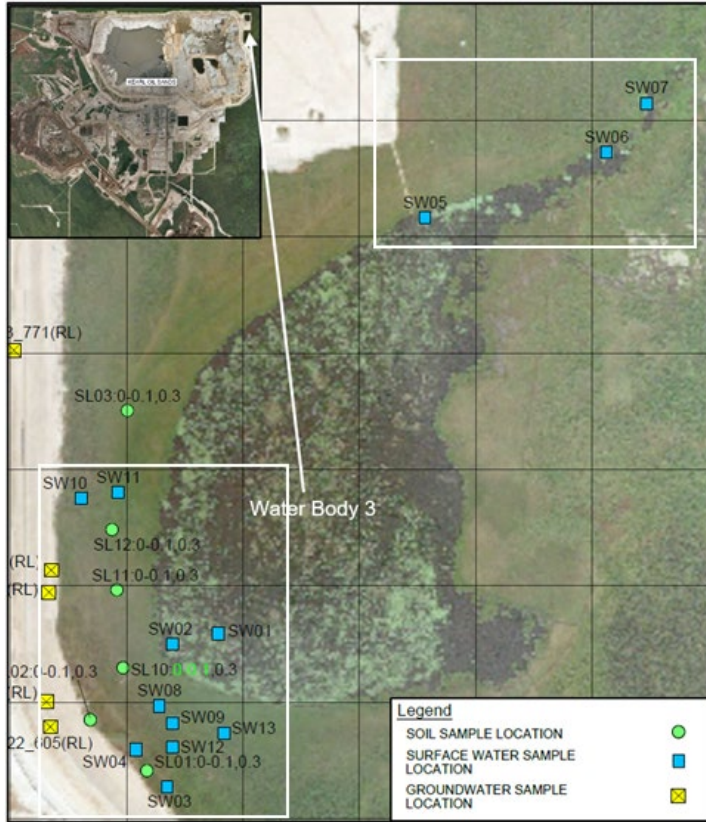


AER Third-Party Sampling 2023

Kearl Oil Sands

Surface Water Quality



* Environmental Quality Guidelines for Alberta Surface Waters, Surface Water Quality Guidelines for the Protection of Aquatic Life.

Location	Date	PAL Guideline Exceedance*
Receptor (Water Body 3)		
SW01 (receptor-near seep)	13-June-2023	PAL: total sulphide
SW02 (receptor-near seep)	13-June-2023	PAL: total sulphide
SW05 (receptor-near outlet)	13-June-2023	PAL: total sulphide
SW06 (receptor-outlet)	13-June-2023	PAL: total sulphide
SW07 (receptor-near outlet)	13-June-2023	PAL: total sulphide
Source		
SW03 (source- seep)	13-June-2023	PAL: F2, dissolved iron, total sulphide No guideline: naphthenic acids (1.8 mg/L)
SW04 (source- seep)	13-June-2023	PAL: F2, total cobalt, total selenium, total zinc, dissolved iron, ammonia, total sulphide No guideline: naphthenic acids (2.8 mg/L)
SW08 (source- onshore)	13-June-2023	PAL: F2, total sulphide No guideline: naphthenic acids (1.6 mg/L)
SW11 (source- onshore)	13-June-2023	PAL: dissolved iron, total sulphide
SW13 (source- onshore)	13-June-2023	PAL: dissolved iron, total sulphide

Interpretation

- Several metals and major ions exceed guidelines in the area prior to Kearl mine development, based on 2003-2004 baseline sampling. This includes iron, sulphide, zinc.
- Naphthenic acids were analyzed using the FTIR method. Naphthenic acids sampled on June 13, 2023 analyzed using the Orbitrap method is not available for this update.

AER Third-Party Sampling 2023

Kearl Oil Sands Surface Water Quality



Location	Date	AB Tier 1 Guideline Exceedance*
Water Body 4		
WB4-SW01	13-June-2023	PAL: total cobalt, total selenium, total sulphide

* Environmental Quality Guidelines for Alberta Surface Waters, Surface Water Quality Guidelines for the Protection of Aquatic Life

Interpretation

- Toluene may be biogenic (natural) in origin and is common in wetlands.
- Naphthenic acids were below detection limit based on the FTIR analytical method. Naphthenic acids sampled on June 13, 2023 analyzed using the Orbitrap method is not available for this update.

AER Third-Party Sampling 2023

Kearl Oil Sands

Groundwater

Last sampled on June 1, 2023. Refer to previous update.

Soils

Last sampled on April 22, 2023. Refer to previous update.