

**PHASE 2 REPORT
FURTHER SITE CHARACTERIZATION AND ANALYSIS
VOLUME 2E - REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
HUDSON RIVER PCBs REASSESSMENT**

NOVEMBER 2000



For

**U.S. Environmental Protection Agency
Region 2
and
U.S. Army Corps of Engineers
Kansas City District**

**Book 2 of 2
Tables, Figures and Plates**

**TAMS Consultants, Inc.
Menzie-Cura & Associates, Inc.**

**PHASE 2 REPORT
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 VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
 HUDSON RIVER PCBs REASSESSMENT RI/FS**

CONTENTS

Volume 2E (Book 1 of 2)

	<u>Page</u>
TABLE OF CONTENTS	i
LIST OF TABLES	xiii
LIST OF FIGURES	xxv
LIST OF PLATES	xxvi
EXECUTIVE SUMMARY	ES-1
1.0 INTRODUCTION	1
1.1 Purpose of Report	1
1.2 Site History	2
1.2.1 Summary of PCB Sources to the Upper and Lower Hudson River	4
1.2.2 Summary of Phase 2 Geochemical Analyses	5
1.2.3 Extent of Contamination in the Upper Hudson River	5
1.2.3.1 PCBs in Sediment	5
1.2.3.2 PCBs in the Water Column	6
1.2.3.3 PCBs in Fish	7
1.3 Data Sources	8
1.4 Technical Approach and Ecological Assessment in the Superfund Process	10
1.5 Report Organization	11
2.0 PROBLEM FORMULATION	15
2.1 Site Characterization	15
2.1.1 Habitat Descriptions	16
2.1.1.1 Upper Hudson River Habitats	16
2.1.1.2 Lower Hudson River Habitats	17
2.1.2 Hudson River Natural History	21
2.1.3 Threatened and Endangered Species	24
2.1.4 Significant Habitats	26
2.1.5 Human Use of the River	27
2.2 Contaminants of Concern	28
2.3 Conceptual Model	30
2.3.1 Exposure Pathways in the Hudson River Ecosystem	31
2.3.1.1 Processes That Govern PCB Distributions in the Environment	31
2.3.1.2 Biological Fate and Transport Processes	32
2.3.1.3 Spatial and Temporal Issues in Congener-specific Uptake	36
2.3.2 Ecosystems of the Hudson River	37

**PHASE 2 REPORT
 FURTHER SITE CHARACTERIZATION AND ANALYSIS
 VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
 HUDSON RIVER PCBs REASSESSMENT RI/FS**

CONTENTS

Volume 2E (Book 1 of 2)

	<u>Page</u>
2.3.3 Aquatic Exposure Pathways	38
2.3.4 Terrestrial Exposure Pathways	39
2.4 Assessment Endpoints	40
2.5 Measurement Endpoints	41
2.6 Representative Receptors	50
2.6.1 Macroinvertebrate Communities	51
2.6.2 Fish Receptors	51
2.6.3 Avian Receptors	52
2.6.4 Mammalian Receptors	53
3.0 EXPOSURE ASSESSMENT	55
3.1 Quantifying PCB Mixtures and TEQs	56
3.1.1 Quantifying PCB Mixtures as Tri+ PCBs	58
3.1.2 Quantifying Toxic Equivalencies (TEQ)	58
3.2 Estimating Current and Future Exposures	61
3.2.1 Upper Hudson River Models	61
3.2.2 Lower Hudson River Models	62
3.2.2.1 Use of the Farley Models	63
3.2.2.2 Estimation of Striped Bass Body Burdens in the Lower Hudson	64
3.3 Exposure Concentrations in Water and Sediments	65
3.3.1 Measured Concentrations in Water and Sediments	65
3.3.2 Modeled Concentrations in Water and Sediments	66
3.3.3 Estimating Future Baseline TEQ Concentrations	66
3.4 Exposure to Benthic Invertebrates	67
3.4.1 Observed Benthic Invertebrate Concentrations	67
3.4.2 Modeled Benthic Invertebrate Concentrations	68
3.5 Exposure to Fish	68
3.5.1 Observed Fish Concentrations	69
3.5.2 Modeled Fish Concentrations	70
3.6 Exposure to Avian Wildlife	71
3.6.1 Measured Concentrations in Birds	71
3.6.2 Avian Exposure Models	71
3.6.2.1 Surface Water Ingestion Pathway	73
3.6.2.2 Incidental Sediment Ingestion Pathway	73
3.6.2.3 Dietary Exposure Pathway	75

**PHASE 2 REPORT
 FURTHER SITE CHARACTERIZATION AND ANALYSIS
 VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
 HUDSON RIVER PCBs REASSESSMENT RI/FS**

CONTENTS

Volume 2E (Book 1 of 2)

	<u>Page</u>
3.6.2.4 Behavioral and Temporal Modifying Factors Relating to Exposure	79
3.6.2.5 Biomagnification Factors for Predicting Egg Concentrations ...	79
3.6.3 Exposure Estimates for Avian Wildlife on a Total (Tri+) PCB Basis ...	80
3.6.4 Exposure Estimates for Avian Wildlife on a TEQ Basis	81
3.7 Exposure to Mammalian Wildlife	82
3.7.1 Observed Mammalian Concentrations	82
3.7.2 Mammalian Wildlife Exposure Models	83
3.7.2.1 Surface Water Ingestion Pathway	83
3.7.2.2 Incidental Sediment Ingestion Pathway	83
3.7.2.3 Dietary Exposure Pathway	84
3.7.2.4 Behavioral and Temporal Modifying Factors Relating to Exposure	87
3.7.3 Exposure Estimates for Mammalian Wildlife on a Total (Tri+) PCB Basis	87
3.7.4 Exposure Estimates for Mammalian Wildlife on a TEQ Basis	88
3.8 Uncertainty and Sensitivity in Exposure	89
3.9 Examination of Exposure Pathways Based on Congener Patterns	89
3.9.1 Identifying Aroclor Patterns for Use in the Toxicity Assessment	92
3.9.2 Determining the Relative Importance of Water, Sediment, and Dietary Exposures	94
4.0 EFFECTS ASSESSMENT	97
4.1 Polychlorinated Biphenyl Structure and Toxicity	97
4.1.1 Structure-Function Relationships of PCBs	97
4.1.2 Metabolic Activation and Toxicity of PCBs	98
4.1.3 Estimating the Ecological Effects of PCBs	99
4.2 Selection of Measures of Effects	101
4.2.1 Methodology Used to Derive TRVs	103
4.2.2 Selection of TRVs for Benthic Invertebrates	106
4.2.3 Selection of TRVs for Fish	106
4.2.3.1 Pumpkinseed (<i>Lepomis gibbosus</i>)	107
4.2.3.2 Spottail Shiner (<i>Notropis hudsonius</i>)	104
4.2.3.3 Brown Bullhead (<i>Ictalurus nebulosus</i>)	112
4.2.3.4 Yellow Perch (<i>Perca flavescens</i>)	114

**PHASE 2 REPORT
 FURTHER SITE CHARACTERIZATION AND ANALYSIS
 VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
 HUDSON RIVER PCBs REASSESSMENT RI/FS**

CONTENTS

Volume 2E (Book 1 of 2)

	<u>Page</u>
4.2.3.5 White Perch (<i>Morone americana</i>)	117
4.2.3.6 Largemouth Bass (<i>Micropterus salmoides</i>)	120
4.2.3.7 Striped Bass (<i>Morone saxatilis</i>)	122
4.2.4 Selection of TRVs for Avian Receptors	125
4.2.4.1 Tree Swallow (<i>Tachycineta bicolor</i>)	125
4.2.4.2 Mallard (<i>Anas platyrhynchos</i>)	130
4.2.4.3 Belted Kingfisher (<i>Ceryle alcyon</i>)	134
4.2.4.4 Great Blue Heron (<i>Ardea herodias</i>)	138
4.2.4.5 Bald Eagle (<i>Haliaeetus leucocephalus</i>)	142
4.2.5 Selection of TRVs for Mammalian Receptors	145
4.2.5.1 Little Brown Bat (<i>Myotis lucifugus</i>)	145
4.2.5.2 Raccoon (<i>Procyon lotor</i>)	147
4.2.5.3 Mink (<i>Mustela vison</i>)	149
4.2.5.4 River Otter (<i>Lutra canadensis</i>)	151
4.3 Dose-Response Functions from the Literature	154
5.0 RISK CHARACTERIZATION	155
5.1 Evaluation of Assessment Endpoint: Sustainability of a Benthic Invertebrate Community That Can Serve as a Food Source for Local Fish for Local Fish and Wildlife	156
5.1.1 Does the Benthic Community Structure Reflect the Influence of PCBs?	156
5.1.1.1 Measurement Endpoint: TI Pool (Upper Hudson River) Benthic Invertebrate Community Analysis	156
5.1.1.2 Measurement Endpoint: Lower Hudson Benthic Invertebrate Community Analysis	158
5.1.2 Do Measured and Modeled Sediment Concentrations Exceed Guidelines?.	159
5.1.2.1 Measurement Endpoint: Comparison of Sediment PCB Concentrations to Guidelines	159
5.2 Evaluation of Assessment Endpoint: Sustainability (<i>i.e.</i> , Survival, Growth, and Reproduction) of Local Fish Populations	161
5.2.1 Do Measured and/or Modeled Total and TEQ-Based PCB Body Burdens in Local Fish Species Exceed Benchmarks for Adverse Effects on Fish Reproduction?	161

**PHASE 2 REPORT
 FURTHER SITE CHARACTERIZATION AND ANALYSIS
 VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
 HUDSON RIVER PCBs REASSESSMENT RI/FS**

CONTENTS

Volume 2E (Book 1 of 2)

	<u>Page</u>
5.2.1.1 Measurement Endpoint: Comparison of Measured and Modeled Total PCB Fish Body Burdens to Toxicity Reference Values for Forage Fish	161
5.2.1.2 Measurement Endpoint: Comparison of Modeled TEQ Fish Body Burdens to Toxicity Reference Values for Forage Fish	161
5.2.1.3 Measurement Endpoint: Comparison of Modeled Total PCB Fish Body Burdens to Toxicity Reference Values for Brown Bullhead	162
5.2.1.4 Measurement Endpoint: Comparison of Modeled TEQ Basis Fish Body Burdens to Toxicity Reference Values for Brown Bullhead	162
5.2.1.5 Measurement Endpoint: Comparison of Observed Total PCB and TEQ Basis Fish Body Burdens to Toxicity Reference Values for Largemouth Bass and Brown Bullhead	162
5.2.1.6 Measurement Endpoint: Comparison of Measured Total and TEQ-based PCB Fish Body Burdens to Toxicity Reference Values for White and Yellow Perch Based on NYSDEC Data	163
5.2.1.7 Measurement Endpoint: Comparison of Modeled Total PCB Fish Body Burdens to Toxicity Reference Values for White and Yellow Perch for the Period 1993 - 2018	163
5.2.1.8 Measurement Endpoint: Comparison of Modeled TEQ Basis Body Burdens to Toxicity Reference Values for White and Yellow Perch for the Period 1993 - 2018	164
5.2.1.9 Measurement Endpoint: Comparison of Modeled Tri+ PCB Fish Body Burdens to Toxicity Reference Values for Large-mouth Bass for the Period 1993 - 2018	164
5.2.1.10 Measurement Endpoint: Comparison of Modeled TEQ Based Fish Body Burdens to Toxicity Reference Values for Largemouth Bass for the Period 1993 - 2018	164
5.2.1.11 Measurement Endpoint: Comparison of Observed Striped Bass Concentrations to Toxicity Reference Values on a Total (Tri+) and TEQ PCB Basis	164
5.2.1.12 Measurement Endpoint: Comparison of Modeled Striped Bass Concentrations to Toxicity Reference Values on a Total (Tri+) and TEQ PCB Basis	165

**PHASE 2 REPORT
 FURTHER SITE CHARACTERIZATION AND ANALYSIS
 VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
 HUDSON RIVER PCBs REASSESSMENT RI/FS**

CONTENTS

Volume 2E (Book 1 of 2)

	<u>Page</u>
5.2.2 Do Measured and Modeled PCB Water Concentrations Exceed Appropriate Criteria and/or Guidelines for the Protection of Wildlife?	165
5.2.2.1 Measurement Endpoint: Comparison of Water Column Concentrations of PCBs to Criteria	165
5.2.3 Do Measured and Modeled Sediment Concentrations Exceed Appropriate Criteria and/or Guidelines for the Protection of Aquatic Life and Wildlife?	165
5.2.3.1 Measurement Endpoint: Comparison of Sediment PCB Concentrations to Guidelines	165
5.2.4 What Do the Available Field-Based Observations Suggest About the Health of Local Fish Populations?	166
5.2.4.1 Measurement Endpoint: Evidence from Field Studies	166
5.3 Evaluation of Assessment Endpoint: Sustainability (<i>i.e.</i> , Survival, Growth, and Reproduction) of Hudson River Insectivorous Birds (as Representated by the Tree Swallow)	168
5.3.1 Do Measured and Modeled Total and TEQ-Based PCB Dietary Doses to Insectivorous Birds and Egg Concentrations Exceed Benchmarks for Adverse Effects on Reproduction?	168
5.3.1.1 Measurement Endpoint: Modeled Dietary Doses of Total PCBs (<i>i.e.</i> , Tri+) to Insectivorous Birds (Tree Swallow) and Predicted Egg Concentrations Using 1993 Data	168
5.3.1.2 Measurement Endpoint: Modeled Dietary Doses on a Tri+ PCB Basis to Insectivorous Birds (Tree Swallow) for the Period 1993 - 2018	169
5.3.1.3 Measurement Endpoint: Predicted Egg Concentrations on a Tri+ PCB Basis to Insectivorous Birds (Tree Swallow) for the Period 1993 - 2018	169
5.3.1.4 Measurement Endpoint: Modeled Dietary Doses of PCBs and Predicted Egg Concentrations Expressed as TEQ to Insectivorous Birds (Tree Swallow) Based on 1993 Data ...	169
5.3.1.5 Measurement Endpoint: Modeled Dietary Doses of PCBs Expressed as TEQ to Insectivorous Birds (Tree Swallow) for the Period 1993 - 2018	169

**PHASE 2 REPORT
 FURTHER SITE CHARACTERIZATION AND ANALYSIS
 VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
 HUDSON RIVER PCBs REASSESSMENT RI/FS**

CONTENTS

Volume 2E (Book 1 of 2)

	<u>Page</u>
5.3.1.6 Measurement Endpoint: Predicted Egg Concentrations Expressed as TEQ to Insectivorous Birds (Tree Swallow) for the Period 1993 - 2018	169
5.3.2 Do Measured and Modeled PCB Water Concentrations Exceed Criteria and/or Guidelines for the Protection of Insectivorous Birds/Wildlife?	169
5.3.2.1 Measurement Endpoint: Comparison of Measured and Modeled Water Concentrations to Criteria and/or Guidelines	169
5.3.3 What Do the Available Field-Based Observations Suggest About the Health of Local Insectivorous Bird Populations?	170
5.3.3.1 Measurement Endpoint: Observational Studies	170
5.4 Evaluation of Assessment Endpoint: Sustainability (<i>i.e.</i> , Survival, Growth and Reproduction) of Local Waterfowl (as represented by Mallards)	171
5.4.1 Do Measured and Modeled Total and TEQ-Based PCB Dietary Doses to Waterfowl and Egg Concentrations Exceed Benchmarks for Adverse Effects on Reproduction?	171
5.4.1.1 Measurement Endpoint: Modeled Dietary Doses of PCBs and Predicted Egg Concentrations as Total PCBs to Waterfowl (Mallard Ducks) Based on 1993 Data	171
5.4.1.2 Measurement Endpoint: Modeled Dietary Doses of Tri+ PCBs to Waterfowl (Mallard Ducks) for the Period 1993 - 2018	171
5.4.1.3 Measurement Endpoint: Predicted Egg Concentrations of Tri+ PCBs to Waterfowl (Mallard Ducks) for the Period 1993 - 2018	171
5.4.1.4 Measurement Endpoint: Modeled Dietary Doses and Predicted Egg Concentrations of TEQ-Based PCBs to Waterfowl (Mallard Ducks) Using 1993 Data	171
5.4.1.5 Measurement Endpoint: Modeled Dietary Doses of TEQ-Based PCBs to Waterfowl (Mallard Ducks) for the Period 1993 - 2018	172

**PHASE 2 REPORT
 FURTHER SITE CHARACTERIZATION AND ANALYSIS
 VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
 HUDSON RIVER PCBs REASSESSMENT RI/FS**

CONTENTS

Volume 2E (Book 1 of 2)

	<u>Page</u>
5.4.1.6 Measurement Endpoint: Predicted Egg Concentrations of TEQ-Based PCBs to Waterfowl (Mallard Ducks) for the Period 1993 - 2018	172
5.4.2 Do Measured and Modeled Water Concentrations Exceed Criteria and/or Guidelines for the Protection of Waterfowl/Wildlife?	172
5.4.2.1 Measurement Endpoint: Comparison of Measured and Modeled Water Concentrations to Criteria and/or Guidelines	172
5.4.3 What Do the Available Field-Based Observations Suggest About the Health of Local Waterfowl Populations?	172
5.4.3.1 Measurement Endpoint: Observational Studies	172
5.5 Evaluation of Assessment Endpoint: Sustainability (<i>i.e.</i> , Survival, Growth, and Reproduction) of Hudson River Piscivorous Bird Species (as represented By the Belted Kingfisher, Great Blue Heron, and Bald Eagle)	173
5.5.1 Do Measured and Modeled Total and TEQ-Based PCB Dietary Doses To Piscivorous Birds and Egg Concentrations Exceed Benchmarks for Adverse Effects on Reproduction?	173
5.5.1.1 Measurement Endpoint: Modeled Dietary Doses of PCBs and Predicted Egg Concentrations for Total PCBs for Piscivorous Birds (Belted Kingfisher, Great Blue Heron, Bald Eagle) Using 1993 Data	173
5.5.1.2 Measurement Endpoint: Modeled Dietary Doses of Total (Tri+) PCBs to Piscivorous Birds (Belted Kingfisher, Great Blue Heron, Bald Eagle) for the Period 1993-2018.	174
5.5.1.3 Measurement Endpoint: Predicted Egg Concentrations Expressed as Tri+ to Piscivorous Birds (Belted Kingfisher, Great Blue Heron, Bald Eagle) for the Period 1993 - 2018	174
5.5.1.4 Measurement Endpoint: Modeled Dietary Doses and Predicted Egg Concentrations of PCBs on a TEQ Basis to Piscivorous Birds (Belted Kingfisher, Great Blue Heron, Bald Eagle) Using 1993 Data	175
5.5.1.5 Measurement Endpoint: Modeled Dietary Doses of PCBs Expressed as TEQs to Piscivorous Birds (Belted Kingfisher, Great Blue Heron, Bald Eagle) for the Period 1993 - 2018	176

**PHASE 2 REPORT
 FURTHER SITE CHARACTERIZATION AND ANALYSIS
 VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
 HUDSON RIVER PCBs REASSESSMENT RI/FS**

CONTENTS

Volume 2E (Book 1 of 2)

	<u>Page</u>
5.5.1.6 Measurement Endpoint: Predicted Egg Concentrations of PCBs Expressed as TEQs to Piscivorous Birds (Belted Kingfisher, Great Blue Heron, Bald Eagle) for the Period 1993 - 2018	176
5.5.2 Do Measured and Modeled Water Concentrations Exceed Criteria And/or Guidelines for the Protection of Wildlife?	177
5.5.2.1 Measurement Endpoint: Comparison of Measured and Modeled Water Concentrations to Criteria and/or Guidelines . .	177
5.5.3 What Do the Available Field-Based Observations Suggest About the Health of Local Piscivorous Bird Populations?	177
5.5.3.1 Measurement Endpoint: Observational Studies	177
5.6 Evaluation of Assessment Endpoint: Sustainability (<i>i.e.</i> , Survival and Reproduction) of Local Insectivorous Mammals (as Represented by the Little Brown Bat)	179
5.6.1 Do Measured and Modeled Total and TEQ-Based PCB Dietary Doses to Insectivorous Mammalian Receptors Exceed Benchmarks for Adverse Effects on Reproduction?	179
5.6.1.1 Measurement Endpoint: Modeled Dietary Doses of Tri+ to Insectivorous Mammalian Receptors (Little Brown Bat) Using 1993 Data	179
5.6.1.2 Measurement Endpoint: Modeled Dietary Doses of Tri+ to Insectivorous Mammalian Receptors (Little Brown Bat) for the Period 1993 - 2018	179
5.6.1.3 Measurement Endpoint: Modeled Dietary Doses on a TEQ Basis to Insectivorous Mammalian Receptors (Little Brown Bat) Using 1993 Data	179
5.6.1.4 Measurement Endpoint: Modeled Dietary Doses on a TEQ Basis to Insectivorous Mammalian Receptors (Little Brown Bat) for the Period 1993 - 2018	180
5.6.2 Do Measured and Modeled Water Concentrations Exceed Criteria and/or Guidelines for the Protection of Wildlife?	180
5.6.2.1 Measurement Endpoint: Comparison of Measured and Modeled Water Concentrations to Criteria and/or Guidelines	180
5.6.3 What Do the Available Field-Based Observations Suggest About the Health of Local Insectivorous Mammal Populations?	181

**PHASE 2 REPORT
 FURTHER SITE CHARACTERIZATION AND ANALYSIS
 VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
 HUDSON RIVER PCBs REASSESSMENT RI/FS**

CONTENTS

Volume 2E (Book 1 of 2)

		<u>Page</u>
	5.6.3.1 Measurement Endpoint: Observational Studies	181
5.7	Evaluation of Assessment Endpoint: Sustainability (<i>i.e.</i> , Survival and Reproduction) of Local Omnivorous Mammals (as Represented by the Raccoon) . . .	181
5.7.1	Do Measured and Modeled Total and TEQ-Based PCB Dietary Doses to Omnivorous Mammalian Receptors Exceed Benchmarks for Adverse Effects on Reproduction?	181
5.7.1.1	Measurement Endpoint: Modeled Dietary Doses of Tri+ to Omnivorous Mammalian Receptors (Raccoon) using 1993 Data	181
5.7.1.2	Measurement Endpoint: Modeled Dietary Doses of Tri+ to Omnivorous Mammalian Receptors (Raccoon) for the Period 1993 - 2018	181
5.7.1.3	Measurement Endpoint: Modeled Dietary Doses on a TEQ Basis to Omnivorous Mammalian Receptors (Raccoon) using 1993 Data	182
5.7.1.4	Measurement Endpoint: Modeled Dietary Doses on a TEQ Basis to Omnivorous Mammalian Receptors (Raccoon) for the Period 1993 - 2018	182
5.7.2	Do Measured and Modeled Water Concentrations Exceed Criteria and/or Guidelines for the Protection of Omnivorous Mammals/Wildlife?	182
5.7.2.1	Measurement Endpoint: Comparison of Measured and Modeled Water Concentrations to Criteria and/or Guidelines	182
5.7.3	What Do the Available Field-Based Observations Suggest About the Health of Local Omnivorous Mammal Populations?	183
5.7.3.1	Measurement Endpoint: Observational Studies	183
5.8	Evaluation of Assessment Endpoint: Sustainability (<i>i.e.</i> , Survival and Reproduction) of Local Piscivorous Mammals (as Represented by the Mink and River Otter)	183
5.8.1	Measurement Endpoint: Measured Total PCB Concentrations in the Liver of Piscivorous Mammalian Receptors (Mink, River Otter)	183
5.8.1.1	Measurement Endpoint: Modeled Dietary Doses of Tri+ to Piscivorous Mammalian Receptors (Mink, River Otter) using 1993 Data	183

**PHASE 2 REPORT
 FURTHER SITE CHARACTERIZATION AND ANALYSIS
 VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
 HUDSON RIVER PCBs REASSESSMENT RI/FS**

CONTENTS

Volume 2E (Book 1 of 2)

	<u>Page</u>
5.8.1.2 Measurement Endpoint: Modeled Dietary Doses of Tri+ to Piscivorous Mammalian Receptors (Mink, River Otter) for the Period 1993 - 2018	184
5.8.1.3 Measurement Endpoint: Modeled Dietary Doses on a TEQ Basis to Piscivorous Mammalian Receptors (Mink, River Otter) Using 1993 Data	185
5.8.1.4 Measurement Endpoint: Modeled Dietary Doses on a TEQ Basis to Piscivorous Mammalian Receptors (Mink, River Otter) for the Period 1993 - 2018	185
5.8.2 Do Measured and Modeled Water Concentrations Exceed Criteria and/or Guidelines for the Protection of Wildlife?	186
5.8.2.1 Measurement Endpoint: Comparison of Measured and Modeled Water Concentrations to Criteria and/or Guidelines for the Protection of Wildlife	186
5.8.3 What Do the Available Field-Based Observations Suggest About the Health of Local Mammalian Populations?	186
5.8.3.1 Measurement Endpoint: Observational Studies	186
5.9 Results of the Probabilistic Dose-Response Analysis	187
5.9.1 Belted Kingfisher	187
5.9.2 Bald Eagle	187
5.9.3 Mink	188
5.9.4 River Otter	188
6.0 UNCERTAINTY ANALYSIS	189
6.1 Sampling Error and Representativeness	189
6.2 Analysis and Quantitation Uncertainties	190
6.2.1 TEQ Quantitation	192
6.3 Conceptual Model Uncertainties	192
6.4 Toxicological Uncertainties	193
6.5 Exposure and Modeling Uncertainties	195
6.5.1 Natural Variation and Parameter Error	195
6.5.1.1 Food Chain Exposures	196
6.5.2 Sensitivity and Uncertainty Analysis for Risk Models	201
6.5.3 Model Error	202
6.5.3.1 Uncertainty in FISHRAND Model Predictions	203

**PHASE 2 REPORT
 FURTHER SITE CHARACTERIZATION AND ANALYSIS
 VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
 HUDSON RIVER PCBs REASSESSMENT RI/FS**

CONTENTS

Volume 2E (Book 1 of 2)

	<u>Page</u>
6.5.3.2 Uncertainty in the Farley Models	204
6.6 Summary	205
7.0 CONCLUSIONS	207
7.1 Assessment Endpoint: Sustainability of a Benthic Invertebrate Community, Which Serves as a Food Source for Local Fish and Wildlife	207
7.2 Assessment Endpoint: Sustainability (<i>i.e.</i> , Survival, Growth, and Repro- duction) of Local Fish Populations	208
7.3 Assessment Endpoint: Sustainability (<i>i.e.</i> , Survival, Growth, and Repro- duction) of Local Insectivorous Birds	213
7.4 Assessment Endpoint: Sustainability (<i>i.e.</i> , Survival, Growth, and Repro- duction) of Local Waterfowl	215
7.5 Assessment Endpoint: Sustainability (<i>i.e.</i> , Survival, Growth and Repro- duction) of Hudson River Piscivorous Bird Species	217
7.6 Assessment Endpoint: Sustainability (<i>i.e.</i> , Survival, Growth and Repro- duction) of Local Insectivorous Mammals	220
7.7 Assessment Endpoint: Sustainability (<i>i.e.</i> , Survival, Growth and Repro- duction) of Local Omnivorous Mammals	222
7.8 Assessment Endpoint: Sustainability (<i>i.e.</i> , Survival, Growth and Repro- duction) of Local Piscivorous Mammals	223
7.9 Summary	225
REFERENCES	227

**PHASE 2 REPORT
FURTHER SITE CHARACTERIZATION AND ANALYSIS
VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
HUDSON RIVER PCBs REASSESSMENT RI/FS**

CONTENTS

Volume 2E (Book 2 of 2)

LIST OF TABLES:

- 1-1 Average Fish Tissue Concentrations from 1998 NYSDEC Sampling in the Upper Hudson River, Reported as mg/kg Wet Weight and Converted to a Consistent Estimator of Tri+ PCBs
- 1-2 Average Fish Tissue Concentrations from 1998 NYSDEC Sampling in the Upper Hudson River, Reported as mg/kg-Lipid and Converted to a Consistent Estimator of Tri+ PCBs
- 1-3 Half-Life Comparison of Data Lipid-Based Annual Average PCB Concentrations in Fish
- 2-1 Hudson River Fishes
- 2-2 Typical Fish Aggregations in the Upper Hudson River Estuary (RM 101-153)
- 2-3 Amphibians Potentially Found Along the Hudson River
- 2-4 Reptiles Potentially Found Along the Hudson River
- 2-5 Breeding Birds of the Hudson River
- 2-6 Mammals Potentially Found Along the Hudson River
- 2-7 NYS Rare and Listed Species and Habitats Occurring in the Vicinity of the Hudson River
- 2-8 Hudson River Significant Habitats
- 2-9 Hudson River Significant Habitat Species and Resources
- 2-10 Assessment and Measurement Endpoints
- 2-11 Hudson River Receptor Species

- 3-1 Average Proportion of Fish-Based TEQ Congeners Using USEPA 1993 Dataset and USFWS 1995 Dataset
- 3-2 Fraction of Tri+ Chlorinated Congeners Expressed as Toxic Equivalencies (TEQ)
- 3-3 Summary of Conversion for the Di through Hexa Homologues used in the Farley Model (table 3-1 of ERA addendum)
- 3-3a Predicted Annual Tri+ PCBs Loads To The Lower Hudson River
- 3-4 Ratio of Striped Bass to Largemouth Bass Concentrations (table 3-2 of ERA addendum)
- 3-5 Whole Water Concentrations Based on USEPA Phase 2 Dataset
- 3-6 Dry Weight Sediment Concentrations Based on USEPA Phase 2 Dataset
- 3-7 Summary of Tri+ Whole Water Concentrations from the HUDTOX (Upper River) and Farley (Lower River) Models and TEQ-Based Predictions for 1993 - 2018
- 3-8 Summary of Tri+ Sediment Concentrations from the HUDTOX (Upper River) and Farley (Lower River) Models and TEQ-Based Predictions for 1993 - 2018
- 3-9 Summary of Organic Carbon Normalized Tri+ Sediment Concentrations from the HUDTOX (Upper River) and Farley (Lower River) Models and TEQ-Based Predictions for 1993 - 2018
- 3-10 Benthic Invertebrate Concentrations Based on USEPA Phase 2 Dataset

PHASE 2 REPORT
FURTHER SITE CHARACTERIZATION AND ANALYSIS
VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
HUDSON RIVER PCBs REASSESSMENT RI/FS

CONTENTS

Volume 2E (Book 2 of 2)

- 3-11 Summary of Tri+ Benthic Invertebrate Concentrations from the FISHRAND Model and TEQ-Based Predictions for 1993 - 2018
- 3-12 Forage Fish Concentrations Based on USEPA Phase 2 Dataset
- 3-13 Observed Concentrations in PPM for Fish Species for River Miles 113, 152, 168 and 189 from NYSDEC Dataset
- 3-14 Observed Striped Bass Concentrations from NYSDEC for the Hudson River
- 3-15 Largemouth Bass Predicted Tri+ Concentrations for 1993 - 2018
- 3-16 Brown Bullhead Predicted Tri+ Concentrations for 1993 - 2018
- 3-17 White Perch Predicted Tri+ Concentrations for 1993 - 2018
- 3-18 Yellow Perch Predicted Tri+ Concentrations for 1993 - 2018
- 3-19 Striped Bass Predicted Tri+ Concentrations for 1993 - 2018
- 3-20a Observed Avian Total PCB Concentrations
- 3-20b Observed Mammalian Total PCB Concentrations
- 3-21 Exposure Parameters for the Tree Swallow (*Tachycineta bicolor*)
- 3-22 Exposure Parameters for the Mallard (*Anas platyrhynchos*)
- 3-23 Exposure Parameters for the Belted Kingfisher (*Ceryle alcyon*)
- 3-24 Exposure Parameters for Great Blue Heron (*Ardea herodias*)
- 3-25 Exposure Parameters for the Bald Eagle (*Haliaeetus leucocephalus*)
- 3-26 Biomagnification Factors Fish to Bird Egg from Scientific Literature
- 3-26a Ratio of Egg And Chick To Insect and Odonata from Hudson River USFWS Data
- 3-27 Summary of ADD_{EXPECTED} and Egg Concentrations for Female Tree Swallow Based on 1993 Data Using Sum of Tri+ Congeners
- 3-28 Summary of ADD_{95%UCL} and Egg Concentrations for Female Tree Swallow Based on 1993 Data Using Sum of Tri+ Congeners
- 3-29 Summary of Upper River ADD_{EXPECTED} and Egg Concentrations for Female Tree Swallow Based on Tri+ Congeners for Period 1993 - 2018
- 3-30 Summary of Lower River ADD_{EXPECTED} and Egg Concentrations for Female Tree Swallow Based on Tri+ Congeners for Period 1993 - 2018
- 3-31 Summary of ADD_{EXPECTED} and Egg Concentrations for Female Mallard Based on 1993 Data Using Sum of Tri+ Congeners
- 3-32 Summary of ADD_{95%UCL} and Egg Concentrations for Female Mallard Based on 1993 Data Using Sum of Tri+ Congeners
- 3-33 Summary of Upper River ADD_{EXPECTED} and Egg Concentrations for Female Mallard Based on Tri+ Congeners for Period 1993 - 2018
- 3-34 Summary of Lower River ADD_{EXPECTED} and Egg Concentrations for Female Mallard Based on Tri+ Congeners for Period 1993 - 2018

**PHASE 2 REPORT
FURTHER SITE CHARACTERIZATION AND ANALYSIS
VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
HUDSON RIVER PCBs REASSESSMENT RI/FS**

CONTENTS

Volume 2E (Book 2 of 2)

- 3-35 Summary of Upper River ADD_{EXPECTED} and Egg Concentrations for Female Belted Kingfisher Based on 1993 Data Using Sum of Tri+ Congeners
- 3-36 Summary of ADD_{95%UCL} and Egg Concentrations for Female Belted Kingfisher Based on 1993 Data Using Sum of Tri+ Congeners
- 3-37 Summary of Upper River ADD_{EXPECTED} and Egg Concentrations for Female Belted Kingfisher Based on Tri+ Congeners for Period 1993 - 2018
- 3-38 Summary of Lower River ADD_{EXPECTED} and Egg Concentrations for Female Belted Kingfisher Based on Tri+ Congeners for Period 1993 - 2018
- 3-39 Summary of Upper River ADD_{EXPECTED} and Egg Concentrations for Female Great Blue Heron Based on 1993 Data Using Sum of Tri+ Congeners
- 3-40 Summary of ADD_{95%UCL} and Egg Concentrations for Female Great Blue Heron Based on 1993 Data Using Sum of Tri+ Congeners
- 3-41 Summary of Upper River ADD_{EXPECTED} and Egg Concentrations for Female Great Blue Heron Based on Tri+ Congeners for Period 1993 - 2018
- 3-42 Summary of Lower River ADD_{EXPECTED} and Egg Concentrations for Female Great Blue Heron Based on Tri+ Congeners for Period 1993 - 2018
- 3-43 Summary of ADD_{EXPECTED} and Egg Concentrations for Female Eagle Based on 1993 Data Using Sum of Tri+ Congeners
- 3-44 Summary of ADD_{95%UCL} and Egg Concentrations for Female Eagle Based on 1993 Data Using Sum of Tri+ Congeners
- 3-45 Summary of Upper River ADD_{EXPECTED} and Egg Concentrations for Female Eagle Based on Tri+ Congeners for Period 1993 - 2018
- 3-46 Summary of Lower River ADD_{EXPECTED} and Egg Concentrations for Female Eagle Based on Tri+ Congeners for Period 1993 - 2018
- 3-47 Summary of ADD_{EXPECTED} and Egg Concentrations for Female Tree Swallow Based on 1993 Data on TEQ Basis
- 3-48 Summary of ADD_{95%UCL} and Egg Concentrations for Female Tree Swallow Based on 1993 Data on TEQ Basis
- 3-49 Summary of Upper River ADD_{EXPECTED} and Egg Concentrations for Female Tree Swallow for the Period 1993 - 2018 on TEQ Basis
- 3-50 Summary of Lower River ADD_{EXPECTED} and Egg Concentrations for Female Tree Swallow for the Period 1993 - 2018 on TEQ Basis
- 3-51 Summary of ADD_{EXPECTED} and Egg Concentrations for Female Mallard Based on 1993 Data on a TEQ Basis
- 3-52 Summary of ADD_{95%UCL} and Egg Concentrations for Female Mallard Based on 1993 Data on a TEQ Basis

**PHASE 2 REPORT
FURTHER SITE CHARACTERIZATION AND ANALYSIS
VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
HUDSON RIVER PCBs REASSESSMENT RI/FS**

CONTENTS

Volume 2E (Book 2 of 2)

- 3-53 Summary of Upper River ADD_{EXPECTED} and Egg Concentrations for Female Mallard on a TEQ Basis for Period 1993 - 2018
- 3-54 Summary of Lower River ADD_{EXPECTED} and Egg Concentrations for Female Mallard on a TEQ Basis for Period 1993 - 2018
- 3-55 Summary of ADD_{EXPECTED} and Egg Concentrations for Female Belted Kingfisher Based on 1993 Data on TEQ Basis
- 3-56 Summary of ADD_{95%UCL} and Egg Concentrations for Female Belted Kingfisher Based on 1993 Data on TEQ Basis
- 3-57 Summary of Upper River ADD_{EXPECTED} and Egg Concentrations for Female Belted Kingfisher for the Period 1993 - 2018 on TEQ Basis
- 3-58 Summary of Lower River ADD_{EXPECTED} and Egg Concentrations for Female Belted Kingfisher for the Period 1993 - 2018 on TEQ Basis
- 3-59 Summary of ADD_{EXPECTED} and Egg Concentrations for Female Great Blue Heron Based on 1993 Data on TEQ Basis
- 3-60 Summary of ADD_{95%UCL} and Egg Concentrations for Female Great Blue Heron Based on 1993 Data on TEQ Basis
- 3-61 Summary of Upper River ADD_{EXPECTED} and Egg Concentrations for Female Great Blue Heron for the Period 1993 - 2018 on TEQ Basis
- 3-62 Summary of Lower River ADD_{EXPECTED} and Egg Concentrations for Female Great Blue Heron for the Period 1993 - 2018 on TEQ Basis
- 3-63 Summary of ADD_{EXPECTED} and Egg Concentrations for Female Eagle Based on 1993 Data on TEQ Basis
- 3-64 Summary of ADD_{95%UCL} and Egg Concentrations for Female Eagle Based on 1993 Data on TEQ Basis
- 3-65 Summary of Upper River ADD_{EXPECTED} and Egg Concentrations for Female Eagle for the Period 1993 - 2018 on TEQ Basis
- 3-66 Summary of Lower River ADD_{EXPECTED} and Egg Concentrations for Female Eagle for the Period 1993 - 2018 on TEQ Basis
- 3-67 Exposure Parameters for Little Brown Bat (*Myotis lucifugus*)
- 3-68 Exposure Parameters for Raccoon (*Procyon lotor*) use updated addendum table
- 3-69 Exposure Parameters for Mink (*Mustela vison*)
- 3-70 Exposure Parameters for River Otter (*Lutra canadensis*)
- 3-71 Summary of ADD_{EXPECTED} for Female Bat Using 1993 Data Based on Tri+ Congeners
- 3-72 Summary of ADD_{95%UCL} for Female Bat Using 1993 Data Based on Tri+ Congeners
- 3-73 Summary of Upper River ADD_{EXPECTED} for Female Bat Based on Tri+ Predictions for the Period 1993 - 2018

**PHASE 2 REPORT
FURTHER SITE CHARACTERIZATION AND ANALYSIS
VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
HUDSON RIVER PCBs REASSESSMENT RI/FS**

CONTENTS

Volume 2E (Book 2 of 2)

- 3-74 Summary of Lower River ADD_{EXPECTED} for Female Bat Based on Tri+ Predictions for the Period 1993 - 2018
- 3-75 Summary of ADD_{EXPECTED} for Female Raccoon Using 1993 Data Based on Tri+ Congeners
- 3-76 Summary of ADD_{95%UCL} for Female Raccoon Using 1993 Data Based on Tri+ Congeners
- 3-77 Summary of Upper River ADD_{EXPECTED} for Female Raccoon Based on Tri+ Predictions for the Period 1993 - 2018
- 3-78 Summary of Lower River ADD_{EXPECTED} for Female Raccoon Based on Tri+ Predictions for the Period 1993 - 2018
- 3-79 Summary of ADD_{EXPECTED} for Female Mink Using 1993 Data Based on Tri+ Congeners
- 3-80 Summary of ADD_{95%UCL} for Female Mink Using 1993 Data Based on Tri+ Congeners
- 3-81 Summary of Upper River ADD_{EXPECTED} for Female Mink Based on Tri+ Predictions for the Period 1993 - 2018
- 3-82 Summary of Lower River ADD_{EXPECTED} for Female Mink Based on Tri+ Predictions for the Period 1993 - 2018
- 3-83 Summary of ADD_{EXPECTED} for Female Otter Using 1993 Data Based on Tri+ Congeners
- 3-84 Summary of ADD_{95%UCL} for Female Otter Using 1993 Data Based on Tri+ Congeners
- 3-85 Summary of Upper River ADD_{EXPECTED} for Female Otter Based on Tri+ Predictions for the Period 1993 - 2018
- 3-86 Summary of Lower River ADD_{EXPECTED} for Female Otter Based on Tri+ Predictions for the Period 1993 - 2018
- 3-87 Summary of ADD_{EXPECTED} for Female Bat Using 1993 Data on a TEQ Basis
- 3-88 Summary of ADD_{95%UCL} for Female Bat Using 1993 Data on a TEQ Basis
- 3-89 Summary of Upper River ADD_{EXPECTED} for Female Bat on a TEQ Basis for the Period 1993 - 2018
- 3-90 Summary of Lower River ADD_{EXPECTED} for Female Bat on a TEQ Basis for the Period 1993 - 2018
- 3-91 Summary of ADD_{EXPECTED} for Female Raccoon Using 1993 Data on a TEQ Basis
- 3-92 Summary of ADD_{95%UCL} for Female Raccoon Using 1993 Data on a TEQ Basis
- 3-93 Summary of Upper River ADD_{EXPECTED} for Female Raccoon on a TEQ Basis for the Period 1993 - 2018
- 3-94 Summary of Lower River ADD_{EXPECTED} for Female Raccoon on a TEQ Basis for the Period 1993 - 2018
- 3-95 Summary of ADD_{EXPECTED} for Female Mink Using 1993 Data on a TEQ Basis
- 3-96 Summary of ADD_{95%UCL} for Female Mink Using 1993 Data on a TEQ Basis
- 3-97 Summary of Upper River ADD_{EXPECTED} for Female Mink on a TEQ Basis for the Period 1993 - 2018
- 3-98 Summary of Lower River ADD_{EXPECTED} for Female Mink on a TEQ Basis for the Period 1993 - 2018
- 3-99 Summary of ADD_{EXPECTED} for Female Otter Using 1993 Data on a TEQ Basis
- 3-100 Summary of ADD_{95%UCL} for Female Otter Using 1993 Data on a TEQ Basis
- 3-101 Summary of Upper River ADD_{EXPECTED} for Female Otter on a TEQ Basis for the Period 1993 - 2018

PHASE 2 REPORT
FURTHER SITE CHARACTERIZATION AND ANALYSIS
VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
HUDSON RIVER PCBs REASSESSMENT RI/FS

CONTENTS

Volume 2E (Book 2 of 2)

- 3-102 Summary of Lower River ADD_{EXPECTED} for Female Otter on a TEQ Basis for the Period 1993 - 2018
- 3-103 Summary of Distributions and Distribution Parameters

- 4-1 Common Effects of PCB Exposure in Animals
- 4-2 World-Health Organization for Toxic Equivalency Factors (TEFs) for Humans, Mammals, Fish, and Birds
- 4-3 Selected Sediment Screening Guidelines: PCBs
- 4-4 Toxicity Endpoints for Benthic Invertebrates - Effective Concentrations of Total PCBs, Aroclors and Dioxin Toxic Equivalents (TEQs)
- 4-5 Toxicity Endpoints for Fish - Laboratory Studies - Effective Concentrations of Total PCBs and Aroclors
- 4-6 Toxicity Endpoints for Fish - Field Studies - Effective Concentrations of Total PCBs and Aroclors
- 4-7 Toxicity Endpoints for Fish - Laboratory Studies - Effective Concentrations of Dioxin Toxic Equivalents (TEQs)
- 4-8 Toxicity Endpoints for Fish - Field Studies - Effective Concentrations of Dioxin Toxic Equivalents (TEQs)
- 4-9 Toxicity Endpoints for Birds - Laboratory Studies - Effective Dietary Doses of Total PCBs and Aroclors
- 4-10 Toxicity Endpoints for Birds - Field Studies - Effective Dietary Doses of Total PCBs and Aroclors
- 4-11 Toxicity Endpoints for Bird s - Laboratory Studies - Effective Dietary Doses of Dioxin Toxic Equivalents (TEQs)
- 4-12 Toxicity Endpoints for Birds Field Studies - Effective Dietary Doses of Dioxin Toxic Equivalents (TEQs)
- 4-13 Toxicity Endpoints for Bird Eggs - Laboratory Studies - Effective Concentrations of Total PCBs and Aroclors
- 4-14 Toxicity Endpoints for Bird Eggs - Field Studies - Effective Concentrations of Total PCBs and Aroclors
- 4-15 Toxicity Endpoints for Bird Eggs - Laboratory Studies - Effective Concentrations of Dioxin Toxic Equivalents (TEQs)
- 4-16 Toxicity Endpoints for Bird Eggs - Field Studies - Effective Concentrations of Dioxin Toxic Equivalents (TEQs)
- 4-17 Toxicity Endpoints for Other Mammals - Laboratory Studies - Effective Dietary Doses of Total PCBs and Aroclors
- 4-18 Toxicity Endpoints for Other Mammals - Laboratory Studies - Effective Dietary Doses of Dioxin Toxic Equivalents (TEQs)
- 4-19 Toxicity Endpoints for Mink - Laboratory Studies - Effective Dietary Doses of Total PCBs and Aroclors

PHASE 2 REPORT
FURTHER SITE CHARACTERIZATION AND ANALYSIS
VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
HUDSON RIVER PCBs REASSESSMENT RI/FS

CONTENTS

Volume 2E (Book 2 of 2)

- 4-20 Toxicity Endpoints for Mink - Field Studies - Effective Dietary Doses of Total PCBs and Aroclors
- 4-21 Toxicity Endpoints for Mink - Laboratory Studies - Effective Dietary Doses of Dioxin Toxic Equivalents (TEQs)
- 4-22 Toxicity Endpoints for Mink - Field Studies - Effective Dietary Doses of Dioxin Toxic Equivalents (TEQs)
- 4-23 Taxonomy of Studied Organisms
- 4-24 Standard Animal Body Weights and Food Intake Rates
- 4-25a Toxicity Reference Values for Fish - Dietary Doses and Egg Concentrations of Total PCBs and Dioxin Toxic Equivalents (TEQs) Without Uncertainty Factors
- 4-25b Toxicity Reference Values for Fish - Dietary Doses and Egg Concentrations of Total PCBs and Dioxin Toxic Equivalents (TEQs) With Uncertainty Factors
- 4-26a Toxicity Reference Values for Birds - Dietary Doses and Egg Concentrations of Total PCBs and Dioxin Toxic Equivalents (TEQs) Without Uncertainty Factors
- 4-26b Toxicity Reference Values for Birds - Dietary Doses and Egg Concentrations of Total PCBs and Dioxin Toxic Equivalents (TEQs) With Uncertainty Factors
- 4-27a Toxicity Reference Values for Mammals - Dietary Doses of Total PCBs and Dioxin Toxic Equivalents (TEQs) Without Uncertainty Factors
- 4-27b Toxicity Reference Values for Mammals - Dietary Doses of Total PCBs and Dioxin Toxic Equivalents (TEQs) With Uncertainty Factors

- 5-1 Benthic Invertebrates Collected at TI Pool Stations
- 5-2 Relative Abundance of Five Dominant Taxonomic Groups at TI Stations
- 5-3 Summary of Infauna and Total Benthos Indices - TI Pool
- 5-4 Relative Percent Abundance of Macroinvertebrates - Lower Hudson River
- 5-5 Summary of Diversity Indices and Abundance Data - Lower Hudson River
- 5-6 Ratio of Observed Sediment Concentrations to Guidelines
- 5-7 Ratio of Predicted Sediment Concentrations to Sediment Guidelines
- 5-8 Ratio of Measured Whole Water Concentrations to Benchmarks
- 5-9 Ratio of Predicted Whole Water Concentrations to Criteria and Benchmarks
- 5-10 Ratio of Measured Forage Fish Concentrations to Toxicity Benchmarks
- 5-11a Ratio of Predicted Pumpkinseed Concentrations to Laboratory-Based NOAEL for Tri+ PCBs - Upper River
- 5-11b Ratio of Predicted Pumpkinseed Concentrations to Laboratory-Based NOAEL for Tri+ PCBs - Lower River
- 5-12a Ratio of Predicted Pumpkinseed Concentrations to Laboratory-Based LOAEL for Tri+ PCBs - Upper River

**PHASE 2 REPORT
FURTHER SITE CHARACTERIZATION AND ANALYSIS
VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
HUDSON RIVER PCBs REASSESSMENT RI/FS**

CONTENTS

Volume 2E (Book 2 of 2)

- 5-12b Ratio of Predicted Pumpkinseed Concentrations to Laboratory-Based LOAEL for Tri+ PCBs - Lower River
- 5-13a Ratio of Predicted Spottail Shiner Concentrations to Field-Derived NOAEL for Tri+ PCBs - Upper River
- 5-13b Ratio of Predicted Spottail Shiner Concentrations to Field -Derived NOAEL for Tri+ PCBs - Lower River
- 5-14a Ratio of Predicted Spottail Shiner Concentrations to Field-Derived LOAEL for Tri+ PCBs- Upper River
- 5-14b Ratio of Predicted Spottail Shiner Concentrations to Field-Derived LOAEL for Tri+ PCBs - Lower River
- 5-15a Ratio of Predicted Pumpkinseed Concentrations to Laboratory-Derived NOAEL on a TEQ Basis - Upper River
- 5-15b Ratio of Predicted Pumpkinseed Concentrations to Laboratory-Derived NOAEL on a TEQ Basis - Lower River
- 5-16a Ratio of Predicted Spottail Shiner Concentrations to Laboratory-Derived NOAEL on a TEQ Basis - Upper River
- 5-16b Ratio of Predicted Spottail Shiner Concentrations to Laboratory-Derived NOAEL on a TEQ Basis - Lower River
- 5-17a Ratio of Predicted Brown Bullhead Concentrations to Laboratory-Derived NOAEL For Tri+ PCBs - Upper River
- 5-17b Ratio of Predicted Brown Bullhead Concentrations to Laboratory-Derived NOAEL For Tri+ PCBs - Lower River
- 5-18a Ratio of Predicted Brown Bullhead Concentrations to Laboratory-Derived LOAEL For Tri+ PCBs - Upper River
- 5-18b Ratio of Predicted Brown Bullhead Concentrations to Laboratory-Derived LOAEL For Tri+ PCBs - Lower River
- 5-19a Ratio of Predicted Brown Bullhead Concentrations to Laboratory-Derived NOAEL on a TEQ Basis - Upper River
- 5-19b Ratio of Predicted Brown Bullhead Concentrations to Laboratory-Derived NOAEL on a TEQ Basis - Upper River
- 5-20 Ratio of Observed Largemouth Bass and Brown Bullhead Concentrations to Toxicity Benchmarks Using NYSDEC Dataset
- 5-21 Ratio of Observed White Perch and Yellow Perch Concentrations to Toxicity Benchmarks Using NYSDEC Dataset
- 5-22 Ratio of Predicted White Perch Concentrations to Field-Based NOAEL for Tri+ PCBs
- 5-23 Ratio of Predicted White Perch Concentrations to Laboratory-Derived LOAEL for Tri+ PCBs

**PHASE 2 REPORT
FURTHER SITE CHARACTERIZATION AND ANALYSIS
VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
HUDSON RIVER PCBs REASSESSMENT RI/FS**

CONTENTS

Volume 2E (Book 2 of 2)

- 5-24a Ratio of Predicted Yellow Perch Concentrations to Laboratory-Derived NOAEL for Tri+ PCBs - Upper River
- 5-24b Ratio of Predicted Yellow Perch Concentrations to Laboratory-Derived NOAEL for Tri+ PCBs - Lower River
- 5-25a Ratio of Predicted Yellow Perch Concentrations to Laboratory-Derived LOAEL for Tri+ PCBs - Upper River
- 5-25b Ratio of Predicted Yellow Perch Concentrations to Laboratory-Derived LOAEL for Tri+ PCBs - Lower River
- 5-26 Ratio of Predicted White Perch Concentrations to Laboratory-Derived NOAEL on a TEQ Basis
- 5-27a Ratio of Predicted Yellow Perch Concentrations to Laboratory-Derived NOAEL on a TEQ Basis - Upper River
- 5-27b Ratio of Predicted Yellow Perch Concentrations to Laboratory-Derived NOAEL on a TEQ Basis - Lower River
- 5-28a Ratio of Predicted Largemouth Bass Concentrations to Laboratory-Derived NOAEL For Tri+ PCBs - Upper River
- 5-28b Ratio of Predicted Largemouth Bass Concentrations to Laboratory-Derived NOAEL For Tri+ PCBs - Lower River
- 5-29a Ratio of Predicted Largemouth Bass Concentrations to Laboratory-Derived LOAEL For Tri+ PCBs - Upper River
- 5-29b Ratio of Predicted Largemouth Bass Concentrations to Laboratory-Derived LOAEL For Tri+ PCBs - Lower River
- 5-30a Ratio of Predicted Largemouth Bass Concentrations to Laboratory-Derived NOAEL on a TEQ Basis- Upper River
- 5-30b Ratio of Predicted Largemouth Bass Concentrations to Laboratory-Derived NOAEL on a TEQ Basis- Lower River
- 5-31 Comparison of Measured Striped Bass Concentrations to Toxicity Reference Values
- 5-31a Ratio Of Predicted Striped Bass Concentrations To Tri+ PCB-Based TRVs
- 5-31b Ratio Of Predicted Striped Bass Concentrations To TEQ-Based TRVs
- 5-32 Ratio of Modeled Dietary Dose and Egg Concentrations to Benchmarks Based on 1993 Data for Female Tree Swallow for Tri+ Congeners
- 5-33 Ratio of Modeled Dietary Dose to Benchmarks Based on FISHRAND for Female Tree Swallow Based on the Sum of Tri+ Congeners for the Period 1993 -2018
- 5-34 Ratio of Modeled Egg Concentrations to Benchmarks for Female Tree Swallow Based on the Sum of Tri+ Congeners for the Period 1993 -2018
- 5-35 Ratio of Modeled Dietary Dose and Egg Concentrations to Benchmarks Based on 1993 Data for Female Tree Swallow on TEQ Basis

**PHASE 2 REPORT
FURTHER SITE CHARACTERIZATION AND ANALYSIS
VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
HUDSON RIVER PCBs REASSESSMENT RI/FS**

CONTENTS

Volume 2E (Book 2 of 2)

- 5-36 Ratio of Modeled Dietary Dose to Benchmarks Based on FISHRAND for Female Tree Swallow Using TEQ for the Period 1993 - 2018
- 5-37 Ratio of Modeled Egg Concentrations to Benchmarks Based on FISHRAND for Female Tree Swallow Using TEQ for the Period 1993 - 2018
- 5-38 Ratio of Modeled Dietary Dose and Egg Concentrations to Benchmarks Based on 1993 Data for Female Mallard for Tri+ Congeners
- 5-39 Ratio of Modeled Dietary Dose to Benchmarks for Female Mallard Based on FISHRAND Results for the Tri+ Congeners
- 5-40 Ratio of Egg Concentrations to Benchmarks for Female Mallard Based on FISHRAND Results for the Tri+ Congeners
- 5-41 Ratio of Modeled Dietary Dose and Egg Concentrations to Benchmarks for Female Mallard Based on 1993 Data on a TEQ Basis
- 5-42 Ratio of Modeled Dietary Dose to Benchmarks for Female Mallard for Period 1993 - 2018 on a TEQ Basis
- 5-43 Ratio of Modeled Egg Concentrations to Benchmarks for Female Mallard for Period 1993 - 2018 on a TEQ Basis
- 5-44 Ratio of Modeled Dietary Dose and Egg Concentrations to Benchmarks Based on 1993 Data for Female Belted Kingfisher for Tri+ Congeners
- 5-45 Ratio of Modeled Dietary Dose and Egg Concentrations to Benchmarks Based on 1993 Data for Female Great Blue Heron for Tri+ Congeners
- 5-46 Ratio of Modeled Dietary Dose and Egg Concentrations to Benchmarks Based on the 1993 Data for Female Bald Eagle for Tri+ Congeners
- 5-47 Ratio of Modeled Dietary Dose to Benchmarks Based on FISHRAND for Female Belted Kingfisher Based on the Sum of Tri+ Congeners for the Period 1993 - 2018
- 5-48 Ratio of Modeled Dietary Dose to Benchmarks Based on FISHRAND for Female Great Blue Heron Based on the Sum of Tri+ Congeners for the Period 1993 - 2018
- 5-49 Ratio of Modeled Dietary Dose to Benchmarks Based on FISHRAND for Female Bald Eagle Based on the Sum of Tri+ Congeners for the Period 1993 - 2018
- 5-50 Ratio of Modeled Egg Concentrations to Benchmarks for Female Belted Kingfisher Based on the Sum of Tri+ Congeners for the Period 1993 - 2018
- 5-51 Ratio of Modeled Egg Concentrations to Benchmarks for Female Great Blue Heron Based on the Sum of Tri+ Congeners for the Period 1993 - 2018
- 5-52 Ratio of Modeled Egg Concentrations to Benchmarks for Female Bald Eagle Based on the Sum of Tri+ Congeners for the Period 1993 - 2018
- 5-53 Ratio of Modeled Dietary Dose and Egg Concentrations to Benchmarks Based on 1993 Data for Female Belted Kingfisher on TEQ Basis

**PHASE 2 REPORT
FURTHER SITE CHARACTERIZATION AND ANALYSIS
VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
HUDSON RIVER PCBs REASSESSMENT RI/FS**

CONTENTS

Volume 2E (Book 2 of 2)

- 5-54 Ratio of Modeled Dietary Dose and Egg Concentrations to Benchmarks Based on 1993 Data for Female Great Blue Heron on TEQ Basis
- 5-55 Ratio of Modeled Dietary Dose and Egg Concentrations to Benchmarks Based on 1993 Data for Female Bald Eagle on TEQ Basis
- 5-56 Ratio of Modeled Dietary Dose to Benchmarks Based on FISHRAND for Female Belted Kingfisher Using TEQ for the Period 1993 - 2018
- 5-57 Ratio of Modeled Dietary Dose to Benchmarks Based on FISHRAND for Female Great Blue Heron Using TEQ for the Period 1993 - 2018
- 5-58 Ratio of Modeled Dietary Dose to Benchmarks Based on FISHRAND for Female Bald Eagle Using TEQ for the Period 1993 - 2018
- 5-59 Ratio of Modeled Egg Concentrations to Benchmarks Based on FISHRAND for Female Belted Kingfisher Using TEQ for the Period 1993 - 2018
- 5-60 Ratio of Modeled Egg Concentrations to Benchmarks Based on FISHRAND for Female Great Blue Heron Using TEQ for the Period 1993 - 2018
- 5-61 Ratio of Modeled Egg Concentrations to Benchmarks Based on FISHRAND for Female Bald Eagle Using TEQ for the Period 1993 - 2018
- 5-62 Ratio of Modeled Dietary Doses to Benchmarks for Female Bats Based on 1993 Data for the Tri+ Congeners
- 5-63 Ratio of Modeled Dietary Doses to Toxicity Benchmarks for Female Bat for Tri+ Congeners for the Period 1993 - 2018
- 5-64 Ratio of Modeled Dietary Doses to Benchmarks for Female Bat Based on 1993 Data on a TEQ Basis
- 5-65 Ratio of Modeled Dietary Doses to Toxicity Benchmarks for Female Bat on a TEQ Basis for the Period 1993 - 2018
- 5-66 Ratio of Modeled Dietary Doses to Benchmarks for Female Raccoon Based on 1993 Data for the Tri+ Congeners
- 5-67 Ratio of Modeled Dietary Doses to Toxicity Benchmarks for Female Raccoon for Tri+ Congeners for the Period 1993 - 2018
- 5-68 Ratio of Modeled Dietary Doses to Benchmarks for Female Raccoon Based on 1993 Data on a TEQ Basis
- 5-69 Ratio of Modeled Dietary Doses to Toxicity Benchmarks for Female Raccoon on a TEQ Basis for the Period 1993 - 2018
- 5-70 Ratio of Observed Mink and Otter PCB Concentrations to Benchmarks
- 5-71 Ratio of Modeled Dietary Doses to Benchmarks for Female Mink Based on 1993 Data for the Tri+ Congeners
- 5-72 Ratio of Modeled Dietary Doses to Benchmarks for Female Otter Based on 1993 Data for the Tri+ Congeners

**PHASE 2 REPORT
FURTHER SITE CHARACTERIZATION AND ANALYSIS
VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
HUDSON RIVER PCBs REASSESSMENT RI/FS**

CONTENTS

Volume 2E (Book 2 of 2)

- 5-73 Ratio of Modeled Dietary Doses to Toxicity Benchmarks for Female Mink for Tri+ Congeners for the Period 1993 - 2018
- 5-74 Ratio of Modeled Dietary Dose to Toxicity Benchmarks for Female Otter for Tri+ Congeners for the Period 1993 - 2018
- 5-75 Ratio of Modeled Dietary Doses to Benchmarks for Female Mink Based on 1993 Data on a TEQ Basis
- 5-76 Ratio of Modeled Dietary Doses to Benchmarks for Female Otter Based on 1993 Data on a TEQ Basis
- 5-77 Ratio of Modeled Dietary Doses to Toxicity Benchmarks for Female Mink on a TEQ Basis for the Period 1993 - 2018
- 5-78 Ratio of Modeled Dietary Doses to Toxicity Benchmarks for Female Otter on a TEQ Basis for the Period 1993 - 2018

- 6-1 Sensitivity Analysis- Receptor Output
- 6-2 Ranges of Percent Contribution to Variance of Input Parameters
- 6-3 Rank Correlation Sensitivity Analysis Results (R^2)

**PHASE 2 REPORT
FURTHER SITE CHARACTERIZATION AND ANALYSIS
VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
HUDSON RIVER PCBs REASSESSMENT RI/FS**

CONTENTS

Volume 2E (Book 2 of 2)

LIST OF FIGURES

- 1-1 Hudson River Drainage Basin and Site Location Map
- 1-2 Baseline Ecological Risk Assessment Upper Hudson River Sampling Stations
- 1-3 Baseline Ecological Risk Assessment Lower Hudson River Sampling Stations
- 1-4 Hudson River ERA Data Sources
- 1-5 Eight-Step Ecological Risk Assessment Process for Superfund Hudson River PCB Reassessment Ecological Risk Assessment

- 2-1 Hudson River PCB Reassessment Conceptual Model Diagram Including Floodplain Soils

- 3-1 Revised Segments and Regions of the Farley Model for PCBs in Hudson River Estuary and Surrounding Waters
- 3-2 Average Wet Weight PCB Concentrations in Selected Fish Species Based on NYSDEC Data
- 3-3 Average Lipid-Normalized PCB Concentrations in Selected Fish Based on NYSDEC Data
- 3-4 Cumulative Distribution Functions of Exposure for Kingfisher and Eagle
- 3-5 Cumulative Distribution Functions of Exposure for Mink and Otter
- 3-6 Comparison of Congener Mass Fraction Between a Largemouth Bass Sample from RM 190 and Several Aroclor Standards
- 3-7 Comparison of Congener Mass Fraction Between a White Perch Sample from RM 26 and Several Aroclor Standards
- 3-8 Variation of Principal Component 1 with River Mile in Fish and Sediment
- 3-9 Variation of Principal Component 1 with River Mile in Fish and Sediment River Miles 150 to 80
- 3-10 Relationship Between Molecular Weight and River Mile for 1993 Hudson River Samples
- 3-11 Principal Component Results for 1993 and 1995 Fish Samples by Life Stage (Based on 29 Congeners)
- 3-12 Comparison of Congener Mass Fraction in Hudson River Fish and Several Aroclor Standards: Linear Scale
- 3-13 Comparison of Congener Mass Fraction in Hudson River Fish and Several Aroclor Standards: Semilogarithmic

- 4-1 Shape of Biphenyl and Substitution Sites
- 4-2 Dose Response Functions for Pheasant and Mink

**PHASE 2 REPORT
FURTHER SITE CHARACTERIZATION AND ANALYSIS
VOLUME 2E- REVISED BASELINE ECOLOGICAL RISK ASSESSMENT
HUDSON RIVER PCBs REASSESSMENT RI/FS**

CONTENTS

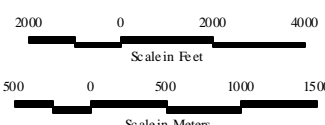
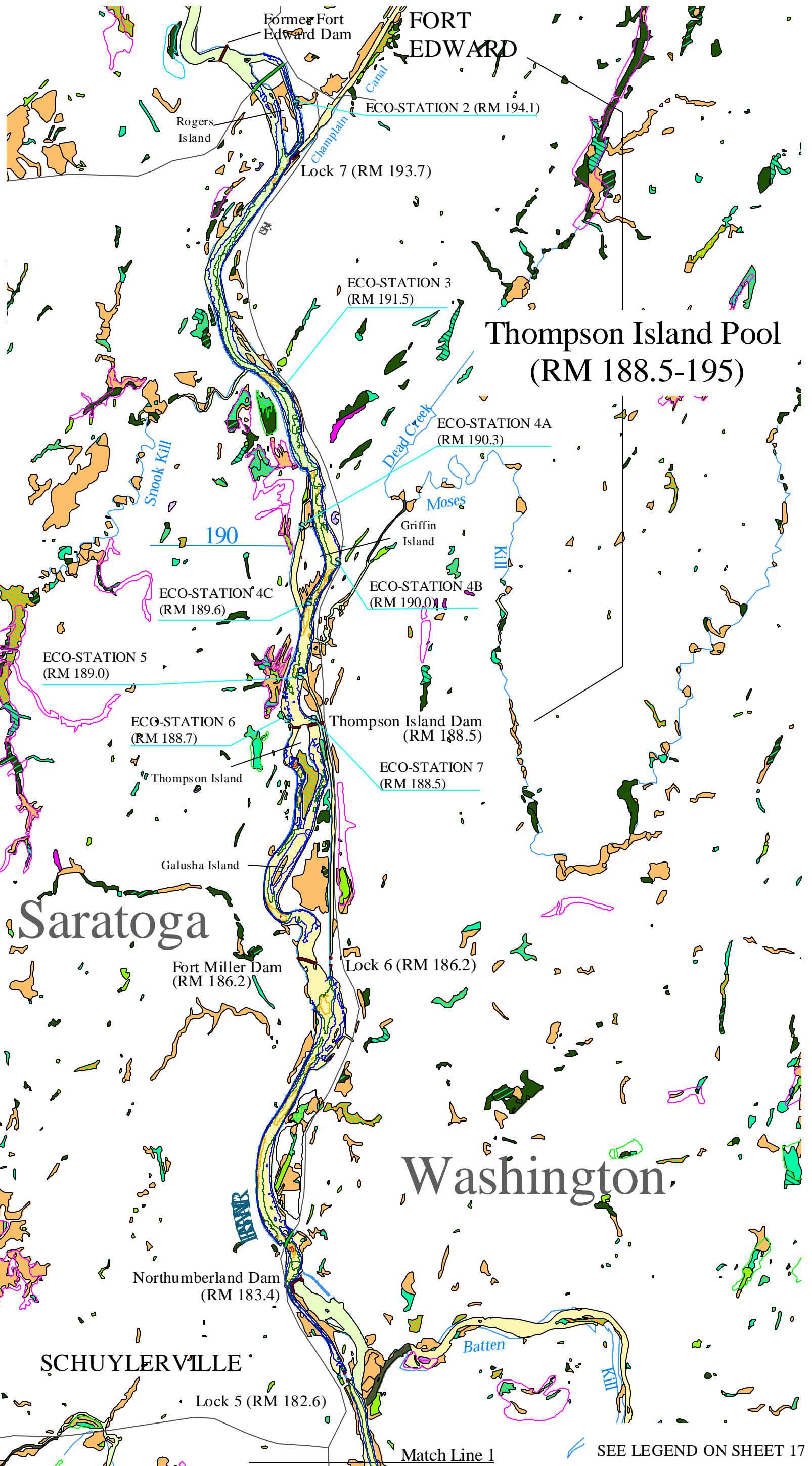
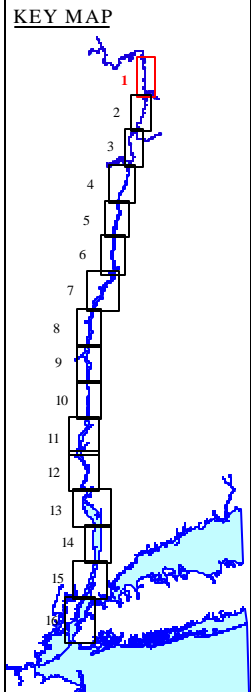
Volume 2E (Book 2 of 2)

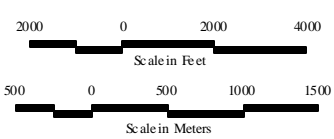
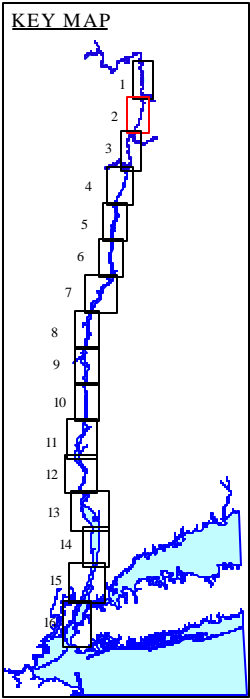
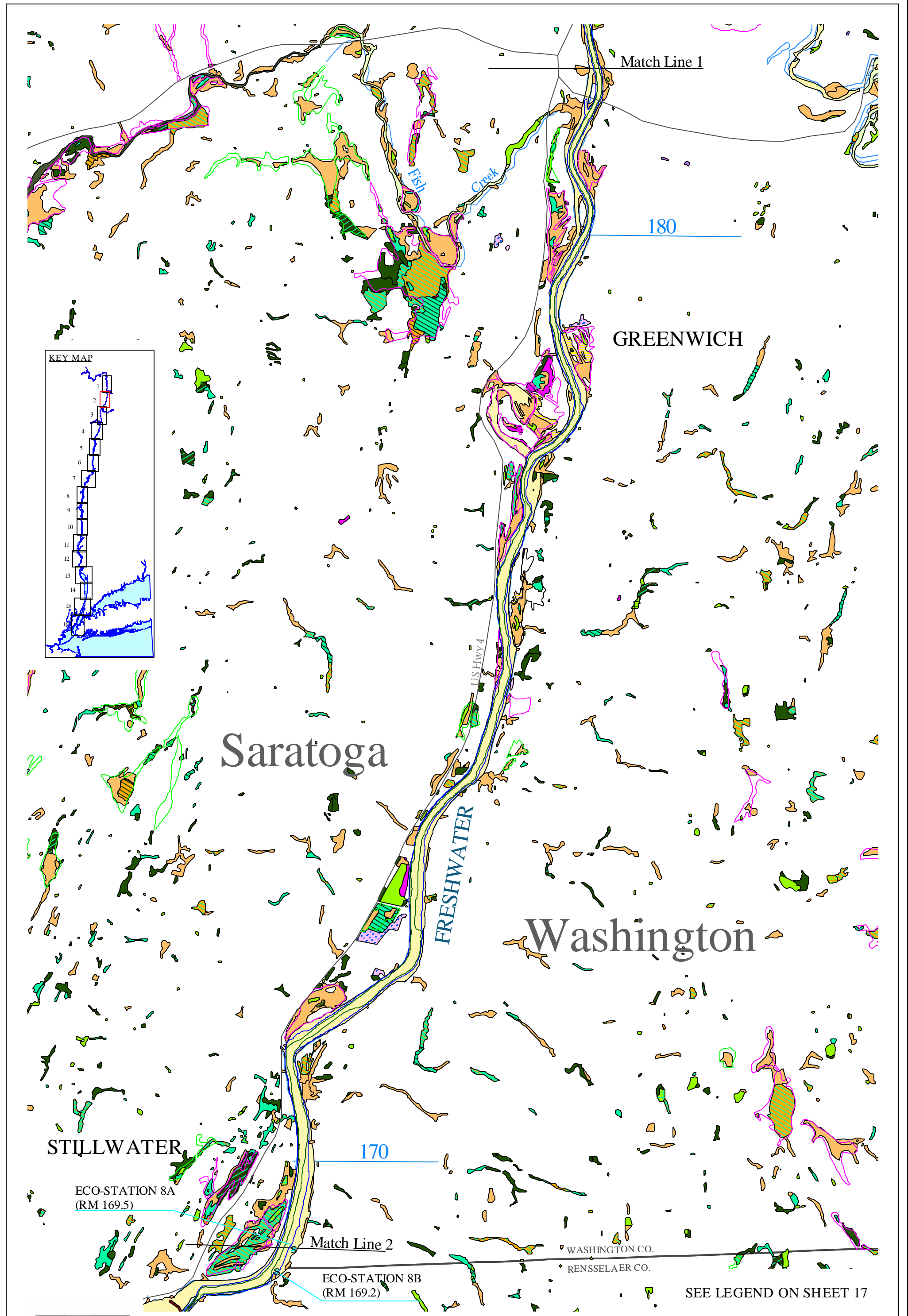
- 5-1 Complete Linkage Clustering - TI Pool
- 5-2 Relative Percent Grain Size Classes - TI Pool
- 5-3 Mean Sediment TOC - TI Pool
- 5-4 Mean Total PCB Concentrations in Sediment - TI Pool
- 5-5 Biomass of Benthic Invertebrates - TI Pool
- 5-6 Relative Percent Grain Size Classes - Lower Hudson River
- 5-7 Mean Sediment TOC - Lower Hudson River
- 5-8 Mean Total PCB Concentration in Sediment - Lower Hudson River
- 5-9 Cumulative Risk Functions for the Belted Kingfisher and Bald Eagle
- 5-10 Cumulative Risk Functions for the Mink and River Otter

- 6-1 Predicted Toxicity Quotients from Uncertainty Analysis for the Kingfisher and Kingfisher Egg
- 6-2 Predicted Toxicity Quotients from Uncertainty Analysis for Eagle and Eagle Egg
- 6-3 Predicted Toxicity Quotients from Uncertainty Analysis for Mink and River Otter

LIST OF PLATES

- Plate 1 Habitat Map
- Plate 2 Water-Column Sampling Locations in Hudson River



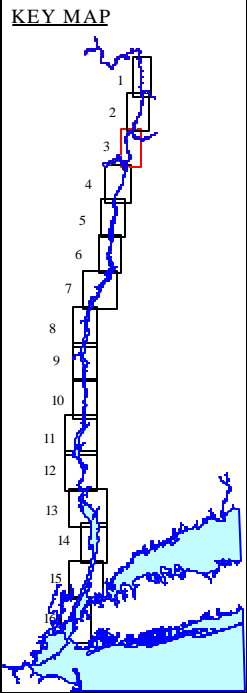
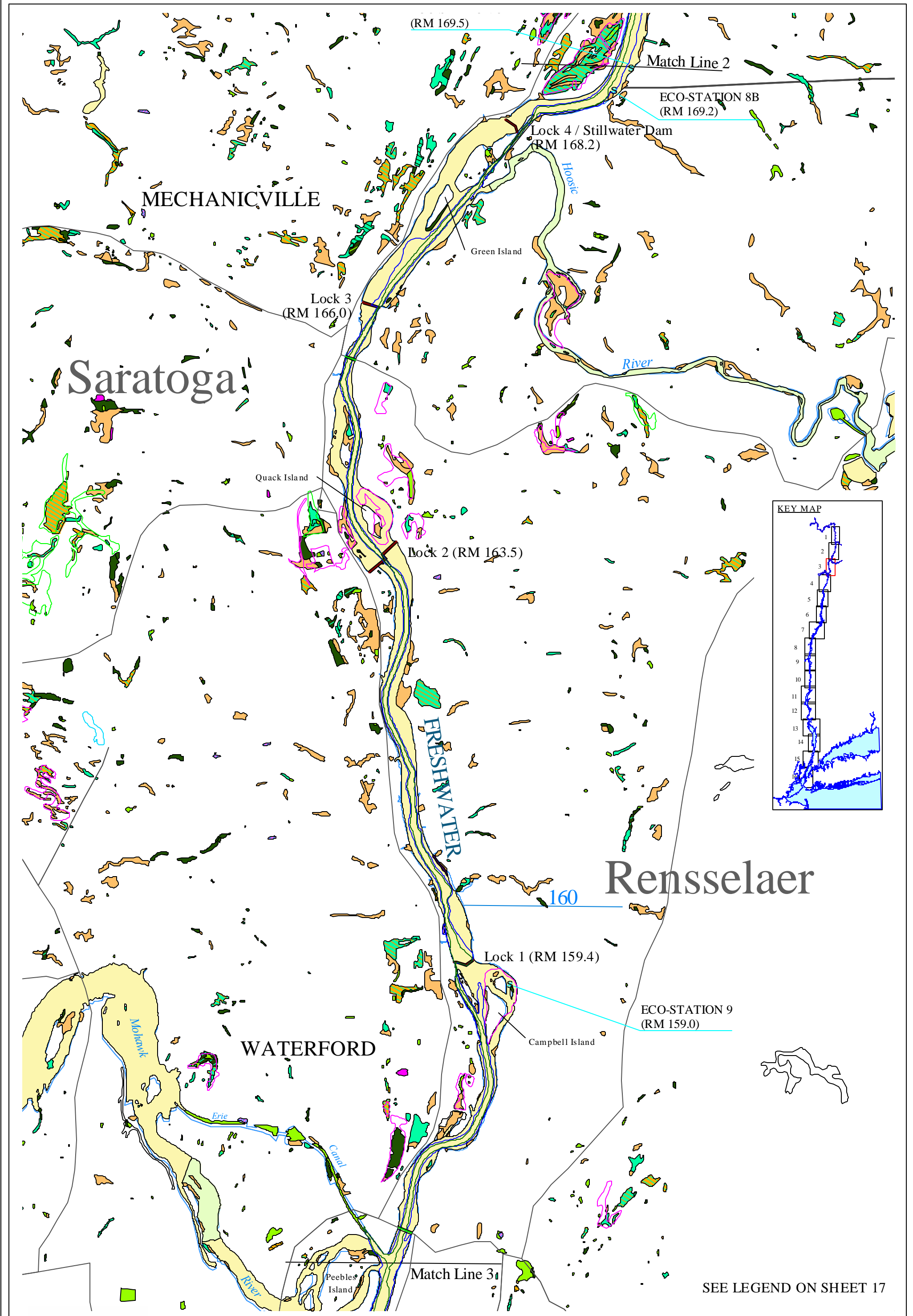


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 Revised Baseline Ecological Risk Assessment
 October, 2000

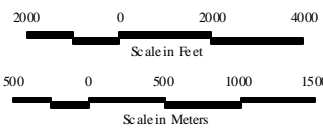
Plate 1
 Habitat Map

Sheet 2 of 17

SEE LEGEND ON SHEET 17



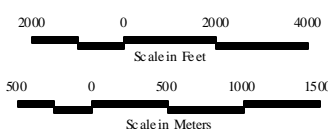
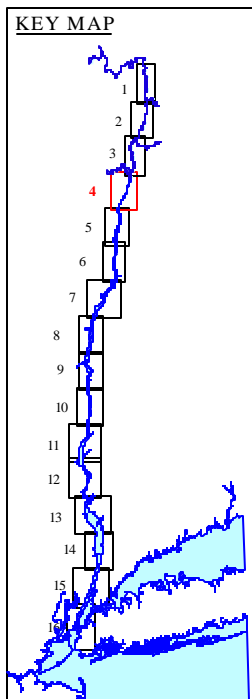
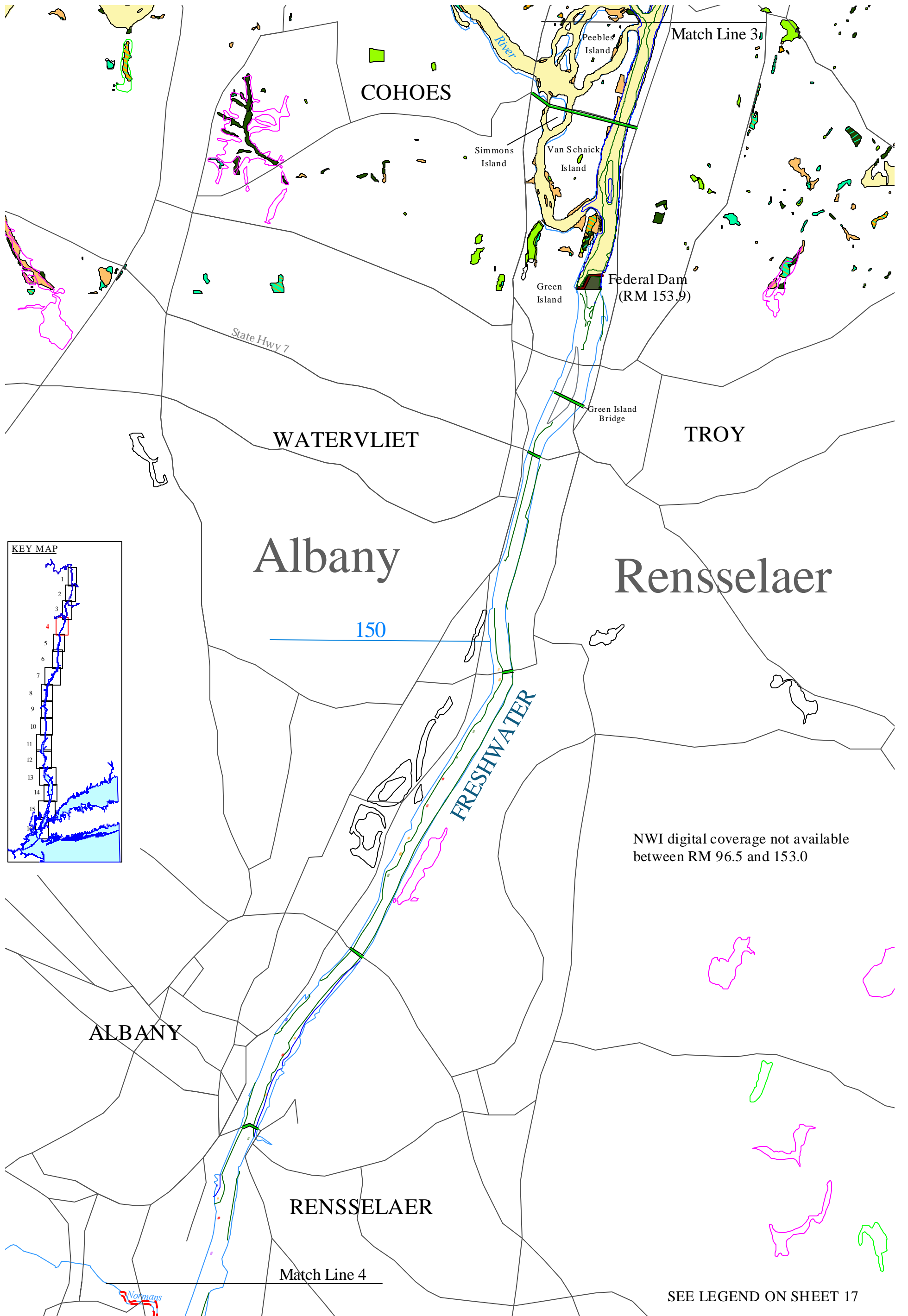
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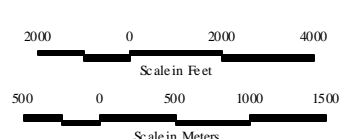
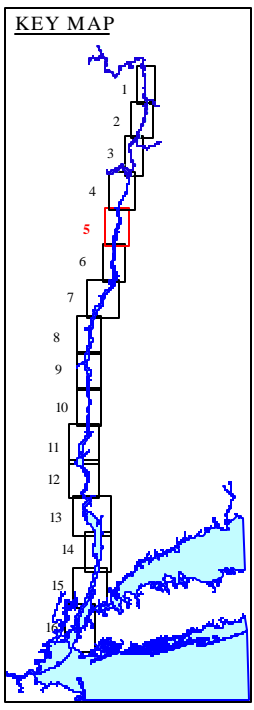
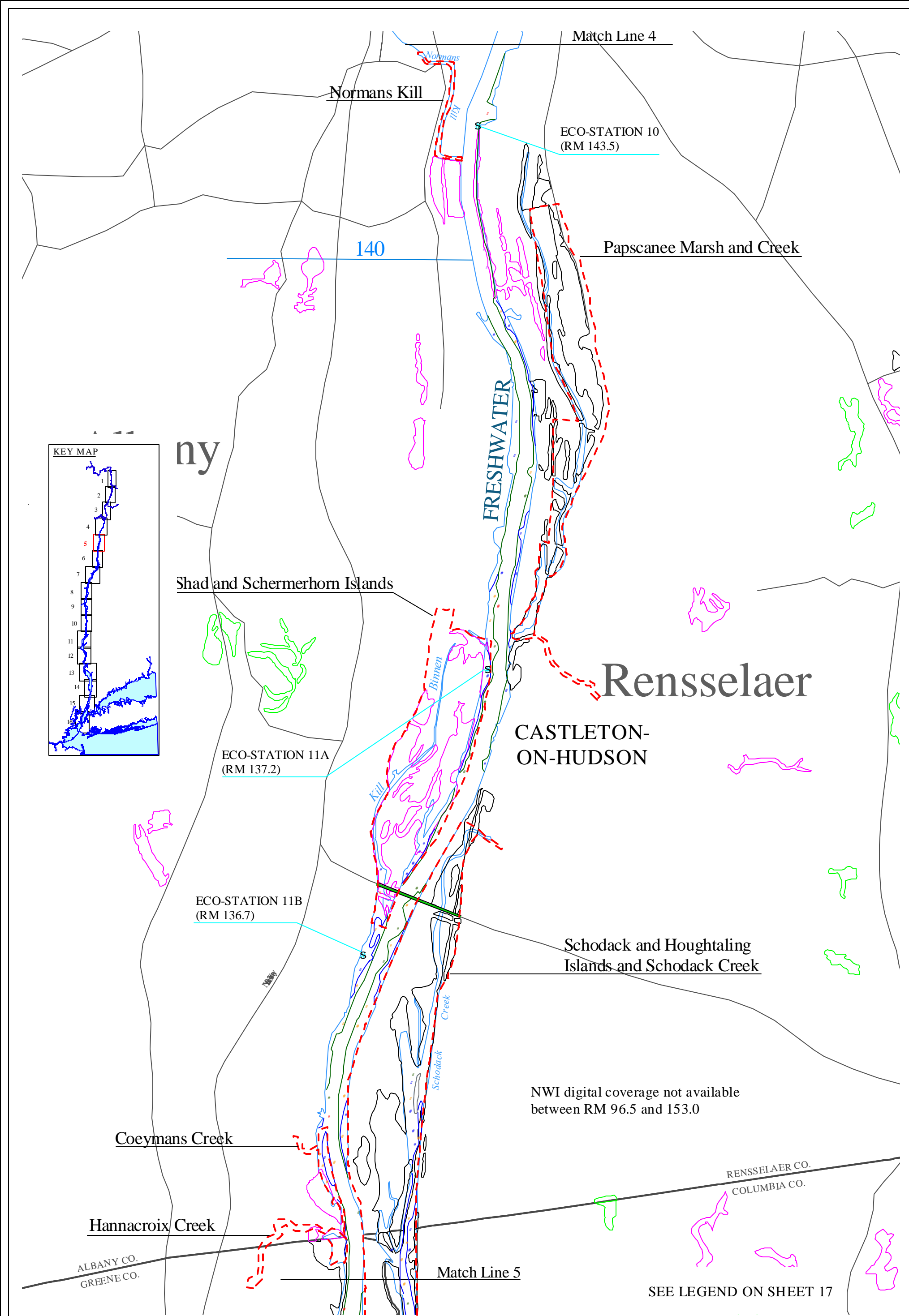
Hudson River PCBs Reassessment RI/FS
 Revised Baseline Ecological Risk Assessment
 October, 2000

Plate 1
 Habitat Map

Sheet 3 of 17



SEE LEGEND ON SHEET 17

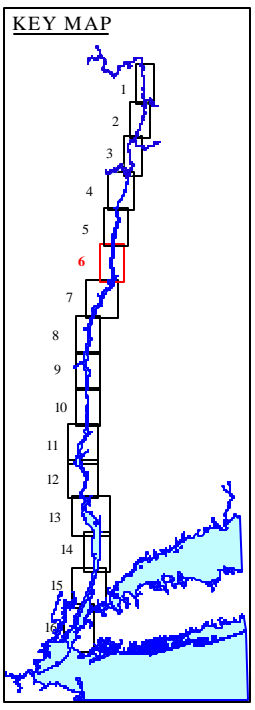
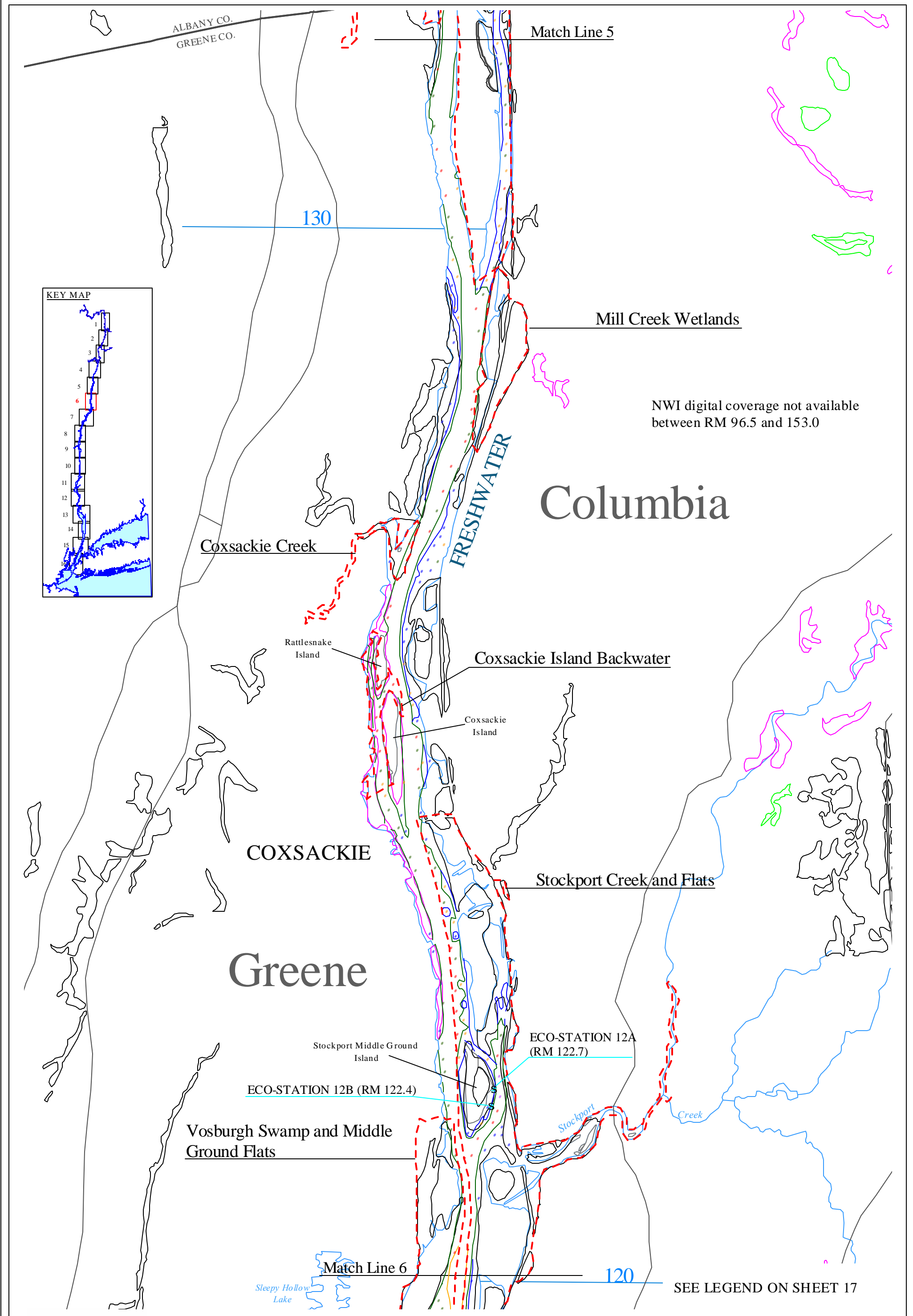


Hudson River PCBs Reassessment RI/FS
Revised Baseline Ecological Risk Assessment
October, 2000

Plate 1
Habitat Map

Sheet 5 of 17

SEE LEGEND ON SHEET 17



ALBANY CO.
GREENE CO.

Match Line 5

130

Mill Creek Wetlands

NWI digital coverage not available
between RM 96.5 and 153.0

Columbia

Coxsackie Creek

FRESHWATER

Rattlesnake Island

Coxsackie Island Backwater

Coxsackie Island

COXSACKIE

Stockport Creek and Flats

Greene

Stockport Middle Ground Island

ECO-STATION 12A
(RM 122.7)

ECO-STATION 12B (RM 122.4)

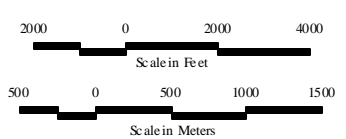
Vosburgh Swamp and Middle Ground Flats

Match Line 6

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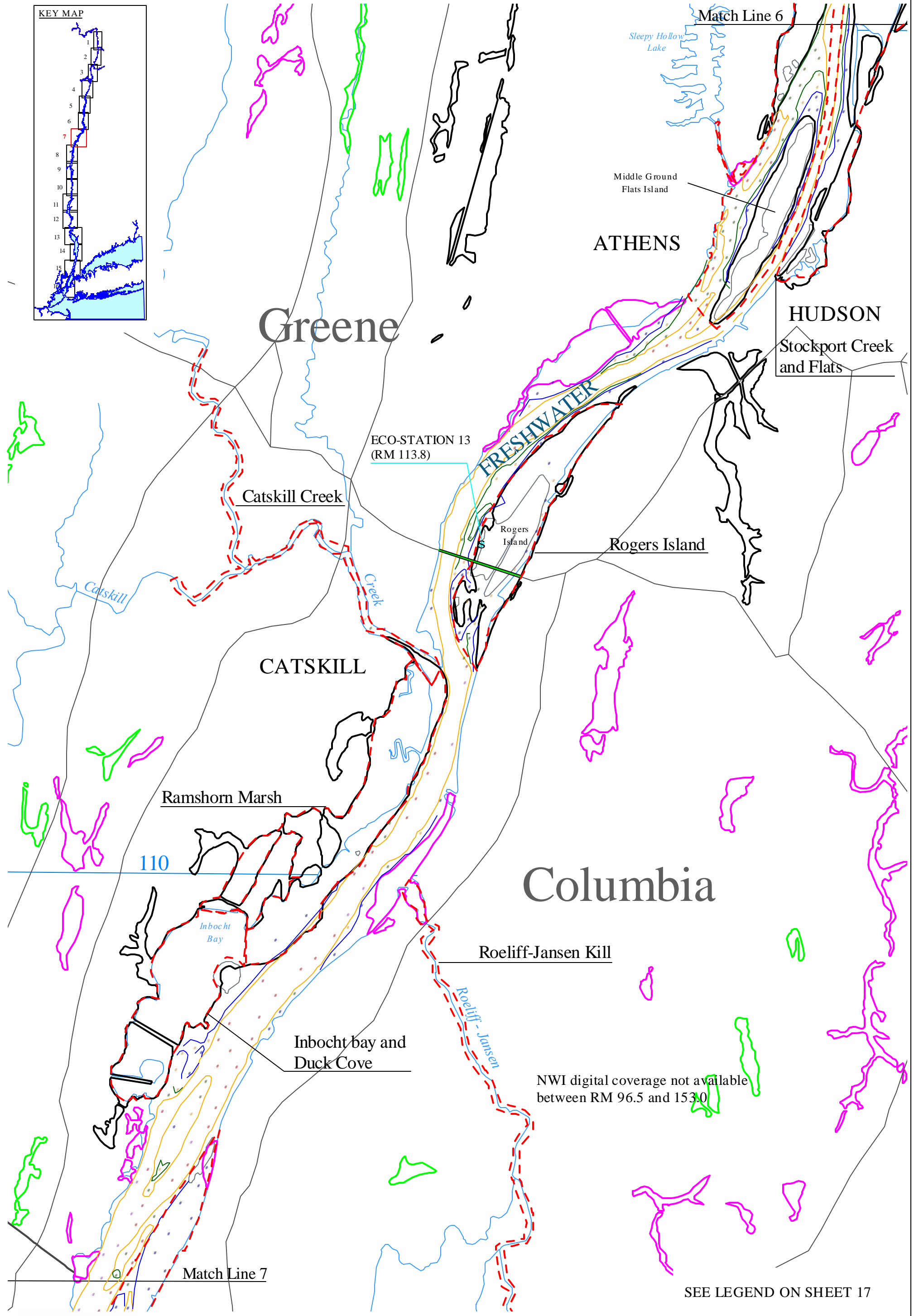
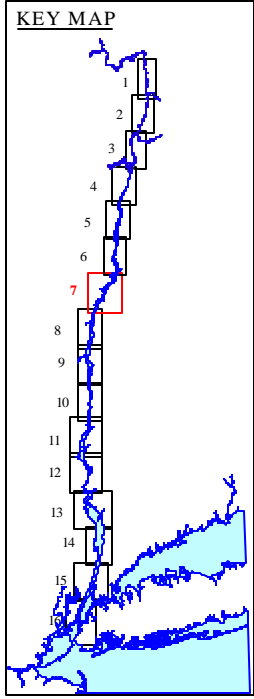
Sleepy Hollow Lake



Hudson River PCBs Reassessment RI/FS
Revised Baseline Ecological Risk Assessment
October, 2000

Plate 1
Habitat Map

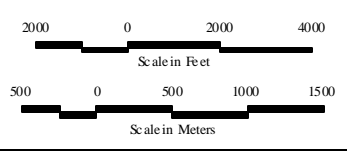
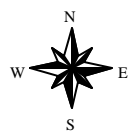
Sheet 6 of 17



ECO-STATION 13
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SEE LEGEND ON SHEET 17



Hudson River PCBs Reassessment RI/FS
Revised Baseline Ecological Risk Assessment
October, 2000

Plate 1
Habitat Map

Sheet 7 of 17

NWI digital coverage not available
between RM 96.5 and 153.0

Match Line 7

Germantown-Clermont Flats

Ulster

Esopus Estuary

Creek
Esopus

SAUGERTIES

TIVOLI

100

COLUMBIA CO.
DUTCHESS CO.

ECO-STATION 14
(RM 100.0)

North and South Tivoli Bays

Dutchess

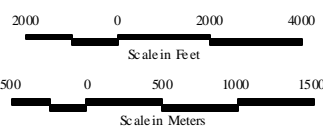
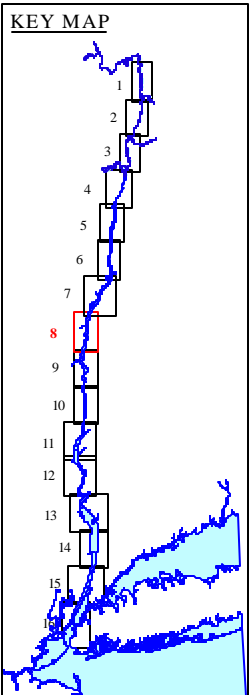
FRESHWATER

The Flats

Kingston-Rhinecliff
Bridge

Match Line 8

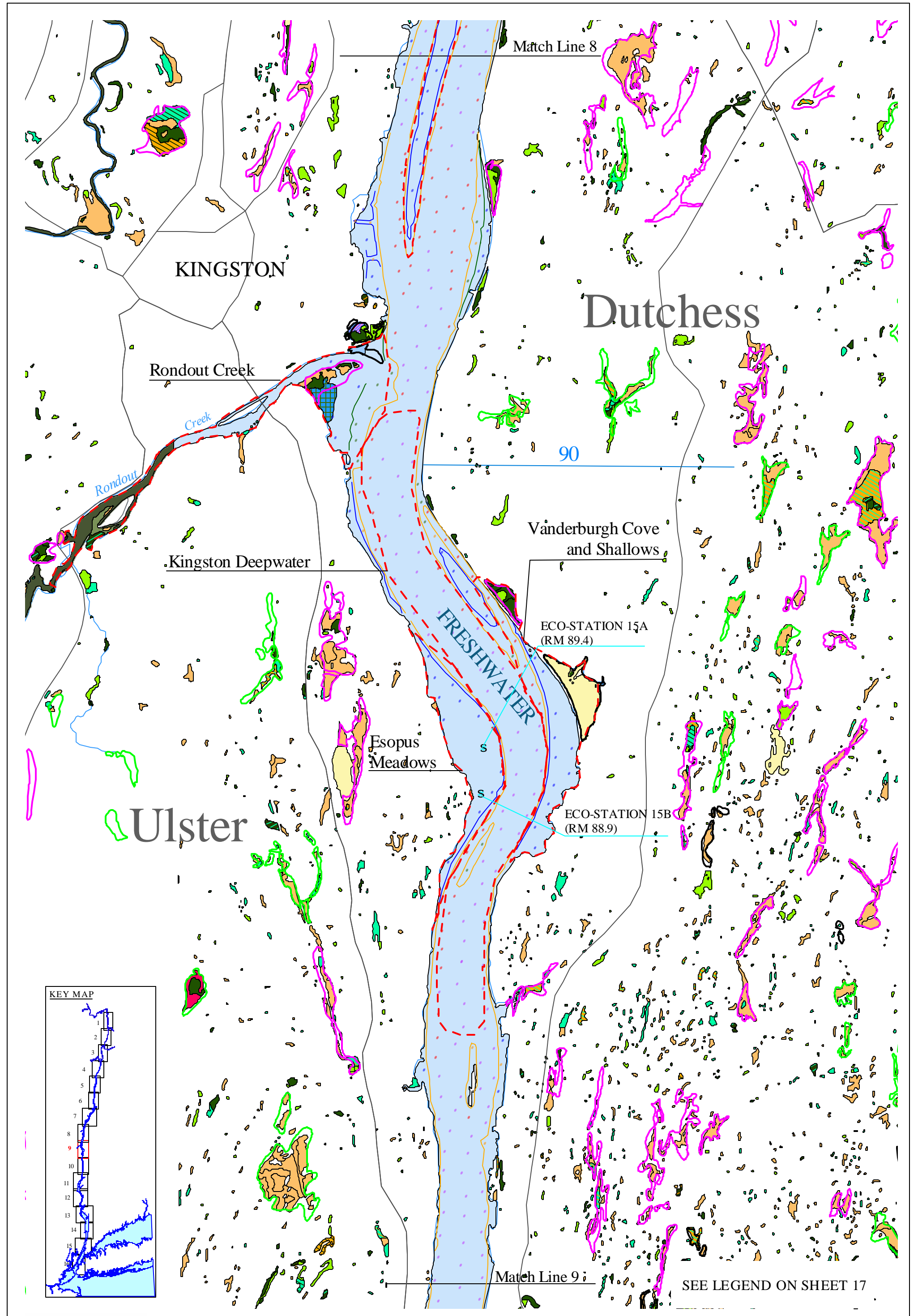
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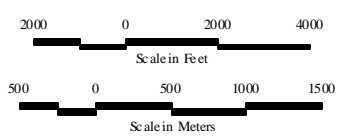
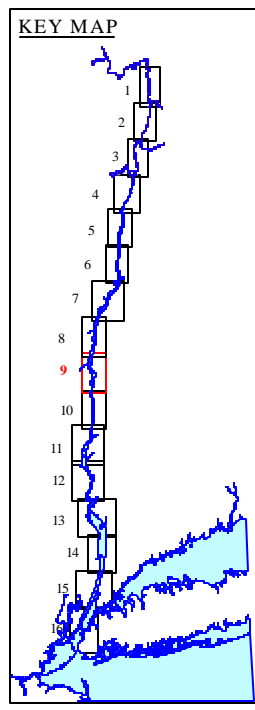
Hudson River PCBs Reassessment RI/FS
Revised Baseline Ecological Risk Assessment
October, 2000

Plate 1
Habitat Map

Sheet 8 of 17



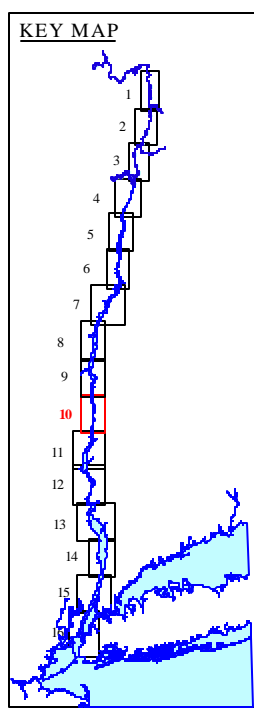
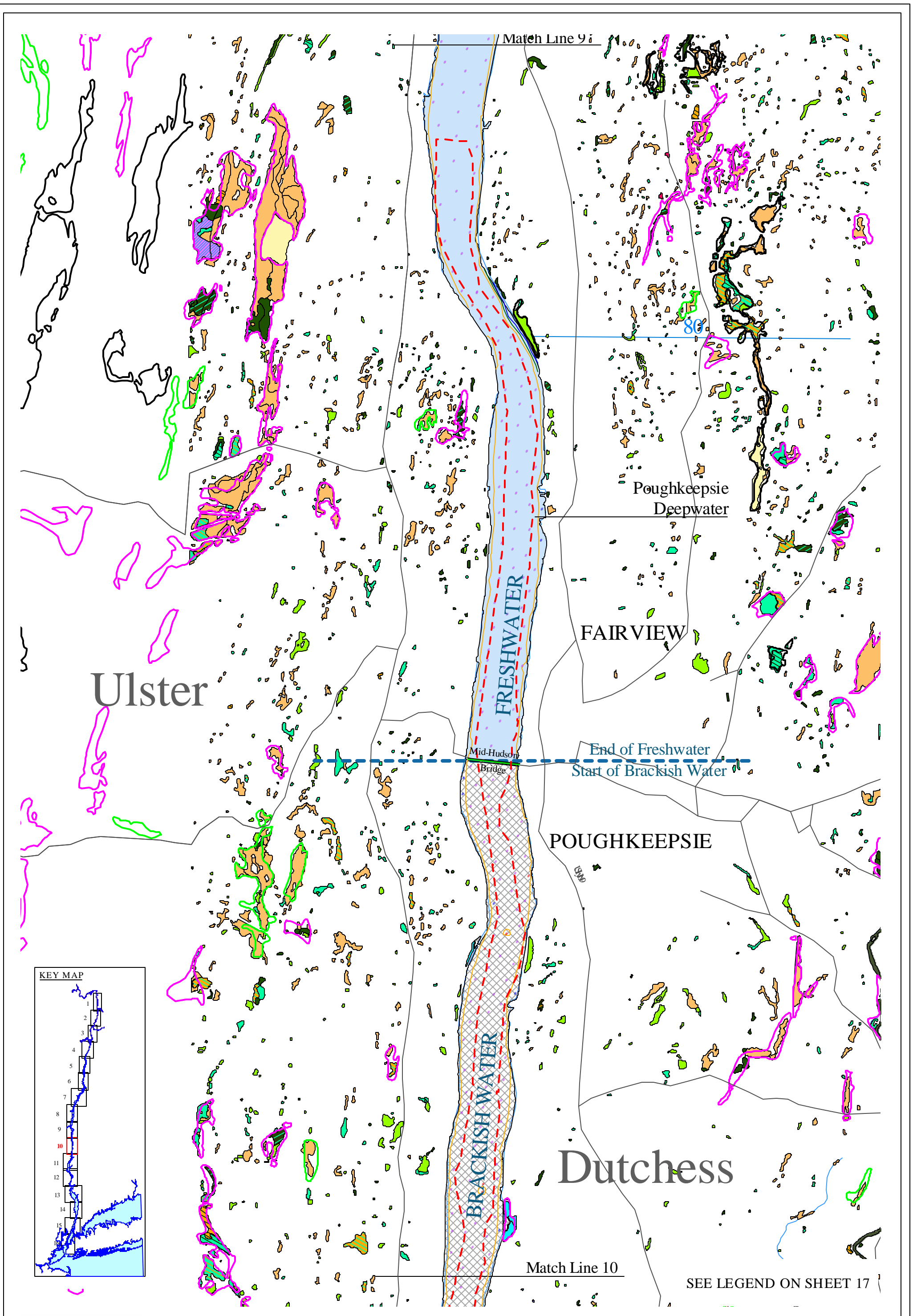
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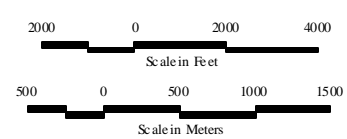
Hudson River PCBs Reassessment R/FS
Revised Baseline Ecological Risk Assessment
October, 2000

Plate 1
Habitat Map

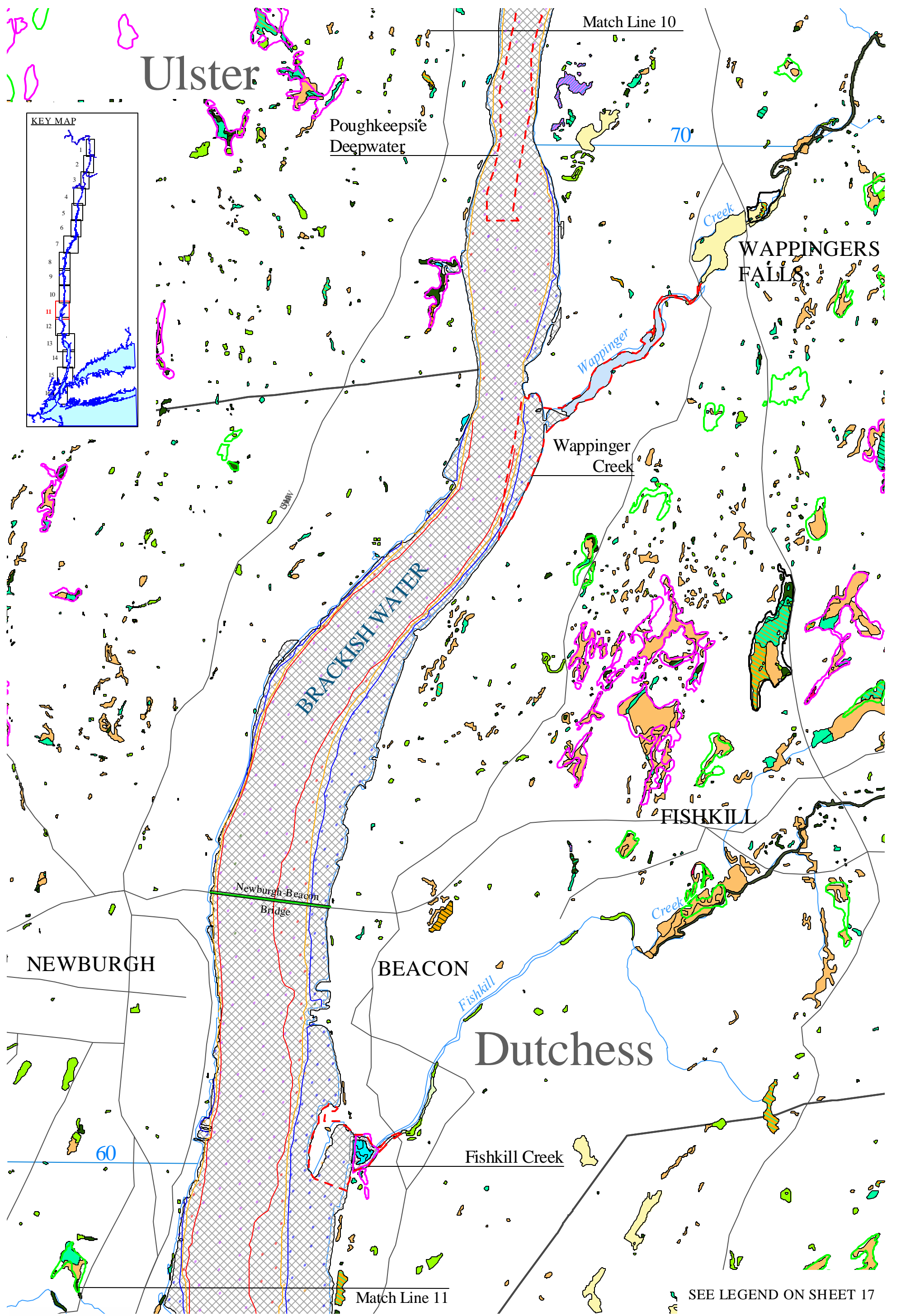
Sheet 9 of 17



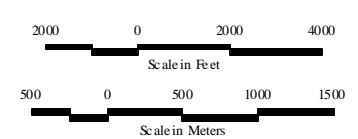
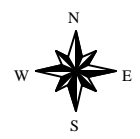
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Hudson River PCBs Reassessment RI/FS Revised Baseline Ecological Risk Assessment October, 2000	Plate 1	Sheet 10 of 17
	Habitat Map	



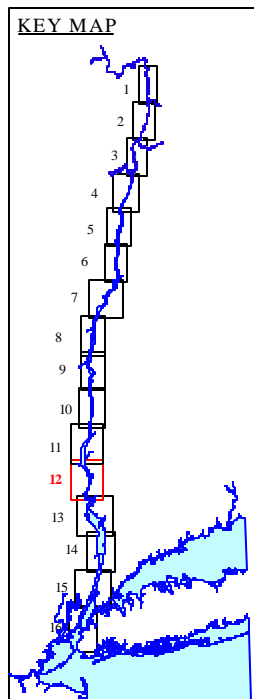
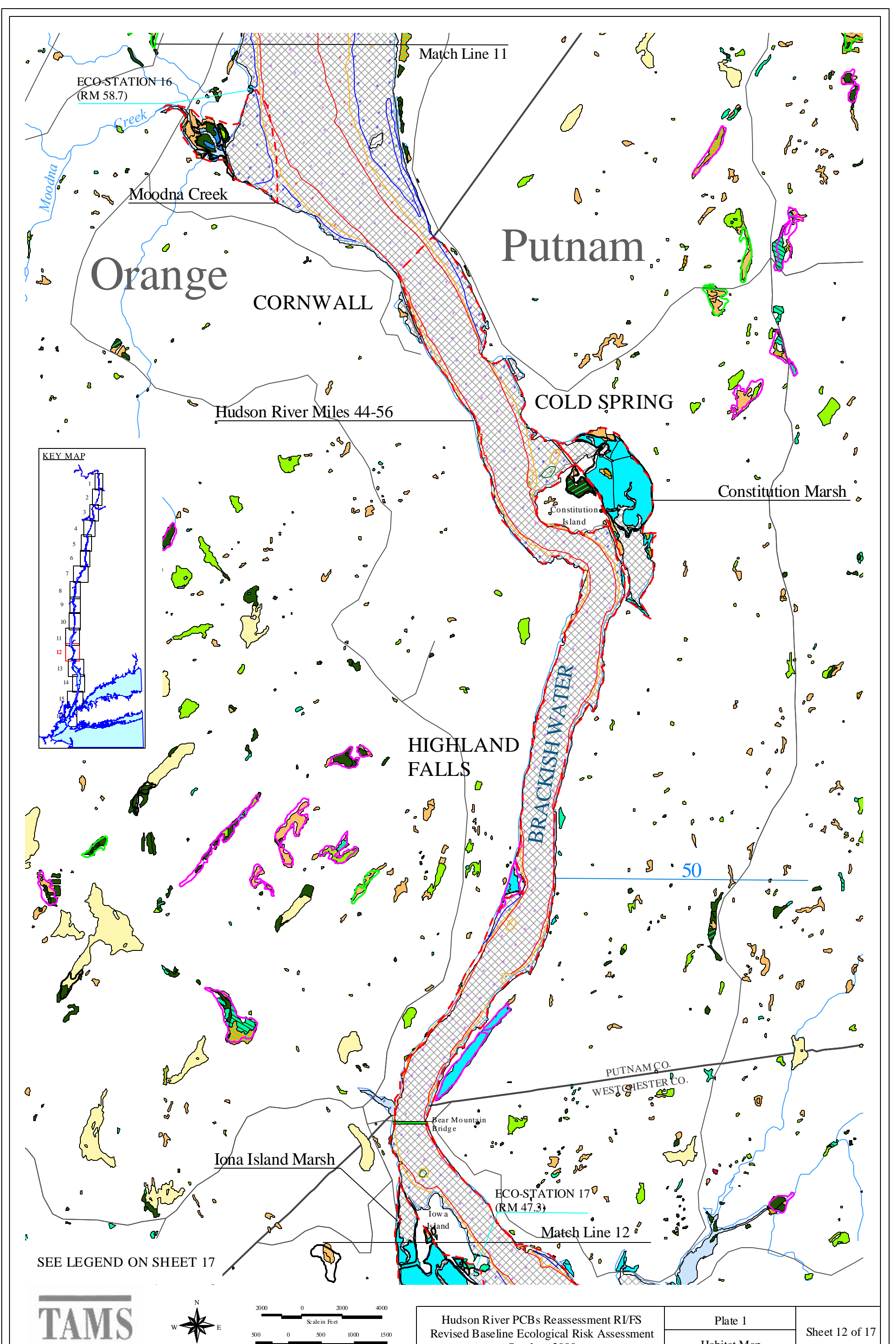
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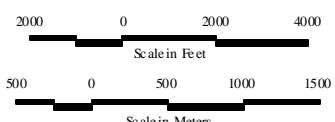
Hudson River PCBs Reassessment RI/FS
 Revised Baseline Ecological Risk Assessment
 October, 2000

Plate 1
 Habitat Map

Sheet 11 of 17



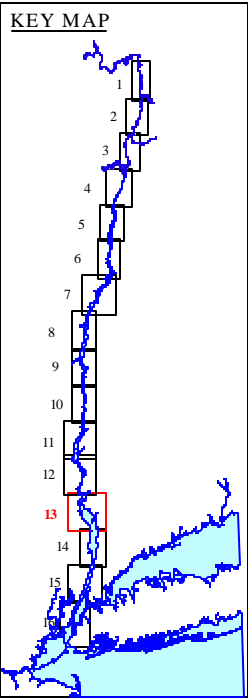
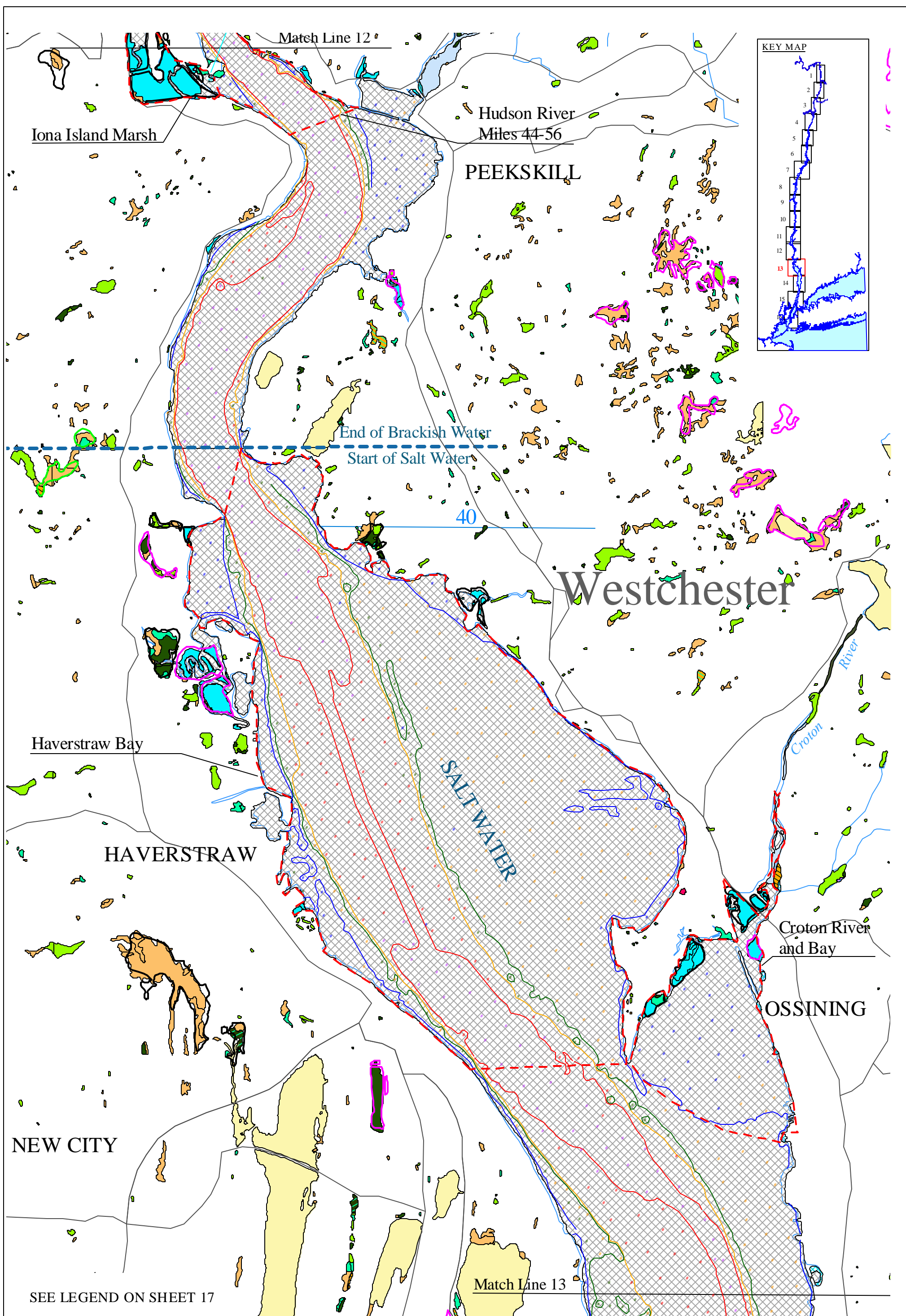
SEE LEGEND ON SHEET 17



Hudson River PCBs Reassessment RI/FS
 Revised Baseline Ecological Risk Assessment
 October, 2000

Plate 1
 Habitat Map

Sheet 12 of 17



Iona Island Marsh

Match Line 12

Hudson River
Miles 44-56

PEEKSKILL

End of Brackish Water
Start of Salt Water

40

Westchester

Haverstraw Bay

HAVERSTRAW

SALT WATER

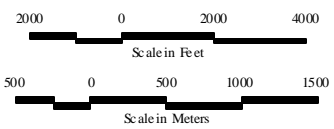
Croton River
and Bay

OSSINING

NEW CITY

Match Line 13

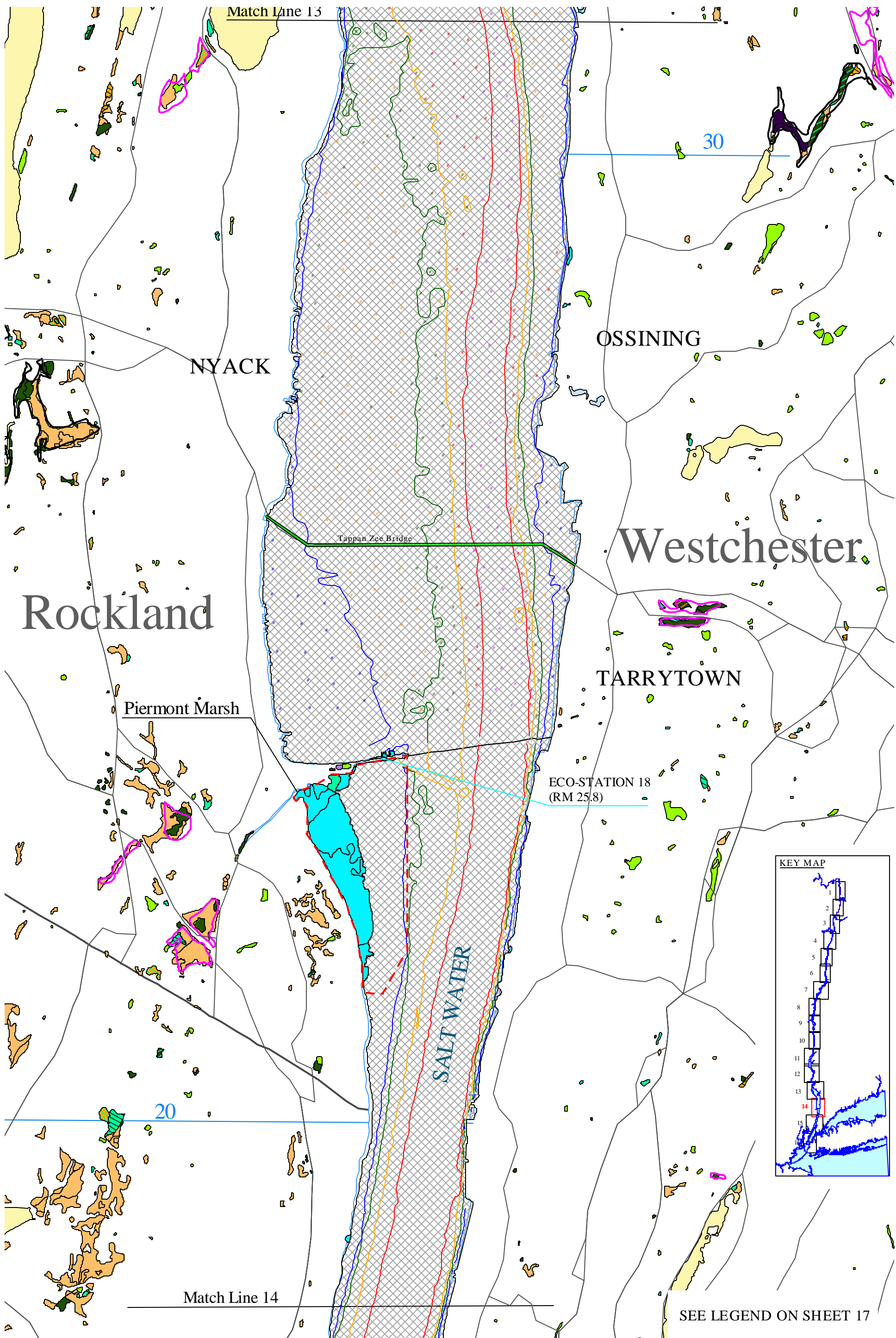
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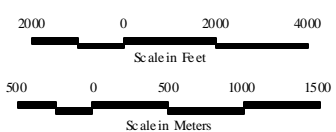
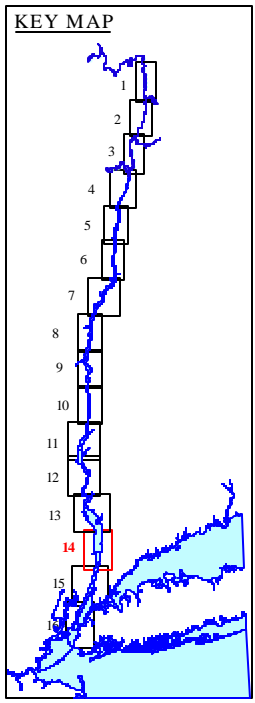
Hudson River PCBs Reassessment RI/FS
Revised Baseline Ecological Risk Assessment
October, 2000

Plate 1
Habitat Map

Sheet 13 of 17



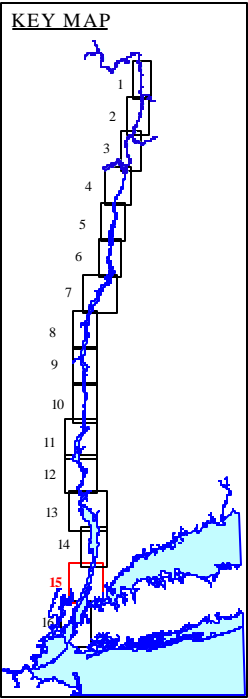
SEE LEGEND ON SHEET 17



Hudson River PCBs Reassessment RI/FS
Revised Baseline Ecological Risk Assessment
October, 2000

Plate 1
Habitat Map

Sheet 14 of 17



Match Line 14

YONKERS

Westchester

TENAFLY

ENGLEWOOD

WESTCHESTER CO.
BRONX CO.

SALT WATER

FORT LEE

10

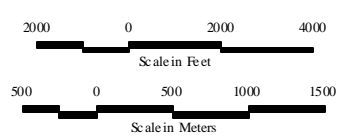
Bronx

George Washington
Bridge

Harlem
River

Match Line 15

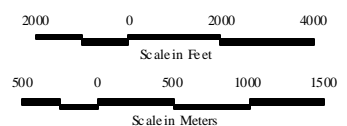
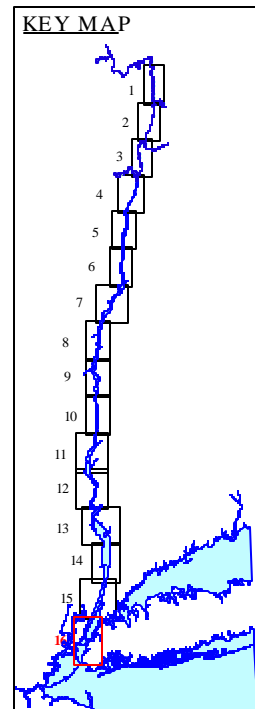
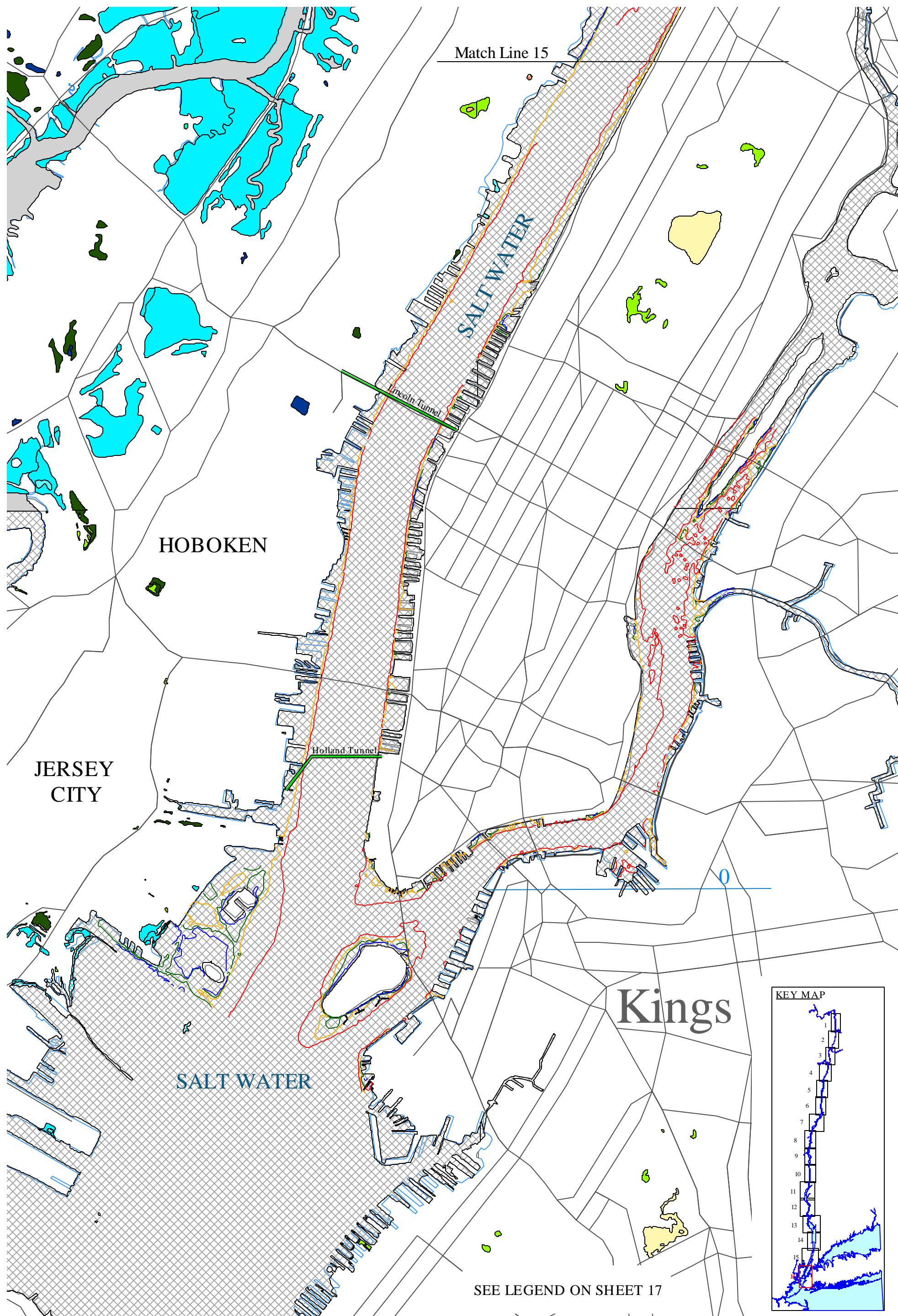
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Hudson River PCBs Reassessment RI/FS
Revised Baseline Ecological Risk Assessment
October, 2000

Plate 1
Habitat Map

Sheet 15 of 17





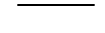








Hudson River PCBs Reassessment RI/FS
Revised Baseline Ecological Risk Assessment
October, 2000

Plate 1
Habitat Map

Sheet 16 of 17








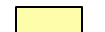

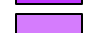









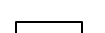


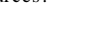
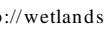

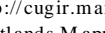
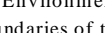
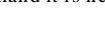
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






 FRESHWATER	Water Salinity Boundary		
	Road		
	Dam and Lock		
	Bridge		
	Match Line		
	River Mile Marker		
 Ulster	County		Significant Habitat (NYS DOS, 1987)
 TROY	Town		Ecological Sampling Locations (Hudson River Database, August, 2000)
	Shoreline		

New York Regulated Wetlands (NYSDEC: From Article 24 of the Environmental Conservation Law)

	Class I Wetlands
	Class II Wetlands
	Class III Wetlands
	Class IV Wetlands

National Wetlands Inventory (U.S. Fish and Wildlife Service) Categories divided into Class

	E1OW : ESTUARINE SUB-TIDAL OPEN WATER
	E1UB : ESTUARINE SUB-TIDAL UNCONSOLIDATED BOTTOM
	E2AB : ESTUARINE INTERTIDAL AQUATIC BED
	E2EM : ESTUARINE INTERTIDAL EMERGENT
	E2EM/OW : ESTUARINE INTERTIDAL EMERGENT/OPEN WATER
	E2FL : ESTUARINE INTERTIDAL FLATS
	E2RS : ESTUARINE INTERTIDAL ROCKY
	E2SB : ESTUARINE INTERTIDAL STREAMBED
	E2SS/EM : ESTUARINE INTERTIDAL SCRUB-SHRUB/EMERGENT
	E2US : ESTUARINE INTERTIDAL UNCONSOLIDATED SHORE
	L1UB : LACUSTRINE LIMNETIC UNCONSOLIDATED BOTTOM
	L2US : LACUSTRINE LITTORAL UNCONSOLIDATED SHORE
	L2AB : LACUSTRINE LITTORAL AQUATIC BED
	L2EM : LACUSTRINE LITTORAL EMERGENT
	L2UB : LACUSTRINE LITTORAL UNCONSOLIDATED BOTTOM
	L2US : LACUSTRINE LITTORAL UNCONSOLIDATED SHORE
	PAB : PALUSTRINE AQUATIC BED
	PAB/SS : PALUSTRINE AQUATIC BED/SCRUB-SHRUB
	PAB/UB : PALUSTRINE AQUATIC BED/UNCONSOLIDATED BOTTOM
	PEM : PALUSTRINE EMERGENT
	PEM/AB : PALUSTRINE EMERGENT/AQUATIC BED
	PEM/FO : PALUSTRINE EMERGENT/FORESTED
	PEM/SS : PALUSTRINE EMERGENT/SCRUB-SHRUB
	PEM/UB : PALUSTRINE EMERGENT/UNCONSOLIDATED BOTTOM
	Pf : PALUSTRINE FARMED
	Pfd : PALUSTRINE FARMED PARTIALLY DRAINED DITCHED
	Pfh : PALUSTRINE FARMED DIKED IMPOUNDED
	Primarily Upland Areas, but may include unclassified wetlands such as man-modified areas, non photoidentifiable areas and/or unintentional omissions

	PFL : PALUSTRINE FLAT
	PFO : PALUSTRINE FORESTED
	PFO/EM : PALUSTRINE FORESTED/EMERGENT
	PFO/SS : PALUSTRINE FORESTED/SCRUB-SHRUB
	PFO/UB : PALUSTRINE FORESTED/UNCONSOLIDATED BOTTOM
	POW : PALUSTRINE OPEN WATER
	PSS : PALUSTRINE SCRUB-SHRUB
	PSS/AB : PALUSTRINE SCRUB-SHRUB/AQUATIC BED
	PSS/EM : PALUSTRINE SCRUB-SHRUB/EMERGENT
	PSS/FO : PALUSTRINE SCRUB-SHRUB/FORESTED
	PSS/UB : PALUSTRINE SCRUB-SHRUB/UNCONSOLIDATED BOTTOM
	PSS/US : PALUSTRINE SCRUB-SHRUB/UNCONSOLIDATED SHORE
	PUB : PALUSTRINE UNCONSOLIDATED BOTTOM
	PUB/AB : PALUSTRINE UNCONSOLIDATED BOTTOM/AQUATIC BED
	PUB/EM : PALUSTRINE UNCONSOLIDATED BOTTOM/EMERGENT
	PUB/FO : PALUSTRINE UNCONSOLIDATED BOTTOM/FORESTED
	PUB/SS : PALUSTRINE UNCONSOLIDATED BOTTOM/SCRUB-SHRUB
	PUS : PALUSTRINE UNCONSOLIDATED SHORE
	R1AB/EM : RIVERINE TIDAL AQUATIC BED/EMERGENT
	R1EM : RIVERINE TIDAL EMERGENT
	R1OW : RIVERINE TIDAL OPEN WATER
	R1UB : RIVERINE TIDAL UNCONSOLIDATED BOTTOM
	R1US : RIVERINE TIDAL UNCONSOLIDATED SHORE
	R2UB : RIVERINE LOWER PERENNIAL UNCONSOLIDATED BOTTOM
	R2US : RIVERINE LOWER PERENNIAL UNCONSOLIDATED SHORE
	R3RB : RIVERINE UPPER PERENNIAL ROCK
	R3UB : RIVERINE UPPER PERENNIAL UNCONSOLIDATED BOTTOM
	R3US : RIVERINE UPPER PERENNIAL UNCONSOLIDATED SHORE

Notes:

- 1) The digital maps are NOT the official maps. While considerable effort has been made to ensure that the digital maps are an accurate representation of the official maps, they should be used with an awareness of the possibility of error.
- 2) There is a gap in the NWI digital coverage between RM 96.5 and 153.0. Therefore, only the NYS Regulated Wetlands are presented for this portion of the river.
- 3) Federal Dam on Sheet No. 4 marks the division between the Upper Hudson River and Lower Hudson River.
- 4) Coordinate System used: New York East State Plane, NAD 27.

Sources:

National Wetlands Inventory were downloaded from U.S. Fish and Wildlife Service at <http://wetlands.fws.gov/>. Coordinate systems were transformed from UTM 18, NAD27 to NY (East) State Plate, NAD27.

New York State Regulated Wetlands were downloaded from Cornell Web site: http://cugir.mannlib.comell.edu/browse_lis/browse_lis.html. The data is based on the Freshwater Wetlands Mapping and Classification Regulations (6 NY CRR Part 664), Pursuant to Article 24 of the Environmental Conservation Law. Wetland lines indicate "the approximate location of the actual boundaries of the wetlands" (ECL 24-0301(3)). For a final determination of the actual location of a wetland it is necessary to contact the DEC office for the region in which the wetland occurs.

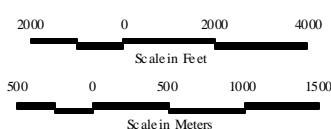
Above Lock 5, contour lines (in feet) were provided in elevation (New York State Barge Canal Datum). The elevation for the water surface was calculated for each pool based on a flow of 3,090 cfs. The water depth was obtained by subtracting the river bottom elevation from the water surface elevation, then rounded to the closest 0.5 foot. Below Lock 5, the bathymetry information was digitized from the NOAA Digital Nautical Charts.

The significant habitat locations and the water salinity boundaries were taken from New York State Department of State (NYS DOS) Hudson River Significant Coastal Fish and Wildlife Habitat Documentation, November 15, 1987.

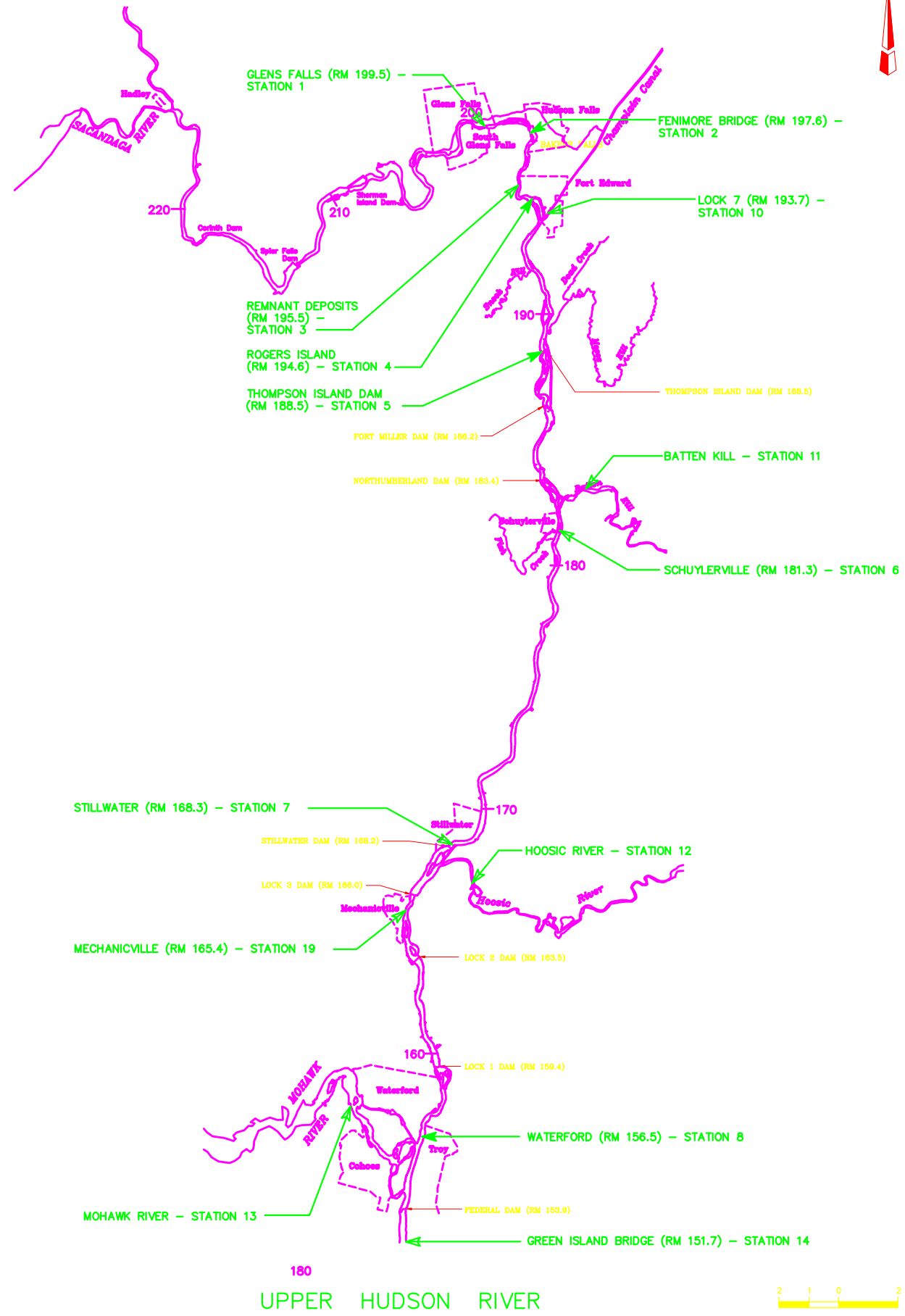
The Upper Hudson River shoreline, rivermiles, the dams and locks and the Ecological Sampling Locations were taken from the Database for the Hudson River PCBs Reassessment RI/FS, Release 5, August 2000, TAMS Consultants and Environmental Protection Agency.

Roads and Lower Hudson River county boundaries were taken from the Hudson River Watershed Database & Mapping Project, developed by NOAA, Office of Response and Restoration, Coastal Protection and Restoration Division.

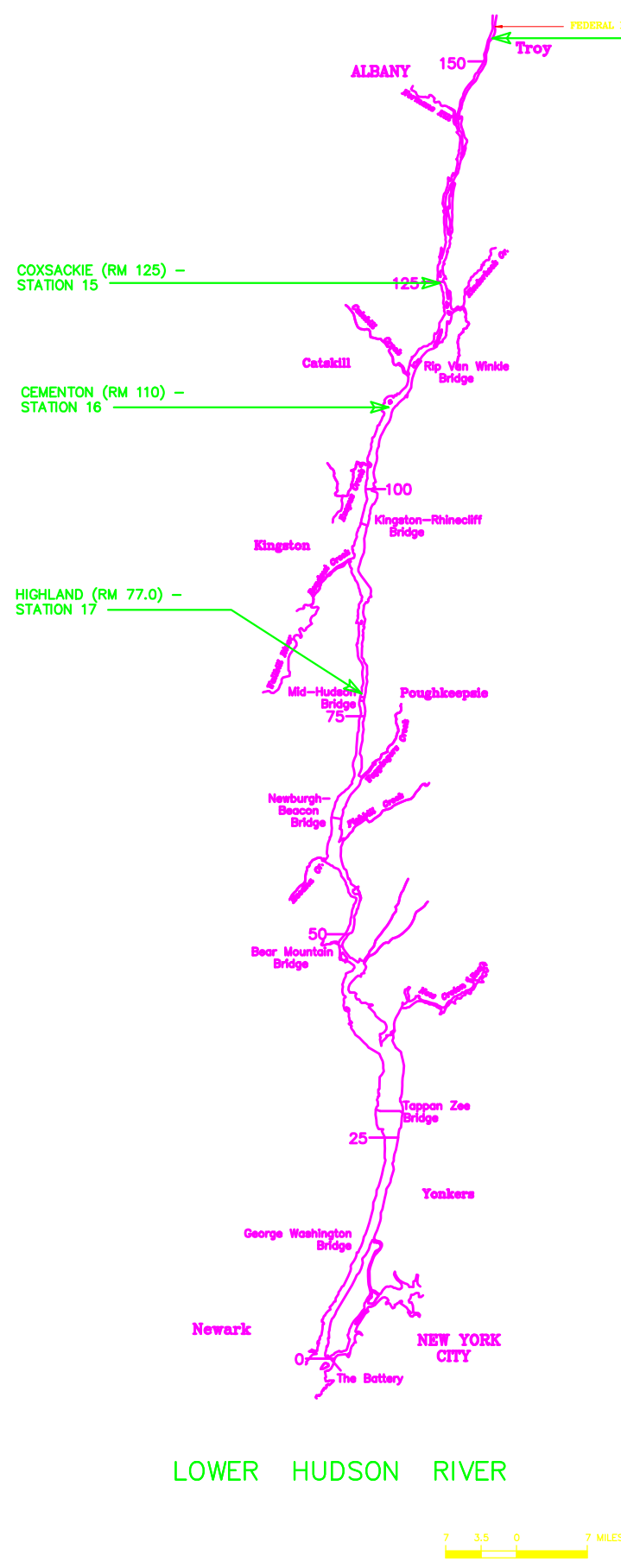
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UPPER HUDSON RIVER



LOWER HUDSON RIVER

LEGEND:

- WATER-COLUMN TRANSECT SAMPLING STATION - ONLY
- WATER-COLUMN TRANSECT AND FLOW-AVERAGED SAMPLING STATION
- 220 RIVER MILE (RM) UPSTREAM OF THE BATTERY

SOURCES:

- SHORELINES AND RM DESIGNATIONS ARE APPROXIMATE.
1. ABOVE HUDSON FALLS - SHORELINE, RM DESIGNATIONS AND TRIBUTARIES WERE OBTAINED FROM USGS TOPOGRAPHIC MAPS.
 2. SCHUYLERVILLE TO HUDSON FALLS - SHORELINE, RM DESIGNATIONS AND TRIBUTARIES WERE PRINCIPALLY DERIVED BY TAMS FROM THE HUDSON RIVER SURVEY, 1976-1977, FOR NYSDEC (NORMANDEAU ASSOCIATES, INC., 1977). PORTIONS OF THE SHORELINE AROUND ROGERS ISLAND AND BAKERS FALLS WERE OBTAINED FROM NYSDEC BASED ON SUBSEQUENT SURVEYS PERFORMED IN 1986-1992 (UNPUBLISHED).
 3. FEDERAL DAM TO SCHUYLERVILLE - SHORELINE, RM DESIGNATIONS AND TRIBUTARIES WERE DERIVED BY GE FROM THE HUDSON RIVER SURVEY, 1976-1977, FOR NYSDEC (NORMANDEAU ASSOCIATES, INC., 1977).
 4. BELOW FEDERAL DAM - SHORELINE, RM DESIGNATIONS AND TRIBUTARIES WERE OBTAINED FROM THE HUDSON RIVER FOUNDATION, 1990.

HUDSON RIVER PCB REASSESSMENT RI/FS
 PHASE 2: FURTHER SITE CHARACTERIZATION AND ANALYSIS
 VOLUME 2C: DATA EVALUATION AND INTERPRETATION REPORT

PHASE 2 WATER-COLUMN SAMPLING LOCATIONS IN HUDSON RIVER