

In Situ Bitumen Water Sourcing & Environmental Burden Shifting



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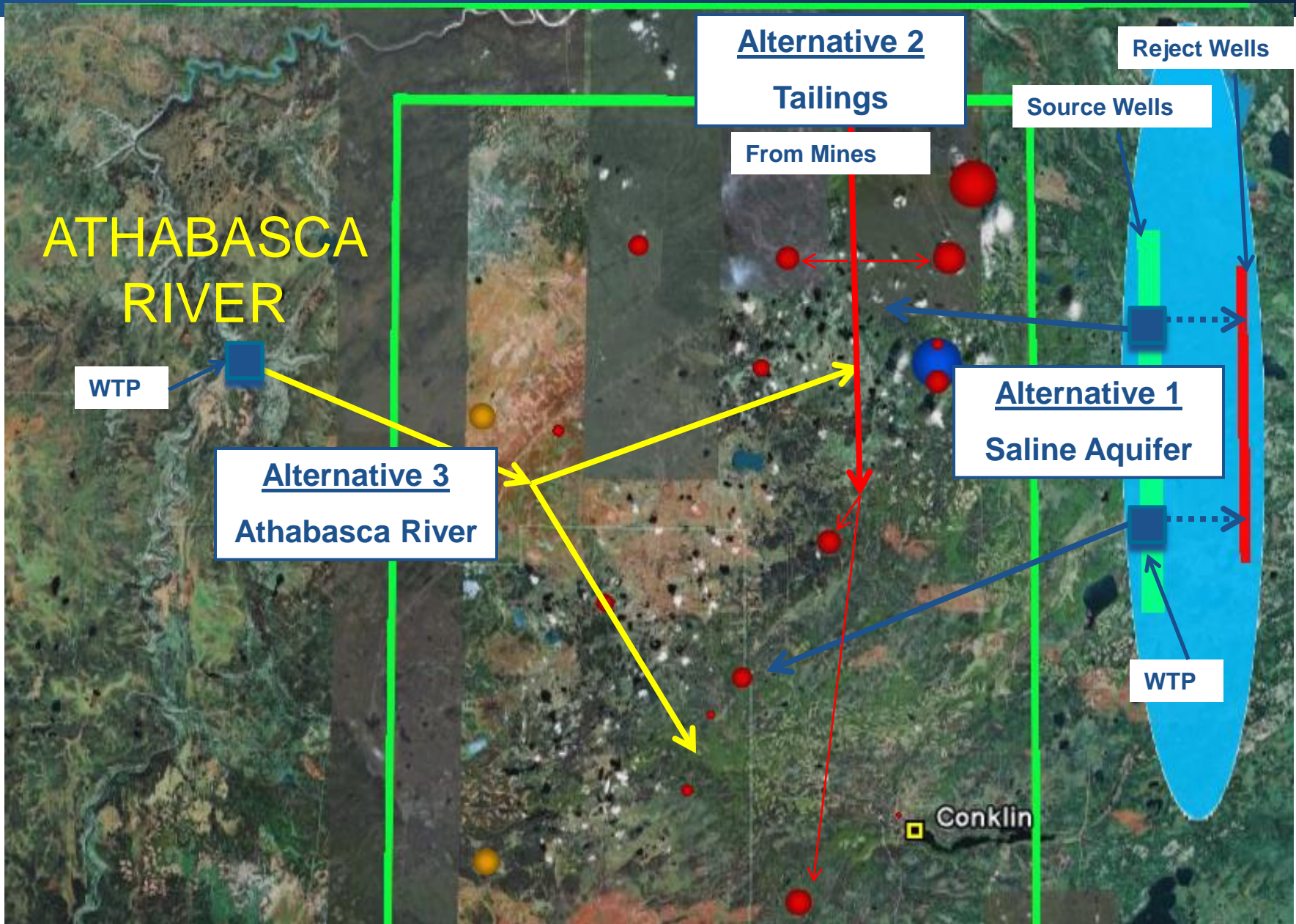
What is Environmental Burden Shifting?



Case Study - SAGD Water Sourcing

PROBLEM:

- Water is required for SAG-D production
- Access to local fresh aquifers is restricted by ERCB & Alberta Environment.
- Potential Solutions:
 - Saline Aquifer to the east of the bitumen edge.
 - Athabasca River
 - Tailings Water



Three Source Water Alternatives

Alternative Relative Metrics

	Cost	CO2	Ecological Disturbance (Km Pipeline)	Social/ Policy Barriers
Saline Aquifer	2.2 x Base	6.7 x Base	717	Low
Tailings Ponds	1.1 x Base	1.4 x Base	423	Med
Athabasca River	Base	Base	371	High

- We need to consider **ALL** the costs
- The highest cost alternative is not always the most environmentally sensitive

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