

Equipment or Method	Action performed on underground storage tank system				
	Inspection/Testing	Maintenance	Repairs	Records	BMPs
OVERFILL PREVENTION					
Spill Containment Manhole (Spill Bucket)	Daily inspection if Stage II vapor recovery is present. Inspection not required if Stage II is not present, but frequent inspection is a good idea	Must be kept clean and dry. Drain mechanism (drain valve or small pump) should be in operating condition.	Can only be done by a certified worker.	If Stage II vapor recovery is present, keep records of daily inspection. Keep records of any repairs.	Annual tightness testing is recommended. For new or replacement installations, use spill bucket that can be replaced without breaking concrete.
Automatic Shut Off (Flapper Valve in the Drop Tube)	Visual verification of function required if installed after 3/1/03. Must be able to demonstrate proper function if installed prior to this date.	None specified.	Can only be done by a certified worker.	Keep records of any repairs.	Inspect periodically to be sure no gauge stick is present. Remove and inspect annually for proper level of operation and function.
Ball Float	Visual verification of function required if installed after 3/1/03. Must be able to demonstrate proper function if installed prior to this date.	None specified.	Can only be done by a certified worker.	Keep records of any repairs.	Not compatible with certain UST systems. Not recommended for use by PEI RP100-2005. Remove and inspect annually for proper level of operation and function.
High Level Alarm	Visual verification of function required if installed after 3/1/03. Must be able to demonstrate proper function if installed prior to this date.	None specified.	Can only be done by a certified worker.	Keep records of any repairs.	Inspect and test annually for proper level of operation and function. Chronic overfill alarms should be investigated.

Equipment or Method	Action performed on underground storage tank system				
	Inspection/Testing	Maintenance	Repairs	Records	BMPs
Delivery Practices	Owner or permittee must have documented safe delivery procedures (e.g., verify that there is room in the tank for the volume to be delivered; monitor delivery constantly, etc.)	Not required.	Not required.	Develop and maintain a written delivery procedure.	Develop a written delivery procedure and be sure that all personnel involved with deliveries are trained in how to implement the procedure.
CORROSION PROTECTION					
Steel Tank or Pipe with Galvanic Cathodic Protection	Cathodic protection must be tested every 3 years by a licensed CP tester.	Not required.	Repairs to the cathodic protection system should only be performed by a qualified CP person.	Keep last two CP test records on-site and available for inspection. Keep records of any repairs.	Keep all CP test records. They are very valuable if system ever needs repairs.
Steel Tank or Pipe with Impressed Current Cathodic Protection	Cathodic protection must be tested every 3 years by a licensed CP tester. In addition, the rectifier must be checked every 60 days for proper operation.	Not required.	Repairs should only be performed by a qualified CP person.	Keep last two CP test records on-site and available for inspection. Keep last three rectifier readings on-site and available for inspections. Keep records of any repairs.	Keep all CP test records. They are very valuable if system ever needs repairs. Check rectifier every 30 days rather than 60 because this is easier to remember.
Fiberglass or Fiberglass-Clad Steel Tank	Not required.	Not required.	Repairs should only be performed by a qualified person.	Keep copy of installation records to prove tank is non-metallic. Keep records of any repairs.	None specified.
Internally Lined Steel Tank	If steel tank does not have cathodic protection, the tank must be internally inspected 10 years after lining and every 5 years thereafter. Inspection must be done according to a national code of practice.	Not required.	Repairs should only be performed by a qualified CP person.	Keep lining inspection records on file. Keep records of any repairs.	None specified.

Equipment or Method	Action performed on underground storage tank system				
	Inspection/Testing	Maintenance	Repairs	Records	BMPs
Flexible Plastic Pipe	Not required.	Not required.	Not required unless damaged.	Not required.	Inspect piping monthly. Watch for signs of deterioration such as elongation, softening, swelling, cracking, or leaking of product.
RELEASE DETECTION					
Automatic Tank Gauge (ATG)	Tank gauge must complete at least one valid, passing tightness test per month.	Must be conducted according to manufacturer requirements.	Should only be conducted by a manufacturer certified technician.	Maintain record of at least the last year of monthly test results. Records of calibration, maintenance, and repair should be kept indefinitely.	Program ATG to conduct a test at least once a week. Learn how to operate the ATG and DO NOT IGNORE ALARMS!
Double-Walled Tank	Determine status of interstitial space at least monthly. Mandatory for new installations after 2008.	Must be conducted according to manufacturer requirements.	Can only be done by a certified worker.	Maintain record of at least the last year of monthly inspection results. The record must include the power status (on or off), alarm status (on or off), and sensor status (normal or malfunctioning). Records of calibration, maintenance, and repair should be kept indefinitely.	Check the tank monitor for alarms on a daily basis. DO NOT IGNORE ALARMS.
Inventory Control and Tank Tightness Testing NOTE: Inventory control and tightness testing may not be used for leak detection after 12/22/08	Make daily measurements of sales, deliveries, and product on hand. Reconcile monthly. Also conduct tank tightness test every 5 years.	If gauge stick is used, markings must be easily read. If ATG is used, maintain ATG according to manufacturer requirements.	If ATG is used, repairs should only be conducted by a manufacturer certified technician.	Maintain record of at least the last year of daily data and monthly reconciliation results. If ATG is used, records of calibration, maintenance, and repair should be kept indefinitely. Keep records of last two tightness tests conducted.	Use ATG to gather inventory data. Use computer spreadsheet to do the math. Review data trends as well as monthly reconciliation result.

Equipment or Method	Action performed on underground storage tank system				
	Inspection/Testing	Maintenance	Repairs	Records	BMPs
Statistical Inventory Reconciliation (SIR) NOTE: SIR may not be used for leak detection on pressurized piping systems	Statistical analysis of inventory records must be completed every 30 days. SIR results must be obtained within 22 days of the end of each monitoring period. Note: Cannot continue using SIR if more than 4 inconclusive results in a 12 month period.	Make daily measurements of sales, deliveries, and product on hand. Follow SIR vendor requirements.	None required.	Maintain record of at least the last year of SIR results.	None specified.
Groundwater Monitoring (Only allowed with DEQ approval)	Inspect groundwater wells monitoring a tank or pressurized piping for presence of contamination every day. Inspect wells monitoring suction piping every 30 days.	Must be conducted according to manufacturer requirements.	Can only be done by a certified worker	Maintain record of at least the last year of inspection results. Records of calibration, maintenance, and repair should be kept indefinitely.	Use another method of leak detection.
Soil Vapor Monitoring (Only allowed with DEQ approval)	Inspect groundwater wells monitoring a tank or pressurized piping for presence of contamination every day. Inspect wells monitoring suction piping every 30 days.	Must be conducted according to manufacturer requirements.	Can only be done by a certified worker.	Maintain record of at least the last year of inspection results. Records of calibration, maintenance, and repair should be kept indefinitely.	Use another method of leak detection.
Manual Tank Gauging NOTE: This method of leak detection may only be used on tanks with a capacity of less than 2001 gallons. After 12/22/2008, this method may only be used on tanks with a capacity of less than 1001 gallons.	Measure for change in product level during idle period each week. Average weekly results each month. Tightness test is also required every five years for tanks greater than 1,000 gallons and less than 2,001 gallons in capacity.	Markings on gauge stick must be easily read.	Not required.	Maintain record of at least the last year of weekly and monthly test results. If tightness testing is required, records of the last two tightness tests must be retained.	None specified.

Equipment or Method	Action performed on underground storage tank system				
	Inspection/Testing	Maintenance	Repairs	Records	BMPs
Double-Walled Piping	Determine status of interstitial space daily and record monthly for pressurized piping and monthly for suction piping. Sensors must be present in every sump. In addition, owner must maintain records of start-up interstitial space pressure test.	Must be conducted according to manufacturer requirements.	Can only be done by a certified worker.	Maintain record of at least the last year of daily checking and monthly inspection results. The record must include the power status (on or off), alarm status (on or off), and sensor status (normal or malfunctioning). Records of calibration, maintenance, and repair should be kept indefinitely. Also maintain start-up interstitial pressure test results.	Check the monitor for alarms on a daily basis. DO NOT IGNORE ALARMS.
Line Leak Detector NOTE: a line leak detector is required on all pressurized piping. Double-walled piping with continuous monitoring does not meet the requirement for a line leak detector.	Must be tested for proper operation annually.	Test of operation must be conducted according to manufacturer requirements.	Can only be done by a certified worker.	Maintain record of the last test of operation. Records of calibration, maintenance, and repair should be kept indefinitely.	None specified.
Line Tightness Test	Test pressurized piping annually by a licensed service provider. Test suction piping every three years if not equipped with "safe suction."	Not required.	Not required.	Keep record of last test result.	Perform an annual line tightness test even if piping is double-walled.
Monthly Line Tightness Test (conducted by electronic line leak detector, typically connected to automatic tank gauge)	Test piping at least once a month. Leak detector must be function-tested annually.	Must be conducted according to manufacturer requirements.	Can only be done by a certified worker.	Maintain record of at least the last year of test results. Records of calibration, maintenance, and repair should be kept indefinitely. Also keep annual function test results.	Verify that the leak detection unit has been properly programmed for the type, length and diameter of piping present at the facility.

LOOKUP TABLE: OR DEQ UST Regulations
SPILL BUCKET

Item	Inspection/Testing	Maintenance	Repairs	Records	BMPs
Spill Containment Manhole (Spill Bucket)	Daily inspection if Stage II vapor recovery is present. Inspection not required if Stage II is not present, but frequent inspection is a good idea	Must be kept clean and dry. Drain mechanism (drain valve or small pump) should be in operating condition.	Can only be done by a certified worker.	If Stage II vapor recovery is present, keep records of daily inspection. Keep records of any repairs.	Annual tightness testing is recommended. For new or replacement installations, use spill bucket that can be replaced without breaking concrete.
CONSIDERATIONS					
Common problems		Maintenance of spill buckets is a perennial problem. The facility owner should implement a program to regularly clean out spill buckets and ensure that they are in proper operating condition.			As spill buckets age they are more prone to leakage. Leaks are not always obvious, so tightness testing is recommended. Once a spill bucket leaks, it is no longer doing its job and a release into the environment is likely.
Additional considerations					

LOOKUP TABLE: OR DEQ UST Regulations
AUTOMATIC SHUT-OFF

Item	Inspection/Testing	Maintenance	Repairs	Records	BMPs
Automatic Shut Off (Flapper Valve in the Drop Tube)	Visual verification of function required if installed after 3/1/03. Must be able to demonstrate proper function if installed prior to this date.	None specified.	Can only be done by a certified worker.	Keep records of any repairs.	Inspect periodically to be sure no gauge stick is present. Remove and inspect annually for proper level of operation and function
CONSIDERATIONS					
Common problems					It is commonly known among delivery drivers that a gauge stick inserted in the fill pipe will effectively bypass a flapper valve. Finding a gauge stick in the fill pipe may be an indication that the flapper valve is not working properly (e.g., closing prematurely) or that the tank is being filled above the overfill limit set by the flapper valve.
Additional considerations					If a flapper valve is used with a remote fill pipe, the direct fill must be equipped with a "trap door" or other device that will effectively seal the direct fill should the flapper valve close. Do not rely on a standard fill cap. The driver may not replace the fill cap after sticking the tank before the delivery or the cap may not withstand the pressure produced when the flapper valve closes.

LOOKUP TABLE: OR DEQ UST Regulations
BALL FLOAT VALVES

Item	Inspection/Testing	Maintenance	Repairs	Records	BMPs
Ball Float	Visual verification of function required if installed after 3/1/03. Must be able to demonstrate proper function if installed prior to this date.	None Specified.	Can only be done by a certified worker.	Keep records of any repairs.	Not compatible with certain UST systems. Not recommended for use by PEI RP100-2005. Remove and inspect annually for proper level of operation and function.
CONSIDERATIONS					
Common problems		Ball float valves in new USTs installed after March 31, 2003, must be installed in an extractor fitting to allow inspection and maintenance.			
Additional considerations					Do not use ball floats with pressurized deliveries, remote fills, suction pumps, boiler or emergency generators, coaxial Stage I vapor recovery, or in conjunction with flapper valves unless the ball float operates at a higher level in the tank than the flapper valve. PEI RP100-05 recommends AGAINST the use ball float valves. Also, ball float valves should not be installed in tanks with automatic shut-off devices (flapper valves).

LOOKUP TABLE: OR DEQ UST Regulations
HIGH LEVEL ALARMS

Item	Inspection/Testing	Maintenance	Repairs	Records	BMPs
High Level Alarm	Visual verification of function required if installed after 3/1/03. Must be able to demonstrate proper function if installed prior to this date.	None specified.	Can only be done by a certified worker.	Keep records of any repairs.	Inspect and test annually for proper level of operation and function. Chronic overfill alarms should be investigated.
CONSIDERATIONS					
Common problems					The alarm must be located where the delivery operator can see and hear it. The alarm must be labeled so that the delivery operator will know what it is. Instructions such as "When alarm sounds, stop delivery" should also be provided.
Additional considerations					Alarms rely entirely on the proper response of the delivery operator for their effectiveness. It is prudent to install a flapper valve in addition to an alarm to provide an additional measure of safety.

LOOKUP TABLE: OR DEQ UST Regulations
DELIVERY PRACTICES

Item	Inspection/Testing	Maintenance	Repairs	Records	BMPs
Delivery Practices	Owner or permittee must have documented safe delivery procedures (e.g., verify that there is room in the tank for the volume to be delivered; monitor delivery constantly, etc.)	Not required.	Not required.	Develop and maintain a written delivery procedure.	Develop a written delivery procedure and be sure that all personnel involved with deliveries are trained in how to implement the procedure.
CONSIDERATIONS					
Common problems					
Additional considerations					Owners often do not know the true capacity of their tanks and do not take overfill prevention devices into consideration when ordering fuel. Inform the owner of the "working capacity" of their tanks - the level up to which the tank can be safely filled without activating any overfill prevention devices.

LOOKUP TABLE: OR DEQ UST Regulations
GALVANIC CATHODIC PROTECTION

Item	Inspection/Testing	Maintenance	Repairs	Records	BMPs
Steel Tank or Pipe with Galvanic Cathodic Protection	Cathodic protection must be tested every 3 years by a licensed CP tester.	Not required.	Repairs to the cathodic protection system should only be performed by a qualified CP person.	Keep last two CP test records on-site and available for inspection. Keep records of any repairs.	Keep all CP test records. They are very valuable if system ever needs repairs.
CONSIDERATIONS					
Common problems	Tank or pipe may fail CP test. Analysis of the tank and/or piping is required to determine whether the problem is that the tank/piping is connected to extraneous metal, the anodes have worn out, or whether the coating is defective. Results of the analysis will determine what corrective action is needed to properly protect the tank and/or piping against corrosion.				
Common problems	Maintaining adequate tri-annual test results in not commonly done. The majority of CP test reports conducted do not contain adequate information to meet Oregon's rule on a "permanent test station of written test procedure".			Cathodic protection test results should include at a minimum the information required in the DEQ CP form.	
Common problems	Designing a field-installed CP system without a corrosion expert's review or signature. This is particularly important with spike anodes on piping near dispensers.		Field-installed CP systems must be designed by someone designated as a "corrosion expert" or a corrosion engineer.	Maintain a record of the design of the system.	
Additional considerations					

LOOKUP TABLE: OR DEQ UST Regulations
IMPRESSED CURRENT

Item	Inspection/Testing	Maintenance	Repairs	Records	BMPs
Steel Tank or Pipe with Impressed Current Cathodic Protection	Cathodic protection must be tested every 3 years by a licensed CP tester. In addition, the rectifier must be checked every 60 days for proper operation.	Not required.	Repairs should only be performed by a qualified CP person.	Keep last two CP test records on-site and available for inspection. Keep last three rectifier readings on-site and available for inspections. Keep records of any repairs.	Keep all CP test records. They are very valuable if system ever needs repairs. Check rectifier every 30 days rather than 60 because this is easier to remember.
CONSIDERATIONS					
Common problems	Anode wires buried in saw cuts in concrete and asphalt may become exposed. Any damage to the insulation on anode wires will cause premature failure of the system. Monitor rectifier output closely. A significant drop in the output amperage is indicative of system failure and must be investigated promptly.				
Common problems	Maintaining adequate tri-annual test results in not commonly done. The majority of CP test reports conducted do not contain adequate information to meet Oregon's rule on a "permanent test station of written test procedure".			Cathodic protection test results should include at a minimum the information required in the DEQ CP form.	
Additional considerations					

LOOKUP TABLE: OR DEQ UST Regulations
FIBERGLASS OR FIBERGLASS-CLAD STEEL TANKS

Item	Inspection/Testing	Maintenance	Repairs	Records	BMPs
Fiberglass or Fiberglass-Clad Steel Tank	Not required.	Not required.	Repairs should only be performed by a qualified person.	Keep copy of installation records to prove tank is non-metallic. Keep records of any repairs.	None specified.
CONSIDERATIONS					
Common problems					
Additional considerations					

LOOKUP TABLE: OR DEQ UST Regulations
INTERNALLY LINED STEEL TANK

Item	Inspection/Testing	Maintenance	Repairs	Records	BMPs
Internally Lined Steel Tank	If steel tank does not have cathodic protection, the tank must be internally inspected 10 years after lining and every 5 years thereafter. Inspection must be done according to a national code of practice.	Not required.	Repairs should only be performed by a qualified CP person.	Keep lining inspection records on file. Keep records of any repairs.	None specified.
CONSIDERATIONS					
Common problems	Lining failure is common, even in the first few years after the lining has been applied.		If decision to add cathodic protection rather than repair the lining is made, a structural assessment of the tank must be conducted before the cathodic protection can be added.		Inspect the lining after 5 years.
Additional considerations					

LOOKUP TABLE: OR DEQ UST Regulations
FLEXIBLE PLASTIC PIPE

Item	Inspection/Testing	Maintenance	Repairs	Records	BMPs
Flexible Plastic Pipe	Not required.	Not required.	Not required unless damaged.	Not required.	Inspect piping monthly. Watch for signs of deterioration such as elongation, softening, swelling, cracking, or leaking of product.
CONSIDERATIONS					
Common problems	Failure of certain brands of flexible piping, especially Total Containment Enviroflex, have been common, especially in warm, humid environments. Be sure all sumps are kept free of both water and product. Avoid exposure of the exterior of flexible piping to product. Monitor the condition of sump penetration fittings as well as the piping.				
Additional considerations					Test sumps for tightness annually to ensure that sumps and penetration fittings will contain a leak should one occur. Test the operation of sump sensors and line leak detectors so that leaks will be detected in a timely manner.

LOOKUP TABLE: OR DEQ UST Regulations
AUTOMATIC TANK GAUGE

Item	Inspection/Testing	Maintenance	Repairs	Records	BMPs
Automatic Tank Gauge (ATG)	Tank gauge must complete at least one valid, passing tightness test per month.	Must be conducted according to manufacturer requirements.	Should only be conducted by a manufacturer certified technician.	Maintain record of at least the last year of monthly test results. Records of calibration, maintenance, and repair should be kept indefinitely.	Program ATG to conduct a test at least once a week. Learn how to operate the ATG and DO NOT IGNORE ALARMS!
CONSIDERATIONS					
Common problems	Be sure the fuel level is sufficient to conduct a valid test. Check the certification for the ATG to determine the minimum test level. For tank gauges that conduct continuous testing, check the certification to determine the maximum throughput allowed. Certifications are available on the web at www.nwglde.org			Most ATGs print test results on thermal paper that will fade with time. Keep test results away from sunlight to extend their life. Photocopy fresh printouts to store them indefinitely. Do not apply adhesive tape over printout text or printing will disappear in a few weeks.	Operation of the tank gauge is poorly understood. Alarms are often ignored. Test results are not maintained.
Additional considerations	Improper operating mode (less than 99% confidence level) for continuous monitoring.			For ATGs with continuous monitoring (Veeder-Root CSLD and Incon SCALD), the setting must be set at 99% probability of detection to be in compliance with third party certification.	

LOOKUP TABLE: OR DEQ UST Regulations
DOUBLE-WALLED TANKS

Item	Inspection/Testing	Maintenance	Repairs	Records	BMPs
Double-Walled Tank	Determine status of interstitial space at least monthly.	Must be conducted according to manufacturer requirements.	Can only be done by a certified worker.	Maintain record of at least the last year of monthly inspection results. The record must include the power status (on or off), alarm status (on or off), and sensor status (normal or malfunctioning). Records of calibration, maintenance, and repair should be kept indefinitely.	Check the tank monitor for alarms on a daily basis. DO NOT IGNORE ALARMS.
CONSIDERATIONS					
Common problems					
Additional considerations	Starting in 2008, all new tanks must be double-walled and must use interstitial monitoring.				While the rules only require that the inner wall of the tank be monitored for leaks, tanks with liquid filled interstitial spaces (known as brine or hydrostatic systems) monitor the integrity of both walls of the tank.

LOOKUP TABLE: OR DEQ UST Regulations
INVENTORY CONTROL

Item	Inspection/Testing	Maintenance	Repairs	Records	BMPs
Inventory Control and Tank Tightness Testing NOTE: Inventory control and tightness testing may not be used for leak detection after 12/22/08	Make daily measurements of sales, deliveries, and product on hand. Reconcile monthly. Also conduct tank tightness test every 5 years.	If gauge stick is used, markings must be easily read. If ATG is used, maintain ATG according to manufacturer requirements.	If ATG is used, repairs should only be conducted by a manufacturer certified technician.	Maintain record of at least the last year of daily data and monthly reconciliation results. If ATG is used, records of calibration, maintenance, and repair should be kept indefinitely. Keep records of last two tightness tests conducted.	Use ATG to gather inventory data. Use computer spreadsheet to do the math. Review data trends as well as monthly reconciliation result.
CONSIDERATIONS					
Common problems	Sales data and product volume data are not gathered at the same time. Inventory data are not gathered every day. Inventory measurements are made in a haphazard manner.			Not enough attention is paid to inventory data. Investigate loss trends even if other forms of leak detection indicate that there is no problem.	
Additional considerations					

LOOKUP TABLE: OR DEQ UST Regulations
 STATISTICAL INVENTORY RECONCILIATION

Item	Inspection/Testing	Maintenance	Repairs	Records	BMPs
Statistical Inventory Reconciliation (SIR) NOTE: SIR may not be used for leak detection on pressurized piping systems	Statistical analysis of inventory records must be completed every 30 days. SIR results must be obtained within 22 days of the end of each monitoring period. Note: Cannot continue using SIR if more than 4 inconclusive results in a 12 month period.	Make daily measurements of sales, deliveries, and product on hand. Follow SIR vendor requirements.	None required.	Maintain record of at least the last year of SIR results.	None specified.
CONSIDERATIONS					
Common problems	To avoid inconclusive results, accurate inventory data must be provided to the SIR vendor.				
Additional considerations					

LOOKUP TABLE: OR DEQ UST Regulations
GROUNDWATER MONITORING

Item	Inspection/Testing	Maintenance	Repairs	Records	BMPs
Groundwater Monitoring (Only allowed with DEQ approval)	Inspect groundwater wells monitoring a tank or pressurized piping for presence of contamination every day. Inspect wells monitoring suction piping every 30 days.	Must be conducted according to manufacturer requirements.	Can only be done by a certified worker.	Maintain record of at least the last year of inspection results. Records of calibration, maintenance, and repair should be kept indefinitely.	Use another method of leak detection.
CONSIDERATIONS					
Common problems					
Additional considerations					Groundwater monitoring is a crude method of leak detection. Rules require an extensive site investigation to determine the suitability of this method of monitoring for a specific site. In most cases, an alternate method of leak detection would be less costly and more effective.

LOOKUP TABLE: OR DEQ UST Regulations
SOIL VAPOR MONITORING

Item	Inspection/Testing	Maintenance	Repairs	Records	BMPs
Soil Vapor Monitoring (Only allowed with DEQ approval)	Inspect groundwater wells monitoring a tank or pressurized piping for presence of contamination every day. Inspect wells monitoring suction piping every 30 days.	Must be conducted according to manufacturer requirements.	Can only be done by a certified worker.	Maintain record of at least the last year of inspection results. Records of calibration, maintenance, and repair should be kept indefinitely.	Use another method of leak detection.
CONSIDERATIONS					
Common problems					
Additional considerations					Rules require an extensive site investigation to determine the suitability of this method of monitoring for a specific site. In most cases, an alternate method of leak detection would be less costly.

LOOKUP TABLE: OR DEQ UST Regulations
MANUAL TANK GAUGING

Item	Inspection/Testing	Maintenance	Repairs	Records	BMPs
<p>Manual Tank Gauging NOTE: This method of leak detection may only be used on tanks with a capacity of less than 2001 gallons. After 12/22/2008, this method may only be used on tanks with a capacity of less than 1001 gallons.</p>	<p>Measure for change in product level during idle period each week. Average weekly results each month. Tightness test is also required every five years for tanks greater than 1,000 gallons and less than 2,001 gallons in capacity.</p>	<p>Markings on gauge stick must be easily read.</p>	<p>Not required.</p>	<p>Maintain record of at least the last year of weekly and monthly test results. If tightness testing is required, records of the last two tightness tests must be retained.</p>	<p>None specified.</p>
CONSIDERATIONS					
Common problems					
Additional considerations	<p>This method is most useful for small used oil tanks. The tank must be tested weekly by monitoring the liquid level over a period of at least 36 hours. Two level measurements must be taken at the beginning and two at the end of the test period. Every four weeks, the last four weekly volume changes must be averaged to obtain a monthly variation. Allowable change in volume is indicated in the regulations. This method of leak detection is a stand alone method for tanks of less than 1001 gallons capacity. This method must be used in conjunction with a tightness test every five years for tanks with a capacity of 1,001 gallons and less than 2,001 gallons.</p>				

LOOKUP TABLE: OR DEQ UST Regulations
MANUAL TANK GAUGING

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LOOKUP TABLE: OR DEQ UST Regulations
DOUBLE-WALLED PIPING

Item	Inspection/Testing	Maintenance	Repairs	Records	BMPs
Double-Walled Piping	Determine status of interstitial space daily and record monthly for pressurized piping and monthly for suction piping. Sensors must be present in every sump. In addition, owner must maintain records of start-up interstitial space pressure test. Mandatory for new installations after 2008.	Must be conducted according to manufacturer requirements.	Can only be done by a certified worker.	Maintain record of at least the last year of daily checking and monthly inspection results. The record must include the power status (on or off), alarm status (on or off), and sensor status (normal or malfunctioning). Records of calibration, maintenance, and repair should be kept indefinitely. Also maintain start-up interstitial pressure test results.	Check the monitor for alarms on a daily basis. DO NOT IGNORE ALARMS.
CONSIDERATIONS					
Common problems	Water entry into containment sumps is a frequent source of false alarms.				Repair sumps so that they are liquid tight. Test sumps annually to verify that they are liquid tight. If water entry problems cannot be completely resolved, install discriminating sensors that can detect product even if significant amounts of water are present.
Additional considerations	Starting in 2008, all new tanks must be double-walled and must use interstitial monitoring. Pressurized pipe sumps must be monitored daily.				While the rules only require that the inner wall of the tank be monitored for leaks, tanks with liquid filled interstitial spaces (known as brine or hydrostatic systems) monitor the integrity of both walls of the tank.

LOOKUP TABLE: OR DEQ UST Regulations
DOUBLE-WALLED PIPING

Additional considerations	Interstitial monitoring sensors must be installed in any sump which houses a noncontinuous junction of the interstitial space (e.g., any and all points along the piping run where the interstitial space is no longer continuous).				

LOOKUP TABLE: OR DEQ UST Regulations
LINE LEAK DETECTOR

Item	Inspection/Testing	Maintenance	Repairs	Records	BMPs
Line Leak Detector NOTE: a line leak detector is required on all pressurized piping. Double-walled piping with continuous monitoring does not meet the requirement for a line leak detector.	Must be tested for proper operation annually. This included mechanical as well as electronic models.	Test of operation must be conducted according to manufacturer requirements.	Can only be done by a certified worker.	Maintain record of the last test of operation. Records of calibration, maintenance, and repair should be kept indefinitely.	None specified.
CONSIDERATIONS					
Common problems					Some manufacturers of electronic line leak detectors claim that their devices are self testing and need no additional test of operation. Regardless of manufacturer claims, an annual test of the ability to detect a simulated three gallon per hour leak is required.
Additional considerations					Both mechanical and electronic line leak detectors require that the pump be cycled from off to on or on to off in order to conduct a test. At high throughput locations, a pump may run continuously for more than an hour, and so the regulatory requirement of detecting a leak in one hour will not be met. Very large releases have occurred at such facilities because of the failure to detect large leaks in a timely manner. High throughput locations must have secondary containment with continuous monitoring in order to detect leaks in a timely manner.

LOOKUP TABLE: OR DEQ UST Regulations
LINE TIGHTNESS TEST

Item	Inspection/Testing	Maintenance	Repairs	Records	BMPs
Line Tightness Test	Test pressurized piping annually by a licensed service provider. Test suction piping every three years if not equipped with "safe suction."	Not required.	Not required.	Keep record of last test result.	Perform an annual line tightness test even if piping is double-walled.
CONSIDERATIONS					
Common problems					
Additional considerations					Hire a reputable tester who was not involved in the installation of the piping.

LOOKUP TABLE: OR DEQ UST Regulations
MONTHLY LINE TIGHTNESS TEST

Item	Inspection/Testing	Maintenance	Repairs	Records	BMPs
Monthly Line Tightness Test (conducted by electronic line leak detector, typically connected to automatic tank gauge)	Test piping at least once a month. Leak detector must be function-tested annually.	Must be conducted according to manufacturer requirements.	Can only be done by a certified worker.	Maintain record of at least the last year of test results. Records of calibration, maintenance, and repair should be kept indefinitely. Also keep annual function test results.	Verify that the leak detection unit has been properly programmed for the type, length and diameter of piping present at the facility.
CONSIDERATIONS					
Common problems	In the past, Oregon DEQ did not require function test by a third party. Self-diagnosing leak detector test is no longer allowed.				
Additional considerations					Because testing is conducted automatically on a fairly frequent basis, some test failures may occur. Pay careful attention to these occasional failures as they may indicate a leak that is slightly less than the leak detection threshold of the device.