

DIRECTIVE 055: STORAGE REQUIREMENTS FOR THE UPSTREAM PETROLEUM INDUSTRY

FREQUENTLY ASKED QUESTIONS (FAQ)

Question: Do fuel tanks fall under the requirements of *Directive 055*?

No. For storage of fuels (e.g., diesel and gasoline) in aboveground and underground storage tanks, refer to the *Alberta Fire Code*, Part 4. These storage tanks also may require registration with the Petroleum Tank Management Association of Alberta (PTMAA).

Question: Do propane tanks need to meet the storage requirements of *Directive 055*?

No. For storage of natural gas (NG) and liquefied petroleum gas (LPG), see:

- *CSA International B 149.1-00, Natural Gas and Propane Installation Code*, and
- *CSA International B 149.2-00, Propane Storage and Handling Code*.

Question: Does the storage of sulphur fall under *Directive 055* requirements?

No. The storage of sulphur on upstream petroleum sites must conform to the requirements of ERCB *Informational Letter IL 84-11: Approval, Monitoring, and Control of Sulphur Storage Sites*.

Question: If collected surface water meets *Directive 055* discharge criteria, but landowner permission cannot be obtained to release the water, can I take the water to a disposal well?

No. In accordance with *Directive 051: Injection and Disposal Wells* surface run-off water that meets surface discharge criteria or can meet surface discharge criteria without cost-prohibitive treatment is prohibited from disposal by subsurface injection except under exceptional circumstances. Licensees that cannot obtain landowner permission for surface water discharge are required to manage the surface water by some other method. Examples include using the water for dust suppression purposes, or discharging water in another location where landowner permission can be obtained.

Question: What happens if surface water is accidentally discharged (e.g., lease dike overflows) and landowner permission has not been obtained?

- If the ERCB receives a public complaint from the landowner, enforcement action(s) may be issued.
- If the fluids meet surface water discharge criteria and landowner permission can be obtained after the incident, report the incident verbally to the ERCB and enter as a non-reportable incident on the Digital Data Submission (DDS) system.
- If the fluid does not meet surface water discharge criteria, report to the ERCB as an off-lease spill.
- If fluids meet surface water discharge criteria and landowner permission cannot be obtained after the incident, report to the ERCB as a self-disclosure.

Question: If a steel dike needs to have piping routed through it, are we in noncompliance with *Directive 055*?

Directive 055 states that a dike wall must not have openings in it, such as dike drains; however, the ERCB is working to clarify this issue and harmonize with the *Alberta Fire Code*. ERCB

Report 2009-A: Updates to the Storage Requirements for the Upstream Petroleum Industry (Report 2009-A) can be found on the ERCB Web site. Currently this document states that the following modifications will be made to *Directive 055*: "Only piping for product, utility, or fire protection purposes directly connected to a tank or tanks within a diked area may be routed through the dike. Piping passing through dike walls must be designed to prevent excessive stresses as a result of settlement or fire exposure." The licensee would also want to ensure that the piping to dike seal is impermeable and is able to withstand the hydrostatic head associated with the dike being full of liquid.

Question: How often to I have to integrity test an underground tank?

Licensees and approval holders that chose to verify the mechanical integrity of pre-1996 underground storage tanks were to complete the initial test/inspection by October 31, 2001, and then were to repeat the integrity test/inspection at a minimum of every three years. Appendix 2 of *Directive 055* clarified that the date of the initial integrity test/inspection was to be used to set the frequency for the repeat tests/inspections. As indicated in the following table which can be found in Section 2.2.2 of Appendix 2 of *Directive 055*:

Year of first test	Year of second test	Year of third test
1999 or earlier	2002	2005
2000	2003	2006
2001	2004	2007

The ERCB acknowledges that the intent of the three year frequency is not stated clearly. Section 2.1.2 of Appendix 2 of *Directive 055* will be updated to identify that the schedule for the next integrity test must be based on the previous integrity test such that the time interval between integrity tests for underground tanks **must not exceed three years**, as outlined in ERCB *Report 2009-A*.

Question: Is concrete acceptable for secondary containment?

The 2001 edition of *Directive 055* removed the option to use concrete as primary containment in situations where liquids are being stored or where there is potential for leachate to be generated. Concrete is not acceptable as primary containment but is still acceptable as secondary containment; however, concrete is known to crack (especially if there is upheaval/subsidence/extreme weather). Licensees have to inspect and maintain the integrity of the secondary containment system. If a release occurs, the licensee would have to prove that the released material did not escape the secondary containment system and that all released material is recovered.

Question: Is a lease berm acceptable as secondary containment for a tank?

In the current edition of *Directive 055*, a minimum dike capacity has been established, but not a maximum capacity. The purpose of a dike is to contain fluids in a localized area in the event of a breach of or release from a tank, and to prevent the fluids from spreading across the site. This serves to limit the extent of contamination caused by the release and to prevent the spread of fire should the liquids be flammable or combustible. Section 5.3.2.1 of *Directive 055* stipulates that for in situ oil sands operations **where a conventional dike interferes with operations**, the secondary containment system must be lined and graded to collection area(s) so that the system

meets the capacity requirements of a conventional dike. If it has been identified that a dike or contoured area has not been constructed around a tank or group of tanks, and the site is configured in such a manner that it would be difficult to implement the dike or contoured area, the ERCB has considered alternative containment systems that provide an equivalent level of environmental protection and safety (requires ERCB approval). To better clarify this issue, *Directive 055* will be modified to provide the following clarifications as outlined in *Report 2009-A*:

- For environmental protection and fire safety purposes, a lease berm on an oil and gas site cannot be used in place of a tank farm dike.
- For in situ oil sands operations constructed between 1991 and 2001, an acceptable alternative to a dike involves contouring the area surrounding a tank or group of tanks to contain the volume of the largest tank. For sites constructed after January 1, 2002, the capacity must be equivalent to the applicable diking requirements. The contoured area must be lined for sites using this option that were constructed after January 1, 1996.
- Variances to secondary containment systems require ERCB approval.

Question: Do pop tanks require secondary containment?

Section 3.4.1 of *Directive 055* outlines pop tanks and other emergency containment tanks as not requiring secondary containment provided they are emptied immediately after use and are regularly inspected to verify their integrity.

Question: Do flare knockout tanks require secondary containment as per *Directive 055*?

Section 2.4 of *Directive 055* identifies that aboveground and underground pressurized vessels that are part of an active process (e.g., flare knockouts and amine surge/drain tanks) and pipeline drip vessels are not within the scope of the storage requirements, provided that they have been designed for a working pressure of 103.4 kilopascals (kPa) (15 pounds per square inch [psi]) and are registered with the *Alberta Boilers Safety Association (ABSA)*. All aboveground and underground nonpressurized storage vessels not registered with *ABSA* are subject to *Directive 055*. Also, Section 7.6 of *Directive 060: Upstream Petroleum Industry Flaring, Incinerating, and Venting (Directive 060)* identifies that flare knockouts used for liquid storage must be designed and be in accordance with *Directive 055*.

The ERCB recognizes that flare knockouts are often part of a pressure-relieving system, and the systems are designed to handle worst-case emergency scenarios, but the flare knockouts typically are not operating under pressure and are not registered with *ABSA*.

Above-ground flare knockouts do not require secondary containment as per *Directive 055*; however, as outlined in *ERCB Report 2009-A*, the exterior of underground flare knockouts cannot be examined for integrity; therefore, secondary containment and leak detection are required as environmental mitigative measures. The use of double-walled designs that allow monitoring of the interstitial space between the two walls is acceptable. Single-walled systems installed prior to 1996 must be tested for integrity at least every three years. This document also recommends that Section 7.6 of *Directive 060* be updated to include the following:

- Underground flare or incinerator separators or knockouts installed after January 1, 1996, must be designed with double walls and interstitial space monitoring capabilities.

- Any single-walled underground flare or incinerator separators or knockouts installed prior to 1996 must have an established integrity monitoring system that verifies integrity at a minimum frequency of every three years. (For information on integrity tests for underground storage tanks, see Appendix 2 of *Directive 055*)
- Liquid hydrocarbons separated out from other parts of a facility must not be directed to flare or incinerator separators or knockouts for storage. The use of these vessels for storage of other liquids separated out from other parts of a facility is acceptable if this was contemplated when designing the system and the design and operational procedures provide for safe removal of the stored liquids.

Question: Does underground cavern storage of natural gas need to meet the requirements of *Directive 055*?

No. The underground cavern storage of natural gas is covered under Section 39(1)(b) of the *Oil and Gas Conservation Act* and Unit 4.3 of *Directive 065: Resources Application for Conventional Oil and Gas Reservoirs*.

Question: If there are 5 barrels of lube oil on site, do they require secondary containment?

No. A container is considered a portable aboveground storage device that does not exceed 1 m³ in capacity. The total combined volume of containers without secondary containment cannot exceed 1 m³ (e.g., approximately five barrels or five 45-gallon drums) on any site; however, secondary containment should be considered if a release or spill could not be contained on-site or if a spill or release could reasonably be expected to present a risk to a stream, water body, groundwater, or cause other environmental concerns. All containers that exceed the total combined volume of 1 m³ require secondary containment (e.g., five or fewer barrels on a site do not require secondary containment, but for sites with more than five barrels, the number of barrels exceeding five require secondary containment).

Question: If the spill control device for a load line has fluids in the container, will the ERCB issue a housekeeping noncompliance?

The spill control device is intended to contain releases/drips. Provided that the device is not overflowing and not semi-buried in the ground, no enforcement will be issued by the ERCB.

Question: If the secondary containment system for tanks/containers contains rainwater, will the ERCB issue a noncompliance?

The secondary containment system for the tank(s)/container(s) must meet the secondary containment requirements outlined in *Directive 055*. Licensees must ensure that the rainwater does not interfere with the net capacity requirements inside the secondary containment system. The secondary containment system must have a net capacity of the following:

- containers - greater than that of the largest container within the storage area or 10% of the total volume of all containers in the storage area, whichever is greater,
- Tanks – if one tank, have a volumetric capacity of not less than 110% of the capacity of the tank, or if more than one tank, have a volumetric capacity of the largest tank and 10% of the greater of:
 - the capacity of the largest tank, or
 - aggregate capacity of all other tanks within the diked area.

If the additional rainwater volume impedes the secondary containment capacity requirements, the ERCB may issue enforcement.

Question: Can contaminated soil be stored temporarily on the ground (e.g., excavated contaminated soil from a pipeline failure)?

No. Contaminated soil and also contaminated soil that has the potential to leach must not be stored directly on the ground. A liner or bin is required as per the requirements of *Directive 055*. Any alternative storage method must be approved by the ERCB Environment Group.

Question: How do I apply for an alternative storage approval?

Directive 055 is intended to permit the use of alternative storage systems if it can be shown that the system can meet the objectives and intent of *Directive 055*. *ERCB Report 2009-A* provides the following clarification respecting when an alternative storage systems requires application for specific approval or when it is incorporated into an application submitted pursuant to *Directive 056: Energy Development Application and Schedules*. Note that in all situations the application must contain sufficient information to substantiate that an equivalent level of environmental protection and safety will be achieved by the proposed storage system.

- Applications for new energy developments requiring licensing pursuant to *Directive 056* that are proposing to incorporate alternative storage systems must describe the storage system and be filed as nonroutine.
- Applications for modifications to *Directive 056*-licensed energy developments that are proposing to incorporate alternative storage systems must describe the storage system and be filed as nonroutine. Note that implementation of an alternative storage system on an existing licensed energy development, on its own, does not trigger the need to submit a *Directive 056* amendment application.
- Applications for approval to incorporate an alternative storage system on an existing licensed or approved upstream petroleum site must be submitted to the ERCB Resources Group in situations when the proposed alternative storage system is not part of a modification to the energy development that requires its license/approval to be amended. Applications for alternative storage systems under *Directive 55* can be submitted electronically through the ERCB Digital Data Submission (DDS) system. The applications can be sent via email to the mailbox: Directive_055-storageapps@ercb.ca until 31 December 2011. Effective 1 January, 2012 all applications must be made electronically. Please see ERCB [Bulletin 2011-17](#) for more information.

If you have questions/comments, please contact your local ERCB field centre or email the ERCB industry education coordinator at industry.education@ercb.ca