

Lower Duwamish Waterway Source Control Update

Toxics Cleanup Program and Water Quality Program

November 4, 2015



Source Control

Short Term Goal

- Find and sufficiently control sources of sediment contamination before conducting active in-waterway remediation

Long Term Goal

- Minimize recontamination of sediments after cleanup

How Do We Manage Sources of Pollution to the Duwamish?



Managing Sources

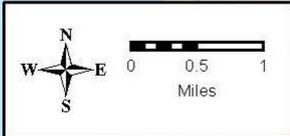
- Source Area Evaluations
- Business inspections
- Source tracing
- Site investigations
- Upland site cleanups
- Studies and Reports
- NPDES permits



Elliott Bay

Lake Washington

- Source Control Areas**
- 1. Spokane St to Ash Grove Cement
 - 2. Duwamish/Diagonal Way
 - 3. Slip 1
 - 4. KC Lease Parcels
 - 5. St Gobain to Glacier NW
 - 6. Slip 2 to Slip 3
 - 7. Slip 3 to Seattle Boiler Works
 - 8. Seattle Boiler Works to Slip 4
 - 9. Slip 4
 - 10. Boeing Plant 2 to Jorgensen Forge
 - 11. Boeing Isaacson/Central KCIA
 - 12. Slip 6
 - 13. Boeing Developmental Center
 - 14. Norfolk CSO/SD
 - 15. Spokane St to Kellogg Island
 - 16. Kellogg Island to Lafarge
 - 17. Glacier Bay
 - 18. Terminal 115
 - 19. 1st Avenue S SD
 - 20. Trotsky Inlet
 - 21. Riverside Drive
 - 22. Terminal 117
 - 23. Sea King Industrial Park
 - 24. Restoration Areas
 - CSO Basins



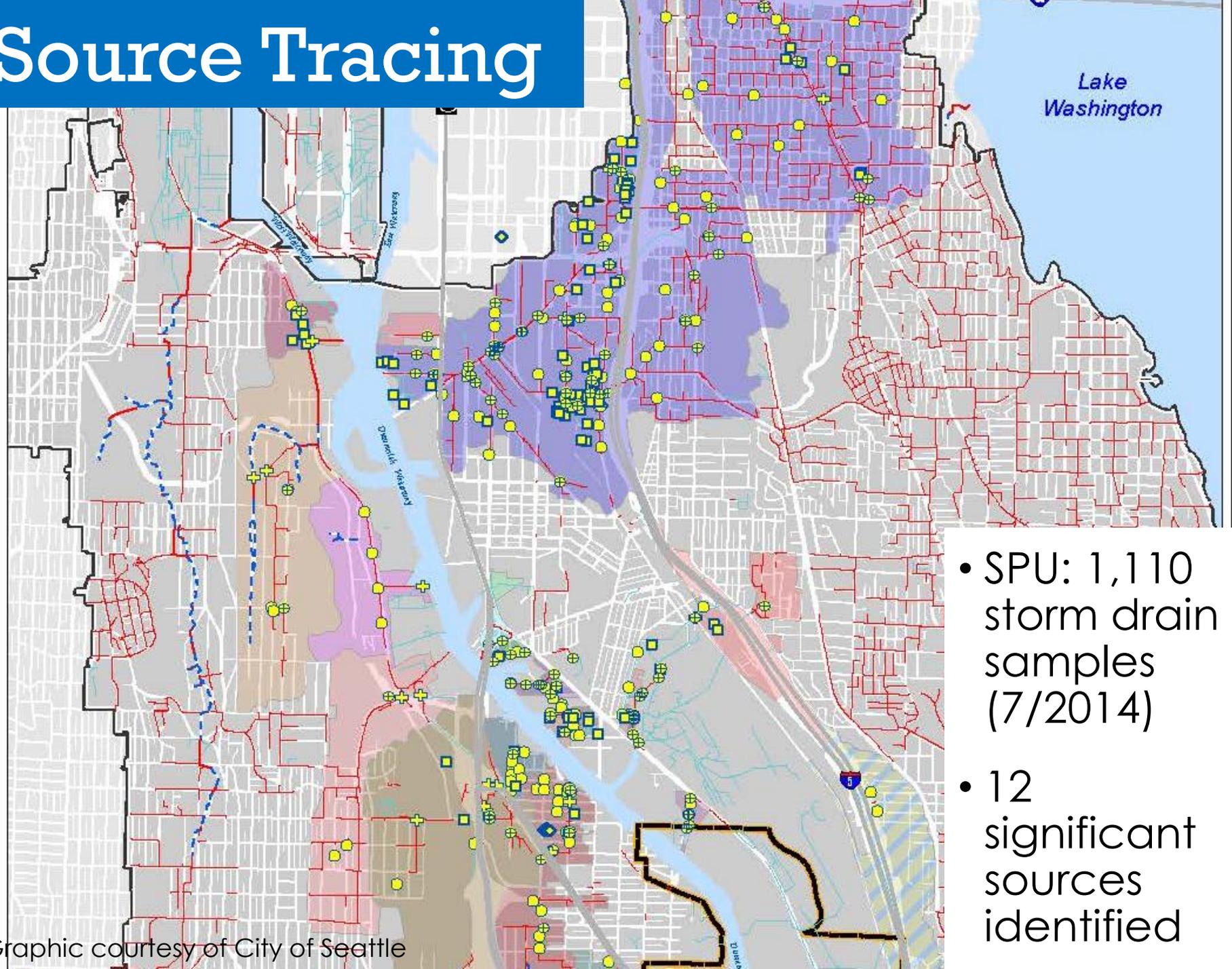
Business Inspections

- Seattle Public Utilities
- Ecology
- King County

4,768
inspections at
approximately
1,900
businesses

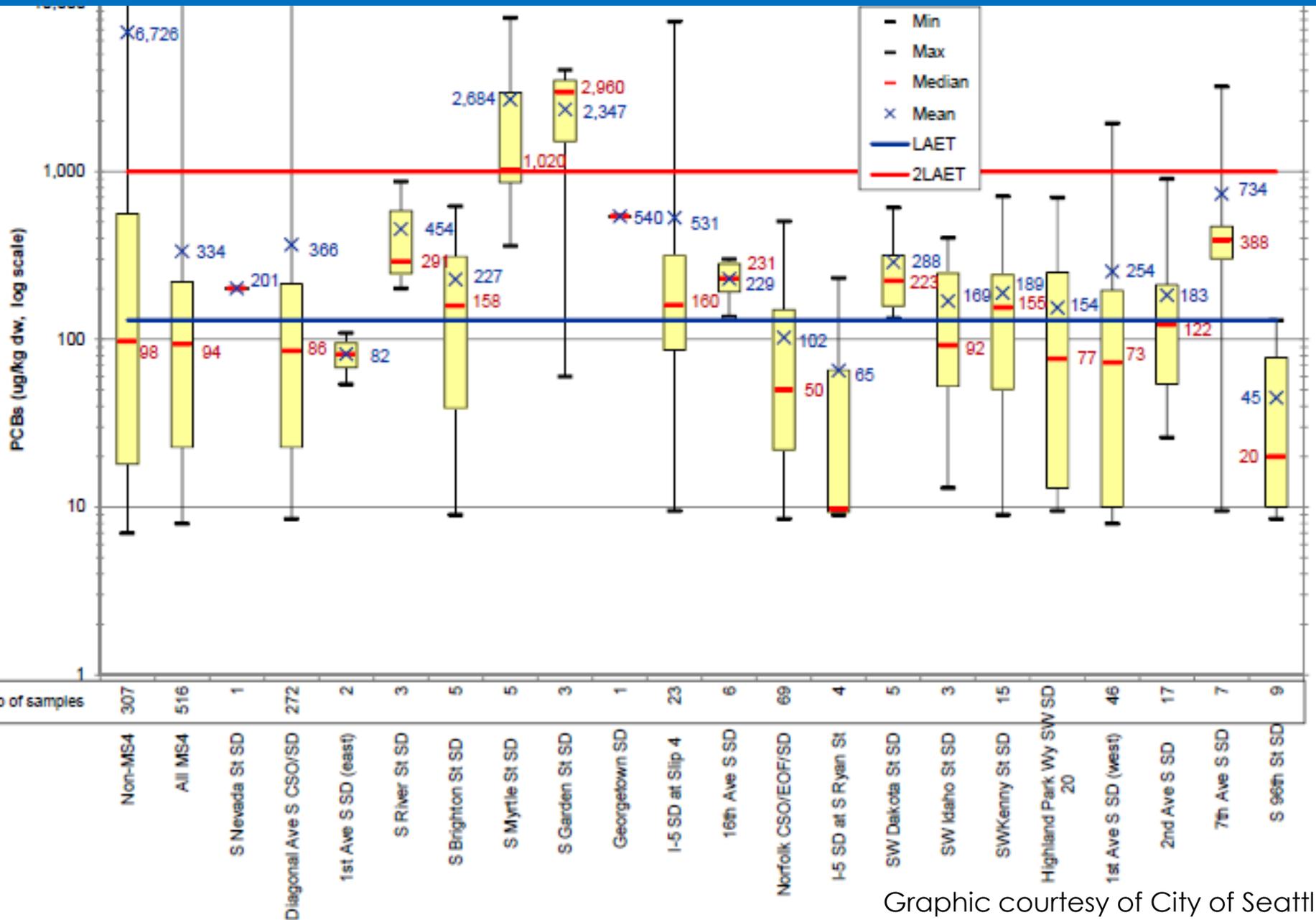


Source Tracing



- SPU: 1,110 storm drain samples (7/2014)
- 12 significant sources identified

Storm Drain Solids Samples: PCBs



Graphic courtesy of City of Seattle

Site Investigations

- Industrial Container Services
- Douglas Management
- South Park Marina / A & B Barrel
- Basin Oil
- Terminal 108 (Port of Seattle)
- Washington State Liquor Control Board
- Slip 3-Fox Ave S Soil Pile



Upland Site Cleanup

Ecology

- **19** facilities with Agreed Orders
 - **14** in Toxics Cleanup Program
 - **5** in Hazardous Waste Program
- **1** Proposed PLP Notice Letter (TCP)
- **29** active Voluntary Cleanup Program sites

EPA

- **9** facilities with CERCLA, RCRA, or TSCA orders



Studies and Reports

- Cement Kiln Dust (CKD) Mapping
- Site Hazard Assessment/Site Ranking
- Industrial Facilities Monitoring
- Green River Loading Study
- PCB Congener Tech Memo
- Interagency Agreements
 - Sediment Trap Pilot (City of Seattle)
 - Line Cleaning, Bank Stabilization (Port of Seattle)



NPDES Permits

The past, present and future
of source control



Lower Duwamish Waterway Source Control Update

Water Quality Overview

Major Water Quality Discharge Permits &
the Watershed Pollutant Loading Assessment

November 4, 2015



Drainage Comparison

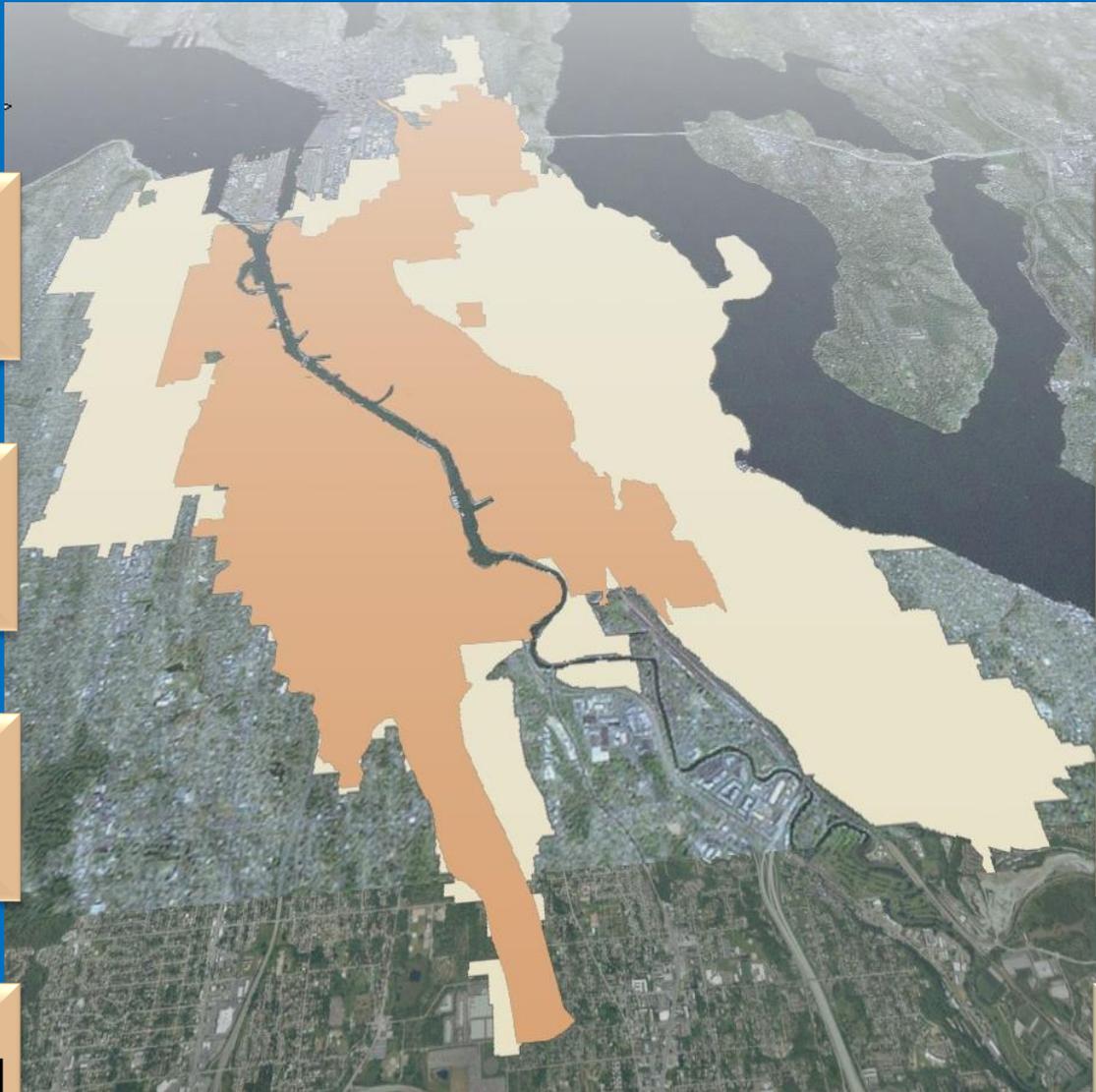
Separated Stormwater

8,900 acres
(14 sq miles)

~235 outfalls

4,000 MGY
1,150 MT/yr
solids

179
Contaminated
Sites



Combined Sewer

20,000 acres
(31 sq miles)

14 combined
sewer outfalls

75 MGY
35 MT/yr solids

173
Contaminated
Sites

Permit Type	Approx # in LDW
Combined Sewer Overflow	2
Municipal Stormwater	5
Industrial Stormwater	90
Individual Industrial	2
Boatyard	2
Sand & Gravel	6

Water Quality Discharge Permits

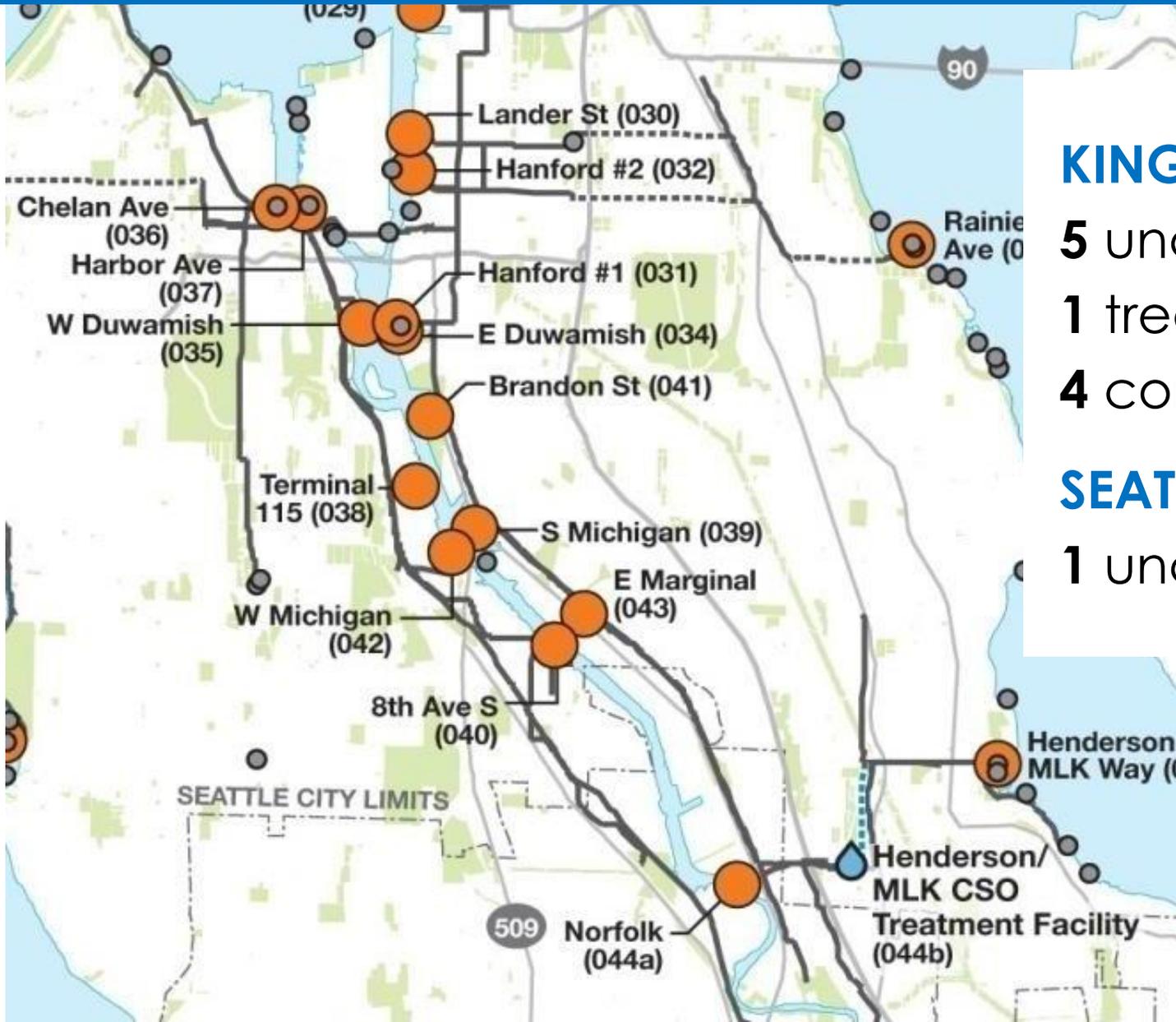
- Combined
Sewer Overflows
- Municipal
Stormwater
- Industrial
Stormwater
- Individual
Industrial

Combined Sewer Overflow (CSO) Permits

- Two Permits:
 - King County West Point Treatment Plant (2015-2020)
 - Seattle CSO (2010-2015)
- Two Consent Decrees require Long Term Control Plan implementation by:
 - King County: **2030**
 - Seattle: **2025***
- State regulation defines “CSO control”
 - No more than 1 untreated overflow per year, per outfall (20 year rolling avg.)



LDW CSO Statistics



KING COUNTY

5 uncontrolled

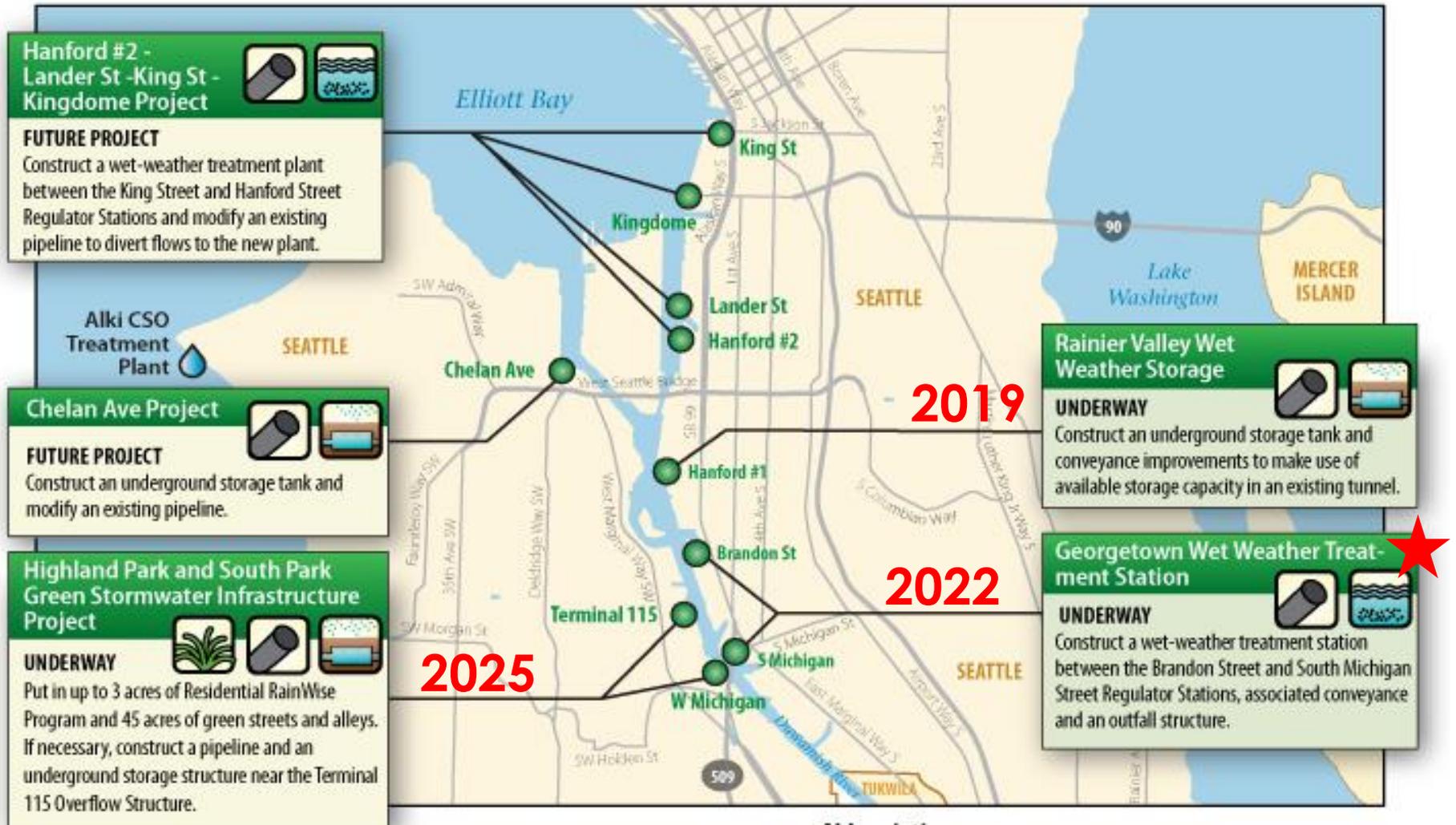
1 treatment plant

4 controlled

SEATTLE

1 uncontrolled

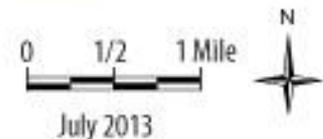
King County CSO Control in LDW



- CSO Treatment Plant/Facility
- King County CSO Outfall

Abbreviations

- MG = million gallons
- MGD = million gallons/day
- CSO = combined sewer overflow



King County's Georgetown Wet Weather Treatment Station

- Treats & controls S. Michigan & Brandon CSOs
- High-rate ballasted sedimentation w/ UV disinfection
- 85% TSS removal
- Potential new outfall structure near 1st Ave S bridge
- Status: Draft Facility Plan under EPA & Ecology review



Seattle CSO Control & Integrated Plan

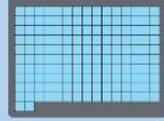
CSO Projects

-  Sewer system improvements by 2020
-  West Ship Canal Tunnel project with King County by 2025
-  LTCP storage projects by 2025
-  LTCP storage projects by 2030

Stormwater Projects

-  Natural Drainage Partnering
-  Street Sweeping
-  South Park Water Quality Treatment

15.2 million gallons storage needed



Graphic courtesy of City of Seattle

Seattle Integrated Plan: South Park Stormwater Treatment

Water Quality Treatment Facility

- Coupled with pump station for improved local drainage
- Active treatment system
- 278 acres
- 74M gal/year (avg.)
- \$35M (planning estimate)



Graphic courtesy of City of Seattle



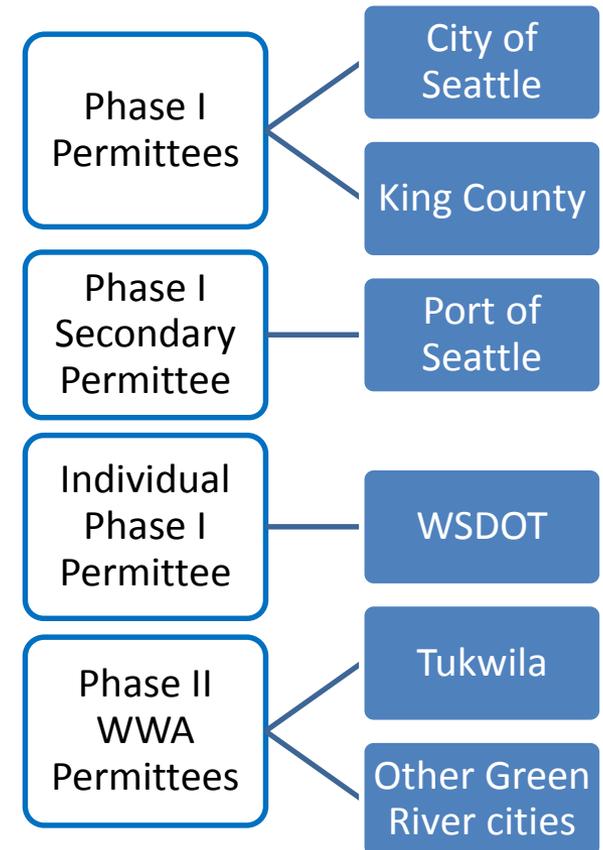
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Water Quality Discharge Permits

- Combined
Sewer Overflows
- **Municipal
Stormwater**
- Industrial
Stormwater
- Individual
Industrial

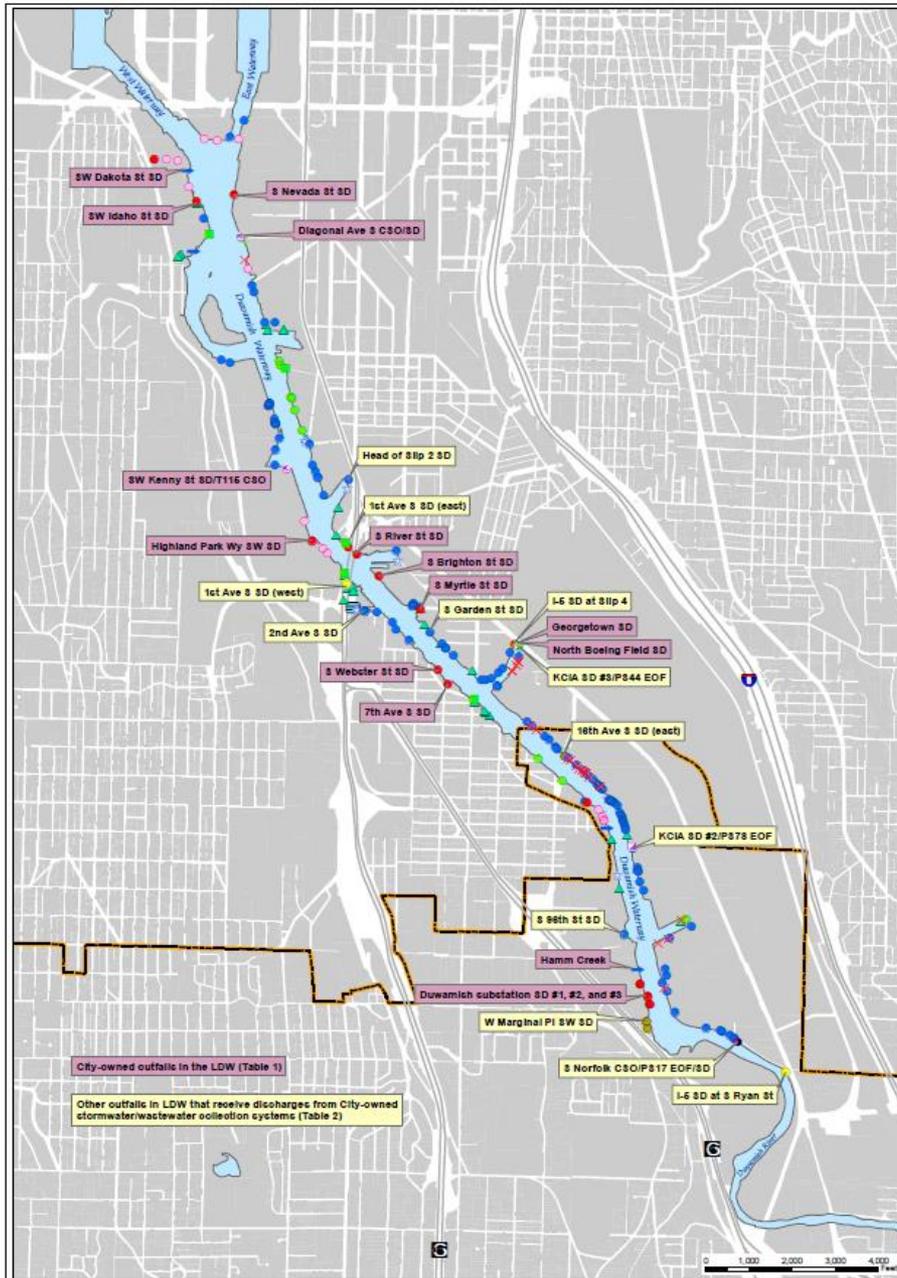
Municipal Stormwater Permits

- Apply to Municipal Separate Storm Sewer Systems (MS4)
- Requires comprehensive programmatic approach to stormwater management
 - Education & Outreach
 - Public Involvement
 - Operations & Maintenance
 - Illicit Discharge Detection & Elimination
 - Runoff Controls for New & Redevelopment
 - Source Control*
 - Structural Controls*
- Four permittee types



Seattle MS4 in LDW

- Serves 5,400 acres
- 17 City-owned outfalls
- 12 outfalls w/ MS4 inputs, not City owned



Lower Duwamish Waterway

Map No. 1 - Outfalls



Seattle City Limits	CSO - King County	SD - City of Seattle	SD - WSDOT/SPU
Freeway/Highway	CSO/EOF/SD - SPU/KC/Tukwila	SD - Private	Seep
Outfalls (by user)	CSO/SD - SPU/KC	SD - King County	Unknown
Abandoned	EOF - King County	SD - Port of Seattle	Water supply overflow
Channel/Ditch	EOF/SD - SPU/KC	SD - City of Tukwila	

SD = storm drain, CSO = combined sewer overflow, EOF = emergency overflow
 SPU = Seattle Public Utilities, KC = King County



Seattle Stormwater Program

- City-wide Programmatic Requirements
- LDW enhancements since 2003
 - Business inspections
 - Storm solids source tracing
 - Line cleaning
- Planned additional actions
 - Expanded near end of pipe storm solids sampling
 - Line cleaning
 - Internal coordination
 - Source tracing program enhancements



King County Stormwater in LDW

- S 96th Street & Restoration Areas source control areas (Hamm Creek drainages)
 - Mapping improvements
 - Business inspections & source tracing enhancements
- KC International Airport
 - 615 acres (435 impervious)
 - 4 outfalls: Slip 4, former Slip 5, Slip 6 & Norfolk SD
 - Industrial Stormwater General Permits
 - Sediment trap sampling program
- Harbor Bond Properties
 - Right bank from RM 1.0–1.2 (Slip 1 vicinity)
 - Lessees: Manson, Cadman, United Western, J.A. Jack & Sons, Ardagh
 - Industrial Stormwater General Permits



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- **Industrial
Stormwater**
- Individual
Industrial

Industrial Stormwater General Permit (ISGP) Overview

- Authorizes discharges of stormwater associated with industrial activities
 - State-wide general permit (2014-2019)
- Requires Best Management Practices (BMPs) to reduce stormwater pollution
- Escalating corrective actions based on sampled water quality
 - Level I: Operational BMPs
 - Level II: Structural BMPs
 - Level III: Treatment systems (passive & active)



Who needs an ISGP?

- Federal rule applies to types of industrial activities (SIC codes)
- Permit Determination Inspections
 - New Permittees via referrals & complaints
 - Certificate of No-Exposure (CNE)
 - Approx 60 CNEs in LDW
- Significant Contributor of Pollutants
 - Can require permit coverage for unlisted commercial and industrial activities
 - Enforcement action



New Special ISGP Requirements

- Apply to ~90% ISGP permittees in LDW
 - Puget Sound sediment cleanup sites
 - Sediment quality impaired waters
- 30 mg/L Total Suspended Solids effluent limit
- Clean stormwater system
- Characterize storm drain solids



ISGP Implementation & Oversight

- Level III Corrective Actions = Treatment
 - 50-60% of LDW facilities have installed treatment since 2010
- Ecology's Compliance Inspections
 - Large, complex facilities: annually
 - Others: every other year or as needed
- Enforcement
 - Administrative Orders
 - Penalties



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Water Quality Discharge Permits

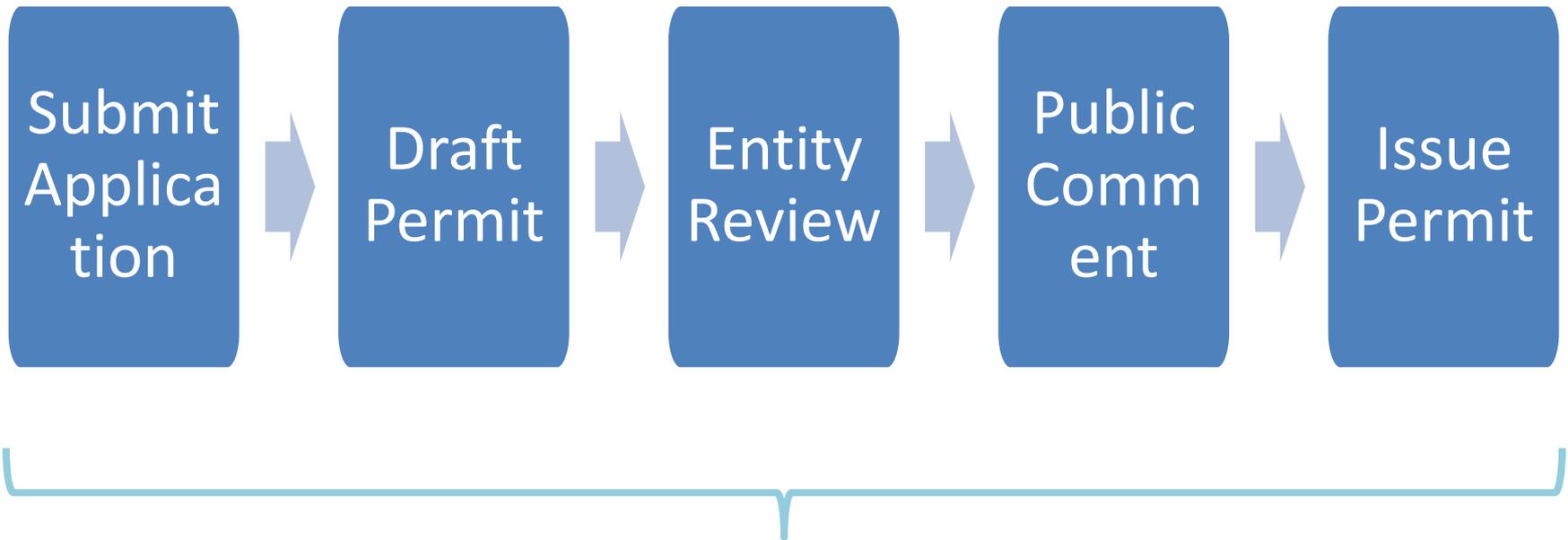
- Combined
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Stormwater
- Industrial
Stormwater
- **Individual
Industrial**

Individual Industrial Permits

- Five year renewal cycle
- Requirements specific to facility operations and site conditions
 - Focus on stormwater quality
 - May address wastewater (e.g., dust suppression, wheel wash)
- New individual permits typically require robust effluent characterization



Individual Permitting Process



6 months - 1 year timeline



Existing Individual Industrial Permittees in LDW

LaFarge

- 2011-2015
- Stormwater treatment



Seattle Iron & Metals

- 2013-2018
- Stormwater treatment
- Dust control improvements underway

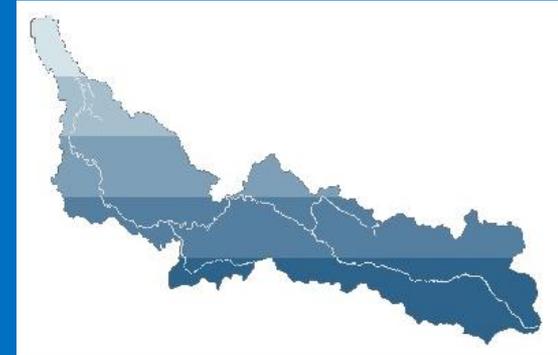


How to Stay Informed about Permits

- Individual Permits (incl. CSO):
 - Become a “party of record”
 - For a specific facility/permittee
 - For a specific geographic area (the LDW)
 - To receive email notifications of
 - Permit Application Received
 - Draft Permit for Public Comment (incl. modified permits)
- General Permits:
 - Join the permit-specific listserve
 - To receive email notifications of
 - Draft General Permit for Public Comment
 - Final Permit Issuance
 - Announcements & Guidance Documents



Green-Duwamish Watershed Pollutant Loading Assessment (PLA)



Goals

- Address water, sediment, and tissue quality impairments under the Clean Water Act.
- Prioritize pollutant reduction efforts to minimize recontamination of remediated LDW sediments.

PLA Objectives

- Develop a modeling tool to assess pollutant loads from different sources (point and diffused).
- Better understand the relationship between water, sediment, and fish tissue quality.
- Predict improvement in water, sediment, and tissue quality expected to occur as a result of management actions.
- Improve effectiveness of Monitored Natural Recovery, one of the LDW in-waterway sediment remedial actions, which is dependent on cleaner upstream sediments depositing in the LDW.



PLA Activities (2015)

- Technical Advisory Committee meetings
 - 6 meetings between Dec. '14 & June '15
- Interested Party Meeting
- Technical consultant memos
 - Existing Data & Model Evaluation (2/2015)
 - Data Gaps & Pollutant Groupings (6/2015)
- Input for the EPA & Ecology Project Team
 - Project phasing, funding concerns
 - Coordination with local expertise



PLA Next Steps into 2016

- Project Scoping, Phasing & Budget
- Draft Modeling Quality Assurance Project Plan (QAPP)
- Technical Advisory Committee & Interested Party Engagement
- Initiate model development focused on hydrology/hydrodynamics
- Data assessment to prepare for future water quality model development



TMDL Alternative Restoration & Protection Plan

- Clean Water Act Section 303(d) responsibility:
Restore impaired waters
- EPA's 303(d) Program Vision
 - Acknowledges that tailored strategies to restore & protect designated uses may be appropriate alternatives to a traditional TMDL if they are faster and more practical
 - Allows States to prioritize alternative water quality restoration & protection plans
- Green-Duwamish Toxics: A high-priority alternative approach includes many actions underway
 - LDW sediment cleanups (EAAs & river-wide)
 - Source control activities (studies, NPDES, upland site cleanups)
 - CSO Control Plans
 - PLA model development



Contacts

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QUESTIONS?