

# **Evaluation of the long-term effectiveness of “Monitored Natural Restoration” (MNR) as a contaminated sediment management option**

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# *Evaluation of Sediment MNR*

## *Objective*

Use existing historical site data to demonstrate and assess the long-term effectiveness of “Monitored Natural Restoration” (MNR) as a contaminated sediment management option in protecting human health and the environment.

Use this information as a basis in future management decisions for contaminated sediments.



# *Evaluation of Sediment MNR*

## *Approach*

**Expert scientific review of existing historical site data from contaminated sediment sites where MNR has been implemented (by design or default)**

**Opportunity to examine historical data (sometimes up to 25 years) from a series of sites where MNR has been an integral component**



|   | Chemical(s) of Concern      | Surface Chemistry Record | Dated Sediment Cores | Sediment Transport Analysis | Natural Recovery Model      | Biological Trend Measures               | Biological Analysis Record |
|---|-----------------------------|--------------------------|----------------------|-----------------------------|-----------------------------|---|----------------------------|
| <b>Bellingham Bay, WA (MTCA)</b>            | Hg, BOD/sulfite             | 30+ yrs                  | 10                   | partial                     | Officer/Lynch; WASP         | Fish/Shellfish Tissue & Benthic Infauna | 25+ yrs                    |
| <b>Commencement Bay, WA (CERCLA)</b>        | PCB, PAH, As, HCB, D, other | 30+ yrs                  | 20                   | partial                     | Officer/Lynch; WASP; others | Fish Histo. & Tissue                    | 25+ yrs                    |
| <b>Duwamish Waterway, WA (CERCLA)</b>       | PCB, PAH, As, Pb, BOD       | 35+ yrs                  | 0                    | partial                     | SEDCAM; EFDC; others        | Fish Histo. & Tissue                    | 35+ yrs                    |
| <b>Eagle Harbor, WA (CERCLA)</b>            | PAH, Hg                     | 20+ yrs                  | 10                   | full                        | Officer/Lynch; others       | Fish Histo. & Tissue                    | 20+ yrs                    |
| <b>Los Angeles Bight, CA (CERCLA)</b>       | DDT, PCB, PAH               | 30+ yrs                  | 20?                  | partial                     | SEDCAM; others              | Fish Histo. & Tissue                    | 25+ yrs                    |
| <b>Central Puget Sound, WA</b>              | PAH, As                     | 25+ yrs                  | 50?                  | partial                     | SEDCAM; others              | Fish Histo. & Tissue                    | 20+ yrs                    |
| <b>Seattle Waterfront, WA (CERCLA/MTCA)</b> | Hg, PCB                     | 25+ yrs                  | 10                   | full                        | Officer/Lynch; others       | Fish Histo. & Tissue                    | 20+ yrs                    |
| <b>Spokane River, WA</b>                    | Cd, Pb, Zn, PCB             | 5+ yrs                   | 5                    | partial                     | SEDCAM; others              | Fish Tissue                             | 15+ yrs                    |



# *Evaluation of Sediment MNR*

## *Deliverables*

- **Summary of relevant data from selected sites which address the effectiveness of MNR as a management option**
- **Critical evaluation and implication of the data**
- **Recommendations for type of data that would contribute towards assessing effectiveness of SED-MNR**

*Formulation of an approach for implementation of MNR for contaminated sediments*



# Outline

## Mike Swindoll:

**Sediment Monitored Natural Restoration Assessment Elements**

## Clay Patmont:

**Summary Review of 3 sites using assessment element (lines of evidence)**

## John Davis:

**Path Forward**



