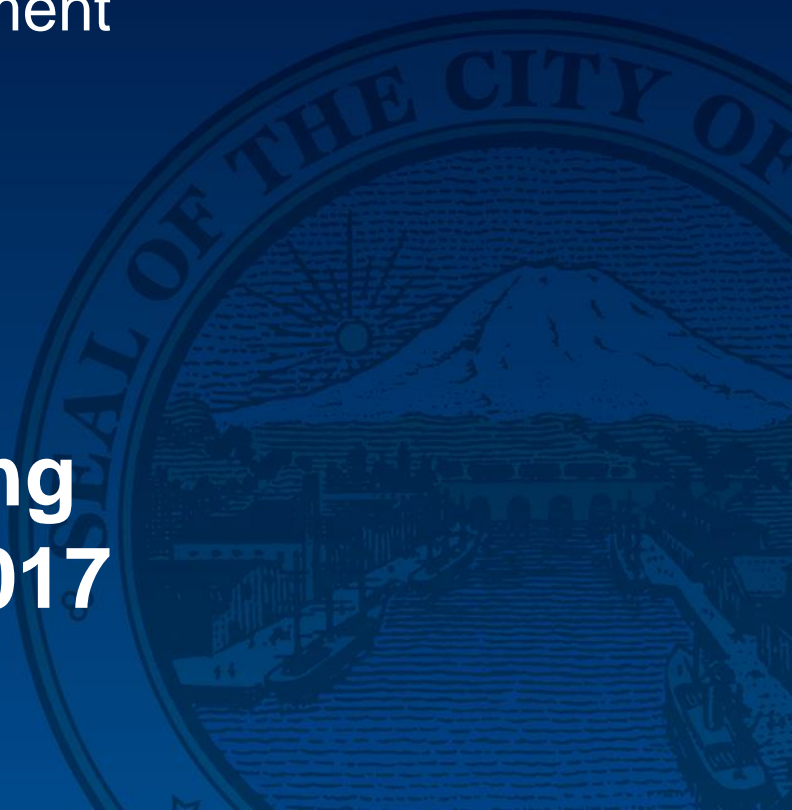


10 Years of Clean Water: Update on the Superfund Cleanup of the Thea Foss Waterway

City of Tacoma
Environmental Services Department

Geoff Smyth
Dana de Leon
Mary Henley

**IPS Briefing
June 14, 2017**



Overview

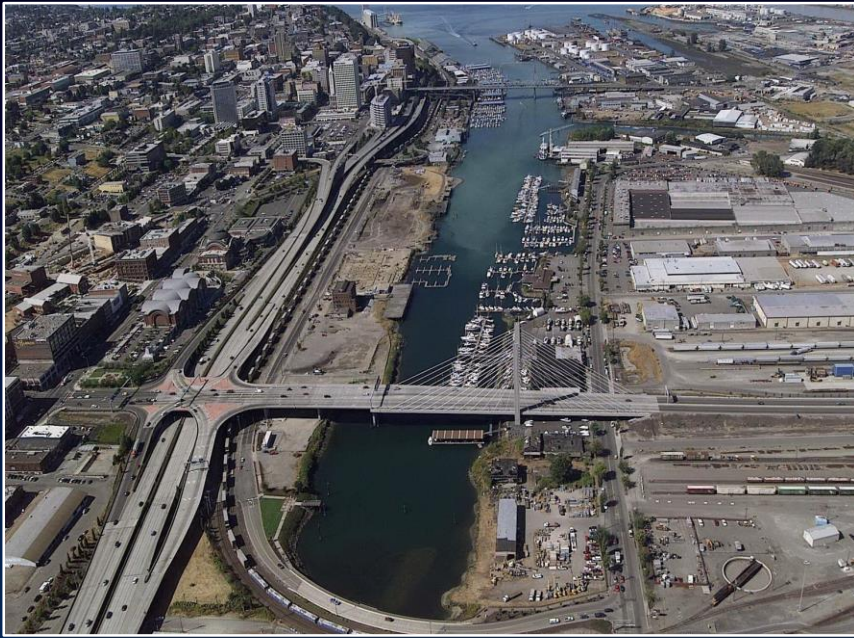
- Update on the Thea Foss Waterway cleanup project and associated stormwater monitoring program
- Summary of recent results
- Next steps and timelines



Thea Foss Named Superfund Site in 1983

\$105 million invested to
clean and cap the
waterway

- Ongoing effort to reduce or eliminate contaminant sources so that ratepayer investment is protected



Thea Foss Waterway – Background

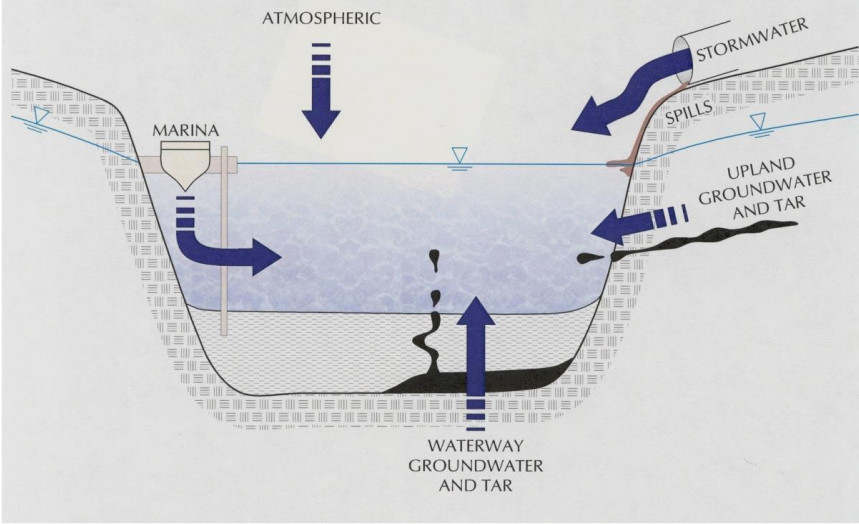
2001 – City, EPA and Ecology entered into an agreement known as the Foss Stormwater Workplan

- Pairs monitoring with aggressive source control
- Program intent is to prevent recontamination

2006 – Cleanup of the waterway completed

Today – 15 years of stormwater monitoring data from 7 outfalls and sediment monitoring shows Tacoma's program is successful

POTENTIAL POLLUTANT SOURCES THEA FOSS WATERWAY



What were we dealing with?

- PAHs
- Phthalates
- PCBs
- Pesticides
- Metals



Coal Tar – Head of Thea Foss



Cleanup Plan

- Combination of capping and dredging
- Dredged sediments were placed in the nearby St. Paul Waterway
- Habitat areas were constructed



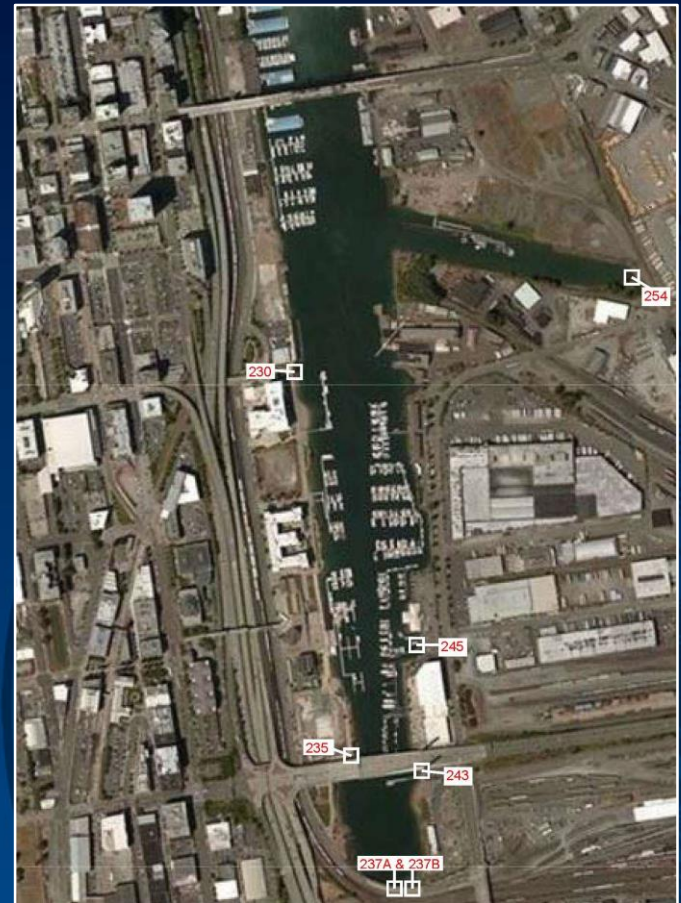
Thea Foss Monitoring

In-waterway sediment samples collected at Years 0, 2, 4, 7 & 10 after the cleanup was complete

- 35+ by City
- 18 by others

1,735 upland samples collected at 7 outfalls

- 347 baseflow
- 1,006 stormwater
- 382 sediment samples

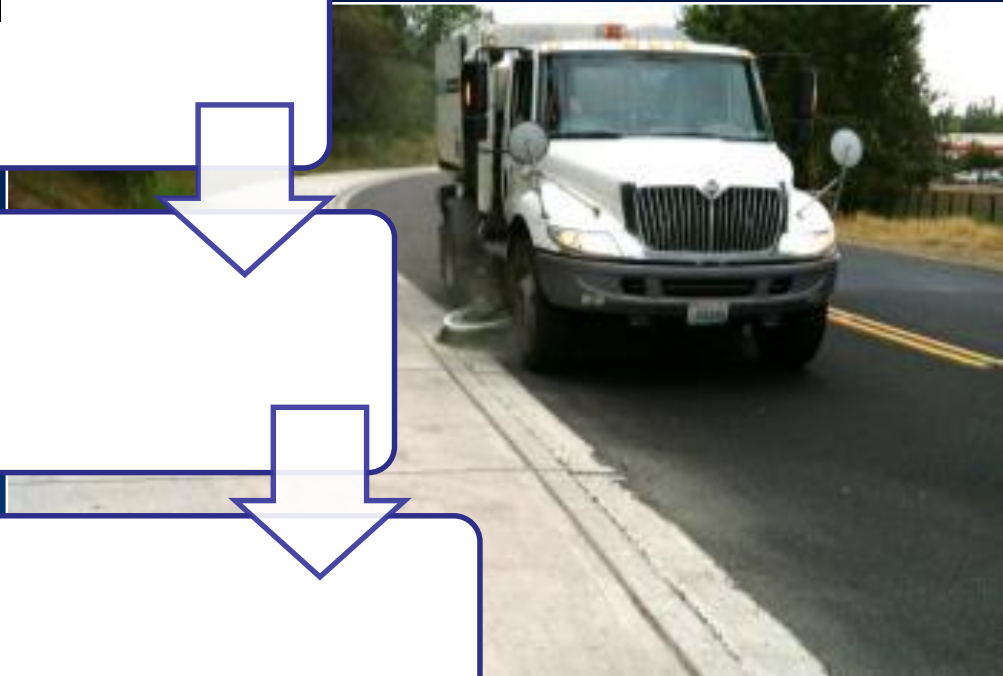


Tacoma's Stormwater Management Program

Source Control
and Monitoring

Enhanced
Maintenance

Treatment
Retrofit

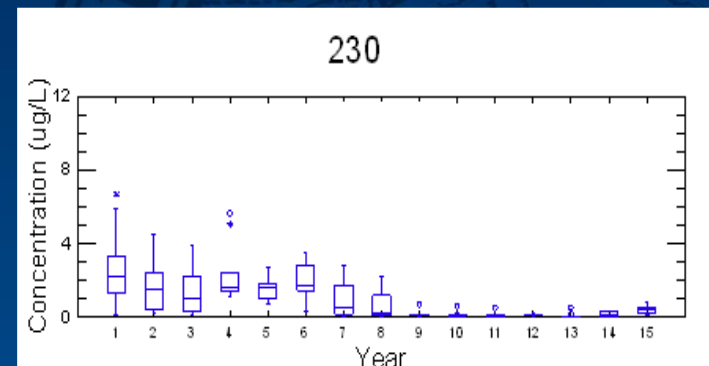


Results to Date – Foss Stormwater Trends

Of the 49 tests performed, 47 have shown decreasing trends over the 15 year monitoring period

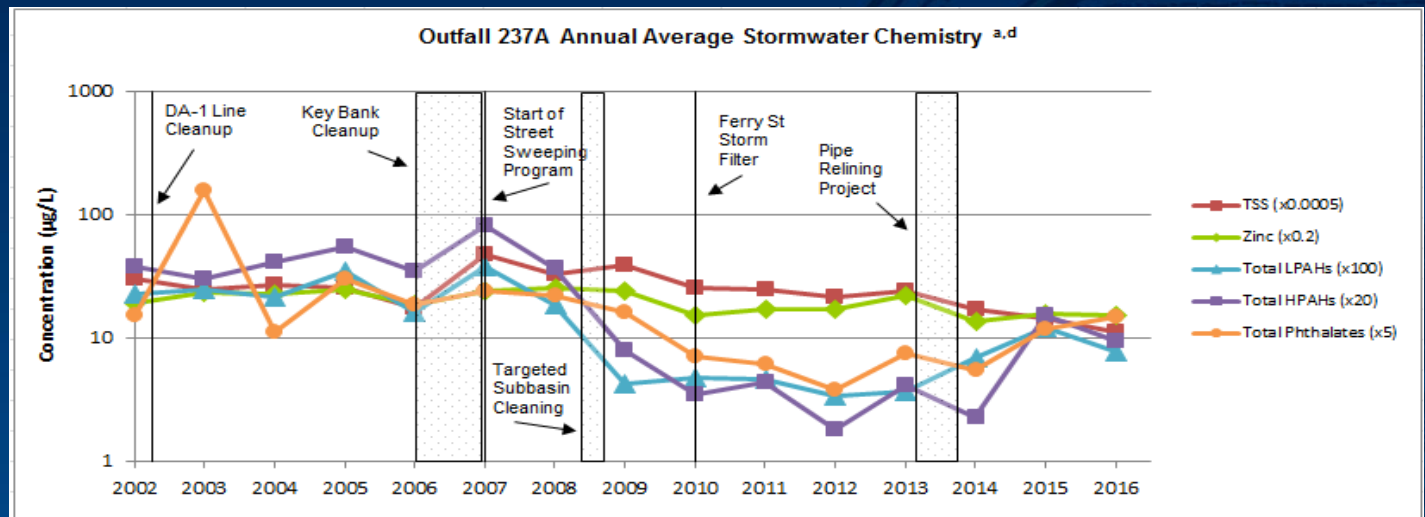
OUTFALL	CHEMICAL	PERCENT REDUCTION
In 5 Outfalls	Solids	54-72%
All 7 Outfalls	Lead or Zinc	45-79%
All 7 Outfalls	PAHs	86-98%
All 7 Outfalls	Phthalates	67-88%

Example – Total HPAH concentrations have decreased to low levels and further reductions may not be feasible



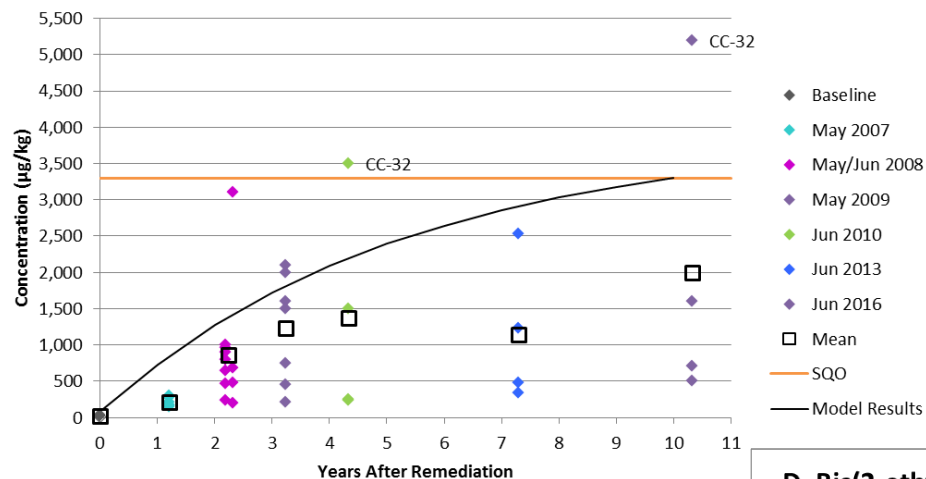
Statistical Evaluations

A. Parametric Outfall Pair Comparisons, Years 1-15							
Analyte	OF230	OF235	OF237A	OF237B	OF243	OF245	OF254
TSS	-4	1	-3	-1	0	1	6
Total Lead	1	6	-4	-4	4	-4	1
Total Zinc	-1	3	-2	-6	-2	4	4
DEHP	4	5	-2	-2	-2	-1	-2
Phenanthrene	1	0	0	-2	0	0	1
Pyrene	-1	2	2	-3	0	-3	3
Indeno(1,2,3-c,d)pyrene	1	1	2	-1	0	-4	1



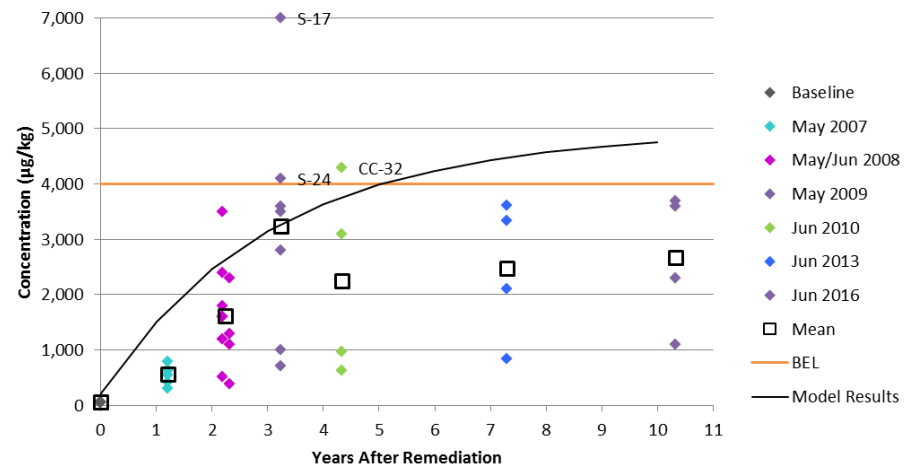
How Are We Doing?

B. Pyrene



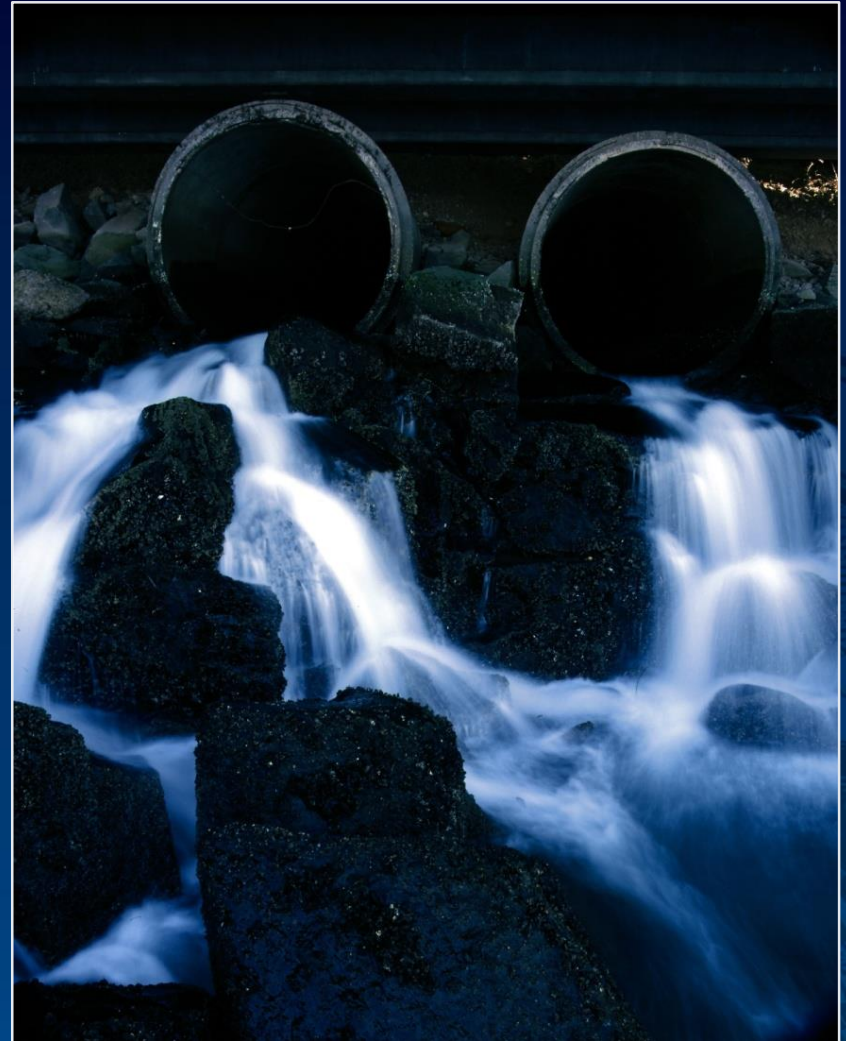
Predicted vs.
observed waterway
sediment
concentrations

D. Bis(2-ethylhexyl)phthalate



10 Years of Clean Water

- Remediated areas are generally stable
- Wide scale recontamination is not occurring
- Tacoma's stormwater program has been very successful
- Some issues remain but are common to urban landscapes



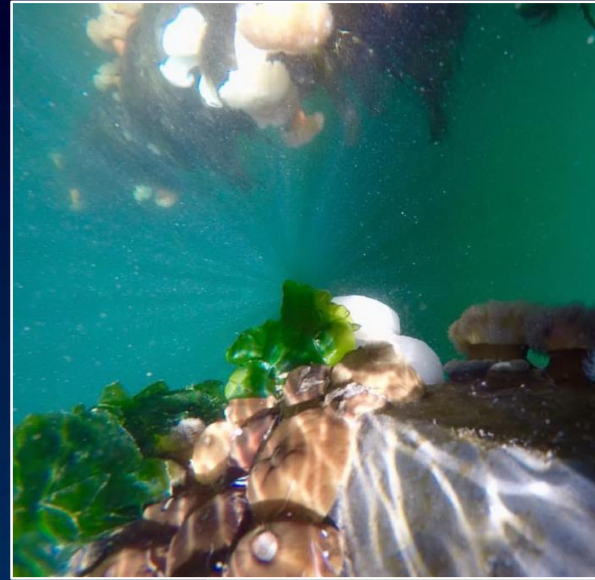
Next Steps

Continue stormwater management

- Source control /monitoring
- Enhanced maintenance
- Treatment retrofit where issues remain

Continue sediment monitoring

Finalize Long Term Monitoring Plan



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