

Follow-up to Mass Balance Assessment based on Workshop Feedback

Dave Dilks
SRRTTF

February 26, 2015

Topics

- Follow-up items identified at workshop
- Activities conducted post-workshop
- Next steps



Follow-Up Activities Identified

- Include J-flagged PCB data
- Consider stormwater and CSO loading
- Add Greene St. segment
- Conduct sensitivity to groundwater quality assumption
- Evaluate flows at Nine Mile
- Provide detailed summary of PCB concentrations at each sampling location



Include J-Flagged PCB Data

- Workshop consensus: J-flagged data should be included in the mass balance assessment
- Update: J-flagged data have been used all along, but not *NJ*-flagged data
 - J flag: Concentration less than quantitation limit
 - NJ flag: Presumptively present at approximate quantity



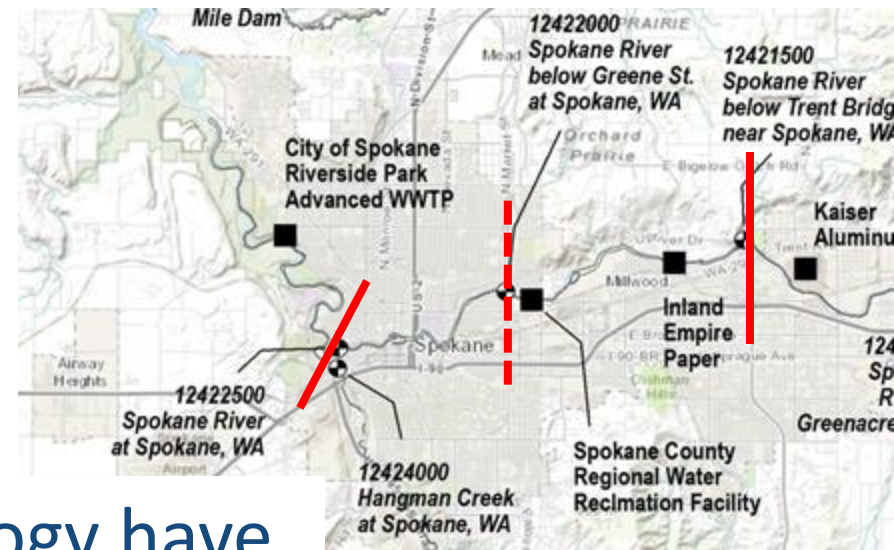
Consider Stormwater and CSO Loading

- Original mass balance assessment did not consider stormwater and CSO loading that occurred during the synoptic survey
- City of Spokane provided estimates of loads
 - Analysis of data indicates CSO and stormwater contributed less than 10% of observed river loads



Add Greene St. Segment

- Original analysis did not have flow estimate for Greene St.
 - Trent Ave. to Spokane gage reaches combined
- Spokane County and Ecology have provided method to estimate flows
 - Divide into two reaches
 - Interim results showed potential for another unknown source



Sensitivity to Groundwater Quality Assumption

- Mass balance assessment assumed that groundwater lost from an upstream reach re-entered in the next downstream reach at the same concentration at which it left



Sensitivity to Groundwater Quality Assumption

- Conduct sensitivity analysis assuming that lost groundwater is permanently lost, and replaced by clean groundwater
 - Range of results from the two methods should bound the true answer



Evaluate Flows at Nine Mile

- Questions were raised at the workshop regarding the accuracy of the flows assumed at Nine Mile
 - Gravity-reported flows were the sum of Spokane Gage and Hangman Creek Gages
 - Flow information obtained from Avista
 - Sum of Spokane Gage, Hangman Creek Gage, and pool level changes.
 - Avista dropped pool by 2 to 4 feet on 8/15/14



Next Steps

- Closure of synoptic sampling issues
- High level scoping for next phase
- Lessons learned



Closure of Synoptic Sampling Issues

- Document consideration of wet weather loads
 - Future wet weather sampling will address the issue of storm contribution
- Finalize addition of Greene St. reach
 - Update analysis with more rigorous flow estimate
 - Make recommendation on repeating dry weather sampling in these two reaches
- Update Nine Mile flows with Avista data



Closure of Synoptic Sampling Issues

- Conduct sensitivity analysis regarding groundwater flow of final mass balance
- Provide summary data output for each sampling location
 - Tables including
 - total PCB
 - PCB homologues
 - conventional parameters



High Level Scoping for Next Phase

- Assess “unknown” load in Barker Road to Trent Avenue reach
- Assess wet weather contribution



Unknown Load in Barker to Trent Reach

- Data mining
 - Use synoptic data (homologues) to identify approximate "fingerprint" for unidentified source
 - Get hydrologic information on groundwater area that recharges this river segment
 - Inventory wells (production and monitoring) and the screened intervals in the identified area
 - Collect any congener data available in the identified wells



Unknown Load in Barker to Trent Reach

- Determine what groundwater sampling may be needed to fill in gaps
- Develop monitoring alternatives
 - Discuss results with SRRTTF
- Prepare scope of work for sampling

- Conduct sampling



Assess Wet Weather Contribution

- Data mining
 - Identify stormwater discharge locations into the river
 - Identify river reaches receiving direct stormwater discharge
 - Review existing monitoring data



Unknown Load in Barker to Trent Reach

- Determine what wet weather sampling may be needed to fill in gaps
 - Assess feasibility of obtaining useful results
 - Assess viability of high volume sampling
- Develop monitoring alternatives
 - Discuss results with SRRTTF
- Prepare scope of work for sampling

- Conduct sampling



Synoptic Survey Lessons Learned

- Flow measurement capability needs to be in place at the Green Street gage for future sampling efforts
- The importance of flow measurement capability at Lake Coeur d'Alene and below Nine Mile needs to be evaluated for future sampling events

