Agenda

- Summary of active projects, status, and review schedule
- Fish tissue trend assessment
- Sediment/biofilm survey
- Expanded synoptic survey
- Groundwater flow direction assessment
# Current Study Status

## Topics to be Discussed Today in Red

<table>
<thead>
<tr>
<th>Project</th>
<th>Status</th>
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<tbody>
<tr>
<td>Fish tissue trend assessment</td>
<td>Draft report provided for review.</td>
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<tr>
<td>Sediment/biofilm</td>
<td>Initial assessment completed.</td>
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<tr>
<td>Expanded synoptic survey (plus catch basins and artesian well)</td>
<td>Mass balance updated from April presentation. Catch basin and artesian well assessment complete.</td>
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<tr>
<td>Groundwater flow direction study</td>
<td>Complete except for question on one well.</td>
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<tr>
<td>Long term water column trend assessment</td>
<td>SPMD results currently being analyzed for low and moderate flow conditions. High flow monitoring underway.</td>
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<tr>
<td>GE fingerprinting</td>
<td>Fingerprinting being updated to consider 2022 data.</td>
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<tr>
<td>Data Report</td>
<td>Date Initially Presented at TTWG</td>
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<tr>
<td>-------------------------------------------------</td>
<td>----------------------------------</td>
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<tr>
<td>Groundwater Report</td>
<td>4/18/2023</td>
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(a) - Request that TF members interested in detailed review, take part in the TTWG review process for a specific report.
2022 Expanded Synoptic Survey

• Purpose
  – Verify elevated PCB concentration in artesian well observed in 2021
  – Support updated mass balance assessment
  – Assess stormwater catch basin PCBs in the area identified by the PCB detection dog
2022 Artesian Well

• Background
  – Discharge to Mission Reach observed by Ecology during summer temperature float
  – Single PCB sample in 2021 measured 2100 pg/l
    • Homolog pattern was similar to Aroclor 1242 or 1016
2022 Artesian Well Results

• Two samples: 1300 and 1500 pg/l
  – Confirmation that this source consistently discharges PCBs at 10x the concentration in the river
  – Significance of this load will be assessed via the mass balance

• Homolog distribution slightly different than in 2021
  – 2021: Maximum cosine similarity is to Aroclor 1242: 0.91
  – 2022: Maximum cosine similarity is to Aroclor 1248: 0.86
2022 Mass Balance Assessment

- **Purpose**
  - Add stations to provide more spatial resolution than prior assessments
    - Provide insight on homolog shift observed near Upriver Dam
    - Mass balance specific to Mission Reach
    - Divided the reach between USGS Gage and Nine Mile into two parts
  - Allow congener-specific mass balances
    - PCB 11
    - Upstream/downstream of GE site
2022 PCB Concentrations
Data Received to Date

- Concentrations ~20 to 150 pg/l
- Three outliers
  - Mid-Pt., Greene St., Upriver Dam
- Similar concentrations as in 2018
2022 Mass Balance

- Results highly dependent on treatment of outliers
  - Variability in concentrations makes it difficult to discern “non-significant” loads
- Loss of PCBs passing through Upriver Dam
Assessment of Outliers

- Outliers at Mid-Pt. station and Upriver Dam look like a stronger version of the non-outlier samples
Assessment of Outliers

- Outlier at Greene St. looks different than the non-outlier samples
  - Similar to Aroclor 1260
Homolog Balance between Trent and Greene

• Previous homolog-specific mass balances had shown a homolog shift between Trent Avenue/Plantes Ferry and Greene St.

• 2018 mass balance added a station downstream of Upriver Dam
  – Suggested that the loss of lower chlorinated homologs was occurring between Trent and below Upriver Dam
2022 Homolog Balance near Upriver Dam

- 2022 mass balance added an additional station upstream of Upriver Dam
  - Interim results suggest that homologs are being lost as water passes through Upriver Dam

- Results from downstream of Upriver Dam to Greene St. confounded by outlier data value at Greene
PCB-11 Mass Balance

- Initial investigation of sources of PCB-11 conducted in 2021
  - Concluded that concentrations were largely indistinguishable from blanks upstream of Greene St. and increased downstream from there
  - Mass balance assessments of 2014, 2015, and 2018 survey data showed potential for an unknown source occurring downstream of USGS gage in 2018
PCB-11 Mass Balance

• 2022 data lower than previous years (especially at Nine Mile), but generally consistent with historical spatial trend

• Mass balance assessments using 2022 data show essentially zero incremental load, except
  – +12 to 56 mg/day between USGS Gage and mid-way to Nine Mile
  – -13 to 58 mg/day between mid-way to Nine Mile and Nine Mile
PCBs in Catch Basin Solids

- Detection dog had identified elevated PCB concentrations in the Springfield stormwater service area
- PCB content measured in four catch basins in the vicinity
PCBs in Catch Basin Solids

• Results to be compared to historical catch basin PCB data from Spokane
• If PCBs in Springfield catch basins are significantly higher than those previously observed, trigger additional monitoring
PCBs in Catch Basin Solids

• Results
  – Springfield catch basin PCBs not significantly higher than those observed elsewhere in Spokane

<table>
<thead>
<tr>
<th>Location</th>
<th>Total PCB Concentration (µg/kg)</th>
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<tbody>
<tr>
<td>Catch Basin 1</td>
<td>127</td>
</tr>
<tr>
<td>Catch Basin 2</td>
<td>82.4</td>
</tr>
<tr>
<td>Catch Basin 3</td>
<td>94.3</td>
</tr>
<tr>
<td>Catch Basin 4</td>
<td>31.5</td>
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Expanded Synoptic Survey Findings

- Artesian well confirmed to be contributing PCBs at a concentration 10x that of the river itself
- Mass balance results confounded by presence of outliers
  - Loss of PCBs from above to below Upriver Dam
  - Apparent presence of Aroclor 1260 in Greene St. outlier
- Springfield catch basin PCBs not significantly higher than those observed elsewhere in Spokane
  - Doesn’t rule out presence of PCBs in nearby buildings
  - Does cast doubt regarding whether there is significant migration of those PCBs into the stormwater system