Project Overview and update

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NWRO Water Quality Program
TMDL Alternative

- WRIA 9 Salmon Recovery Plan Update
- PLA model
- Source Control Activities
- Sediment Cleanups
- Regional Stormwater Strategy
Green-Duwamish Watershed Basics

- 480 square miles and 90 miles long
The PLA will:

- Develop a modeling tool to assess pollutant loads from different sources (point and diffused).
- Better understand the relationship between water, sediment, and fish tissue quality.
- Predict improvement in water, sediment, and tissue quality expected to occur as a result of management actions.
Watershed Model (LSPC)
- Hydrodynamic
- Sediment transport
- Toxic

Receiving Water Model (EFDC)
- Hydrodynamic
- Sediment transport
- Toxic

Food Web Model
Receiving Water Model (EFDC)
- Hydrodynamic
- Sediment transport
- Toxic

Food Web Model
Food Web Model
## Selected Pollutants

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Fate/Trans.</th>
<th>Food Web</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCBs</td>
<td>Y</td>
<td>Y</td>
<td>Select specific PCBs for modeling based on data review and analysis.</td>
</tr>
<tr>
<td>Carcinogenic PAHs</td>
<td>Y</td>
<td>Y</td>
<td>Simulate cPAHs as a group with approximated characteristics; reassess based on data analysis if necessary.</td>
</tr>
<tr>
<td>Dioxins/Furans</td>
<td>N</td>
<td>NA</td>
<td>Delay modeling until additional data area collected.</td>
</tr>
<tr>
<td>Phthalates</td>
<td>Y</td>
<td>N</td>
<td>Simulate DEHP. Use as a surrogate appears reasonable.</td>
</tr>
<tr>
<td>Pollutant</td>
<td>Fate/Trans.</td>
<td>Food Web</td>
<td>Decision</td>
</tr>
<tr>
<td>---------------------------</td>
<td>-------------</td>
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<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Arsenic (inorganic)</td>
<td>Y</td>
<td>N</td>
<td>Simulate inorganic arsenic only using a simplified mass balance approach</td>
</tr>
<tr>
<td>Copper</td>
<td>Y</td>
<td>N</td>
<td>Simulate dissolved and sorbed inorganic forms using USEPA translator guidance (1996) methods adjusted to local data.</td>
</tr>
<tr>
<td>Zinc</td>
<td>Y</td>
<td>N</td>
<td>Same as copper</td>
</tr>
<tr>
<td>Mercury</td>
<td>N</td>
<td>NA</td>
<td>Do not model mercury at this time.</td>
</tr>
</tbody>
</table>
Project Phasing
PLA
- Technical Approach
- Modeling QAPP
- LSPC Hydrodynamics

PCB study
- PCB congener data compilation
- PCB congener study II

USGS study
- USGS study phase II
- USGS study phase III
PLA progress

**INPUT**
- TAC #5 June, 2015
- TAC #6 July, 2015
- TAC #7 April, 2016
- TAC #8 Oct., 2016
- TAC #9 March, 2017

**OUTPUT**
- Data gaps and pollutant groupings memo
- Develop QAPP
- Set up watershed model for hydrology
- Final data gaps and pollutant groupings memo
- Final QAPP
- Final watershed hydrodynamic model report
PCB congener study

- Phase I completed
  - Summarized and compiled available PCB data in LDW and Green-Duwamish environmental media.
- Phase II started from October, 2016.
  - Leidos subcontracted Professor Lisa Rodenburg for the factor analysis on PCB data.
USGS Green River Chemical Loading Study

- Estimate sediment loads and toxic chemical loads from upstream sources in the watershed that are transported by the Green-Duwamish River to the LDW.
USGS Study Progress

Phase I
- Jan – June 2013

Phase II
- Jan 2014 –
- June 2015

Phase III
- Started July 2016
<table>
<thead>
<tr>
<th>Year</th>
<th>Project 1</th>
<th>Project 2</th>
<th>Project 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>LSPC Toxic</td>
<td>EFDC Sediment Transport</td>
<td>EFDC Toxic</td>
</tr>
<tr>
<td>2021</td>
<td></td>
<td></td>
<td>Food Web Model</td>
</tr>
</tbody>
</table>
PLA Objectives

- Develop a modeling tool to assess pollutant loads from different sources (point and diffused).

Modeling Scenario

- Baseline scenario
  Estimates of current contaminant levels for a critical time period in different sources.

- Assess relative contribution of pollutants from various sources and pathways.
PLA Objectives

- Better understand the relationship between water, sediment, and fish tissue quality.

Modeling Scenario

- Source Assessment: Estimate the impact of each group of loadings on fish tissue, bed sediment and water column concentrations in the LDW.
- Understand which sources cause the most harm or risk in each media.
PLA Objectives

- Predict improvement in water, sediment, and tissue quality expected to occur as a result of management actions.

Modeling Scenario

- Management scenario Based on existing permits and cleanup actions, can we achieve water/sediment/fish tissues quality standard?

- Identify other pollutant sources that need source reduction projects (include building materials reduction, air pollution control, non-point stormwater discharge and etc.).
- Identify permit discharge criteria for point sources.
- Identify BMP implementation locations.