

Thea Foss Waterway Project

City of Tacoma | Environmental Services Department

Government Performance & Finance Committee

April 4, 2023

ITEM #





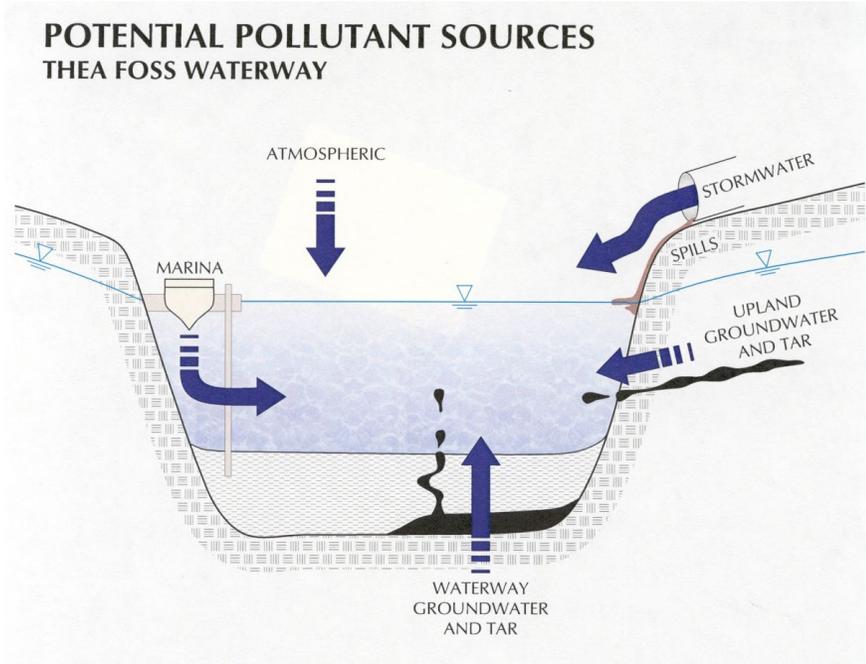
OVERVIEW – Steps to Cleanup

- Declared a Superfund Site in 1983
- City Signs AOC for Remedial Design in 1994
- 1994-2001 – Several rounds of sampling in the waterway and development of cleanup plan
- EPA determination that Source Control was in place before cleanup could begin
- 2001 and ongoing: City/EPA/Ecology Stormwater Work Plan
- 2002 Consent Decree cleanup performed between 2003 and 2006

OVERVIEW



What Were We Dealing With?



- PAHs
- PCBs
- Metals
- Phthalates
- Pesticides



The Cleanup Plan



Legend

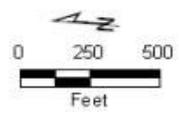
8 Remedial Areas

Completed Remedial Actions:

- No Action
- Slope Rehabilitation
- Natural Recovery
- Enhanced Natural Recovery
- Habitat Enhancement
- Backfill
- Channel Sand Cap
- Slope Cap
- Dredge to Clean
- Grout Mat Cap
- Additional Cap Material Placement in Utilities Area
- Transition Slope
- Quarry Spalls
- Cap Placed by the Utilities
- City of Tacoma Outfall and Designation
- Private Outfall (No Designation Provided)

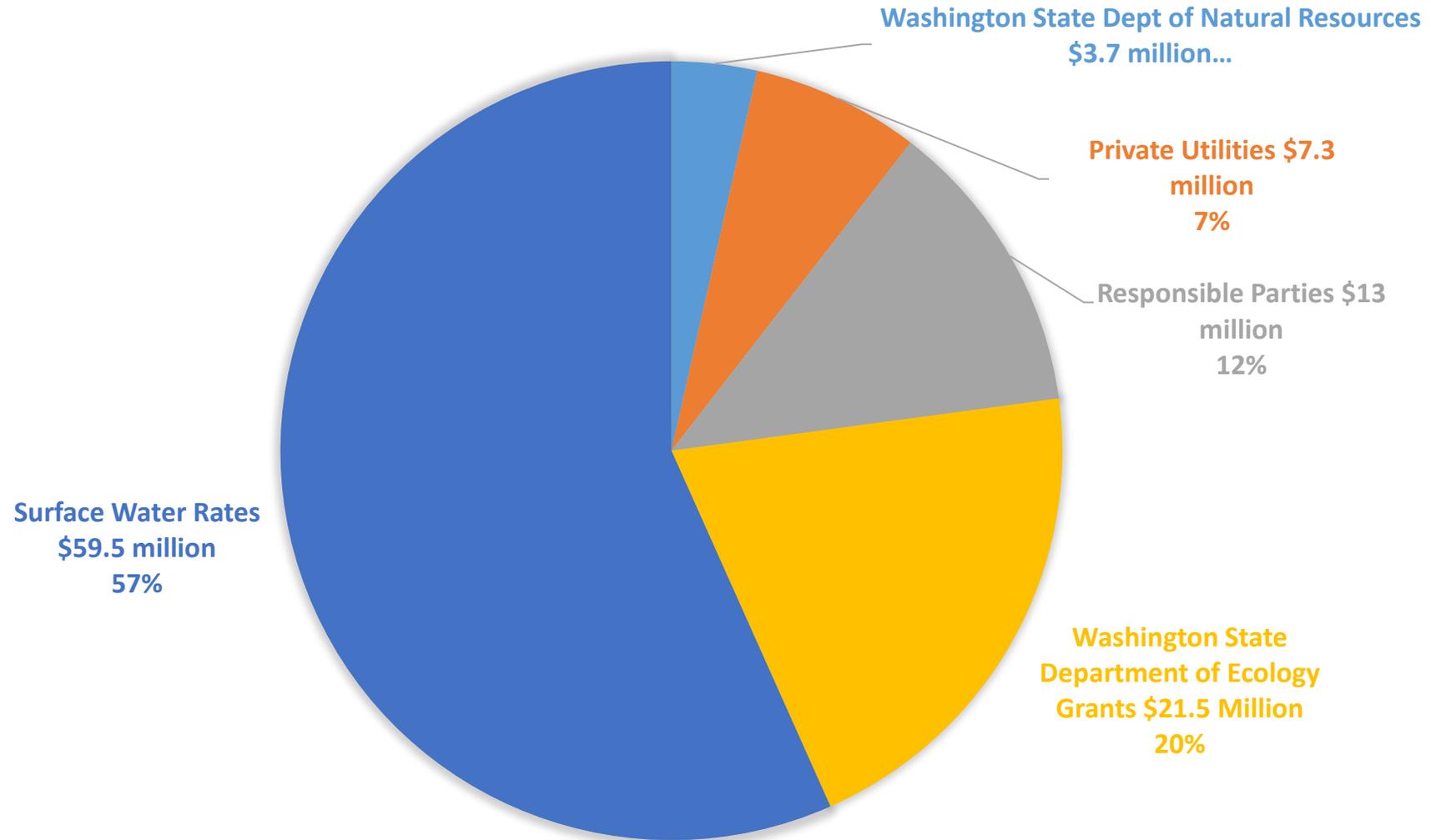
NOTES

- Base map generated from CAD drawings supplied by Walker and Associates, based on a March 2005 aerial survey.
- Outfall locations provided by City of Tacoma. Outfall number is provided by City of Tacoma or Tacoma-Pierce County Health Department File # E-1 (1995). Note: Outfalls monitored as part of the City's Tia Foss stormwater monitoring program include outfalls 230, 235, 237A, 237B, 243, 245, and 254.





Funding the Cleanup





Steps to Waterway Cleanup

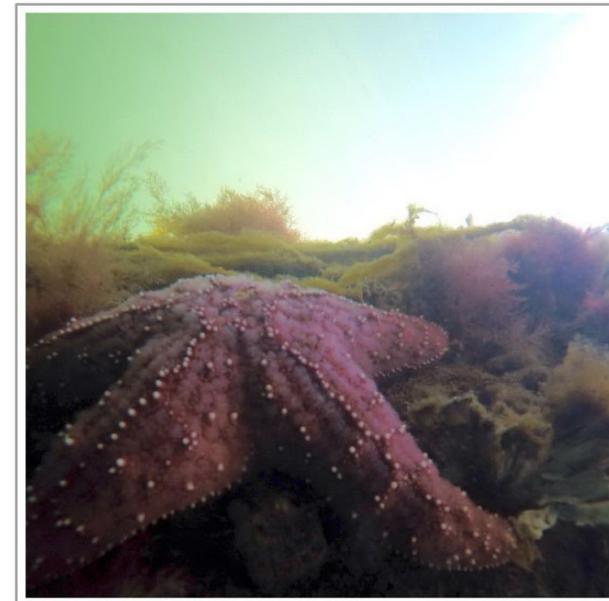
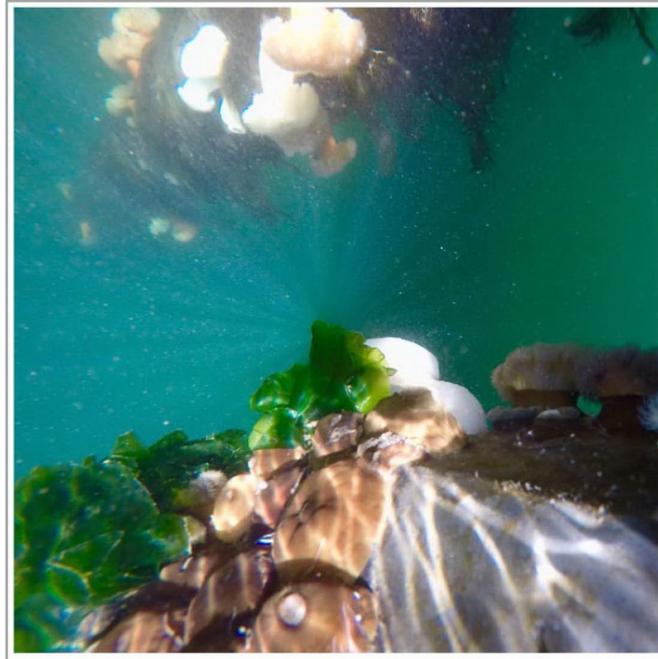
- 2006-2016 Initial Post-Construction Monitoring under OMMP
- 2018-2028 Ongoing Monitoring under LTMP
- 2020 EPA Determination Remedial Action Complete . Monitoring Continues



●●● Cleanup Summary



- Remediated areas are generally stable and remediation goals have been met
- Wide scale recontamination is not occurring
- Tacoma's stormwater management program has been very successful
- Continued sediment monitoring to ensure it continues to meet goals



Keeping It Clean





Stormwater workplan



Consent Decree and NPDES

- Stormwater monitoring performed under Ecology Phase 1 NPDES Permit
- Stormwater Work Plan Addendum included as part of the Remedial Action Consent Decree ties ongoing monitoring to sediment cleanup
- Annual reports each March 31st as part of NPDES report and includes Source Control Work Plan for following year



Source Control Strategy

Element 1: NPDES Permit's Stormwater Management Program

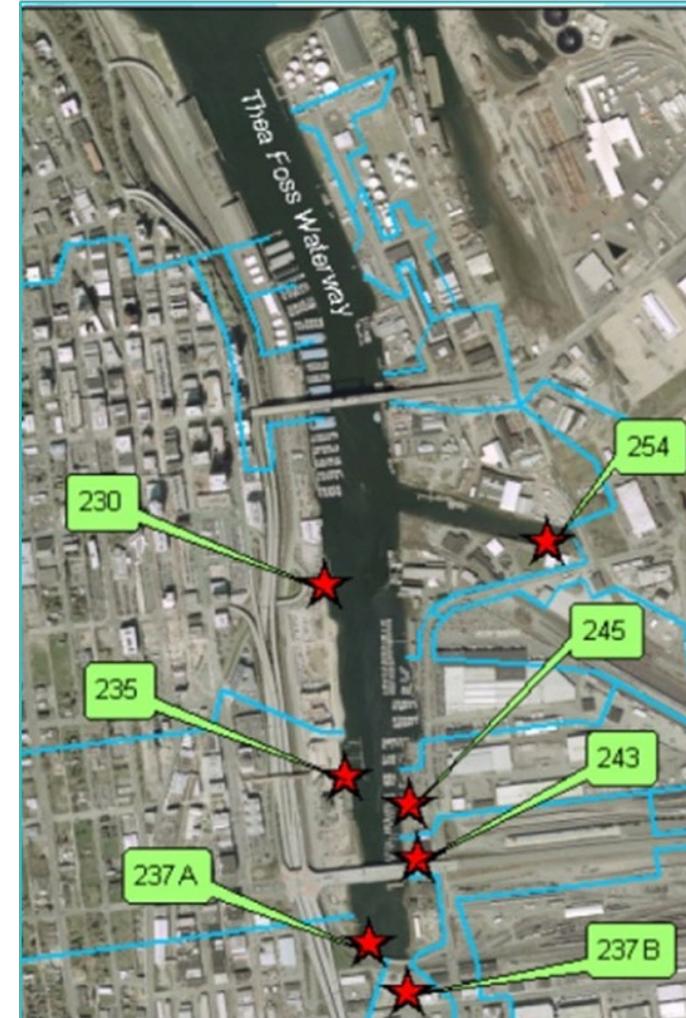
- Stormwater Management Manual & Ordinance: Development/Redevelopment Standards for Water Quantity and Quality
- Public Education
- Business Inspections & Spill/Complaint Response
- Illicit Discharge Detection and Elimination Investigations
- Enhanced Maintenance/Cleaning Programs
- Capital Projects – Stormwater Treatment

Element 2: Stormwater Outfall Monitoring & Analysis

- 2001-2022: 2,325 samples collected at 7 Foss outfalls
- Uses a series of 4 statistical tests to evaluate effectiveness of source control actions & to provide early warning of any new problems

Element 3: Waterway Sediment Sampling - LTMP

Waterway sediment contaminant concentrations equilibrate at a level below the sediment cleanup standards set by the EPA.





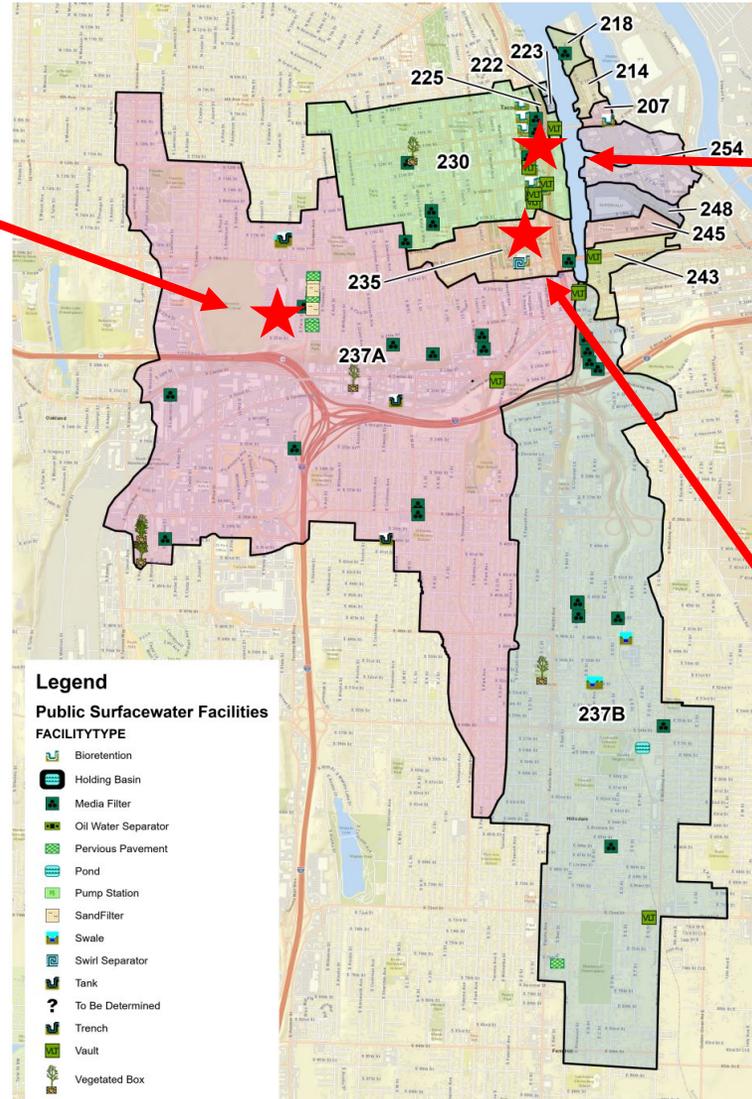
Stormwater Treatment



Ferry ST – 61 Acres

Stormwater Treatment Facilities in Foss Watershed

- 3 Regional
- 55 Public
- 219 Private



A ST – 34 Acres



UWT – 45 Acres

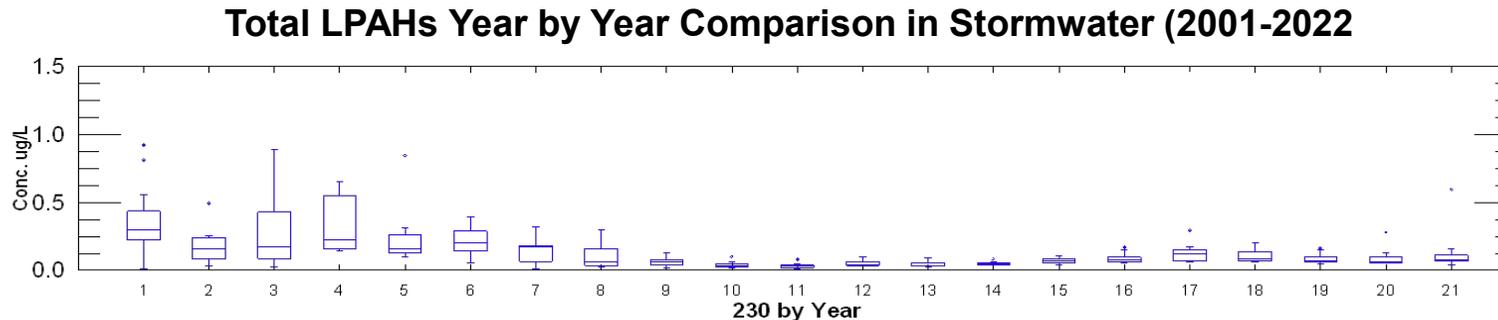


Foss Stormwater Trends

- Of the 49 tests performed 48 had decreasing trends over the 21 year monitoring period completed to date

OUTFALL	CHEMICAL	PERCENT REDUCTION
In 5 Outfalls	Solids	40-78%
All 7 Outfalls	Lead	71-83%
All 7 Outfalls	Zinc	51-71%
All 7 Outfalls	PAHs	64-90%
All 7 Outfalls	DEHP	48-82%

Example – Total LPAH concentrations have decreased to low levels and further decrease may not be feasible.



Statistical Evaluations

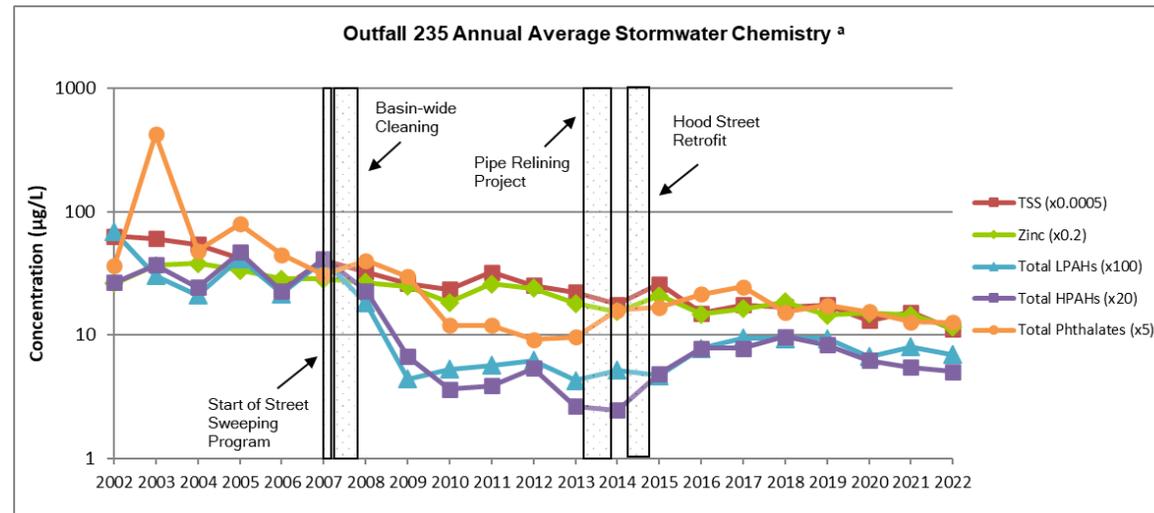


A. Parametric Outfall Pair Comparisons, Years 1-21

Analyte	OF230	OF235	OF237A	OF237B	OF243	OF245	OF254
TSS	-3	-1	-2	-2	0	2	6
Total Copper ¹	-3	6	-4	-5	3	1	2
Total Lead	1	6	-3	-4	4	-4	0
Total Zinc	1	2	-1	-6	-3	4	3
DEHP	5	5	-1	-2	-5	-1	-1
Phenanthrene	1	0	1	-5	-1	1	3
Pyrene	0	2	3	-4	-2	-3	4
Indeno(1,2,3-c,d)pyrene	2	0	5	-1	0	-6	0

Test shows which outfall has higher/lower concentrations compared to all outfalls

Average Annual Stormwater concentrations overtime with major source control activities





Conclusions – 2022 Stormwater Report

- Number of downward trends significant and continuing to remain stable
- Source control and maintenance efforts have been very successful
- Fewer areas where point sources can be controlled
- Completing ongoing investigations
- Water quality has improved significantly and now these levels need to be maintained
- Waterway sediments will be tested again in 2023

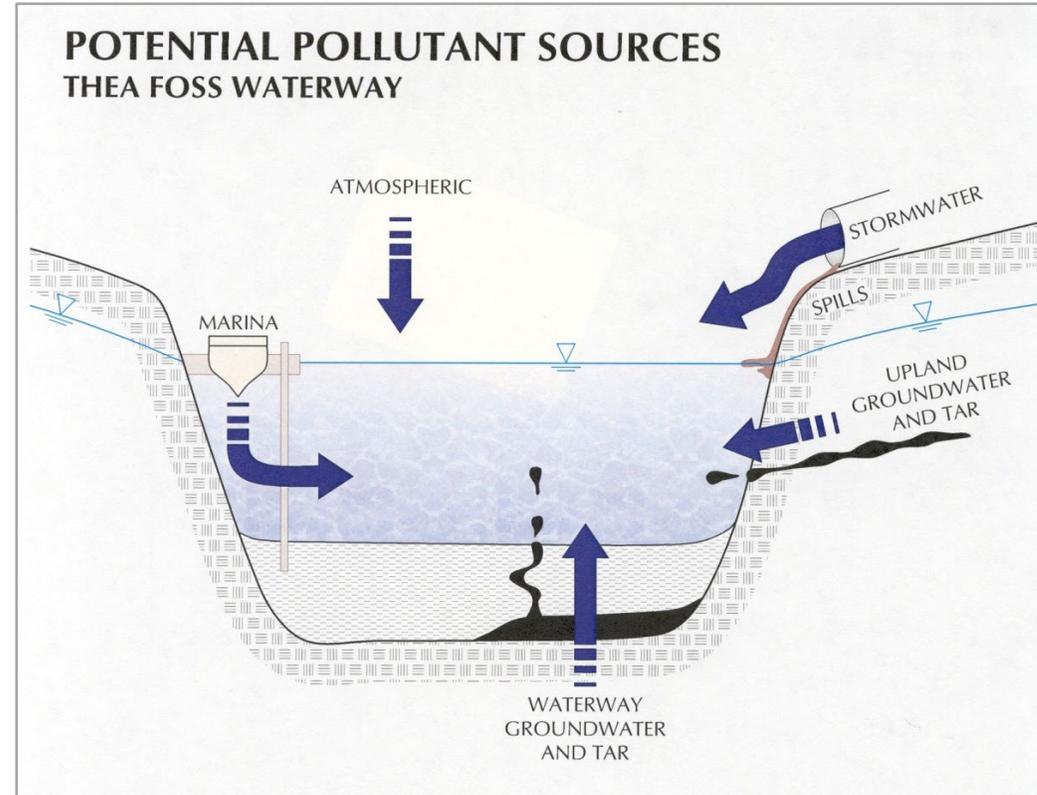


Conclusions of Program to Date

- Number of downward trends in contaminant levels is significant and generally stable
- Source control and maintenance efforts have been very successful
- Fewer areas where point sources can be controlled
- Some issues remain but are common to urban landscapes
- Water quality has improved significantly and now these levels need to be maintained
- Lessons learned in Foss are being used in the city-wide Watershed Plan & Stormwater Treatment Prioritization Tool

Strategies for the Future

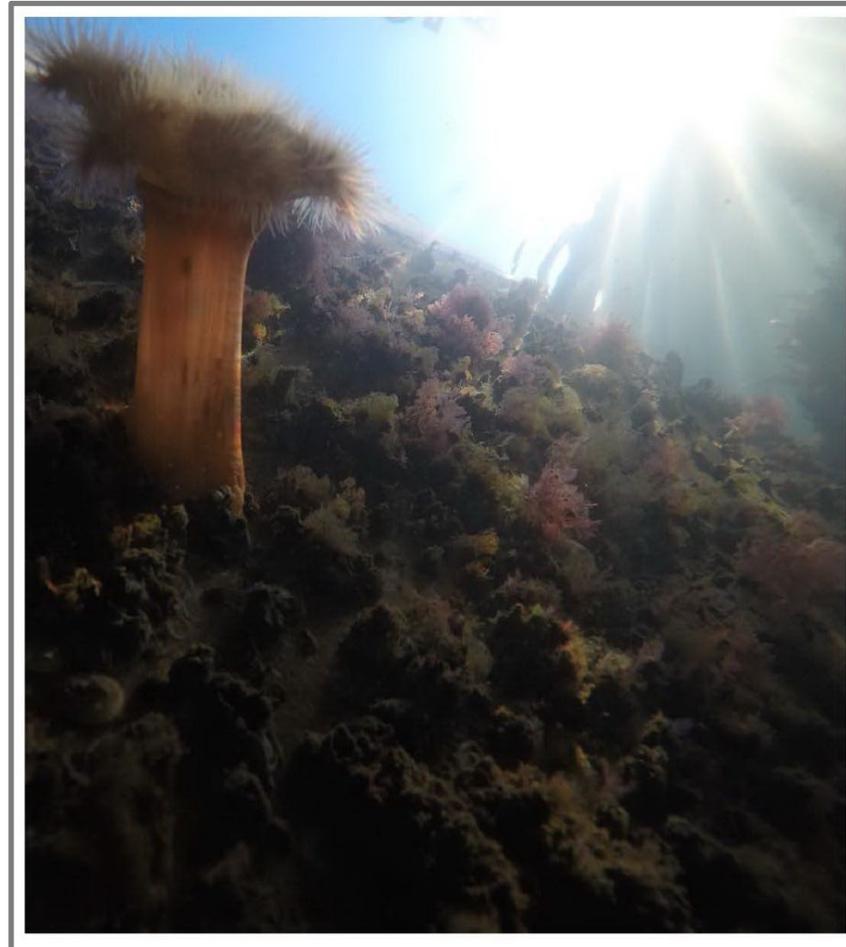
- Continue monitoring program to identify new issues and to optimize maintenance schedule
- Used as measure of effectiveness for NPDES Permit
- Continue source control and maintenance programs
- Continue asset management program to better understand the condition, capacity and quality of the system
- Tacoma's Watershed Plan and Heatmap Model for Regional Stormwater Treatment prioritization

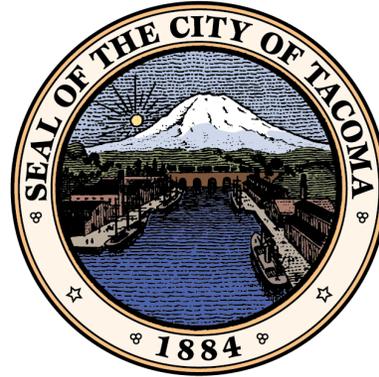




Conclusions

- A lot of good work has been done and significant improvements seen
- Need to remain vigilant to continue to follow up on the issues identified and watch for new ones
- Good reporting is key to meeting regulatory requirements





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