Monitoring to Assist in Defining the Sources of PCB Contamination in the Mission Reach

Spokane River Toxics Task Force Meeting
March 23, 2022
Background

• PCB concentrations in Mission Reach are higher than elsewhere in the river
  – Suggests presence of unidentified source

• Diagnostic monitoring was conducted in 2021 to aid in source identification
  – Water and sediment monitoring
  – PCB-detection dog
  – Sub-bottom object detection
  – Drive-point piezometer feasibility assessment
Water and Sediment Monitoring

• Three separate components, each with different objectives
  – Water column: Define the spatial distribution of PCB concentrations
  – “Artesian well” discharge: Provide an indication of the potential significance of contaminated groundwater
  – Bed sediments: Supplement the single Mission Reach sediment sample collected in 2018
Water Results: Total PCBs

- Spokane River
  - Concentrations generally range between 150 and 320 pg/l
  - No obvious spatial pattern indicating presence of a PCB source
  - Elevated concentration observed at E. Mission Ave. (574 pg/l)
    - Source (if any) upstream of Mission Reach

- Artesian well
  - PCB concentration = 2100 pg/l
Water Results: Homolog Distributions

• Spokane River
  – Tetra- most prevalent, followed by tri- and penta-chloro homologs
  – Potentially indicative of a mixture of Aroclor 1242 and 1254

• Artesian Well
  – Dominated by tri and tetra-chloro homologs
  – Very similar to Aroclor 1242
Sediment Results: Total PCBs

- Consistent with historically observed patterns
  - One elevated (300 ug/kg) concentrations
  - Two concentration similar to those seen outside of Mission Reach
Sediment Results: Homolog Distributions

- Elevated sample
  - Penta- most prevalent, followed by hexa- nona- and tetra-
  - Does nona- signal represent a Galbestos (Aroclor 1268) source?
Water and Sediment Survey: Findings and Next Steps

- “Artesian well” sample suggests presence of subsurface contamination
  - Artesian well may actually be a subsurface drain or creek
  - Currently initiating a deeper dive into local geohydrology
  - Additional sampling to confirm elevated concentrations

- Sediment sampling confirms presence of patchy contamination
  - Additional monitoring recommended after follow-up object detection survey

- River samples did not indicate presence of unknown source in Mission Reach
PCB-Detection Dog

- Trained PCB-detecting dog deployed to identify potential areas of PCB contamination in riparian areas of the Mission Reach
  - Location targeted to where the highest PCB concentrations were observed in biofilm
PCB-Detection Dog: Findings and Next Steps

- No definitive sources of PCBs detected along riverbank
- Detections were observed at
  - several buildings
  - stormwater catch basin sites
  - drywell sites
- Sampling to be recommended at catch basins
  - Follow-up monitoring contingent upon those results
Object Detection Survey

- Remote sensing technologies deployed to identify potential PCB-containing objects in the riverbed
  - Side scan sonar
    - Physical objects
  - Magnetometer
    - Metallic objects
Object Detection Results

- Entire Mission Reach could not be surveyed due to construction at Trent Bridge

  - Monitored in 2021
  - To be monitored in 2022
Object Detection Results

- Areas of contamination identified in lower portion of surveyed area
Object Detection Results

• Three metallic objects identified in downstream portion of surveyed area
Object Detection: Next Steps

- Extend object detection survey to cover unmonitored portion of the Mission Reach
- Recommend targeted sediment/biofilm sampling on entire Mission Reach after object detection survey is complete
Drive-Point Piezometer Feasibility Assessment

- Groundwater interaction is of concern in the Mission Reach.
- Temporary drive-point piezometers are being considered for use in groundwater quality monitoring as part of the dissolved oxygen TMDL.
- Feasibility assessment conducted to determine whether they could be used in Mission Reach:
  - Can they be installed?
  - Can we measure water quality in the transition zone between river and aquifer?
Piezometer Feasibility Assessment: Findings and Next Steps

• Piezometers were successfully installed at two out of three locations attempted in the Mission Reach
  – Conductivity in the transition zone higher than that measured in the river

• Next steps
  – No further action planned until ongoing studies assessing groundwater interaction in Mission Reach are completed
Report Status

• Draft distributed for TTWG review March 10
  – Discussed at March 15 TTWG meeting
  – Comments due March 31
  – TTWG approval expected at April 20 meeting

• Submit to Task Force on April 20 for approval at April 27 meeting