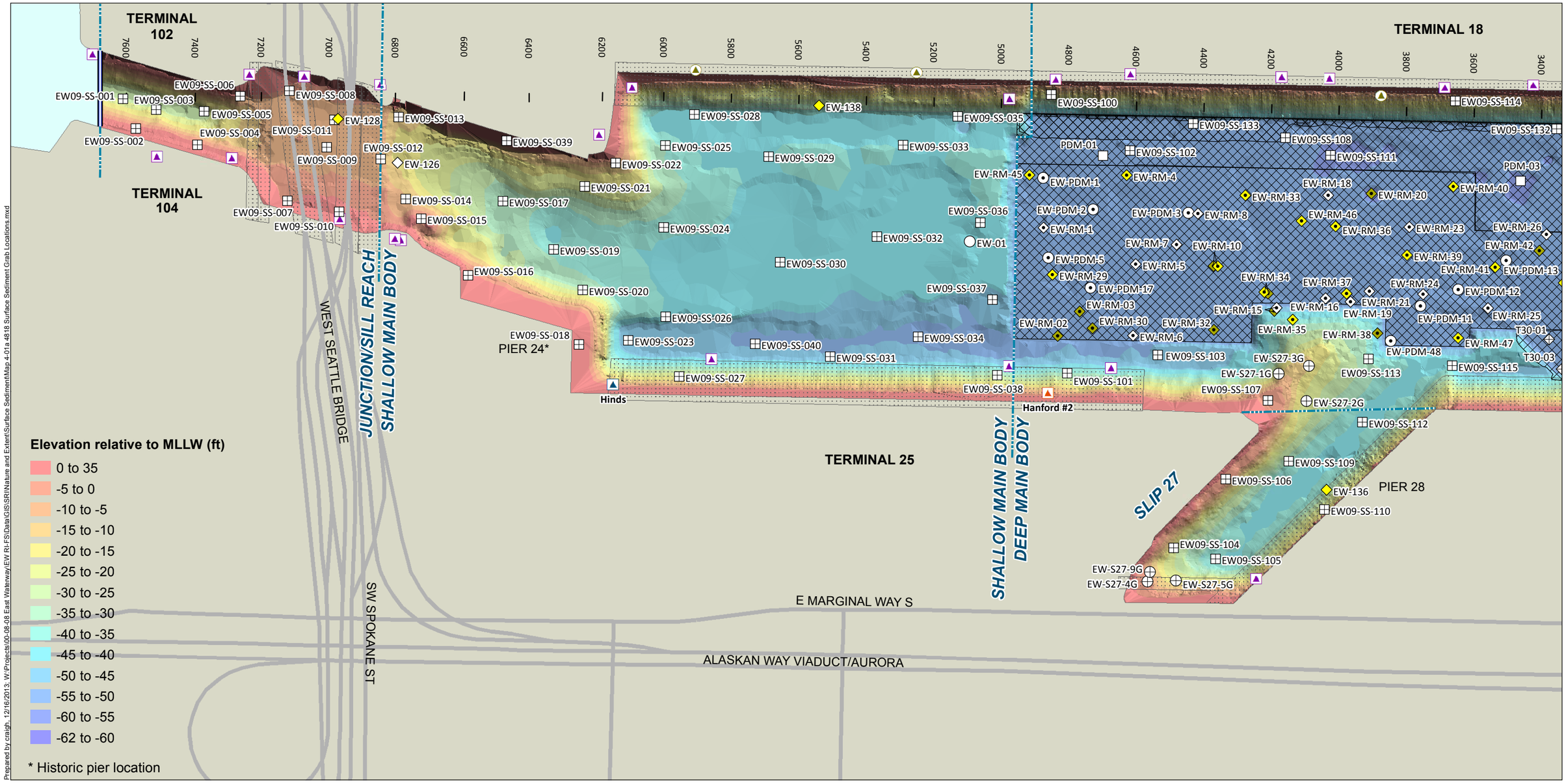
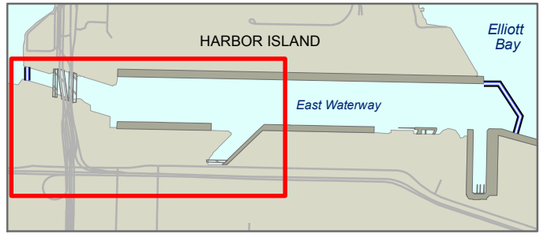


Surface Sediment Location by Sampling Event

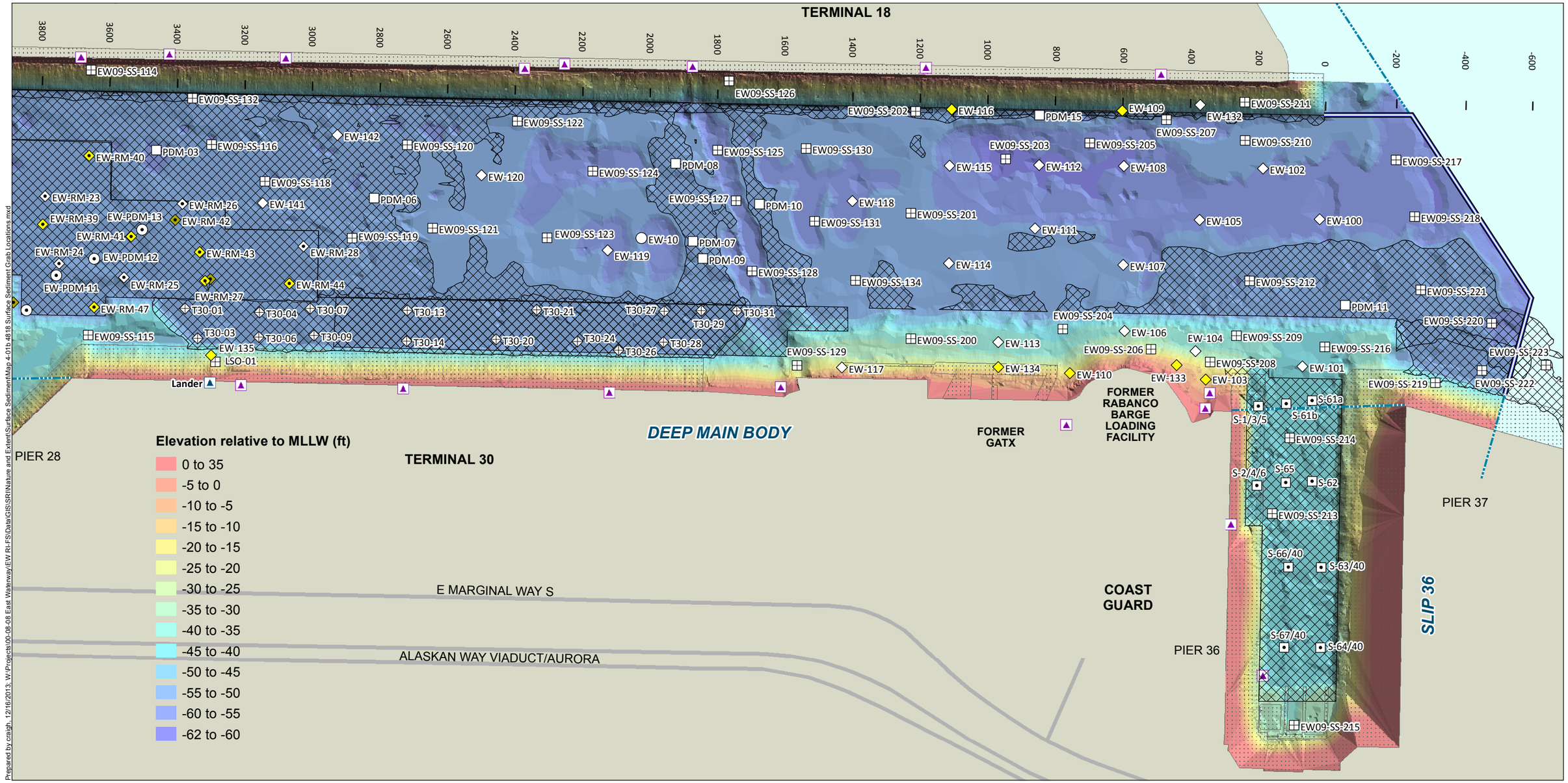
- HIRI95
- T18-PDM
- EW/HI Nature and Extent Phase 1
- EW/HI Nature and Extent Phase 2
- PostDredgeMonitoring-2005Phase2
- USCG_P36 PostDredge Sed Char
- Recontamination Monitoring 2006
- Recontamination Monitoring 2007
- EW RCM 2008
- East Waterway - Slip 27
- EW Surface Sediment
- EW T30 PDM 2009
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary



0 600

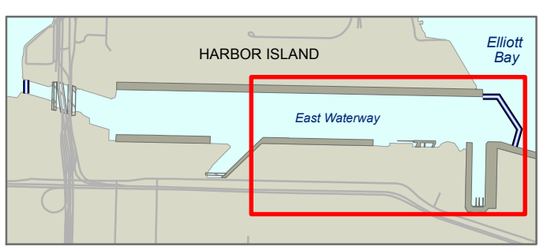
Scale in feet

Map 4-1a
Locations of SRI Baseline Surface Sediment Grab Samples
Supplemental Remedial Investigation
East Waterway Study Area



Surface Sediment Location by Sampling Event

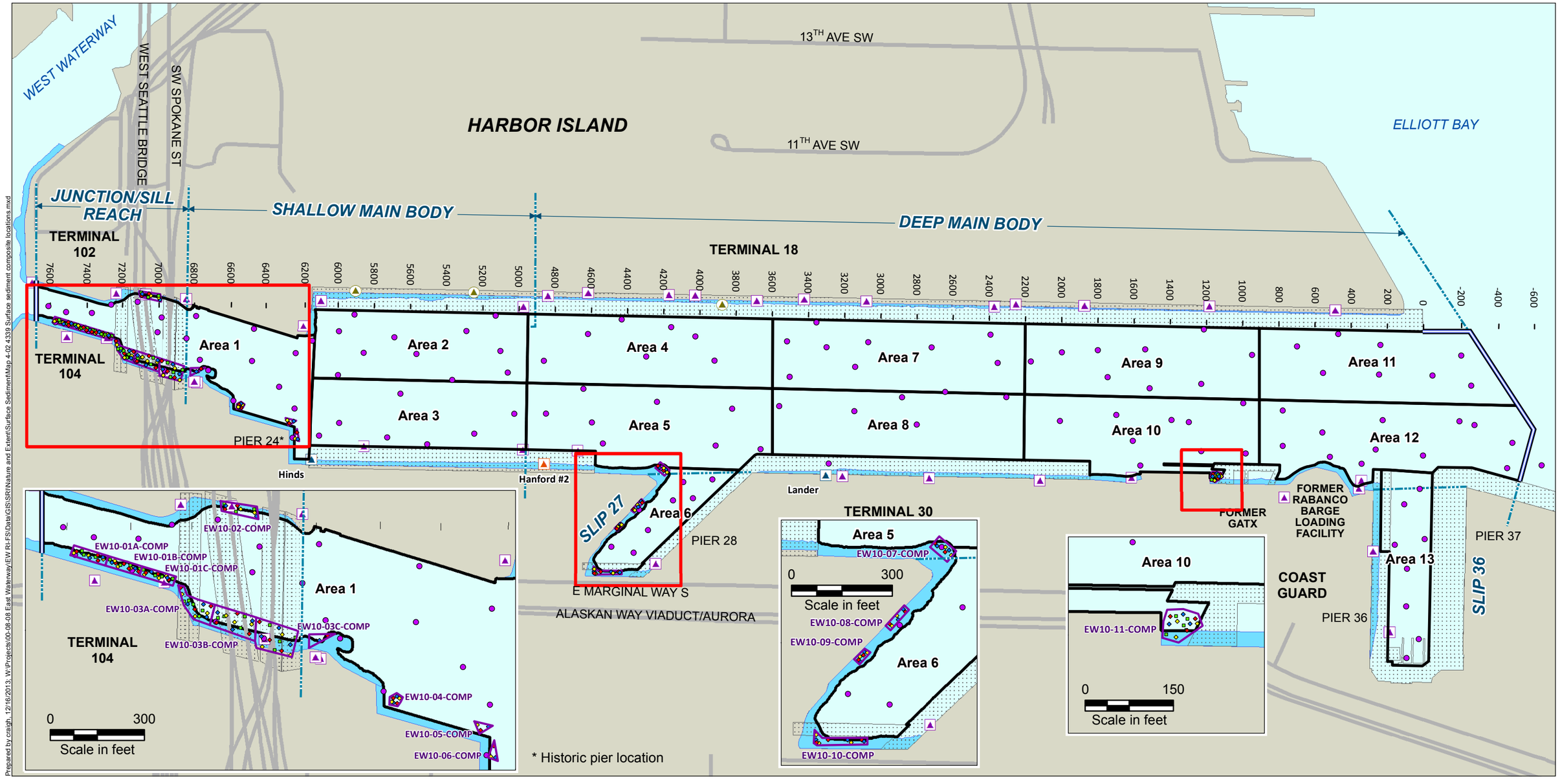
- HIRI95
- T18-PDM
- EW/HI Nature and Extent Phase 1
- EW/HI Nature and Extent Phase 2
- PostDredgeMonitoring-2005Phase2
- USCG_P36 PostDredge Sed Char
- Recontamination Monitoring 2006
- Recontamination Monitoring 2007
- EW RCM 2008
- East Waterway - Slip 27
- EW Surface Sediment
- EW T30 PDM 2009
- Storm Drain
- CSO/Storm Drain
- Area Dredged in the Last 11 Years
- Dock/Pier
- Road
- East Waterway Study Area Boundary



0 600

Scale in feet

Map 4-1b
Locations of SRI Baseline
Surface Sediment Grab Samples
Supplemental Remedial Investigation
East Waterway Study Area



- Subtidal Sampling Location Used in Composite Samples
- Subtidal Composite Area

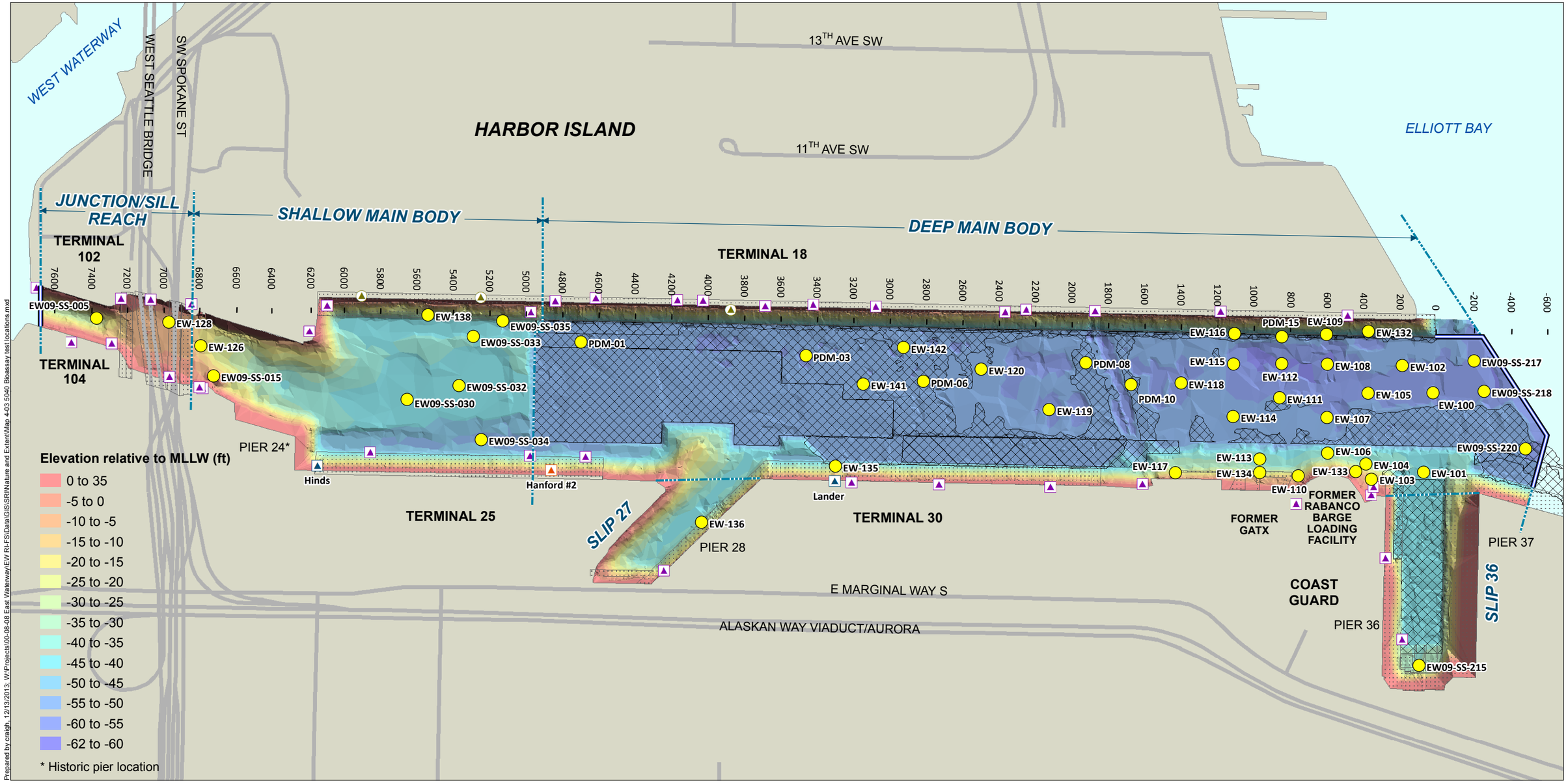
Multi-Increment Sampling (MIS) Composite Locations

- Area wide - Rep 1
- Area wide - Rep 2
- Area wide - Rep 3
- Public access
- Intertidal PAH Composite Area
- Intertidal Zone
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

0 600
Scale in feet

Map 4-2
Locations of SRI Baseline Surface Sediment Composite Samples
Supplemental Remedial Investigation
East Waterway Study Area

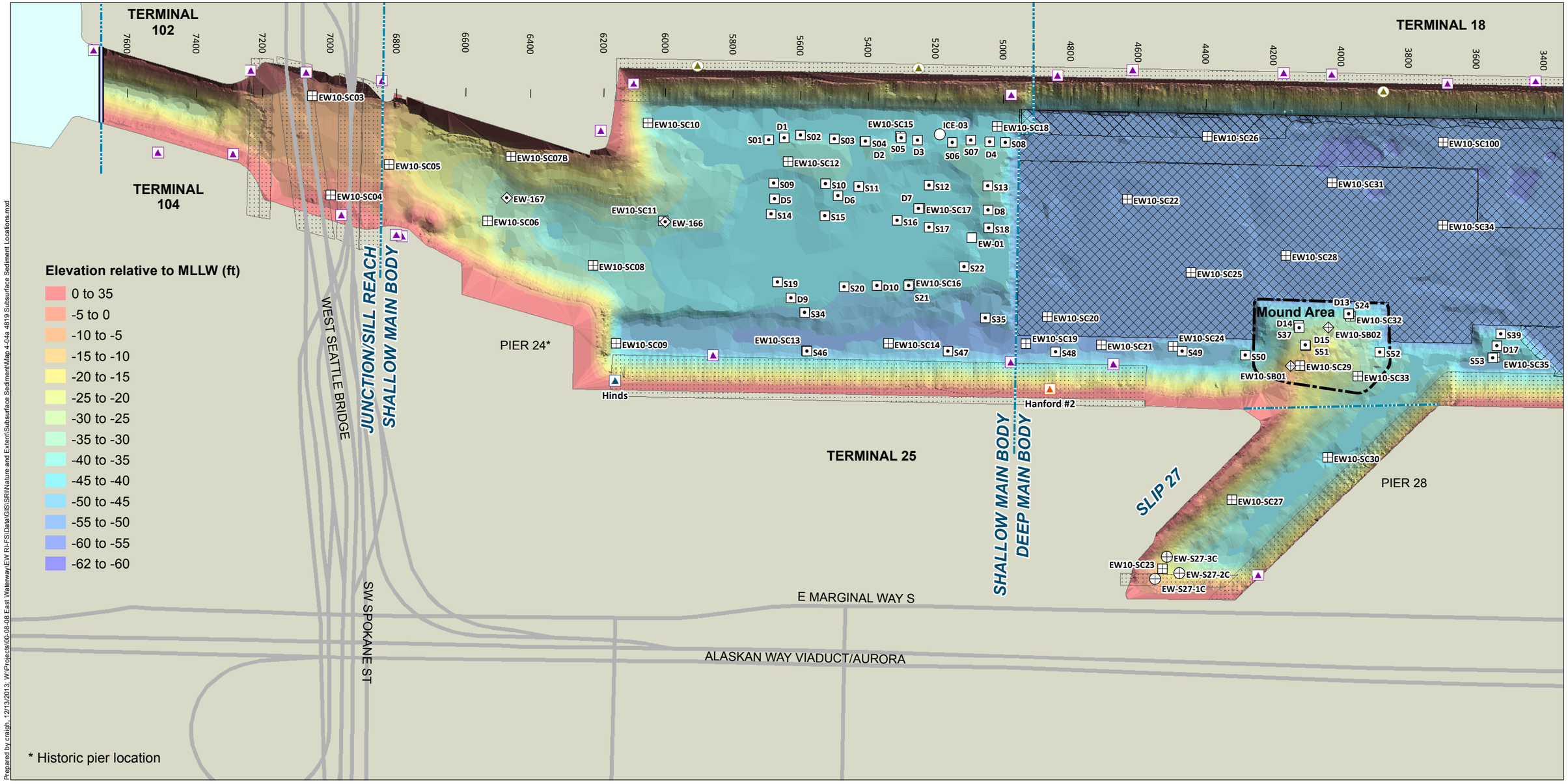
Prepared by craigh, 12/16/2013, W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SRI\Nature and Extent\Surface Sediment\Map 4-02 4339 Surface sediment composite locations.mxd



0 600
Scale in feet

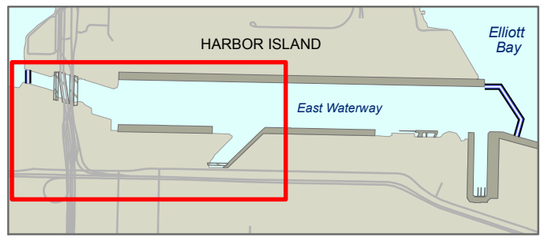
- Bioassay Test Location
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

Map 4-3
SRI Baseline Bioassay Test Locations
Supplemental Remedial Investigation
East Waterway Study Area



Subsurface Core Location by Event

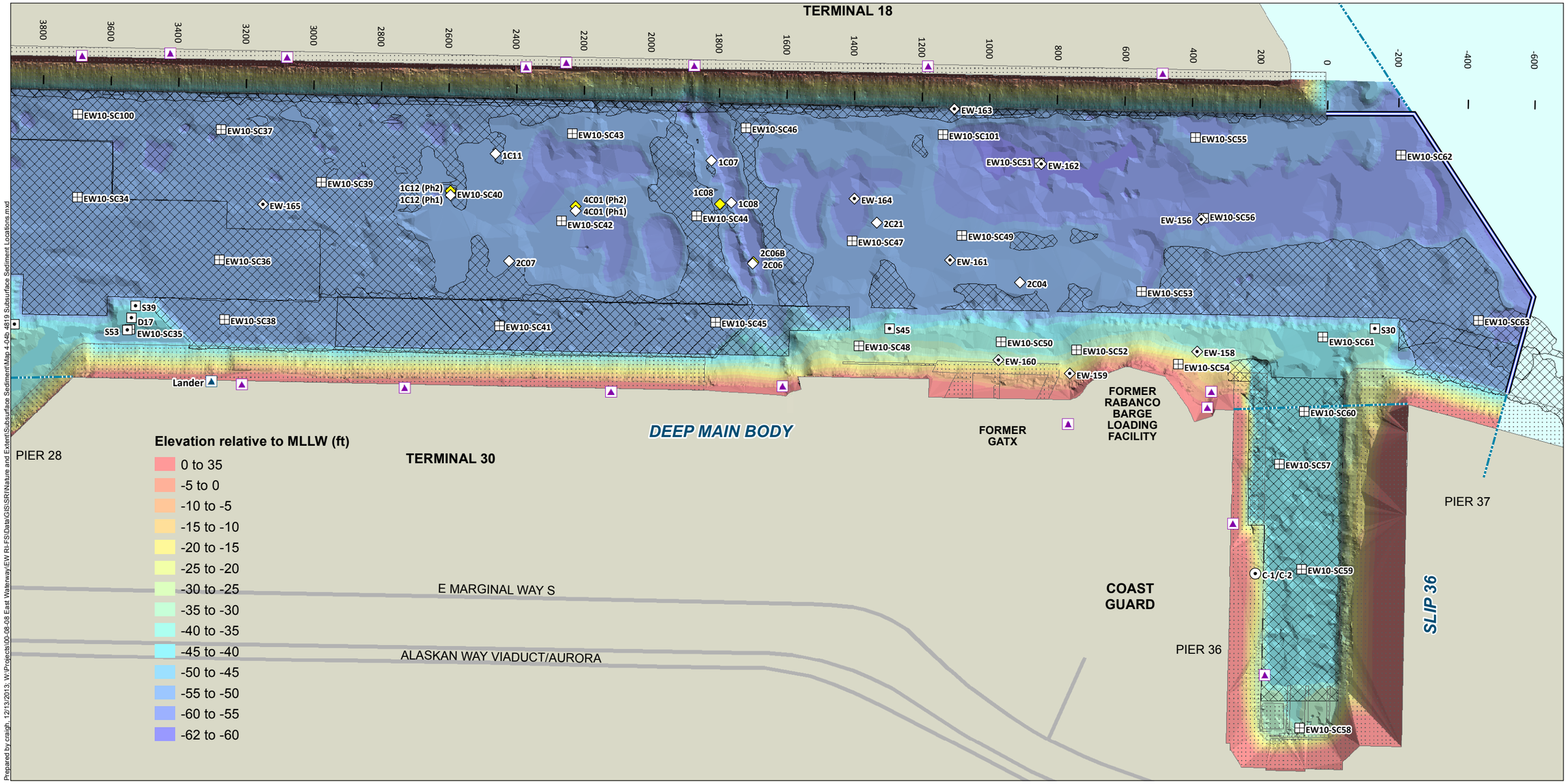
- Harbor Island RI
- HIRI95
- T18-Phase1
- T18-Phase 2
- Pier36-prelim
- EW-ChannelDeep
- EW/HI Nature and Extent Phase 3b
- East Waterway - Slip 27
- EW Subsurface Sed
- EW Subsurface Boring
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary



0 600

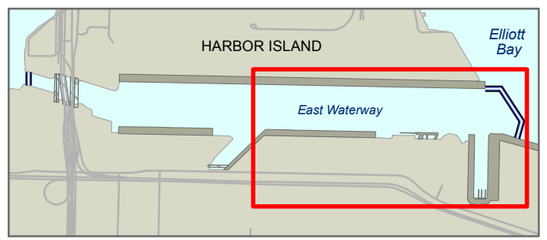
Scale in feet

Map 4-4a
Locations of SRI Baseline Subsurface Sediment Cores
Supplemental Remedial Investigations
East Waterway Study Area



Subsurface Core Location by Event

- Harbor Island RI
- HIRI95
- T18-Phase1
- T18-Phase 2
- Pier36-prelim
- EW-ChannelDeep
- EW/HI Nature and Extent Phase 3b
- East Waterway - Slip 27
- EW Subsurface Sed
- EW Subsurface Boring
- Storm Drain
- CSO/Storm Drain
- Area Dredged in the Last 11 Years
- Dock/Pier
- Road
- East Waterway Study Area Boundary



0 600

Scale in feet

Map 4-4b
Locations of SRI Baseline Subsurface Sediment Cores
Supplemental Remedial Investigations
East Waterway Study Area

WEST WATERWAY

WEST SEATTLE BRIDGE

SW SPOKANE ST

HARBOR ISLAND

13TH AVE SW

11TH AVE SW

ELLIOTT BAY

JUNCTION/SILL REACH

SHALLOW MAIN BODY

DEEP MAIN BODY

TERMINAL 102

TERMINAL 104

TERMINAL 18

7600 7400 7200 7000 6800 6600 6400 6200 6000 5800 5600 5400 5200 5000 4800 4600 4400 4200 4000 3800 3600 3400 3200 3000 2800 2600 2400 2200 2000 1800 1600 1400 1200 1000 800 600 400 200 0 -200 -400 -600

PIER 24*

Hinds

Hanford #2

TERMINAL 25

SLIP 27

PIER 28

Lander

TERMINAL 30

FORMER GATX

FORMER RABANCO BARGE LOADING FACILITY

PIER 37

SLIP 36

COAST GUARD

PIER 36

E MARGINAL WAY S

ALASKAN WAY VIADUCT/AURORA

* Historic pier location

Prepared by craigh, 12/13/2013; W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SRI\Nature and Extent\Map 4-05 4820 Fish tissue and shellfish locations.mxd

- Rockfish Sampling Location (2008)
- Juvenile Chinook Sampling Location (2009)

Tissue Collection Trawl Line

- Elliott Bay/Duwamish River Tissue (1995)
- EW Tissue (2005)
- EW Fish/Shellfish (2008)

Shellfish Collection Locations (2008)

- Crab Trap and Shrimp Trap
- Shrimp Trap
- Mussel
- Geoduck Sampling Location
- Clam Collection Beach

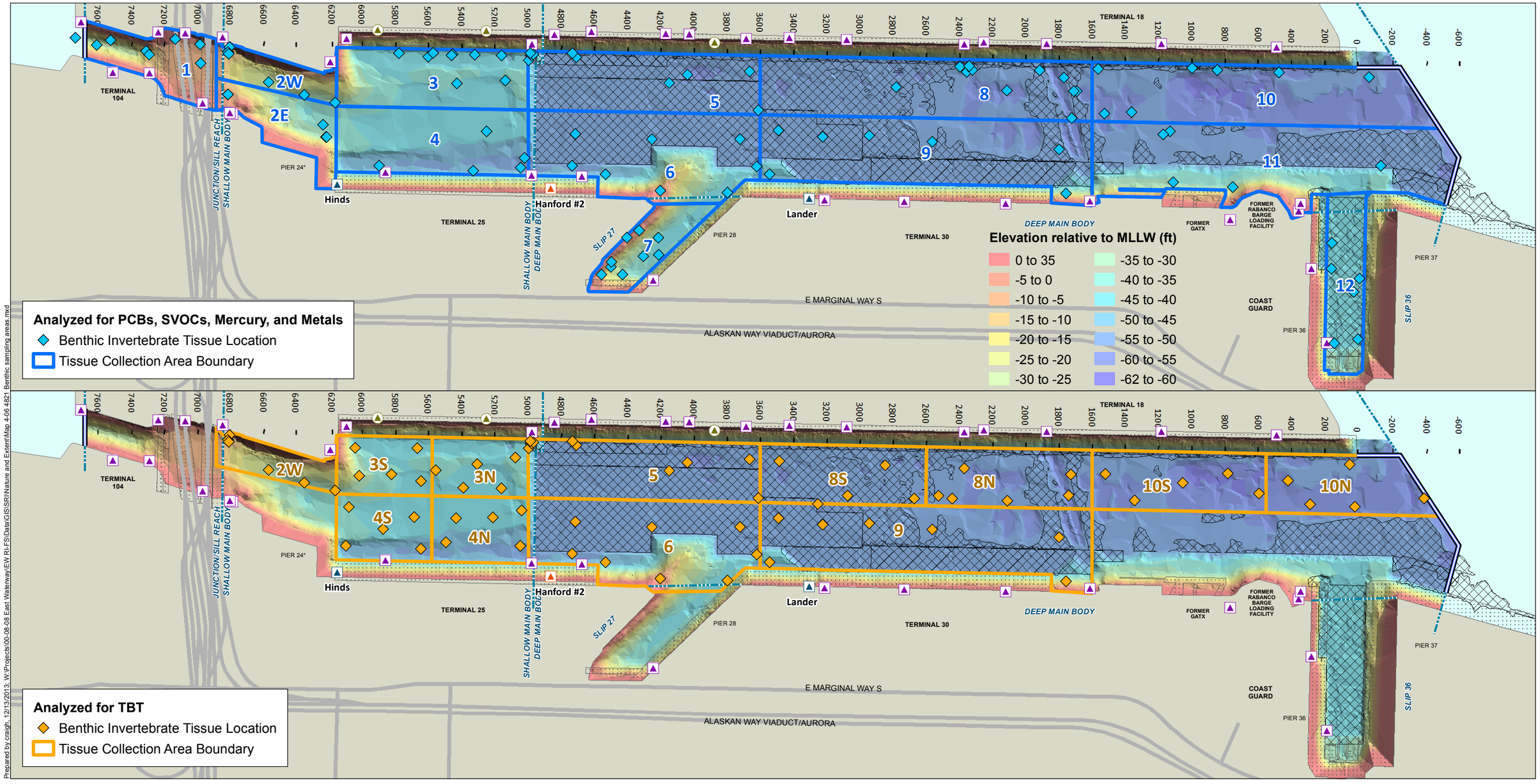
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

0 600

Scale in feet

Map 4-5

SRI Baseline Fish and Shellfish Tissue Sampling Locations
Supplemental Remedial Investigation
East Waterway Study Area

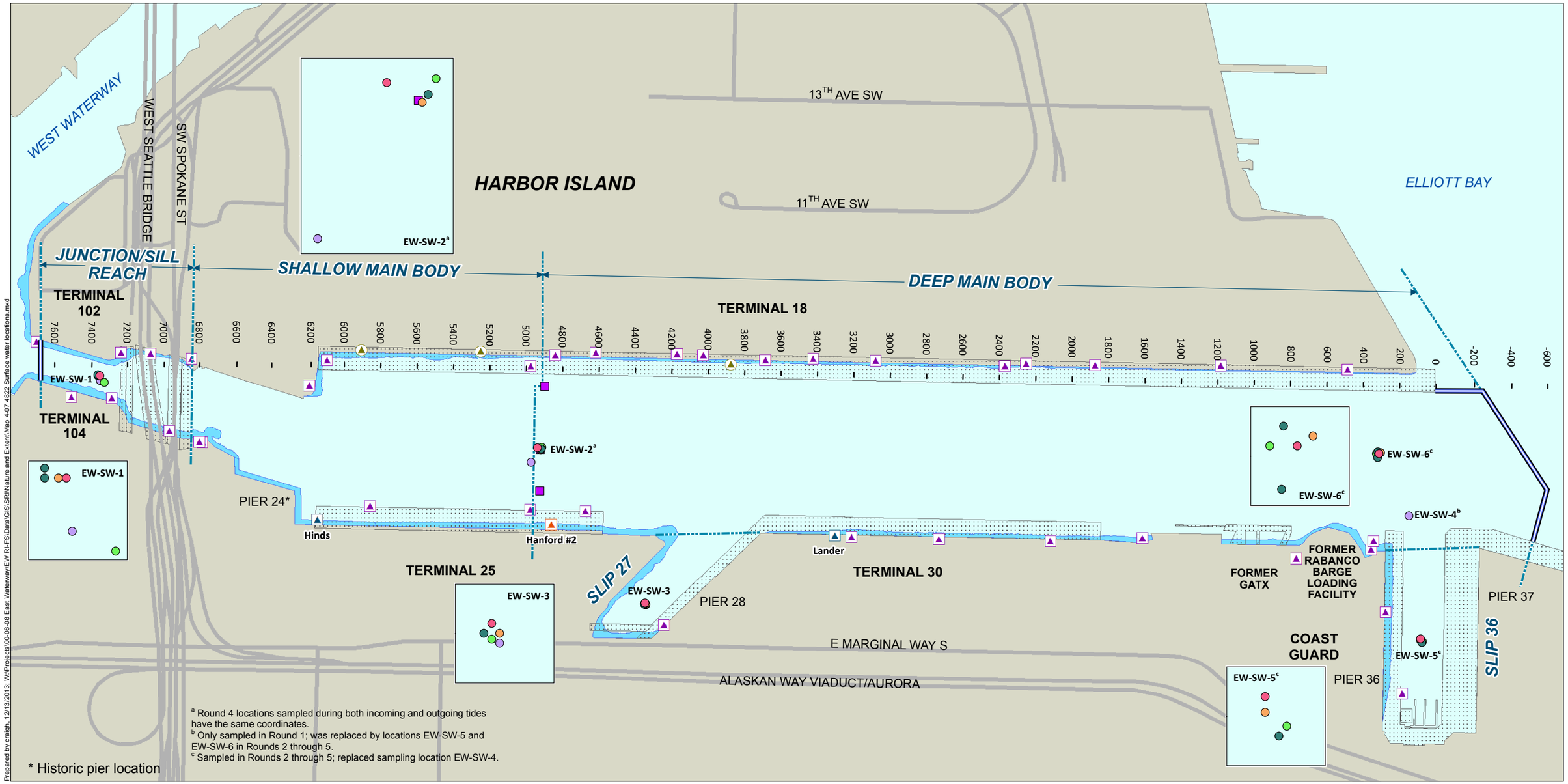


Prepared by craigh, 12/13/2013, W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SRI\Nature and Extent\Map 4-06 4821 Benthic sampling areas.mxd

- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

0 600
Scale in feet

Map 4-6
SRI Baseline Benthic Invertebrate Tissue Sampling Locations
Supplemental Remedial Investigation
East Waterway Study Area



[a] Round 4 locations sampled during both incoming and outgoing tides have the same coordinates.
[b] Only sampled in Round 1; was replaced by locations EW-SW-5 and EW-SW-6 in Rounds 2 through 5.
[c] Sampled in Rounds 2 through 5; replaced sampling location EW-SW-4.

* Historic pier location

Sampled Surface Water Locations

- SRI Round 1 (Sept 11-12, 2008)
- SRI Round 2 (Sept 25-27, 2008)
- SRI Round 3 (Dec 9-11, 2008)
- SRI Round 4 (Jan 7-9, 2009)
- SRI Round 5 (Feb 21-23, 2009)
- King County WQA

- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Dock/Pier/Bridge
- Intertidal Zone
- Road
- East Waterway Study Area Boundary

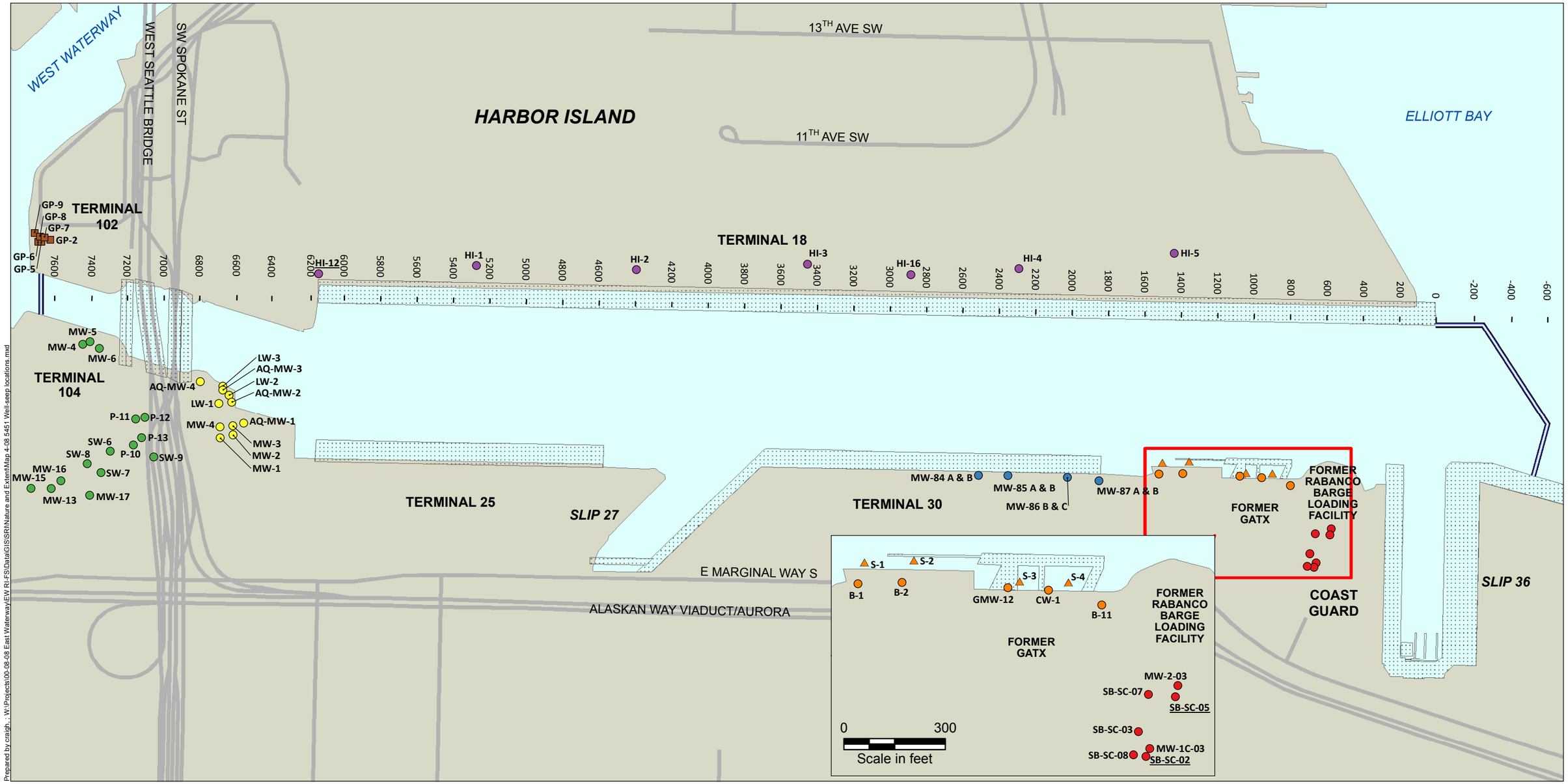
Note: Samples collected from two depths: 1 m below water surface and 1 m above sediment surface at all locations.

0 600 Scale in feet

0 20 Scale in feet (insets)

Map 4-7
SRI Baseline Surface Water Sampling Locations
Supplemental Remedial Investigation
East Waterway Study Area

Prepared by craigh, 12/13/2013; W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SRI\Nature and Extent\Map 4-07 4822 Surface water locations.mxd



Prepared by craigh... W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SRI\Nature and Extent\Map 4-08 5451 Well-seep locations.mxd

Evaluated Wells[a]

- Coast Guard (Pier 35)
- Former Chevron (Terminal 30)
- Former GATX (Pier 34)
- Harbor Island Soil and Groundwater OU
- Terminal 104 and Vicinity
- Terminal 25

Approximate Geoprobe Borings (Evaluated Wells)

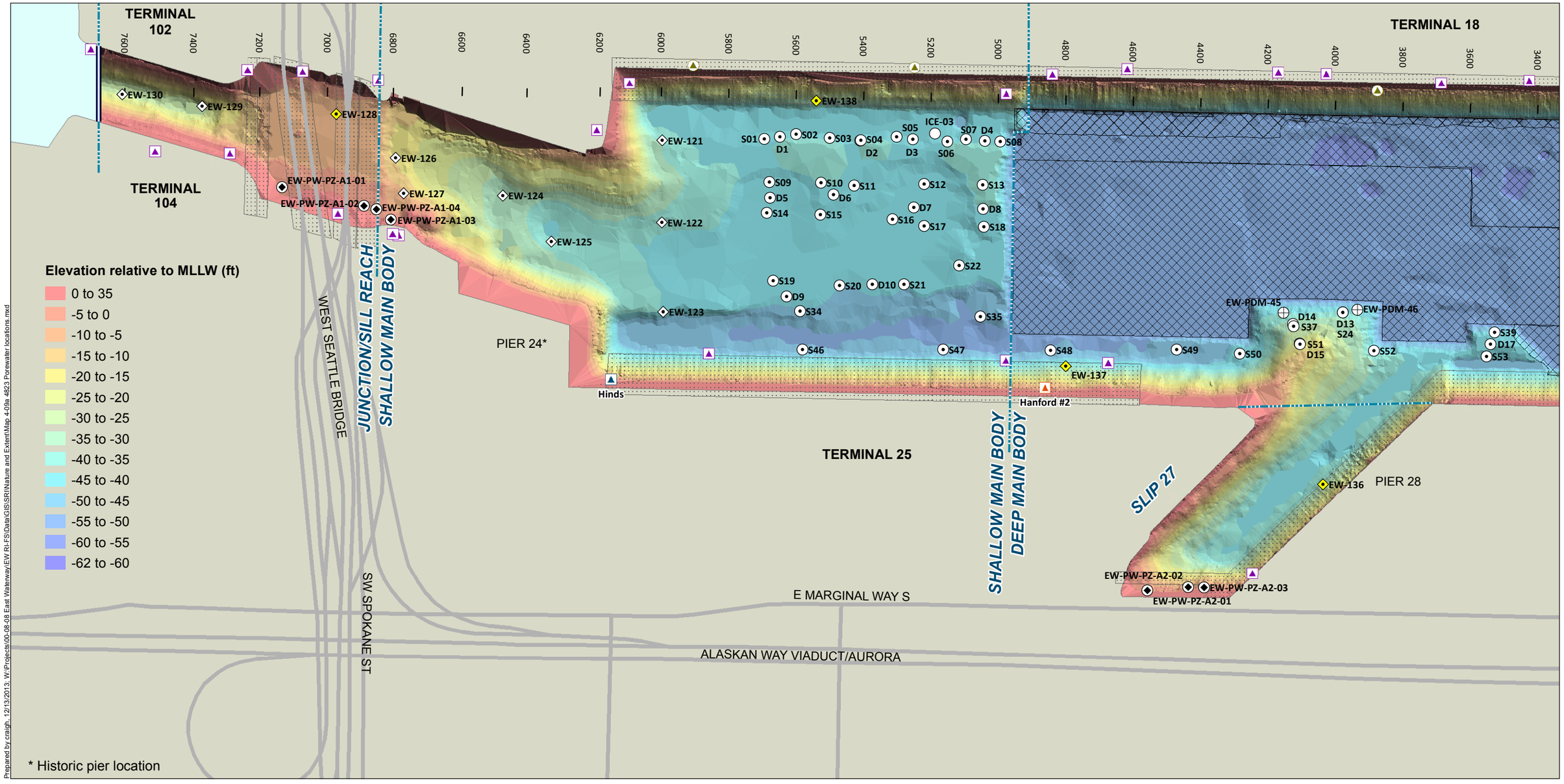
- Terminal 102 LUST Site

Evaluated Seep Sample Locations

- Former GATX (Pier 34)
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

[a] Locations with underlined labels are associated with water quality exceedances.

Map 4-8
Evaluated Well and Seep Locations
Supplemental Remedial Investigation
East Waterway Study Area



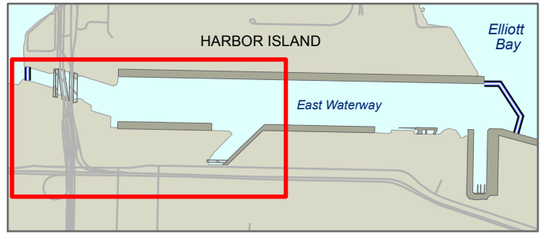
Porewater Sampling Locations

Analyzed for TBT - Subsurface Sediment
- Harbor Island RI
- T18-Phase 2
- Pier36-prelim
- EW-ChannelDeep

Analyzed for TBT - Surface Sediment
- EW Pre-Sand Placement Monitoring
- EW/HI Nature and Extent Phase 2
- EW/HI Nature and Extent Phase 1

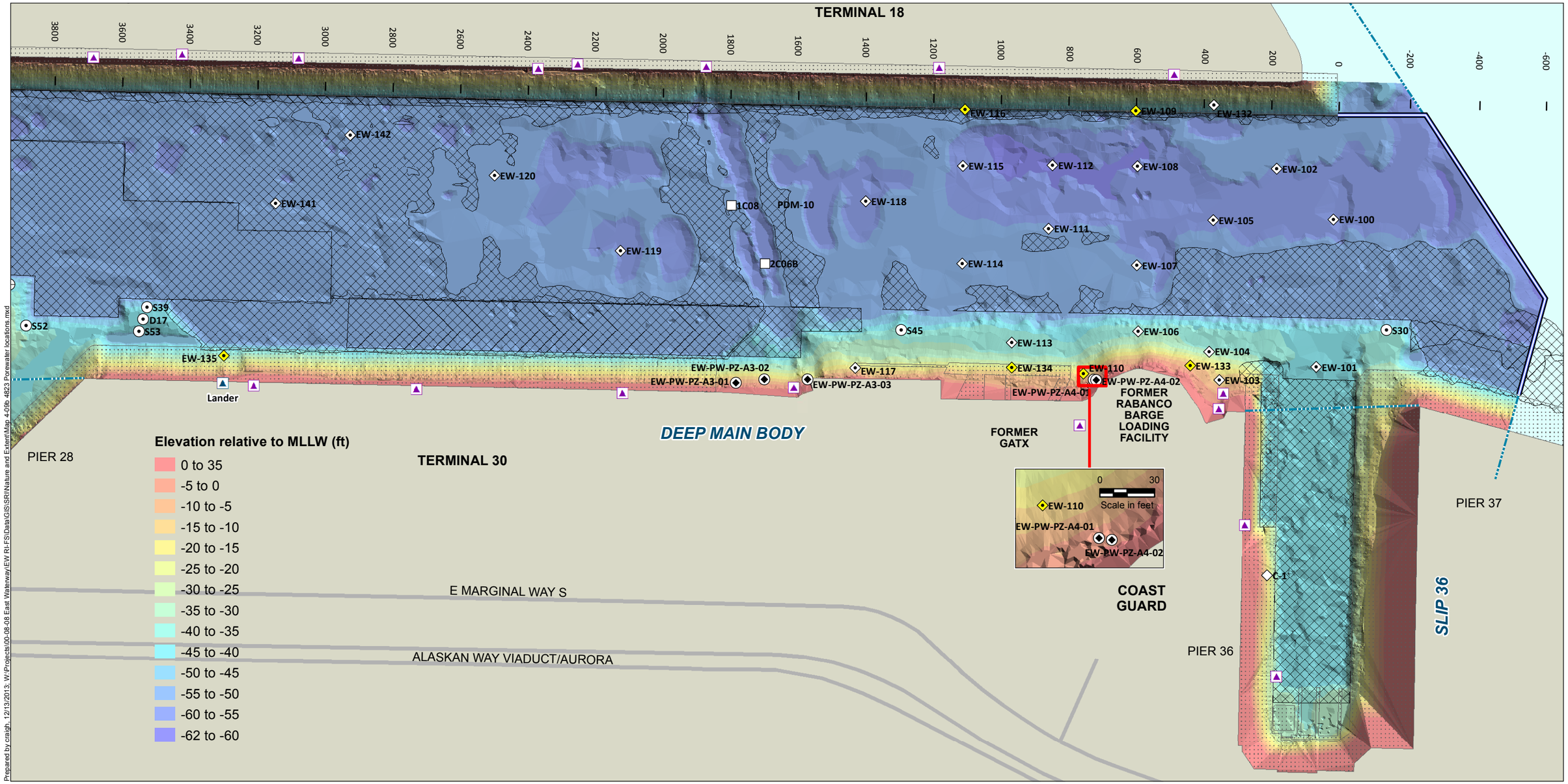
Analyzed for VOC
- EW Porewater

- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary



0 600
Scale in feet

Map 4-9a
SRI Baseline Porewater Sampling Locations
Supplemental Remedial Investigation
East Waterway Study Area



Porewater Sampling Locations

Analyzed for TBT - Subsurface Sediment

- Harbor Island RI
- T18-Phase 2
- Pier36-prelim
- EW-ChannelDeep

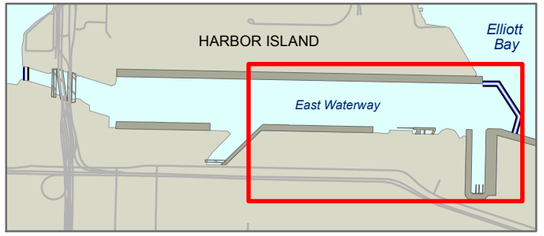
Analyzed for TBT - Surface Sediment

- EW Pre-Sand Placement Monitoring
- EW/HI Nature and Extent Phase 2
- EW/HI Nature and Extent Phase 1

Analyzed for VOC

- EW Porewater

- Storm Drain
- CSO/Storm Drain
- Area Dredged in the Last 11 Years
- Dock/Pier
- Road
- East Waterway Study Area Boundary

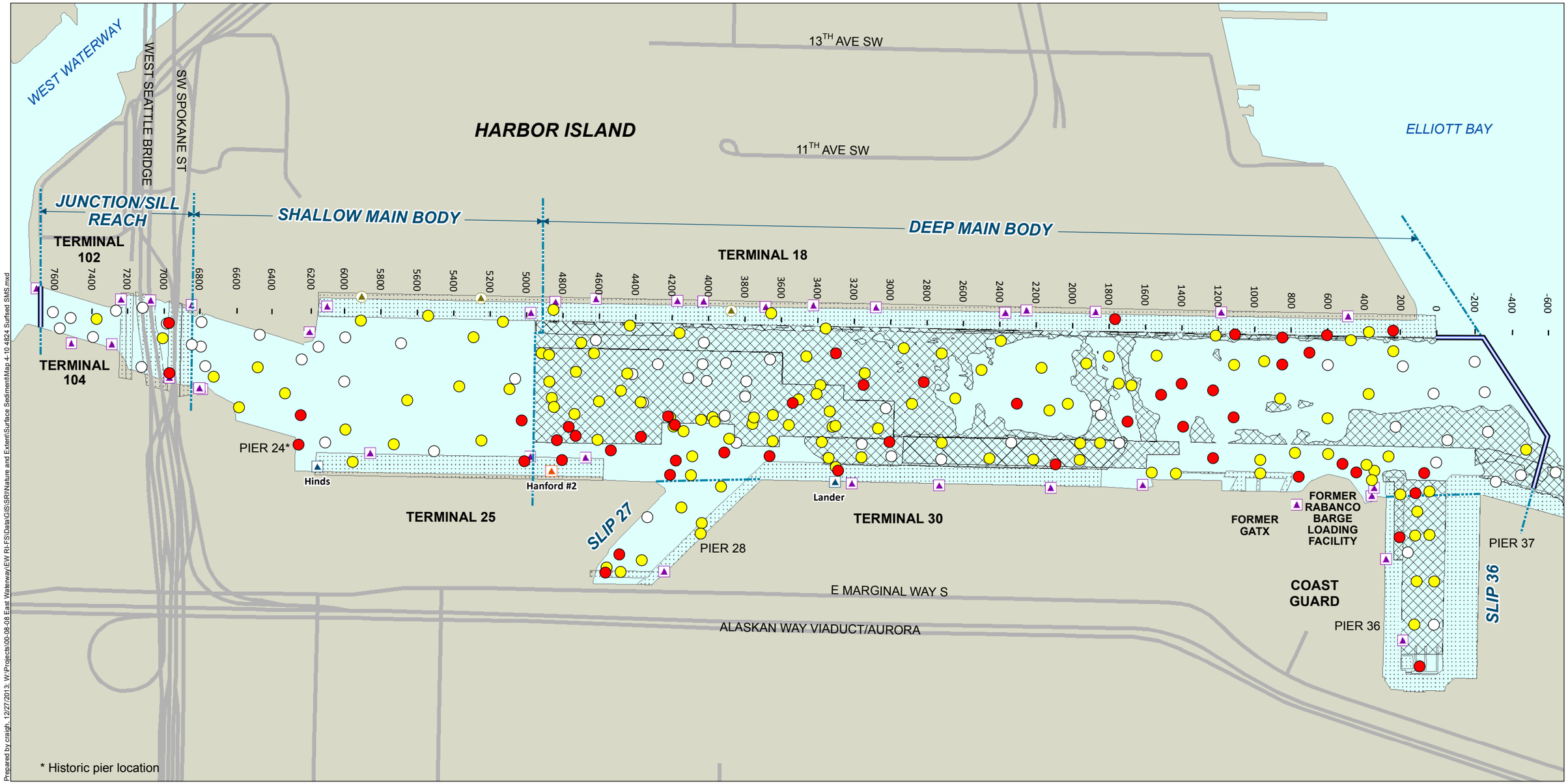


0 600

Scale in feet

Map 4-9b

SRI Baseline Porewater Sampling Locations
Supplemental Remedial Investigation
East Waterway Study Area



0 600
Scale in feet

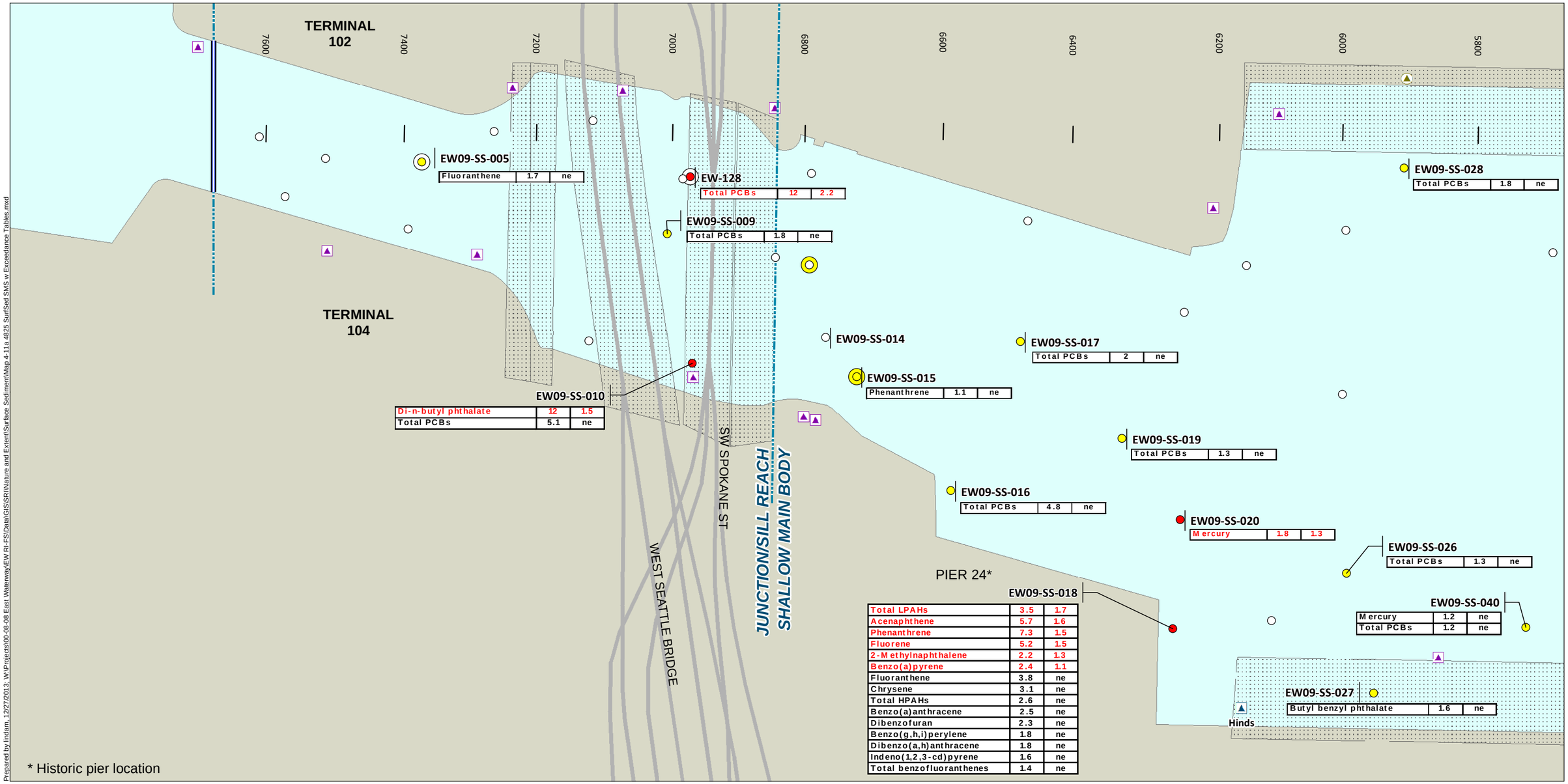
SMS Exceedances at Surface Sediment Sampling Locations
- > CSL, Detect
- > SQS and ≤ CSL, Detect
- ≤ SQS or Non-detect

- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall

- Dock/Pier/Bridge
- Area Dredged in the Last 11 Years
- Road
- East Waterway Study Area Boundary

Map 4-10
Exceedances of SQS and CSL Numerical Criteria by All Chemicals with SMS Criteria in the Surface Sediment Dataset
Supplemental Remedial Investigation
East Waterway Study Area

Prepared by lindam, 12/27/2013; W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SRINature and Extent\Surface Sediment\Map 4-11a 48x25 SurfSed SMS w Exceedance Tables.mxd



* Historic pier location

Analyte	Exceedance Factor	
	SQS	CSL
PCBs	15	2.8

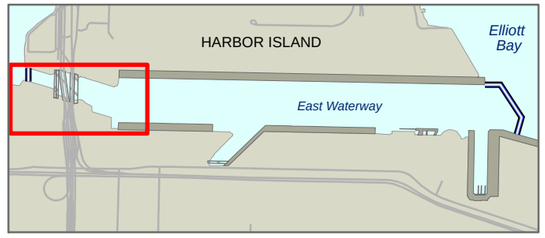
Chemicals in red exceeded CSL. The EF has no regulatory relevance and is presented here to provide an indication of the general magnitude of the concentration. Sampling locations were analyzed for all SMS chemicals. "ne" = not exceeded.

Surface Sediment SMS Status
- > CSL, Detect
- > SQS and ≤ CSL, Detect
- ≤ SQS or Non-detect

Toxicity Test Results[a]
- Fails CSL
- Fails SQS
- Pass

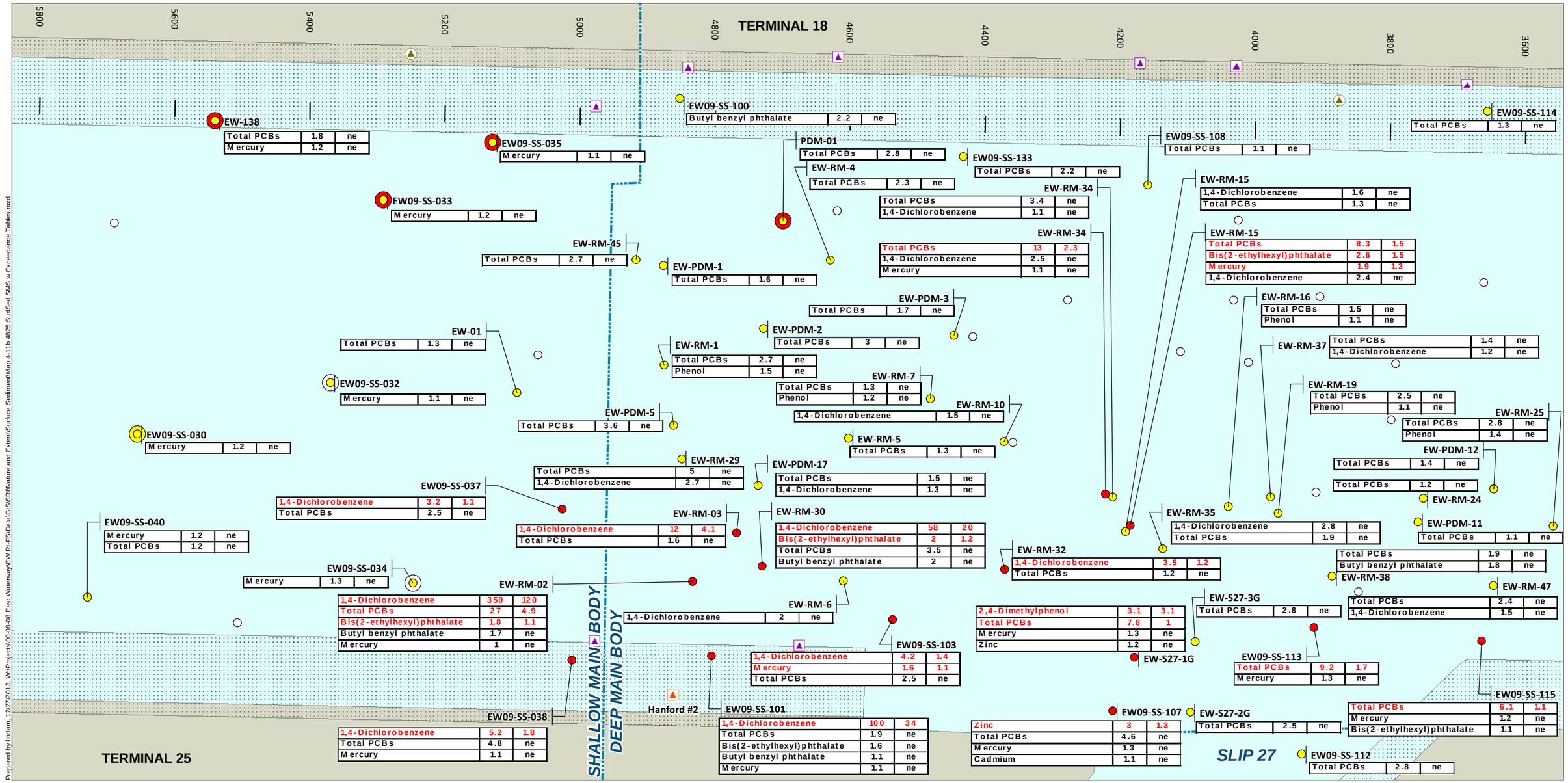
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

[a] Toxicity test results on Map 4-12.



0 300
Scale in feet

Map 4-11a
Chemical and Toxicity Test Results for Surface Sediment Sampling Locations Compared with SMS Criteria
Supplement Remedial Investigation
East Waterway Study Area



Prepared by lindam, 12/27/2013; W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SRI\Nature and Extent\Surface Sediment\Map 4-11b 4825 SurfSed SMS w Exceedance Tables.mxd

Analyte	Exceedance Factor	
	SQS	CSL
PCBs	15	2.8

Chemicals in red exceeded CSL. The EF has no regulatory relevance and is presented here to provide an indication of the general magnitude of the concentration. Sampling locations were analyzed for all SMS chemicals. "ne" = not exceeded.

Surface Sediment SMS Status
- > CSL, Detect
- > SQS and ≤ CSL, Detect
- ≤ SQS or Non-detect

Toxicity Test Results[a]
- Fails CSL
- Fails SQS
- Pass

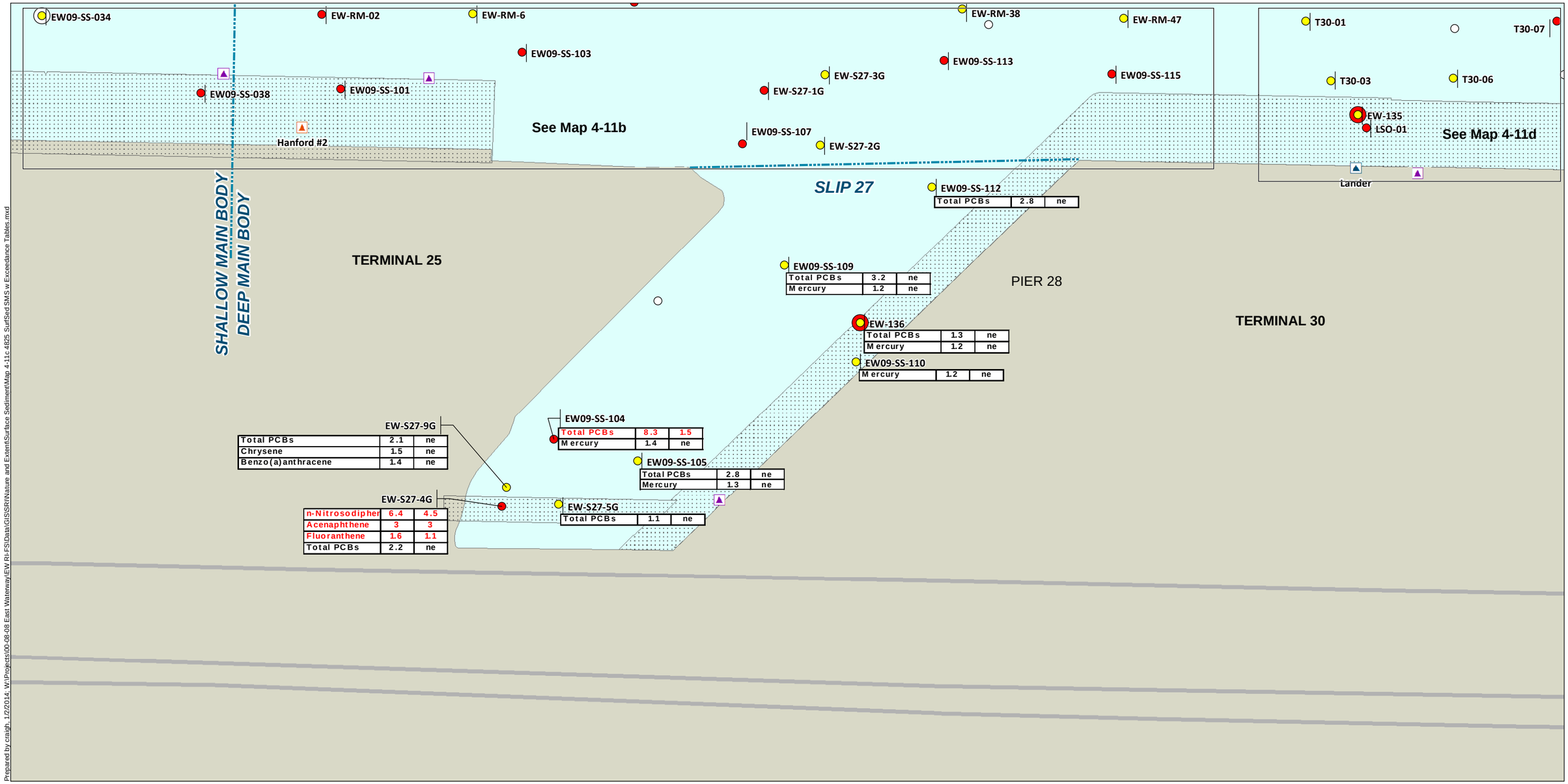
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

[a] Toxicity test results on Map 4-12.



0 300
Scale in feet

Map 4-11b
Chemical and Toxicity Test Results for Surface Sediment Sampling Locations Compared with SMS Criteria
Supplement Remedial Investigation
East Waterway Study Area



Prepared by craigh, 1/2/2014; W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SRINature and Extent\Surface Sediment\Map 4-11c 4825 SurfSed SMS w Exceedance Tables.mxd

Analyte	Exceedance Factor	
	SQS	CSL
PCBs	15	2.8

Chemicals in red exceeded CSL. The EF has no regulatory relevance and is presented here to provide an indication of the general magnitude of the concentration. Sampling locations were analyzed for all SMS chemicals. "ne" = not exceeded.

Surface Sediment SMS Status
- > CSL, Detect
- > SQS and ≤ CSL, Detect
- ≤ SQS or Non-detect

Toxicity Test Results[a]
- Fails CSL
- Fails SQS
- Pass

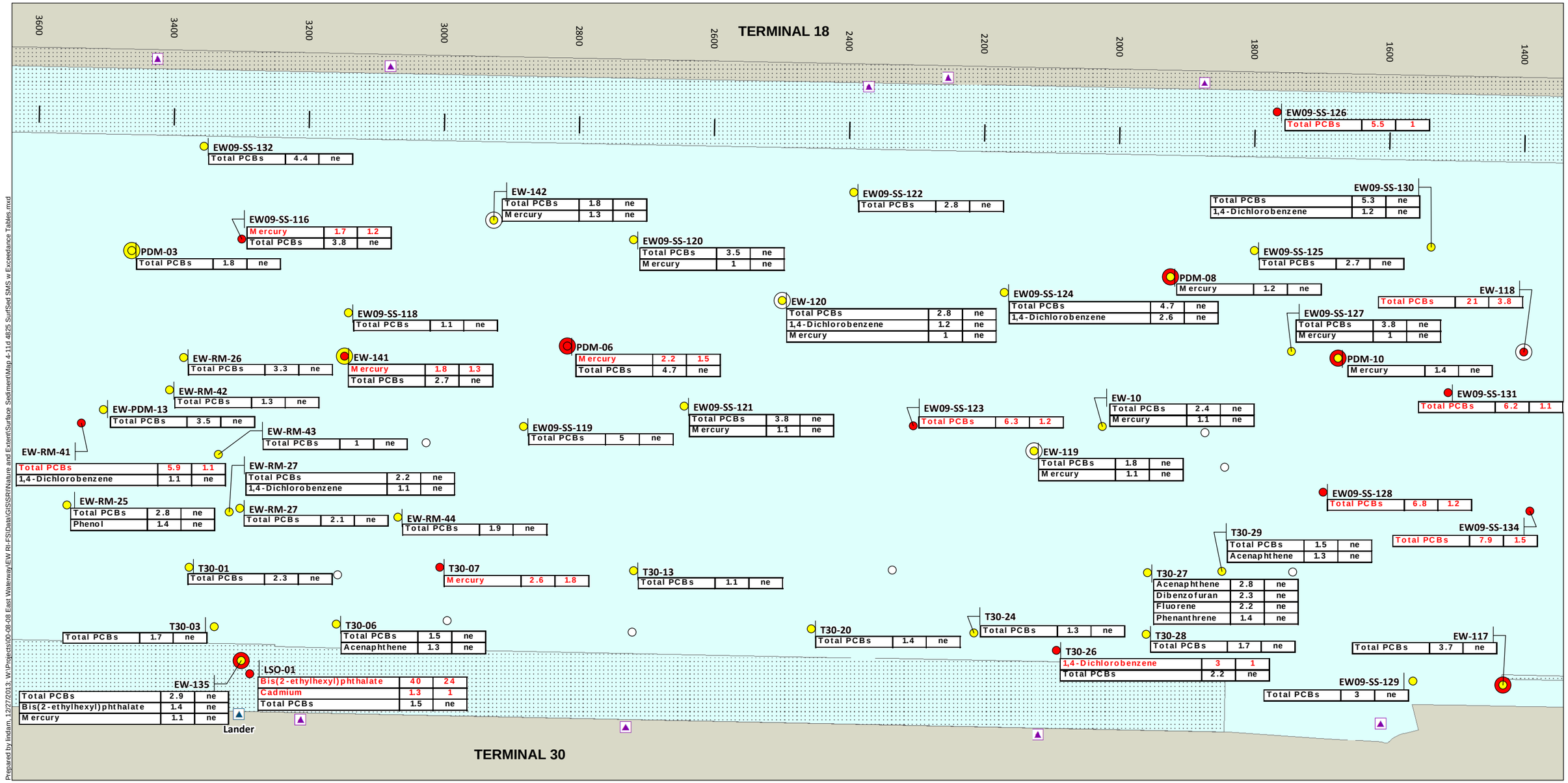
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

[a] Toxicity test results on Map 4-12.



0 300
Scale in feet

Map 4-11c
Chemical and Toxicity Test Results for Surface Sediment Sampling Locations Compared with SMS Criteria
Supplement Remedial Investigation
East Waterway Study Area



Prepared by lindam, 12/27/2013; W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SR\Nature and Extent\Surface Sediment\Map 4-11d 48;25 SurfSed SMS w Exceedance Tables.mxd

Analyte	Exceedance Factor	
	SQS	CSL
PCBs	15	2.8

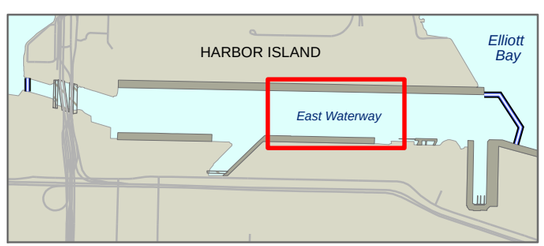
Chemicals in red exceeded CSL. The EF has no regulatory relevance and is presented here to provide an indication of the general magnitude of the concentration. Sampling locations were analyzed for all SMS chemicals. "ne" = not exceeded.

Surface Sediment SMS Status
- > CSL, Detect
- > SQS and ≤ CSL, Detect
- ≤ SQS or Non-detect

Toxicity Test Results[a]
- Fails CSL
- Fails SQS
- Pass

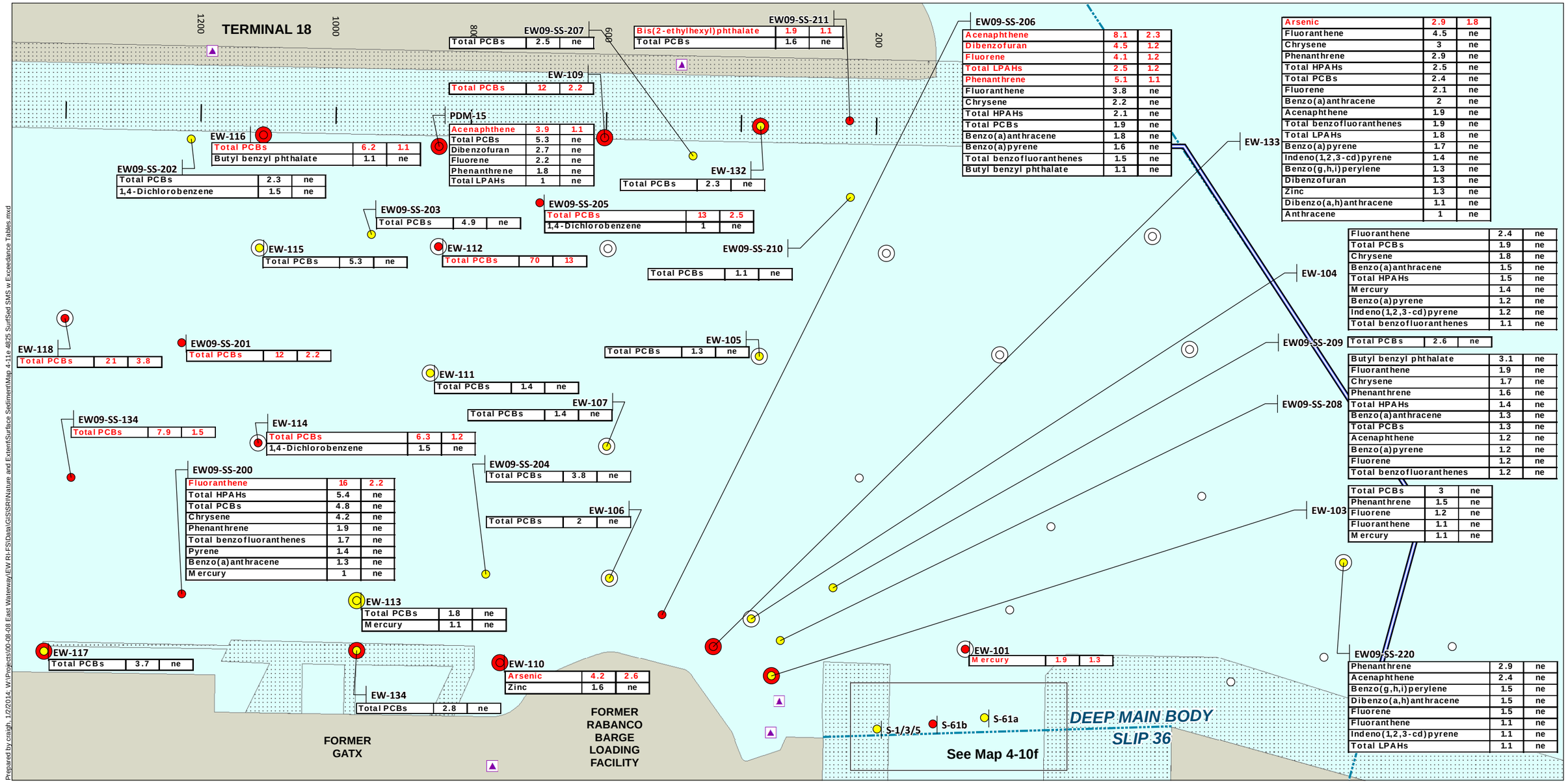
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

[a] Toxicity test results on Map 4-12.



0 300
Scale in feet

Map 4-11d
Chemical and Toxicity Test Results for Surface Sediment Sampling Locations Compared with SMS Criteria
Supplement Remedial Investigation
East Waterway Study Area



Prepared by craigh, 1/2/2014, W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SRI\Nature and Extent\Surface Sediment\Map 4-11e 4825 SurfSed SMS w Exceedance Tables.mxd

Analyte	Exceedance Factor	
	SQS	CSL
PCBs	15	2.8

Chemicals in red exceeded CSL. The EF has no regulatory relevance and is presented here to provide an indication of the general magnitude of the concentration. Sampling locations were analyzed for all SMS chemicals. "ne" = not exceeded.

Surface Sediment SMS Status
- > CSL, Detect
- > SQS and ≤ CSL, Detect
- ≤ SQS or Non-detect

Toxicity Test Results[a]
- Fails CSL
- Fails SQS
- Pass

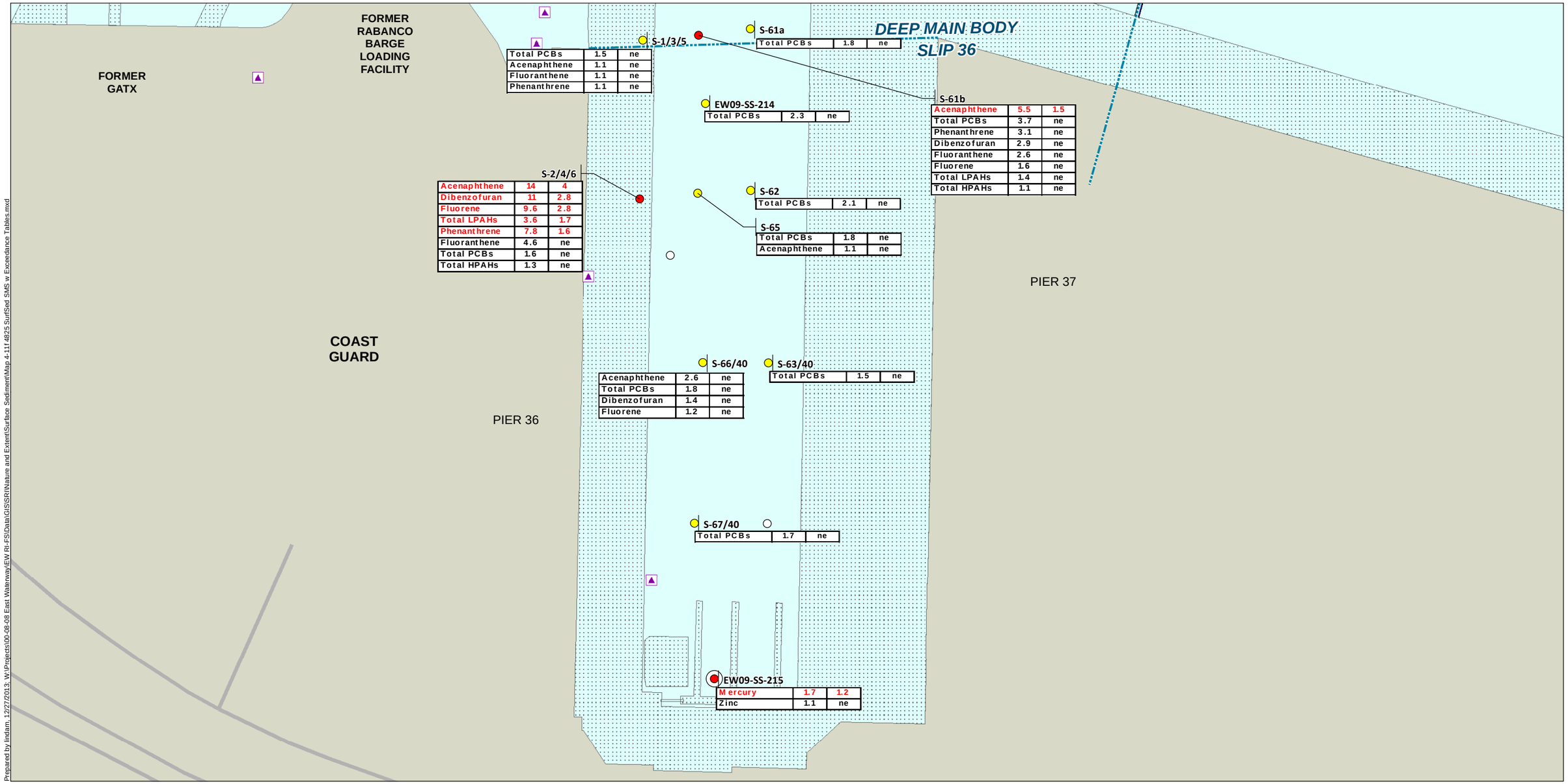
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

[a] Toxicity test results on Map 4-12.



0 300
Scale in feet

Map 4-11e
Chemical and Toxicity Test Results for Surface Sediment Sampling Locations Compared with SMS Criteria
Supplement Remedial Investigation
East Waterway Study Area



Prepared by lindam, 12/27/2013; W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SRI\Nature and Extent\Surface Sediment\Map 4-11f 4825 SurfSed SMS w Exceedance Tables.mxd

Analyte	Exceedance Factor	
	SQS	CSL
PCBs	15	2.8

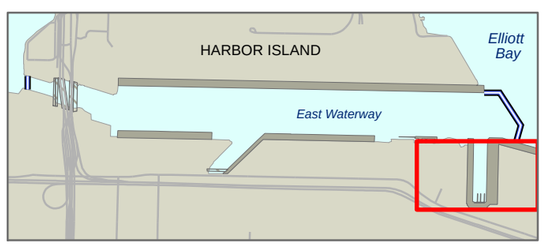
Chemicals in red exceeded CSL. The EF has no regulatory relevance and is presented here to provide an indication of the general magnitude of the concentration. Sampling locations were analyzed for all SMS chemicals. "ne" = not exceeded.

Surface Sediment SMS Status
- > CSL, Detect
- > SQS and ≤ CSL, Detect
- ≤ SQS or Non-detect

Toxicity Test Results[a]
- Fails CSL
- Fails SQS
- Pass

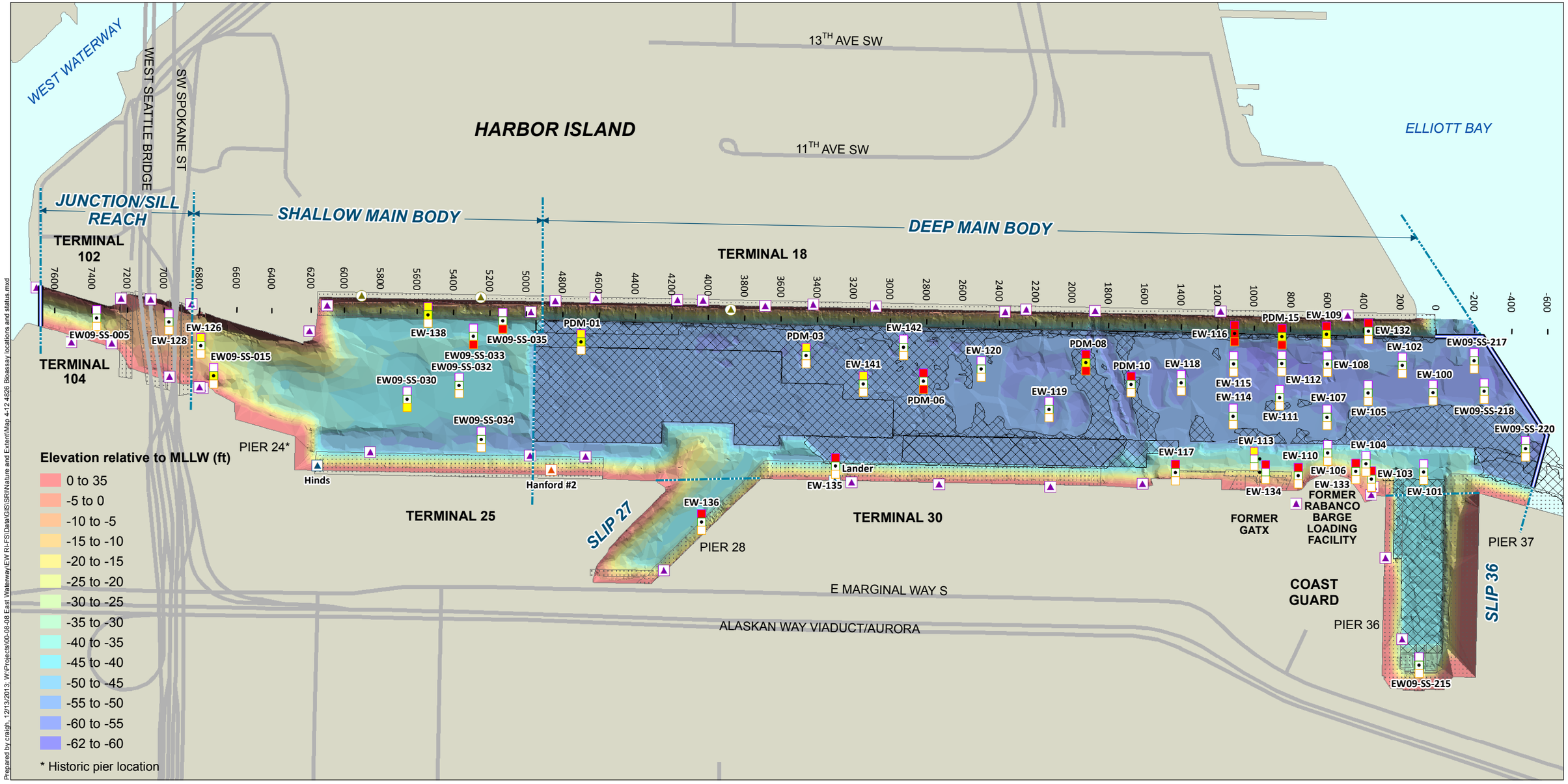
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

[a] Toxicity test results on Map 4-12.



0 300
Scale in feet

Map 4-11f
Chemical and Toxicity Test Results for Surface Sediment
Sampling Locations Compared with SMS Criteria
Supplement Remedial Investigation
East Waterway Study Area



Toxicity test results

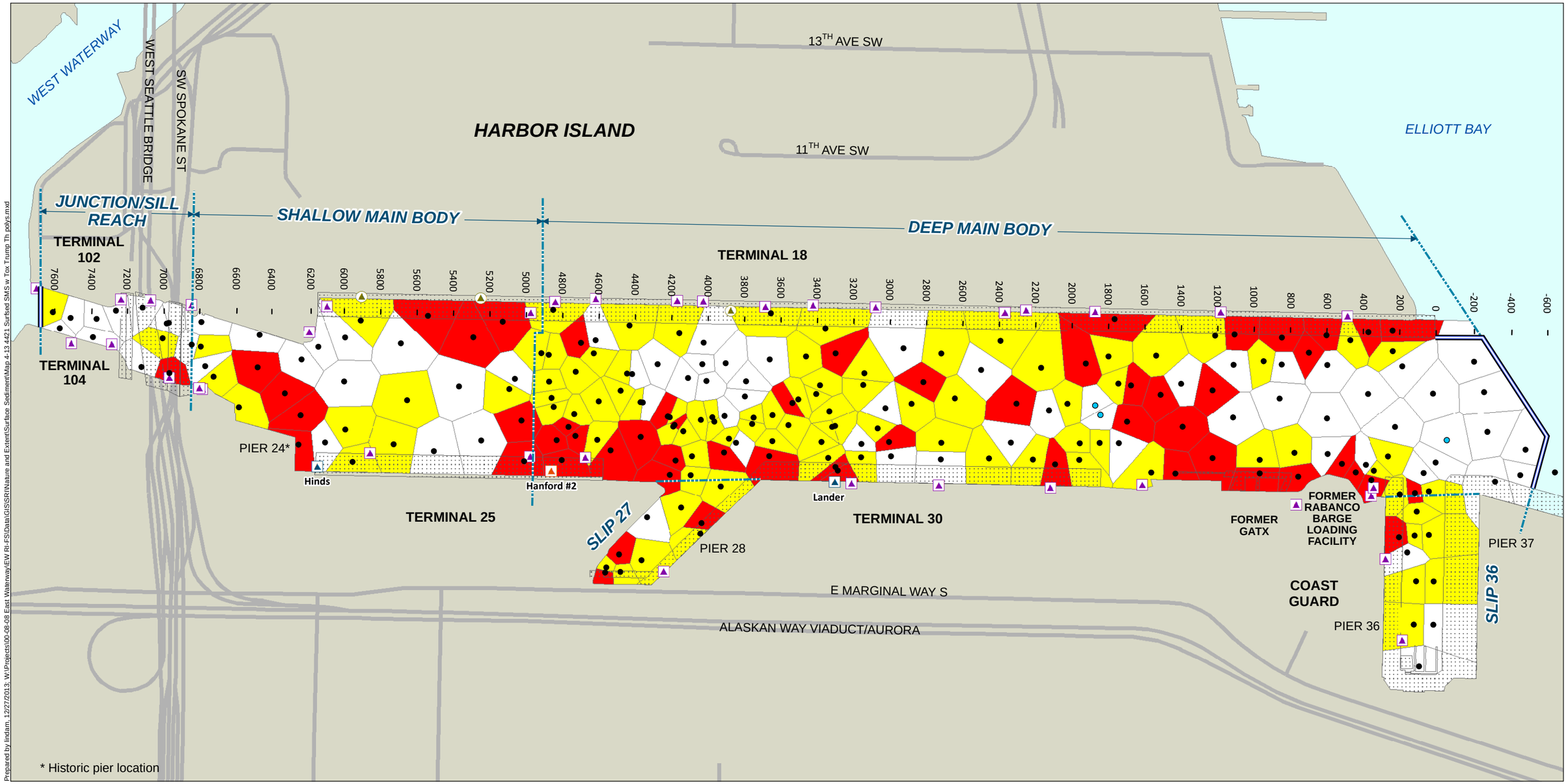
Sample Location
- Larval
- Polychaete
- Amphipod

- > CSL
- > SQS and ≤ CSL
- ≤ SQS

- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

0 600
Scale in feet

Map 4-12
Surface Sediment Toxicity Test Results for Individual Bioassay Tests
Supplemental Remedial Investigation
East Waterway Study Area



Final SMS Status (Chemical Criteria and Toxicity Combined) in Surface Sediment

- > CSL
- > SQS and ≤ CSL
- ≤ SQS
- Surface Sediment Sampling Location
- Restricted Analyte Location[a]
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

[a] Not analyzed for SVOCs, phthalates, or metals other than mercury.

0 600
Scale in feet

Map 4-13
Exceedances of SQS and CSL (Chemical Criteria and Toxicity Combined)
Using Thiessen Polygons for the Surface Sediment Dataset
Supplemental Remedial Investigation
East Waterway Study Area

7000 6800 6600 6400 6200 6000

EW10-SC03
EW10-SC04
EW10-SC05
EW10-SC07B
EW10-SC10
EW-167
EW10-SC06
EW10-SC11
EW-166
EW10-SC08
EW10-SC09
Hinds

JUNCTION/SILL REACH
SHALLOW MAIN BODY

PIER 24*

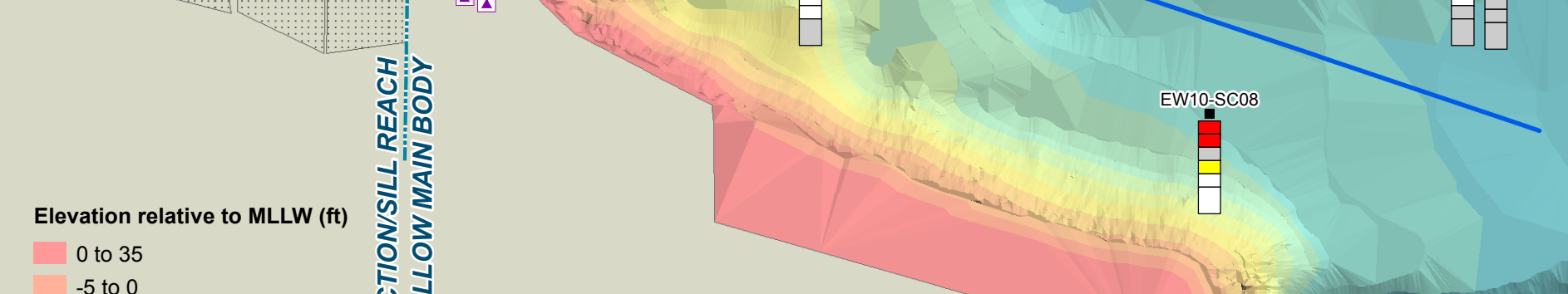
Elevation relative to MLLW (ft)

- 0 to 35
- -5 to 0
- -10 to -5
- -15 to -10
- -20 to -15
- -25 to -20
- -30 to -25
- -35 to -30
- -40 to -35
- -45 to -40
- -50 to -45
- -55 to -50
- -60 to -55
- -62 to -60

* Historic pier location

Prepared by craigh, 12/13/2013, W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SR\Nature and Extent\Subsurface Sediment\Map 4-14a 4927 Subsurface SMS.mxd

Bathymetry Profile

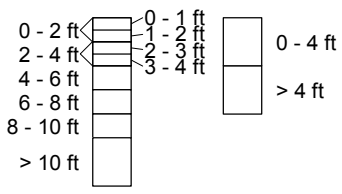


Subsurface Core Depth Charts

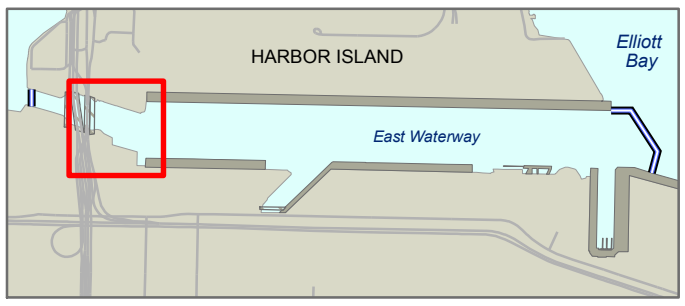
- Subsurface Core Location

SMS Exceedance

- > CSL, Detect
- > SQS and ≤ CSL, Detect
- ≤ SQS or Non-detect
- Not Analyzed for This Interval

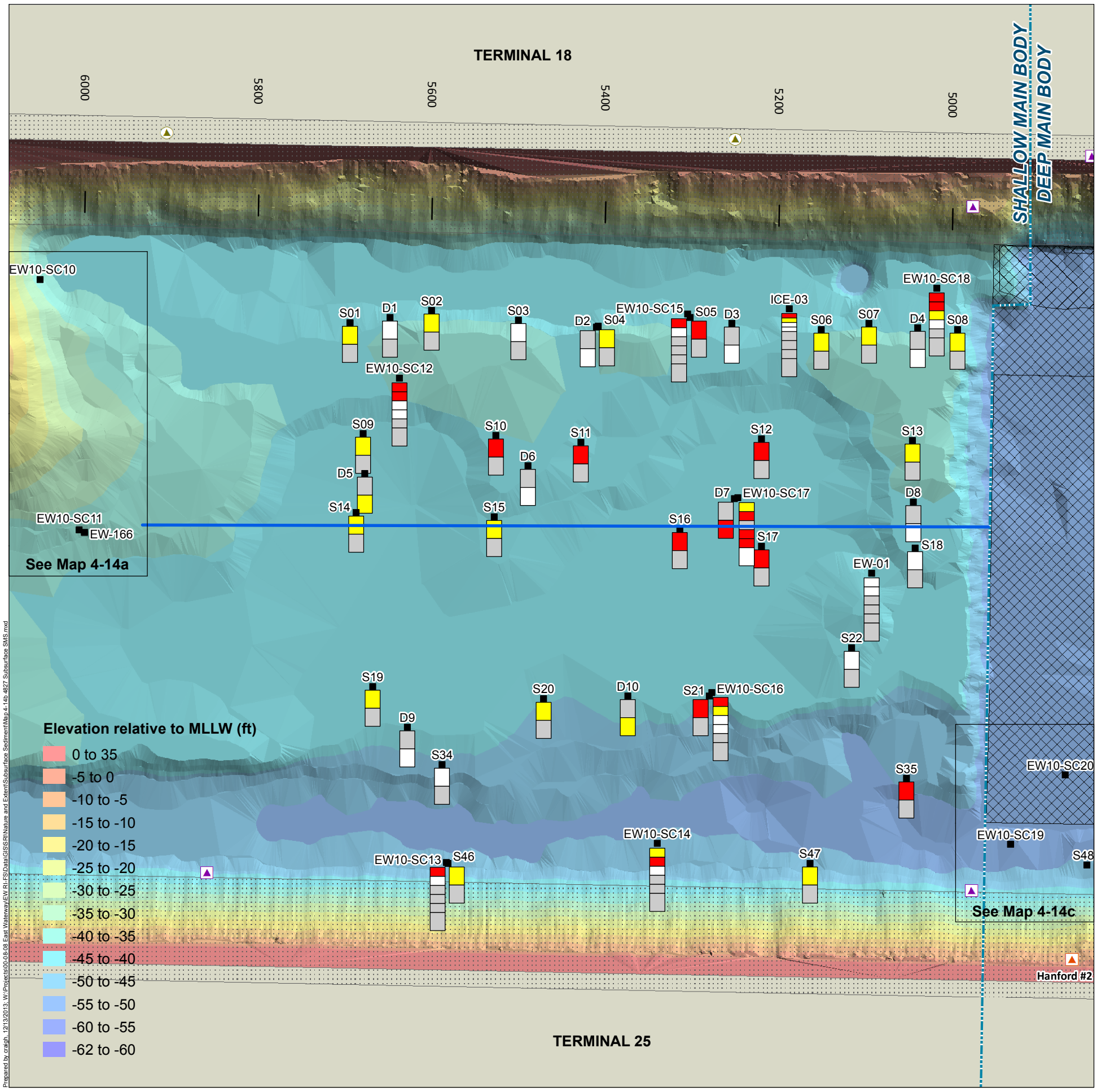


- Dock/Pier/Bridge
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown
- East Waterway Study Area Boundary

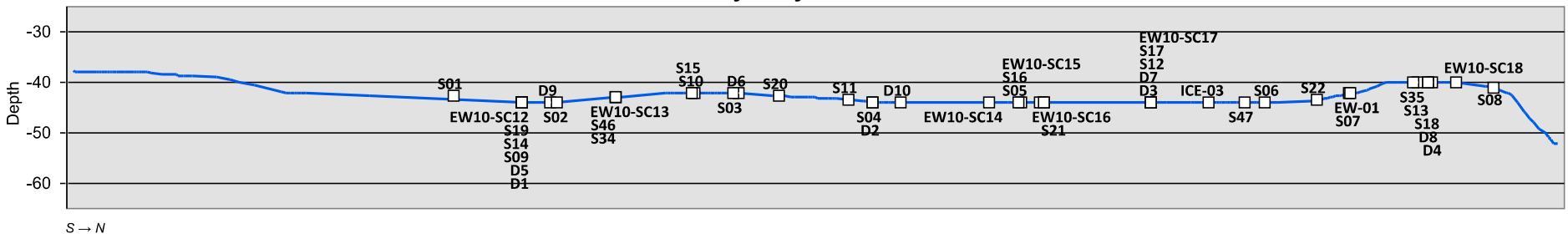


0 150
Scale in feet

Map 4-14a
Concentrations of All SMS Chemicals in Subsurface Sediment Cores Compared with SMS Criteria (SQS or CSL)
Supplemental Remedial Investigation
East Waterway Study Area



Bathymetry Profile



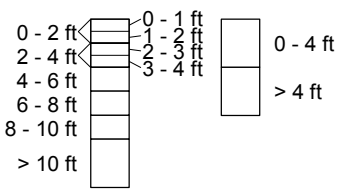
Subsurface Core Depth Charts

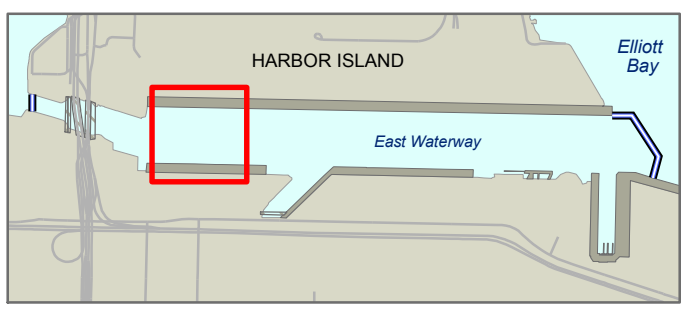
- Subsurface Core Location

SMS Exceedance

- > CSL, Detect
- > SQS and ≤ CSL, Detect
- ≤ SQS or Non-detect
- Not Analyzed for This Interval

- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown
- East Waterway Study Area Boundary

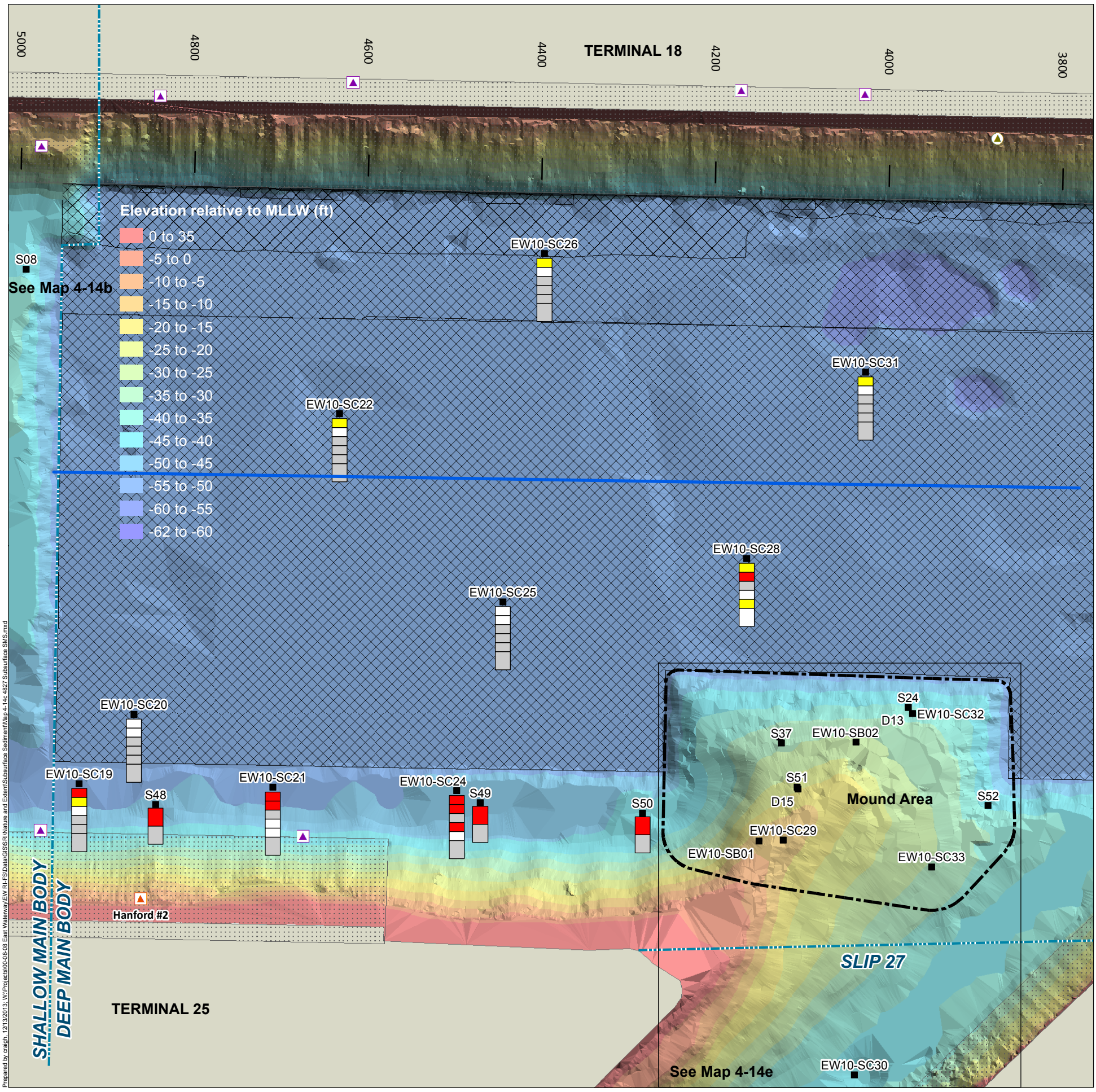


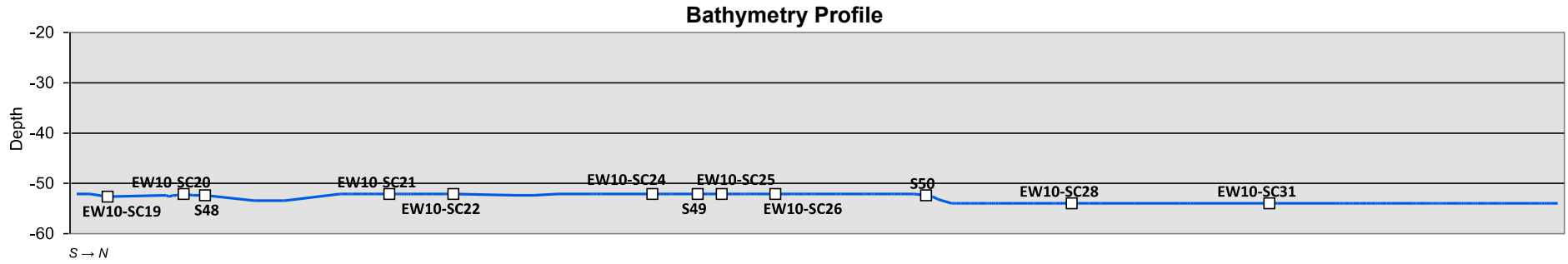


0 150

Scale in feet

Map 4-14b
Concentrations of All SMS Chemicals in Subsurface Sediment Cores Compared with SMS Criteria (SQS or CSL)
Supplemental Remedial Investigation
East Waterway Study Area





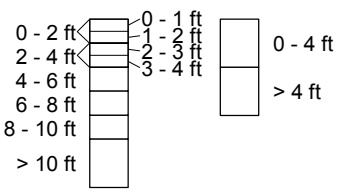
Subsurface Core Depth Charts

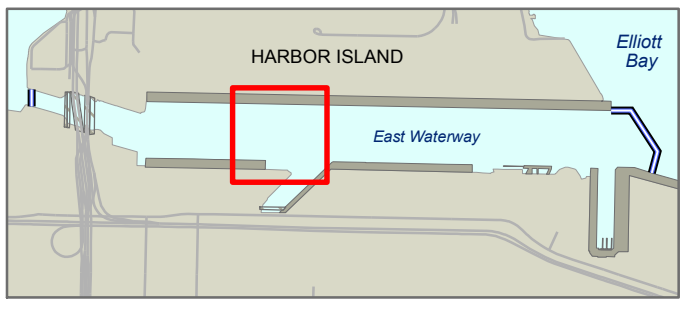
- Subsurface Core Location

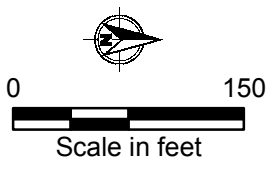
SMS Exceedance

- > CSL, Detect
- > SQS and ≤ CSL, Detect
- ≤ SQS or Non-detect
- Not Analyzed for This Interval

- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown
- East Waterway Study Area Boundary

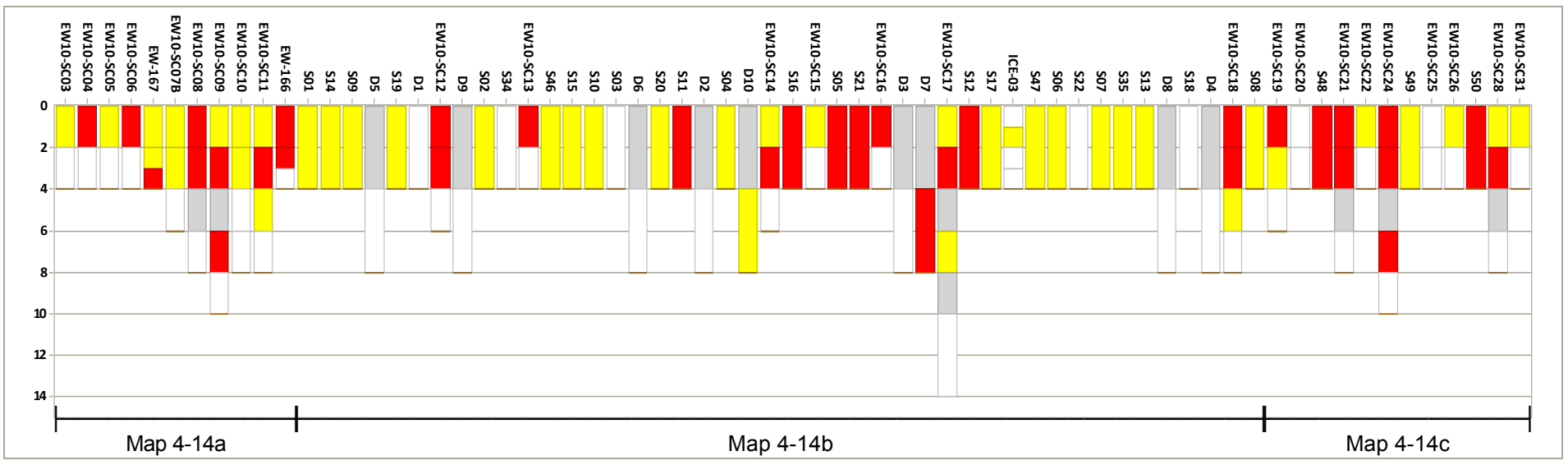




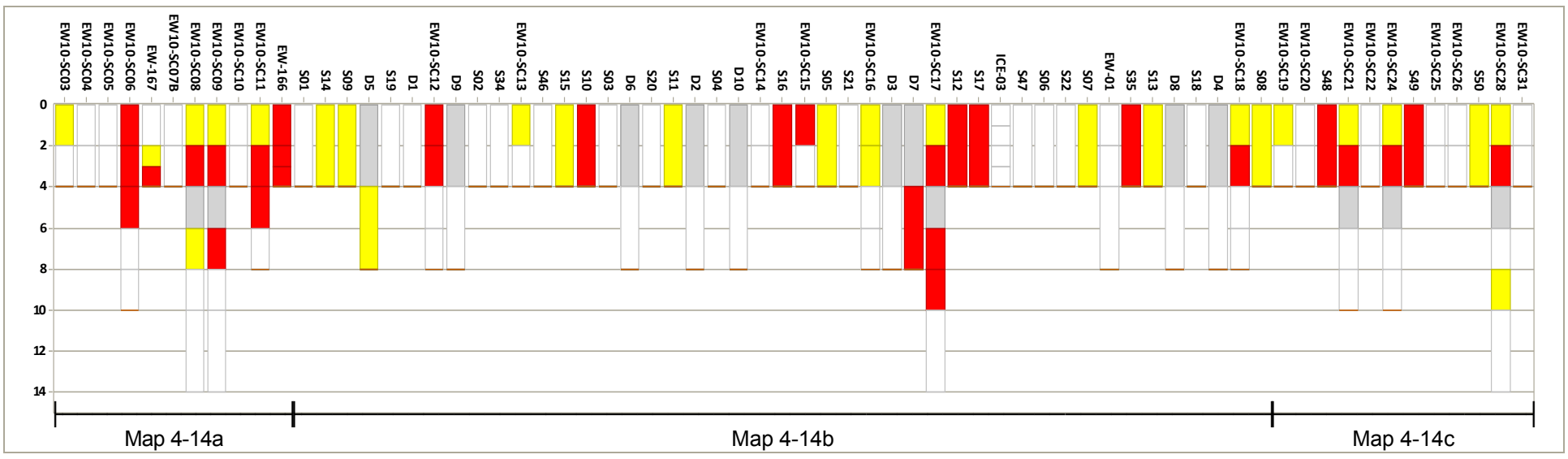


Map 4-14c
Concentrations of All SMS Chemicals in Subsurface Sediment Cores Compared with SMS Criteria (SQS or CSL)
Supplemental Remedial Investigation
East Waterway Study Area

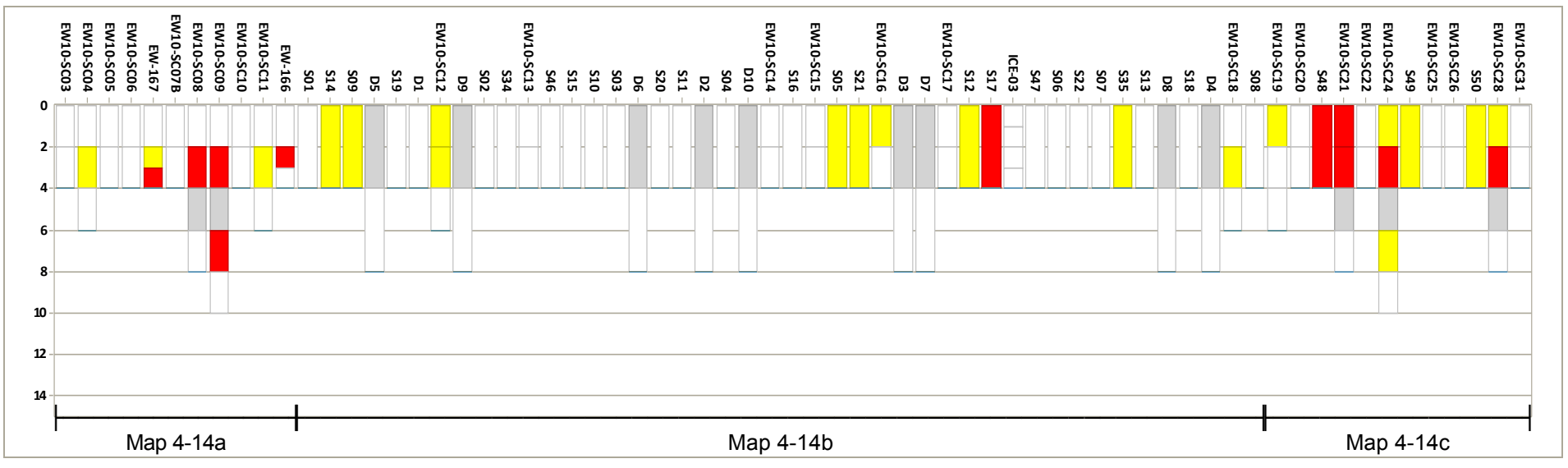
Total PCBs



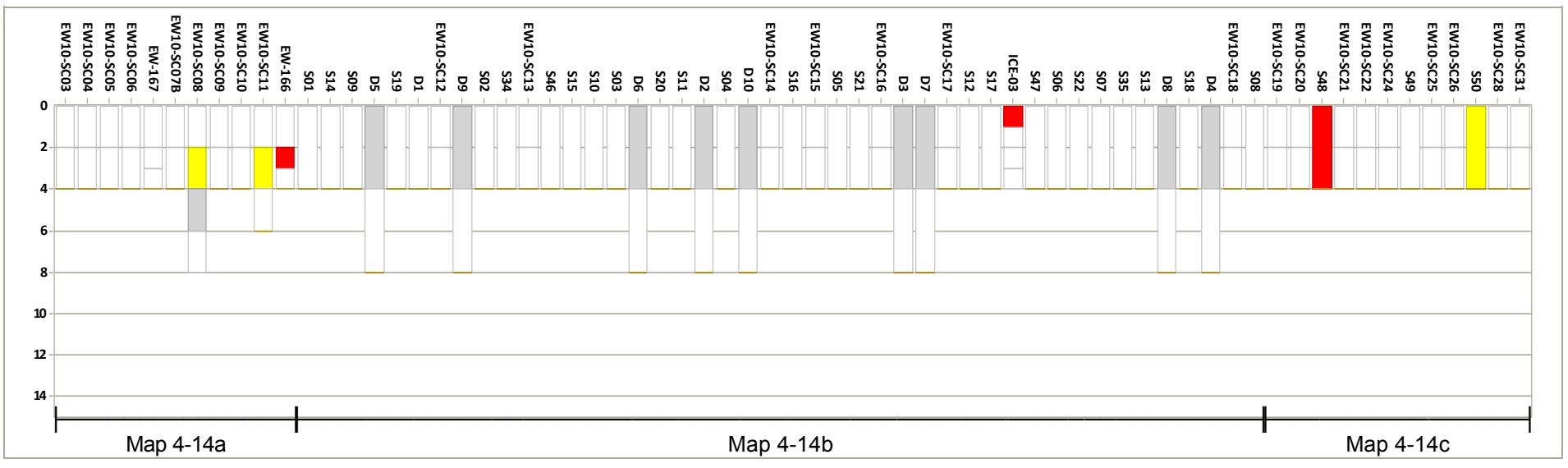
Mercury



SVOCs



Metals (excluding Mercury)



> CSL, Detect
> SQS and ≤ CSL, Detect
≤ SQS or Non-detect
Not Analyzed for This Interval

Map 4-14d
Concentrations of All SMS Chemicals in Subsurface Sediment Cores Compared with SMS Criteria (SQS or CSL)
Supplemental Remedial Investigation
East Waterway Study Area

See Map 4-14c

See Map 4-14f

EW10-SC34

EW10-SC28

EW10-SC25

EW10-SC20

EW10-SC21

EW10-SC24

S48

S49

S50

D13 S24

D14 S37

EW10-SB02

EW10-SC32

D15

S51

S52

Mound Area

EW10-SB01

EW10-SC29

EW10-SC33

Hanford #2

DEEP MAIN BODY

SLIP 27

TERMINAL 25

EW10-SC30

TERMINAL 30

EW10-SC27

SLIP 27

PIER 28

EW-S27-3C

EW10-SC23

EW-S27-1C

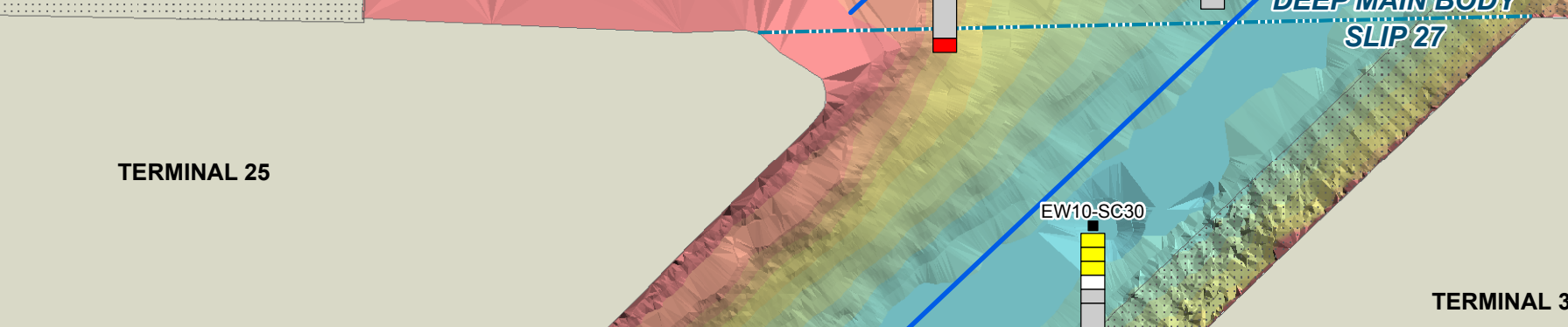
EW-S27-2C

Elevation relative to MLLW (ft)

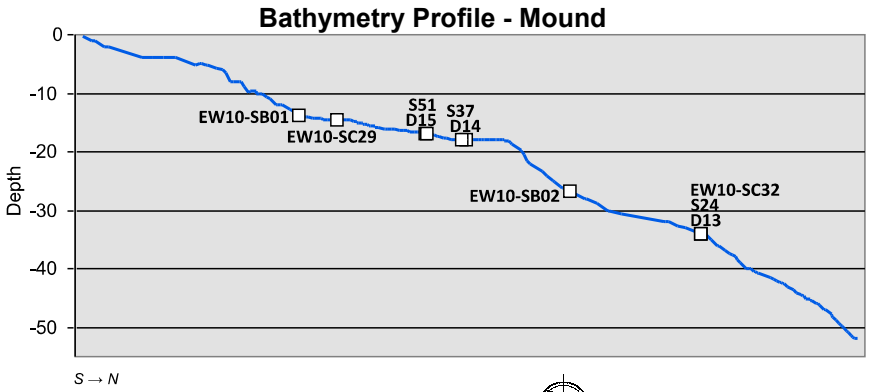
- 0 to 35
- -5 to 0
- -10 to -5
- -15 to -10
- -20 to -15
- -25 to -20
- -30 to -25
- -35 to -30
- -40 to -35
- -45 to -40
- -50 to -45
- -55 to -50
- -60 to -55
- -62 to -60

Prepared by craigh, 12/13/2013; W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SRI\Nature and Extent\Subsurface Sediment\Map 4-14e 4827 Subsurface SMS.mxd

Bathymetry Profile - Slip 27



Bathymetry Profile - Mound

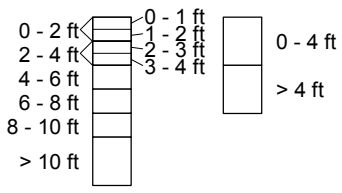


Subsurface Core Depth Charts

- Subsurface Core Location

SMS Exceedance

- > CSL, Detect
- > SQS and ≤ CSL, Detect
- ≤ SQS or Non-detect
- Not Analyzed for This Interval



- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown
- East Waterway Study Area Boundary

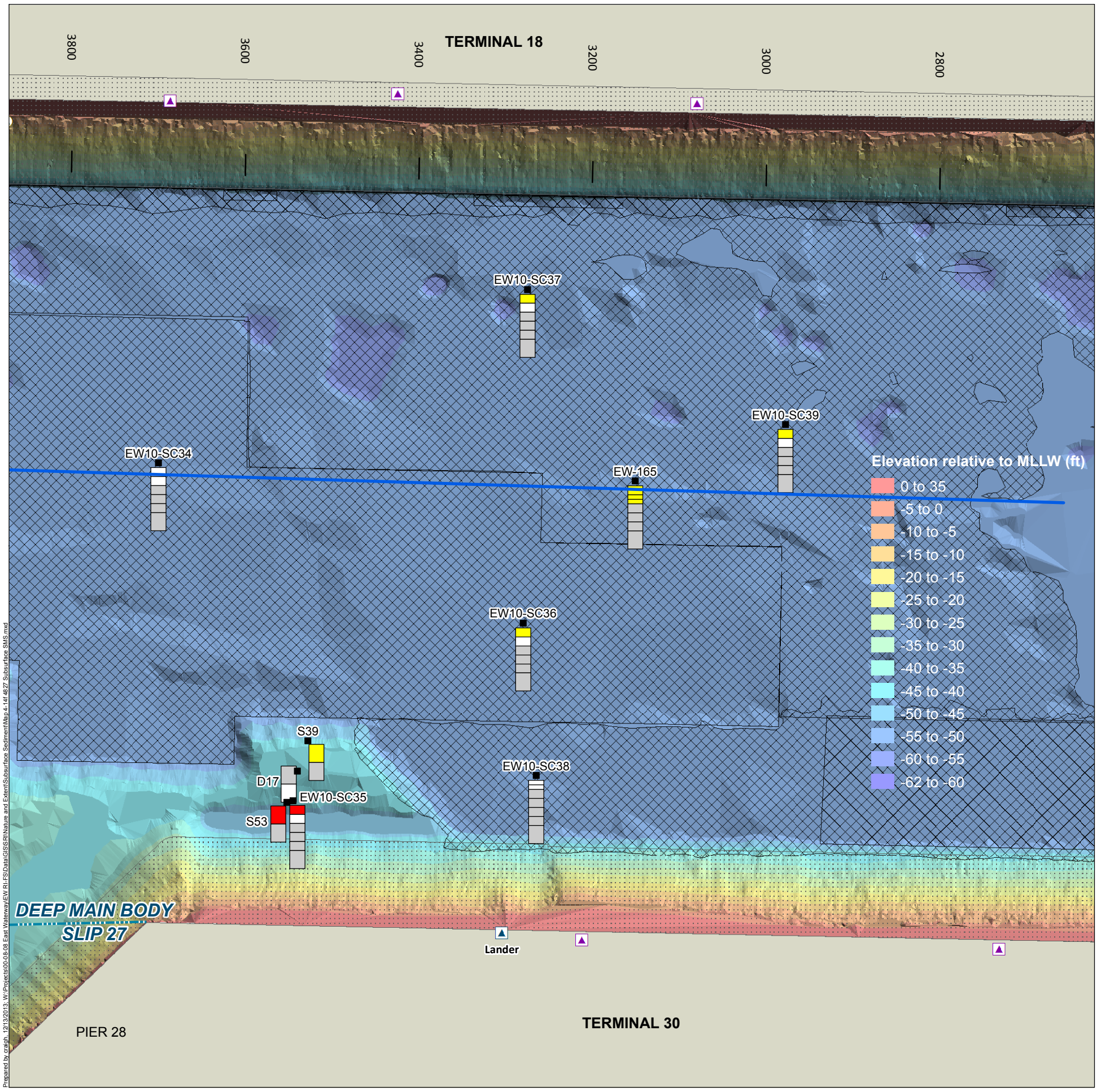


0 150

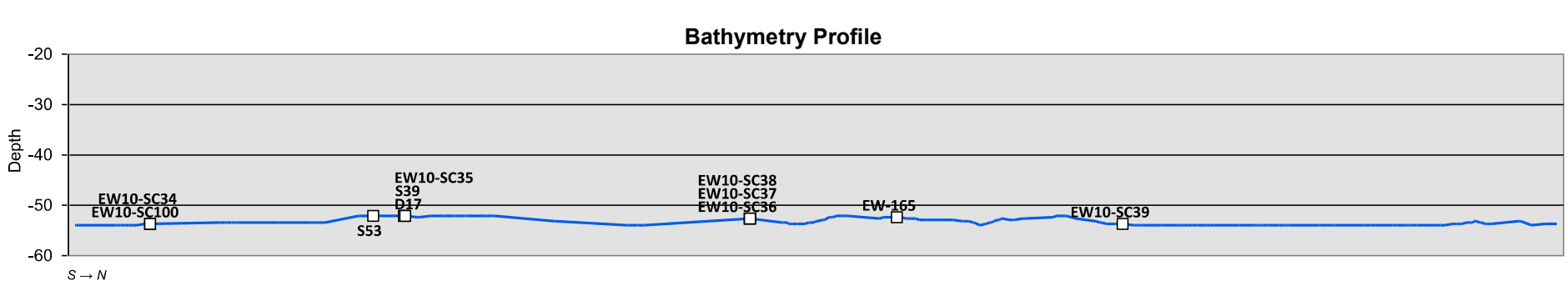
Scale in feet

Map 4-14e

Concentrations of All SMS Chemicals in Subsurface Sediment Cores Compared with SMS Criteria (SQS or CSL)
Supplemental Remedial Investigation
East Waterway Study Area



Prepared by craigh, 12/13/2013, W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\ESRI\Nature and Extent\Subsurface Sediment\Map 4-14f 4827 Subsurface SMS.mxd



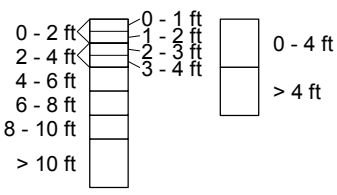
Subsurface Core Depth Charts

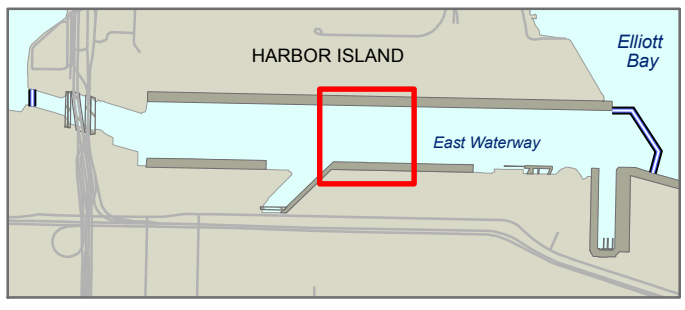
- Subsurface Core Location

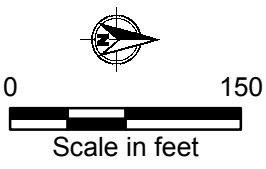
SMS Exceedance

- > CSL, Detect
- > SQS and ≤ CSL, Detect
- ≤ SQS or Non-detect
- Not Analyzed for This Interval

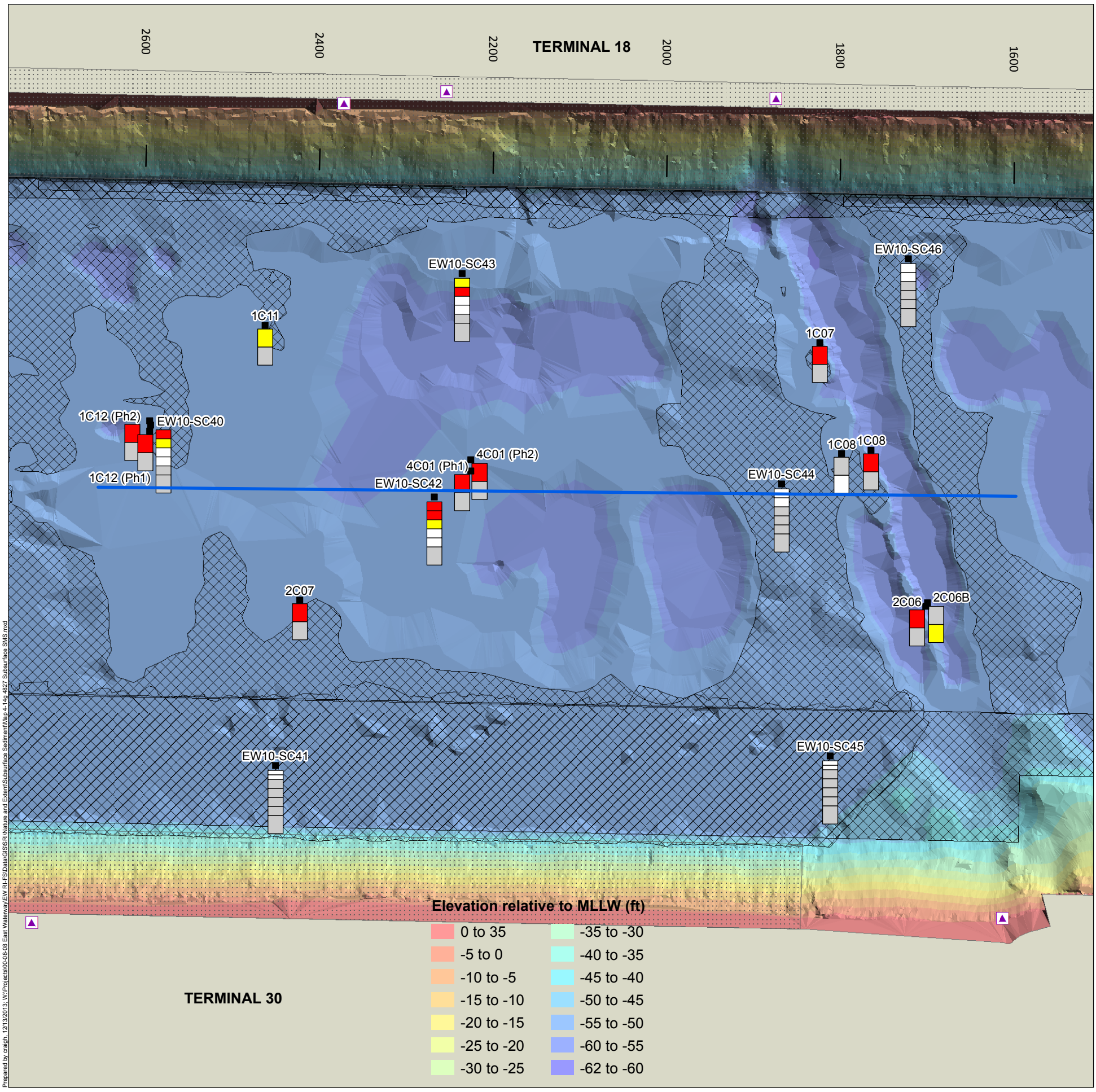
- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown
- East Waterway Study Area Boundary

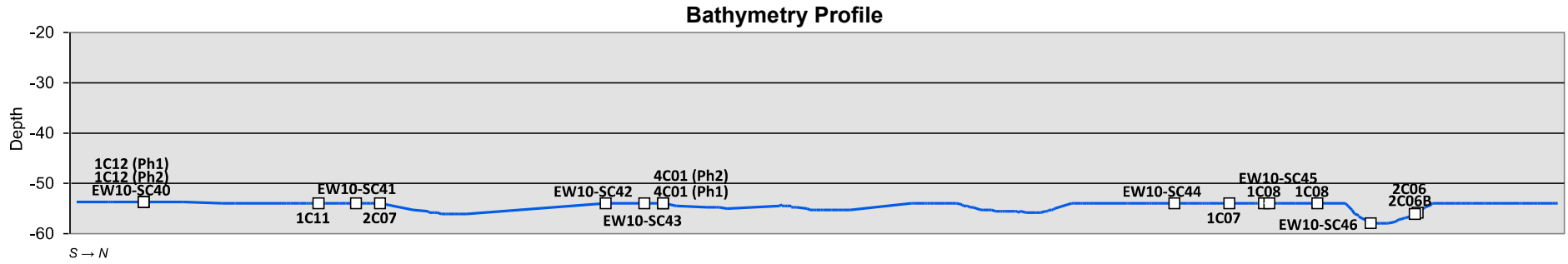






Map 4-14f
Concentrations of All SMS Chemicals in Subsurface Sediment Cores Compared with SMS Criteria (SQS or CSL)
Supplemental Remedial Investigation
East Waterway Study Area





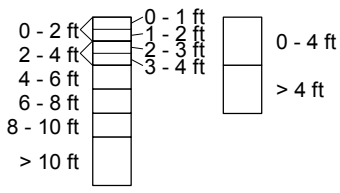
Subsurface Core Depth Charts

- Subsurface Core Location

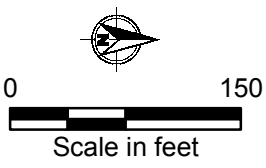
SMS Exceedance

- > CSL, Detect
- > SQS and ≤ CSL, Detect
- ≤ SQS or Non-detect
- Not Analyzed for This Interval

- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown
- East Waterway Study Area Boundary

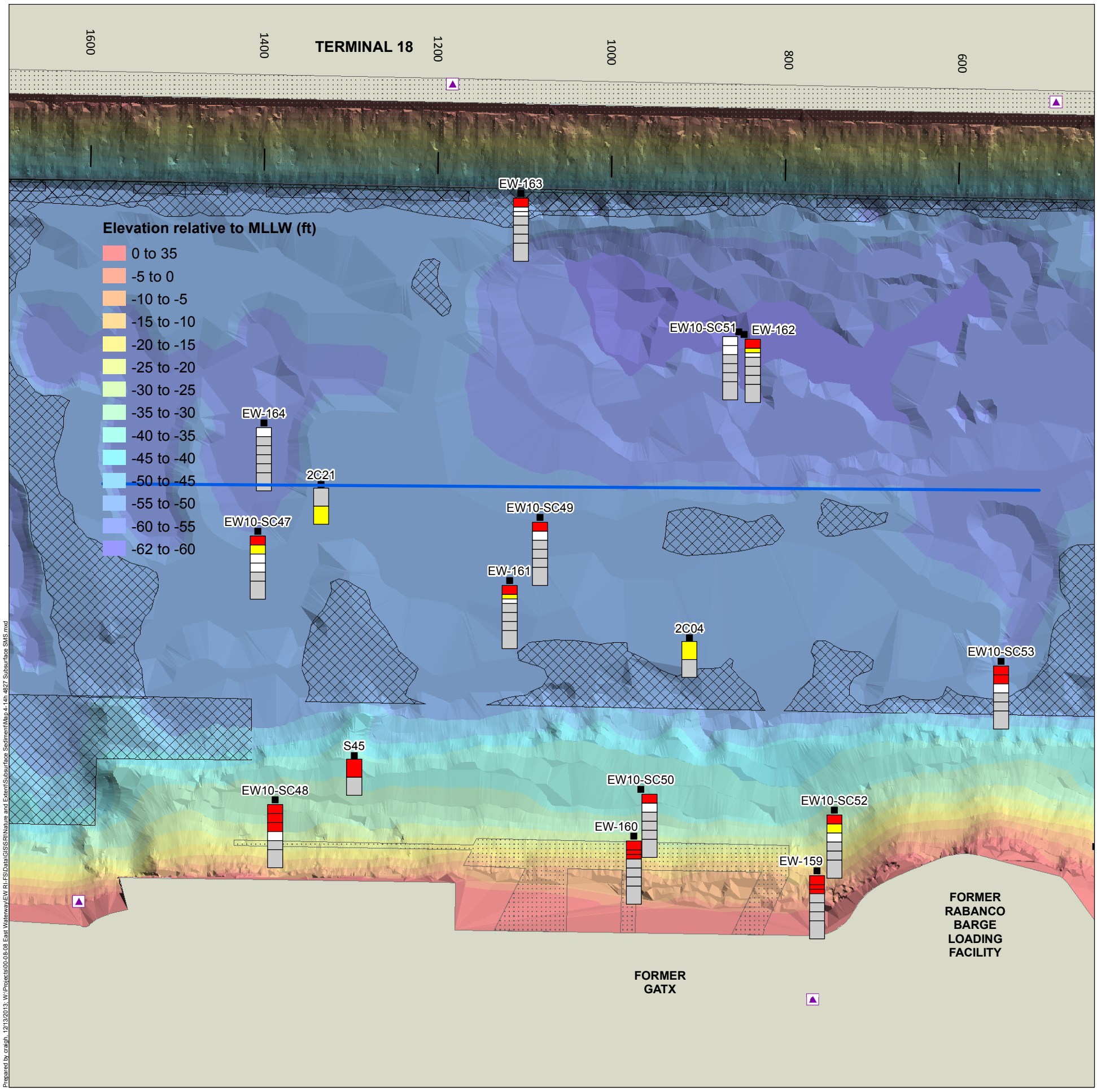


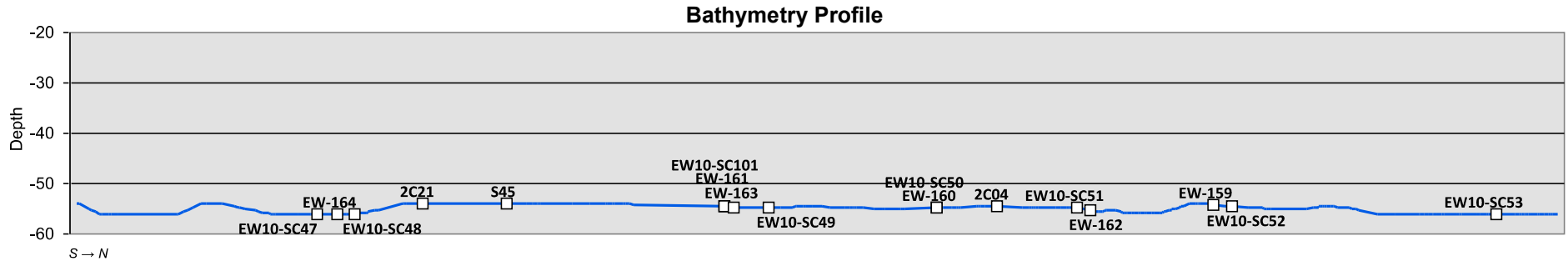




Map 4-14g
Concentrations of All SMS Chemicals in Subsurface Sediment Cores Compared with SMS Criteria (SQS or CSL)
Supplemental Remedial Investigation
East Waterway Study Area

Prepared by craigh, 12/13/2013, W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SR\Nature and Extent\Subsurface Sediment\Map 4-14g 4827 Subsurface SMS.mxd





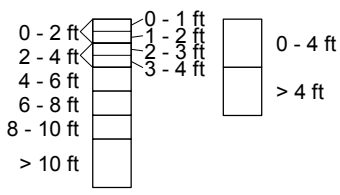
Subsurface Core Depth Charts

- Subsurface Core Location

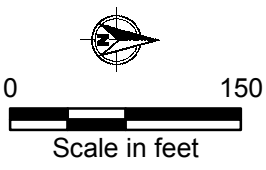
SMS Exceedance

- > CSL, Detect
- > SQS and ≤ CSL, Detect
- ≤ SQS or Non-detect
- Not Analyzed for This Interval

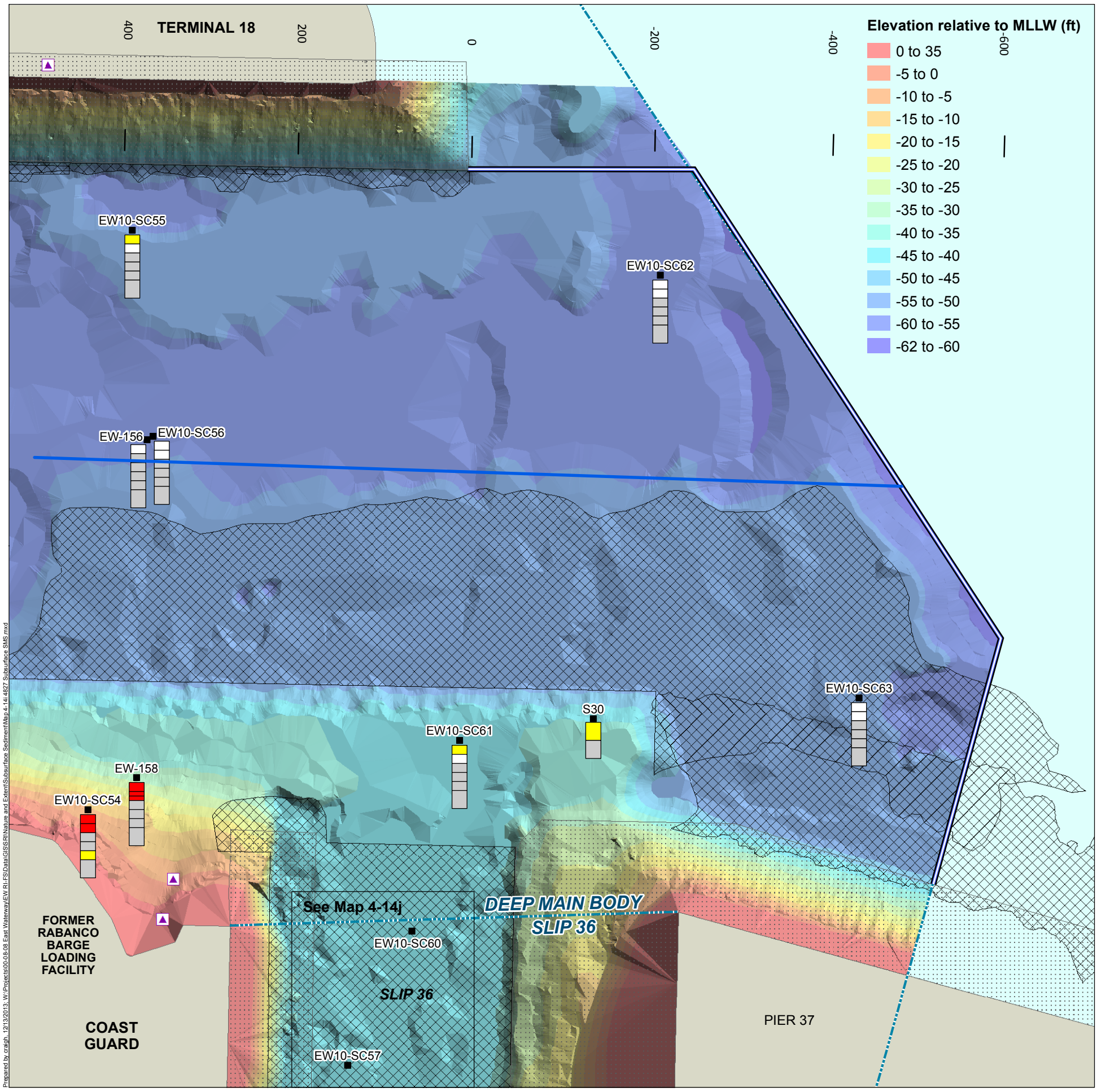
- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown
- East Waterway Study Area Boundary



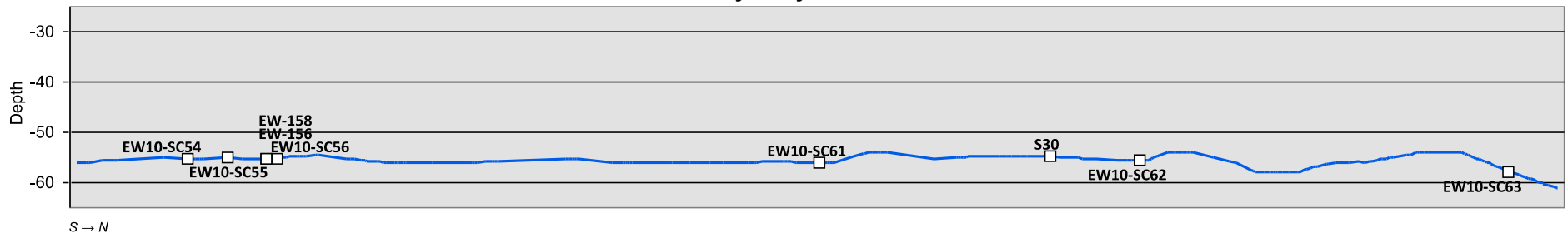




Map 4-14h
Concentrations of All SMS Chemicals in Subsurface Sediment Cores Compared with SMS Criteria (SQS or CSL)
Supplemental Remedial Investigation
East Waterway Study Area



Bathymetry Profile



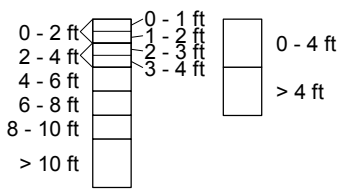
Subsurface Core Depth Charts

- Subsurface Core Location

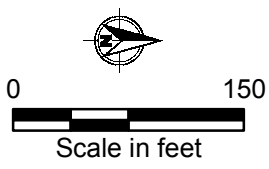
SMS Exceedance

- > CSL, Detect
- > SQS and ≤ CSL, Detect
- ≤ SQS or Non-detect
- Not Analyzed for This Interval

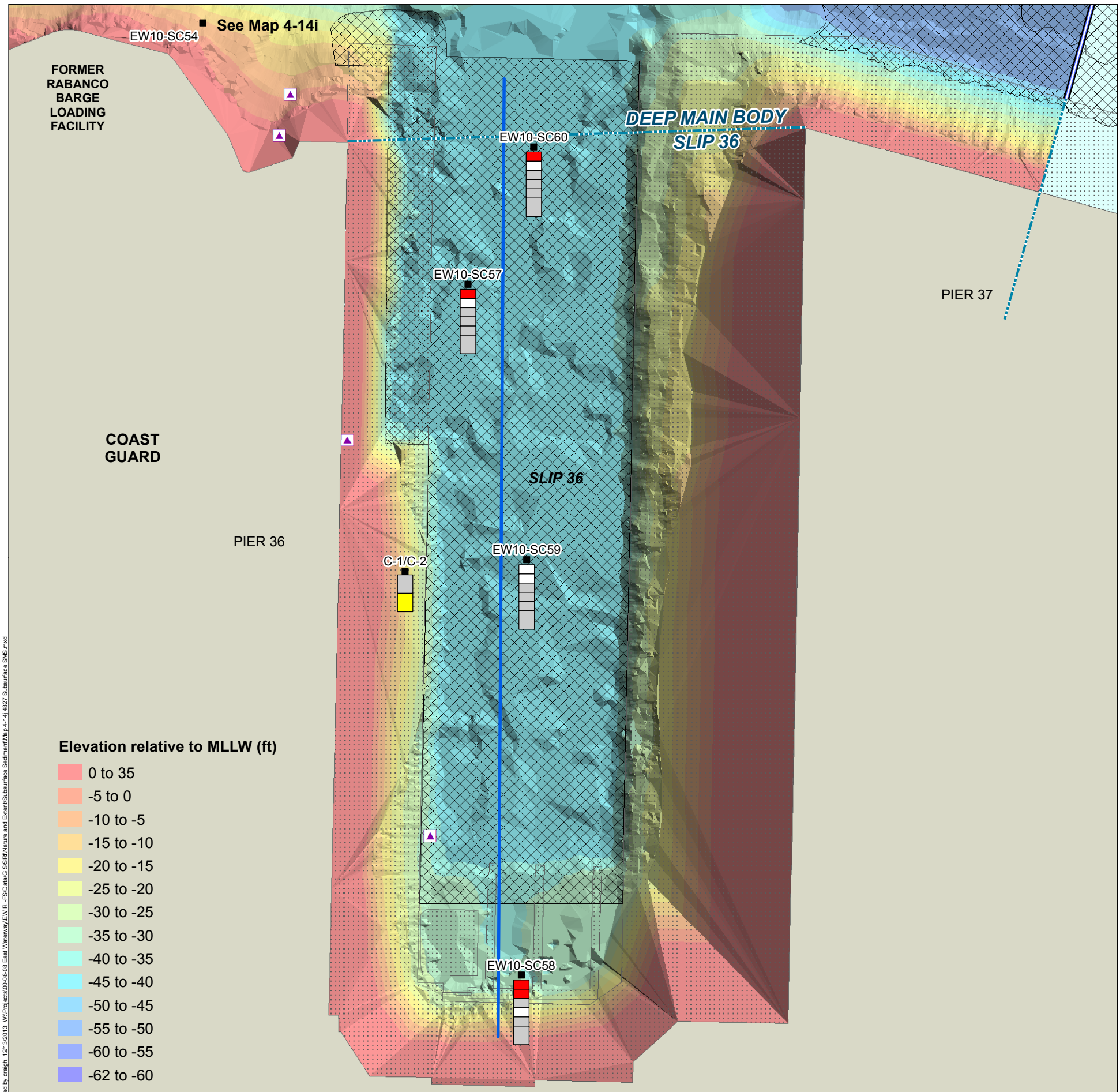
- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown
- East Waterway Study Area Boundary





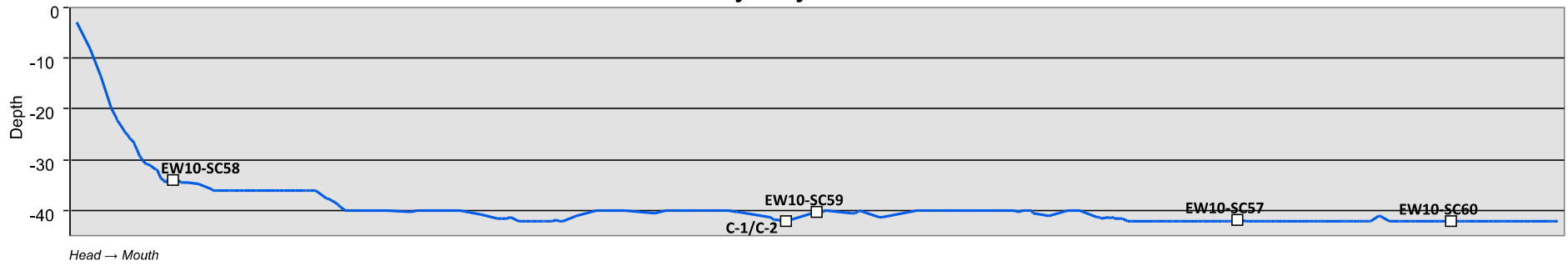


Map 4-14i
Concentrations of All SMS Chemicals in Subsurface Sediment Cores Compared with SMS Criteria (SQS or CSL)
Supplemental Remedial Investigation
East Waterway Study Area



Prepared by craigh, 12/13/2013; W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SRI\Nature and Extent\Subsurface Sediment\Map 4-14j 4827 Subsurface SMS.mxd

Bathymetry Profile

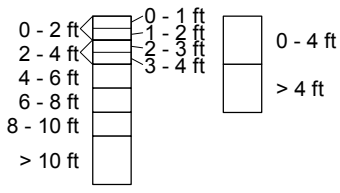


Subsurface Core Depth Charts

- Subsurface Core Location

SMS Exceedance

- > CSL, Detect
- > SQS and ≤ CSL, Detect
- ≤ SQS or Non-detect
- Not Analyzed for This Interval



- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown
- East Waterway Study Area Boundary

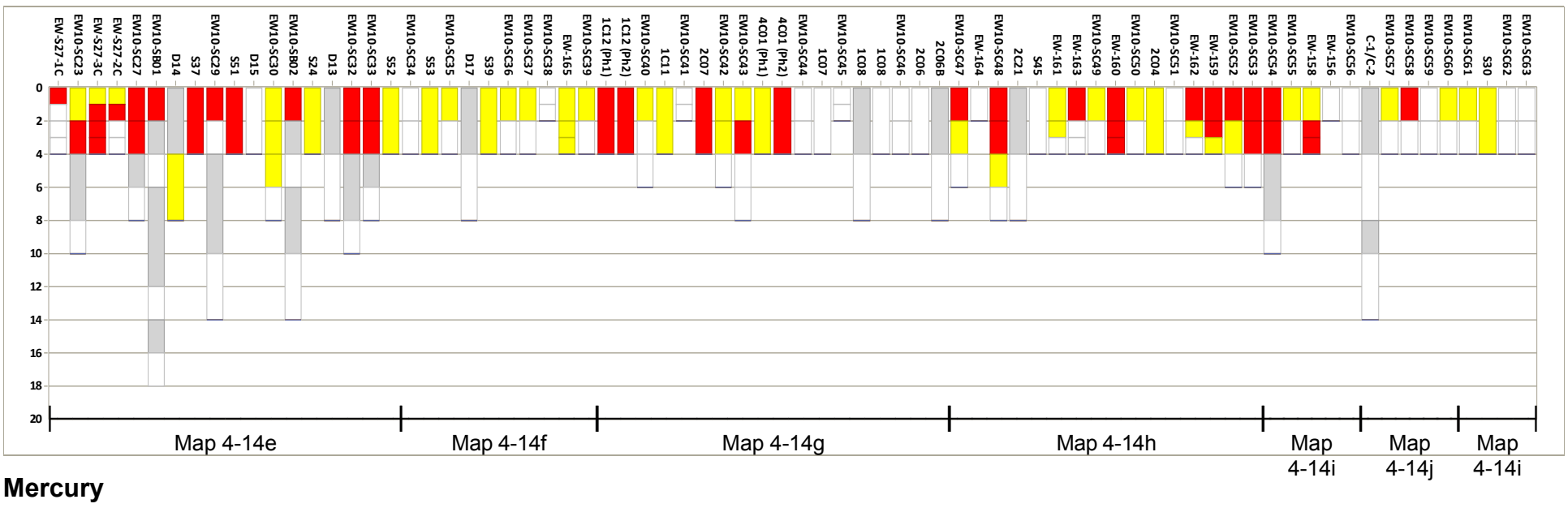


0 150

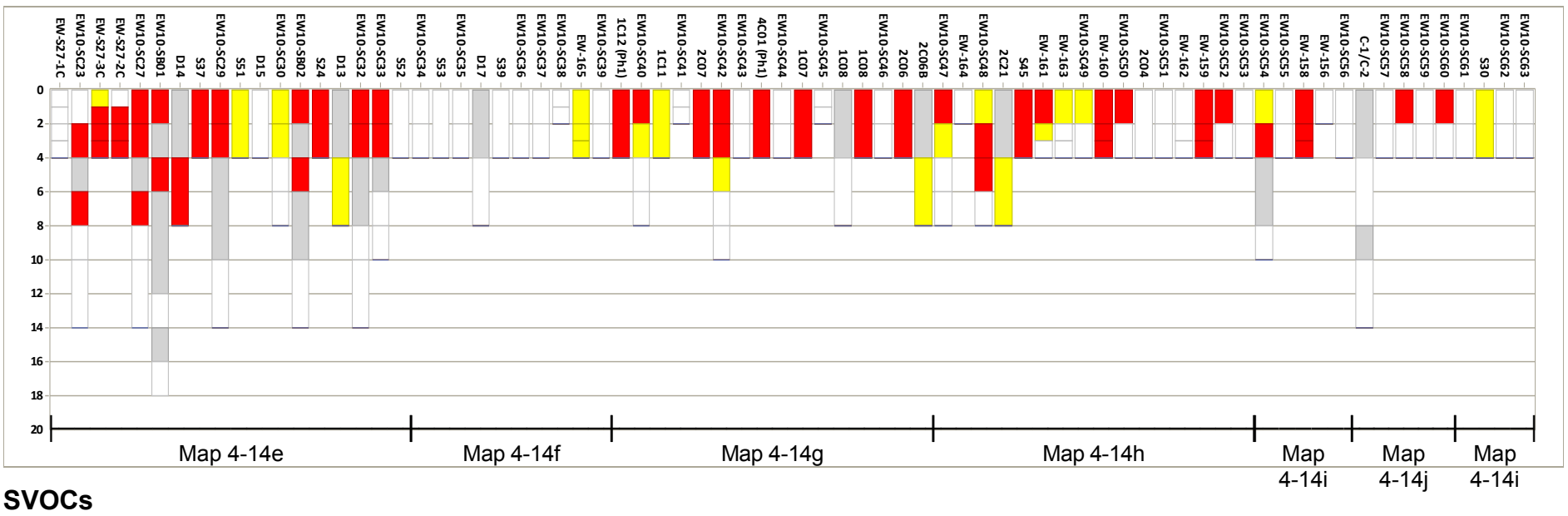
Scale in feet

Map 4-14j
Concentrations of All SMS Chemicals in Subsurface Sediment Cores Compared with SMS Criteria (SQS or CSL)
Supplemental Remedial Investigation
East Waterway Study Area

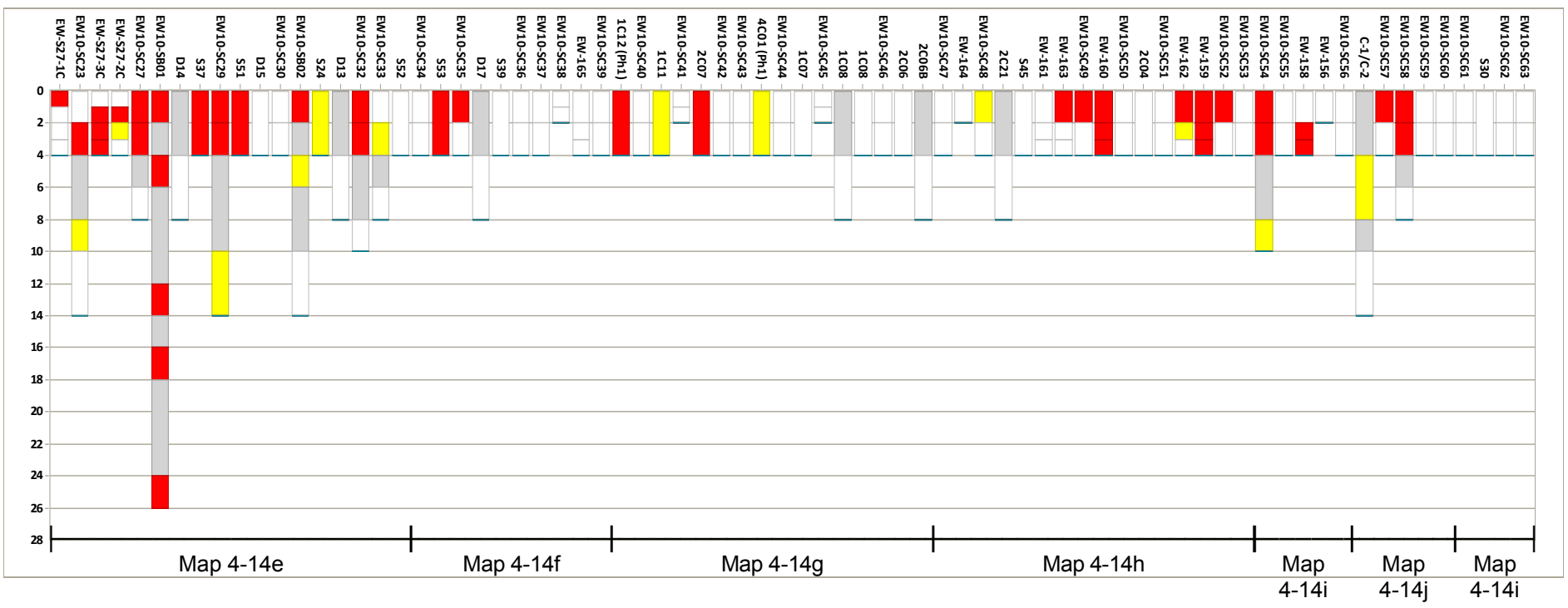
Total PCBs



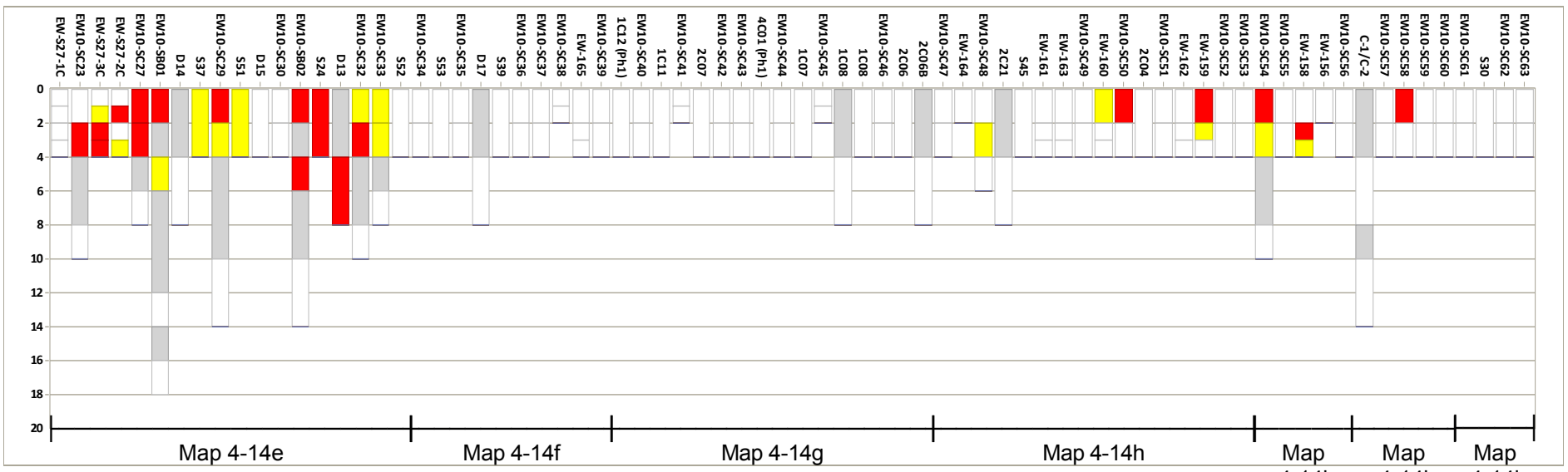
Mercury



SVOCs



Metals (excluding Mercury)



> CSL, Detect
> SQS and ≤ CSL, Detect
≤ SQS or Non-detect
Not Analyzed for This Interval

Map 4-14k
Concentrations of All SMS Chemicals in Subsurface Sediment Cores Compared with SMS Criteria (SQS or CSL)
Supplemental Remedial Investigation
East Waterway Study Area

Terminal 18

Terminal 104

Terminal 25

WEST SEATTLE BRIDGE

SW SPOKANE ST.

SC03 SC04 SC05 SC06 SC07B SC08 SC09 SC10 SC11 SC12 SC13 SC14 SC15 SC16 SC17 SC18 SC19 SC20

NOTES:

1. Core depths are in recovered feet below mudline.
2. SMS chemistry includes parameters measured in subsurface SRI dataset.
3. Bathymetry surveyed by David Evans and Associates. January 2010.

LEGEND:

- **EW10-SC03** Sediment Core Location and Number
- East Waterway Study Area
- Dock/Pier
- Road
- Navigation Channel

Lithology
- GM
- ML
- ML-SM
- ML-SP
- Sand Cover
- SM
- SM-ML
- SP
- SP-ML
- SP-SM
- Anthropogenic/Engineered Fill
- Void

Stratigraphy
- Recent
- Upper Alluvium
- Lower Alluvium
- In-water Fill

SMS Chemistry
- <SQS, Detected
- >SQS and <CSL, Detected
- >CSL, Detected
- Not Analyzed

Depth (ft) — SC88 — Lithology and Stratigraphy — SMS Chemistry

0 200 Scale in Feet

HORIZONTAL DATUM: Washington State Plane North, NAD83.
VERTICAL DATUM: Mean Lower Low Water (MLLW).

Harbor Island — Terminal 18 — EAST WATERWAY — Terminal 25 — Terminal 30 — Not to Scale

K:\Jobs\060003-PORT OF SEATTLE\060003-01\06000301-RP-058.dwg MAP 4-15a
Sep 18, 2013 2:27pm epipkin

Map 4-15a
Subsurface Sediment Core Profiles with SMS Chemistry
Supplemental Remedial Investigation
East Waterway Operable Unit

Terminal 18

SC22 SC26 SC31 SC100 SC37 SC39 SC25 SC28 SC34 SC36 SC32 SC21 SC24 SC29 SC33 SC35 SC38 SC30 SC27 SC23

Slip 27

Terminal 30

E. MARGINAL WAY S.

LEGEND:

- **EW10-SC03** Sediment Core Location and Number
- East Waterway Study Area
- Dock/Pier
- Road
- Navigation Channel

Stratigraphy
- Recent
- Upper Alluvium
- Lower Alluvium
- In-water Fill

Lithology
- GM
- ML
- ML-SM
- ML-SP
- Sand Cover
- SM
- SM-ML
- SP
- SP-ML
- SP-SM
- Anthropogenic/Engineered Fill
- Void

SMS Chemistry
- <SQS, Detected
- >SQS and <CSL, Detected
- >CSL, Detected
- Not Analyzed

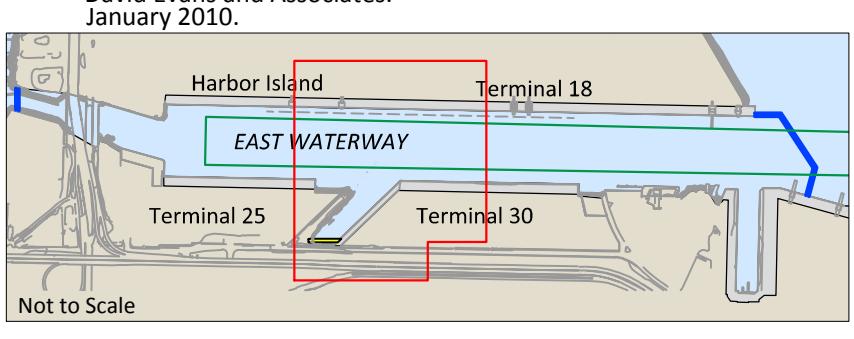
NOTES:

1. Core depths are in recovered feet below mudline.
2. SMS chemistry includes parameters measured in subsurface SRI dataset.
3. Bathymetry surveyed by David Evans and Associates. January 2010.

HORIZONTAL DATUM: Washington State Plane North, NAD83.
VERTICAL DATUM: Mean Lower Low Water (MLLW).

0 200
Scale in Feet

Depth (ft) — SC88 — Lithology and Stratigraphy — SMS Chemistry



K:\Jobs\060003-PORT OF SEATTLE\060003-01\06000301-RP-058.dwg MAP 4-15b
Sep 18, 2013 2:29pm epipkin

Map 4-15b
Subsurface Sediment Core Profiles with SMS Chemistry
Supplemental Remedial Investigation
East Waterway Operable Unit

Terminal 18

Terminal 30

E. MARGINAL WAY S.

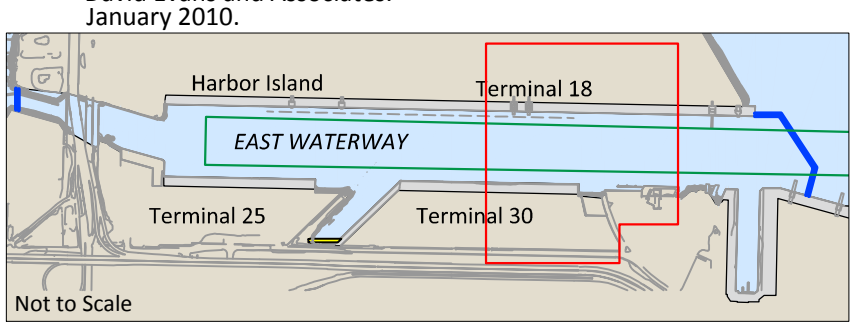
SC40 SC41 SC42 SC43 SC44 SC45 SC46 SC47 SC48 SC49 SC50 SC51 SC101

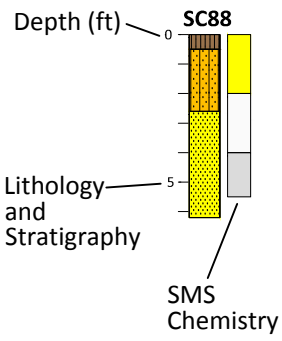
NOTES:

1. Core depths are in recovered feet below mudline.
2. SMS chemistry includes parameters measured in subsurface SRI dataset.
3. Bathymetry surveyed by David Evans and Associates. January 2010.

HORIZONTAL DATUM: Washington State Plane North, NAD83.
VERTICAL DATUM: Mean Lower Low Water (MLLW).

0 200
Scale in Feet





LEGEND:

- **EW10-SC03** Sediment Core Location and Number
- East Waterway Study Area
- Dock/Pier
- Road
- Navigation Channel

Lithology
- GM
- ML
- ML-SM
- ML-SP
- Sand Cover
- SM
- SM-ML
- SP
- SP-ML
- SP-SM
- Anthropogenic/Engineered Fill
- Void

Stratigraphy
- Recent
- Upper Alluvium
- Lower Alluvium
- In-water Fill

SMS Chemistry
- <SQS, Detected
- >SQS and <CSL, Detected
- >CSL, Detected
- Not Analyzed

K:\Jobs\060003-PORT OF SEATTLE\060003-01\06000301-RP-058.dwg MAP 4-15c
Sep 18, 2013 2:29pm epipkin

Map 4-15c
Subsurface Sediment Core Profiles with SMS Chemistry
Supplemental Remedial Investigation
East Waterway Operable Unit

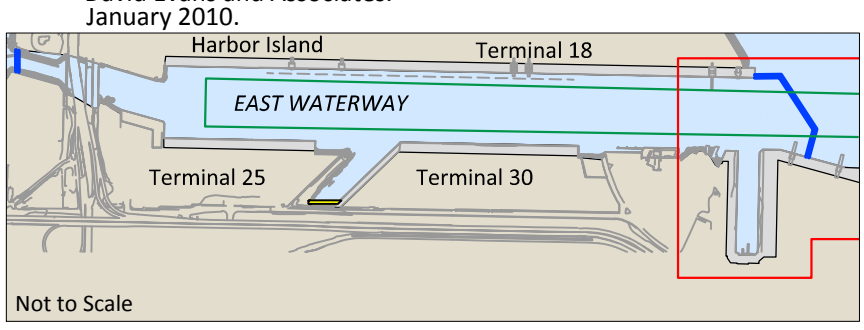
SC55
SC56
SC62
SC53
SC52
SC54
SC61
SC63
SC60
SC57
SC59
SC58
Slip 36

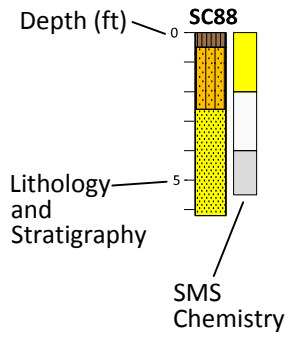
NOTES:

1. Core depths are in recovered feet below mudline.
2. SMS chemistry includes parameters measured in subsurface SRI dataset.
3. Bathymetry surveyed by David Evans and Associates. January 2010.

HORIZONTAL DATUM: Washington State Plane North, NAD83.
VERTICAL DATUM: Mean Lower Low Water (MLLW).

0 200
Scale in Feet





LEGEND:

- EW10-SC03 Sediment Core Location and Number
- East Waterway Study Area
- Dock/Pier
- Road
- Navigation Channel

Lithology
- GM
- ML
- ML-SM
- ML-SP
- Sand Cover
- SM
- SM-ML
- SP
- SP-ML
- SP-SM
- Anthropogenic/Engineered Fill
- Void

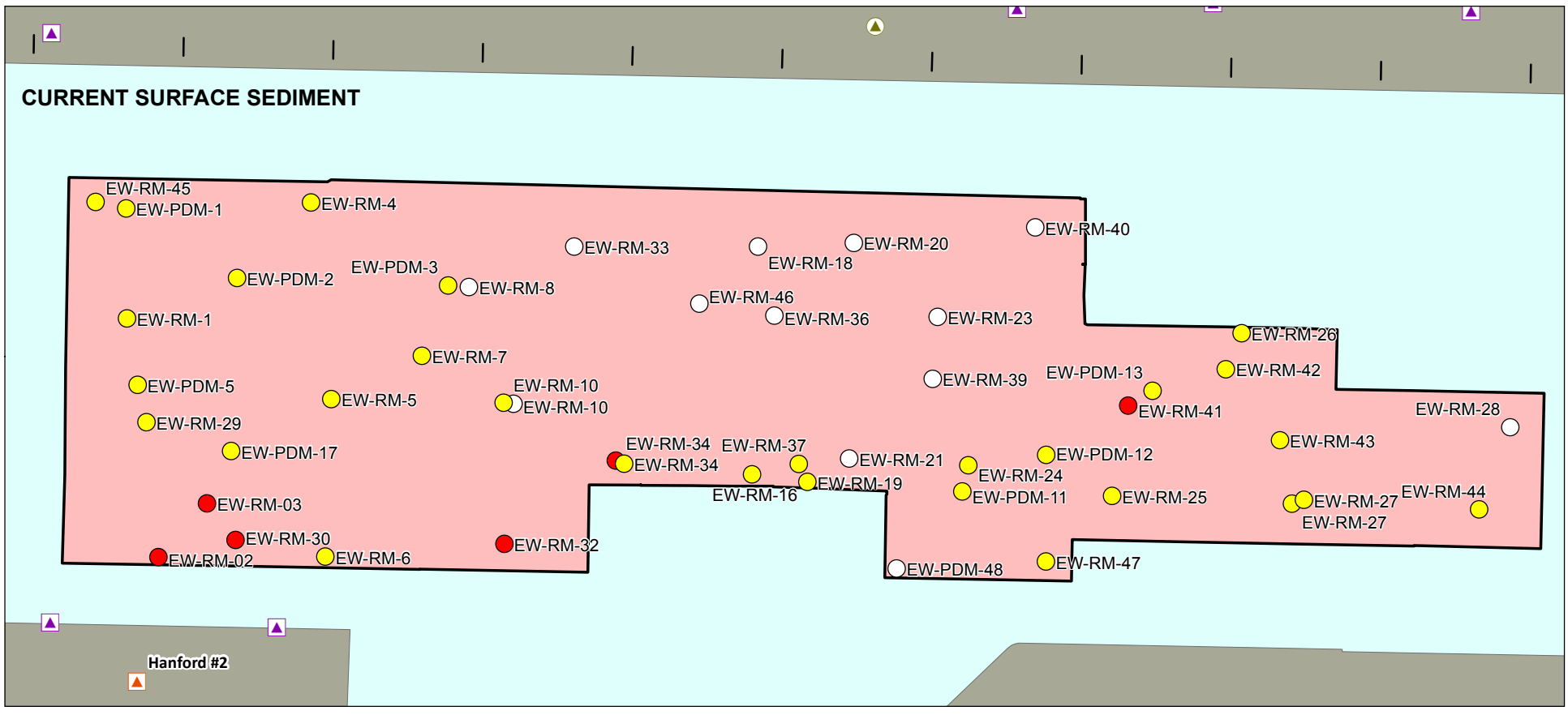
Stratigraphy
- Recent
- Upper Alluvium
- Lower Alluvium
- In-water Fill

SMS Chemistry
- <SQS, Detected
- >SQS and <CSL, Detected
- >CSL, Detected
- Not Analyzed

K:\Jobs\060003-PORT OF SEATTLE\060003-01\06000301-RP-058.dwg MAP 4-15d
Sep 18, 2013 2:29pm epipkin

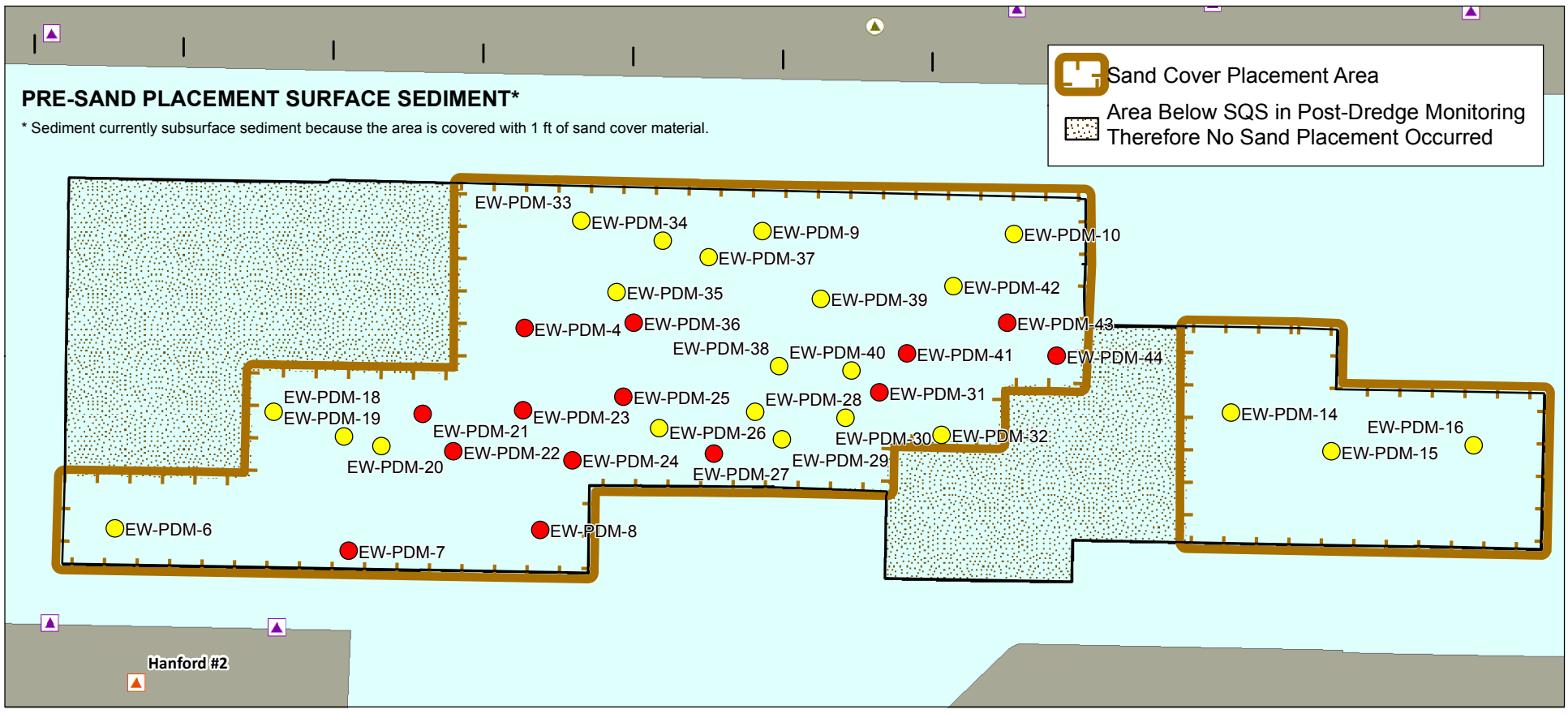
Map 4-15d
Subsurface Sediment Core Profiles with SMS Chemistry
Supplemental Remedial Investigation
East Waterway Operable Unit

CURRENT SURFACE SEDIMENT

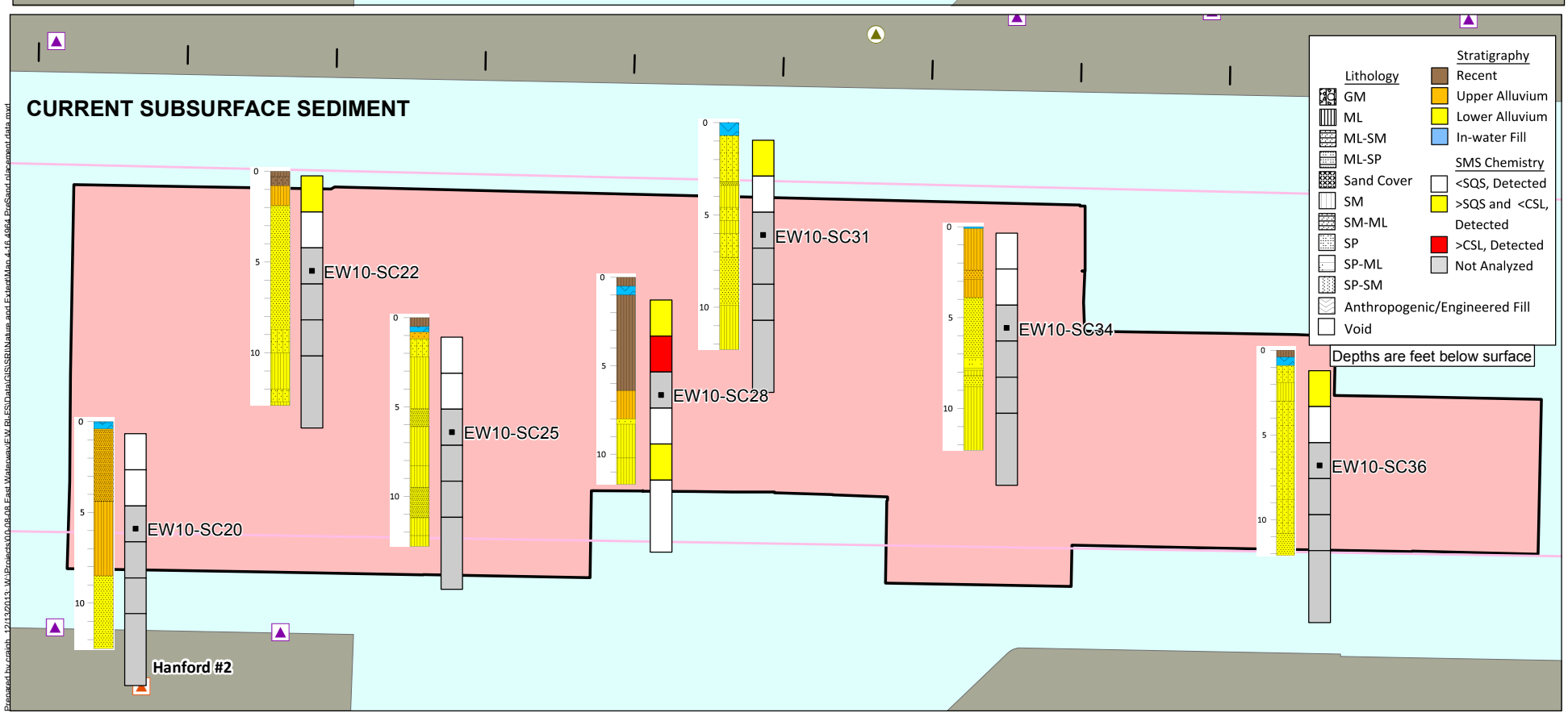


PRE-SAND PLACEMENT SURFACE SEDIMENT*

* Sediment currently subsurface sediment because the area is covered with 1 ft of sand cover material.



CURRENT SUBSURFACE SEDIMENT



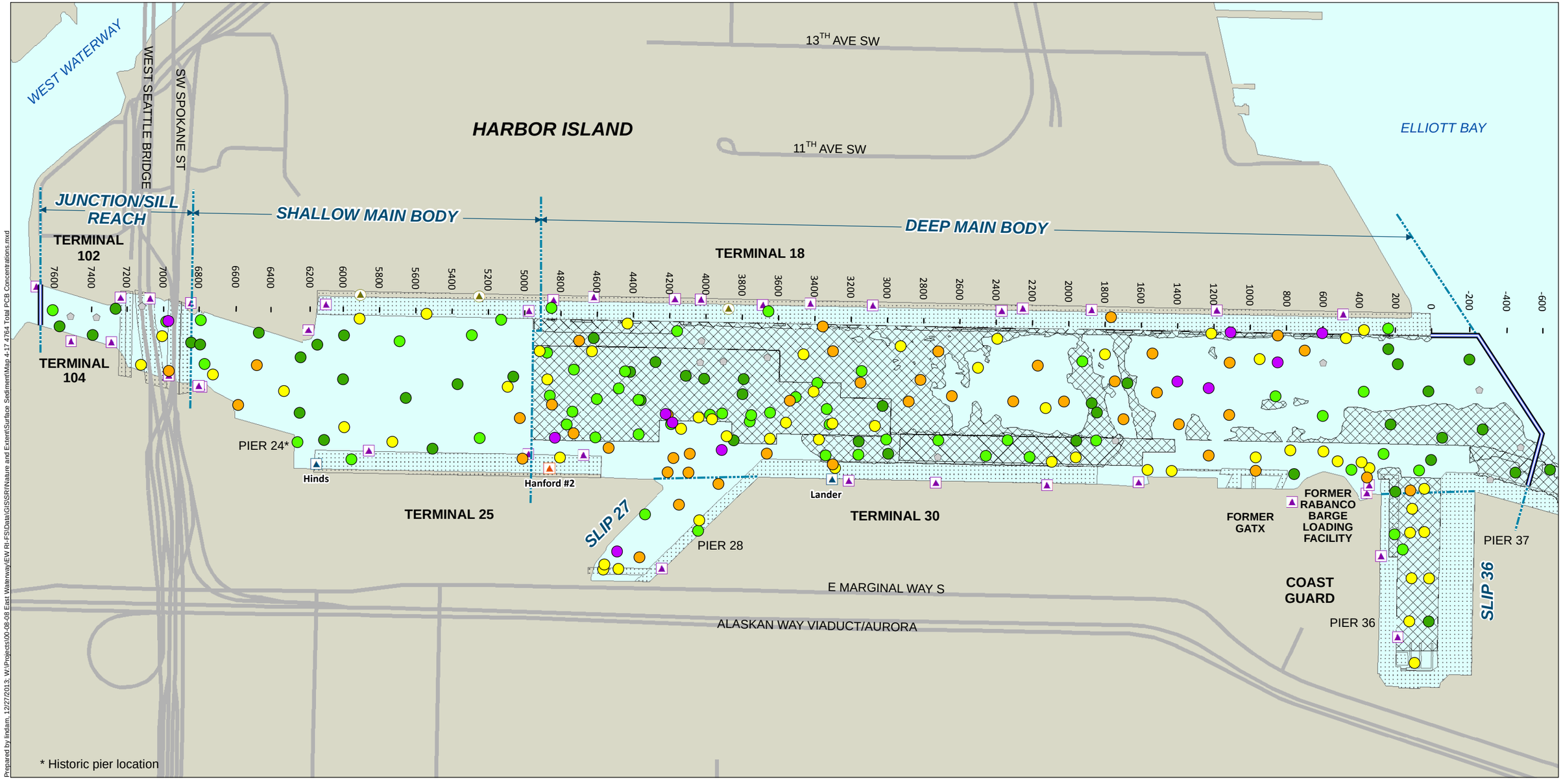
Surface Sediment SMS Status

- > CSL, Detect
- > SQS and ≤ CSL, Detect
- ≤ SQS or Non-detect
- CSO
- Storm Drain
- Unknown Outfall
- Dock/Pier
- Phase 1 Removal Action Boundary



0 150
Scale in feet

Map 4-16
Surface and Subsurface Sediment Datasets Associated with the Phase 1 Dredge Area
Supplemental Remedial Investigation
East Waterway Study Area



Prepared by lindam, 12/27/2013, W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SRI\Nature and Extent\Surface Sediment\Map 4-17 4764 Total PCB Concentrations.mxd

Total PCB Concentration*

µg/kg dw

- > 1,800 (> 95th percentile)
- > 590 and ≤ 1,800 (≤ 95th percentile)
- > 270 and ≤ 590 (≤ 75th percentile)
- > 110 and ≤ 270 (≤ 50th percentile)
- ≤ 110 (≤ 25th percentile)
- Non-detect

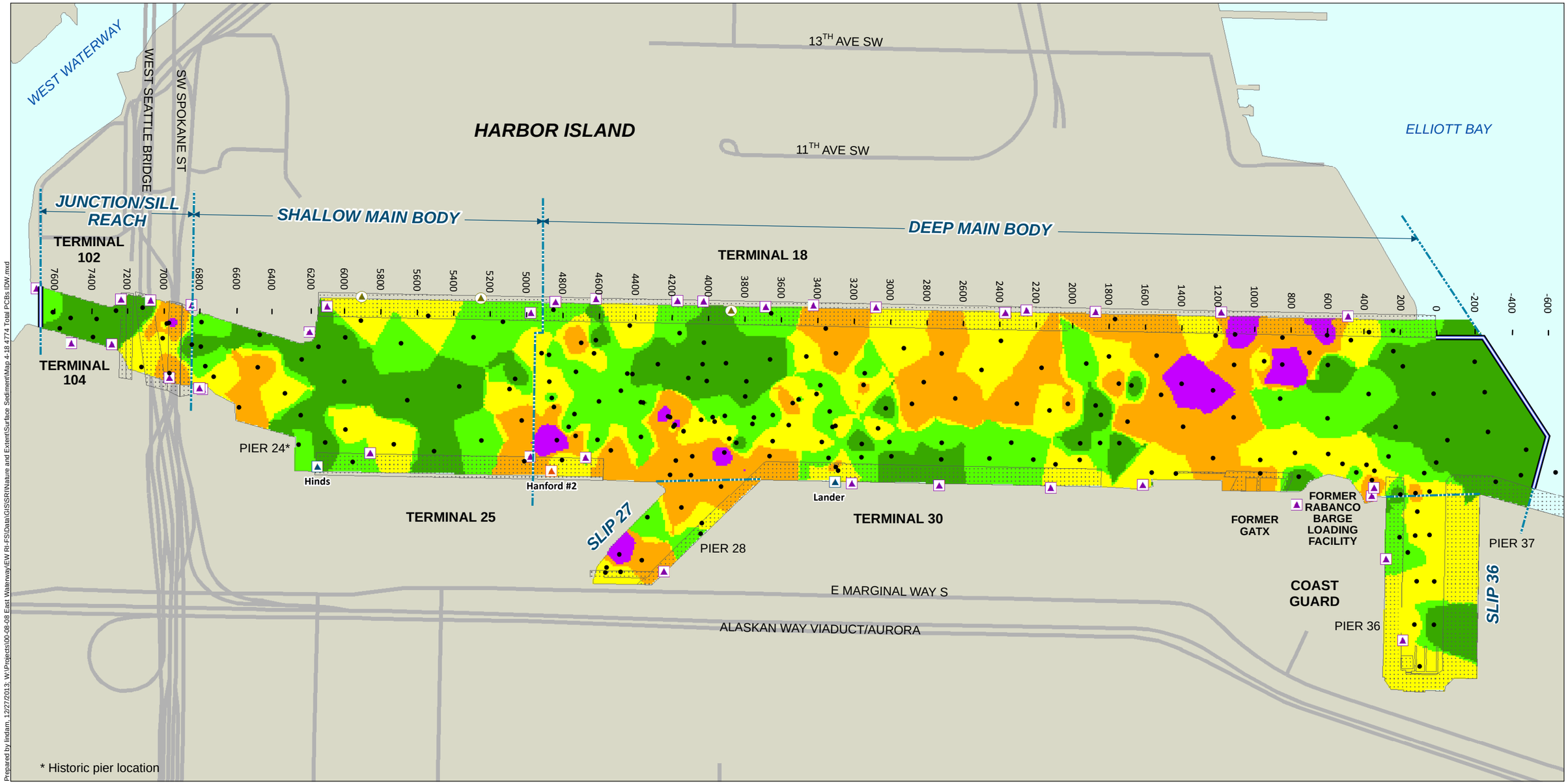
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

* The percentiles are all numeric percentiles of the surface sediment dataset.

0 600

Scale in feet

Map 4-17
Total PCB Concentrations in Surface Sediment
Supplemental Remedial Investigation
East Waterway Study Area



Interpolated Total PCB Concentration*

µg/kg dw

- > 1,800 (> 95th percentile)
- > 590 and ≤ 1,800 (≤ 95th percentile)
- > 270 and ≤ 590 (≤ 75th percentile)
- > 110 and ≤ 270 (≤ 50th percentile)
- ≤ 110 (≤ 25th percentile)
- Surface Sediment Sampling Location

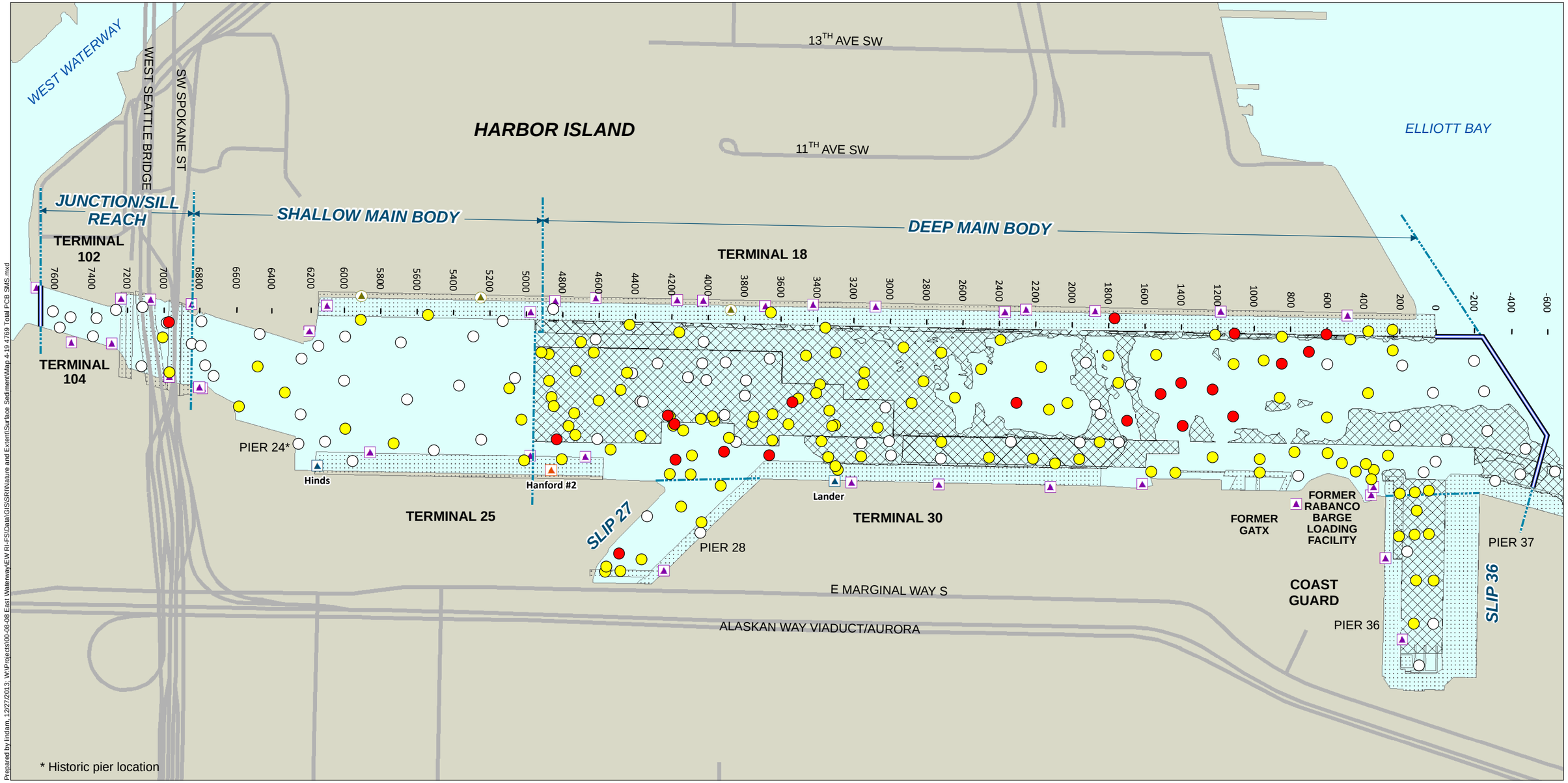
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

* The percentiles are all numeric percentiles of the surface sediment dataset.

0 600

Scale in feet

Map 4-18
Inverse Distance Weighted Interpolation of
Total PCB Concentrations in Surface Sediment
Supplemental Remedial Investigation
East Waterway Study Area



SMS Categories for Total PCBs
CSL = 65 mg/kg OC
SQS = 12 mg/kg OC

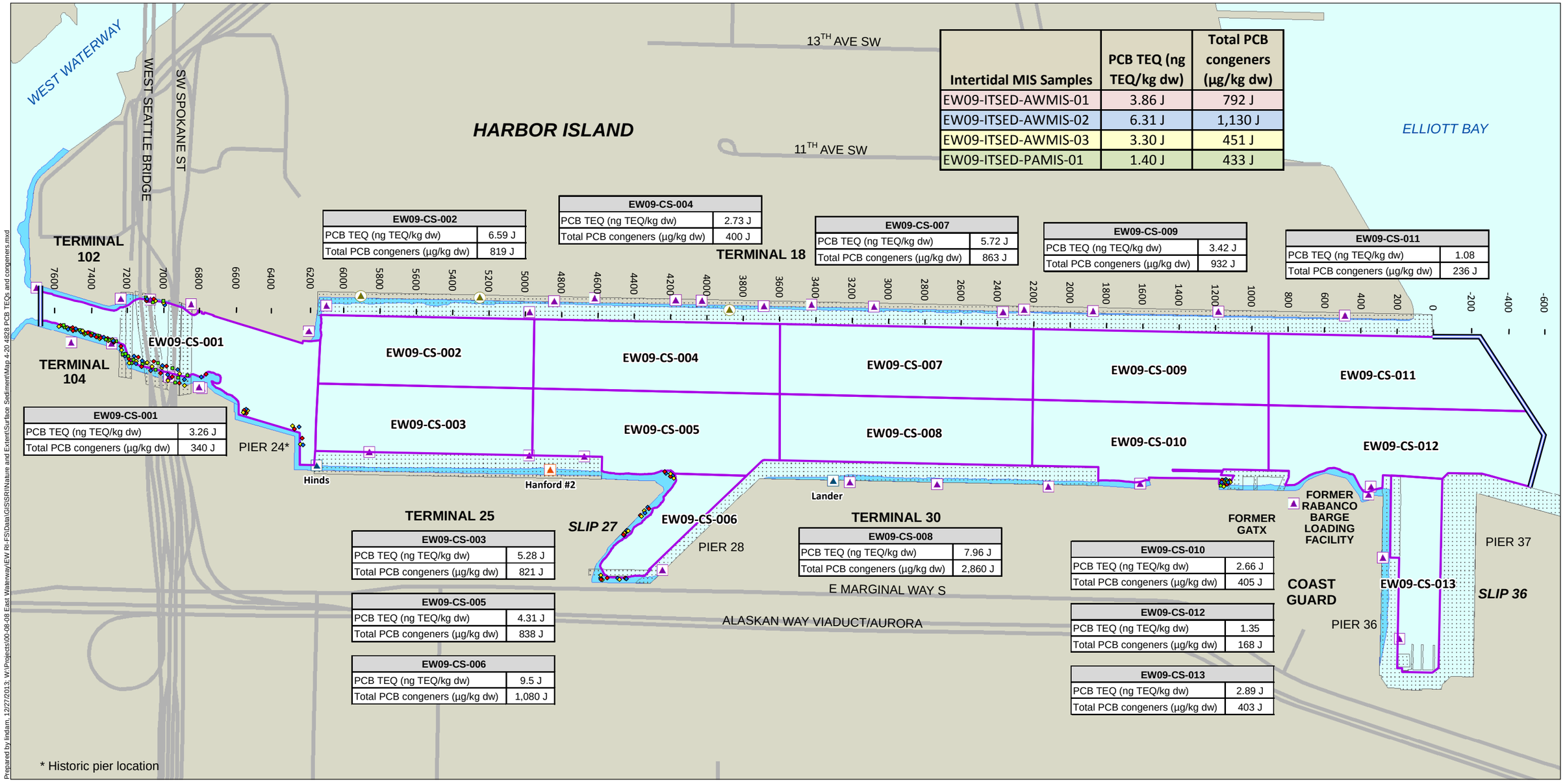
- > CSL, Detect
- > SQS and ≤ CSL, Detect
- ≤ SQS or Non-detect

- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall

- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

0 600
Scale in feet

Map 4-19
Exceedances of SMS Criteria (SQS or CSL) by Total PCBs in Surface Sediment
Supplemental Remedial Investigation
East Waterway Study Area



Intertidal MIS Samples	PCB TEQ (ng TEQ/kg dw)	Total PCB congeners (µg/kg dw)
EW09-ITSED-AWMIS-01	3.86 J	792 J
EW09-ITSED-AWMIS-02	6.31 J	1,130 J
EW09-ITSED-AWMIS-03	3.30 J	451 J
EW09-ITSED-PAMIS-01	1.40 J	433 J

EW09-CS-001	
PCB TEQ (ng TEQ/kg dw)	3.26 J
Total PCB congeners (µg/kg dw)	340 J

EW09-CS-002	
PCB TEQ (ng TEQ/kg dw)	6.59 J
Total PCB congeners (µg/kg dw)	819 J

EW09-CS-003	
PCB TEQ (ng TEQ/kg dw)	5.28 J
Total PCB congeners (µg/kg dw)	821 J

EW09-CS-004	
PCB TEQ (ng TEQ/kg dw)	2.73 J
Total PCB congeners (µg/kg dw)	400 J

EW09-CS-005	
PCB TEQ (ng TEQ/kg dw)	4.31 J
Total PCB congeners (µg/kg dw)	838 J

EW09-CS-006	
PCB TEQ (ng TEQ/kg dw)	9.5 J
Total PCB congeners (µg/kg dw)	1,080 J

EW09-CS-007	
PCB TEQ (ng TEQ/kg dw)	5.72 J
Total PCB congeners (µg/kg dw)	863 J

EW09-CS-008	
PCB TEQ (ng TEQ/kg dw)	7.96 J
Total PCB congeners (µg/kg dw)	2,860 J

EW09-CS-009	
PCB TEQ (ng TEQ/kg dw)	3.42 J
Total PCB congeners (µg/kg dw)	932 J

EW09-CS-010	
PCB TEQ (ng TEQ/kg dw)	2.66 J
Total PCB congeners (µg/kg dw)	405 J

EW09-CS-011	
PCB TEQ (ng TEQ/kg dw)	1.08
Total PCB congeners (µg/kg dw)	236 J

EW09-CS-012	
PCB TEQ (ng TEQ/kg dw)	1.35
Total PCB congeners (µg/kg dw)	168 J

EW09-CS-013	
PCB TEQ (ng TEQ/kg dw)	2.89 J
Total PCB congeners (µg/kg dw)	403 J

* Historic pier location

Multi-Increment Sampling (MIS) Composite Locations[a]

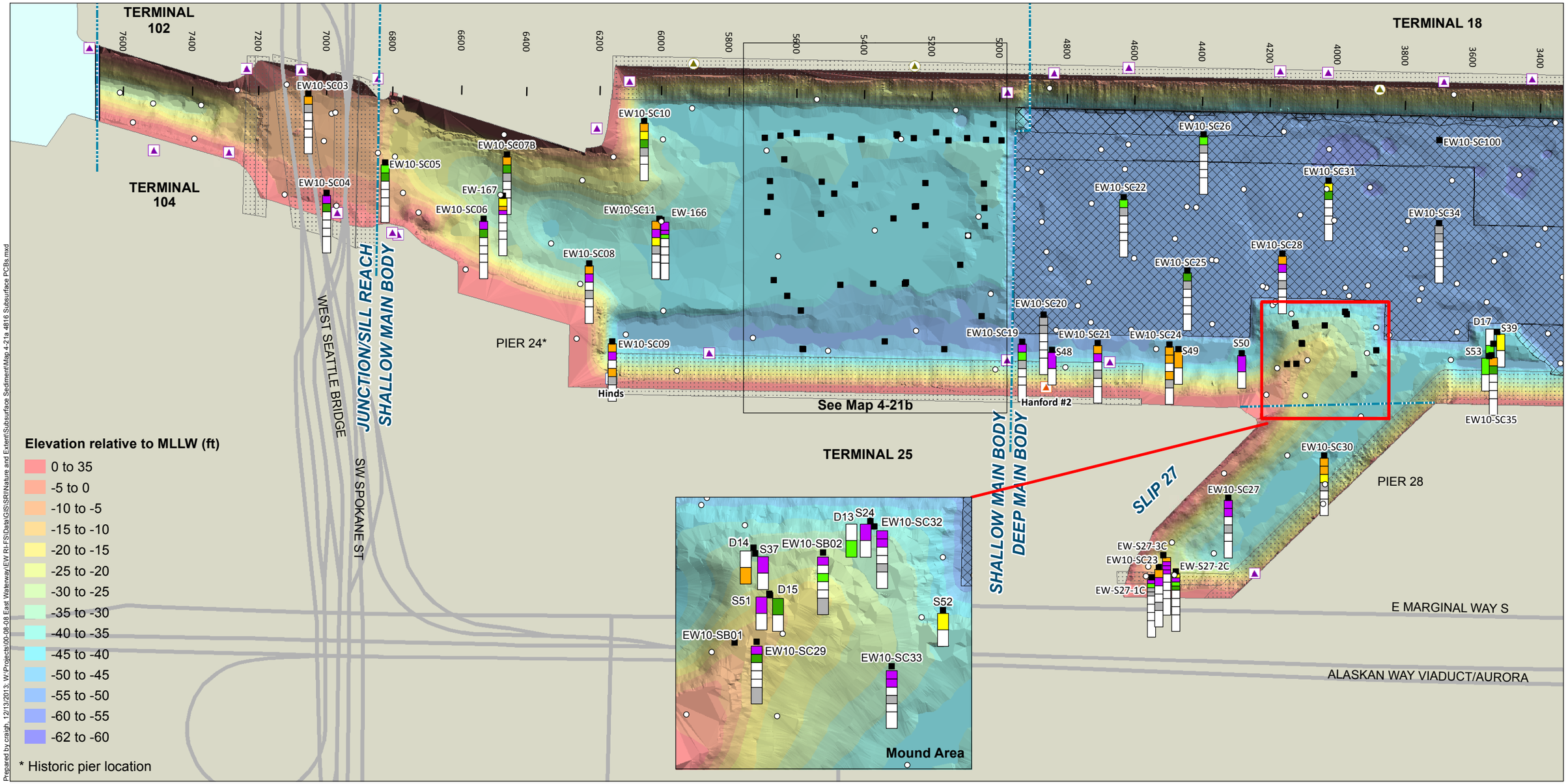
- EW09-ITSED-AWMIS-01
- EW09-ITSED-AWMIS-02
- EW09-ITSED-AWMIS-03
- EW09-ITSED-PAMIS-01
- Subtidal Composite Area Boundary[a]
- Intertidal Zone
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

[a] See Map 4-2 for detail on subtidal and intertidal MIS composites.

0 600
Scale in feet

Map 4-20
Total PCB Congener Concentrations and PCB TEQ Values for Surface Sediment
Supplemental Remedial Investigation
East Waterway Study Area

Prepared by lindam, 12/27/2013; W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SRI\Nature and Extent\Surface Sediment\Map 4-20 4828 PCB TEQs and congeners.mxd



Subsurface Core Depth Charts

- Subsurface Core Location

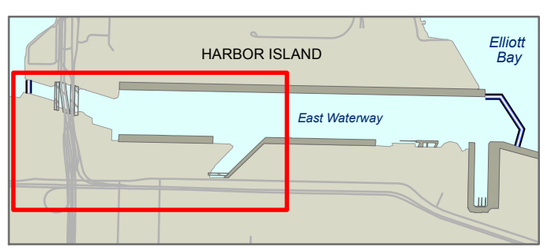
Total PCBs in Subsurface Sediment* (µg/kg dw)

- > 1,800 (> 95th percentile)
- > 590 and ≤ 1,800 (≤ 95th percentile)
- > 270 and ≤ 590 (≤ 75th percentile)
- > 110 and ≤ 270 (≤ 50th percentile)
- ≤ 110 (≤ 25th percentile)
- Non-detect
- Not Analyzed for This Interval

0 - 2 ft, 2 - 4 ft: 0 - 1 ft, 1 - 2 ft, 2 - 3 ft, 3 - 4 ft
4 - 6 ft, 6 - 8 ft, 8 - 10 ft, > 10 ft: 0 - 4 ft, > 4 ft

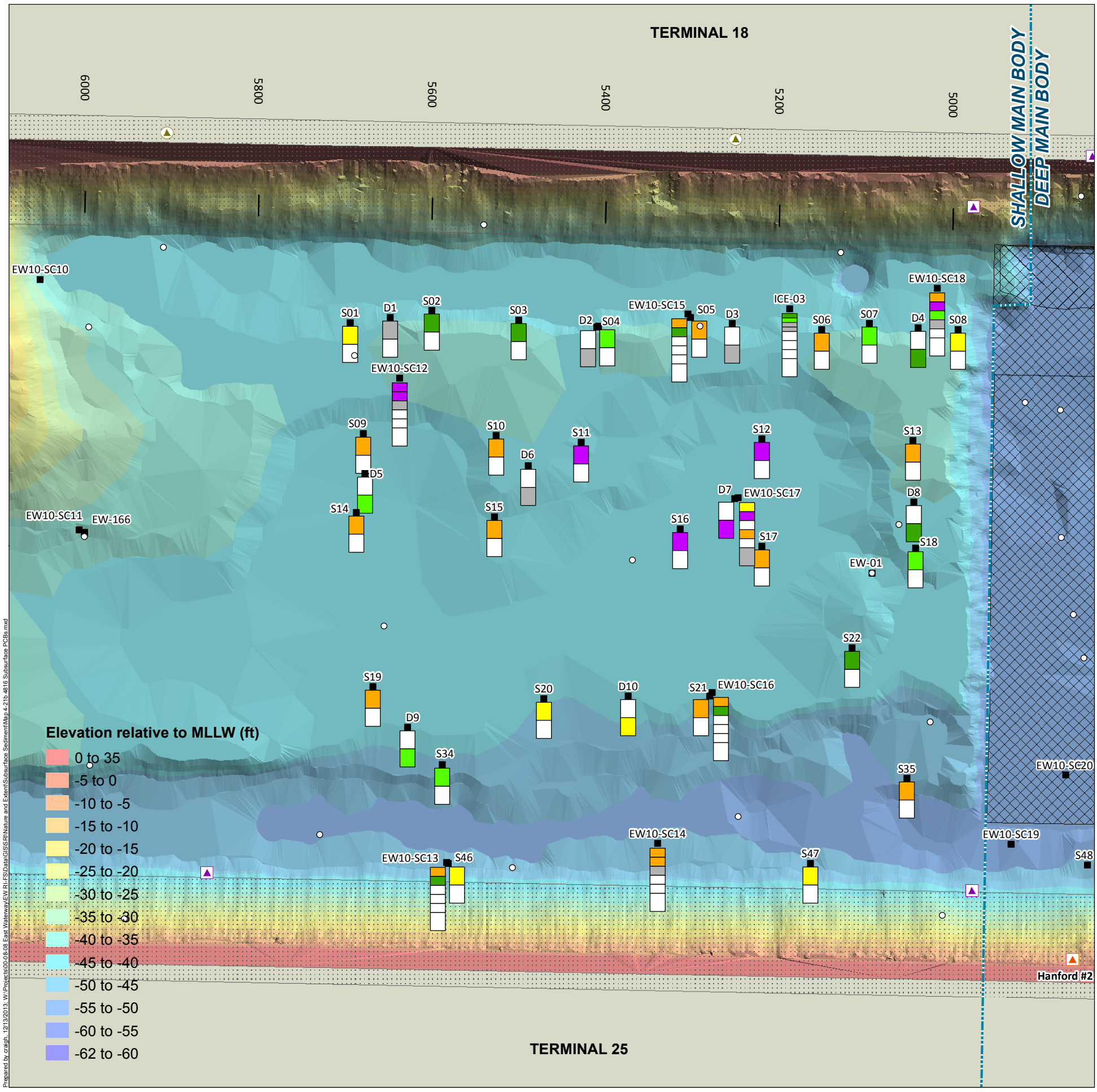
- Surface Sediment Sampling Location
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

* The percentiles are all numeric percentiles of the surface sediment dataset.



0 600
Scale in feet

Map 4-21a
Total PCB Concentrations in Subsurface Sediment
Supplemental Remedial Investigation
East Waterway Study Area



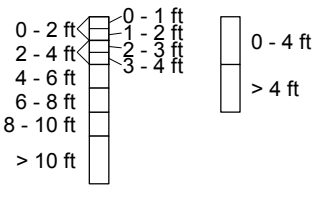
Subsurface Core Depth Charts

- Subsurface Core Location

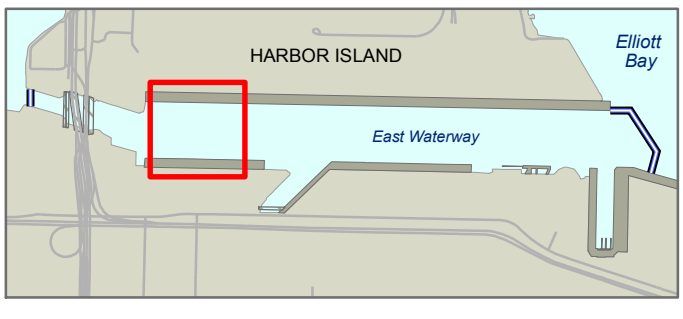
Total PCBs in Subsurface Sediment* (µg/kg dw)

- > 1,800 (> 95th percentile)
- > 590 and ≤ 1,800 (≤ 95th percentile)
- > 270 and ≤ 590 (≤ 75th percentile)
- > 110 and ≤ 270 (≤ 50th percentile)
- ≤ 110 (≤ 25th percentile)
- Non-detect
- Not Analyzed for This Interval

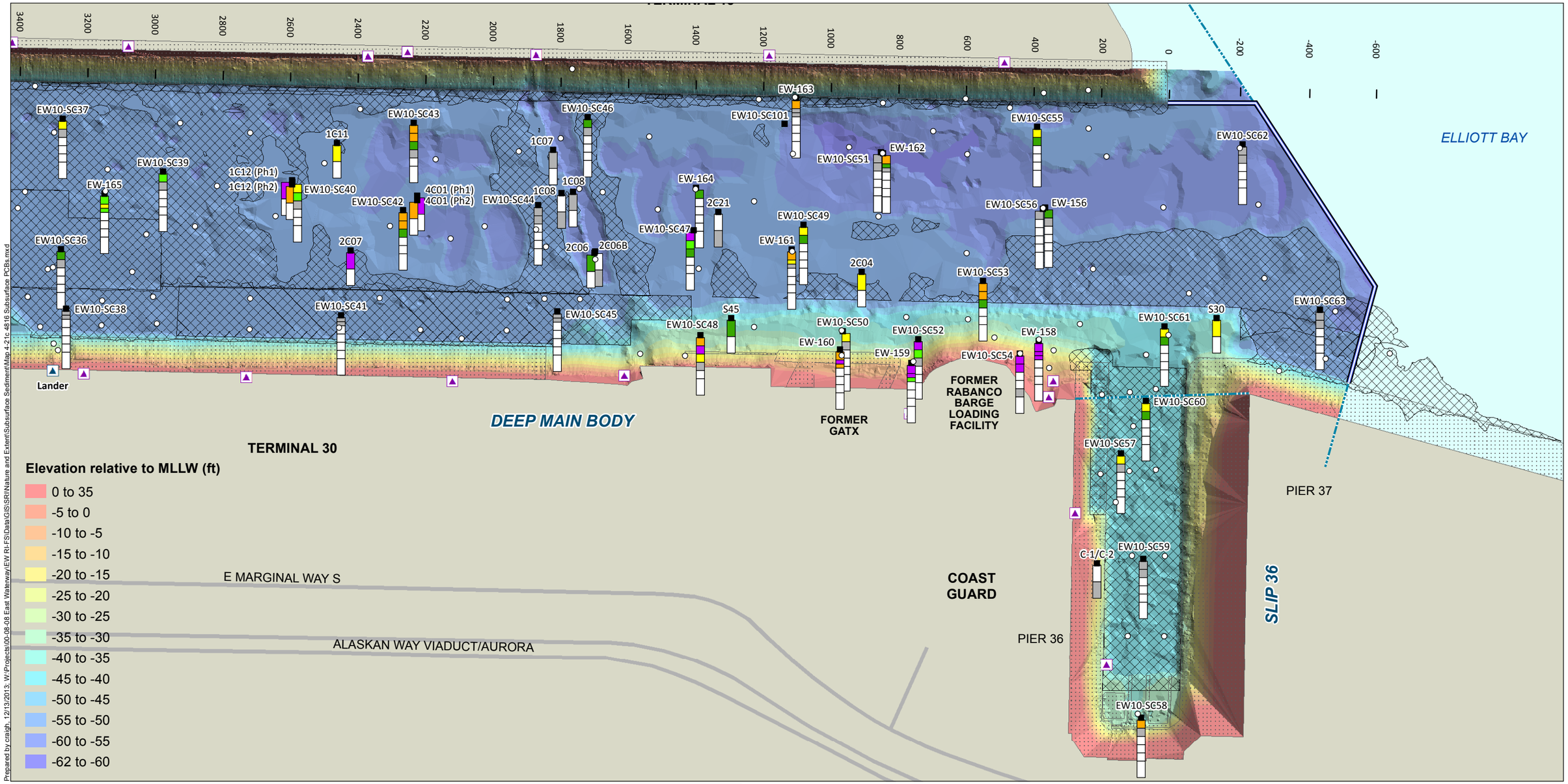
* The percentiles are all numeric percentiles of the surface sediment dataset.



- ○ Surface Sediment Sampling Location
- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- CSO
- CSO/Storm Drain
- Storm Drain
- Unknown
- East Waterway Study Area Boundary



Map 4-21b
Total PCB Concentrations
in Subsurface Sediment
Supplemental Remedial Investigation
East Waterway Study Area



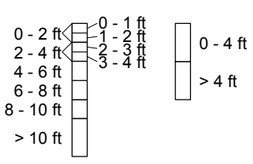
Prepared by craigh, 12/13/2013, W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SRI\Nature and Extent\Subsurface Sediment\Map 4-21c 4816 Subsurface PCBs.mxd

Subsurface Core Depth Charts

- Subsurface Core Location

Total PCBs in Subsurface Sediment* (µg/kg dw)

- > 1,800 (> 95th percentile)
- > 590 and ≤ 1,800 (≤ 95th percentile)
- > 270 and ≤ 590 (≤ 75th percentile)
- > 110 and ≤ 270 (≤ 50th percentile)
- ≤ 110 (≤ 25th percentile)
- Non-detect
- Not Analyzed for This Interval



- Surface Sediment Sampling Location
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

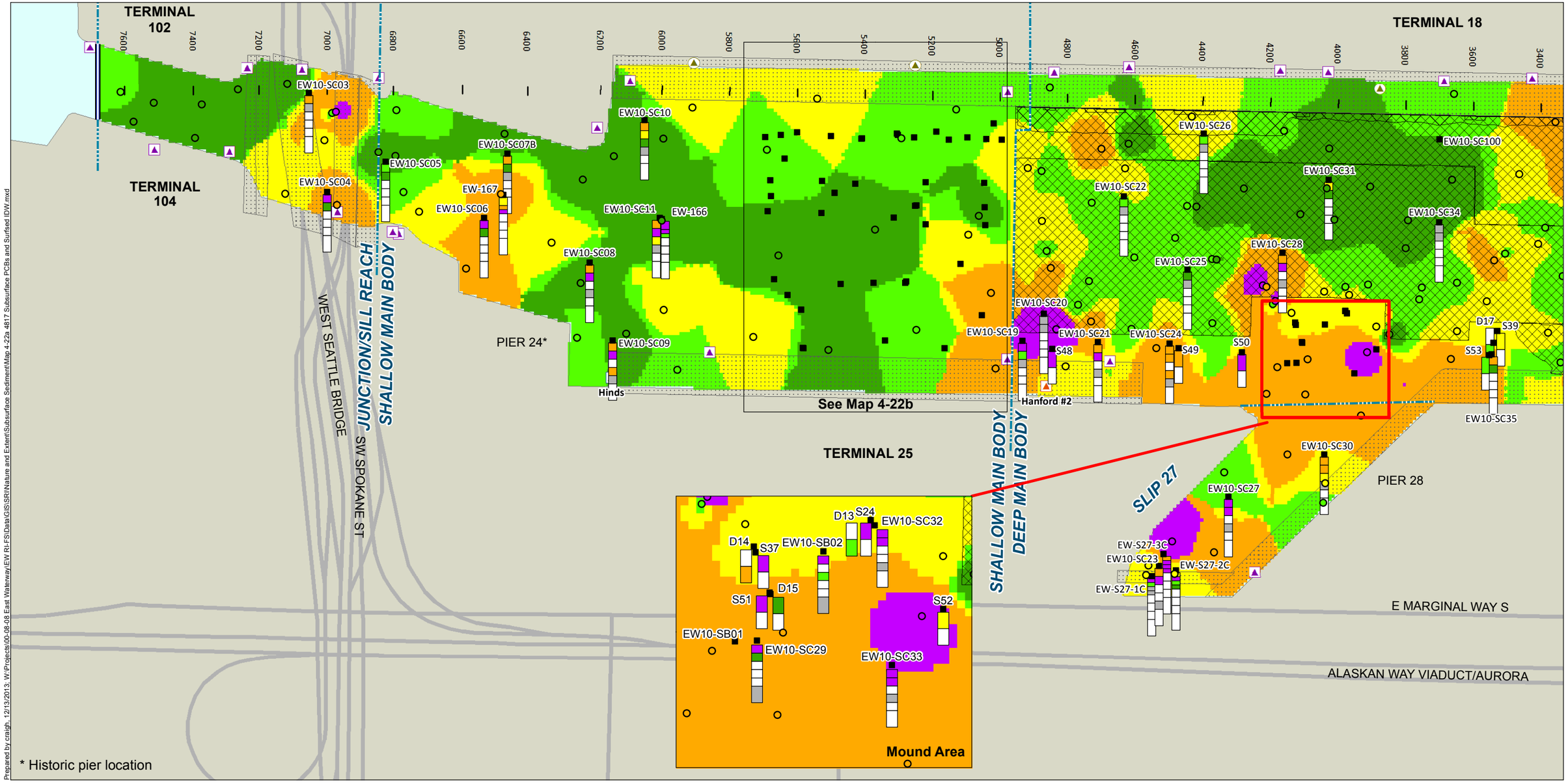
* The percentiles are all numeric percentiles of the surface sediment dataset.



0 600

Scale in feet

Map 4-21c
Total PCB Concentrations in Subsurface Sediment
Supplemental Remedial Investigation
East Waterway Study Area



* Historic pier location

Prepared by craigh, 12/13/2013; W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SRI\Nature and Extent\Subsurface Sediment\Map 4-22a 4817 Subsurface PCBs and Surfsed IDW.mxd

Subsurface Core Depth Charts

- Subsurface Core Location

Total PCBs in Subsurface and Surface Sediment* (µg/kg dw)

- > 1,800 (> 95th percentile)
- > 590 and ≤ 1,800 (≤ 95th percentile)
- > 270 and ≤ 590 (≤ 75th percentile)
- > 110 and ≤ 270 (≤ 50th percentile)
- ≤ 110 (≤ 25th percentile)
- Non-detect
- Not Analyzed for This Interval

0 - 2 ft, 2 - 4 ft, 4 - 6 ft, 6 - 8 ft, 8 - 10 ft, > 10 ft

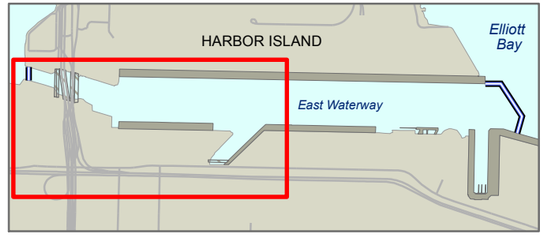
0 - 1 ft, 1 - 2 ft, 2 - 3 ft, 3 - 4 ft

0 - 4 ft

> 4 ft

- Surface Sediment Sampling Location
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

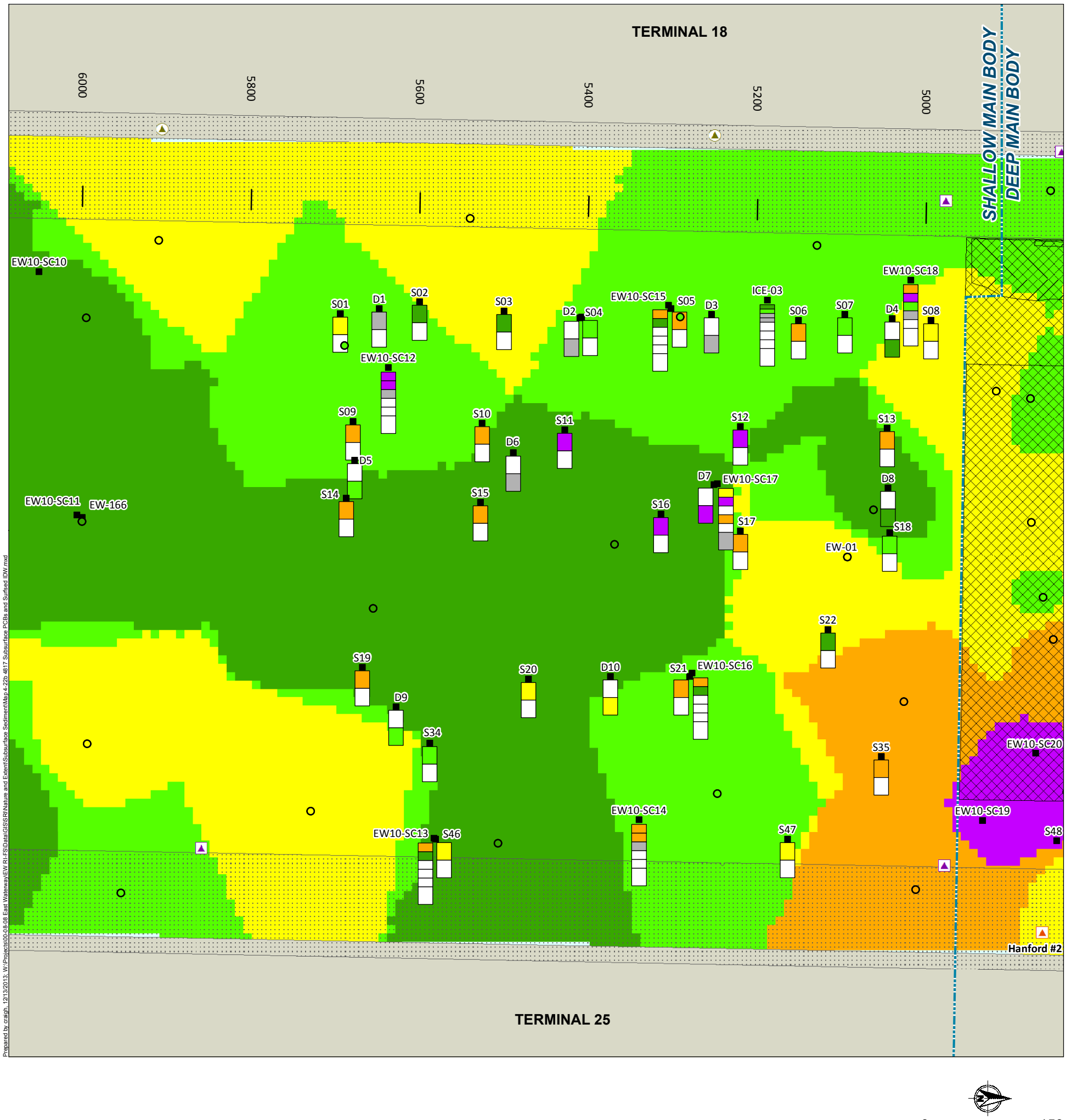
* The percentiles are all numeric percentiles of the surface sediment dataset.



0 600

Scale in feet

Map 4-22a
Subsurface Sediment Total PCB Concentrations and
Interpolated Surface Sediment Total PCB Concentrations
Supplemental Remedial Investigation
East Waterway Study Area



0 150

Scale in feet

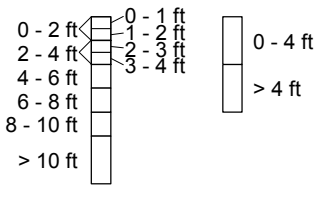
Subsurface Core Depth Charts

- Subsurface Core Location

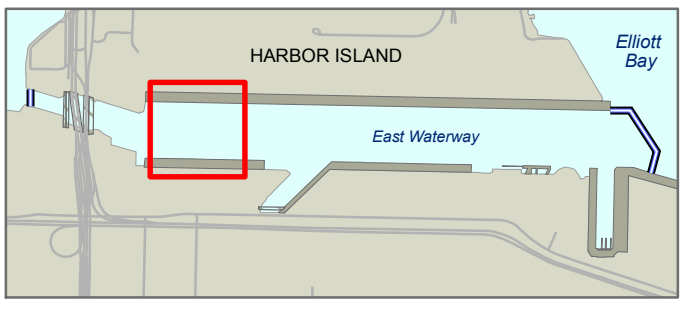
Total PCBs in Subsurface and Surface Sediment* (µg/kg dw)

- > 1,800 (> 95th percentile)
- > 590 and ≤ 1,800 (≤ 95th percentile)
- > 270 and ≤ 590 (≤ 75th percentile)
- > 110 and ≤ 270 (≤ 50th percentile)
- ≤ 110 (≤ 25th percentile)
- Non-detect
- Not Analyzed for This Interval

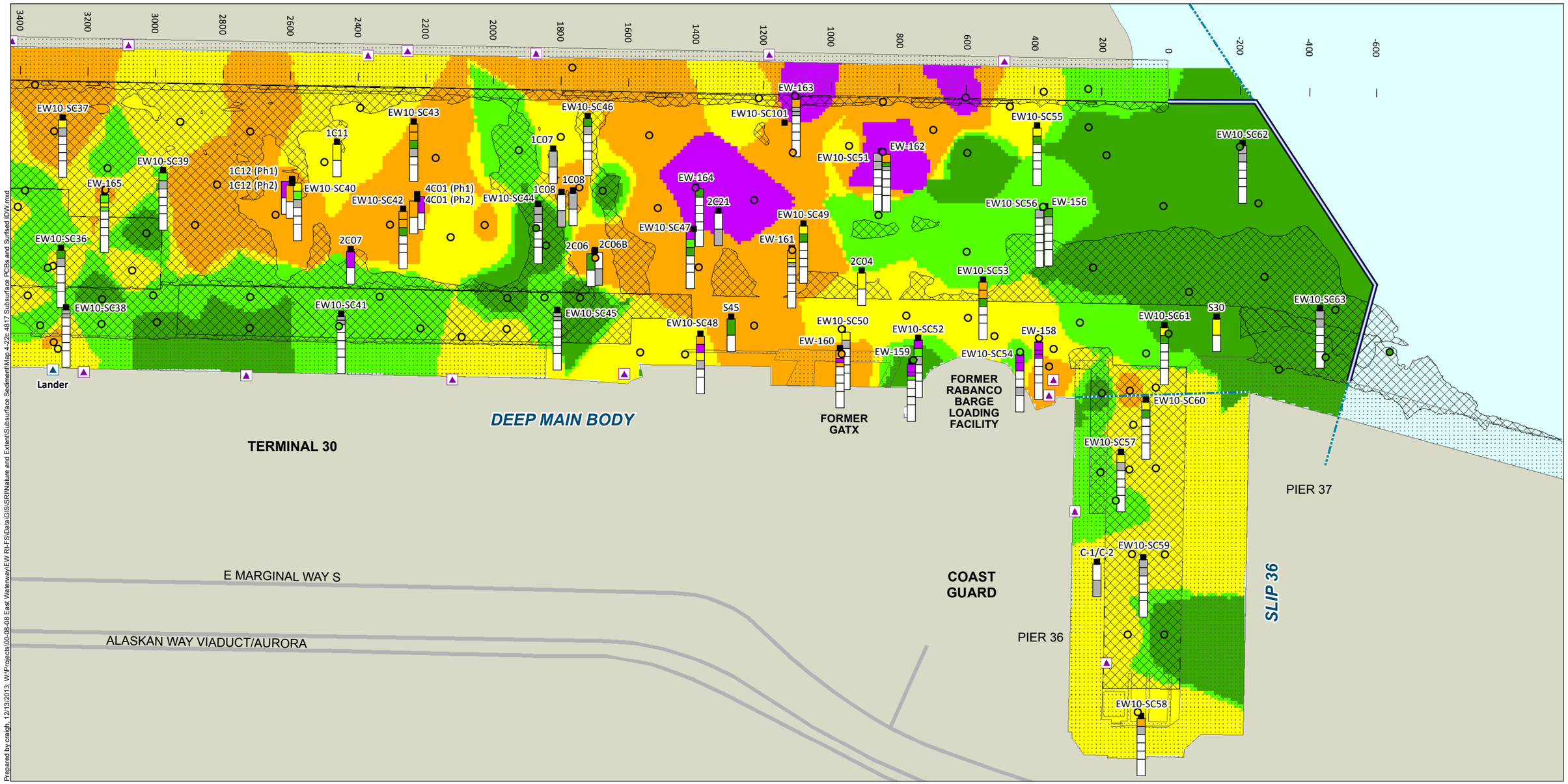
* The percentiles are all numeric percentiles of the surface sediment dataset.



- Surface Sediment Sampling Location
- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- CSO
- CSO/Storm Drain
- Storm Drain
- Unknown
- East Waterway Study Area Boundary



Map 4-22b
Subsurface Sediment Total PCB Concentrations and Interpolated Surface Sediment Total PCB Concentrations
Supplemental Remedial Investigation
East Waterway Study Area



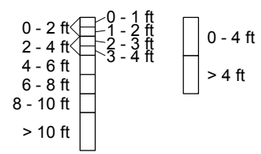
Prepared by craigh, 12/13/2013; W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SRI\Nature and Extent\Subsurface Sediment\Map 4-22c 4817 Subsurface PCBs and Surfsed IDW.mxd

Subsurface Core Depth Charts

- Subsurface Core Location

Total PCBs in Subsurface and Surface Sediment* (µg/kg dw)

- > 1,800 (> 95th percentile)
- > 590 and ≤ 1,800 (≤ 95th percentile)
- > 270 and ≤ 590 (≤ 75th percentile)
- > 110 and ≤ 270 (≤ 50th percentile)
- ≤ 110 (≤ 25th percentile)
- Non-detect
- Not Analyzed for This Interval



- Surface Sediment Sampling Location
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

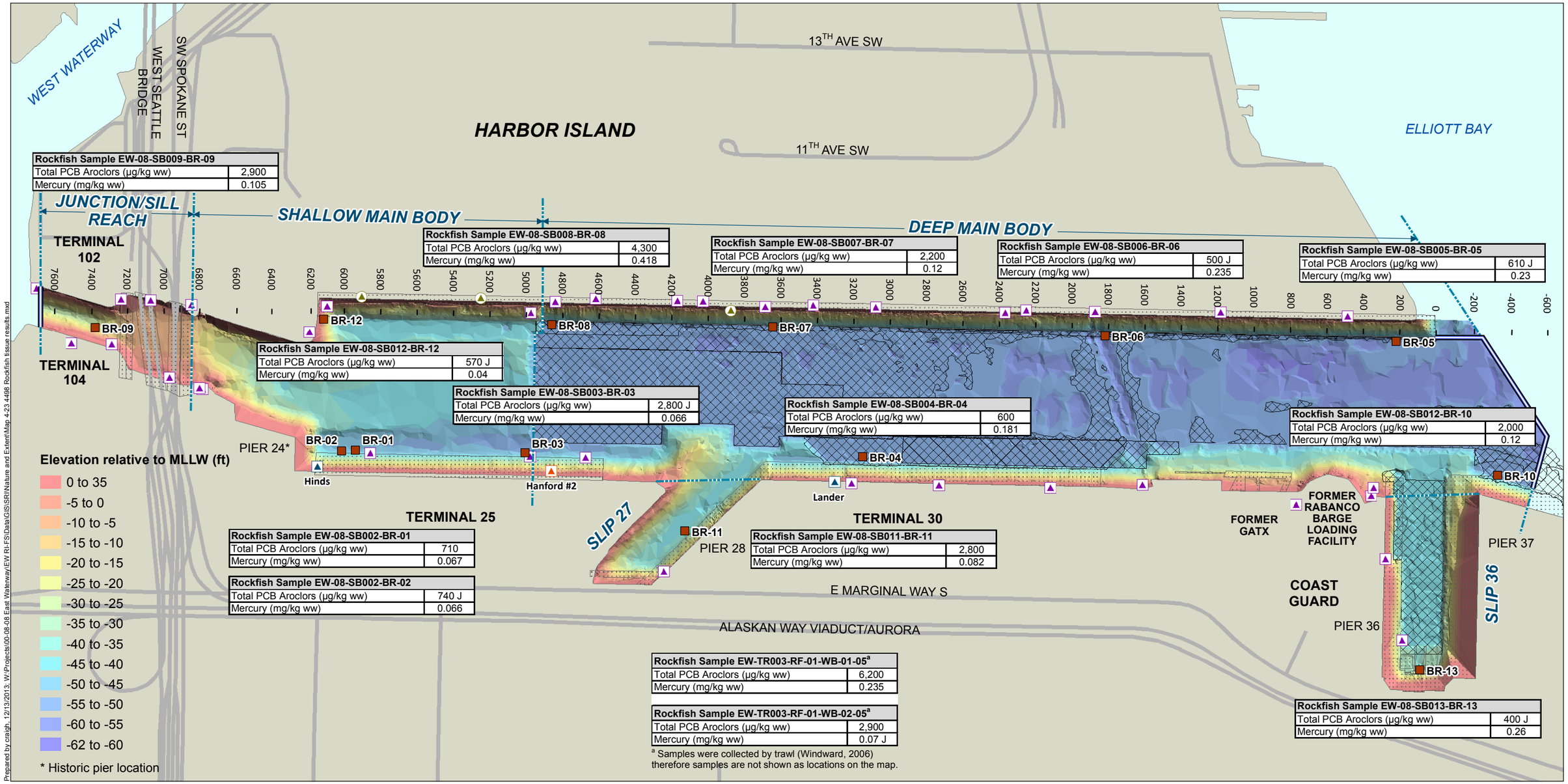
* The percentiles are all numeric percentiles of the surface sediment dataset.



0 600

Scale in feet

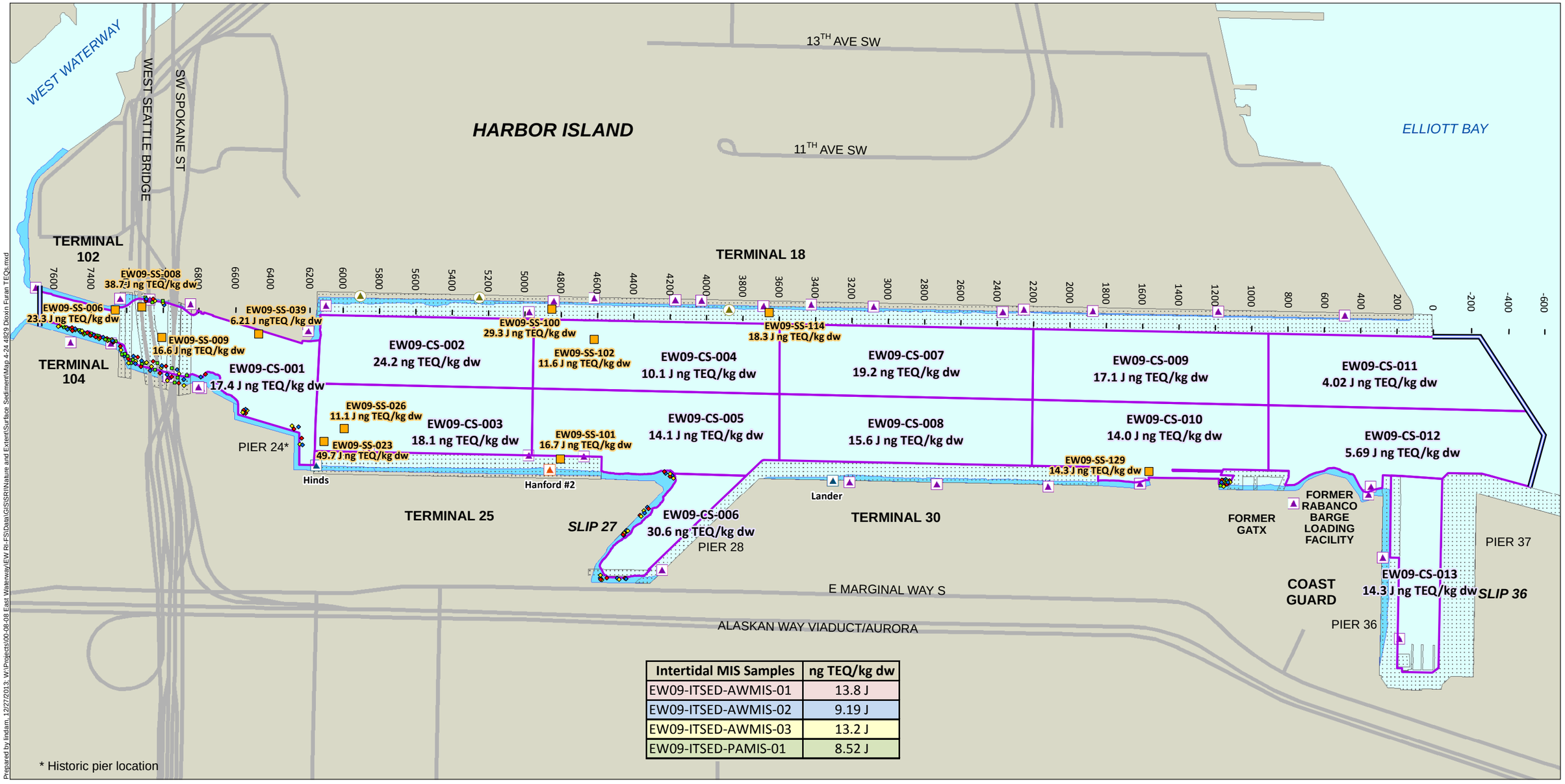
Map 4-22c
Subsurface Sediment Total PCB Concentrations and
Interpolated Surface Sediment Total PCB Concentrations
Supplemental Remedial Investigation
East Waterway Study Area



- Brown Rockfish Sampling Location
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

0 600
Scale in feet

Map 4-23
Total PCB and Mercury Concentrations in Brown Rockfish
Supplemental Remedial Investigation
East Waterway Study Area



Intertidal MIS Samples	ng TEQ/kg dw
EW09-ITSED-AWMIS-01	13.8 J
EW09-ITSED-AWMIS-02	9.19 J
EW09-ITSED-AWMIS-03	13.2 J
EW09-ITSED-PAMIS-01	8.52 J

* Historic pier location

- Grab Sample Location

Multi-Increment Sampling (MIS) Composite Locations[a]

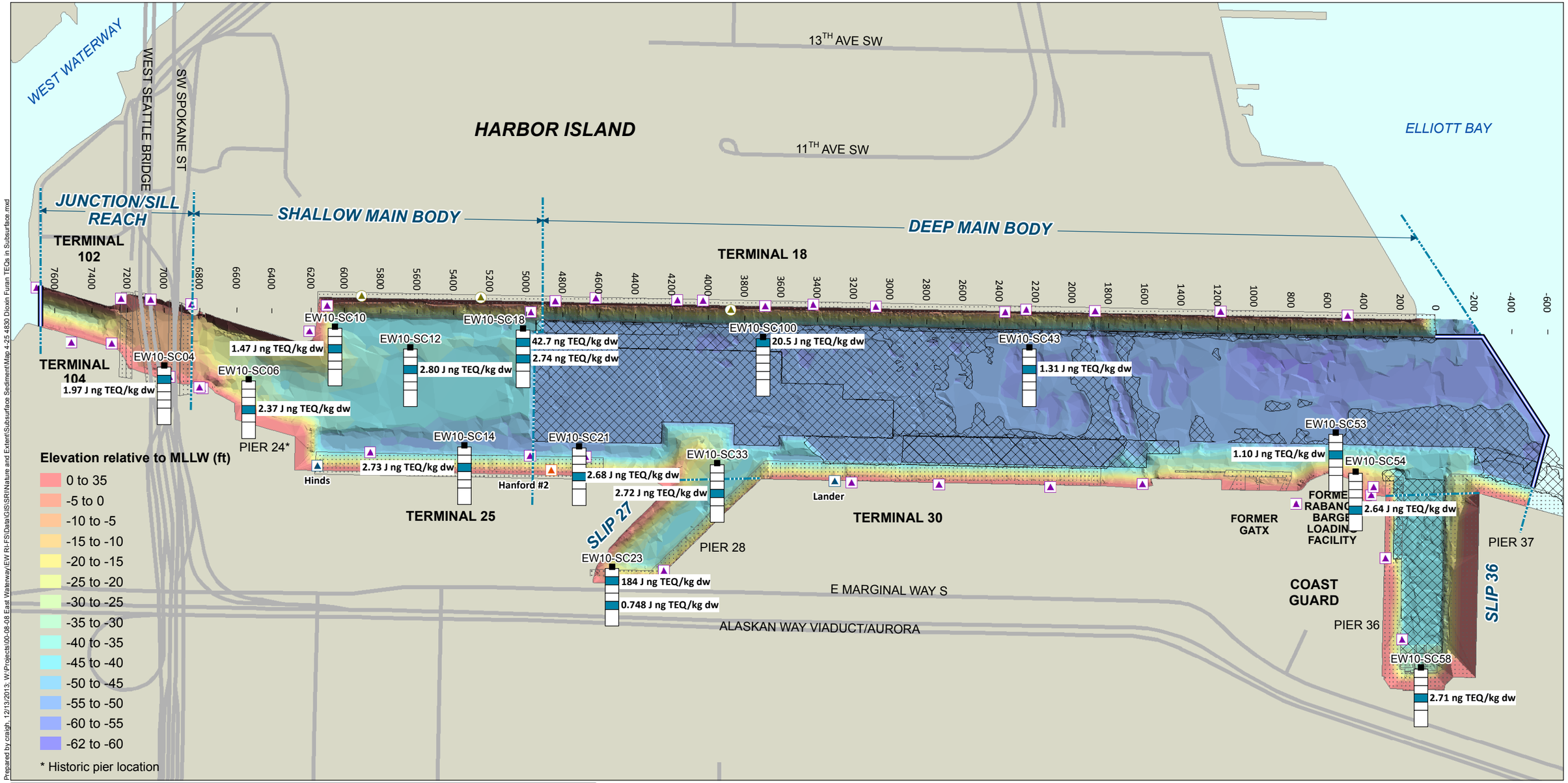
- EW09-ITSED-AWMIS-01
- EW09-ITSED-AWMIS-02
- EW09-ITSED-AWMIS-03
- EW09-ITSED-PAMIS-01
- Subtidal Composite Area Boundary[a]
- Intertidal Zone
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

[a] See Map 4-2 for detail on subtidal and intertidal MIS composites.

0 600
Scale in feet

Map 4-24
Dioxin and Furan TEQ Values for Surface Sediment
Supplemental Remedial Investigation
East Waterway Study Area

Prepared by lindam. 12/27/2013; W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SRI\Nature and Extent\Surface Sediment\Map 4-24 4829 Dioxin Furan TEQs.mxd



Subsurface Core Depth Charts

- Subsurface Core Location

Dioxin and Furan TEQs in Subsurface Sediment

- Sampled Interval
- Not Analyzed for This Interval

0 - 2 ft, 2 - 4 ft, 4 - 6 ft, 6 - 8 ft, 8 - 10 ft, > 10 ft

0 - 1 ft, 1 - 2 ft, 2 - 3 ft, 3 - 4 ft

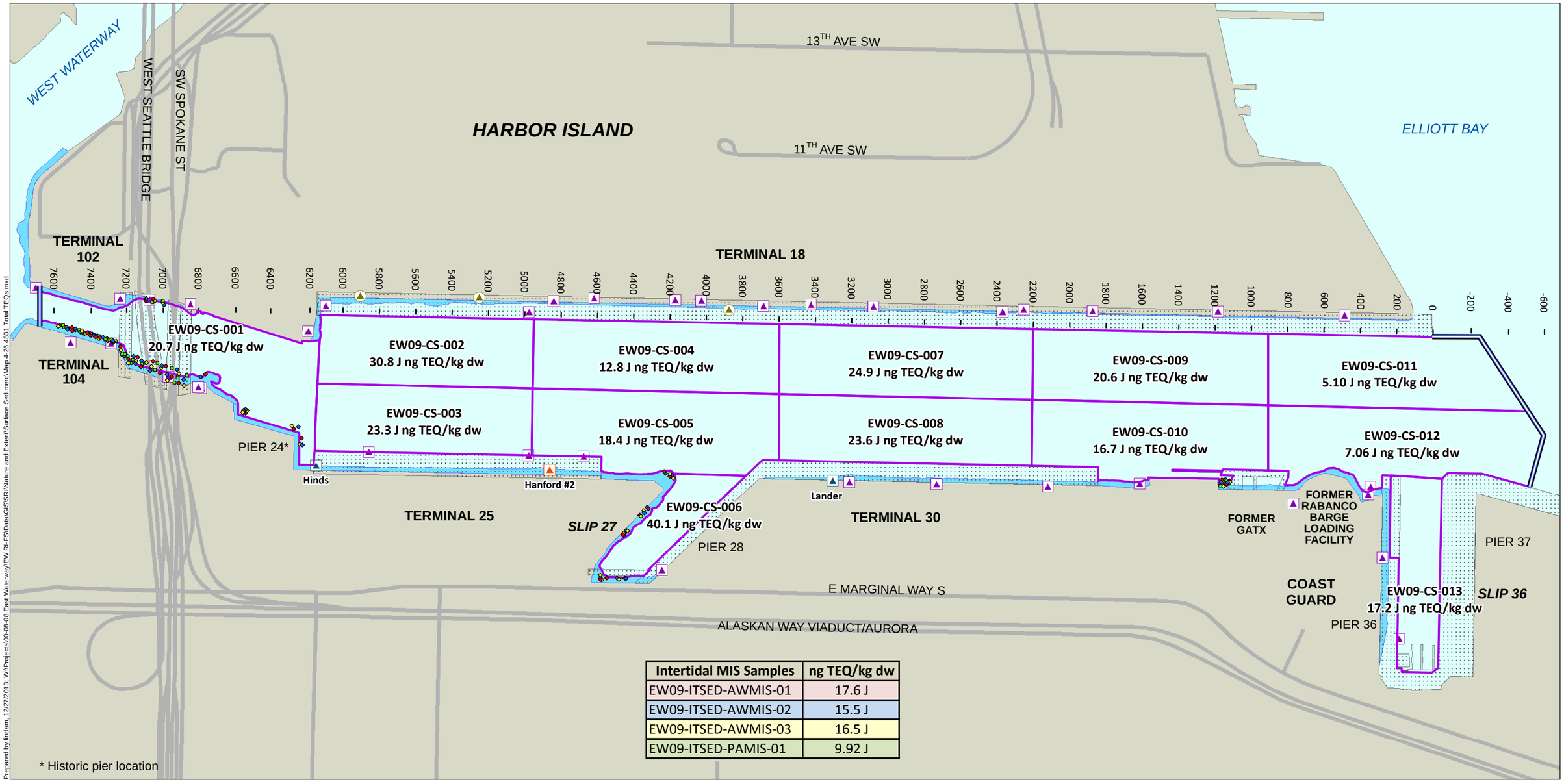
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

0 600

Scale in feet

Map 4-25

Dioxin and Furan TEQ Values for Subsurface Sediment
Supplement Remediation Investigation
East Waterway Study Area



Intertidal MIS Samples	ng TEQ/kg dw
EW09-ITSED-AWMIS-01	17.6 J
EW09-ITSED-AWMIS-02	15.5 J
EW09-ITSED-AWMIS-03	16.5 J
EW09-ITSED-PAMIS-01	9.92 J

* Historic pier location

Multi-Increment Sampling (MIS) Composite Locations[a]

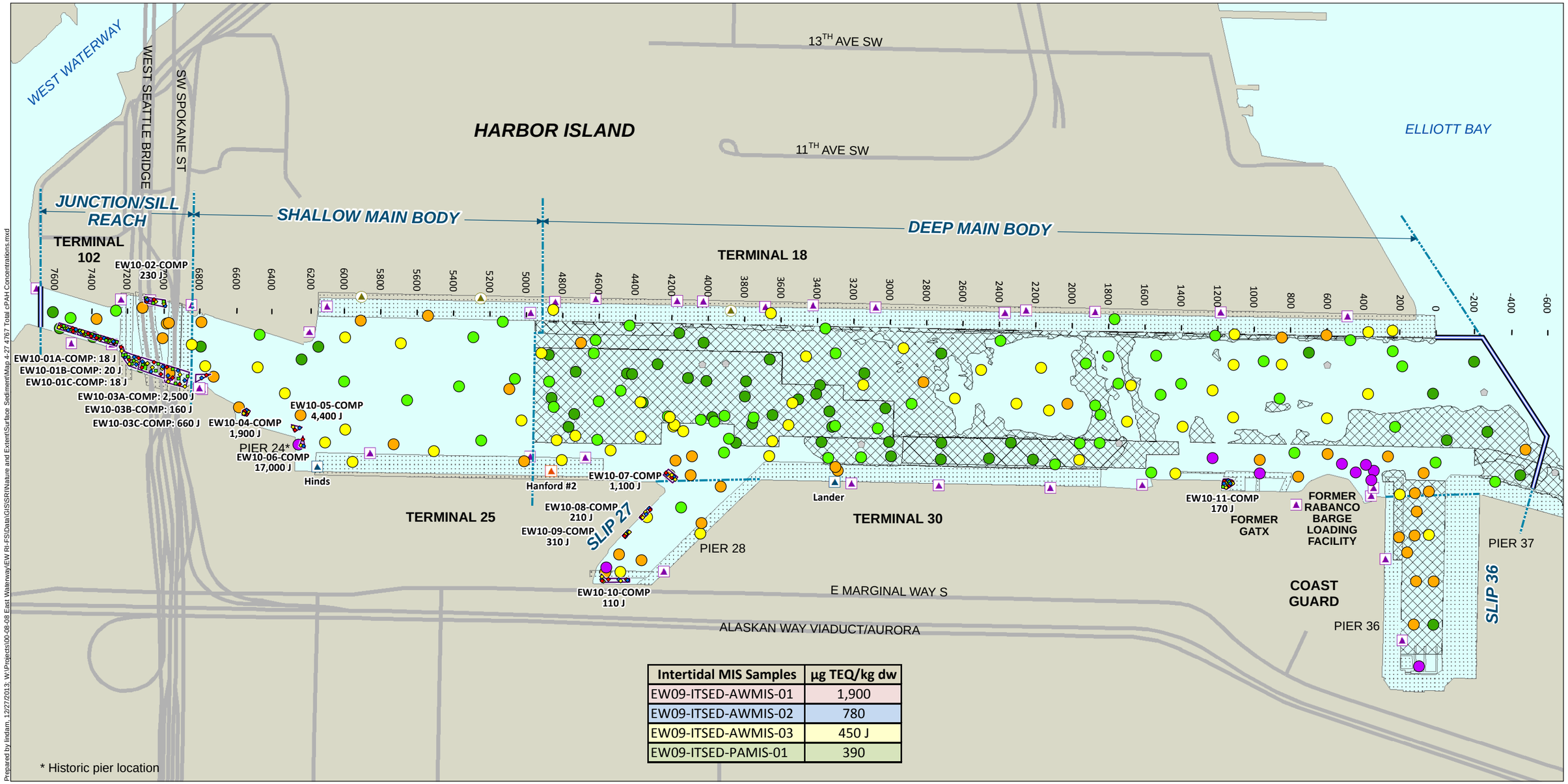
- EW09-ITSED-AWMIS-01
- EW09-ITSED-AWMIS-02
- EW09-ITSED-AWMIS-03
- EW09-ITSED-PAMIS-01
- Subtidal Composite Area Boundary[a]
- Intertidal Zone
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

[a] See Map 4-2 for detail on subtidal and intertidal MIS composites.

0 600
Scale in feet

Map 4-26
Total TEQ Values for Surface Sediment
Supplemental Remedial Investigation
East Waterway Study Area

Prepared by lindam, 12/27/2013; W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SRI\Nature and Extent\Surface Sediment\Map 4-26 4831 Total TEQs.mxd



Intertidal MIS Samples	µg TEQ/kg dw
EW09-ITSED-AWMIS-01	1,900
EW09-ITSED-AWMIS-02	780
EW09-ITSED-AWMIS-03	450 J
EW09-ITSED-PAMIS-01	390

* Historic pier location

Total cPAH Concentration*
µg TEQ/kg dw
- > 1,200 (> 95th percentile)
- > 480 and ≤ 1,200 (≤ 95th percentile)
- > 220 and ≤ 480 (≤ 75th percentile)
- > 95 and ≤ 220 (≤ 50th percentile)
- ≤ 95 (≤ 25th percentile)
- Non-detect

Multi-Increment Sampling (MIS) Composite Locations[a]
- Area wide - Rep 1
- Area wide - Rep 2
- Area wide - Rep 3
- Public access
- Intertidal PAH Composite Area[a]

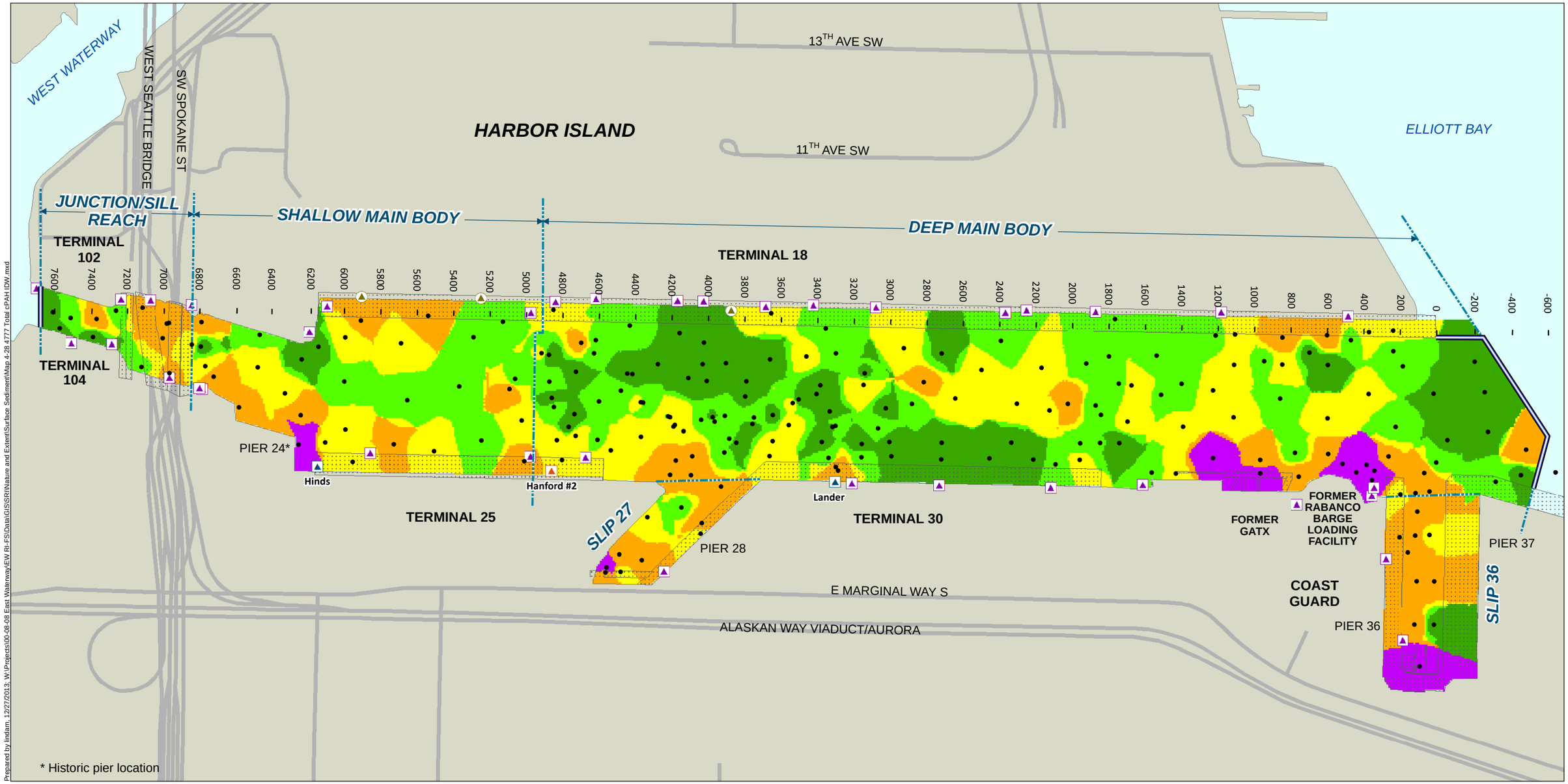
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

0 600
Scale in feet

[a] See Map 4-2 for detail on intertidal composites and intertidal MIS composites.
* The percentiles are all numeric percentiles of the surface sediment dataset.

Map 4-27
cPAH Concentrations in Surface Sediment
Supplemental Remedial Investigation
East Waterway Study Area

Prepared by lindam, 12/27/2013; W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SRI\Nature and Extent\Surface Sediment\Map 4-27 4767 Total cPAH Concentrations.mxd



Prepared by lindam, 12/27/2013, W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SRI\Nature and Extent\Surface Sediment\Map 4-28 4777 Total cPAH IDW.mxd

Interpolated Total cPAH Concentration*

µg TEQ/kg dw

- > 1,200 (>95th percentile)
- > 480 and ≤ 1,200 (≤95th percentile)
- > 220 and ≤ 480 (≤75th percentile)
- > 95 and ≤ 220 (≤50th percentile)
- ≤ 95 (≤25th percentile)
- Surface Sediment Sampling Location
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

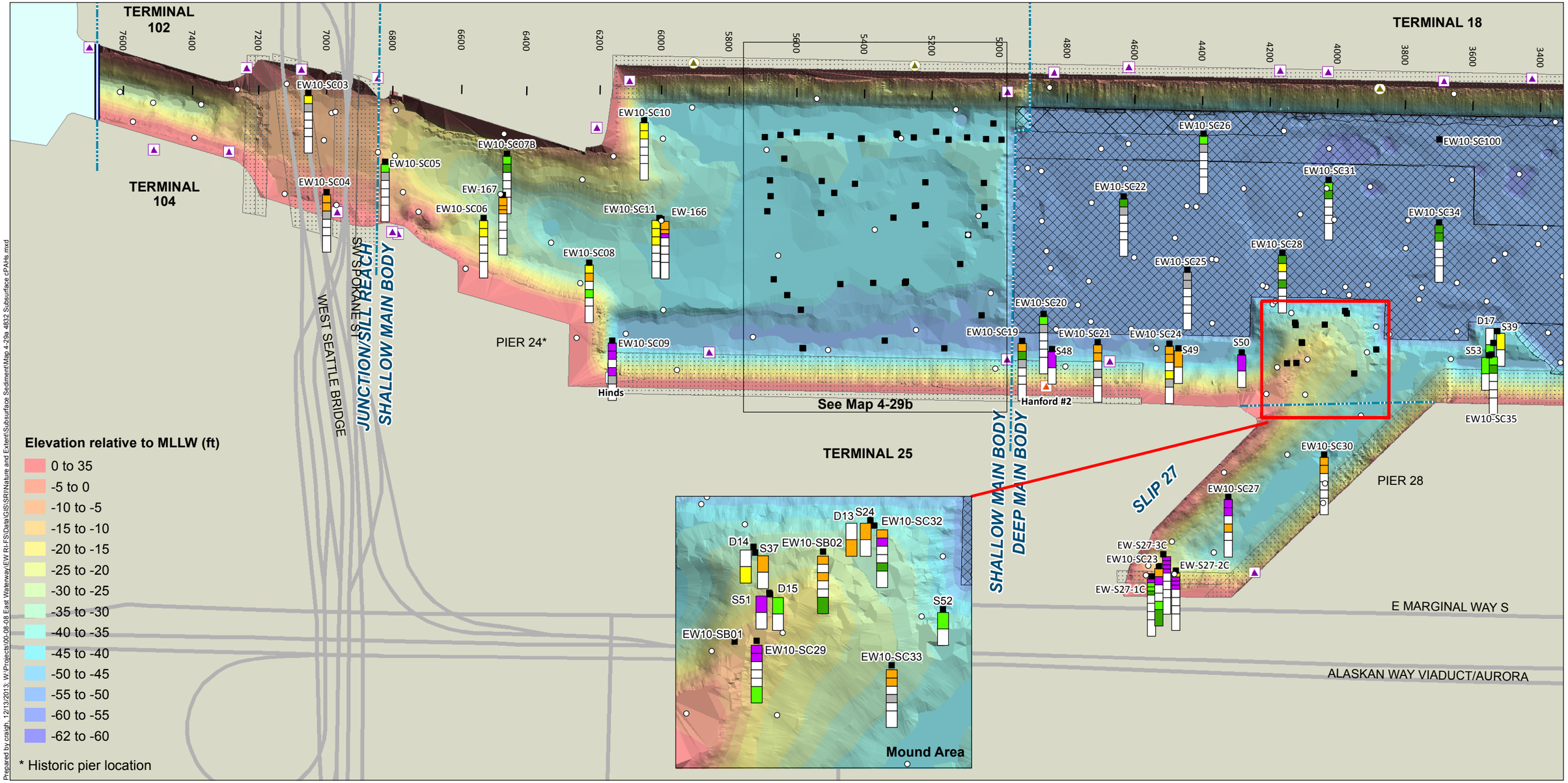
* The percentiles are all numeric percentiles of the surface sediment dataset.

0 600

Scale in feet

Map 4-28

Inverse Distance Weighted Interpolation of cPAH Concentrations in Surface Sediment
East Waterway Supplemental Remedial Investigation
East Waterway Study Area



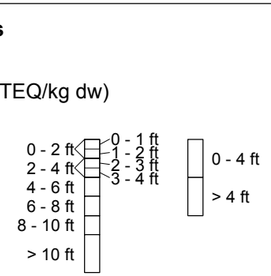
Prepared by craigh, 12/13/2013, W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SRI\Nature and Extent\Subsurface Sediment\Map 4-29a 4832 Subsurface cPAHs.mxd

Subsurface Core Depth Charts

- Subsurface Core Location

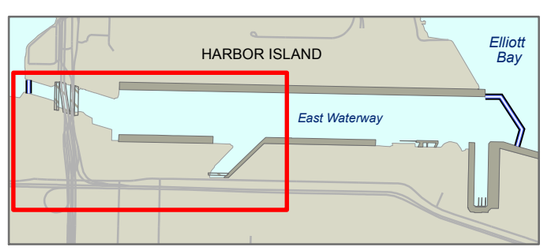
Total cPAHs in Subsurface Sediment* (µg TEQ/kg dw)

- > 1,200 (> 95th percentile)
- > 480 and ≤ 1,200 (≤ 95th percentile)
- > 220 and ≤ 480 (≤ 75th percentile)
- > 95 and ≤ 220 (≤ 50th percentile)
- ≤ 95 (≤ 25th percentile)
- Non-detect
- Not Analyzed for This Interval



- Surface Sediment Sampling Location
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

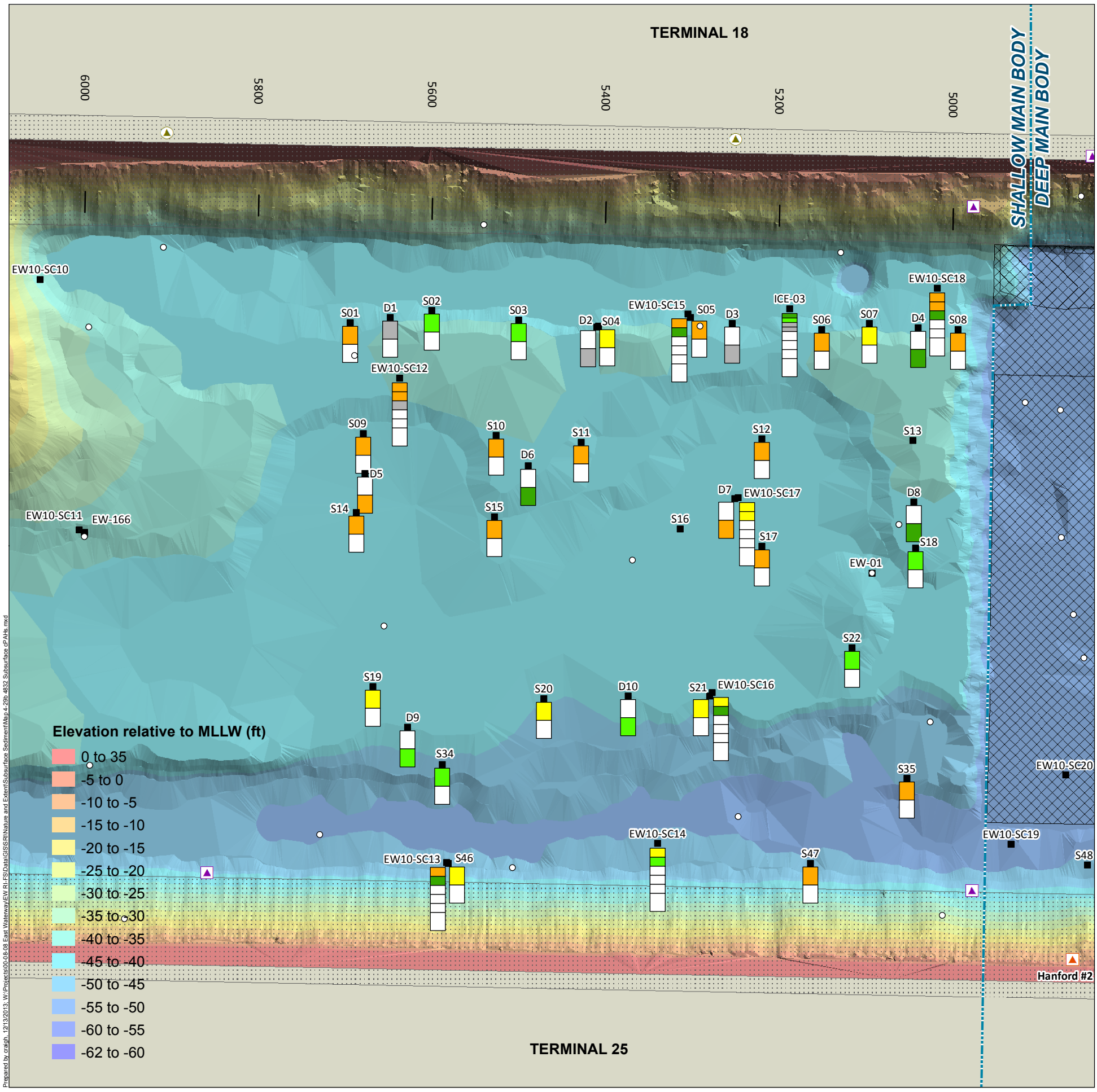
* The percentiles are all numeric percentiles of the surface sediment dataset.



0 600

Scale in feet

Map 4-29a
cPAH Concentrations in Subsurface Sediment
Supplemental Remedial Investigation
East Waterway Study Area



0 150

Scale in feet

Subsurface Core Depth Charts

- Subsurface Core Location

Total cPAHs in Subsurface Sediment* (µg TEQ/kg dw)

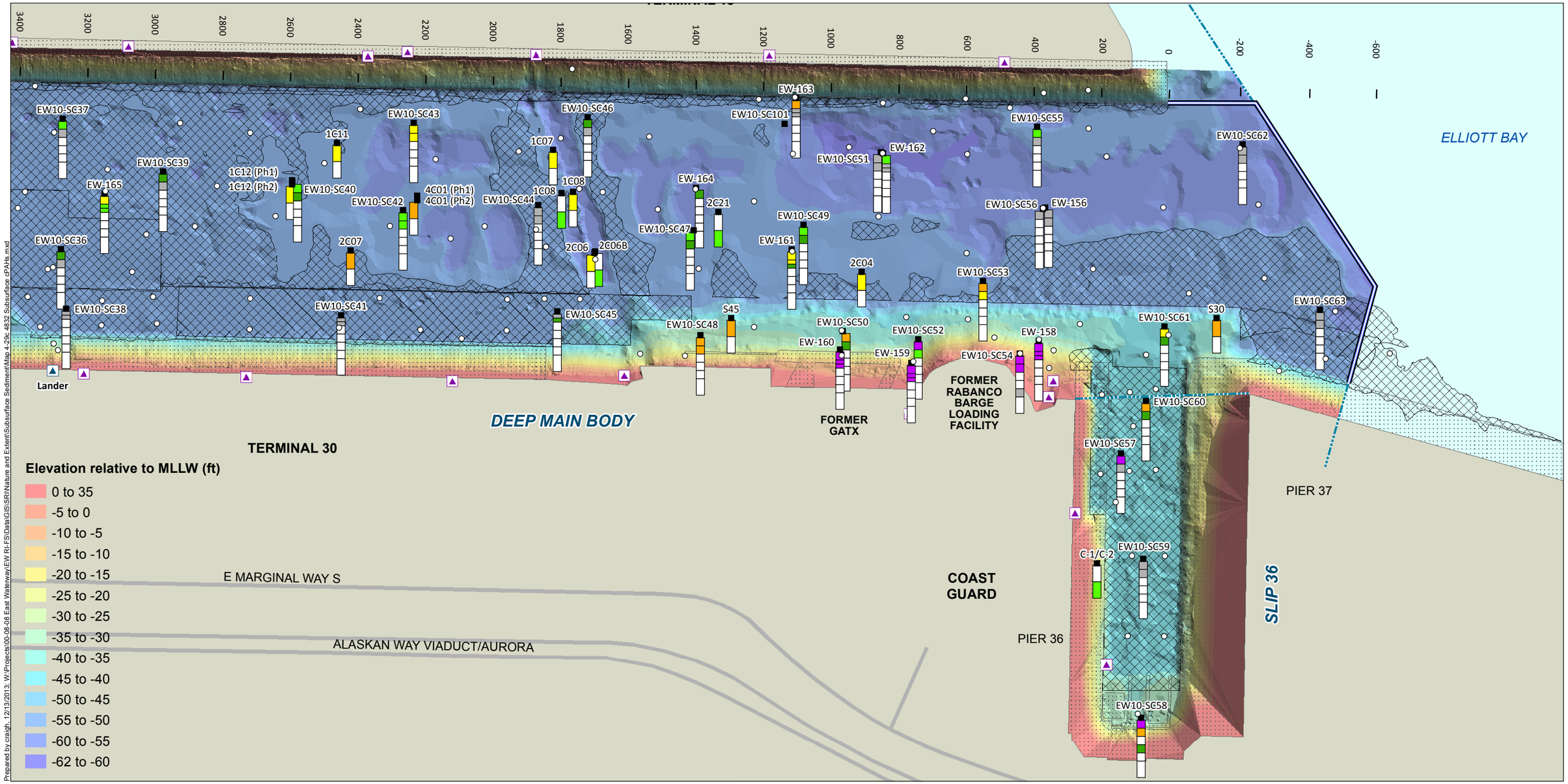
- > 1,200 (> 95th percentile)
- > 480 and ≤ 1,200 (≤ 95th percentile)
- > 220 and ≤ 480 (≤ 75th percentile)
- > 95 and ≤ 220 (≤ 50th percentile)
- ≤ 95 (≤ 25th percentile)
- Non-detect
- Not Analyzed for This Interval

* The percentiles are all numeric percentiles of the surface sediment dataset.

- Surface Sediment Sampling Location
- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- CSO
- CSO/Storm Drain
- Storm Drain
- Unknown
- East Waterway Study Area Boundary



Map 4-29b
cPAH Concentrations in Subsurface Sediment
Supplemental Remedial Investigation
East Waterway Study Area



Prepared by craigh, 12/13/2013, W:\Projects\00-08-08 East Waterway\EW RI-FS\Data\GIS\SRI\Nature and Extent\Subsurface Sediment\Map 4-29c 4832 Subsurface cPAHs.mxd

Subsurface Core Depth Charts

- Subsurface Core Location

Total cPAHs in Subsurface Sediment* (µg TEQ/kg dw)

- > 1,200 (> 95th percentile)
- > 480 and ≤ 1,200 (≤ 95th percentile)
- > 220 and ≤ 480 (≤ 75th percentile)
- > 95 and ≤ 220 (≤ 50th percentile)
- ≤ 95 (≤ 25th percentile)
- Non-detect
- Not Analyzed for This Interval

0 - 2 ft, 2 - 4 ft, 4 - 6 ft, 6 - 8 ft, 8 - 10 ft, > 10 ft

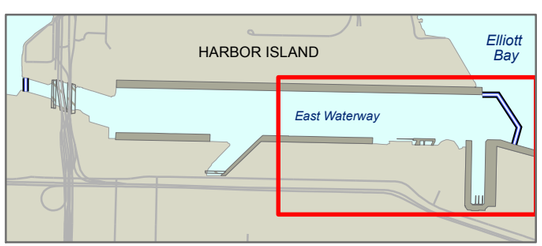
0 - 1 ft, 1 - 2 ft, 2 - 3 ft, 3 - 4 ft

0 - 4 ft

> 4 ft

- Surface Sediment Sampling Location
- CSO
- Storm Drain
- CSO/Storm Drain
- Unknown Outfall
- Area Dredged in the Last 11 Years
- Dock/Pier/Bridge
- Road
- East Waterway Study Area Boundary

* The percentiles are all numeric percentiles of the surface sediment dataset.



0 600

Scale in feet

Map 4-29c
cPAH Concentrations in Subsurface Sediment
Supplemental Remedial Investigation
East Waterway Study Area