# Portland Harbor Development of Remedial Alternatives

Presentation to the
Portland Harbor TCT
May 13, 2015

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# Presentation Objectives

Present technology assignment layers that will form the Alternatives to be presented in the Portland Harbor Feasibility Study.

# Cap/Dredge

- Focus COCs
  - PCBs
  - PAHs
  - DDx
  - PeCDD
  - PeCDF
  - TCDD
- RALs
- Technology Assignment

# Cap/Dredge – PCB RALs

| Total PCBs | | | |
|---|---|---|---|
| ID | RAL (µg/kg) | Site-Wide | |
| | | SWAC (µg/kg) | Acres Remediated |
| B | 1,000 | 51 | 26 |
| C | 750 | 48 | 34 |
| D | 500 | 43 | 52 |
| E | 200 | 34 | 124 |
| F | 75 | 23 | 343 |
| G | 50 | 19 | 515 |

# Cap/Dredge – PAH RALs

| Total PAHs | | | |
|---|---|---|---|
| ID | RAL (µg/kg) | Site-Wide | |
| | | SWAC (µg/kg) | Acres Remediated |
| B | 170,000 | 8,360 | 38 |
| C | 130,000 | 7,140 | 48 |
| D | 69,000 | 5,000 | 72 |
| E | 35,000 | 3,800 | 99 |
| F | 13,000 | 2,690 | 157 |
| G | 5,400 | 1,780 | 286 |

# Cap/Dredge – DDx RALs

| | Total DDx | | | | |
|---|---|---|---|---|---|
| | RAL (µg/kg) | RM7W | | Site Wide | |
| ID | | SWAC (µg/kg) | Acres Remediated | SWAC (µg/kg) | Acres Remediated |
| B | 650 | 100 | 10 | 21 | 11 |
| C | 550 | 84 | 12 | 20 | 13 |
| D | 450 | 64 | 15 | 19 | 16 |
| E | 300 | 35 | 20 | 17 | 22 |
| F | 160 | 21 | 24 | 15 | 33 |
| G | 40 | 9 | 34 | 10 | 110 |

# Cap/Dredge – Dioxin/Furan RALs

| Dioxins/Furans | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| ID | 2,3,4,7,8-PeCDF | | | 1,2,3,7,8-PeCDD | | | 2,3,7,8-TCDD | | |
| | RALs (µg/kg) | SWAC (µg/kg) | Acres Rem | RALs (µg/kg) | SWAC (µg/kg) | Acres Rem | RALs (µg/kg) | SWAC (µg/kg) | Acres Rem |
| B | 1 | 0.0031 | 3 | 0.003 | 0.00030 | 9 | 0.002 | 0.00034 | 7 |
| C | 1 | 0.0031 | 3 | 0.002 | 0.00028 | 16 | 0.002 | 0.00034 | 7 |
| D | 1 | 0.0031 | 3 | 0.0008 | 0.00025 | 43 | 0.002 | 0.00034 | 7 |
| E | 0.2 | 0.0020 | 5 | 0.0008 | 0.00025 | 43 | 0.0006 | 0.00024 | 31 |
| F | 0.2 | 0.0020 | 5 | 0.0008 | 0.00025 | 43 | 0.0006 | 0.00024 | 31 |
| G | 0.009 | 0.0011 | 27 | 0.0008 | 0.00025 | 43 | 0.0006 | 0.00024 | 31 |

# SMA Technology Assignment

* RALs for focused COCs = SMA boundary
* Nearshore = 3' dredge/cap w/beach mix cover
* Nav/FMD = dredge w/sand cover
* GW plume = reactive cap
* All other areas = dredge w/sand cover or engineered cap (armoring in high sheer)

# Principle Threat Waste

High concentration

- $10^{-3}$ Increased Cancer Risk Threshold
- Preference for treatment

Highly mobile/unreliably contained threshold

- Based on mobility of napthalene and chlorobenzene
- Evaluated using super cap design
- Preference for removal to maximum extent practicable

# PTW - High Concentration

- Total PCBs > 200 ug/kg = 124 acres
- Total BaP Eq > 100,000 ug/kg = 5.4 acres
- Total DDx > 7000 ug/kg = 1.4 acres

# PTW – Technology Assignment

* Unreliably contained (6.8 acres)
  * Dredge & ex-situ treatment
* Technology Assignment = cap
  * Reactive cap
  * Acres defined by RAL
* Technology Assignment = dredge
  * Dredge & ex-situ treatment
  * Acres defined by RAL
* Remaining Area
  * In-situ treatment = GAC

# Benthic Risk

## LWG

- CBRA
- Used lines-of-evidence
  - 1 endpoint @ L3
  - 2 endpoints @ L2
  - MQ=0.7
  - Pmax > 0.59
  - Removed risk from metals
  - Removed risk from TBT
  - TZW HQ > 100
  - Needed 2 or more adjacent samples
  - Piers, Nav channel, property boundaries used to cut off area

## EPA

- Bioassay – L2 & L3
- LRM – pmax > 0.5

# Benthic Risk – Technology Assignment

- Nav/FMD = Dredge
- Inside SMA = Technology Assignment (Dredge or Cap)
- Remainder = EMNR

# Additional Areas Considered

* Swan Island Lagoon = EMNR
* International Slip = EMNR
* Others?

* Remainder of study area = MNR