

SASKATCHEWAN PETROLEUM INDUSTRY PIPELINE WATERCOURSE CROSSING STANDARDS

The following guidelines are to be considered standard construction practices for all **crude oil, emulsion and saltwater** pipelines, flowlines/gathering lines, crossing water courses in Saskatchewan, including seasonal watercourses.

1. Pipe must be buried a minimum of 1.5 meters below the creek bed to ensure the pipe will not be exposed due to scouring of the channel during runoff, during floods, or due to normal flows over time.
2. The pipeline (flowline) must be encased in a steel-casing pipe and either:
 - A) The annulus between the carrier pipe and the steel casing pipe will be sealed at each end and a pressure gauge installed and calibrated to zero, to ensure any leaks or ruptures in the carrier pipe can be detected immediately, or:
 - B) The annulus between the carrier pipe and the casing pipe will be sealed at each end of the casing and annulus vents extending to the surface will be installed on each side of the creek for leak detection.
 - or
 - C) crossing must be constructed using heavy wall steel, extend past both banks of the creek and be equipped with an approved emergency shut off in the case of integrity loss or a drop in pressure
3. The steel casing pipe shall span the entire length of the crossing and extend far enough beyond the creek (river, stream) banks to prevent leakage from the annulus vents or the gauge installation point, from draining back into the watercourse.
4. Where method B (above) is used, annulus vents are to be located on level land, or land that drains away from the watercourse and an area around the annulus vents on both sides of the crossing must be diked or isolated in some manner.

These are applied to **all** crude oil, emulsion and saltwater pipeline/flowlines crossing watercourses, regardless of whether they are open cut, bored, or directionally drilled.