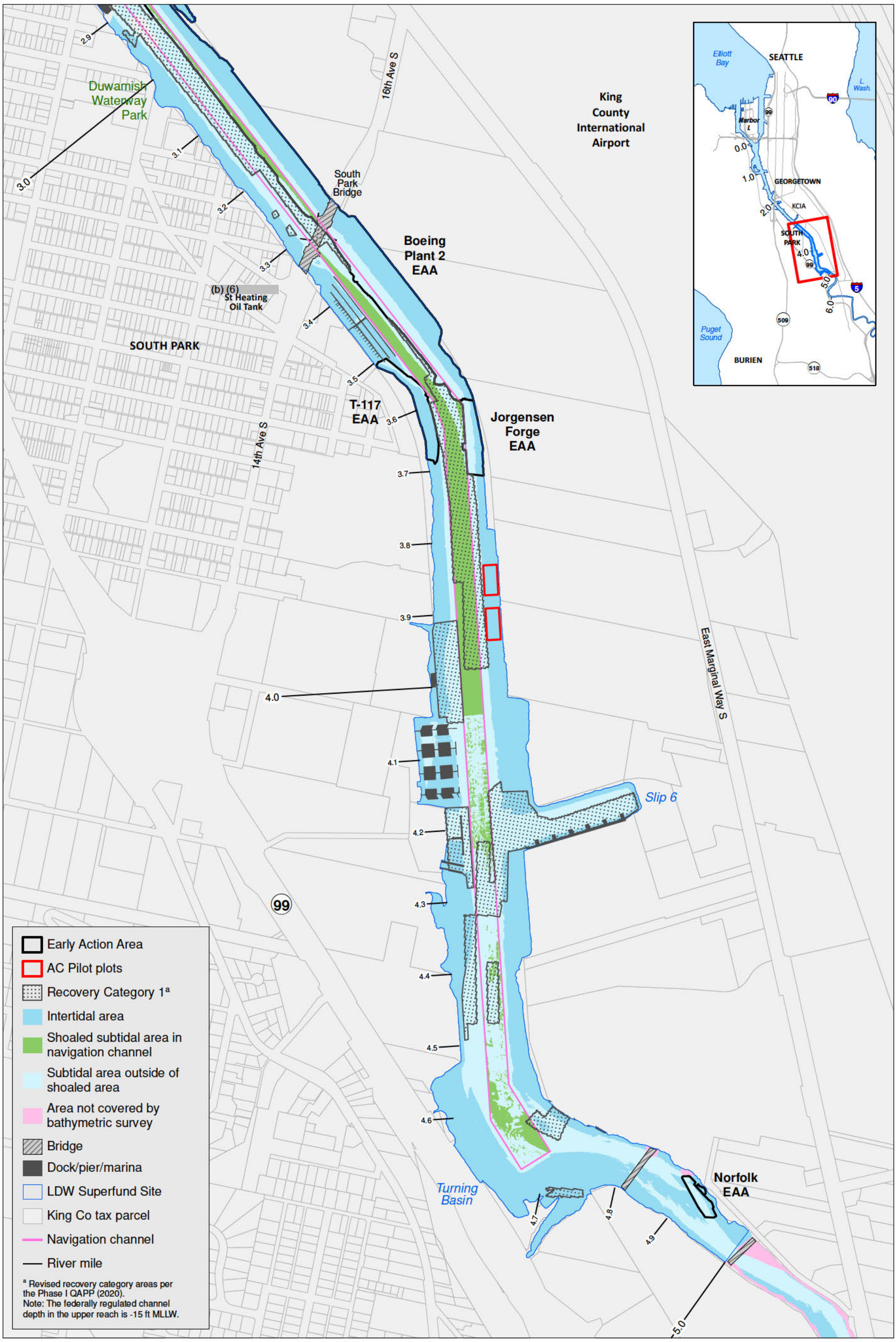

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Map 1-1. Upper reach of the Lower Duwamish Waterway

PRE-DESIGN INVESTIGATION PHASE II QAPP ADDENDUM FOR THE LDW UPPER REACH

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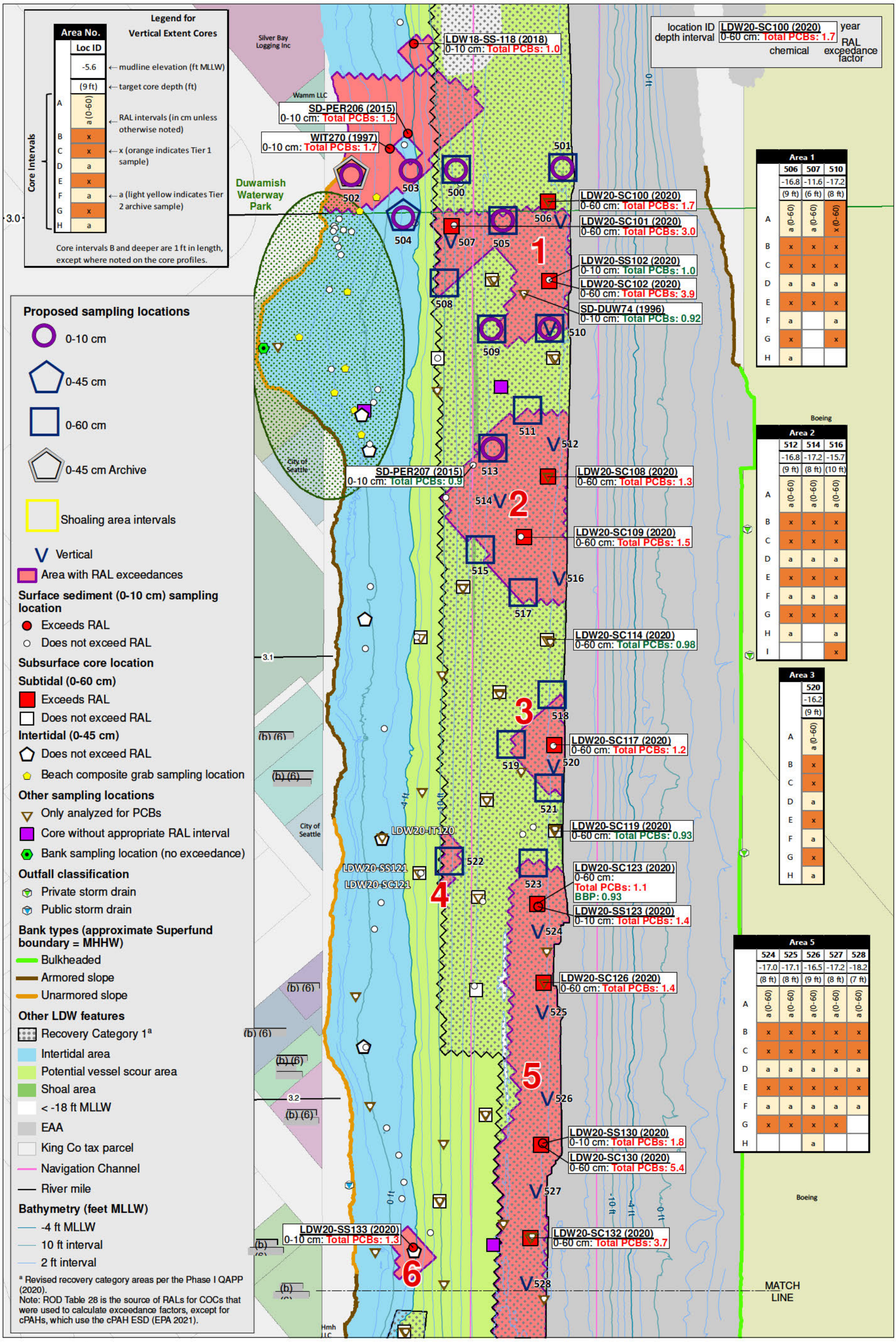

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0 100 200 Feet
0 25 50 Meters

Map 4-1a. Design dataset with RAL exceedance areas, RM 3.0 to RM 3.2

PRE-DESIGN INVESTIGATION PHASE II QAPP ADDENDUM FOR THE LDW UPPER REACH

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0 100 200 Feet
0 25 50 Meters

Map 4-1b. Design dataset with RAL exceedance areas, RM 3.2 to RM 3.5

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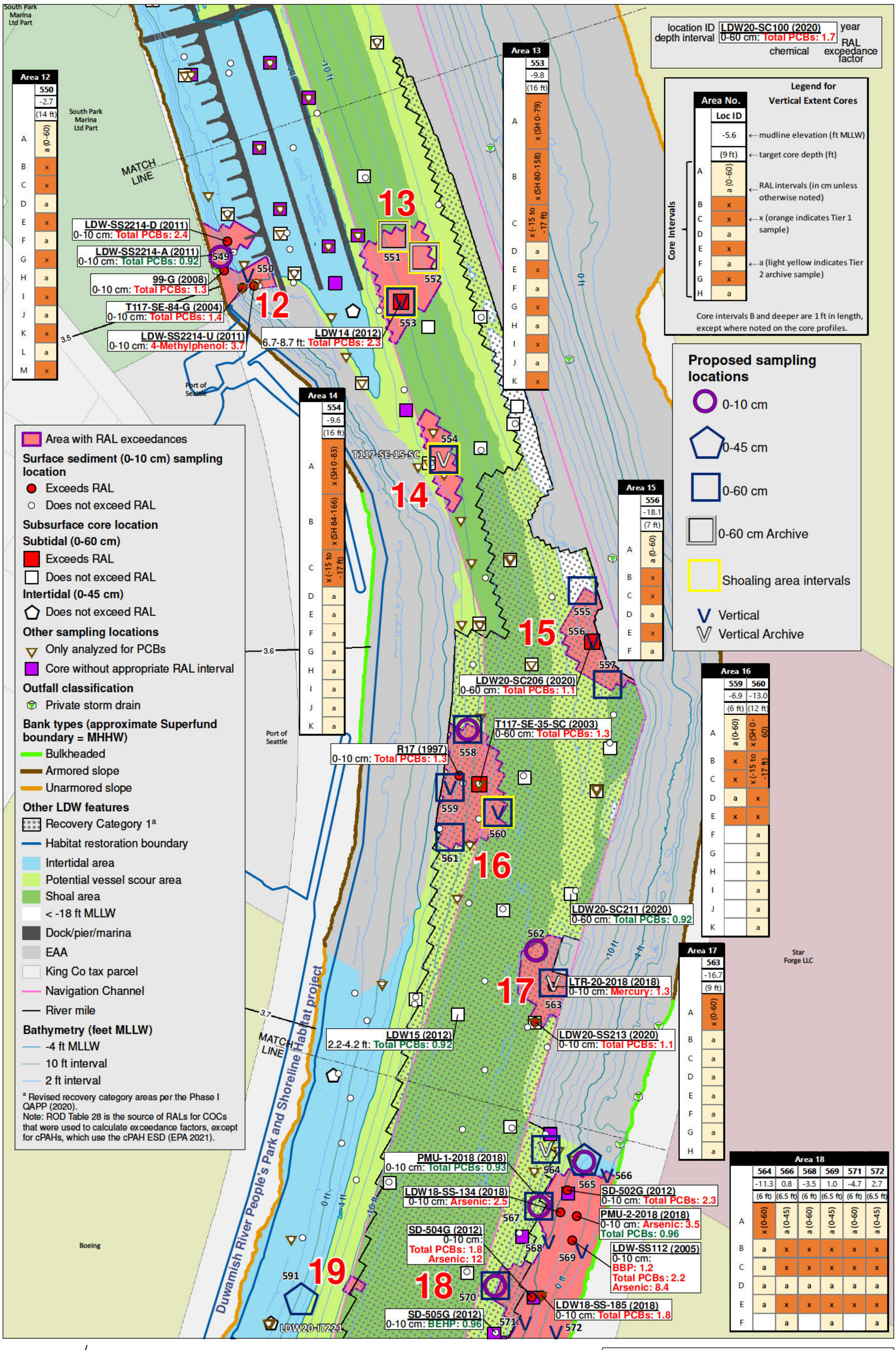

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Map 4-1c. Design dataset with RAL exceedance areas, RM 3.5 to RM 3.7

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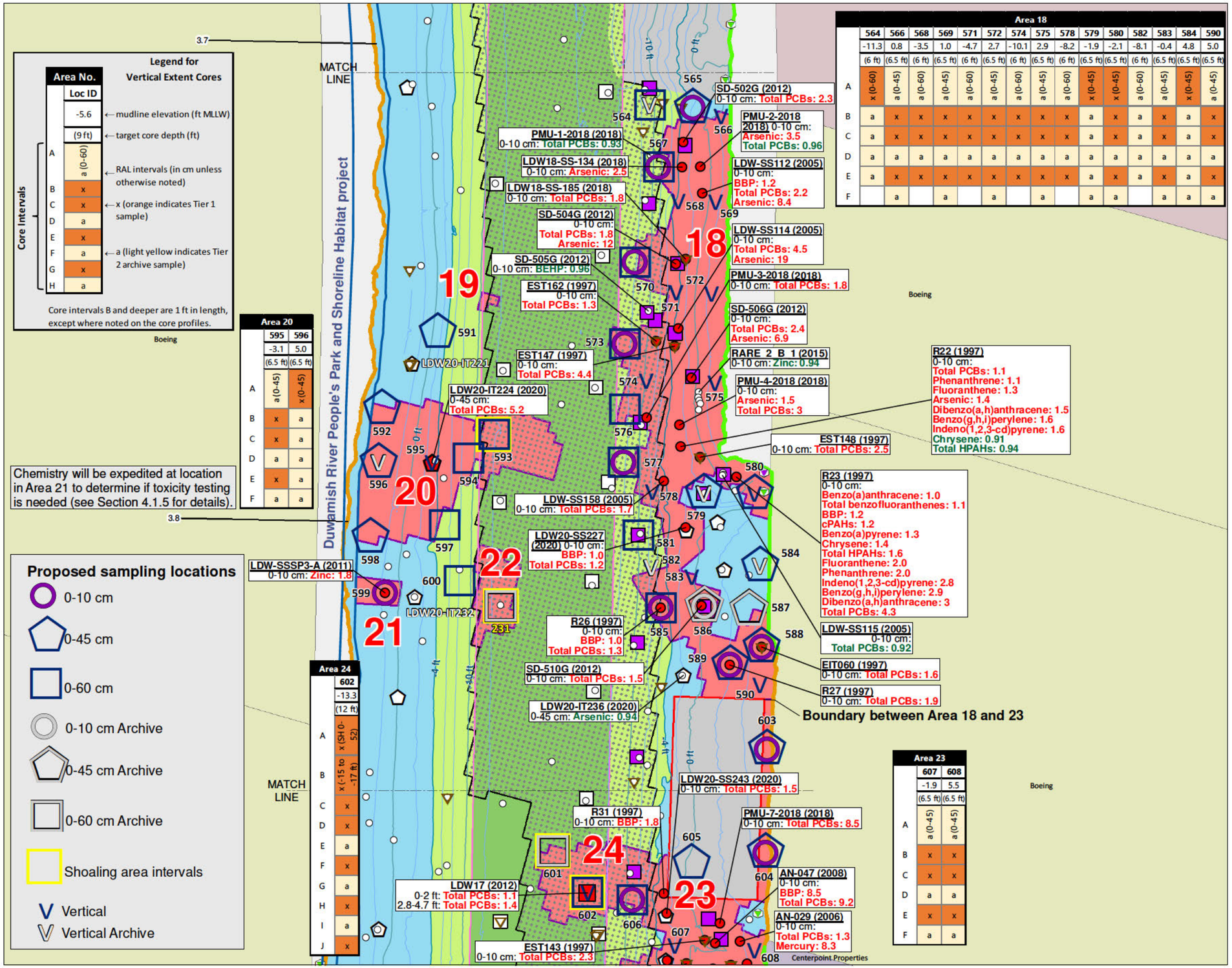
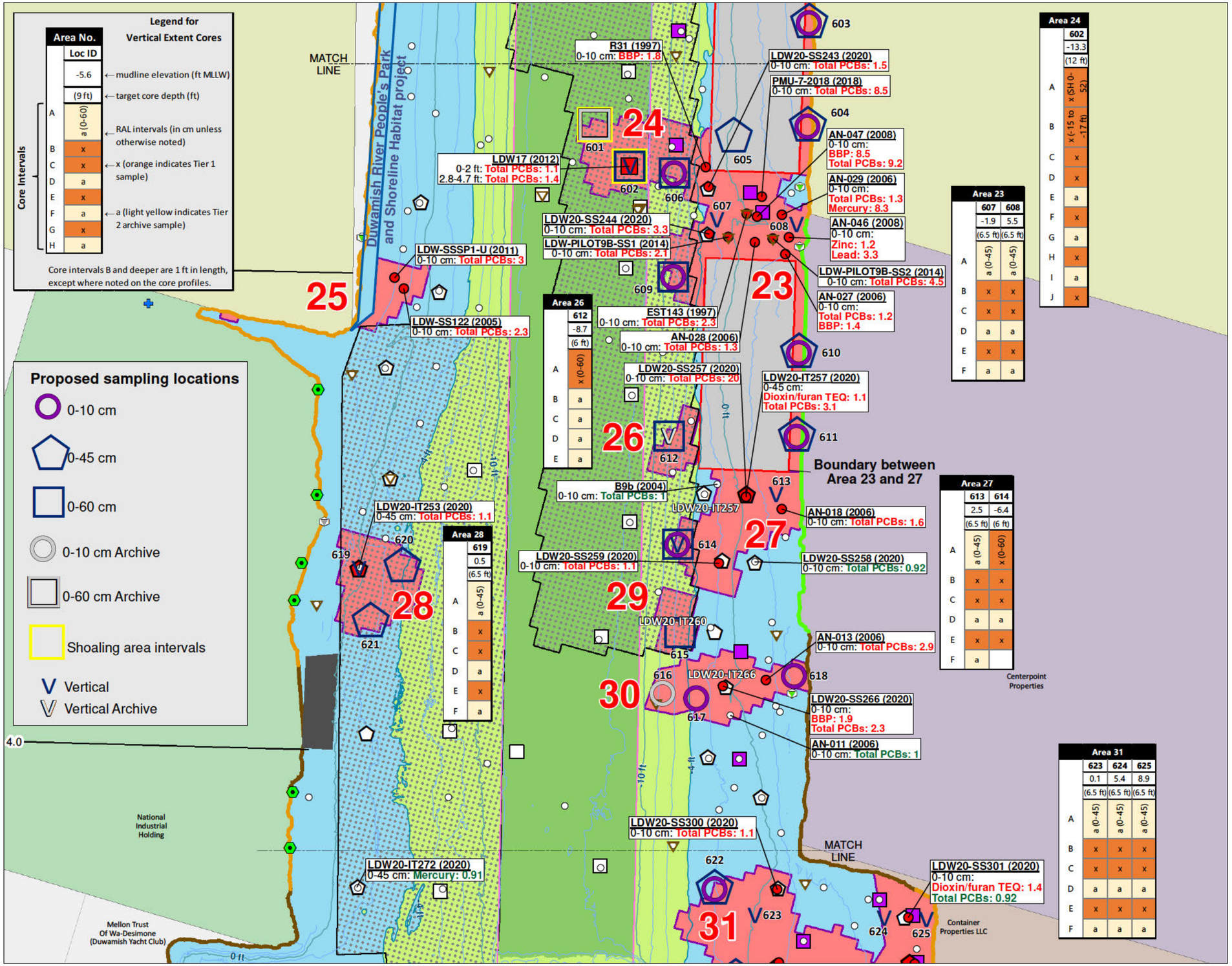


Prepared by craigh, 3/12/21; W:\Projects\Duwamish AOC4\GIS\Maps and Analyses\Phase II\QAPP Addendum\Map 4-1d 7172 Upper Reach Ph1 Data wRBAs - RM 3.7-3.85.mxd



Area with RAL exceedances

Surface sediment (0-10 cm) sampling location

- Exceeds RAL
- Does not exceed RAL

Subsurface core location

Subtidal (0-60 cm)

- Exceeds RAL
- Does not exceed RAL

Intertidal (0-45 cm)

- Exceeds RAL
- Does not exceed RAL

Other sampling locations

- Only analyzed for PCBs
- Core without appropriate RAL interval
- Bank sampling location (no exceedance)

Outfall classification

- Private storm drain
- Pipe of unresolved origin and/or use
- Stream, channel, or ditch

Bank types (approximate Superfund boundary = MHHW)

- Bulkheaded
- Armored slope
- Unarmored slope

Other LDW features

- Recovery Category 1
- Habitat restoration boundary
- Intertidal area
- Potential vessel scour area
- Shoal area
- Dock/pier/marina
- AC Pilot plots
- King Co tax parcel
- Navigation Channel
- River mile

Bathymetry (feet MLLW)

- -4 ft MLLW
- 10 ft interval
- 2 ft interval

[a] Revised recovery category areas per the Phase I QAPP (2020). Note: ROD Table 28 is the source of RALs for COCs that were used to calculate exceedance factors, except for cPAHs, which use the cPAH ESD (EPA 2021).

N

0 100 200 Feet

0 25 50 Meters

Map 4-1e. Design dataset with RAL exceedance areas, RM 3.85 to RM 4.05

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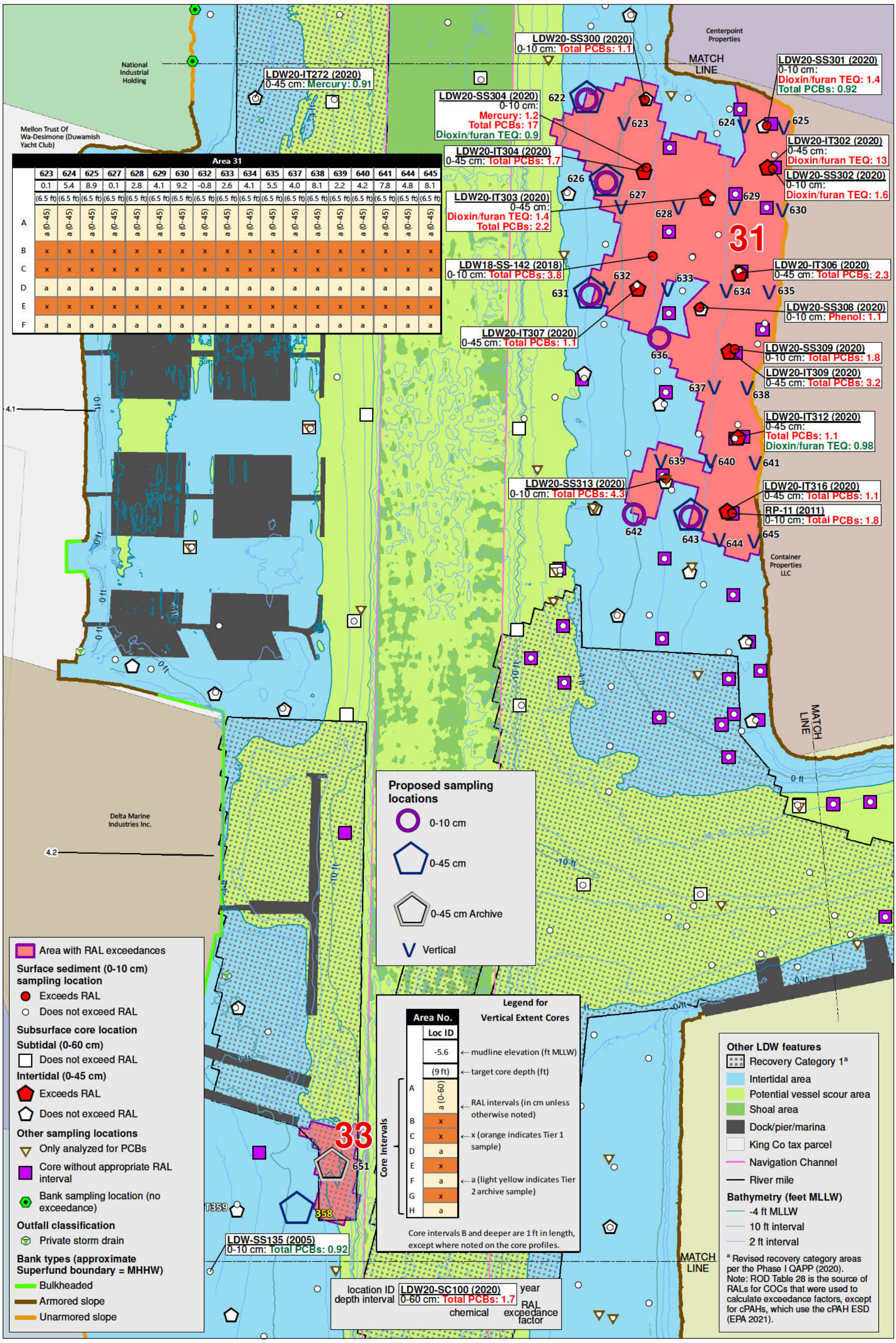

	623	624	625	627	628	629	630	632	633	634	635	637	638	639	640	641	644	645
	0.1	5.4	8.9	0.1	2.8	4.1	9.2	-0.8	2.6	4.1	5.5	4.0	8.1	2.2	4.2	7.8	4.8	8.1
	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)
A	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)
B	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
C	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
D	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
E	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
F	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a

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Map 4-1f. Design dataset with RAL exceedance areas, RM 4.05 to RM 4.3

PRE-DESIGN INVESTIGATION PHASE II QAPP ADDENDUM FOR THE LDW UPPER REACH

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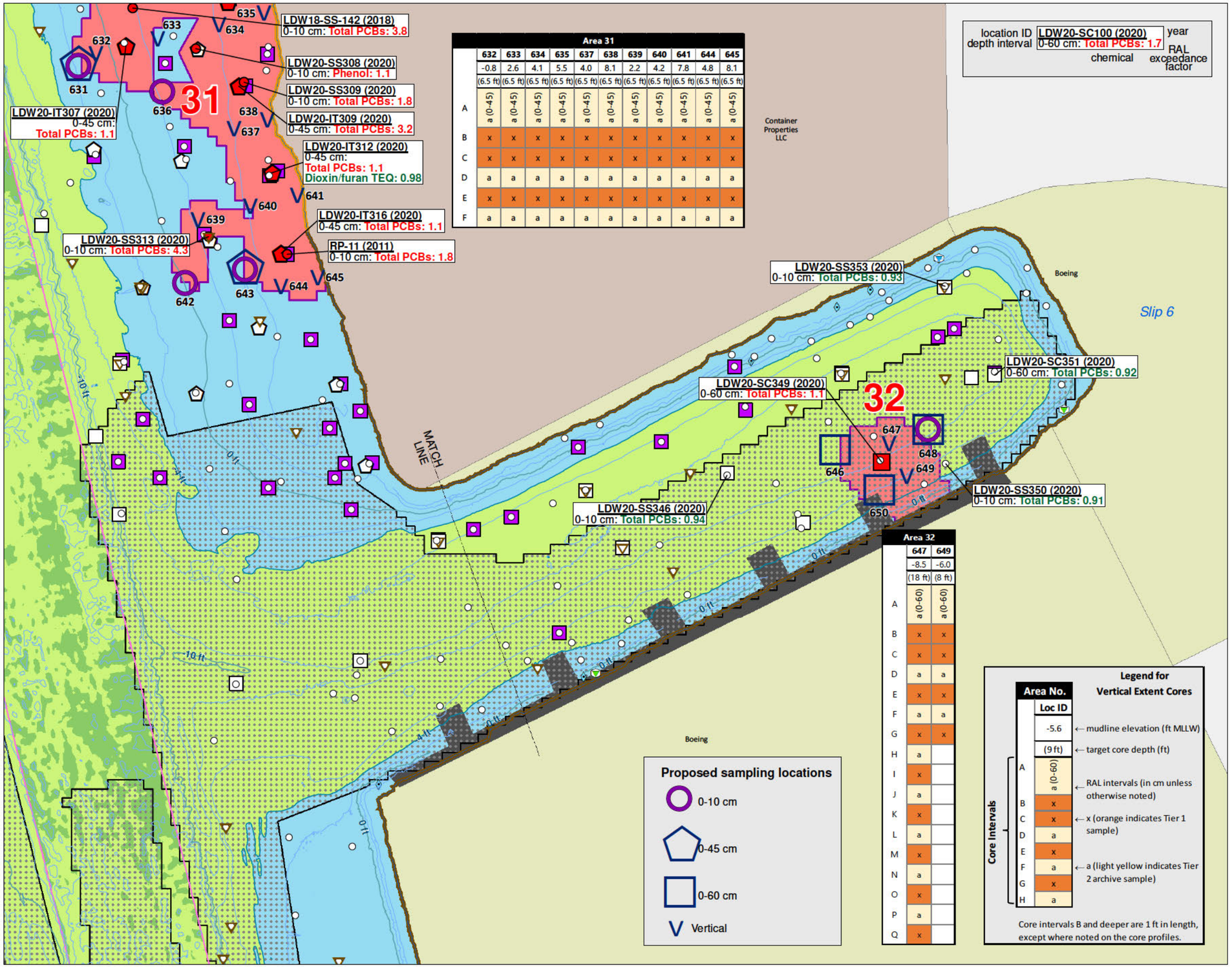

Area 31	632	633	634	635	637	638	639	640	641	644	645
	-0.8	2.6	4.1	5.5	4.0	8.1	2.2	4.2	7.8	4.8	8.1
	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)
A	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)
B	x	x	x	x	x	x	x	x	x	x	x
C	x	x	x	x	x	x	x	x	x	x	x
D	a	a	a	a	a	a	a	a	a	a	a
E	x	x	x	x	x	x	x	x	x	x	x
F	a	a	a	a	a	a	a	a	a	a	a

Area 32	647	649
	-8.5	-6.0
	(18 ft)	(8 ft)
A	a (0-60)	a (0-60)
B	x	x
C	x	x
D	a	a
E	x	x
F	a	a
G	x	x
H	a	
I	x	
J	a	
K	x	
L	a	
M	x	
N	a	
O	x	
P	a	
Q	x	

location ID / depth interval: LDW20-SC100 (2020) / 0-60 cm: Total PCBs: 1.7 — year / chemical / RAL exceedance factor

Legend for Vertical Extent Cores

Area No.	Loc ID	
	-5.6	← mudline elevation (ft MLLW)
	(9 ft)	← target core depth (ft)
Core Intervals: A	a (0-60)	← RAL intervals (in cm unless otherwise noted)
B	x	
C	x	← x (orange indicates Tier 1 sample)
D	a	
E	x	
F	a	← a (light yellow indicates Tier 2 archive sample)
G	x	
H	a	

Core intervals B and deeper are 1 ft in length, except where noted on the core profiles.

Surface sediment (0-10 cm) sampling location
- Exceeds RAL
- Does not exceed RAL

Subsurface core location

Subtidal (0-60 cm)
- Exceeds RAL
- Does not exceed RAL

Intertidal (0-45 cm)
- Exceeds RAL
- Does not exceed RAL

Other sampling locations
- Only analyzed for PCBs
- Core without appropriate RAL interval

Outfall classification
- Private storm drain
- Public storm drain
- Abandoned/inactive

Bank types (approximate Superfund boundary = MHHW)
- Armored slope
- Unarmored slope

Other LDW features
- Recovery Category 1[a]
- Intertidal area
- Potential vessel scour area
- Shoal area
- Dock/pier/marina
- King Co tax parcel
- Navigation Channel

Bathymetry (feet MLLW)
- -4 ft MLLW
- 10 ft interval
- 2 ft interval

[a] Revised recovery category areas per the Phase I QAPP (2020). Note: ROD Table 28 is the source of RALs for COCs that were used to calculate exceedance factors, except for cPAHs, which use the cPAH ESD (EPA 2021).

N

0 100 200 Feet

0 25 50 Meters

Map 4-1g. Design dataset with RAL exceedance areas, Slip 6

PRE-DESIGN INVESTIGATION PHASE II QAPP ADDENDUM FOR THE LDW UPPER REACH

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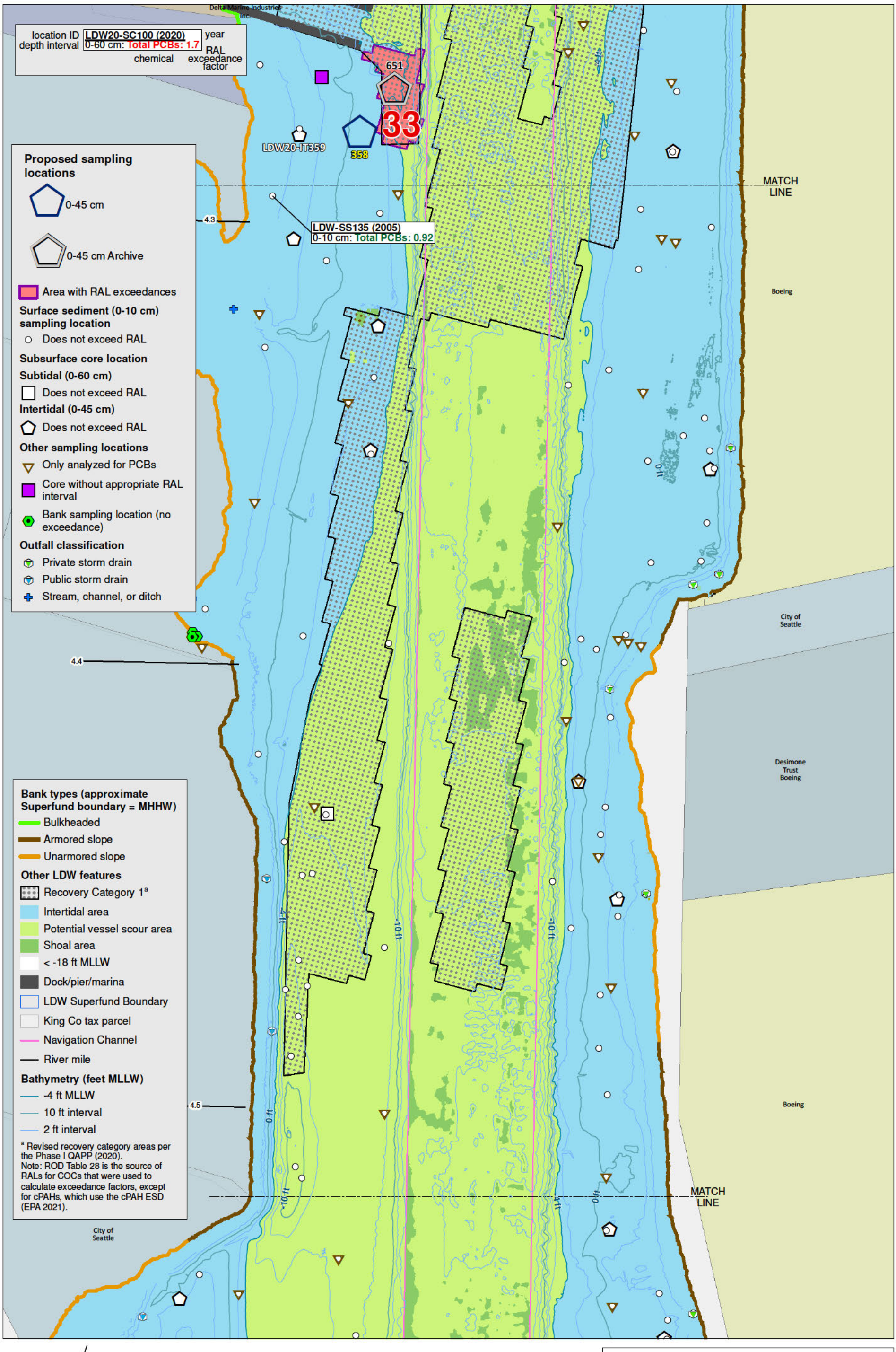

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Map 4-1h. Design dataset with RAL exceedance areas, RM 4.3 to RM 4.55

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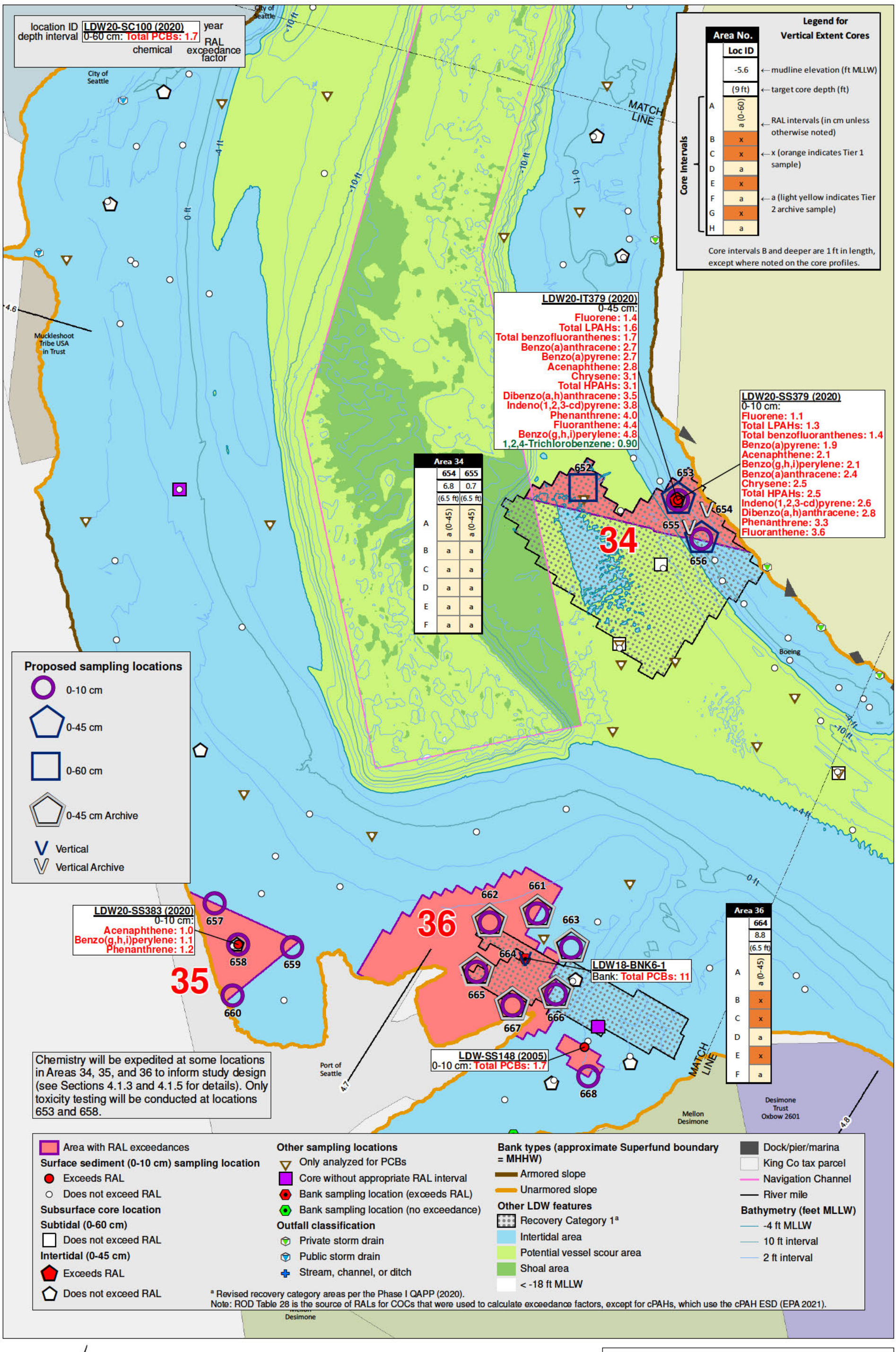

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0 100 200 Feet
0 25 50 Meters

Map 4-1i. Design dataset with RAL exceedance areas, RM 4.55 to RM 4.8

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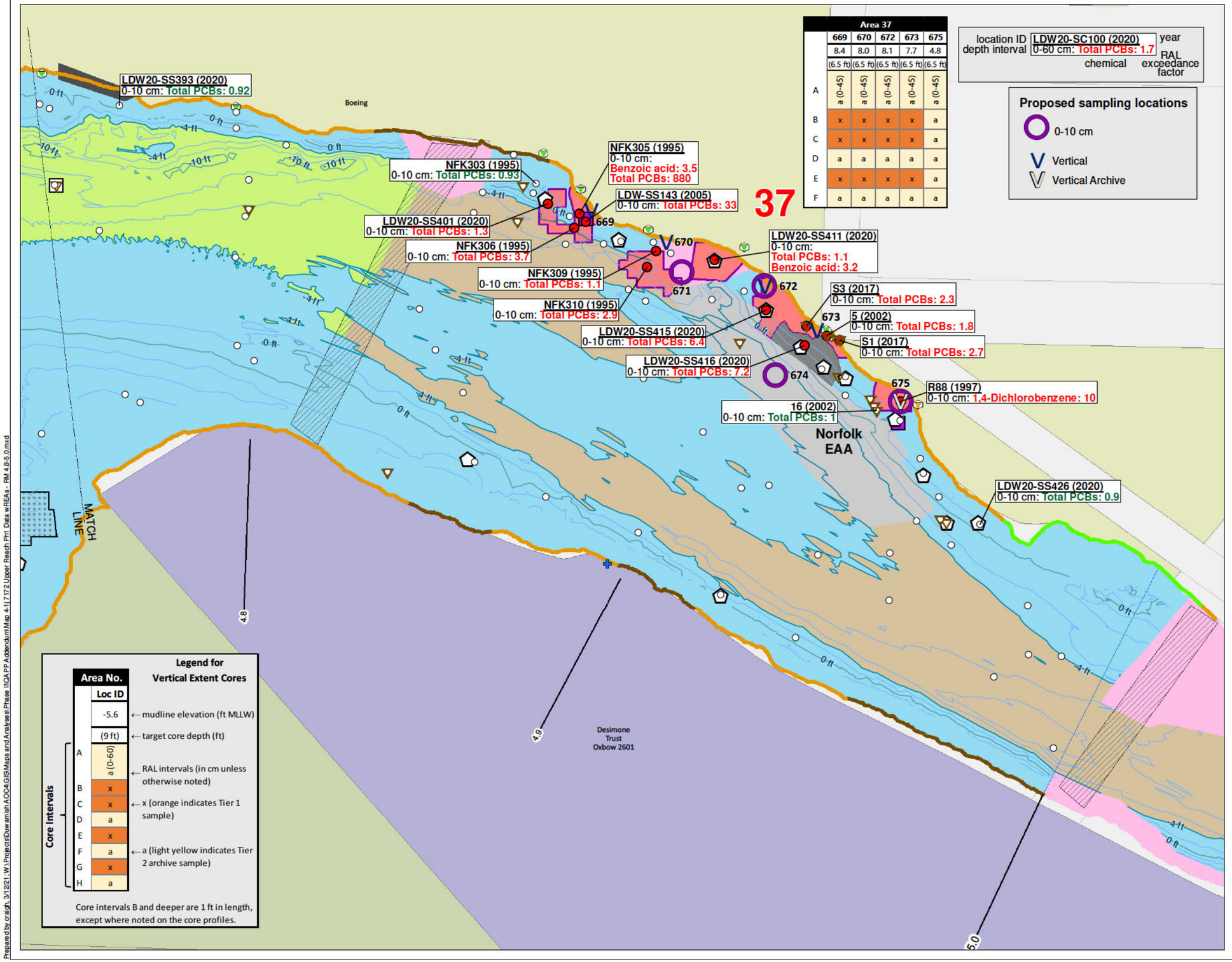

Area 37					
	669	670	672	673	675
	8.4	8.0	8.1	7.7	4.8
	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)	(6.5 ft)
A	a (0-45)	a (0-45)	a (0-45)	a (0-45)	a (0-45)
B	x	x	x	x	a
C	x	x	x	x	a
D	a	a	a	a	a
E	x	x	x	x	a
F	a	a	a	a	a

location ID: LDW20-SC100 (2020) — year
depth interval: 0-60 cm: Total PCBs: 1.7 — RAL exceedance factor
chemical

Proposed sampling locations

- 0-10 cm
- Vertical
- Vertical Archive

Legend for Vertical Extent Cores

Area No.	Loc ID	
	-5.6	← mudline elevation (ft MLLW)
	(9 ft)	← target core depth (ft)
A	a (0-60)	← RAL intervals (in cm unless otherwise noted)
B	x	
C	x	← x (orange indicates Tier 1 sample)
D	a	
E	x	
F	a	← a (light yellow indicates Tier 2 archive sample)
G	x	
H	a	

Core Intervals

Core intervals B and deeper are 1 ft in length, except where noted on the core profiles.

- Area with RAL exceedances

Surface sediment (0-10 cm) sampling location
- Exceeds RAL
- Does not exceed RAL

Subsurface core location

Subtidal (0-60 cm)
- Does not exceed RAL

Intertidal (0-45 cm)
- Does not exceed RAL

Other sampling locations
- Only analyzed for PCBs
- Core without appropriate RAL interval

Outfall classification
- CSO/storm drain
- Private storm drain
- Abandoned/inactive
- Stream, channel, or ditch

Bank types (approximate Superfund boundary = MHHW)
- Bulkheaded
- Armored slope
- Unarmored slope

Other LDW features
- Recovery Category 1[a]
- Intertidal area
- Potential vessel scour area
- Subtidal with no subsurface RAL
- Area not covered by bathymetric survey
- Bridge
- Dock/pier/marina
- Boeing South Storm Drain
- EAA
- King Co tax parcel
- River mile

Bathymetry (feet MLLW)
- -4 ft MLLW
- 10 ft interval
- 2 ft interval

[a] Revised recovery category areas per the Phase I QAPP (2020).
Note: ROD Table 28 is the source of RALs for COCs that were used to calculate exceedance factors, except for cPAHs, which use the cPAH ESD (EPA 2021).

N

0 100 200 Feet

0 25 50 Meters

Map 4-1j. Design dataset with RAL exceedance areas, RM 4.8 to RM 5.0

PRE-DESIGN INVESTIGATION PHASE II QAPP ADDENDUM FOR THE LDW UPPER REACH

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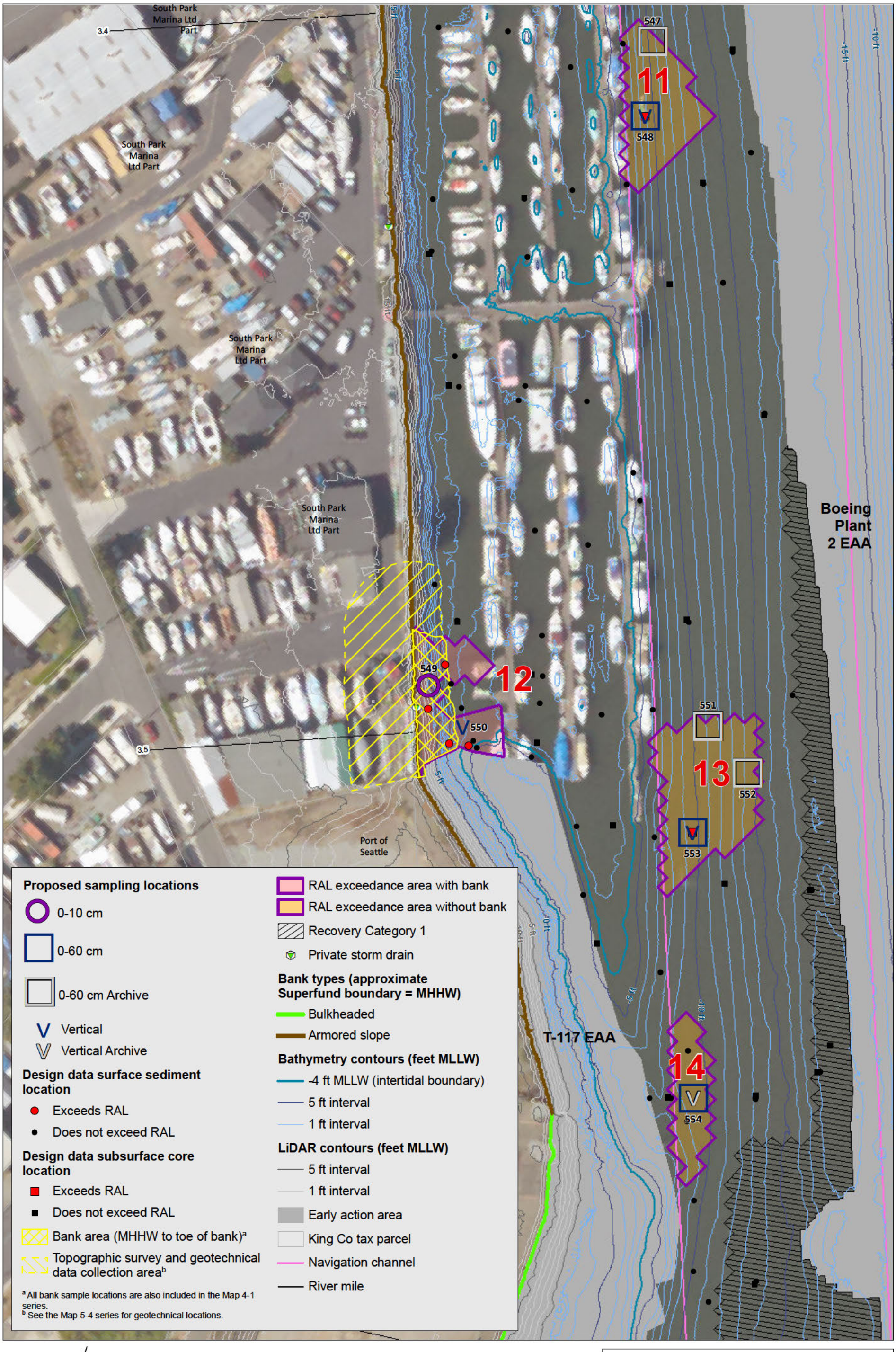

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0 50 100 Feet
0 10 20 Meters

Map 5-1a. Area of potential surveying and bank sampling/investigation at RAL Exceedance Area 12

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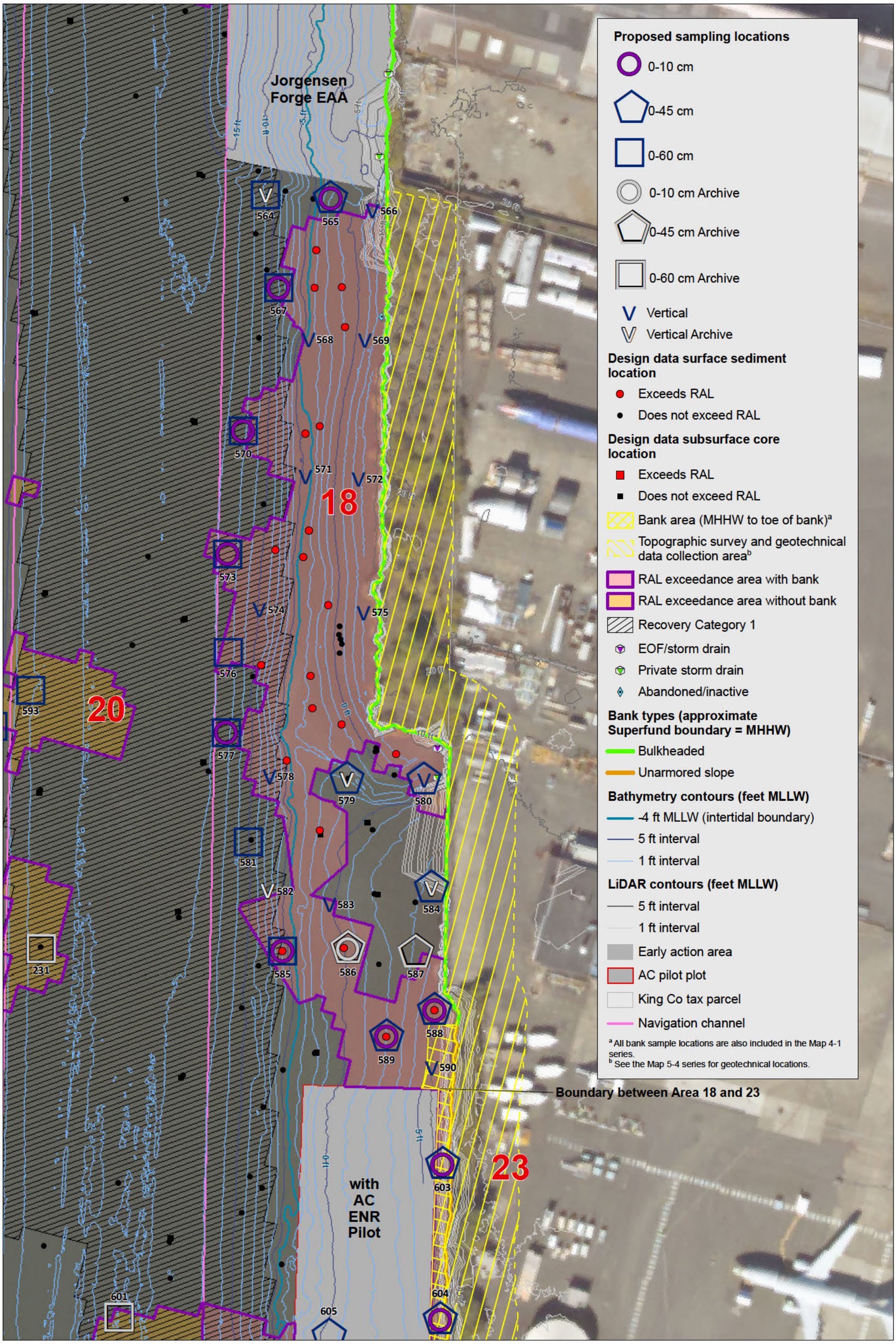

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N

0 50 100 Feet

0 10 20 Meters

Map 5-1b. Area of potential surveying and bank sampling/investigation at RAL Exceedance Area 18

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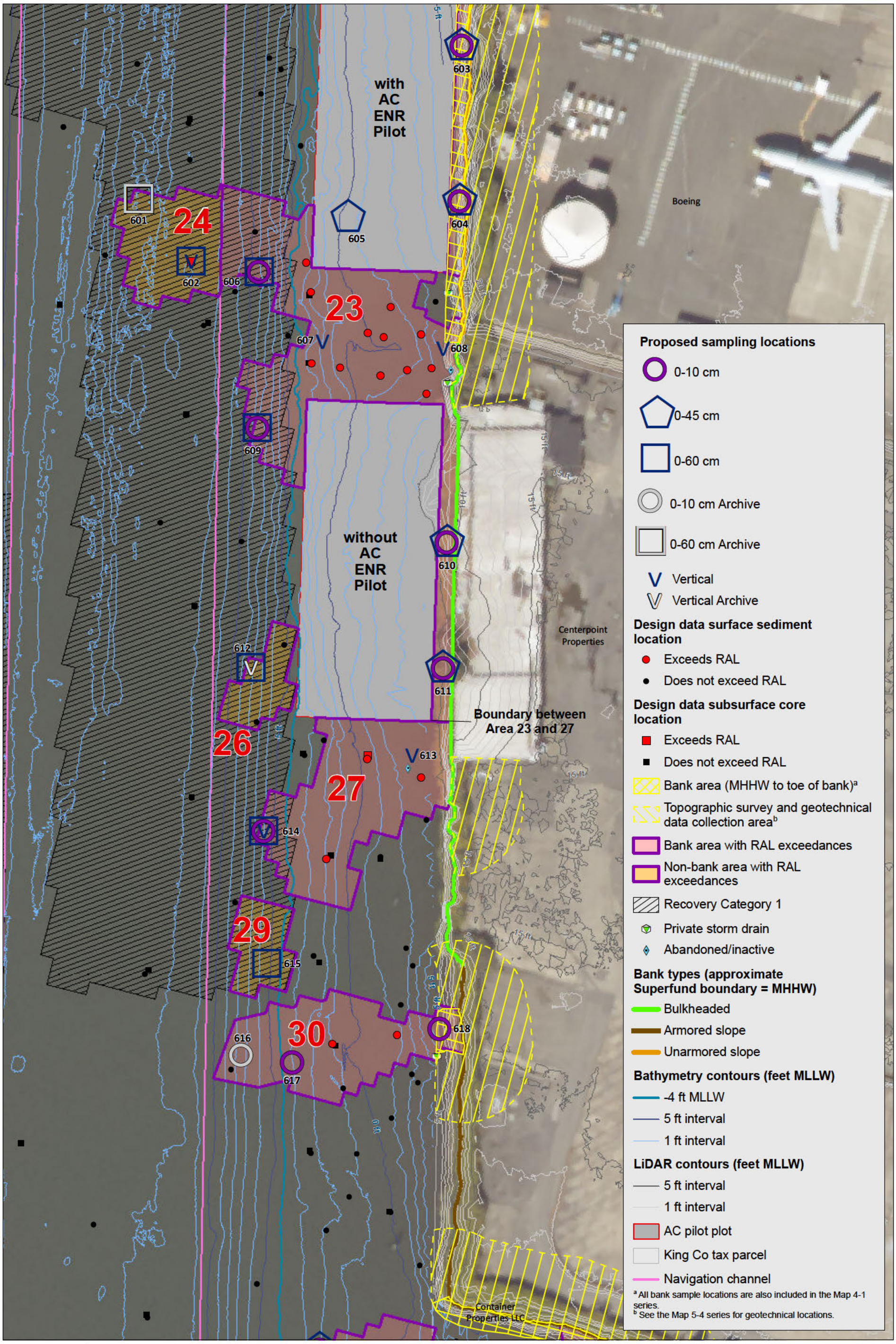

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N

0 50 100 Feet

0 10 20 Meters

Map 5-1c. Area of potential surveying and bank sampling/investigation at RAL Exceedance Areas 23, 27, and 30

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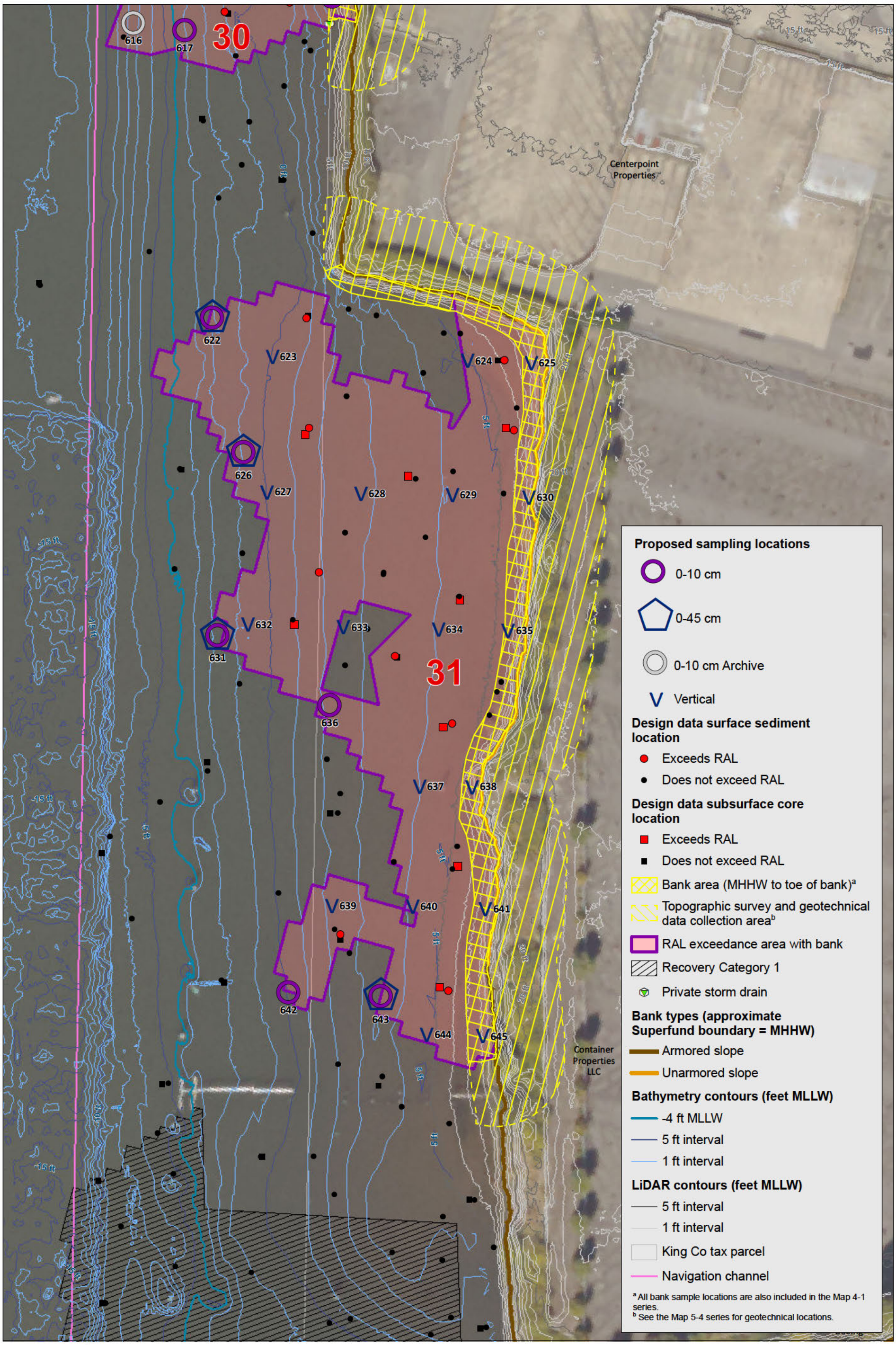

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N

0 50 100 Feet

0 10 20 Meters

Map 5-1d. Area of potential surveying and bank sampling/investigation at RAL Exceedance Area 31

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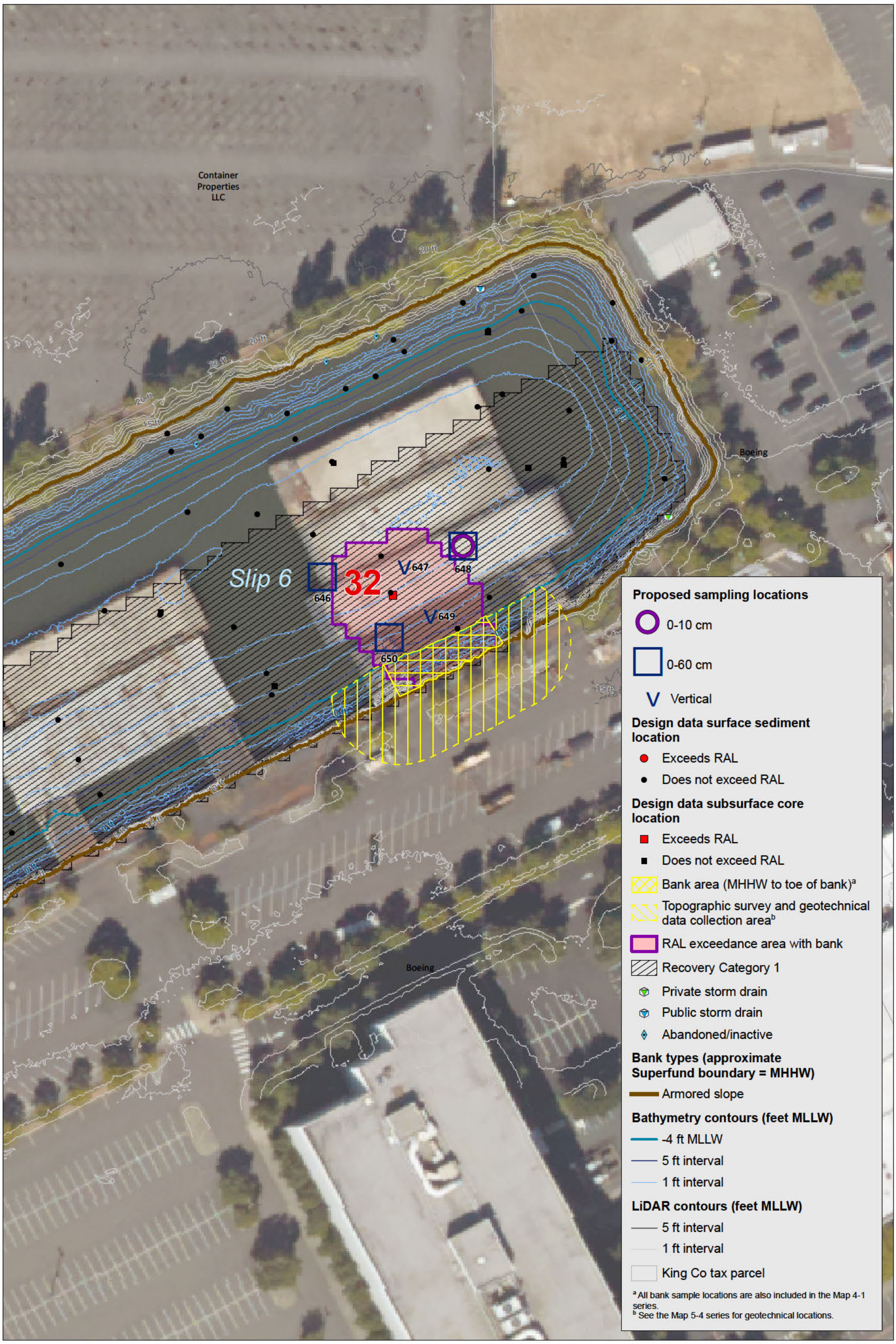

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N

0 50 100 Feet

0 10 20 Meters

Map 5-1e. Area of potential surveying and bank sampling/investigation at RAL Exceedance Area 32

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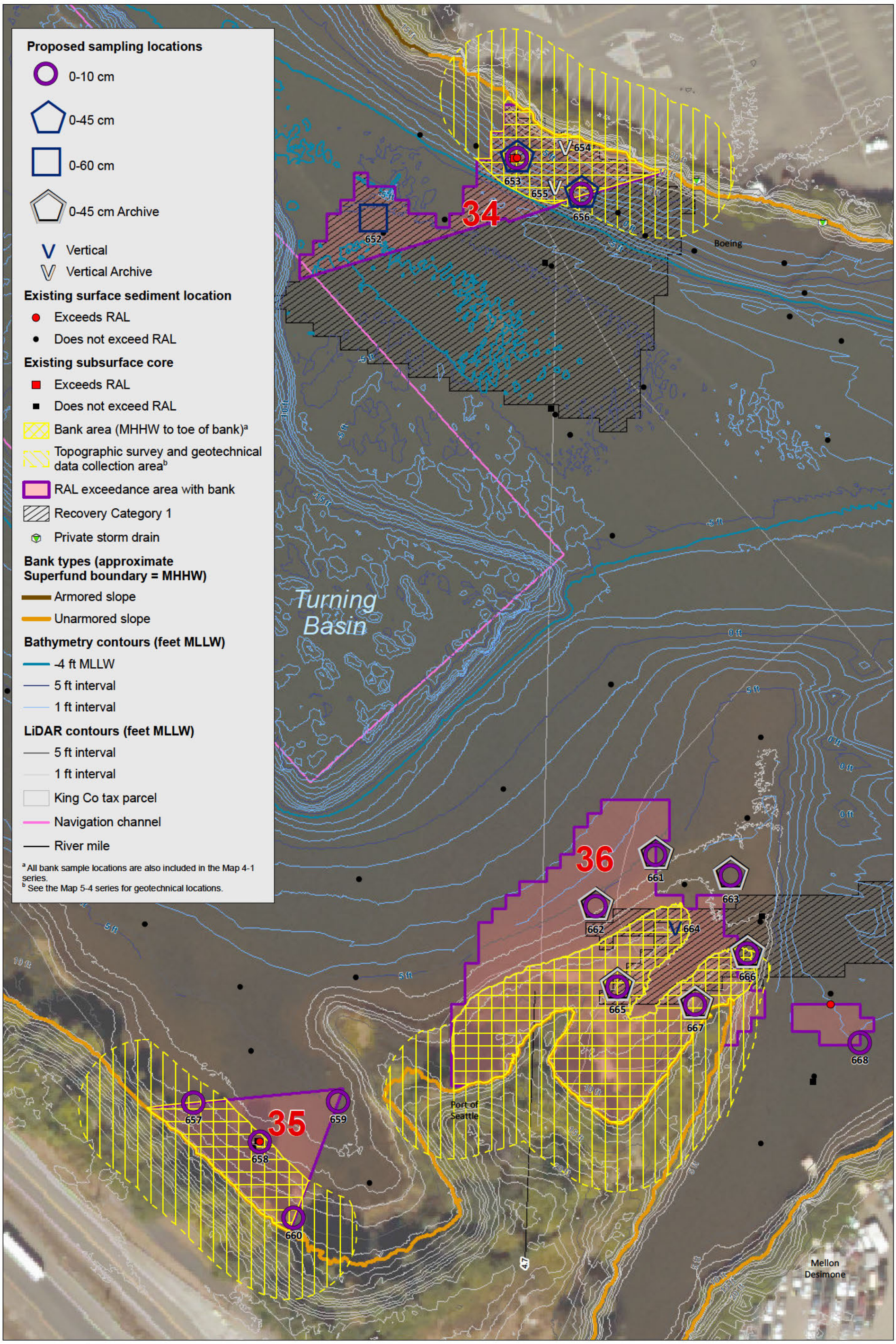
Prepared by craigh, 3/12/21; W:\Projects\Duwamish AOC4\GIS\Maps and Analyses\Phase II\QAPP Addendum\Map 5-1e 7266 Banks - 32.mxd



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N

0 50 100 Feet

0 10 20 Meters

Map 5-1f. Area of potential surveying and bank sampling/investigation at RAL Exceedance Areas 34, 35, and 36

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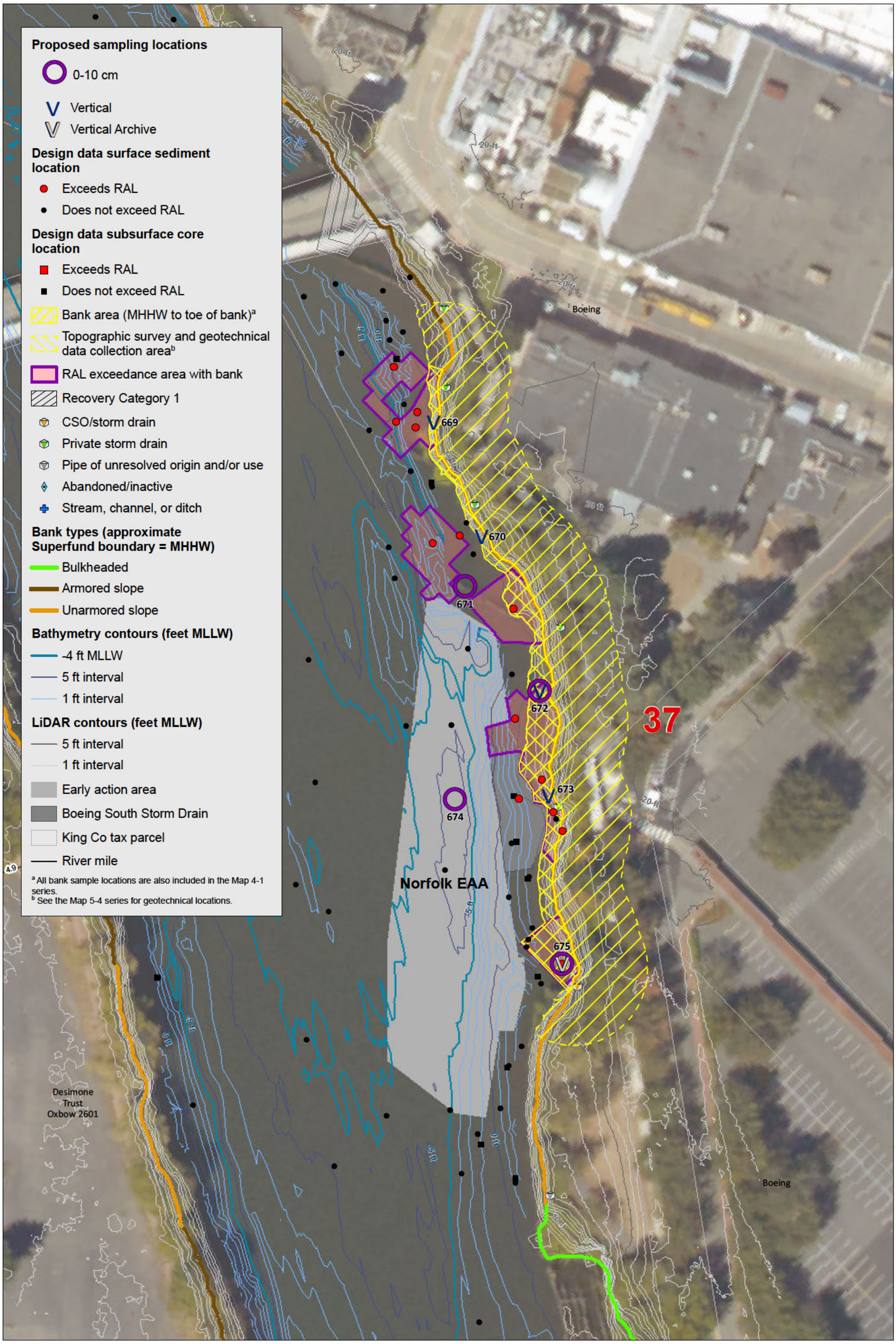

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0 50 100 Feet
0 10 20 Meters

Map 5-1g. Area of potential surveying and bank sampling/investigation at RAL Exceedance Area 37

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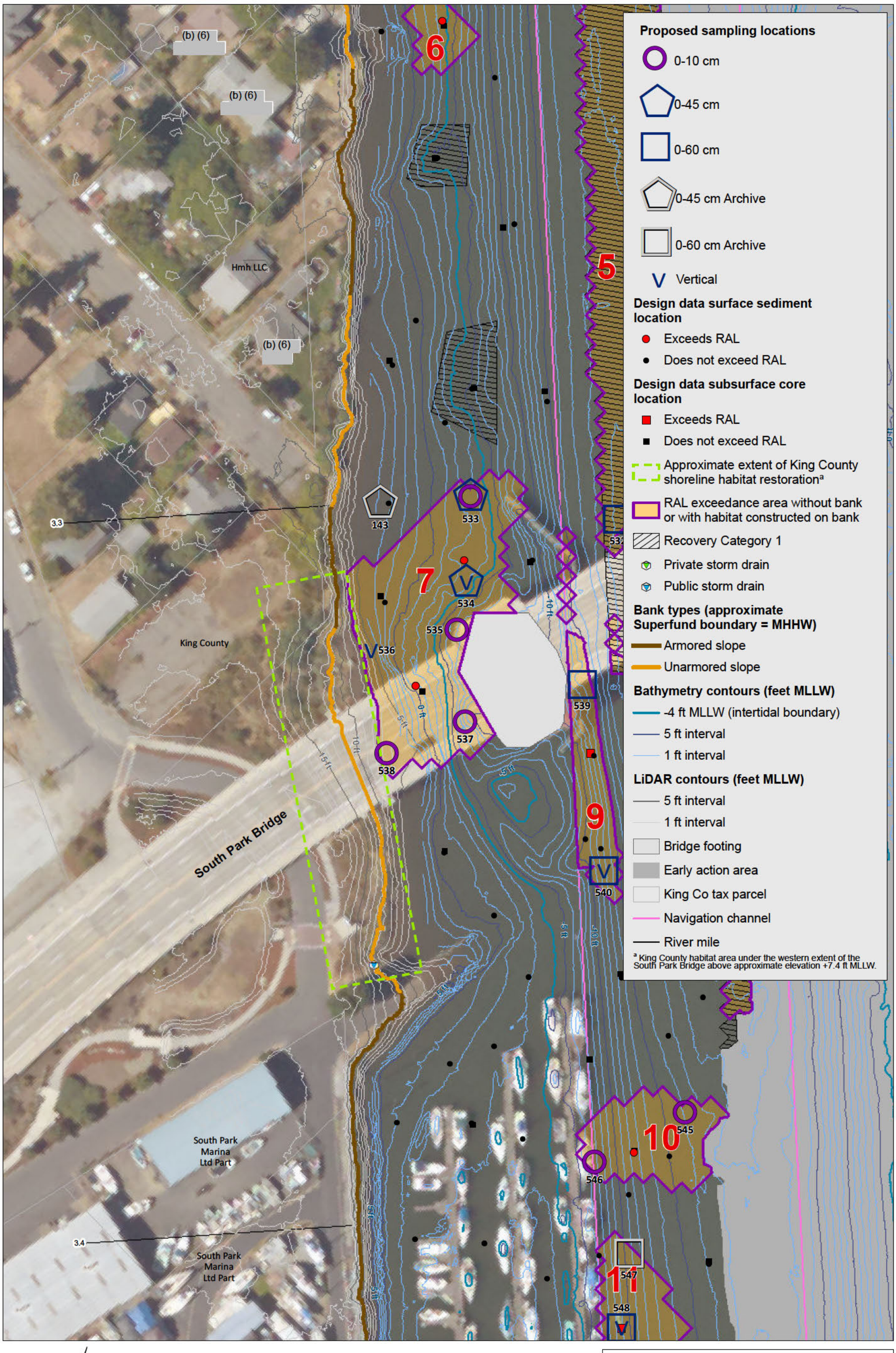

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0 50 100 Feet

0 10 20 Meters

Map 5-2a. Area of habitat restoration at RAL Exceedance Area 7

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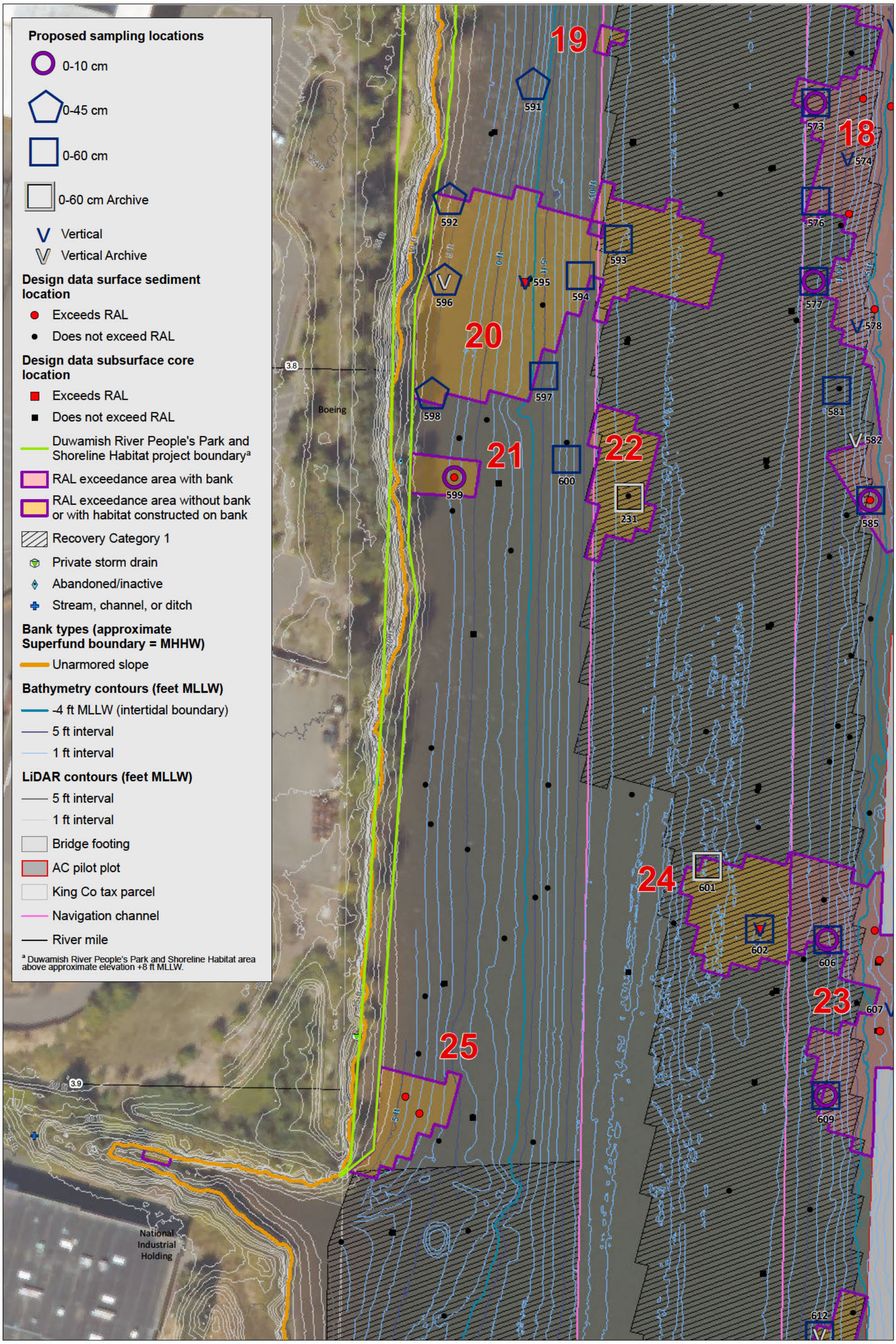

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N

0 50 100 Feet

0 10 20 Meters

Map 5-2b. Area of habitat restoration at RAL Exceedance Areas 20, 21, and 25

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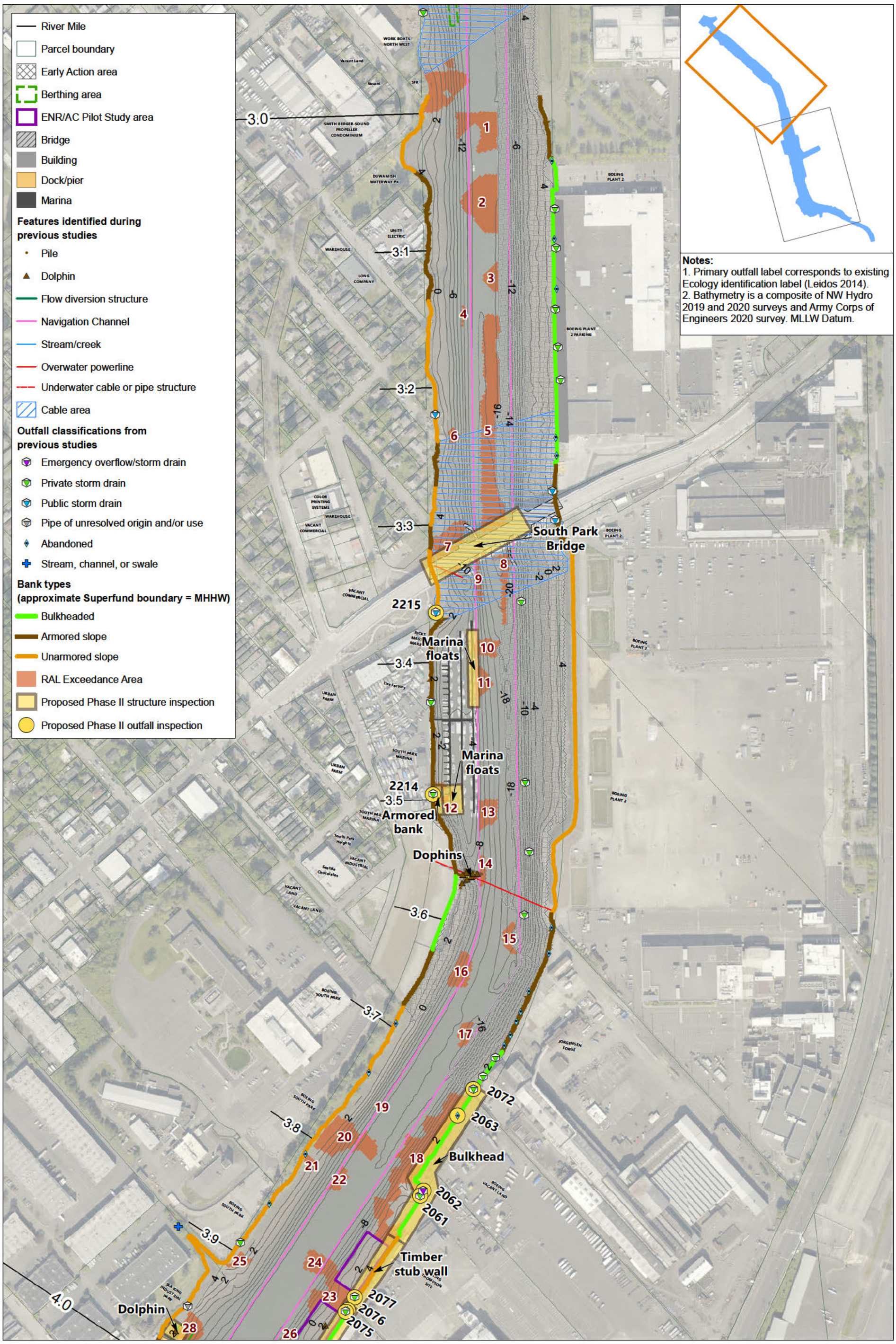

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0 250 500 Feet

0 40 80 Meters

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Map 5-3a
Proposed Phase II structure and outfall inspection, RM 3.0 to RM 4.0

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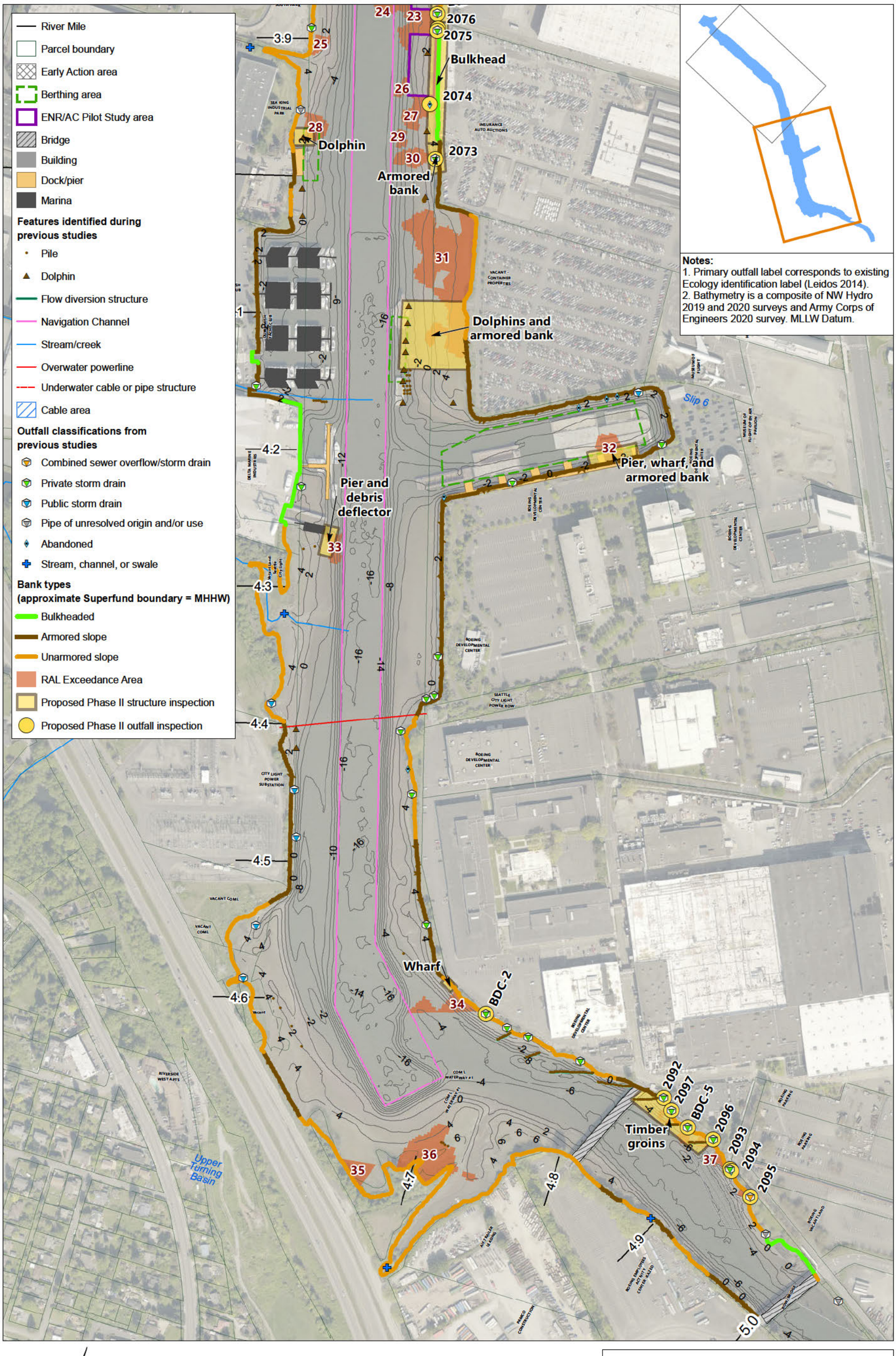

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N

0 250 500 Feet

0 40 80 Meters

Map 5-3b
Proposed Phase II structure and outfall inspection, RM 4.0 to RM 5.0

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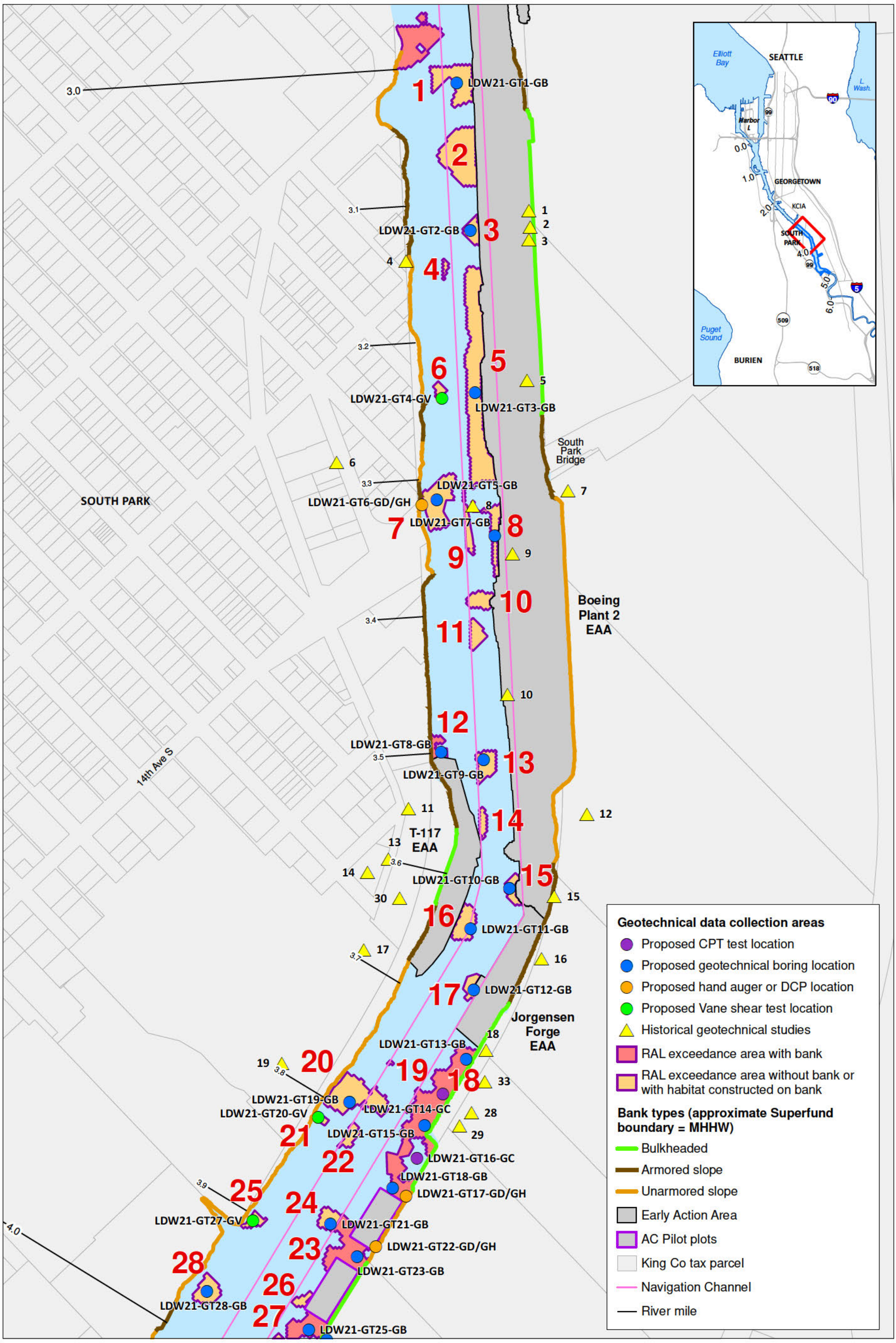

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Map 5-4a. Geotechnical data collection areas, RM 3.0 to RM 4.0

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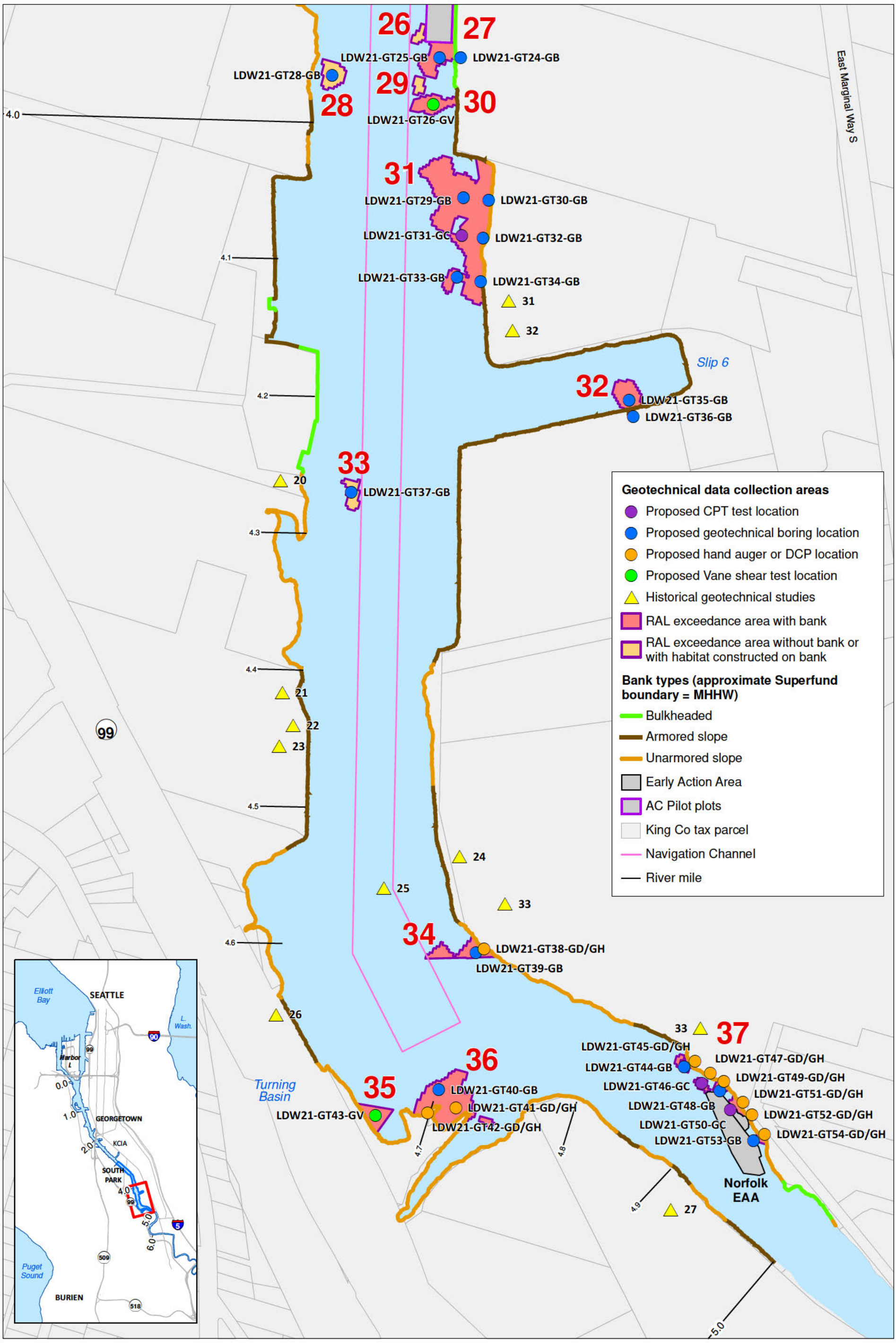

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N

0 260 520 Feet

0 100 200 Meters

Map 5-4b. Geotechnical data collection areas, RM 4.0 to RM 5.0

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