

# PUMP STATIONS

## FACT SHEET



### Pump Stations

Pipelines are designed to transport products from one point to another by maintaining pressure within them. Factors such as friction and elevation can reduce the pressure and rate of the flow, so pump stations are required to provide the necessary force to keep the liquid petroleum moving. Pipeline system pumps are powered by electric motors and controlled by variable frequency drives to allow all the pumps to operate at optimum efficiency.

- Pump stations will be situated along the Northern Gateway right-of-way to optimize the hydraulic flow along the oil and condensate pipelines between Edmonton and Kitimat.
- Wherever possible, pump station locations are sited in areas where there is already existing development and infrastructure (access roads, power lines) to minimize impact to the environment.
- Pump station sites will be graded and include a retention pond to collect storm water on-site. This will prevent site flooding and allow testing of the site surface water to ensure that it is contaminant free before returning to the environment.
- Each site will be fenced to protect the facility. Security will also include intrusion alarms and video surveillance.
- Each station will be equipped with remotely operated valves to allow the station to be isolated and bypassed if there is a risk to either the station or on the mainline.
- Stations will also be equipped with instruments tied into a real-time supervisory control and data acquisition system that is continuously monitored by the Control Center in Edmonton. This will allow control room operators to identify and make safe operational decisions at each station in a short time frame.
- Each station will have backup satellite or radio communications. However, should communication between the stations and the control room be disrupted the stations are programmed to operate at a reduced rate or shutdown to prevent the risk of operating in a manner that could damage pipe and equipment and subsequently cause an environmental incident.
- Stations will be equipped with at least one sump tank (dependent on station size) and an extensive system of drain piping to significantly reduce the potential for small oil spills during maintenance activities. Inspection tool by-pass facilities will be incorporated into the design to eliminate the need to drain oil out of scraper traps and remove oil covered inspection tools from the pipeline.
- Station facility piping will be installed almost entirely aboveground. This will allow the operators and maintenance staff to observe any issues that may arise and have ready access to shorten repair times.
- To minimize the visibility of the stations, the area surrounding the site, with the exception of the access road, will remain undisturbed and in its natural state.
- The stations will be designed to comply with the applicable Canadian standards, keying on human safety and protection of the environment.
- Once complete, the stations will be monitored and maintained in a manner consistent with current best practices. This will ensure that the pump stations provide safe and reliable service throughout the life of the Project.