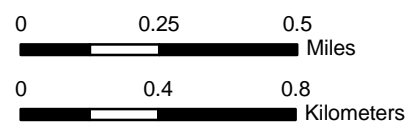
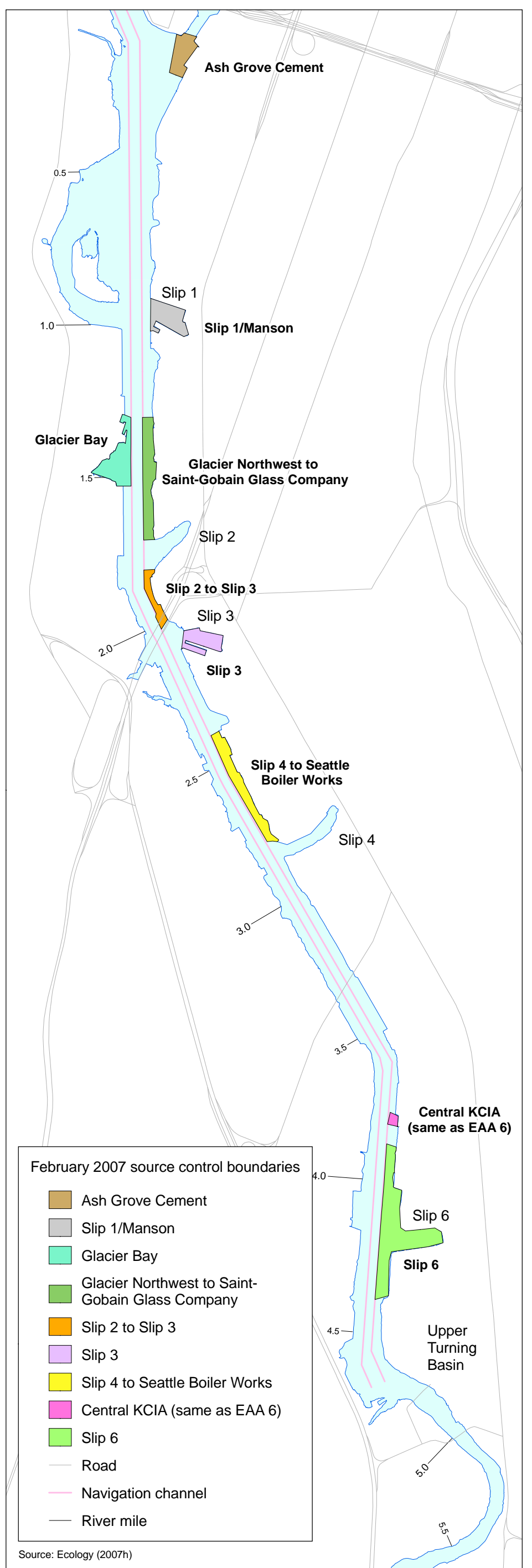
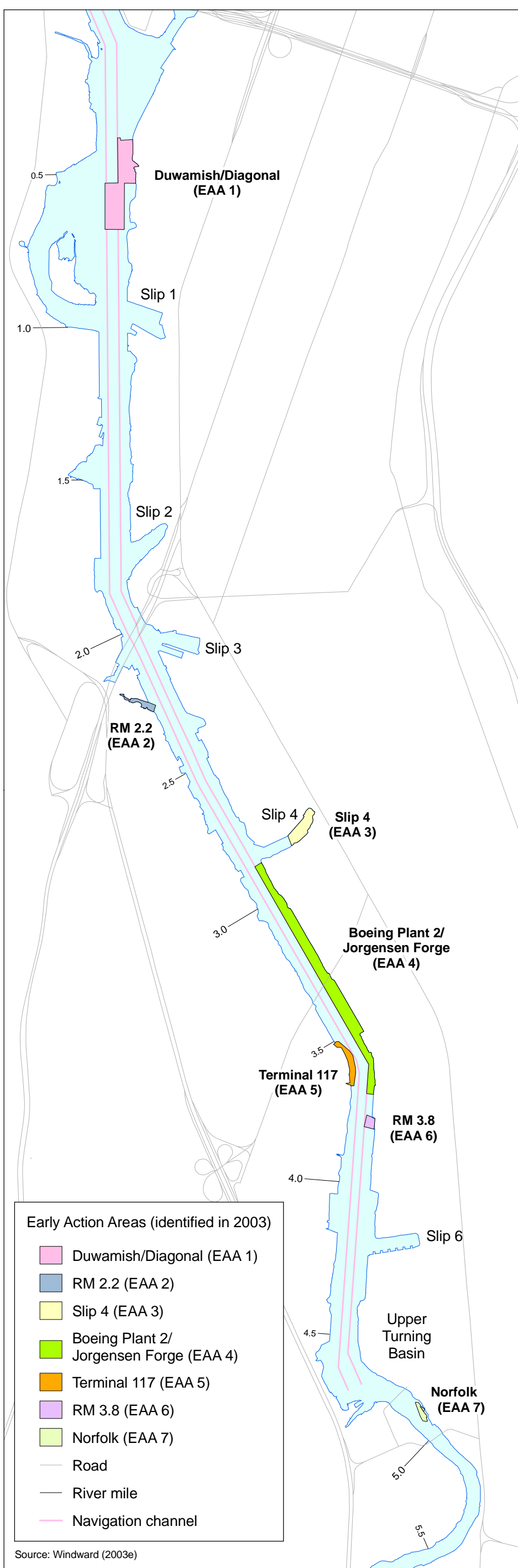


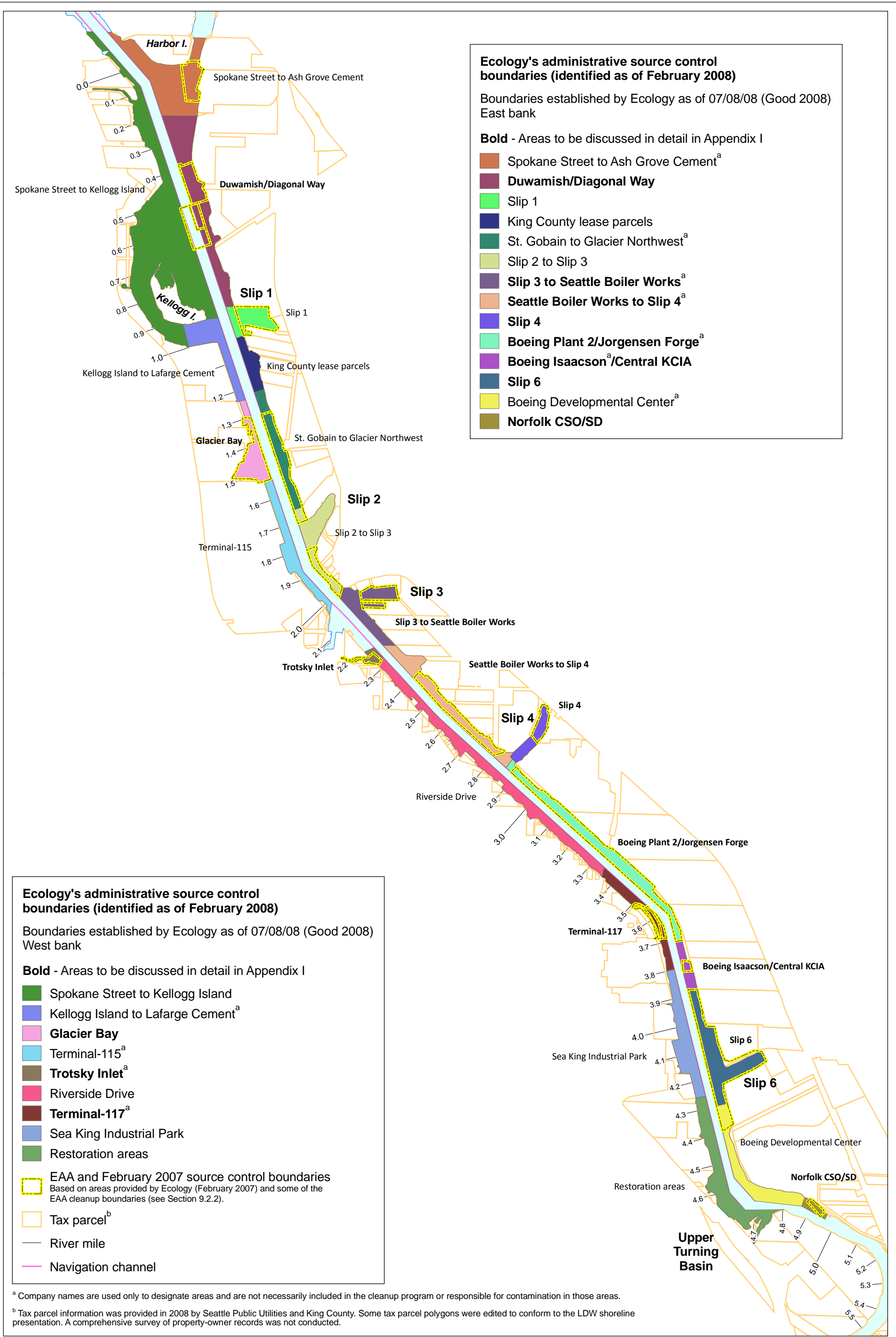
- Combined sewer service area discharging to the LDW
- Greater LDW surface drainage basin
- Diagonal Ave S CSO/SD
- Norfolk SD
- Slip 4
- 7th Ave S SD
- West side public SDs
- Hamm Creek
- Central KCIA
- South KCIA
- Remaining east side public SDs
- S 96th St SD
- Glacier Bay/SW Kenny SD
- Private waterfront drains
- Road
- Creek
- City boundary

Map 9-1. Greater LDW drainage basins



Scale is the same for each inset map

Map 9-2. Early Action Areas (identified in 2003) and Ecology's February 2007 source control boundaries



Ecology's administrative source control boundaries (identified as of February 2008)

Boundaries established by Ecology as of 07/08/08 (Good 2008)
East bank

Bold - Areas to be discussed in detail in Appendix I

- Spokane Street to Ash Grove Cement^a
- Duwamish/Diagonal Way**
- Slip 1
- King County lease parcels
- St. Gobain to Glacier Northwest^a
- Slip 2 to Slip 3
- Slip 3 to Seattle Boiler Works^a**
- Seattle Boiler Works to Slip 4^a**
- Slip 4**
- Boeing Plant 2/Jorgensen Forge^a**
- Boeing Isaacson^a/Central KCIA**
- Slip 6**
- Boeing Developmental Center^a
- Norfolk CSO/SD**

Ecology's administrative source control boundaries (identified as of February 2008)

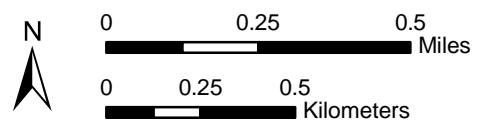
Boundaries established by Ecology as of 07/08/08 (Good 2008)
West bank

Bold - Areas to be discussed in detail in Appendix I

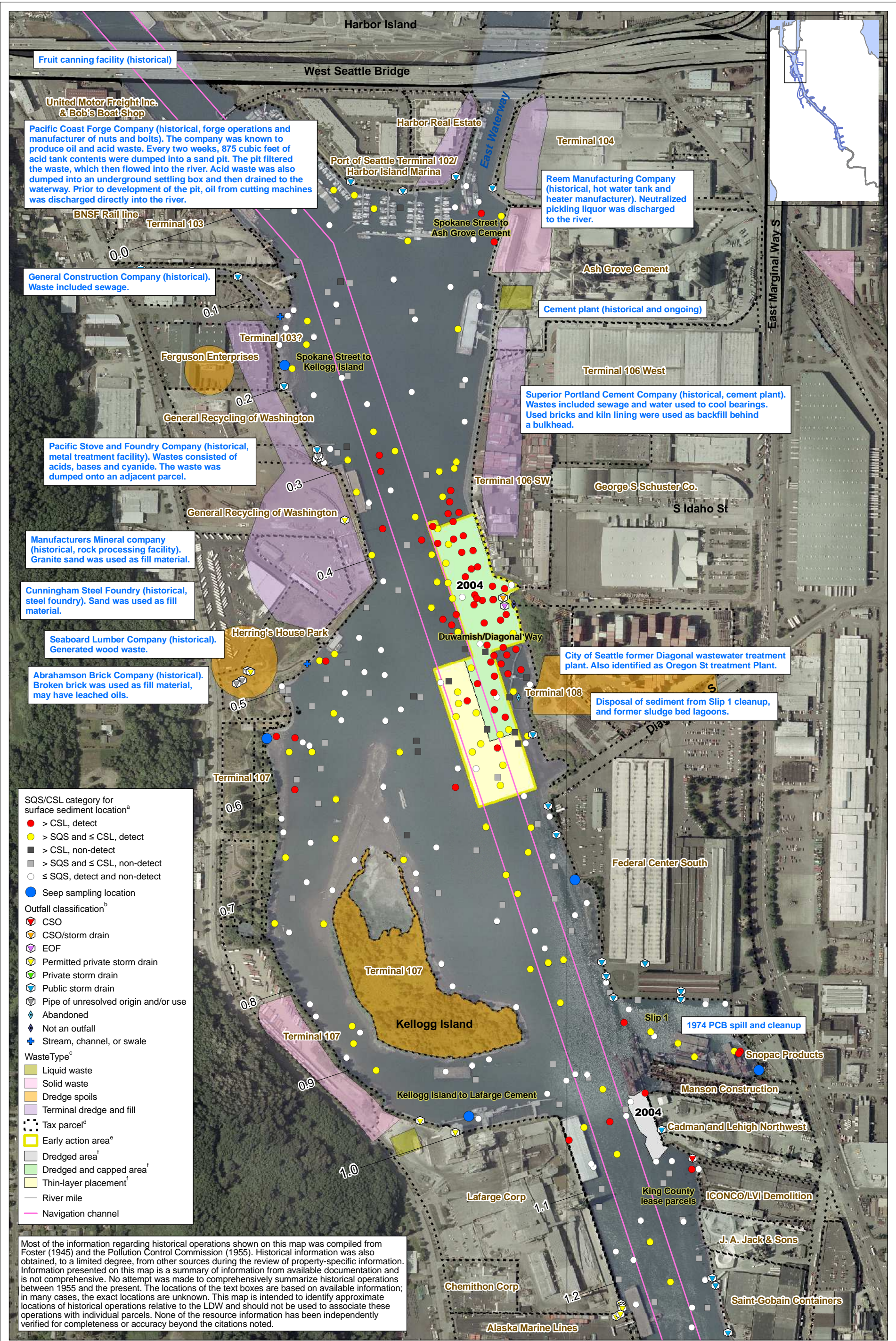
- Spokane Street to Kellogg Island
- Kellogg Island to Lafarge Cement^a
- Glacier Bay**
- Terminal-115^a
- Trotsky Inlet^a**
- Riverside Drive**
- Terminal-117^a**
- Sea King Industrial Park
- Restoration areas
- EAA and February 2007 source control boundaries
Based on areas provided by Ecology (February 2007) and some of the EAA cleanup boundaries (see Section 9.2.2).
- Tax parcel^b
- River mile
- Navigation channel

^a Company names are used only to designate areas and are not necessarily included in the cleanup program or responsible for contamination in those areas.

^b Tax parcel information was provided in 2008 by Seattle Public Utilities and King County. Some tax parcel polygons were edited to conform to the LDW shoreline presentation. A comprehensive survey of property-owner records was not conducted.



Map 9-3. Ecology's administrative source control boundaries (identified as of February 2008)



Fruit canning facility (historical)

United Motor Freight Inc. & Bob's Boat Shop

Pacific Coast Forge Company (historical, forge operations and manufacturer of nuts and bolts). The company was known to produce oil and acid waste. Every two weeks, 875 cubic feet of acid tank contents were dumped into a sand pit. The pit filtered the waste, which then flowed into the river. Acid waste was also dumped into an underground settling box and then drained to the waterway. Prior to development of the pit, oil from cutting machines was discharged directly into the river.

General Construction Company (historical). Waste included sewage.

Pacific Stove and Foundry Company (historical, metal treatment facility). Wastes consisted of acids, bases and cyanide. The waste was dumped onto an adjacent parcel.

Manufacturers Mineral company (historical, rock processing facility). Granite sand was used as fill material.

Cunningham Steel Foundry (historical, steel foundry). Sand was used as fill material.

Seaboard Lumber Company (historical). Generated wood waste.

Abrahamson Brick Company (historical). Broken brick was used as fill material, may have leached oils.

Reem Manufacturing Company (historical, hot water tank and heater manufacturer). Neutralized pickling liquor was discharged to the river.

Cement plant (historical and ongoing)

Superior Portland Cement Company (historical, cement plant). Wastes included sewage and water used to cool bearings. Used bricks and kiln lining were used as backfill behind a bulkhead.

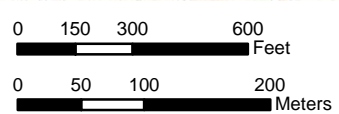
City of Seattle former Diagonal wastewater treatment plant. Also identified as Oregon St treatment plant.

Disposal of sediment from Slip 1 cleanup, and former sludge bed lagoons.

1974 PCB spill and cleanup

- SQS/CSL category for surface sediment location^a
- > CSL, detect
 - > SQS and ≤ CSL, detect
 - > CSL, non-detect
 - > SQS and ≤ CSL, non-detect
 - ≤ SQS, detect and non-detect
 - Seep sampling location
- Outfall classification^b
- CSO
 - CSO/storm drain
 - EOF
 - Permitted private storm drain
 - Private storm drain
 - Public storm drain
 - Pipe of unresolved origin and/or use
 - Abandoned
 - Not an outfall
 - Stream, channel, or swale
- WasteType^c
- Liquid waste
 - Solid waste
 - Dredge spoils
 - Terminal dredge and fill
- Tax parcel^d
- Early action area^e
 - Dredged area^f
 - Dredged and capped area^f
 - Thin-layer placement^f
- River mile
- Navigation channel

Most of the information regarding historical operations shown on this map was compiled from Foster (1945) and the Pollution Control Commission (1955). Historical information was also obtained, to a limited degree, from other sources during the review of property-specific information. Information presented on this map is a summary of information from available documentation and is not comprehensive. No attempt was made to comprehensively summarize historical operations between 1955 and the present. The locations of the text boxes are based on available information; in many cases, the exact locations are unknown. This map is intended to identify approximate locations of historical operations relative to the LDW and should not be used to associate these operations with individual parcels. None of the resource information has been independently verified for completeness or accuracy beyond the citations noted.



Map 9-4a. Selected historical operations near the LDW, RM 0.0 to RM 1.2

Photo source: "USGS High Resolution Orthoimage, Seattle/Tacoma, WA", United States Geological Survey, 2003. Distributed by King County GIS. Photo date 06/11/2002.

^a When OC-normalization was not appropriate because TOC content was < 0.5% or > 4.0%, dry weight concentrations for these locations are compared instead to the LAET and 2LAET.

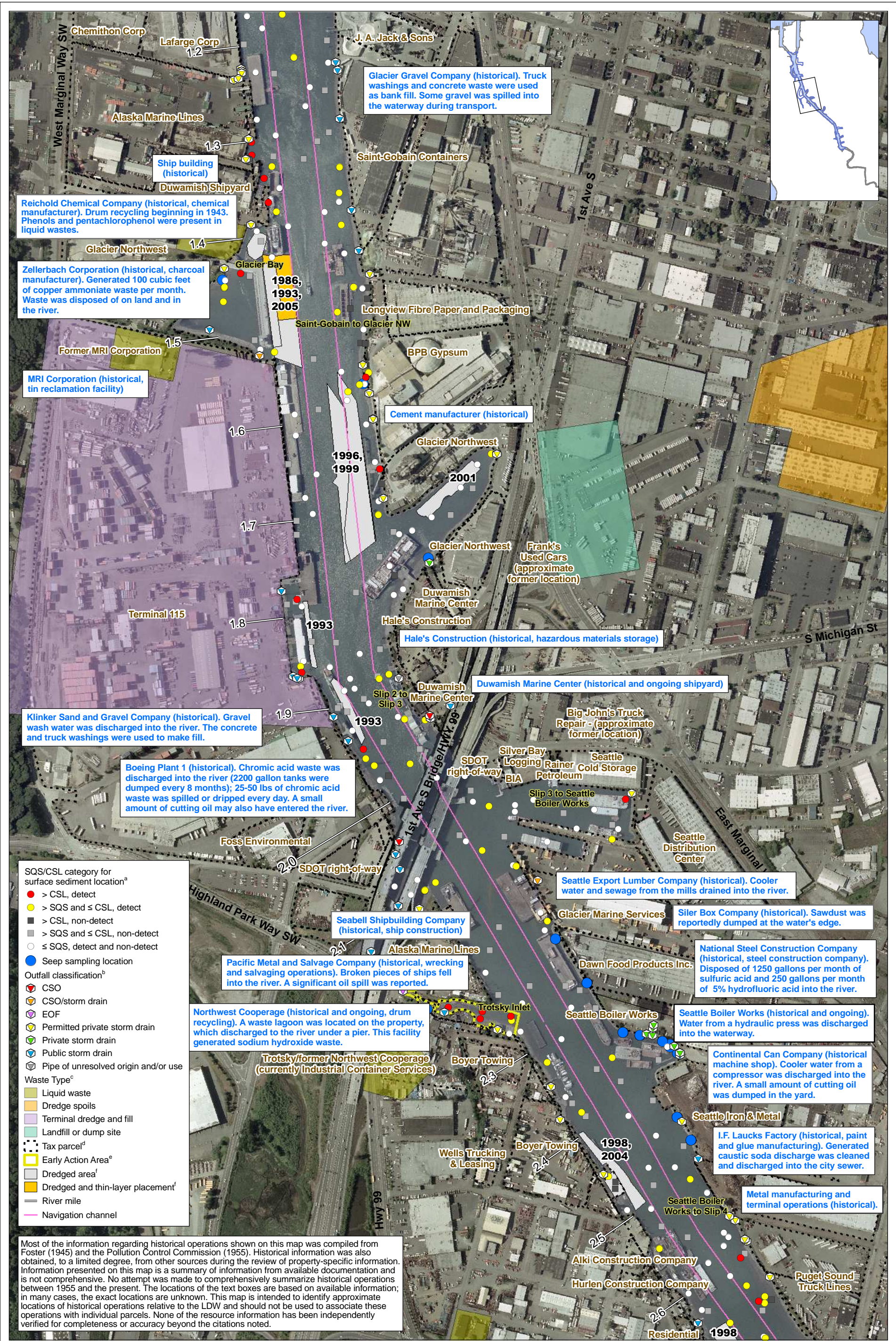
^b Outfalls shown were identified during a City of Seattle low-tide survey in 2003 (Herrera 2004). Some locations were initially identified using drainage maps from Ecology's National Pollutant Discharge Elimination System (NPDES) permit files and other relevant agency databases. These locations were later surveyed in the field. Review of agency files and interviews with agency and LDWG personnel provided additional outfall-specific information. Some locations were field-verified by LDWG members; some additional outfall locations were identified during these subsequent verifications. The outfall layer is meant to serve as a snapshot of outfall conditions at the time the survey was completed (2003). More recent information, when available, is reflected in the outfall discussions in Appendix I.

^c Sweet Edwards 1985. Duwamish groundwater study. Prepared for Municipality of Metropolitan Seattle, Sweet, Edwards and Associates, Inc. and Harper-Owes Company, Seattle, WA

^d Tax parcel information was provided in 2008 by Seattle Public Utilities and King County. Some tax parcel polygons were edited to conform to the LDW shoreline presentation. A comprehensive survey of property-owner records was not conducted. Names represent tenant/operator or owner.

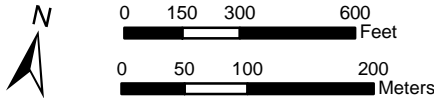
^e Several of the EAA boundaries are approximate and have not been finalized by EPA/Ecology; a description of each EAA boundary is presented in Section 9.2.2.

^f For the Duwamish/Diagonal Early Action Area, surface sediment data in the baseline dataset represent samples collected before dredging/capping in 2003/2004, or thin-layer placement in 2005. For other dredged areas, surface sediment data were collected after dredging. Subsurface sediment data in dredged areas were collected prior to dredging. Dredging information provided by AECOM. Year shown represents dredge year.



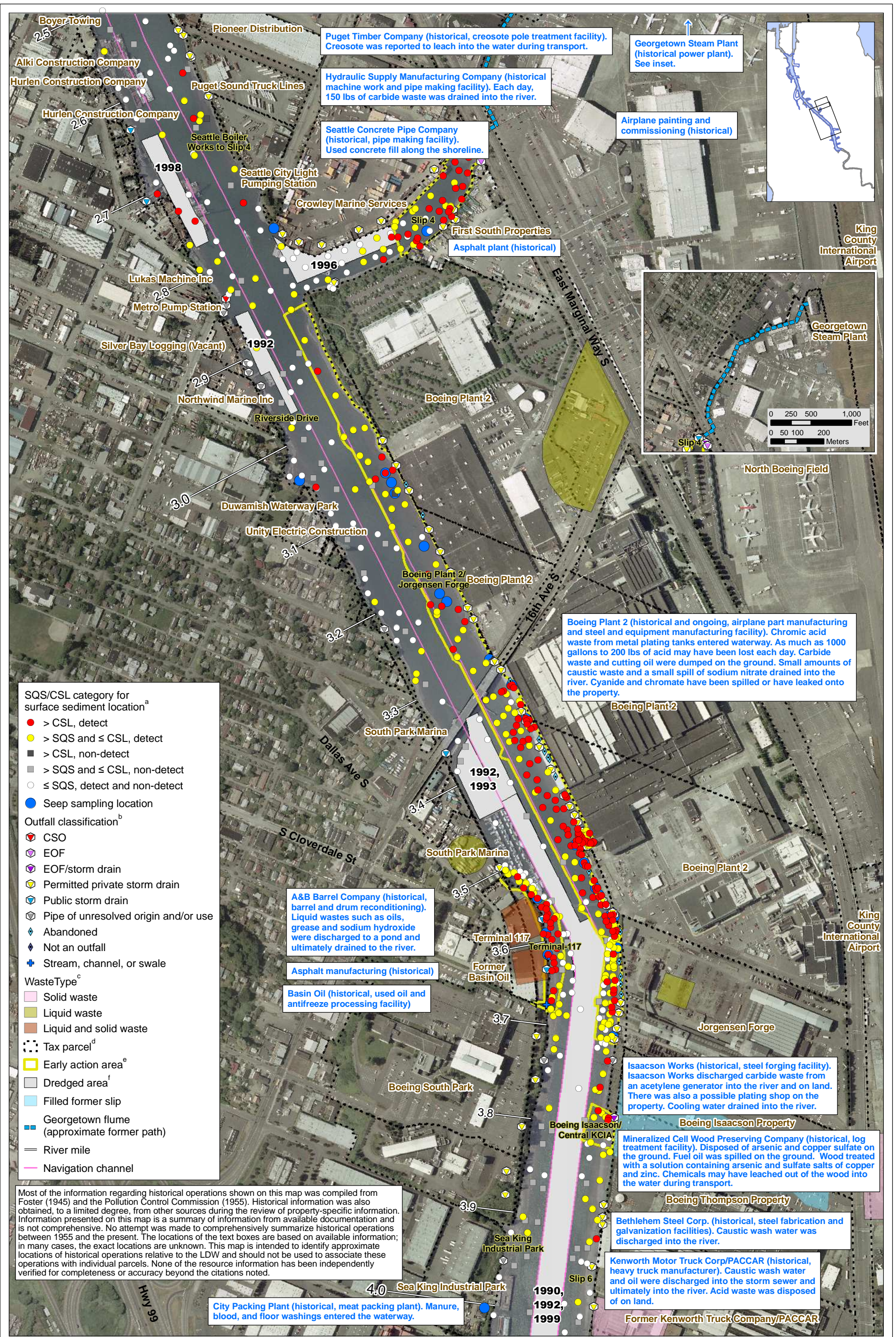
- SQS/CSL category for surface sediment location^a
- > CSL, detect
 - > SQS and ≤ CSL, detect
 - > CSL, non-detect
 - > SQS and ≤ CSL, non-detect
 - ≤ SQS, detect and non-detect
 - Seep sampling location
- Outfall classification^b
- CSO
 - CSO/storm drain
 - EOF
 - Permitted private storm drain
 - Private storm drain
 - Public storm drain
 - Pipe of unresolved origin and/or use
- Waste Type^c
- Liquid waste
 - Dredge spoils
 - Terminal dredge and fill
 - Landfill or dump site
 - Tax parcel^d
 - Early Action Area^e
 - Dredged area^f
 - Dredged and thin-layer placement^f
 - River mile
 - Navigation channel

Most of the information regarding historical operations shown on this map was compiled from Foster (1945) and the Pollution Control Commission (1955). Historical information was also obtained, to a limited degree, from other sources during the review of property-specific information. Information presented on this map is a summary of information from available documentation and is not comprehensive. No attempt was made to comprehensively summarize historical operations between 1955 and the present. The locations of the text boxes are based on available information; in many cases, the exact locations are unknown. This map is intended to identify approximate locations of historical operations relative to the LDW and should not be used to associate these operations with individual parcels. None of the resource information has been independently verified for completeness or accuracy beyond the citations noted.



Map 9-4b. Selected historical operations near the LDW, RM 1.2 to RM 2.6

^a When OC-normalization was not appropriate because TOC content was < 0.5% or > 4.0%, dry weight concentrations for these locations are compared instead to the LAET and 2LAET.
^b Outfalls shown were identified during a City of Seattle low-tide survey in 2003 (Herrera 2004). Some locations were initially identified using drainage maps from Ecology's National Pollutant Discharge Elimination System (NPDES) permit files and other relevant agency databases. These locations were later surveyed in the field. Review of agency files and interviews with agency and LDWG personnel provided additional outfall-specific information. Some locations were field-verified by LDWG members; some additional outfall locations were identified during these subsequent verifications. The outfall layer is meant to serve as a snapshot of outfall conditions at the time the survey was completed (2003). More recent information, when available, is reflected in the outfall discussions in Appendix I.
^c Sweet Edwards 1985. Duwamish groundwater study. Prepared for Municipality of Metropolitan Seattle, Sweet, Edwards and Associates, Inc. and Harper-Owes Company, Seattle, WA
^d Tax parcel information was provided in 2008 by Seattle Public Utilities and King County. Some tax parcel polygons were edited to conform to the LDW shoreline presentation. A comprehensive survey of property-owner records was not conducted. Names represent tenant/operator or owner.
^e Several of the EAA boundaries are approximate and have not been finalized by EPA/Ecology; a description of each EAA boundary is presented in Section 9.2.2.
^f For the Duwamish/Diagonal Early Action Area, surface sediment data in the baseline dataset represent samples collected before dredging/capping in 2003/2004, or thin-layer placement in 2005. For other dredged areas, surface sediment data were collected after dredging. Subsurface sediment data in dredged areas were collected prior to dredging. Dredging information provided by AECOM. Year shown represents dredge year.



Map 9-4c. Selected historical operations near the LDW, RM 2.6 to RM 4.1

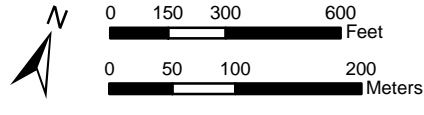
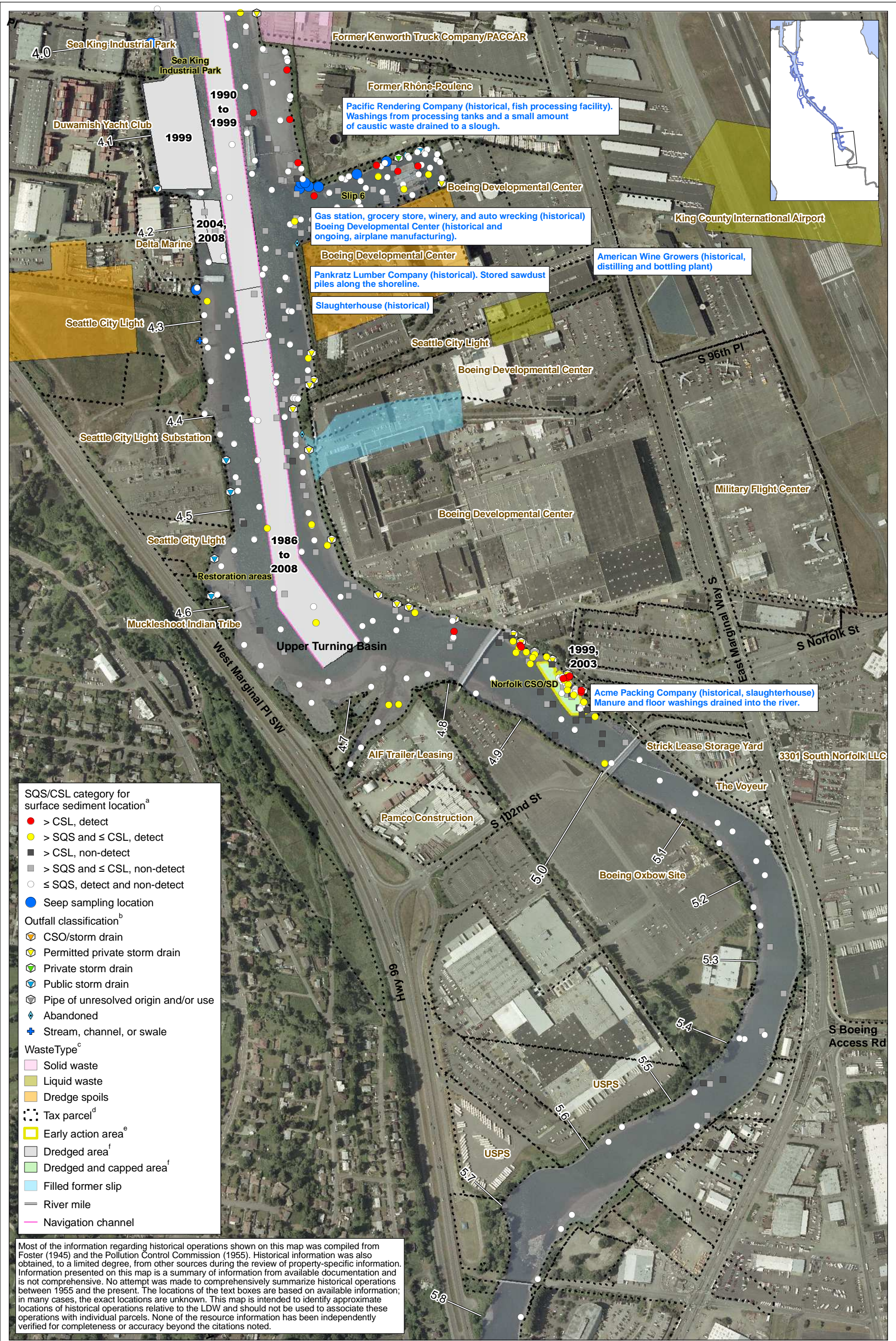


Photo source: "USGS High Resolution Orthoimage, Seattle/Tacoma, WA, United States Geological Survey, 2003. Distributed by King County GIS. Photo date 06/11/2002."
 a. When OC-normalization was not appropriate because TOC content was < 0.5% or > 4.0%, dry weight concentrations for these locations are compared instead to the LAET and 2LAET.
 b. Outfalls shown were identified during a City of Seattle low-tide survey in 2003 (Herrera 2004). Some locations were initially identified using drainage maps from Ecology's National Pollutant Discharge Elimination System (NPDES) permit files and other relevant agency databases. These locations were later surveyed in the field. Review of agency files and interviews with agency and LDWG personnel provided additional outfall-specific information. Some locations were field-verified by LDWG members; some additional outfall locations were identified during these subsequent verifications. The outfall layer is meant to serve as a snapshot of outfall conditions at the time the survey was completed (2003). More recent information, when available, is reflected in the outfall discussions in Appendix I.
 c. Sweet Edwards 1985. Duwamish groundwater study. Prepared for Municipality of Metropolitan Seattle, Sweet, Edwards and Associates, Inc. and Harper-Owes Company, Seattle, WA
 d. Tax parcel information was provided in 2008 by Seattle Public Utilities and King County. Some tax parcel polygons were edited to conform to the LDW shoreline presentation. A comprehensive survey of property-owner records was not conducted. Names represent tenant/operator or owner.
 e. Several of the EAA boundaries are approximate and have not been finalized by EPA/ Ecology; a description of each EAA boundary is presented in Section 9.2.2.
 f. For the Duwamish/Diagonal Early Action Area, surface sediment data in the baseline dataset represent samples collected before dredging/capping in 2003/2004, or thin-layer placement in 2005. For other dredged areas, surface sediment data were collected after dredging. Subsurface sediment data in dredged areas were collected prior to dredging. Dredging information provided by AECOM. Year shown represents dredge year.



- SQS/CSL category for surface sediment location^a**
- > CSL, detect
 - > SQS and ≤ CSL, detect
 - > CSL, non-detect
 - > SQS and ≤ CSL, non-detect
 - ≤ SQS, detect and non-detect
 - Seep sampling location
- Outfall classification^b**
- ◆ CSO/storm drain
 - ◆ Permitted private storm drain
 - ◆ Private storm drain
 - ◆ Public storm drain
 - ◆ Pipe of unresolved origin and/or use
 - ◆ Abandoned
 - ◆ Stream, channel, or swale
- WasteType^c**
- Solid waste
 - Liquid waste
 - Dredge spoils
- Tax parcel^d**
- Early action area^e
 - Dredged area^f
 - Dredged and capped area^f
 - Filled former slip
- Other symbols:**
- River mile
 - Navigation channel

Most of the information regarding historical operations shown on this map was compiled from Foster (1945) and the Pollution Control Commission (1955). Historical information was also obtained, to a limited degree, from other sources during the review of property-specific information. Information presented on this map is a summary of information from available documentation and is not comprehensive. No attempt was made to comprehensively summarize historical operations between 1955 and the present. The locations of the text boxes are based on available information; in many cases, the exact locations are unknown. This map is intended to identify approximate locations of historical operations relative to the LDW and should not be used to associate these operations with individual parcels. None of the resource information has been independently verified for completeness or accuracy beyond the citations noted.



Map 9-4d. Selected historical operations near the LDW, RM 4.1 to RM 5.8

Photo source: "USGS High Resolution Orthoimage, Seattle/Tacoma, WA", United States Geological Survey, 2003. Distributed by King County GIS. Photo date 06/11/2002.

^a When OC-normalization was not appropriate because TOC content was < 0.5% or > 4.0%, dry weight concentrations for these locations are compared instead to the LAET and 2LAET.

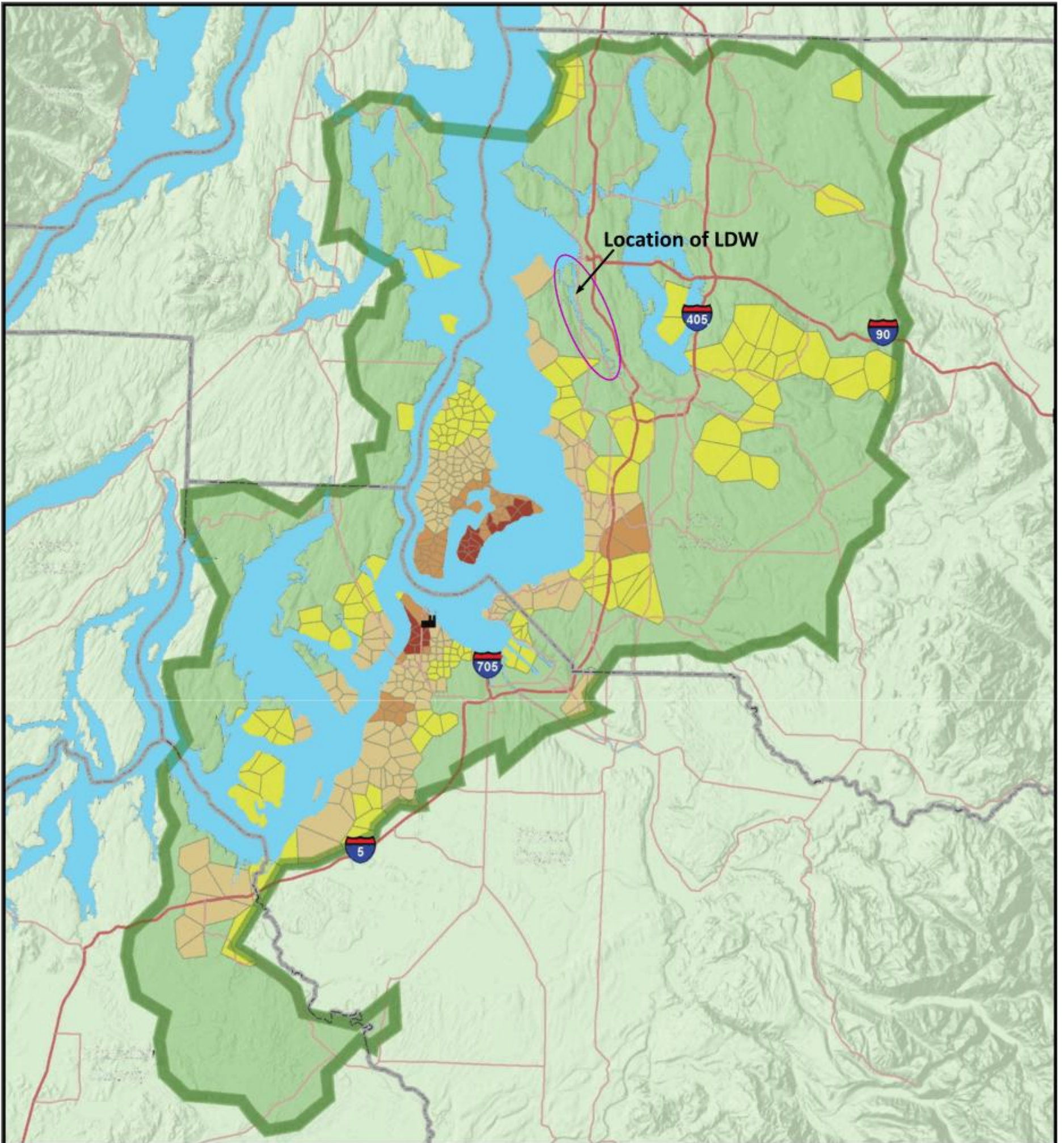
^b Outfalls shown were identified during a City of Seattle low-tide survey in 2003 (Herrera 2004). Some locations were initially identified using drainage maps from Ecology's National Pollutant Discharge Elimination System (NPDES) permit files and other relevant agency databases. These locations were later surveyed in the field. Review of agency files and interviews with agency and LDWG personnel provided additional outfall-specific information. Some locations were field-verified by LDWG members; some additional outfall locations were identified during these subsequent verifications. The outfall layer is meant to serve as a snapshot of outfall conditions at the time the survey was completed (2003). More recent information, when available, is reflected in the outfall discussions in Appendix I.

^c Sweet Edwards 1985. Duwamish groundwater study. Prepared for Municipality of Metropolitan Seattle, Sweet, Edwards and Associates, Inc. and Harper-Owes Company, Seattle, WA

^d Tax parcel information was provided in 2008 by Seattle Public Utilities and King County. Some tax parcel polygons were edited to conform to the LDW shoreline presentation. A comprehensive survey of property-owner records was not conducted. Names represent tenant/operator or owner.

^e Several of the EAA boundaries are approximate and have not been finalized by EPA/Ecology; a description of each EAA boundary is presented in Section 9.2.

^f For the Duwamish/Diagonal Early Action Area, surface sediment data in the baseline dataset represent samples collected before dredging/capping in 2003/2004, or thin-layer placement in 2005. For other dredged areas, surface sediment data were collected after dredging. Subsurface sediment data in dredged areas were collected prior to dredging. Dredging information provided by AECOM. Year shown represents dredge year.



Adapted from Ecology (2007)

Legend

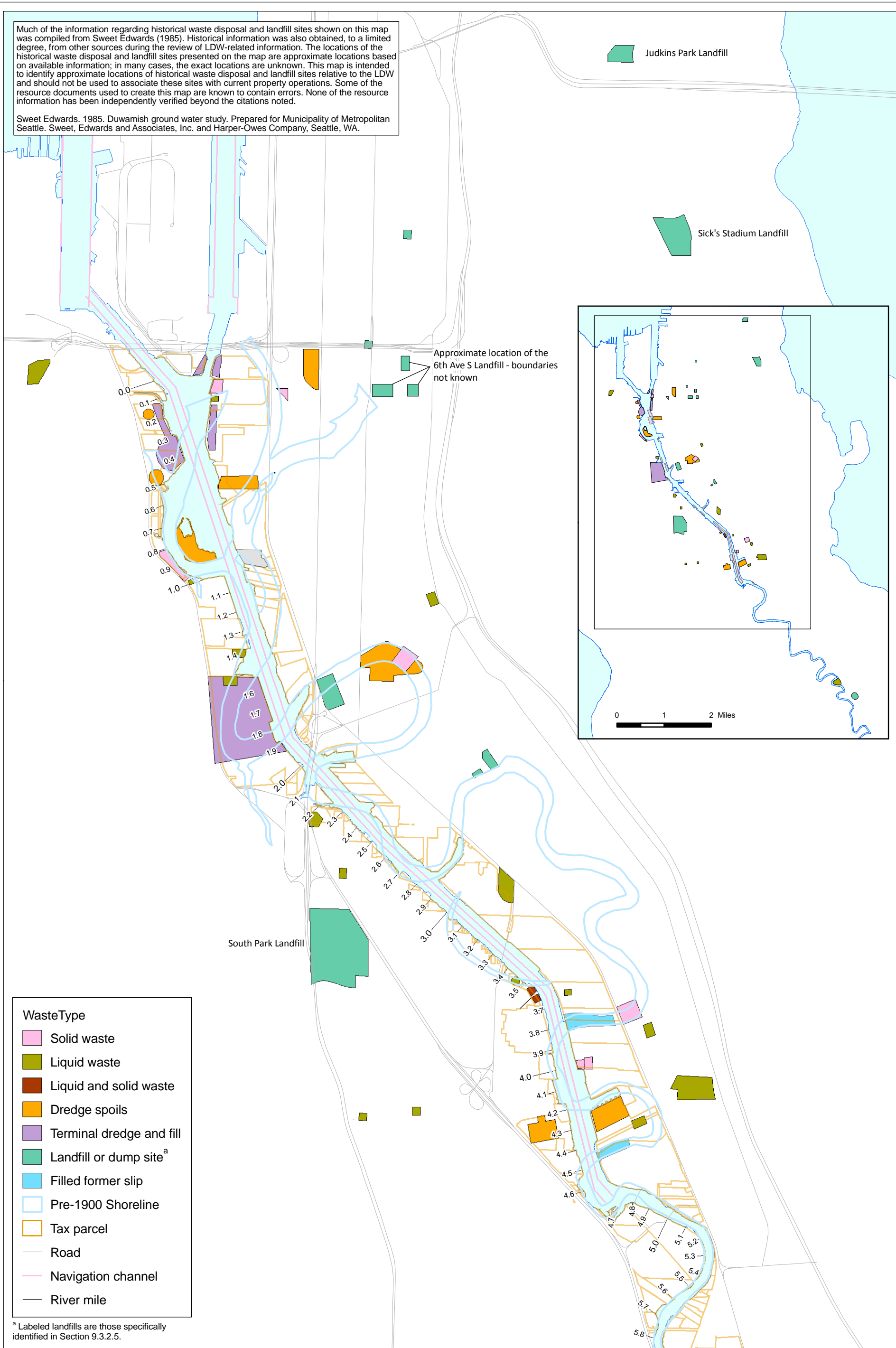
Arsenic concentrations in soil,
0 to 6 in. (mg/kg dw)

- 20.1 to 40.0
- 40.1 to 100.0
- 100.1 to 200.0
- > 200

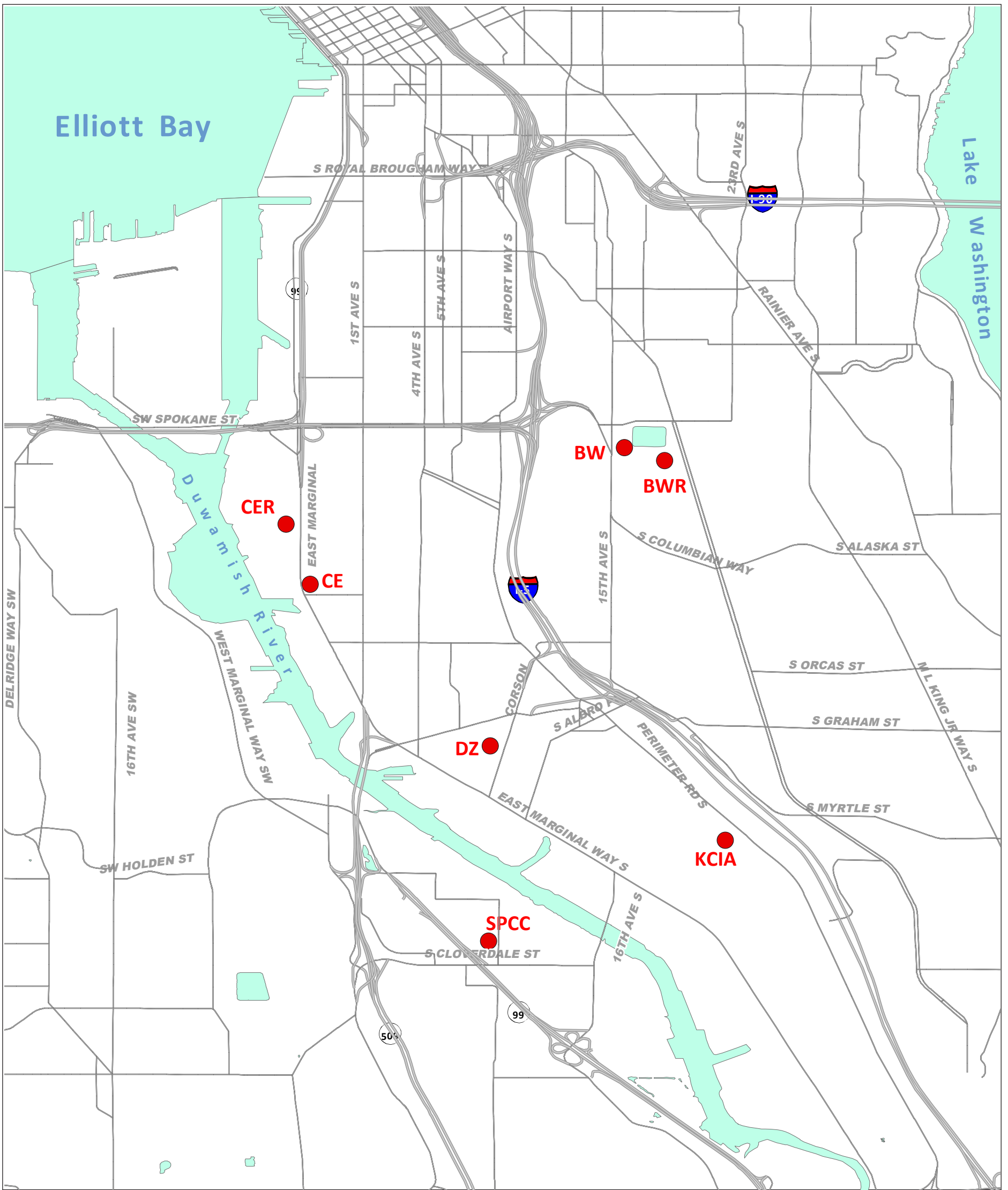
- Toxic smelter plume study area
- Stack
- County boundary
- Interstate highway
- Highway

Much of the information regarding historical waste disposal and landfill sites shown on this map was compiled from Sweet Edwards (1985). Historical information was also obtained, to a limited degree, from other sources during the review of LDW-related information. The locations of the historical waste disposal and landfill sites presented on the map are approximate locations based on available information; in many cases, the exact locations are unknown. This map is intended to identify approximate locations of historical waste disposal and landfill sites relative to the LDW and should not be used to associate these sites with current property operations. Some of the resource documents used to create this map are known to contain errors. None of the resource information has been independently verified beyond the citations noted.

Sweet Edwards, 1985. Duwamish ground water study. Prepared for Municipality of Metropolitan Seattle. Sweet, Edwards and Associates, Inc. and Harper-Owes Company, Seattle, WA.



Map 9-6. Historical waste disposal sites and landfills within the LDW summation area as identified by Sweet Edwards (1985)

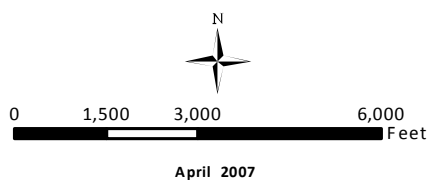


Source: King County (2008b)

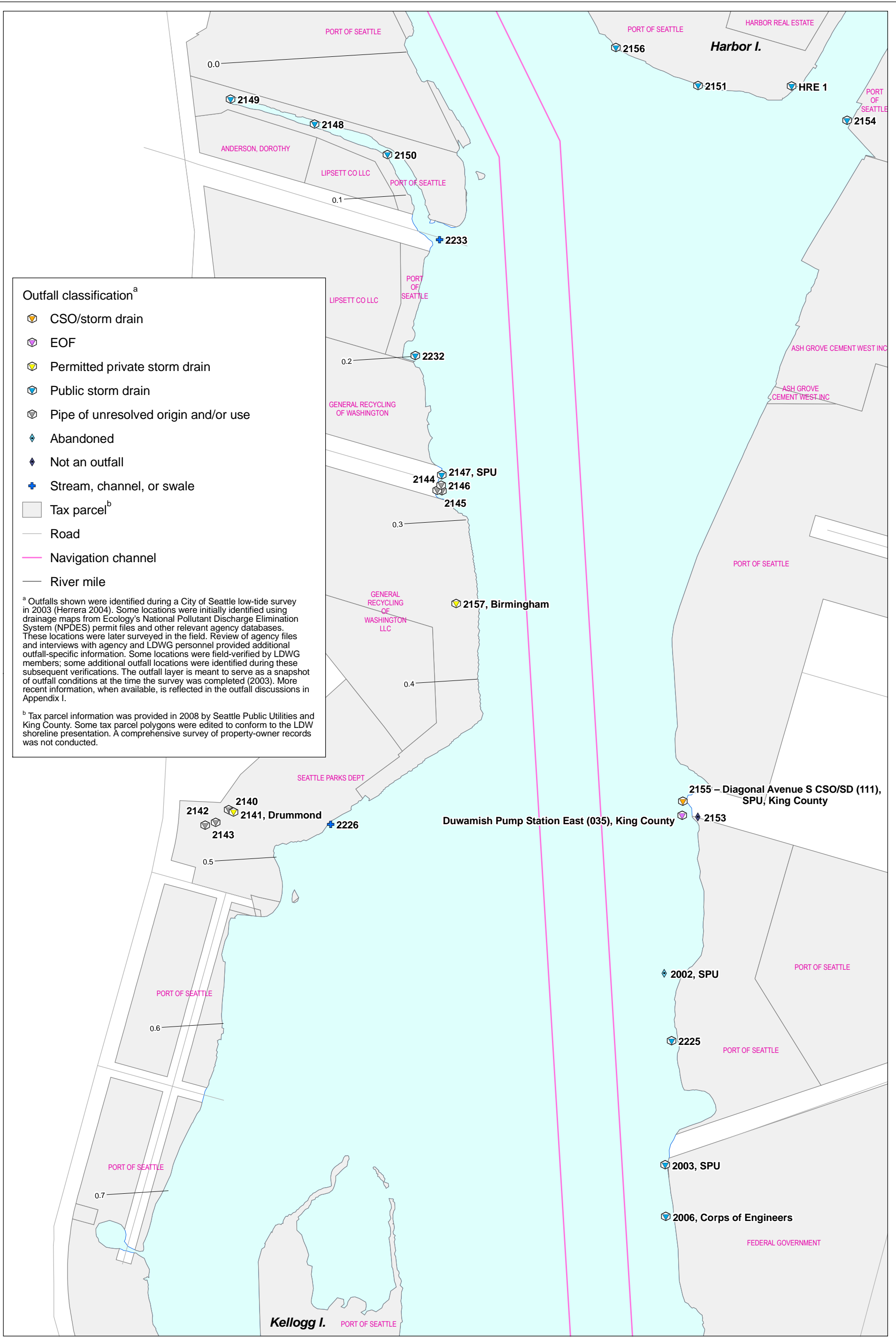
Legend

- - Atmospheric deposition monitoring station
- BW - Beacon Hill
- BWR - Relocated Beacon Hill
- CE - Duwamish Valley/E Marginal Way S
- CER - Relocated Duwamish Valley/E Marginal Way S
- DZ - Georgetown
- KCIA - King County International Airport
- SPCC - South Park Community Center

The information included on this map has been compiled from a variety of sources and is subject to change without notice. King County makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. King County shall not be liable for any general, special, indirect, incidental, or consequential damages including, but not limited to, lost revenues or lost profits resulting from the use or misuse of the information contained on this map. Any sale of this map or information on this map is prohibited except by written permission of King County.



Map 9-7. King County atmospheric deposition monitoring stations



Outfall classification^a

- CSO/storm drain
- EOF
- Permitted private storm drain
- Public storm drain
- Pipe of unresolved origin and/or use
- Abandoned
- Not an outfall
- Stream, channel, or swale

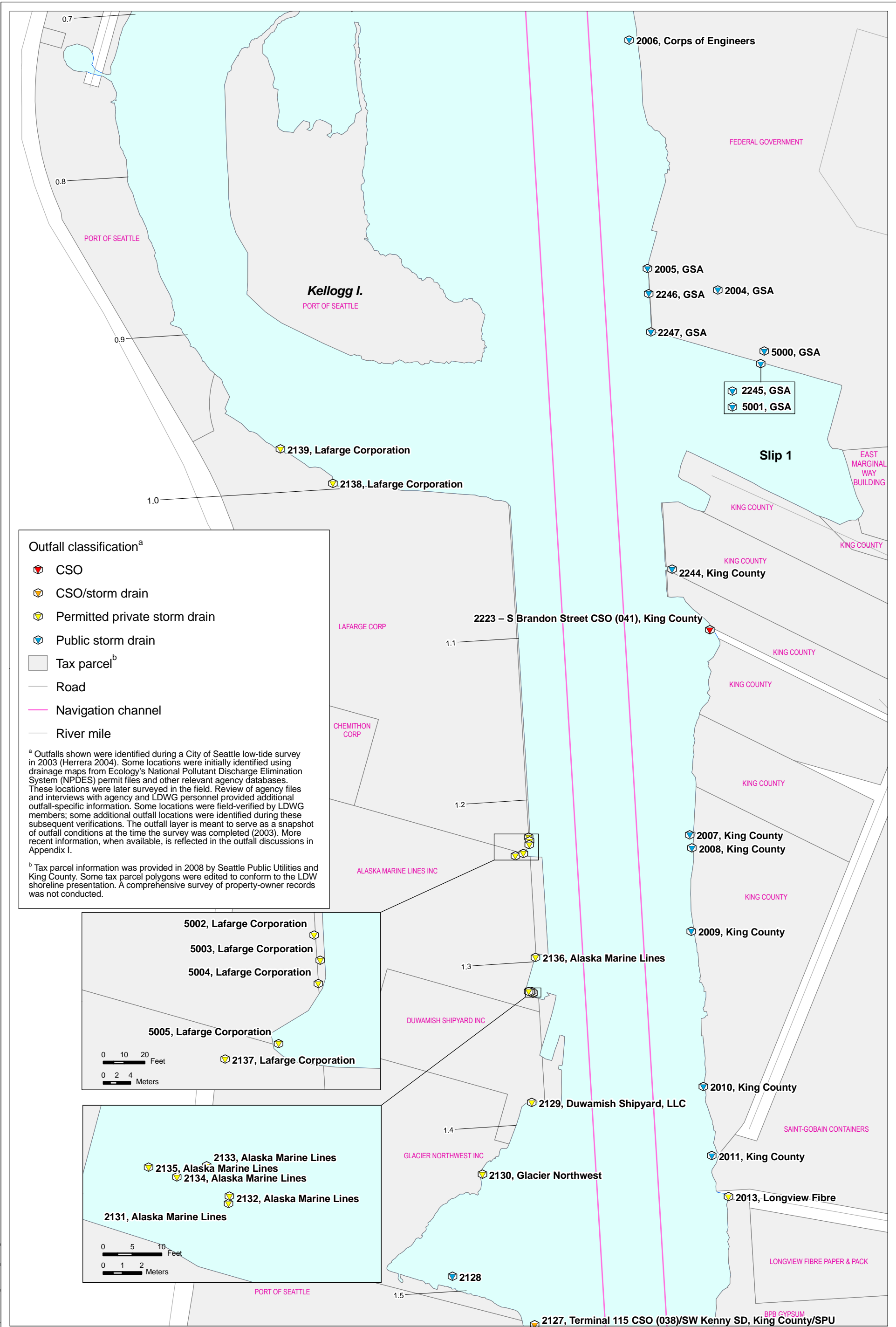
Other symbols:

- Tax parcel^b
- Road
- Navigation channel
- River mile

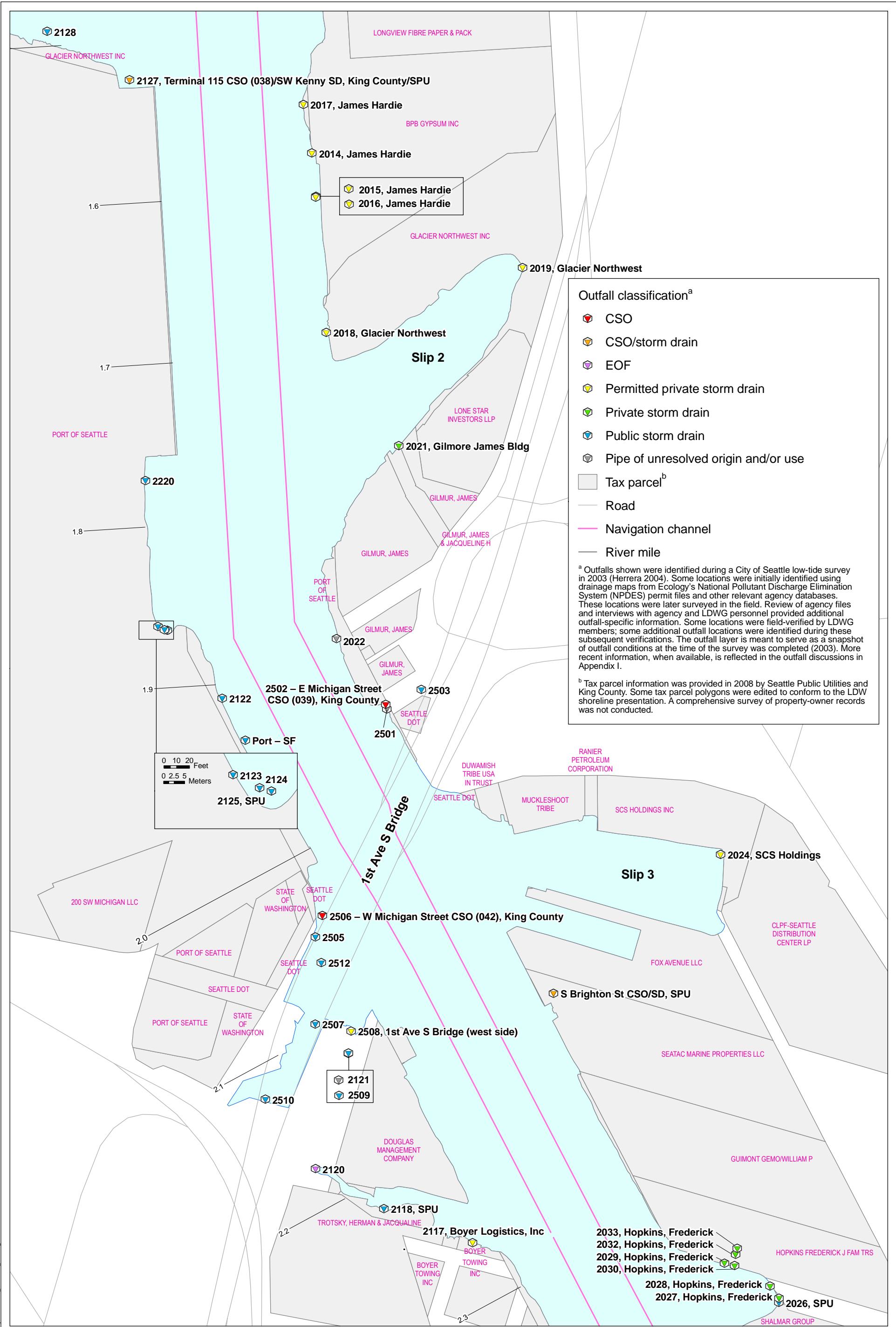
^a Outfalls shown were identified during a City of Seattle low-tide survey in 2003 (Herrera 2004). Some locations were initially identified using drainage maps from Ecology's National Pollutant Discharge Elimination System (NPDES) permit files and other relevant agency databases. These locations were later surveyed in the field. Review of agency files and interviews with agency and LDWG personnel provided additional outfall-specific information. Some locations were field-verified by LDWG members; some additional outfall locations were identified during these subsequent verifications. The outfall layer is meant to serve as a snapshot of outfall conditions at the time the survey was completed (2003). More recent information, when available, is reflected in the outfall discussions in Appendix I.

^b Tax parcel information was provided in 2008 by Seattle Public Utilities and King County. Some tax parcel polygons were edited to conform to the LDW shoreline presentation. A comprehensive survey of property-owner records was not conducted.

Map 9-8a. Outfall locations and ownership, RM 0.0 to RM 0.7



Prepared by CEH, 07/15/2010, MAP 2720: W:\Projects\00\09\06_Duwamish_River\Map\Phase2_R1\Source_Control\Section 9



Outfall classification^a

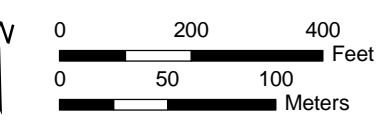
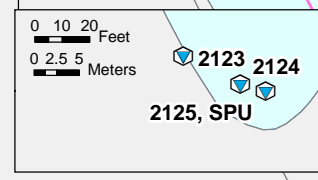
- CSO
- CSO/storm drain
- EOF
- Permitted private storm drain
- Private storm drain
- Public storm drain
- Pipe of unresolved origin and/or use

Other symbols:

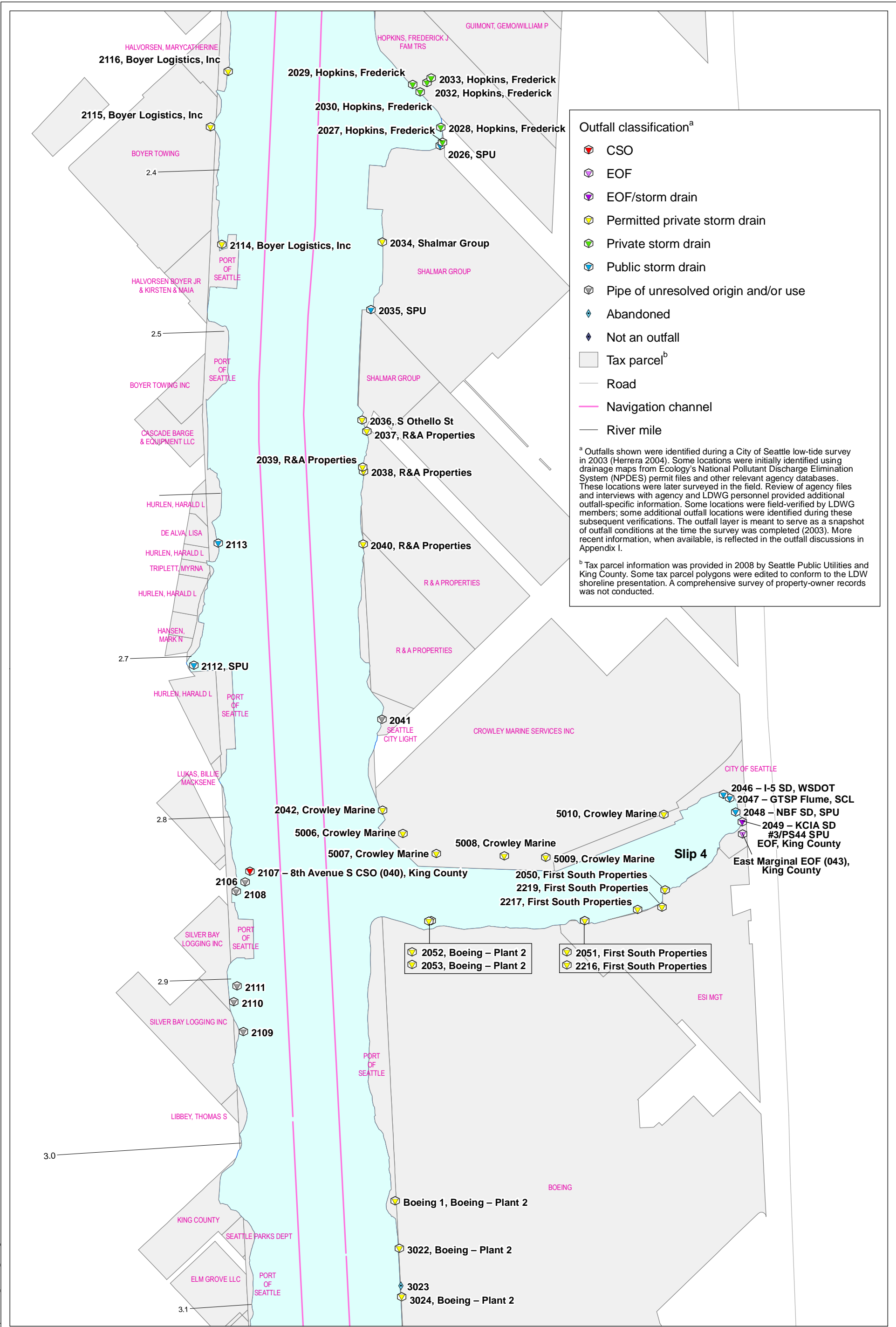
- Tax parcel^b
- Road
- Navigation channel
- River mile

^a Outfalls shown were identified during a City of Seattle low-tide survey in 2003 (Herrera 2004). Some locations were initially identified using drainage maps from Ecology's National Pollutant Discharge Elimination System (NPDES) permit files and other relevant agency databases. These locations were later surveyed in the field. Review of agency files and interviews with agency and LDWG personnel provided additional outfall-specific information. Some locations were field-verified by LDWG members; some additional outfall locations were identified during these subsequent verifications. The outfall layer is meant to serve as a snapshot of outfall conditions at the time of the survey was completed (2003). More recent information, when available, is reflected in the outfall discussions in Appendix I.

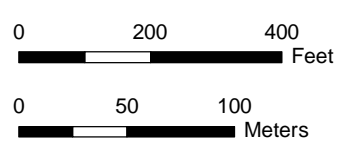
^b Tax parcel information was provided in 2008 by Seattle Public Utilities and King County. Some tax parcel polygons were edited to conform to the LDWG shoreline presentation. A comprehensive survey of property-owner records was not conducted.



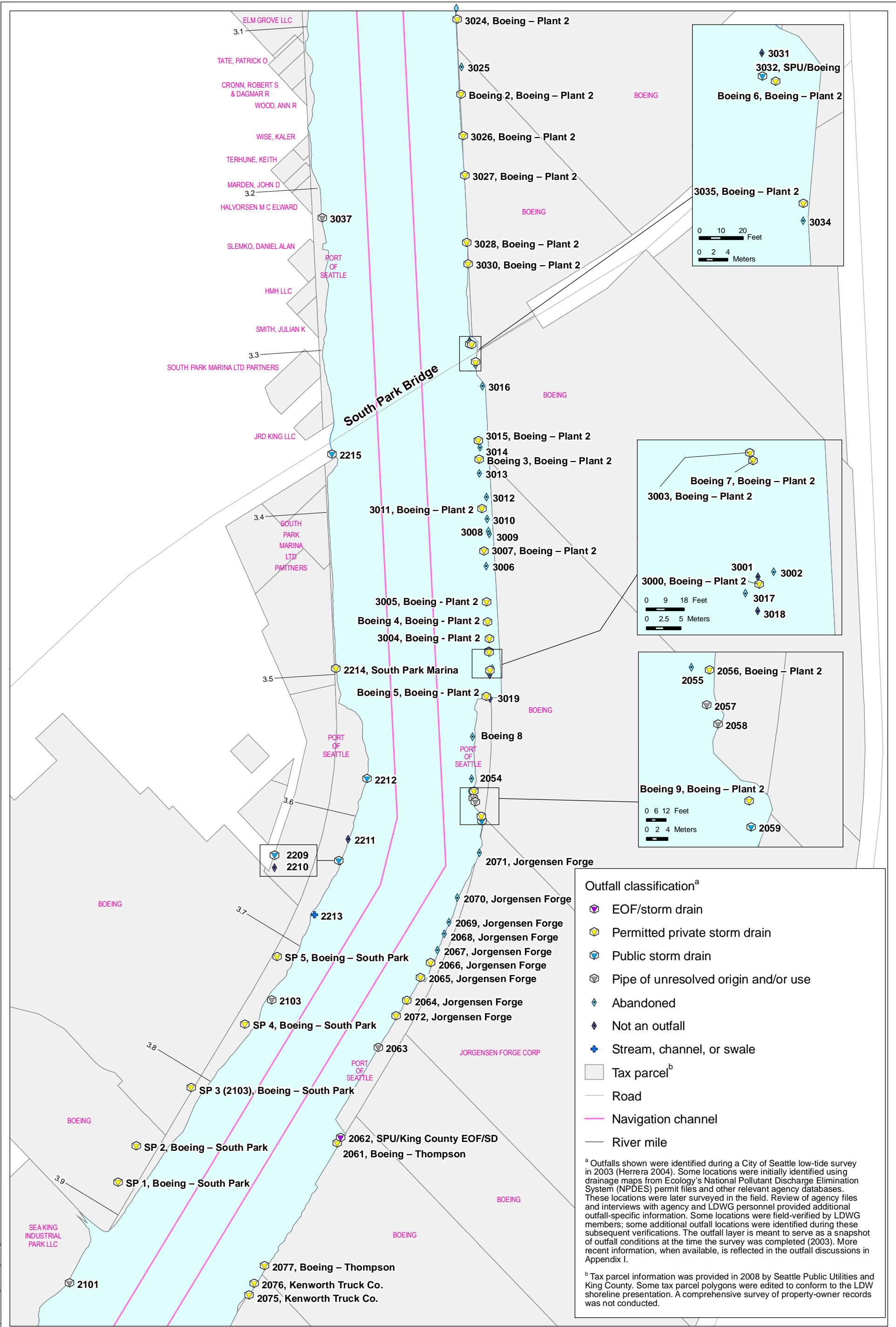
Map 9-8c. Outfall locations and ownership, RM 1.5 to RM 2.3



Prepared by CEH, 07/15/2010, MAP 27.20, W:\Projects\00-08-06_Duwanish_R\Map\Phase2_RI\Source_Control\Section 9



Map 9-8d. Outfall locations and ownership, RM 2.4 to RM 3.1



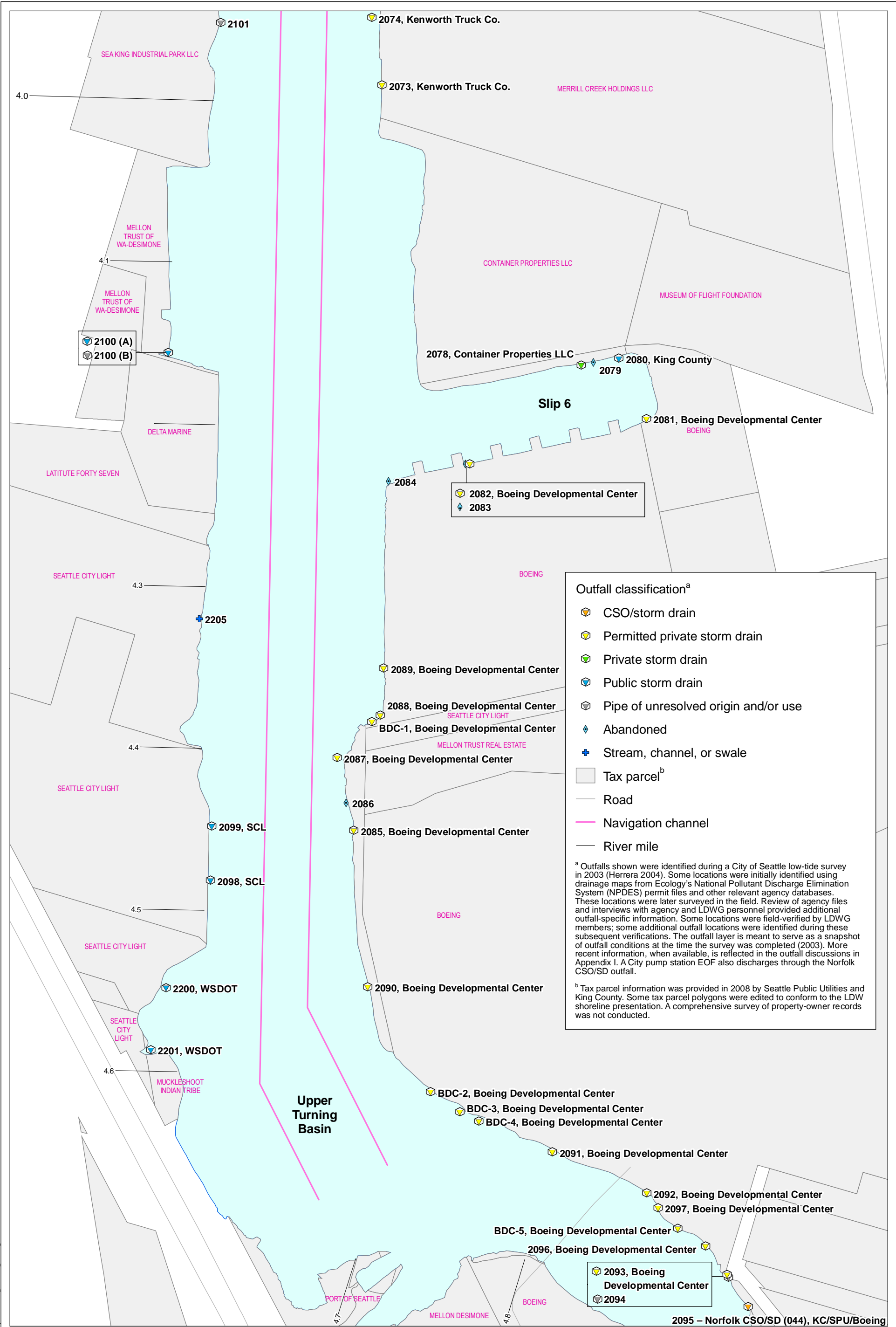
Outfall classification^a

- EOF/storm drain
- Permitted private storm drain
- Public storm drain
- Pipe of unresolved origin and/or use
- Abandoned
- Not an outfall
- Stream, channel, or swale
- Tax parcel^b
- Road
- Navigation channel
- River mile

^a Outfalls shown were identified during a City of Seattle low-tide survey in 2003 (Herrera 2004). Some locations were initially identified using drainage maps from Ecology's National Pollutant Discharge Elimination System (NPDES) permit files and other relevant agency databases. These locations were later surveyed in the field. Review of agency files and interviews with agency and LDWG personnel provided additional outfall-specific information. Some locations were field-verified by LDWG members; some additional outfall locations were identified during these subsequent verifications. The outfall layer is meant to serve as a snapshot of outfall conditions at the time the survey was completed (2003). More recent information, when available, is reflected in the outfall discussions in Appendix I.

^b Tax parcel information was provided in 2008 by Seattle Public Utilities and King County. Some tax parcel polygons were edited to conform to the LDW shoreline presentation. A comprehensive survey of property-owner records was not conducted.

Map 9-8e. Outfall locations and ownership, RM 3.1 to RM 3.9



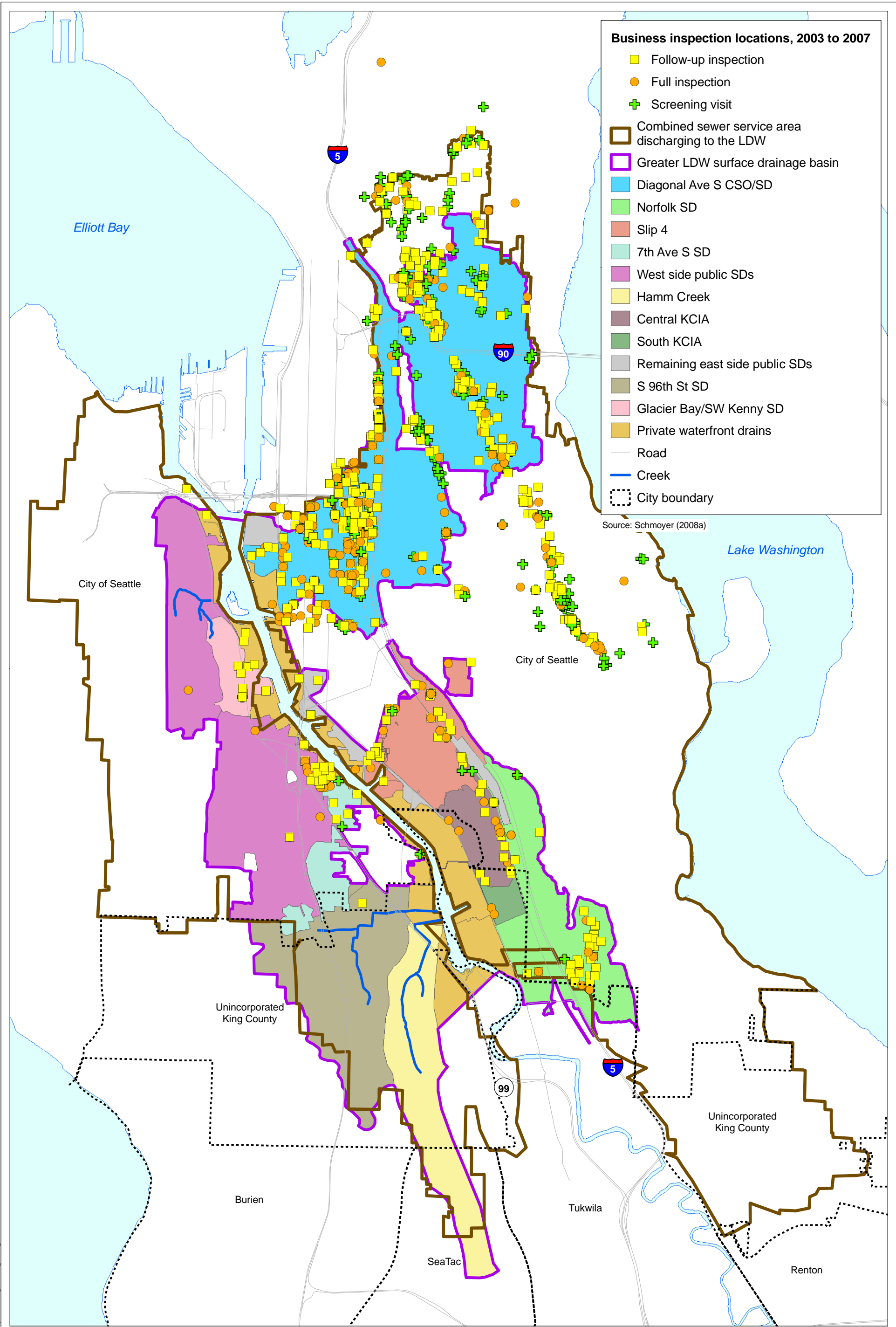
Outfall classification^a

- CSO/storm drain
- Permitted private storm drain
- Private storm drain
- Public storm drain
- Pipe of unresolved origin and/or use
- Abandoned
- Stream, channel, or swale
- Tax parcel^b
- Road
- Navigation channel
- River mile

^a Outfalls shown were identified during a City of Seattle low-tide survey in 2003 (Herrera 2004). Some locations were initially identified using drainage maps from Ecology's National Pollutant Discharge Elimination System (NPDES) permit files and other relevant agency databases. These locations were later surveyed in the field. Review of agency files and interviews with agency and LDWG personnel provided additional outfall-specific information. Some locations were field-verified by LDWG members; some additional outfall locations were identified during these subsequent verifications. The outfall layer is meant to serve as a snapshot of outfall conditions at the time the survey was completed (2003). More recent information, when available, is reflected in the outfall discussions in Appendix I. A City pump station EOF also discharges through the Norfolk CSO/SD outfall.

^b Tax parcel information was provided in 2008 by Seattle Public Utilities and King County. Some tax parcel polygons were edited to conform to the LDW shoreline presentation. A comprehensive survey of property-owner records was not conducted.

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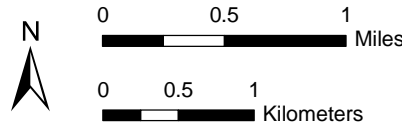


Business inspection locations, 2003 to 2007

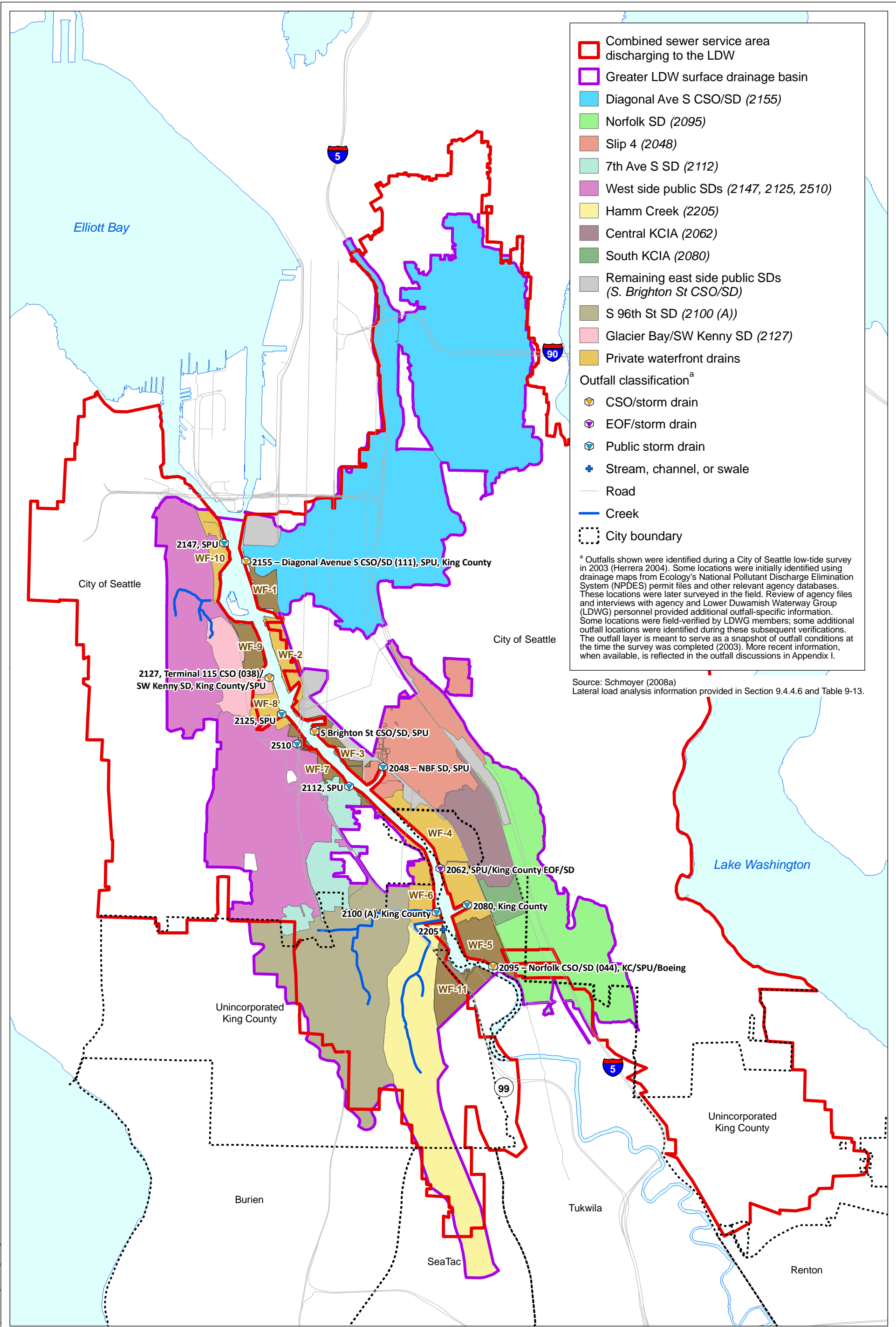
- Follow-up inspection
- Full inspection
- + Screening visit
- Combined sewer service area discharging to the LDW
- Greater LDW surface drainage basin
- Diagonal Ave S CSO/SD
- Norfolk SD
- Slip 4
- 7th Ave S SD
- West side public SDs
- Hamm Creek
- Central KCIA
- South KCIA
- Remaining east side public SDs
- S 96th St SD
- Glacier Bay/SW Kenny SD
- Private waterfront drains
- Road
- Creek
- City boundary

Source: Schroyer (2008a)

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Map 9-9. Business inspections completed by SPU through December 2007



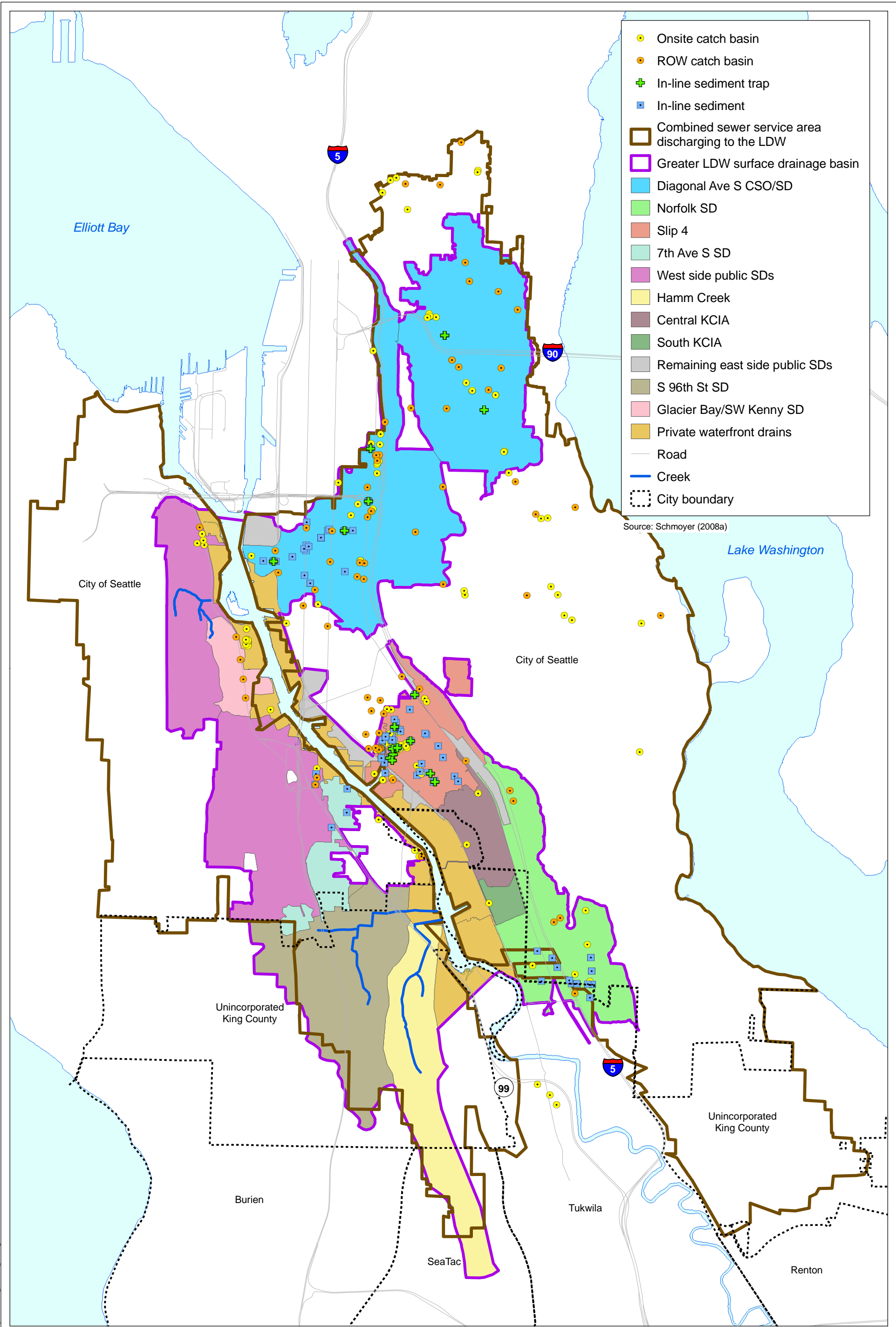
Combined sewer service area discharging to the LDW
 Greater LDW surface drainage basin
 Diagonal Ave S CSO/SD (2155)
 Norfolk SD (2095)
 Slip 4 (2048)
 7th Ave S SD (2112)
 West side public SDs (2147, 2125, 2510)
 Hamm Creek (2205)
 Central KCIA (2062)
 South KCIA (2080)
 Remaining east side public SDs (S. Brighton St CSO/SD)
 S 96th St SD (2100 (A))
 Glacier Bay/SW Kenny SD (2127)
 Private waterfront drains

Outfall classification^a
● CSO/storm drain
● EOF/storm drain
● Public storm drain
+ Stream, channel, or swale
 — Road
 — Creek
 City boundary

^a Outfalls shown were identified during a City of Seattle low-tide survey in 2003 (Herrera 2004). Some locations were initially identified using drainage maps from Ecology's National Pollutant Discharge Elimination System (NPDES) permit files and other relevant agency databases. These locations were later surveyed in the field. Review of agency files and interviews with agency and Lower Duwamish Waterway Group (LDWG) personnel provided additional outfall-specific information. Some locations were field-verified by LDWG members; some additional outfall locations were identified during these subsequent verifications. The outfall layer is meant to serve as a snapshot of outfall conditions at the time the survey was completed (2003). More recent information, when available, is reflected in the outfall discussions in Appendix I.

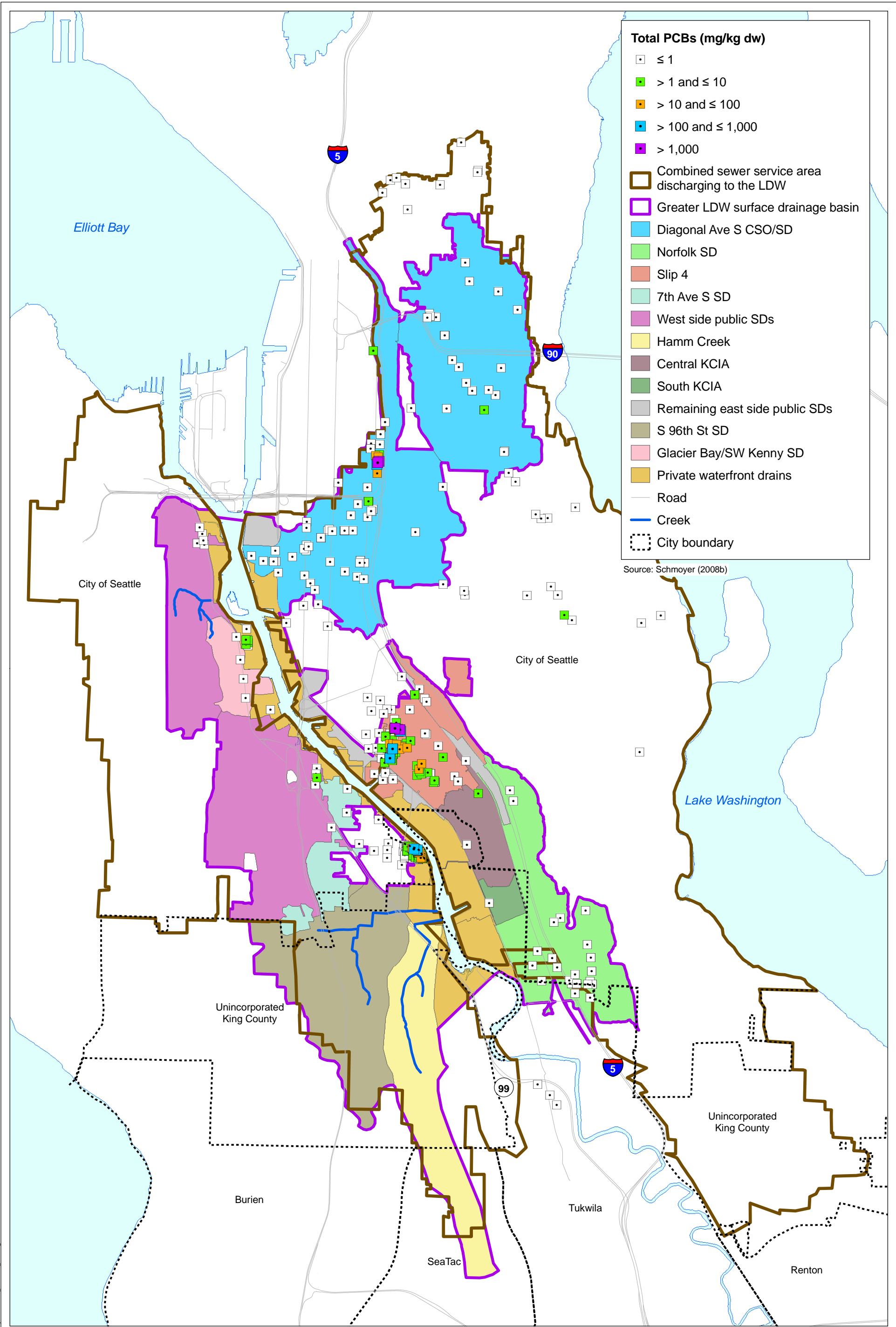
Source: Schmoyer (2008a)
 Lateral load analysis information provided in Section 9.4.4.6 and Table 9-13.

Map 9-10. Input locations for storm drain sub-basins in the lateral load analysis



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Map 9-11. Source-tracing program sampling locations through December 2007



Total PCBs (mg/kg dw)

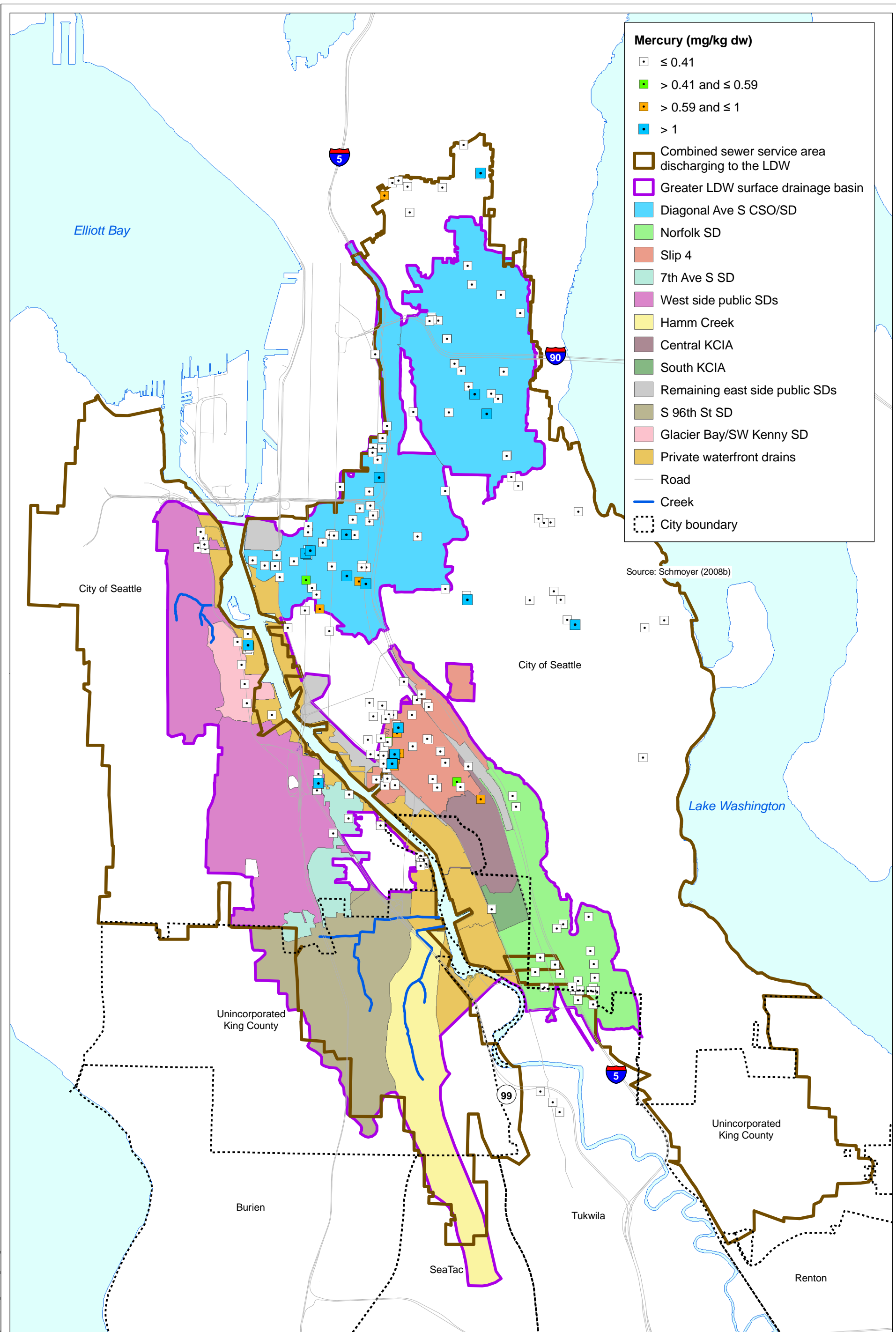
- ≤ 1
- > 1 and ≤ 10
- > 10 and ≤ 100
- > 100 and ≤ 1,000
- > 1,000

- ▭ Combined sewer service area discharging to the LDW
- ▭ Greater LDW surface drainage basin
- ▭ Diagonal Ave S CSO/SD
- ▭ Norfolk SD
- ▭ Slip 4
- ▭ 7th Ave S SD
- ▭ West side public SDs
- ▭ Hamm Creek
- ▭ Central KCIA
- ▭ South KCIA
- ▭ Remaining east side public SDs
- ▭ S 96th St SD
- ▭ Glacier Bay/SW Kenny SD
- ▭ Private waterfront drains
- Road
- Creek
- ⊘ City boundary

Source: Schroyer (2008b)

Map 9-12. Total PCB concentrations in source tracing sediment samples through December 2007

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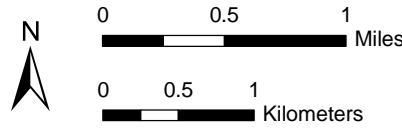
Mercury (mg/kg dw)

- ≤ 0.41
- > 0.41 and ≤ 0.59
- > 0.59 and ≤ 1
- > 1

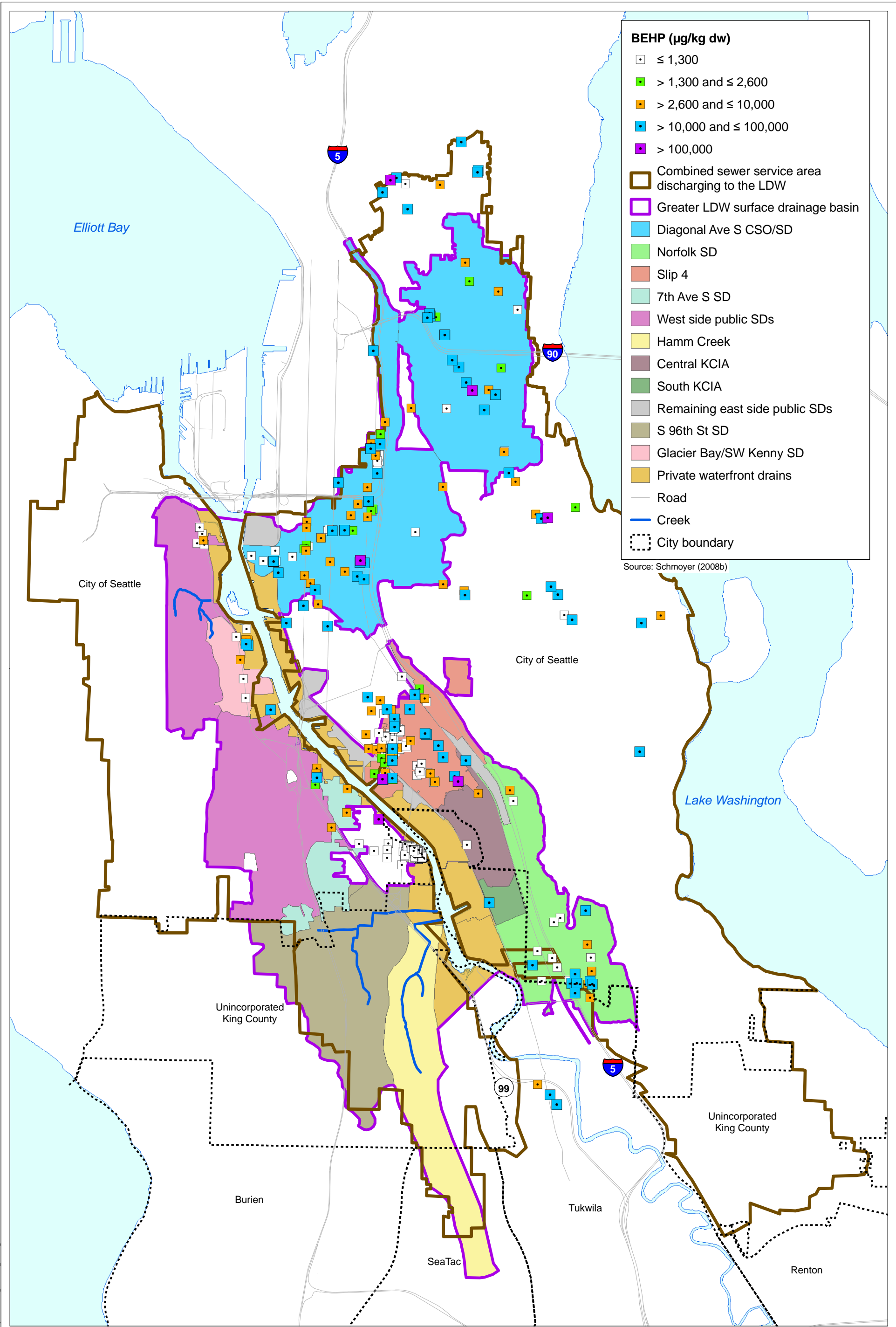
- ▭ Combined sewer service area discharging to the LDW
- ▭ Greater LDW surface drainage basin
- ▭ Diagonal Ave S CSO/SD
- ▭ Norfolk SD
- ▭ Slip 4
- ▭ 7th Ave S SD
- ▭ West side public SDs
- ▭ Hamm Creek
- ▭ Central KCIA
- ▭ South KCIA
- ▭ Remaining east side public SDs
- ▭ S 96th St SD
- ▭ Glacier Bay/SW Kenny SD
- ▭ Private waterfront drains
- Road
- Creek
- ⊘ City boundary

Source: Schmoyer (2008b)

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Map 9-13. Mercury concentrations in source tracing sediment samples through December 2007



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Map 9-14. BEHP concentrations in source tracing sediment samples through December 2007

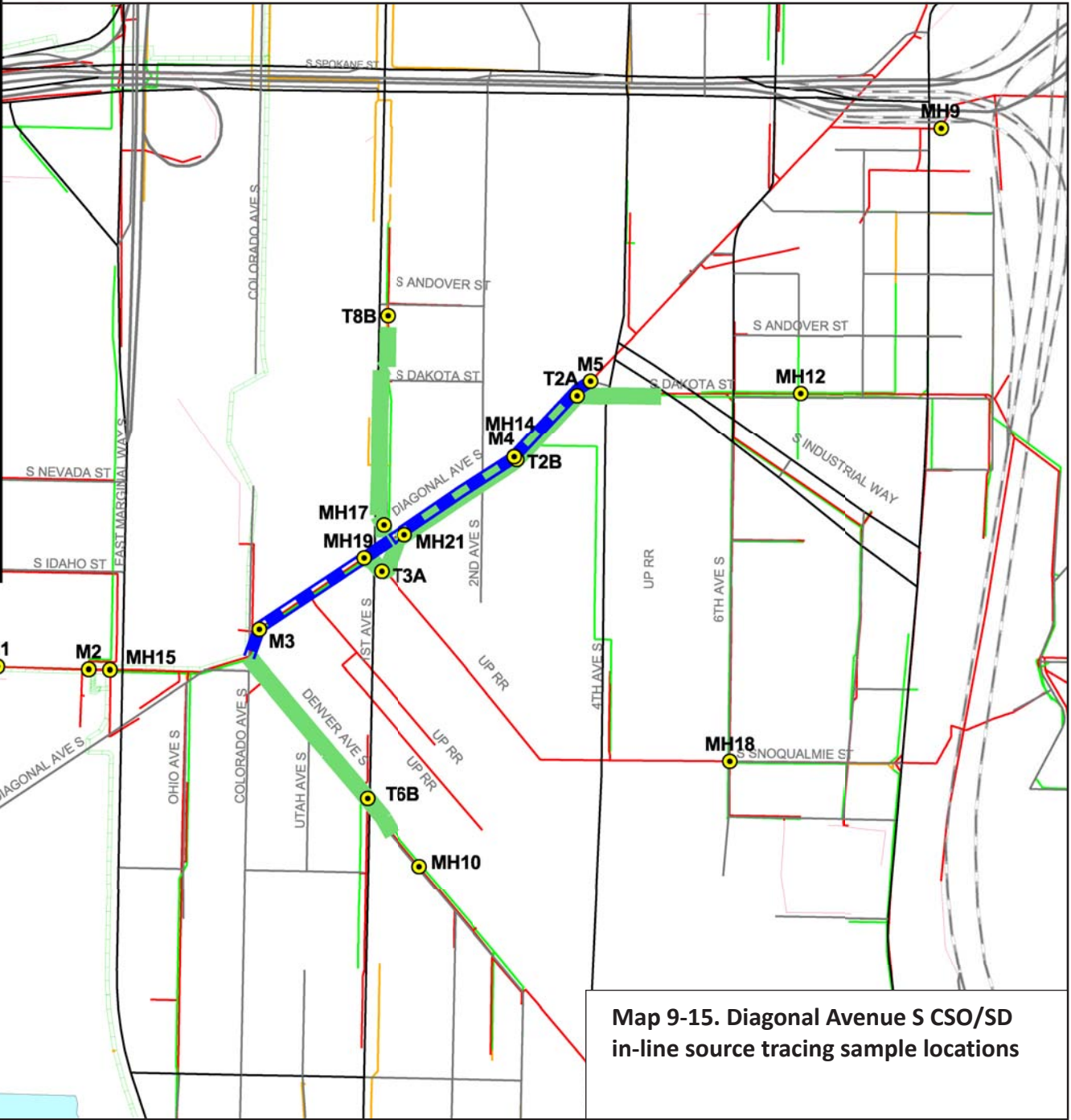
Legend

- Mainline cleaned
- Lateral line cleaned
- Storm drain
- Sanitary sewer
- Combined sewer
- King County interceptor
- Source tracing sample location

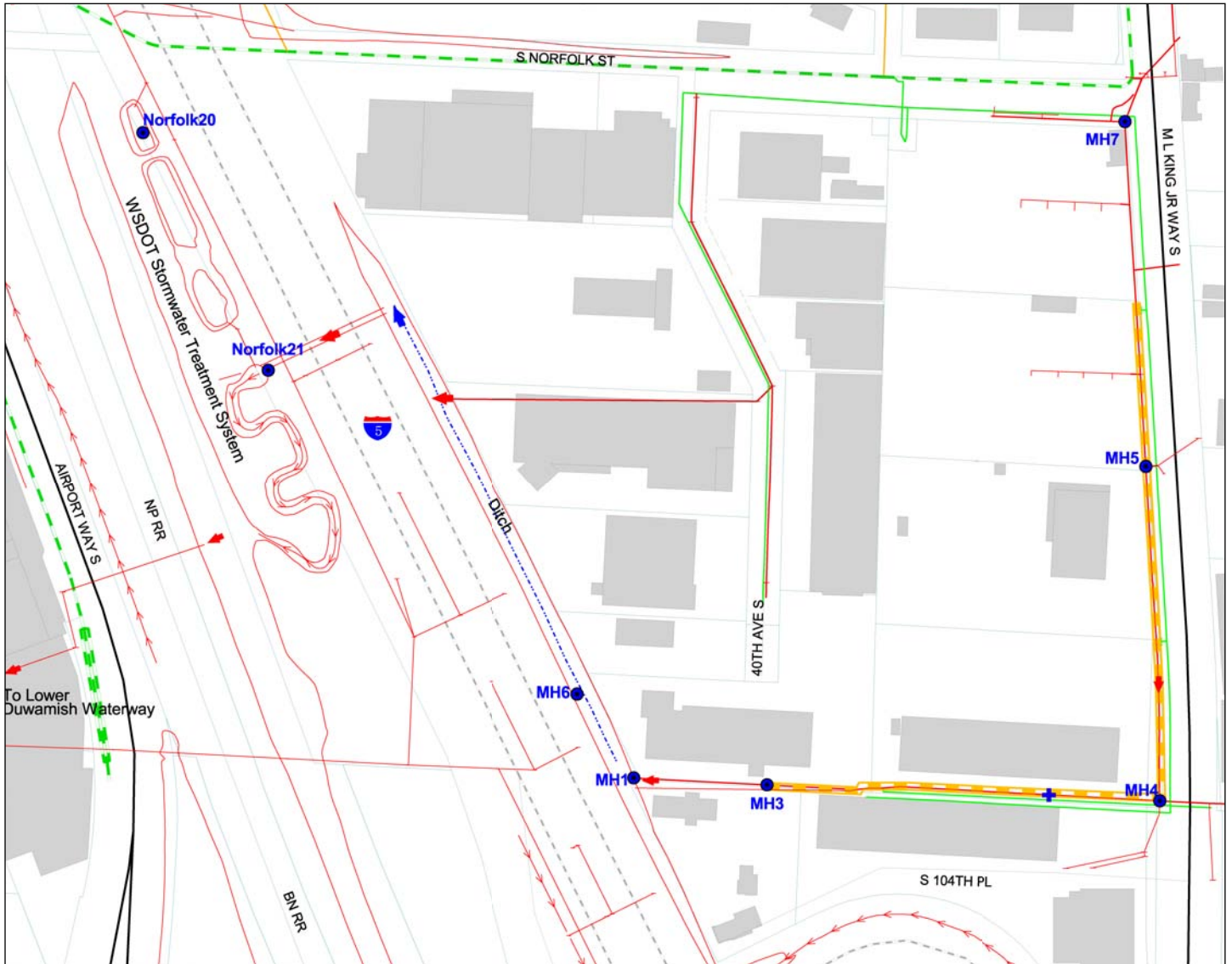
0.2 0 0.2 0.4 0.6 0.8 1 Miles

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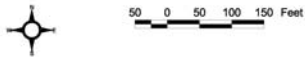


Map 9-15. Diagonal Avenue S CSO/SD in-line source tracing sample locations



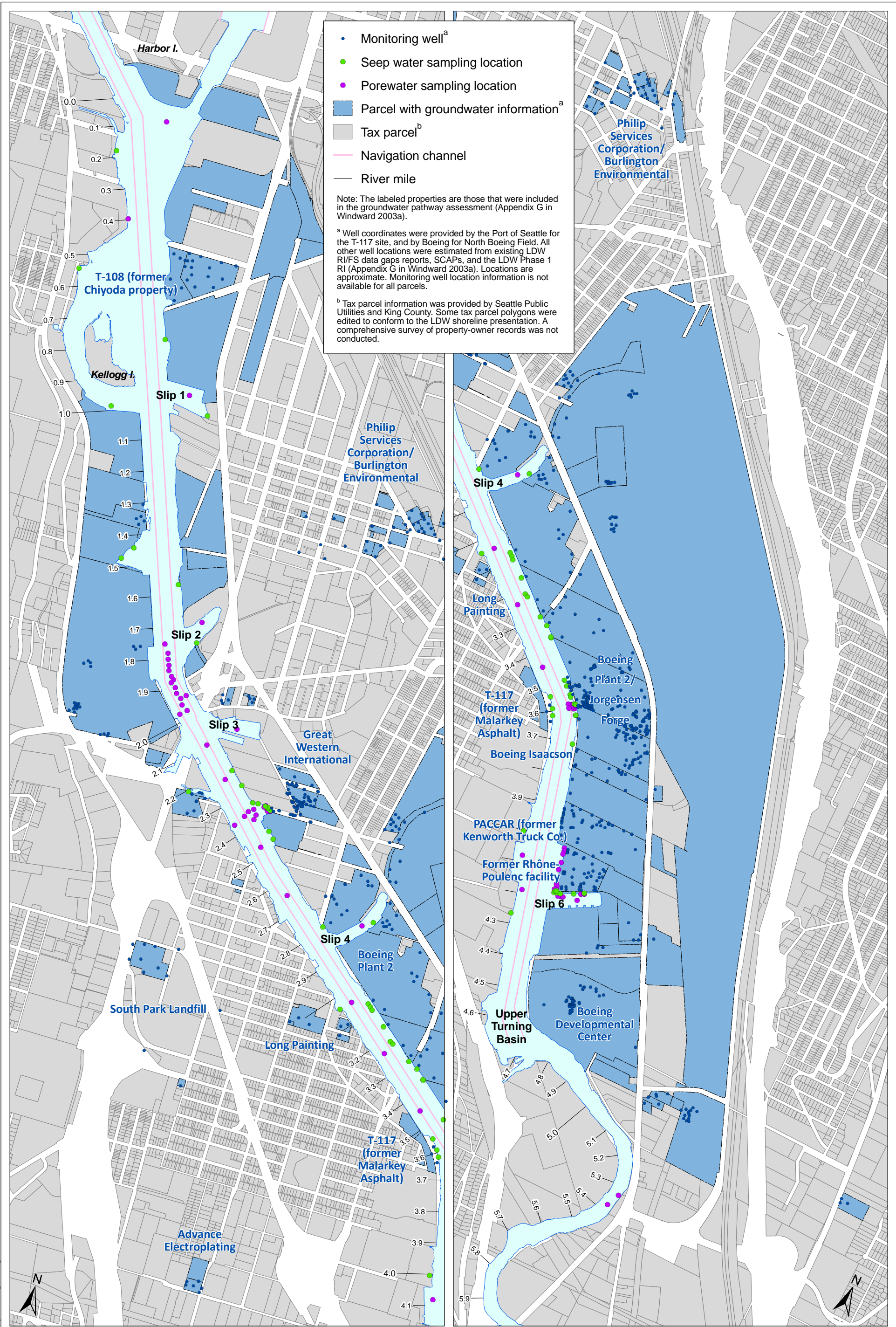
Legend

Streets	
	Arterial
	State Highway
	Interstate Freeway
	Parcel boundary
	Building
	Source tracing sample location
	Storm drain
	Sanitary sewer
	County interceptor
	Pipe cleaned in 2005



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Map 9-16. Storm drain source tracing sample locations in the Norfolk drainage basin



- Monitoring well^a
- Seep water sampling location
- Porewater sampling location
- Parcel with groundwater information^a
- Tax parcel^b
- Navigation channel
- River mile

Note: The labeled properties are those that were included in the groundwater pathway assessment (Appendix G in Windward 2003a).

^a Well coordinates were provided by the Port of Seattle for the T-117 site, and by Boeing for North Boeing Field. All other well locations were estimated from existing LDW RI/FS data gaps reports, SCAPs, and the LDW Phase 1 RI (Appendix G in Windward 2003a). Locations are approximate. Monitoring well location information is not available for all parcels.

^b Tax parcel information was provided by Seattle Public Utilities and King County. Some tax parcel polygons were edited to conform to the LDW shoreline presentation. A comprehensive survey of property-owner records was not conducted.

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Map 9-17. Properties with documented groundwater information