

Figure 4-1: Past, present and future timeframes of Newark Bay which represent the changes to the bathymetry and shoreline.

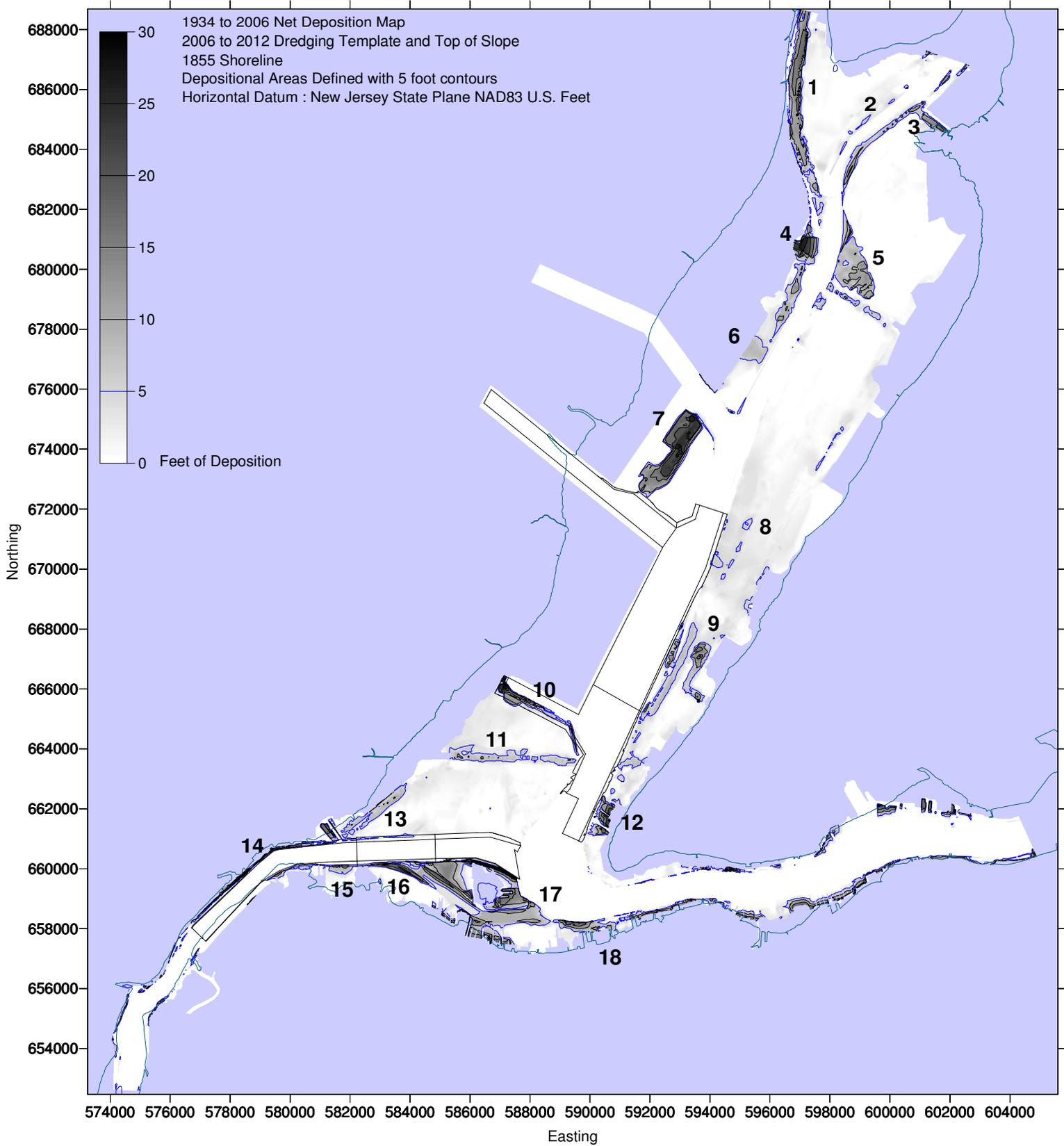
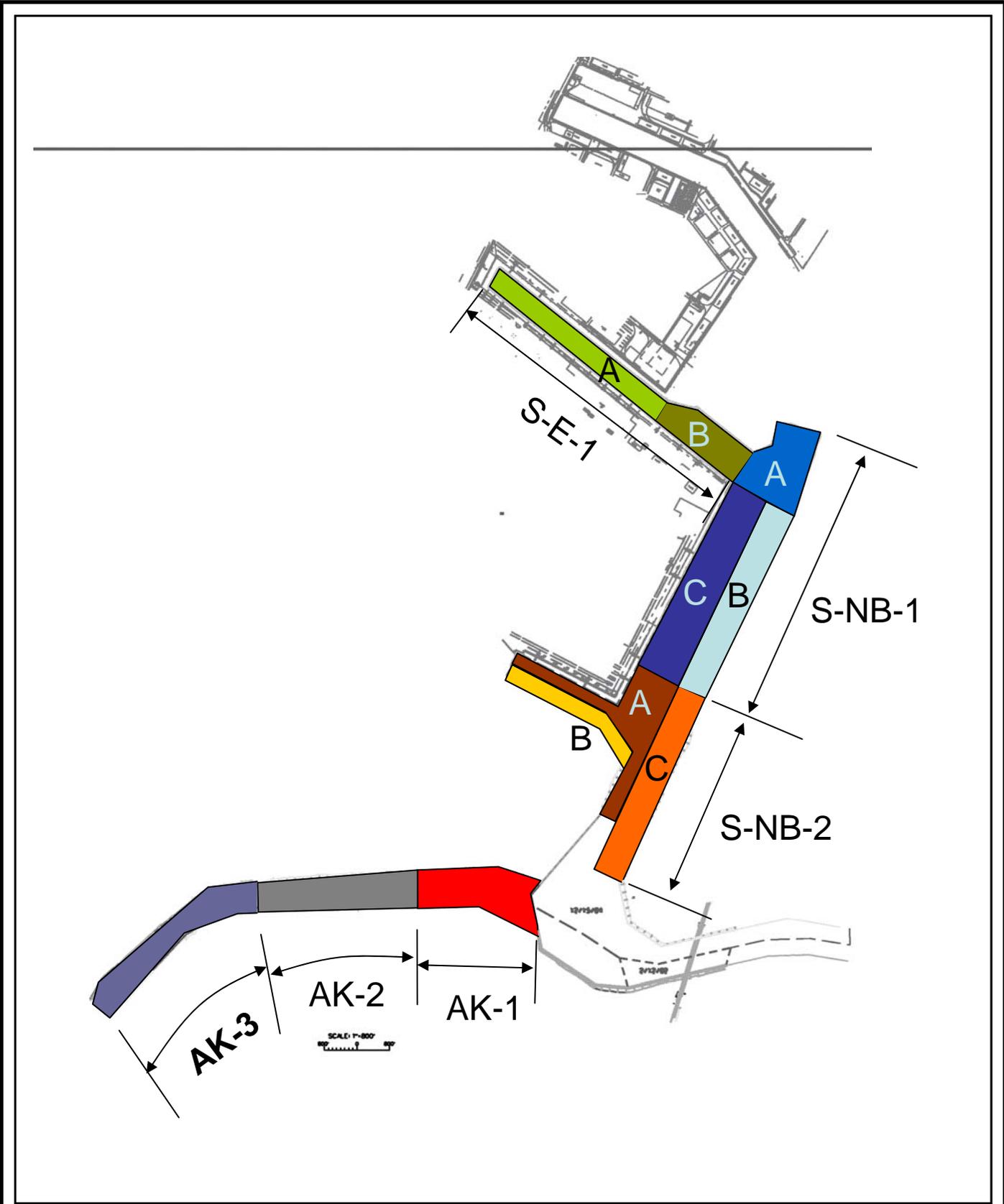


Figure 4-2: Historic Sediment Deposition in Newark Bay

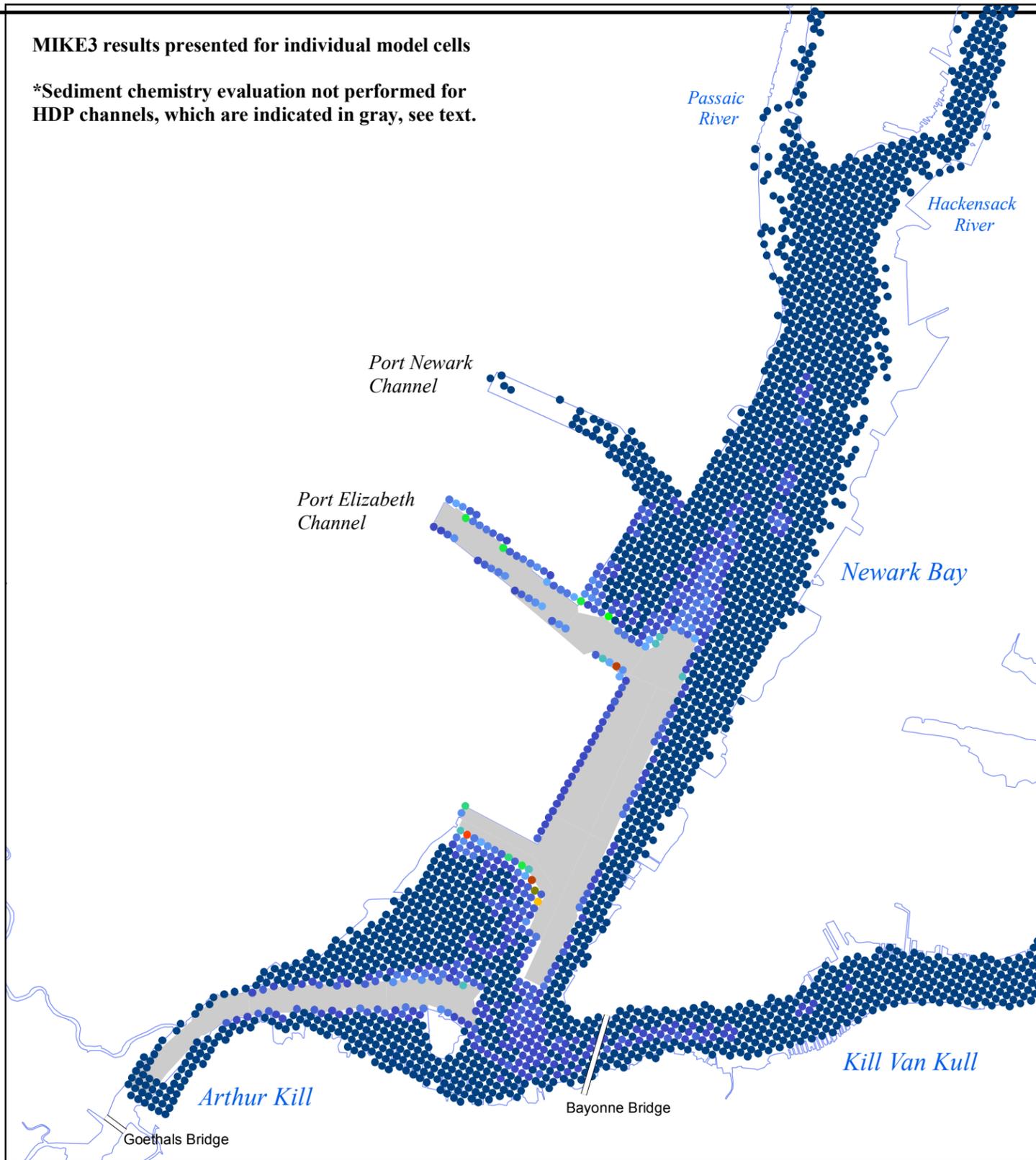


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Figure 4-3
Dredge Model Sub-areas

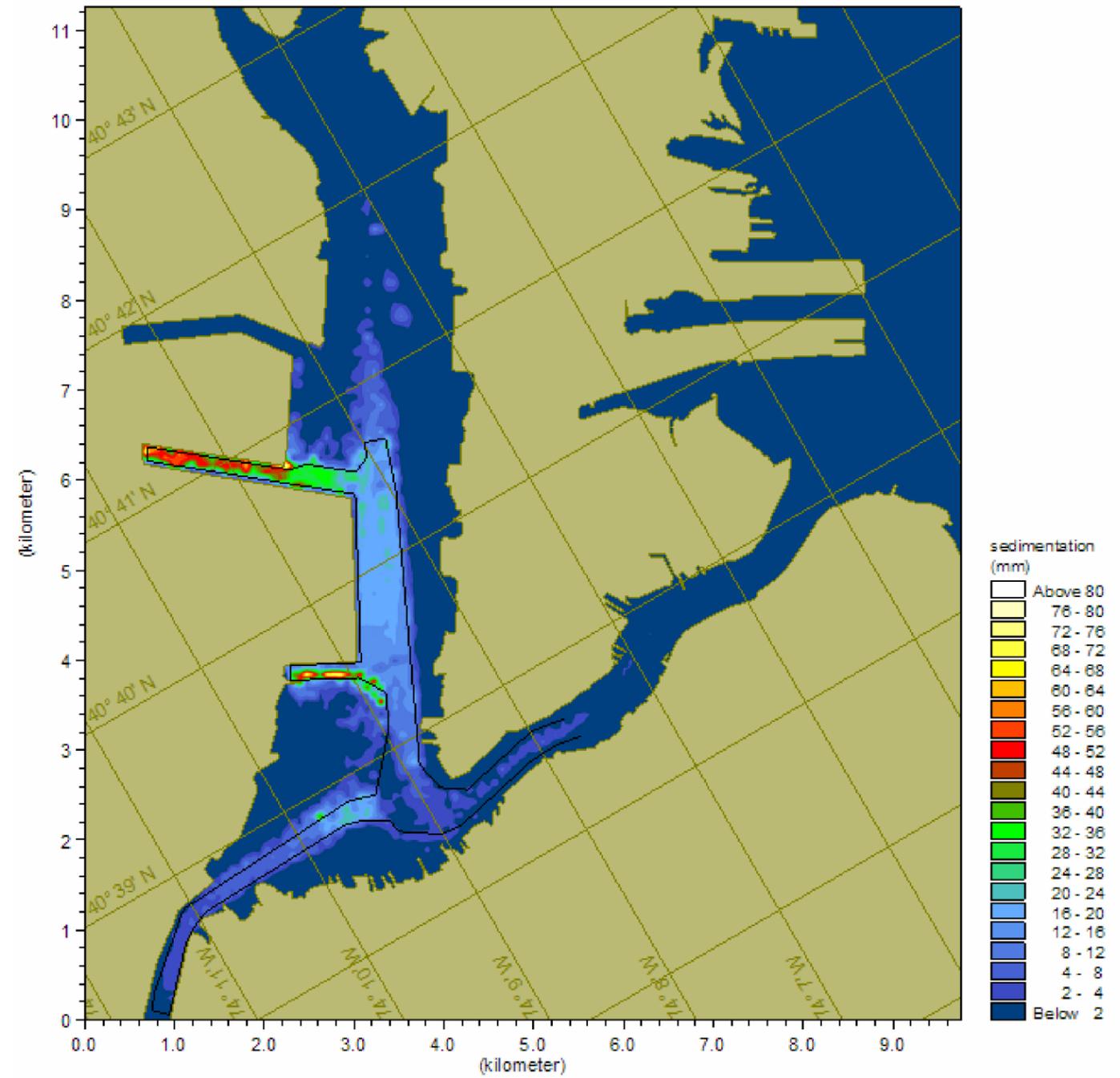
MIKE3 results presented for individual model cells

*Sediment chemistry evaluation not performed for HDP channels, which are indicated in gray, see text.



Interpolated MIKE3 Model Results

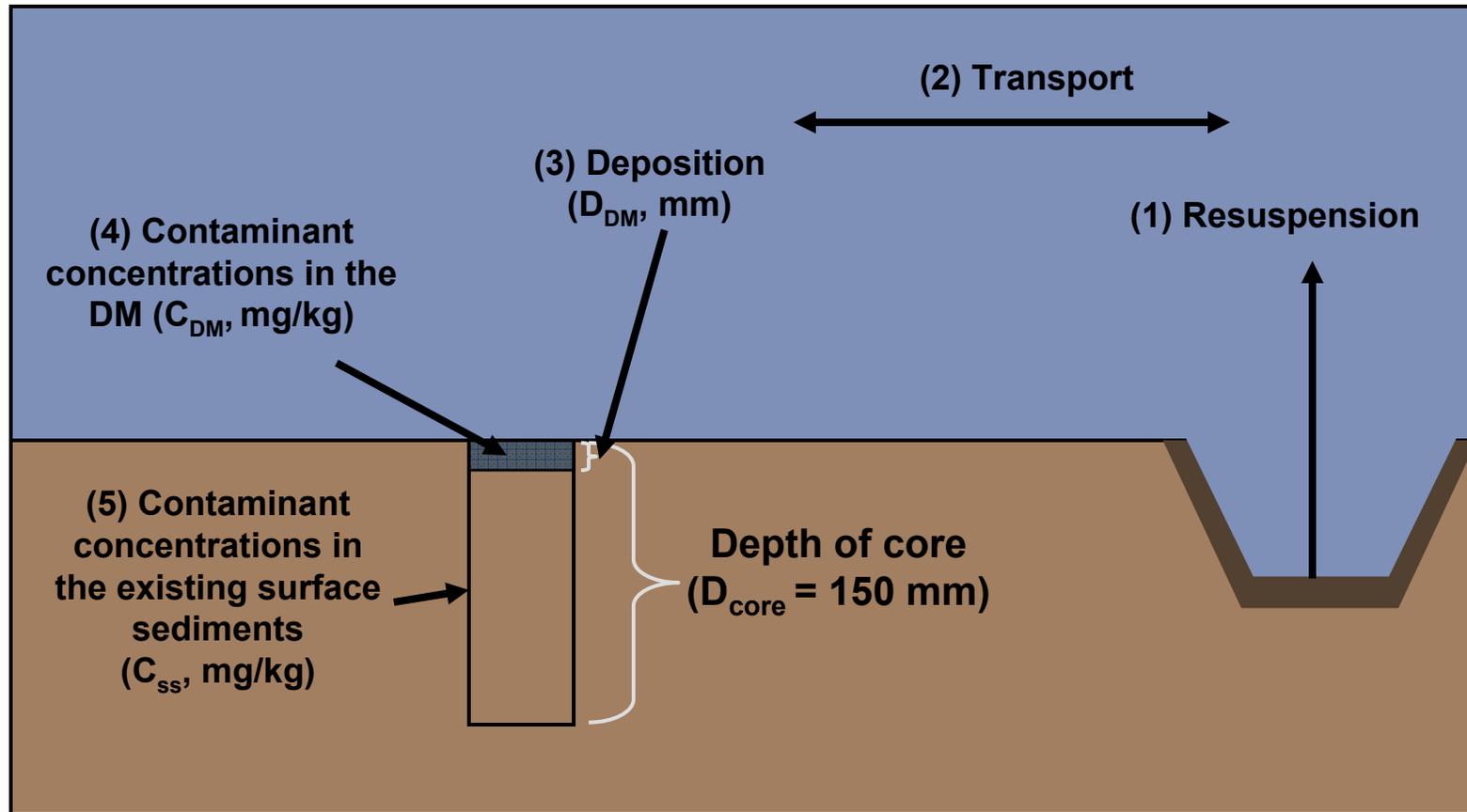
Source: Appendix 1, Figure 35



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Figure 4-4

Dredge Resuspension Induced Sedimentation due to the HDP



$$D_{core} = D_{DM} + D_{SS}$$

$$C_{post-dredging} = \frac{1}{D_{core}} [D_{DM} C_{DM} + (D_{core} - D_{DM}) C_{SS}]$$

Figure 4-5. Schematic of the analysis of effects.

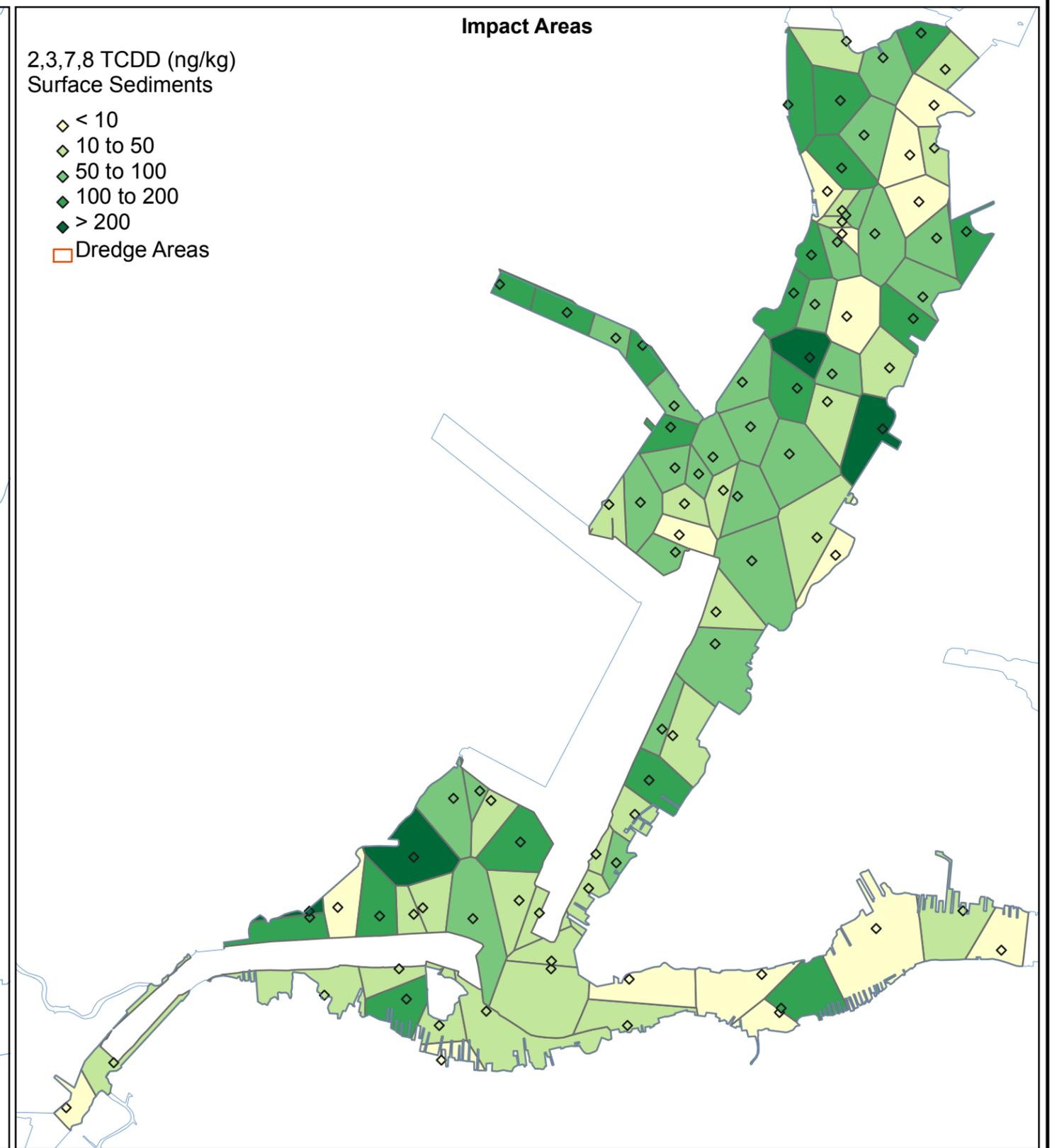
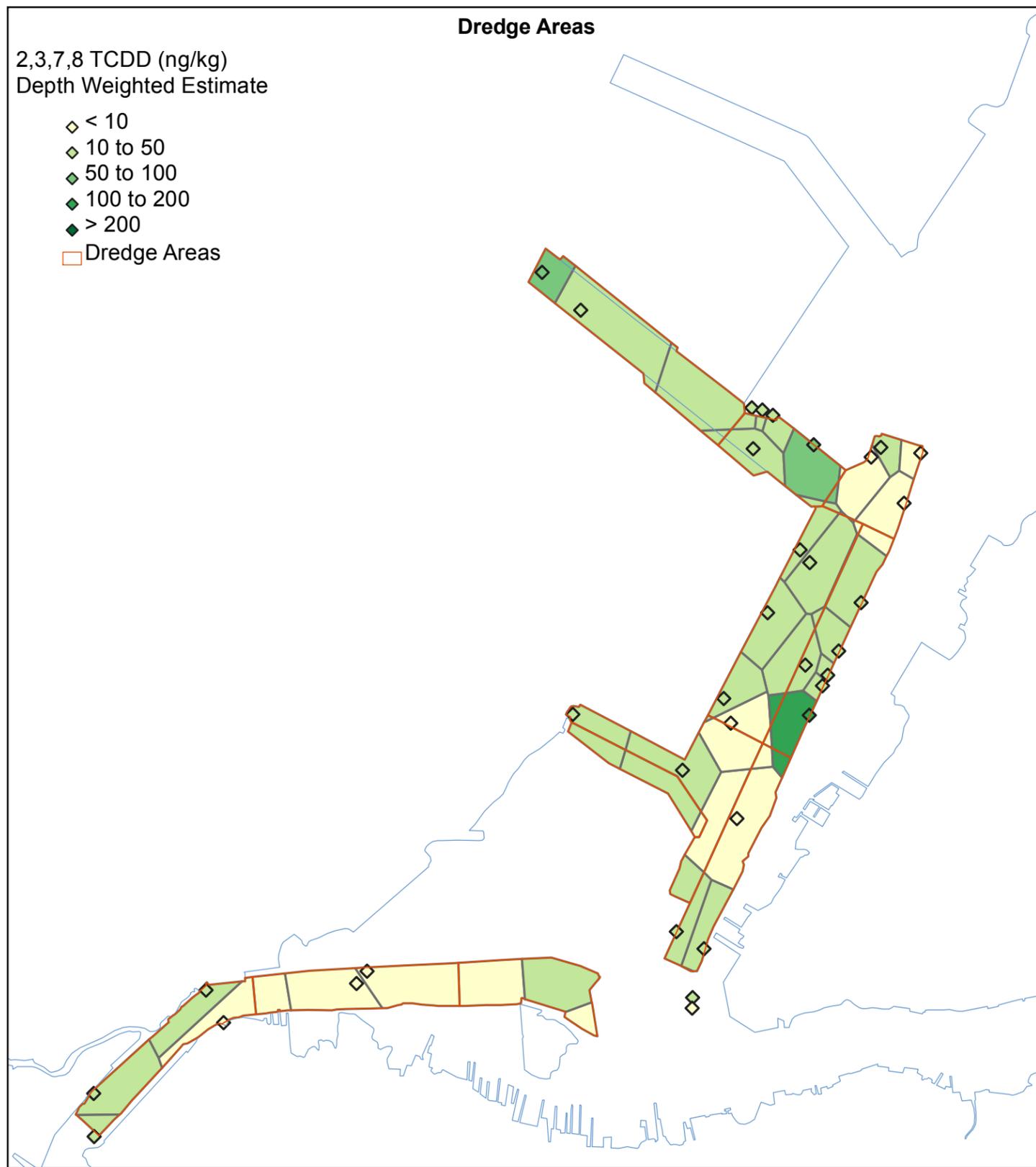


Figure 4-6
2,3,7,8 TCDD in the sediments of Newark Bay
under current conditions: Thiessen polygons

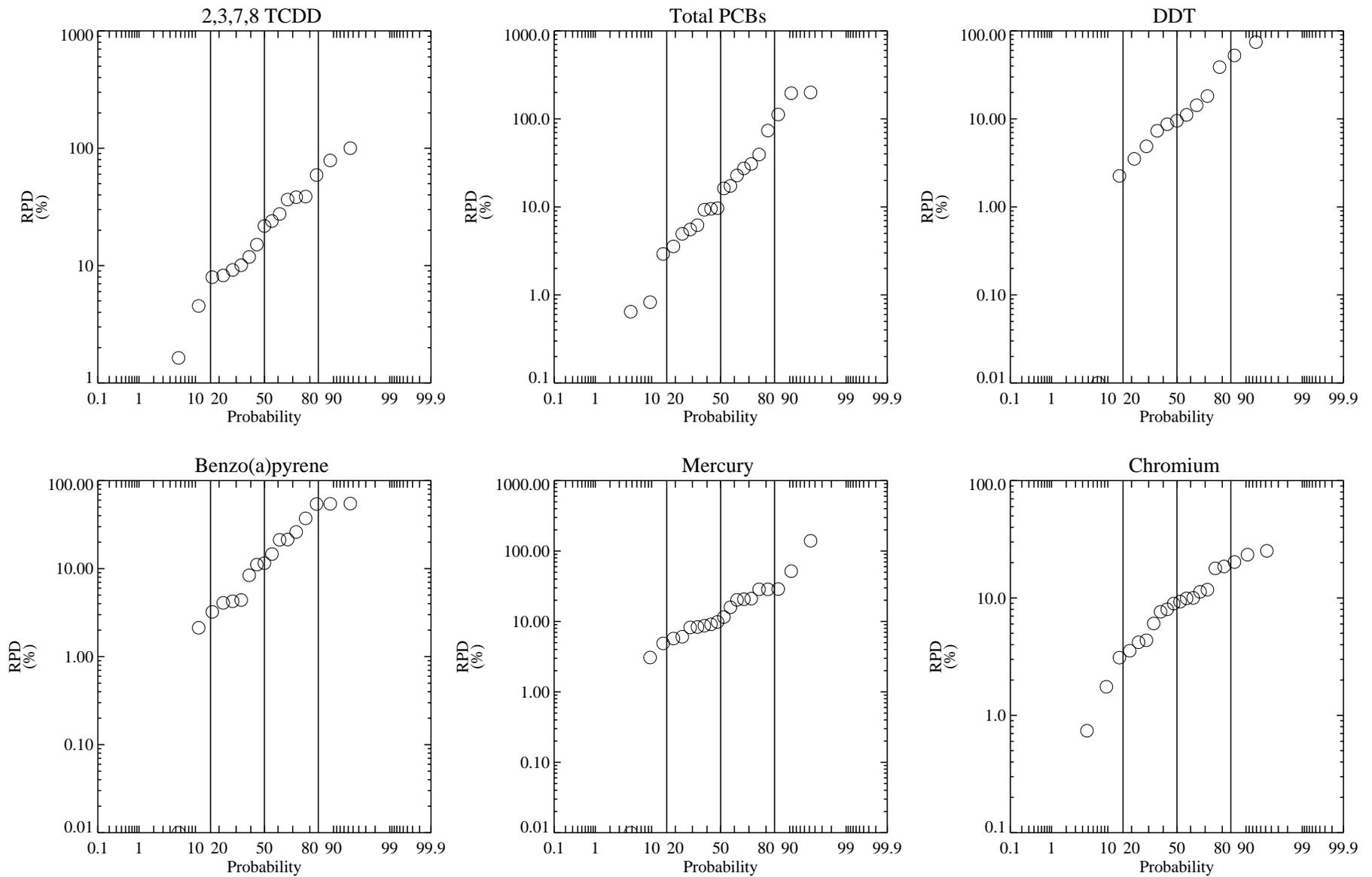
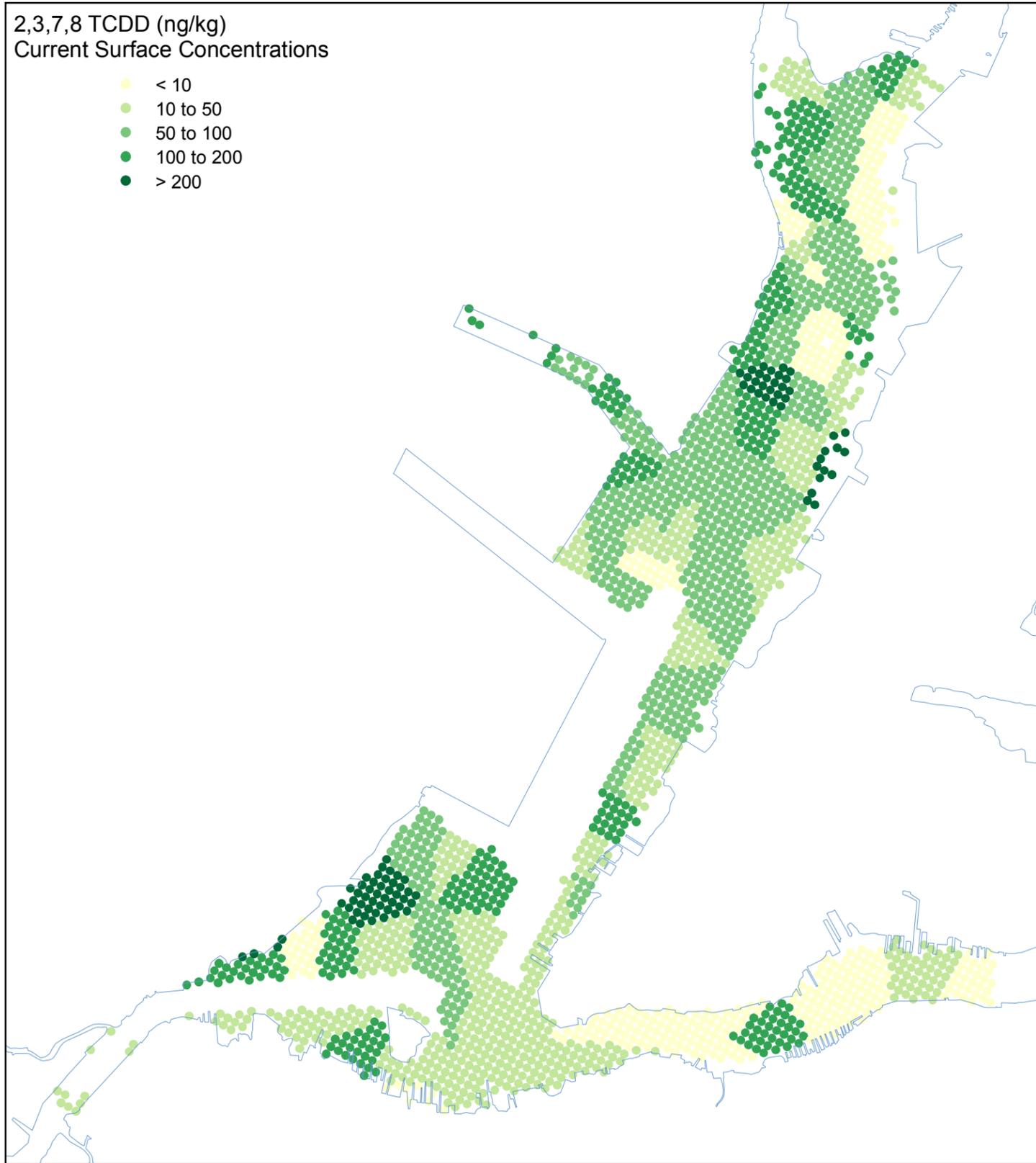


Figure 4-7. Field duplicates in the NBSA RI/FS Phase 1 Data Set: Relative Percent Differences

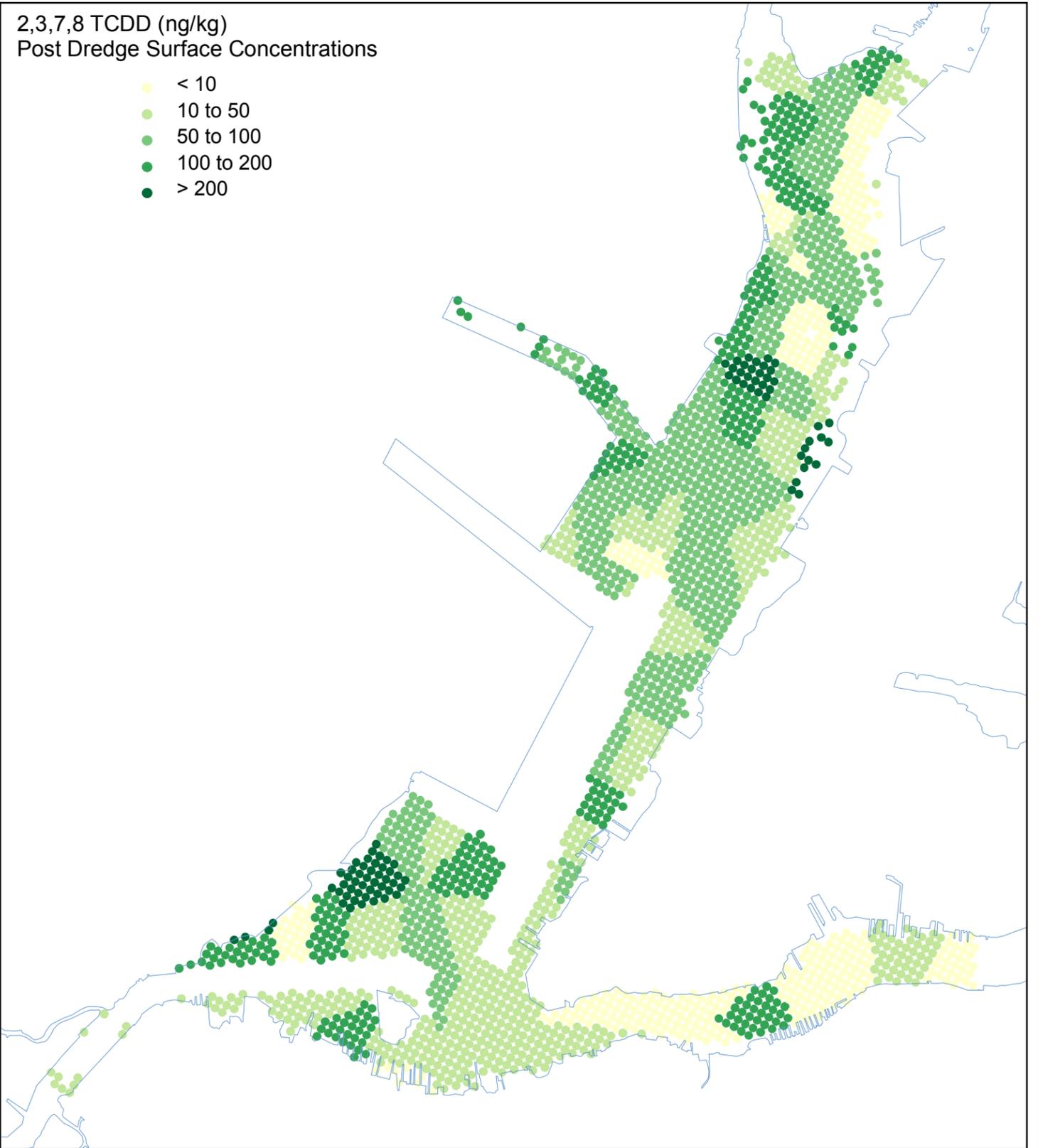
2,3,7,8 TCDD (ng/kg)
Current Surface Concentrations

- < 10
- 10 to 50
- 50 to 100
- 100 to 200
- > 200



2,3,7,8 TCDD (ng/kg)
Post Dredge Surface Concentrations

- < 10
- 10 to 50
- 50 to 100
- 100 to 200
- > 200



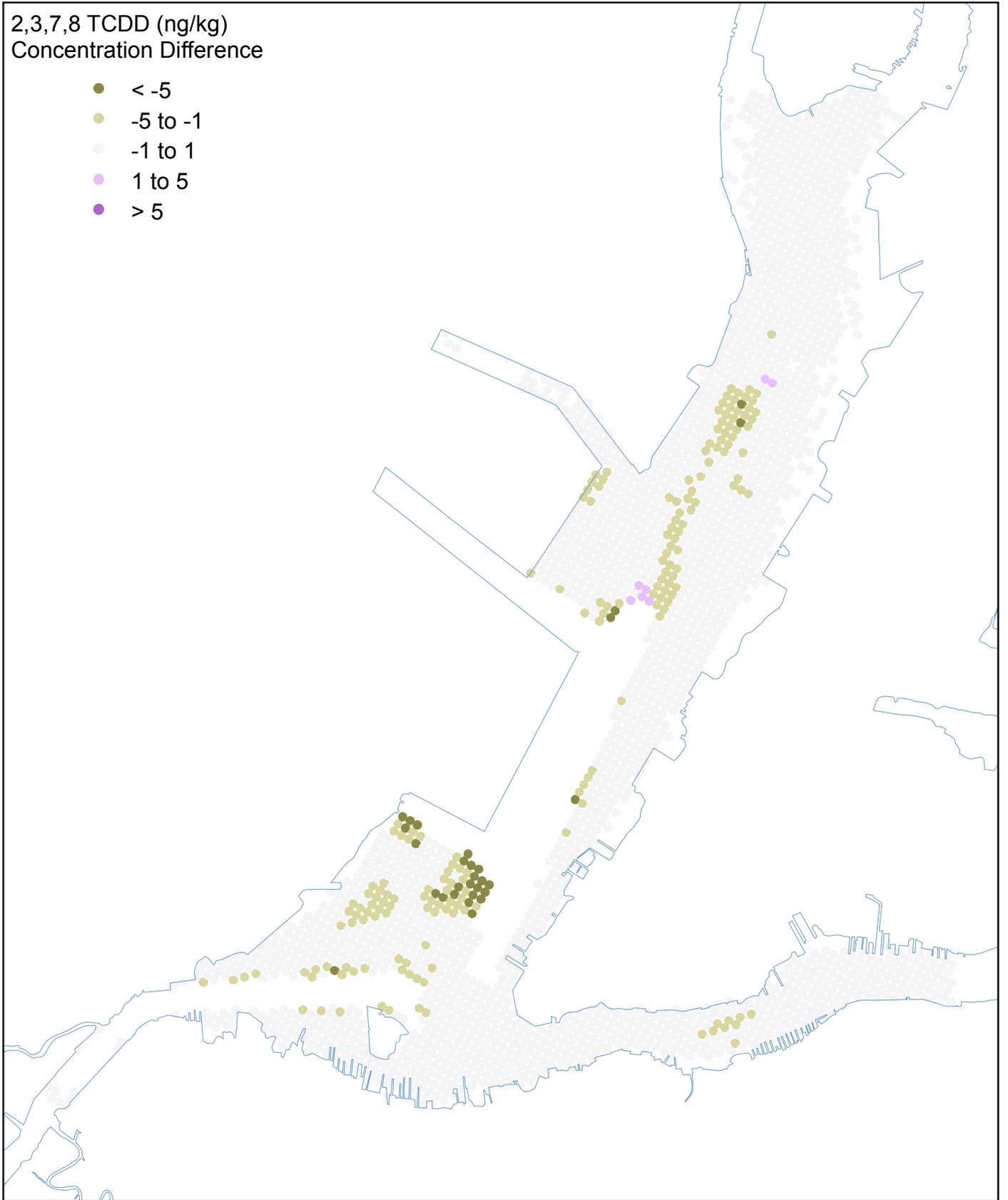
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Figure 4-8a

2,3,7,8 TCDD: comparison of existing surface sediment concentrations
with post HDP concentrations predicted by the model

2,3,7,8 TCDD (ng/kg)
Concentration Difference

- < -5
- -5 to -1
- -1 to 1
- 1 to 5
- > 5



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Figure 4-8b.
**2,3,7,8 TCDD: change in surface sediment
concentrations due to dredging
as predicted by the model**

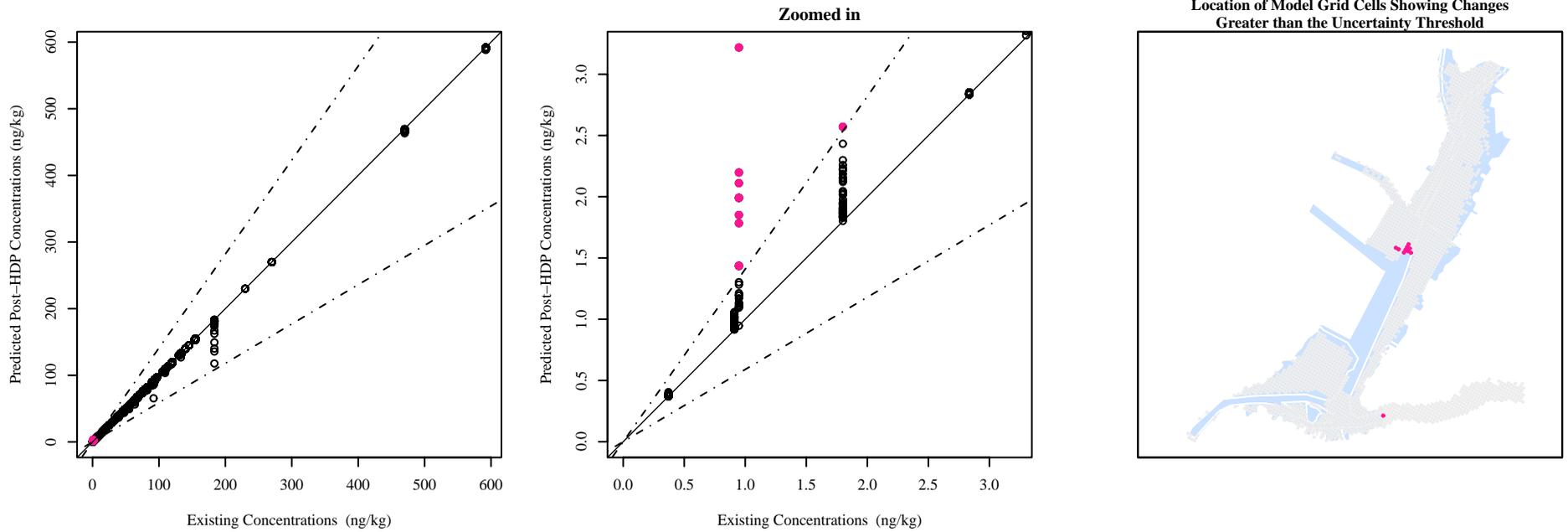
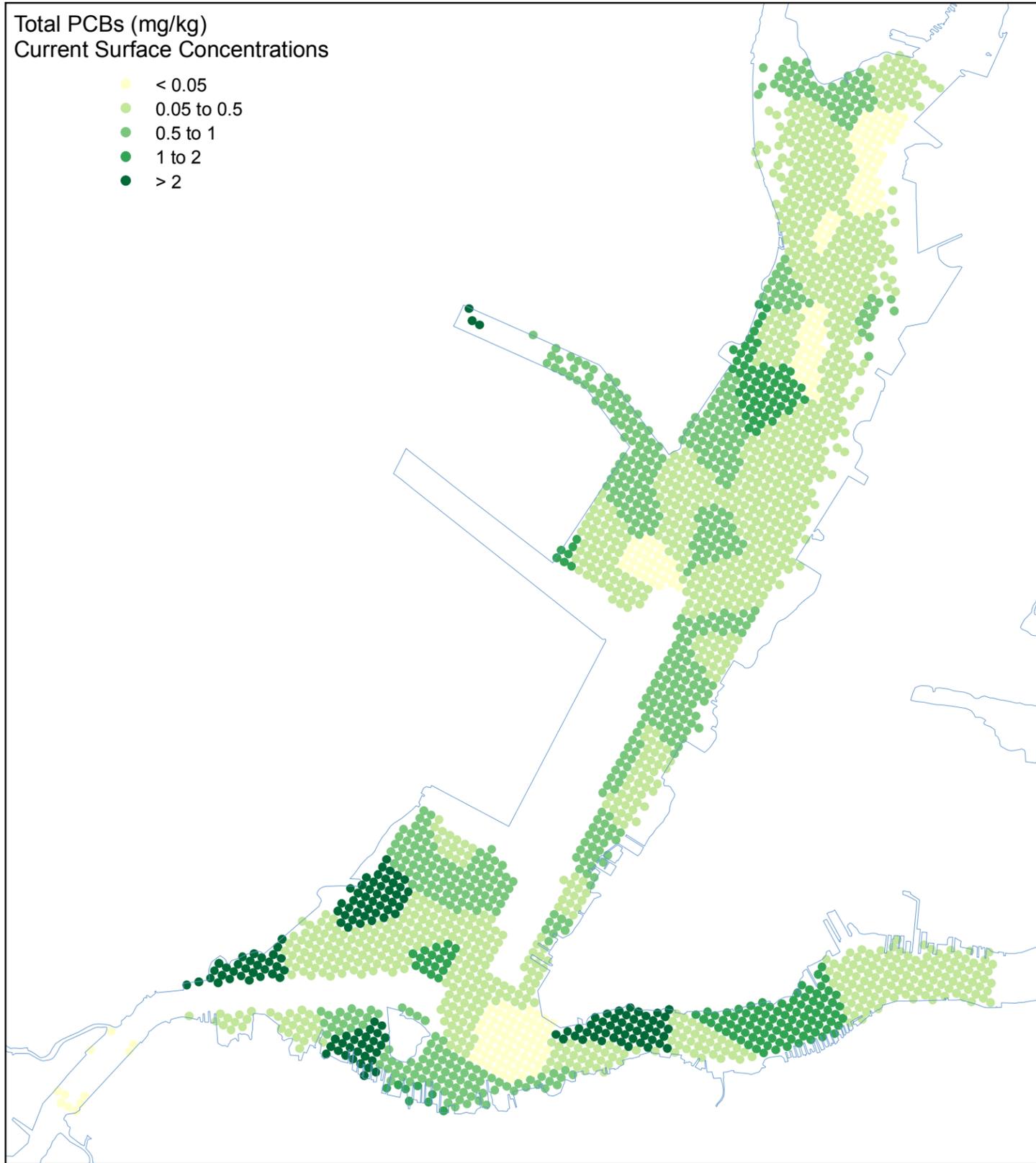


Figure 4-8c. 2,3,7,8 TCDD : Predicted changes in surface sediment concentrations that are greater than the uncertainty threshold

Predicted changes were greater than the uncertainty threshold in points colored pink. Dashed line represents the boundaries of the uncertainty threshold. See text for more details.

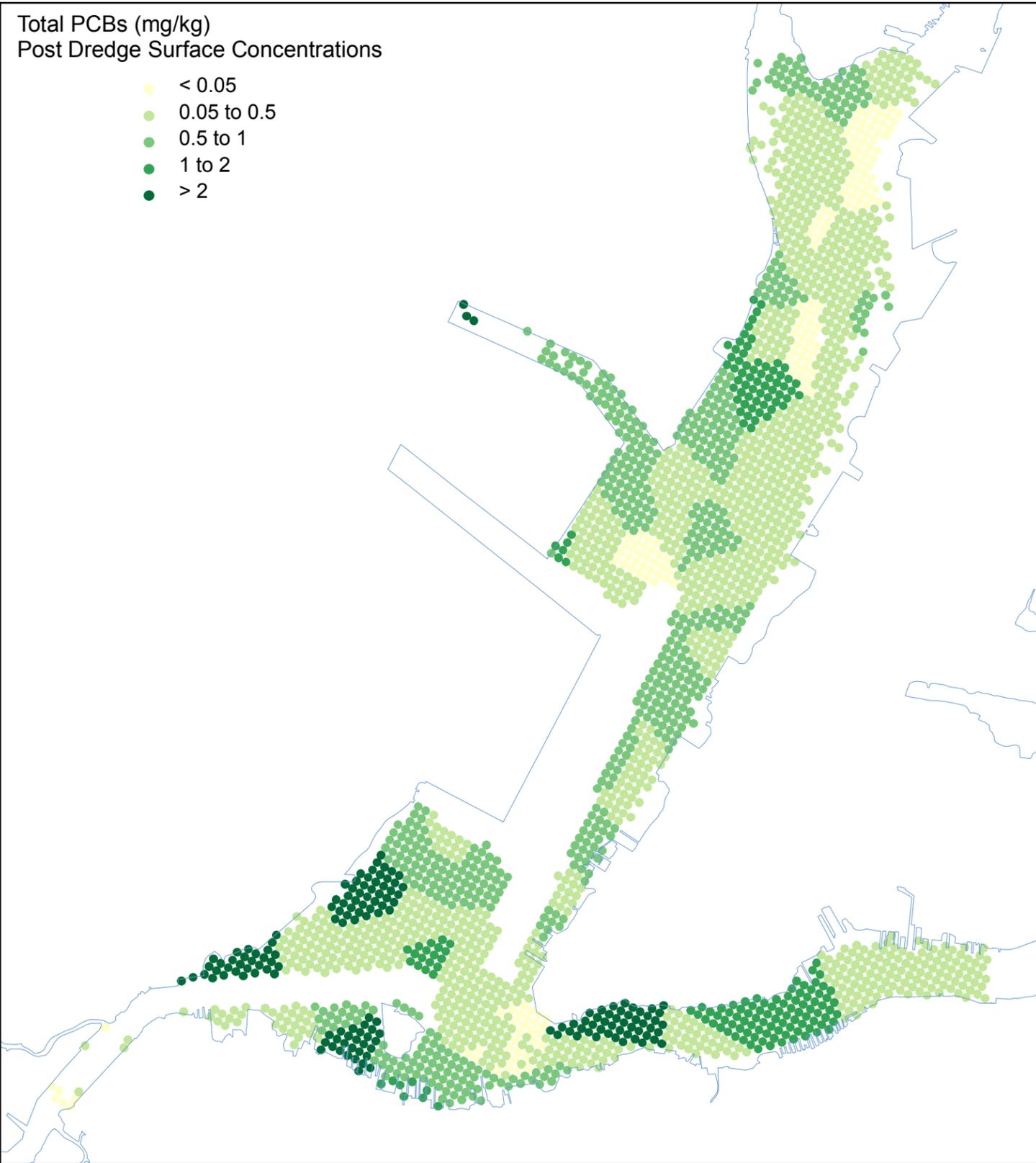
Total PCBs (mg/kg)
Current Surface Concentrations

- < 0.05
- 0.05 to 0.5
- 0.5 to 1
- 1 to 2
- > 2



Total PCBs (mg/kg)
Post Dredge Surface Concentrations

- < 0.05
- 0.05 to 0.5
- 0.5 to 1
- 1 to 2
- > 2



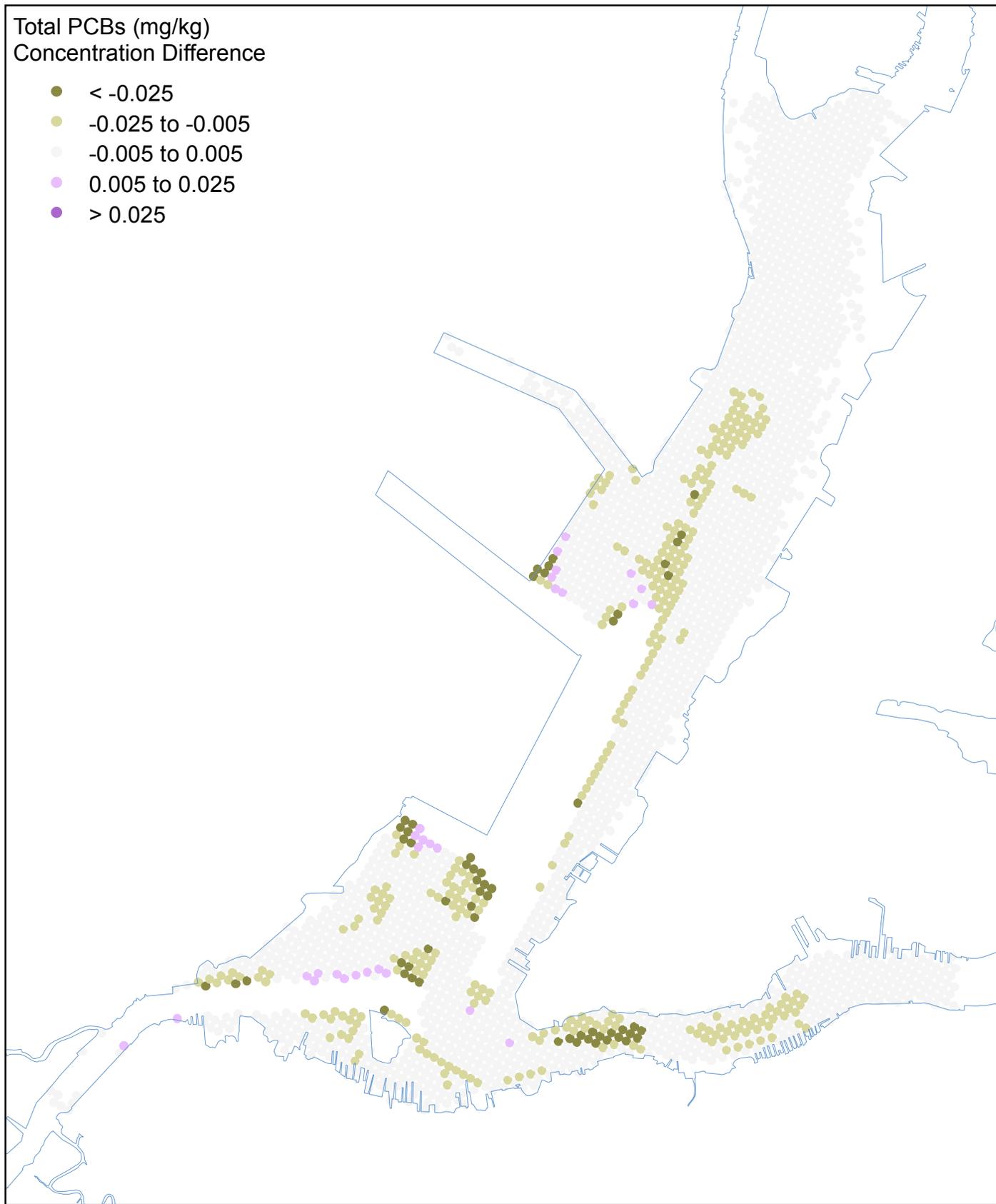
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Figure 4-9a

Total PCBs: comparison of existing surface sediment concentrations
with post HDP concentrations predicted by the model

Total PCBs (mg/kg)
Concentration Difference

- < -0.025
- -0.025 to -0.005
- -0.005 to 0.005
- 0.005 to 0.025
- > 0.025



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Figure 4-9b.
**Total PCBs: change in surface sediment
concentrations due to dredging
as predicted by the model**

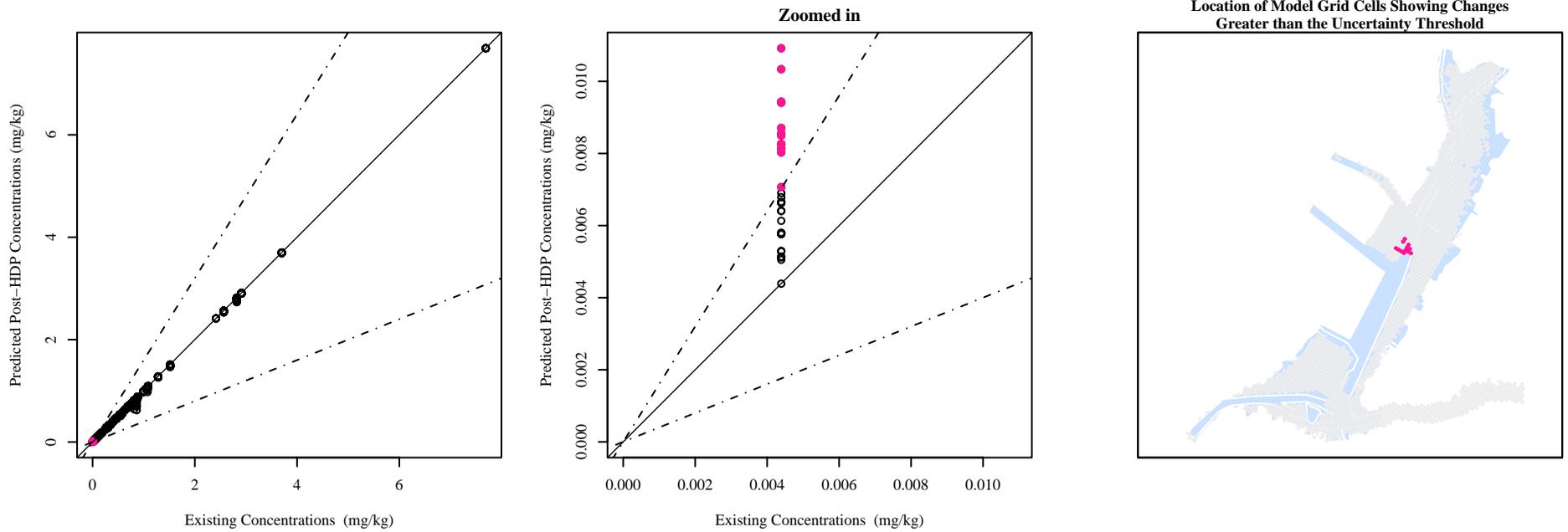
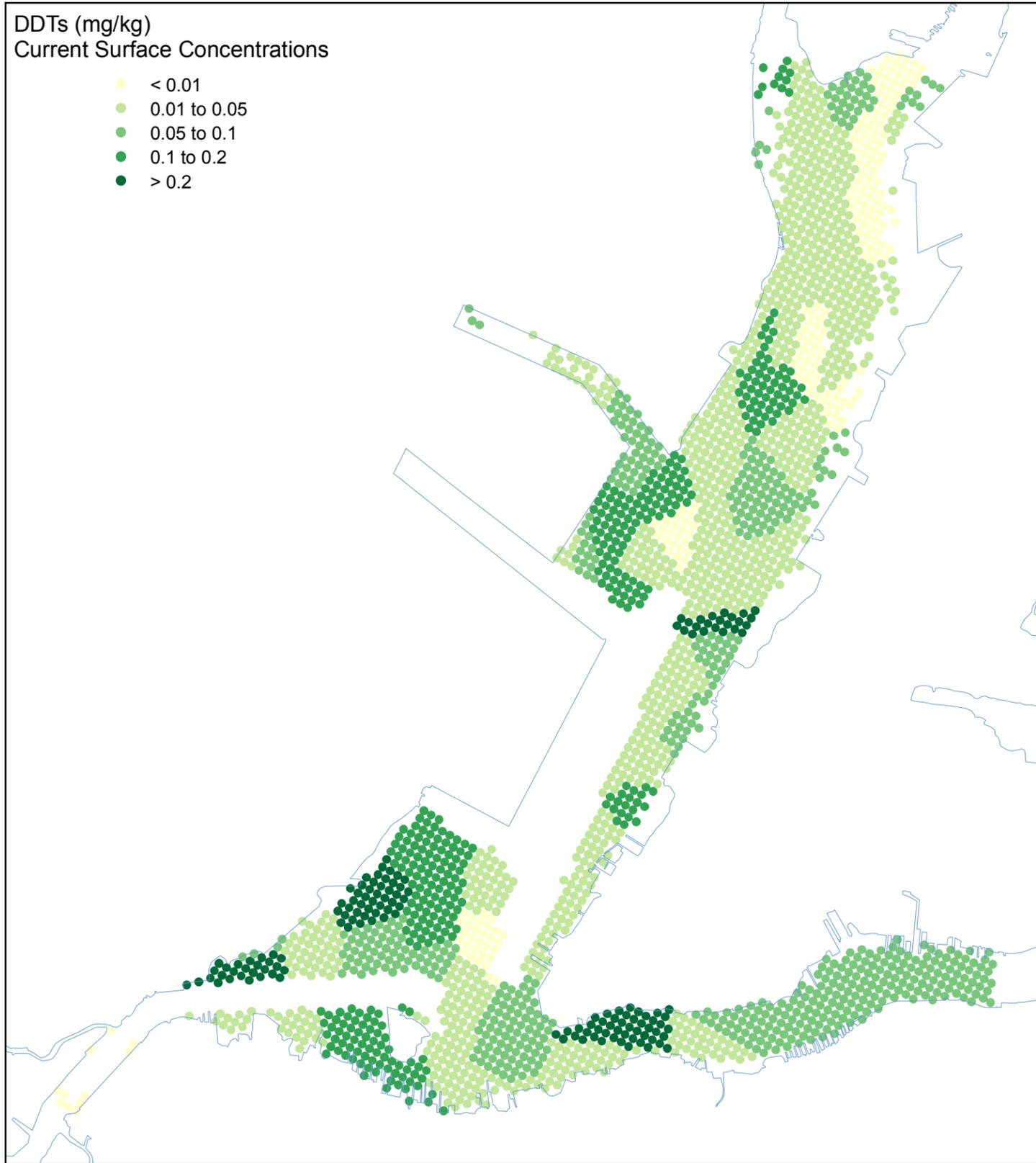


Figure 4-9c. Total PCBs : Predicted changes in surface sediment concentrations that are greater than the uncertainty threshold

Predicted changes were greater than the uncertainty threshold in points colored pink. Dashed line represents the boundaries of the uncertainty threshold. See text for more details.

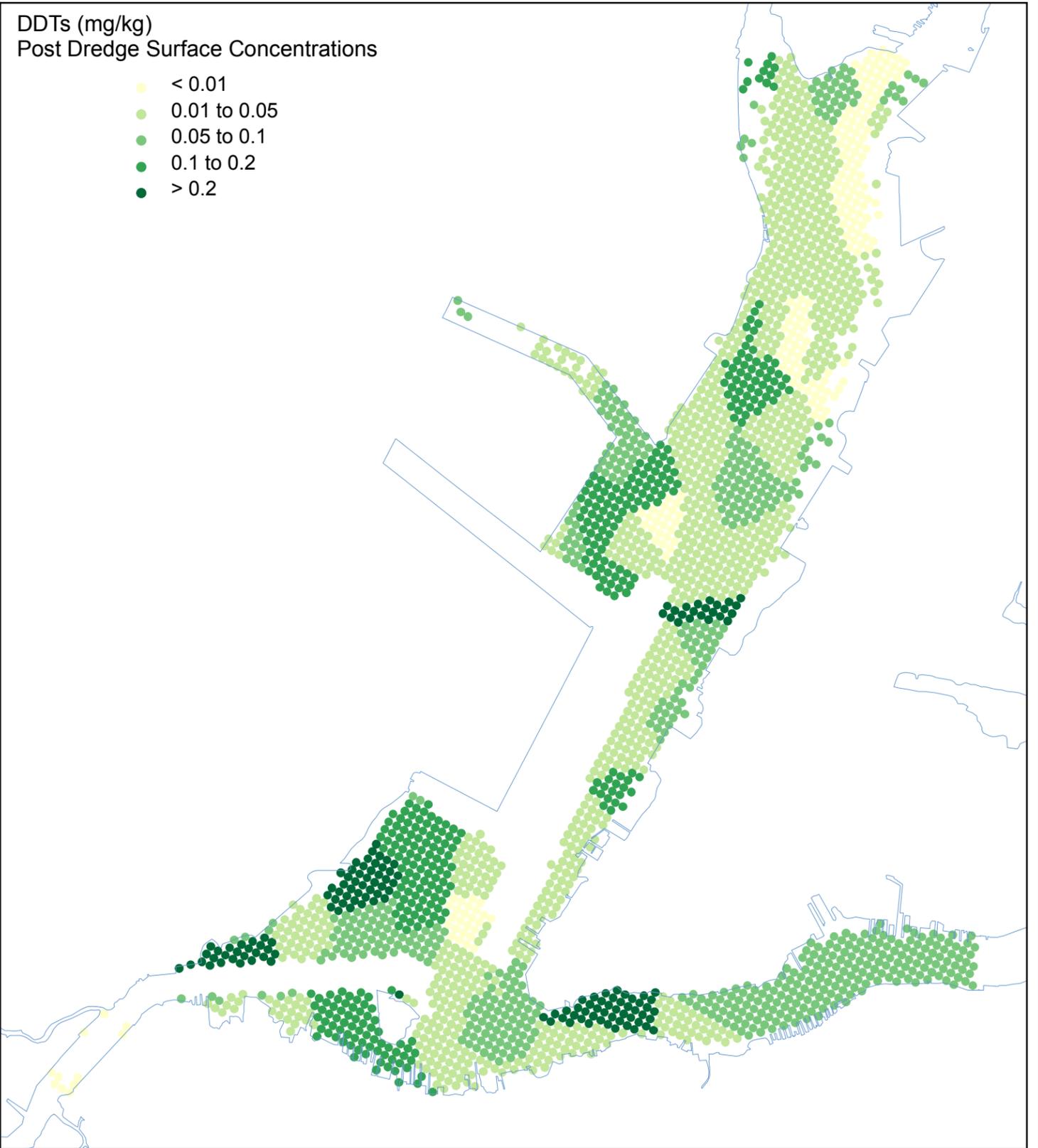
DDTs (mg/kg)
Current Surface Concentrations

- < 0.01
- 0.01 to 0.05
- 0.05 to 0.1
- 0.1 to 0.2
- > 0.2



DDTs (mg/kg)
Post Dredge Surface Concentrations

- < 0.01
- 0.01 to 0.05
- 0.05 to 0.1
- 0.1 to 0.2
- > 0.2



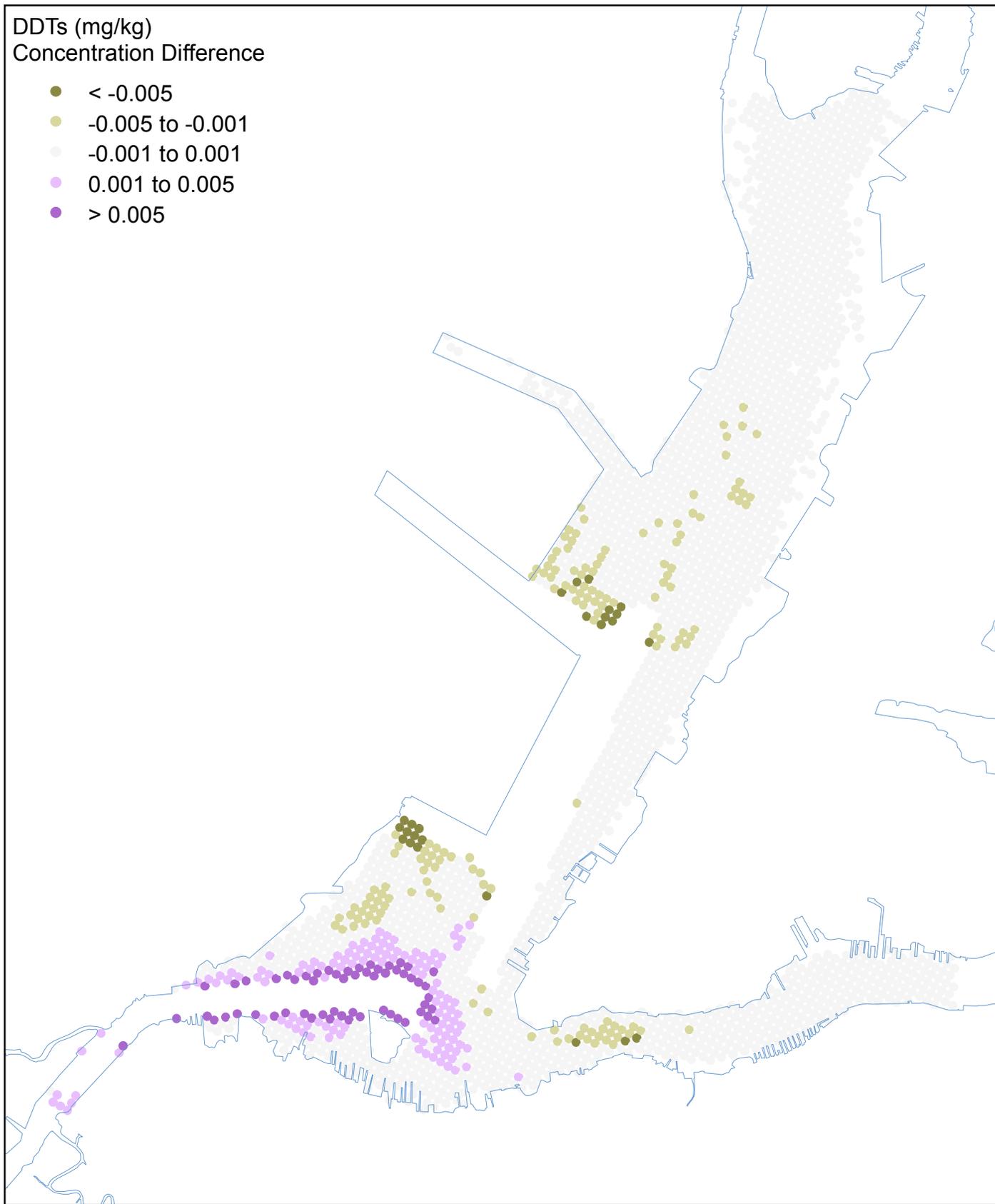
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Figure 4-10a

DDTs: comparison of existing surface sediment concentrations
with post HDP concentrations predicted by the model

DDTs (mg/kg)
Concentration Difference

- < -0.005
- -0.005 to -0.001
- -0.001 to 0.001
- 0.001 to 0.005
- > 0.005



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Figure 4-10b.
DDTs: change in surface sediment
concentrations due to dredging
as predicted by the model

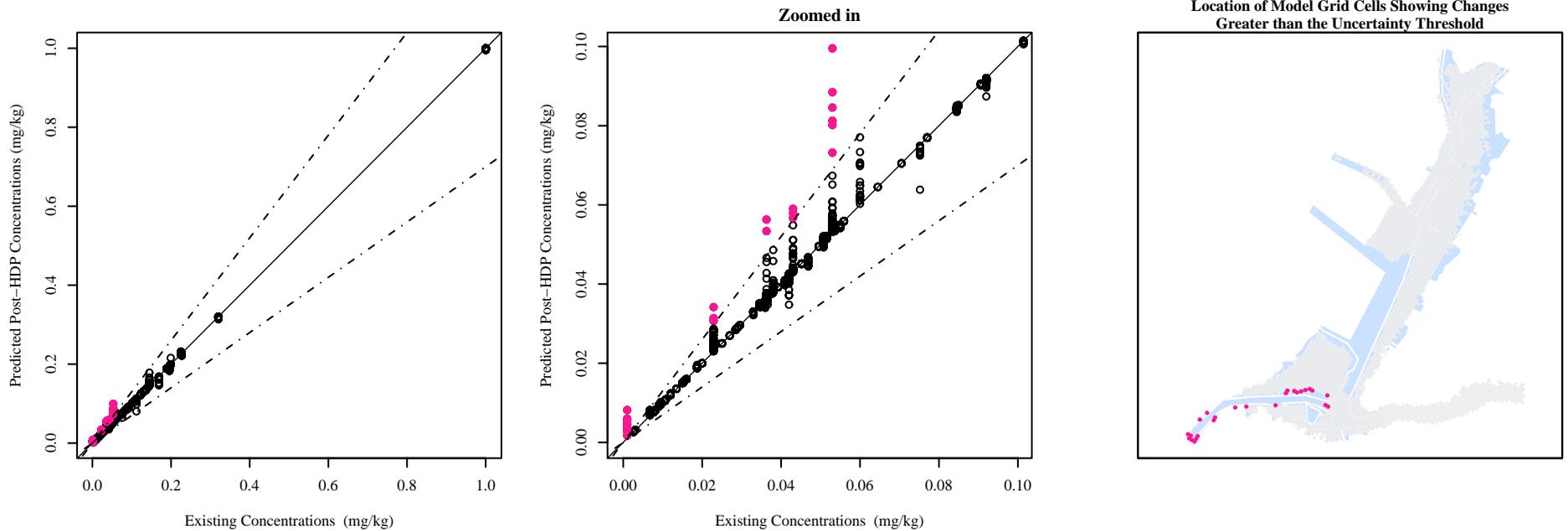
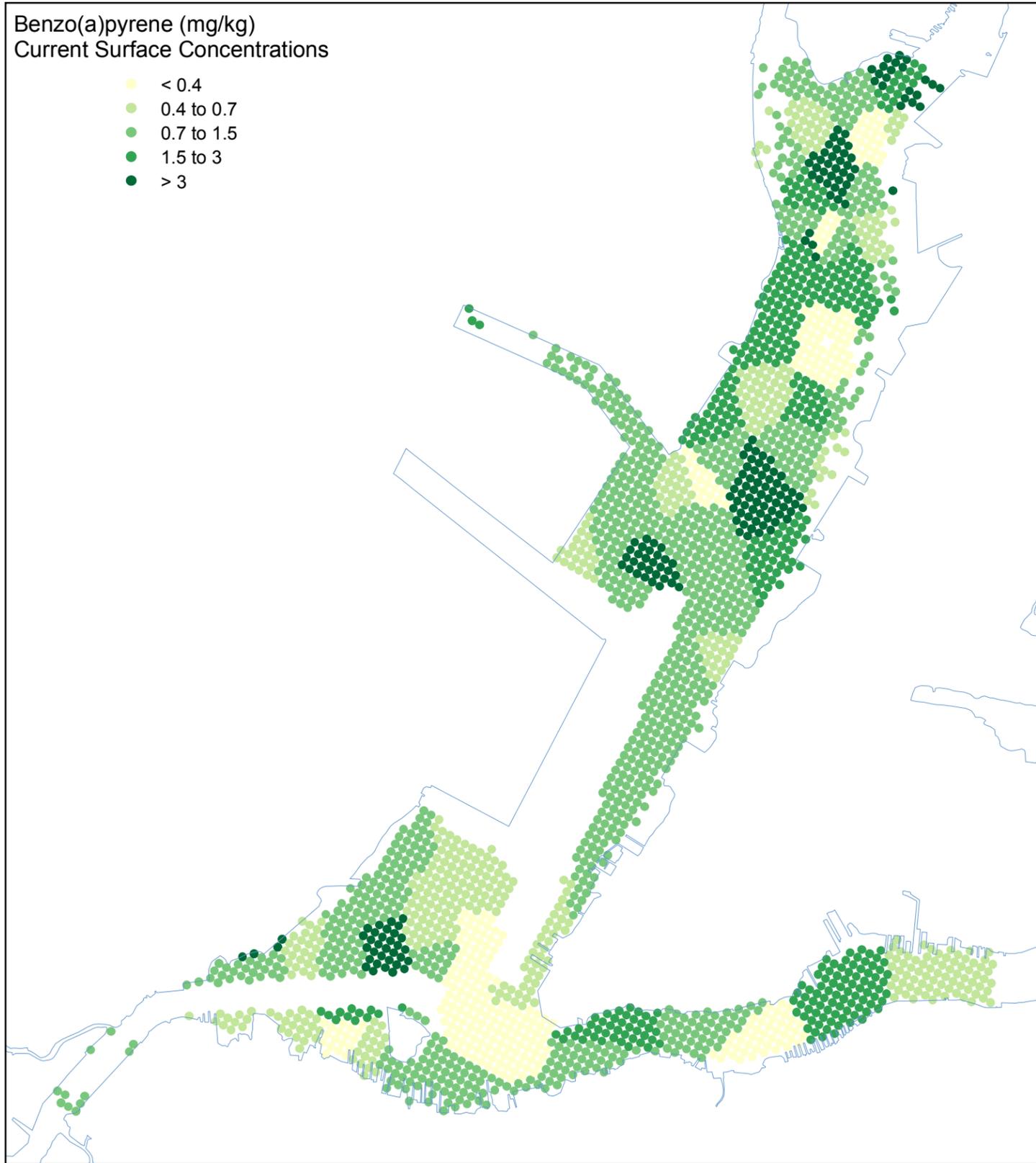


Figure 4-10c. DDT : Predicted changes in surface sediment concentrations that are greater than the uncertainty threshold

Predicted changes were greater than the uncertainty threshold in points colored pink. Dashed line represents the boundaries of the uncertainty threshold. See text for more details.

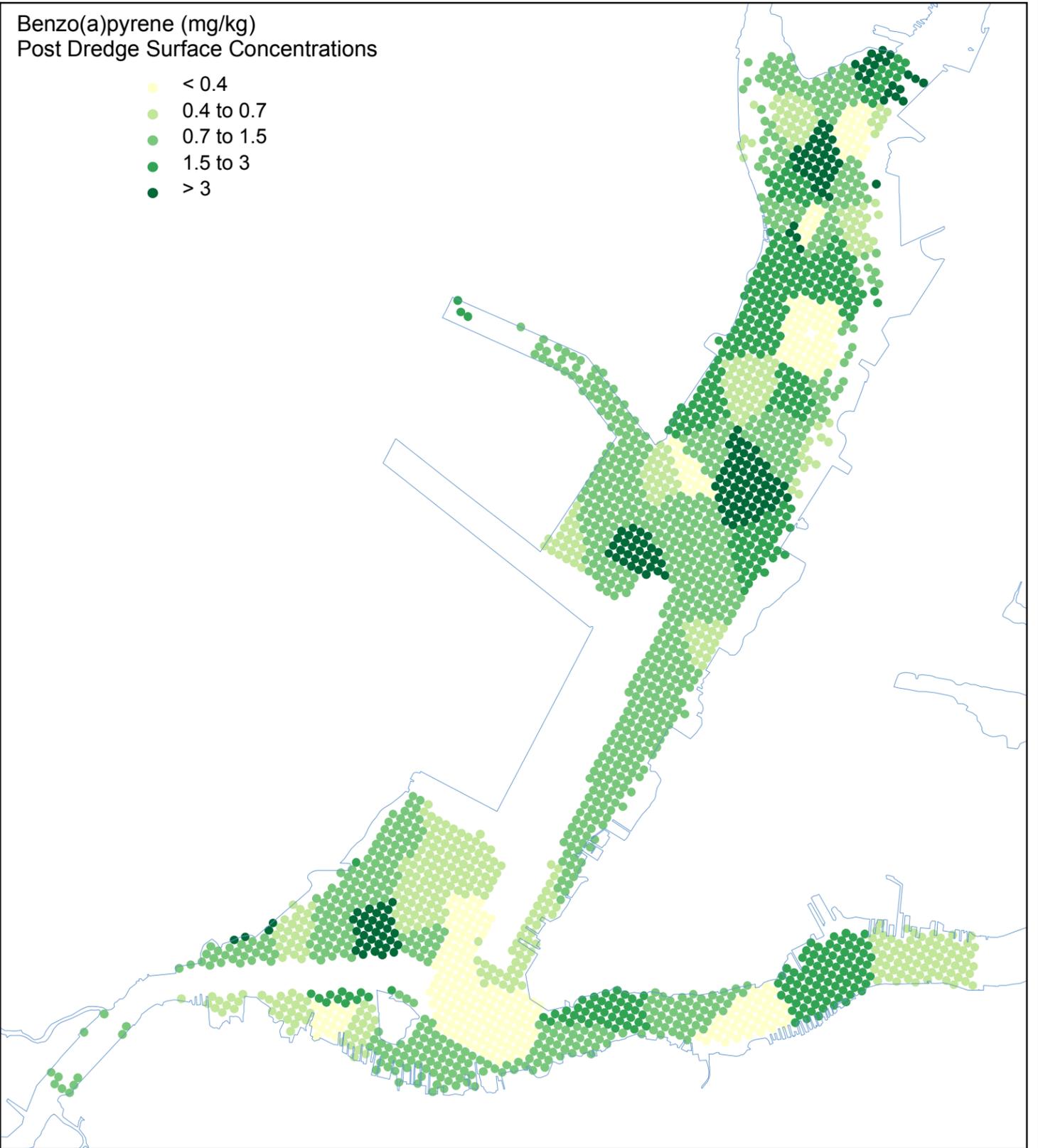
Benzo(a)pyrene (mg/kg)
Current Surface Concentrations

- < 0.4
- 0.4 to 0.7
- 0.7 to 1.5
- 1.5 to 3
- > 3



Benzo(a)pyrene (mg/kg)
Post Dredge Surface Concentrations

- < 0.4
- 0.4 to 0.7
- 0.7 to 1.5
- 1.5 to 3
- > 3



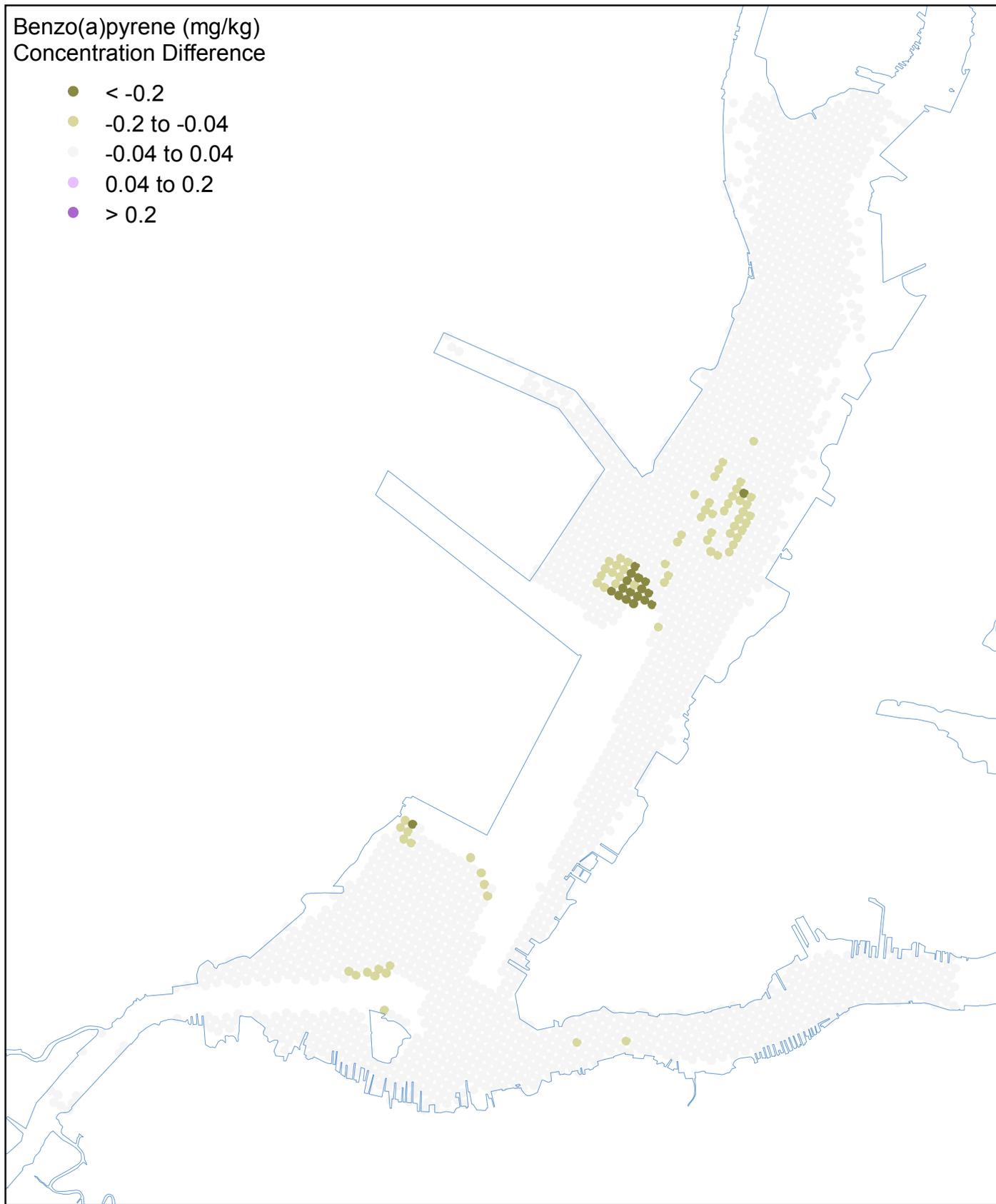
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Figure 4-11a

Benzo(a)pyrene: comparison of existing surface sediment concentrations
with post HDP concentrations predicted by the model

Benzo(a)pyrene (mg/kg)
Concentration Difference

- < -0.2
- -0.2 to -0.04
- -0.04 to 0.04
- 0.04 to 0.2
- > 0.2



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Figure 4-11b
Benzo(a)pyrene: change in surface sediment
concentrations due to dredging
as predicted by the model

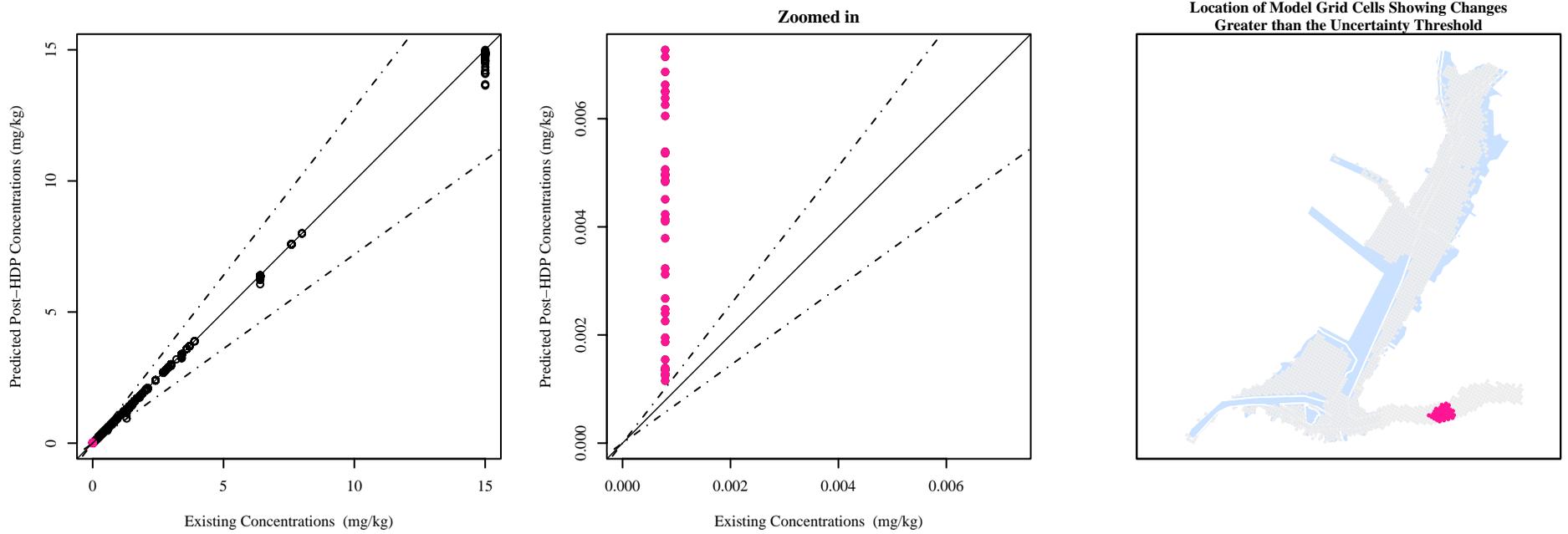
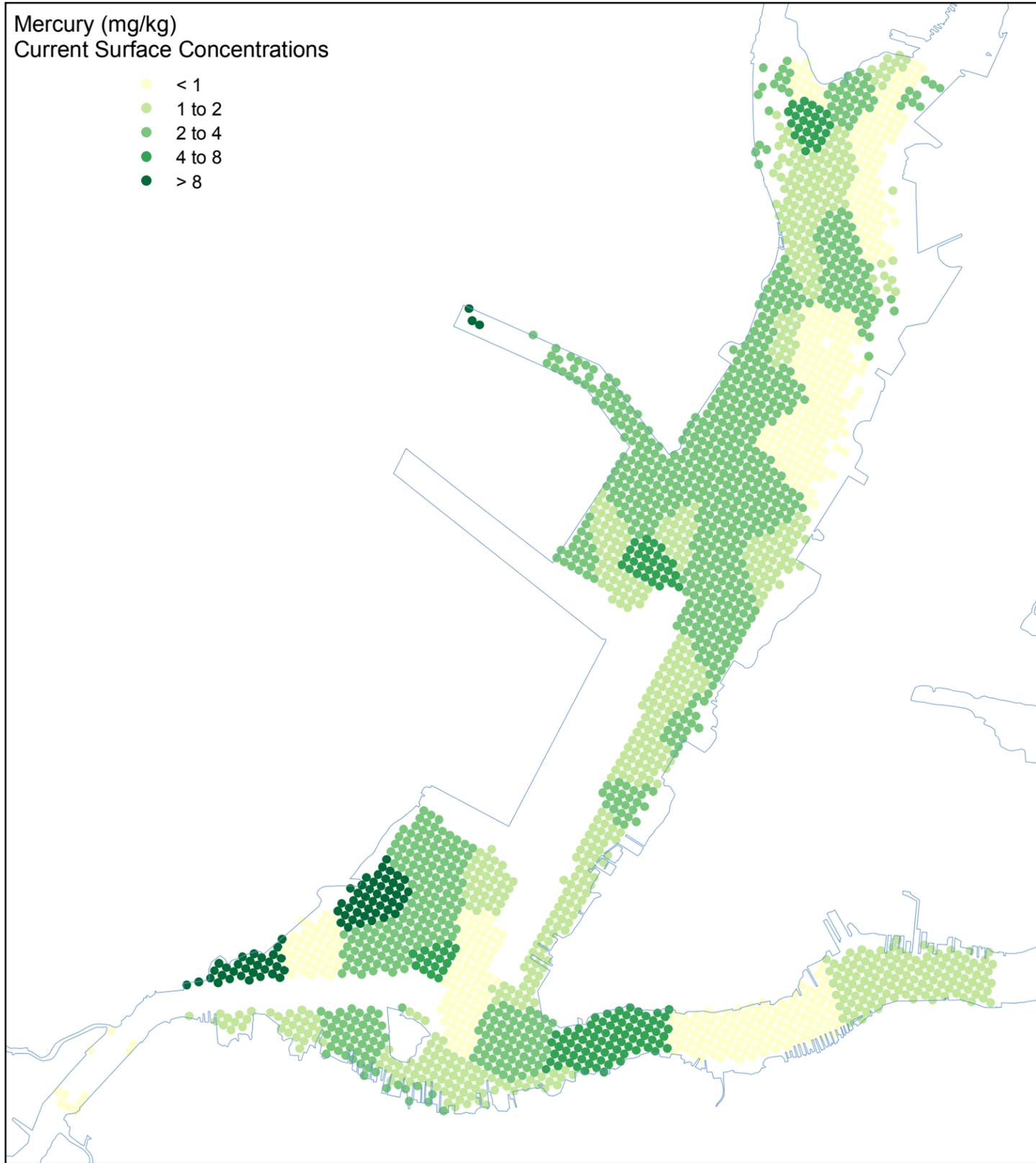


Figure 4-11c. Benzo(a)pyrene : Predicted changes in surface sediment concentrations that are greater than the uncertainty threshold

Predicted changes were greater than the uncertainty threshold in points colored pink. Dashed line represents the boundaries of the uncertainty threshold. See text for more details.

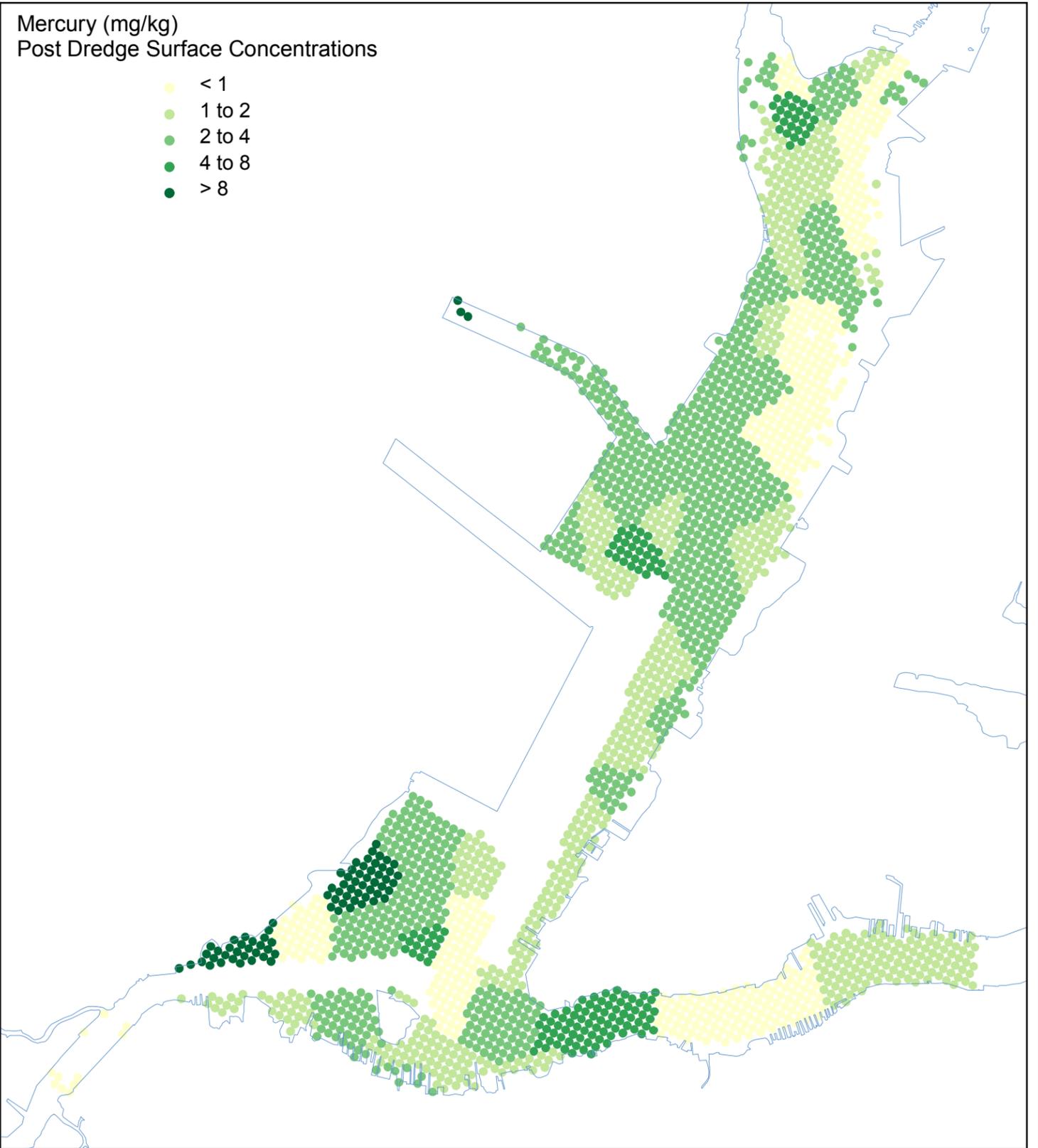
Mercury (mg/kg)
Current Surface Concentrations

- < 1
- 1 to 2
- 2 to 4
- 4 to 8
- > 8



Mercury (mg/kg)
Post Dredge Surface Concentrations

- < 1
- 1 to 2
- 2 to 4
- 4 to 8
- > 8



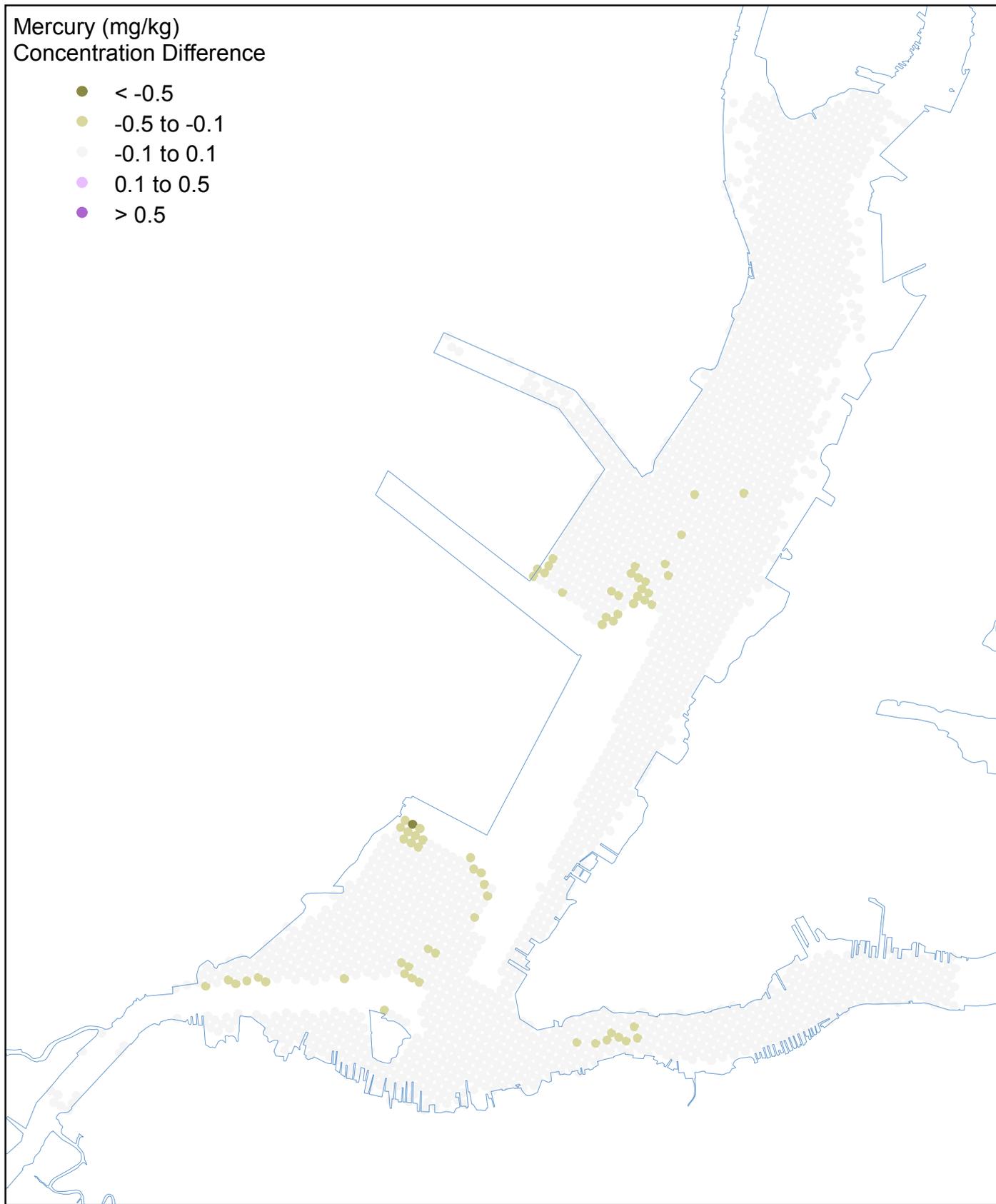
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Figure 4-12a

Mercury: comparison of existing surface sediment concentrations
with post HDP concentrations predicted by the model

Mercury (mg/kg)
Concentration Difference

- < -0.5
- -0.5 to -0.1
- -0.1 to 0.1
- 0.1 to 0.5
- > 0.5



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Figure 4-12b
Mercury: change in surface sediment
concentrations due to dredging
as predicted by the model

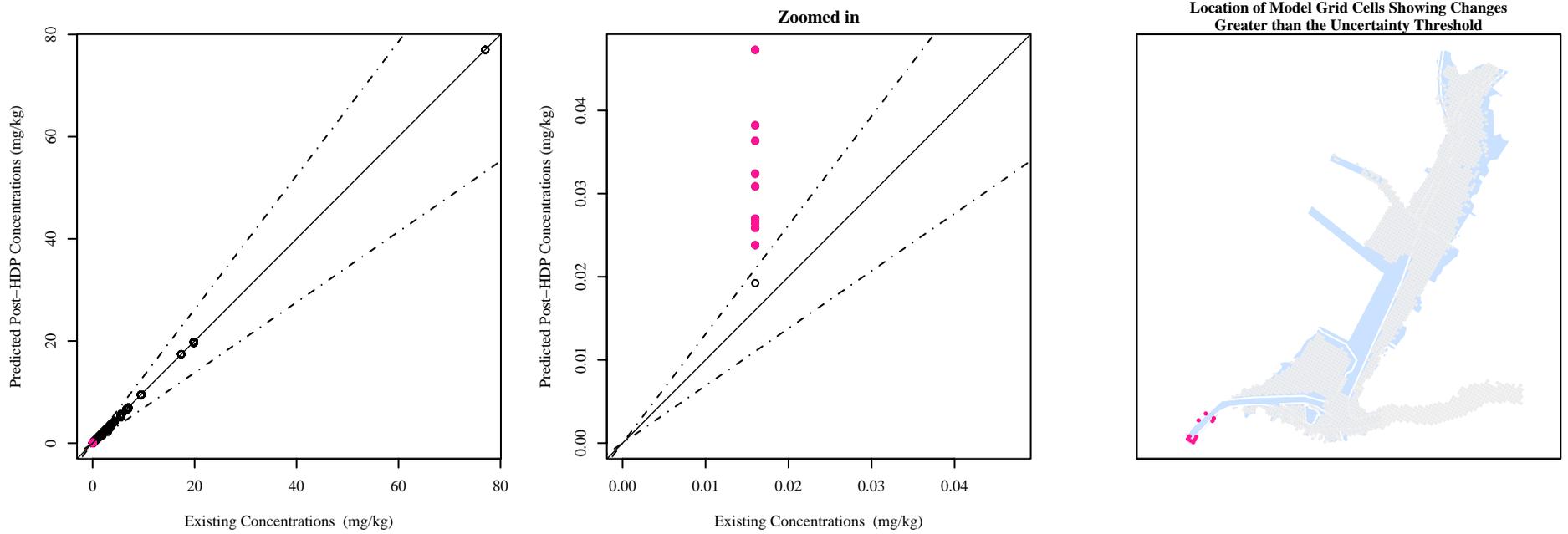
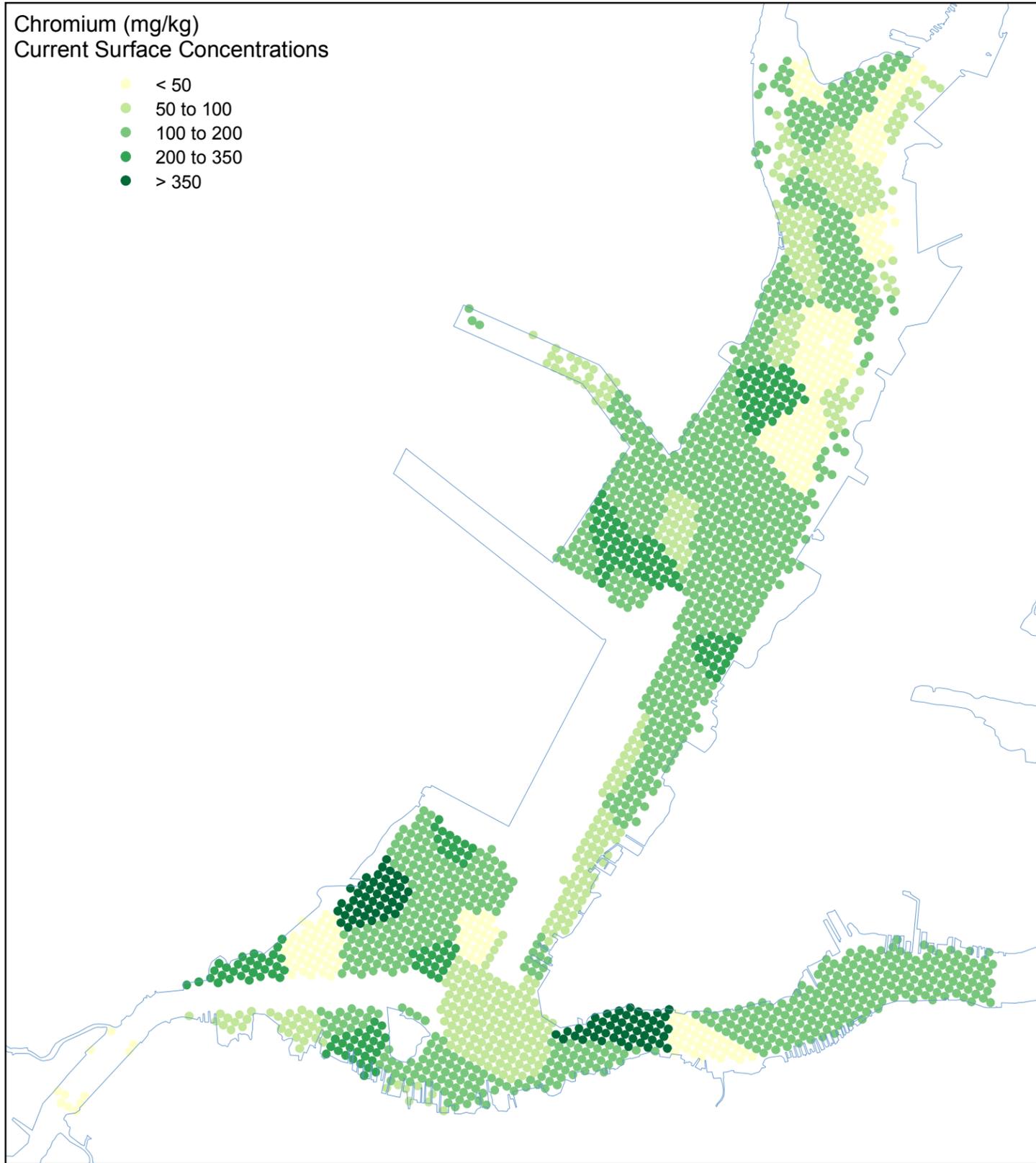


Figure 4-12c. Mercury : Predicted changes in surface sediment concentrations that are greater than the uncertainty threshold

Predicted changes were greater than the uncertainty threshold in points colored pink. Dashed line represents the boundaries of the uncertainty threshold. See text for more details.

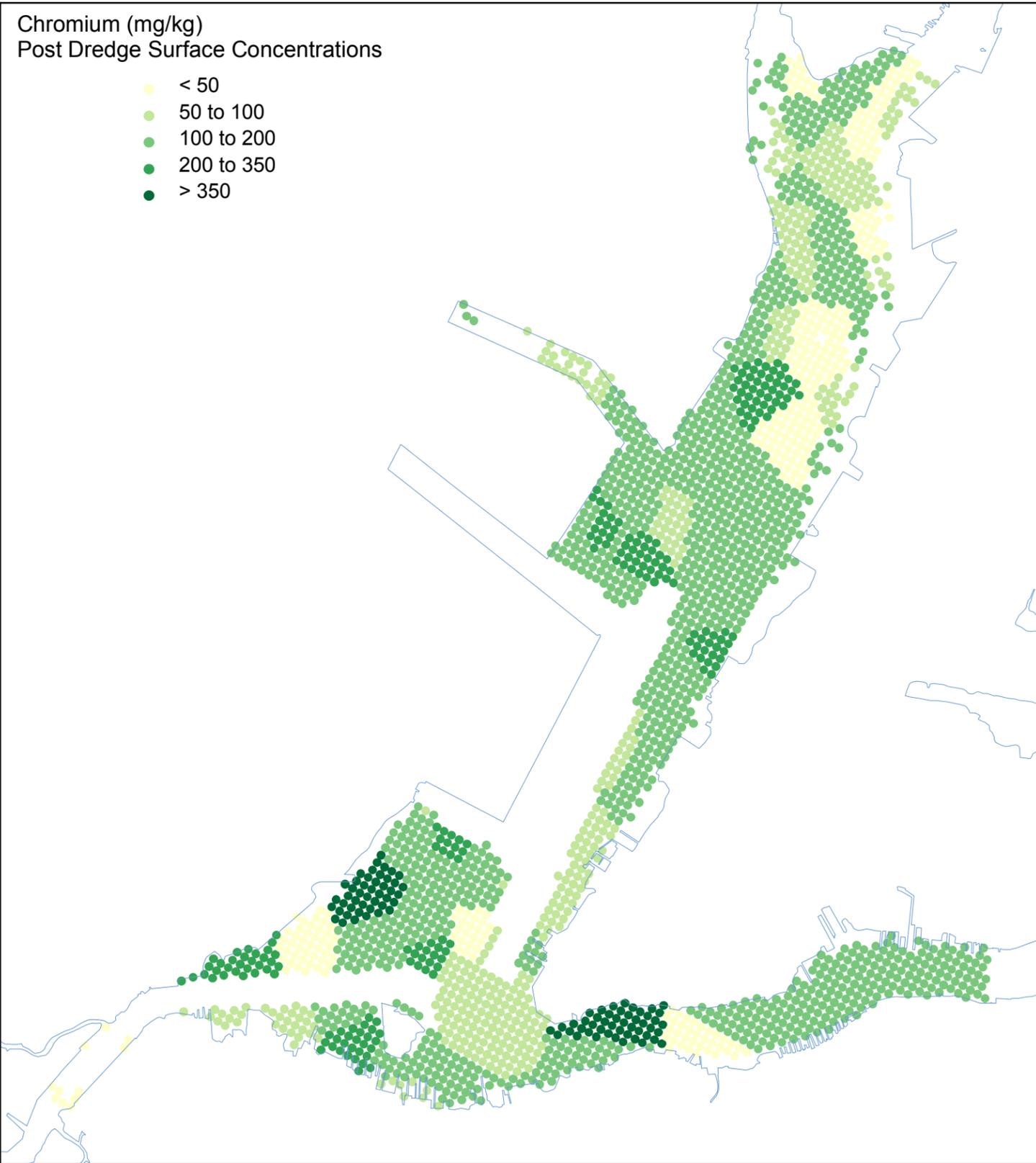
Chromium (mg/kg)
Current Surface Concentrations

- < 50
- 50 to 100
- 100 to 200
- 200 to 350
- > 350



Chromium (mg/kg)
Post Dredge Surface Concentrations

- < 50
- 50 to 100
- 100 to 200
- 200 to 350
- > 350



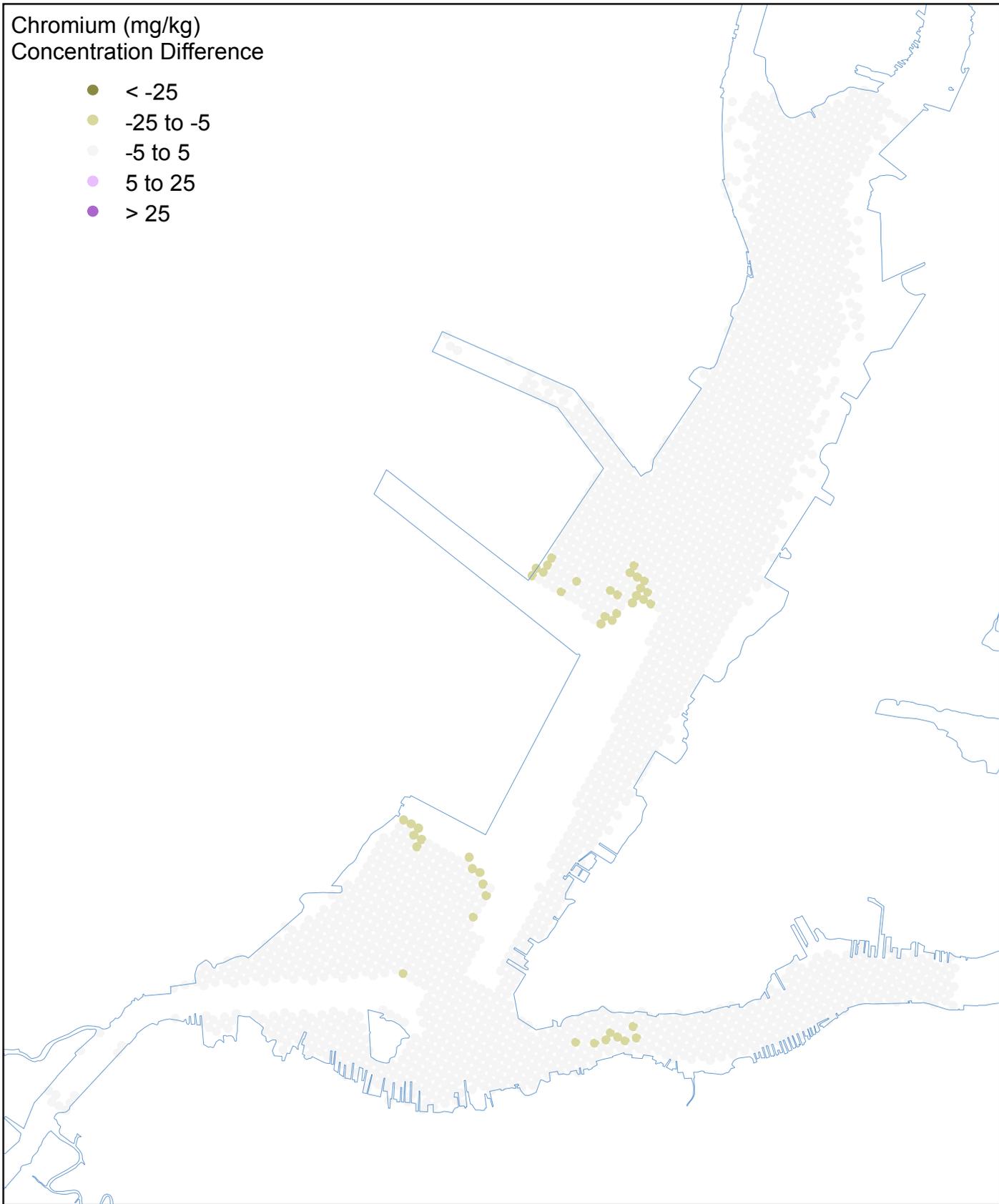
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Figure 4-13a

Chromium: comparison of existing surface sediment concentrations
with post HDP concentrations predicted by the model

Chromium (mg/kg)
Concentration Difference

- < -25
- -25 to -5
- -5 to 5
- 5 to 25
- > 25



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Figure 4-13b
Chromium: change in surface sediment
concentrations due to dredging
as predicted by the model

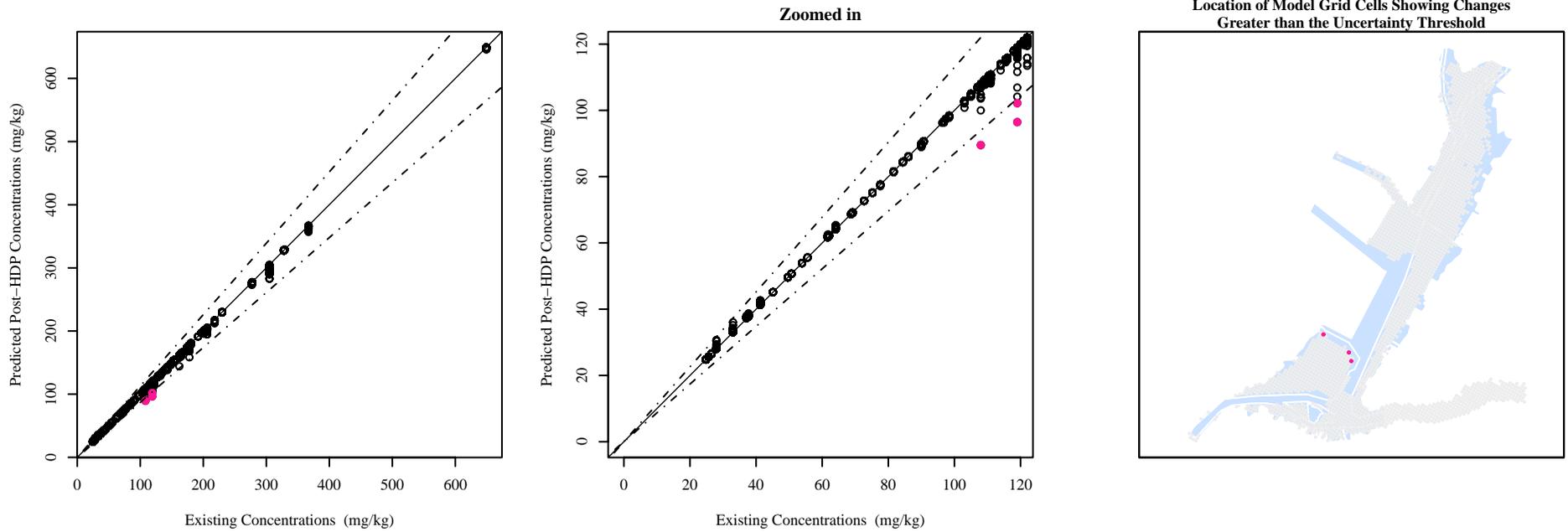
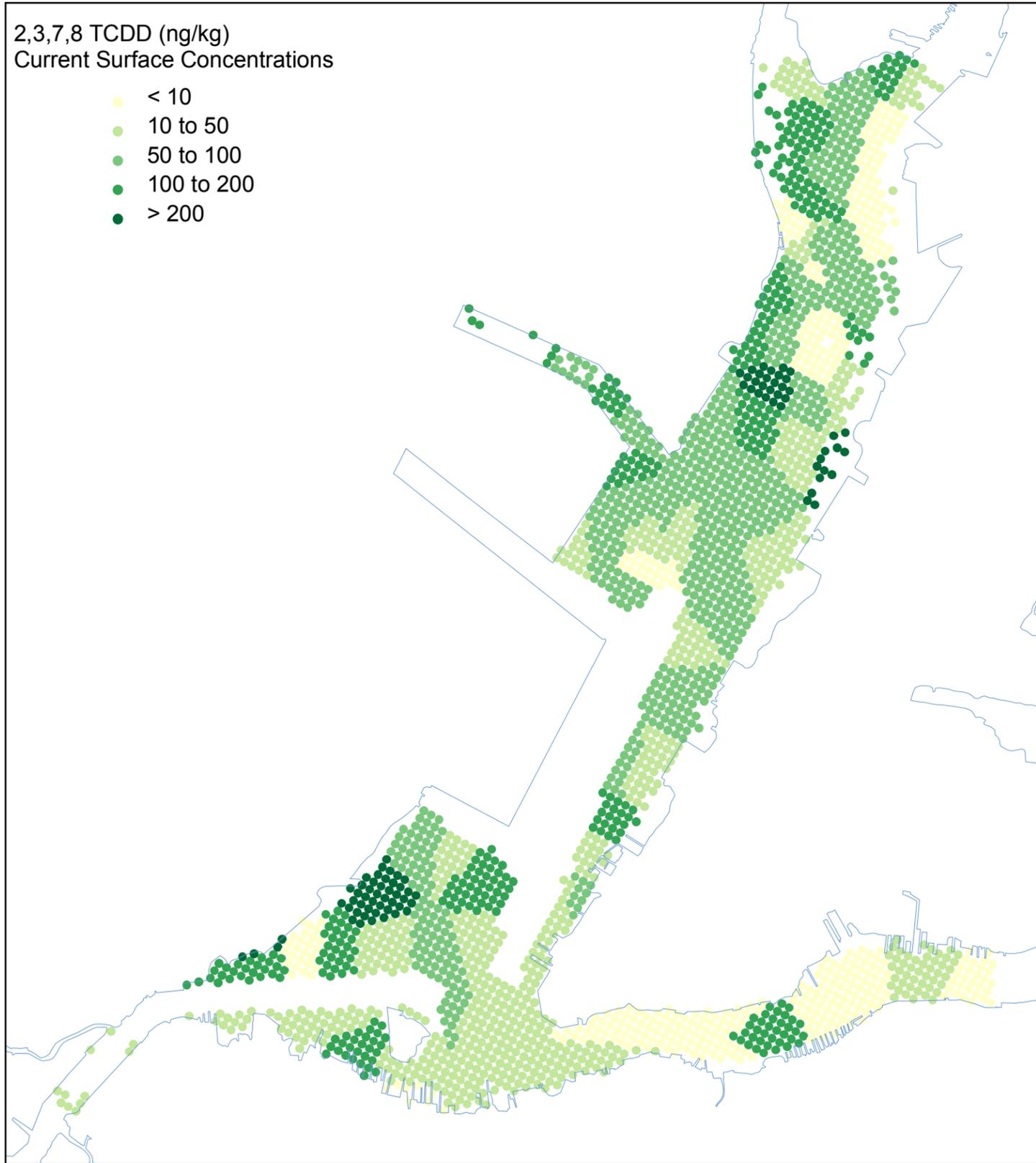


Figure 4-13c. Chromium : Predicted changes in surface sediment concentrations that are greater than the uncertainty threshold

Predicted changes were greater than the uncertainty threshold in points colored pink. Dashed line represents the boundaries of the uncertainty threshold. See text for more details.

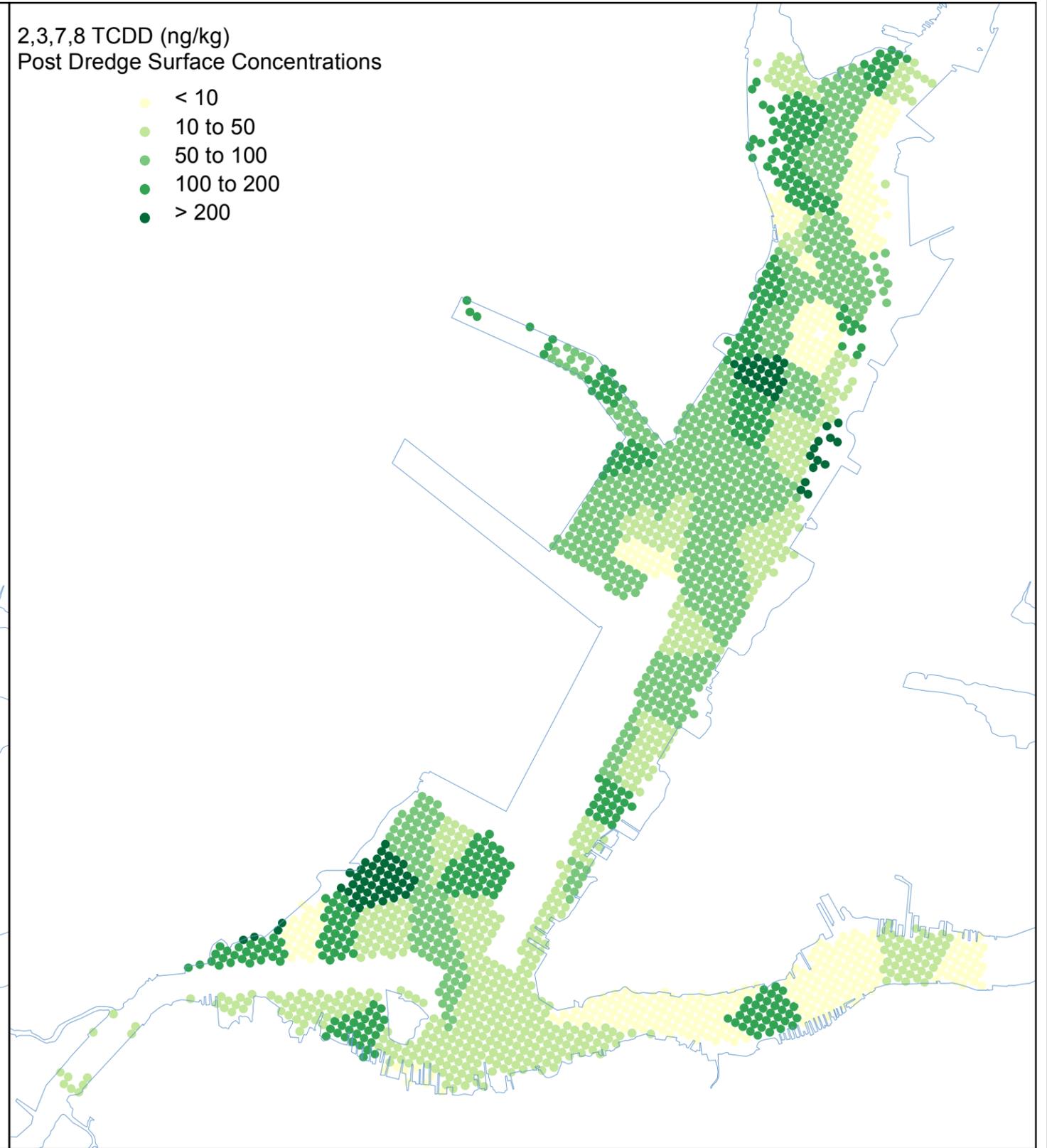
2,3,7,8 TCDD (ng/kg)
Current Surface Concentrations

- < 10
- 10 to 50
- 50 to 100
- 100 to 200
- > 200



2,3,7,8 TCDD (ng/kg)
Post Dredge Surface Concentrations

- < 10
- 10 to 50
- 50 to 100
- 100 to 200
- > 200



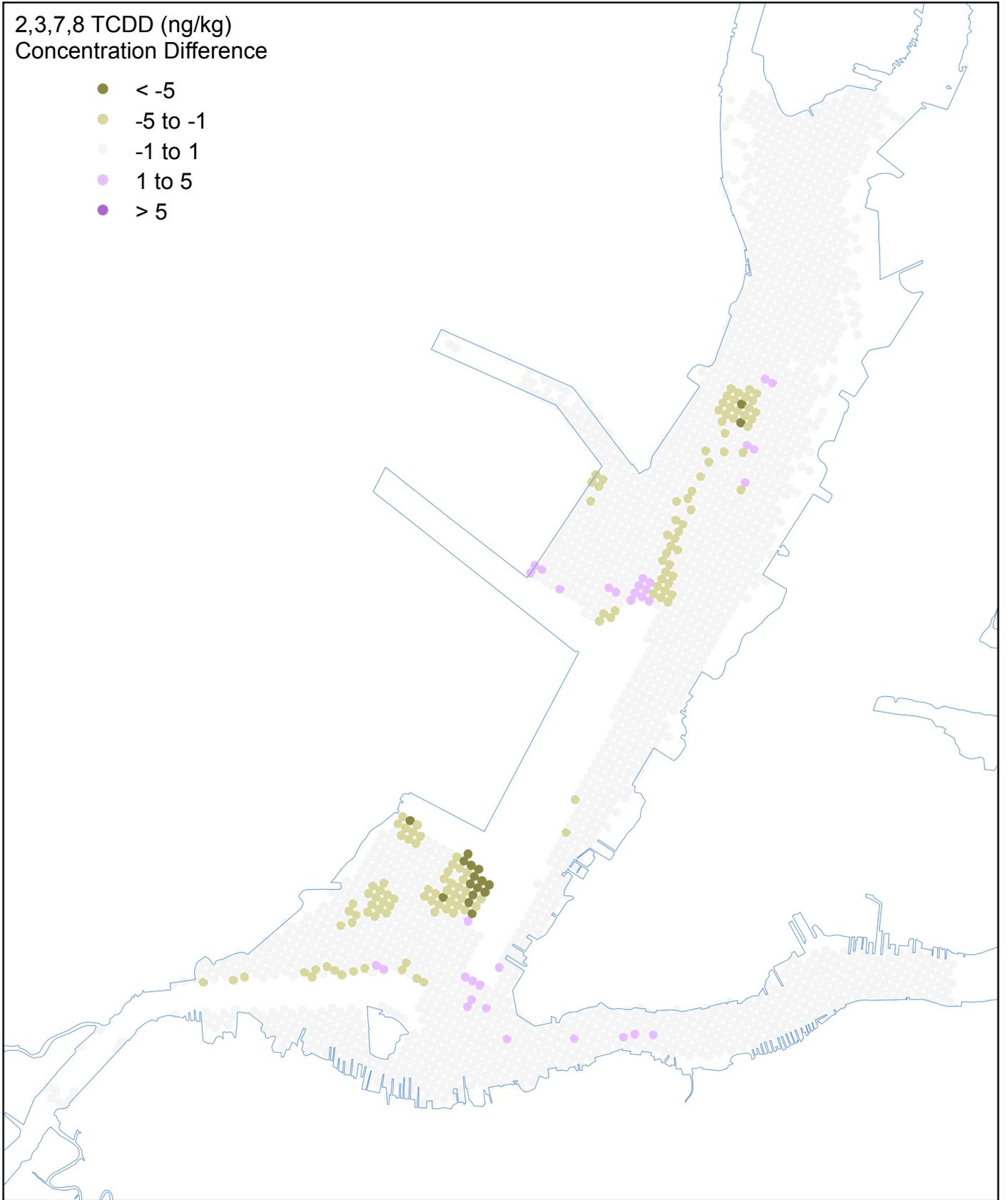
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Figure 4-14a

2,3,7,8 TCDD: comparison of existing surface sediment concentrations with post dredging concentrations predicted by the model, AEC analysis

2,3,7,8 TCDD (ng/kg)
Concentration Difference

- < -5
- -5 to -1
- -1 to 1
- 1 to 5
- > 5



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Figure 4-14b
2,3,7,8 TCDD: change in surface sediment
concentrations due to dredging as predicted
by the model, AEC analysis

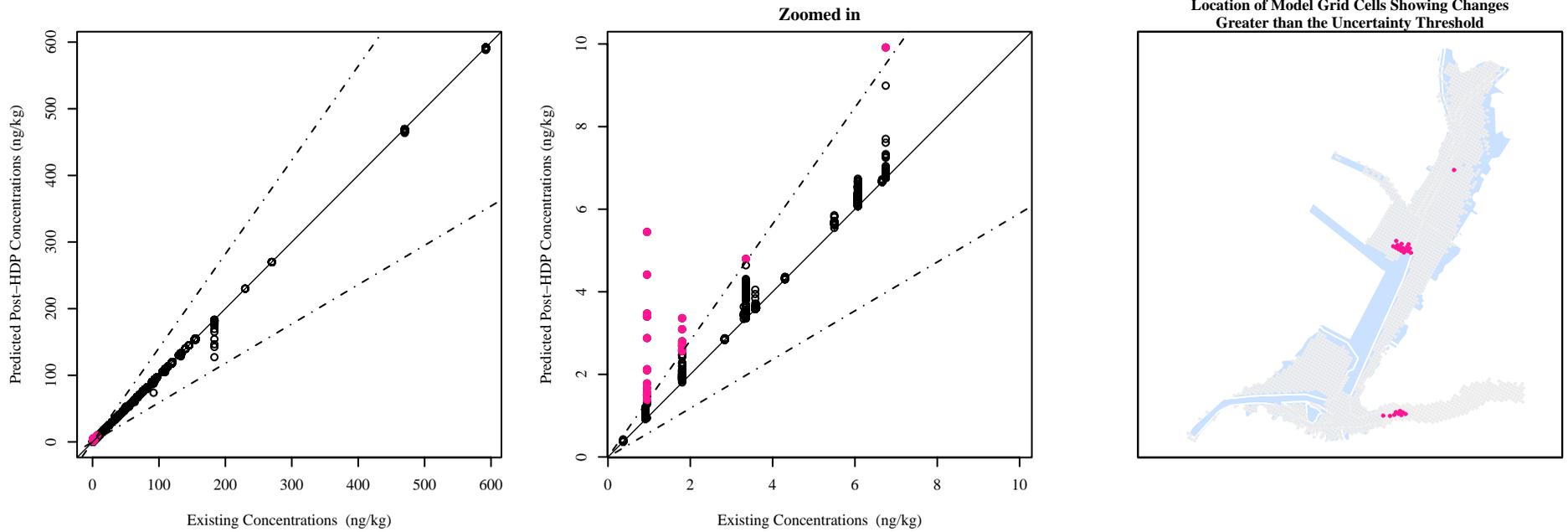
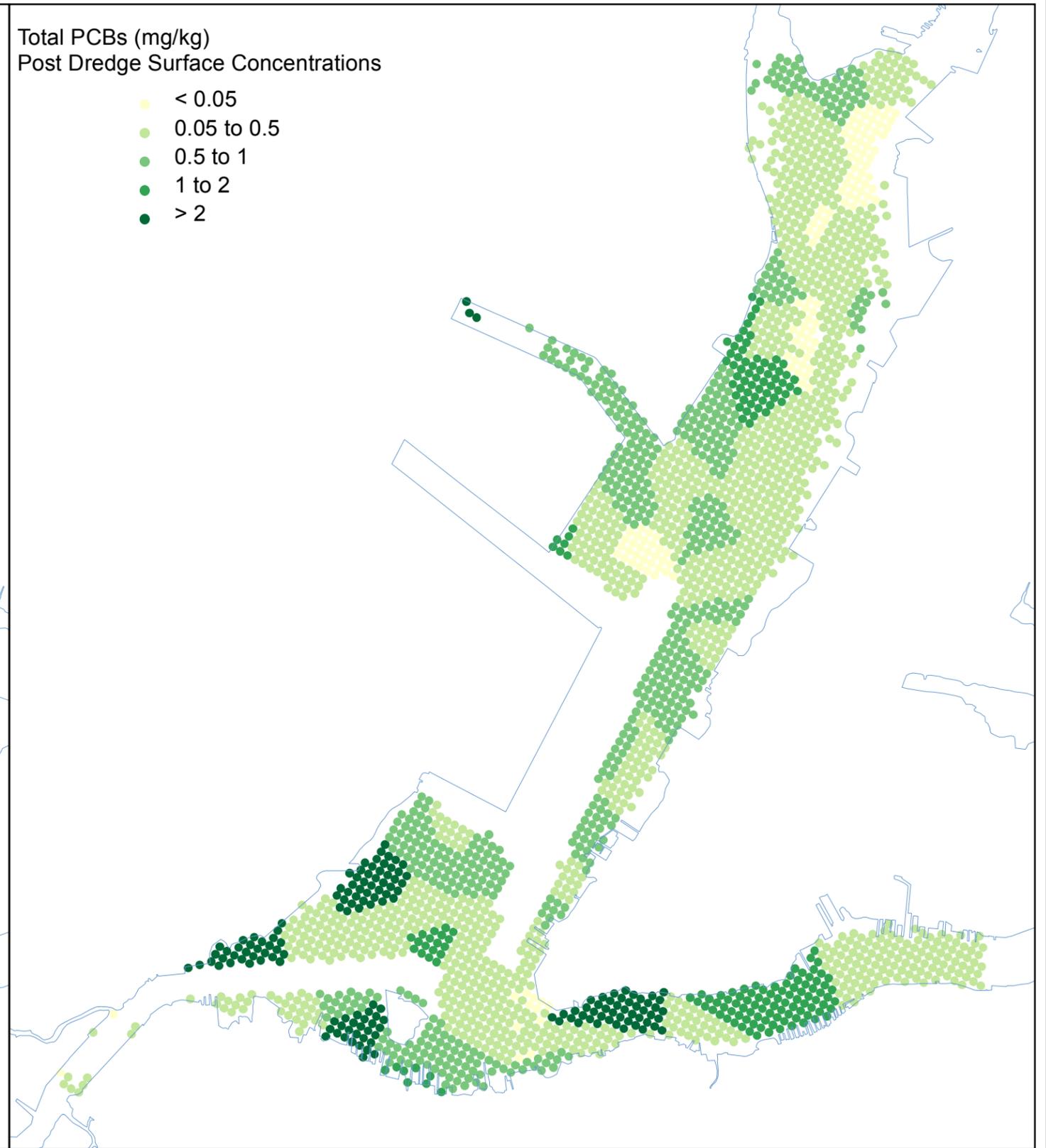
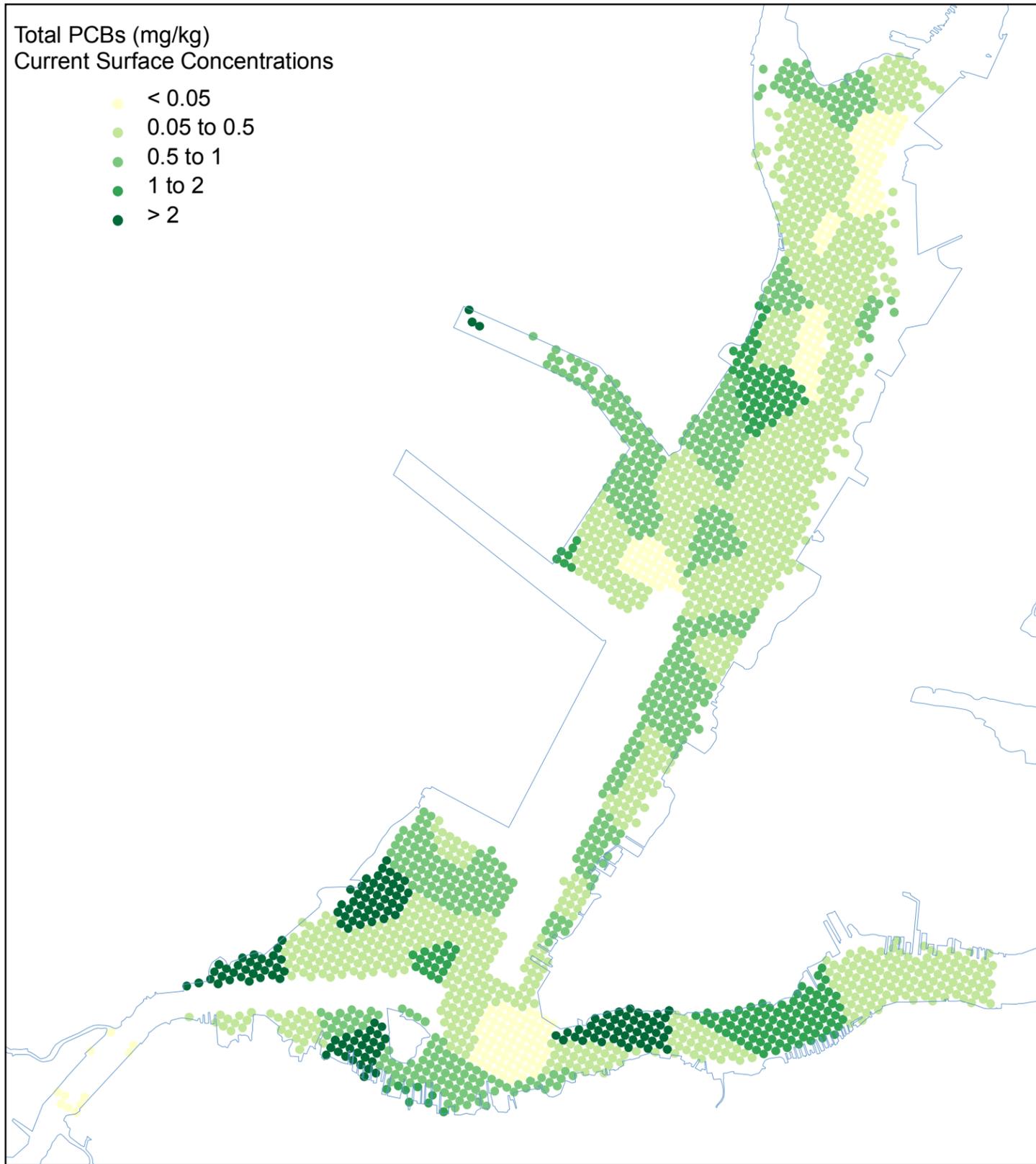


Figure 4-14c. 2,3,7,8 TCDD : Predicted changes in surface sediment concentrations that are greater than the uncertainty threshold, AEC analysis

Predicted changes were greater than the uncertainty threshold in points colored pink. Dashed line represents the boundaries of the uncertainty threshold. See text for more details.



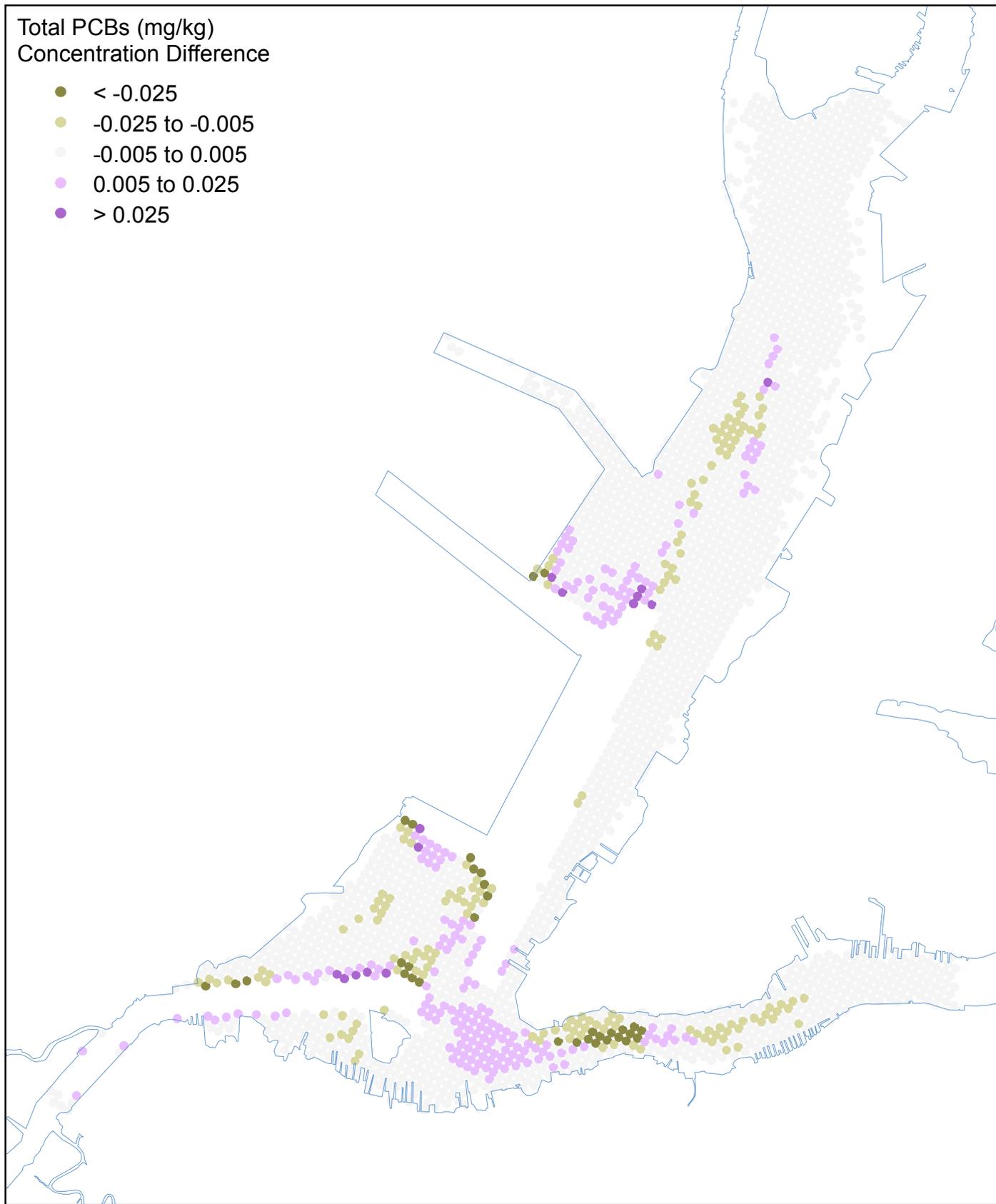
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Figure 4-15a

Total PCBs: comparison of existing surface sediment concentrations with post dredging concentrations predicted by the model, AEC analysis

Total PCBs (mg/kg)
Concentration Difference

- < -0.025
- -0.025 to -0.005
- -0.005 to 0.005
- 0.005 to 0.025
- > 0.025



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Figure 4-15b
Total PCBs: change in surface sediment
concentrations due to dredging as predicted
by the model, AEC analysis

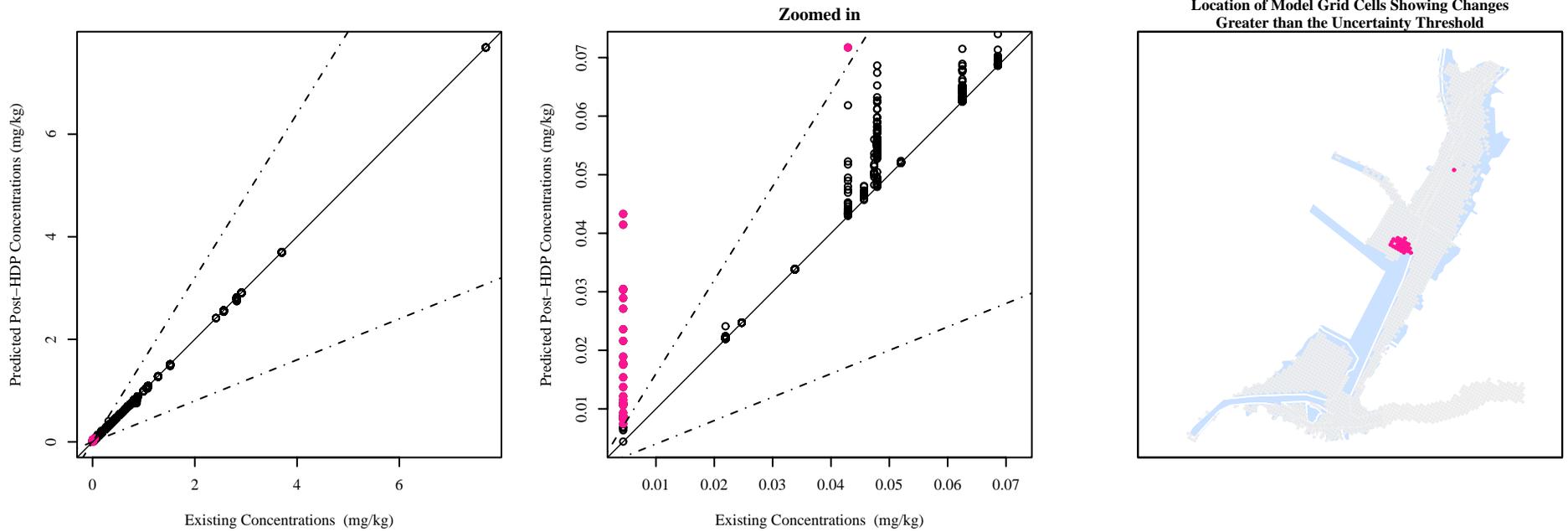
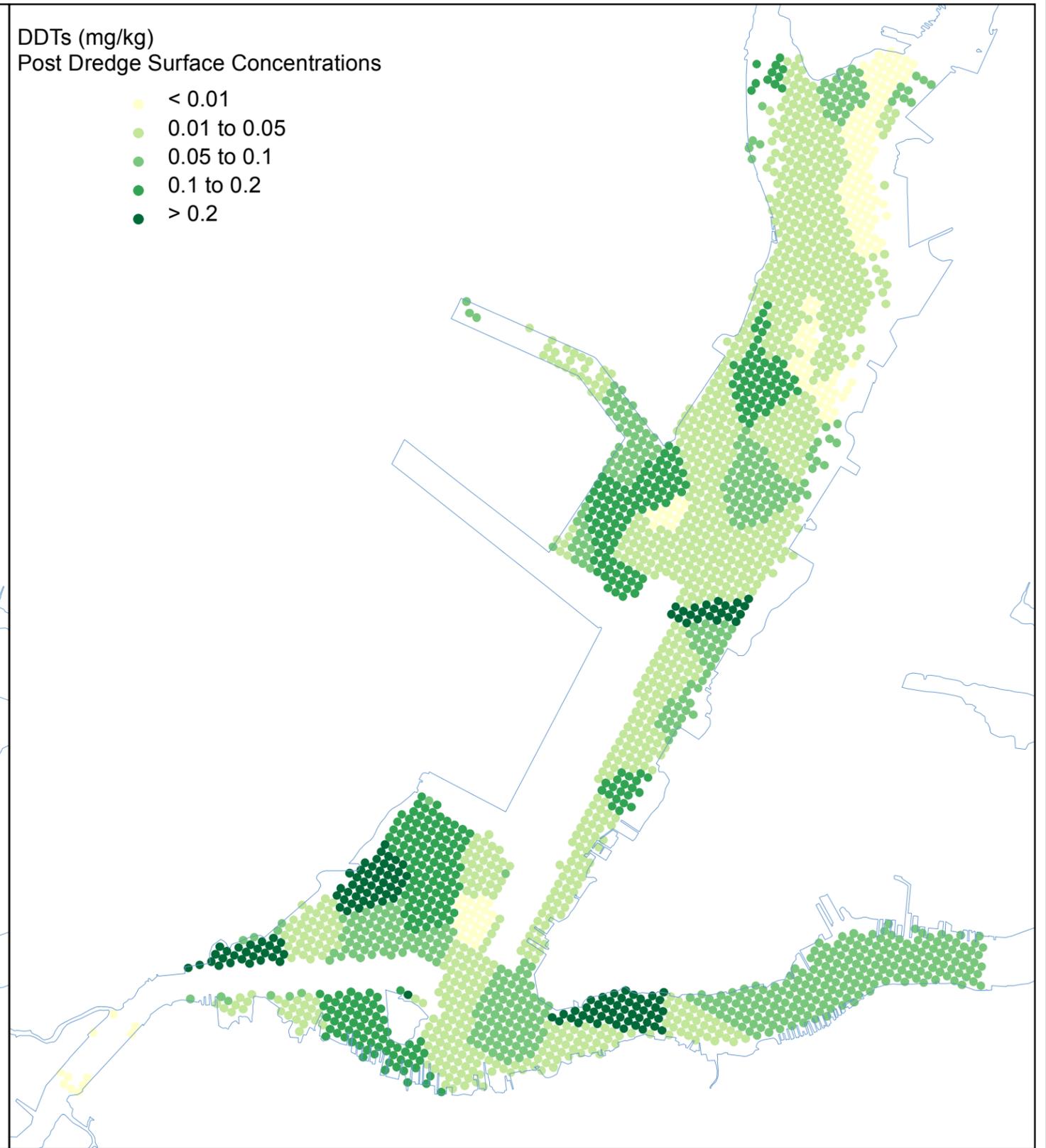
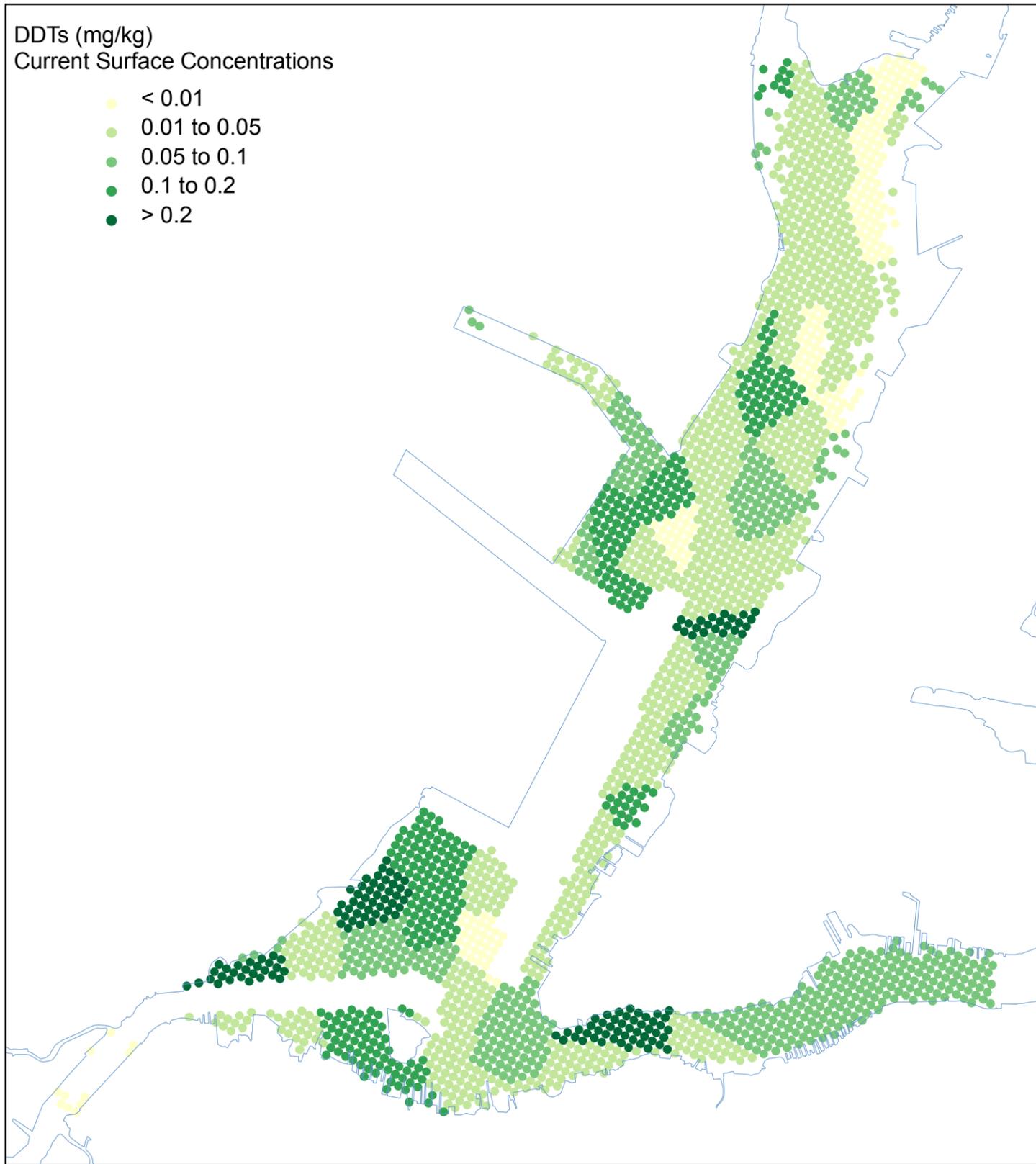


Figure 4-15c. Total PCBs : Predicted changes in surface sediment concentrations that are greater than the uncertainty threshold, AEC analysis

Predicted changes were greater than the uncertainty threshold in points colored pink. Dashed line represents the boundaries of the uncertainty threshold. See text for more details.



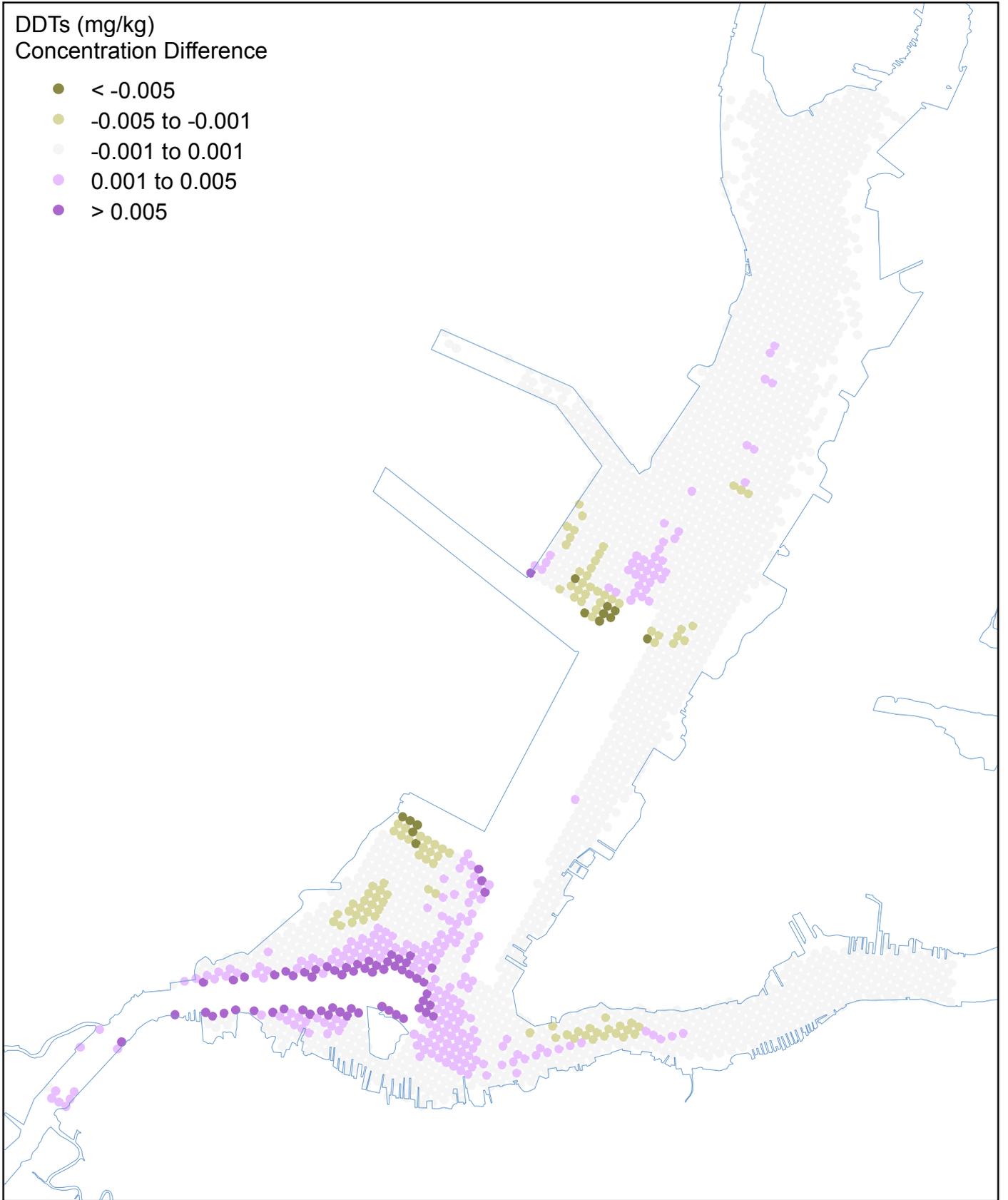
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Figure 4-16a

DDTs: comparison of existing surface sediment concentrations with post dredging concentrations predicted by the model, AEC analysis

DDTs (mg/kg)
Concentration Difference

- < -0.005
- -0.005 to -0.001
- -0.001 to 0.001
- 0.001 to 0.005
- > 0.005



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Figure 4-16b
DDTs: change in surface sediment
concentrations due to dredging as predicted
by the model, AEC analysis

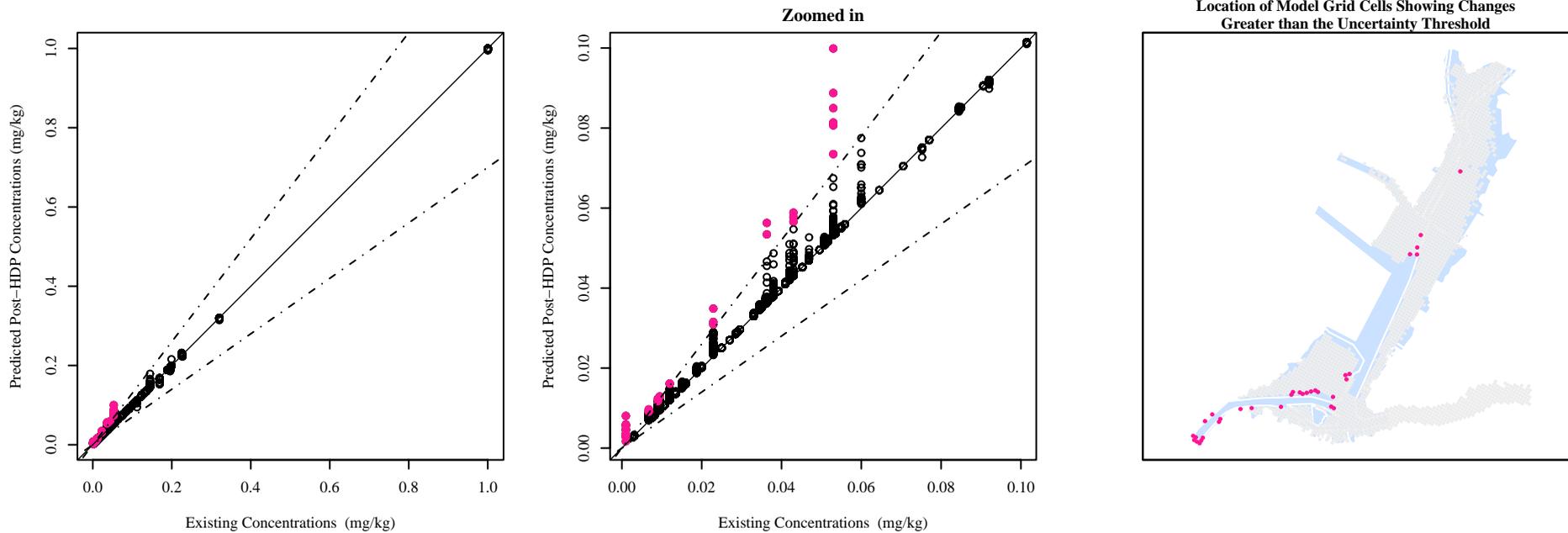
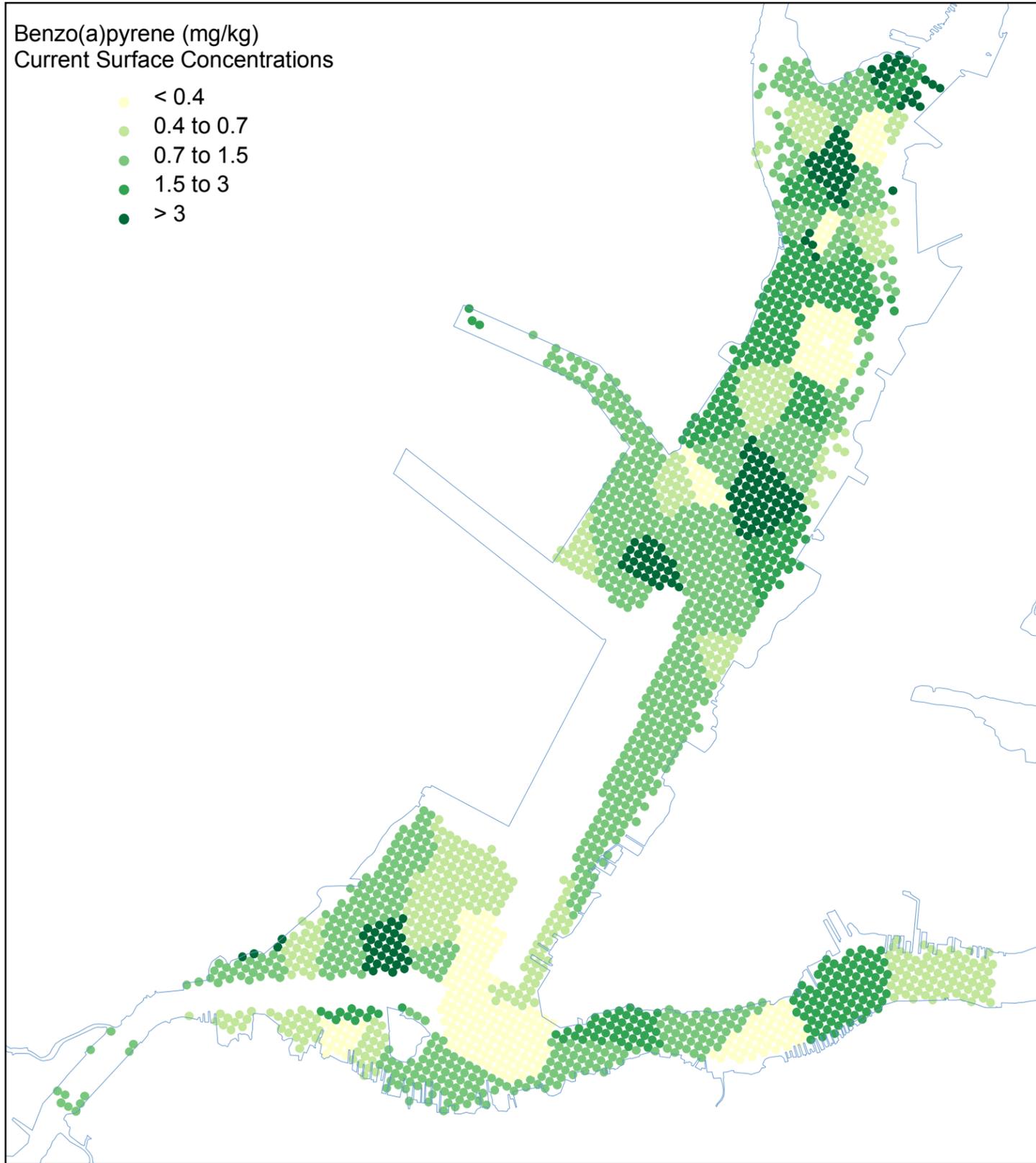


Figure 4-16c. DDT : Predicted changes in surface sediment concentrations that are greater than the uncertainty threshold, AEC analysis

Predicted changes were greater than the uncertainty threshold in points colored pink. Dashed line represents the boundaries of the uncertainty threshold. See text for more details.

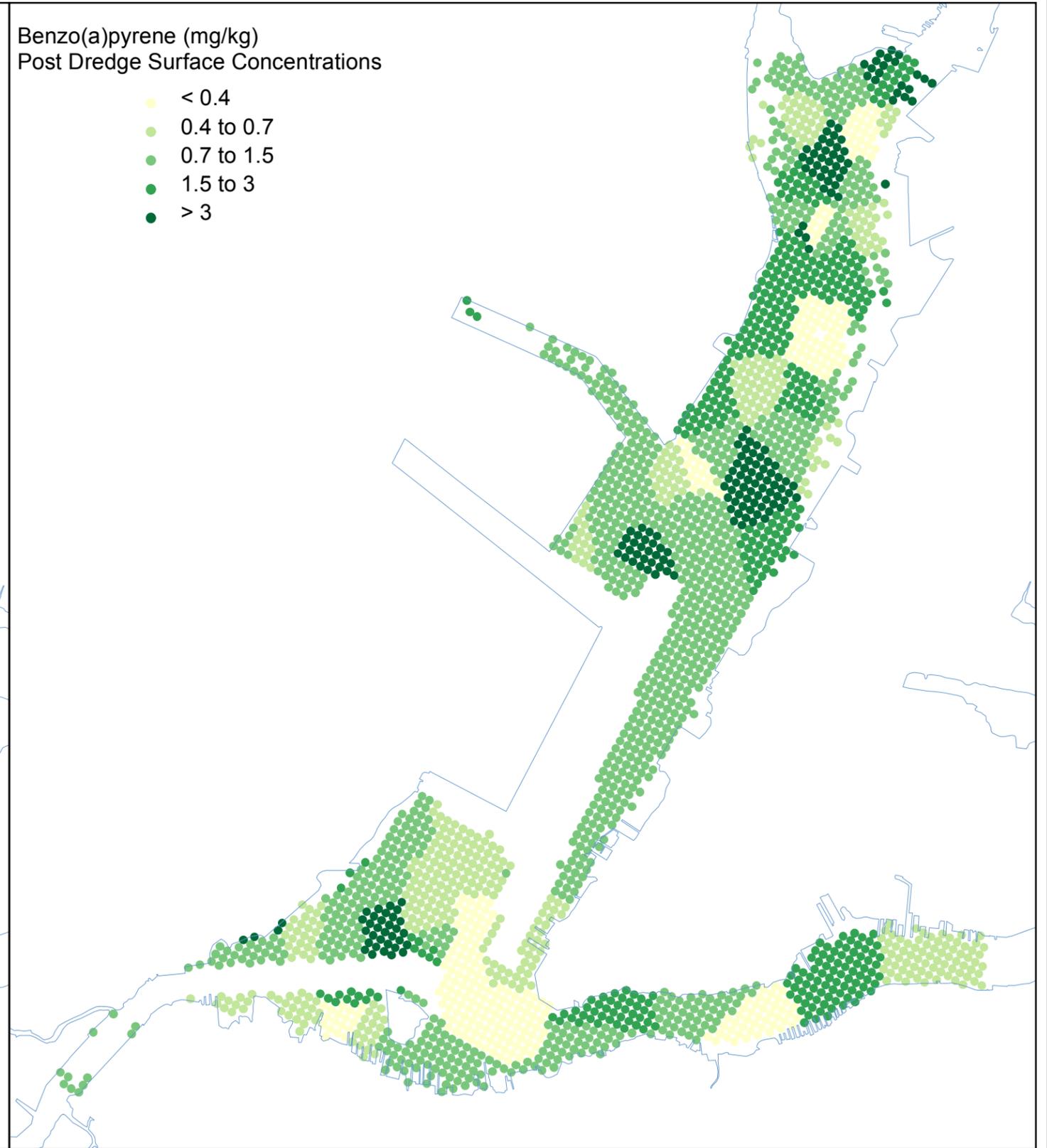
Benzo(a)pyrene (mg/kg)
Current Surface Concentrations

- < 0.4
- 0.4 to 0.7
- 0.7 to 1.5
- 1.5 to 3
- > 3



Benzo(a)pyrene (mg/kg)
Post Dredge Surface Concentrations

- < 0.4
- 0.4 to 0.7
- 0.7 to 1.5
- 1.5 to 3
- > 3



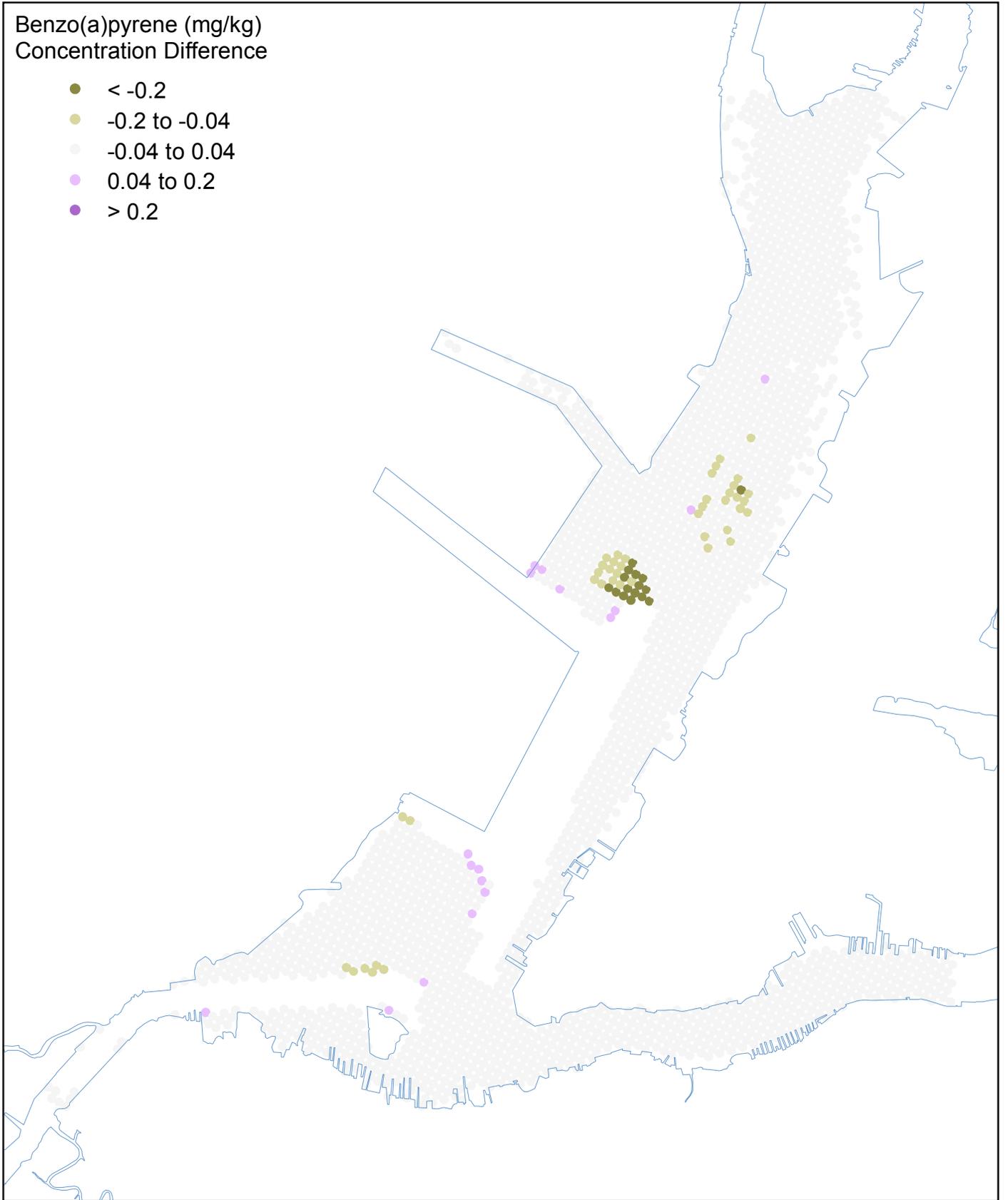
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Figure 4-17a

Benzo(a)pyrene: comparison of existing surface sediment concentrations with post dredging concentrations predicted by the model, AEC analysis

Benzo(a)pyrene (mg/kg)
Concentration Difference

- < -0.2
- -0.2 to -0.04
- -0.04 to 0.04
- 0.04 to 0.2
- > 0.2



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Figure 4-17b
Benzo(a)pyrene: change in surface sediment
concentrations due to dredging as predicted
by the model, AEC analysis

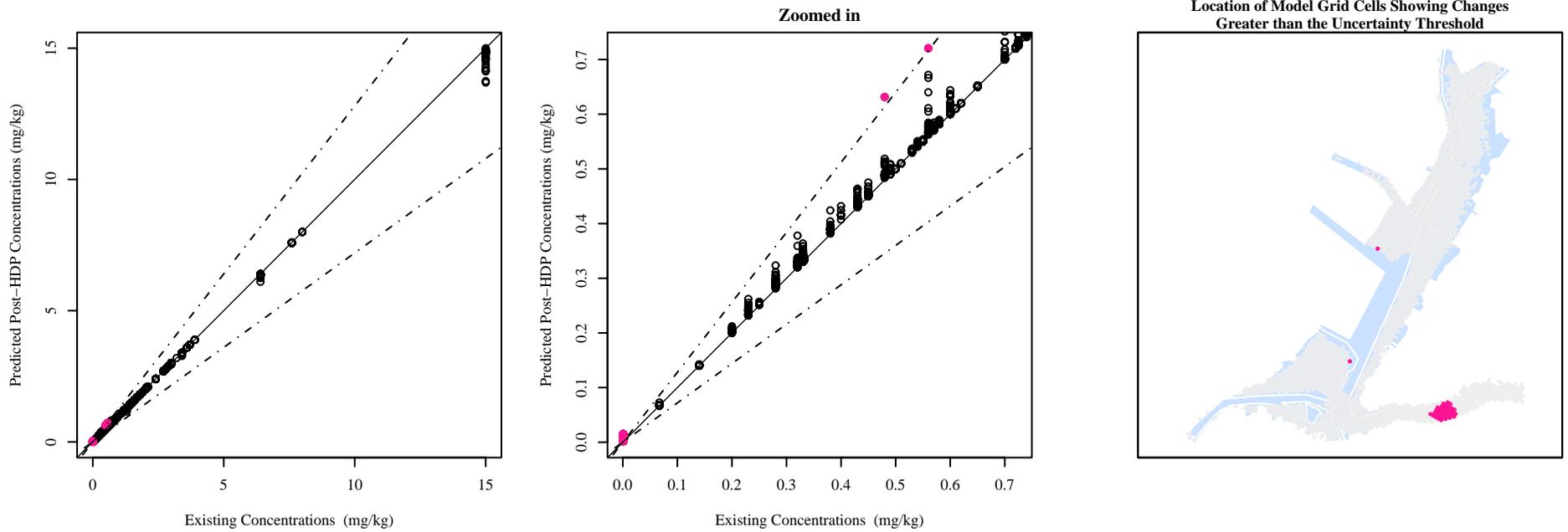
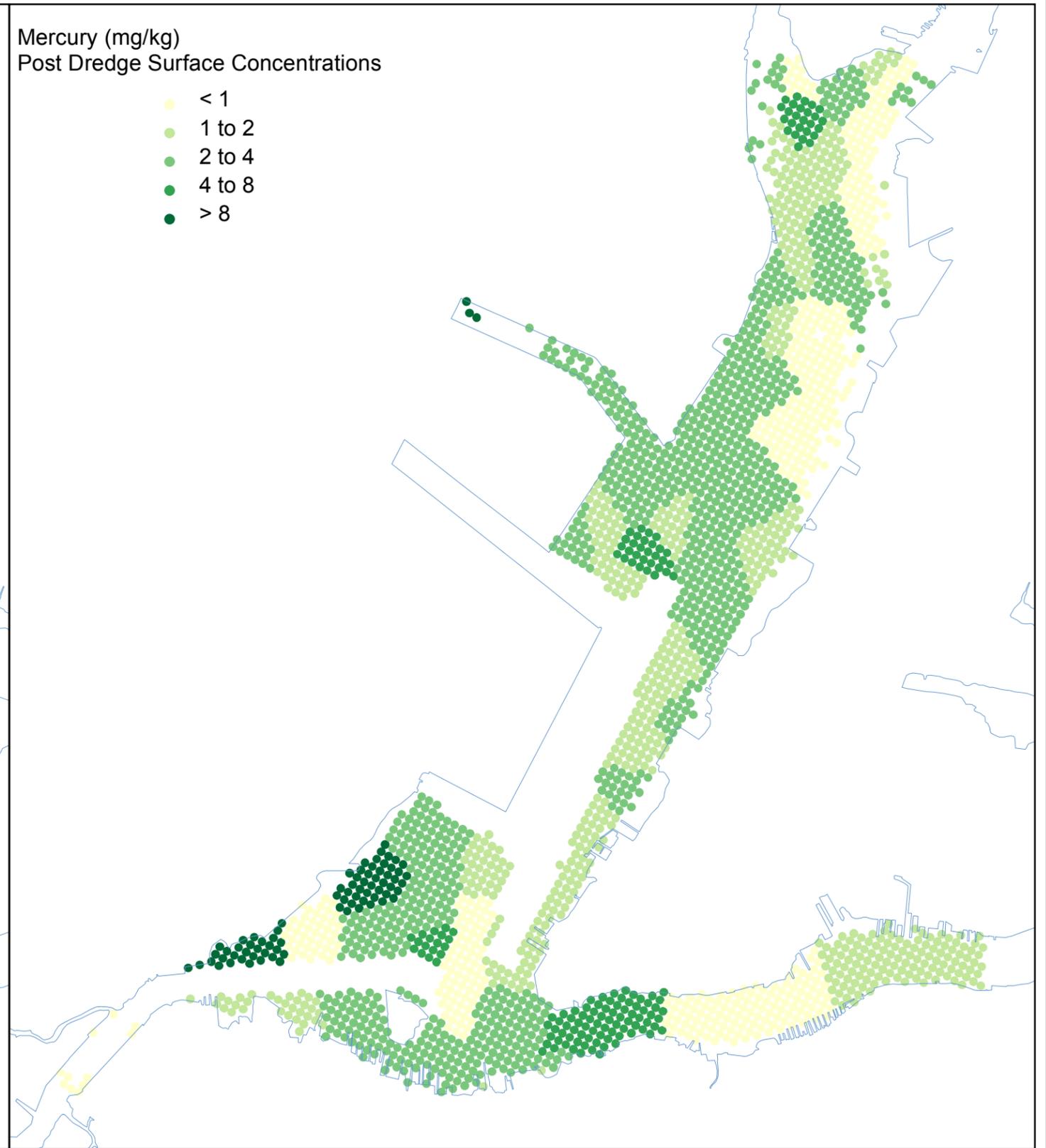
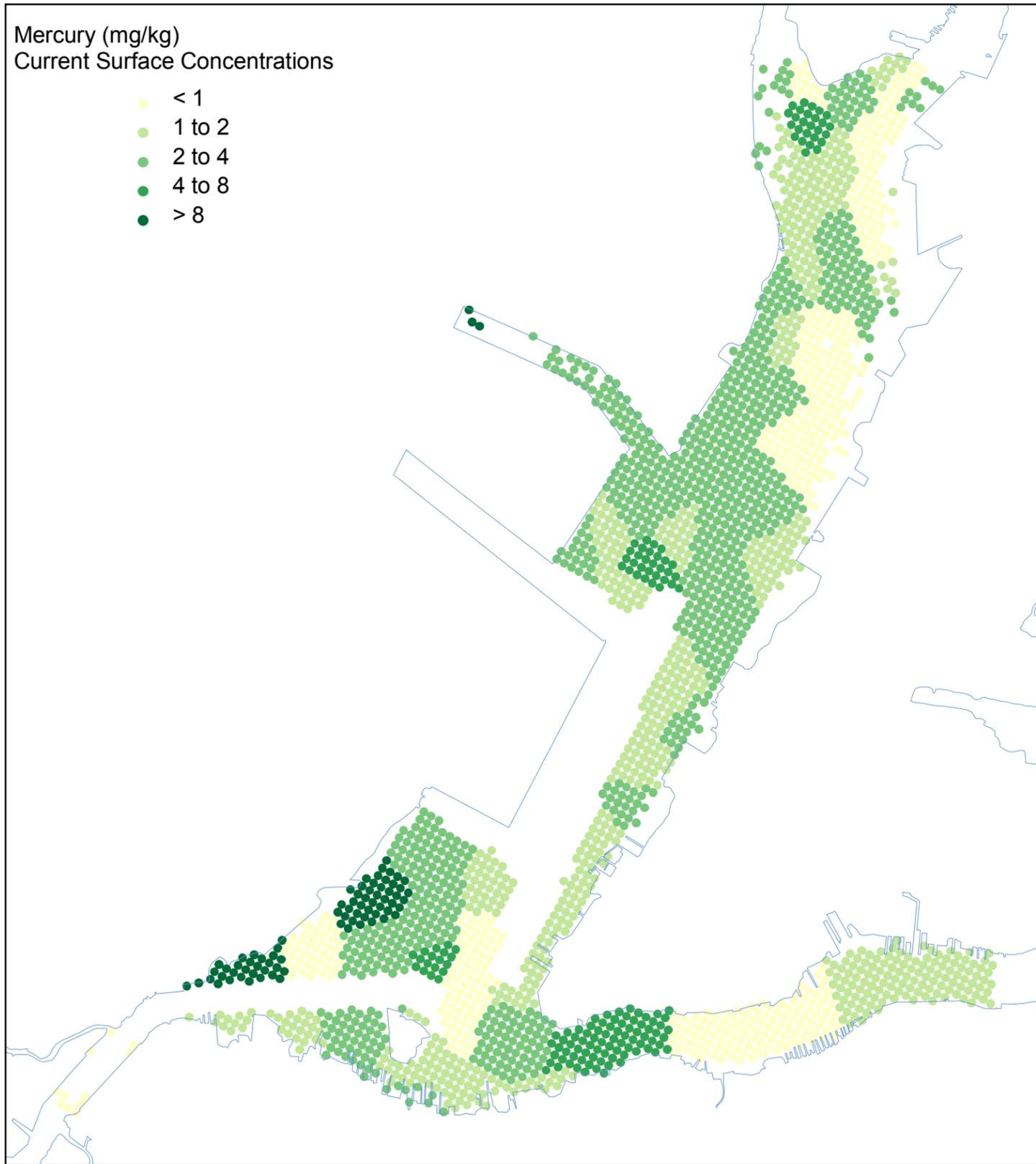


Figure 4-17c. Benzo(a)pyrene : Predicted changes in surface sediment concentrations that are greater than the uncertainty threshold, AEC analysis

Predicted changes were greater than the uncertainty threshold in points colored pink. Dashed line represents the boundaries of the uncertainty threshold. See text for more details.



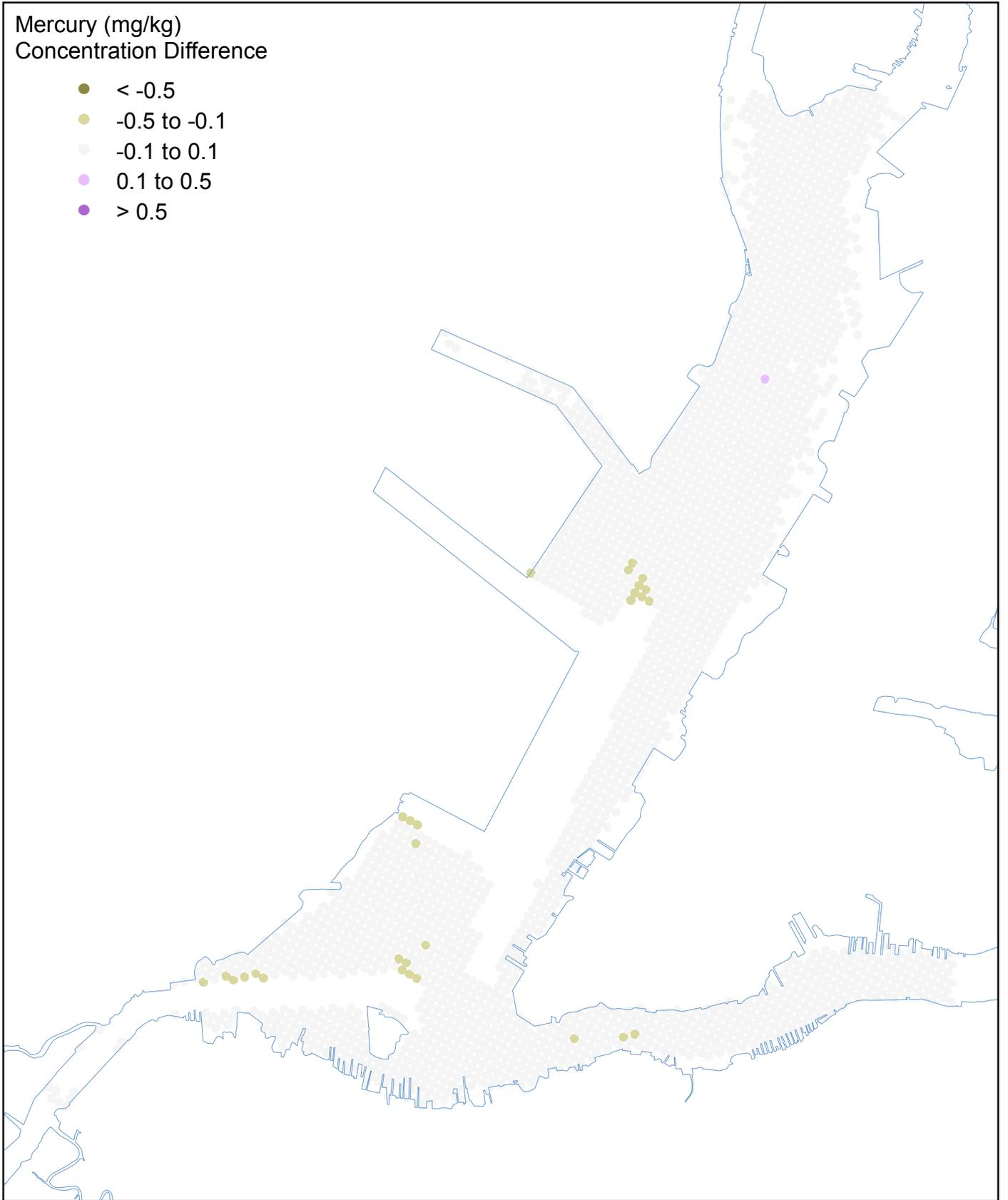
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Figure 4-18a

Mercury: comparison of existing surface sediment concentrations with post dredging concentrations predicted by the model, AEC analysis

Mercury (mg/kg)
Concentration Difference

- < -0.5
- -0.5 to -0.1
- -0.1 to 0.1
- 0.1 to 0.5
- > 0.5



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Figure 4-18b
Mercury: change in surface sediment
concentrations due to dredging as predicted
by the model, AEC analysis

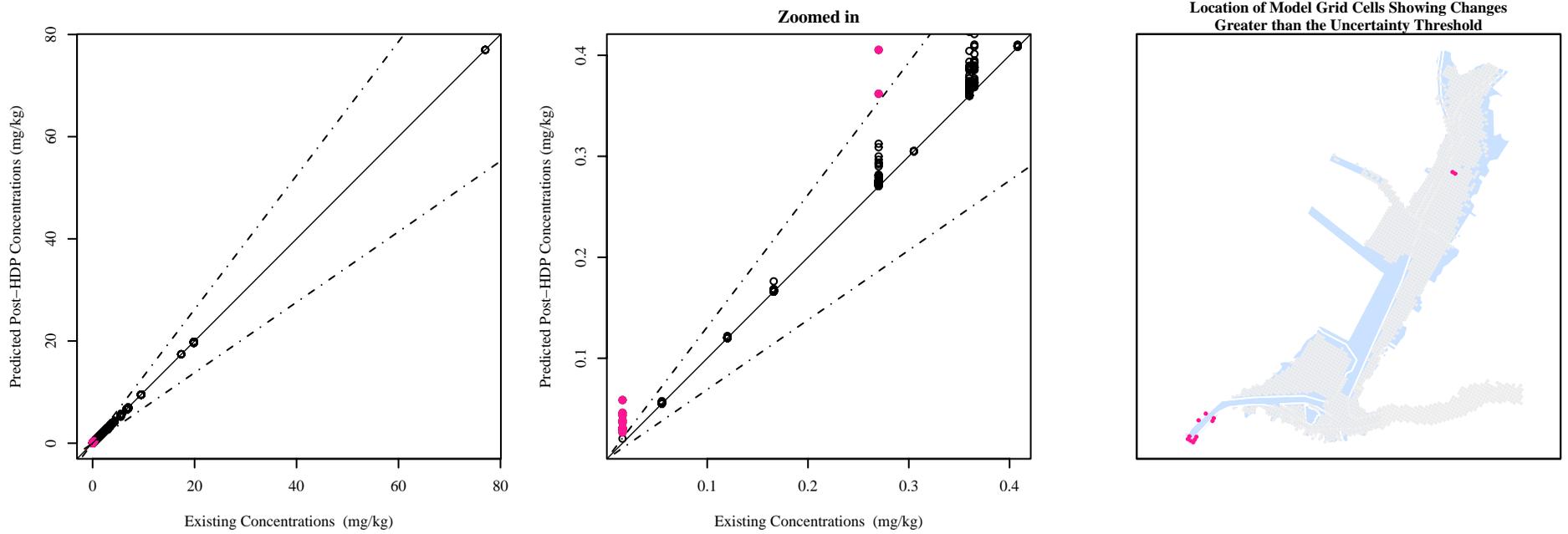
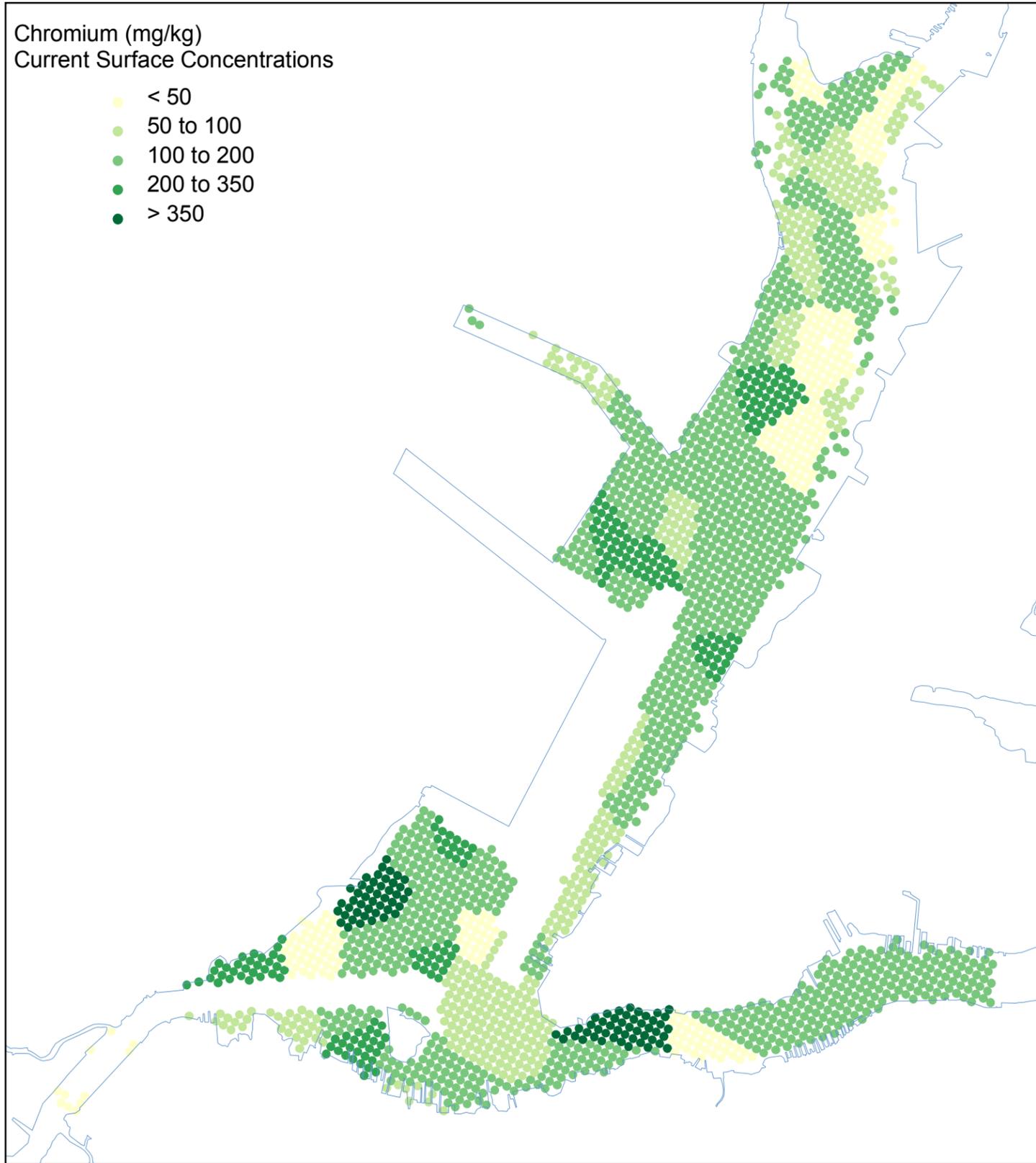


Figure 4-18c. Mercury : Predicted changes in surface sediment concentrations that are greater than the uncertainty threshold, AEC analysis

Predicted changes were greater than the uncertainty threshold in points colored pink. Dashed line represents the boundaries of the uncertainty threshold. See text for more details.

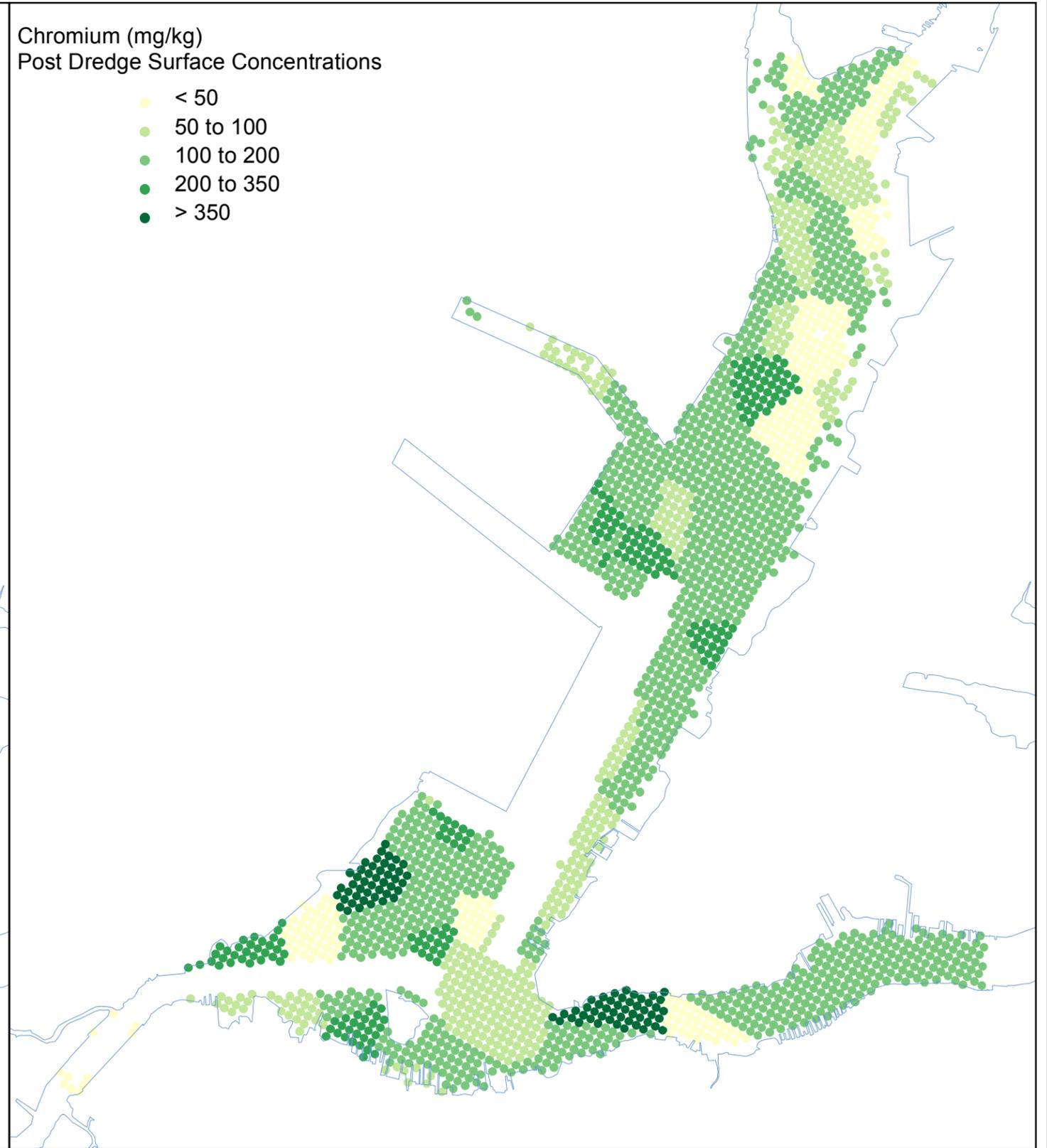
Chromium (mg/kg)
Current Surface Concentrations

- < 50
- 50 to 100
- 100 to 200
- 200 to 350
- > 350



Chromium (mg/kg)
Post Dredge Surface Concentrations

- < 50
- 50 to 100
- 100 to 200
- 200 to 350
- > 350



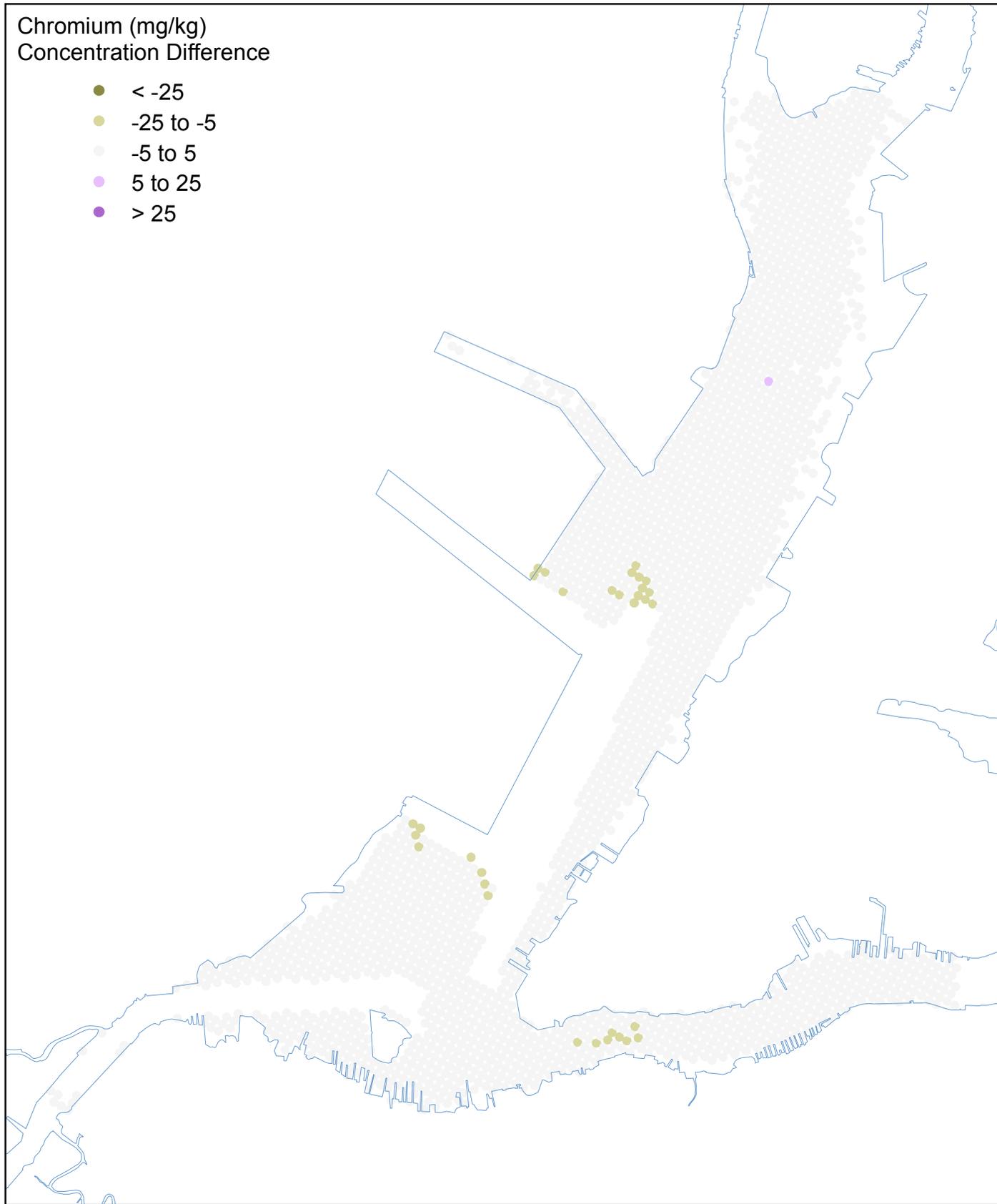
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Figure 4-19a

Chromium: comparison of existing surface sediment concentrations with post dredging concentrations predicted by the model, AEC analysis

Chromium (mg/kg)
Concentration Difference

- < -25
- -25 to -5
- -5 to 5
- 5 to 25
- > 25



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Figure 4-19b
Chromium: change in surface sediment
concentrations due to dredging as predicted
by the model, AEC analysis

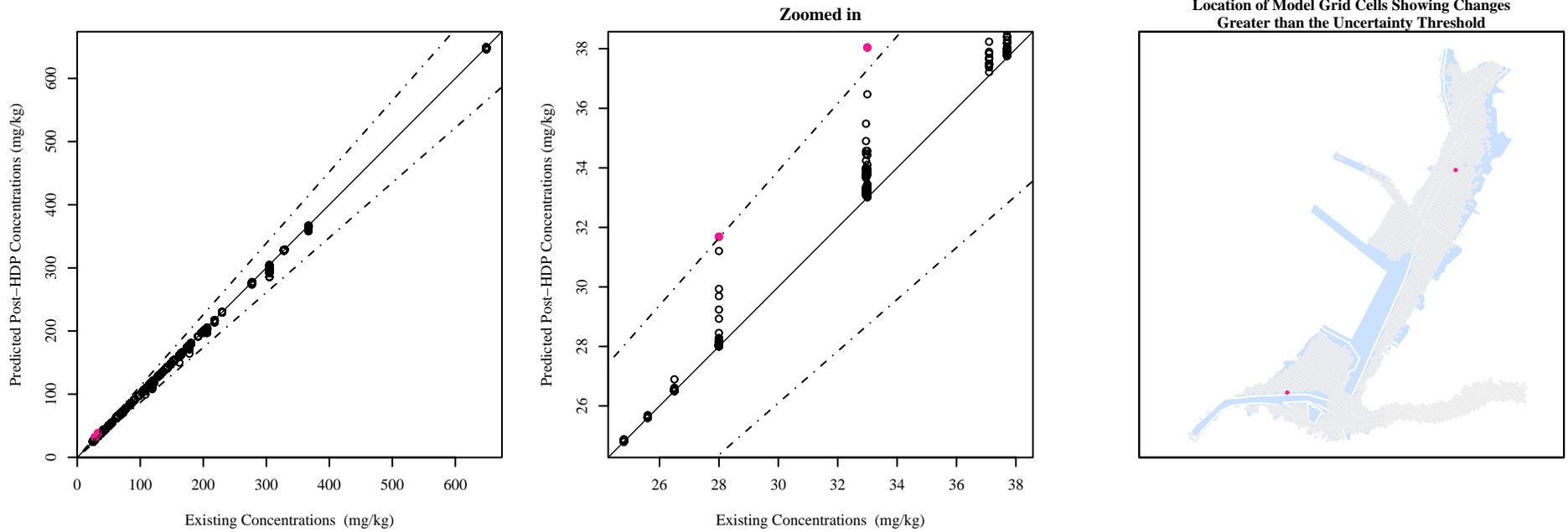


Figure 4-19c. Chromium : Predicted changes in surface sediment concentrations that are greater than the uncertainty threshold, AEC analysis

Predicted changes were greater than the uncertainty threshold in points colored pink. Dashed line represents the boundaries of the uncertainty threshold. See text for more details.

Phase II Proposed Sampling Locations

- EPA
- USACE recommended



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**Figure 4-20
Phase II Proposed
Sampling Locations**