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Memorandum

To: Sean Sheldrake, EPA and Ken Fellows, Parametrix

From: NewFields and Anchor Environmental, LLC

CC: Anne Summers, Krista Koehl, Marcel Hermans, and Jim McKenna from the Port of Portland

Date: November 9, 2007

Re: Summary of Bioaccumulation Evaluation for Abatement Measures Proposal

The development of the proposed abatement plan was based on evaluating two issues associated with sediment effects, bioaccumulation and direct toxicity. As explained further in this memo, bioaccumulation related effects (and concentrations) were determined to be at low enough levels to not warrant being the basis for the abatement measures that were identified. As a result, the proposed abatement plan is based on 20 times the PECs as a direct indicator of substantial risks that can be tied directly to exposure to sediments within the Removal Action Area (i.e., the benthic community). Preventing exposure to COPC concentrations of this magnitude by the proposed abatement measures will substantially and rapidly reduce environmental impacts in the Removal Action Area.

In contrast to the PEC analysis that focuses on direct exposure to benthos, PBTs pose a concern to higher trophic levels (e.g., fish and humans) over long-term exposure periods and relatively large-scale spatial areas. Concentrations of PBTs (i.e., of PCBs and DDX –see attached figure) in the Removal Action Area were compared to concentrations in the overall Portland Harbor Superfund Site. This comparison was done to determine if the concentrations in the Removal Action Area were significantly higher than the rest of the Harbor, and warrant special attention in the abatement proposal as imminent environmental bioaccumulation threat. This comparison concluded that concentrations are not elevated with respect to the rest of the Portland Harbor Superfund Site. For example, the median concentration of total PCBs in the Removal Action Area is 21 ug/Kg, compared to the harbor-wide median for surface sediments of 33 ug/Kg. Only two sampling locations had concentrations above 100 ug/Kg (T4-VC01 and

T4-VC13) (see attached figure), and these locations are separated by substantial distances. The median DDx concentration at T4 (9.7 ug/Kg) is only slightly higher than the harborwide median (7.93 ug/Kg).

Therefore, the bioaccumulation risks in the Removal Action Area do not appear to be exceptionally high compared to concentrations throughout the Portland Harbor Superfund Site. Bioaccumulation risks in the Removal Action Area will be addressed in Phase II of the removal action, and will be informed by results of the Harborwide RI/FS risk assessments.