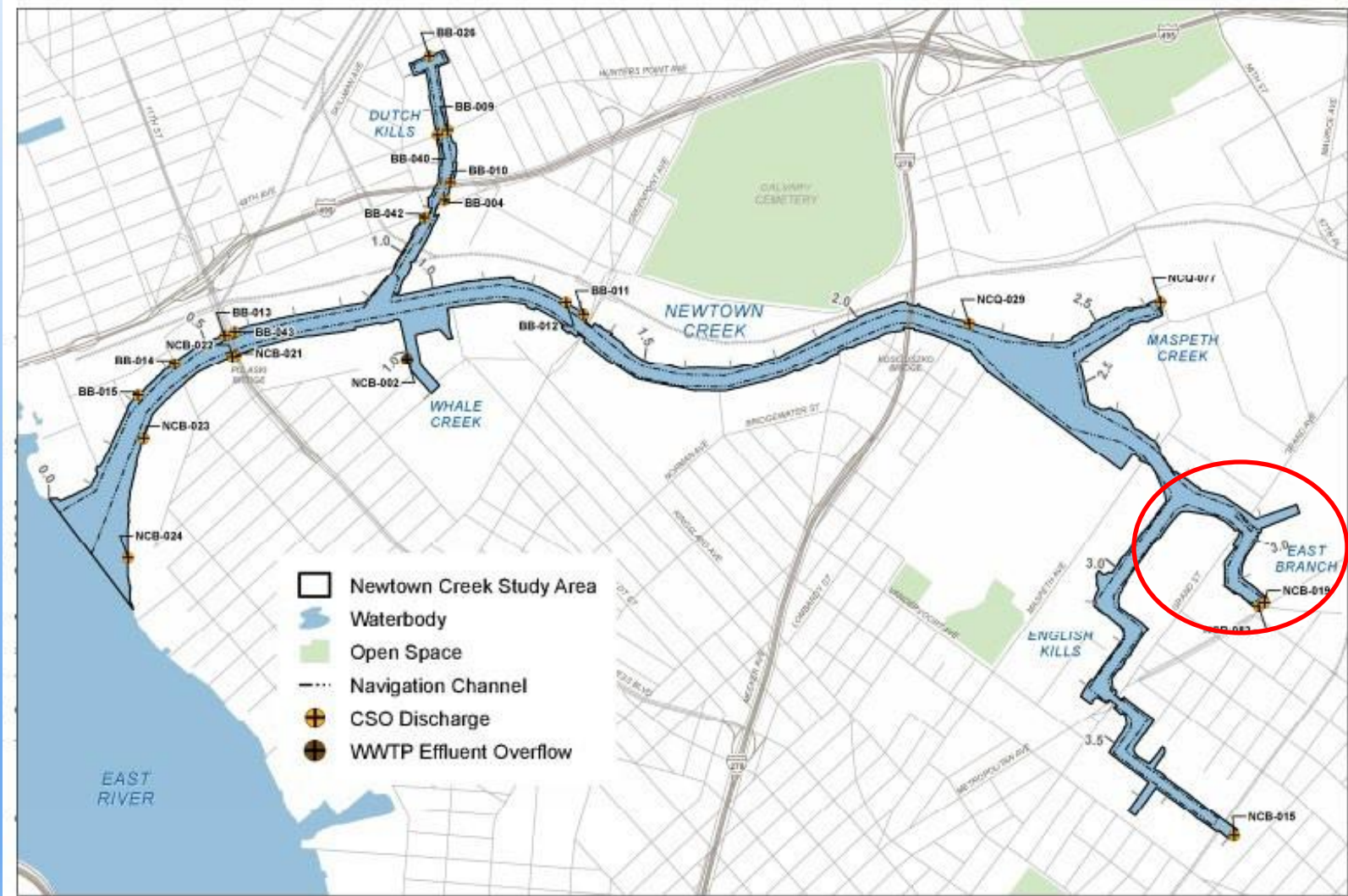


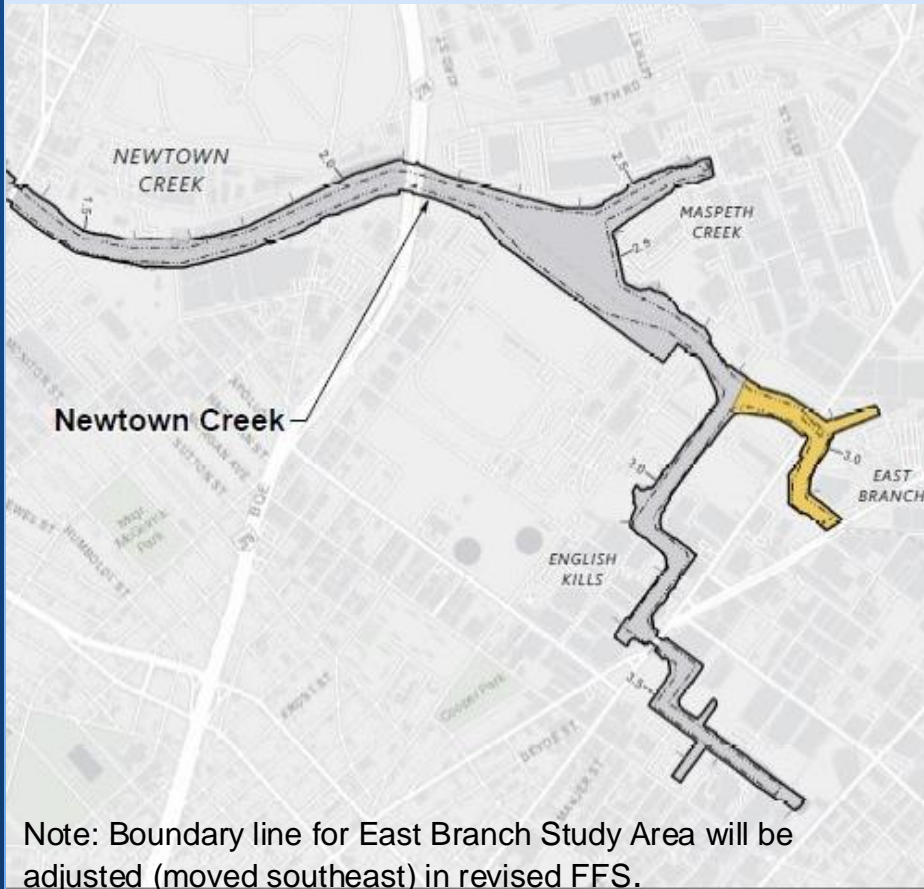


**East Branch Early Action  
Data Overview  
Newtown Creek Superfund Site CAG Meeting  
July 17, 2024**

# Study Area



# East Branch Early Action Study Area



- Tributary of Newtown Creek
- Approximately 0.5 miles in length
- Surface area ~11 acres
- Depth 10.3-16.5 ft in channel and shallower at head of tributaries
- Extensive investigations completed as part of the Remedial Investigation/Feasibility Study Process
- Focused Feasibility Study (FFS) was developed to evaluate remedial alternatives for the East Branch

\*Additional detail on the rationale for conducting the East Branch Early Action can be found in a June 20, 2023 presentation to the CAG (available on the CAG website).

# Review of Process for East Branch

## Release Proposed Plan

Release of the Proposed Plan to cleanup the East Branch initiates a Public Comment Period

All comments received (verbal and written) during the public comment period are reviewed and responded to in a Responsiveness Summary

**Timing of Release:** Summer 2024 (minimum comment period of 30 days)

## Sign Record of Decision

Selects an interim remedy to cleanup the East Branch portion of Newtown Creek

The Record of Decision includes the Responsiveness Summary

May include adjustments to the Proposed Plan based on comments received

**Timing of Signature:** Early 2025 anticipated

## Design the Remedy

A comprehensive Predesign Investigation of the East Branch will be conducted; much more data will be collected

The new/additional data will be used to help make the detailed decisions about how to design the remedy

Additional enforcement agreements will be needed

→ Cleanup to follow completion of design and enforcement agreements



# Review of Key Terminology

- COCs – Contaminants of Concern
- PRGs – Preliminary Remediation Goals
  - For this action, they are risk-based concentrations
  - measured as milligrams (or nanograms) of contaminant per kilogram of sediment (equivalent to parts per million (or trillion))
- RAOs – Remedial Action Objectives
  - Exposure-Based RAOs
    - Reduce potential current and future human exposure to COCs from ingestion of fish and crab by preventing biota exposure to sediments in the East Branch with COC concentrations above protective PRGs/Remediation Goals (RGs).
    - Reduce ecological exposure to Site COCs in sediment by reducing the concentrations of COCs in contaminated sediment in the East Branch to protective PRGs/RGs.
  - Source Control RAO
    - Reduce migration of COCs related to NAPL and its constituents, and other sources of COCs within the East Branch, to surface sediment and surface water to levels that are protective for human health and ecological exposure.
- Additional details on the East Branch Early Action can be found in the May and June 2024 presentations to the CAG (available online)

# Contaminants of Concern and Risk-Based Preliminary Remediation Goals

Contaminants of Concern	Risk-Based PRG	Most Sensitive Receptor and Exposure Pathway
TPCBs <sup>1</sup>	0.30 mg/kg	Humans via crab consumption
Dioxins/Furans TEQ <sup>1</sup>	18 ng/kg	Humans via crab consumption
Copper <sup>2</sup>	490 mg/kg	Mummichog via dietary intake
Lead <sup>1</sup>	340 mg/kg	Spotted sandpiper via dietary intake <sup>3</sup>
TPAH(34) <sup>2</sup>	100 mg/kg	Benthic macroinvertebrates via sediment toxicity
C19-C36 Aliphatic Hydrocarbons <sup>2</sup>	200 mg/kg	Benthic macroinvertebrates via sediment toxicity

**Notes:**

TPCBs – total polychlorinated biphenyls

TEQ – toxic equivalence quotient

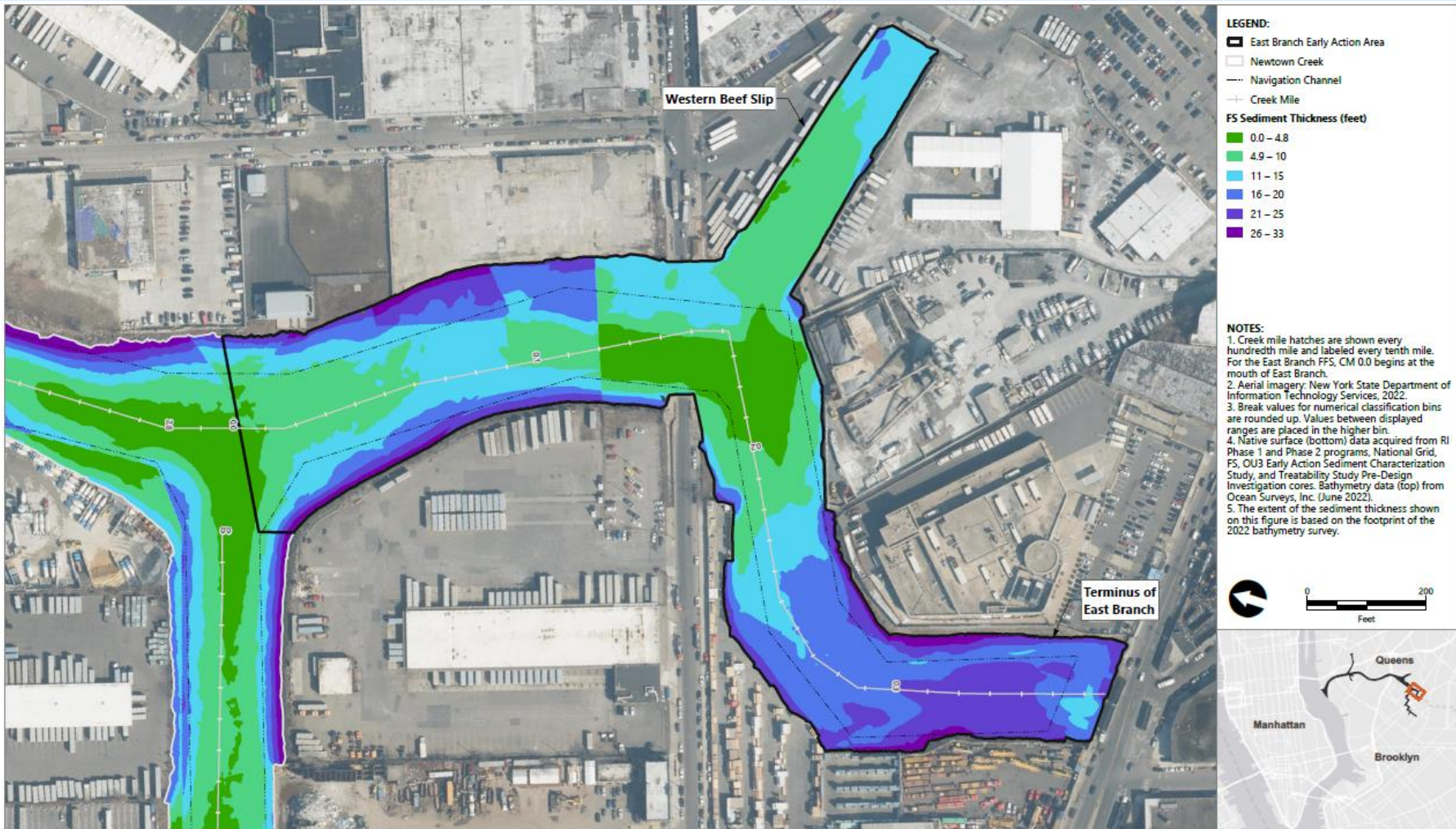
mg/kg – milligrams per kilogram

ng/kg – nanograms per kilogram

1. Evaluated on SWAC basis
2. Evaluated on point-by-point basis (not to exceed)
3. Occurs in intertidal mud flats

# OVERVIEW OF DATA

# Sediment Thickness Above Native Layer



Publish Date: 2024/03/06, 3:13 PM | User: alesueur  
 Filepath: \\corca\gis\Jobs\NewtownCreek\_1037\NewtownCreek\_RI\FS\Map\F3\Reports\EastBranch\_FFS\EastBranch\_FFS\_Report\EBFFS\_Appendix\_A.aprx | AQ\_EB\_FFS\_FigA02\_04\_SoftSedimentThickness

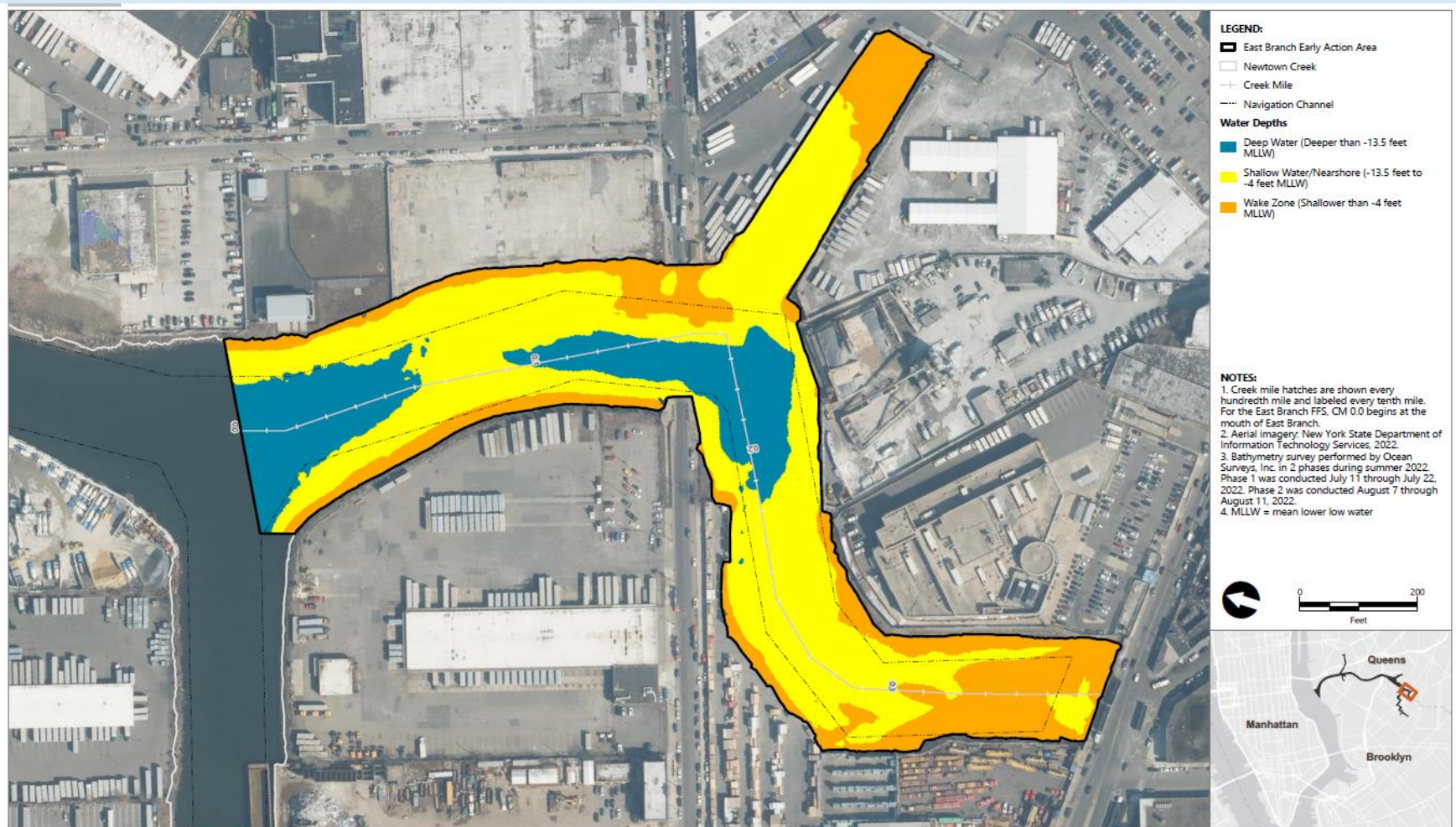


Note: Boundary line for East Branch Study Area will be adjusted (moved southeast) in revised FFS.

Figure A2-4  
 Sediment Thickness  
 Conceptual Site Model  
 Newtown Creek RI/FS



# Water Depth Zones



Publish Date: 2024/02/26, 3:38 PM | User: alexsaur  
 Filepath: \\orcas\gis\Jobs\NewtownCreek\_1037\NewtownCreek\_RFS\Map\F5\Reports\EastBranch\_FFS\EastBranch\_FFS\_Report\F8FFS\_Section05.aprx | AQL\_E8\_FFS\_Fig05\_08\_SurfaceWaterDepths



Note: Boundary line for East Branch Study Area will be adjusted (moved southeast) in revised FFS.

Figure 5-8  
 Water Depth Zones for Capping Evaluations  
 East Branch Early Action Focused Feasibility Study  
 Newtown Creek R/F/S

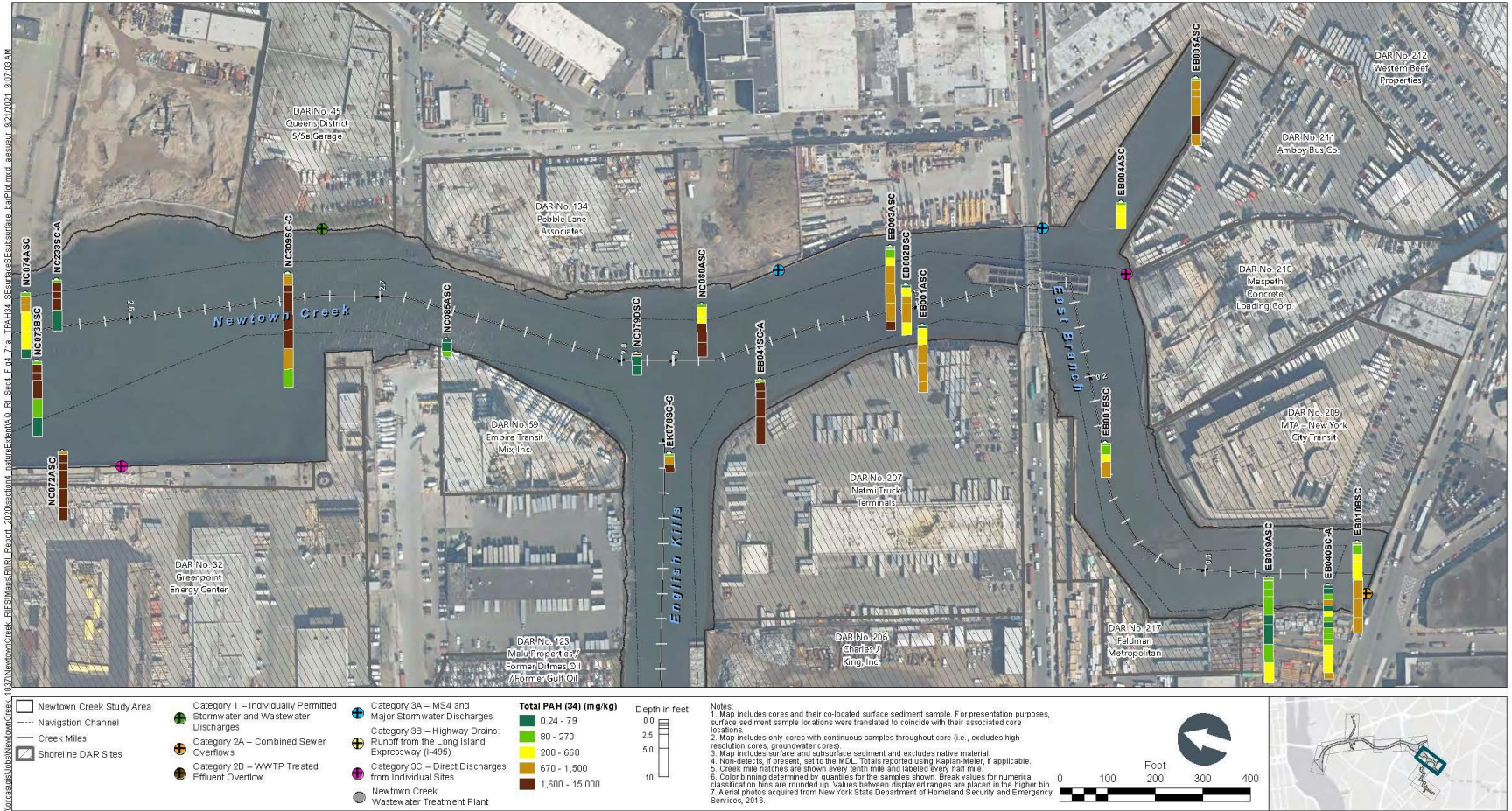


# TPAH(34)- Surface and Subsurface Concentrations

Newtown Creek CSTAG July 2023: Attachment 1

Figure 10a

East Branch Early Action Overview



**Figure 4-71h**  
Total PAH (34) in Surface and Subsurface Sediment Bar Plots by Depth – Plan View of East Branch and Newtown Creek CM 2.6 to 2.8 Remedial Investigation Report Newtown Creek RI/FS

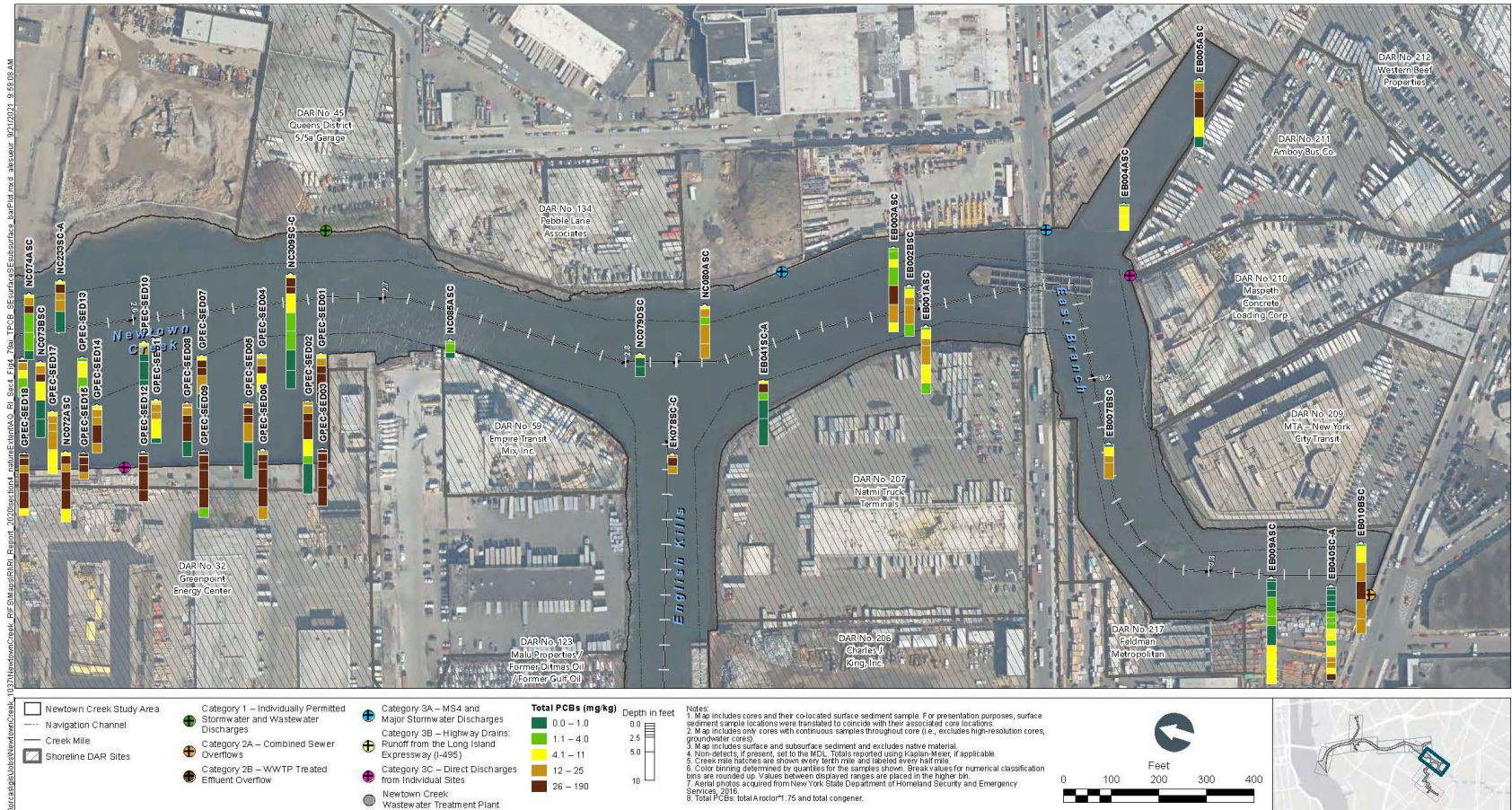


# Total PCB- Surface and Subsurface Concentrations

Newtown Creek CSTAG July 2023: Attachment 1

Figure 10c

East Branch Early Action Overview



**Figure 4-79h**  
Total PCBs in Surface and Subsurface Sediment Bar Plots by Depth – Plan View of East Branch and Newtown Creek CM 2.6 to 2.8 Remedial Investigation Report Newtown Creek R/FS

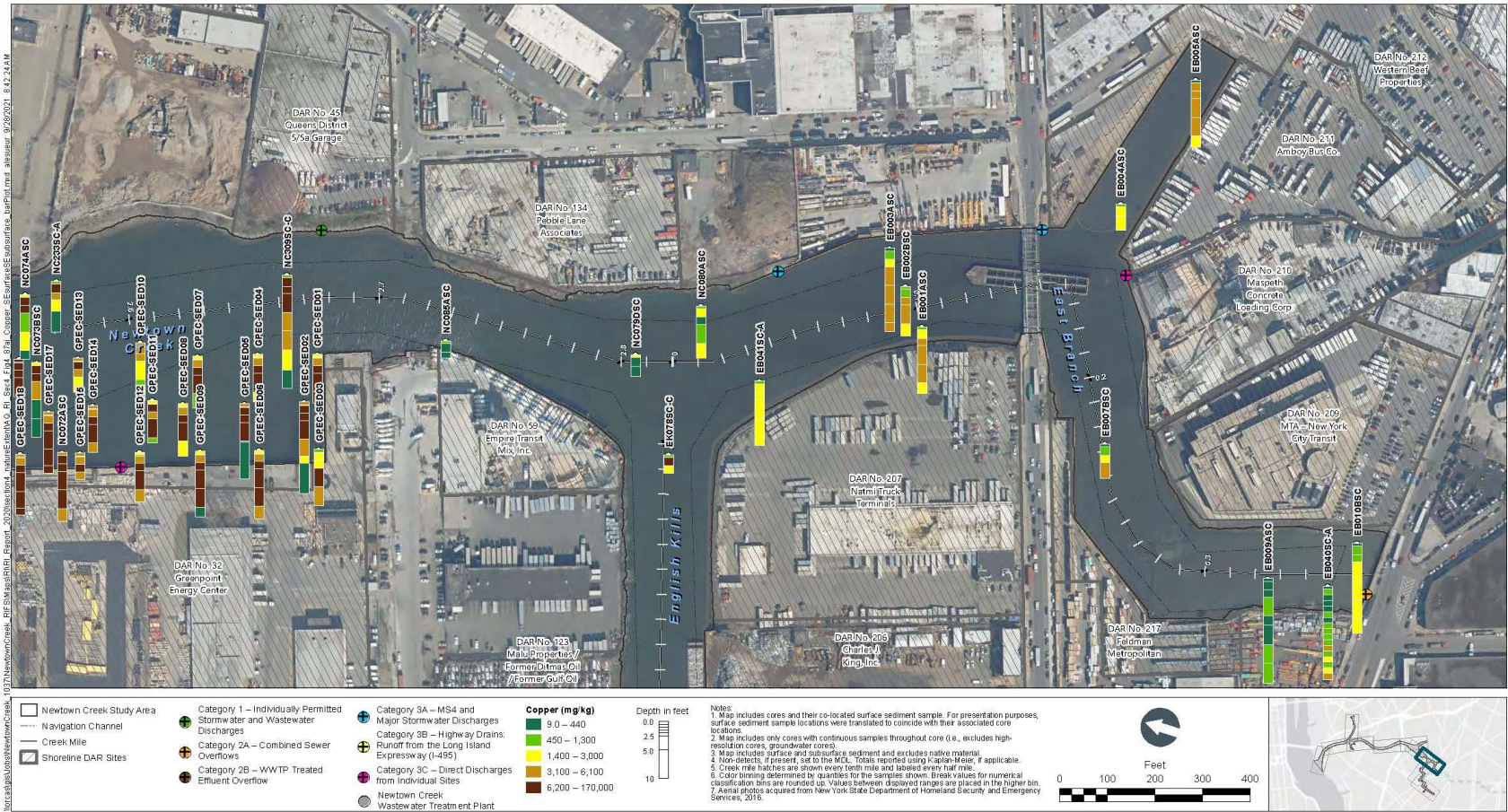


# Copper- Surface and Subsurface Concentrations

Newtown Creek CSTAG July 2023: Attachment 1

Figure 10e

East Branch Early Action Overview



**Figure 4-87h**  
Copper in Surface and Subsurface Sediment Bar Plots by Depth – Plan View of East Branch and Newtown Creek CM 2.6 to 2.8 Remedial Investigation Report Newtown Creek RI/FS

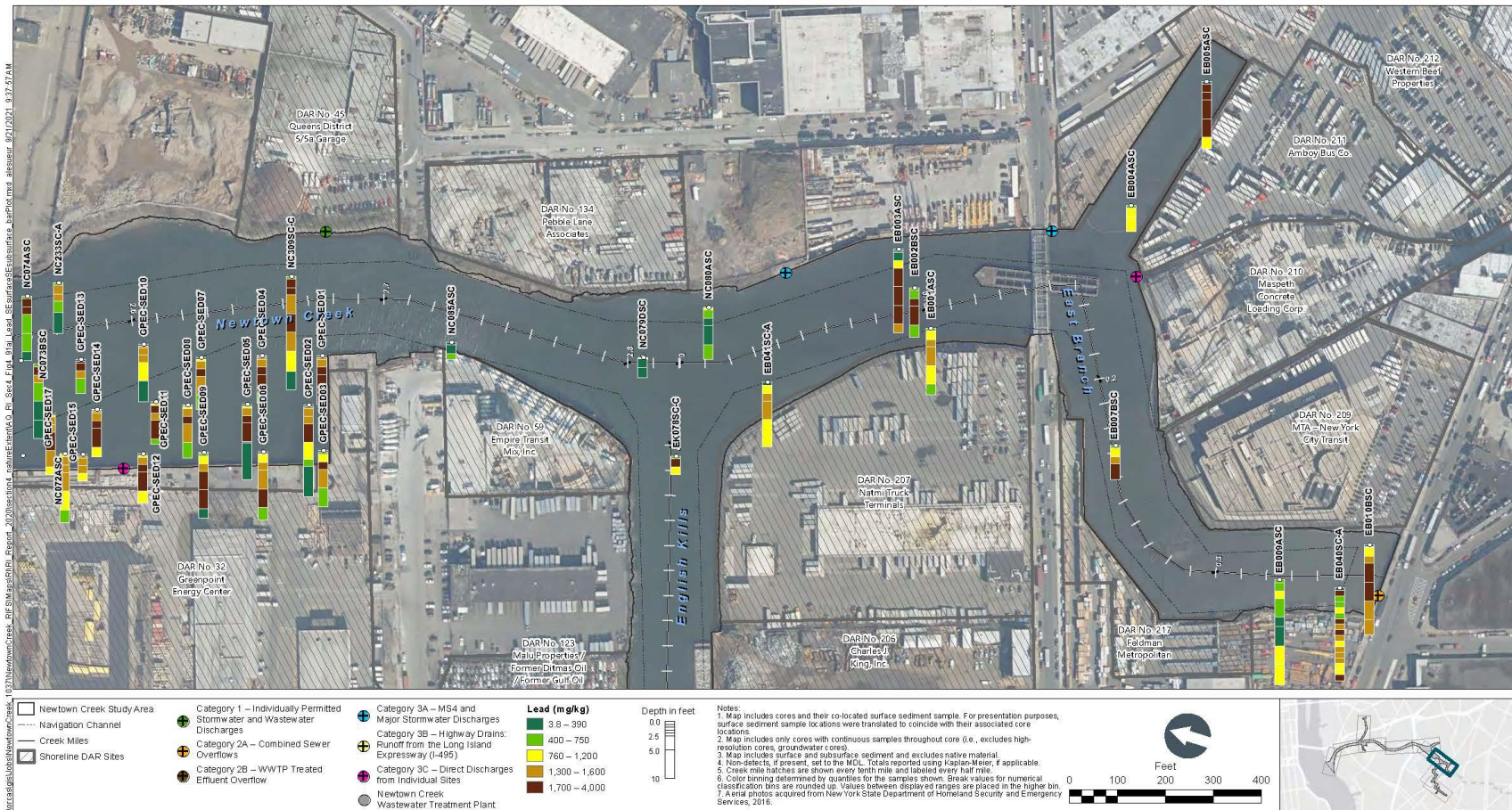


# Lead- Surface and Subsurface Concentrations

Newtown Creek CSTAG July 2023: Attachment 1

Figure 10f

East Branch Early Action Overview



**Figure 4-91h**  
Lead in Surface and Subsurface Sediment Bar Plots  
by Depth – Plan View of East Branch and Newtown Creek CM 2.6 to 2.8  
Remedial Investigation Report  
Newtown Creek RI/FS

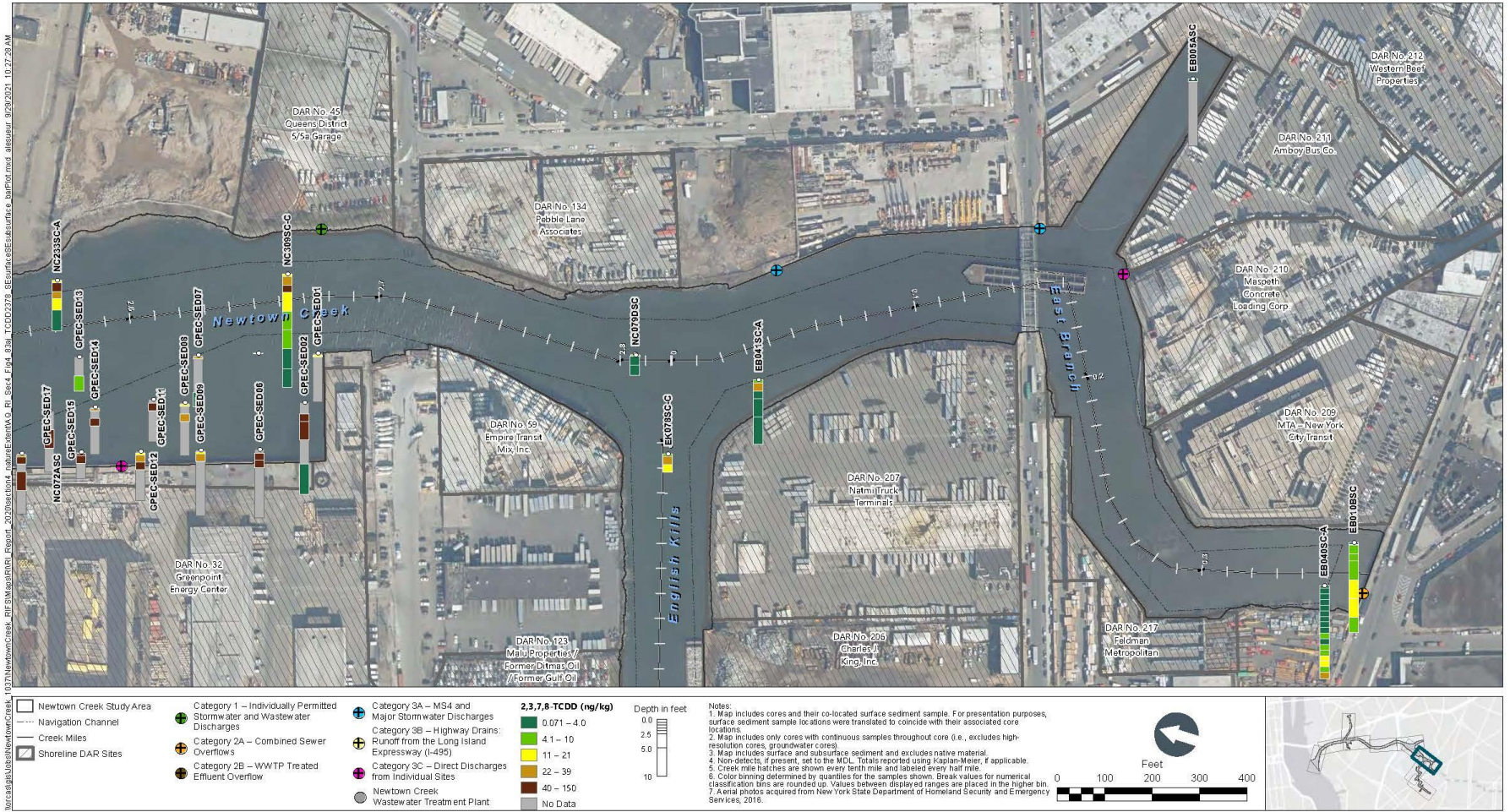


# Dioxins/Furans- Surface and Subsurface Concentrations

Newtown Creek CSTAG July 2023: Attachment 1

Figure 10d

East Branch Early Action Overview



**Figure 4-83h**  
2,3,7,8-TCDD in Surface and Subsurface Sediment Bar Plots by Depth – Plan View of East Branch and Newtown Creek CM 2.6 to 2.8 Remedial Investigation Report Newtown Creek RI/FS





# C19-C36- Surface and Subsurface Concentrations

Newtown Creek CSTAG July 2023: Attachment 1

Figure 10b

East Branch Early Action Overview

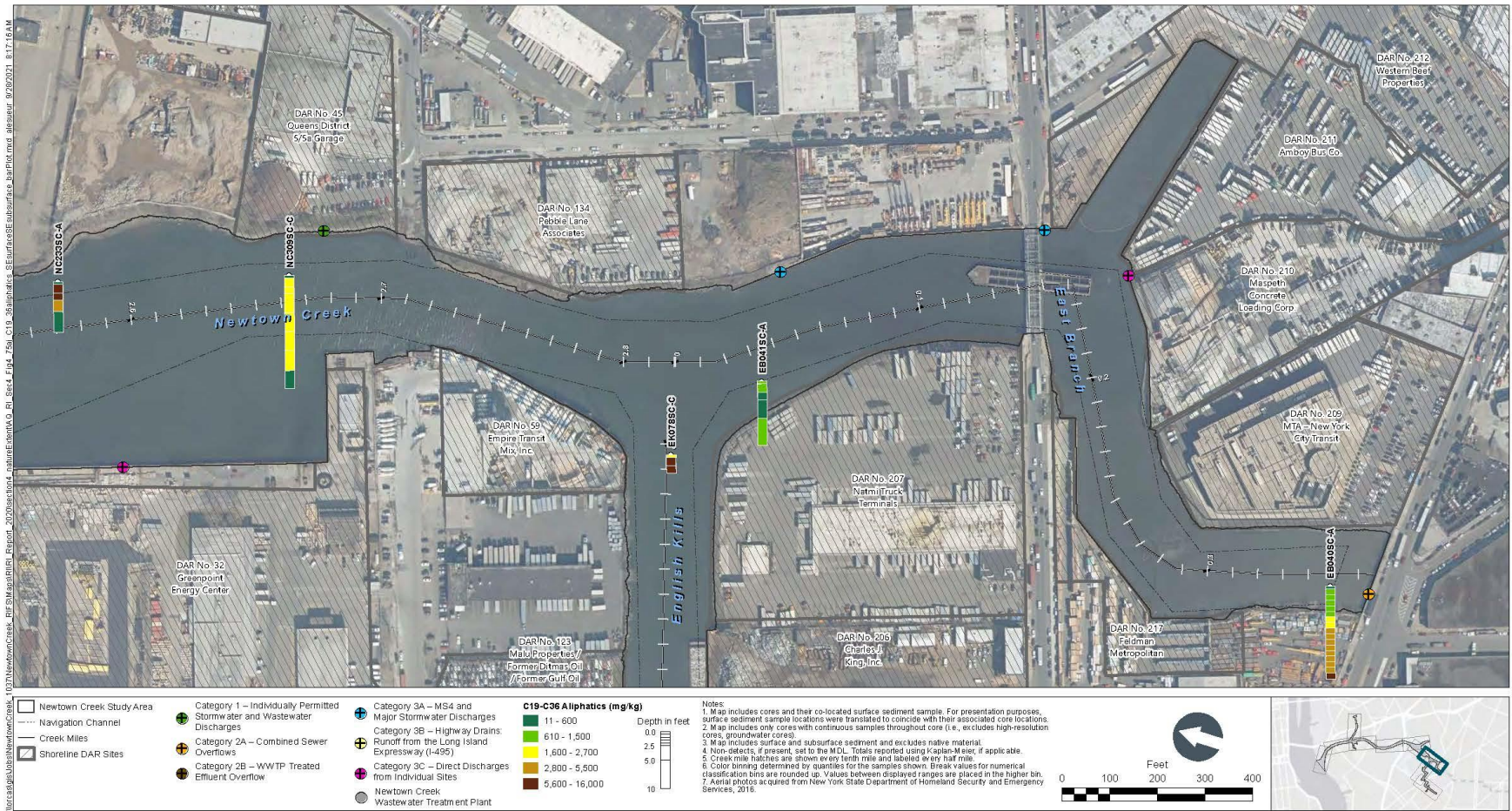
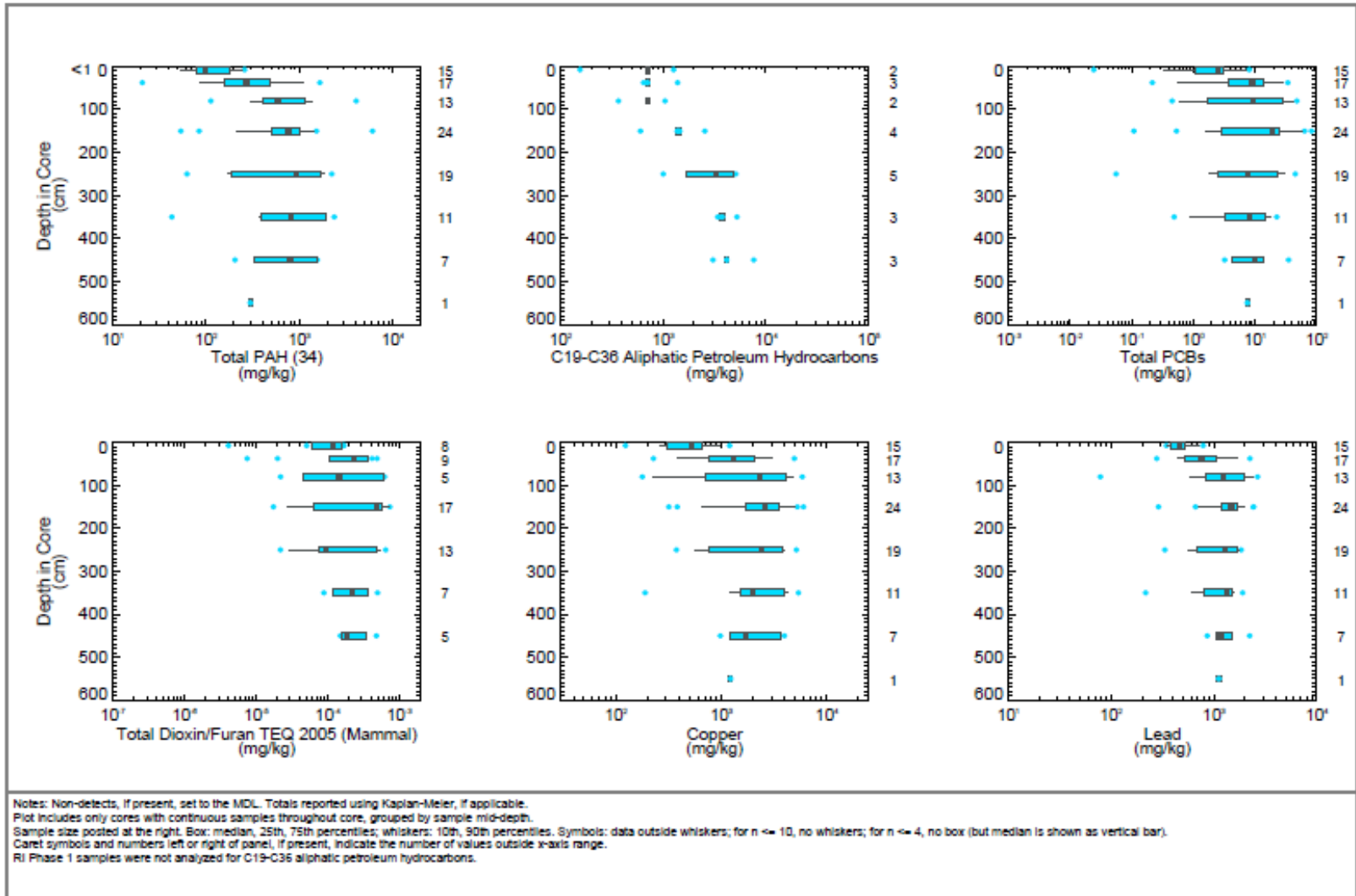


Figure 4-75h  
C19-C36 Aliphatics in Surface and Subsurface Sediment Bar Plots by Depth – Plan View of East Branch and Newtown Creek CM 2.6 to 2.8 Remedial Investigation Report Newtown Creek RI/FS

# Surface and Subsurface Sediment Concentrations

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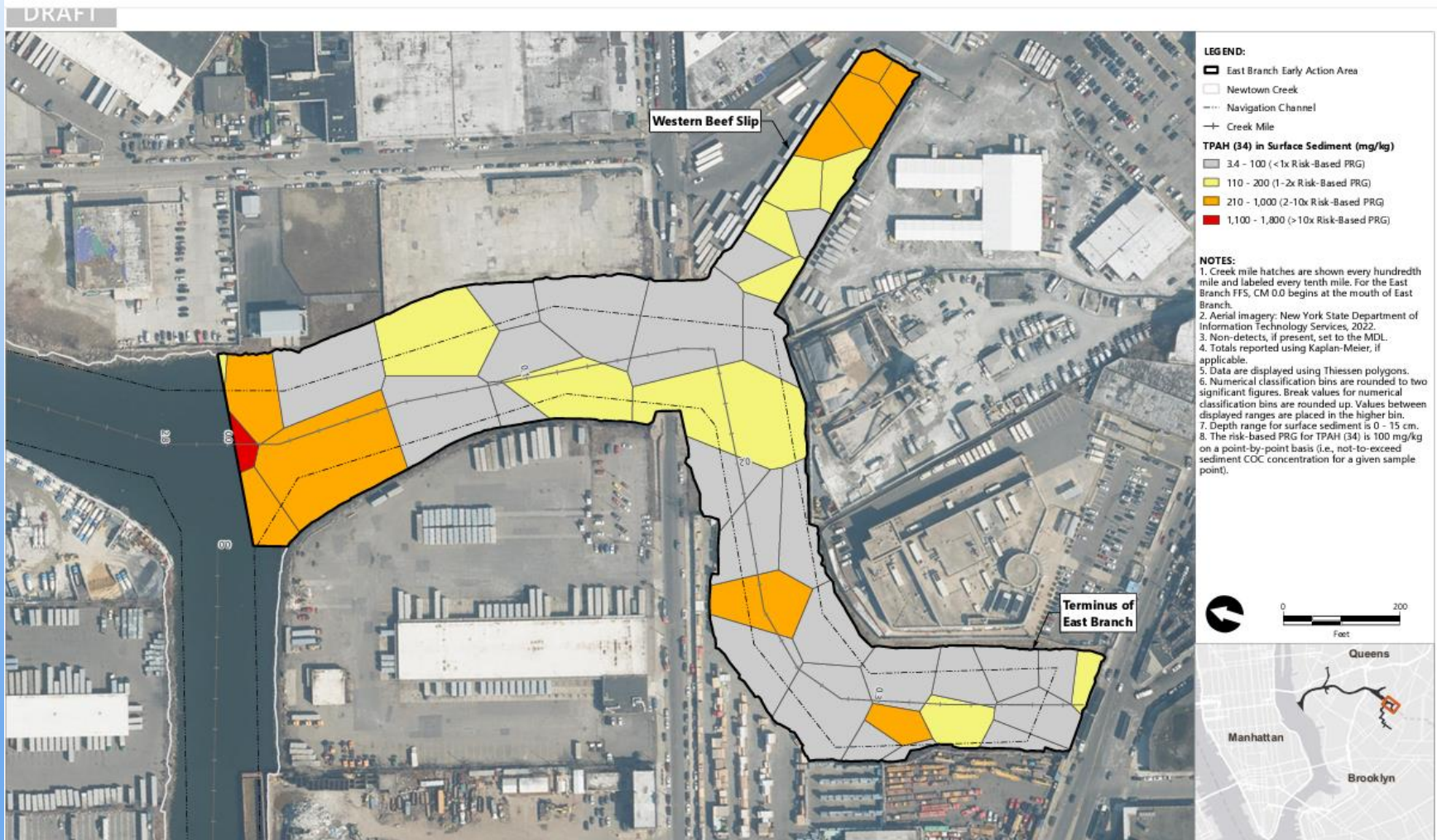


Figure A2-8  
 Surface Sediment and Subsurface Sediment Concentrations in East Branch - Box Plots by Depth

Conceptual Site Model  
 Newtown Creek RI/FS



# TPAH(34) Risk Based PRG Exceedances Surface Sediment



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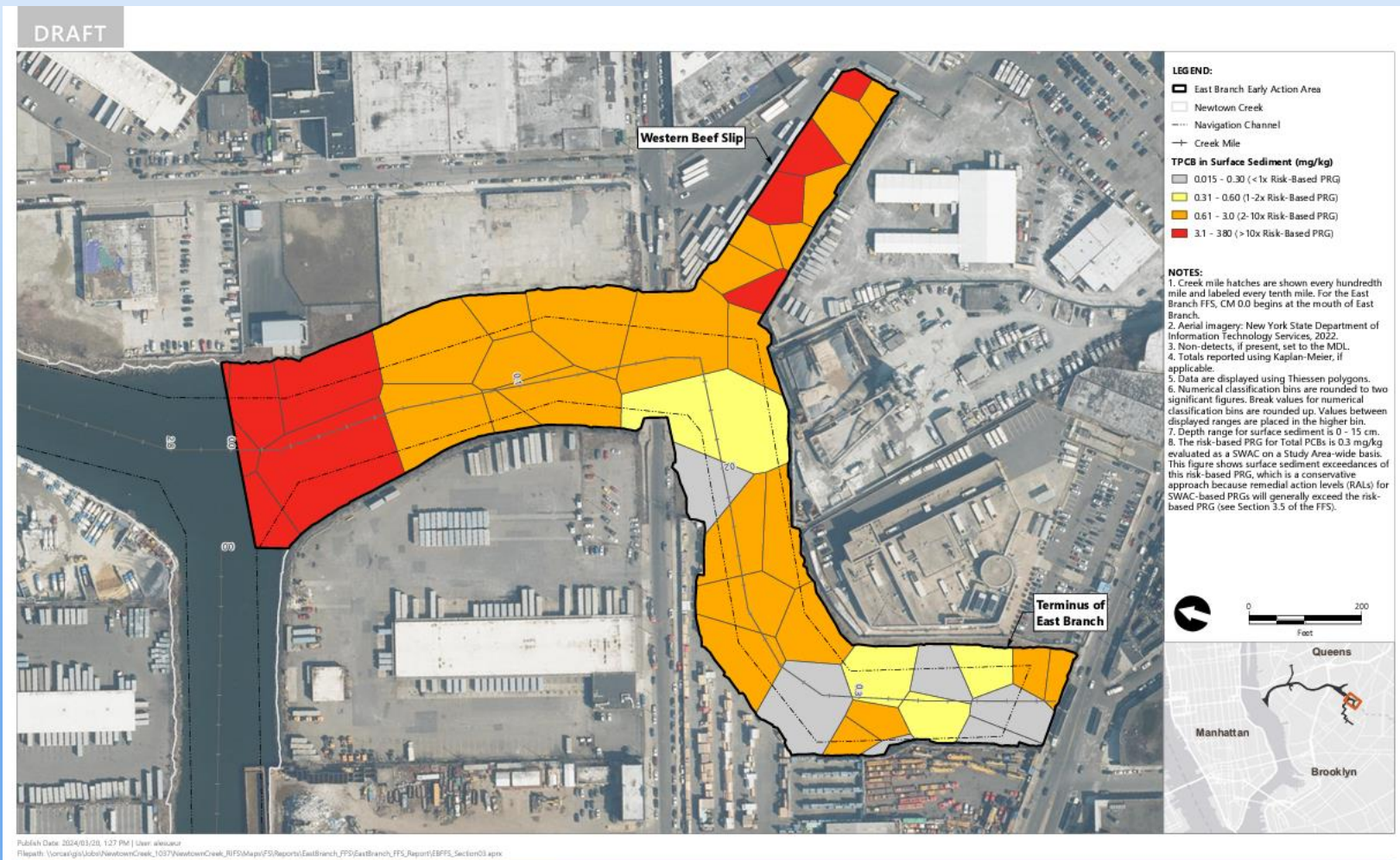


Note: Boundary line for East Branch Study Area will be adjusted (moved southeast) in revised FFS.

**Figure 3-1**  
 TPAH (34) Risk-Based PRG Exceedances in Surface Sediment  
 East Branch Early Action Focused Feasibility Study  
 Newtown Creek R/FFS



# Total PCB Risk Based PRG Exceedances Surface Sediment

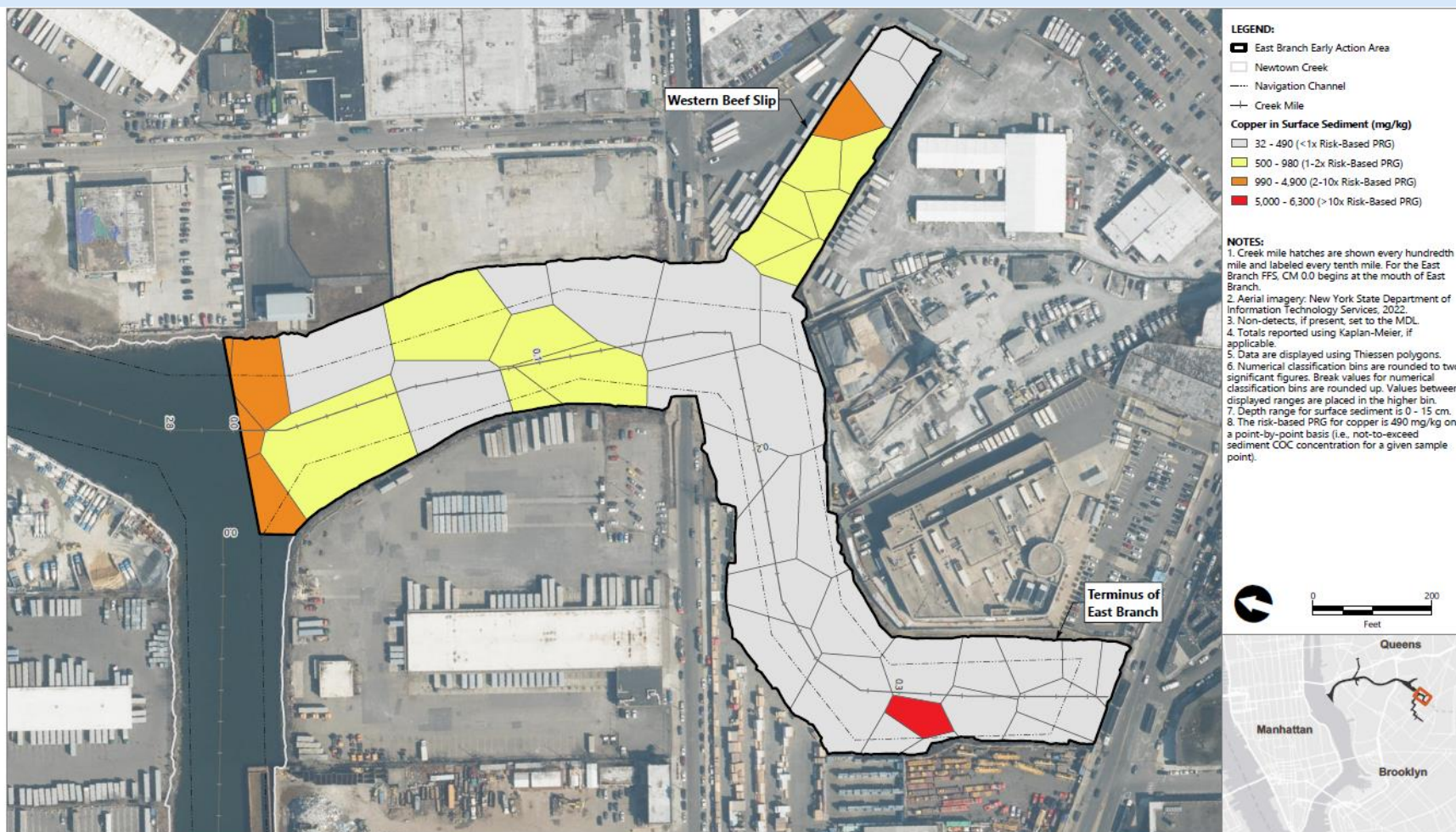


Note: Boundary line for East Branch Study Area will be adjusted (moved southeast) in revised FFS.

**Figure 3-3**  
TPCB Risk-Based PRG Exceedances in Surface Sediment  
East Branch Early Action Focused Feasibility Study  
Newtown Creek R/FS



# Copper Risk-Based PRG Exceedances Surface Sediment



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Note: Boundary line for East Branch Study Area will be adjusted (moved southeast) in revised FFS.

**Figure 3-5**  
 Copper Risk-Based PRG Exceedances in Surface Sediment  
 East Branch Early Action Focused Feasibility Study  
 Newtown Creek RI/FS



# Lead Risk-Based PRG Exceedances Surface Sediment



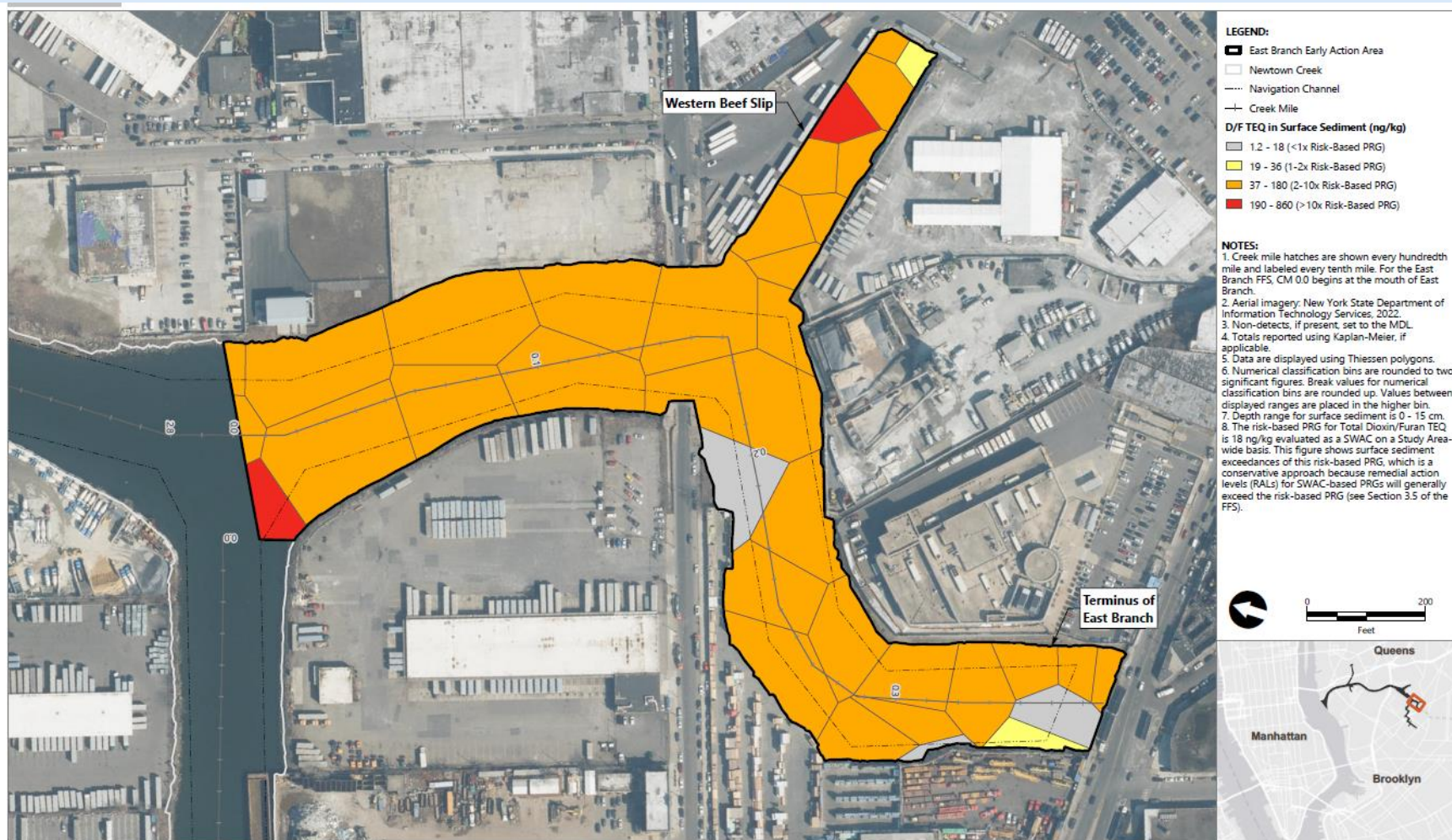
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**Figure 3-6**  
Lead Risk-Based PRG Exceedances in Surface Sediment in Intertidal Areas  
East Branch Early Action Focused Feasibility Study  
Newtown Creek, R/FS



# Dioxin/Furan TEQ Risk Based PRG Exceedances Surface Sediment



Publish Date: 2024/03/20, 1:27 PM | User: slouwer  
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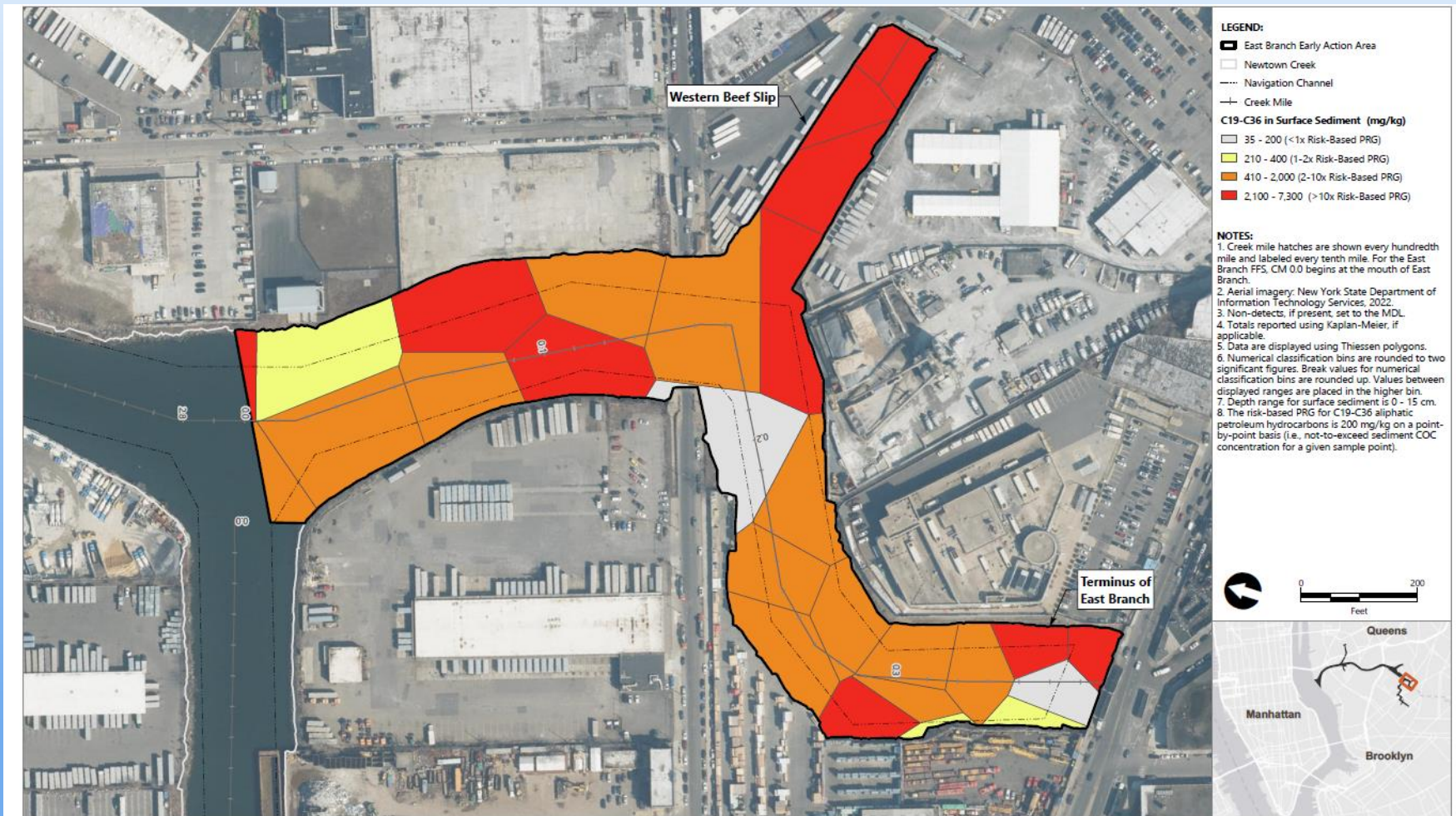


Note: Boundary line for East Branch Study Area will be adjusted (moved southeast) in revised FFS.

Figure 3-4  
 D/F TEQ Risk-Based PRG Exceedances in Surface Sediment  
 East Branch Early Action Focused Feasibility Study  
 Newtown Creek RI/FS



# C19-C36 Risk Based PRG Exceedances Surface Sediment



Publish Date: 2024/03/20, 1:27 PM | User: alesueur  
 Filepath: \\poc\cas\gis\Jobs\NewtownCreek\_1037\NewtownCreek\_RIF\Map\F5\Reports\EastBranch\_FF5\EastBranch\_FF5\_Report\EBFF5\_Section03.aprx

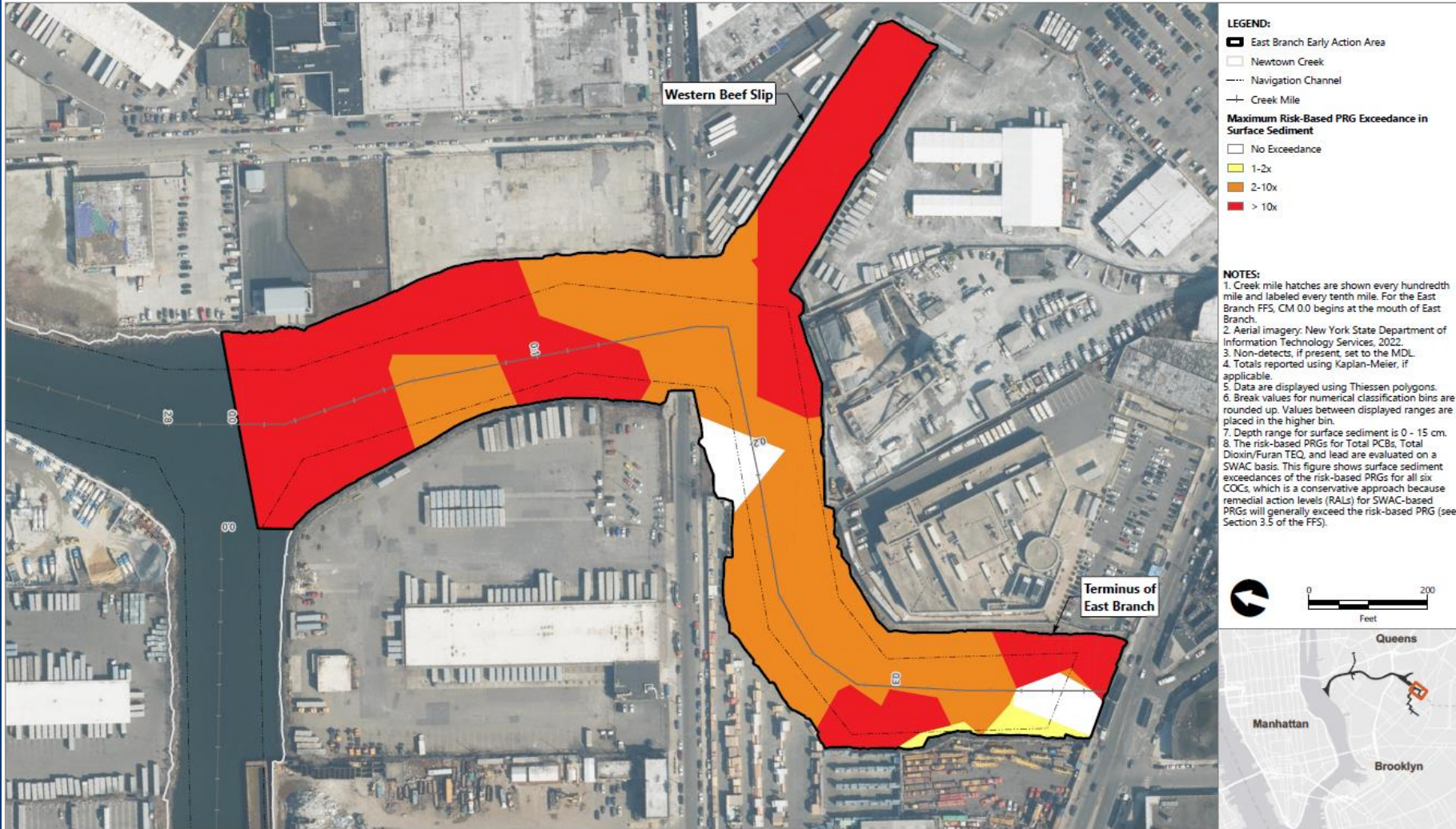


Note: Boundary line for East Branch Study Area will be adjusted (moved southeast) in revised FFS.

Figure 3-2  
 C19-C36 Risk-Based PRG Exceedances in Surface Sediment  
 East Branch Early Action Focused Feasibility Study  
 Newtown Creek R/FS



# All Contaminant of Concern Risk-Based PRG Exceedances – Surface Sediment



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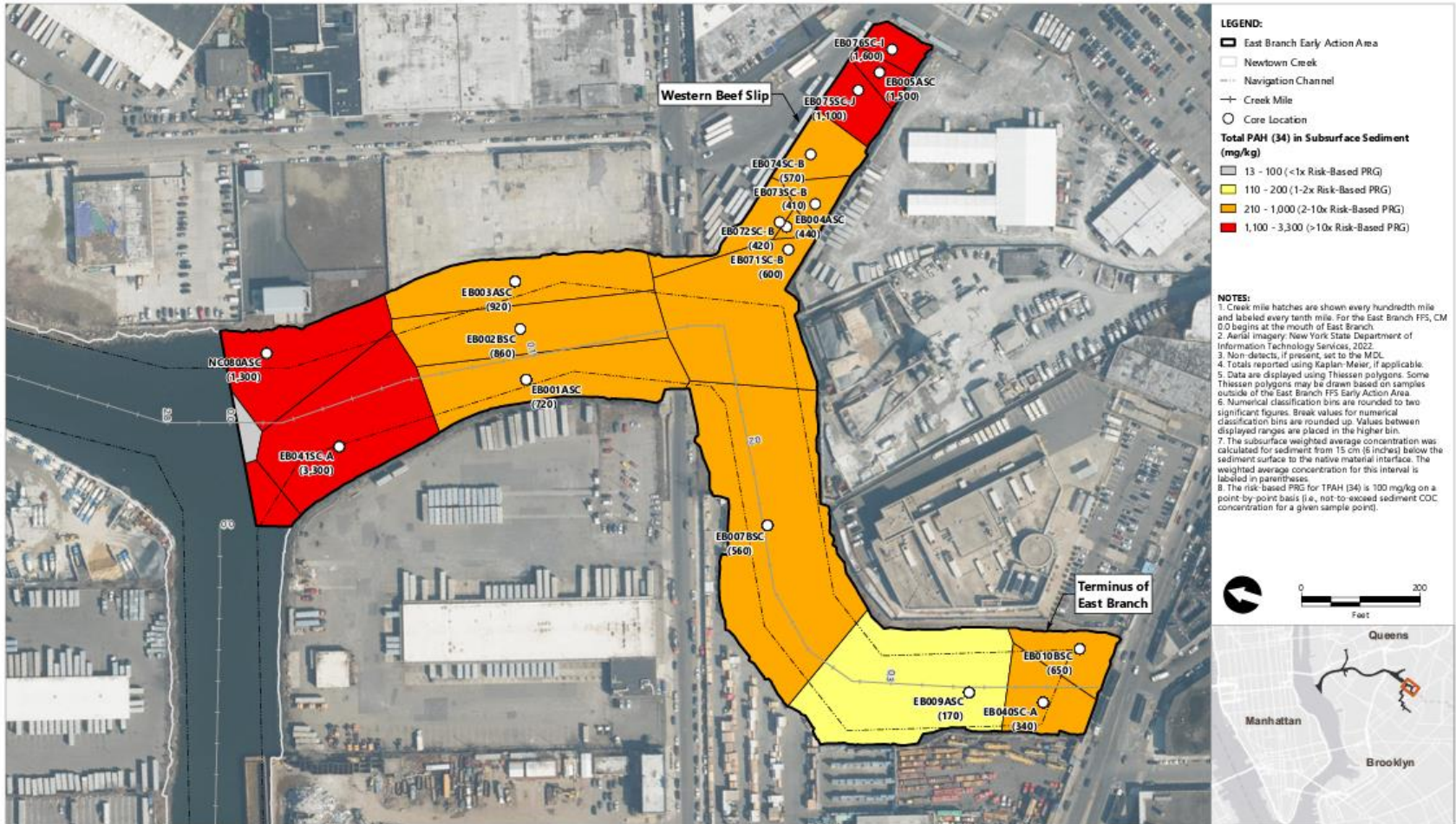
Note: Boundary line for East Branch Study Area will be adjusted (moved southeast) in revised FFS.

**Figure 3-7**  
 Maximum Risk-Based PRG Exceedances in Surface Sediment for All COCs  
 East Branch Early Action Focused Feasibility Study  
 Newtown Creek R/FS



# TPAH(34) Risk Based PRG Exceedances Depth Weighted Average Subsurface Sediment

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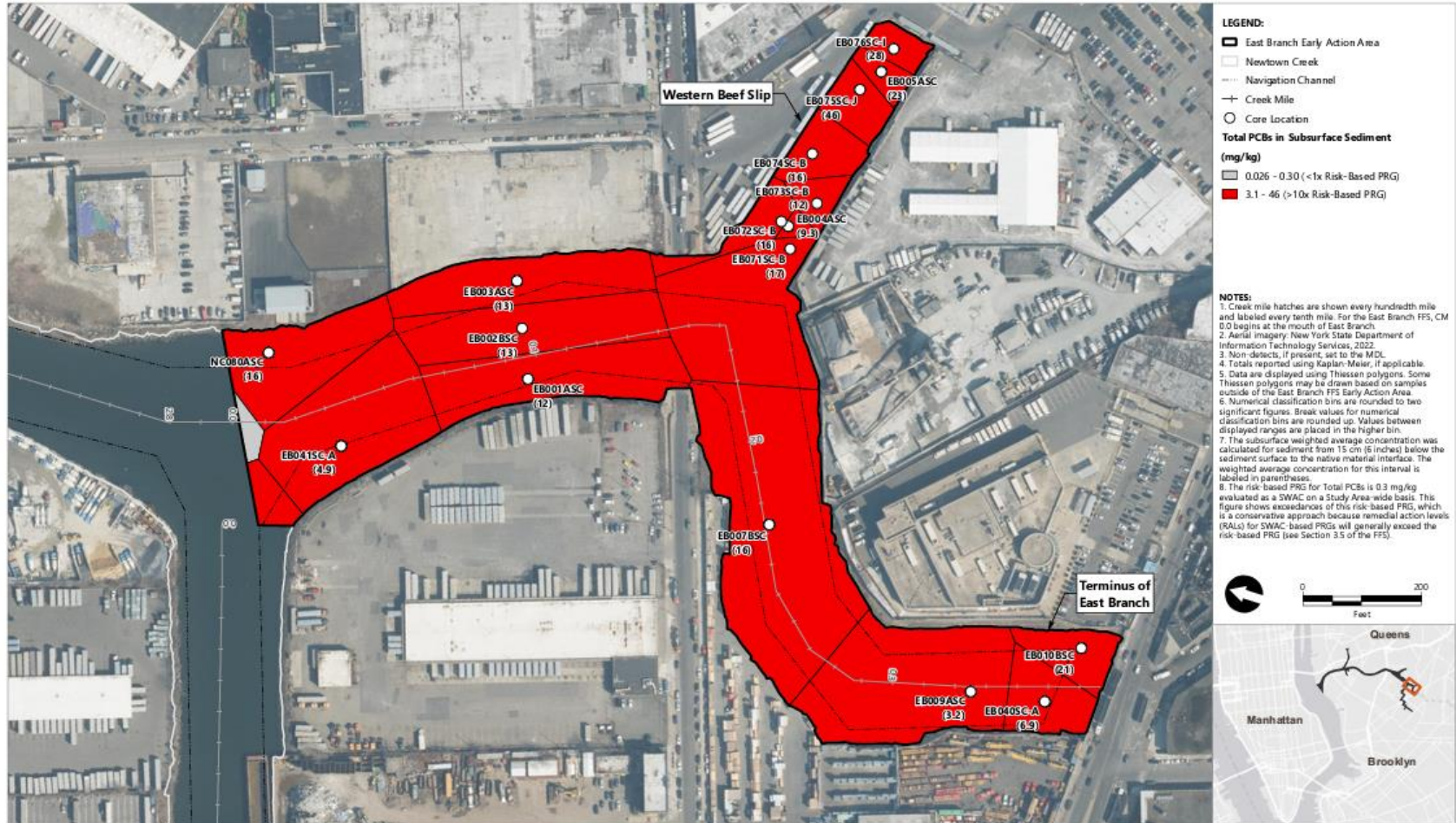
Note: Boundary line for East Branch Study Area will be adjusted (moved southeast) in revised FFS.

Figure A2-9a  
 Total PAH (34) Depth-Weighted Average Subsurface Sediment Concentrations  
 Conceptual Site Model  
 Newtown Creek RIFS



# Total PCBs Risk Based PRG Exceedances Depth Weighted Average Subsurface Sediment

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Publish Date: 2024/03/21, 2:27 PM | User: alexander  
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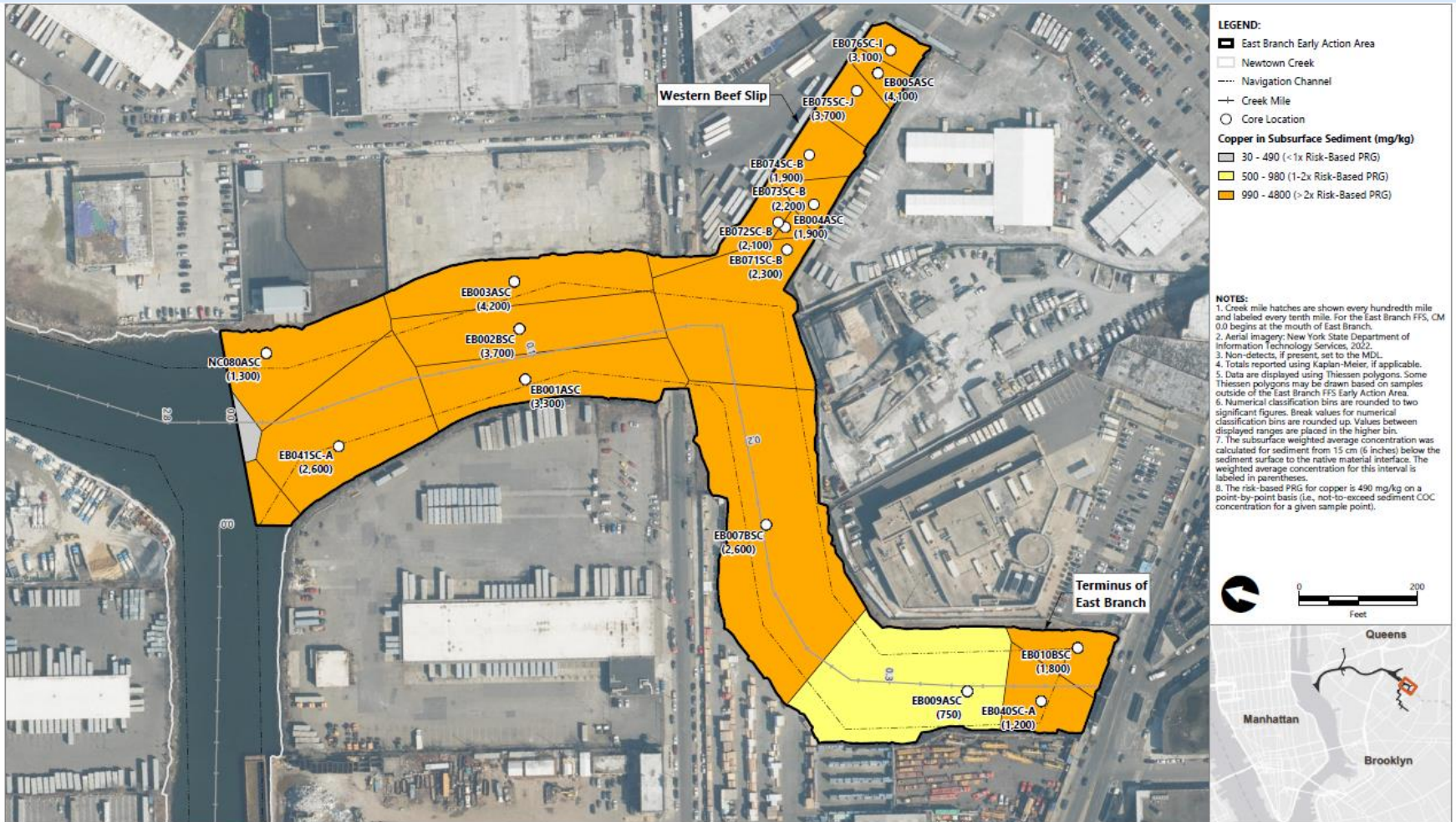


Note: Boundary line for East Branch Study Area will be adjusted (moved southeast) in revised FFS.

Figure A2-9c  
Total PCBs Depth-Weighted Average Subsurface Sediment Concentrations  
Conceptual Site Model  
Newtown Creek RIFS



# Copper Risk Based PRG Exceedances Depth Weighted Average Subsurface Sediment



Publish Date: 2024/03/21, 2:27 PM | User: alessandr  
 Filepath: Y:\arcgis\Jobs\NewtownCreek\_1037\NewtownCreek\_RIFS\Map\F5\Reports\EastBranch\_FFS\EastBranch\_FFS\_Report\EBFFS\_Appendix\_A.aprx

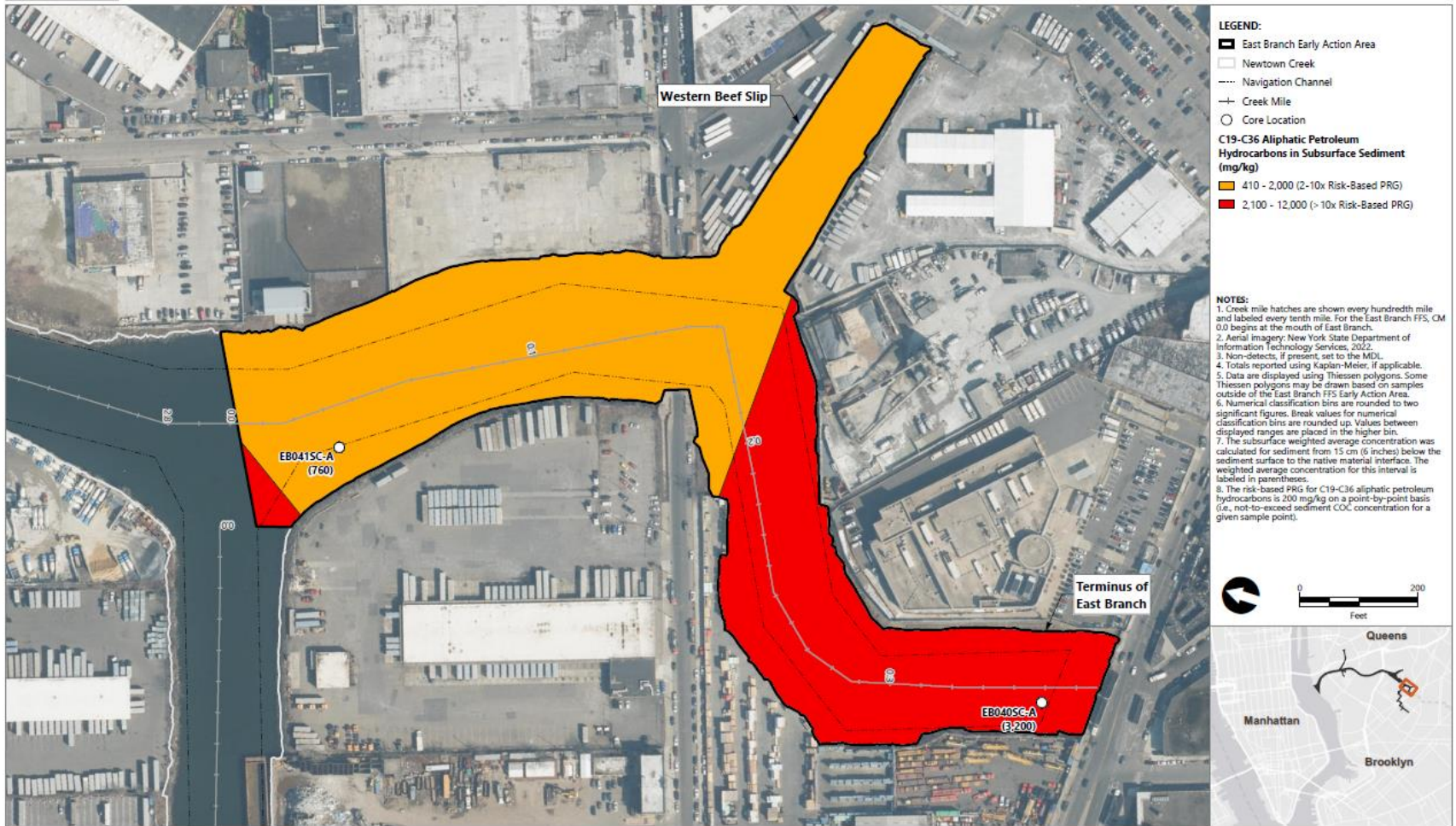


Note: Boundary line for East Branch Study Area will be adjusted (moved southeast) in revised FFS.

Figure A2-9e  
 Copper Depth-Weighted Average Subsurface Sediment Concentrations  
 Conceptual Site Model  
 Newtown Creek RI/FS



# C19-C36 Risk Based PRG Exceedances Depth Weighted Average Subsurface Sediment



Publish Date: 2024/03/21, 2:27 PM | User: aliesaur  
Filepath: \\orcas\gis\jobs\NewtownCreek\_RIFD\Map\FIS\Reports\EastBranch\_FFS\EastBranch\_FFS\_Report\EBFFS\_Appendix\_A.aprx

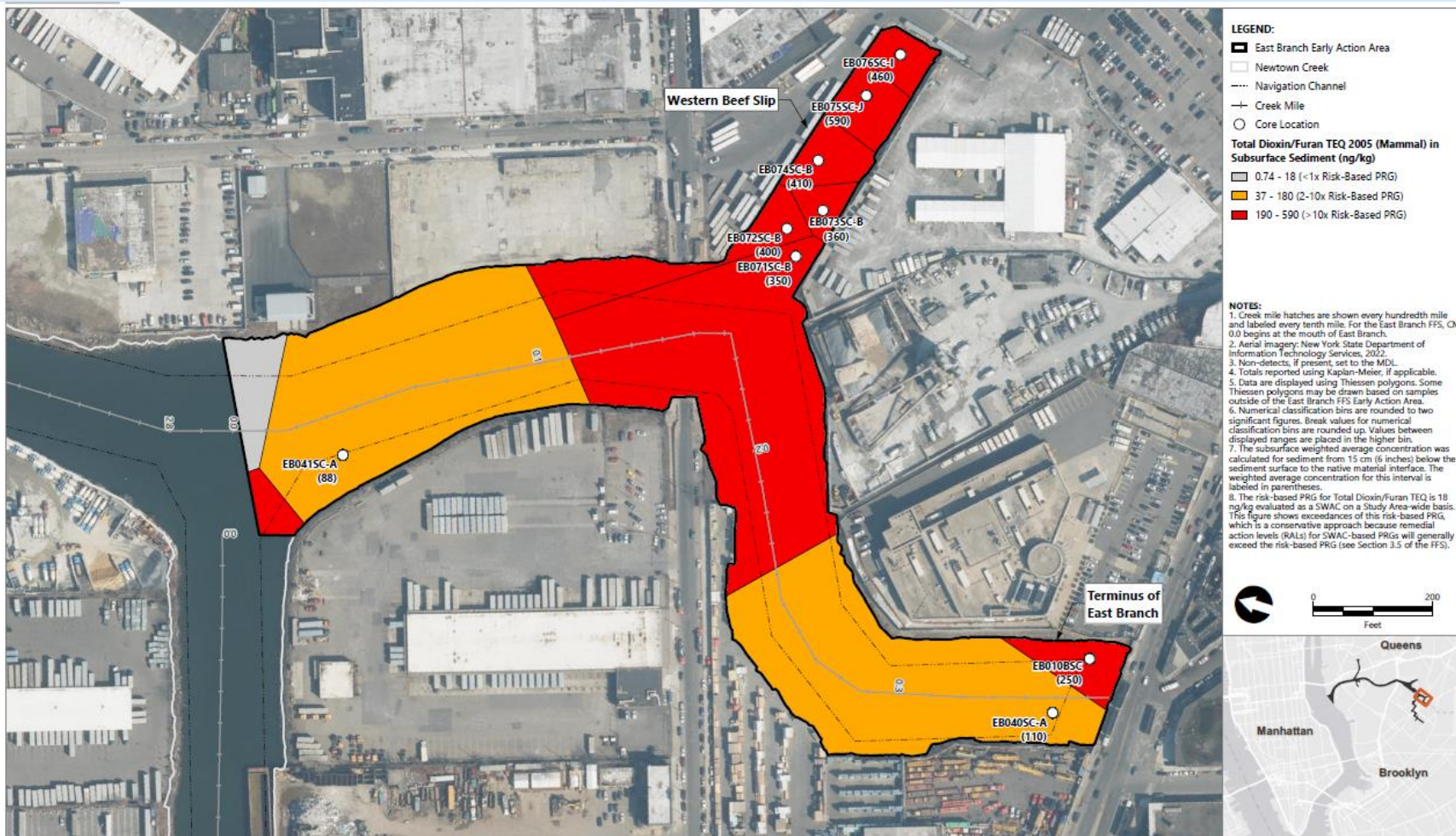


Note: Boundary line for East Branch Study Area will be adjusted (moved southeast) in revised FFS.

Figure A2-9b  
C19-C36 Aliphatic Petroleum Hydrocarbon Depth-Weighted Average Subsurface Sediment Concentrations  
Conceptual Site Model  
Newtown Creek RIF/FS



# Dioxin/Furan TEQ Risk Based PRG Exceedances Depth Weighted Average Subsurface Sediment



Publish Date: 2024/03/21, 2:27 PM | User: alessaur  
 Filepath: \\pccac\gis\Jobb\NewtownCreek\_1037\NewtownCreek\_R\FFS\Reports\F5\EastBranch\_FF5\EastBranch\_FF5\_Report\EBFF5\_Appendix\_A.aprx



Note: Boundary line for East Branch Study Area will be adjusted (moved southeast) in revised FFS.

Figure A2-9d  
 Total Dioxin/Furan TEQ 2005 (Mammal) Depth-Weighted Average Subsurface Sediment Concentrations  
 Conceptual Site Model  
 Newtown Creek R/FS

## Native Material Concentrations

- TPAH(34), C19-C36 aliphatic hydrocarbons, and lead concentrations in native material are generally two to three orders of magnitude less than those in subsurface sediment.
- TPCBs and copper concentrations are generally one to two orders of magnitude less than those in subsurface sediment.
- 2,3,7,8-TCDD was not detected in any native material samples collected during the RI; however, it was detected in a native material sample collected during the FS
- Other than one sample with a C19-C36 aliphatic hydrocarbons concentration greater than the risk-based PRG, all other COC concentrations detected in native material were less than their respective risk-based PRG.



## East Brach NAPL

- Laboratory analysis of NAPL from shows that it generally consists of TPAH(34) and TPCBs.
- Observations of NAPL blebs in sediment were located sporadically throughout the East Branch area and are not clustered at a particular location.
- Visual observations of surface and subsurface sediment samples identified sheen intermittently throughout the East Branch
- Visual observations of sediment samples collected in the Western Beef slip identified sheen in every sample collected
  - Note that sheen is the appearance of iridescence on the surface of sediment or water and can be due to biological degradation of organic material or other processes; it is not necessarily indicative of the presence of Site COCs.
  - NAPL blebs were also observed in the shake tests of two subsurface sediment cores collected in the eastern lobe.

# Most Notable Observations of NAPL Surface Sediment



Publish Date: 2004/03/06, 3:13 PM | User: alesaur  
 Filepath: \\vncar\gis\Jobs\NewtownCreek\_1037\NewtownCreek\_RIFS\Map\FS\Report\EastBranch\_FFS\EastBranch\_FFS\_Report\EBFFS\_Appendix\_A.aprx | AQ\_EB\_FFS\_FigA02\_10a\_MostNotableNAPL\_Surface



Note: Boundary line for East Branch Study Area will be adjusted (moved southeast) in revised FFS.

Figure A2-10a  
 Most Notable NAPL Observations in Surface Sediment  
 Conceptual Site Model  
 Newtown Creek RI/FS



# Most Notable Observations of NAPL Subsurface Sediment



Publish Date: 2024/03/06, 3:14 PM | User: alesueur  
 Filepath: \\oncar\gis\Jobs\NewtownCreek\_1037\NewtownCreek\_RI\FS\Maps\FS\Reports\EastBranch\_FFS\EastBranch\_FFS\_Report\EBFFS\_Appendix\_A\aprs | AQ\_EB\_FFS\_FigA02\_10b\_MostNotableNAPL\_Subsurface



Note: Boundary line for East Branch Study Area will be adjusted (moved southeast) in revised FFS.



# Most Notable Observations of NAPL Native Material



Publish Date: 2024/01/06, 3:13 PM | User: alesaur  
 Filepath: \\orcassgis\Jobs\NewtownCreek\_10137\NewtownCreek\_RIFS\Mapri\FS\Reports\EastBranch\_FFS\EastBranch\_FFS\_Report\EBFFS\_Appendix\_A.aprx | AQ, EB, FFS, FigA02\_10c, MostNotableNAPL\_Native



Note: Boundary line for East Branch Study Area will be adjusted (moved southeast) in revised FFS.

Figure A2-10c  
 Most Notable NAPL Observations in Native Material  
 Conceptual Site Model  
 Newtown Creek RI/FS



# Ebullition Associated Sheens



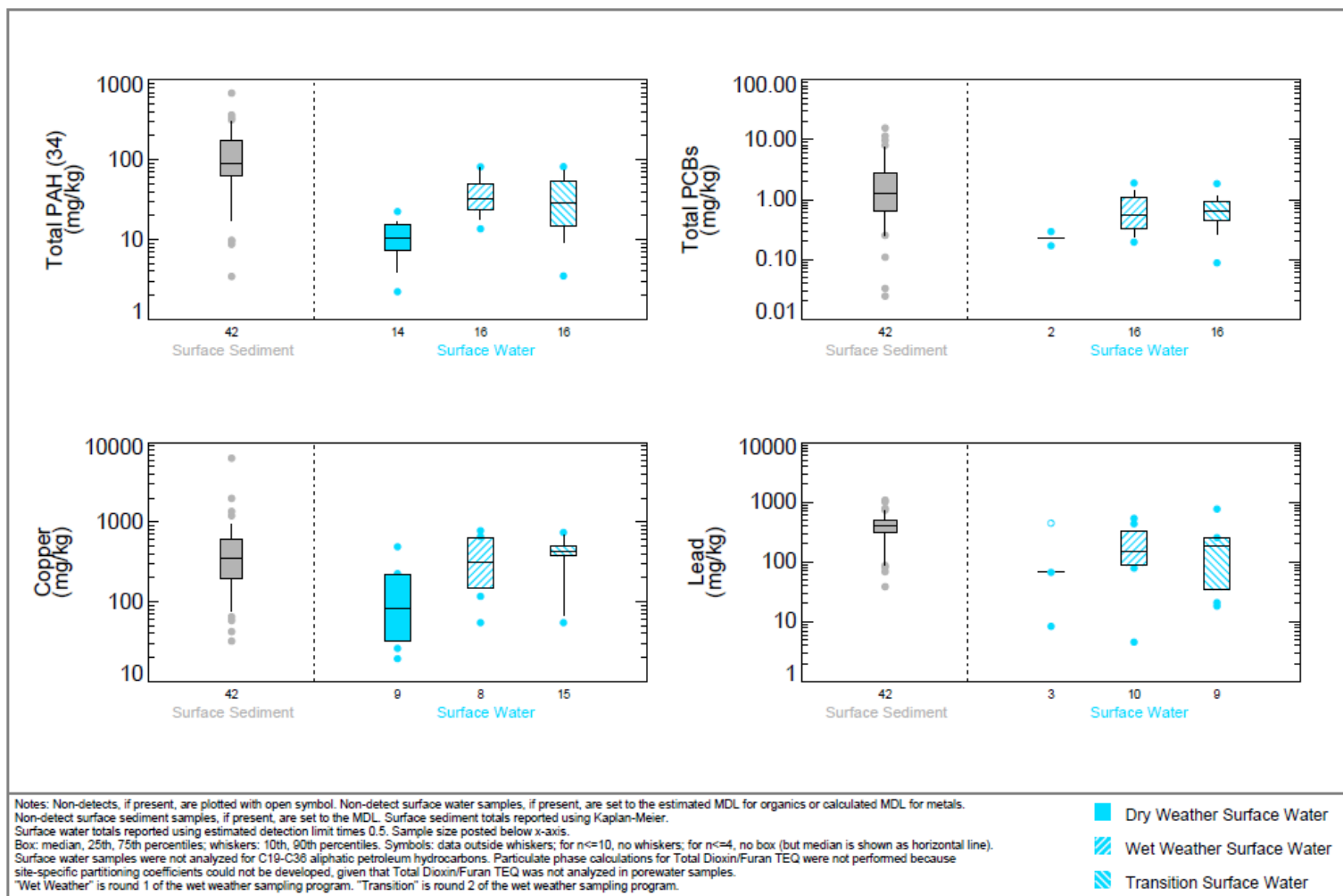
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Note: Boundary line for East Branch Study Area will be adjusted (moved southeast) in revised FFS.

**Figure A2-16**  
 Maximum Spatial Extent of Gas Ebullition Associated Dynamic Sheens  
 Conceptual Site Model  
 Newtown Creek RI/FS

# Particulate Phase Concentrations in Surface Water



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 File Path: \\fujii\Anchor\Projects\Newtown\_Creek\Deliverables\EB\_FFS\_Report\Working\Appendices\Appendix A\_CSM\source\NTC\_SS\_WC\_boxplots\_TPAH\_TPCB\_Cu\_6panel.pro



**Figure A2-11**  
**Comparison of Particulate Phase Concentrations in Surface Water to Surface Sediment Concentrations in East Branch - Box Plots by Sampling Event**

Conceptual Site Model  
 Newtown Creek RI/FS



# Porewater

- Shallow porewater samples (0 to 12 inches below sediment surface) were analyzed for all Site COCs except for C19–C36 aliphatic hydrocarbons and 2,3,7,8-TCDD, because these were not initially identified as potential COCs for the Site.
- There is no clear spatial distribution pattern associated with measurements of TPAH(34) and lead concentrations in shallow porewater in the East Branch
- Concentrations of TPCBs and copper in shallow porewater are higher near the East Branch's confluence with the main stem of the Creek than at the locations closer to its head.
- TPCB concentrations in porewater from 1 to 2 feet below sediment surface (collected during the FS) in the eastern lobe are higher than in shallow porewater at the confluence with the main stem.
- Only one mid-depth porewater sample was collected in the East Branch of mid-depth porewater.
  - Since only one sample was collected, no spatial pattern could be determined.
  - However, in the mid-depth porewater sample, TPCBs and copper concentrations were greater than, TPAH(34) concentrations were similar to, and lead concentrations were less than, those concentrations in shallow porewater samples collected at this one location.

# Summary

- Contaminant of concern concentrations in the sediment generally increase with depth, whereas their concentrations in native material are generally one or more orders of magnitude lower than they are in the surface and subsurface sediment.
  - Areas of sediment where contaminant of concern concentrations do not increase with depth (e.g., near CSO discharges at the head of the western lobe) have likely been affected by resuspension, redeposition, and mixing.
  - Contaminants of concern are detected and elevated in media other than sediments, including surface water, porewater and groundwater.
  - Observations of NAPL blebs in sediment were located sporadically throughout the East Branch area and are not clustered at a particular location.
  - Laboratory analysis of NAPL shows that it generally consists of TPAH(34) and TPCBs.
  - Sheens have been observed intermittently throughout surface and subsurface sediment;
  - Sheens have been observed in surface water due to ebullition.
- Lots more data will be collected during the predesign investigation!



## Predesign Investigation

- The investigation will include at least the following:
  - Additional sediment sampling to refine the delineation of contaminants of concern in sediment;
  - Additional porewater and/or groundwater data collection, primarily to refine cap designs;
  - Additional shoreline investigations and surveys, including seeps;
  - Data collection to further delineate NAPL, investigate NAPL mobility, and characterize contaminants of concern in NAPL;
  - Geotechnical data collection to support dredge design, cap design and shoreline stability evaluations;
  - Investigations to inform decisions on the need for upland controls.
- Will also be used to help develop the long-term evaluation monitoring program.

Questions?