

Oil Sands Monitoring (OSM)

2016-2017 PROJECT PLAN SUMMARY

Project Name:	W2-1-1 Uniquely identifying Industrial Sources of Aquatic Contamination
Type of Project:	Focused Study
Delivery Agent:	Environment and Climate Change Canada
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Budget:	\$ 250,000

Project Description:

Building on our previous studies and addressing key recommendations from the March 2016 Workshop on methods for monitoring bitumen influenced ambient waters, this project will advance efforts to validate and refine analytical methodologies that allow for the discrimination of industrially-derived chemicals from those that arise from naturally-occurring bitumen deposits in groundwater and surface waters in the Athabasca Basin. These methods will be applied to Oil Sands Monitoring (OSM), to support enabling the identification of the sources, pathways and environmental levels of migratory waterborne oil sands mixtures. Bioassays will then assess the significance of the chemical classes of interest such as acid extractable organics (AEOs) including naphthenic acids (NAs), per-fluorinated flame retardants, and artificial sweeteners.

Project Objectives:

Development of methodology to detect and characterize migratory Oil Sands Process-affected Water (OSPW) mixtures.

Key Outcomes:

- Enhanced knowledge on the sources of industrially derived oils sands contaminants, and prioritized chemical classes.
- Data available in the JOSM Data Portal.
- Methodological and analytical advances related to source attribution and relevant SOPs.
- Characterization of chemicals of concern, including specific AEOs (NAs), as well as other classes of organics (e.g. neutrals) within bitumen-influenced waters
- Ongoing identification of chemicals of concern will be integrated into OSM network and analytical design to better discriminate natural vs. anthropogenic sources.

Geographic Scope:

The Lower Athabasca Oil Sands Region.

Associated Data and Reports:

Data generated is Quality assured and Quality controlled and uploaded to the JOSM Portal.

Investigations to be summarized (i.e. manuscripts) include: Expanded chemical analysis of groundwater sites identified in Frank et al. 2014, as OSPW-influenced, Validation of protocols at additional purported tailings plume site, including expanded chemo-metric analyses and first MS/MS characterization of unknown tracer compounds, Chemo-metric analyses of temporal and spatial variability of AEOs within OSPW containments, and, Fractionation and assessment of bitumen-influenced waters.