

HISTORY

CHALLENGES

APPROACH

OUTCOME

Mapping Weathered Bedrock Using Traditional Logging, Geophysics and Downhole Camera

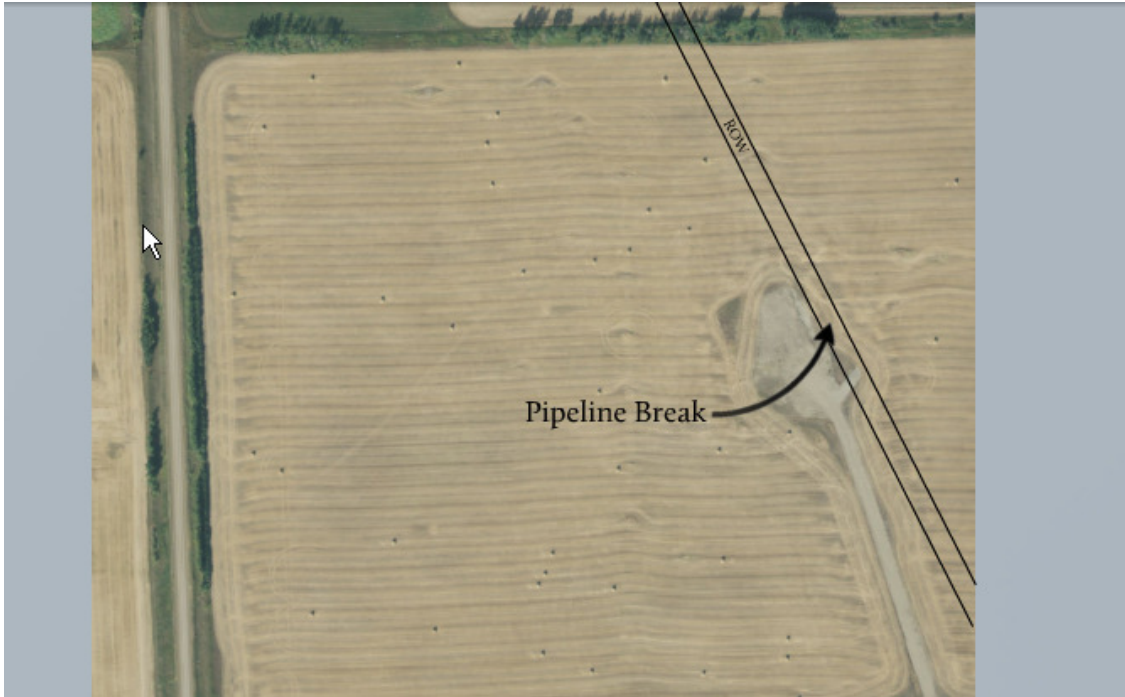
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HISTORY

Pipeline Break

Condensate Release

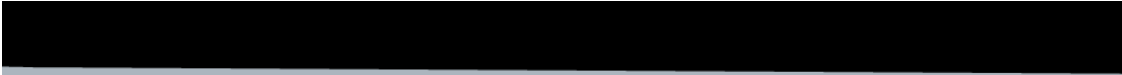


Spill Response

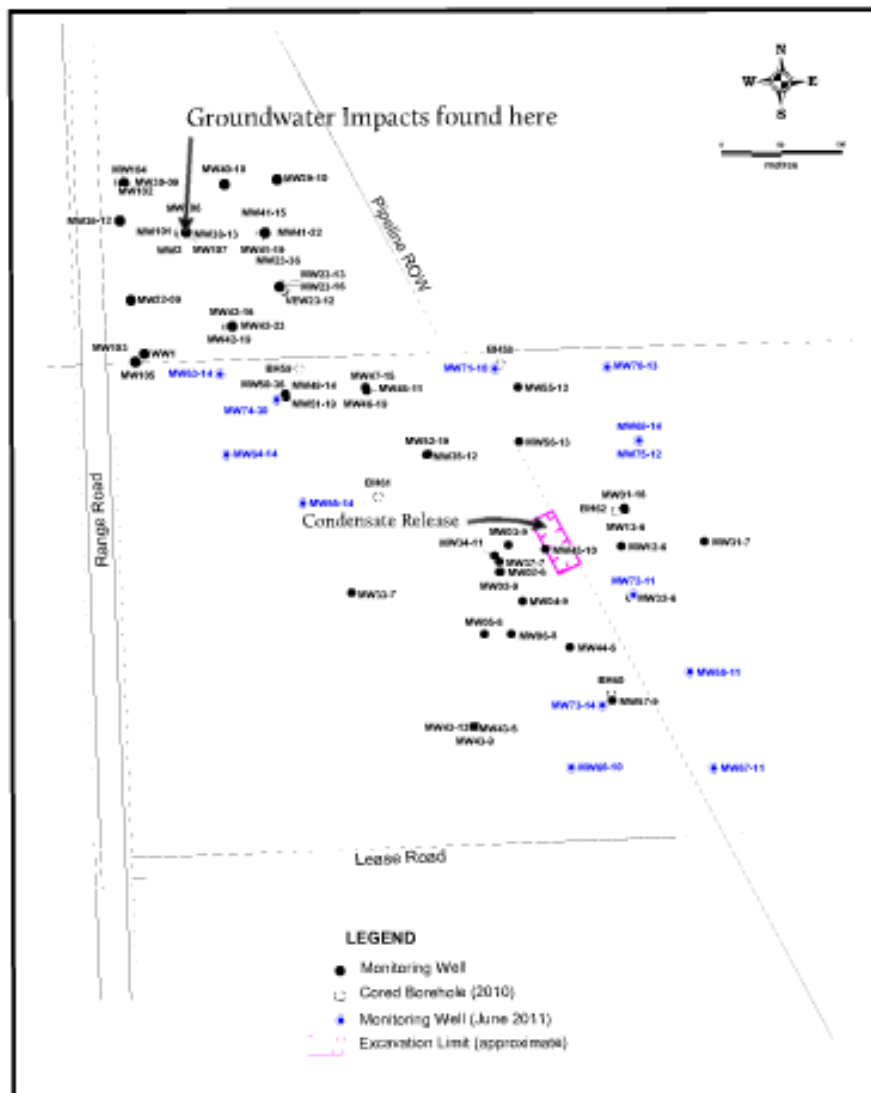




Preliminary groundwater assessment



Various phases of delineation



GEOLOGY

Shallow Bedrock
(0.5 - 2 mbg)

Groundwater
~ 6 - 8 mbg



Interbedded siltstone,
sandstone and shale

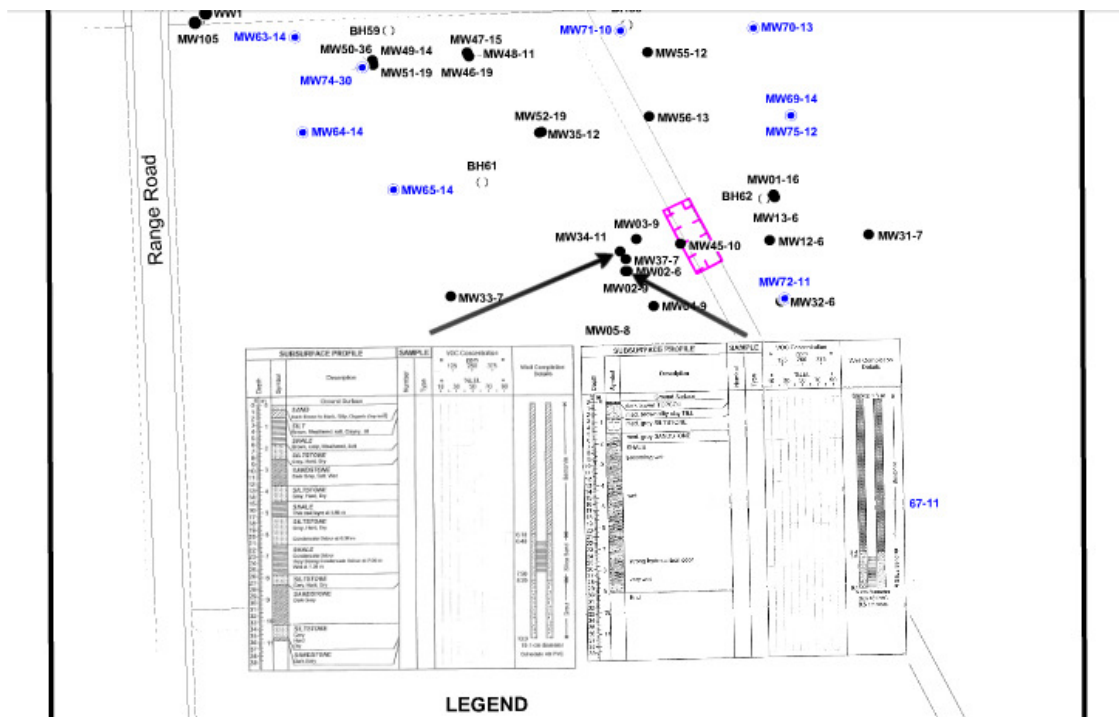


Data collected over ~ 10 years

Several Different Consultants

Various Drilling Techniques

Borehole Logging Variance





Traditional Logging

- Coring
- Air Rotary



Downhole Geophysics

- EM39 Conductivity
- Natural Gamma



Measures Natural Gamma Radiation Emissions

- *Sandstone < 70 counts*
- *Siltstone 70 - 100 counts*
- *Shale >100 counts*

Downhole Video Imaging

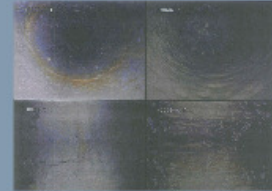




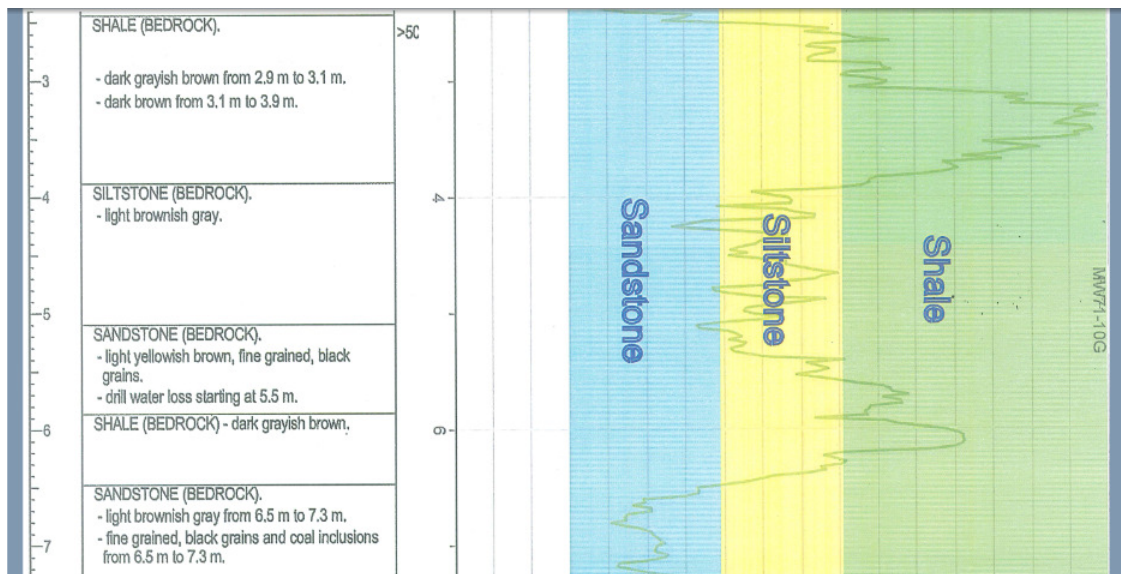
OUTCOME

Video Imaging

- fracturing/weathering
 - water bearing zones
 - void spaces
-
- Answers questions raised during coring program

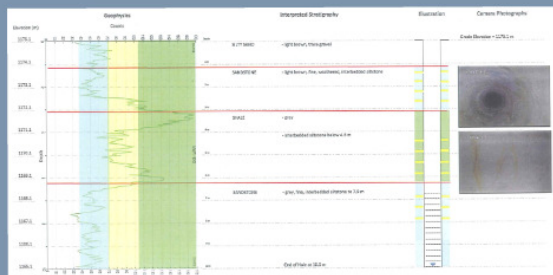


Ground-truthing

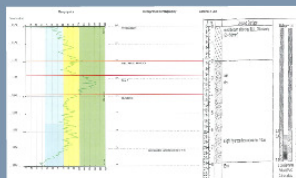


Interpreted Stratigraphy Logs

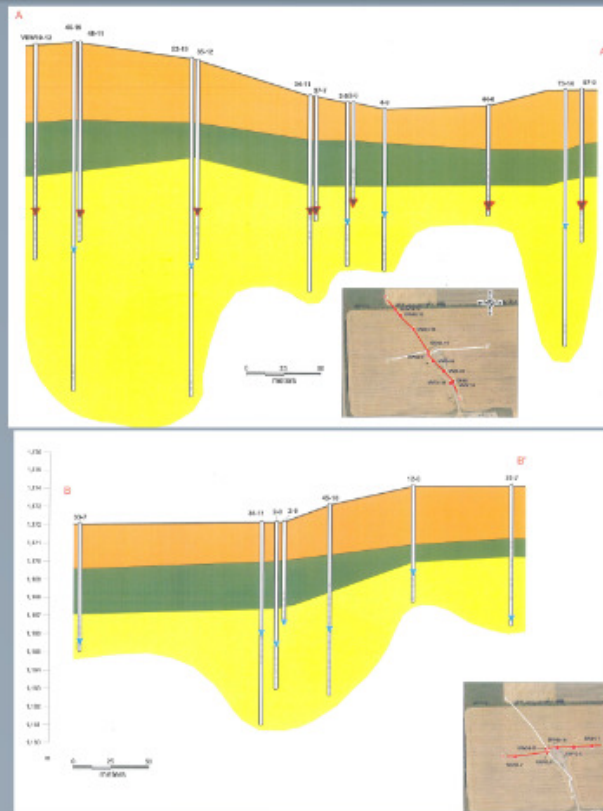
Newly Drilled Boreholes



Previous/Existing Monitoring Wells



Clear picture of stratigraphy!





*Consolidated a decade worth
information, collected from
various methods/sources*

*Understanding of stratigraphy to
develop a Conceptual Site Model*

*Framework for risk management
and future remediation strategy*



Questions?

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