# Pipeline Release – Hydrogeological Investigation & Dugout Remediation

| | | Other Consultant | SynergyAspen |
|---|---|---|---|
| **Groundwater Use** | Drinking Water Use | X | |
| | Aquatic Life Water Use | X | |
| | Irrigation Water Use | | |
| | Livestock Water Use | X | X |
| **Soil Matrix Standards** | Intake of contaminated soil | X | X |
| | Groundwater used for drinking water | X | |
| | Toxicity to soil invertebrates and plants | X | X (0 to 1 m) |
| | Livestock ingesting soil and fodder | X | X |
| | Major microbial functional impairment | X | X |
| | Groundwater flow to surface water used by aquatic life – Freshwater | X | |
| | Groundwater used for livestock watering | X | X |
| | Groundwater used for irrigation | | |

X – denotes applicable site-specific factors and standards for the Site.

## Project Profile

A produced water release from an O&G pipeline affected an off-Site dugout located on private land.

## Issue

Another consulting firm completed two phases of excavation without resolving the contamination issues. All confirmatory soil samples were identified to be above the standards considered by the consultant to be applicable to the Site.

## Solution

SynergyAspen completed a detailed hydrogeological study to determine the applicable standards based on hydraulic conductivities, travel time calculations and receptor/pathway interactions.

## Outcome

Based on the hydrogeological data, we determined that the preferential pathways could not be recharged by groundwater and that the drinking water and aquatic life standards were not applicable to the Site. Based on the revised applicable standards, the volume of soil was significantly reduced. The excavation limits were determined and we excavated the contaminated soil from the Site. We submitted a Confirmation of Remediation report to the Ministry of Environment, Oil and Gas Commission and the landowner, satisfying the needs of all three stakeholders. We estimate the cost savings at over $200,000.