DEPARTMENT OF ECOLOGY
Toxics Cleanup Program

Memorandum

April 25, 2025

TO: Lawson Hills MDP Site File

FROM: Priscilla Tomlinson

SUBJECT: Comments on site documents

Screening Levels and COCs

Lawson Creek is not listed in WAC 173-201A-600 so it must be protected for, among other things, domestic supply, wildlife habitat, and harvesting (-600(1)). Aspect claimed there were no beneficial uses of surface water, so they used drinking water SLs, which are higher than surface water SLs for metals, and claimed no impacts to surface water. My screening identified arsenic, iron, manganese, and zinc as potential COPCs based on detected concentrations. Additional metals might be identified if we get surface water data with lower detection limits. See additional discussion of Lawson Creek below.

Aspect considered only drinking water in their groundwater SLs. Because of limited data in Lawson Creek (see below), we cannot rule out impacts to surface water or sediment, so the groundwater and soil SLs need to consider these pathways. My screening identified lead as a groundwater COPC based on detected concentrations. The detection limits for cadmium, mercury, and silver are above their SLs.

Aspect considered only direct contact because they ruled out groundwater COCs and they didn't consider the TEE (see discussion below). My screening identified TPH-D+O, arsenic, barium, copper, iron, lead, mercury, zinc, benzo(g,h,i)perylene, fluoranthene, and pyrene as COPCs. The detection limits for selenium and silver are above their SLs.

Once we get sufficient data with good detection limits, it might be possible to eliminate some pathways from the SLs, which could decrease the lists of COPCs. For example, by concluding that some chemicals aren't impacting Lawson Creek or some chemicals aren't impacting groundwater.

Lawson Creek

Surface water was sampled in six locations during the Phase II investigation (Golder 2005, Figure 5 and Table 4). The detection limits for cadmium, chromium, copper, mercury, selenium, and silver are above surface water SLs. We should request additional sampling of surface water and sediment within the creek, up and downgradient from the waste rock piles, with detection limits below SLs if possible.

SW1 was the only sample located in Lawson Creek near or downgradient of the waste piles. Iron was detected at 1,200 ug/L, which exceeds the SL of 300 ug/L.

Three samples (SW2, SW4, SW5) were taken from seeps or ponded water in contact with waste rock piles, which evaluate the possibility for waste rock piles to impact surface water. Arsenic was detected at 4.6 ug/L in SW5, which exceeds the SL of 0.013 ug/L. Iron was detected up to 2,400 ug/L (SW5), which exceeds the SL of 300 ug/L. Manganese was detected up to 980 ug/L (SW5), which exceeds the SL of 50 ug/L. Zinc was detected at 660 ug/L in SW2, which exceeds the SL of 24 ug/L.

SW3 is in Lawson Creek upgradient of the waste rock piles. Arsenic and zinc were ND. The concentration of iron (1,300 ug/L) was similar to the result for SW1 (1,200 ug/L). The concentration of manganese (55 ug/L) was higher than the result for SW1 (26 ug/L). It will be important to consider upstream concentrations when interpreting the creek data.

SW6 was collected from mine water discharge from the former south gangway entrance, which is not within the proposed development area.

Are Metals at Natural Background?

If surface water or sediment are determined to be impacted, many soil PCULs will default to natural background. The three-part statistical rule can be adjusted when CULs are based on natural background. I made the adjustments to frequency and magnitude of exceedance for arsenic, copper, lead, mercury, and zinc in soil. The only metal that passes these two criteria is lead. I didn't calculate the 95UCL for lead but I could do that in the future.

Natural background concentrations in a coal mining area might be higher than the Puget Sound Basin for some metals. The PLP could consider conducting a site-specific natural background study.

TEE

Aspect (2025) ruled out all soil COCs except arsenic, which they said was at natural background for the area. Based on this, they wrote off the TEE. Aspect considered 20 mg/kg to be natural background for arsenic, but the site doesn't qualify for Method A so we'll use 7.3 mg/kg for background. In addition, we might select more soil COCs. The PLP needs to conduct a TEE and it might need to be site-specific, depending on the outcome of

the evaluation per WAC 173-340-7491(2). In the meantime, I included the site-specific TEE in my soil screening.

TPH at Depth

During geotechnical work in 2020-2022, Associated Earth Sciences Inc. (AESI) collected four samples at depths of 130-151 ft bgs. TPH was detected above Method A in one sample (EB-4-130B in RI Table 1a). Kurt Johnson of Apex Forensics (AESI 2022) evaluated the gas chromatogram and concluded it looked like shaley/bituminous coal or similar material with possibly some field or lab contamination by ketones. He also noted that combustion engines were not widely available in Washington State until after the mine closed.

Dr. Abrams of Imperial College London (2022) evaluated 14 samples of coal and carbonaceous shale from boreholes in the area of EB-4-130B, using programmed pyrolysis, solvent extraction, and gas chromatography. He concluded the materials at depth were natural, early mature, locally generated petroleum with possibly drilling mud additives mixed in and there was no evidence of a refined petroleum product.

In an email to Aspect Consulting on 3/27/2025, Frank Winslow asked why the samples at depth were analyzed for petroleum. In a response on 4/15/2025, Ali Cochrane of Aspect said she couldn't speak to AESI's rationale.

I believe the work by Johnson and Abrams is sufficient to conclude that petroleum was not released at depth at this site.

References

Abrams, MA. 2022. Geochemical evaluation of selected bore hole core samples. March 28.

AESI. 2022. Summary of core sampling and analysis and responses to Washington State Department of Ecology comments from email dated November 4, 2021. April 25.

Aspect. 2025. Remedial investigation report, Lawson Hills MPD property, Black Diamond, Washington. March 17.

Golder Associates. 2005. Phase II Environmental Site Assessment at the Lawson Hills Property. June 17.