site is assessed to ensure compliance with the above requirements for vapor detection tubes and to establish the number and positioning of these tubes that will detect Releases within the Excavation Zone from any portion of the UST System that routinely contains Regulated Substance.

2.9.9.10 Owners and Operators shall record the results of the testing required in §2.9.9.6 once every thirty (30) calendar days and the records shall be maintained for the life of the UST System.

2.9.9.11 Vadose Zone Vapor Detection Tubes shall not be used to comply with the Release Detection requirements of §2.9 of this Part after January 1, 2013.

2.9.10 U-Tube Release Detection Requirements for Tanks

2.9.10.1 U-Tubes shall be designed, constructed, installed and maintained to detect a Release from any portion of the UST System that routinely contains Regulated Substance.

2.9.10.2 U tubes shall be constructed of four (4) inch diameter Schedule 40 PVC pipe or other material inert with respect to the stored Regulated Substance and installed under each Tank in a dry excavation and covered with a waterproof cap. The U tube shall be built of a half slotted (slots facing up), gently pitched (1/4 inch per foot) mesh cloth wrapped pipe connected at the higher end of a 90 degree elbow and a vertical section of the pipe finished to grade and capped with a water proof connection. The lower end of the slotted pipe shall be connected to another unslotted vertical pipe finished to grade and topped with a removable waterproof cap. The lower end of the tee shall be attached to two (2) feet of unslotted pipe which is finished at the bottom with a sealed cap to form a collection sump.

2.9.10.3 U tubes shall be clearly marked and secured to avoid unauthorized access and tampering.

2.9.10.4 Owners and Operators shall test all U-Tubes for evidence of a Release from the UST System by:

2.9.10.4.1 Monitoring with a continuously functioning Release Detection device; or

2.9.10.4.2 Testing at a minimum of once every thirty (30) calendar days with a portable device inserted into the tube; or

2.9.10.4.3 Sampling at least once ~~during each calendar month~~ every thirty (30) calendar days with the removal of at least eight (8) ounces of fluid from the well, using a bailer or a sampler of similar design. The fluid shall be taken from the surface of the water table unless otherwise directed by the Department. The fluid shall:

2.9.10.4.3.1 Be tested on site for the presence of Regulated Substance using portable devices; or

2.9.10.4.3.2 Be sent to an independent certified laboratory and analyzed for the presence of the Regulated Substance(s) stored at the Facility and the laboratory results reported to the Owner or Operator within a minimum of twenty-one (21) calendar days.

2.9.10.5 The presence or odor of a Regulated Substance or a signal from a Release Detection device shall be evidence of a Release unless Owners and Operators affirmatively demonstrate that no Release has occurred.

2.9.10.6 Owners and Operators shall record the results of the testing required in §2.9.10.4 ~~monthly~~ of this Part and the records shall be maintained for the life of the UST System.

2.9.10.7 U-Tubes may only be used if the following conditions are met:

2.9.10.7.1 The materials used as backfill are sufficiently porous (e.g., gravel, sand, crushed rock) to readily allow diffusion of vapors from the Regulated Substance into the excavation area; and

2.9.10.7.2 The Regulated Substance stored, or tracer compound placed in the UST System, is sufficiently volatile (e.g., gasoline) to result in a vapor level that is detectable by the monitoring devices located in the Excavation Zone in the event of a Release from the Tank; and

2.9.10.7.3 The measurement of vapors by the monitoring device is not rendered inoperative by the ground water, rainfall, or soil moisture or other known interferences so that a Release could go undetected for more than thirty (30) days; and

2.9.10.7.4 The level of background contamination in the Excavation Zone will not interfere with the method used to detect Releases from the Tank; and

2.9.10.7.5 The vapor monitors are designed and operated to detect any significant increase in concentration above background levels of the Regulated Substance stored in the UST System, a component of that substance, or a tracer compound placed in the UST System; and

2.9.10.7.6 In the UST System Excavation Zone, the site is assessed to ensure compliance with the above requirements for U tubes and to establish the number and positioning of these U tubes that will detect Releases within the Excavation Zone from any portion of the UST System that routinely contains Regulated Substance.

2.9.10.7.7 U Tubes shall not be used to comply with the Release Detection requirements of §2.9 of this Part after January 1, 2013.

2.9.11 Alternative Release Detection Methods for Tanks

2.9.11.1 The Department may approve other types of Release Detection method, or a combination of methods or devices not specified in this Section if:

2.9.11.1.1 It can detect a 0.2 gallon per hour leak rate or a Release of one hundred and fifty(150) gallons within a month with a probability of detection of 0.95 or greater and a probability of false alarm of 0.05 or less; or

2.9.11.1.2 The Department may approve another method or a combination of methods or devices if Owners and Operators can demonstrate that the method or a combination of methods or devices can detect a Release as effectively as any of the methods allowed in §2.9 of this Part. In comparing methods of Release Detection allowed the Department shall consider the size of Release that the method or a combination of methods or devices can detect and the frequency and reliability with which it can be detected. If the method or a combination of methods or devices is approved, Owners and Operators shall comply with any conditions imposed by the Department on its use to ensure the protection of human health, safety or the environment.

2.10 Anchoring Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.10.1 Support and anchorage shall be provided for all installations to avoid flotation. Any of the following anchoring methods can be used to meet this requirement and shall be completed in accordance with the PEI, RP 100, *Recommended Practices for Installation of Underground Liquid Storage Systems:*

2.10.1.1 Reinforced concrete deadmen anchors; or

2.10.1.2 Bottom hold down pad which consists of eight (8) inches of reinforced concrete that extends eighteen (18) inches beyond Tank sides and twelve (12) inches beyond each end; or

2.10.1.3 Reinforced concrete slab over Tank.

2.10.2 All exposed metallic components of hold down systems shall be Electrically Isolated and cathodically protected when the hold down system is required by the Department; adequate bed of backfill shall be provided between the Tank and concrete.

2.11 Backfill Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.11.1 Backfill material shall consist of sand, crushed rock or pea gravel. The material shall be clean, washed, inert, free flowing, homogeneous, well granulated, non corrosive, and free of debris, rock, ice, snow or organic material. Particle length of crushed rock or pea gravel shall be no more than 1/8" to 3/4" in size. Backfill material shall comply with the manufacturer's specifications. Mixing of backfill with native soil or foreign objects is prohibited.

2.12 Installation of New UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance In Existing UST Field

2.12.1 If an UST System shall be installed in or near a previous UST Facility, Owners and Operators shall provide a means of Release Detection that will, at a minimum, detect any future Release from the UST System. An Observation Tube, an U Tube, a Monitor Well, or a vadose zone vapor detection tube may not be permitted as a Release Detection option if the soil is already contaminated.

2.13 Tank and Piping Installation Inspection and Testing Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.13.1 Once on site all UST Systems materials and equipment shall be inspected for flaws, surface cracks, holes, large scrapes, blisters, indentations and other indications of damage. All defects and Repairs to the UST System shall be recorded and submitted together with a site completion report to the Department.

2.13.2 All Tank(s) shall be air pressure tested according to the manufacturer's specifications prior to installation of the Tank(s) into the excavation. For single walled Tank(s), the installer shall remove, dope and re install all factory plugs. The installer shall soap the exterior, particularly its seams and fittings and pressure test the Tank(s) using the manufacturer's specifications to watch for bubbles. For double walled Tanks testing shall be conducted according to the manufacturer's recommendations and accepted engineering practices.

2.13.3 After installation of the Tank and integral Piping is completed, the entire UST System shall be tested in accordance with current industry standards and practices and in the following manner to prove tightness prior to the initial use of the UST System:

2.13.3.1 All testing of UST Systems shall be accomplished by the Precision Test method described in NFPA 329, *Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases,* or other test approved by the Department which is of equivalent or superior accuracy.

2.13.3.2 All testing of UST Systems shall be able to account for the effects of thermal expansion or contraction of the Regulated Substances, vapor pockets, Tank deformation, evaporation or condensation, and the location of the water table.

2.13.3.3 These tests shall be conducted by a person trained and certified in the correct use of the necessary equipment, and shall be performed in accordance with the testing procedures and requirements established by the test system manufacturer and with current industry standards and practices.

2.14 General Piping Installation Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.14.1 The Piping layout shall be designed to minimize crossed lines and interference with conduit and other UST System components. If crossing of lines is unavoidable, adequate clearance shall be provided to prevent contact.

2.14.2 Double elbow swing joints or flexible connectors shall be installed at all locations where a pipeline changes direction from horizontal to vertical, or from vertical to horizontal. All double elbow swing joints shall be replaced with flexible connectors by January 1, 2011.

2.14.3 All Regulated Substance, vent and vapor return Piping shall slope back to the Tank with a minimum slope of one-eighth (1/8) inch per foot.

2.14.4 The pipe joints shall be cut accurately and deburred to provide liquid tight seals.

2.14.5 All underground metal pipe, fittings, flexible connectors, joints, and pipes shall be coated or wrapped and shall have Cathodic Protection.

2.15 UST Piping Design Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.15.1 Underground Piping shall be protected from corrosion in accordance with accepted corrosion engineering practices and shall be designed, constructed, installed and tested in accordance with the following industry standards, as applicable:

2.15.1.1 NFPA 30, *Flammable and Combustible Liquids Code*.

2.15.1.2 NFPA 30A, *Motor Fuel Dispensing Facilities and Repair Garages.*

2.15.1.3 NFPA 329, *Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases.*

2.15.1.4 API RP 1632, *Cathodic Protection of Underground Petroleum Storage Tanks.*

2.15.1.5 NACE RP 0169, *Control of External Corrosion on Underground or Submerged Metallic Piping Systems.*

2.15.1.6 UL 971, *Standard for Nonmetallic Underground Piping for Flammable Liquids.*

2.15.1.7 UL 567, *Standard for Emergency Breakaway Fittings, Swivel Connectors and Pipe-Connection Fittings for Petroleum Products and LP-Gas.*

2.15.1.8 PEI RP 100, *Recommended Practices for Installation of Underground Liquid Storage Systems.*

2.15.2 All integral Piping systems shall be designed, constructed, and installed in a manner which will permit periodic tightness testing of the entire Piping system without the need for extensive excavation.

2.15.3 Acceptable designs for Underground Piping construction include Cathodically Protected metallic, fiberglass reinforced plastic and flexible plastic Piping.

2.15.4 Use of metal Piping without either Sacrificial Anodes or impressed current Cathodic Protection is prohibited.

2.16 Metal Piping Design Requirements for UST Systems Storing Regulated Substance excluding Heating Fuel or Hazardous Substance

2.16.1 All metal Piping shall be coated or wrapped, and cathodically protected in the following manner:

2.16.1.1 The Piping is coated with a suitable Dielectric Material; and

2.16.1.2 Field installed Cathodic Protection systems are designed and installed in accordance with accepted engineering practice and standards established under this Section; and

2.16.1.3 Cathodically protected Piping systems of the Sacrificial Anode type shall be designed and installed to permit measurement of structure to soil potential six (6) months after installation and at least once every twelve (12) months thereafter. If inadequate Cathodic Protection is indicated, the cause shall be determined, and necessary Repairs made in accordance with accepted engineering practices and one of the Standards contained in this Section within ~~thirty (30)~~ sixty (60) days of the test; and

2.16.1.4 Impressed current systems shall be designed to allow determination of current operating status. The impressed current source cannot be de energized at any time including periods when the Facility is closed (except during power failures or during service work on the storage systems or the impressed current Cathodic Protection system), and it shall be equipped with a continuously operating meter to show that the system is working~~.~~ ; and

2.16.1.5 Where a Sacrificial Anode or impressed current system is used, a monitor station to check on the adequacy of the cathodic protection system shall be installed and kept in proper working condition. If at any time the monitor station shows that the electrical current necessary to prevent corrosion is not being maintained the ~~cathodic protection system shall be restored,~~ cause shall be determined and necessary Repairs made in accordance with accepted engineering practices and one of the Standards contained in this Section within sixty (60) days of the failure, and the Piping shall be tested for tightness in accordance with NFPA 329, *Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases*~~.~~ ; and

2.16.1.6 Except where Cathodic Protection is provided by impressed current, underground Piping systems shall have dielectric bushings, washers, sleeves or gaskets installed to electrically isolate the Piping system from the Tank and the dispenser. These dielectric connectors shall be chemically compatible with Regulated Substances, additives, corrosive soils and groundwater~~.~~; and

2.16.1.7 Cathodic Protection systems shall be maintained, operated, tested and Repaired in accordance with the requirements of §2.25. of this Part.

2.17 Fiberglass Reinforced Plastic and Flexible Plastic Piping Design Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.17.1 Fiberglass reinforced plastic and flexible plastic Piping shall be designed, constructed, installed and tested in accordance with the manufacturer's specifications and the following industry standards, as applicable:

2.17.1.1 UL 971, *Standard for Nonmetallic Underground Piping for Flammable Liquids.*

2.17.1.2 UL Standard 567, *Standard for Emergency Breakaway Fittings, Swivel Connectors and Pipe Connection Fittings for Petroleum Products and LP-Gas.*

2.17.1.3 NFPA 30, F*lammable and Combustible Liquids Code*.

2.17.1.4 NFPA 30A, *Motor Fuel Dispensing Facilities and Repair Garages.*

2.17.1.5 NFPA 329, *Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases.*

2.17.1.6 PEI RP 100, *Recommended Practices for Installation of Underground Liquid Storage Systems.*

2.17.2 The construction materials, joints and joint adhesives of all fiberglass reinforced plastic and flexible plastic pipes shall be Compatible with the Regulated Substance and additives stored, soil and groundwater.

2.17.3 Pipes, fittings and adhesives shall be designed, fabricated, and factory tested in accordance with generally accepted structural, material and performance standards for underground Piping systems.

2.18 Suction Piping Design Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.18.1 Suction Piping shall operate at less than atmospheric pressure and shall be designed, constructed, and installed to meet the requirements of §2.18.1.1 or §2.18.1.2 of this Part:

2.18.1.1 Safe suction Piping systems shall be designed and constructed in accordance with the following requirements:

2.18.1.1.1 The below grade Piping shall be constructed so that if suction is released the contents of the pipe will drain back into the Tank; and

2.18.1.1.2 Only one (1) check valve shall be included in each suction ~~line~~ Pipe; and

2.18.1.1.3 The check valve shall be located directly below and as close as practical to the suction pump; or

2.18.1.2 Suction Piping systems with a foot valve (U.S. Suction) shall be designed and constructed in accordance with the following requirements:

2.18.1.2.1 The below grade Piping shall be constructed so that the Piping slopes back to the Tank; and

2.18.1.2.2 A foot valve is installed at the Tank.

2.19 General Release Detection Requirements for UST Piping for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.19.1 Owners and Operators shall equip all underground Piping that routinely contains Regulated Substances with a method, or combination of methods of Release Detection that can detect a Release from any portion of the underground Piping that routinely contains Regulated Substance.

2.19.2 UST Piping interstitial or sump monitoring systems shall be designed, constructed installed and maintained to detect a Release from any portion of the Piping that routinely contains Regulated Substance.

2.19.3 Release Detection methods not specified in this Section will be considered an alternative by the Department. A written request detailing the method or combination of methods proposed shall be submitted to the Department prior to installation for approval. Alternative methods shall meet the following requirements:

2.19.3.1 The method can detect a 0.1 gallon per hour leak rate or a Release of seventy-five (75) gallons within a month with a probability of detection of 0.95 or greater and a probability of false alarm of 0.05 or less; or

2.19.3.2 The method or a combination of methods or devices can detect a Release as effectively as any of the Release Detection methods allowed in §2.20.of this Part. If the method or a combination of methods or devices is approved, Owners and Operators shall comply with any conditions imposed by the Department on its use to ensure the protection of human health, safety or the environment.

2.19.4 Owners and Operators shall implement the Indicated Release investigation procedure in Part E of these Regulations if the Piping Release Detection equipment or method shows indication of a Release.

2.20 Pressurized Piping Release Detection Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.20.1 Line Leak Detector Requirements

2.20.1.1 Underground Piping that conveys Regulated Substances under pressure shall be equipped with an automatic ~~l~~Line leak detector.

2.20.1.2 The automatic ~~l~~Line leak detector shall alert Owners and Operators to the presence of a Release by restricting or shutting off the flow of the Regulated Substance through the Piping or triggering an audible or visual alarm.

2.20.1.3 Mechanical and Electronic automatic ~~l~~Line leak detectors shall be capable of reacting to leaks of three (3) gallons per hour at ten (10) pounds per square inch line pressure within one (1) hour.

2.20.1.4 Owners and Operators shall conduct an annual test of the operation of the automatic ~~l~~Line leak detector ~~in accordance with the manufacturer's test protocols~~ while installed in the UST System and under normal operating conditions. All Mechanical and Electronic automatic line leak detectors shall pass a function test at least once every twelve (12) months at three (3) gallons per hour (gph) at ten (10) pounds per square inch line pressure within one (1) hour.

2.20.2 Tightness Test Requirements

2.20.2.1 Owners and Operators shall conduct an annual tightness test of the entire pressurized underground Piping system, including primary and secondary Piping, in accordance with NFPA 329, *Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases.*

2.20.2.2 Owners and Operators of UST Systems with underground pressurized Piping systems shall use a Piping tightness test method designed to detect a Release from any portion of the underground Piping system that routinely contains Regulated Substances.

2.20.2.3 Owners and Operators of UST Systems with underground pressurized Piping systems constructed of double wall design may utilize interstitial monitoring systems to comply with the annual ~~p~~Piping tightness test requirements in §2.20.2.1 of this Part if the following requirements are met:

2.20.2.3.1 All interstitial monitoring devices shall be designed, constructed, installed and maintained to continuously detect a Release from any portion of the Piping that routinely contains Regulated Substance; and

2.20.2.3.2 At a minimum of once every thirty (30) calendar days, Owners and Operators shall provide proof via the ~~automatic tank gauge~~ interstitial monitoring equipment record that the interstitial monitoring device is functioning in accordance with the manufacturer's specifications; and

2.20.2.3.3 Owners and Operators shall maintain records of the ~~monthly~~ interstitial Release Detection ~~automatic tank gauge~~ records for the life of the UST System; and

2.20.2.3.4 ~~The interstitial monitoring device shall alert the Owner and Operator to the presence of a Release by shutting off the flow of the Regulated Substance; and~~

~~2.20.2.3.5~~ All sump and interstitial sensors shall comply with the testing and monitoring requirements of §2.28 of this Part~~.~~; and

2.20.2.3.5 All Containment Sumps shall comply with the testing and monitoring requirements of §2.26 of this Part.

2.21 Suction Piping Release Detection Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.21.1 Release Detection is not required for suction Piping that is designed and constructed to meet the requirements of §2.18.1.1 of this Part.

2.21.2 Owners and Operators of suction Piping that is designed and constructed in accordance with §2.18.1.2 shall conduct a ~~l~~Line tightness test a minimum of once every three (3) years in accordance with NFPA 329, *Recommended Practice for Handling Releases of Flammable and Combustible Liquids and Gases*~~.~~; or

2.21.3 Owners and Operators of UST Systems with underground suction Piping systems constructed of double wall design may utilize interstitial monitoring systems to comply with Piping Release Detection requirements of §2.19 and the line tightness testing requirements of §2.21.2 of this Part if the following requirements are met:

2.21.3.1 All interstitial monitoring devices shall be designed, constructed, installed and maintained to continuously detect a Release from any portion of the Piping that routinely contains Regulated Substance; and

2.21.3.2 At a minimum of once every thirty (30) calendar days, Owners and Operators shall provide proof via the interstitial monitoring equipment record that the interstitial monitoring device is functioning in accordance with the manufacturer's specifications; and

2.21.3.3 Owners and Operators shall maintain records of the interstitial Release Detection records for the life of the UST System; and

2.21.3.4 All sump and interstitial sensors shall comply with the testing and monitoring requirements of §2.28 of this Part; and

2.21.3.5 All Containment Sumps shall comply with the testing and monitoring requirements of §2.26 of this Part

2.22 Spill ~~Protection~~ Prevention Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.22.1 No Person shall construct, install, use or maintain any UST System without providing a reliable means of ensuring that Releases due to spilling do not occur.

2.22.2 To prevent spilling associated with Regulated Substance transfer to the UST System, Owners and Operators shall comply with the requirements of ~~one of~~ the following industry standards:

2.22.2.1 NFPA 30, *Flammable and Combustible Liquids Code*; or

2.22.2.2 NFPA 385, *Standard for Tank Vehicles for Flammable and Combustible Liquids;* or

2.22.2.3 API RP 1621, *Bulk Liquid Stock Control at Retail Outlets.*

2.22.3 Owners and Operators shall equip UST Systems with an impervious spill containment device that forms a liquid tight seal around the fill pipe. The spill containment device shall consist of one of the following:

2.22.3.1 Impervious Materials which form a seal around the UST fill pipe with an optional drain leading to an overfill collection device; or

2.22.3.2 An impervious container surrounding the fill pipe which will collect any overfill or spill and will allow the Regulated Substance to drain back into the UST when there is sufficient ullage space.

2.22.4 Owners and Operators shall immediately remove water, Regulated Substance or debris that accumulates in the spill containment device. Owners and Operators shall maintain spill containment devices to be capable of containing a spill of the containment design capacity at all times.

2.22.5 All reasonable precautions shall be taken to prevent UST overfilling, spilling or dripping.

2.22.6 Owners and Operators shall test spill containment devices once every twelve (12) months for tightness, or in accordance with the manufacturer's specifications, or when deemed necessary by the Department to determine if a threat to human health, safety or the environment exists.

2.22.7 Spill containment devices of double wall design with continuous monitoring of the interstitial space and the interstitial sensors are tested in accordance with §1.27 of this Part are exempt from the testing requirements of §2.22.6 of this Part. ~~Owners and Operators shall maintain records of the continuous interstitial monitoring of the spill containment device.~~

2.22.8 Owners and Operators shall report, investigate and clean up any spills in accordance with Part E of these Regulations.

2.23 Overfill ~~Protection~~ Prevention Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.23.1 No Person shall construct, install, use, or maintain any UST Facility without providing a reliable means of detecting and preventing an overfill.

2.23.2 The Person In Charge of the transfer of Regulated Substance to the Tank shall adhere to proper safety precautions and procedures for transfer as found in NFPA 385, *Standard for Tank Vehicles for Flammable and Combustible Liquids* or API RP 1621, *Bulk Liquid Stock Control at Retail Outlets* and shall comply with the following:

2.23.2.1 The Person In Charge of the transfer operation shall first check the UST to ensure that the volume available in the UST is greater than the volume of Regulated Substance to be transferred to the UST before the transfer is made; and

2.23.2.2 During the transfer, the Person In Charge shall continuously monitor the entire transfer operation to prevent an Overfill Release; and

2.23.2.3 At the conclusion of the transfer, the Person in Charge shall collect any Regulated Substance which remains in the transfer hose and shall ensure it is properly managed and does not reach the environment; and

2.23.2.4 The Person in Charge shall take all precautions to prevent spilling and dripping.

2.23.3 Owners and Operators shall install and maintain overfill ~~protection~~ prevention equipment that shall:

2.23.3.1 Automatically shut off the flow into the UST when the UST is no more than ninety-five percent (95%) full; or

2.23.3.2 Alert the transfer operator when the UST is no more than ninety percent (90%) full by restricting the flow into the UST or triggering a high level alarm; or

2.23.3.3 Restrict flow 30 minutes prior to overfilling, alert the Operator with a high level alarm one minute before overfilling, or automatically shut off flow into the UST so that none of the fittings located on top of the Tank are exposed to Regulated Substance due to overfilling; or

2.23.3.4 Be ~~A~~an automatic partial flow shut off float vent or vapor valve installed inside the UST~~(s)~~ set to restrict flow when the UST is no more than ninety (90%) full. Vent or vapor restriction devices shall not be installed in UST Systems that are equipped with suction pumps, remote fill ~~lines~~ Piping, remote vapor ~~lines~~ Piping or receive pressurized deliveries.

2.23.4 UST Systems that receive pressurized deliveries require a high level alarm that is triggered at no more than ninety (90%) percent full for overfill ~~protection~~ prevention or an automatic flow shut-off valve designed for pressurized deliveries.

2.23.5 Owners and Operators shall report, investigate, and clean up any spills and overfills in accordance with Part E of these Regulations.

2.24 Fill Line Protection Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.24.1 Owners and Operators shall clearly mark all fill lines for UST Systems to indicate the size of the Tank and the type of Regulated Substance stored. These markings shall be as follows:

2.24.1.1 A label or permanent tag at the fill connection which states the size of the UST and the specific type of Regulated Substance stored; and

2.24.1.2 A color symbol system shall be implemented according to the following requirements:

2.24.1.2.1 Fill and vapor recovery covers shall be marked consistent with API RP 1637, Using the API Color-Symbol System to Mark Equipment and Vehicles for Product Identification at Service Stations and Distribution Terminals or API IP 1542, Identification Markings for Dedicated Aviation Fuel Manufacturing and Distribution Facilities, Airport Storage and Mobile Fuel Equipment; and

2.24.1.2.2 A different color symbol shall be used for each type of Regulated Substance or grade of substance being stored at the Facility.

2.24.2 Pipes and other openings not used for transfer of Regulated Substance at the storage Facility shall not be painted any color which would be associated with the color symbol designated for marking the Regulated Substance stored at the Facility. It is particularly important that openings with access to soil and ground water, such as Monitor Wells, Release Detection tubes, vadose zone vapor detection tubes and U tubes, not be confused with Regulated Substance fill lines.

2.25 Sacrificial Anode and Impressed Current Cathodic Corrosion Protection Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.25.1 General Requirements

2.25.1.1 Owners and Operators of steel UST systems with corrosion protection systems shall install, operate and maintain the system in accordance with the following industry standards:

2.25.1.1.1 NACE RP 0285, *Corrosion Control of Underground Storage Tank Systems by Cathodic Protection*; and

2.25.1.1.2 NACE TM0101, *Measurement Techniques Related to Criteria for Cathodic Protection on Underground or Submerged Metallic Tank Systems;* and

2.25.1.1.3 NFPA 30, *Flammable and Combustible Liquids Code*; and

2.25.1.1.4 NFPA 30A, *Motor Fuel Dispensing Facilities and Repair Garages*.

2.25.1.2 Owners and Operators of steel UST Systems with corrosion protection systems shall maintain and operate the corrosion protection system to continuously provide corrosion protection to the metal components of the UST System that routinely contain a Regulated Substance and are in contact with the ground to ensure that Releases due to corrosion are prevented for the life of the UST System.

2.25.1.3 Owners and Operators shall ensure the integrity of the UST System utilizing one of the following methods prior to the addition of a Cathodic Protection system to an existing UST System:

2.25.1.3.1 The Tank shall be internally inspected to ensure that the Tank is structurally sound and free of corrosion holes prior to installing the Cathodic Protection system; or

2.25.1.3.2 The Tank has been installed for less than ten (10) years and is monitored monthly for Releases in accordance with the requirements of an approved Release Detection method in §2.9 of this Part; or

2.25.1.3.3 The Tank has been installed for less than ten (10) years and is assessed for corrosion holes by conducting two (2) ~~p~~Precision ~~Tank t~~Tests that meet the requirements of §2.9.7 of this Part. The first Precision Test shall be conducted prior to installing the Cathodic Protection system. The second Precision Test shall be conducted between three (3) and six (6) months following the first operation of the Cathodic Protection system; or

2.25.1.3.4 A third party approved integrity assessment method approved by the Department.

2.25.2 Sacrificial Anode Cathodic Protection System Operation and Maintenance Requirements

2.25.2.1 Owners and Operators shall test all UST Systems equipped with Sacrificial Anode Cathodic Protection systems for proper operation using standard corrosion engineering practices and in accordance with the following requirements:

2.25.2.1.1 Testing procedures shall be done in accordance with NACE RP 0285, *Corrosion Control of Underground Storage Tank Systems by Cathodic Protection,* and the manufacturer's specifications, and shall include the following:

2.25.2.1.1.1 A minimum of three (3) voltage readings along the center line for UST Systems less than twenty thousand (20,000) gallons and a minimum of five (5) voltage readings along the center line for UST Systems greater than or equal to twenty thousand (20,000) gallons; and

2.25.2.1.1.2 A minimum of one (1) voltage reading for every ten (10) feet of Piping.

2.25.2.2 All Sacrificial Anode Cathodic Protection systems that protect UST System components shall be tested by an individual certified by a nationally recognized industry standard setting organization, and in accordance with Department standards within six (6) months of installation and at least once every twelve (12) months thereafter.

2.25.2.3 The Sacrificial Anode Cathodic Protection system shall be tested by an individual certified by a nationally recognized industry standard setting organization, and in accordance with Department standards within six (6) weeks after underground work is performed at or near a site with a Sacrificial Anode Cathodic Protection system and once every twelve (12) months thereafter.

2.25.2.4 Owners and Operators shall Repair or replace the Sacrificial Anode Cathodic Protection system in accordance with NACE RP 0285, *Corrosion Control of Underground Storage Tank Systems by Cathodic Protection* and the requirements of §1.6 of this Part if the Sacrificial Anode Cathodic Protection system is not operating in accordance with the manufacturer's specifications and the requirements of these Regulations. This includes but is not limited to failure to register a negative voltage of at least 0.85 volts for each UST. An individual certified by a nationally recognized industry standard setting organization shall determine the cause of the failure and make the necessary Repairs within sixty (60) days of the discovery of the failure of the corrosion protection system.

2.25.2.5 UST System Owners and Operators shall notify the Department within forty-eight (48) hours of the discovery of the failure of a Sacrificial Anode Cathodic Protection system.

2.25.2.6 The Department shall approve, either verbally or in writing, all Cathodic Protection repair or replacement plans prior to work commencing.

2.25.2.7 ~~The Department shall review the Release Detection and Cathodic Protection records of the UST System and based upon this information may require that Owners and Operators determine the current integrity of the UST System if the Cathodic Protection system is not operating in accordance with the manufacturer's specifications and the requirements of these Regulations prior to making Repairs to the corrosion protection system.~~ If the Cathodic Protection system is not operating in accordance with the manufacturer's specifications and the requirements of these Regulations, the Department shall review the Release Detection and Cathodic Protection records of the UST System prior to repair or replacement of the Cathodic Protection system. The Department may require that Owners and Operators determine the current integrity of the UST system.

2.25.2.8 The following information shall be submitted to the Department prior to Repair or replacement of the Sacrificial Anode Cathodic Protection system:

2.25.2.8.1 Results of one of the following:

2.25.2.8.1.1 The two (2) most recent Sacrificial Anode Cathodic Protection system tests including the failed test, or

2.25.2.8.1.2 The results of an internal assessment, or

2.25.2.8.1.3 The results of a third party approved integrity assessment; and

2.25.2.8.2 Records of the Tank Release Detection method from the date of the most recent passed Sacrificial Anode Cathodic Protection test.

2.25.2.9 If the tank has an internal lining, no internal assessment results will be accepted for the purpose of determining the current integrity of the UST System.

2.25.2.~~8~~10 The use of alternate methods of monitoring shall be those described in NACE RP 0285, *Corrosion Control of Underground Storage Tank Systems by Cathodic Protection*, and shall only be used with prior written approval from the Department.

2.25.2.~~9~~11 Owners and Operators shall maintain a record of the operation of Sacrificial Anode Cathodic Protection systems to demonstrate compliance with the requirements of this Section. These records shall be retained in a permanent record and shall at a minimum provide the following information:

2.25.2.~~9~~11.1 The results of all tests and inspections of the Sacrificial Anode Cathodic Protection system.

2.25.2.~~10~~12 Impressed current Cathodic Protection systems shall not be utilized as a Repair, Upgrade or ~~R~~replacement for a failed Sacrificial Anode Cathodic Protection system after ~~the Effective Date of these Regulations~~ January 11, 2008.

2.25.3 Impressed Current Cathodic Protection ~~Requirements~~ Operation and Maintenance Requirements

2.25.3.1 Owners and Operators shall test all UST Systems equipped with impressed current Cathodic Protection systems for proper operation using standard corrosion engineering practices in accordance with the following requirements:

2.25.3.1.1 Testing procedures shall be done in accordance with NACE RP 0285, *Corrosion Control of Underground Storage Tank Systems by Cathodic Protection,* and the manufacturer's specifications and shall include the following:

2.25.3.1.1.1 A minimum of three (3) instant off voltage readings along the center line for UST Systems less than twenty thousand (20,000) gallons and a minimum of five (5) instant off voltage readings along the center line for UST Systems greater than or equal to twenty thousand (20,000) gallons; and

2.25.3.1.1.2 A minimum of one (1) instant off voltage reading for every ten (10) feet of Piping.

2.25.3.2 Owners and Operators shall have all impressed current Cathodic Protection systems that protect underground Facility components tested by an individual certified by a nationally recognized industry standard setting organization, and in accordance with Department standards within six (6) months of installation and at least once every twelve (12) months thereafter.

2.25.3.3 Owners and Operators shall have all impressed current Cathodic Protection systems tested by an individual certified by a nationally recognized industry standard setting organization and in accordance with Department standards within six (6) weeks after underground work is performed at or near a site with an impressed current Cathodic Protection system and at least once every twelve (12) months thereafter.

2.25.3.4 Owners and Operators shall Repair or replace the impressed current Cathodic Protection system in accordance with NACE RP 0285, *Corrosion Control of Underground Storage Tank Systems by Cathodic Protection* if the impressed current Cathodic Protection system is not operating in accordance with the manufacturer's specifications and the requirements of these Regulations. This includes but is not limited to failure to register a negative voltage of at least 0.85 volts for each UST. An individual certified by a nationally recognized industry standard setting organization shall determine the cause of the failure and make the necessary Repairs within sixty (60) days of the discovery of the failure of the impressed current corrosion protection system.

2.25.3.5 Owners and Operators shall notify the Department within forty-eight (48) hours of the discovery of the failure of an impressed current Cathodic Protection system.

2.25.3.6 The Department shall approve, either verbally or in writing, all impressed current Cathodic Protection system Repair or replacement plans prior to work commencing.

2.25.3.7 ~~The Department shall review the Release Detection and impressed current Cathodic Protection records of the UST System and based upon this information may require that Owners and Operators determine the current integrity of the UST system if the impressed current Cathodic Protection system is not operating in accordance with the manufacturer's specifications and the requirements of these Regulations prior to making Repairs to the impressed current corrosion protection system.~~ If the Cathodic Protection system is not operating in accordance with the manufacturer's specifications and the requirements of these Regulations, the Department shall review the Release Detection and Cathodic Protection records of the UST System prior to repair or replacement of the Cathodic

Protection system. The Department may require that Owners and Operators determine the current integrity of the UST system.

2.25.3.8 The following information shall be submitted to the Department prior to Repair or replacement of the impressed current Cathodic Protection system:

2.25.3.8.1 Results of one of the following:

2.25.3.8.1.1 The two (2) most recent impressed current Cathodic Protection system tests including the failed test, or

2.25.3.8.1.2 The results of an internal assessment, or

2.25.3.8.1.3 The results of a third party approved integrity assessment; and

2.25.3.8.2 Records of the Tank Release Detection method from the date of the most recent passed impressed current Cathodic Protection test; and

2.25.3.8.3 Records of required rectifier readings from the date of the most recent passed impressed current Cathodic Protection test.

2.25.3.9 If the tank has an internal lining, no internal assessment results will be accepted for the purpose of determining the current integrity of the UST System.

2.25.3.~~8~~10 The impressed current source cannot be de energized at any time including periods when the Facility is closed except during power failures or during service work on the UST Systems or the impressed current Cathodic Protection system.

2.25.3.~~9~~11 The use of alternate methods of testing shall be those described in NACE RP 0285, *Corrosion Control of Underground Storage Tank Systems by Cathodic Protection,* and shall only be used with prior written approval from the Department.

2.25.3.~~10~~12 Owners and Operators shall record all rectifier readings at least once every thirty (30) calendar days. If the monthly rectifier reading demonstrates the impressed current Cathodic Protection is not operating in accordance with the manufacturer's specifications and the requirements of these Regulations the procedures in §2.25.3.4 shall be followed.

2.25.3.~~11~~13 Owners and Operators shall have all impressed current Cathodic Protection systems inspected once every twelve (12) months by an individual certified by a nationally recognized industry standard setting organization and in accordance with Department standards. Inspection shall at a minimum include a check for electrical shorts, ground connections, meter accuracy, and circuit resistance. The effectiveness of isolating devices, continuity bonds, and insulators shall be evaluated during the annual surveys.

2.25.3.~~12~~14 Owners and Operators shall maintain a record of the operation of impressed current Cathodic Protection systems to demonstrate compliance with the performance standards in this Section. These records shall be retained in a permanent record and shall at a minimum provide the following information:

2.25.3.~~12~~14.1 The results of all tests and inspections of the impressed current Cathodic Protection system; and

2.25.3.~~12~~14.2 The rectifier readings as required in §2.25.3.10 of this Part.

2.26 Containment Sump Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.26.1 When a sump sensor is used to comply with the Tank or Piping Release Detection requirements of §2.9, §2.18, §2.19, ~~or~~ §2.20 or §2.21 of this Part, the Containment Sump shall be Product Tight and shall be tested to ensure it is Product Tight once every thirty-six (36) months.

2.26.2 All dispenser, Tank top, transition and any other Containment Sump tightness testing methods utilized shall be in accordance with the manufacturer's specifications or shall be approved in advance by the Department.

2.26.3 Owners and Operators shall immediately upon discovery remove water, Regulated Substance or debris that accumulates in any Containment Sump.

2.27 Dispenser Sump Requirements for Dispenser Sumps Installed After ~~The Effective Date Of These Regulations~~ January 11, 2008 On Existing UST Systems Storing Regulated Substance Excluding Consumptive Use Heating Fuel or Hazardous Substance

2.27.1 Dispenser sumps shall be designed and installed such that Regulated Substance accumulating within the sump is contained and can be detected or is conveyed to the Tank top sump via the Piping interstitial space where it is contained and can be detected.

2.28 Testing and Monitoring Procedures for Sump and Interstitial Sensors for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.28.1 Owners and Operators shall ~~inspect and~~ perform a functionality test of all sump and interstitial sensors used to comply with the Release Detection requirements of §2.9 or §2.19 or §2.20 or §2.21 of this Part, or the requirements of §2.22.7 or §2.30.7.7 of this Part, once every twelve (12) months in accordance with the manufacturer's specifications or as directed by the Department to verify proper sensor operation.

2.28.2 All sensors installed in a sump for the purpose of detecting a Release from the UST System shall be installed no more than one inch (1") from the bottom of the sump such that the sensor is capable of detecting any accumulation of Regulated Substance.

2.29 Repair, Retrofit and Upgrade Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.29.1 All Repairs, Upgrades, Retrofits and replacements to existing UST Systems shall meet the applicable design, installation, maintenance and operational standards in Part B, §1 of these Regulations or shall be approved by the Department prior to installation.

2.29.2 ~~Documentation of Repair completion shall be submitted to the Department in accordance with Part E, §2.2.2 of these Regulations.~~ Owners and Operators shall report any abnormal operating conditions to the Tank Management Branch in accordance with the requirements of Part E, §1.2 of these Regulations.

2.29.3 All equipment installed after ~~the Effective Date of these Regulations~~ January 11, 2008 shall be installed, operated and maintained such that manufacturer's warranties are not voided.

2.29.4 Owners and Operators shall ensure that Repairs, Upgrades or Retrofits will prevent Releases due to structural failure or corrosion as long as the UST System is used to store Regulated Substance.

2.29.5 Owners and Operators shall test the Cathodic Protection system in accordance with §2.25 of this Part within six (6) weeks and once every twelve (12) months thereafter following the Repair of any Cathodically Protected UST System to ensure it is operating properly.

2.29.6 Owners and Operators shall maintain records for each Repair for the Operational Life of the UST System.

2.29.7 After any Repair, Retrofit or Upgrade to an UST System, Owners and Operators shall have the applicable portions of the UST System tested for tightness in accordance with ~~§2.9.7 of this Part~~ these Regulations before the UST System is placed into service.

2.29.8 Repairs to fiberglass reinforced plastic Tanks may be made only by the manufacturer or by its authorized representatives.

2.29.9 Owners and Operators may not Repair holes in Piping and fittings, but shall replace any piece of such Piping or fittings from which a Release has occurred. Replacement Piping and fittings shall meet all applicable Piping requirements in §1 of this Part. Loose fittings and joints in Piping that have been tightened to eliminate leakage may be put back into service.

2.29.10 At any time during the course of a Repair, Retrofit or Upgrade there is an indication of a Release the requirements of Part E of these Regulations must be followed.

2.29.11 At any time excavation of soil or removal of concrete, asphalt or other cover is required during the course of a Repair, Retrofit or Upgrade, Owners and Operators shall perform a Site Assessment to measure for the presence of a Release where contamination is most likely to be present at the UST site. In selecting sample types, sample locations and measurement methods, Owners and Operators shall consider the nature of the stored substance, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence of a Release. The Site Assessment shall be completed within ten (10) days of the Repair, Retrofit or Upgrade of the UST System.

2.29.12 Within sixty (60) days of completion of a Repair, Retrofit or Upgrade of an UST System Owners and Operators and UST Contractors shall submit documentation to the Tank Management Branch including but not limited to the following:

2.29.12.1 Repair, Retrofit or Upgrade completion documentation; and

2.29.12.2 Results of sampling required in Part E of these Regulations or §2.29.10 of this Part; and

2.29.12.3 Results of any UST System tests required by the Department.

2.30 Used Oil Underground Storage Tank Systems Requirements

2.30.1 General Requirements

2.30.1.1 Owners and Operators of UST Systems used solely for the storage of Used Oil shall comply with all the requirements of these Regulations except where modifications are specifically listed in this Section.

2.30.2 Release Detection Requirements for Used Oil UST Systems

2.30.2.1 Owners and Operators shall monitor Used Oil UST Systems for Releases through the use of one of the inventory control procedures in §2.30.3 of this Part and at least one of the following Release Detection methods~~as prescribed in §2.9 of this Part~~:

2.30.2.1.1 Interstitial ~~M~~monitoring as prescribed in §2.9 of this Part; or

2.30.2.1.2 Automatic ~~T~~tank G~~g~~aug~~ing~~e performing Tank tightness testing at a minimum of once every thirty (30) calendar days as prescribed in §2.9 of this Part; or

2.30.2.1.3 ~~Tank Tightness Test as prescribed in §2.9 of this Part ; or~~

~~2.30.2.1.4~~ Manual ~~T~~tank ~~G~~gauging as prescribed in §2.30.4; or

2.30.2.1.~~5~~4 Department ~~A~~approved ~~A~~alternative ~~M~~method.

2.30.~~2.2~~3 Inventory Control Requirements for Used Oil UST Systems

2.30.~~2.2~~3.1 Owners and Operators of UST Systems used solely for the storage of Used Oil ~~shall comply~~ may utilize inventory control procedures performed in accordance with the inventory control ~~R~~requirements of §2.9.3 of this Part to comply with inventory control requirements; or~~.~~

2.30.~~2.2~~3.2 Owners and Operators of UST Systems with a storage capacity less than or equal to two thousand (2,000) gallons~~,~~ and used solely for the storage of Used Oil, may utilize manual ~~T~~tank gauging performed in accordance with the requirements of §2.30.4 of this Part to comply with inventory control requirements~~.~~; or

2.30.3.3 Owners and Operators of UST Systems used solely for the storage of Used Oil may utilize modified inventory control procedures performed in accordance with the requirements of §2.30.5 to comply with inventory control requirements.

2.30.~~2.23~~4 ~~Methods of Release Detection~~ Manual Tank Gauging Requirements for Used Oil UST Systems

2.30.~~2.3~~4.1 Owners and Operators of UST Systems with a storage capacity of one thousand (1,000) gallons or less~~,~~ and used solely for the storage of Used Oil, may utilize manual ~~T~~tank gauging to comply with Release Detection requirements when used in conjunction with inventory control.

2.30.~~3~~4.2 Owners and Operators of UST Systems, used solely for the storage of Used Oil, shall not utilize manual ~~T~~tank gauging to simultaneously comply with both Release Detection and inventory control requirements.

2.30.4.3 Owners and Operators shall utilize manual tank gauging test procedures that meet the following requirements:

2.30.4.3.1 Once every seven (7) days the Used Oil UST shall be tested. No ~~Regulated Substance~~ Used Oil shall be added to or removed from the Used Oil UST during the prescribed test period in Table 2 of this Part~~.~~; and

2.30.4.3.2 At the beginning and at the end of the test period the liquid level in the Used Oil UST shall be measured twice consecutively to the nearest one-eighth (1/8) inch and the average of the two measurements shall be recorded~~.~~; and

2.30.4.3.3 At the end of each seven (7) day test period the change in Tank volume shall be calculated from the beginning and ending liquid level measurements and compared to the weekly test standard in Table 2 of this Part~~.~~; and

2.30.4.3.4 At a minimum of once every thirty (30) calendar days ~~the monthly cumulative change in Tank volume~~ the four (4) most recent change in tank volume numbers calculated in §2.30.4.3.3 of this Part shall be averaged and this test average shall be compared to the monthly test standard in Table 2 of this Part~~.~~; and

2.30.4.3.5 If at any time the weekly or monthly change in Tank volume test average exceeds the test standard in Table 2 of this Part, Owners and Operators shall notify the Department of an indicated Release within twenty-four hours of the end of the test period~~.~~; and

2.30.4.3.6 Owners and Operators shall keep all manual tank gauging records utilized to comply with inventory control requirements on file for a minimum of three (3) years and shall make the records available to the Department within ten (10) days of the Department's request~~.~~; and

2.30.4.3.7 Owners and Operators shall keep all manual tank gauging records utilized to comply with Release Detection requirements on file for the life of the UST System and shall make the records available to the Department ~~upon~~ within ten (10) days of the Department's request.

Table 2			
Tank Size	**Minimum Duration of Test**	**Weekly Standard (1 test)**	**Monthly Standard (4-test average)**
Up to 550 gallons	36 hours	10 gallons	5 gallons
551-1,000 gallons (when Tank diameter if 64")	44 hours	9 gallons	4 gallons
551-1,000 gallons (when Tank diameter is 48")	58 hours	12 gallons	6 gallons
1,001 -2,000 gallons (also requires 2nd Release Detection method)	36 hours	26 gallons	13 gallons

2.30.5 Modified Inventory Control Requirements for Used Oil UST Systems

2.30.5.1 Owners and Operators shall utilize modified inventory control procedures that meet the following requirements:

2.30.5.1.1 The Regulated Substance level shall be measured in inches to the nearest one-eighth (1/8") of an inch and shall be recorded each day that an UST has Used Oil added to or withdrawn from the UST, or at least once every seven (7) days; and

2.30.5.1.2 The water level shall be measured in inches to the nearest one-eighth (1/8") of an inch and shall be recorded at least once every seven (7) days. If the water level changes two (2) inches or more from the last measurement the Owner or Operator must contact the TMB within 24 hours; and

2.30.5.1.3 The amount of Used Oil removed from the UST shall be recorded, and receipts for Used Oil removal shall be maintained and made available to the Department upon request; and

2.30.5.1.4 If there is an unexplainable consistent negative trend in any given month, or if the amount of Used Oil removed from the UST is less than the amount indicated by the modified

inventory control, the Department shall be notified, and the Release investigation procedures in Part E of these Regulations shall be followed; and

2.30.5.1.5 Failure to maintain modified inventory control records for Used Oil UST Systems may be cause for the Department to require Tank tightness test(s) and inspection(s) of the UST Facility at the expense of Owners and Operators.

2.30.~~5~~6 Overfill Requirements for Used Oil UST Systems

2.30.~~5~~6.1 Owners and Operators of Used Oil UST Systems shall comply with the overfill requirements in §~~1.22~~2.23 of this Part or shall have a written standard operating procedure that includes the following minimum requirements:

2.30.~~5~~6.1.1 Determine and record the maximum gallons allowable such that the UST shall not be more than ninety percent (90%) full; and

2.30.~~5~~6.1.2 The ~~Regulated Substance~~ level of Used Oil shall be measured each day an UST has Used Oil added to or withdrawn from the UST to determine the current amount of ullage space available; and

2.30.~~5~~6.1.3 The amount of Used Oil added shall be such that the UST is not more than ninety percent (90%) full; and

2.30.6.1.4 The amount of Used Oil ~~or~~ removed from the UST shall be recorded; and

2.30.~~5~~6.1.~~4~~5Receipts for Used Oil removal shall be maintained and made available to the Department upon request to ensure that the UST is not filled beyond ninety percent (90%) capacity.

2.30.~~6~~7 Spill Containment Requirements for Used Oil UST Systems

2.30.~~6~~7.1 No Person shall construct, install, use or maintain a UST storing Used Oil without providing a reliable means of ensuring that Releases due to spilling do not occur.

2.30.~~6~~7.2 Owners and Operators shall equip Used Oil UST Systems with an impervious spill containment device that forms a liquid tight seal around any fill pipe or pump out location.

2.30.~~6~~7.3 All spill containment devices shall have a minimum containment capacity of five (5) gallons or be of a design that provides equivalent environmental protection.

2.30.~~6~~7.4 Owners and Operators shall immediately upon discovery remove water, Used Oil or debris that accumulates in the spill containment device. Owners and Operators shall maintain spill containment devices to be capable of containing a spill of the containment design capacity at all times.

2.30.~~6~~7.5 All precautions shall be taken to prevent Tank overfilling, spilling and dripping.

2.30.~~6~~7.6 Owners and Operators shall test spill containment devices once every twelve (12) months for tightness, in accordance with the manufacturer's specifications, or ~~when deemed necessary~~ as directed by the Department to determine if a threat to human health, safety or the environment exists.

2.30.7.7 Spill containment devices of double wall design with continuous monitoring of the interstitial space and the interstitial sensors are tested in accordance with §2.28 of this Part are exempt from the testing requirements of §1.29.7.6 of this Part.

2.30.~~67~~78 Owners and Operators shall report, investigate and clean up any spills and overfills in accordance with Part E of these Regulations.

2.31 Emergency Generator Underground Storage Tank Systems Requirements

2.31.1 Owners and Operators of UST Systems used solely for the storage of Regulated Substance to power emergency generation equipment shall comply with all the requirements of these Regulations except where modifications are specifically listed in this Section.

2.31.~~1~~2 Owners and Operators of UST Systems used solely for the storage of Regulated Substance to power emergency generation equipment are exempt from ~~i~~inventory control ~~R~~requirements of §2.9.3 of this Part.

2.31.~~2~~3 Owners and Operators of UST Systems used solely for the storage of Regulated Substance to power emergency generation equipment may utilize ~~T~~tank tightness testing as a method of Release Detection for the life of the UST provided the ~~T~~tank tightness testing is performed in accordance with the ~~T~~tank ~~T~~tightness ~~T~~test Requirements in §2.9.7.2 -2.9.7.6.4 of this Part, or may utilize any method in §2.9 of this Part.

2.31.~~3~~4 Owners and Operators of UST Systems used solely for the storage of Regulated Substance to power emergency generation equipment shall implement the requirements of §2.9, Release Detection Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance, with the exceptions listed in §2.31.1 and §2.31.2 of this Part, by January 1, 2009.

2.31.~~4~~5 UST Systems used solely for the storage of Regulated Substance to power emergency generation equipment are exempt from the Piping Release requirements of §§2.19, 2.20, and 2.21 of this Part.

2.32 Routine Inspection Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.32.1 Owners and Operators shall conduct an ~~routine~~ inspection ~~once every thirty (30)~~ at an interval no less frequently than once every twenty-eight (28) to thirty-one (31) calendar days to monitor the condition of the UST System including but not limited to all dispensers, dispenser sumps, access ports, spill containment devices, sumps and Containment Sumps~~, access ports and Tank tops~~.

~~2.32.2~~ The routine inspection shall ~~include~~ at a minimum include the following:

2.32.~~2~~1.1 The removal of all dispenser covers and visual inspection for any evidence of a Release of a Regulated Substance and inspection of all fittings, couplings and filters; and

2.32.~~2~~1.2 The removal of all Containment Sump and sump covers and visual inspection of the sump for any evidence of a Release of a Regulated Substance or intrusion of water; and

2.32.~~2~~1.3 The inspection of all access ports to make sure that the covers, caps and adaptors are tightly sealed; and

2.32.~~2~~1.4 The removal of all spill containment device covers and inspection to ensure all spill containment devices are empty and free of debris, water or Regulated Substance~~.~~; and

2.32.1.5 All product shear valves shall be manually opened and loosened to prevent gum deposit build-up and other conditions that may affect the operation of the valve.

2.32.~~3~~2 A record of all routine inspections shall be kept on file by Owners and Operators for a minimum of three (3) years and shall be made available to the Department upon request. The records shall at a minimum include the results of all inspections including any Repairs made.

2.32.~~4~~3 If at any time during a routine inspection evidence of a Release of Regulated Substance is discovered Owners and Operators shall follow the investigation requirements of Part E of these Regulations.

2.33 Internal Lining Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

2.33.1 An internal lining may be added to UST Systems to improve the ability of an UST System to prevent the release of Regulated Substance.

2.33.2 An internal lining ~~may be~~ shall not be added to UST Systems to meet corrosion protection requirements after ~~the Effective Date of these Regulations~~ January 11, 2008.

2.33.3 The internal lining installation, operation and maintenance shall meet the following requirements:

2.33.3.1 The lining shall be installed in accordance with the following industry standards:

2.33.3.1.1 API RP 1631, *Interior Lining and Periodic Inspection of Underground Storage Tanks*; and

2.33.3.1.2 NLPA Standard 631, Chapter A, *Entry, Cleaning, Interior Inspection, Repair, and Lining of Underground Storage Tanks*; and

2.33.3.1.3 NLPA Standard 631, Chapter B, *Future Internal Inspection Requirements for Lined Tanks*.

2.33.3.2 The lined Tank shall be tested for tightness in accordance with §2.9.7 of this Part and found to be tight before the Tank is put back into service; and

2.33.3.3 Within ten (10) years after lining, and every five (5) years thereafter, Owners and Operators shall conduct an internal inspection of the lined Tank in accordance with NLPA Standard 631, Chapter A, *Entry, Cleaning, Interior Inspection, Repair, and Lining of Underground Storage Tanks* and Chapter B, *Future Internal Inspection Requirements for Lined Tanks*, and API RP 1631, *Interior Lining and Periodic Inspection of Underground Storage Tanks*. At the time of the inspection, the lined Tank shall be structurally sound and comply with the original design specifications. If any damage is found, Repairs shall be made in accordance with standard engineering practice, industry standards and the requirements of these Regulations or the Tank shall be replaced in accordance with the requirements in §1 of this Part.

2.33.3.4 When an internally lined bare steel Tank is not inspected at a minimum in accordance with the intervals required in §2.33.3.3 of this Part and subsequently fails an internal inspection the Tank shall be Removed or Closed In Place in accordance with these Regulations.

2.34 Additional Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance installed prior to July 12, 1985.

2.34.1 Not later than January 1, 1991, no Person shall own or operate an UST System Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance installed prior to July 12, 1985 that is not in compliance with one of the following:

2.34.1.1 The permanent Removal or Closure In Place of the UST System in accordance with the requirements of Part B, §4 these Regulations and the applicable hydrogeologic investigation and Remedial Action requirements of Part E of these Regulations; or

2.34.1.2 The requirements of the following:

2.34.1.2.1 The Tank release detection requirements of §2.9 of this Part; and

2.34.1.2.2 The ~~p~~Piping release detection requirements of §2.19, and §2.20 or §2.21 of this Part; and

2.34.1.2.3 The spill ~~protection~~ prevention requirements of §2.22 of this Part; and

2.34.1.2.4 The overfill ~~protection~~ prevention requirements of §2.23 of this Part; and

2.34.1.2.5 The fill ~~l~~Line protection requirements of §2.24 of this Part.

2.34.2 Not later than December 22, 1998, no Person shall own or operate an UST System Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance installed prior to July 12, 1985 that is not in compliance with the requirements of one of the following:

2.34.2.1 UST System design requirements of §2.3 of this Part; or

2.34.2.2 UST System Cathodic Protection requirements of §2.6 and §2.25 of this Part; or

2.34.2.3 UST System Internal Lining Requirements of §2.33 of this Part; or

2.34.2.~~3~~4 UST System Cathodic Protection requirements of §2.6 and §2.25 of this Part and UST System Internal Lining requirements of §2.33 of this Part; or

2.34.2.~~4~~5 The permanent Removal or Closure In Place of the UST System in accordance with the requirements of Part B, §4 of these Regulations and the applicable hydrogeologic investigation and Remedial Action requirements of Part E of these Regulations.

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3.0 Change In Service Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

3.1 Change In Service Notification Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

3.1.1 Owners and Operators shall notify the Department of all Changes In Service in accordance with the requirements of §4.0 of Part A of these Regulations

3.2 General Requirements for Change in Status from In Service to Out Of Service for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance.

3.2.1 Owners and Operators shall continue operation and maintenance of corrosion protection in accordance with the applicable requirements of §1 and §2 of this Part when an UST System is Out of Service.

3.2.2 Owners and Operators shall continue operation and maintenance of Release Detection in accordance with the applicable Release Detection requirements for Tanks and Piping in §1 and §2 of this Part, when the Out of Service ~~Tank~~ UST System is not empty. Release Detection is not required if the UST System has been rendered empty.

3.2.3 The UST System is empty when all Regulated Substances have been removed using commonly employed practices so that no more than one inch or 2.5 centimeters of residue, or 0.3 percent by weight of the total capacity of the UST System, remains in the system.

3.2.4 Owners and Operators shall comply with the routine inspection requirements of §1.31 or §2.32 of this Part as applicable, if the Out of Service UST System is not empty and requires Release Detection in accordance with §3.2.2. of this Part.

3.2.~~3~~5 When any UST System is Out of Service for three (3) months or more, Owners and Operators shall ~~comply with the following requirements~~:

3.2.~~3~~5.1 Leave vent ~~lines~~ Pipes open and functioning; and

3.2.~~3~~5.2 Cap and secure all other ~~lines~~ Pipes, pumps, manways, and Ancillary Equipment.

3.2.~~4~~6 When an UST System is Out Of Service for twelve (12) months Owners and Operators shall:

3.2.~~4~~6.1 Permanently Remove or Close in Place the UST System in accordance with the applicable requirements of these Regulations; or

3.2.~~4~~6.2 Render the UST System empty in accordance with the definition in §3.2.~~2~~3 of this Part and complete a Site Assessment in accordance with §3.4 of this Part including any required hydrogeologic investigation and Remedial Action in accordance with Part E of these Regulations.

3.3 General Requirements for Change in Status from Out of Service to In Service for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

3.3.1 Prior to a change in status of an UST System from Out of Service to In Service, for an UST System that has been Out of Service for three (3) months or more, Owners and Operators shall ensure that the UST System meets the following requirements prior to being placed In Service:

3.3.1.1 The UST System shall meet the requirements of ~~Section~~ §1 or 2 of this Part as applicable; and

3.3.1.2 The UST System shall be tested for tightness ~~in accordance with the requirements of §2.9.7 of this Part~~ as applicable; and

3.3.1.3 All Cathodically Protected UST Systems shall be tested and all necessary Repairs made in accordance with the requirements of Section 2.25. of this Part.

3.4 Change In Service Site Assessment Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

3.4.1 Within thirty (30) days of rendering the UST System empty as required in §3.2.~~4~~6.2 of this Part, Owners and Operators shall complete a Site Assessment designed to measure for the presence of a Release where contamination is most likely to be present. The Site Assessment is not restricted to the property containing the UST System. In selecting sample types, sample locations and measurement methods, Owners and Operators shall consider the nature of the stored substance, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence of a Release. A Site Assessment plan shall be approved by the Department prior to implementation.

3.4.2 If contaminated soils, contaminated groundwater, or ~~Free Product~~ LNAPL as a liquid or a vapor is discovered as a result of the Site Assessment performed in accordance with §3.4.1 of this Part, or by any other manner, Owners and Operators shall begin a hydrogeologic investigation and Remedial Action in accordance with the requirements of Part E of these Regulations.

3.5 Change In Service Recordkeeping Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

3.5.1 Owners and Operators shall submit the following documents to the Department within thirty (30) days of the completion of the Site Assessment required in §3.4 of this Part:

3.5.1.1 A site plan detailing the UST(s) location and surrounding area; and

3.5.1.2 The approved Site Assessment plan with sampling points clearly marked; and

3.5.1.3 Chain of custody for all samples submitted for laboratory analysis; and

3.5.1.4 Results of any on-site screening performed; and

3.5.1.5 Laboratory test results for all samples submitted for laboratory analysis ; and

3.5.1.6 Documentation of proper disposal or recycling of solid or hazardous waste generated as a result of the Change In Service of the UST System, including manifests and receipts for soil, water, and Regulated Substances.

3.6 Financial Responsibility Requirements for Out of Service UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

3.6.1 Owners and Operators shall comply with the requirements of Part F of these Regulations for Out of Service UST Systems until the UST System is permanently Removed or Closed In Place in accordance with the requirements of this Part and all requirements of Part E of these Regulations are completed.

4.0 Removal or Closure in Place Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

4.1 Removal or Closure in Place Notification Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

4.1.1 Owners and Operators shall notify the Department of all Removals or Closures in Place in accordance with the requirements of §4.0 of Part A of these Regulations.

4.2 Removal or Closure in Place General Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

4.2.1 The Removal and Closure in Place procedures shall comply with the following industry standards:

4.2.1.1 API RP 1604, *Closure of Underground Petroleum Storage Tanks*.

4.2.1.2 API RP 2015, *Safe Entry and Cleaning of Petroleum Storage Tanks*.

4.2.1.3 OSHA, 29 CFR, 1910.146, *Permit Required Confined Spaces*.

4.3 Removal or Closure in Place Site Assessment Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

4.3.1 At the time of Removal of an UST System, Owners and Operators shall perform a Site Assessment to measure for the presence of a Release where contamination is most likely to be present at the UST site. In selecting sample types, sample locations and measurement methods, Owners and Operators shall consider the nature of the stored substance, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence of a Release. The Site Assessment shall be completed within ten (10) days of the Removal of the UST System.

4.3.2 At the time of Closure in Place of an UST System, Owners and Operators shall perform a Site Assessment to measure for the presence of a Release where contamination is most likely to be present at the UST site. In selecting sample types, sample locations and measurement methods, Owners and Operators shall consider the nature of the stored substance, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence of a Release. A Site Assessment plan shall be approved by the Department prior to implementation. The Site Assessment shall be completed within ten (10) days of the Closure in Place of the UST System.

4.3.3 If contaminated soils, contaminated groundwater, or ~~Free Product~~ LNAPL as a liquid or a vapor is discovered as a result of the Site Assessment performed in accordance with §4.3.1 and §4.3.2 of this Part, or by any other manner, Owner and Operators shall begin a hydrogeologic investigation and Remedial Action in accordance with the requirements of Part E of these Regulations.

4.4 Removal or Closure in Place Recordkeeping Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

4.4.1 Owners and Operators shall submit the following documents to the Department within sixty (60) days of the Removal or Closure in Place of an UST System:

4.4.1.1 A site plan detailing the UST(s) location and surrounding area; and

4.4.1.2 A site map with sampling points clearly marked; and

4.4.1.3 Results of any on-site screening performed; and

4.4.1.4 Chain of custody for all samples submitted for laboratory analysis; and

4.4.1.5 Laboratory test results for all samples submitted for laboratory analysis; and

4.4.1.6 Documentation of proper disposal or recycling of solid or hazardous waste generated as a result of the Removal of the UST System, including manifests and receipts for soil, water, and Regulated Substances and the UST System disposal; and

4.4.1.7 Documentation of Tank cleaning prior to UST System Closure in Place.

4.5 Removal or Closure in Place Financial Responsibility Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

4.5.1 Owners and Operators shall comply with the requirements of Part F of these Regulations until the UST System is permanently Removed or Closed In Place in accordance with the requirements of this Part and all requirements of Part E of these Regulations are completed.

4.6 Applicability to Previously Removed or Closed In Place UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

4.6.1 When a Release is suspected from a previously Removed, Closed In Place or abandoned UST System, the Owner, Operator and Responsible Party shall comply with the requirements of Part E of these Regulations. If a Release is confirmed the Owner, Operator and Responsible Party shall Remove or Close In Place the UST System in accordance with all applicable requirements of these Regulations.

5.0 Change In Substance Stored Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

5.1 Change In Substance Stored Notification Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

5.1.1 Owners and Operators shall notify the Department of all Changes in Substance Stored in accordance with the requirements of §4.0 of Part A of these Regulations.

5.2 Change In Substance Stored General Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

5.2.1 Before the Change In Substance Stored, Owners and Operators shall empty and clean the UST System by removing all liquids and accumulated sludge in accordance with the following industry standards:

5.2.1.1 API RP 1604, *Closure of Underground Petroleum Storage Tanks*.

5.2.1.2 API Standard 2015, *Safe Entry and Cleaning of Petroleum Storage Tanks*.

5.2.1.3 OSHA, 29 CFR, 1910.146, *Permit Required Confined Spaces*.

5.3 Change In Substance Stored Site Assessment Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

5.3.1 Within thirty (30) days of the completion of the cleaning of the UST System required in §5.2 of this Part, Owners and Operators shall perform a Site Assessment to measure for the presence of a Release where contamination is most likely to be present at the UST site. In selecting sample types, sample locations and measurement methods, Owners and Operators shall consider the nature of the stored substance, the type of backfill, the depth to groundwater, and other factors appropriate for identifying the presence of a Release. A Site Assessment plan shall be approved by the Department prior to implementation.

5.3.2 If contaminated soils, contaminated groundwater, or ~~Free Product~~ LNAPL as a liquid or a vapor is discovered as a result of the Site Assessment performed in accordance with §5.3.1 of this Part, or by any other manner, Owner and Operators shall begin a hydrogeologic investigation and Remedial Action in accordance with the requirements of Part E of these Regulations.

5.4 Change In Substance Stored Recordkeeping Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

5.4.1 Owners and Operators shall submit the following documents to the Department within sixty (60) days of the Change In Substance Stored in an UST System:

5.4.1.1 A site plan detailing the UST(s) location and surrounding area; and

5.4.1.2 The approved Site Assessment plan with sampling points clearly marked; and

5.4.1.3 Chain of custody for all samples submitted for laboratory analysis; and

5.4.1.4 Results of any on-site screening performed; and

5.4.1.5 Laboratory test results for all samples submitted for laboratory analysis; and

5.4.1.6 Documentation of proper disposal or recycling of solid or hazardous waste generated as a result of the Change in Substance Stored of the UST System, including manifests and receipts for soil, water, and Regulated Substances.

5.5 Change In Substance Stored Financial Responsibility Requirements for UST Systems Storing Regulated Substance excluding Consumptive Use Heating Fuel or Hazardous Substance

5.5.1 Owners and Operators shall comply with the requirements of Part F of these Regulations until the UST System is permanently Removed or Closed In Place in accordance with these Regulations or does not store a Regulated Substance and all requirements of Part E of these Regulations are completed.