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**Subject:** PGM Year 3 Bathymetry Results

Sarah, Heidi, and Dan –

We have analyzed the latest PGM bathymetry survey data that was collected on June 20, 2023, and results are summarized in the attached figures and table:

1. Year 3 Bathymetry – June 2023 map
2. June 2022 to June 2023 bathymetry comparison map
3. June 2022 to June 2023 bathymetry comparison cross sections
4. 2020 vs. June 2023 bathymetry comparison isopach map
5. June 2023 cap, cover, infill thickness map
6. Cap evaluation locations and results map
7. Table of Cap/Cover/Infill Thickness by SDU

The key results of this analysis include:

1. Over a large majority of the site, there has been negligible change in mudline elevation between the 2022 and 2023 surveys. See attached June 2022 vs. June 2023 bathymetry comparison map.
  - a. The scour hole that was a concern in 2022 in the downstream MNR area – SDU B1 – has partially filled in with 6" to 18" of new sediment.
  - b. There has been no change at SDU D, it looks stable.
2. There is one notable area of measurable material loss. There is an area along the seawall in SDUs A and F2 that shows a 6" to 12" loss of elevation. In SDU A, this is along the top of the cut slope adjacent to the seawall.
  - a. This could be a result of material sloughing down the slope into SDU C1 or natural river redistribution processes.
  - b. This slope did not need much carbon amendment based on cap model predictions (0.0% to 0.1% GAC) and our design was overly conservative.

- c. On an SDU-averaged basis, there was 4" (-0.36 feet) of erosion in SDU A and 1.4 feet of cover thickness still remains. See Table of Cap/Cover/Infill Thickness by SDU.
- d. Review of subsurface sediment quality:
  - i. The historical sediment cores that are most relevant to the affected area are PGM-03 and PGM-04 in SDU F2, and PGM-05 in SDU A. Subsurface sediment chemistry (summarized below) shows that all of these cores are below or near cleanup levels in the top foot, and within the range of natural recovery processes in the 1 to 3 feet depth interval, indicating no imminent risk of exposure of unacceptable levels of contamination.

CORE	DEPTH (bml)	CLEANUP LEVEL EXCEEDANCES
PGM-03	0-1 ft.	No exceedances
	1-3 ft.	TPH-D at 3.5x, Hg at 2.3x, Pb at 1.3x
PGM-04	0-1 ft.	No exceedances
	1-3 ft.	Pb at 1.5x, TPH-D at 1.4x
PGM-05	0-1 ft.	Pb at 1.1x
	1-3 ft.	Hg at 3.1x, TPH-D at 2.4x, Naph at 2.0x, Pb at 1.8x

- ii. Upward groundwater flow along this inner slope is greatly attenuated by the sheet pile wall at the base of the seawall.
  - iii. PGM-35 and PGM-37, located downslope at the border with SDU C1, remain well covered with GAC-amended material.
2. We continue to see a return to equilibrium, the cap is working as designed, and the remedy is effective. We do not believe any follow-up sampling is needed this year due to one area that is relatively low risk. We recommend conducting another bathy survey in June 2024 to keep an eye on SDU A.

**PGM Permit Renewal Status**

Below is a timeline of the PGM permit renewals. We submitted the Joint Permit Application and the Biological Assessment on March 21, 2023. We already received the Removal-Fill Permit Waiver from DSL, but the Corps only just started processing our application in the last week or two. We have been seeing significant delays in permit processing at the Corps.

2/28/2023	DSL Easement Application Renewal Submitted
3/21/2023	JPA/BA Submitted
3/22/2023	JPA/BA Received/Date Stamped
5/23/2023	DSL Removal-Fill Permit Waiver authorized
6/29/2023	Corps requests WQC from DEQ
7/6/2023	Corps requests informal consultation from NMFS

Please let us know if you agree with the recommended path forward, or if you would like us to schedule a call to discuss.

Thank you,

**Kendra Skellenger, P.E.**

Senior Managing Engineer

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