Groundwater Metals Associated with Oilfield Wellsites

2022 Wellsite Groundwater Metals – Final Report

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The overall objective of this project is to summarize, with rationale, a list of metals in groundwater most likely to be associated with anthropogenic activities at oilfield wellsites.

The scope of work of this project relates to conventional oil and gas wellsites in Alberta and takes as its starting point the list of trace metals for which Alberta Tier 1 groundwater guidelines have been published. The highly soluble metals in Groups I and II of the periodic table commonly considered to be "major ions" in groundwater (sodium, potassium, calcium and magnesium) are not included. Scope items are as follows:

- Determine which of the metals could be present in significant concentrations in drilling fluids.
- Determine which of the metals could be present

in significant concentrations in produced formation waters.
- Identify metals that could be released to shallow groundwater as a result of anaerobic biodegradation of organic chemicals.
- List the metals deemed to be potentially associated with oilfield wellsites and provide a brief
rationale for each included metal.
- Generate a report summarizing the findings

Policy Issue

Regulatory Guidelines/Directives/Policies/Criteria

Knowledge Gap

Inorganics (salinity, metals)

- Natural salt distribution,
- Fate and transport assessment
- Appropriate protection of various exposure pathways,
- SCARG criteria evaluation
- Risk-based soil quality guidelines for selected trace metals
- Knowledge on background concentrations of inorganics

2019 Event Presentation
2018 Wellsite Groundwater Metals – Final Report
2018 Wellsite Groundwater Metals – Best Management

Practices
2018 Wellsite Groundwater Metals – Information Letter