Table1. Summary of O&M activities and permit actions in the Newark Bay Study Area.

Permittee/ Project Name	Permit Number	Work Authorized/ Waterway	Permit Expiration/ Extension Date	Percentage of Work Completed	Estimated Date Work to be Performed	Estimated Volume to be Removed
Caschem Division of Rutherford	2004-00720	Structures/ dolphins (Newark Bay)	18-Aug-2006	0%	Not Known – Depends if Funds are Available	
Port Authority of NYNJ	2004-00520	Pier Maintenance (Newark Bay)	15-Jun-2006	100%	N/A	
City of Elizabeth Municipal Marina	2004-00149	Rehabilitate Wavebreak (Arthur Kill)	27-Apr-2007	100%	N/A	
City of Bayonne	2003-01276	Dredging/Wetland Enhancement (Newark Bay)	15-Jul-2007			
Texaco Downstream Properties, Inc	2003-01034	Pier Rehabilitation/Bank Stabilization (Newark Bay)	11-Apr-2008	40%	Jun-06	
Bayonne Municipal Utilities Authority	2002-01080	Structures (Kill Van Kull)	15-Oct-2005			
K. Hovnanian of Jersey City IV, LLC	2002-01075	Fill Placement as part of Remedial Cleanup (Newark Bay)	15-Oct-2005			
Port Authority of NYNJ	2002-00711-2	Dredging (Newark Bay)	11-Aug-2007* and 11-Aug-2014*			
Port Authority of NYNJ	2002-00711	Dredging (Newark Bay)	16-Oct-2005* and 16-Oct-2012*			
Port Authority of NYNJ	2001-01023	Bayonne Bridge Abutment Rehabilitation/Dredging (Kill Van Kull)	9-Nov-2006	Dredging complete except for 350 Cy for NY-side fender	Nov-05	350 CY
Darling International	1999-13370	Dredging (Newark Bay)	28 June 2010			22,000CY
Amerada Hess Corp.	1999-11040	Dredging (Newark Bay)	31-Aug-2010	0%	Dec-05	
Motiva Enterprises LLC	1999-03620	Dredging (Newark Bay)	1-Nov-2010			
OENJ Cherokee Corp.	1997-02031	Dredging/Structures (Newark Bay)	25-Mar-2007			

Permittee/ Project Name	Permit Number	Work Authorized/ Waterway	Permit Expiration/ Extension Date	Percentage of Work Completed	Estimated Date Work to be Performed	Estimated Volume to be Removed
Port Authority of NYNJ	1997-02031	Wharf reinforcement and fender system maintenance at Port Newark/Elizabeth;(Newark Bay)	25-Mar-2007	Work is performed as needed as part of an ongoing long-term maintenance/improvement project		N/A
Port Authority of NYNJ	1995-04370	Newark Bay Confined Disposal Facility	20-May-2000 extended to 19 May 2007	CDF is close to capacity	No projects are currently scheduled to place dredged material at the CDF	
City of Elizabeth	2005-00868	Rehabilitate Wavebreak and Bulkhead (Arthur Kill)	Pending	N/A	N/A	
Goethals Bridge Modernization	2004-00712	(Arthur Kill)	Pre-application Meeting	N/A	N/A	
NBG Group	2004-00285	Structures/Pier (Kill van Kull)	Pending	N/A	N/A	
O&M		Sample Collection for O&M Dredging Newark in Newark Bay			Jan-16-2006 – Jan 25-2006	
O&M		Dredging Port Newark Pierhead and/or Branch Channels		0%	Mar 16-2005 – Apr-24-2006	60,000 CY
O&M		Dredging Port Newark Pierhead and/or Branch Channels	Pending additional funds	0%	Apr-25 - Jun-14-2006	140,000 CY
O&M		Dredging Port Newark Pierhead and/or Branch Channels	Pending additional funds	0%	Jun-15 – Aug-24-2006	200,000 CY

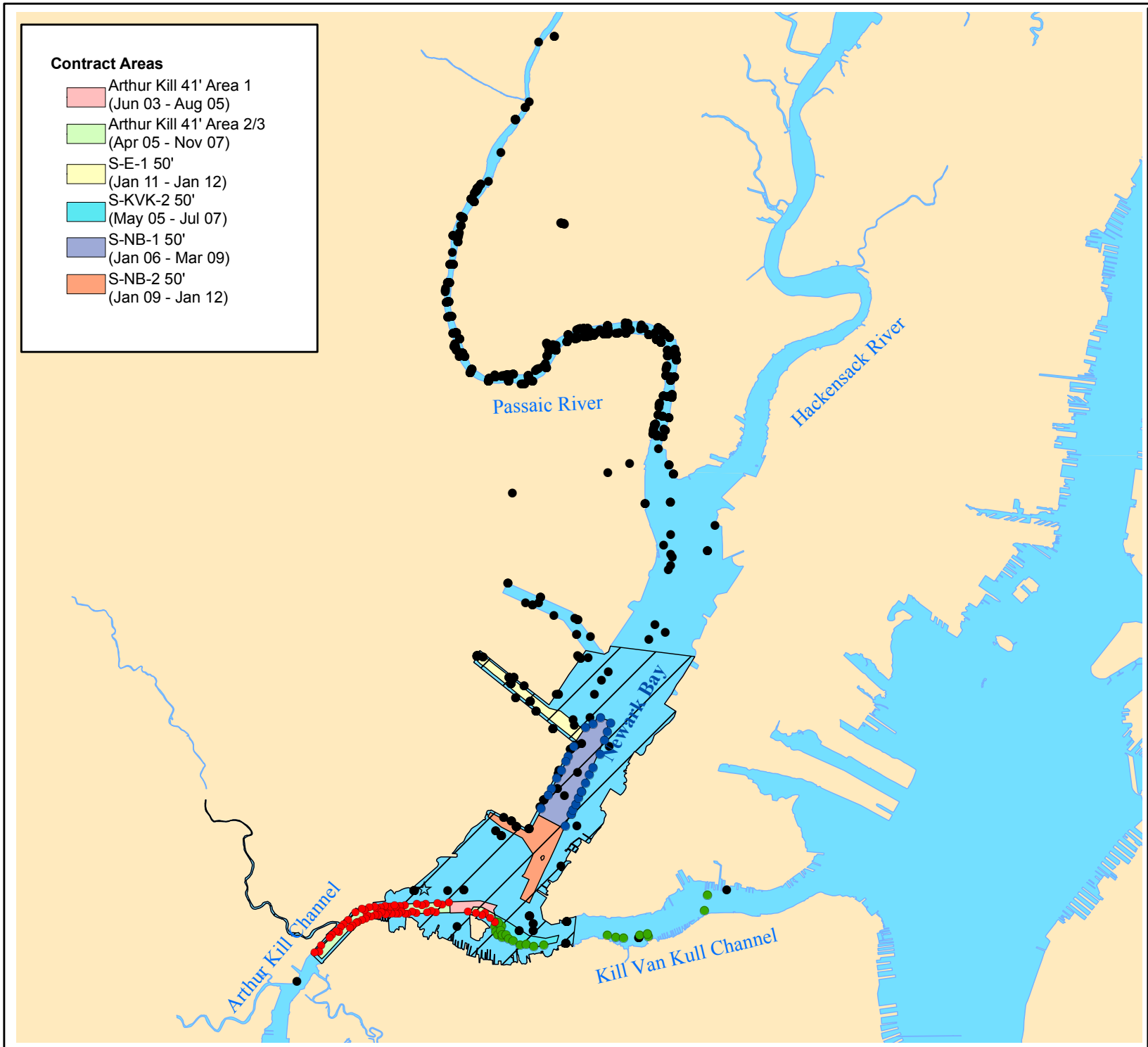
Table 2.
Contaminant Concentrations in Surface Sediments, Arthur Kill Dredge Material, Estimated Post-Dredging Core, and Core #39 PRP-99-02 Near the Arthur Kill.

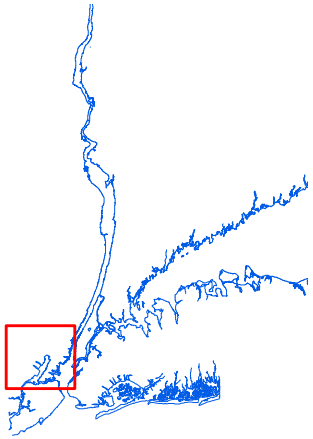
Contaminant	Units	Concentrations in the Surface Sediments of Southern Newark Bay (1)			AK Dredge Material			Estimated Concentration in Post-Dredging Core (1)	Ratio: Post-Dredging:Existing
		Average	Standard Deviation	Number	Average	Standard Deviation	Number		
2,3,7,8 TCDD	ng/kg	56.3	44.7	48	50.4	34.6	20	56.3	1.00
Benzo(a)pyrene	ug/kg	1,210.6	3,283.4	47	2,221.9	2,270.0	20	1,222.9	1.01
Total PCBs	ug/kg	642.1	542.0	38	1,818.7	946.9	20	656.3	1.02
Mercury	mg/kg	2.7	1.3	39	6.3	3.0	20	2.7	1.02
Chromium	mg/kg	145.8	63.5	36	216.0	69.7	20	146.7	1.01
Total DDTs	ug/kg	165.7	297.4	37	853.8	795.7	20	174.0	1.05

Notes

(1) Calculated for surface slice of 6 inches using Equation (8).

Deposition of dredge material estimated to be 0.19 cm. See text





LOCATOR MAP OF THE NEW YORK/NEW JERSEY HARBOR

GRAPHIC SCALE

Miles

0 0.5 1

LEGEND

- Shoreline and Bay Area
- USACE cores
- USACE cores
- USACE cores
- Historical Cores
- ☆ Core 39-PRP-99-02
- Study Area

**Halo indicates questionable location coordinates.*

Notes: (1) Data extend beyond frame of map.
(2) NOAA data includes sediment grabs and cores.
(3) The future 50-foot work in the Arthur Kill partially overlaps the AK 41-foot areas 1, 2 and 3 presented in the map. This area was excluded for clarity.

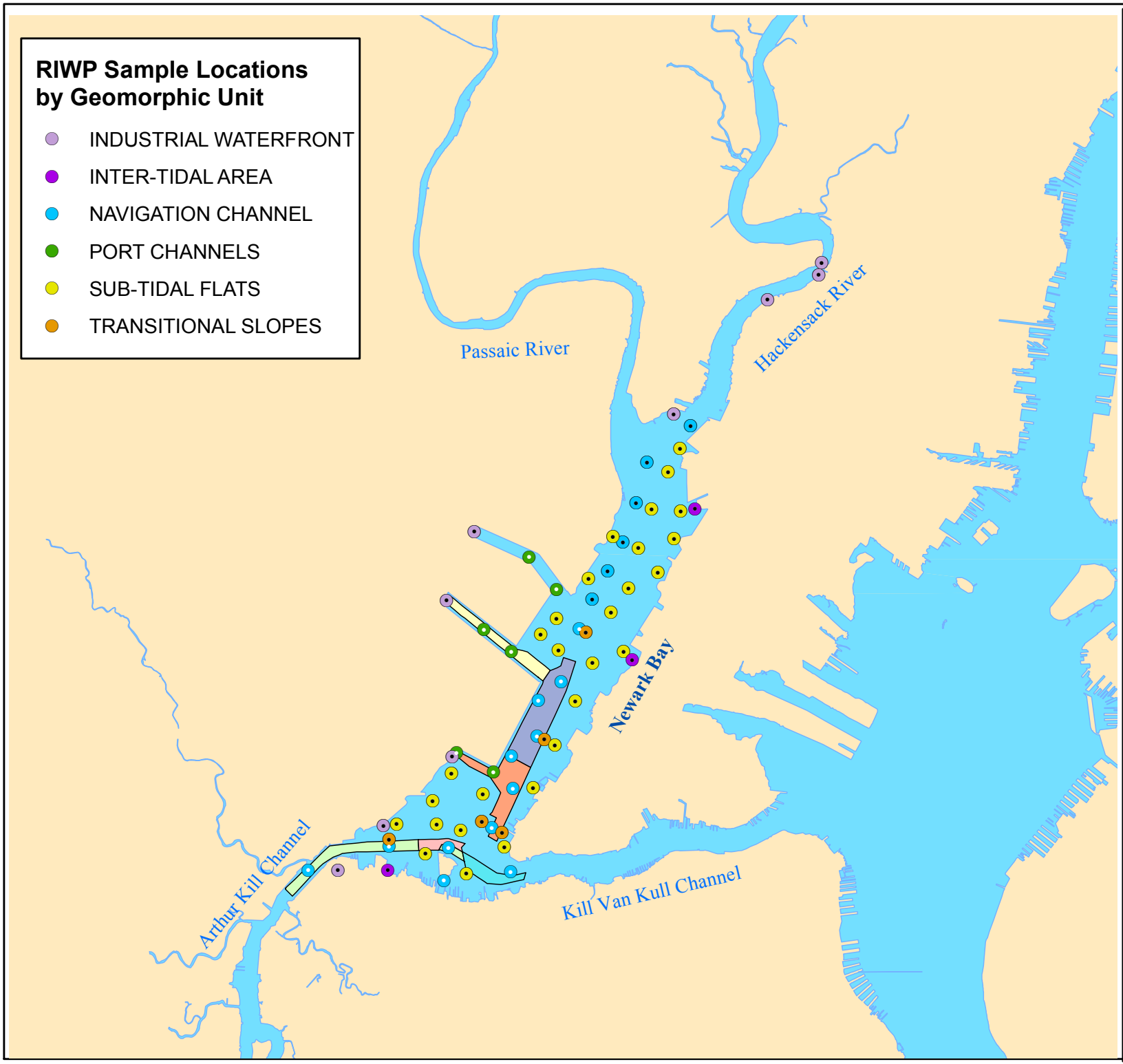
Figure 1a.

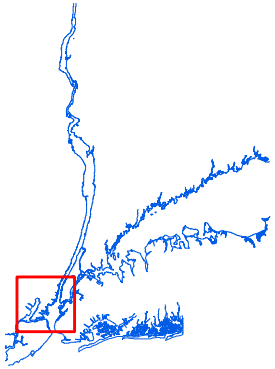
Historical core locations and USACE Navigational Deepening Contracts

ACEnew:111 September 2005

Data Sources: NOAA National Ocean Service Office of Response and Restoration/Toxic Chemicals in Coastal Environmentals - Watershed Tools (Databases & Mapping): http://response.restoration.noaa.gov/cpr/watershed/watershedtools.html
CARP - Contaminant Assessment & Reduction Program/Hudson River Foundation/New York-New Jersey Harbor: http://www.carpweb.org

REMAP 1998 data not included in NOAA database.





LOCATOR MAP OF THE NEW YORK/NEW JERSEY HARBOR

GRAPHIC SCALE

0 0.5 1 2 Miles

LEGEND

Contract Areas

- Arthur Kill 41' Area 1 (Jun 03 - Aug 05)
- Arthur Kill 41' Area 2/3 (Apr 05 - Nov 07)
- S-E-1 50' (Jan 11 - Jan 12)
- S-KVK-2 50' (May 05 - Jul 07)
- S-NB-1 50' (Jan 06 - Mar 09)
- S-NB-2 50' (Jan 09 - Jan 12)
- Shoreline and Bay Area
- • Chemical & Radiochemical Sampling
- ◦ Radiochemical Sampling Only

Note: The future 50-foot work in the Arthur Kill partially overlaps the AK 41-foot areas 1, 2 and 3 presented in the map. This area was excluded for clarity.

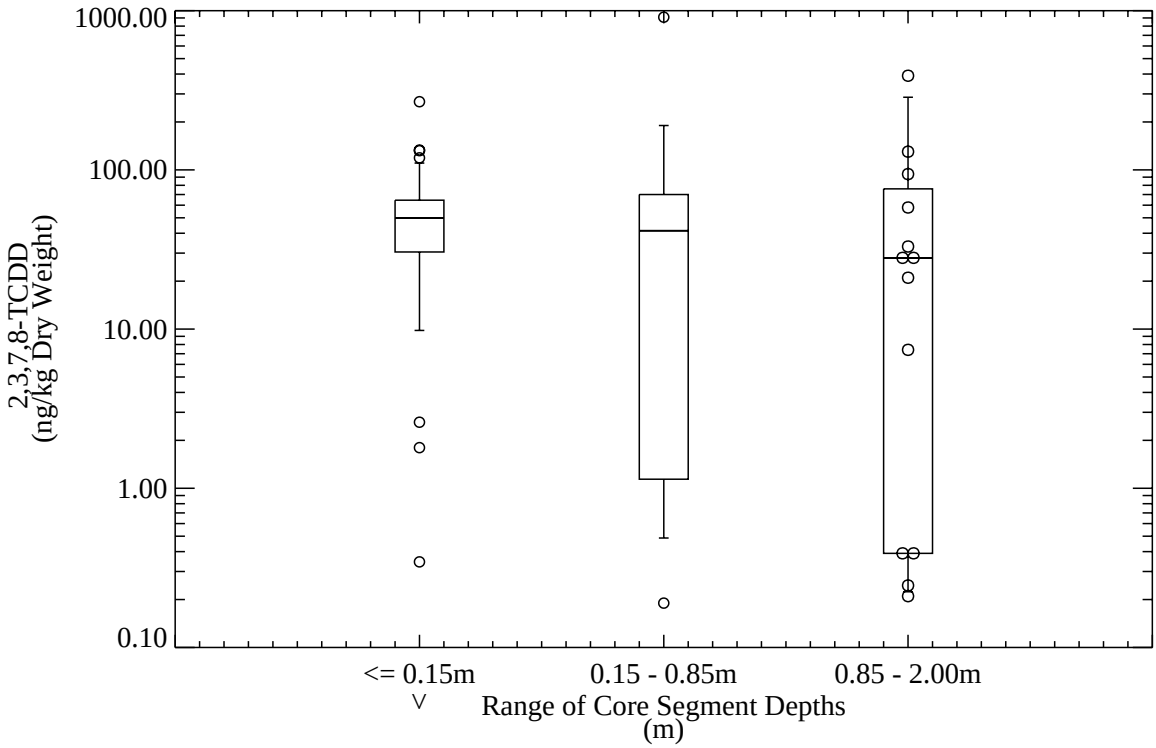
Figure 1b.

Newark Bay Study Area RIFS Workplan proposed 9/6/05 release sediment sampling locations and USACE Navigational Deepening Contracts

ACEnew:111

September 2005

\\HC\D_Drive\ACEnew\Analysis\Project\Newark_Bay_200509012.mxd



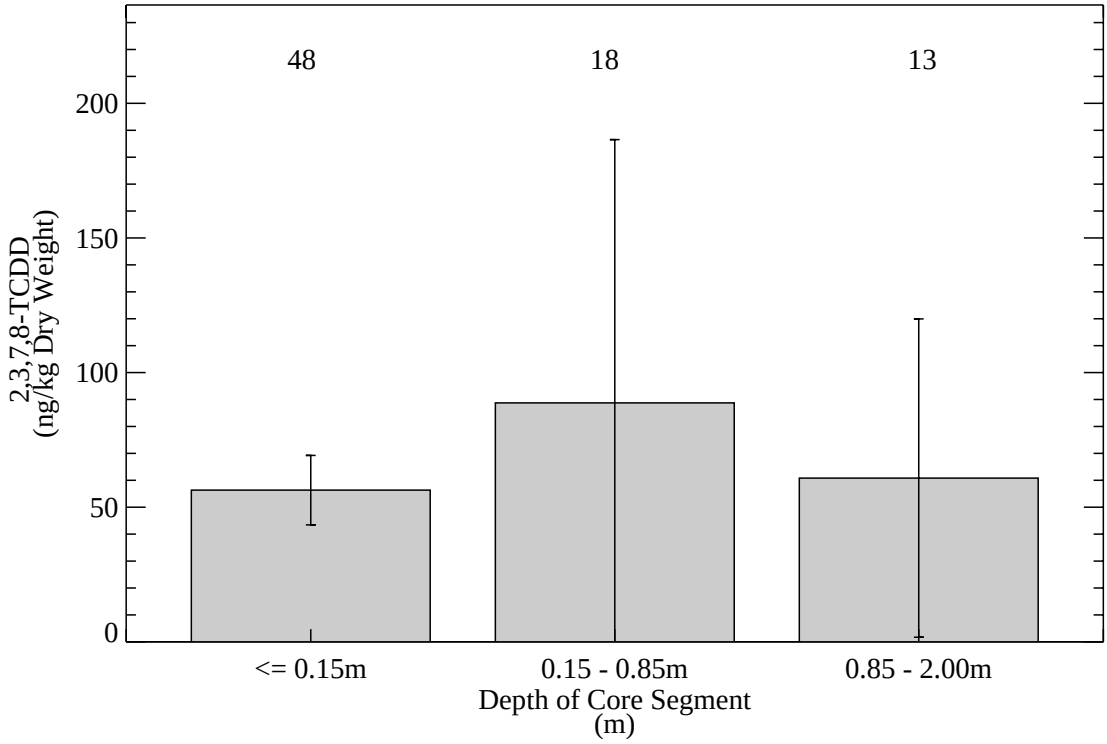
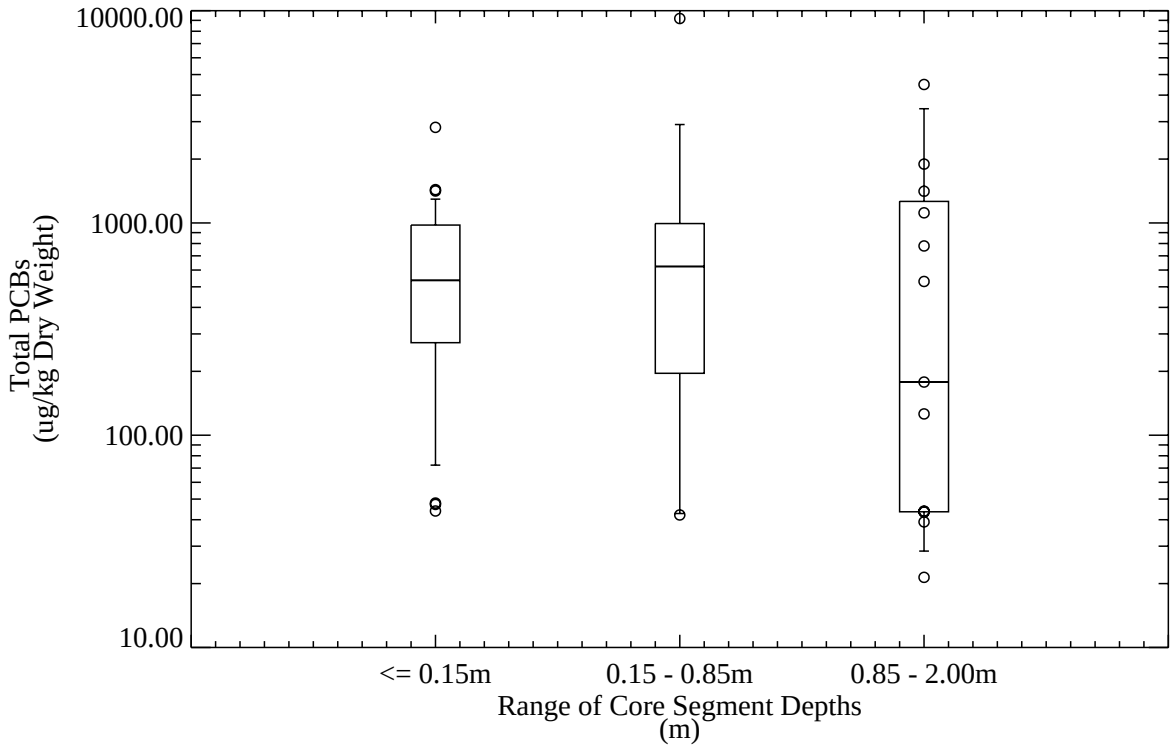


Figure 2a. Relationship between Contaminant Concentrations (ng/kg Dry Weight) and Core Segment Depths: 2,3,7,8-TCDD

No data samples had a core depth greater than 2 m
All data values shown for sets with less than 15 samples. 10th and 90th percentiles shown for sets with more than 9 samples

Data Sources: NOAA NS&T 93, Maxus 91, Maxus 92, Maxus 03/93, EPA Newark Bay 97, EPA Sediment Sampling 99, REMAP 98/99



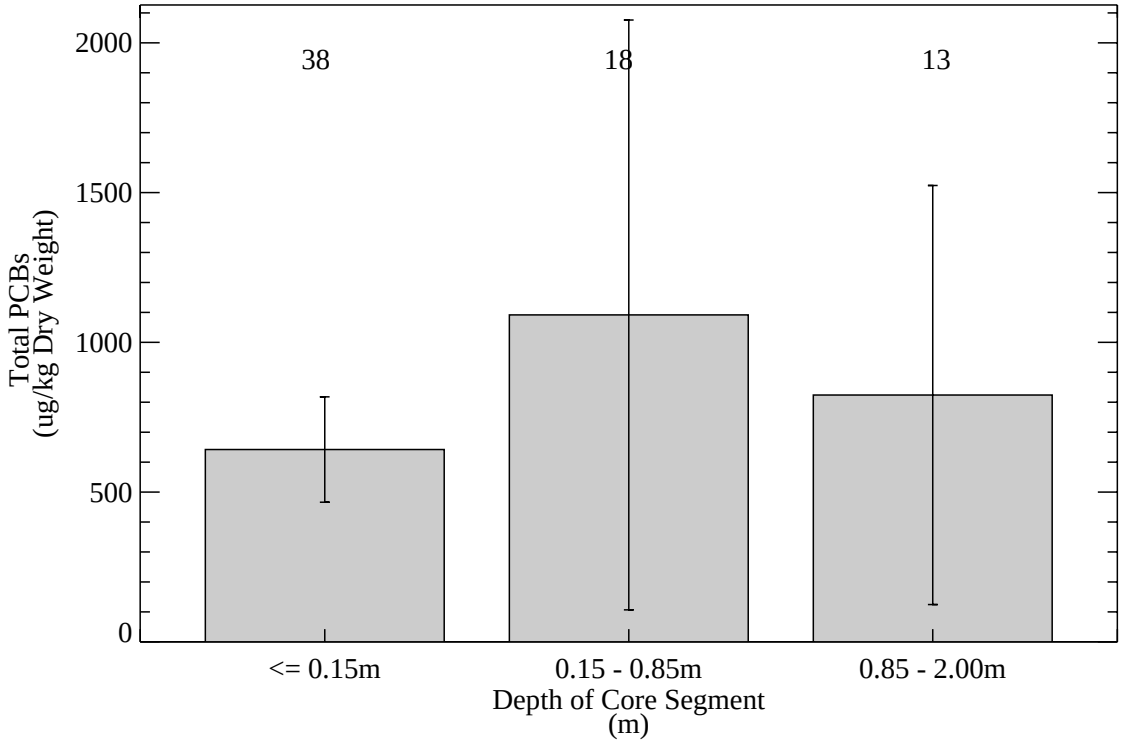
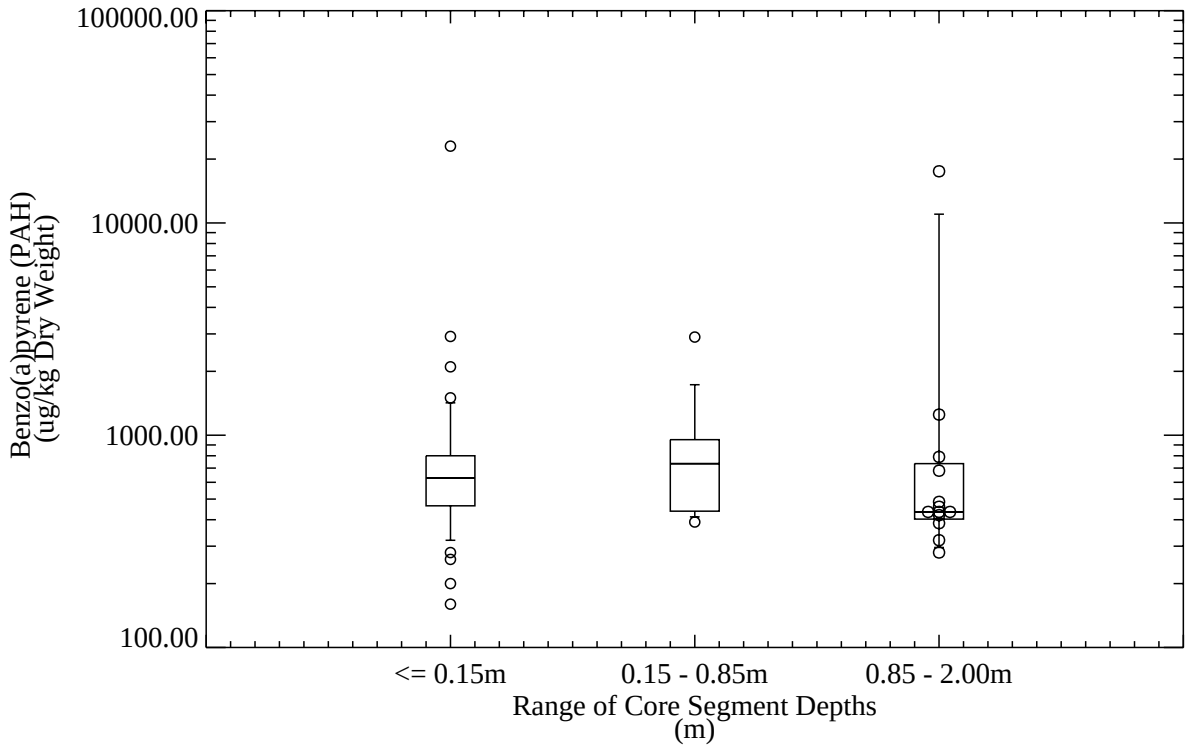


Figure 2b. Relationship between Contaminant Concentrations (ug/kg Dry Weight) and Core Segment Depths: Total PCBs

No data samples had a core depth greater than 2 m
All data values shown for sets with less than 15 samples. 10th and 90th percentiles shown for sets with more than 9 samples

Data Sources: NOAA NS&T 93, Maxus 91, Maxus 92, Maxus 03/93, EPA Newark Bay 97, EPA Sediment Sampling 99, REMAP 98/99



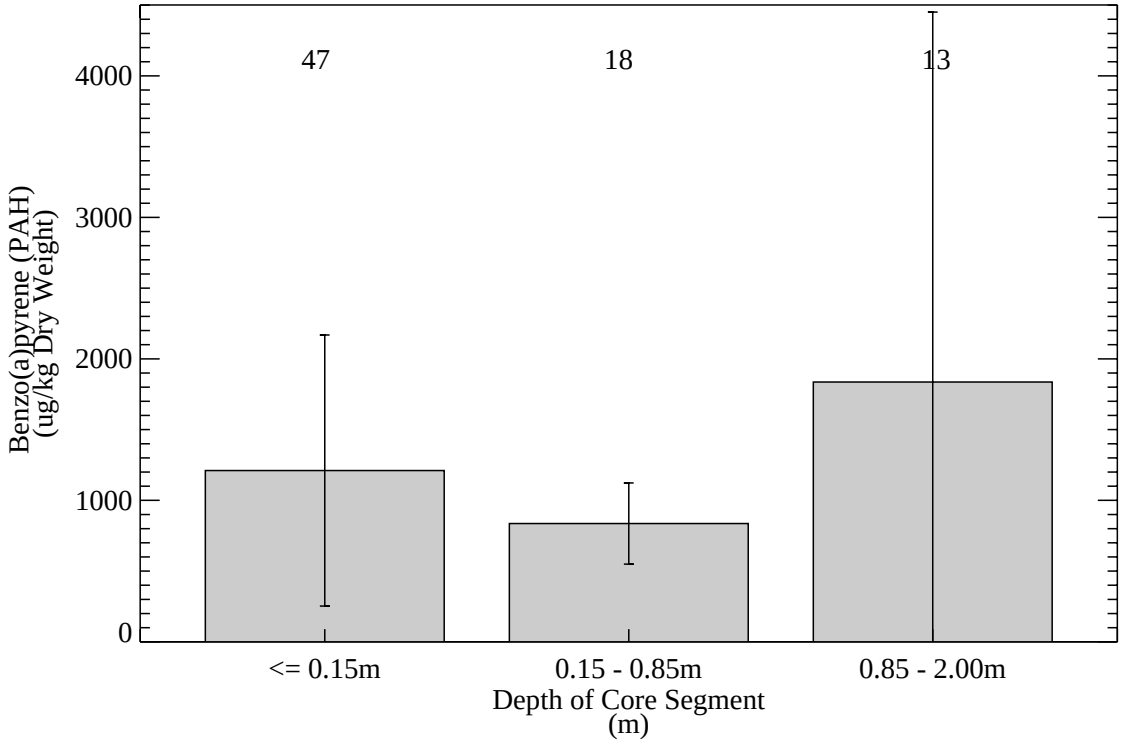
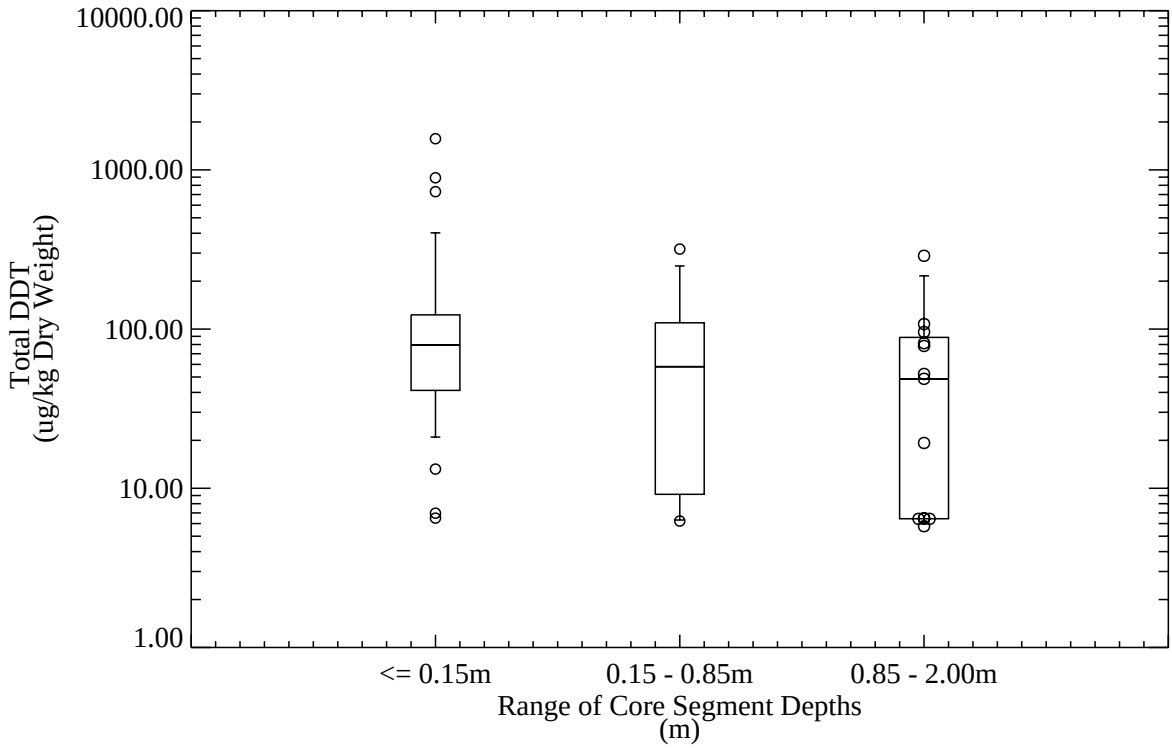


Figure 2c. Relationship between Contaminant Concentrations (ug/kg Dry Weight) and Core Segment Depths: Benzo(a)pyrene (PAH)

No data samples had a core depth greater than 2 m
All data values shown for sets with less than 15 samples. 10th and 90th percentiles shown for sets with more than 9 samples

Data Sources: NOAA NS&T 93, Maxus 91, Maxus 92, Maxus 03/93, EPA Newark Bay 97, EPA Sediment Sampling 99, REMAP 98/99



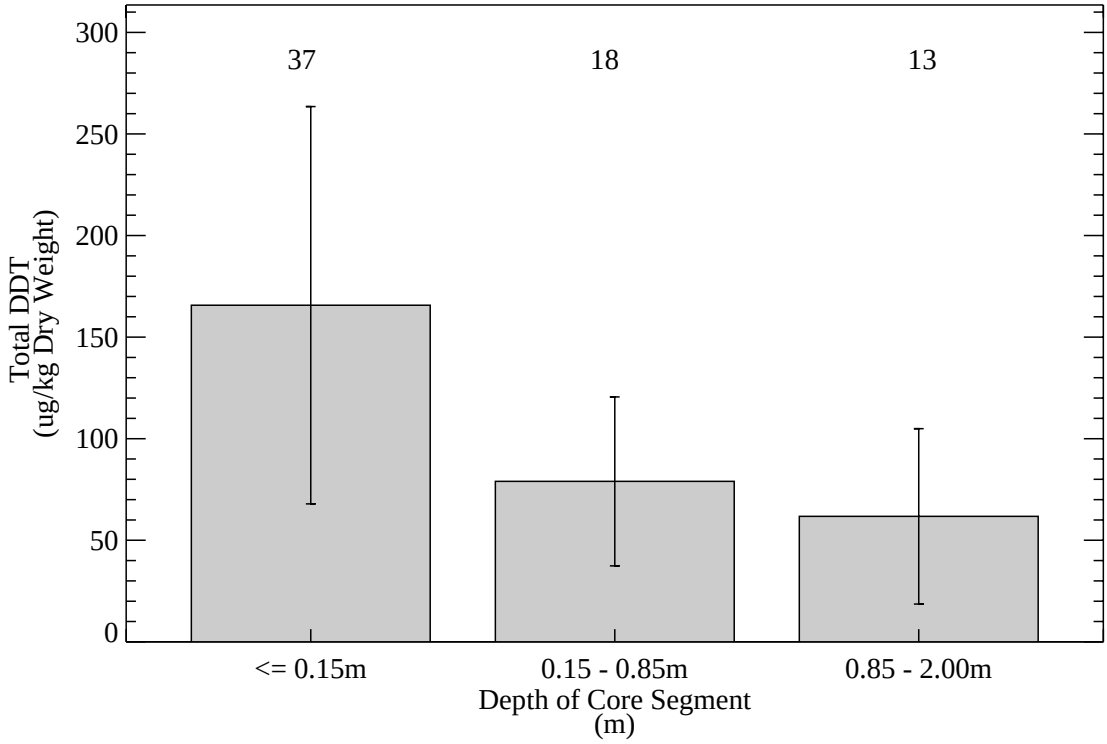
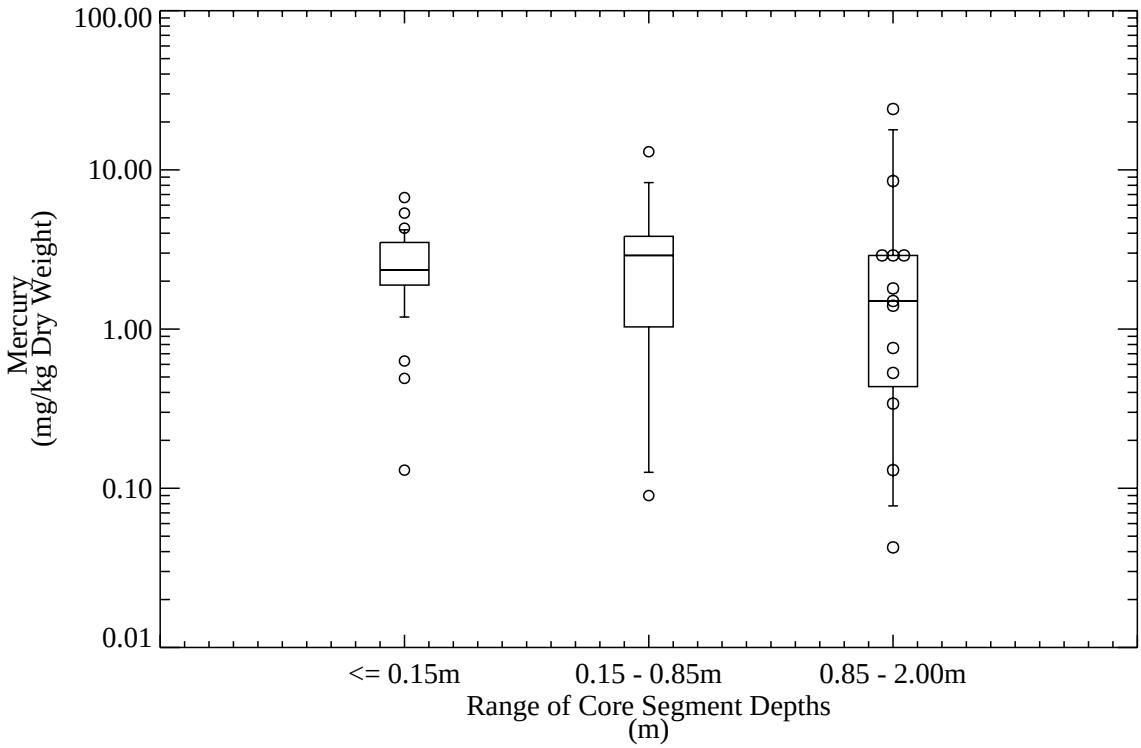


Figure 2d. Relationship between Contaminant Concentrations (ug/kg Dry Weight) and Core Segment Depths: Total DDT

No data samples had a core depth greater than 2 m
All data values shown for sets with less than 15 samples. 10th and 90th percentiles shown for sets with more than 9 samples

Data Sources: NOAA NS&T 93, Maxus 91, Maxus 92, Maxus 03/93, EPA Newark Bay 97, EPA Sediment Sampling 99, REMAP 98/99



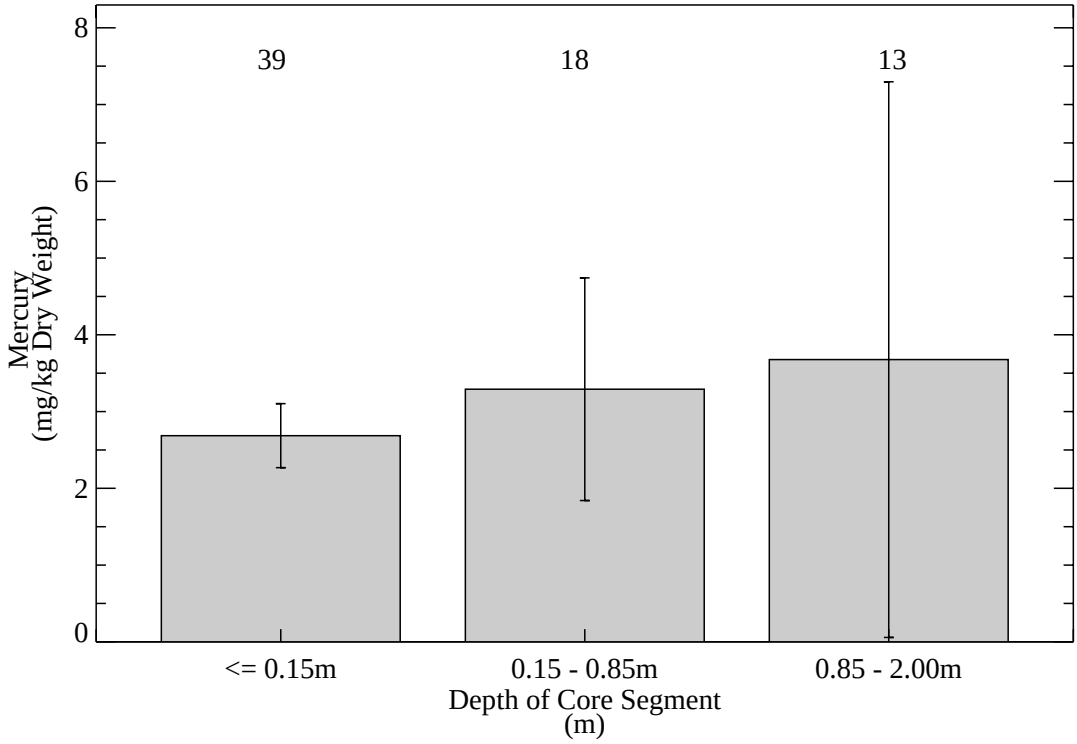
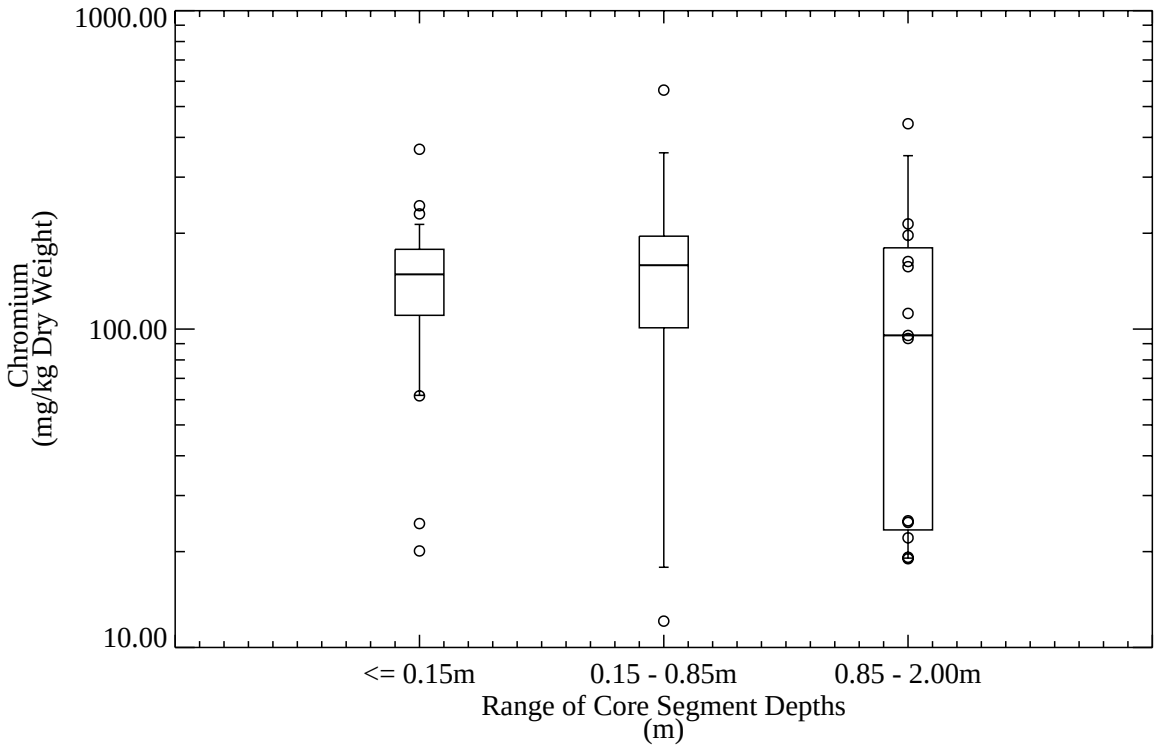


Figure 2e. Relationship between Contaminant Concentrations (mg/kg Dry Weight) and Core Segment Depths: Mercury

No data samples had a core depth greater than 2 m
All data values shown for sets with less than 15 samples. 10th and 90th percentiles shown for sets with more than 9 samples

Data Sources: NOAA NS&T 93, Maxus 91, Maxus 92, Maxus 03/93, EPA Newark Bay 97, EPA Sediment Sampling 99, REMAP 98/99



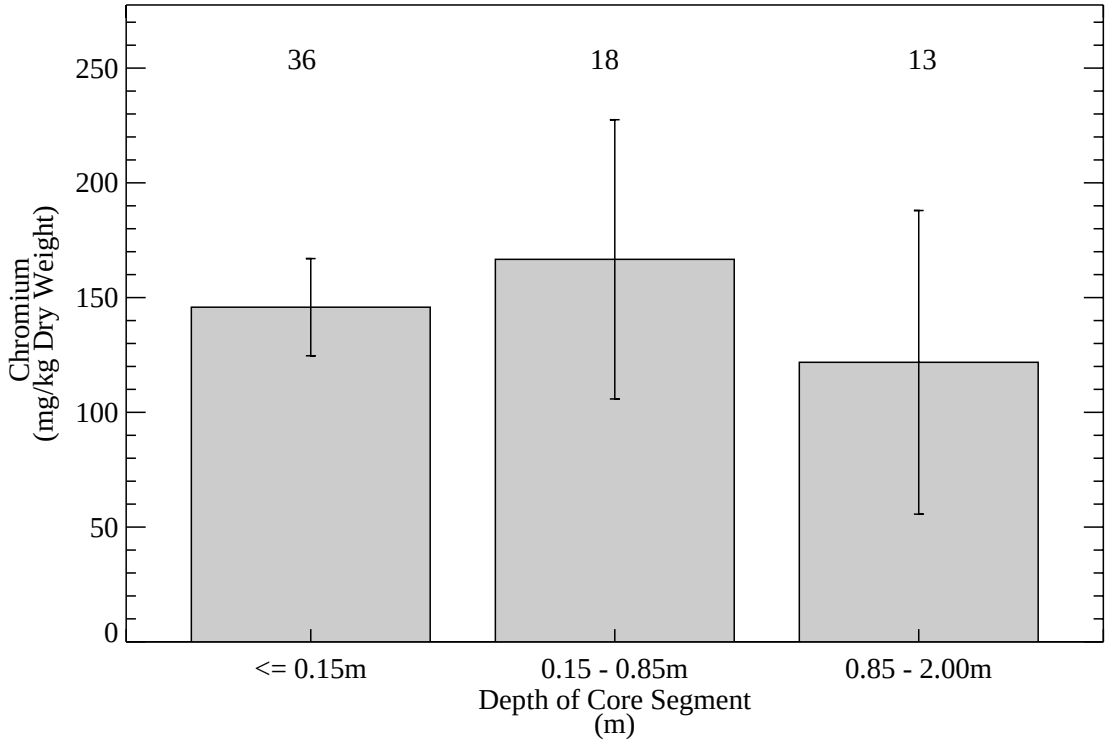


Figure 2f. Relationship between Contaminant Concentrations (mg/kg Dry Weight) and Core Segment Depths: Chromium

No data samples had a core depth greater than 2 m
All data values shown for sets with less than 15 samples. 10th and 90th percentiles shown for sets with more than 9 samples

Data Sources: NOAA NS&T 93, Maxus 91, Maxus 92, Maxus 03/93, EPA Newark Bay 97, EPA Sediment Sampling 99, REMAP 98/99

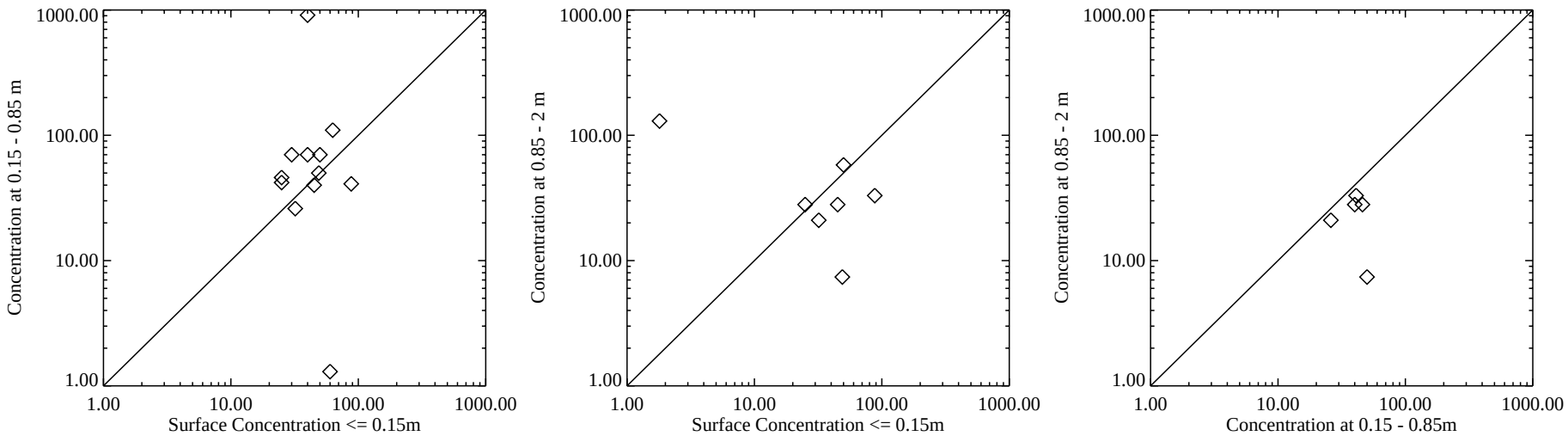


Figure 3a. Comparison of Contaminant Concentrations (ng/kg Dry Weight) in Paired Core Segments at Various Depths: 2,3,7,8-TCDD

Note: Solid line: 1-1 line

No data samples had a core depth greater than 2 m

Data Sources: NOAA NS&T 93, Maxus 91, Maxus 92, Maxus 03/93, EPA Newark Bay 97, EPA Sediment Sampling 99, REMAP 98/99

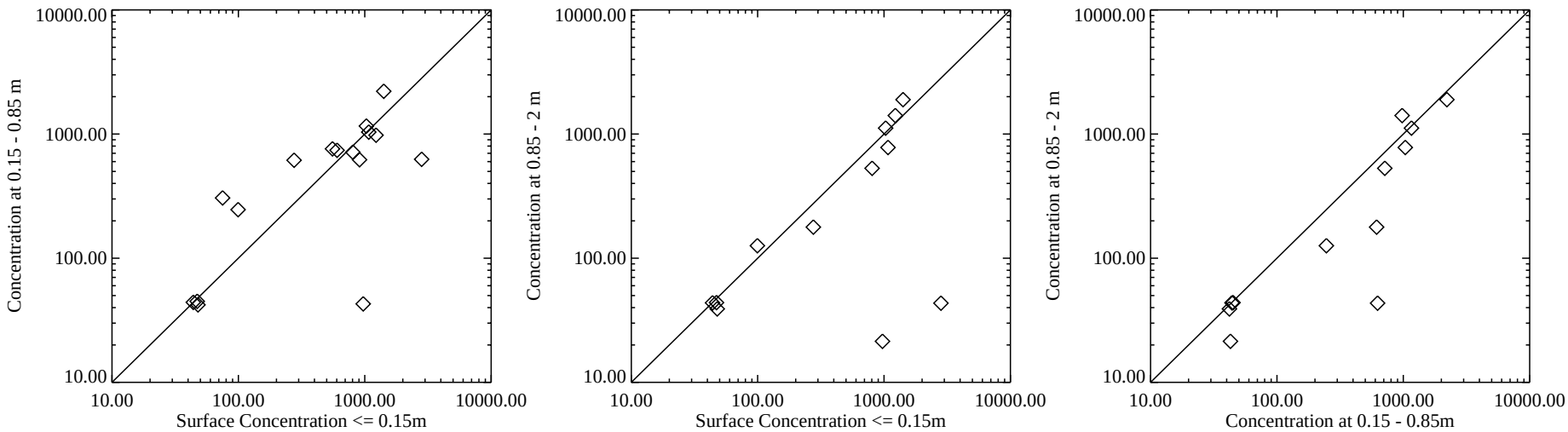


Figure 3b. Comparison of Contaminant Concentrations (ug/kg Dry Weight) in Paired Core Segments at Various Depths: Total PCBs

Note: Solid line: 1-1 line

No data samples had a core depth greater than 2 m

Data Sources: NOAA NS&T 93, Maxus 91, Maxus 92, Maxus 03/93, EPA Newark Bay 97, EPA Sediment Sampling 99, REMAP 98/99

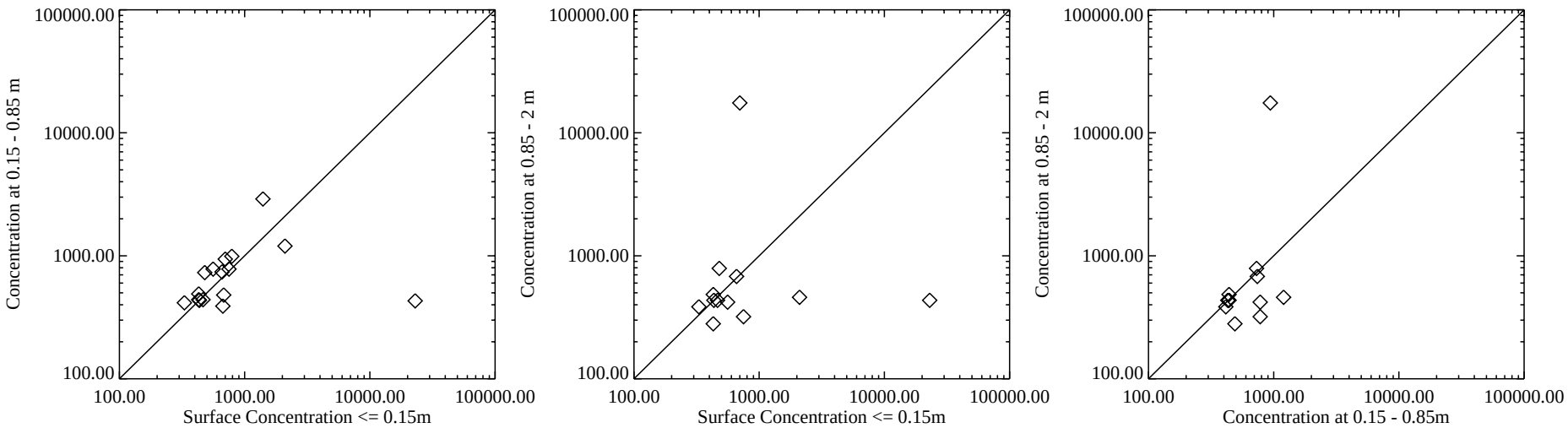


Figure 3c. Comparison of Contaminant Concentrations (ug/kg Dry Weight) in Paired Core Segments at Various Depths: Benzo(a)pyrene (PAH)

Note: Solid line: 1-1 line

No data samples had a core depth greater than 2 m

Data Sources: NOAA NS&T 93, Maxus 91, Maxus 92, Maxus 03/93, EPA Newark Bay 97, EPA Sediment Sampling 99, REMAP 98/99

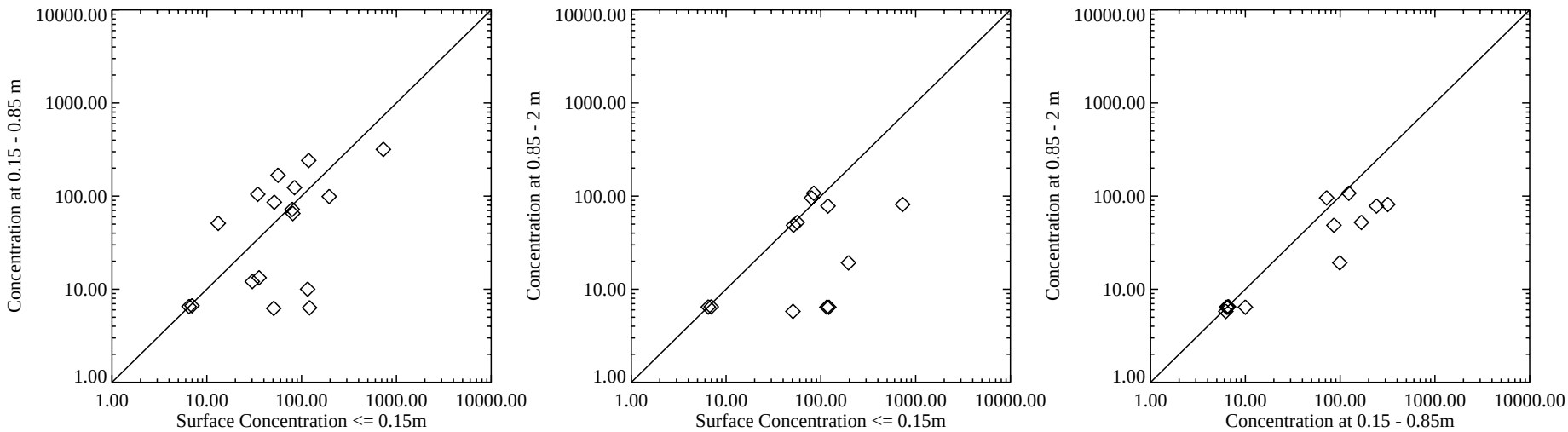


Figure 3d. Comparison of Contaminant Concentrations (ug/kg Dry Weight) in Paired Core Segments at Various Depths: Total DDT

Note: Solid line: 1-1 line

No data samples had a core depth greater than 2 m

Data Sources: NOAA NS&T 93, Maxus 91, Maxus 92, Maxus 03/93, EPA Newark Bay 97, EPA Sediment Sampling 99, REMAP 98/99

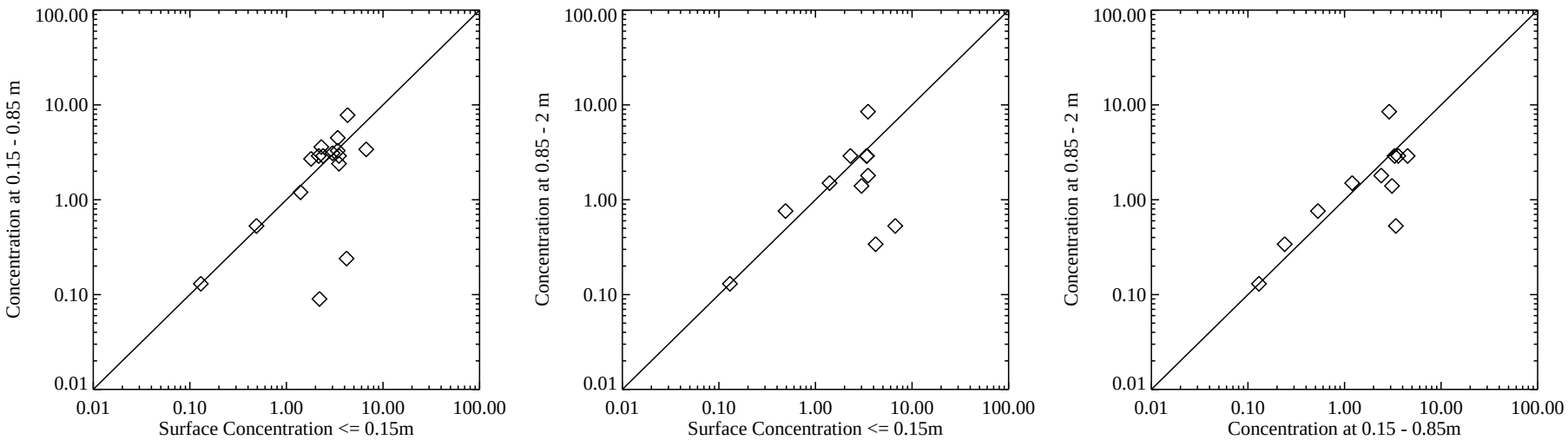


Figure 3e. Comparison of Contaminant Concentrations (mg/kg Dry Weight) in Paired Core Segments at Various Depths: Mercury

Note: Solid line: 1-1 line

No data samples had a core depth greater than 2 m

Data Sources: NOAA NS&T 93, Maxus 91, Maxus 92, Maxus 03/93, EPA Newark Bay 97, EPA Sediment Sampling 99, REMAP 98/99

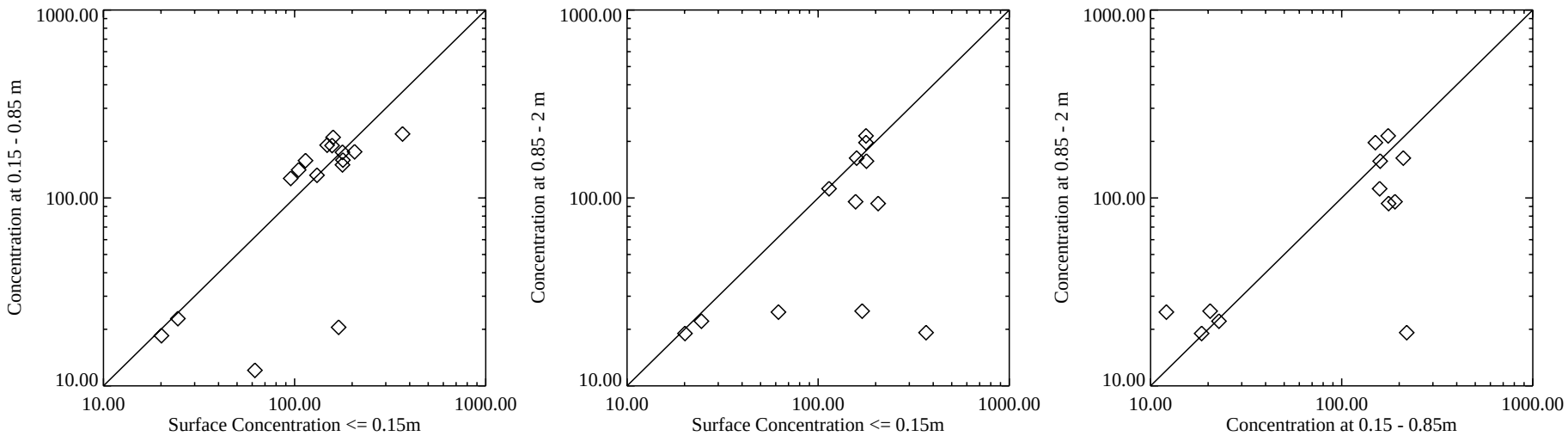
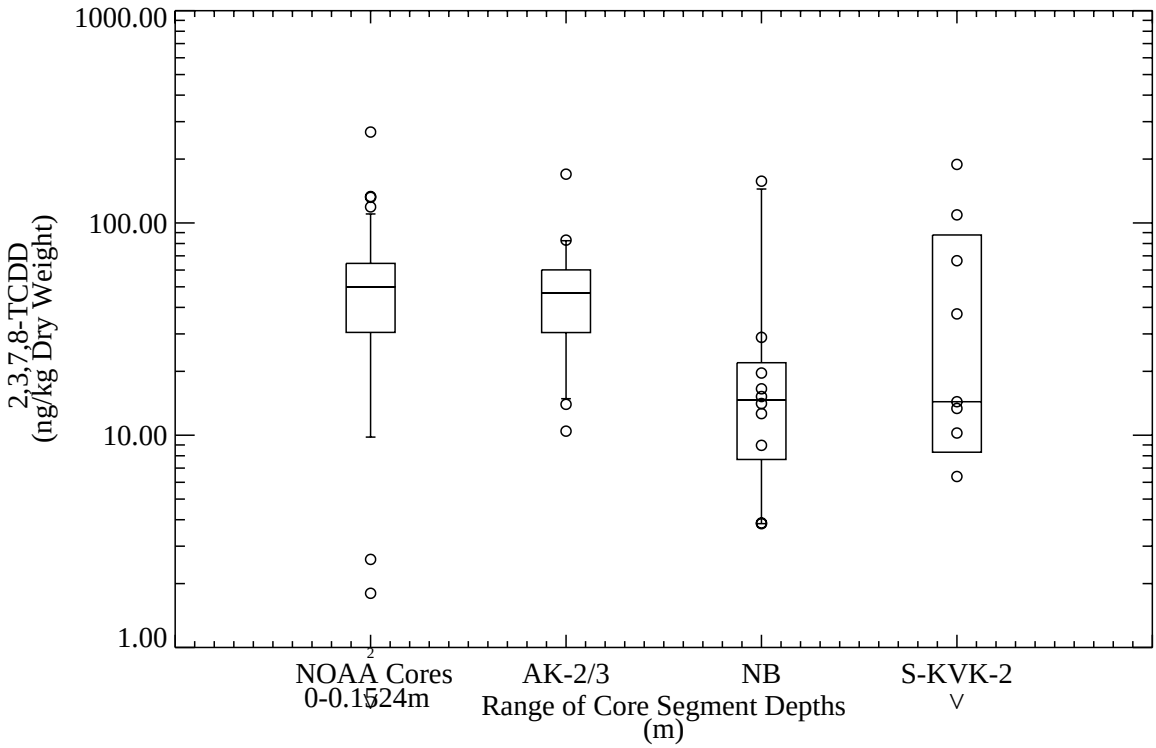


Figure 3f. Comparison of Contaminant Concentrations (mg/kg Dry Weight) in Paired Core Segments at Various Depths: Chromium

Note: Solid line: 1-1 line

No data samples had a core depth greater than 2 m

Data Sources: NOAA NS&T 93, Maxus 91, Maxus 92, Maxus 03/93, EPA Newark Bay 97, EPA Sediment Sampling 99, REMAP 98/99



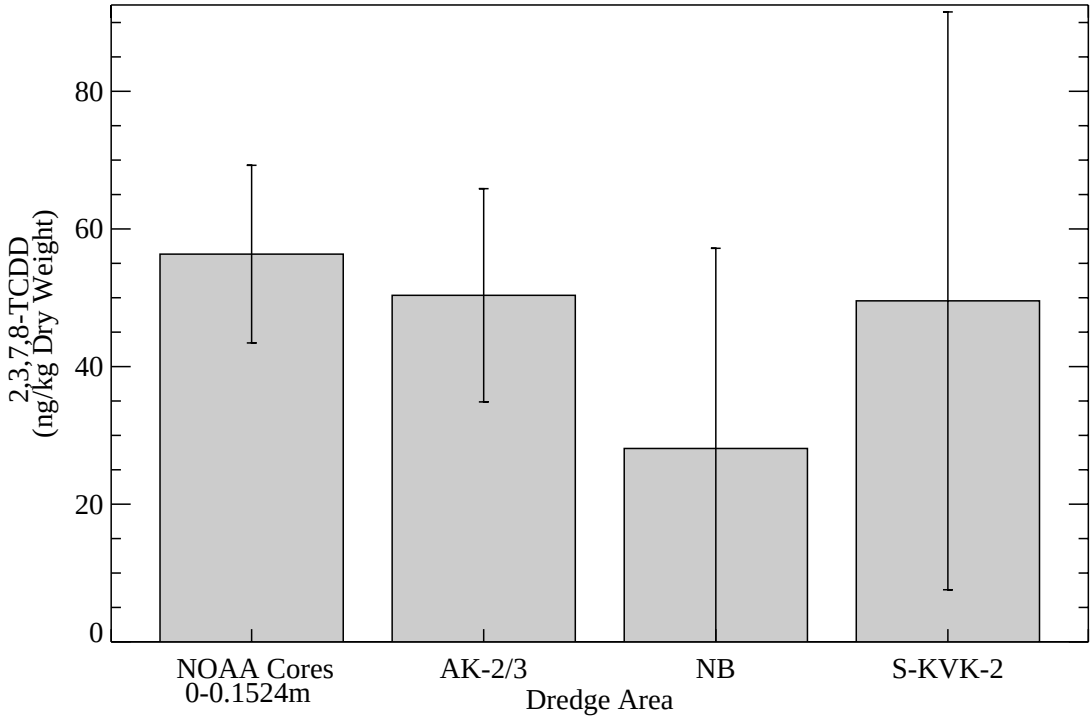
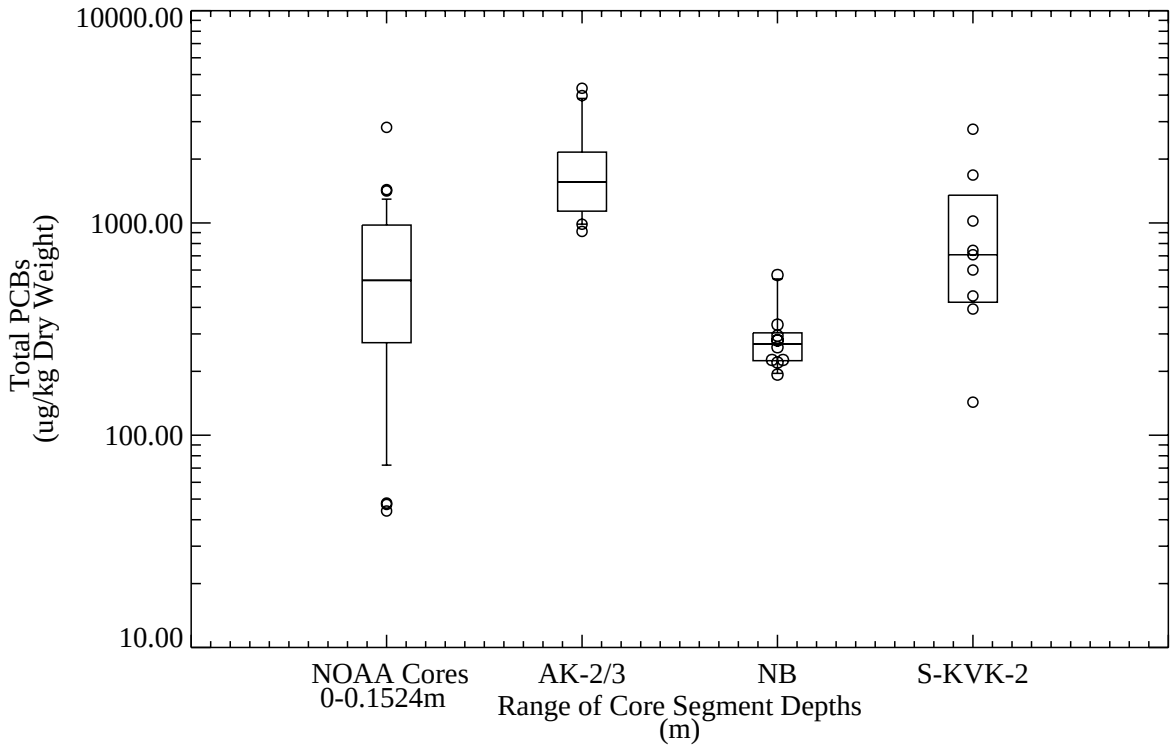


Figure 4a. Average Contaminant Concentrations (ng/kg Dry Weight) of Surface Sediments Compared with USACE Cores for each Dredge Area: 2,3,7,8-TCDD

No data samples had a core depth greater than 2 m
S-KVK-2 bar includes two samples outside of the NBSA

Data Sources: NOAA NS&T 93, Maxus 91, Maxus 92, Maxus 03/93, EPA Newark Bay 97, EPA Sediment Sampling 99, REMAP 98/99



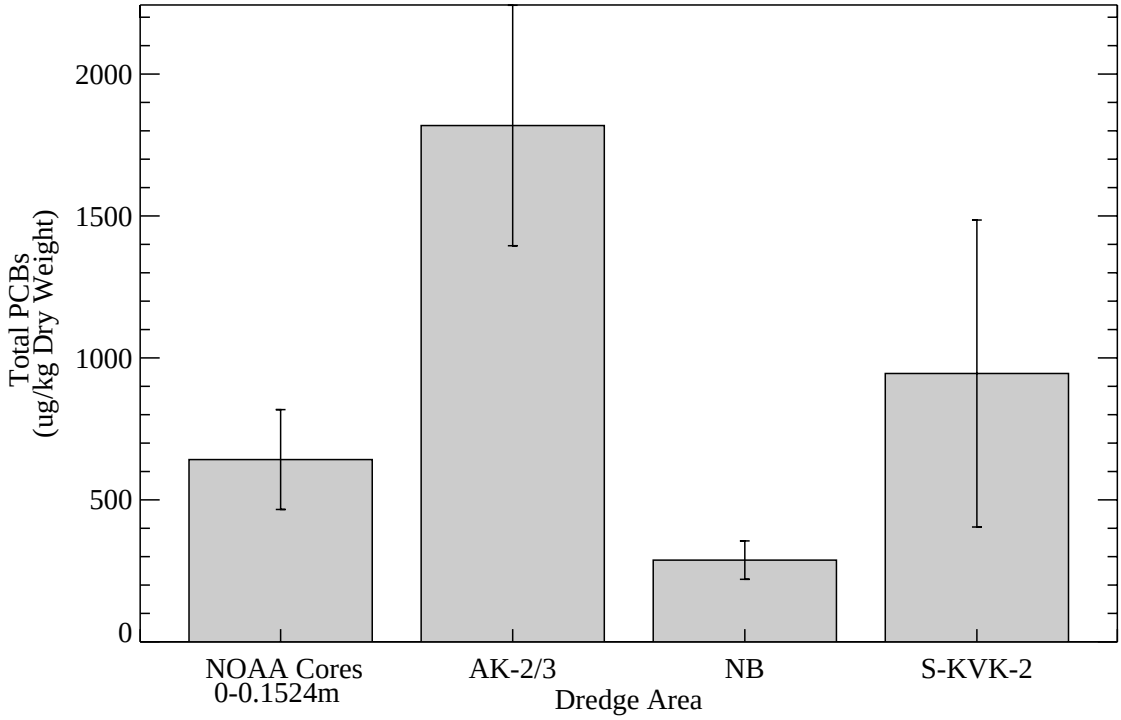
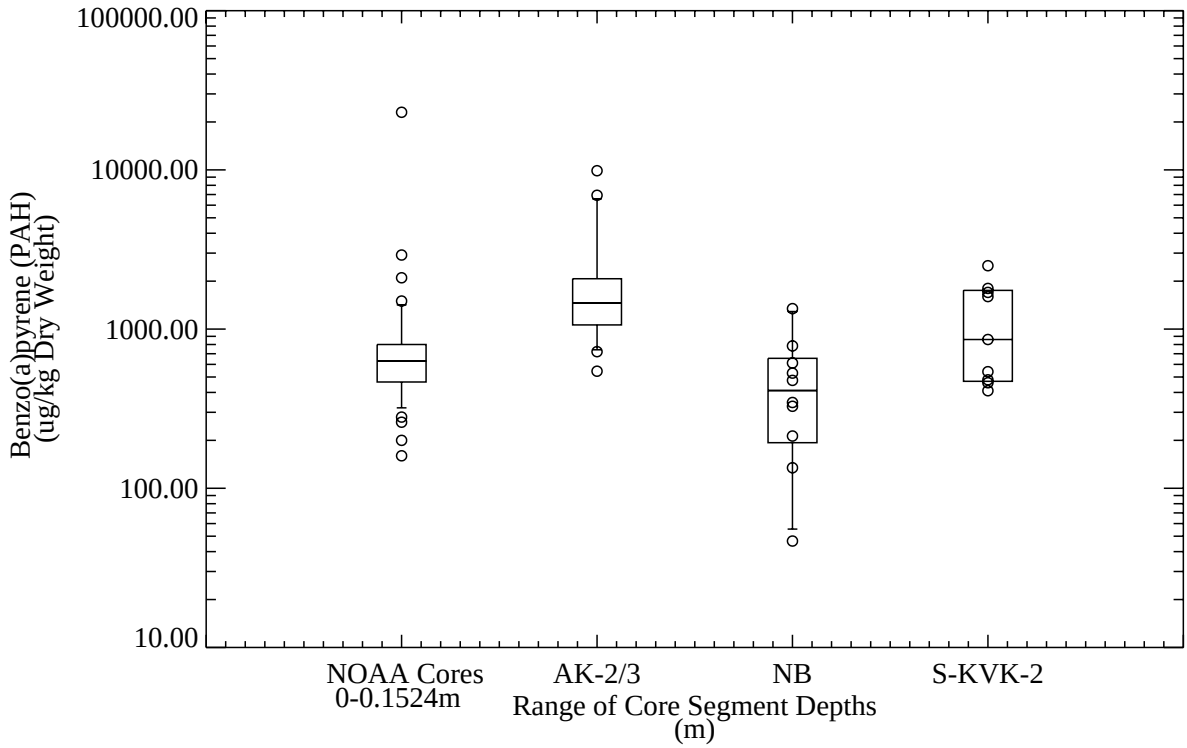


Figure 4b. Average Contaminant Concentrations (ug/kg Dry Weight) of Surface Sediments Compared with USACE Cores for each Dredge Area: Total PCBs

No data samples had a core depth greater than 2 m
S-KVK-2 bar includes two samples outside of the NBSA

Data Sources: NOAA NS&T 93, Maxus 91, Maxus 92, Maxus 03/93, EPA Newark Bay 97, EPA Sediment Sampling 99, REMAP 98/99



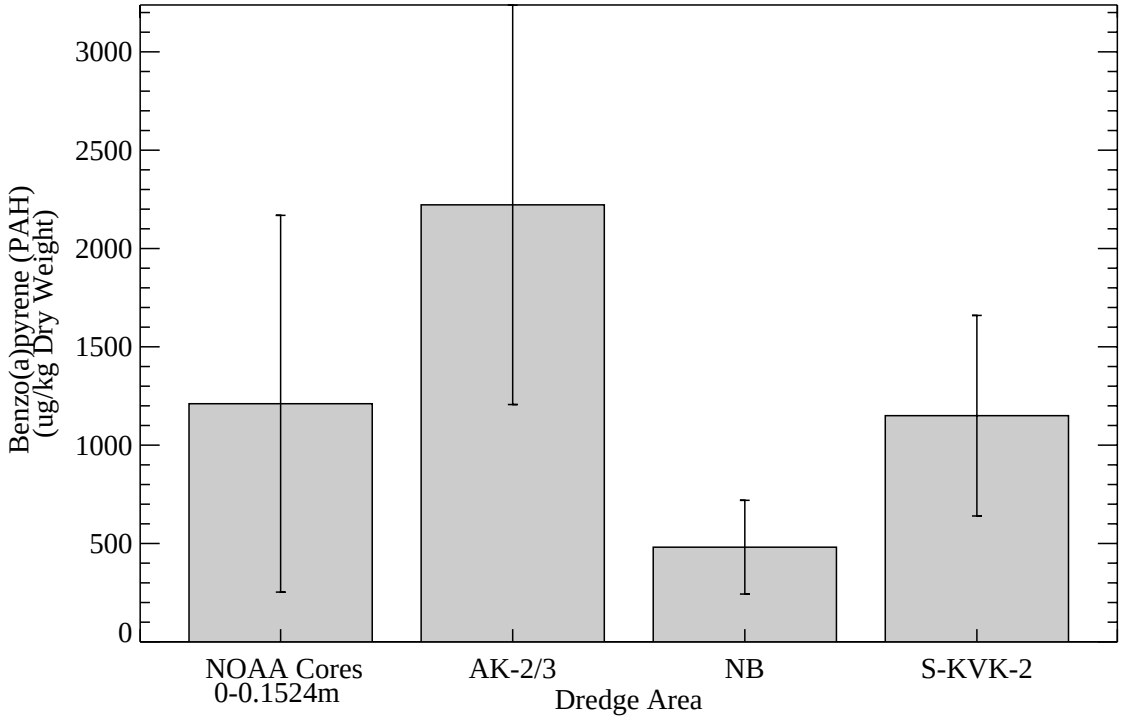
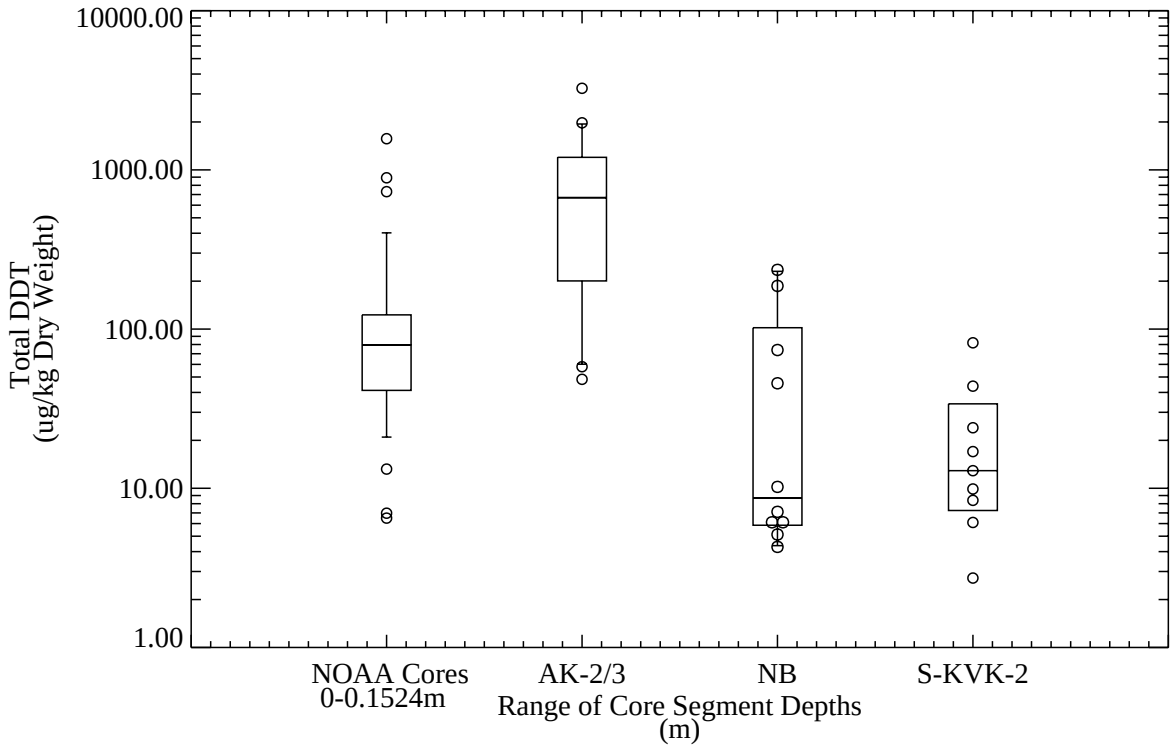


Figure 4c. Average Contaminant Concentrations (ug/kg Dry Weight) of Surface Sediments Compared with USACE Cores for each Dredge Area: Benzo(a)pyrene (PAH)

No data samples had a core depth greater than 2 m
S-KVK-2 bar includes two samples outside of the NBSA

Data Sources: NOAA NS&T 93, Maxus 91, Maxus 92, Maxus 03/93, EPA Newark Bay 97, EPA Sediment Sampling 99, REMAP 98/99



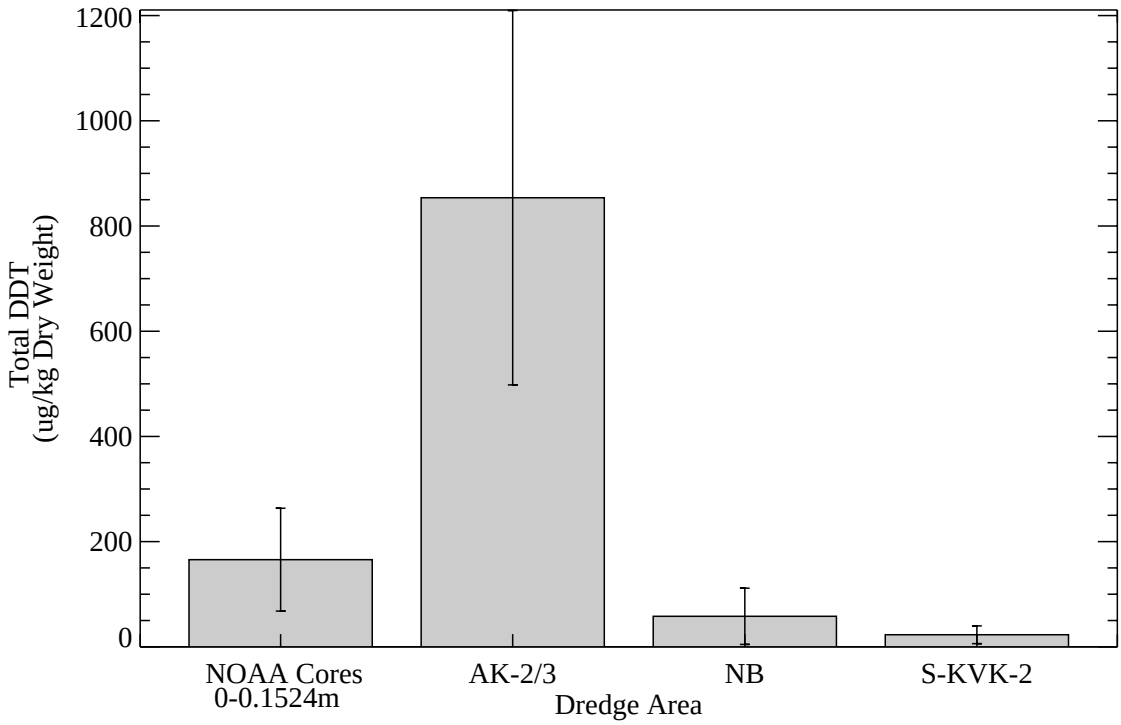
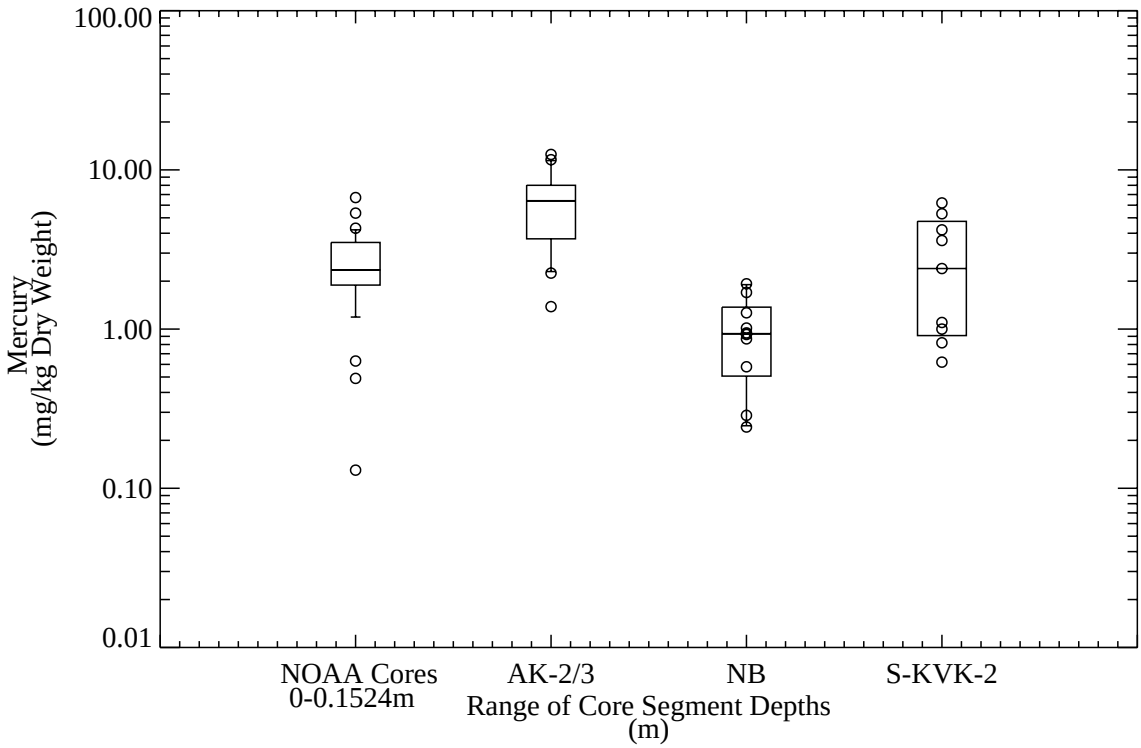


Figure 4d. Average Contaminant Concentrations (ug/kg Dry Weight) of Surface Sediments Compared with USACE Cores for each Dredge Area: Total DDT

No data samples had a core depth greater than 2 m
S-KVK-2 bar includes two samples outside of the NBSA

Data Sources: NOAA NS&T 93, Maxus 91, Maxus 92, Maxus 03/93, EPA Newark Bay 97, EPA Sediment Sampling 99, REMAP 98/99



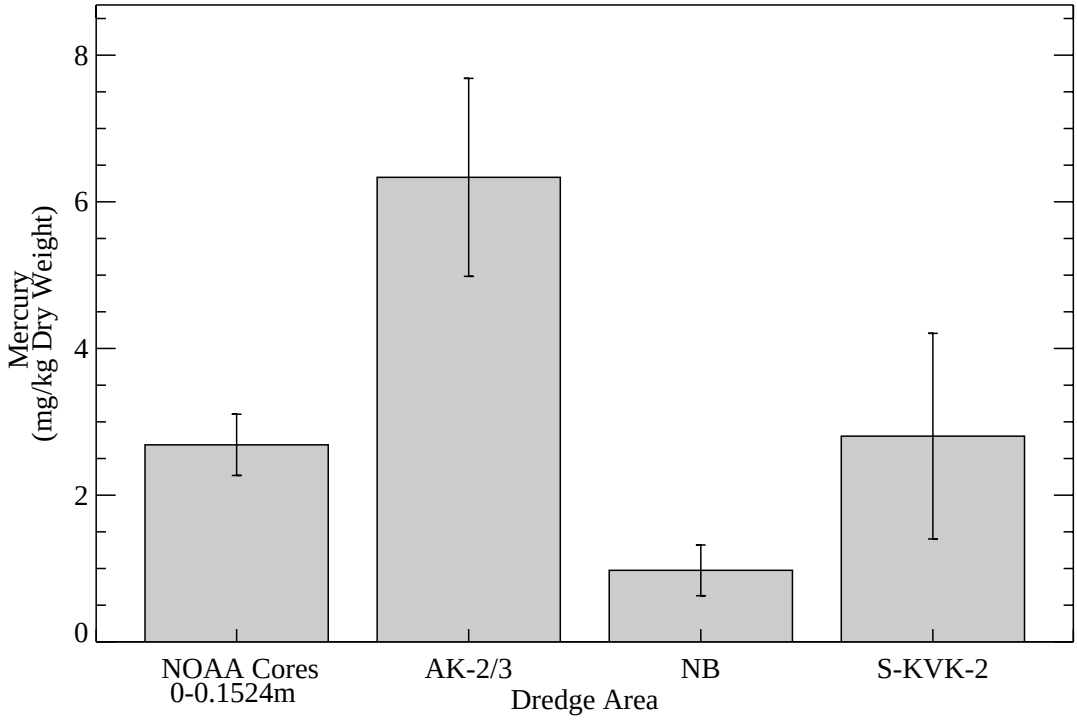
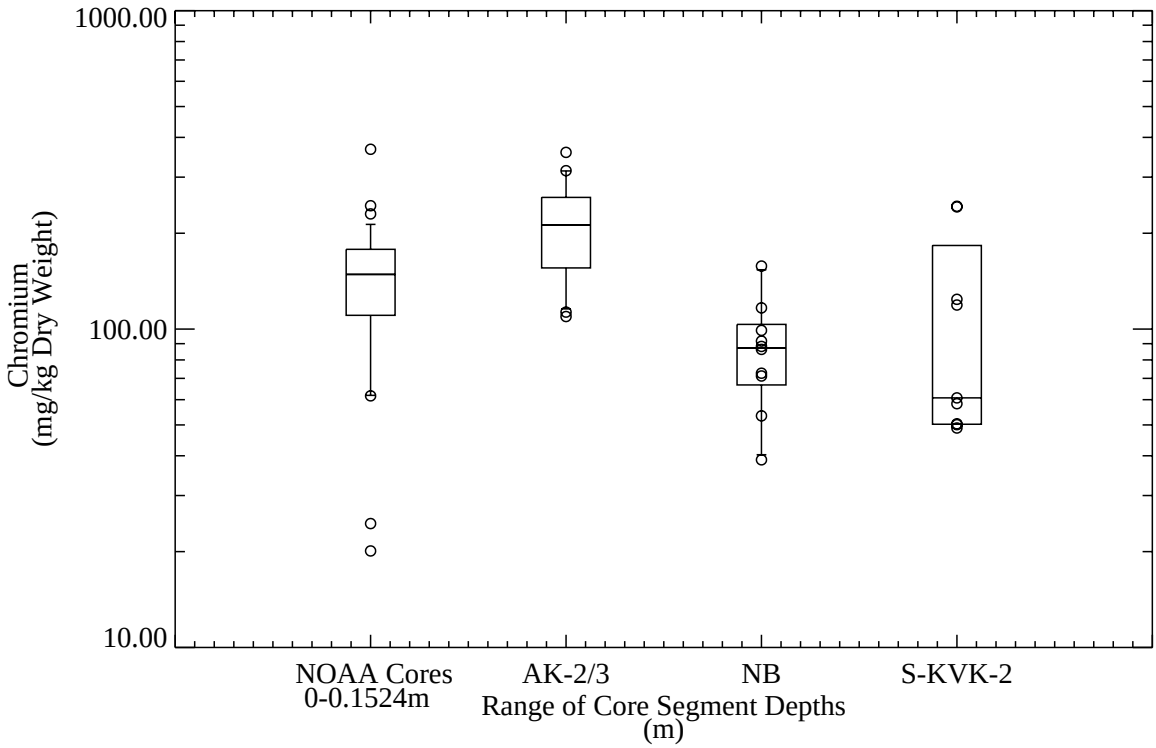


Figure 4e. Average Contaminant Concentrations (mg/kg Dry Weight) of Surface Sediments Compared with USACE Cores for each Dredge Area: Mercury

No data samples had a core depth greater than 2 m
S-KVK-2 bar includes two samples outside of the NBSA

Data Sources: NOAA NS&T 93, Maxus 91, Maxus 92, Maxus 03/93, EPA Newark Bay 97, EPA Sediment Sampling 99, REMAP 98/99



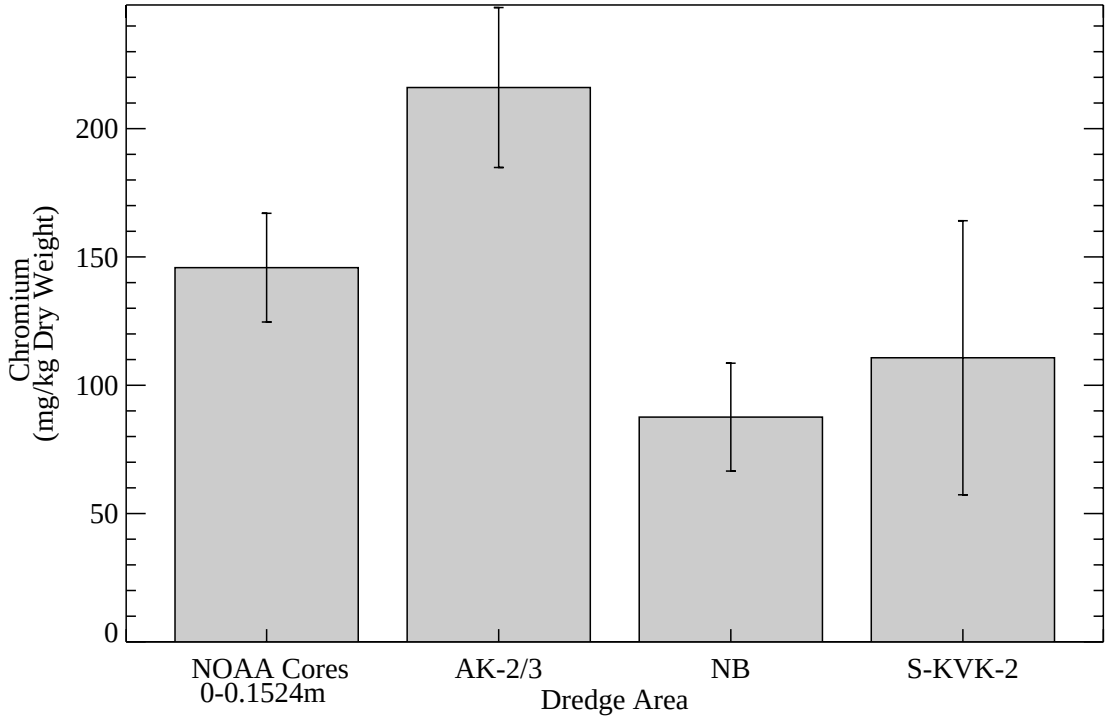


Figure 4f. Average Contaminant Concentrations (mg/kg Dry Weight) of Surface Sediments Compared with USACE Cores for each Dredge Area: Chromium

No data samples had a core depth greater than 2 m
S-KVK-2 bar includes two samples outside of the NBSA

Data Sources: NOAA NS&T 93, Maxus 91, Maxus 92, Maxus 03/93, EPA Newark Bay 97, EPA Sediment Sampling 99, REMAP 98/99

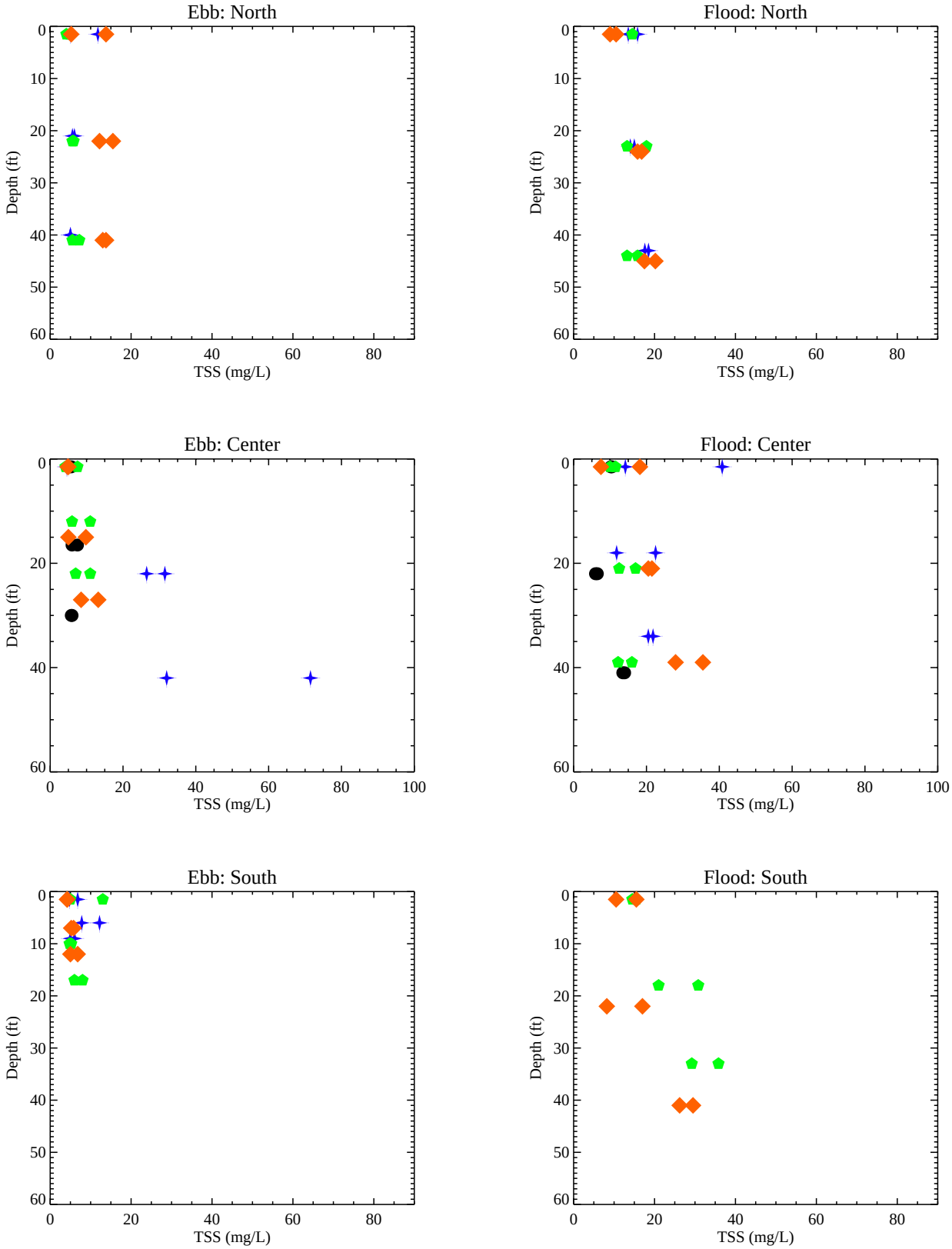


Figure 5a. TSS concentrations measured at different positions upstream and downstream of a dredge located in Newark Bay near the Kill Van Kull on 07/01/05

Data Source: LMS/HDR, Inc. 2005. NY & NJ Harbor Deepening Project - TSS Sampling Data

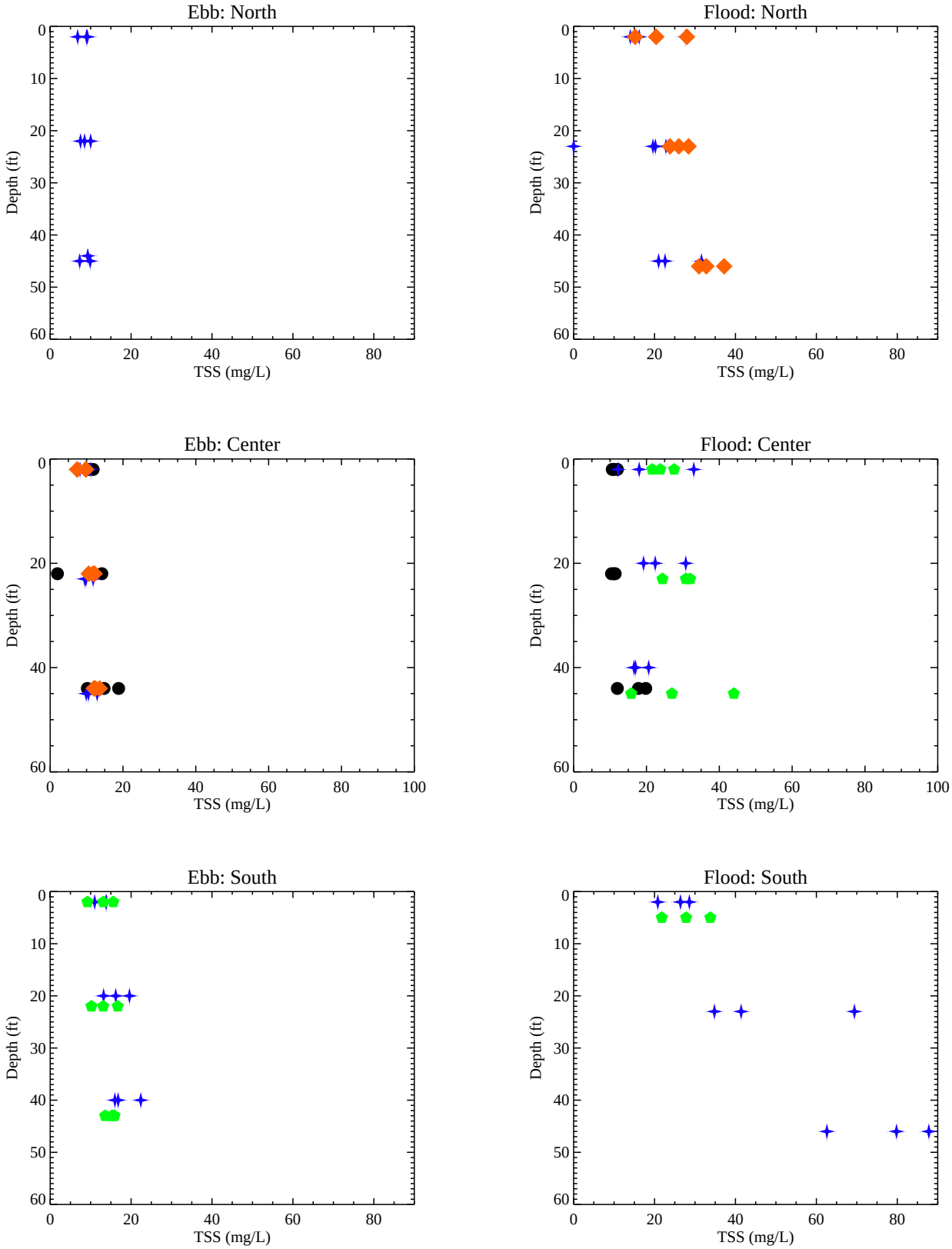


Figure 5b. TSS concentrations measured at different positions upstream and downstream of a dredge located in Newark Bay near the Kill Van Kull on 07/19/05

Data Source: LMS/HDR, Inc. 2005. NY & NJ Harbor Deepening Project - TSS Sampling Data

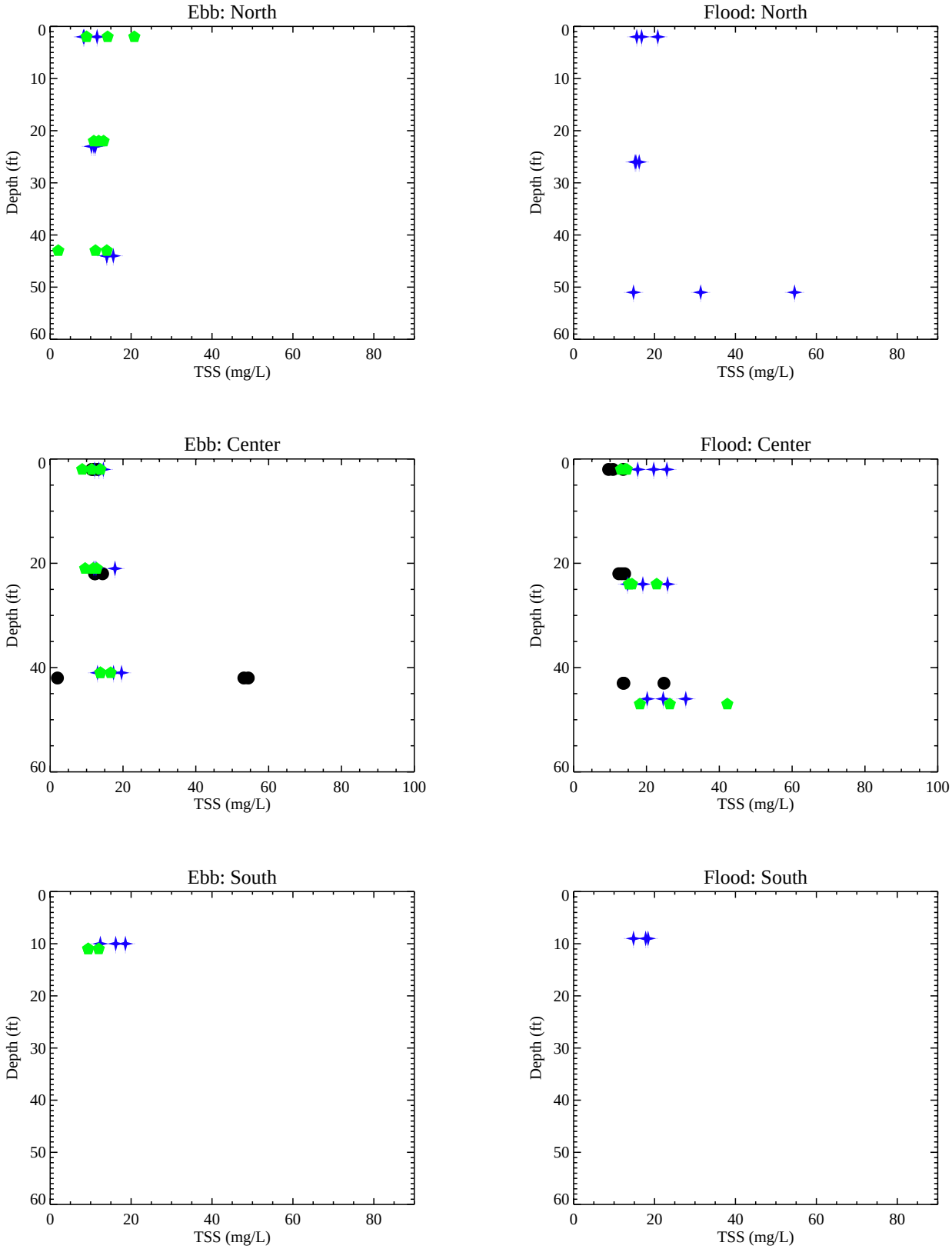


Figure 5c. TSS concentrations measured at different positions upstream and downstream of a dredge located in Newark Bay near the Kill Van Kull on 08/01/05

- 250ft-350ft Upstream
- 250ft-350ft Downstream
- 500ft-700ft Downstream
- 900ft-1100ft Downstream

Data Source: LMS/HDR, Inc. 2005. NY & NJ Harbor Deepening Project - TSS Sampling Data

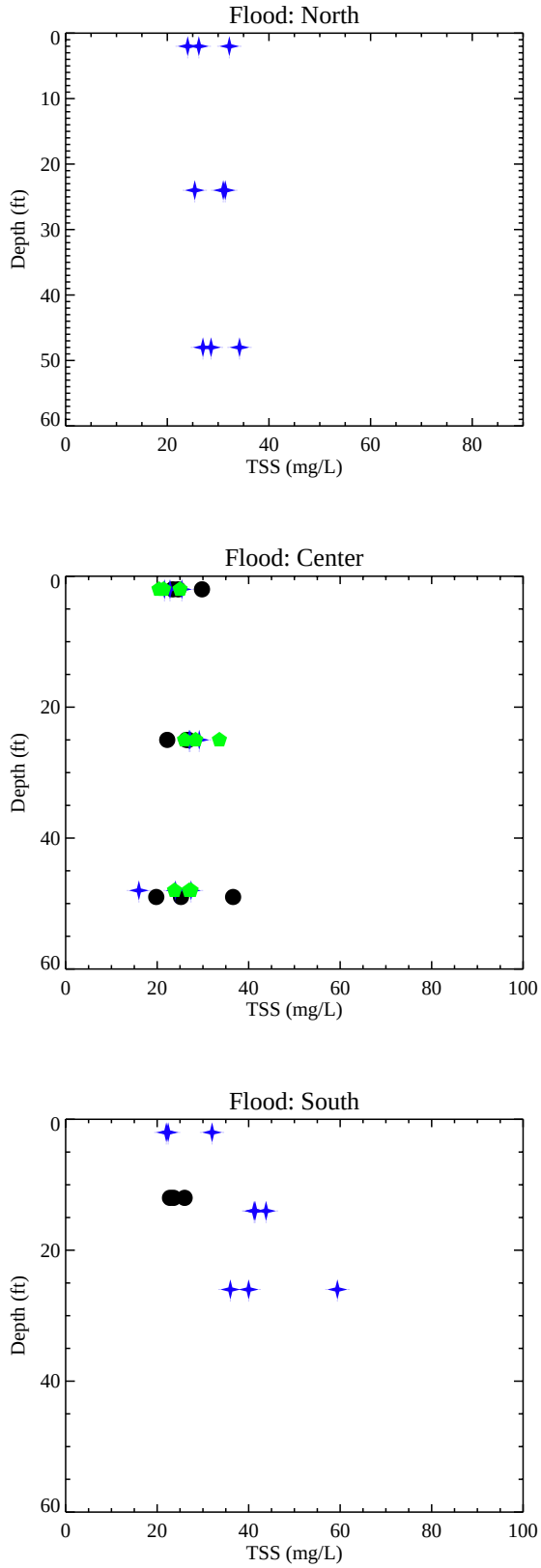
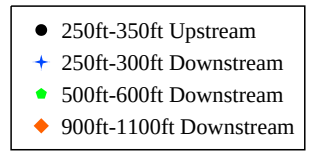


Figure 5d. TSS concentrations measured at different positions upstream and downstream of a dredge located in Newark Bay near the Kill Van Kull on 08/15/05



Data Source: LMS/HDR, Inc. 2005. NY & NJ Harbor Deepening Project - TSS Sampling Data