Access Pipeline Fact Sheet #9 -
WATER CROSSINGS – WHAT ARE THEY?

Pipeline water crossings are common throughout western Canada and are required when a pipeline route intersects with a body of water. Pipeline companies utilize industry best practices when determining the method of construction for a water crossing in a way that has minimum impact on the surrounding environment. This is a standard pipeline activity that requires special attention and implementation of mitigation measures to ensure successful installation. Water crossings are guided by strict regulations throughout the planning, approval, construction and decommissioning of a pipeline route.

**WHY ENVIRONMENTAL BEST PRACTICES MATTER**
Access Pipeline believes that when pipeline water crossings are constructed with care and attention, they help reduce siltation around a water body, protect fish habitat, prevent water pollution/contamination, and allow workers to maintain the flow of a water body during construction.

**TYPES OF WATERCROSSINGS**
Bodies of water such as wetlands, streams and rivers are classified by Alberta Environment and Sustainable Resource Development under the Code of Practice for Pipelines and Telecommunication Lines Crossing a Water Body. Below are the standard definitions associated with water crossings:

- **Water Body** – a water body with a defined bed and banks, regardless of whether or not water is continuously present. This does not include fish bearing lakes. This definition includes all watercourses and wetlands in Alberta.
- **Drainage** – wet areas lacking a defined bed and banks

A Qualified Aquatic Environmental Specialist conducts a fish and fish habitat assessment, or a wetland assessment, at the crossing locations. This allows them to determine the type of water body they are crossing, and a recommended crossing method.

**METHODS OF CROSSING**
There are three basic methods of crossing bodies of water. The techniques for each are site-specific:

- **Open-Cut Method:** Open-cut watercourse crossings trench directly through the watercourse. This type of watercourse crossing is typically performed if the watercourse is dry or frozen to the bottom.

- **Isolated (Dam and Pump, Flume) Method:** This construction method is the most commonly used on flowing watercourses. In a dam and pump water crossing, an upstream and a downstream dam are installed in the watercourse to prevent water flow in the area to be trenched. A pump system is set up to move water from upstream of the dam to the downstream side of the dam. The trench is excavated as quickly as possible then backfilled following installation of the pipeline. Silt and sediment accumulation is removed from the streambed and the bed banks are restored to preconstruction profiles prior to removal of the dams.
In a flume watercourse crossing, a dam is placed upstream and downstream of the trench to prevent the main flow of water into the area that the crossing will be installed. A large pipe, or flume, is installed to allow water flow downstream. Pumps are used to dewater the ditch in between, being careful to employ mitigative measures to prevent siltation or sediment transfer.

**Trenchless Method (Horizontal Directional Drilling):** This method allows a pipeline to be drilled underneath a watercourse, leaving the bed and banks relatively undisturbed. A horizontal drill is utilized to drill under the watercourse creating a path to pull the pipeline back through. Horizontal directional drilling is only possible in the right geotechnical conditions and requires special environmental measures to be put in place to prevent contamination of the watercourse in case of a drilling mud release.

Access Pipeline primarily uses the isolated dam and flume method to construct water crossings.

**CONSTRUCTION**
Once aquatic studies and public notification is complete and appropriate permits and approvals are granted, construction of a pipeline water crossing begins. The construction process varies between projects depending on the watercourse, but generally consists of:

1) Access to water crossing is developed;
2) Determine additional workspace needed for staging, storage etc.;
3) Strategies put in place to prevent spill;
4) When necessary, vegetation is removed;
5) Salvage shrubs for re-vegetation after construction; and
6) Construction begins.

**REGULATORY REQUIREMENTS**
Several governing bodies are often involved in the approval and construction of water crossings, and regulate the timing, methods of crossings, and mitigation measures throughout the lifecycle of a water crossing. Most activities that could affect fish and fish habitat, riparian wildlife habitat, species at risk, migratory birds during the nesting season or navigability of the watercourse are often regulated under at least one of the following:

- Canadian Environmental Assessment Act
- Alberta Pipeline Act
- Fisheries Act
- Alberta Water Act
- Migratory Birds Convention Act
- Navigable Waters Protection Act
- Species at Risk Act

Careful monitoring and rigorous development guidelines help protect the environment and wildlife, and ensure a water crossing is developed properly to prevent any future integrity issues.

**HEALTH SAFETY AND ENVIRONMENT**
Safety and integrity are our core values. We have an obligation to our neighbors to ensure our pipeline operations run safely and smoothly. We strive to use best practices to minimize land disturbance during pipeline construction and soil handling. The safeguarding of the lands is an integral part of our values in minimizing potential impacts on the environment.

We are committed to responsible management practices that protect the environment and the health and safety of our employees, contractors, agents and the public. Our health, safety, and environment programs are modeled after industry programs and inclusive of community initiatives.