Spokane River Dissolved Oxygen TMDL Implementation Advisory Committee

Annual Meeting April 15, 2014

Point Source Reduction Update

By the Numbers – annually...

Volume	Source
12 Billion Gallons	Flow treated at RPWRF From combined sewers to River annually
1 Billion Gallons	Partially treated storm runoff to the Spokane River and Latah Creek From two largest combined sewer basins to River annually
300~600 Million Gallons	Partially treated storm runoff to Spokane River from Cochran Basin
54 Million Gallons	Combined sewer overflows from all basins
28.5 Million Gallons	Combined sewer overflows from the two largest basins: 26 & 34

How the City manages runoff

Separated Storm Sewers
Combined Sewers
Infiltration
Evaporation



Integrated Plan

Integrated Strategy Savings from Optimizing



Integrated Strategy Goals Environmentally & Financially Responsible

- Cleaner River Faster.
 Prioritize work that has a greater impact on pollutants.
- Implement cost-effective & innovative technologies.
 - Add "green" technologies.
 - Right-size planned projects.



Holistic integration with other critical infrastructure.

- Solve multiple problems.
- Better streets, new water mains, better parks...



Preferred Alternative: Pollutant Removal by Project Type



CSO storage

Green (in CSO basins)

Cochran Stormwater

NLT during non-critical season



Pollutant Load Percent Reduction With and Without Integrated Plan



Next Level of Treatment

(Facility Plan Amendment #3)

Treatment at RPWRF

- Preliminary: Removal of rocks, grit and larger debris.
- Primary: Settling of solids, skimming of oils & grease.*
- Advanced Secondary: Separation and removal of most dissolved nutrients and suspended particles.*
- Tertiary (Next Level of Treatment): Membrane filters remove significantly more pollution* than secondary.

*(Anaerobic Digesters process solids, grease and particles to create biosolids which are used as fertilizer on farm fields.)

Next Level of Treatment

- City required to install additional nutrients treatment at the wastewater plant per TMDL:
 - Permit deadline for water quality compliance is 2021
 - Engineering Report to Ecology January, 2014
 - Engineering Consultant chosen for design and C/M
 - Construction scheduled to begin in 2016

Integrated Plan Considerations

- Reviewed interconnections between storm, CSO, plant and interceptors to identify sizing benefits
- Applied "right-sizing" to Next Level of Treatment
 - 50 MGD membranes: net environmental benefit
- Operate NLT year-round to remove more PCBs

Financial comparison



Total Present Worth of Filters and Membranes

Cost of lb of phosphorus removal

Cost of Phosphorus Removal During Critical Season



CSO Plan Amendment

Progress on CSO Reduction



Avg Annual Number of Overflows Across System
Avg Annual Overflow Volume (MG)

Cochran Storm Outfall – typical June storm



CSO 24 Outfall – same storm...



2014 construction

- 21st & Ray (CSO 34-3)
 Construction under way
- Underhill Park (CSO 34-2)
 Construction underway
- High Drive (CSO 20)
 Construction starting in 2014
- U-District (CSO 33-2)
 Construct starting in 2014









Right-sizing CSO facilities

- Developed control volumes based on:
 - Historical CSO Reports
 - Historical flow monitoring
 - Modeled 1.2-yr/24-hr storm

Finalized control volumes with

- Validation modeling (20-year record)
- Considered risk and uncertainty
- Developed conceptual designs
- CSO Plan Amendment to Ecology, Dec 2013



Validated with 20 years of data



Example of right-sizing

CSO Basin 34 Largest CSOs



^aCost inflated from 2005 to 2013 \$'s, based on average of Seattle and National ENR CCI. Cost includes only construction, engineering, and administrative cost for the storage facility, and does not include costs associated with other improvements that may be needed.

CSOs

- Submitted revised plan for controlling CSOs.
 Right-sized tanks
 - Frequency regulation
 - Historic rain data
 - Overflow data
 - Interceptor Protection

 11 new storage tanks & 4 weir modifications
 Construction picking up



Stormwater Component

Cochran Basin



Potential Internal WLA Trading under Integrated Plan, e.g. TP

17.81 lbs/day – RPWRF <6.10 lbs/day – Stormwater⁽¹⁾ 0.95 lbs/day – CSO

<24.86 lbs/day - Total

(1) Stormwater wasteload allocation is for Washington sources only and is based on average existing flows, not 2027 flows. TMDL Tabke 5

Toolbox recognizes total TP load
 Monitoring and Adaptive Management

Questions?

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