Kevin Mooney
Senior Project Manager
Global Operations - Environment, Health & Safety

General Electric Company
1 Plastics Ave.
Pittsfield, MA 01201

T (413) 553-6610
kevin.mooney@ge.com

Via Electronc Mail

September 28, 2023

Mr. Christopher Smith
EPA Project Manager
U.S. Environmental Protection Agency
New England Region
Five Post Office Square, Suite 100
Boston, MA 02109

Re: GE-Pittsfield/Housatonic River Site
Rest of River (GECD850)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A

Dear Mr. Smith:

In accordance with Section II.H.6 of the Revised Final Permit issued by the U.S. Environmental Protection Agency (EPA) for the Rest of River, Section 4.3.3.1 of the *Final Revised Rest of River Statement of Work*, and the schedule in the *Final Revised Overall Strategy and Schedule for Implementation of the Corrective Measures*, the General Electric Company (GE) is submitting herewith for EPA's review and approval the *Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A*, prepared for GE by Anchor QEA in conjunction with AECOM and Arcadis.

Please let me know if you have any questions about this work plan.

Very truly yours,

Kevin G. Mooney
Senior Project Manager – Environmental Remediation

Enclosure

Cc: (via electronic mail)
Dean Tagliaferro, EPA
Anni Loughlin, EPA
Tim Conway, EPA
John Kilborn, EPA
Richard Fisher, EPA
Joshua Fontaine, EPA

SEMS Doc ID 677553

Alexander Carli-Dorsey, EPA
Christopher Ferry, ASRC Federal
Thomas Czelusniak, HDR Inc.
Scott Campbell, Taconic Ridge Environmental
Izabella Zapisek, Taconic Ridge Environmental
Michael Gorski, MassDEP
John Ziegler, MassDEP
Ben Guidi, MassDEP
Michelle Craddock, MassDEP
Jeffrey Mickelson, MassDEP
Mark Tisa, MassDFW
Jonathan Regosin, MassDFW
Betsy Harper, MA AG
Traci Iott, CT DEEP
Susan Peterson, CT DEEP
Graham Stevens, CT DEEP
Carol Papp, CT DEEP
Lori DiBella, CT AG
Molly Sperduto, USFWS
Mark Barash, US DOI
Ken Finkelstein, NOAA
James McGrath, City of Pittsfield
Andrew Cambi, City of Pittsfield
Michael Coakley, PEDA
Melissa Provencher, BRPC
Christopher Ketchen, Town of Lenox
Town Administrator, Lee
Town Manager, Great Barrington
Town Administrator, Stockbridge
Town Administrator, Sheffield
Jim Wilusz, Tri Town Health Department
Andrew Silfer, GE
Andrew Thomas, GE
Matthew Calacone, GE
Michael Werth, Anchor QEA
Mark Gravelding, Arcadis
Dennis Lowry, AECOM
Daniel Cassedy, AECOM
James Bieke, Sidley Austin
Public Information Repository at David M. Hunt Library in Falls Village, CT
GE Internal Repository

September 2023
Housatonic River – Rest of River

Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A

Prepared for General Electric Company
Pittsfield, Massachusetts

September 2023
Housatonic River – Rest of River

Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A

Prepared for
General Electric Company
1 Plastics Avenue
Pittsfield, Massachusetts 01201

Prepared by
Anchor QEA, LLC
290 Elwood Davis Road
Liverpool, New York 13088

In Conjunction with:
AECOM
500 Enterprise Drive
Rocky Hill, Connecticut 06067

Arcadis U.S., Inc.
One Lincoln Center
110 West Fayette Street, Suite 300
Syracuse, New York 13202

TABLE OF CONTENTS

1 Introduction 1

1.1 Background 1

1.2 Purpose and Scope of the Reach 5A Conceptual RD/RA Work Plan 3

1.3 Description of Reach 5A 5

1.4 Work Plan Organization 6

2 Reach 5A Performance Standards and Corrective Measures 8

2.1 General Performance Standards 8

2.1.1 Downstream Transport Performance Standard 8

2.1.2 Biota Performance Standards 9

2.1.3 Restoration of Areas Disturbed by Remediation Activities 9

2.2 Sediment 10

2.2.1 River Sediment 10

2.2.2 Backwaters 10

2.2.3 Other Waterbodies 11

2.2.4 Engineered Caps 11

2.3 Riverbanks 13

2.4 Floodplains 14

2.4.1 Non-Residential Floodplain Exposure Areas 14

2.4.2 Residential Properties 14

2.4.3 Vernal Pools 15

2.5 Inspection Monitoring and Maintenance Before and During Construction 15

2.6 Disposal of Contaminated Sediment and Soil (Including Upland Disposal Facility and Off-Site Disposal) 16

2.7 Water Withdrawals and Uses 17

3 Reach 5A Characteristics and Existing Data 18

3.1 Overview 18

3.2 PCB Data 18

3.2.1 Sediment 18

3.2.1.1 Main Channel Sediment 18

3.2.1.2 Backwater Sediment 19

3.2.1.3 Other Waterbodies Containing Sediment 19

3.2.2 Riverbank Soil 19

3.2.3 Floodplain Soil 20

3.2.3.1 Residential Properties ... 20
3.2.3.2 Non-Residential Floodplain Exposure Areas ... 20
3.2.3.3 Vernal Pools ... 22
3.3 Waste Characterization ... 22
3.4 Sediment Characteristics ... 23
3.5 River Hydraulic Characteristics ... 24
3.6 Definition of Riverbanks ... 27
3.7 Riverbank Conditions ... 28
3.8 Baseline Restoration Assessment ... 30
3.8.1 Riverine Habitat ... 31
3.8.2 Riverbank Habitat ... 32
3.8.3 Backwater Habitat ... 32
3.8.4 Other Waterbodies Habitats ... 33
3.8.5 Floodplain Wetland and Upland Habitats ... 34
3.8.6 Vernal Pool Habitats ... 34
3.8.7 Rare Species Habitats ... 34
3.9 Cultural Resources Assessment ... 35
3.10 Riparian Property Ownership ... 36
3.11 Infrastructure and Obstructions ... 36
3.11.1 Utilities and Structures ... 36
3.11.2 Shoreline Vegetation and In-River Debris ... 37
3.12 Seasonal Considerations ... 37

4 Preliminary PCB Evaluations ... 39
4.1 Overview ... 39
4.2 Sediment Evaluations ... 39
4.2.1 Main Channel Sediment ... 39
4.2.1.1 Data Evaluation (Existing Conditions) ... 39
4.2.1.2 Proposed Remediation Plan ... 40
4.2.1.3 Disposal Evaluation ... 41
4.2.2 Backwaters ... 42
4.2.2.1 Backwater Located in Core Area 1 Habitat (BW5A-1) ... 42
4.2.2.2 Backwaters Outside Core Area 1 Habitat (BW5A-2 through BW5A-6) ... 43
4.2.2.3 Disposal Evaluation (All Reach 5A Backwaters) ... 45
4.2.3 Other Waterbodies ... 46

4.3 Riverbank Soil Evaluation ... 48
4.3.1 Data Evaluation (Existing Conditions) ... 48
4.3.2 Proposed Remediation Plan ... 49
4.3.3 Disposal Evaluation ... 49
4.4 Floodplain Soil Evaluations ... 50
4.4.1 Residential Properties ... 50
4.4.1.1 Overview of Prior and Updated Evaluations ... 50
4.4.1.2 Data Evaluation (Existing Conditions) ... 51
4.4.1.3 Proposed Remediation Plan ... 52
4.4.2 Non-Residential Exposure Areas ... 53
4.4.2.1 PCB Evaluation (Existing Conditions) ... 53
4.4.2.2 Proposed Remediation Plan ... 56
4.4.3 Disposal Evaluation ... 58
4.5 Vernal Pools ... 59
4.5.1 Data Evaluation (Existing Conditions) ... 59
4.5.2 Proposed Remediation Plan ... 61
4.5.3 Disposal Evaluation ... 62
4.6 Summary ... 63

5 Remedial Design Process and Considerations ... 64
5.1 Overview ... 64
5.2 Hydraulic Modeling ... 64
5.3 Engineered Cap ... 65
5.3.1 Erosion Protection Layer ... 67
5.3.2 Geotechnical Filter Layer ... 69
5.3.3 Chemical Isolation Layer ... 70
5.3.4 Cap Material Selection ... 75
5.3.5 Engineered Cap Types ... 75
5.3.6 Other Design Considerations ... 76
5.4 Sediment Remediation ... 77
5.4.1 Conceptual Sediment Remediation Approach ... 77
5.4.2 Excavation and Capping Design Considerations ... 80
5.4.3 Structures and Utilities ... 81
5.4.4 Debris and Obstructions ... 82
5.5 Riverbank Remediation/Stabilization ... 82
5.6 Floodplain Remediation ... 83

5.7 Vernal Pool Remediation ... 84
5.8 Placement of Amendment in BW5A-1 ... 85
5.9 Material Handling and Staging Areas and Access Roads ... 86
5.10 Waste Transport and Disposal ... 89
5.10.1 Waste Characterization ... 89
5.10.2 On-Site Transport to UDF ... 90
5.10.3 Off-Site Transport ... 90
5.11 Habitat Impacts and Restoration ... 91
5.11.1 Riverine Habitat Impacts and Restoration ... 91
5.11.2 Riverbank Habitat Impacts and Restoration ... 93
5.11.3 Backwater Habitat Impacts and Restoration ... 93
5.11.4 Other Waterbodies Habitat Impacts and Restoration ... 94
5.11.5 Floodplain Wetland and Upland Habitat Impacts and Restoration ... 95
5.11.6 Vernal Pool Habitat Impacts and Restoration ... 97
5.11.7 Rare Species Habitat Impacts and Restoration ... 97
5.12 Property Access ... 98
5.13 Consideration of Cultural Resources ... 98

6 Applicable or Relevant and Appropriate Requirements ... 100

7 Quality-of-Life Considerations ... 101

8 Sustainability Considerations ... 103
8.1 Overview ... 103
8.2 Vulnerability Assessment ... 103
8.2.1 Exposure Assessment ... 107
8.2.2 Sensitivity Assessment ... 107
8.2.3 Resiliency Measures ... 109
8.2.4 Adaptive Capacity ... 110
8.3 Greenhouse Gas Emissions Evaluation ... 110

9 Summary and Preliminary Evaluation of River Water Withdrawals and Uses ... 114
9.1 Overview ... 114
9.2 Summary of Outreach Activities and Information Obtained ... 114
9.3 Evaluation of Potential Impacts on River Water Uses ... 117

10 Supplemental Data Collection and Treatability Testing ... 118
10.1 Overview ... 118

10.2 Supplemental Data Collection 118
10.3 Treatability Studies 119

11 Remedial Design Schedule 121

12 References 124

TABLES

Table 2-1 Downstream Transport Performance Standard
Table 3-1 Residential Sample Program Summary
Table 3-2 PCB Sample Counts within the 32 Non-Residential Floodplain EAs in Reach 5A
Table 3-3 Summary of Total PCB Sample Counts in Reach 5A Vernal Pools
Table 3-4 Summary of Geotechnical Index Parameter Testing Results (Sediment)
Table 3-5 Average Monthly Flow at USGS Coltsville Gage (1936 – 2022)
Table 3-6 Estimated Flow Values in the Housatonic River for Specified Recurrence Intervals in Reaches 5 and 6
Table 3-7 Dates of ADCP Sampling Events and Corresponding Flows at Nearby USGS Gages
Table 3-8 Summary of BEHI and NBS Assessment
Table 3-9 Mean Monthly Air Temperatures and Precipitation at Pittsfield Municipal Airport (1991-2020)
Table 4-1 Existing Spatially Weighted Average Total PCB Concentrations (BW5A-2 through BW5A-6)
Table 4-2 Remedial Extents and Preliminary Volume Estimates (BW5A-2 through BW5A-6)
Table 4-3 Existing Spatially Weighted Average Total PCB Concentrations in Other Waterbodies
Table 4-4 Remedial Extents and Preliminary Volume Estimates in Other Waterbodies
Table 4-5 Lengths of Erodible Banks Binned by PCB Concentration
Table 4-6 Existing PCB Concentrations in Residential Properties
Table 4-7 Residential Property Remediation Areas and Volumes
Table 4-8 Post-Remediation PCB Concentrations in Residential Properties
Table 4-9 Calculated 0- to 1-Foot EPCs for Reach 5A Non-Residential Exposure Areas and Subareas
Table 4-10 Calculated 0- to 3-Foot EPCs for Frequently Used Subareas
Table 4-11 Removal Area and Volume Estimates and Post-Remediation EPCs for Non-Residential Floodplain EAs and Subareas Requiring Remediation
Table 4-12 Floodplain Soil – Estimated Disposal Volumes Summary

Table 4-13 Summary of 0- to 1-Foot Spatially Weighted Average PCB Concentrations in Vernal Pools
Table 4-14 Removal Areas and Volume Estimates for Vernal Pools Selected for Removal-Based Pilot Study
Table 4-15 Summary of Conceptual Design Removal Areas and Estimated Removal Volumes for Reach 5A
Table 5-1 Recommended Chemical Isolation Layer Amendment Dose
Table 5-2 Conceptual Engineered Cap Types
Table 6-1 Applicable or Relevant and Appropriate Requirements for Reach 5A Remedial Activities
Table 8-1 Potential Vulnerabilities Associated with Potential Climate Change Impacts
Table 8-2 Potential Resiliency Measures to Address High-Priority Vulnerabilities
Table 8-3 Emission Sources and Quantification Tools
Table 8-4 Potential Greenhouse Gas Mitigation Measures

FIGURES

Figure 1-1 Housatonic River Map (Subreaches in Reaches 5 and 7)
Figure 1-2 Reach 5A Site Map
Figure 1-3 Floodplain Exposure Areas, Subareas, and Frequently Used Subareas in Reach 5A
Figure 1-4 Vernal Pools in Reach 5A
Figure 3-1 Cumulative Frequency Distribution of Flow at USGS Coltsville Gage by Month
Figure 3-2 Flow Input Locations in HEC-RAS Model
Figure 3-3 Predicted Water Surface Elevations for Low, Moderate, and High Flow Conditions in Reach 5A
Figure 3-4 Estimated Water Depths in Reach 5A Corresponding to Flow of 150 cfs at USGS Coltsville Gage
Figure 3-5 Riparian Property Ownership in Reach 5A
Figure 4-1 Summary of In-River PDI Sediment PCB Data for Reach 5A
Figure 4-2a Spatial Distribution of In-River PDI Sediment PCBs by Depth
Figure 4-2b Spatial Distribution of In-River PDI Sediment PCBs Across Transects
Figure 4-3 Depth-Weighted Average In-River Sediment PCB Concentrations (Thiessen Polygons)
Figure 4-4 Backwater Remedial Extents and Sediment PCB Concentrations by Depth
Figure 4-5 Other Waterbody Remedial Extents and Sediment PCB Concentrations by Depth
Figure 4-6 Riverbank Soil PCB Results, Riverbank Erodibility, and Conceptual Riverbank Remedial Extents

Figure 4-7 Residential Floodplain Preliminary Remediation Areas
Figure 4-8 Non-Residential Floodplain Preliminary Remediation Areas
Figure 4-9 Vernal Pools and Core Habitat Areas in Reach 5A
Figure 4-10 Preliminary Remediation Areas for Reach 5A
Figure 5-1 Performance Standards and Conceptual Cap Design for Reach 5A
Figure 5-2 Calculated Stable Particle Sizes at Each HEC-RAS Transect in Reach 5A
Figure 5-3 Extents of Cap Model Simulation Areas in Reach 5A
Figure 5-4 Extents of Conceptual Cap Types in Reach 5A
Figure 5-5 Conceptual Cap Types for Reach 5A
Figure 5-6 Preliminary Staging Area and Temporary Access Road Locations for Reach 5A
Figure 9-1 Outreach to Reach 5A Parcels Within 500 Feet of River

APPENDICES

Appendix A Engineered Cap Modeling and Design Evaluations
Appendix B PCB Evaluations for River Sediment
Appendix C PCB Evaluations for Backwaters and Other Waterbodies
Appendix D PCB Evaluations for Riverbank Soils
Appendix E PCB Evaluations for Floodplain Soil – Residential
Appendix F PCB Evaluations for Floodplain Soil – Non-Residential
Appendix G Hydrologic/Hydraulic Analysis and Modeling of Reaches 5 and 6
Appendix H Treatability Study Work Plan for Reach 5A
Appendix I Supplemental Data Collection Work Plan for Reach 5A

ABBREVIATIONS

A/P Lawn	Actual/Potential Lawn
AC	activated carbon
ADCP	acoustic Doppler current profiler
APE	Area of Potential Effects
ARAR	applicable or relevant and appropriate requirement
ATV	all-terrain vehicle
BANCS	Bank Assessment for Non-point source Consequences of Sediment
BEHI	Bank Erosion Hazard Index
bgs	below ground surface
BMP	best management practice
BRA	Baseline Restoration Assessment
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
cm	centimeter
CMR	Code of Massachusetts Regulations
CO_2	carbon dioxide
Conceptual RD/RA Work Plan	*Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A*
CRA	Cultural Resources Assessment
CRS	Cultural Resources Survey
cy	cubic yard
EA	Exposure Area
EPA	U.S. Environmental Protection Agency
EPC	exposure point concentration
FEMA	Federal Emergency Management Agency
Final Revised OSS	*Final Revised Overall Strategy and Schedule for Implementation of Corrective Measures*
Final Revised SOW	Final Revised Rest of River Statement of Work
FIS	Flood Insurance Study
fps	foot per second
GAC	granular activated carbon
GE	General Electric Company
GHG	greenhouse gas
GWP	global warming potential

HEC-RAS	Hydrologic Engineering Center – River Analysis System
HEC-SSP	Hydrologic Engineering Center – Statistical Software Package
HHRA	Human Health Risk Assessment
HI	Hazard Index
ITRC	Interstate Technology and Regulatory Council
kg	kilogram
lb/ft^3	pound per cubic foot
LGS	Low-Gradient Stream
LiDAR	Light Detection and Ranging
MassDEP	Massachusetts Department of Environmental Protection
MassGIS	Commonwealth of Massachusetts Bureau of Geographic Information
mg	milligram
MGD	million gallons per day
MGS	Medium-Gradient Stream
MHC	Massachusetts Historical Commission
MNHESP	Massachusetts Natural Heritage and Endangered Species Program
NA	not applicable
NBS	Near Bank Stress
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NTE	not-to-exceed
PAC	powdered activated carbon
PCB	polychlorinated biphenyl
PDI	pre-design investigation
PDI Summary Report for Floodplain Residential Properties	*Pre-Design Investigation Summary Report for Reach 5A Floodplain Residential Properties*
PDI Summary Report for Non-Residential Floodplain EAs	*Pre-Design Investigation Summary Report for Reach 5A Non-Residential Floodplain Exposure Areas*
PDI Summary Report for Sediment and Riverbanks	*Pre-Design Investigation Summary Report for Reach 5A Sediment and Riverbanks*
Phase IB CRS Work Plan	*Phase IB Cultural Resources Survey Work Plan for Reach 5A*
POP	Project Operations Plan
PSA	Primary Study Area
QOL	quality of life
RCMS	*Housatonic River – Rest of River, Revised Corrective Measures Study Report*

RCRA	Resource Conservation and Recovery Act
RD/RA	Remedial Design/Remedial Action
Reach 5A BRA Report	*Housatonic River Reach 5A Baseline Restoration Assessment Report*
Restoration Criteria Report	*Restoration Performance Objectives and Evaluation Criteria Report*
Revised Final Permit	Revised Final Resource Conservation and Recovery Act Permit Modification
Revised Phase IA CRA Report	*Revised Supplemental Phase IA Cultural Resources Assessment Report*
Revised Sediment/ Bank PDI Work Plan	*Revised Pre-Design Investigation Work Plan for Reach 5A Sediment and* Riverbanks
RME	Reasonable Maximum Exposure
ROR	Rest of River
RU	Remediation Unit
SCAP	*Sustainability and Climate Adaptation Plan*
SDC Work Plan	*Supplemental Data Collection Work Plan for Reach 5A*
Second Revised PDI Work Plan for Non-Residential Floodplain EAs	*Second Revised Pre-Design Investigation Work Plan for Reach 5A Non-Residential Floodplain Exposure Areas*
SEFA	Spreadsheets for Environmental Footprint Analysis
SI	Supplemental Investigation
SIP	Supplemental Information Package
SMU	Sediment Management Unit
Subaqueous Capping Guidance	*Guidance for In-Situ Subaqueous Capping of Contaminated Sediments*
SWAC	spatially weighted average concentration
T&D Plan	Off-Site and On-Site Transportation and Disposal Plan
TCLP	toxicity characteristic leaching procedure
TOC	total organic carbon
UDF	Upland Disposal Facility
UDF Conceptual Design Plan	*Upland Disposal Facility Conceptual Design Plan*
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
WARM	Waste Reduction Model
WWTP	wastewater treatment plant
WWUP	*Revised Water Withdrawal and Uses Plan*

1 Introduction

1.1 Background

On December 16, 2020, pursuant to the 2000 Consent Decree (CD) for the GE Pittsfield/Housatonic River Site (EPA and GE 2000), the U.S. Environmental Protection Agency (EPA) issued to the General Electric Company (GE) a final revised modification of GE's Resource Conservation and Recovery Act (RCRA) Corrective Action Permit (Revised Final Permit) for the Housatonic Rest of River (ROR; EPA 2020). The ROR is defined as that portion of the Housatonic River and its backwaters and floodplain (excluding Actual/Potential Lawns as defined in the CD) located downstream of the confluence of the East and West Branches of the Housatonic River (the Confluence). The Revised Final Permit set forth a Remedial Action selected by EPA to address polychlorinated biphenyls (PCBs) in the ROR.

The Revised Final Permit required GE to develop and submit a Statement of Work specifying the deliverables and activities that GE will conduct to design and implement the ROR Remedial Action. In accordance with that requirement, after receipt of EPA's comments on an earlier version, GE submitted a *Final Revised Rest of River Statement of Work* on September 14, 2021 (Final Revised SOW; Anchor QEA et al. 2021), and EPA approved it on September 16, 2021. The Revised Final Permit also required GE, in Section II.H.2, to develop and submit an Overall Strategy and Schedule document to present its overall strategy for implementing the ROR Remedial Action. In response, GE submitted its *Final Revised Overall Strategy and Schedule for Implementation of the Corrective Measures* on July 5, 2022 (Final Revised OSS; Anchor QEA 2022a), and EPA approved it on July 6, 2022. As described in Section 3.2 of that document, the ROR has been segmented into six separate Remediation Units (RUs) to manage workflow and schedule for the ROR Remedial Action. Reach 5A is the first RU to be addressed because it is the most upstream reach in the ROR.

Remediation in Reach 5A will include removal and capping of sediments in the riverbed and remediation of associated backwaters, riverbank soils, and floodplain soils (including those at residential properties, non-residential floodplain areas, and vernal pools) to the extent required by the applicable Performance Standards in the Revised Final Permit. Soil and sediment excavated from the remediation areas will be subject to disposal at an on-site Upland Disposal Facility (UDF) or at an off-site disposal facility, consistent with the requirements specified in Attachment E to the Revised Final Permit.

Section II.H.6 of the Revised Final Permit and Section 4.3.3.1 of the Final Revised SOW require GE to prepare a Conceptual Remedial Design/Remedial Action (RD/RA) Work Plan following completion of pre-design investigation (PDI) activities and related reporting for each RU. The Final Revised OSS established that this *Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A* (Conceptual RD/RA Work Plan) would be submitted concurrently with submittal of the last PDI

Summary Report for Reach 5A. PDI activities for Reach 5A were conducted in three parts—floodplain residential properties, floodplain non-residential Exposure Areas (EAs), and sediments and riverbanks. The following is a summary of those PDI activities:

- A PDI work plan for residential properties within the Reach 5A floodplain was first submitted to EPA on August 15, 2018, and conditionally approval by EPA on June 9, 2020. A revised PDI work plan for residential properties (Anchor QEA 2020) was submitted on July 9, 2020, and conditionally approved on July 23, 2020. GE then conducted the soil sampling described in that work plan. Following receipt of those analytical results, GE determined that additional pre-design sampling was necessary at a subset of properties. As a result, an addendum to the PDI work plan for residential properties (Anchor QEA 2021a) was submitted on March 31, 2021, and conditionally approved on April 20, 2021. Following completion of that supplemental sampling, GE prepared and submitted a *Pre-Design Investigation Summary Report for Reach 5A Floodplain Residential Properties* (PDI Summary Report for Floodplain Residential Properties) on December 22, 2021 (Anchor QEA 2021b). That PDI summary report was conditionally approved by EPA on February 14, 2022.
- A PDI work plan for non-residential EAs in Reach 5A was first submitted on October 6, 2017, and conditionally approved by EPA in various parts on January 25, 2018; March 28, 2018; and April 26, 2021. The portions of that work plan relating to the identification of vernal pools in Reach 5A, and the assessment of the accessibility of the various habitats within that reach of floodplain were previously implemented and reports on these activities were submitted in 2020 and 2021 (AECOM 2020; AECOM and Anchor QEA 2020; GE 2021). On June 25, 2021, a revised PDI work plan for the non-residential EAs (in the Reach 5A floodplain, including sampling for PCBs at the identified vernal pools) was submitted and was conditionally approved on October 6, 2021. Pursuant to that conditional approval, the *Second Revised Pre-Design Investigation Work Plan for Reach 5A Non-Residential Floodplain Exposure Areas* (Second Revised PDI Work Plan for Non-Residential Floodplain EAs; Anchor QEA 2021c) was submitted on November 19, 2021, and subsequently approved on December 13, 2021. GE then conducted the soil sampling described in that work plan. Following receipt of those analytical results, GE determined that additional pre-design sampling was necessary for a subset of EAs. An addendum to the PDI work plan for non-residential floodplain EAs (Anchor QEA and Arcadis 2023a) was submitted on January 19, 2023, and conditionally approved on February 27, 2023. GE conducted the additional soil sampling pursuant to that addendum in April 2023. GE has prepared a *Pre-Design Investigation Summary Report for Reach 5A Non-Residential Floodplain Exposure Areas* (PDI Summary Report for Non-Residential Floodplain EAs; Anchor QEA and Arcadis 2023b) that summarizes all data collected at the Reach 5A non-residential floodplain EAs under the PDI. That PDI summary report is being submitted concurrently with this Conceptual RD/RA Work Plan.

- A PDI work plan for sediments and riverbanks in Reach 5A was first submitted on September 27, 2021. In a letter dated November 24, 2021, EPA conditionally approved portions of that work plan that contained time-critical, seasonal dependent work. EPA conditionally approved the remainder of the work plan in a letter dated March 17, 2022, requiring GE to submit a revision to that plan. A revised PDI work plan for sediments and riverbanks (Anchor QEA and AECOM 2022) was submitted on May 2, 2022, and conditionally approved on June 1, 2022. As of July 2023, GE has completed most of the PDI activities described in that work plan; some activities are either ongoing or have not yet been completed. GE has prepared a *Pre-Design Investigation Summary Report for Reach 5A Sediment and Riverbanks* (PDI Summary Report for Sediment and Riverbanks; Anchor QEA and AECOM 2023a) to summarize those activities. That PDI summary report is being submitted concurrently with this Conceptual RD/RA Work Plan.

1.2 Purpose and Scope of the Reach 5A Conceptual RD/RA Work Plan

This Conceptual RD/RA Work Plan presents preliminary design information for the remediation of in-river sediment, backwater sediment, sediment in certain other waterbodies, riverbank soil, floodplain soil, and vernal pools within Reach 5A of the ROR. This work plan evaluates data collected during the Reach 5A PDI (and relevant historical data) and presents preliminary remediation areas for each of those media in accordance with the Performance Standards and other requirements specified in the Revised Final Permit. Details of these evaluations are presented in the remainder of this work plan.

This Conceptual RD/RA Work Plan was prepared in accordance with the requirements presented in the Revised Final Permit and in Section 4.3.3.1 of the Final Revised SOW. Specifically, this work plan, including its appendices, present the following information:

- A description of the characteristics of Reach 5A and a summary of existing data, including the results of pre-design studies/investigations for Reach 5A;
- An evaluation of the areas and, in some cases, depths subject to remediation in Reach 5A to meet the applicable PCB-related Performance Standards;
- An evaluation of issues that may affect the type and extent of remediation activities;
- Preliminary remediation plans;
- A summary of preliminary remediation quantities for Reach 5A, including estimated sediment/soil removal volumes and capping areas/backfill volumes;
- Design assumptions and parameters, including preliminary cap design evaluations for Reach 5A;
- Results of an in-river hydraulic analysis conducted in support of the design for Reach 5A;

- A preliminary evaluation of where the dredged/excavated materials from Reach 5A will be disposed (i.e., in the UDF versus in off-site disposal facilities);
- An identification of applicable or relevant and appropriate requirements (ARARs) for the remediation and restoration work in Reach 5A;
- A discussion of sustainability considerations for the Reach 5A remediation;
- A summary of the status of the water withdrawals and uses evaluation for Reach 5A;
- A description of supplemental engineering data collection activities to be conducted in Reach 5A prior to final design, including a *Supplemental Data Collection Work Plan for Reach 5A* (SDC Work Plan, provided in Appendix I);
- A *Treatability Study Work Plan for Reach 5A* (provided in Appendix H) to describe proposed treatability testing to support the final design for Reach 5A; and
- A schedule for completion of the remedial design for the Reach 5A remediation.

Section 4.3.3.1 of the Final Revised SOW states that the Conceptual RD/RA Work Plan would also include a description of preliminary area-specific measures to address the quality of life (QOL) standards and potential impacts on the public. However, as described in Section 7 of this Conceptual RD/RA Work Plan, GE is developing a separate QOL Compliance Plan in accordance with the Final Revised SOW that will describe the proposed QOL standards to be applied during remediation. As approved by EPA, the QOL Compliance Plan is scheduled for submittal to EPA on December 20, 2023. Thus, a description of Reach 5A-specific measures to address the QOL standards and potential impacts on the public has been deferred until after development and EPA review of the QOL Compliance Plan and will be included in the Final RD/RA Work Plan for Reach 5A.

The conceptual design information presented herein is preliminary and represents an approximate 30% design. As such, the estimated removal and disposal quantities presented herein are likewise preliminary and may be adjusted after further evaluation during final design. As described in the following sections of this Conceptual RD/RA Work Plan, supplemental data collection, treatability testing, additional habitat assessment activities, cultural resources investigations, and additional design evaluations are necessary and will be conducted as part of the final design process. Once these activities are complete, GE will submit a Final RD/RA Work Plan that includes a detailed description of the design and implementation of the proposed remedial activities for Reach 5A along with updated removal and disposal quantity estimates, where applicable.[1]

[1] This Conceptual RD/RA Work Plan does not present conceptual design details for the UDF, which were presented in GE's December 2022 UDF Conceptual Design Plan (Arcadis 2022). The UDF Final Design Plan will be submitted within 60 days after EPA approval of the *Final Upland Disposal Facility Pre-Design Investigation Summary Report for Upland Disposal Facility Area* (Arcadis 2023), which was submitted to EPA on August 7, 2023.

1.3 Description of Reach 5A

As noted in Section 1.1, the ROR consists of that portion of the Housatonic River and its backwaters and floodplain (excluding Actual/Potential Lawns as defined in the CD) located downstream of the Confluence. Within Reaches 5 and 6, which constitute the portion of the ROR between the Confluence and Woods Pond Dam and is also known as the Primary Study Area (PSA), the CD defines the ROR site boundary as the floodplain area extending laterally to the 1 milligram per kilogram (mg/kg) PCB isopleth, which corresponds approximately to the 10-year floodplain.

Reach 5A (shown on Figure 1-1) encompasses approximately the first five miles of the ROR, extending from the Confluence to the Pittsfield Wastewater Treatment Plant (WWTP) discharge location. The river channel in this reach is free flowing, contains numerous meanders, and has riverbanks that are subject to erosion in places. As described in GE's July 16, 2020 *Final Morphology and Accessibility Survey Report* (AECOM and Anchor QEA 2020), Reach 5A also contains six backwater areas (shown on Figure 1-2), defined as quiescent areas adjacent and hydraulically connected to the main channel of the river. River stations were established for Reach 5A during the PDI for sediments and riverbanks to provide a locational reference to support the PDI, remedial design, and construction.[2] The stationing begins with Station 0+00 at the Confluence and extends to the downstream end of Reach 5A at Station 245+00 (located 24,500 feet from Station 0+00 or approximately 4.6 miles). River stations were established every approximately 100 feet along the approximate centerline of the river (as also shown on Figure 1-2).

The floodplain in Reach 5A covers approximately 325 acres and ranges in width from 100 feet at its narrowest point to approximately 2,500 feet at its widest point (BBL and QEA 2003). EPA's *Human Health Risk Assessment* (HHRA; EPA 2005a) divided the ROR floodplain into 90 EAs for the assessment of direct human contact with floodplain soils. Of those 90 EAs, 38 are located within Reach 5A, as shown on Figure 1-3. Several properties that comprise six of those EAs (EAs 3, 9, 23, 25, 28, and 30) within the Reach 5A floodplain are subject to the Residential Performance Standards in the Revised Final Permit.[3] The remaining 32 EAs within the Reach 5A floodplain are subject to the non-residential Performance Standards and are referred to herein as "non-residential EAs." In addition, in the *Housatonic River – Rest of River, Revised Corrective Measures Study Report* (RCMS;

[2] Each river station is approximately 100 feet apart along the centerline of the main river channel and has been assigned a number (e.g., Station 49+50). For each river station, the value to the left of the plus symbol in the number is in hundreds of feet from the first station, and the value to the right of the plus symbol is in feet. In Reach 5A, the first (i.e., farthest upstream) station is identified as 0+00, and the next station is identified as 1+00, which is 100 feet downstream along the channel centerline. As a further example, Station 49+50 is located approximately 4,950 feet downstream of Station 0+00 along the river centerline.

[3] Those properties are Tax Parcels I6-1-42 (EA 3); J6-2-3 (EA 9), J3-1-11, -12, -13, and -14 (EA 23); J3-2-2, -3, -4, -5, and -6 (EA 25); K3-1-2 (EA 28); and K2-1-10 (EA 30). The need for remediation at these properties is governed by the Residential Performance Standards in Table 3 of the Revised Final Permit rather than the non-residential Performance Standards in Tables 1 and 2.

Arcadis et al. 2010), GE identified "heavily used subareas" within EAs that were identified as "frequently used" in the *Housatonic River – Rest of River, Corrective Measures Study Proposal* (Arcadis BBL and QEA 2007). These heavily used subareas are referred to as "Frequently Used Subareas" in the Revised Final Permit and in this Conceptual RD/RA Work Plan. The Frequently Used Subareas in Reach 5A include portions of EAs 4, 12, 26, and 61.

Reach 5A also contains numerous vernal pools. GE completed an identification and evaluation of vernal pools in the Reach 5A floodplain in 2018 and 2019, with some follow-up surveys into 2020. Those investigations were conducted to identify pools that met both the biological and physical criteria for certification of vernal pools based on criteria established by the Massachusetts Natural Heritage and Endangered Species Program (MNHESP). Findings were presented in GE's *Final Report on Potential Vernal Pool Investigations* (AECOM 2020). After receipt of comments from MNHESP, GE finalized its determination of areas meeting the applicable vernal pool criteria in a February 4, 2021, letter to EPA, resulting in 59 identified vernal pools in the Reach 5A floodplain (GE 2021). EPA approved that determination on March 9, 2021. The 59 confirmed vernal pools in Reach 5A are shown on Figure 1-4.[4]

1.4 Work Plan Organization

The remainder of this Conceptual RD/RA Work Plan is organized into the following sections:

- Section 2 presents a summary of the Performance Standards and other requirements applicable to the Reach 5A Remedial Action.
- Section 3 summarizes existing conditions and data applicable to the remediation of Reach 5A based on applicable historical data and pre-design studies/investigations.
- Section 4 presents a summary of the evaluations conducted to determine the preliminary sediment, riverbank, and floodplain remedial areas required to achieve the Performance Standards summarized in Section 2.
- Section 5 presents conceptual design details for the main elements of the Reach 5A design.
- Section 6 presents a discussion of ARARs associated with remedial action for Reach 5A at the conceptual design phase.
- Section 7 discusses the QOL Compliance Plan that will be prepared to describe the proposed QOL standards to be applied during remediation and other factors involving the community.

[4] EPA subsequently directed GE to investigate one additional certified vernal pool located east of 5A-VP-24A and outside of but near the floodplain boundary (identified as 5A-VP-24B). That pool is also shown on Figure 1-4.

- Section 8 describes presents a preliminary vulnerability assessment for Reach 5A and describes the methodology for how greenhouse gas (GHG) emissions will be evaluated as part of final design.
- Section 9 presents a summary of water withdrawal and uses outreach activities performed to date for Reach 5A and a preliminary evaluation of potential impacts to identified water users.
- Section 10 summarizes the proposed supplemental data collection activities and treatability testing to be conducted prior to final design (with details presented in attached work plans).
- Section 11 presents a schedule for the remaining design activities for Reach 5A.
- Section 12 lists the references cited in this Conceptual RD/RA Work Plan.

The discussions in Sections 2 through 11 are supported by various tables, figures, and appendices included in this Conceptual RD/RA Work Plan.

2 Reach 5A Performance Standards and Corrective Measures

This section summarizes the Performance Standards and Corrective Measures in the Revised Final Permit that are applicable to the design and construction of remedial activities in Reach 5A.

2.1 General Performance Standards

Section II.B.1 of the Revised Final Permit established general Performance Standards that are applicable to the entire ROR remedy (including Reach 5A). The Downstream Transport Performance Standard (Section 2.1.1) and the Biota Performance Standard (Section 2.1.2) include standards that will not be evaluated until several years after the Reach 5A remedial construction (and remediation in other RUs) is complete.

2.1.1 Downstream Transport Performance Standard

Section II.B.1.a of the Revised Final Permit lists the first of three general performance standards—Downstream Transport of PCBs. That standard specifies the future allowable PCB load passing Woods Pond Dam and Rising Pond Dam, as summarized in Table 2-1.

Table 2-1
Downstream Transport Performance Standard

Woods Pond		Rising Pond	
Average Daily Flow at Woods Pond Dam Gage (cfs)[1]	**Average Annual PCB Load (kg/year)**	**Average Daily Flow at Great Barrington USGS Gage (cfs)[1]**	**Average Annual PCB Load (kg/year)**
≤325	2.2	≤485	1.9
>325 ≤395	2.8	>485 ≤600	2.4
>395 ≤1,450	3.3	>600 ≤2,670	4.0
>1,450	NA	>2,670	NA

Note:

1. The calculated arithmetic average of the average daily flows on days when samples are collected will determine the flow bin for a given year.

An exceedance of this standard would occur if the annual average PCB load exceeds the standard for the corresponding river flow bin at either location in three or more years within any five-year period following completion of the ROR remediation activities. Details regarding measurement of compliance with the Downstream Transport Performance Standards are provided in Sections II.B.1.a.(2)(a) through (g) of the Revised Final Permit.

2.1.2 Biota Performance Standards

Section II.B.1.b of the Revised Final Permit specifies both short-term and long-term biota standards as follows:

- The Short-Term Biota Performance Standard is an average total PCB concentration of 1.5 mg/kg wet weight, skin off, in fish fillets in each reach of the river and backwaters.[5] This standard is to be achieved within 15 years of completion of construction-related activities for that reach (or if the reach is subject to monitored natural recovery upon completion of the closest upstream reach subject to active remediation). An exceedance of this standard would occur in the event that the standard is exceeded in any two consecutive monitoring periods after the 15-year period.
- The Long-Term Biota Monitoring Performance Standard is to continue to monitor (even after the Short-Term Biota Performance Standard has been attained) the expected reduction in biota PCB concentrations and the progress toward achieving average total PCB concentrations of 0.064 mg/kg wet weight, skin off, in fish fillets in each reach of the river and associated backwaters in Massachusetts;[6] 0.00018 mg/kg wet weight, skin off, in fish fillets in each reach of the river in Connecticut;[7] and 0.075 mg/kg in duck breast tissue in all areas along the river.[8]

2.1.3 Restoration of Areas Disturbed by Remediation Activities

As provided in Section II.B.1.c.(1) of the Revised Final Permit, the Performance Standards for restoration of disturbed areas require GE to do the following: (1) implement a comprehensive program of restoration measures to address the impacts of the remediation on affected ecological resources, species, and habitats, including, but not limited to, riverbanks, riverbed, floodplain, wetland habitat, and the occurrence of threatened, endangered, or other state-listed species and their habitats; and (2) return areas disturbed by remediation activities to pre-remediation conditions (e.g., the functions, values, characteristics, vegetation, habitat, species use, and other attributes) to the extent feasible and consistent with the remediation requirements.

---

[5] This standard was based on the estimate, in EPA's probabilistic risk assessment of fish consumption by humans, of the PCB concentration corresponding to a non-cancer HI of 1 for the Central Tendency Exposure of adults to PCBs in fish fillets.

[6] This criterion was based on the estimate, in EPA's probabilistic risk assessment of fish consumption by humans, of the PCB concentration associated with an excess cancer risk of 1×10^{-5} for the RME of both young children and adults to PCBs in fish fillets.

[7] This criterion was developed by the State of Connecticut.

[8] This criterion was based on the estimate, in EPA's probabilistic risk assessment of waterfowl consumption by humans, of the PCB concentration associated with an excess cancer risk of 1×10^{-5} for the RME exposure of both young children and adults to PCBs in duck breast consumed.

2.2 Sediment

2.2.1 River Sediment

Section II.B.2.a of the Revised Final Permit provides that riverbed sediment throughout Reach 5A will be removed and that an engineered cap (Section 2.2.4) will be placed over the entire riverbed such that the final grade is generally consistent with the original grade or with modifications, as approved by EPA, considering the principles of Natural Channel Design. Removal and capping activities must generally use engineering methods employed from within the river channel or other methods approved by EPA.

2.2.2 Backwaters

The Performance Standards for backwaters are specified in Section II.B.2.d of the Revised Final Permit. These Performance Standards have separate requirements for portions of backwaters located within and outside of Core Area 1 Priority Habitat[9] and for surface (top one foot) and subsurface sediments, as follows:

- *Portions of Backwaters Located Outside Core Area 1 Habitat*: For surface sediments in areas located outside Core Area 1 habitat, sufficient sediment will be removed, including any sediment in areas with total PCB concentrations greater than or equal to 50 mg/kg, and replaced with a contiguous engineered cap to achieve a spatially weighted average concentration of 1 mg/kg total PCBs in each averaging area. When calculating post-remediation spatially weighted average concentrations, a PCB concentration equal to 1% of the existing average surficial PCB concentration within a given backwater area will be used as the PCB concentration in capped areas.

  For subsurface sediments, additional sediment will be removed as needed to achieve a spatially weighted average concentration of 1 mg/kg total PCBs in each averaging area and depth interval in areas outside the footprint of the engineered cap necessary to meet the requirements for surface sediments described previously. As with surface sediments, when calculating post-remediation spatially weighted average concentrations, a PCB concentration equal to 1% of the existing average surficial PCB concentration within a given backwater area will be used as the PCB concentration in capped areas.

  In lieu of engineered capping for the surface and subsurface sediment remediation described previously, the Revised Final Permit allows for the placement of backfill in areas where sediment was removed; however, the backfill cannot be factored into the spatial weighting calculations.

[9] As defined in the Revised Final Permit, Core Area 1 habitat consists of areas identified by the Massachusetts Division of Fisheries and Wildlife as areas with "the highest quality habitat for species that are most likely to be adversely impacted by PCB remediation activities," most of which species are plants because they are not mobile (Attachment B to Revised Final Permit).

- *Portions of Backwaters Located Within Core Area 1 Habitat:* For areas within Core Area 1 habitat where discrete total PCB concentrations in surface sediment are greater than or equal to 50 mg/kg, GE will remove those sediments and then place an engineered cap to original grade. In areas where surface sediment total PCB concentrations are between 1 and 50 mg/kg, an amendment (e.g., activated carbon [AC] or other comparable amendments) will be placed to reduce bioavailability.

Delineation of remediation areas needed to achieve the concentration criteria for backwaters is to be determined based on Thiessen polygons developed using data collected during pre-design sampling.

2.2.3 Other Waterbodies

In addition to the sediment-containing areas discussed above, there are certain other hydrographic features within Reach 5A that do not constitute backwaters and are not addressed in the Revised Final Permit and that EPA has directed GE to evaluate. There are five such areas in Reach 5A, including the outlet from Morewood Lake (known as Wampenum Brook), two streams flowing from east to west into the Housatonic River on and just south of the Massachusetts Audubon parcel (i.e., portions of Sackett Brook and Sykes Brook), West Pond, and the intermittently flowing side channel located east of the Confluence (referred to herein as the Intermittent Side Channel). These areas are shown on Figure 1-2 and were designated as "Other Waterbodies in Reach 5A Containing Sediment" in GE's revised PDI work plan for sediments and riverbanks (and are hereafter referred to as "Other Waterbodies"). Given that the Revised Final Permit did not establish specific Performance Standards or other requirements for these areas, GE has elected to evaluate them against the Performance Standards for backwaters described in Section 2.2.2 because they are separate from, but hydraulically connected to, the main river channel.

2.2.4 Engineered Caps

The Performance Standards for engineered caps are described in Section II.B.2.i of the Revised Final Permit, which states that all engineered caps constructed for the ROR will include the following layers or functions:

- A Mixing Layer to prevent contamination of the overlying chemical isolation layer due to mixing with underlying contaminated sediment during cap placement, taking into account geotechnical considerations, placement techniques, and other factors as appropriate;
- A Chemical Isolation Layer sufficient to minimize (reduce by 99%) the flux of PCB concentrations through the isolation layer;
- An Erosion Protection Layer to prevent erosion in accordance with federal and state requirements and consistent with pertinent EPA or U.S. Army Corps of Engineers (USACE) guidance;

- A Geotechnical Filter Layer, as needed based on the design evaluation, to prevent mixing between the chemical isolation and erosion protection layers;
- A Bioturbation Layer to prevent bioturbation from impacting underlying layers; and
- A Habitat Layer to provide functions and values equivalent to the pre-existing surficial sediment substrate.

Section II.B.2.i.(2) of the Revised Final Permit provides details related to design and construction requirements for each of the cap layers described previously. These requirements are summarized as follows:

- *Mixing Layer:* The composition and thickness of the Mixing Layer will be evaluated and designed to prevent contamination of the overlying chemical isolation layer due to mixing with underlying contaminated sediment during cap placement.
- *Chemical Isolation Layer:* Modeling of the Chemical Isolation Layer will be performed using site-specific data collected during the design process, as appropriate, and in general accordance with the EPA's *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites* (EPA 2005b) and *Guidance for In-Situ Subaqueous Capping of Contaminated Sediments* (Subaqueous Capping Guidance; Palermo et al. 1998). The model will consider the processes of advection, diffusion, sorption, bioturbation, surface water exchange, and sediment deposition, and will be used to determine the thickness and composition (i.e., the amount of AC/total organic carbon [TOC] or equivalent sorptive amendment) required to reduce the flux of PCB concentrations through the Chemical Isolation Layer by 99%.
- *Erosion Protection Layer:* The design flow event for the Erosion Protection Layer, which is a flow event up to and including the applicable return interval event (e.g., 100-year or 500-year flow event), will be calculated using up-to-date flow data, with additional considerations for the potential impacts of climate change on cap performance and appropriate measures to mitigate them. Site-specific data and modeling will be used to determine design velocities and associated bed shear stresses associated with various flow events. Other potential erosional forces (e.g., bioturbation, wind-generated waves, debris, motorboat wakes, and ice) will also be considered, as appropriate. The stable particle sizes necessary to resist the erosive forces in Reach 5A will be computed in accordance with federal and state requirements and consistent with pertinent EPA and USACE guidance such as EPA's *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites* (EPA 2005b) and Subaqueous Capping Guidance (Palermo et al. 1998).
- *Geotechnical Filter Layer:* The use of a Geotechnical Filter Layer between the Chemical Isolation Layer material and Erosion Protection Layer material will be evaluated and may be necessary for those areas requiring cobble or larger-sized material in the Erosion Protection Layer.

- *Bioturbation Layer:* The assemblage of species, bioturbation depth profile, and abundances of dominant organisms will be evaluated to determine the need for and thickness of a bioturbation layer.
- *Habitat Layer:* The Habitat Layer will be designed such that it provides functions and values equivalent to the pre-existing surficial sediment substrate.

The Revised Final Permit also provides that under some circumstances, a single layer of material may serve more than one of the functions listed previously. The design of the engineered cap is also required to consider other factors, such as geotechnical stability and the need for over-placement allowances with additional excavation for each layer. Further, installation of the cap cannot result in a loss of flood storage capacity or an increase in water surface elevations.

The constructed Engineered Cap is required to be inspected, monitored, and maintained to ensure long-term protectiveness and to ensure that it continues to function as designed.

2.3 Riverbanks

Section II.B.2.a requires the removal of contaminated soil from erodible riverbanks in Reach 5A based on the following definitions:

- A bank is considered contaminated if it contains discrete total PCB concentrations greater than or equal to 5 mg/kg in the surficial one foot of soil. Delineation of bank areas exceeding this criterion is to be determined based on data to be collected during pre-design activities pursuant to the sampling requirements in Section II.B.2.a.(2) of the Revised Final Permit.
- A bank is considered erodible if the Bank Erosion Hazard Index (BEHI) and Near Bank Stress (NBS) rating is classified as "Moderate-High" or greater using the Bank Assessment for Non-point source Consequences of Sediment (BANCS) model.

Under the Revised Final Permit, riverbank areas in Reach 5A meeting both of the previously described conditions are subject to removal and restoration. Specifically, excavated riverbanks will be reconstructed to minimize erosion, considering the principles of Natural Channel Design, and to result in a channel that is in dynamic equilibrium, balances flow and sediment loads, and reduces erosive forces.

In addition, Revised Final Permit Section II.B.2.a.(2)(c) provides that, for Reach 5A banks that do not require remediation based on the criteria described above, GE will evaluate the PCB data, erosion potential, adjacent floodplain removal (if any), constructability issues, and likelihood of future downstream transport at such concentrations should such banks erode and, based on these factors, will consider supplemental riverbank removal and propose any further action consistent with its evaluation.

2.4 Floodplains

2.4.1 Non-Residential Floodplain Exposure Areas

Section II.B.3.a of the Revised Final Permit describes the Performance Standards associated with floodplain soils. For each of the floodplain EAs shown on Figures 3, 3A, and 4 in the Revised Final Permit,[10] the top one foot of soil will be excavated (and backfilled to grade) to achieve either the Primary or Secondary Floodplain Performance Standards applicable to each EA, as listed in Table 1 of the Revised Final Permit.[11] In general, this remediation will be designed to meet the Primary Floodplain Performance Standards, except that in certain Core Area habitats, the remediation will achieve, at a minimum, the Secondary Floodplain Performance Standards, as discussed further below.

In addition, for each of the Frequently Used Subareas within the EAs, as shown in Figure 5 of the Revised Final Permit,[12] the top three feet of soil will be excavated (and backfilled to grade) to achieve the relevant Performance Standards for those areas, as listed in Table 2 of the Revised Final Permit.

Excavation in Core Area 1 habitat (other than in Frequently Used Subareas) will be avoided, except in limited areas where necessary to meet the Secondary Floodplain Performance Standards. Further, GE will minimize impacts from remediation to the extent practicable in Core Areas 2 and 3 habitat shown in Attachment B to the Revised Final Permit); however, at a minimum, Secondary Floodplain Performance Standards will be attained in those areas.

2.4.2 Residential Properties

Section II.B.3.a.(1)(d) of the Revised Final Permit requires that soil from 22 floodplain residential properties in Reach 5A (identified in Table 5 of the Revised Final Permit) be removed and replaced as necessary to meet the Residential Performance Standards set forth in Table 3 of the Revised Final Permit.[13]

---

[10] These EAs consist of the 90 direct-contact EAs that EPA identified in its HHRA (EPA 2005), with the modification that, as provided in Section II.O of the Settlement Agreement, EA 10 has been expanded as shown in Figure 3A of the Revised Final Permit.

[11] Table 1 lists the Primary and Secondary Performance Standards for each EA based on exposure scenarios determined by EPA. The Primary Performance Standards are floodplain soil PCB concentrations associated with a residual 1×10^{-5} cancer risk or a non-cancer HI of 1 (as calculated by EPA based on assumed direct contact with soil), whichever is lower. The Secondary Performance Standards are floodplain soil PCB concentrations associated with a residual 1×10^{-4} cancer risk or a non-cancer HI of 1 (as calculated by EPA based on assumed direct contact), whichever is lower.

[12] Frequently Used Subareas are portions of the EAs that are more heavily used than other areas. Those subareas were originally defined in GE's RCMS and are generally shown in Figure 5 of the Revised Final Permit but are subject to modification, with EPA approval, based on current conditions pertaining to potential use.

[13] There are five additional residential parcels that were not included in the Revised Final Permit (and were not addressed previously as part of the Floodplain Current Residential Properties Downstream of the Confluence – Actual/Potential Lawns) and where EPA directed GE (or GE agreed) to conduct additional sampling to confirm that PCB concentrations in soil were below the Residential Performance Standards. Therefore, there were a total of 27 residential properties required to be evaluated in Reach 5A.

For floodplain soils within residential properties adjacent to Reaches 5 through 8, the Performance Standards applicable to the PCBs in soil are set forth in Table 3 of the Revised Final Permit. As provided in Table 3 of the Revised Final Permit, the applicable Residential Performance Standards are an average PCB concentration of 2 mg/kg in the top foot of soil and in the 1- to X-foot depth increment (where X equals the depth at which PCBs are detected at 2 mg/kg or greater, up to a maximum depth of 15 feet), with no discrete PCB concentration in the top foot of soil exceeding 10 mg/kg (the not-to-exceed [NTE] level) for parcels exceeding 0.25 acre in size.

2.4.3 Vernal Pools

Section II.B.3.b of the Revised Final Permit requires that, in addition to any remediation of vernal pools necessary to meet the Floodplain Performance Standards discussed in the previous two subsections, any such pool that contains sediment/soil exceeding a spatially weighted average PCB concentration of 3.3 mg/kg must be remediated. To implement this requirement, GE is to submit a plan for, and upon EPA approval, conduct a pilot study on no more than 10 vernal pools (none in Core Area 1 habitat) using either traditional excavation and restoration techniques or amendments such as AC.[14] Based on the results of the pilot study, after an appropriate monitoring period determined by EPA, EPA will determine, and GE will implement, the appropriate remediation of the vernal pools as necessary to meet the Performance Standards specified in Section II.B.3.b.(1) of the Revised Final Permit, which require either achievement of a spatially weighted average total PCB concentration in soil of 3.3 mg/kg in the pool or an equivalent reduction in PCB bioavailability. This can be achieved through removal and replacement of soil or reduction in the bioavailability of PCBs in the pool through placement of amendments.

2.5 Inspection Monitoring and Maintenance Before and During Construction

In accordance with Section II.B.4 of the Revised Final Permit, GE will implement both a baseline and a construction monitoring program. The baseline monitoring program will include collection of PCB data in surface water, sediment, and biota (and other data) prior to the commencement of construction activities to serve as a baseline for the evaluation of the potential impacts of the remediation.[15]

The construction monitoring program will include similar types of data collection and will focus on monitoring for potential adverse impacts due to construction activities (e.g., resuspension). It will

[14] An initial *Vernal Pool Pilot Study Work Plan* (Anchor QEA and AECOM 2023b) was submitted to EPA on June 8, 2023, and conditionally approved by EPA on September 12, 2023. As described in that plan, of the 59 vernal pools in Reach 5A that will require remediation, 10 were selected for the pilot study.

[15] GE submitted a *Second Revised Baseline Monitoring Plan* on January 30, 2023, which was subsequently approved by EPA on February 16, 2023.

include the following: (1) measures to assess these impacts (e.g., establishing notification and action levels for PCBs measured in surface water); (2) a monitoring plan to collect these data; and (3) establishment of response actions (e.g., slowdown and evaluation of operations, stop work and modification of operations).

2.6 Disposal of Contaminated Sediment and Soil (Including Upland Disposal Facility and Off-Site Disposal)

As described in Sections II.B.5 and II.B.6 of the Revised Final Permit, the ROR Remedial Action will use a hybrid disposal approach that includes a combination of disposal at a UDF and off-site disposal. This section summarizes the criteria and methods for determining whether material excavated during the ROR Remedial Action may be disposed of in the UDF, as provided in Attachment E to the Revised Final Permit.[16] Those requirements are as follows:

- *Sediments:* Sediments to be disposed of in the UDF must have a volume-weighted average PCB concentration of less than or equal to 25 mg/kg within a reach or subreach (in this case, Reach 5A). If the volume-weighted average PCB concentration of sediments to be removed from Reach 5A exceeds 25 mg/kg, sediments with the highest PCB concentrations will be segregated for off-site disposal until the average concentration of the remaining sediments to be removed decreases to less than 25 mg/kg for subsequent disposal at the UDF. In addition, any sediment represented by a three-dimensional polygon associated with a single vertical core that has an average PCB concentration greater than or equal to 100 mg/kg will be segregated for off-site disposal.
- *Floodplain Soils:* Floodplain soil to be disposed of in the UDF must have a volume-weighted average PCB concentration of less than 50 mg/kg for each EA. If the volume-weighted average PCB concentration in the soil to be removed from a given EA equals or exceeds 50 mg/kg, the soils with the highest PCB concentrations in the EA will be segregated for off-site disposal until the average concentration of the remainder of the soil to be removed in the EA decreases to less than 50 mg/kg for subsequent disposal at the UDF.
- *Riverbanks Soils:* For Reach 5A riverbanks, soil to be disposed of in the UDF must have a volume-weighted average PCB concentration of less than 50 mg/kg. If the volume-weighted average PCB concentration of riverbank soils to be removed from Reach 5A equals or exceeds 50 mg/kg, soil with the highest PCB concentrations will be segregated for off-site disposal until the average concentration of the remaining soil to be removed decreases to less than 50 mg/kg for subsequent disposal at the UDF.

[16] The specific design Performance Standards for the UDF are provided in Section II.B.5.a.(2) of the Revised Final Permit and summarized in Section 2.1 of GE's December 2022 UDF Conceptual Design Plan (Arcadis 2022); those requirements are not presented herein.

The UDF will be used only for disposal of sediments and soils that were generated as part of the ROR Remedial Action and only of those sediments and soils that meet the acceptance criteria summarized above. The Revised Final Permit also prohibits the disposal of certain types of waste in the UDF—e.g., free liquids, free product, or wastes that meet the federal criteria for RCRA hazardous waste.

In addition, no material from the ROR Remedial Action may be disposed of at any other location in Berkshire County (apart from the UDF), and no material from any portion of the GE-Pittsfield/Housatonic River Site other than the ROR or from other response actions under the CD may be disposed of at the UDF.

2.7 Water Withdrawals and Uses

In accordance with Section II.B.8 of the Revised Final Permit, GE will minimize and/or mitigate impacts during implementation of the Remedial Action to withdrawals and/or uses of water from the ROR by any entity. GE will achieve this Performance Standard by doing the following: (1) identifying all industrial, commercial, private, or other withdrawals and/or uses of water from the ROR; (2) identifying requirements associated with these uses (including water quality and quantity) that may be affected by implementation of the Remedial Action; and (3) proposing methods to minimize/mitigate impacts during implementation of the Remedial Action.[17]

[17] GE submitted a *Revised Water Withdrawal and Uses Plan* on April 3, 2023, and it was approved by EPA on May 10, 2023.

3 Reach 5A Characteristics and Existing Data

3.1 Overview

Numerous pre-design investigations and other studies have been conducted (beginning in approximately 2018) to provide data that are needed to support remedial design and engineering evaluations for Reach 5A. These investigations were performed in accordance with EPA-approved PDI work plans (described in Section 1.1), and EPA representatives provided oversight during those activities. These activities include, but are not limited to, extensive PCB characterization sampling of in-river sediments, riverbanks, and floodplain soils (including residential properties and non-residential EAs and vernal pools), topographic and bathymetric field surveys, riverbank erodibility surveys, a baseline habitat assessment, surveys of river hydraulic characteristics, initial geotechnical characterization sampling, groundwater seepage evaluations, surveys of shoreline structures and utilities, and a cultural resource assessment (CRA). This information, combined with relevant historical data, has been used to summarize existing data and conditions in Reach 5A provided in this section.

3.2 PCB Data

3.2.1 Sediment

Sediment PCB sampling was conducted in the main river channel, backwaters, and Other Waterbodies as part of the Reach 5A PDI activities conducted in 2022 and 2023. The sampling in these areas was designed to support several objectives, including assessment of the extent of removal and capping or backfill required to achieve the Performance Standards described in Section 2 and assessment of disposal requirements for sediments that will be removed from these areas. A comprehensive summary of the PDI sediment sampling activities and results is provided in GE's PDI Summary Report for Sediment and Riverbanks (Anchor QEA and AECOM 2023a), which is being submitted concurrently with this Conceptual RD/RA Work Plan. The Reach 5A PDI sediment sampling program is briefly summarized in the following subsections.[18]

3.2.1.1 Main Channel Sediment

Sampling in the main channel of Reach 5A included collection of sediment core samples along transects spaced approximately 250 linear feet apart, with three sediment cores per transect (i.e., cores located on the east side, center, and west side of the channel). Sediment samples were collected at a total of 284 locations. The targeted depth of sampling was three feet (or to the depth of actual sediment thickness based on probing if less than three feet). Sediment core recovery was generally in the range of

[18] The sampling data discussed in this section do not include historical sediment data because those data were collected nearly 25 years ago (or more); the PDI sediment data set provides a contemporary and comprehensive characterization of sediment conditions in Reach 5A. Note also that the sample counts presented in this section do not include EPA split samples.

1.5 to 2.0 feet due to the coarse nature of the sediments in this reach. Because of this shorter recovery, GE modified the sampling approach/methodology to obtain cores with a recovery of at least three feet to better characterize PCB concentrations in the 2.0- to 3.0-foot depth interval and conducted a second round of sampling. This resampling was conducted at a subset of the original sediment core locations: 30 cores (i.e., 10 transects, with three locations per transect) distributed throughout Reach 5A using the modified sampling approach.[19] All cores were processed in six-inch intervals, resulting in a total of 1,191 samples for PCB characterization (including the resampled sediments). Evaluations of existing sediment PCB conditions in the main channel are provided in Section 4.2.1.

3.2.1.2 Backwater Sediment

Sampling of the six backwaters in Reach 5A (BW5A-1 through BW5A-6, as shown on Figure 1-2) included collection of sediments on approximate 50-foot grids. In BW5A-1 (the only Reach 5A backwater located within Core Area 1 habitat), sediment sampling was limited to a depth of one foot based on the specific requirements for backwaters located within Core Area 1 habitat under the Revised Final Permit. In the other five backwater areas (all located outside Core Area 1 habitat), sediment sampling was performed to a depth of five feet. Each sediment core was segmented into a 0- to 1-foot interval and six-inch intervals between one and five feet (or to the bottom of the core if recovery depth was less than five feet). A total of 461 sediment samples were collected for PCB characterization from 127 locations in these six backwaters located within Reach 5A. Evaluations of existing sediment PCB conditions in backwaters are provided in Section 4.2.2.

3.2.1.3 Other Waterbodies Containing Sediment

Sediment sampling was performed in the five Other Waterbodies described in Section 2.2.3—i.e., the outlet from Morewood Lake, the Intermittent Side Channel, portions of Sackett Brook and Sykes Brook, and West Pond. West Pond was sampled on an approximate 50-foot grid to a depth of three feet. The other four areas were sampled to a depth of two feet at locations spaced approximately 100 feet apart. All cores were processed in six-inch intervals resulting in a total of 268 samples collected for PCB characterization from 75 locations. Evaluations of existing sediment PCB conditions in these Other Waterbodies are provided in Section 4.2.3.

3.2.2 Riverbank Soil

Riverbank soil PCB sampling was conducted as part of the Reach 5A PDI activities conducted in 2022 and 2023 to characterize the extent of riverbank soils having PCB concentrations greater than or equal to 5 mg/kg in the top one foot of soil and to support assessment of disposal requirements for riverbank soils to be removed. Surficial (0- to 12-inch) riverbank soil samples were collected at the toe, midpoint, and top-of-bank along transects spaced approximately 25 feet apart. The three

[19] These resampled sediments were also used to perform initial testing of sediments for waste characterization, utilizing the Toxicity Characteristic Leaching Procedure (TCLP), as described further in Section 3.3.

samples collected at the toe, midpoint, and top-of-bank locations at each transect were composited into a single sample for PCB analysis. A total of 1,992 composite samples were collected for PCB characterization. A comprehensive summary of PDI riverbank soil sampling activities and results is provided in GE's PDI Summary Report for Sediment and Riverbanks. Evaluations of existing riverbank soil PCB conditions, based on the PDI data, are provided in Section 4.3.

3.2.3 Floodplain Soil

3.2.3.1 Residential Properties

Floodplain soil PCB sampling has been performed historically and during the Reach 5A PDI at (or near) each of the 27 residential properties located within Reach 5A (described in Section 2.4.2). This sampling included the following: (1) historical floodplain soil investigations performed by GE between 1992 and 1998; (2) floodplain soil sampling performed by EPA as part of its Supplemental Investigation (SI) between 1998 and 2002; (3) floodplain soil PCB sampling conducted by GE during PDIs of residential properties included in the separate Removal Action Area for Floodplain Current Residential Properties Downstream of the Confluence—Actual/Potential Lawns (hereafter referred to as A/P Lawn Properties); and (4) Reach 5A residential floodplain property PDIs conducted by GE in 2020 and 2021. Sample counts for the various programs are summarized in Table 3-1. A summary of the most recent sampling conducted as part of the 2020/2021 Reach 5A PDI is provided in GE's PDI Summary Report for Floodplain Residential Properties (Anchor QEA 2021b). Evaluations of existing residential floodplain soil PCB conditions are provided in Section 4.4.1.

Table 3-1
Residential Sample Program Summary

Sampling Program	Number of Samples in Reach 5A[1]
Historical GE/EPA	332
A/P Lawn Properties	230
2020/2021 PDI	351

Note:
1. Counts do not include EPA split samples.

3.2.3.2 Non-Residential Floodplain Exposure Areas

Several floodplain soil PCB investigations have been conducted since the late 1980s to characterize soil PCB concentrations in the non-residential floodplain EAs. These studies include the following:

- Floodplain soil PCB data collected historically by GE between 1988 and 1998;
- Floodplain soil PCB data collected by EPA during the SI (1998 to 2002);

- Soil PCB data collected by GE in 2005 to further characterize the extent of PCBs in certain portions of the floodplain;
- Soil PCB data collected by GE between 2013 and 2015 in the PDI for A/P Lawn Properties;
- Soil PCB samples collected by GE during PDIs conducted on Reach 5A residential properties in 2020/2021 (described above in Section 3.2.3.1) given that many of the residential properties overlap with non-residential EAs; and
- Soil PCB samples collected by GE during the Reach 5A PDI conducted in 2022 and 2023.

GE performed two rounds of soil sampling in non-residential floodplain EAs during the PDI in 2022 and 2023 to further characterize floodplain soil PCB concentrations and better define and confirm the location of the 1 mg/kg PCB isopleth. A total of 2,549 samples were analyzed for PCBs from core locations within the 32 non-residential EAs discussed in Section 1.3.[20] Cores were collected at all the locations to a total depth of one foot below ground surface (bgs) and processed into 0.5-foot intervals. Additionally, cores were collected from one to three feet bgs at a subset of 89 locations within the Frequently Used Subareas (Figure 1-3) and processed into one-foot intervals. A comprehensive summary of the Reach 5A non-residential floodplain soil PDI sampling is provided in GE's PDI Summary Report for Non-Residential Floodplain EAs. Sample counts within the 32 non-residential floodplain EAs in Reach 5A for each sampling program are summarized in Table 3-2. Evaluations of existing floodplain soil PCB conditions in the non-residential floodplain EAs are provided in Section 4.4.2.

Table 3-2
PCB Sample Counts within the 32 Non-Residential Floodplain EAs in Reach 5A

Program	Lead Entity	Number of Samples[1]	
		0–1 Foot	1–3 Feet[2]
1998–2002 EPA Supplemental Investigation	EPA	1,048	—
1988-1998 and 2005 GE Investigation	GE	99	—
2013–2015 PDI Actual/Potential Lawn Properties	GE	2	—
2020–2021 PDI Reach 5A Residential Floodplain Properties	GE	31	22
2022–2023 PDI Reach 5A Non-Residential Floodplain EAs	GE	2,449	100
	Total	**3,629**	**122**

Notes:
1. Counts represent samples within the 1 mg/kg PCB isopleth and do not include EPA split samples. Duplicate samples were excluded from the summary.
2. Only includes samples within the Frequently Used Subareas.

[20] This sample count represents samples collected within the 1 mg/kg PCB isopleth. Duplicate samples were not included.

3.2.3.3 Vernal Pools

As noted in Section 1.3, there are 59 confirmed vernal pools in the floodplain in Reach 5A. As part of Reach 5A non-residential floodplain PDI sampling conducted in 2022 (described in Section 3.2.3.2), GE sampled those vernal pools.[21] Specifically, GE collected 371 soil cores, yielding a total of 646 samples in either 0- to 0.5-foot or 0.5- to 1-foot depth intervals. These samples are generally positioned within an approximate 50-foot grid for pools greater than approximately 0.1 acre in size, except in one large pool (5A-VP-77), where samples were positioned within an approximate 100-foot grid. For pools less than 0.1 acre, a minimum of three cores were collected and analyzed. The Reach 5A PDI dataset is supplemented by samples that were collected in vernal pools as part of the same historical floodplain soil sampling programs described in Section 3.2.3.2. The PCB sample counts in the Reach 5A vernal pools from these programs are shown in Table 3-3.

Table 3-3
Summary of Total PCB Sample Counts in Reach 5A Vernal Pools

Program	Lead Entity	Number of Samples in 0–1 Foot[1]
1990–1992 Massachusetts Contingency Plan Phase II Investigation	GE	4
1998–2002 EPA Supplemental Investigation	EPA	155
2013–2015 PDI (Actual/Potential Lawn Properties)	GE	5
2020–2021 PDI (Reach 5A Residential Floodplain Properties)	GE	6
2022 PDI (Reach 5A Non-Residential Floodplain EAs)	GE	646
	Total	**816**

Note:

1. Vernal pool samples were also included in the sample counts for non-residential floodplain EAs shown in Table 3-2. Sample counts do not include EPA split samples.

3.3 Waste Characterization

As described in Section 3.2.1.1, a subset of sediment samples collected in 2023 from the main channel during the Reach 5A PDI were used to perform initial toxicity characteristic leaching procedure (TCLP) testing for disposal characterization. For this analysis, one composite sample was generated from sediments collected at 10 transects (distributed throughout Reach 5A) by homogenizing sediments from three discrete cores collected along each transect. The composite sample was a full-depth (0- to 3-feet) composite of all three cores along the transect. Those

[21] As noted in Section 1.3, EPA also directed GE to investigate one additional certified vernal pool located east of 5A-VP-24A and outside of the floodplain boundary (identified as 5A-VP-24B). As a result, that pool was included in the PCB sampling of vernal pools in 2022. That sampling showed the concentration of PCBs within that vernal pool to be well below 1 mg/kg (spatial average concentration of 0.08 mg/kg). Therefore, this vernal pool has not been evaluated further.

10 samples were analyzed for TCLP metals, volatile organic compounds, semi-volatile organic compounds, pesticides, and herbicides. The analytical results of the TCLP sampling are presented in the PDI Summary Report for Sediment and Riverbanks. Those results indicate that none of the TCLP parameters were detected above the RCRA hazardous waste toxicity characteristic regulatory levels in 40 Code of Federal Regulations (CFR) 261.24.

3.4 Sediment Characteristics

The river channel in Reach 5A is free flowing, contains numerous meanders, and has riverbanks that are subject to erosion in places. The width of the river in Reach 5A ranges from approximately 40 to 120 feet, and riverbank heights in Reach 5A generally range from three to seven feet, with some higher banks of 10 feet or more in several areas, based on observations made in 2022 during the bank erosion studies discussed in Section 3.7.

Sediment deposit reconnaissance and probing activities conducted historically identified the following three general types of sediment deposits in Reach 5A: (1) channel deposits (deposits that typically occur in parts of the riverbed that are permanently inundated during low-to-moderate flow conditions); (2) aggrading bars (small islands or mounds that are typically composed of coarse-grained material and usually occur along the convex sides of channel curves); and (3) terrace deposits (deposits that occur in parts of the riverbed that are usually inundated during high-flow conditions but are exposed during low-to-moderate flows). More than half (60%) of the sediment deposits identified historically in Reach 5A were characterized as terrace deposits, 30% were channel deposits, and 10% were aggrading bars. Surveys of channel features in Reach 5A conducted in 2022 documented the presence of 24 point bars, 17 side bars, and 11 mid-channel bars. While some of the mid-channel and side bars are indicators of an overwide channel, several of these features are also created by large log jams (piles of woody debris) and may be transient as the debris is dispersed and moved downstream during periods of high flow.

Geotechnical data collected historically indicate that the sediment bed in Reach 5A consists predominantly of coarse-to-fine sands with approximately 10% to 15% silt and clay (BBL and QEA 2003). This is generally consistent with sediment geotechnical data collected in 2022 and 2023 as part of the Reach 5A PDI (see Table 3-4 below). As presented in the PDI Summary Report for Sediment and Riverbanks, a total of 69 sediment samples were collected in 2022 and 2023 from the riverbed (50 samples) and backwater areas (19 samples) in and along Reach 5A for testing of grain size and moisture content, and subset of those samples were analyzed for dry bulk density and specific gravity. In addition to in-situ sediment strength testing in backwater areas, laboratory testing was conducted on selected riverbed and backwater area samples for seepage-induced consolidation testing. A summary of index testing results is provided in Table 3-4. Main channel sediment samples in the Reach 5A PDI dataset consisted predominantly of sand (84% on average), with smaller

fractions of gravel (9%) and fines (7%). In the backwaters, there is a higher proportion of fines (43% on average), but the majority is primarily sand (54%).

The geotechnical moisture content (i.e., ratio of water contained in the pore spaces of the sample to the solid mass of particles) was measured for both main channel and backwater sediments. The average moisture content for main channel sediment samples was 26%. Moisture content is higher in backwater sediments (87% on average) with a much wider range than main channel sediments.

Table 3-4
Summary of Geotechnical Index Parameter Testing Results (Sediment)

Geotechnical Analyses		Dry Bulk Density (lb/ft^3)	Moisture Content (%)	Grain Size (% by weight)		
				Gravel	Sand	Total Fines
Main Channel Sediment	Number of Samples	7	45	50		
	Minimum	57	13	0.0	1.6	1.1
	Average	87	26	8.7	84	6.5
	Maximum	110	49	49	99	98
Backwater Sediment	Number of Samples	1	14	19		
	Minimum	35	28	0.0	22	3.0
	Average	35	87	3.0	54	43
	Maximum	35	237	23	96	78

Atterberg limit testing was also conducted to evaluate the relationship between moisture content and behavior type (state) for a given fine-grained soil. Testing was completed on all 69 PDI sediment samples (50 main channel samples and 19 backwater samples), all of which were found to be non-plastic.

3.5 River Hydraulic Characteristics

The U.S. Geological Survey (USGS) maintains two flow-monitoring stations along the Housatonic River that are close to Reach 5A. One gage is located along the East Branch of the Housatonic River in Coltsville, Massachusetts (Station 01197000 – East Branch Housatonic River at Coltsville, Massachusetts); this gage is located approximately 5.5 miles upstream of the Confluence and has a long period of record from 1936 to present. A second gage was installed by USGS in September 2022 (in coordination with EPA and GE) along the Housatonic River in the vicinity of Woods Pond Dam (Station 01197145 – Housatonic River at Lenoxdale, Massachusetts); the short period of record at this location precludes use for evaluation of long-term flow statistics. Table 3-5 summarizes monthly average flow rates at the Coltsville gage, and Figure 3-1 provides cumulative frequency distribution plots of the record of daily average flow rates for each month.

Table 3-5
Average Monthly Flow at USGS Coltsville Gage (1936 – 2022)

Month	Average Flow (cfs)
January	103
February	100
March	183
April	252
May	133
June	88
July	57
August	51
September	58
October	80
November	99
December	114
Annual Average	**110**

As described in Section 5.2, a hydrologic evaluation was used to calculate the recurrence intervals of various flow events. A common goal of this analysis is to specify the 1% annual chance discharge, commonly referred to as the 100-year event, or base flood. This event has a 1% chance of occurring in any given year and is the standard regulatory event used by the Federal Emergency Management Agency (FEMA) for flood mapping. The hydrologic analysis also provides information on smaller and larger events that may be of interest to stream evaluations and remedial design. Table 3-6 summarizes the results of this hydrologic analysis—specifically, this table provides estimated flow rates within the main channel of the Housatonic River at Coltsville and at various locations throughout Reaches 5 and 6 for various recurrence intervals (see Figure 3-2 for locations).

Table 3-6
Estimated Flow Values in the Housatonic River for Specified Recurrence Intervals in Reaches 5 and 6

Annual % Chance	Return Period (Years)	Flow in Housatonic River (cfs) at Various Flow Input Locations						
		USGS Coltsville Gage	West Branch Confluence	Wampenum Brook	Sackett/ Sykes Brook	Mill/ Roaring Brook	Yokun Brook	Woods Pond Headwaters
0.20%	500	10,934	20,119	20,665	22,743	25,039	26,351	27,554
0.5%	200	8,721	16,047	16,482	18,140	19,971	21,018	21,977
1%	100	7,277	13,390	13,754	15,136	16,664	17,538	18,338
2%	50	6,003	11,046	11,346	12,486	13,747	14,467	15,128
5%	25	4,547	8,366	8,594	9,458	10,413	10,958	11,458

Annual % Chance	Return Period (Years)	Flow in Housatonic River (cfs) at Various Flow Input Locations						
		USGS Coltsville Gage	West Branch Confluence	Wampenum Brook	Sackett/ Sykes Brook	Mill/ Roaring Brook	Yokun Brook	Woods Pond Headwaters
10%	10	3,591	6,607	6,787	7,469	8,223	8,654	9,049
20%	5	2,734	5,031	5,167	5,687	6,261	6,589	6,890
50%	2	1,688	3,106	3,190	3,511	3,866	4,068	4,254
99%	1	575	1,058	1,087	1,196	1,317	1,386	1,449

During the Reach 5A PDI, river-current velocities were measured at three cross-sectional sites within Reach 5A using an acoustic Doppler current profiler (ADCP), including a location at Holmes Road Bridge, one adjacent to Joseph Drive, and one near the Pittsfield WWTP. Water surface elevation and current-velocity profile measurements were collected at each location under three different flow conditions—low, moderate, and high flow. For the purposes of this survey, low, moderate, and high flows were defined as less than 100 cubic feet per second (cfs), between 100 and 300 cfs, and greater than 300 cfs, respectively, as measured at the USGS Coltsville gage. Table 3-7 summarizes the survey dates corresponding to each of the target flow ranges, and the daily average flow rate observed during each event at Coltsville and at the USGS gage at Lenoxdale.

Table 3-7
Dates of ADCP Sampling Events and Corresponding Flows at Nearby USGS Gages

Event	Target Flow Range at Coltsville Gage (cfs)	Survey Start Date	Survey End Date	Observed Daily Average Flow (cfs)[1]	
				Coltsville Gage (01197000)	Lenoxdale Gage (01197145)
Low	<100	10/25/2022	10/27/2022	63	232
Moderate	100 to 300	4/11/2023	4/12/2023	169	504
High	>300	5/1/2023	5/2/2023	420	759

Note:
1. Values represent averages over survey dates. USGS flow values are provisional.

The ADCP measurements showed a range of current velocities during these events. Under low-flow conditions, current velocities at all Reach 5A cross-sections (Sites 1 through 3) ranged from approximately 1.1 to 1.8 feet per second (fps). Under moderate-flow conditions, velocities increased to approximately 1.9 to 2.7 fps, and velocities under high-flow conditions generally ranged from approximately 2.8 to 3.1 fps. The upper portion of Reach 5A (Holmes Road Bridge location) tended to have the highest velocities of the three monitoring locations in Reach 5A.

Figure 3-3 shows estimated water surface elevations throughout Reach 5A for the same low-, moderate-, and high-flow conditions based on output from the USACE Hydrologic Engineering Center – River Analysis System (HEC-RAS) model (Section 5.2). Based on the bathymetric surface data

collected in 2022 and the water surface elevations predicted by the HEC-RAS model, Figures 3-4a through 3-4i show the estimated water depths in Reach 5A based on a 150-cfs flow rate at the USGS Coltsville gage.[22]

3.6 Definition of Riverbanks

A critical element of the remedial design is to define the extent of riverbanks (i.e., toe and top-of-bank) so that the bank areas can be differentiated from the adjoining river channel sediment and adjacent floodplain. Once established, the top-of-bank boundary defines the interface between the riverbank and the floodplain (i.e., the floodplain-riverbank interface), which will be used to define the horizontal extent of remediation in the floodplain (discussed in Section 4.4). Similarly, the toe (or bottom) of the bank boundary will define the interface between the riverbank and the sediment (i.e., the sediment-riverbank interface), which will be used as the horizontal extent of sediment removal and capping within the river (discussed in Sections 4.2.1 and 5.3, respectively).

For purposes of determining riverbank soil sampling locations for the PDI, the *Revised Pre-Design Investigation Work Plan for Reach 5A Sediment and Riverbanks* (Revised Sediment/Bank PDI Work Plan; Anchor QEA and AECOM 2022) presented a definition of the top-of-bank based on the Massachusetts Wetlands Protection Act regulations (310 Code of Massachusetts Regulations [CMR] 10.54(2)(c)), which state that "[t]he upper boundary of a Bank is the first observable break in the slope or the mean annual flood level, whichever is lower." Generally consistent with that definition, for the Reach 5A PDI riverbank sampling, the top-of-bank was set as the first observable break in slope based on comprehensive aerial and mobile Light Detection and Ranging (LiDAR) topographic survey data collected in 2021 and 2022 (described in the PDI Summary Report for Sediment and Riverbanks), but no higher than the elevation of the adjacent 1 mg/kg PCB isopleth (which corresponds approximately to the 10-year floodplain elevation). The conceptual design for Reach 5A uses the same limits for the top-of-bank boundary that were used to guide the sampling in the Reach 5A PDI.

For the final remedial design, the elevation of the mean annual flood level (i.e., estimated river flow rate with a return frequency of one year) will be modeled using the HEC-RAS model (see Section 5.2) to determine whether predicted water surface elevations are lower than the current top-of-bank boundary. Adjustments to the top-of-bank boundary will be considered on a case-by-case basis, depending on how any adjustment would affect the remedial evaluations (Section 4). Any changes to the top-of-bank boundary would move the line towards the river. After this evaluation (and any adjustments), additional field surveys will be performed as part of the supplemental data collection program (Section 10.2) to stake the current top-of-bank line at adjacent riverbank and floodplain

[22] A flow rate of 150 cfs was used for these figures because it represents the approximate upper limit of the flow used to establish the limits for the toe-of-bank boundary for the Reach 5A PDI and the conceptual design, as described in Section 3.6.

remediation areas or where river sediment dredge cut slope stability may be a concern. Then, a joint field review will be conducted by GE and EPA representatives to review and make field adjustments, if needed, based on location-specific observations.

During the PDI sampling, the toe of the bank was defined based on the water surface elevation observed during the April 2022 topographic survey, which was conducted during a period when river flow rates generally ranged between 130 and 150 cfs. This definition was used to guide placement of the toe-of-bank riverbank soil sampling locations instead of using the definition in the Massachusetts Wetlands Protection Act regulations (310 CMR 10.54(2)(c)), which state that "[t]he lower boundary of a Bank is the mean annual low flow level." Using the mean annual low flow rate (i.e., approximately 15 cfs at the Coltsville gage) to define the sediment-riverbank interface would have reduced the river remediation extent by more than 60%, including point, side-channel, and mid-channel sand bars, as well as portions of the riverbed that are dry under low-flow conditions. For the same reason, the same toe-of-bank boundary limits used for the Reach 5A PDI have been used for the conceptual design. For the final remedial design, a field survey and geomorphologic survey will be conducted as part of the supplemental data collection program (Section 10.2) to determine whether any adjustments to the toe-of-bank boundary are warranted based on location-specific field conditions (e.g., point bars within the transitional zone between the river and the banks may be characteristic of a riverbank in some areas) and provide important habitat functions for a variety of species. Once the toe-of-bank boundary is staked as part of these surveys, a joint field review will be held by GE and EPA representatives during low-flow conditions (i.e., flows less than 100 cfs at the USGS Coltsville gage) to review and make field adjustments, if needed, to the toe-of-bank boundary.

3.7 Riverbank Conditions

A field assessment of BEHI and NBS was performed in 2022 as part of the Reach 5A PDI to evaluate the erodibility of the riverbanks relative to the Performance Standards summarized in Section 2.3.[23] The BEHI is a method that evaluates a stream bank's susceptibility to erosion from erosional processes based on the physical characteristics of the bank. This method integrates multiple variables that relate to combined erosional processes leading to annual erosion rates. Erosion risk is then established for a variety of BEHI variables that are then totaled to obtain an overall BEHI risk score (Total Score). The BEHI Total Score is converted to a qualitative rating descriptive of the bank erosion risk. NBS is the evaluation of potential disproportionate energy distribution of the river flow in the near-bank region (one-third of channel cross section) associated with the bank being evaluated. Increases in NBS can accelerate stream bank erosion. Three methods were used to determine NBS ratings for each study bank segment in Reach 5A based on the *Watershed*

[23] In addition, a BANCS model will be developed and calibrated for Reach 5A following the methodology outlined in *Watershed Assessment of River Stability and Sediment Supply* (Rosgen 2006). Data collection for this model is still in progress, so it has not been considered in this Conceptual RD/RA Work Plan.

Assessment of River Stability and Sediment Supply (Rosgen 2006). A summary of the field investigations, including the resulting BEHI and NBS ratings for each study bank segment, is presented in GE's PDI Summary Report for Sediment and Riverbanks.

A total of 50,033 linear feet of riverbank in Reach 5A was assessed for BEHI and NBS. The lengths of riverbank for each combination of BEHI and NBS are summarized in Table 3-8.

Table 3-8
Summary of BEHI and NBS Assessment

NBS	BEHI (Length of Bank in Feet)						
	Low	**Moderate**	**High**	**Very High**	**Extreme**	**Not Rated[1]**	**Total**
Low	7,544	20,666	6,657	376	0	96	**35,339** (71%)
Moderate	477	2,231	1,131	0	175	0	**4,014** (8%)
High	0	448	949	325	0	0	**1,722** (3%)
Very High	323	2,093	1,377	0	0	75	**3,868** (8%)
Extreme	1,236	1,761	1,485	408	0	200	**5,090** (10%)
Total	**9,580** (19%)	**27,199** (54%)	**11,599** (23%)	**1,109** (2%)	**175** (0.3%)	**371** (0.7%)	**50,033**

Note:

1. The 2022 riverbank field assessments were conducted throughout Reach 5A except for the portion of the western riverbank downstream of BW5A-6 (approximately Station 244+00). Additional assessments are ongoing to determine the erodibility rating for the portion of the western riverbank between Stations 244+00 and 245+00 (i.e., the downstream limit of Reach 5A). Also, certain riverbanks were not rated because they contained riprap (for which BEHI analysis is not applicable).

The predominant BEHI ratings on the Reach 5A banks were Low or Moderate (jointly covering 73% of the total length). Nearly 25% of the banks in Reach 5A had a High BEHI rating. Several factors resulted in banks being assigned a High BEHI rating. These banks typically lacked woody vegetation and the associated root mass that goes along with that vegetation. These banks also often had sandy substrate, although steeper banks with more of a silt/clay substrate were also assigned a High BEHI rating. Banks that received a BEHI rating of Very High or Extreme were characterized by being vertical and typically sandy. The differentiating factor between these two categories was the presence or absence of vegetation; a vertical sandy bank was rated Very High if it had some herbaceous vegetation and Extreme if it lacked significant vegetation).

NBS ratings in Reach 5A range from Low to Extreme. The predominant NBS rating was Low (71% of the riverbank length). The remaining banks were distributed among ratings of Moderate (8%), High (3%), Very High (8%), and Extreme (10%). Riverbanks with higher NBS ratings were those occurring

on the outside of meander bends and reaches where the river thalweg is flowing along the near bank. Additionally, for several short reaches, ratings of Very High and Extreme were caused by transverse riffles directing flow towards a bank or by mid-channel bars forcing flow against a bank.

As noted in Section 2.3, the Revised Final Permit specifies that banks are considered erodible if they have BEHI and NBS ratings of "Moderate-High" or greater. However, in Rosgen (2006), there is no such rating for BEHI or NBS; ratings are either Moderate or High. The BEHI Total score for the Moderate category ranges from 20 to 30. For present purposes, GE is considering a BEHI score of 27 to be the lower bound for the Moderate-High range. This is consistent with EPA's prior (2009) analysis of the banks, in which the six conventional adjective BEHI ratings were subdivided into 16 adjective ratings, and BEHI scores of 27 to 29 were indicated to be "Moderate-High" (EPA 2009). This increased subdivision of BEHI ratings was also used by Weston Solutions, Inc. (2014), in its estimates of bank removal volumes. The NBS range for Moderate can vary depending upon the method; therefore, GE is conservatively considering all banks with an NBS score of Moderate or greater to meet the definition of erodible. Based on this definition, a total of 9,471 feet of riverbank in Reach 5A (19% of the total length of riverbanks) is classified as erodible. Additional information on the bank erodibility assessment is provided in Section 4.3.

In addition to the assessments of erodibility, an analysis of geotechnical index parameters was performed on a subset of the Reach 5A riverbank soil samples collected during the Reach 5A PDI in 2022 and 2023, as also discussed in the PDI Summary Report for Sediment and Riverbanks. On average, riverbank soil samples consisted predominantly of sand (68%) and fines (31%), with a small fraction of gravel. Moisture content and bulk density in riverbank soil samples averaged approximately 45% and 53 lb/ft^3, respectively.

3.8 Baseline Restoration Assessment

Section II.B.1.c.(2)(a) of the Revised Final Permit required GE to conduct a Baseline Restoration Assessment (BRA) of areas that will be affected by the ROR Remedial Action. On August 25, 2023, GE submitted a *Housatonic River Reach 5A Baseline Restoration Assessment Report* (Reach 5A BRA Report; AECOM 2023a), which provides a description and assessment of the pre-remediation conditions, functions, and values of river bottom, riverbank, backwater, floodplain, impoundment, and vernal pool habitats, as well as the identified habitats of federal or state-listed threatened or endangered species or state-listed species of special concern and any invasive species in the areas affected by the remediation. This assessment was based on data collection performed during 2022 and 2023 pursuant to GE's *Revised Reach 5A Baseline Restoration Assessment Work Plan* (AECOM 2022), which was approved by EPA on July 18, 2022. The Reach 5A BRA also incorporated results from previous investigations that included information on ecological conditions in Reach 5A (including surveys of vernal pools conducted from 2018 to 2020), as well as updated information provided by the MNHESP on mapped state-listed rare species habitats.

Based upon the BRA data collection described previously, Reach 5A is composed of the following habitat types: 45 acres of riverine habitat[24] and 50,000 linear feet of riverbanks associated with the Housatonic River; three acres of other stream habitat (e.g., Sykes Brook and Sackett Brook); four acres of backwater habitat; 302 acres of floodplain wetland habitat (including vernal pools); and 55 acres of upland floodplain habitat, of which approximately 31 acres are managed/disturbed habitat (i.e., agriculture and cultural grasslands). These areas total 409 acres within the 1 mg/kg PCB isopleth. Reach 5A also contains habitat for 21 state-listed rare species (one of which is also federally listed), based upon mapping provided by the MNHESP. Brief summaries of each of the main habitat types and their characteristics and functions are provided in the following subsections.

3.8.1 Riverine Habitat

Reach 5A includes two primary flowing water habitat designations: Medium-Gradient Stream (MGS) and Low-Gradient Stream (LGS). Total riverine habitat covers approximately 45 acres over a distance of approximately 4.6 river miles. Approximately 29 of the 45 acres of riverine habitat is MGS; the remaining 16 acres are LGS. Stream substrate, which is the foundation of riverine habitat, is closely related to these flow regimes, with the following proportions identified during the Reach 5A field studies: Sand 42%, Gravel 21%, Silt 20%, Clay 7%, Cobble 7%, and Boulder 2%.[25] Other important habitat features within the riverine system in Reach 5A include the presence of riffle/pool/run habitats, point bars, and accumulations of large woody debris. Habitat conditions and functions are strongly tied to the hydrologic/hydraulic characteristics, which in turn influence the stream geomorphology and ultimately the habitat characteristics. Submerged aquatic vegetation is sparse in Reach 5A (covering less than 5% of the riverine area); invasive curly-leaf pondweed is the most common vascular plant species, and periphyton algae is the most common cover type.

The river channel in Reach 5A provides diverse habitat for aquatic organisms. Due to the range of substrate types, vegetative cover, and depth features, this area provides a range of functional uses for many fish and invertebrate species, including several freshwater mussel species. Benthic macroinvertebrate surveys conducted in 2022 noted a relatively high species richness. The most abundant fish species in Reach 5A is the white sucker, but other commonly occurring species are largemouth and rock bass, yellow perch, and various minnow species (*Cyprinidae*). Also, there are at least 10 state-listed species that have mapped habitat areas that overlap with the river and have habitat requirements at some life stages that include the identified riverine habitat conditions. The

[24] Note that riverine habitat acreage estimates include both river bottom and portions of the riverbank (which otherwise is only expressed as a measurement in linear feet).

[25] These data reflect field observational estimates of river substrate at 18 locations throughout Reach 5A; these percentages are not based on laboratory grain-size data collected during the Reach 5A PDI.

state-listed species include several species of dragonflies, which rely on foraging, shelter, and emergence habitat provided by the river.

3.8.2 Riverbank Habitat

As noted in Section 3.4, riverbanks in Reach 5A generally range in height from three to seven feet (average of 6.2 feet among the surveyed stations), with areas of higher vertical banks ranging from eight to 12 feet.[26] Although the overall character of the Reach 5A riverbanks is primarily mature woodland, specific vegetative composition varies considerably based on factors such as location across the bank section (e.g., bank toe versus top of bank), hydrology, bank slope, and substrate. In general, the upper portions of the Reach 5A banks consist predominantly of trees, with interspersed sections being a shrub-dominated mix of trees, vines, and herbaceous growth. As noted in the riverine habitat, point bars are transitional areas between the river and the banks and provide important habitat functions for a variety of species. Large woody debris is also a common and important habitat feature along the banks.

The field estimates of Reach 5A riverbank substrate indicate a relatively equal percentage of silts and sands with a range of physical attributes, including sloped and vegetated banks, vertical and exposed banks, erosional banks with slumping, and erosional but vegetated banks. Vertical and exposed banks generally lack vegetative cover but provide habitat functions. Undercut banks are prevalent in Reach 5A, occurring in 97% of the surveyed bank stations. Mature trees overhanging the river, and dense herbaceous and shrub communities are also prevalent on the banks in Reach 5A and provide shading to the river and foraging opportunities for wildlife. At least 13 state-listed species have mapped habitat areas that overlap with the river and have habitat requirements at some life stages that include the identified riverbank habitat conditions.

3.8.3 Backwater Habitat

As noted in Section 1.3, Reach 5A contains six designated backwaters covering a total area of 4.3 acres. All six backwaters have surface water that is in direct hydraulic connection with the main channel; however, most of these surface water connections run dry during low-flow periods in the summer. This characteristic allows fish to move into the backwaters during spring flooding periods; however, they may be trapped there and subject to draw-down. The six backwaters in Reach 5A consist generally of deep marsh habitat occurring on saturated, mucky mineral soils that are seasonally inundated and permanently saturated. The substrate is flooded by waters that are not subject to significant wave action, with water depths ranging from six inches to six feet. Water levels fluctuate seasonally, but the substrate is rarely dry, and there is usually some standing water throughout the year. The emergent vegetation in these deep marshes is quite variable, with a total of

[26] This is based on field observational estimates at 34 riverbank stations in Reach 5A where habitat data were obtained.

55 plant species (including seven invasive and one non-native plant) observed and documented within these six backwaters.

The Reach 5A backwaters and associated deep emergent marshes are used by a range of bird, mammal, amphibian, and reptile species that rely on these areas for foraging, shelter, and breeding. These backwaters and marshes provide nesting and foraging habitat for a variety of bird species. There are 11 state-listed plant and animal species that have MNHESP-mapped Species Habitat within the Reach 5A backwaters that could use those habitats based upon habitat requirements of each species and the backwater habitat conditions documented to occur there.

3.8.4 Other Waterbodies Habitats

As discussed in Section 2.3.3, Reach 5A contains five Other Waterbodies that do not constitute backwaters. Although they were not discussed in detail in the Reach 5A BRA Report, their current habitats can be generally summarized as follows:

- The outlet from Morewood Lake (known as Wampenum Brook) flows into the Housatonic River for approximately 500 feet within the Reach 5A limits. This stream is six to eight feet wide and has a typical average depth of six inches. The substrate within the stream channel is composed of 80% sand/gravel and 20% silt. The banks range from one to two feet in height and contain small animal burrows and woody debris.
- Sackett Brook flows east to west through Canoe Meadows and discharges into the Housatonic River near the southwestern end of Canoe Meadows. Within Canoe Meadows there are several beaver dams which have impounded the brook in several places. The lower portion of Sackett Brook is free flowing and approximately eight to 10 feet wide, with water depths typically in the range of one to two feet. The substrate is predominantly coarse sand and gravel, with some small point bar development and woody debris accumulations present, often at bends in the brook. The banks range in height from two to three feet.
- Sykes Brook feeds into Reach 5A on the eastern side of the river at the southern end of Canoe Meadows. The brook is approximately eight to 10 feet wide with depths typically in the range of one foot and with coarse sand and gravel substrate.
- The Intermittent Side Channel extends off the main channel just below the Confluence and runs along the eastern side of the Housatonic River. This is largely a non-vegetated channel scoured through the floodplain by overbank flooding, with various sediment deposition zones.
- West Pond is situated in the northern end of Canoe Meadows and is a shallow pond with outflow to both the west (via a small tributary flowing directly to the Housatonic River just

downstream of the Holmes Road bridge) and the south (via surface flow that drains to Sackett Brook). Beaver impoundments have affected flows in both directions.

3.8.5 Floodplain Wetland and Upland Habitats

Reach 5A includes approximately 365 acres of floodplain habitat, defined by the area between the top-of-bank (defined in Section 3.6) and the 1 mg/kg PCB isopleth. Most of this area (308 acres) consists of wetland community types (wet meadow, shallow and deep marshes, shrub swamp, and several forested wetland types). The forested wetland habitats comprise slightly more than half the floodplain cover types (160 acres, or 52%), with the subcategory of transitional floodplain forest the most prevalent of these forested wetland habitats (142 acres, or 39%). Upland community types account for 31 acres of the floodplain, mostly along the outer perimeter of the 10-year floodplain; cultural grassland (upland fields that are periodically mowed) are the most prevalent upland cover (26 acres). The floodplain habitat also includes a small area (8.5 acres) of ponded open water.

The assessment of floodplain wetland and upland functions indicate that numerous ecological functions are provided by the Reach 5A wetlands, including flood storage, groundwater recharge/discharge, water quality improvement, and wildlife habitat. A total of 21 state-listed plant and animal species have mapped habitat areas that encompass the floodplain habitats in Reach 5A and could be found in those habitats based upon habitat requirements.

3.8.6 Vernal Pool Habitats

As described in Section 1.3, the Reach 5A floodplain contains 59 seasonally wet depressions that meet the MNHESP criteria for certification as vernal pools. A total of 45 of these vernal pools are mapped as isolated depressions in the floodplain, with the remaining 14 pools being part of a larger wetland system. The vernal pools in Reach 5A consist of depressions that are capable of holding standing water through at least a portion of the amphibian breeding season. These depressions function as vernal pool breeding habitat for obligate vernal pool species, such as wood frog, spotted salamander, and fairy shrimp, as well as breeding, foraging, and rehydration/thermoregulation habitat for other amphibians and reptiles A total of 12 state-listed plant and animal species have mapped habitat areas that encompass the vernal pools in Reach 5A and may be found in those vernal pool habitats based upon habitat requirements.

3.8.7 Rare Species Habitats

Based upon information provided by MNHESP in October 2022, a total of 21 state-listed plant and animal species have mapped habitat areas that encompass the various habitats in Reach 5A; one of these species (the northern long-eared bat) is also federally listed. There is also one candidate species for federal listing (the monarch butterfly). Included in the list of state-listed species are 10 plants, seven invertebrates, two birds, one reptile, and one mammal. In addition to the species

habitat mapping of these 21 species, MNHESP has also identified several Core Area habitats within Reach 5A intended to indicate the "habitats and species that might be particularly sensitive to impacts from PCB remediation activities" (MDFW 2012).

3.9 Cultural Resources Assessment

On March 10, 2023, GE submitted a *Revised Supplemental Phase IA Cultural Resources Assessment Report* (Revised Phase IA CRA Report; AECOM 2023b) for the overall ROR area; that report was approved by EPA on March 27, 2023.[27] The Revised Phase IA CRA Report described the process and activities that GE conducted to identify potentially affected areas that contain known cultural resources or have a high potential to contain such resources. That report also described upland areas with known or suspected historic structures that might be indirectly affected by project activities.

The floodplain in Reach 5A has many areas of high potential for containing pre-contact archaeological sites.[28] There are extensive well-drained floodplain terraces, and the background data document multiple previously recorded archaeological sites, such as Native American campsites, villages, and cemeteries in the area. The areas around the Confluence and the mouth of Sackett Brook have some of the highest densities of previously recorded pre-contact sites in the region.

Areas of post-contact archaeological site sensitivity in Reach 5A are more limited due to the setting on the margins of the main area of post-contact settlement in Pittsfield, Massachusetts. Exceptions to this include an area around the Holmes Road bridge crossing, which is an old road that has been in this general alignment since the late 18th century. Preliminary field reconnaissance of the river channel within Reach 5A noted several old bridge abutments, as well as multiple locations where rock mounds and alignments can be seen within the channel. These could be post-contact features or possibly remnants of Native American fish weirs.

The Phase I CRA noted that there is an area of historic structures concentration located along Holmes Road west of the floodplain and south of where Holmes Road crosses the river in Reach 5A. The estate of Oliver Wendell Holmes is located on a hill overlooking the floodplain, and the campus of Miss Hall's School is located across the road from the Holmes property. Both properties are included in the Massachusetts Historical Commission (MHC) inventory, as are three other nearby residential properties, but none of the five has yet been evaluated for National Register of Historic Places (NRHP) eligibility. In addition, author Herman Melville's home, Arrowhead, is located a short distance south at 780 Holmes Road, situated on a hillside that overlooks the Housatonic River

[27] A public release version of this report was submitted on March 14, 2023. The term "Phase IA CRA" is appropriate under the federal program governing the Revised Final Permit activities, but it is not recognized terminology by the Commonwealth of Massachusetts. Using the terminology of the MHC, the Phase IA CRA Report was comparable to a reconnaissance survey report under 950 CMR 70.04 and 70.14.

[28] "Pre-contact" refers to Native American occupations prior to contact with European explorers and settlers.

floodplain from the west. This property has been designated as a National Historic Landmark and is operated as a museum by the Berkshire County Historic Society.

The Revised Phase IA CRA Report stated that the next step in the process will be to conduct a Phase IB Cultural Resources Survey (CRS) of portions of Reach 5A that will be affected by remediation activities or support activities such as access roads and staging areas (a Phase IB study is equivalent to an intensive archaeological survey as defined by MHC guidelines). The additional investigations will be conducted to evaluate whether the remediation and support activities for Reach 5A will impact any potentially significant cultural resources. Details on research methods and proposed areas of investigation are described in a *Phase IB Cultural Resources Survey Work Plan for Reach 5A* (Phase IB CRS Work Plan; AECOM 2023c), which is being submitted concurrently with this Conceptual RD/RA Work Plan and is discussed in Section 5.13.

3.10 Riparian Property Ownership

Figures 3-5a through 3-5e provides an overview of property ownership along Reach 5A. In this reach, property ownership can be summarized in six general categories—specifically, properties owned by the Massachusetts Audubon, the City of Pittsfield, the Commonwealth of Massachusetts, GE, private residential owners, and private non-residential owners. The identification of property ownership along the river shoreline and adjacent floodplain is needed to understand who will be potentially impacted by remediation activities. This is also an important consideration during design when selecting locations for temporary staging/support areas and access roads.

3.11 Infrastructure and Obstructions

The presence of utilities, structures, or other infrastructure/obstructions will need to be considered during remedial design and construction. Overhanging trees, shoreline vegetation, and debris within the river will also need to be addressed to allow the remediation work to be completed.

3.11.1 Utilities and Structures

Utility clearance efforts (using Massachusetts Dig Safe Inc. or 811) conducted prior to PDI sampling activities in Reach 5A and field reconnaissance conducted during the PDI identified the presence of several structures and utilities along the Reach 5A river channel. The PDI Summary Report for Sediment and Riverbanks provides details regarding the locations, types, and dimensions of these features. In summary, the utilities and structures identified along the Reach 5A river channel include the following:

- Bridges, including the Pomeroy Avenue Bridge and the Holmes Road Bridge;
- Subsurface utility crossings below the river, including a natural gas pipeline and two sewer crossings;

- Overhead utility crossings, including overhead power lines and overhead sewer and natural gas piping within the substructures of the bridge crossings;
- Storm water outfalls, including associated headwalls and in-river riprap scour protection;
- A discharge channel for the City of Pittsfield publicly owned treatment works; and
- Concrete and stone remnants associated with a former bridge crossing.

No residential structures (e.g., housing, garages, retaining walls, or sheds) were observed immediately on or adjacent to the riverbank.

In addition to the structures observed along the river, several utilities and other possible obstructions were noted within the floodplain. These features were identified but not specifically surveyed during the PDI because remedial footprints and associated support areas had not been identified at that time. Additional field survey and outreach efforts for these features will be conducted as part of the supplemental data collection program described in Section 10.2.

3.11.2 Shoreline Vegetation and In-River Debris

Certain segments of the river channel contain a considerable amount of woody debris, such as downed trees and driftwood, rocks, and, to a lesser extent, consumer debris (i.e., trash). It is expected that buried debris (i.e., buried logs and large rocks) may also be present within the river. In addition, shoreline trees or other vegetation extend over the river at numerous locations. The debris and overhanging trees/vegetation can limit access, and submerged or buried debris can have an adverse impact on production rates, cause project standby periods, or affect the ability to achieve sediment removal to required elevations.

3.12 Seasonal Considerations

Seasonal factors such as rainfall, snow, river flows, and air temperatures could affect project implementation by restricting the seasonal work schedule, reducing production rates, or necessitating temporary operational shutdown. These factors will need to be considered during remedial construction planning to protect worker safety, construction equipment, and completed work, and when developing production rate estimates and project schedules. Due to variable weather and river flow conditions, the actual in-river construction period may vary from year to year.

For example, as described in Section 3.5, river flows are variable from month to month and over shorter durations because they are highly dependent on precipitation and snow melt events. As such, river flows are typically higher in the spring (i.e., March through May) and lowest during summer and

early fall (i.e., June through October),[29] although runoff from large storms in the summer or fall can cause river flows and stage heights to increase rapidly (Table 3-5 and Figure 3-1).

Local historical meteorological data are available from the National Weather Service for the Pittsfield Municipal Airport.[30] Table 3-9 summarizes monthly air temperature and precipitation data over the last 30 years.

Table 3-9
Mean Monthly Air Temperatures and Precipitation at Pittsfield Municipal Airport (1991-2020)

Month	Average Monthly Precipitation (inches)	Mean Minimum Temperature (°F)	Mean Average Temperature (°F)	Mean Maximum Temperature (°F)	Average Number of Freezing-Degree Days[1]
January	2.67	13.9	22.0	30.1	25
February	2.52	15.0	24.1	33.1	22
March	3.08	23.1	32.4	41.7	15
April	3.38	33.8	44.5	55.2	2
May	3.79	44.4	55.7	67.0	0
June	4.58	53.1	63.9	74.6	0
July	4.18	58.0	68.7	79.3	0
August	3.82	56.5	67.1	77.6	0
September	4.50	48.9	59.7	70.4	0
October	4.56	38.5	48.4	58.3	1
November	3.52	29.2	37.9	46.6	7
December	3.63	20.9	28.2	35.5	21

Note:
1. Freezing-degree days refers to days when the mean average temperature was 32°F or below.

[29] Although the average monthly precipitation rates (Table 3-9) are higher between June and October than between March and May, average river flows are typically higher between March and May (Table 3-5) due to snow melt and because tree transpiration is limited before full leaf growth.

[30] These data are available at: https://www.weather.gov/wrh/Climate?wfo=aly.

4 Preliminary PCB Evaluations

4.1 Overview

This section presents a summary of the evaluations performed to delineate the preliminary sediment, riverbank, and floodplain remediation areas needed to achieve the Performance Standards summarized in Section 2. For each medium, this section summarizes existing conditions, a preliminary remediation plan including remedial footprint and volume, and an evaluation of the segregation of material for on-site versus off-site disposal. The final horizontal and vertical extents of remediation will be determined during the final design process and will be presented in the Final RD/RA Work Plan for Reach 5A.

4.2 Sediment Evaluations

4.2.1 Main Channel Sediment

4.2.1.1 Data Evaluation (Existing Conditions)

As summarized in Section 3.2.1.1, extensive sediment sampling was conducted in the Reach 5A main channel during the PDI (1,191 samples from 284 locations). These data were collected to support the cap design process to achieve the applicable cap Performance Standards described in Section 2 and to evaluate on-site versus off-site disposal requirements for sediments to be removed from the river. Figure 4-1 shows cumulative frequency distributions of total PCB concentrations (top panel) and summary statistics of PCB concentrations (average, median, and statistical range based on two standard errors; bottom panel) by depth for each six-inch depth interval down to a total depth of three feet. This figure illustrates that PCB concentrations throughout Reach 5A in all sampled depth intervals are highly variable, ranging from non-detect to over 1,000 mg/kg overall and from non-detect to over 100 mg/kg in each sampled depth interval. Overall, PCB concentrations in the top three feet of sediment in the main channel average approximately 8.7 mg/kg. On average, the highest PCB concentrations are observed in the 1- to 1.5-foot and 1.5- to 2-foot intervals (approximately 11 and 14 mg/kg, respectively); however, the higher average concentrations for these intervals are influenced by a limited number of samples greater than 500 mg/kg. The large degree of variability within each interval means that the distributions of PCB concentrations are very similar across each depth (as evidenced by the overlapping error bars in the bottom panel of the figure). Median PCB concentrations are highest in the surficial 0- to 0.5-foot and 0.5- to 1-foot intervals (1.7 mg/kg and 1.6 mg/kg, respectively).

Figure 4-2a shows a spatial profile of main channel sediment PCB concentrations for each six-inch depth interval. This graphic illustrates that sediment PCB concentrations throughout Reach 5A are heterogeneous at all depths. PCB concentrations in samples that are relatively close together can range by two to three orders of magnitude, meaning that there are no apparent “hot spots.”

Figure 4-2b compares the spatial profile of sediment PCB concentrations for cores collected from the east, center, and west sides of the channel. Similar to Figure 4-2a, this graphic illustrates that sediment PCB concentrations throughout Reach 5A are laterally heterogeneous.

4.2.1.2 Proposed Remediation Plan

As described in Section 2.2.1, the Performance Standard for the Reach 5A main channel is the removal of riverbed sediment and placement of an engineered cap over the entire riverbed. The extent of the area subject to removal/capping is dependent on mapping of the extent of sediment defined by the sediment-riverbank interface. As described in Section 3.6, for the conceptual design, this interface is being defined based on the water surface elevation observed during the April 2022 topographic survey, which was conducted during a period when river flow generally ranged between 130 and 150 cfs. This results in an assumed area of approximately 41 acres in the main channel subject to removal and capping.

The volume of sediments to be removed from the main channel is primarily dependent on the thickness of the engineered cap, which will be variable throughout Reach 5A. As described in Section 5.3, three different cap types are anticipated to be placed over the main channel sediment.[31] The conceptual design thicknesses for the different cap types vary as summarized in Section 5.3 and described more fully in Appendix A. Based on that design, the corresponding "neat" volume of sediment removal is estimated to be approximately 87,600 cubic yards (cy) to meet the minimum cap thicknesses. As described in Section 5.3.6, some cap over-placement allowance will need to be included in the final sediment removal design. In addition, the final sediment removal volume will be dependent on several other factors that will be evaluated during final design, such as uncertainties related to the design bathymetry surface (e.g., interpolation between single-beam transects), changes that could occur in the sediment bed before the start of remediation, removal prism design adjustments to account for slope stability (if necessary), the presence of existing channel features that may not be reconstructed (e.g., point bars and mid-channel bars), and the fact that the final channel that may have a different geometry in some areas based on the application of Natural Channel Design principles.[32] These factors influence the overall sediment removal volume and will be subject to evaluation during final design. Due to these uncertainties at this conceptual stage, it is currently assumed that the additional sediment removal could be 10% higher than the estimated "neat" volume. Therefore, for the purpose of this conceptual design, the sediment removal volume is assumed to be approximately 96,400 cy. This assumed volume is subject to change during final design.

[31] A fourth cap type is anticipated for backwater areas and certain Other Waterbodies, as described in Section 5.3.

[32] Natural Channel Design principles are described briefly in Section 5.4.2.

4.2.1.3 Disposal Evaluation

As described in Section 2.6, off-site disposal is required for any sediment that is represented by a three-dimensional polygon associated with a single vertical core that has an average PCB concentration greater than or equal to 100 mg/kg. This criterion is evaluated as the depth-weighted average PCB concentration for each location, which is calculated using the depth intervals that correspond to the targeted depth of removal associated with each core location. In addition, as described in Section 2.6, the Revised Final Permit states that Reach 5A sediments to be disposed of in the UDF must have a volume-weighted average PCB concentration of less than or equal to 25 mg/kg.

Thiessen polygons were generated for each sampled location and depth. The sizes and shapes of the Thiessen polygons vary based on data availability for each sample location and depth interval. Thiessen polygon extents are generated for each depth interval using only locations where data are available at that depth. A series of figures was developed to show the Thiessen polygons and detected PCB concentrations throughout the river for each 0.5-foot depth interval (i.e., 0- to 0.5-foot, 0.5- to 1.0-foot, 1.0- to 1.5-foot, 1.5- to 2.0-foot, 2.0- to 2.5-foot, 2.5- to 3.0-foot). These figures are presented as Figures B-1 through B-6 in Appendix B. Because fewer cores had less recovery at deeper depths, the Thiessen polygons at the deeper depth intervals are larger than the Thiessen polygons for the shallower intervals.

Depth-weighted average PCB concentrations were calculated for each PDI sediment core in the main channel based on the minimum design cap thickness (Table B-1 in Appendix B) and, for conservative estimating purposes, additional depth intervals to account for uncertainty (Table B-2 in Appendix B). Based on these separate calculations, the maximum depth-weighted average PCB concentration for each core location is summarized in Table B-3 (Appendix B) and shown on Figures 4-3a through 4-3i. Based on the PDI data and these assumptions, there are four core locations that have depth-weighted average PCB concentrations that exceed 100 mg/kg (SE-030-61-W, SE-080-85-E, SE-217-93-E, and SE-230-73-C, shown on Figures 4-3b, 4-3d, and 4-3i). Thus, the sediments removed from these four locations will be subject to off-site disposal. Those sediments are preliminarily estimated to amount to a collective volume of 1,650 cy (including an assumed uncertainty factor of 10% of the estimated "neat" volume).[33]

Based on the volume-weighted average PCB concentration calculations presented in Table B-1 in Appendix B, the estimated volume-weighted average PCB concentration of the remaining sediments (which have a preliminary estimated volume of approximately 94,750 cy) is approximately 6 mg/kg, which satisfies the 25 mg/kg criterion for disposal in the UDF as described in Section 2.6.

[33] Additional sampling is being proposed as part of the supplemental data collection program to further delineate the areas of sediment that would be subject to off-site disposal (see Section 10.2 and Appendix I).

4.2.2 Backwaters

As summarized in Section 3.2.1.2, extensive sediment PCB sampling was conducted (on a 50-foot grid) in the six backwaters located in Reach 5A during the PDI (461 samples from 127 locations). One of those six backwaters (BW5A-1) is located in Core Area 1 habitat; the other five backwaters (BW5A-2 through BW5A-6) are located in areas outside Core Area 1 habitat. This section presents the results of the PCB evaluations that were performed for each of these six backwater areas. Maps of PCB concentrations (Thiessen polygons) and targeted remediation areas are shown on Figures 4-4a through 4-4f.

4.2.2.1 Backwater Located in Core Area 1 Habitat (BW5A-1)

As described in Section 2.2.2, the Performance Standard for backwaters located within Core Area 1 habitat is to remove (and cap) discrete total PCB concentrations greater than or equal to 50 mg/kg in surficial (0- to 1-foot) sediment and place an amendment in areas where total PCB concentrations are between 1 and 50 mg/kg in surficial (0-to 1-foot) sediment to reduce bioavailability.

4.2.2.1.1 Data Evaluation (Existing Conditions)

Figure 4-4a shows Thiessen polygons of 0- to 1-foot PCB concentrations in backwater BW5A-1, and Table C-1 in Appendix C summarizes the PCB concentrations for each Thiessen polygon in that backwater. There are three discrete polygons in this backwater with total PCB concentrations greater than or equal to 50 mg/kg. These cover a total of only 0.09 acre. PCB concentrations in the remaining polygons (totaling 1.7 acres) in this backwater are all between 1 and 50 mg/kg.

4.2.2.1.2 Proposed Remediation Plan

As shown on Figure 4-4a, sediments will be removed from the upper one foot within the three Thiessen polygons in backwater BW5A-1 with total PCB concentrations greater than 50 mg/kg followed by placement of an engineered cap. The estimated volume of sediments greater than or equal to 50 mg/kg to be removed from BW5A-1 is approximately 150 cy. The design of the replacement cap in the backwater areas subject to excavation is summarized in Section 5.3 and described more fully in Appendix A.

An amendment will be placed over the remaining 1.7 acres of this backwater to reduce bioavailability at sediment sample locations with PCB concentrations between 1 and 50 mg/kg. Details related to the placement of amendments in BW5A-1 are provided in Section 5.8.

4.2.2.2 Backwaters Outside Core Area 1 Habitat (BW5A-2 through BW5A-6)

As described in Section 2.2.2, an evaluation of both the surface (0 to 1 foot) and subsurface[34] sediment is necessary to define extent of remediation in these backwaters. The Performance Standard for surface sediments in backwaters located outside Core Area 1 habitat is to remove sufficient sediment, including any sediment in areas with total PCB concentrations greater than or equal to 50 mg/kg, and replace them with a contiguous engineered cap to achieve a spatially weighted average concentration of 1 mg/kg total PCBs in each backwater (assuming a replacement value of 1% of the pre-remediation surface sediment PCB concentration in capped areas of a given backwater). For subsurface sediments, the Performance Standard is to remove additional sediment as needed to achieve a spatially weighted average concentration of 1 mg/kg total PCBs in each backwater in areas outside the footprint of the engineered cap necessary to meet the requirements for surface sediments described above (assuming a replacement value of 1% of the pre-remediation surface sediment PCB concentration in capped areas of a given backwater).[35]

4.2.2.2.1 Data Evaluation (Existing Conditions)

Figures 4-4b through 4-4f show Thiessen polygons of PCB concentrations for each depth interval in backwaters BW5A-2 through BW5A-6, respectively. Using these polygons, spatially weighted average PCB concentrations were calculated for each backwater for the surface (0- to 1-foot) and subsurface intervals. These concentrations are shown in Table 4-1. Detailed summaries of the spatially weighted average PCB concentration calculations for each backwater area are provided in Tables C-3 to C-6 in Appendix C. The spatially weighted average PCB concentrations in the surface and subsurface intervals for each of these five backwaters exceed 1 mg/kg under existing conditions and, therefore, require remediation.

[34] The total depth of sampling in these backwaters was five feet; however, the vertical extent of the subsurface for each backwater area is dependent on the depth of sample recovery listed in Table 4-1.

[35] As noted in Section 2.2.2, in lieu of engineered capping for the surface and subsurface sediment remediation described above, the Revised Final Permit allows for the placement of backfill in areas where sediment was removed, provided that the backfill cannot be factored into the spatial weighting calculations. GE has elected not to use that approach, but to use the dredge and cap approach for these backwaters.

Table 4-1
Existing Spatially Weighted Average Total PCB Concentrations (BW5A-2 through BW5A-6)

Area ID	Existing Average Surface (0–1 foot) Total PCB Concentration (mg/kg)	Subsurface	
		Evaluation Depth (feet)	Existing Average Total PCB Concentration (mg/kg)
BW5A-2	11.5	1 to 3.5	19.4
BW5A-3	111	1 to 4	44.7
BW5A-4	17.2	1 to 4	14.1
BW5A-5	9.25	1 to 5	2.87
BW5A-6	10.4	1 to 5	21.7

Note:
Subsurface PCB values represent the spatially weighted average for all subsurface intervals based on the evaluation depth.

4.2.2.2.2 Proposed Remediation Plan

The remediation footprint required to achieve a spatially weighted average PCB concentration in the surficial 0- to 1-foot of sediment was delineated through a "hill topping" exercise—i.e., "removal" of Thiessen polygons sequentially from high to low concentration (with the original concentration value replaced with a concentration equal to 1% of the existing average surface sediment PCB concentration for the given backwater), until an average PCB concentration of 1 mg/kg in surface sediments was achieved.

For the subsurface depth interval, the average PCB concentration was calculated by applying a concentration equal to 1% of the existing average surface sediment PCB concentration to subsurface polygons located beneath the surface cap. If the subsurface PCB concentration still exceeded 1 mg/kg, then the cap area was increased until a subsurface average PCB concentration of 1 mg/kg was achieved. Detailed summaries of the post-cap spatially weighted average PCB concentration calculations are provided in Tables C-2 to C-6 in Appendix C. In these tables, orange-highlighted cells indicate locations and depth intervals where surficial remediation (i.e., removal of the top foot of sediment followed by cap placement) is required to achieve the 1 mg/kg spatial average criterion, and yellow-highlighted cells indicate the locations and depth intervals where remediation is required to achieve the subsurface criterion. Cells with blue-gray shading indicate locations where no surface remediation is required.

Figures 4-4b through 4-4f show the limits of the removal and cap area required to achieve the 1 mg/kg spatial average criteria in surface sediment, including any additional cap area required for subsurface sediments. Table 4-2 summarizes the removal areas and volumes for each backwater area based on a removal depth of one foot. The estimated volume of sediments to be removed from these five backwaters is approximately 2,900 cy. The conceptual design of the engineered cap in the backwater areas is summarized in Section 5.3 and described more fully in Appendix A.

Table 4-2
Remedial Extents and Preliminary Volume Estimates (BW5A-2 through BW5A-6)

Area ID	Area (acres)		% Area to Remediate	Post-Remediation Surface Spatially Weighted Average Total PCB (mg/kg)	Estimated Removal Volume (cy)[2]
	Total	Remedial Extent			
BW5A-2	0.31	0.31	100%	0.12	490
BW5A-3	0.21	0.21	100%	1.11[1]	340
BW5A-4	0.07	0.07	100%	0.17	110
BW5A-5	1.57	0.96	61%	0.98	1,570
BW5A-6	0.36	0.25	70%	0.88	390
Total	**2.51**	**1.79**	**71%**	**—**	**2,900**

Notes:

1. Although the entire footprint of BW5A-3 will be remediated (i.e., surface sediment removal followed by engineered cap placement), the post-remediation concentration in BW5A-3 is shown as greater than 1 mg/kg because the Revised Final Permit requires that the post-remediation surface spatially weighted average be calculated by assuming that the PCB concentration in areas subject to removal/capping be assumed to equal 1% of the existing average surface sediment PCB concentration of the backwater (which is 152 mg/kg for BW5A-3).
2. The estimated removal volumes presented in this table are based on a one-foot removal in the backwater areas and are rounded.

4.2.2.3 Disposal Evaluation (All Reach 5A Backwaters)

As described in Section 2.6, off-site disposal is required for sediment that is represented by a three-dimensional polygon associated with a single vertical core that has an average PCB concentration greater than or equal to 100 mg/kg. To meet this requirement, the depth-weighted average PCB concentrations for the PDI backwater sediment cores were calculated based on a total removal depth of one foot. Three backwater core locations have depth-weighted average PCB concentrations that exceed 100 mg/kg (two cores in BW5A-3, and one core in BW5A-6[36]). The Theissen polygons associated with these core locations are shown on Figures 4-4c and 4-4f and represent an area of 0.1 acre. The sediments removed from these three locations—which are preliminarily estimated to constitute 170 cy—will be subject to off-site disposal.

The Revised Final Permit (Attachment E) also requires that sediments to be disposed of in the UDF have a volume-weighted average PCB concentration of less than or equal to 25 mg/kg. The volume-weighted average of the remaining 2,880 cy of sediments to be removed from backwaters is approximately 16 mg/kg, which meets the UDF disposal criterion in the Revised Final Permit. Table C-7 in Appendix C provides a detailed summary of the estimated disposal volumes and volume-weighted average PCB calculations for the sediments to be removed from the backwater areas.

[36] To be conservative, core SE-BW5A-6-A-B-5-6 was identified as having a potential depth-weighted average PCB concentration exceeding 100 mg/kg based on the 0-to-1.5-foot average PCB (103 mg/kg).

4.2.3 Other Waterbodies

As described in Section 2.2.3, although the Revised Final Permit does not address the Other Waterbodies in Reach 5A, GE has elected to evaluate them against the Performance Standards for backwaters, given that they are separate from, but hydraulically connected to, the main river channel. As such, the evaluations for these five areas were performed in the same way as the backwaters described in Section 4.2.2 (with the exception that the depth of the subsurface interval in these areas was generally limited to two feet).

Figures 4-5a through 4-5e show Thiessen polygons of PCB concentrations for each depth interval in these five areas, and Table 4-3 summarizes existing spatially weighted average total PCB concentrations in each area. Detailed summaries of the spatially weighted average PCB concentration calculations are provided in Tables C-8 to C-12 in Appendix C. Two of the five areas (outlet from Morewood Lake and Lower Sackett Brook) have existing spatial average PCB concentrations less than 1 mg/kg and, therefore, require no remediation. The remaining three areas have spatial average PCB concentrations that exceed 1 mg/kg (i.e., the Intermittent Side Channel, West Pond, and Lower Sykes Brook).

Table 4-3
Existing Spatially Weighted Average Total PCB Concentrations in Other Waterbodies

Area ID	Area Description	Existing Average Surface Sediment (0–1 foot) Total PCB Concentration (mg/kg)	Subsurface Sediment	
			Evaluation Depth (feet)	Existing Average Total PCB Concentration (mg/kg)
E-OWB1	Intermittent Side Channel	5.6	1 to 2	2.8
W-OWB1	Outlet from Morewood Lake	0.4	1 to 2	0.04
OWB-WP	West Pond	4.4	1 to 2.5	1.8
E-OWB2	Lower Sackett Brook	0.3	1 to 2	0.2
E-OWB3	Lower Sykes Brook	8.6	1 to 2	43.1

Consistent with the approach applied to the backwater areas, the top one foot of sediment will be removed to accommodate the placement of an engineered cap in the Intermittent Side Channel and Lower Sykes Brook. The limits of the removal and cap area necessary to achieve a spatial average PCB concentration of 1 mg/kg in surface sediment in these two areas are shown on Figures 4-5a and 4-5e, respectively. In West Pond, surface and sub-surface removal to a depth of two feet will be performed, followed by backfill placement to achieve a spatial average PCB concentration of 1 mg/kg. The limits of the removal and backfill extent for West Pond are shown on Figure 4-5c.

Detailed summaries of the post-cap and post-backfill spatially weighted average PCB concentration calculations are provided in Tables C-8, C-10, and C-12 in Appendix C. In Tables C-8 and C-12, orange-highlighted cells indicate locations and depth intervals where surficial remediation (i.e., removal of the top foot of sediment followed by cap placement) is necessary to achieve the 1 mg/kg spatial average criterion in surface sediments. In Table C-10, green-highlighted cells indicate locations and depth intervals in West Pond where surface and subsurface removal followed by backfill placement is necessary to achieve the 1 mg/kg spatial average criterion in surface and subsurface sediments. In Tables C-8 through C-12, the locations and depth intervals where no remediation is necessary are shaded blue-gray. Table 4-4 summarizes the removal areas and volumes for each of the three Other Waterbodies subject to remediation. The total estimated volume of sediments to be removed from these three areas is approximately 4,150 cy.

As with the backwaters, depth-weighted average PCB concentrations were calculated based on the total removal depths in each of the Other Waterbodies subject to remediation to evaluate off-site disposal requirements (i.e., to determine whether any single vertical core has an average PCB concentration greater than or equal to 100 mg/kg). None of the core locations in the Other Waterbodies has a depth-weighted average PCB concentration that exceeds 100 mg/kg. In addition, the volume-weighted average of the sediments to be excavated from the Other Waterbodies is approximately 6.4 mg/kg, which is less than the 25 mg/kg criterion for sediment disposal in the UDF. Thus, all sediments to be removed from the Other Waterbodies meet the criteria for disposal in the UDF. Table C-13 in Appendix C summarizes the estimated disposal volumes and volume-weighted average PCB calculations for the Other Waterbodies. The design of the replacement cap in the two Other Waterbodies subject to capping (i.e., the Intermittent Side Channel and Lower Sykes Brook) is summarized in Section 5.3 and described more fully in Appendix A.

Table 4-4
Remedial Extents and Preliminary Volume Estimates in Other Waterbodies

Area ID	Remedial Approach	Area (acres)		% Area to Remediate	Post-Remediation Surface Spatially Weighted Average Total PCB (mg/kg)	Estimated Removal Volume (cy)[1]
		Total	Remedial Extent			
E-OWB1	Dredge and cap	0.16	0.10	63%	0.96	160
OWB-WP	Dredge and backfill	2.50	1.77	71%	0.98	3,840
E-OWB3	Dredge and cap	0.19	0.09	47%	0.3	150
Total	**—**	**2.85**	**1.94**	**68%**	**—**	**4,150**

Note:

1. The estimated removal volumes presented in this table are based on a one-foot removal in the Intermittent Side Channel and Lower Sykes Brook and up to two feet of removal in West Pond.

4.3 Riverbank Soil Evaluation

4.3.1 Data Evaluation (Existing Conditions)

As described in Section 3.2.2, extensive sampling of riverbank soils was conducted (1,987 locations) to characterize the extent of riverbank soils having PCB concentrations greater than or equal to 5 mg/kg in the top one foot of soil and to support assessment of on-site versus off-site disposal requirements for riverbank soils to be removed. Riverbank PCB concentrations in Reach 5A average approximately 8 mg/kg and range from non-detect to 236 mg/kg.

The results of the bank erodibility assessment based on the BEHI and NBS ratings designated during the PDI field investigations were presented in Section 3.7. As discussed there, although the Revised Final Permit provides that a bank is considered to be erodible if the BEHI and NBS rating is classified as "Moderate-High" or greater, there is no such rating for BEHI or NBS. As a result, as discussed in Section 3.7, given that the BEHI Total score for the Moderate category ranges from 20 to 30 and based on previous EPA analyses (EPA 2009), GE is considering a BEHI score of 27 to be the lower bound for the Moderate-High range; and it is conservatively considering all banks with an NBS score of Moderate or greater to meet the definition of erodible. As described in Section 3.7, a total of 9,471 feet of riverbank in Reach 5A are classified as erodible.

Riverbank PCB concentrations and erodibility information (BEHI/NBS scores) for each bank segment are shown on Figures 4-6a through 4-6i. Using the above definition of erodible, a summary of lengths of erodible banks binned by PCB concentration is provided in Table 4-5.

Table 4-5
Lengths of Erodible Banks Binned by PCB Concentration

Total PCB (mg/kg)	Category	
	Length of Erodible Bank (linear feet)	% of Erodible Bank
<1	1,819	19.2%
1–5	2,244	23.7%
Total (<5)	**4,063**	**43%**
5–10	2,697	28.5%
10–25	2,117	22.4%
25–50	447	4.7%
50–100	98	1.0%
>100	50	0.5%
Total (≥5)	**5,409**	**57%**

4.3.2 Proposed Remediation Plan

Based on the evaluation described in the previous section, there are approximately 5,400 linear feet of riverbank that are considered erodible with PCB concentrations exceeding 5 mg/kg and, therefore, require remediation (i.e., approximately 11% of the total 50,000 linear feet of riverbanks in Reach 5A). The bank segments requiring remediation are shown in red on Figures 4-6a through 4-6i.

In addition to the bank areas where remediation is required (described above), the Revised Final Permit requires that GE evaluate the PCB data, erosion potential, adjacent floodplain removal (if any), and constructability issues at other banks and, based on these factors, consider supplemental riverbank removal. GE has conducted that review and selected additional bank segments for supplemental remediation based on constructability considerations (e.g., small sections of bank that do not require remediation but are situated between banks where remediation is required) and banks where the erosion potential is relatively high based on either the BEHI or NBS rating and the adjacent floodplain PCB concentrations are elevated. Based on that evaluation, GE has selected an additional approximately 6,900 linear feet of banks for supplemental remediation (i.e., approximately 14% of the total 50,000 linear feet of riverbanks in Reach 5A). These supplemental remediation areas are shown in yellow on Figures 4-6a through 4-6i.

The total length of bank proposed for remediation is approximately 12,300 feet (approximately 25% of the riverbanks in Reach 5A). The removal volume associated with remediation of these banks is estimated to be between 14,000 and 21,000 cy. This is a preliminary assessment based upon the existing riverbank topography data and assumed location-specific sloping considerations for higher and steeper riverbanks. This preliminary volume estimate range was developed to provide an order-of-magnitude estimate for the riverbank soil removal. It was developed using a two-dimensional evaluation that assumed post-excavation slopes varying between 3 horizontal to 1 vertical (3H:1V) and 1H:1V depending on the existing cross-sectional bank height and slope of individual riverbank segments. As described in Section 5.5, the final post-remediation riverbank slopes will be dependent on numerous factors. During final design, three-dimensional grading and geotechnical analysis may be needed to evaluate the bank sections in consideration of localized riverbank conditions and principles of Natural Channel Design.

4.3.3 Disposal Evaluation

The Revised Final Permit requires that soils with high PCB concentrations be segregated and disposed of off site so that the remaining soil to be disposed of in the UDF has a volume-weighted average PCB of less than 50 mg/kg. For the purpose of this conceptual design, due to uncertainties in the volume estimate per riverbank sample location, a length-weighted average PCB concentration was calculated for the soils to be removed from riverbanks.[37] The length-weighted average PCB concentration of the

[37] The length-weighting is based on the length between riverbank PCB transects.

soils associated with the 12,300 linear feet of riverbanks subject to remediation (based on 0- to 1-foot riverbank soil PCB data) is approximately 11 mg/kg. This satisfies the 50 mg/kg average criterion for disposal in the UDF. Details associated with calculation of the volume-weighted average PCB concentrations are provided in Appendix D (Table D-1).

As details related to riverbank excavation design are developed during final design (as described in Section 5.5), further evaluation of the volume-weighted average PCB concentration will be performed to verify compliance with the disposal requirements for the riverbank soils.

4.4 Floodplain Soil Evaluations

4.4.1 Residential Properties

As described in Section 2.4.2, there are a total of 27 residential floodplain properties that were evaluated as part of the PDI for Reach 5A floodplain residential properties. These include 22 current residential properties identified in the Revised Final Permit and five additional residential parcels that were not included in the list of parcels in the Revised Final Permit and were not addressed previously as part of the A/P Lawn Properties, but for which EPA directed GE (or GE agreed) to conduct additional limited sampling to confirm that PCB concentrations in soil are less than the Residential Performance Standards.

As provided in Table 3 of the Revised Final Permit, the applicable Residential Performance Standards are an average PCB concentration of 2 mg/kg in the top foot of soil and in the 1- to X-foot depth increment (where X equals the depth to which PCBs are detected at concentrations of 2 mg/kg or greater, up to a maximum depth of 15 feet), with no discrete PCB concentration in the top foot of soil exceeding 10 mg/kg (the NTE level) for parcels exceeding 0.25 acre in size.

4.4.1.1 Overview of Prior and Updated Evaluations

A preliminary evaluation of these 27 residential parcels was conducted previously and summarized in GE's PDI Summary Report for Floodplain Residential Properties (Anchor QEA 2021b), approved by EPA on February 14, 2022. That report concluded that the Residential Performance Standards were met at 15 of the 27 properties, with no remediation required in those properties. Those preliminary evaluations also indicated that the Residential Performance Standards are likely not met under existing conditions at the remaining 12 properties and that soil removal activities to address PCBs will thus be needed at each of these properties.

Updated evaluations of current conditions and the extent of remediation required to achieve the Residential Performance Standards on these 12 properties were completed for this Conceptual RD/RA Work Plan. Details of that assessment are provided in Appendix E, and the results are summarized in the subsections that follow. This Conceptual RD/RA Work Plan also includes an updated evaluation for

one additional residential property that was evaluated previously under the A/P Lawn program (Parcel J6-3-1), where remediation was proposed but deferred by the property owner (see Anchor QEA 2019; EPA 2019a). This results in a total of 13 residential properties requiring remediation.

4.4.1.2 Data Evaluation (Existing Conditions)

Appendix E provides updated PCB evaluations (Thiessen polygon maps and tables) for the 13 residential properties that require remediation to meet the Residential Performance Standards. Thiessen polygons were generated based on usable PCB data within each property, including data collected by GE and EPA prior to 2020, as well as data collected during 2020 and 2021 as part of the residential floodplain PDI. Table 4-6 summarizes the maximum PCB concentration and the spatially weighted average PCB concentration in the top one foot of soil on each property. In addition, this table includes the spatially weighted average PCB concentration calculated for subsurface soils on each property (where applicable), using the "X" depth value specified in the PDI Summary Report for Floodplain Residential Properties to represent the subsurface depth to be used during future remedial design evaluations. As shown in Table 4-6, seven of the 13 properties requiring removal to satisfy the Residential Performance Standards have a subsurface "X" depth. At the remaining six properties, all samples below a depth of one foot had non-detected PCBs or PCB concentrations less than 2 mg/kg, and thus the evaluation was limited to the top foot.

Table 4-6
Existing PCB Concentrations in Residential Properties

Parcel ID	"X" Depth (feet)	Maximum PCB (0–1 feet; mg/kg)	Existing 0–1 feet PCB SWAC (mg/kg)	Existing 1–X feet PCB SWAC (mg/kg)
I6-3-13	6	140	12	16
J3-1-11	None[1]	31	0.99	—
J3-1-12	None[1]	26	1.1	—
J3-1-13	None[1]	17	0.4	—
J3-2-2	2	94	5.7	2.5
J3-2-3	3	94	2.9	0.56
J3-2-4	3	23	1.3	1.4
J3-2-5	None[1]	37	1.1	—
J3-2-6	None[1]	11	0.20	—
J6-2-3	2	40	0.72	1.3
J6-3-1	10	70	1.8	2.5
K2-1-10	4	100	2.1	1.2
K3-1-2	2	63	2.1	0.94

Note:

1. All samples below a depth of one foot had non-detected PCBs or PCB less than 2 mg/kg, and thus the evaluation was limited to the top foot.

4.4.1.3 Proposed Remediation Plan

Appendix E provides details associated with the evaluation of removal areas and volumes required to achieve the Residential Performance Standards. Soil removal polygons are shown in Appendix E. Figure 4-7 shows the remedial extents for residential floodplain properties in Reach 5A. Table 4-7 summarizes the estimated soil removal volume for each residential floodplain property (surface and subsurface). As shown, remediation of the Reach 5A Floodplain Residential Properties (including the deferred Parcel J6-3-1) will involve excavation of a total of approximately 4,500 cy of soil. Table 4-8 summarizes the post-remediation PCB concentrations for each such property, including the maximum surface PCB concentration, the spatially weighted average surface PCB concentration, and the spatially weighted average PCB concentration calculated for subsurface soils (where applicable) using the "X" depth value. As shown in that table, the remediation will achieve the Residential Performance Standards in the Revised Final Permit at each property.

Table 4-7
Residential Property Remediation Areas and Volumes

Parcel ID	Removal Depth Interval (feet)	Removal Surface Area (acre)	Removal Volume (cy)
I6-3-13	0–1	0.52	840
	1–6		2,240
J3-1-11	0–1	0.0078	13
J3-1-12	0–1	0.0073	5.9[1]
J3-1-13	0–1	0.010	16
J3-2-2	0–1	0.12	190
	1–2		49
J3-2-3	0–1	0.15	240
J3-2-4	0–1	0.041	67
J3-2-5	0–1	0.020	32
J3-2-6	0–1	0.000069	0.12
J6-2-3	0–1	0.033	54
J6-3-1	0–1	0.14	230
	1–6		320
K2-1-10	0–1	0.087	140
K3-1-2	0–1	0.039	63
Total		**1.2**	**4,500**

Note:

1. The removal associated with this residential parcel was originally 51 cy. This removal was reduced by approximately 45 cy because it overlaps with remediation that will be performed separately in backwater BW5A-3 as described in Section 4.2.2.2.

Table 4-8
Post-Remediation PCB Concentrations in Residential Properties

Parcel ID	"X" Depth (feet)	Maximum PCB (0–1 feet; mg/kg)	0–1 feet PCB SWAC (mg/kg)	1–X feet PCB SWAC (mg/kg)
I6-3-13	6	9.8	1.2	2
J3-1-11	None[1]	4.6	0.77	--
J3-1-12	None[1]	0.50	0.24	--
J3-1-13	None[1]	8.3	0.17	--
J3-2-2	2	8.5	0.32	0.52
J3-2-3	3	9.3	0.44	--
J3-2-4	3	0.19	0.12	--
J3-2-5	None[1]	2.8	0.13	--
J3-2-6	None[1]	7.1	0.19	--
J6-2-3	2	6.3	0.21	--
J6-3-1	10	9.9	0.82	2
K2-1-10	4	5.7	0.22	--
K3-1-2	2	8.3	0.73	--

Note:

1. All samples below a depth of one foot had non-detected PCBs or PCB concentrations less than 2 mg/kg, and thus the evaluation was limited to the top foot.

4.4.2 Non-Residential Exposure Areas

As discussed in Section 1.3, EPA's HHRA divided the ROR floodplain into 90 non-residential EAs for the assessment of human direct contact with floodplain soils. Of those 90 EAs, 38 are located within Reach 5A. The properties that comprise six of those EAs (EAs 3, 9, 23, 25, 28, and 30) within the Reach 5A floodplain are residential properties that are subject to the Residential Performance Standards; therefore, those properties were addressed as part of the residential property assessment described in Section 4.4.1. That leaves 32 remaining non-residential EAs, although some of them include portions of residential properties that are subject to non-residential Performance Standards. Several of those non-residential EAs contain overlying direct contact subareas, which are typically characterized by a different and/or more frequent exposure scenario. This section provides an evaluation of these 32 non-residential EAs. Specifically, this section summarizes existing PCB conditions for each EA and a summary of proposed removal areas and volumes for each EA having soil PCB concentrations that exceed the applicable Performance Standards described in Section 2.4.1. Details associated with this assessment are provided in Appendix F.

4.4.2.1 PCB Evaluation (Existing Conditions)

GE provided an updated evaluation of current exposure point concentrations (EPCs) at each of the 32 non-residential EAs in its PDI Summary Report for Non-Residential Floodplain EAs (Anchor QEA and

Arcadis 2023b), which is being submitted concurrently with this Conceptual RD/RA Work Plan. Details associated with these updated calculations are also provided for completeness in Appendix F. These updated EPCs formed the primary basis (along with other relevant factors) for determining the need for soil remediation at these EAs to achieve the Performance Standards described in Section 2.4.1.

Table 4-9 summarizes the updated floodplain soil EPCs (0- to 1-foot) calculated for each of the 32 non-residential EAs (and subareas) in Reach 5A, and Table 4-10 provides 0- to 3-foot EPCs for each of the three Frequently Used Subareas in Reach 5A. These tables also show the following: (1) the exposure scenario and receptors assigned to each EA/subarea in EPA's HHRA; (2) whether each EA intersects with Core Area 1 habitat; and (3) the corresponding Primary and, where relevant, Secondary Performance Standards that apply to each exposure scenario under Tables 1 and 2 of the Revised Final Permit.[38] EPCs that exceed the applicable Primary Performance Standard are highlighted in gray in Tables 4-9 and 4-10.

Table 4-9
Calculated 0- to 1-Foot EPCs for Reach 5A Non-Residential Exposure Areas and Subareas

EA ID	EA Size (acres)[1]	Includes Core Area 1 Habitat?	Exposure Scenario/Receptor	Performance Standards		0-to 1-foot EPC (mg/kg)[2]
				Primary (RME 10^{-5}/ HI = 1)	Secondary (RME 10^{-4}/ HI = 1)	
1	14		Medium-use general recreation, adult/older child	21	N/R	16
2	31		High-use general recreation, adult/older child	14	N/R	18
2a	2.2		Low-use general recreation, older child	80	N/R	74
2b	2.0		High-use general recreation, older child	27	N/R	9.4
3	0.35		High-use general recreation, adult	N/A		
4	3.3		High-use general recreation, adult/older child	14	N/R	20
5	2.4		High-use general recreation, adult/older child	14	N/R	59
6	3.3		Low-use general recreation, adult	43	N/R	25
7	6.1		High-use general recreation, adult/older child	14	N/R	20
8	0.54		Recreational canoeist	12	N/R	31
9	0.03		Low-use general recreation, older child	N/A		
10	60	Yes	High-use general recreation, young child (high use)	4.6	6.9	13
10a	0.5	Yes	High-use general recreation, young child (high use)	4.6	4.6	27
10b	9.1		High-use general recreation, young child (high use)	4.6	N/R	6.8
11	1.9		High-use general recreation, adult	14	N/R	15
12	3.8	Yes	High-use general recreation, adult/older child	14	27	3.6
13	6.1		High-use general recreation, adult	14	N/R	8.1
14	3.8		High-use general recreation, adult	14	N/R	0.85
15	0.88		High-use general recreation, adult	14	N/R	1.7

[38] In accordance with the Revised Final Permit, the Secondary Performance Standards are relevant only in EAs that contain Core Area 1 habitat.

EA ID	EA Size (acres)[1]	Includes Core Area 1 Habitat?	Exposure Scenario/Receptor	Performance Standards		0-to 1-foot EPC (mg/kg)[2]
				Primary (RME 10^{-5}/ HI = 1)	Secondary (RME 10^{-4}/ HI = 1)	
16	2.7		High-use general recreation, adult	14	N/R	34
17	8.1	Yes	High-use general recreation, adult	14	38	13
18	17	Yes	Medium-use general recreation, adult	21	58	32
19	35	Yes	High-use general recreation, adult	14	38	22
20	8.9	Yes	High-use general recreation, adult	14	38	27
21	2.9		High-use general recreation, adult/older child	14	N/R	3.3
22	19		High-use general recreation, adult/older child	14	N/R	16
22a	1.8		Dirt biking/ATVing	14	N/R	29
23	0.14		Medium-use general recreation, older child	N/A		
24	10		High-use general recreation, adult	14	N/R	18
25	0.41		High-use general recreation, older child	N/A		
26a	47	Yes	High-use general recreation, adult/older child	14	27	3.1
26b	7.6		Agricultural use (based on direct contact by farmer)	12	N/R	0.79
26_F	55	Yes	High-use general recreation, adult/older child	14	27	2.7
27	6.5		High-use general recreation, adult/older child	14	N/R	4.0
27a	0.42		Dirt biking/ATVing	14	N/R	9.2
28	0.16		High-use general recreation, adult/older child	N/A		
28a	0.05		Dirt biking/ATVing	N/A		
29	0.35		Low-use general recreation, adult/older child	43	N/R	16
30	0.19		High-use general recreation, adult/older child	N/A		
31	5.0		High-use general recreation, adult/older child	14	N/R	11
31a	0.63		High-use general recreation, adult/older child	14	N/R	53
32	7.0		High-use general recreation, adult	14	N/R	11
33	30		High-use general recreation, adult	14	N/R	15
34	7.3		Medium-use general recreation, adult	21	N/R	22
61	3.3		Utility worker	169	N/R	35
62	1.5	Yes	Utility worker	169	242	93
63	0.66	Yes	Utility worker	169	242	61
64	0.63		Utility worker	169	N/R	53

Notes:

1. Represents the area within the 1 mg/kg PCB isopleth.
2. EPCs that exceed the applicable Primary Performance Standard are highlighted in gray.

N/A: The non-residential Performance Standards and EPC calculations are not applicable to this EA because the EA contains residential properties subject to the Residential Performance Standards.
N/R: Not relevant; the Secondary Performance Standards are relevant only in EAs that contain Core Area 1 habitat.

Table 4-10
Calculated 0- to 3-Foot EPCs for Frequently Used Subareas

EA ID	Frequently Used Subarea Size (acres)[1]	Includes Core Area 1 Habitat?	Exposure Scenario/Receptor	Performance Standards		0-to 3-foot EPC (mg/kg)[2]
				Primary (RME 10^{-5}/ HI = 1)	Secondary (RME 10^{-4}/ HI = 1)	
4/61	0.21		General Recreation, Adult/older child (high use)	14	N/R	20
12	1.8	Yes	General Recreation, Adult/older child (high use)	14	27	1.5
26a	0.28		General Recreation, Adult/older child (high use)	14	N/R	0.09

Notes:

1. Represents the area of the Frequently Used Subarea within the EA boundary.
2. EPCs that exceed the applicable Primary Performance Standard are highlighted in gray.

N/R: Not relevant; the Secondary Performance Standards are relevant only in EAs that contain Core Area 1 habitat.

As shown in Table 4-9, current 0- to 1-foot EPCs in the Reach 5A EAs and subareas range from less than 1 mg/kg to 93 mg/kg. A total of 19 areas (EAs and subareas combined) have 0- to 1-foot EPCs that exceed the applicable Primary Performance Standards. Five of these 19 areas (EAs 10, 10a, 18, 19, and 20) overlap with Core Area 1 habitat and, therefore, have been evaluated against the applicable Secondary Performance Standard (which, for EAs 10 and 10a, is the same as the Primary Performance Standard). Calculated 0- to 3-foot EPCs for each of the three Frequently Used Subareas in Reach 5A range from less than 1 mg/kg to 19 mg/kg, with only one area (EA 4/61) exceeding its Primary Performance Standard.

4.4.2.2 Proposed Remediation Plan

The EPCs provided in Section 4.4.2.1 formed the primary basis (along with other relevant factors) for determining which EAs/subareas required soil remediation to achieve the relevant Performance Standards. As noted, there are 19 EAs/subareas that require remediation in the 0- to 1-foot depth interval to achieve the relevant Performance Standards; these are EAs 2, 4, 5, 7, 8, 10 (including subareas 10a and 10b), 11, 16, 18, 19, 20, 22 (including subarea 22a), 24, subarea 31a, 33, and 34. One Frequently Used Subarea (EA 4/61) requires remediation in the 0- to 3-foot interval to achieve its Performance Standard. A description of the methods for determining the removal areas and volumes was provided previously in Appendix A to GE's Second Revised PDI Work Plan for Non-Residential Floodplain EAs. Details associated with these methods are also provided for completeness in Appendix F. That appendix also provides a detailed discussion of the results for each EA/subarea, including any adjustments made to removal footprints based on habitat and constructability considerations or potential overlap with other remediation areas.

A summary of proposed removal areas and volumes for the 20 non-residential floodplain EAs/subareas requiring remediation is provided in Table 4-11. Maps showing 0- to 1-foot soil PCB concentrations and proposed remediation areas for each EA/subarea are shown on Figures 4-8a to 4-8q. For those areas where an adjustment was made to the base remedial footprint using the

methodology described in Appendix F (i.e., based on habitat and constructability considerations or potential overlap with other remediation areas), Figures 4-8a through 4-8q show both the base and adjusted remedial footprints. Remediation of the non-residential floodplain EAs results in a total estimated removal volume of approximately 8,230 cy of soil.

Table 4-11
Removal Area and Volume Estimates and Post-Remediation EPCs for Non-Residential Floodplain EAs and Subareas Requiring Remediation

EA ID	Depth Interval (feet)	Includes Core Area 1 Habitat?	Performance Standards		Pre-Remediation EPC (mg/kg)	Post-Remediation EPC (mg/kg)[1]	Removal Area (acre)	Removal Volume (cy)	Adjustment to Base Footprint[2]
			Primary (RME 10^{-5}/ HI = 1)	Secondary (RME 10^{-4}/ HI = 1)					
2	0-1		14	N/R	18	13.9	0.79	1,270	Yes
4	0-1		14	N/R	20	13.9	0.20	320	Yes
4/61	0-3		14	N/R	20	13.6	0.08	400	
5	0-1		14	N/R	59	13.3	0.10	160	
7	0-1		14	N/R	20	13.9	0.07	120	Yes
8	0-1		12	N/R	31	11.9	0.12	190	
10	0-1	Yes	4.6	6.9	13	6.6	0.36	580	
10a	0-1	Yes	4.6	4.6	27	3.2	0.17	270	
10b	0-1		4.6	N/R	6.9	4.59	0.46	740	Yes
11	0-1		14	N/R	15	13.9	0.04	60	
16	0-1		14	N/R	34	11.5	0.41	660	
18	0-1	Yes	21	58	32	19.9	0.04	60	
19	0-1	Yes	14	38	22	22.4	0.01	20	
20	0-1	Yes	14	38	27	22.1	0.84	1,360	
22	0-1		14	N/R	16	13.9	0.39	630	
22a	0-1		14	N/R	29	13.8	0.07	110	
24	0-1		14	N/R	18	13.9	0.47	750	Yes
31a	0-1		14	N/R	53	13.2	0.09	150	
33	0-1		14	N/R	15	13.9	0.17	280	
34	0-1		21	N/R	22	20.9	0.06	100	
						Total	**4.94**	**8,230**	

Notes:

1. The post-remediation EPCs are truncated and generally shown to one decimal place to demonstrate achievement of the applicable Performance Standards.
2. Indicates EAs/subareas where an adjustment was made to the base remedial footprint based on habitat and constructability considerations or potential overlap with other remediation areas.

N/R: Not relevant; the Secondary Performance Standards are not relevant in EAs that do not include Core Area 1 habitat.

4.4.3 Disposal Evaluation

As described in Section 2.6, if the volume-weighted average PCB concentration in the soil to be removed from a non-residential EA equals or exceeds 50 mg/kg, the soil with the highest PCB concentrations within the EA will be separated out for off-site disposal until the average concentration of the remaining soil to be removed in the EA decreases to less than 50 mg/kg for subsequent disposal at the UDF. Because the residential properties generally overlap with non-residential EAs, the entire volume within the boundary of an individual EA (non-residential and residential) was combined for this assessment.[39] The estimated volumes for disposal in the UDF and off-site disposal are summarized in Table 4-12.

Table 4-12
Floodplain Soil – Estimated Disposal Volumes Summary

EA	Residential Parcel(s) ID	UDF Disposal		Off-Site Disposal		Total Volume
		Volume Weighted Average PCB Concentration (mg/kg)	Volume (cy)	Volume Weighted Average PCB Concentration (mg/kg)	Volume (cy)	
2	—	—	—	103	1,270	1,270
4	—	40	720	—	—	720
5	—	—	—	127	160	160
7	I6-3-13	49	2,710	216	490	3,200
8	—	27	190	—	—	190
9	J6-2-3	16	54	—	—	54
10	—	32	1,230	139	360	1,590
11	—	40	60	—	—	60
16	—	40	660	—	—	660
18	—	—	—	247	60	60
19	—	—	—	473	18	18
20	—	—	—	65	1,360	1,360
22	—	—	—	73	740	740
23	J3-1-11, J3-1-12, J3-1-13	18	35	—	—	35
24	—	49	400	60	350	750
25	J3-2-2, J3-2-3, J3-2-4, J3-2-5, J3-2-6	23	580	—	—	580
28	K3-1-2	24	63	—	—	63
30	K2-1-10	35	140	—	—	140
31a	—	44	150	—	—	150
33	—	—	—	144	280	280
34	—	—	—	87	100	100
—	J6-3-1	45	420	150	130	550
		Volume Totals	**7,410**		**5,320**	**12,730**

[39] Residential Parcel J6-3-1 (an A/P Lawn property where remediation was deferred) is the one property that does not overlap with an EA and, therefore, it was evaluated individually.

4.5 Vernal Pools

4.5.1 Data Evaluation (Existing Conditions)

Spatially weighted average PCB concentrations were calculated for the 0- to 1-foot depth interval in each of the 59 vernal pools within Reach 5A following the methodology described in Appendix A to GE's approved Second Revised PDI Work Plan for Non-Residential Floodplain EAs. These values (summarized in Table 4-13) were previously provided in GE's *Vernal Pool Pilot Study Work Plan* (Anchor QEA and AECOM 2023b), submitted on June 8, 2023, and conditionally approved by EPA on September 12, 2023, and are also provided in GE's PDI Summary Report for Non-Residential Floodplain EAs, being submitted concurrently with this Conceptual RD/RA Work Plan. These values are also provided in Table 4-13 below for completeness. Vernal pools that have a spatially weighted average PCB concentration that exceeds the vernal pool Performance Standard of 3.3 mg/kg are highlighted in gray in Table 4-13.

Table 4-13
Summary of 0- to 1-Foot Spatially Weighted Average PCB Concentrations in Vernal Pools

Exposure Area	Vernal Pool ID	Area (acres)	PCB SWAC (0–1 foot; mg/kg)[1]
1	5A-VP-1	0.82	6.4
	5A-VP-1A	0.15	0.59
	5A-VP-1B	0.13	2.9
	5A-VP-2	0.23	3.5
2	5A-VP-3	0.39	18
	5A-VP-4	0.23	14
	5A-VP-5	0.33	2.6
	5A-VP-6	0.05	4.6
	5A-VP-7	0.41	33
	5A-VP-8	0.07	12
	5A-VP-9	0.60	44
	5A-VP-10	0.17	6.2
6	5A-VP-12	0.27	25
7	5A-VP-13	0.40	24
	5A-VP-14	0.03	8.6
	5A-VP-15	0.37	28
	5A-VP-15A	0.04	20
	5A-VP-16	0.04	7.1
	5A-VP-18	0.15	0.52
	5A-VP-18A	0.04	29

Exposure Area	Vernal Pool ID	Area (acres)	PCB SWAC (0–1 foot; mg/kg)[1]
10	5A-VP-19	0.14	5.3
	5A-VP-24	0.10	0.13
13	5A-VP-22	0.82	6.1
14	5A-VP-21	1.65	3.1
15	5A-VP-20	0.33	4.5
16	5A-VP-26	0.08	3.4
	5A-VP-27	0.08	7.6
17	5A-VP-28A	0.03	31
19	5A-VP-32	0.08	34
	5A-VP-33	0.53	45
	5A-VP-35	0.30	67
	5A-VP-36	0.30	12
	5A-VP-40	0.12	74
	5A-VP-42	0.13	32
22	5A-VP-49A	0.03	10
	5A-VP-50	0.06	4.9
	5A-VP-59A	0.06	13
24	5A-VP-52	0.06	40
	5A-VP-54	0.09	42
	5A-VP-55	0.25	25
	5A-VP-57	0.49	30
	5A-VP-64	1.00	28
	5A-VP-65	0.11	27
26a	5A-VP-60	0.08	4.6
	5A-VP-61	0.26	2.2
	5A-VP-62	0.22	1.3
	5A-VP-63	0.09	2.6
	5A-VP-69	0.34	0.11
	5A-VP-70	0.78	0.12
	5A-VP-71	0.47	6.6
	5A-VP-72	1.26	5.9
	5A-VP-73	0.48	19
	5A-VP-73A	0.15	8.5
	5A-VP-74	0.26	9.7
32	5A-VP-77	3.93	6.0

Exposure Area	Vernal Pool ID	Area (acres)	PCB SWAC (0–1 foot; mg/kg)[1]
33	5A-VP-79	0.08	5.2
	5A-VP-80	0.83	36
	5A-VP-81	0.09	77
34	5A-VP-83	0.05	24

Note:

1. PCB SWACs that exceed the vernal pool Performance Standard are highlighted in gray.

As shown in this table, average PCB concentrations in these vernal pools range from less than 1 mg/kg to 77 mg/kg. A total of 48 (of the 59) vernal pools in Reach 5A have a spatially weighted average PCB concentration that exceeds the vernal pool Performance Standard of 3.3 mg/kg.[40]

4.5.2 Proposed Remediation Plan

Section 4.2.4 of the Final Revised SOW requires GE to conduct a pilot study to evaluate the use of both traditional excavation/restoration techniques and amendments, such as AC, for the remediation of vernal pools. GE's June 8, 2023, *Vernal Pool Pilot Study Work Plan* proposed 10 pools requiring remediation for inclusion in the pilot study—five pools for amendment-based treatment (5A-VP-9, 5A-VP-12, 5A-VP-15, 5A-VP-22, and 5A-VP-27), and five pools for removal-based treatment (5A-VP-4, 5A-VP-7, 5A-VP-16, 5A-VP-52, and 5A-VP-57), shown on Figure 4-9—as well as several vernal pools that do not require remediation to serve as field controls.[41] For the five pools selected for excavation, the specific remediation areas in each pool have been derived using a hill-topping approach, consistent with the method described in Appendix A to GE's Second Revised PDI Work Plan for Non-Residential Floodplain EAs. The removal areas delineated from the hill-topping analysis in two of the five pools (5A-VP-4 and 5A-VP-57) were further optimized to provide a more contiguous remedial footprint; specifically, areas with somewhat lower PCB concentrations were targeted for removal in the interest of generating a more contiguous removal footprint. The total estimated removal volume for these five vernal pools is 1,357 cy; a breakdown of the estimated removal volumes and areas for each of these five pools is provided in Table 4-14.

[40] The *Vernal Pool Pilot Study Work Plan* reported that there are 47 vernal pools in Reach 5A that require remediation. That count inadvertently omitted one pool that requires remediation. The correct count is 48.

[41] EPA's September 12, 2023, conditional approval letter for that work plan did not change the selection of the 10 pools requiring remediation for the pilot study.

Table 4-14
Removal Areas and Volume Estimates for Vernal Pools Selected for Removal-Based Pilot Study

Vernal Pool ID	Pre-Remediation PCB SWACs (mg/kg)	Total Area (acres)	Removal Area (acres)	Removal Volume (cy)	Post-Remediation PCB SWACs (mg/kg)[1]
5A-VP-4	14	0.23	0.16	250	3.29
5A-VP-7	33	0.41	0.29	466	3.29
5A-VP-16	7.1	0.04	0.018	30	3.27
5A-VP-52	40	0.06	0.050	81	3.29
5A-VP-57	30	0.49	0.33	530	3.29
		Total	**0.85**	**1,357**	

Note:

1. These SWACs are shown to two decimal places to demonstrate achievement of the vernal pool Performance Standard of 3.3 mg/kg.

For the five pools selected for amendment-based treatment, details related to the specific amendment types, doses, and application methods will be evaluated as part of bench-scale testing to be performed as part of the pilot study. Results of this testing will be presented in a Final Revised Vernal Pool Pilot Study Work Plan, which will provide a final design of the pilot study implementation for both the amendment-based and removal-based alternatives.

A decision regarding the type of remediation to be performed in the remaining 38 vernal pools with spatially averaged PCB concentrations exceeding the Performance Standard of 3.3 mg/kg will be deferred until after completion of the pilot study.

4.5.3 Disposal Evaluation

As noted in GE's June 2023 *Vernal Pool Pilot Study Work Plan*, the schedule for implementation of the vernal pool pilot study (i.e., excavation activities and placement of amendments) will be dependent on the schedule for completing baseline (pre-study) sampling and monitoring and bench-scale testing and on the timing of EPA approval of the subsequent Final Revised Vernal Pool Pilot Work Plan. The disposal location for vernal pool soils excavated as part of the pilot study (i.e., UDF or off-site) will depend on the schedule for implementation of the pilot study relative to other construction activities in Reach 5A and on the timing of completion of construction of the UDF. Given these considerations, it is possible that all vernal pool pilot study soils excavated as part of the pilot study (i.e., an estimated 1,357 cy) could be disposed of off-site. However, the actual disposition of these soils will be determined later and presented in the Final Revised Vernal Pool Pilot Work Plan and the Final RD/RA Work Plan for 5A.

4.6 Summary

Based on the evaluations described in Sections 4.2 through 4.5, preliminary sediment, riverbank, and floodplain (residential, non-residential, and vernal pool) remediation areas have been developed for this conceptual design. Figures 4-10a through 4-10e show the preliminary remediation areas for all of these media. These figures also show vernal pools in Reach 5A that exceed the vernal pool Performance Standard of 3.3 mg/kg but were not included in the pilot study (i.e., those pools where remediation is required, but a decision regarding the type of remediation will be deferred until after completion of the pilot study). As described in Section 10.2, supplemental data collection activities will be performed to further delineate certain remediation areas and to refine the extent of removal in some areas that would be subject to off-site disposal. The final horizontal and vertical extents of remediation will be determined during the final design process and will be presented in the Final RD/RA Work Plan for Reach 5A.

Table 4-15 provides an overall summary of the conceptual removal area and volume estimates for each media along with preliminary estimated volumes for off-site disposal and disposal in the UDF.

Table 4-15
Summary of Conceptual Design Removal Areas and Estimated Removal Volumes for Reach 5A[1]

Media	Remediation Area[2]	Preliminary Estimated UDF Volume (cy)	Preliminary Estimated Off-Site Volume (cy)	Total Estimated Volume (cy)
Main Channel Sediment[3]	41.4 acres	94,750	1,650	96,400
Backwater Sediment	1.9 acres	2,880	170	3,050
Other Waterbodies Sediment	1.9 acres	4,150	0	4,150
Riverbank Soil	12,300 linear feet	21,000	0	21,000
Floodplain Soil[4]	6.1 acres	7,410	5,320	12,730
Vernal Pools (pilot study only)[5]	2.99 acres	0[6]	1,360[6]	1,360
	Total	130,190[6]	8,500[6]	138,690

Notes:

1. All quantities are preliminary estimates, are rounded, and may be subject to change during final design. Volumes represent in-place quantities.
2. Remediation areas are presented in acres for all media, except for riverbanks, which are presented in linear feet.
3. The main channel sediment removal volumes presented in this table assume an increase of 10% over the estimated "neat" volume to account for the various uncertainties described in Section 4.2.1.2.
4. The floodplain soil removal volumes presented in this table include residential and non-residential removal volumes combined.
5. The remediation area for vernal pools includes the entire surface area of the five pilot pools subject to amendment-based treatment and the removal footprint in the five pools subject to excavation. Volumes represent volume of removal only in the five pilot study pools subject to excavation as part of the pilot study.
6. For the conceptual design, it has been assumed that all soil excavated as part of the vernal pool pilot study could be disposed of at an off-site disposal facility. However, as described in Section 4.5.3, the actual disposition of vernal pool pilot study soils in the UDF or off-site is dependent on a number of factors and will be determined later.

5 Remedial Design Process and Considerations

5.1 Overview

This section summarizes completed evaluations that support key aspects of the conceptual design for the Reach 5A remediation. These include the development of a hydraulic model used to support various components of the design and evaluations performed to develop conceptual design details for the engineered cap to be placed in the river channel and backwaters. In addition, this section summarizes the conceptual design approach for various aspects of the Reach 5A remedy, including sediment, riverbank, and floodplain soil removal and transport methods; material handling and staging; waste transport and disposal; and restoration of impacted habitats.

5.2 Hydraulic Modeling

A one-dimensional hydraulic model was developed to evaluate flow conditions in Reaches 5 and 6 using the USACE HEC-RAS version 6.3.1 modeling software (USACE 2022). The model domain included all of Reaches 5 and 6,[42] and inputs to that model were based on a hydrologic analysis conducted using data from multiple sources, including USGS flow data collected at the Coltsville gage through 2023. The model terrain was specified using detailed topographic LiDAR surveys of the riverbanks and floodplain, bathymetric surveys of the river channel, and survey data for bridge crossings obtained during the Reach 5A PDI (described in the PDI Summary Report for Sediment and Riverbanks); topographic information was supplemented using additional LiDAR data collected within the study area in 2015 (Quantum Spatial 2016). Calibration of the model was achieved through comparison of model predictions to field measurements of water surface elevations and current velocities at known flow rates.

Once calibrated, the model was used to simulate flows associated with various recurrence intervals, including 1-, 2-, 5-, 10-, 25-, 50-, 100-, 200-, and 500-year return periods (as determined by the updated hydrologic analysis). Output from these model simulations, including water surface elevations, water depths, average current velocities, and inundation extents, were used to support several aspects of the conceptual design, including sizing of armor material for the erosion protection layer of the engineered cap (described in Section 5.3.1), definition of the sediment-riverbank interface (described in Section 3.6), and evaluation of anticipated seasonal river conditions during remedy implementation (including the Reach 5A hydraulic characteristics summarized in Section 3.5).

It is anticipated that the hydraulic model will be used to support additional evaluations during final design. Specifically, the model will be used to determine the channel and bank reconstruction design

[42] While the current remedial design work is being performed for Reach 5A, the first hydraulic control point downstream of Reach 5A is Woods Pond Dam; therefore, the hydrologic analysis and hydraulic modeling included all of Reaches 5 and 6.

requirements following sediment and riverbank soil removal and capping. Under those post-remediation conditions, the cross-sectional geometry of the river channel and banks will be different from current conditions, and there will likely be changes to the channel bottom roughness. These changes between pre- and post-remediation conditions could affect hydraulic characteristics in the river. Therefore, additional hydraulic modeling will be performed during final design to incorporate post-construction design conditions, verify the predicted model output used for the cap erosion protection design, and verify that post-construction conditions do not result in a loss of flood storage capacity and no increase in water surface elevations where the engineered caps are installed.

A one-dimensional model provides valuable information related to water surface elevations and stream velocities that have been used to support this conceptual design. However, because of the complex geometry of the stream channel and floodplain throughout Reaches 5 and 6, the one-dimensional model will be expanded to a two-dimensional model to support the final design for Reach 5A. A two-dimensional model will more effectively evaluate flow patterns and current velocities at locations with complex stream and floodplain geometry.

Details regarding the hydrologic analysis and hydraulic model development and calibration are provided in Appendix G (Hydrologic/Hydraulic Analysis and Modeling of Reaches 5 and 6).

5.3 Engineered Cap

The Performance Standards for riverbed and backwater sediments summarized in Sections 2.2.1 and 2.2.2 require that an engineered cap be placed over the entire riverbed in Reach 5A and in portions of backwater areas requiring removal to achieve PCB concentration requirements in those areas. Section 4.2.2 presents an evaluation of the PCB data in each of the six backwaters in Reach 5A (i.e., BW5A-1 through BW5A-6) and identifies the required extent of removal and capping in these areas. In addition, as described in Section 4.2.3, engineered caps will be placed in two Other Waterbodies in Reach 5A, including the intermittently flowing side channel near the Confluence and a portion of Sykes Brook.[43]

As stated in the Revised Final Permit, the engineered caps are required to be designed "to physically isolate contaminated sediments from potential ecological and human receptors, and minimize the transport of PCBs from the sediment beneath the caps to the bioavailable surface layer and the water column." The conceptual designs for the engineered caps in the main river channel, backwaters, and Other Waterbodies were designed in accordance with guidance set forth in EPA's *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites* (EPA 2005b), Subaqueous Capping Guidance (Palermo et al. 1998), and the Interstate Technology and Regulatory Council (ITRC) *Contaminated Sediments Remediation: Remedy Selection for Contaminated Sediments* (ITRC 2014).

[43] As discussed in Sections 2.2.3 and 4.2.3, given that the Revised Final Permit did not specifically address these areas, GE has elected to evaluate the five Other Waterbodies in Reach 5A against the Performance Standards for backwaters.

As described in Section 2.2.4, the Performance Standards for engineered caps require that all engineered caps constructed for the ROR include the following layers or functions: a mixing layer, a chemical isolation layer, an erosion protection layer, a geotechnical filter layer, a bioturbation layer, and a habitat layer (left side of Figure 5-1). The Revised Final Permit indicates that a single layer may serve multiple functions, which is consistent with EPA's Subaqueous Capping Guidance (Palermo et al. 1998). For example, depending on the size of material used to construct an erosion protection layer, the erosion protection layer may also serve as a habitat layer and bioturbation layer. Thus, a single erosion protection layer can serve three functions. That is the approach that has been taken for the Reach 5A caps.

With respect to a bioturbation layer, EPA Subaqueous Capping Guidance (Palermo et al. 1998) discusses bioturbation layers as a separate layer to be included in caps in cases in which the erosion protection layer may consist of a relatively thin layer of finer-grained materials (like sands) to make sure organisms could not burrow down through the chemical isolation layer and come into contact with the underlying sediment. However, for the Reach 5A engineered caps described herein, the combined thickness of the erosion protection and chemical isolation layers is sufficiently thick that it exceeds the depth of bioturbation for the types of organisms present in Reach 5A. Additionally, the chemical transport model used to design the chemical isolation explicitly represents the contaminant mixing effects of bioturbation at the cap's surface. More details on these points are provided in the subsections that follow and in Appendix A (Engineered Cap Modeling and Design Evaluations).

With respect to a habitat layer, it is expected that varying thicknesses of native sandy sediment will deposit above the erosion protection layer (i.e., filling voids and covering that layer) such that the resulting substrate will be similar to the current substrate and will provide equivalent habitat functions and values (as has been observed upstream in the East Branch in areas remediated by GE and EPA). This is discussed further at the end of Section 5.3.1 and in Appendix A.

With respect to a mixing layer, at this conceptual stage of design, it has been determined that a separate mixing layer is not necessary for the following reasons. The coarse nature of the native sediment bed (i.e., coarse sands and gravels) does not present a mixing challenge for placement of granular cap materials, given experience from other capping sites indicating that mixing of cap materials and sediments is mainly a concern for fine unconsolidated sediments. The mixing potential is reduced further because the existing sediment surface will be excavated to facilitate placement of the cap. As described in Section 5.4, the conceptual design approach for sediment removal and capping contemplates placement of the cap in dry (i.e., dewatered) conditions that would allow for more precise placement techniques that will mitigate potential mixing.

The right side of Figure 5-1 represents the cap design for Reach 5A and shows a cap configuration that consists of two distinct layers—a chemical isolation layer and an erosion protection layer—with

a geotechnical filter layer between these two layers in areas requiring cobble or larger-sized material in the erosion protection layer.

Sections 5.3.1 and 5.3.2 summarize the preliminary design evaluations and modeling performed to evaluate chemical isolation and erosion protection for the Reach 5A cap, respectively. Also included is an evaluation of the need for filtering between those two layers. Details of the design evaluation and modeling are presented in Appendix A.

5.3.1 Erosion Protection Layer

As described in the Revised Final Permit, the engineered caps will include an erosion protection layer to prevent erosion in accordance with federal and state requirements and consistent with pertinent EPA or USACE guidance. EPA's Subaqueous Capping Guidance states the following (on page 31):

> The cap component for stabilization/erosion protection has a dual function. On the one hand, this component of the cap is intended to stabilize the contaminated sediments being capped, and prevent them from being resuspended and transported offsite. The other function of this component is to make the cap itself resistant to erosion. These functions may be accomplished by a single component, or may require two separate components in an in-situ cap. (Palermo et al. 1998)

The erosion protection layer (often referred to as an armor layer) will be placed above the chemical isolation layer and will be designed to protect it from erosional processes in the river.

Because Reach 5A is not used for navigation, the river currents and flood flows are the dominant factors contributing to potential erosion; effects from vessel wakes and propellor wash, which are often important considerations for cap design, are not relevant in Reach 5A. River currents, particularly during high-flow events, can result in elevated current velocities and bed shear stresses and have the potential to erode or resuspend sediment or cap material. As described in the Revised Final Permit, the design flow event for the erosion protection layer is a flow event up to and including the applicable return interval event, which shall be calculated using up-to-date flow data, with additional considerations for the potential impacts of climate change on cap performance and appropriate measures to mitigate them. EPA's *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites* (EPA 2005b) states the following (on pages 5 to 9):

> The design of the erosion protection features of an in-situ cap (i.e., armor layers) should be based on the magnitude and probability of occurrence of relatively extreme erosive forces estimated at the capping site. Generally, in-situ caps should be designed to withstand forces with a probability of 0.01 per year, for example, the 100-year storm.

The conceptual design of the erosion protection layer was initially developed using a design flow rate with a 100-year return period based on up-to-date flow information (i.e., through 2022) from the USGS Coltsville gage (see Section 3.5). However, a wide range of flows was evaluated to understand velocities in the river channel under various conditions, including higher flows that were evaluated to assess the potential impacts of climate change on cap performance. Because the updated 100-year return period flow (i.e., 13,390 cfs, based on the period from 1936 to 2023) at the Confluence has increased by 8.1% from the value calculated by FEMA in 1987 (12,386 cfs),[44] the 200-year return period flow of 16,400 cfs at the Confluence was used to account for the potential impacts of climate change. This flow represents an approximately 23% increase relative to the current 100-year return period flow estimate.

The stable particle size (e.g., expressed as median diameter [D_{50}]) required to resist the current velocity and related bed shear stress was calculated in accordance with Appendix A to EPA's Subaqueous Capping Guidance (Palermo et al. 1998). The method is based on the USACE's *Hydraulic Design of Flood Control Channels* (USACE 1994). This method uses velocity and flow depth to determine the stable median armor stone size (D_{50}).

Site-specific data and the one-dimensional HEC-RAS model (described in Section 5.2) were used to calculate the design velocities associated with various flow events. The model was used to simulate flows with various recurrence intervals, including 1-, 2-, 5-, 10-, 25-, 50-, 100-, and 200-year return periods. Stable particles sizes for each flow event were computed throughout Reach 5A using the hydraulic model output. Figure 5-2 shows a comparison of the calculated median stable particle size (D_{50}) at each of the hydraulic model transects in Reach 5A for flows up to a 200-year return period. The results of this evaluation indicate that a coarse gravel erosion protection layer would be sufficient to protect the chemical isolation layer material from erosive forces throughout most (i.e., more than 80%) of Reach 5A. Between Stations 30+00 and 63+00, river current velocities are calculated to be higher because flows are generally confined to the river channel due to higher riverbanks in this area, a sharp bend in the river, and flow constrictions created by the bridge abutments at Pomeroy Avenue and Holmes Road. Therefore, larger materials such as cobble- or boulder-sized materials are required for erosion protection in this area. In addition, the hydraulic model predicts increased current velocities between Stations 187+00 and 199+00 that require cobble-sized materials for erosion protection.

Once the erosion protection material sizing (D_{50}) is estimated, Maynord (1998) recommends that the thickness of the erosion protection layer be twice the median particle diameter (i.e., $2 \times D_{50}$) or

[44] As described in Appendix G, the 1987 100-year flow value (12,386 cfs) is from FEMA's FIS report (FEMA 1987), and the updated value (13,390 cfs) is based on return period analysis of long-term data from the USGS Coltsville gage using USACE HEC-SSP (Bartles et al. 2022; England et al. 2019) and the flow increment values presented in Appendix G.

1.5 times the maximum particle diameter (i.e., $1.5 \times D_{100}$), whichever is greater.[45] These calculations, together with evaluations for filtering requirements (Section 5.3.2) and chemical isolation (Section 5.3.3), were used to develop the conceptual cap design types described in Section 5.3.5.

As noted in Section 5.3, it is anticipated that the erosion protection layer will also serve the function of the habitat layer in Reach 5A. Remediation conducted previously in the upper two miles of the East Branch (where large armor stone was placed as erosion protection throughout the entire reach) has demonstrated that sediment transport and deposition will naturally return the surface of the cap to a condition that is consistent with the native riverbed over time (i.e., composed primarily of sands and gravels in Reach 5A) (GE 2012). As such, the conceptual cap design for Reach 5A does not require a separate habitat layer.

Details related to the evaluations performed to develop the conceptual design for the erosion protection layer are presented in Appendix A.

5.3.2 Geotechnical Filter Layer

As described in the Revised Final Permit, "[t]he use of a geotechnical filter layer between the chemical isolation layer material and erosion protection layer material shall be evaluated and may be necessary for those areas requiring cobble or larger sized material in the erosion protection layer."

Where needed, a filter layer provides an interface between the erosion protection layer and the protected material and is an essential element for protecting contaminated sediments (Maynord 1998). The filter prevents migration of one granular material through another (often referred to as "piping"), distributes the weight of overlying armor units to provide more uniform settlement, and permits relief of hydrostatic pressures within the soils. A filter layer is often required when using larger-diameter material for the erosion protection layer of an engineered cap. The same armor-to-filter relationships are used to assess the potential for piping between the filter layer and chemical isolation layer and may be used to evaluate the gradations for the chemical isolation material as well (i.e., to prevent piping of underlying sediment into the chemical isolation layer).

Standard geotechnical filter criteria include recommended particle size ratios between base and overlying materials (e.g., sand chemical isolation and overlying erosion protection materials). The primary filter criteria particle size relationship applicable to subaqueous capping materials is the ratio of D_{15} of the armor stone to D_{85} of the underlying base layer. This relationship relates to the ability of the base layer material (e.g., sand) to pass through the void spaces in the overlying larger material (e.g., erosion protection armor stone). Compliance with the recommended filter criteria minimizes the potential for wash out of the base material by the creation of internal filters in the armor stone

[45] As described in Section 5.3.4, the final material specifications, including the maximum particle diameter (D_{100}), will be made during final design.

voids. The potential for piping can be minimized by using well-graded gradations for the two materials.

For the conceptual design, it was assumed that a gravel filter will be required for the caps with cobble- and boulder-sized erosion protection layers. Where required, the gravel filter layer will be placed between the erosion protection layer and chemical isolation layer.

The geotechnical filter layer, including the gradation of the filter layer, will be evaluated and designed for compatibility with the armor layer and the underlying chemical isolation layer of the engineered cap as part of final design.

5.3.3 Chemical Isolation Layer

As described in the Revised Final Permit, the chemical isolation layer will be "sufficient to minimize (reduce by 99%) the flux of PCB concentrations through the isolation layer." In backwater areas, removal and capping will be performed to achieve a spatially weighted average concentration of 1 mg/kg total PCB in each averaging area, for which the calculation assumes a "PCB concentration equal to 1% of the existing average surficial concentration shall be used as the PCB concentration in capped areas." As stated above, engineered caps will also be placed in two of the Other Waterbodies.

To meet the requirements for engineered caps in the Revised Final Permit, the chemical isolation layer in the main river channel, backwaters, and Other Waterbodies was designed to meet the following criteria:

- For the main channel:
  - Achieve 99% reduction in PCB mass flux across the chemical isolation layer throughout a 100-year timeframe based on model calculations.
- For the backwaters and Other Waterbodies:
  - Achieve 99% reduction in PCB mass flux across the chemical isolation layer within a 100-year timeframe based on model calculations; and
  - Concentrations within the surficial six inches of the cap should remain less than 1% of the existing average surficial concentration (i.e., that used as the replacement value in the evaluation to identify areas requiring capping within the backwater area).

Model simulations were performed using CapSim model (Reible 2017; Shen et al. 2018) to identify the chemical isolation layer thickness and composition (i.e., amendment) needed to meet the Performance Standards. CapSim is a one-dimensional model of chemical transport within sediment caps. The model simulates the transport of contaminants resulting from various transport processes, including groundwater advection, diffusion/dispersion, bioturbation/bioirrigation, and exchange with

the overlying surface water, consistent with the requirements of the Revised Final Permit (see Section 2.2.4). The cap model predicts PCB mass flux and concentrations (for both porewater and sorbed phase) throughout the cap over time.

To optimize the chemical isolation layer design, Reach 5A was subdivided into seven unique cap areas based on the following factors: (1) observed differences in groundwater seepage rates; (2) differences in waterbody type (i.e., main channel, backwaters, and Other Waterbodies); (3) observed differences in porewater concentrations beneath the cap; and (4) constructability considerations.

Figure 5-3 shows the seven unique cap areas (called subareas) that were simulated with the model (differentiated by color). They are as follows:

- Upper portion of Reach 5A main channel and the Intermittent Side Channel (E-OWB1);
- Middle portion of Reach 5A main channel and lower portion of Sykes Brook (E-OWB3);
- Lower portion of Reach 5A main channel;
- BW5A-1;
- BW5A-2, BW5A-4, and BW5A-5;
- BW5A-3; and
- BW5A-6.

Reach 5A and associated backwaters and Other Waterbodies were first subdivided by observed spatial differences in groundwater seepage rates. Shades of blue on Figure 5-3 represent areas in the upper portion of Reach 5A (main channel and backwaters), where mid-range seepage rates were observed (specified to be 1 centimeter per day [cm/day] in modeling). Shades of green on Figure 5-3 represent the middle portion of Reach 5A, where seepage rates were measured to be negative, which is indicative of a downward movement of water from the river into the sediments (specified to be 0 cm/day in modeling). Yellow and orange shading on Figure 5-3 represents the lower portion of Reach 5A, where the highest observed seepage rates were observed (specified to be 5 cm/day in modeling).[46]

Within each of these subareas, the main channel and Other Waterbodies were modeled separately from the backwaters due to differences in expected bioturbation depths (i.e., bioturbation is

[46] Because model results are sensitive to seepage rates, a range of values was evaluated as part of a sensitivity analysis conducted with the model (see Appendix A). These sensitivity analyses consisted of running the model with higher and lower values for groundwater seepage rate (based on variability in the data) and comparing the predicted cap performance to that of the base case. The results from this analysis were considered in determining the recommended chemical isolation layer configuration (i.e., thickness and amendment content). See also Appendix A.

expected to be deeper in the backwaters based on the presence of finer substrate and concomitant differences in infauna) and TOC content of the existing surface sediments (i.e., TOC is generally higher in the backwaters). Differences in porewater PCB concentrations were also considered in the subareas. For example, in the middle portion of Reach 5A (green shading on Figure 5-3), porewater concentrations in backwaters BW5A-2, BW5A-4, and BW5A-5 were within the same order of magnitude; therefore, BW5A-2 was conservatively selected to represent the conditions of those three backwaters in the modeling. Porewater concentrations in backwater BW5A-3 were an order of magnitude greater than the other three backwaters in this subarea; therefore, BW5A-3 was evaluated separately during the modeling.

Constructability was also taken into consideration in the subareas. In the upper portion of Reach 5A (blue shading on Figure 5-3), the Intermittent Side Channel is relatively small and in close proximity to the main channel. Porewater concentrations are lower in the Intermittent Side Channel compared to the main channel; therefore, a cap that meets the Performance Standards in the main channel will also be effective in the Intermittent Side Channel. Thus, the cap for the Intermittent Side Channel was specified to be the same as that for the main channel in this area. For similar reasons, the cap configuration in the middle portion of the main channel (green area in Figure 5-3) is expected to be effective in the lower portion of Sykes Brook; therefore, the cap for Sykes Brook was specified to be the same as that for the main channel in this middle portion of Reach 5A.

In each of the seven subareas that were modeled, the transport of PCBs was simulated for each of the 10 PCB homolog groups (mono- through decachlorobiphenyl) to account for the differences in mobility among the various homologs. Model-predicted mass flux and concentration for each homolog were summed to calculate the total PCB mass flux throughout the chemical isolation layer and the total PCB concentration within the surface of the cap. PCB mass fluxes predicted by the model at the sediment-cap interface and the interface between the chemical isolation layer and erosion protection layer were used to calculate percent reduction in mass flux across the chemical isolation layer throughout the course of 100-year simulations.

Initially, a cap consisting of a six-inch sand chemical isolation layer overlain by a six-inch gravel/cobble erosion protection layer was evaluated with the model. The model was then run iteratively by adjusting the amendment content and/or thickness of the chemical isolation layer as needed to result in predicted reductions in the PCB mass flux across the chemical isolation layer of 99% throughout the 100-year simulation. In the backwaters and Other Waterbodies, if a 99% reduction in PCB mass flux across the chemical isolation layer was achieved, but the solid phase total PCB concentration predicted in the surface of the cap was greater than 1% of the existing average surficial concentration of that backwater at the end of the 100 year simulation, additional model simulations were conducted with higher amendment content and/or increased thickness of the chemical isolation layer until both criteria were satisfied. For the purposes of this conceptual design,

TOC was assumed for the sorptive amendment. Assuming TOC at this stage in the design provides flexibility to select the appropriate amendment(s) during the final design. For example, literature suggests that AC is 10 to 100 times more sorptive than TOC (Arp et al. 2009; Hale et al. 2010; McDonough et al. 2008); therefore, a TOC of 50% by weight determined through the iterative modeling process described above could be achieved using a dose of AC of 5% by weight.

The chemical isolation layer modeling results show that a six-inch chemical isolation layer consisting of sand with a carbon-based sorptive amendment is sufficient to meet the applicable Performance Standards (i.e., to reduce the flux of PCB concentrations through that layer by 99% and, in backwaters, to achieve total PCB concentrations within the surficial six inches of the cap that are less than 1% of the existing average surficial concentration) in each of the seven cap areas. Table 5-1 summarizes the chemical isolation layer thickness and amendment requirements recommended for each area based on the modeling, including a recommended AC amendment dose. These amendment doses were determined based on model results, including the sensitivity analysis noted previously, as well as conservatism considerations and constructability factors. As additional data become available and the design is refined, the final recommended amendment type(s) and dosage(s) will be refined during final design. In particular, an evaluation of carbon-based sorptive amendment types and doses to be used for the chemical isolation layer will be conducted as part of the treatability studies described in Section 10.3. Details related to the chemical isolation layer modeling approach, inputs, development, and results are provided in Appendix A.

Table 5-1
Recommended Chemical Isolation Layer Amendment Dose

Area	Area (acres)	Base Case Groundwater Seepage Rate (cm/day)	Chemical Isolation Layer Thickness	TOC Identified from Chemical Isolation Layer Modeling	Recommended TOC (% by weight)	Recommended AC (% by weight)[1]
Main Channel 5A-1	15.3	1	6 inches	1. 4%	2% to 3%	1%
Intermittent Side Channel	0.1					
BW5A-1	0.1	1	6 inches	1.9%	3% to 5%	1%
Main Channel 5A-2	18.9	0	6 inches	0.1%	1%	1%
Sykes Brook	0.1					
BW5A-2	0.3	0	6 inches	0.1%	2% to 3%	1%
BW5A-4	0.1					
BW5A-5	0.8					
BW5A-3	0.2	0	6 inches	0.1%	2% to 3%	1%
Main Channel 5A-3	13.6	5	6 inches	50%	50% to 100%	7%
BW5A-6	0.3	5	6 inches	60%	50% to 100%	7%

Notes:
Areas in bold font are the seven areas that were explicitly evaluated with the model; the cap configuration identified to meet the Performance Standards in those areas is considered representative of conditions in the corresponding areas that are not shown in bold font.

1. Literature suggests that AC is 10 to 100 times more sorptive than TOC; thus, for purposes of this conceptual design, it was conservatively assumed that AC is 10 times more sorptive than TOC. For constructability reasons, the recommended AC application is no less than 1% by weight.

5.3.4 Cap Material Selection

The engineering analyses completed at this conceptual level of design included the initial estimation of stable particle sizes for the erosion protection layer (D_{50}: diameter at which 50 percent by weight is finer) required by the design. These initial design requirements are narrowly focused on the material type or D_{50} particle size and do not include a complete gradation specification. During final design, a number of factors (including site-specific factors) will be considered in developing the complete material specifications, including the following:

- *Local availability of materials*: The local availability of cap materials will be considered to minimize transport distances and associated environmental impacts, to the extent practicable. Though not a driver for cap design, locally available materials will be considered when developing gradations.
- *Material processing effort required to meet specifications*: Cap material specifications will be aimed at minimizing the level of effort required to produce the materials, as well as minimizing the amount of byproduct generated by the processing that would not otherwise be used for the project.
- *Habitat considerations*: The potential for cap materials to provide suitable habitat functionality will also be considered during material specification development.
- *Constructability considerations*: These considerations will consider cap material placement equipment and limitations.
- *Required quantities*: Required quantities of material will be reviewed to evaluate the feasibility of minimizing the total number of material types required. By evaluating the quantity of materials involved at different design sizes, it may be possible to reduce the total number of specified material types by combining several required sizes under one specified material.
- *Fines content relative to water quality (turbidity)*: The fines content (percent passing the U.S. No. 200 sieve) of each material type will be considered to minimize the potential for turbidity to impact water quality during material placement if not performed under dewatered (i.e., dry) conditions.

5.3.5 Engineered Cap Types

Based on the results of the evaluations presented in Sections 5.3.1 through 5.3.3, the conceptual cap design resulted in the designation of four cap types for Reach 5A. They are summarized in Table 5-2. Figure 5-4 shows the extents of where these different cap types will be applied in Reach 5A, and Figure 5-5 shows schematic cross sections of each cap type. The Final RD/RA Work Plan will present updated evaluations and final cap details, including final material and placement specifications and cross sections.

Table 5-2
Conceptual Engineered Cap Types

Cap Type	Conceptual Design
Type A	• Chemical Isolation Layer: Minimum 6-inch-thick layer of sand with a sorptive carbon-based amendment[1] • Erosion Protection Layer: Minimum 6-inch-thick layer of coarse gravel
Type B	• Chemical Isolation Layer: Minimum 6-inch-thick layer sand with a sorptive carbon-based amendment[1] • Geotechnical Filter Layer: Minimum 6-inch-thick layer of gravel • Erosion Protection Layer: Minimum 18-inch-thick layer of cobble
Type C	• Chemical Isolation Layer: Minimum 6-inch-thick layer sand with a sorptive carbon-based amendment[1] • Geotechnical Filter Layer: Minimum 12-inch-thick layer of gravel • Erosion Protection Layer: 2 to 3 feet of riprap[2]
Type D	• Chemical Isolation Layer: Minimum 6-inch-thick layer of sand with a sorptive carbon-based amendment[1] • Erosion Protection Layer: Minimum 6-inch-thick layer of coarse sand[3]

Notes:

1. The amendment dose will vary by location in accordance with Table 5-1. The type(s) and dosage(s) for the carbon-based amendment will be determined during final design.
2. During final design, an alternate engineered cap may be evaluated for Cap Type C (e.g., articulated concrete mats, marine armored mattress).
3. The conceptual design assumes that the erosion protection layer for the backwater areas and Other Waterbodies will consist of a coarse sand material due to the low-flow characteristics associated with these areas. Final details of the erosion protection layer for these areas will be determined during final design.

5.3.6 Other Design Considerations

In accordance with the Revised Final Permit, the final design of the engineered caps will consider the need for over-placement allowances, with additional sediment removal, for each layer. Over-placement allowances are highly dependent on the cap placement approach (e.g., placement under dewatered conditions or placement through a water column) and based on the final material specifications for each cap layer. Details for the over-placement allowances will be determined during final design based on final erosion protection layer evaluations that include two-dimensional hydraulic modeling, the final cap material specifications, and the construction approach once finalized.

As required by the Revised Final Permit, the final design will also include an evaluation of geotechnical stability based on geotechnical data to be collected as part of the supplemental data collection program described in Section 10.2.

After the final channel and bank reconstruction designs are developed, the two-dimensional hydraulic model (see Section 5.2) will be used to verify that post-construction conditions do not result in a loss of flood storage capacity and that there is no increase in water surface elevations as a result of the placement of the engineered caps.

5.4 Sediment Remediation

As described in Section 4.2, sediment remediation in Reach 5A will include sediment removal in the main channel, certain portions of six backwater areas (BW5A-1 through BW5A-6), and certain portions of three Other Waterbodies (i.e., West Pond, Lower Sykes Brook, and the Intermittent Side Channel). Following sediment removal, an engineered cap (described in Section 5.3) will be placed to physically isolate the underlying contaminated sediments in these areas (except for West Pond, where sediment removal will be followed by placement of backfill). The proposed sediment remediation extents and preliminary quantity estimates for these areas are summarized in Section 4.2, and Figures 4-10a through 4-10e show the preliminary sediment remediation areas throughout Reach 5A. The remainder of this section provides a description of the potential methods that will be employed to conduct the sediment remediation activities in the river channel, backwaters, and Other Waterbodies in Reach 5A.

5.4.1 Conceptual Sediment Remediation Approach

Section II.B.2.a.(2)(a) of the Revised Final Permit states that the Reach 5A sediment removal and capping "shall generally use engineering methods employed from within the river channel or other methods approved by EPA." The characteristics of Reach 5A present numerous challenges to the implementation of the sediment remediation. For example, access to the river is limited by factors such as high steep banks in several areas, two vehicular bridges, residential parcels in some locations, and the presence of various floodplain wetland habitat areas (i.e., wet meadow, shallow and deep marshes, shrub swamp, and several forested wetland types), which collectively comprise a large majority of the adjacent floodplain. In addition, shallow water depths during the summer construction season limit the ability to use barges within much of Reach 5A, yet water depths can be too deep for conventional excavation equipment. Also, variable flow conditions can cause river flows and stage heights to increase rapidly in response to precipitation events over short periods.

During the conceptual design process, several methods for performing the in-water sediment remedial construction were evaluated. The following key factors were considered during the review of potential implementation options for Reach 5A:

- Ability to meet Performance Standards specified in the Revised Final Permit;
- Use of removal and capping methods employed from within the river channel;
- Access to the river;
- Access to nearby properties to site support areas for sediment dewatering, material segregation, and material staging;
- Ability to achieve sediment removal and cap placement to the required elevations and within acceptable tolerances;

- The need to segregate excavated material for disposal at the UDF or for off-site disposal;
- Ability to remove and handle large woody debris from the river channel;
- The need to reconstruct the river channel and banks after sediment removal (considering Natural Channel Design);
- Adaptability to variable water depths and river flow conditions;
- Achievement of production rates consistent with the timeframe contemplated in the Revised Final Permit;
- The need to minimize disturbance to private residential properties;
- The need to minimize impacts to Core Area 1 and 3 habitat for construction of staging areas and access roads;[47] and
- The ability to minimize downstream transport of suspended sediment or turbidity from cap material placement to the extent practicable.

Given the factors and constraints listed above, multiple methods will likely be used for sediment removal and capping within the main river channel in Reach 5A. An adaptive approach may be needed to effectively complete the remediation, in which lessons learned and experience working in one section of Reach 5A are used to adjust the remedial design or construction methods for other sections of the reach, to the extent practicable. Modifications to the remedial design or construction methods will follow an adaptive management process that will be described in a forthcoming Adaptive Management Plan (scheduled to be submitted to EPA in November 2023).[48]

The conceptual design approach for sediment removal and capping in Reach 5A is that this work will generally be performed from upstream to downstream using mechanical excavation equipment operated within dewatered (i.e., dry) diversion/containment cells or cofferdams (similar to the approach that was successfully used for the Upper ½-Mile Reach Removal Action). Alternatively, if geotechnical conditions limit the use of cofferdams or if other factors so warrant, the final design will evaluate the implementation of an approach involving use of temporary dams and a gravity or pumping bypass system to divert the entire river flow and allow work across the full river width under dewatered conditions (similar to the approach that was used for approximately 2,900 feet of the river channel in the 1½-Mile Reach). Further, in portions of Reach 5A where water depths allow,

[47] Although impacts to sensitive habitat areas will be minimized to the extent practicable, impacts to Core Area 2 habitats cannot be avoided for construction of staging areas and access roads given the widespread extent of Core Area 2 in Reach 5A. As described in Section 5.9, no staging areas are proposed in Core Area 1 or 3 habitat areas.

[48] In accordance with EPA's approval on June 5, 2023, of a May 19, 2023, request by GE to revise the schedule for submission of several upcoming near-term deliverables, GE's Adaptive Management Plan is required to be submitted by November 21, 2023.

removal and capping activities in the river channel may be performed under wet conditions by equipment operating directly on the river bottom under low-flow conditions (i.e., without a containment cell). Under any of these approaches, excavators equipped with a mechanical bucket, amphibious excavators, and/or other all-terrain equipment would operate directly on the river bottom, using temporary roads constructed using aggregate materials or composite panels to provide access to certain areas of the river. The actual excavation equipment would need to be sized for the site-specific river conditions and may include the use of long-reach excavators, material handlers, or other specialized equipment (e.g., amphibious equipment) to access the full extent of the river.

Under the first of the conceptual approaches described above, work cells would be created by constructing water diversion/containment areas (e.g., using steel sheet piles or other methods) to split the river in half near the center of the channel, thereby diverting river flow around the work area via open channel flow. The water diversion/containment structures (or other appropriate means) would be designed to withstand the hydrostatic and hydrodynamic forces of the adjacent channel. This approach assumes that the diversion/containment structures can be constructed using equipment working from within the river channel. The work cells would be dewatered through pumping. Initially, water pumped from the containment cell would be diverted directly to the flowing river—as the water depth approaches the sediment bed, pumped water would be collected for transport, or diverted, to a nearby water treatment system. The containment structure would be allowed to overtop under higher flows at a frequency to be determined during final design. Appropriately sized track-mounted excavators would work within the dewatered cells and load off-road haul vehicles that would transport the material to a nearby staging area where the dredged material would be processed and conditioned to meet requirements for transport and disposal to either the UDF or an off-site disposal facility. The excavation and hauling equipment would need to be capable of maneuvering in uneven terrain and in shallow water. Culverts (or other means) would be constructed, where needed, to allow construction equipment to cross the diverted river channel for transport material to or from the staging areas. Once sediment removal limits are confirmed, the engineered cap would be constructed within the work cell. Off-road material transport units would haul the cap material from a nearby staging area to the work cells, and placement of the cap material would occur by excavators or other earth-moving equipment working within the dewatered cells.[49]

As noted above, another potential remediation approach would involve the use of temporary dams to divert the entire river flow and allow work across the full river width under dewatered conditions. This alternative would involve installation of cross-channel dams at the upstream and downstream ends of a segment of river, using large-diameter pipes to bypass the river flow via gravity or

[49] Ultimately, the remediation contractor(s) will be responsible for selection of equipment, means, and methods for sediment removal and capping to be performed in the river channel. The equipment or methods used by the contractor(s) could vary from those described herein.

pumping, and dewatering the isolated section of river using pumps. Like the approach described above for the partially diverted channel, water pumped from the containment cell would be initially diverted directly to the river, and water would be collected for transport, or diverted, to a nearby water treatment system as the water depth approaches the sediment bed. Track-mounted excavators, material handlers, and off-road haul vehicles would work within the dewatered containment area to complete the sediment removal and capping operations in a manner similar to the approach described for the partially diverted channel. Details related to the sizing of the containment areas and construction of temporary dams and a river bypass system would be evaluated during final design if this approach is implemented.

Each of these conceptual approaches involves a number of uncertainties, and further data collection and design evaluations are needed to assess their feasibility and effectiveness. In-river geotechnical investigations are required to characterize subsurface geotechnical conditions within the river to support design of the containment cells. Groundwater modeling evaluations will be needed to evaluate potential containment cell dewatering rates. Additional hydraulic analysis is also needed to determine a design flow for the top elevation of structures used to construct the containment cells and to evaluate estimated current velocities and water surface elevations associated with a diverted river channel approach. The geotechnical investigation and hydraulic analysis results can be used to evaluate potential sheet pile lengths and the feasibility of installing piles from within the river channel. For the partially diverted channel, the diversion/containment structure would need to be designed to provide sufficient cross-sectional area for the river to bypass the work area without significant increases in current velocity or water surface elevation, to provide a surface water/ groundwater infiltration barrier that would allow dewatering to suitably dry conditions, and to be structurally stable.

5.4.2 Excavation and Capping Design Considerations

During final design, the preliminary sediment excavation areas and depths described in Section 4.2 may be adjusted based on the results of supplemental data collection activities (see Section 10.2) or to accommodate adjustments made to the cap design, if any. The final excavation design will also be dependent on the final channel elevations and grades that will be developed in consideration of channel stability in accordance with Natural Channel Design principles, which will be evaluated in the Final RD/RA Work Plan for Reach 5A.[50] The final channel elevations and grades are not necessarily expected to match the pre-remediation conditions in all areas of the river. For example, mid-channel or side-channel depositional bars that have been created by fallen trees or other in-river woody

[50] Natural Channel Design is an approach to stream/river restoration and realignment which attempts to reconstruct channels to emulate the natural physical form of the river or stream that would be appropriate for that location. The Natural Channel Design approach incorporates a combination of analog, empirical, and analytical methods for assessment and design (Rosgen 2011).

debris will likely not be recreated as part of the river restoration design. As such, the final excavation elevations may need to extend deeper than the established remedial limits in certain areas. Once the final remedial limits and the final channel elevations and grades are known, a detailed prism will be developed for the sediment removal areas to define the required dredge elevations and quantify the final design volume to be removed. The final excavation limits and contours will be shown on technical drawings that will be presented in the Final RD/RA Work Plan for Reach 5A.

Sediment Management Units (SMUs) will be developed to segregate the targeted sediment removal areas into smaller units that will be used to verify that the required excavation elevations have been achieved and the areas are ready for engineered cap placement. The sizing and layout of SMUs will be determined prior to construction. If sediment removal and capping are performed within containment cells, the individual containment cells would be designated as separate SMUs.

The sediment removal and capping operations will be required to comply with specific water quality criteria to be defined in the Construction Monitoring Plan, which will be a component of the updated Project Operations Plan (POP). To achieve this, the remediation contractor(s) will implement operational controls and best management practices (BMPs) during dredging and capping to maintain compliance with the water quality requirements. Details on the potential operational controls and BMPs will be described in the Final RD/RA Work Plan for Reach 5A or in the subsequent Supplemental Information Package (SIP) prepared by the remediation contractor.

In addition, performance-based technical specifications will be presented in the Final RD/RA Work Plan. The technical specifications will describe the scope of work, material requirements, testing requirements, post-dredge and post-cap verification requirements, and other requirements for implementing work in accordance with the remedial design, but they will not define the specific methods or equipment that the contractor will use to implement the work, which will be described in the subsequent SIP.

5.4.3 Structures and Utilities

As described in Section 3.11.1, several structures and utilities were identified in Reach 5A. The final design will evaluate whether the utilities and structures could impact remedy implementation and whether there are potential risks to the integrity of the utilities and structures themselves. Specific items that will be further evaluated include a natural gas pipeline crossing, underground sewer crossings, and bridges that cross the river channel. The structures and utilities that could affect, or that could be affected by, the remediation will be surveyed. In addition, owners of several utilities and structures (i.e., property owners, local city building departments, utility companies, and county or state transportation agencies) will be contacted to evaluate whether and how the structures and utilities could impact remedy implementation. The additional survey and outreach efforts will be conducted during the supplemental data collection program described in Section 10.2. The

information gathered by these surveys and outreach will determine whether any offsets or setbacks are needed from critical infrastructure or whether alternate remedial methods are needed.

5.4.4 Debris and Obstructions

As described in Section 3.11.2, certain segments of the river channel contain considerable amounts of woody debris, such as downed trees and driftwood, rocks, and, to a lesser extent, consumer debris (i.e., trash). It is expected that buried debris (i.e., buried logs and large rocks) are also present within the river. In addition, shoreline trees and other vegetation extend over the river at numerous locations.

Large debris will be removed in advance of or concurrently with sediment removal operations. Smaller debris will be removed during the dredging operations. Mechanically removed debris will be loaded into haul vehicles and transported to a nearby staging area for handling and appropriate sizing. Large debris (i.e., fallen trees) will be cut into manageable sizes before being transported to the staging area. If appropriate, some debris may be decontaminated and beneficially reused; for instance, boulders could be power washed and reused for bank stabilization or channel reconstruction.

Trees and shoreline vegetation that overhang the sediment removal and capping areas (and are not located in riverbank removal areas) will be pruned to the extent necessary to allow the safe and effective implementation of in-river remediation. Where tree trimming or removal is necessary, the trees will be cut above the trunk, and the root mass will be left in place where possible. Woody debris that contacts river sediment will be transported to the UDF for disposal. Woody debris that has not contacted river sediment will be segregated for reuse or disposal.

5.5 Riverbank Remediation/Stabilization

As described in Section 4.3, riverbank soil in Reach 5A will be removed, and the riverbank will be reconstructed and stabilized to meet the Performance Standards summarized in Section 2.3. This will include a combination of removal to address PCB-contaminated eroding riverbanks and supplemental riverbank remediation based on constructability considerations. The latter, while not required by the Revised Final Permit, will include remediation of small sections of bank that do not require remediation but are situated between banks requiring remediation and of banks where the erosion potential is relatively high and the adjacent floodplain PCB concentrations are elevated. The supplemental riverbank remediation areas will be subject to either removal or stabilization as determined based on further evaluation that will be conducted during final design, including consideration of Natural Channel Design principles. The proposed riverbank remediation areas and preliminary quantities are summarized in Section 4.3, and Figures 4-6a through 4-6i show the preliminary riverbank remediation areas.

Where riverbank soil removal is performed, the riverbank will be excavated to a minimum depth of one foot. Additional excavation of riverbank soil will be performed (as needed) to create a stable post-excavation slope. Because the riverbanks vary in height, soil types, and slope, the design for riverbank excavation design will likely vary depending on location-specific characteristics. For example, some riverbank soil removal areas may warrant a post-excavation slope of 3 horizontal to 1 vertical (3H:1V) whereas other areas may warrant a steeper slope due to soil types, erosion potential, or the channel reconstruction approach. During final design, a slope stability evaluation will be performed, and details related to riverbank excavation design will be provided. Additional geotechnical data will be collected at certain riverbank remediation areas to support slope stability evaluations as part of the supplemental data collection activities described in Section 10.2.

In general, the riverbank soil removal activities will be conducted concurrently with the adjacent in-river sediment removal activities, although in areas where riverbanks are easily accessible from the adjacent floodplain, they may be excavated from the top of bank.

Following excavation to the specified limits, the excavated riverbanks will be reconstructed to minimize erosion considering the principles of Natural Channel Design, as appropriate. To the extent practicable, this is intended to result in a channel that is in dynamic equilibrium, balances flow and sediment loads, and reduces erosive forces. The design for reconstruction of the riverbanks will be described in the Final RD/RA Work Plan for Reach 5A and may include revegetation, bioengineering, or armoring based on location-specific conditions.

5.6 Floodplain Remediation

As described in Section 4.4, floodplain soil removal activities will be performed at residential properties and non-residential floodplain EAs throughout Reach 5A. The proposed floodplain remediation areas and preliminary quantities are summarized in Section 4.4 and shown on Figures 4-7 and Figures 4-8a through 4-8q.

The floodplain removal activities will be conducted using standard mechanical excavation equipment or other specialized equipment (e.g., an amphibious excavator) as needed based on field conditions. In general, clearing of existing vegetation within the floodplain will be done only where necessary to access and perform removal activities. Temporary roads needed to access remote floodplain removal areas will be constructed using gravel or low-impact methods such as timber matting or composite materials, as determined on a case-by-case basis. Some floodplain remediation areas may be accessed from the river. In remediation areas where mature trees are present, these trees will be left in place to the extent practicable, particularly on residential properties; and excavation in close proximity to these trees will be performed by hand or using other methods that minimize disturbance to the root system. However, trees located within or adjacent to excavations greater than

a depth of one foot will be removed due to potential tree health and stability concerns associated with deeper excavations, unless otherwise proposed by GE and approved by EPA.

During removal activities, field measurements will be made to verify that the target removal depths and elevations have been achieved for each excavation area. It is anticipated that, in most cases, the excavated soils will be loaded into haul trucks and transported to a nearby staging area before transport to the UDF or to an off-site disposal facility, although, in some cases, materials may be directly loaded for transport to the UDF or an off-site disposal facility.

Following removal, common backfill/topsoil material will be obtained from an off-site source and will be placed and compacted to re-establish original grade. The imported backfill materials will either be temporarily stockpiled at a nearby staging area before placement or, where appropriate, may be transported directly to the excavation areas for placement. Detailed requirements and technical specifications for the backfill and restoration will be presented in the Final RD/RA Work Plan for Reach 5A.

5.7 Vernal Pool Remediation

As described in Section 4.5, there are 48 vernal pools in Reach 5A that require remediation (see Table 4-12). Remediation of these vernal pools will include either traditional excavation and restoration techniques or placement of amendments such as AC, depending on the results of the pilot study being conducted on a subset of 10 of the 48 pools (see Section 4.5.2). Details related to the design of the pilot study were provided in GE's June 2023 *Vernal Pool Pilot Study Work Plan*. In summary, that plan outlined the performance criteria, described the process for selecting the amendment(s) and application requirements, identified the anticipated footprint for removal and amendment application, and described the metrics and monitoring (before, during, and after remediation) to evaluate the effectiveness of the remediation approach used. It also provided the experimental design of bench-scale testing to be conducted to evaluate various amendment types, doses, and application methods. In accordance with EPA's September 12, 2023, conditional approval letter for that work plan, the work plan will be revised to reflect the conditions in EPA's letter.

Following the bench-scale testing, GE will present the final design of the pilot study implementation for both the amendment-based and removal-based alternatives, including final plans, specifications, sequencing, and schedule in a Final Revised Vernal Pool Pilot Study Work Plan. Depending on the timing of EPA approval of that final plan, GE anticipates that implementation of the vernal pool pilot study (i.e., excavation activities and placement of amendments in the 10 pilot pools) will be conducted prior to initiation of other construction activities in Reach 5A. Excavation of soils from the pools identified for removal is anticipated to be performed using similar methods and equipment to those described in Section 5.6 for floodplain soils. As part of the pilot study, as described in GE's June 2023 *Vernal Pool Pilot Study Work Plan*, GE will conduct post-remediation monitoring of the pilot

study vernal pools for a period of three years, which is anticipated to be ongoing while remediation is occurring in other areas of Reach 5A. Following that monitoring period, GE will submit an addendum to the Final RD/RA Work Plan for Reach 5A that will provide remedial design details for the remaining 38 vernal pools to be remediated in Reach 5A.

5.8 Placement of Amendment in BW5A-1

Backwater BW5A-1 is the only backwater in Reach 5A located in Core Area 1 habitat. As summarized in Section 2.2.2, the Revised Final Permit states that portions of backwater areas located within Core Area 1 habitat that have discrete total PCB concentrations between 1 and 50 mg/kg in surficial sediment shall receive placement of an amendment (AC and/or other comparable amendment) to reduce PCB bioavailability. As discussed in Section 4.2.2.1, approximately 1.7 acres of BW5A-1 have surface sediment (0- to 1-foot) PCB concentrations between 1 and 50 mg/kg.[51] Figure 4-4a shows the portion of BW5A-1 that will receive amendment.

AC is an amendment that has been successfully demonstrated to reduce the bioavailability of PCB-contaminated sediments, and it has been applied in riverine and lake settings across the country, such as the Grasse River, the Spokane River, and Onondaga Lake among others (Patmont et al. 2014). Site-specific sediment PCB partitioning data collected historically from Reach 5A suggest that the bioavailability of PCBs in this system is within the typical range for sediments (Weston 2002; BBL and QEA 2003). However, site-specific testing of the effectiveness of AC to reduce PCB bioavailability in Reach 5A sediments has not been conducted. GE's *Vernal Pool Pilot Study Work Plan* presents a framework for bench-scale testing of floodplain vernal pool soils to evaluate the effectiveness of various amendment types (specifically, powdered activated carbon [PAC], granular activated carbon [GAC], and biochar) and doses in reducing (bioavailable) porewater PCB concentrations. Similar testing of sediments from backwater BW5A-1 will be performed at the same time as the vernal pool pilot study bench-scale testing. Details on testing methods and backwater sediment collection are provided in the *Treatability Study Work Plan for Reach 5A*, which is provided in Appendix H and summarized in Section 10.3. Results from the bench-scale testing will be used to determine the appropriate AC type and dose for application within BW5A-1.

AC applications typically result in bioavailability reductions of 70% to 99% in PCB-impacted sediment (Patmont et al. 2014). Therefore, the AC type and dose will be selected to achieve that typical range of performance. Because this backwater is located in an area of sensitive habitat, it is anticipated that the AC will be placed in such a way that minimizes habitat impacts—e.g., by broadcasting the AC as a thin layer on top of the sediments and allowing natural processes (i.e., bioturbation) to mix the

[51] As described in Section 4.2.2.1, the remediation of BW5A-1 will also include sediment removal and engineered cap placement in an approximately 0.09-acre portion of that backwater at three discrete polygons with total PCB concentrations greater than or equal to 50 mg/kg in surface sediment.

amendment into the sediments. This method of application will be evaluated further during final design.

5.9 Material Handling and Staging Areas and Access Roads

Figures 5-6a through 5-6e show areas that have been conceptually identified as material handling and staging areas (hereafter referred to as staging areas). The staging area locations were selected based on the following considerations:

- Available or likely available access to land, approximately two to three acres in size, with relatively short and/or simple egress to public roads;
- Avoiding or minimizing impacts to Core Area 1 and 3 habitat areas and other sensitive habitat areas, to the extent practicable;[52]
- Minimizing disturbance to residential and other non-GE owned private properties;
- Proximity to the sediment, riverbank, floodplain, and vernal pool remediation areas defined in Section 4, with spacing across the entire length of Reach 5A to facilitate ingress and egress to the remediation areas; and
- Prioritizing use of disturbed or degraded habitat areas, where practicable (e.g., utility corridors, open fields or other open areas, existing paths, areas with a strong dominance of invasive plant species, and areas impacted by historical man-made disturbances).[53]

Figures 5-6a through 5-6e also show approximate locations for temporary roads to access the staging areas and remediation areas. Like the staging areas, the routes for the temporary access roads were selected to prioritize use of disturbed or degraded habitat areas, where practicable (e.g., utility corridors, existing paths, and other disturbed areas). The temporary access roads are designated as either primary or secondary access roads. At this conceptual design phase, it is anticipated that the primary access roads will consist of temporary gravel roadways to support the weight of trucks necessary to haul away the excavated materials for disposal and to haul imported cap and backfill materials to the staging areas or remediation areas before placement. The secondary access roads that provide access to isolated remediation areas in the floodplain will be constructed using gravel or low-impact construction methods (e.g., timber matting, composite material) and/or

[52] As noted above, no staging areas are proposed in Core Area 1 or 3 habitat areas; impacts to Core Area 2 habitat cannot be avoided given the widespread extent of Core Area 2 in Reach 5A.

[53] Such disturbed or degraded areas were identified during the Baseline Restoration Assessment (BRA) of Reach 5A and were described and shown in Section 10.1 and Figures 10-1a through 10-1e of the Reach 5A BRA Report submitted on August 25, 2023. Those areas were considered in selecting preliminary staging area locations, as well as access roads (discussed below).

may be traversed using other low-ground pressure equipment if location-specific conditions are appropriate.

The staging area locations were selected to support the material handling, dewatering, and segregation for nearby remediation areas. For example, Staging Area 1 (Figure 5-6b) is intended to support the remediation of floodplain soil, riverbank soil, vernal pools, and main channel sediment between the Confluence and the Pomeroy Avenue Bridge (i.e., between River Stations 0+00 and 48+50), and Staging Area 2 (Figure 5-6c) is intended to support remediation between the Pomeroy Avenue Bridge and the Holmes Road Bridge (i.e., between River Stations 48+50 and 57+00). Because the Reach 5A remedial construction will take multiple years to complete, construction of individual staging areas and associated access roads will not occur until they are needed to support the remediation in the applicable section of the river or floodplain. For example, because the remediation will occur from upstream to downstream, Staging Area 1 will be constructed to support remediation during the first construction season, and the staging areas at the downstream end of Reach 5A will not be constructed until the work advances downstream (i.e., multiple years after remediation begins at the Confluence).

The final locations of the staging areas will be subject to potential modification based on the final remediation areas, GE's ability to obtain access agreements for the properties where the staging areas and temporary access roads will be constructed, and selection of a remediation contractor and sediment removal methods. Details regarding the design of the temporary staging areas and access roads will be presented in the Final RD/RA Work Plan for Reach 5A after EPA approval of the proposed remediation areas that are described in Section 4.

Site-related material handling activities will be performed consistent with the updated POP, which is scheduled be submitted to EPA in early 2024.[54] If departure from the protocols specified in the final POP become necessary, alternate protocols will be discussed with EPA prior to implementation. The conceptual approach for handling removed sediments, soils, and debris has been developed in consideration of the following: (1) the nature and characteristics of the materials to be removed; (2) on-site processes needed to prepare the materials for temporary staging and subsequent disposition (e.g., dewatering of materials containing excessive water); and (3) the overall sequence and schedule of the removal activities. Based on these considerations, several handling-related activities will be performed after the sediments, soils, and debris are removed and before they are transported for final disposition at the UDF or an off-site disposal facility.

This conceptual design anticipates that the areas to be used for material handling and temporary staging of excavated and imported materials will consist of outdoor areas that will not be subject to

[54] In accordance with EPA's approval of GE's May 2023 request to revise the schedule for submission of several deliverables, the updated POP is required to be submitted by January 25, 2024.

future remedial excavation. Appropriate run-off and run-on controls will be in place prior to placement of excavated material at the temporary staging areas. The staging and material handling areas, as well as any associated erosion and sedimentation controls, will be inspected regularly, and any noted deficiencies will be promptly addressed. Temporary stockpiles will be constructed on bermed areas lined with an impermeable liner.

The removed sediments, soils, and debris will be transported to nearby staging areas before transport to the UDF or to an off-site disposal facility, or the materials may be directly transported to the UDF or off-site disposal facility. At the staging areas, removed sediments, soils, and debris will be segregated into appropriate stockpiles, with separate stockpiles for materials that will be subject to disposal at the UDF and those to be sent to an off-site disposal facility(ies). Debris encountered during sediment and soil removal will be segregated for disposal based on the designation of the surrounding sediment or soil. As necessary, large debris items will be cut to size at the staging areas to facilitate transport and to meet the requirements of the disposal destination. If appropriate, some debris may be decontaminated and beneficially reused; for instance, boulders could be power washed and reused for bank stabilization or channel reconstruction.

To the extent practicable, removed sediment, soil, and debris will be directly loaded into sealed vehicles for transport to the staging areas for temporary stockpiling and management (e.g., dewatering) prior to transport and disposal at the UDF or transport to an approved off-site disposal facility, or they may be directly transported to the UDF or off-site disposal facility. Where saturated soils and sediments are encountered, they will be allowed to drain within the excavation limits by being placed in small piles for gravity dewatering or by draining directly from the excavator bucket suspended over the excavation area prior to being loaded into sealed vehicles for transport.

Where excavated materials are transported to staging areas, they will be staged and managed at the staging areas until they have been sufficiently dewatered by gravity to pass the Paint Filter Liquids Test (SW846 Test Method 9095B). For excavated materials that will be subject to disposal at the UDF, if gravity dewatering does not yield material that will pass the Paint Filter Test, drier excavated materials (if available in sufficient quantities) or drying agents (e.g., Portland cement, cement kiln dust, lime, fly ash, or other suitable and locally available material) will be blended with the excavated material (as necessary) to condition the material such that it is suitable for transport (i.e., contains no free liquids and passes the Paint Filter Test). If additional dewatering is needed for materials that will be transported to an off-site disposal facility, GE will take other actions (e.g., blending excavated materials that have a higher moisture content with excavated soils that have a lower moisture content, if practicable) prior to adding drying agents. Once the excavated materials are sufficiently dewatered, the materials prepared for final disposition will be loaded into lined and covered over-the-road vehicles for transport to the UDF or for off-site transport. Bench-scale treatability testing

will be performed prior to final design to evaluate the effectiveness of potential dewatering methods for sediment to be removed from Reach 5A, as described in Section 10.3.

Water generated from sediment, soil, and debris staging and processing, stormwater that accumulates in the staging area exclusion zone, backwash water generated during operation of water treatment systems, and water used for decontamination will be collected at the staging area and treated at a nearby temporary water treatment system or at the GE Facility. Details associated with treatment and discharge of water generated during the sediment processing will be developed during the final design.

5.10 Waste Transport and Disposal

As discussed in Section 4, GE has performed an initial evaluation of the existing PCB data from the soils and sediments subject to removal to assess whether the excavated materials can be disposed of on-site at the UDF or must be sent to an approved off-site disposal facility under the Revised Final Permit's disposal criteria summarized in Section 2.6. This section provides a conceptual overview of the transportation and disposal of excavated sediments and soils. Additional details regarding waste transport and disposal, including potential transportation routes and procedures and disposal procedures, both for disposal at the UDF and for off-site transport, will be provided in the forthcoming Off-Site and On-Site Transportation and Disposal Plan (T&D Plan), which is scheduled to be submitted to EPA by the end of October 2023.[55] As provided in the Final Revised SOW, the final methods of transport and transportation routes to the UDF and to the selected off-site disposal facilities will be identified in the Final RD/RA Work Plan or SIP for Reach 5A.

5.10.1 Waste Characterization

As described in Section 3.3, sediment samples collected from 10 transects in the main channel during the Reach 5A PDI were analyzed by the TCLP for disposal characterization, and none of the TCLP parameters were detected above the RCRA hazardous waste toxicity characteristic regulatory levels in 40 CFR 261.24. Once off-site disposal facilities have been selected, GE may perform additional waste characterization sampling to establish the necessary waste profiles and ensure that the material to be sent to such facilities has been adequately characterized, as required by the selected disposal facilities. If additional waste characterization sampling is deemed necessary, GE will coordinate with EPA and submit a plan to describe the proposed sampling (potentially included in the Final RD/RA Work Plan or the subsequent SIP).

[55] In accordance with EPA's approval of GE's May 2023 request to revise the schedule for submission of several deliverables, the T&D Plan is required to be submitted by October 31, 2023.

5.10.2 On-Site Transport to UDF

Details related to the construction and operation of the UDF will be presented in the Upland Disposal Facility Final Design Plan, which is scheduled to be submitted to EPA 60 days after EPA approval of the Final PDI Summary Report for the UDF (submitted in August 2023).

Over-the-road transport of excavated materials to the UDF is considered "on-site" transport and is subject to the on-site permit exemption specified in Section 121(e) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Paragraph 9.a of the CD for the GE-Pittsfield/Housatonic River Site. Additional details regarding transport of materials to the UDF will be provided in the forthcoming T&D Plan.

5.10.3 Off-Site Transport

In accordance with Attachment E of the Revised Final Permit and as summarized in Sections 2.6 and 4, excavated soil and sediment from portions of Reach 5A will be transported to an approved off-site disposal facility or facilities outside of Massachusetts. As required by Section II.B.6.a.(2) of the Revised Final Permit, a minimum of 100,000 cy of PCB-impacted sediment, riverbank soils, and/or floodplain soils for the entire ROR Remedial Action project will be sent off site to such an out-of-state facility. The actual quantity of excavated soil and sediment from portions of Reach 5A that are transported to an approved off-site disposal facility will be documented to track progress toward achieving this minimum 100,000 cy requirement.

For off-site transport, over-the-road transport of excavated materials will be required to move material from the temporary stockpile areas near the remediation area (or from the removal area itself via direct loading) to an off-site disposal facility or potentially to a nearby loading area for subsequent transport by rail to an off-site disposal facility. Such over-the-road transport will be performed by licensed haulers in accordance with appropriate local, state, and federal regulations. Dump trailers leaving the work area will be lined to prevent spillage during transportation (as necessary), manifested, and placarded in accordance with federal and state requirements using hazardous waste manifests or bills of lading.

GE's evaluation of off-site transportation options is ongoing. Additional details regarding the identification and evaluation of off-site transportation methods will be presented in the forthcoming T&D Plan. The final selection of such methods will take into account the limited volume of materials designated for off-site disposal from Reach 5A and the anticipated duration over which those materials will be removed. As noted above, in accordance with the Final Revised SOW, the final methods of transport and transportation routes to the off-site disposal facilities will be described in the Final RD/RA Work Plan or SIP for Reach 5A.

5.11 Habitat Impacts and Restoration

The Performance Standards for restoration of disturbed areas in the ROR, as provided in Section II.B.1.c.(1) of the Revised Permit and summarized in Section 2.1.3, require GE to do the following: (1) implement a comprehensive program of restoration measures to address the impacts of the remediation on affected ecological resources, species, and habitats, including, but not limited to, riverbanks, riverbed, floodplain, wetland habitat, and the occurrence of threatened, endangered, or other state-listed species and their habitats; and (2) return areas disturbed by remediation activities to pre-remediation conditions (e.g., the functions, values, characteristics, vegetation, habitat, species use, and other attributes) to the extent feasible and consistent with the remediation requirements.

The Reach 5A BRA Report, submitted on August 25, 2023, and described in Section 3.8, presented a detailed baseline ecological inventory and assessment of pre-remediation conditions and functions of the affected habitats within Reach 5A and provides the required information for meeting the restoration Performance Standards set forth in Section II.B.1.c.(1) of the Revised Permit as applicable to this reach. The conditions and features identified in the Reach 5A BRA Report have also been used in concert with engineering considerations in an effort to site staging areas and access roads in areas with lower habitat values where practicable (as discussed in Section 5.9).

To address the restoration requirements described previously, in addition to understanding the existing (baseline) conditions, the potential effects on those baseline conditions from the remedial activities need to be considered. These effects are described generally in the following subsections, based on the currently anticipated remedial measures to be applied in Reach 5A and the updated baseline habitat information. The design process will incorporate feasible means of minimizing impacts during all phases of the remediation process; this effort will attempt to reduce the needs for restoration and the time frames needed for recovery of ecological characteristics and functions. In accordance with the Revised Final Permit and the Final Revised SOW, GE will prepare and submit a separate Restoration/Corrective Measures Coordination Plan (Restoration/Remediation Coordination Plan) and a separate Restoration Plan for Reach 5A, to be submitted concurrently with the Final RD/RA Work Plan for Reach 5A. Those plans will provide details regarding the restoration of impacted habitats in Reach 5A.

5.11.1 Riverine Habitat Impacts and Restoration

As described above, remediation of the Reach 5A river channel will include excavation and cap placement over the entire river bottom. Primary impacts related to habitat alterations resulting from those activities include the following:

- Removal of organisms present in the sediments that are subject to excavation;
- Dewatering impacts on organisms and resting stages (eggs, seeds, and overwintering forms);

- Generation of turbidity and downstream movement of suspended sediment from areas that are not dewatered;
- Removal of woody debris, rocks, and other structural habitat elements;
- Changed substrate type that may not support some previously resident species of invertebrates, fish, and other wildlife;
- Impact on state-listed species present in the river channel; and
- Potential colonization by invasive species.

Restoration of affected aquatic riverine habitat will include the following steps, which will be coordinated with the various phases of the remediation process, as will be described in the Restoration/Remediation Coordination Plan and the Restoration Plan for Reach 5A:

- *Site Preparation Phase:* During this phase, GE will conduct any necessary investigations of state-listed species, such as surveys for wood turtles and any other state-listed aquatic species with Species Habitat in the river channel. It will also identify any specific habitat features to be avoided and preserved consistent with the remediation plan (e.g., certain large trees along access routes), as well as procedures to afford their protection during clearing activities for construction of access roads and staging areas.
- *Excavation Phase:* During this phase, GE will evaluate cut trees for subsequent reuse as habitat features and will set aside selected material (if any) separately from woody debris to be removed from the site. GE will also identify large in-stream woody debris or other features present in the channel, if any, for possible replacement after excavation.
- *Capping/Backfilling and Grading Phase:* During this phase, GE will place specified backfill and capping material in accordance with design plans, including replacement of large woody debris, boulders, or other structural habitat features (if any) where doing so would not compromise the integrity of the cap and is consistent with the restoration design. It will also install specific habitat features (if any) designed to replace features used by state-listed species. Final dimensions of the channel will be determined during final design and will take into consideration principles of Natural Channel Design. Final grades and geomorphic features may vary from existing conditions to help ensure that the rebuilt channel is stable.

It is assumed that the riverine restoration program will not include active planting of native aquatic vegetation, which is relatively sparse in Reach 5A. Rather, it is assumed that natural recolonization of plants from upstream will occur as suitable substrate conditions develop over time.[56]

[56] Given the presence of invasive species within the watershed, recolonization in many vegetated areas may include invasive species that are impracticable to control in flowing water.

5.11.2 Riverbank Habitat Impacts and Restoration

As previously discussed, remediation of the riverbanks will occur, in most cases, concurrently with the remediation of the river channel. Similarly, riverbank restoration, where required, will generally occur as the riverine habitat is restored. As described in Section 4.3.2, approximately 12,300 feet (approximately 25%) of riverbanks in Reach 5A will be subject to remediation. The bank remediation activities will involve removal of riverbank vegetation and woody debris from the riverbanks, as well as the cutting back and reshaping of banks and removal of bank soil in designated locations. This will result in the loss of large mature trees alongside, overhanging, and adjacent to the river in the areas subject to remediation, leading to a more open canopy along and immediately adjacent to the river. Primary impacts related to habitat alterations resulting from riverbank remediation/stabilization activities include the following:

- Alteration of connectivity between the river and the adjacent floodplain;
- Removal of structural habitat features, such as large overhanging trees, dense shrub and vine growth, cut/undercut banks, vertical sandy banks, large woody debris, and rocks;
- Alteration of bank suitability for providing burrows, nesting, and crevices/cavities for multiple wildlife species;
- Potential impacts on state-listed species that use the riverbanks; and
- Potential colonization by invasive species.

Following removal of riverbank soil in areas where bank excavation is required, the bank will be restored taking into consideration the principles of Natural Channel Design. Restoration will consist of either stabilizing or rebuilding the riverbank. To the extent practicable, riverbank restoration will utilize bioengineering methods, such as vegetative plantings (seeding, plugs, and livestakes), coir matting, toe-wood, rock or log vanes, vegetated geogrids or soil layer lifts, and compartmentalized placed fill. In areas of high shear stress or where utilities or other infrastructure may need protection, use of harder bank protection, such as riprap or articulated concrete block revetment, may be used.

The riverbanks that undergo remediation will all be replanted with native vegetation. However, it should be noted that the banks will be especially vulnerable to recolonization by Japanese knotweed (*Reynoutria japonica*) which is an invasive species that is already common along the Reach 5A riverbanks.

5.11.3 Backwater Habitat Impacts and Restoration

All six backwater areas in Reach 5A will require remediation, as described in Section 4.2.2. For three of the backwaters, the remediation will involve sediment removal and capping of the entire backwater area; two others will be subject to sediment removal and capping over 60% to 70% of the

backwater area. For BW5A-1 (located in Core Area 1 habitat) only a small area (0.09 acre) will be subject to removal and capping, with the remaining 1.7 acres remediated by the application of an amendment. As described in Section 5.3, the engineered cap in backwaters is proposed to be a 12-inch sand cap that includes a sorptive carbon-based amendment. Final grades in the backwaters are intended to be consistent with original grades.

These backwater habitats are largely deep marsh habitat, with some smaller areas of shallow marsh. Primary potential impacts related to habitat alterations resulting from the backwater remediation involving sediment removal and capping could include the following:

- Change in surface sediment content and characteristics;
- Removal of existing seed bank and organisms in the sediment, as well as structural habitat features, such as large woody debris and rocks;
- Potential impacts to state-listed species habitat in the backwaters; and
- Potential colonization by invasive species.

For BW5A-1, where only a relatively small area of sediment removal/capping is proposed, these potential impacts will be greatly minimized or entirely negated. Physical impacts to the backwater habitat from the application of an amendment may result in some surface disturbance and impact to vegetation in the backwaters.

The primary restoration goal for backwaters is to restore the surface water hydrology of the backwater deep marsh habitat. The critical component of this restoration is to restore the pre-remediation hydraulic connection to the river, thereby maintaining backwater flooding and the overall backwater hydrologic regime. In general, the sand cap material is anticipated to be a suitable planting media for the growth of the deep marsh plant species desired to be re-established through natural recolonization because vegetative growth and expansion in sandy sediments are typically robust. In addition, GE will consider revegetation measures (e.g., seeding and/or planting) in some backwater areas as warranted based upon final evaluation of specific impact areas. Backwater flooding into these six areas generally occurs at least annually, such that sediment deposition will add to the surface sediments on a regular basis to further supplement the substrate suitability to support revegetation.

5.11.4 Other Waterbodies Habitat Impacts and Restoration

As described in Section 4.2.3, three Other Waterbodies in Reach 5A will be subject to remedial activities—the Intermittent Side Channel, portions of Sykes Brook, and West Pond. The remediation will include removal and capping of the top one foot of sediment in the Intermittent Side Channel and Lower Sykes Brook and up to two feet of removal, followed by backfill placement, in West Pond.

The habitats of these Other Waterbodies were described briefly in Section 3.8.4, and summaries of the potential habitat impacts and restoration associated with each are presented below.

Potential habitat impacts and restoration measures for the portion of Sykes Brook subject to remedial activities will be similar to those described above for the riverine habitat in the main stem of the Housatonic River (see Section 5.11.1). Habitat impacts associated with the Intermittent Side Channel will be minimal because it is primarily a conveyance channel for overbank flooding and will be substantially restored to existing conditions in form and function (with an engineered cap for stabilization as needed). West Pond remediation will follow a similar approach as that for the backwaters, and the potential habitat impacts and measures to address such impacts will be similar to those outlined above for the Reach 5A backwaters (see Section 5.11.3). The outlet flows and water stage/regime in West Pond will require addressing beaver dam activity, particularly on the western side, where attempts to maintain discharges from the pond through beaver impoundments have been an ongoing effort.

5.11.5 Floodplain Wetland and Upland Habitat Impacts and Restoration

Based on the currently proposed remediation footprints in Reach 5A (described in Section 4), the floodplain remediation is expected to directly impact approximately 5.8 acres of floodplain habitats (excluding vernal pools), distributed among the following cover types: 4.7 acres of floodplain forest, 0.19 acre of floodplain shrub swamp habitat, 0.73 acre of marsh/wet meadow habitats, and 0.23 acre of upland fields or other disturbed/developed conditions. In addition, temporary access roads and staging areas are estimated to impact approximately 16.8 acres of floodplain habitat within the 1 mg/kg PCB isopleth (based on the preliminary staging area and temporary access road layout shown on Figure 5-6).[57] These include impacts to the following cover types: 7.4 acres of floodplain forest, 0.75 acre of floodplain shrub swamp habitat, 2.0 acres of marsh/wet meadow habitats, and 6.6 acres of upland fields or other disturbed/developed conditions.

Floodplain wetland and upland habitat impacts associated with both remediation and supporting activities could include the following:

- *Loss of vegetative cover*. This impact will be most prominent in forested areas. As discussed in Section 5.6, the removal of mature trees in remediation areas will be minimized to the extent practicable, particularly on residential properties. However, where such removal is necessary, the trees will be lost; further, the grubbing of the root systems, where necessary, could extend

[57] The extents of floodplain habitat impacts associated with temporary access roads conservatively assume a road width of 20 feet; the actual design details for the temporary access roads will be evaluated and determined during final design. In addition, the extents of floodplain habitat impacts associated with both temporary staging areas and temporary access roads include only the portions of those features inside the 1 mg/kg PCB isopleth. Approximately 18.2 acres of temporary staging areas and approximately 6.9 acres of temporary access roads are located outside of the 1 mg/kg isopleth.

laterally (perhaps outside of the direct footprint of the activity) and to the subsurface soils. This impact may be limited in some cases with the use of timber matting and/or low ground pressure equipment, as discussed previously. Non-forested portions of the floodplain will be less impacted, especially from access roads and staging areas, because the grubbing activity may not be warranted in such areas and would be more confined to the areas directly impacted by remediation.

- *Changes in soil characteristics*. Areas subject to remedial excavation and other activities will be returned to grades consistent with pre-remediation conditions (to the extent practicable) by backfilling and grading, and BMPs will be implemented during construction. However, changes in structural characteristics and physical-chemical properties of existing floodplain soils are to be expected despite BMPs. Further, changes in the floodplain microtopography are likely to result from remedial excavation as well as access road and staging area construction and operation. These impacts will be minimized to the extent practicable by detailed specifications and adherence to BMPs.
- *Changes in surface and subsurface hydrology*. Floodplain habitats have developed based on complex patterns of surface water flow during flooding conditions and by shallow groundwater and interstitial water dynamics. These conditions can be altered by excavation and re-grading and by compaction from heavy equipment operations.
- *Potential impacts to rare species habitat*. Both remediation and support activities could impact the habitat of federally or state-listed rare species in the floodplain.
- *Potential colonization by invasive species*. Although replanting and reseeding of cleared areas will be conducted, the disturbance caused by remediation and support activities could ultimately result in some recolonization by invasive plant species.

A number of restoration procedures are available that would be implemented to address the impacts described above and to restore the affected floodplain habitats. The implementation of the work related to restoration of the floodplain habitats will likely include the following steps, which will be coordinated with the various phases of the remediation process, as will be described in the Restoration/Remediation Coordination Plan and Restoration Plan for Reach 5A:

- Implement any necessary construction-phase monitoring for federally or state-listed species (e.g., monitoring for wood turtles).
- Evaluate cut above-ground woody debris for potential subsequent reuse as habitat features and set aside any selected material to separate it from woody debris that is to be removed from the site.
- Use grade stakes and pre-remediation topographic mapping to re-establish the pre-remediation topography to the extent practicable. Make efforts to establish the original

configuration of depressional areas and swales in forested areas that contribute to flood storage, surface water conveyance through the floodplain, soil moisture, and other habitat conditions.

- Promote microtopographic variability by embedding some organic debris within the replacement soils.
- Distribute dead woody debris over and into the ground surface as appropriate, depending on pre-remediation coverage.
- Apply an appropriate seed mix to the disturbed portions of the remediation area, including access and staging areas.
- Plant trees, shrubs, and herbaceous species as detailed on final approved planting plans. These plans would include, to the extent feasible, replanting any state-listed plant species that would be impacted and/or any affected plant species that is relied upon by federally or state-listed animal species.

5.11.6 Vernal Pool Habitat Impacts and Restoration

As described in Section 4.5, it is anticipated that remedial activities will occur in 48 of the 59 vernal pools identified in Reach 5A. Remediation will consist of either excavation and restoration or application of an amendment, to be determined in part based upon the results of a vernal pool pilot study. The associated impacts and restoration details associated with each approach will be evaluated during the vernal pool pilot study.

5.11.7 Rare Species Habitat Impacts and Restoration

As described previously, MNHESP has mapped portions of Reach 5A as Species Habitat for 21 state-listed rare species, including 10 plants, seven invertebrates, two birds, one reptile, and one mammal (which is also a federally listed endangered species). Specific occurrences of these rare species within preliminary remediation and access road/staging areas have not been determined. It is anticipated that additional surveys will be conducted to assess the specific habitat conditions within areas designated for remediation or access roads/staging areas relative to the habitat requirements of these species. As described in GE's *Restoration Performance Objectives and Evaluation Criteria Report* (Restoration Criteria Report; Arcadis and AECOM 2023), submitted on August 25, 2023, the restoration evaluation criteria for rare species impacts are that the impacted habitat for those species has been restored to pre-remediation conditions or other conditions that would support such species or that mitigation for such impacts has been provided and that the applicable requirements of the Massachusetts Endangered Species Act for state-listed species have been met. The Restoration Plan for Reach 5A will be designed to meet these criteria.

5.12 Property Access

Access to various properties along Reach 5A will be required to facilitate site preparation and remedial construction and restoration activities. Those activities include performing remedial excavation and backfilling activities on private and public properties, constructing temporary access roads, and constructing staging and support areas at several locations. As such, signed property owner access agreements will be needed.

Subsequent to final design and prior to the start of any site work, GE will develop a database of properties that will be affected by remediation and support activities. Property owner contact information, obtained from review of City of Pittsfield tax mapping and property owner records, will be included in the database. GE will then contact the private and public floodplain property owners along Reach 5A as needed to notify them of the anticipated work and request that they provide a signed Consent for Access form (based on the form included in the CD) allowing GE and the regulatory agencies, including, EPA, access permission to perform and oversee the work.

GE will track the signed access agreements received in the database and will work with property owners to obtain necessary access agreements. In the event that GE is unable to obtain a signed Consent for Access form from a property owner after making several attempts to do so, GE will notify EPA and provide support for any future attempts by EPA to obtain access permission.

5.13 Consideration of Cultural Resources

As discussed in Section 3.9, GE's Revised Phase IA CRA Report stated that the next step in the cultural resource evaluation process is to conduct a Phase IB CRS of portions of Reach 5A that will be affected by remediation activities or construction and use of access roads and staging areas in order to evaluate whether those activities will impact any potentially significant cultural resources. The proposed CRS for Reach 5A is described in GE's Phase IB CRS Work Plan for Reach 5A, which is being submitted concurrently with this Conceptual RD/RA Work Plan. That work plan defines an updated Archaeological Area of Potential Effects (APE) and Historic Architectural APE for Reach 5A, compares those APEs with the areas identified as containing known potentially significant cultural resources or having a high potential to contain such resources, and describes the proposed intensive survey activities in areas where the two overlap. The results of these survey activities will be presented in a Phase IB CRS Report.

If the additional Phase IB investigations and assessments indicate that the Reach 5A remediation or support activities would result in an adverse effect on potentially significant archaeological or historic structural resources, that such effects cannot be avoided, and that additional information is necessary to determine whether the resources to be affected are in fact significant (using criteria identified in the Phase IB CRS Work Plan), GE will prepare and submit a Phase II CRA Work Plan to evaluate the latter issue. The Phase II CRA Work Plan will be submitted on a schedule specified in the

Phase IB CRS Report, and the results of the proposed activities will be presented in a Phase II CRA Report, to be submitted no later than the date of submittal of Final RD/RD Work Plan for Reach 5A. If it is determined that remediation or support activities would affect significant cultural resources, GE will evaluate whether those resources can be protected during such activities. In the event that the remediation and/or support areas would result in unavoidable adverse effects on significant cultural resources, mitigation activities may be necessary. Any proposed mitigation activities would be described in the Final RD/RA Work Plan for Reach 5A.

6 Applicable or Relevant and Appropriate Requirements

In addition to establishing Performance Standards for the remediation to be conducted in Reach 5A (summarized in Section 2), the Revised Final Permit, in Attachment C, identifies the ARARs for the ROR Remedial Action. The ARARs that are pertinent to and were considered for the remedial design in Reach 5A are presented in Table 6-1 (in the same format as Attachment C to the Revised Final Permit).[58] That table also specifies the actions to be taken in the Reach 5A remediation to comply with these ARARs (where not waived by EPA).

Section II.E of the Revised Final Permit requires that the technical RD/RA submittals for response actions for the ROR specify additional ARARs not listed in Attachment C, if any, for such response actions. As shown in Table 6-1, one additional guidance document that was not listed in Attachment C (EPA's Subaqueous Capping Guidance [Palermo et al. 1998]) has been identified as a document "to be considered" in the Reach 5A remediation. Pursuant to Section II.B.2.i of the Revised Final Permit and as described in Section 5.3, this guidance was considered during conceptual design of the engineered cap.

[58] Note that this summary does not include ARARs that are pertinent to the UDF design. Those ARARs were presented in the UDF Conceptual Design Plan submitted to EPA on December 6, 2022.

7 Quality-of-Life Considerations

Section II.H.11 of the Revised Final Permit requires GE to prepare a QOL Compliance Plan that discusses how several topics will be addressed during remediation, including the following: (1) potential air quality, noise, odor, and light impacts; (2) potential impacts on recreational activities; (3) road use, including restrictions on transportation of waste material through certain residential areas[59] and methods to minimize and mitigate transportation-related impacts to neighborhoods, infrastructure, and the general public; (4) coordination with local governments and affected residents/landowners at or near areas impacted by remediation; and (5) community health and safety. The QOL Compliance Plan is scheduled for submittal to EPA in December 2023.[60]

A central focus of the QOL Compliance Plan will be defining standards for air quality, noise, odor, and lighting to be implemented during the ROR Remedial Action. The QOL Compliance Plan will be a site-wide plan that defines the standards that will be applied throughout the ROR. Details regarding potential QOL impacts resulting from the remediation in Reach 5A, the approach to monitoring those impacts in that reach, and methods to minimize or mitigate such impacts will be provided in the Final RD/RA Work Plan for Reach 5A. It is anticipated that an adaptive management approach will be implemented with respect to compliance with these QOL standards, such that modifications to control measures and remedial construction activities may be identified as the project proceeds. Details regarding the adaptive management approach to be applied to the ROR Remedial Action will be described in GE's forthcoming Adaptive Management Plan.

The QOL Compliance Plan will also describe the impacts of remediation on recreational activities in the river and floodplain in the ROR area and measures to minimize or mitigate such impacts where practicable. As applicable to Reach 5A, the plan will include a general provision that GE will work cooperatively with the City of Pittsfield and the Commonwealth of Massachusetts to facilitate their enhancement of recreational activities, such as canoeing and other water activities, hiking, and biking in the ROR corridor, on properties where remediation will occur and/or where temporary access roads are constructed. Specifics regarding the impacts of remediation on recreational activities in Reach 5A and methods to minimize or mitigate such impacts will be provided the Final RD/RA Work Plan.

The QOL Compliance Plan will also address concerns related to increased traffic in or near residential areas and stress on local roadways that could result in the need for increased road maintenance. The plan will describe methods to reduce residential impacts where practicable, including use of remediation techniques that will avoid transport of waste material through residential areas. The plan

[59] Section II.H.11.c of the Revised Final Permit identifies specific roads where restrictions on transport of waste material through residential areas are required.

[60] In accordance with EPA's approval of GE's May 2023 request to revise the schedule for submission of several deliverables, the QOL Compliance Plan is required to be submitted by December 20, 2023.

will also include a description of activities that will be performed to document the pre- and post-remediation conditions of municipal roads and associated infrastructure (e.g., bridges and culverts) that may be used for the transportation of materials required for remediation. Specific potential roadways to be used for the transport of excavated materials from Reach 5A to the UDF or to off-site disposal facilities will be provided in the forthcoming T&D Plan, with the final selection of such roadways to be included in the Final RD/RA Work Plan or SIP, as discussed in Section 5.10.

8 Sustainability Considerations

8.1 Overview

Section II.H.14 of the Revised Final Permit required GE to prepare a sustainability and climate adaptation plan that includes measures to ensure that the remediation activities to be conducted in the ROR are designed and constructed to be resilient to potential impacts from climate change and to incorporate, where practicable and appropriate, methods to minimize GHG emissions. GE's *Sustainability and Climate Adaptation Plan* (SCAP; Anchor QEA 2022b) was submitted to EPA on September 16, 2022, and conditionally approved by EPA on January 27, 2023. EPA's conditional approval letter on the SCAP directed GE to provide design details and measures to be implemented to provide climate resiliency and sustainability in a specific section in the Conceptual and Final RD/RA Work Plans for each RU. Consistent with that directive, this section contains a preliminary vulnerability assessment performed consistent with EPA's 2019 *Climate Resilience Technical Fact Sheet: Contaminated Sediment Sites* (EPA 2019b) and a conceptual GHG emissions evaluation. At this conceptual stage of the Reach 5A design, this section provides a summary of the tools that will be used to estimate GHG emissions during final design and a summary of the measures that may be incorporated into the final design to minimize GHG emissions.

8.2 Vulnerability Assessment

A preliminary vulnerability assessment was conducted to define and summarize potential climate change vulnerabilities of the Reach 5A remediation and identify potential resiliency measures to avoid or mitigate such impacts. Results of this assessment are described in the following subsections and summarized in Tables 8-1 and 8-2. This preliminary assessment will be updated, as necessary, during final design as additional details related to remedy implementation are better understood.

As described in the above-referenced EPA Fact Sheet, the following steps were performed as part of the vulnerability assessment: (1) an exposure assessment to identify particular hazards of concern and characterize exposure to those hazards caused by climate change; (2) a sensitivity assessment to evaluate the likelihood for those hazards to reduce the remedy's effectiveness; (3) identification of potential resiliency measures to mitigate high-priority vulnerabilities; and (4) a review of adaptive capacity to adjust to climate variability and extremes caused by climate change. Each of these elements is described further in the following subsections.

Table 8-1
Potential Vulnerabilities Associated with Potential Climate Change Impacts

Reach 5A Remedy Components		Potential Vulnerabilities Due to Extreme Weather			
		Physical Damage	Water Damage	Power Interruption	Reduced Access
Submerged Components	Engineered cap – during construction		●		
	Engineered cap – post-construction	●	●		
Upland Components	Riverbank reconstruction and stabilization measures		●		
Site Operations and Infrastructure	Exposed construction equipment and vehicles	●	●		●
	Sediment dewatering and treatment equipment	●	●		
	Fuel storage units	●			●
	Monitoring equipment	●		●	
	Fencing and signs for controlling access or use	●			●
	Field office trailers and other support structures	●	●	●	●
	Temporary access roads	●	●		●

Table 8-2
Potential Resiliency Measures to Address High-Priority Vulnerabilities

Potential Points of System Vulnerability		Potential System Disruption Due to Extreme Weather				Potential Resiliency Measures for High-Priority Vulnerabilities
		Physical Damage	Water Damage	Power Interruption	Reduced Access	
Submerged Components	Engineered Cap – during construction		●			• Evaluate the feasibility of using water diversion/containment barriers to conduct sediment removal and capping under dewatered (dry) conditions (see Section 5.4.1)
	Engineered Cap – post-construction	●	●			• Design the engineered cap's erosional protection layer to withstand a 100-year return period flow consistent with EPA guidance (see Section 5.3.1) • Conduct a sensitivity analysis to evaluate whether the erosion protection layer should be further enhanced to protect against higher flows (see Section 5.3.1) • Implement a post-construction long-term monitoring and maintenance program (to be developed during final design)[1]
Upland Components	Riverbank reconstruction and stabilization measures		●			• Conduct a geomorphological field survey and assessment of the Reach 5A river channel (see Section 10.1) • Design river channel and riverbank reconstruction details in accordance with the principles of Natural Channel Design (to be developed during final design)

Potential Points of System Vulnerability		Potential System Disruption Due to Extreme Weather				Potential Resiliency Measures for High-Priority Vulnerabilities
		Physical Damage	Water Damage	Power Interruption	Reduced Access	
Site Operations and Infrastructure	Exposed construction equipment and vehicles	●	●		◐	• Develop contingency plans, monitor weather forecasts, and relocate equipment to higher ground when there is a potential for flooding (to be included in specifications developed during final design)
	Sediment dewatering and treatment equipment	●	●			• Where possible, locate sediment processing areas outside the 100-year floodplain or implement flood protection measures during staging area construction (to be evaluated during final design) • Use wind-resistant covers on sediment stockpiles (to be evaluated during final design)
	Fuel storage units	●			◐	• Locate outside flood-prone areas, construct wind-resistant housing or anchors, and protect with secondary containment (to be evaluated during final design)
	Monitoring equipment	●		○		• Monitor weather forecasts and relocate vulnerable equipment to shelter when extreme storms are forecasted (to be evaluated during final design)
	Fencing and signs for controlling access or use	○			○	
	Field office trailers and other support structures	●	◐	○	○	• Use wind-resistant anchors, monitor weather forecasts, and evacuate vulnerable shelters when extreme wind events are forecasted (to be evaluated during final design)
	Temporary access roads	◐	◐		●	• Inspect temporary access roads after extreme weather events and repair as necessary (to be evaluated during final design)

Notes:
● = High priority
◐ = Medium priority
○ = Low priority

1. As described in Section 5.1 of the Final Revised SOW, a Post-Construction Inspection, Monitoring, and Maintenance Plan will be developed as part of, or submitted concurrently with, the Final RD/RA Work Plan for Reach 5A.

8.2.1 Exposure Assessment

An exposure assessment was performed to identify potential hazards of concern to the remedy components due to extreme weather events. The identified hazards were then used as part of the sensitivity analysis to assess the likelihood of such hazards (Section 8.2.2) and to identify potential resiliency measures to address the hazards (Section 8.2.3).

As described in Section 4, the Reach 5A remedy components that were developed to meet the Performance Standards include removal and capping of sediments in the riverbed and backwaters, excavation and stabilization of riverbank soils, excavation and backfill of floodplain soils (including those at residential properties, non-residential floodplain EAs, and vernal pools), and habitat restoration. The exposure assessment related to impacts from extreme weather events included a review of potential hazards to the submerged and upland components of the remedy and to site infrastructure critical to remedy construction, monitoring, and operation. Potential hazards that may arise to the remedy or during remedy construction due to extreme weather events include the following:

- Physical damage to in-progress remedial construction from flooding or high river flows;
- Physical damage to support facilities from flooding;
- Remedial construction delays or unsafe conditions due to unseasonably high river flows that can cause stage heights to increase rapidly;
- Reduced access to upload support areas due to flooding of access roads;
- Potential resuspension and transport of sediments during remedial construction due to high river flows;
- Scour of the completed engineered cap or underlying sediment due to extreme river flows;
- Physical damage to completed engineered caps due to fallen trees; and/or
- Erosion of riverbanks during high river flow events.

8.2.2 Sensitivity Assessment

The sensitivity assessment included an evaluation of the likelihood for the climate change hazards of concern to reduce the remedy's effectiveness. While some of the general effects of climate change are universal, regions may experience different levels of effects based on geography and land development pattern. The Commonwealth of Massachusetts has developed the *Massachusetts Climate Change Projections – Statewide and for Major Drainage Basins: Temperature, Precipitation, and Sea Level Rise Projections* (NE CASC 2018). This document indicates that, in Massachusetts, winters may become dominated by rain instead of snow, which would decrease spring-generated snow melts. Rain patterns may change with the result of increases in rain intensity and potential

longer periods of drought. If increased rain intensity or more frequent intense storms occur, the likelihood of the potential hazards identified in Section 8.1.2 would increase.

Sensitivity to extreme weather events will differ during construction and after construction. The construction-related hazards identified in Section 8.2.1 (i.e., the first five bullets) have a potential to disrupt or delay remedy implementation for a period of time during any construction season if an extreme weather event occurs. Because the Reach 5A remedial construction will take multiple years to complete, the potential chance of such disruption increases. During construction, extreme weather events could cause physical damage to the following:

- Portions of the engineered cap that are actively under construction;
- Completed portions of the engineered cap;
- Water diversion/containment barriers used to construct in-river work cells;
- Exposed soils during riverbank excavation or partially constructed stabilization measures;
- Exposed soils or backfill in floodplain remediation areas before adequate soil stabilization is established;
- Excavated sediment and soil stockpiles at staging areas;
- Construction equipment working in the river or in the floodplain;
- Fuel storage units, if staged within the floodway;
- Monitoring equipment;
- Temporary access roads; and/or
- Power to site.

Post-construction hazards to the remedy may also exist due to extreme weather events (i.e., the last three bullets in Section 8.2.1). Extreme weather events are typically evaluated during remedial design regardless of whether climate change impacts are expected to occur. With the potential for increased severity or frequency of extreme weather events, the remedial design for Reach 5A includes sensitivity analysis for certain aspects of the remedy to determine if more resilient measures should be incorporated into the final remedial design.

If remedy components are not designed to be resistant to the potential effects of climate change, indirect impacts that could result include, but are not limited to, the following:

- Recontamination of downstream areas due to erosion or loss of engineered cap material;
- Downstream transport of sediment or soil to river or floodplain areas that were previously uncontaminated or remediated; and/or

- Unexpected and additional costs for repairing engineered caps or performing additional dredging or excavation.

Table 8-1 was developed consistent with the EPA's Fact Sheet to summarize potential vulnerabilities of the remedy and remedial construction to extreme weather and to identify potential direct effects, including physical damage, water damage, power interruption, and reduced access.

8.2.3 Resiliency Measures

In accordance with EPA's Fact Sheet, potential resiliency measures were developed to address the high-priority vulnerabilities identified in Table 8-1. Table 8-2 lists the vulnerabilities identified in Table 8-1 and provides a priority designation (i.e., low, medium, or high priority) for each identified vulnerability and potential direct impact. Table 8-2 also lists the potential resiliency measures that have been identified for each vulnerability at this stage of the conceptual design. Additional design evaluation and assessment will be conducted during final design; this may include identification of additional vulnerabilities and/or resiliency measures or modifications to those listed in Tables 8-1 and 8-2. Resiliency measures evaluated during the conceptual design phase to address certain vulnerabilities are summarized in the following paragraphs.

As described in Section 5.3.1, the design of the engineered cap erosion protection layer was initially developed using a design flow rate with a 100-year return period based on up-to-date flow information (i.e., through 2022) from the USGS Coltsville gage. However, a wide range of flows was evaluated to understand velocities in the river channel under various conditions, including higher flows that were evaluated to assess the potential impacts of climate change on cap performance. Based on an assessment of potential flow increases, the conceptual design for the engineered cap was based on a flow of 16,400 cfs at the Confluence to assess the potential impacts of climate change (approximate 200-year return period flow, which represents a 23% increase relative to the current 100-year return period flow estimate).

As discussed in Section 3.5, river flow conditions can be variable, and stage heights can increase rapidly from runoff from large storms. This was identified as a key factor in the review of potential in-river implementation options for Reach 5A. As described in Section 5.4.1, multiple methods for sediment removal and capping within the main river channel may be used depending on the conditions encountered. One of the potential implementation methods that will further be evaluated during final design is the construction of in-river diversion/containment cells to allow for the sediment removal and capping work to be conducted within dewatered (i.e., "dry") conditions, which would address the potential vulnerability associated with working directly within the river.

Additional potential resiliency measures that will be incorporated into the final design, as appropriate, are listed below (and summarized in Table 8-2).

- The design for reconstruction and stabilization of riverbanks will follow the principles of Natural Channel Design, and that design will be informed by a geomorphological field survey and assessment of the Reach 5A river channel as part of the supplement data collection program described in Section 10.2.
- Contingency plans will be developed to identify response actions associated with potential extreme weather events (e.g., monitoring weather forecasts and relocating equipment and personnel when extreme weather events are forecasted).
- Where possible, sediment processing areas will be located outside the 100-year floodplain, and flood protection measures will be developed for staging areas within the floodplain based on the local topography and accessible land.
- Fuel storage units will be located outside flood-prone areas, staged in wind-resistant housing or with anchors, and protected with secondary containment.
- Temporary access roads will be inspected after extreme weather events and repaired as necessary to minimize project delays.

8.2.4 Adaptive Capacity

Section II.F of the Revised Final Permit requires that an adaptive management approach be incorporated into the design and implementation of the Remedial Action to adapt requirements or activities based on new information and make changes as needed to achieve the expected benefits of the project. This approach will be described in GE's forthcoming Adaptive Management Plan. Specifically, that plan will describe the adaptive management process that will be implemented to adapt and optimize project activities (i.e., design and construction) to account for lessons learned from work conducted at early stages of the project, new information, and changing conditions.

8.3 Greenhouse Gas Emissions Evaluation

GHGs are gases that trap heat in the atmosphere. The most prominent GHGs contributing to this process are carbon dioxide (CO_2), methane, and nitrous oxide. CO_2 is the primary GHG emitted through human activities (approximately 80% of GHG emissions consist of CO_2). However, the carbon dioxin equivalent (CO_2e) consists of the calculated total GHG emissions taking into account the global warming potential (GWP) of each of these components. GWP is the heat absorbed by any GHG in the atmosphere as a multiple of the heat that would be absorbed by the same mass of CO_2. The use of construction equipment and materials is anticipated to generate GHG emissions during the ROR Remedial Action. The potential sources of GHG emissions anticipated during construction and operations will include direct sources (e.g., on- and off-road vehicles and fuel combustion from

equipment operation), indirect sources (electricity use), and upstream contributions (e.g., production of materials used for remedial process).

Because many of the details associated with the Reach 5A remedy have yet to be determined, a GHG assessment has not been provided in this Conceptual RD/RA Work Plan. That assessment will be provided in the Final RD/RA Work Plan for Reach 5A. Table 8-3 identifies the potential sources of GHG by category and the tools that will be used to estimate GHG for each source as part of final design. Those tools are described in the paragraph following Table 8-3.

Table 8-3
Emission Sources and Quantification Tools

Emission Type	Emission Sources	Evaluation Tools
Direct	Vehicle/equipment fuel combustion	SEFA
	Vegetation decay	WARM
	Tree sequestration changes	i-Tree
Indirect	Electricity use	SEFA
Upstream	Material production/use	SEFA

Notes:
i-Tree: https://planting.itreetools.org/
SEFA: https://www.clu-in.org/greenremediation/SEFA/
WARM: https://www.epa.gov/warm

Spreadsheets for Environmental Footprint Analysis (SEFA) is a Microsoft Excel-based tool developed by EPA and is included in EPA's Clean-Up Information (CLU-IN) website. This tool has been designed to help analyze the environmental footprint of a site cleanup project including GHG emissions. Although SEFA addresses fuel combustion, electricity use, and upstream emissions, it does not account for vegetation decay and carbon sequestration. Vegetation decay can be estimated using emission factors provided in EPA's Waste Reduction Model (WARM), which provides emission factors for composting of material including yard trimmings (which would be a surrogate for mulched trees). For tree sequestration changes, the U.S. Forest Service i-Tree Planting tool will be used. The i-Tree Planting tool quantifies carbon sequestration from tree planting over a project lifetime using species-based biomass equations.

As described in the SCAP, methods to minimize GHG emissions will be incorporated into the design and construction process to the extent practicable. These measures will be evaluated by GHG category, including measures to address direct emissions, indirect emissions, and upstream emissions. Table 8-4 provides minimization measures and details regarding how those measures would reduce GHG emissions. Based on the planned minimization activities, a range of anticipated reductions in the potential CO_2e produced during Reach 5A construction activities will be developed and included in the final design.

Sustainable BMPs will be evaluated as part of final design and incorporated into the strategy for continued operation of the remedial activities to minimize GHGs. A summary of the sustainable BMPs will be provided as part of the final design and maintenance of those sustainable BMPs, and GHG mitigation measures will be incorporated into the Post-Construction Inspection, Monitoring, and Maintenance Plan.

Table 8-4
Potential Greenhouse Gas Mitigation Measures

Measure	Reduction	Emission Type		
		Direct	Indirect	Upstream
Incorporate vehicle and equipment BMPs	Measures including use of fuel-efficient on-road vehicles, idling restrictions, use of electric or hybrid vehicles as that market continues to grow, and route planning would reduce fuel use and thereby reduce overall GHG emissions associated with fuel combustion and fuel transport.	✓		✓
Use local sources of construction material	Use of local sources of construction material would reduce emissions compared to those of longer-distance truck transport to the site.	✓		✓
Employ local staff	Use of local staff to perform site work would limit long-distance commuting to the site.	✓		✓
Use low-impact development methods in temporary construction areas	Use of low-impact development methods, where practicable, would reduce disturbance to existing habitat and reduce the extent of restoration needed after construction. Such methods include prioritizing temporary construction on previously disturbed areas or using timber or composite matting for certain access roads.	✓		✓
Renewable energy use	Deployment of solar panels or other renewable energy sources to power office trailers or stationary equipment would reduce the need for fuel combustion.		✓	
Electricity use BMPs	BMPs for electricity use, such as use of motion detectors, would reduce electrical use for the project and thereby reduce GHG emissions from electricity generation.		✓	

Measure	Reduction	Emission Type		
		Direct	Indirect	Upstream
On-site reuse of material	Reuse of on-site material would limit the need for transport and disposal of such material and, as such, decrease GHG emissions associated with fuel combustion and processing of virgin material. For example, some debris could be decontaminated and beneficially reused; for instance, boulders could be power washed and reused for bank stabilization or channel reconstruction. In addition, logs from standing trees removed to allow access within the floodplain or river could be reused to support reconstruction, if suitable.	✓	✓	✓
Use of recycled material	Recycled or reused material, such as steel and concrete from recycled content, would reduce life-cycle emissions of GHG compared to use of virgin material.			✓

9 Summary and Preliminary Evaluation of River Water Withdrawals and Uses

9.1 Overview

As described in Section 2.7, the Revised Final Permit establishes a Performance Standard requiring GE to minimize/mitigate impacts during implementation of the Remedial Action to withdrawals and/or uses of water from the ROR by any entity. Section II.H.22 of the Revised Final Permit required GE to prepare a plan that provides details regarding achievement of that Performance Standard and associated requirements of the Revised Final Permit. GE's *Revised Water Withdrawal and Uses Plan* (WWUP; Anchor QEA 2023) was submitted to EPA on April 3, 2023, and it was approved by EPA on May 10, 2023.

The approved WWUP presented a description of pre-design activities to identify industrial, commercial, and private river water withdrawals and uses from the portions of ROR that will be subject to remediation activities (i.e., Reaches 5 through 8) and gather information for each identified river water user within each RU.[61] That plan also provided a description of the evaluations to be performed to assess potential impacts to identified river water withdrawals and uses during remedial activities and how the information will be used during the design process to minimize/mitigate those potential impacts. It also described the notifications to be made to potentially affected water users during remedial design and remedial action activities. After EPA's approval of the WWUP, GE conducted efforts to identify river water withdrawals and uses in Reach 5A.[62] The sections below provide a summary of those efforts and a preliminary evaluation of potential impacts on river water users.

9.2 Summary of Outreach Activities and Information Obtained

This section presents a summary of the water withdrawal and uses outreach activities performed for Reach 5A in accordance with the WWUP and associated findings in that reach. As provided in the WWUP, outreach activities included the following:

- Review of available online records;
- Outreach to Massachusetts Department of Environmental Protection (MassDEP);
- Outreach to local municipalities;

[61] As described in the WWUP, river water uses are considered activities in which water is physically withdrawn from or discharged to the river for residential, agricultural, industrial, or other uses. That plan states that the evaluation is not intended to evaluate uses of the river for recreational purposes (e.g., boating, swimming, and fishing).

[62] Although the WWUP described activities to be conducted for all of Reaches 5 through 8, initial efforts focused on Reach 5A to support this Conceptual RD/RA Work Plan. The remaining efforts in Reaches 5B through 8 are ongoing.

- Outreach to industrial facilities and agricultural operations along the river;
- Outreach to private property owners/lessees;
- Identification of permitted discharges to the river (excluding stormwater); and
- Visual observations during the field PDI activities.

As part of the initial step to identify potential river water users, GE reviewed available online records related to public water supplies, including those maintained by the Commonwealth of Massachusetts Bureau of Geographic Information (MassGIS). Based on a review of those records, no public or private entity was found that withdraws water for potable use along Reach 5A. This finding is consistent with 314 CMR 4.06(6)(b), which designates the Housatonic River as a Class B water.[63]

GE also contacted MassDEP and requested any available registration and permit documents and information for known uses of water withdrawn from the Housatonic River within Reach 5A. As noted in the WWUP, in accordance with 310 CMR 36.00, any person withdrawing an average daily volume of more than 100,000 gallons of water from a surface or groundwater source within Massachusetts must file with the registration program (for uses that began before 1988) or obtain a permit (for new users after 1988), except for some uses that are exempt under 310 CMR 36.05. Based on MassDEP's review, there are no identified water withdrawals within Reach 5A.

As part of the outreach process GE also contacted the City of Pittsfield and the Berkshire Regional Planning Commission to do the following: (1) gather information regarding any known industrial, commercial, or private withdrawals and users of river water; (2) confirm that no known public water suppliers draw water directly from the Housatonic River; and (3) request any available information on known groundwater extractions and uses within 500 feet of the river. The Berkshire Regional Planning Commission notified GE that the information requested would be maintained by MassDEP and the respective municipalities. As of late-September 2023, GE is continuing to work with the City of Pittsfield to obtain the requested information.

GE also contacted agricultural operations and private property owners/lessees along Reach 5A. This initially involved reviewing the MassGIS database records, mapping the parcels located near the Housatonic River in Reach 5A, and then identifying parcels that are located within 500 feet of the river. These parcels were then filtered by land use type (e.g., residential, industrial/commercial, and agricultural). The information gathered during this step, as well as information gathered through review of property and aerial mapping and as part of EPA's HHRA, was used to identify

[63] In accordance with 314 CMR 4.05(3)(b), Class B waters are designated as a habitat for fish, other aquatic life, and wildlife and for primary and secondary contact recreation. Class B waters are suitable for irrigation and other agricultural uses and for compatible industrial cooling and process uses. They are not designated as suitable as a source of potable water unless they are designated for public water supply as a "Treated Water Supply" under 314 CMR 4.06(1)(d)6. and (6)(b). The Housatonic River does not have the latter designation.

industrial/agricultural facilities and private property owners/lessees that needed to be contacted as part of the outreach process.

Two parcels (having a single owner) located within 500 feet of the Housatonic River in Reach 5A are designated as having agricultural use. These parcels are J3-2-202 and K4-6-201 (shown on Figure 9-1).[64] Survey forms requesting information regarding existing or planned water withdrawal, existing or planned groundwater withdrawal, and permitted discharge details were mailed to the owner of these parcels. The owner indicated there are no existing or planned river water or groundwater withdrawals and no permitted discharges to the Housatonic River associated with these parcels.

Survey forms requesting information regarding existing or planned river water or groundwater withdrawals were also sent to six other private property owners/lessees along Reach 5A for parcels that appeared to have developed land (e.g., properties with structures, dwellings, gardens, or ponds) with some reasonable chance of river water use. These parcels were J4-4-6, J5-2-4, J5-2-7, J6-3-1, K2-1-6, and K2-1-7 (shown on Figure 9-1). All six survey forms were completed and returned, all indicating that there are no existing or planned river water or groundwater withdrawals on those properties.

In addition to the above activities, GE reviewed available online records for active National Pollutant Discharge Elimination System (NPDES) permit holders within Reach 5A. The City of Pittsfield WWTP is the only active permit holder in Reach 5A based on the available records. The location of the discharge is at the downstream end of Reach 5A in the backwater area identified as BW5A-6 (shown on Figure 9-1).

Lastly, to supplement the efforts described above, GE reviewed information and observations gathered during PDI field activities performed within Reach 5A to determine whether there were indications that any property owners/lessees adjacent to the river are withdrawing river water (e.g., pipes extending into the river, intake structures, or pumps located along the shoreline). Specifically, visual observations along the shoreline and other information (i.e., photographs) gathered as part of the Reach 5A PDI activities (as described in Section 3.11) were reviewed to identify any potential water withdrawals. Based on results of that review, water withdrawal and use survey forms were sent to the property owners of four additional parcels (Parcels J6-2-2, J6-2-3, J6-2-10, and J6-2-11, all shown on Figure 9-1) in the vicinity of piping that extends into the river to confirm it is a discharge and not a withdrawal. As of late-September 2023, three of the four survey forms have been completed and returned, all indicating that there are no existing or planned river water or groundwater withdrawals on those properties.

[64] A third parcel designated as having agricultural use was identified near the downstream end of Reach 5A (Parcel K1-1-109). This parcel is owned by GE, and there are no water withdrawal or use activities associated with that parcel.

9.3 Evaluation of Potential Impacts on River Water Uses

Based on results of the outreach activities conducted to date (described in Section 9.2), no river water or groundwater withdrawals within 500 feet of the river were identified in Reach 5A. The Pittsfield WWTP is the only permitted discharge identified in Reach 5A, with the discharge point located at the downstream end of the reach. As noted in the previous section, the WWTP discharge is located within backwater BW5A-6. This backwater (and the adjacent river channel) will require remediation to achieve the Performance Standards (see Section 4.2.2.2). The WWTP is permitted to discharge 17 million gallons per day (MGD), but maximum daily flows have been as high as 20 MGD during the last five years, as identified by the WWTP in its annual NPDES monitoring data summary report (EPA Database 2023). The final design will evaluate whether the WWTP discharge would need to be temporarily diverted during backwater remediation activities in that area. As part of the supplemental data collection program, GE will meet with the City of Pittsfield to discuss details associated with the WWTP discharge and potential impacts and mitigative measures to be performed during remediation. During that outreach, GE will determine whether the design for the WWTP discharge specifies the use of any scour protection at the discharge point. Based on the outcome of that outreach, further evaluation will be conducted during final design to determine whether the engineered cap erosion protection layer to be placed near the discharge will require larger stone or an alternate erosion protection design (e.g., concrete matting) to prevent scour from the discharge.

The WWUP also requires that the Conceptual RD/RA Work Plan for each RU in the ROR includes an evaluation to determine whether water withdrawals or uses downstream of that RU could be affected by the remediation in that RU. GE is currently conducting an evaluation of whether the Reach 5A remediation will affect water withdrawals or uses downstream of that reach. That evaluation will be completed during the final design of the Reach 5A remediation.[65] In any case, water quality monitoring will be conducted during Reach 5A remediation to determine (in part) whether any downstream transport is occurring and whether response actions are required.

[65] This evaluation will not consider potential impacts downstream of Reach 8 because GE has determined that there will no impacts in such areas. The downstream end of Reach 5A is approximately 25 river miles from the upstream end of Reach 9, and there are six dams/impoundments located over that reach that will impede transport of solids/PCBs to downstream reaches.

10 Supplemental Data Collection and Treatability Testing

10.1 Overview

As described in the preceding sections of this Conceptual RD/RA Work Plan, several supplemental data collection activities and treatability testing are necessary to supplement the existing data and provide additional information to support the remedial design for Reach 5A. The following subsections summarize the proposed supplemental data collection and treatability testing for Reach 5A.

10.2 Supplemental Data Collection

Section 4.3.3.1 of the Final Revised SOW stated that the Conceptual RD/RA Work Plan for each RU will include a description of supplemental data collection activities to be conducted prior to final design. This section provides a summary of the proposed supplemental data collection activities. A detailed description of the proposed supplemental investigations and outreach is provided in the SDC Work Plan (Appendix I). As described in that work plan, the proposed supplemental data collection will generally include the following additional activities:[66]

- Additional sediment sampling to refine the volumes of main channel sediment requiring off-site disposal in accordance with the applicable Performance Standards;
- Additional floodplain soil sampling to further delineate the extent of the 1 mg/kg isopleth at two non-residential EAs and improve PCB characterization at one EA where Core Area 1 habitat is to be avoided in accordance with the Performance Standards;
- A river habitat survey and a geomorphological survey of the river channel to support final design evaluations associated with channel and riverbank reconstruction, using principles of Natural Channel Design;
- Supplemental BRA surveys to take into account the extent of remediation and the locations of access roads and staging areas, as identified in the Conceptual RD/RA Work Plan, including surveys to assess the specific habitat conditions within those areas relative to the habitat requirements of the state-listed rare species;

[66] As also discussed in the SDC Work Plan (Appendix I), in addition to conducting the data collection activities listed in the text, GE will complete the PDI, BRA, and related activities that were previously proposed but not yet conducted. These activities include the following: (a) continued recording of the hydraulic head in the river in Reach 5A; (b) completion of the bank erosion rate assessment; (c) evaluation of the potential effects of Reach 5A remediation on downstream water withdrawals and uses; (d) the fish community survey to be conducted along with the first round of fish tissue sampling in the baseline monitoring program; and (e) the collection of soil samples for pH and organic content analysis from the vernal pools that are subject to remediation and have not already been sampled for those parameters. Further, GE will conduct the Phase IB CRS survey activities described in the Phase IB CRS Work Plan described in Section 5.13.

- Additional geotechnical investigations to provide information and data on the geological conditions under the river, in riverbank remediation areas, and in areas where access roads and staging areas are proposed;[67]
- A groundwater investigation (in conjunction with the geotechnical investigation) to characterize local hydrogeologic conditions and groundwater flow patterns to support groundwater modeling effort to estimate in-river containment cell dewatering rates;
- Field surveys to finalize delineation of the top-of-bank line (i.e., riverbank-floodplain interface) and bottom-of-bank line (i.e., sediment-riverbank interface) that will be used to define the limits of the in-river sediment remediation polygon, the riverbank remediation limits, and the edge of floodplain remediation;
- Field surveys to gather detailed topographic data at the remediation areas, at proposed staging area properties, along temporary access road pathways, and where utilities have been identified; and
- Outreach to utility owners, owners of shoreline structures, and the one permitted water discharger (City of Pittsfield WWTP) within Reach 5A to gather supplemental information to support final design evaluations and determine any required setbacks from sensitive structures or utilities.

As described in the SDC Work Plan (Appendix I), the results of the supplemental data collection activities will be presented in a Supplemental Data Collection Summary Report, which will be submitted prior to the Final RD/RA Work Plan for Reach 5A. That report will also include the results of the PDI, BRA, and related activities that were previously proposed but not yet conducted, as described in the footnote on the prior page.

10.3 Treatability Studies

Section 4.3.3.1 of the Final Revised SOW stated that the Conceptual RD/RA Work Plan for each RU may include a Treatability Study Work Plan to describe any necessary treatability testing to support the final design. GE has determined that treatability studies will be necessary to support the remedial design for Reach 5A. This section provides a brief summary of the proposed treatability studies, and a separate *Treatability Study Work Plan for Reach 5A* is provided in Appendix H.

Treatability studies are proposed to provide information needed to support final design evaluations, supplement data gathered during the Reach 5A PDI, and provide data to be used by remediation

[67] As described in the SDC Work Plan (Appendix I), these additional geotechnical investigations supersede the previously proposed Phases 2 through 4 of the PDI geotechnical investigations described in the Revised Sediment/Bank PDI Work Plan.

contractors during construction. Specifically, bench-scale treatability testing is proposed to address the following objectives:

- Evaluate water quality associated with the potential release of suspended solids and PCBs during sediment removal in Reach 5A.
- Evaluate the effectiveness of potential dewatering methods for sediment to be removed from Reach 5A.
- Evaluate potential PCB and sediment concentrations within water to be generated during sediment dewatering activities associated with Reach 5A.
- Evaluate the effectiveness of various amendment types and doses in reducing (bioavailable) porewater PCB concentrations in backwater sediments in BW5A-1.[68]
- Evaluate carbon-based sorptive amendment types and doses to be used for the chemical isolation layer of the engineered caps in Reach 5A.

The *Treatability Study Work Plan for Reach 5A* (Appendix H) describes the sampling that will be conducted within the proposed remediation areas (described in Section 4) to support the bench-scale testing. As also described in that work plan, the results of the treatability studies will be presented in a Treatability Studies Summary Report, which will be submitted prior to the Final RD/RA Work Plan for Reach 5A.

[68] The treatability testing to evaluate amendment placement for backwater BW5A-1 is proposed to be conducted at the same time as the similar bench-scale treatability testing to be conducted as part of the vernal pool pilot study described in GE's June 2023 *Vernal Pool Pilot Study Work Plan*, as conditionally approved by EPA on September 12, 2023.

11 Remedial Design Schedule

In accordance the Final Revised OSS, this Conceptual RD/RA Work Plan is being submitted concurrently with the last PDI Summary Report for Reach 5A (the PDI Summary Report for Sediment and Riverbanks). The Final Revised OSS also states that GE will submit a Final RD/RA Work Plan for Reach 5A in accordance with the schedule proposed in this Conceptual RD/RA Work Plan and approved by EPA.

The Final Revised OSS presents flow charts (i.e., Figures 5-1 and 5-2 in that report) that detail the sequencing and precedence of deliverables and data collection activities that need to be completed prior to the start of remediation activities in Reach 5A. Many of those deliverables will need to be approved by EPA prior to submission of the Final RD/RA Work Plan for Reach 5A. Some of those deliverables have already been submitted or are being submitted concurrently with this Conceptual RD/RA Work Plan. Other plans that will present key aspects for the final design will be submitted to EPA in the near future.[69]

The schedule for development of the Final RD/RA Work Plan for Reach 5A is dependent on the following activities and deliverables:

- EPA approval of the PDI Summary Report for Non-Residential Floodplain EAs (submitted concurrently with this Conceptual RD/RA Work Plan);
- EPA approval of the PDI Summary Report for Sediment and Riverbanks (submitted concurrently with this Conceptual RD/RA Work Plan);
- EPA approval of this Conceptual RD/RA Work Plan and other work plans provided as appendices to it, including the SDC Work Plan (Appendix I) and the *Treatability Study Work Plan for Reach 5A* (Appendix H);[70]
- EPA approval of the Reach 5A BRA Report (submitted to EPA on August 25, 2023), completion of the associated supplemental BRA field activities, and EPA approval of the subsequent addendum to the Reach 5A BRA Report;
- EPA approval of the Restoration Criteria Report (submitted to EPA on August 25, 2023);

[69] As previously noted, in accordance with EPA's approval of GE's May 2023 request to revise the schedule for submission of several deliverables, the T&D Plan will be submitted by October 31, 2023; the Adaptive Management Plan will be submitted by November 21, 2023; the QOL Compliance Plan will be submitted by December 20, 2023; and the updated POP (including a Construction Monitoring Plan) will be submitted by January 25, 2024.

[70] As noted in Section 10.3 and the *Treatability Study Work Plan for Reach 5A* (Appendix H), GE proposes to conduct the treatability testing to evaluate amendment placement for backwater BW5A-1 at the same time as the similar bench-scale treatability testing to be conducted as part of the vernal pool pilot study. Because field sampling for the latter is anticipated to commence in fall 2023, GE requests EPA approval of this particular treatability proposal for BW5A-1 promptly, in advance of other approvals for treatability tests.

- Completion of supplemental data collection activities and EPA approval of the Supplemental Data Collection Summary Report;
- Completion of treatability testing and EPA approval of the Treatability Studies Summary Report;
- EPA approval of the Phase IB CRS Work Plan (submitted concurrently with this Conceptual RD/RA Work Plan) and completion of the associated field surveys;
- EPA approval of the Phase IB CRS Report;
- EPA approval of the Phase II CRA Work Plan (if determined to be necessary) and completion of the associated field activities;
- EPA approval of the T&D Plan (scheduled for submittal in October 2023); and
- EPA approval of the QOL Compliance Plan (scheduled for submittal in December 2023).

As described in various sections of this Conceptual RD/RA Work Plan, supplemental data collection activities, treatability studies, supplemental BRA assessments, the Phase IB CRS, and (if necessary) the Phase II CRA are necessary to support the Reach 5A final design. EPA approval of the work plans for those activities is thus required to proceed with the additional data collection and testing needed to support final design. In addition, because the locations, extents, and depths of remediation areas determine (in part) where supplemental data collection activities will be performed, EPA approval of the conceptual remediation areas presented in Section 4 is necessary to proceed with those activities. As indicated in the Final Revised OSS, the other approvals listed above are also necessary to complete the final design of the Reach 5A remediation.

Accordingly, GE will submit a Final RD/RA Work Plan for Reach 5A within 60 days of the last of the EPA approvals or other activities listed above.

The Final RD/RA Work Plan for Reach 5A will include a detailed description of the design and implementation of the proposed remedial activities in accordance with Section 4.3.3.4 of the Final Revised SOW. It will be accompanied by a Phase II CRA Report (if necessary and not already submitted); a Restoration/Remediation Coordination Plan; a Restoration Plan; and a Post-Construction Inspection, Monitoring, and Maintenance Plan for Reach 5A. The Final RD/RA Work Plan for Reach 5A will also include an anticipated schedule for submission of a SIP (containing the relevant contractor plans) and for implementing the remedial activities in Reach 5A. The updated POP will also need to be approved prior to the initiation of remediation in Reach 5A.

As described in Section 5.7, it is anticipated that the vernal pool pilot study will commence prior to, but be completed after, development of the Final RD/RA Work Plan for Reach 5A. Upon EPA approval of the results of the vernal pool pilot study (i.e., approval of the Vernal Pool Pilot Study Summary Report), GE will submit an addendum to the Final RD/RA Work Plan for Reach 5A that

provides remedial design details for the remaining 38 vernal pools in Reach 5A that were not included in the pilot study.

12 References

AECOM, 2020. *Final Report on Potential Vernal Pool Investigations*. Prepared for General Electric Company, Pittsfield, Massachusetts. July 16, 2020.

AECOM, 2022. *Revised Reach 5A Baseline Restoration Assessment Work Plan*. Housatonic River – Rest of River. Prepared for General Electric Company, Pittsfield, Massachusetts. July 2022.

AECOM, 2023a. *Housatonic River Reach 5A Baseline Restoration Assessment Report*. Prepared for General Electric Company, Pittsfield, Massachusetts. August 2023

AECOM, 2023b. *Revised Supplemental Phase IA Cultural Resources Assessment Report*. Housatonic River – Rest of River. Prepared for General Electric Company, Pittsfield, Massachusetts. March 10, 2023.

AECOM, 2023c. *Phase IB Cultural Resources Survey Work Plan for Reach 5A*. Prepared for General Electric Company, Pittsfield, Massachusetts. September 2023

AECOM and Anchor QEA, 2020. *Housatonic River – Rest of River, Reach 5A Floodplain Pre-Design Investigations: Final Morphology and Accessibility Survey Report*. Prepared for General Electric Company, Pittsfield, Massachusetts. July 16, 2020.

Anchor QEA (Anchor QEA, LLC), 2019. *Final Completion Report for Removal Action for Housatonic River Floodplain – Current Residential Properties Downstream of the Confluence*. GE-Pittsfield/Housatonic River Site. Prepared for General Electric Company. February 2019.

Anchor QEA, 2020. *Revised Pre-Design Investigation Work Plan for Reach 5A Floodplain Residential Properties*. Prepared for General Electric Company, Pittsfield, Massachusetts. July 9, 2020.

Anchor QEA, 2021a. *Addendum to Revised Pre-Design Investigation Work Plan for Reach 5A Floodplain Residential Properties*. Prepared for General Electric Company, Pittsfield, Massachusetts. March 31, 2021.

Anchor QEA, 2021b. *Pre-Design Investigation Summary Report for Reach 5A Floodplain Residential Properties*. Prepared for General Electric Company, Pittsfield, Massachusetts. December 2021.

Anchor QEA, 2021c. *Second Revised Pre-Design Investigation Work Plan for Reach 5A Non-Residential Floodplain Exposure Areas*. Prepared for General Electric Company, Pittsfield, Massachusetts. November 19, 2021.

Anchor QEA, 2022a. *Final Revised Overall Strategy and Schedule for Implementation of the Corrective Measures*. Prepared for General Electric Company, Pittsfield, Massachusetts. July 2022.

Anchor QEA, 2022b. *Sustainability and Climate Adaptation Plan*. Housatonic River – Rest of River. Prepared for General Electric Company, Pittsfield, Massachusetts. September 2022.

Anchor QEA, 2023. *Revised Water Withdrawal and Uses Plan*. Housatonic River – Rest of River. Prepared for General Electric Company, Pittsfield, Massachusetts. April 2023.

Anchor QEA and AECOM, 2022. *Revised Pre-Design Investigation Work Plan for Reach 5A Sediment and Riverbanks*. Housatonic River – Rest of River. Prepared for General Electric Company. May 2, 2022.

Anchor QEA and AECOM, 2023a. *Pre-Design Investigation Summary Report for Reach 5A Sediment and Riverbanks*. Housatonic River – Rest of River. Prepared for General Electric Company, Pittsfield, Massachusetts. September 2023.

Anchor QEA and AECOM, 2023b. *Vernal Pool Pilot Study Work Plan* Housatonic River – Rest of River. Prepared for General Electric Company, Pittsfield, Massachusetts. June 2023.

Anchor QEA, AECOM, and Arcadis, 2021. *Final Revised Rest of River Statement of Work*. Housatonic River – Rest of River. Prepared for General Electric Company, Pittsfield, Massachusetts. September 2021.

Anchor QEA and Arcadis, 2023a. *Addendum to Second Revised Pre-Design Investigation Work Plan for Reach 5A Non-Residential Floodplain Exposure Areas*. Prepared for General Electric Company, Pittsfield, Massachusetts. January 19, 2023.

Anchor QEA and Arcadis, 2023b. *Pre-Design Investigation Summary Report for Reach 5A Non-Residential Floodplain Exposure Areas*. Prepared for General Electric Company, Pittsfield, Massachusetts. September 2023.

Arcadis, 2022. *Upland Disposal Facility Conceptual Design Plan*. Prepared for General Electric Company, Pittsfield, Massachusetts. December 2022.

Arcadis, 2023. *Final Upland Disposal Facility Pre-Design Investigation Summary Report*. Prepared for General Electric Company, Pittsfield, Massachusetts. August 2023.

Arcadis and AECOM, 2023. *Restoration Performance Objectives and Evaluation Criteria Report*. Prepared for General Electric Company, Pittsfield, Massachusetts. August 2023.

Arcadis, Anchor QEA, and AECOM, 2010. *Housatonic River – Rest of River, Revised Corrective Measures Study Report*. Prepared for General Electric Company, Pittsfield, Massachusetts. October 2010.

Arcadis BBL and QEA, 2007. *Housatonic River – Rest of River, Corrective Measures Study Proposal*. Prepared for General Electric Company, Pittsfield, Massachusetts. February 2007.

Arp, H.P.H., G.D. Breedveld, and G. Cornelissen, 2009. "Estimating the In Situ Sediment-Porewater Distribution of PAHs and Chlorinated Aromatic Hydrocarbons in Anthropogenic Impacted Sediments." *Environmental Science & Technology* 43: 5576–5585.

Bartles, M., B. Faber, M. Fleming, G. Karlovits, and J. Slaughter, 2022. *HEC-SSP Statistical Software Package User's Manual*. Version 2.2. Prepared on behalf of U.S. Army Corps of Engineers. January 2022.

BBL and QEA, 2003. *Housatonic River – Rest of River, RCRA Facility Investigation Report*. Prepared for General Electric Company, Pittsfield, Massachusetts. September 2003.

England, J.F., Jr., T.A. Cohn, B.A., Faber, J.R. Stedinger, W.O. Thomas, Jr., A.G. Veilleux, J.E. Kiang, and R.R. Mason, Jr., 2019. "Guidelines for Determining Flood Flow Frequency — Bulletin 17C." *U.S. Geological Survey Techniques and Methods*. Version 1.1, Book 4, Chapter B5:148.

EPA (U.S. Environmental Protection Agency), 2005a. *Human Health Risk Assessment, GE/Housatonic River Site, Rest of River*. Prepared by Weston Solutions, West Chester, Pennsylvania. February 2005.

EPA, 2005b. *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites*. EPA-540-R-05-012. December 2005.

EPA, 2009. May 2009 BEHI Photographic Log, Housatonic River Project, Rest of River. May 2009. SDMS Doc ID 522382.

EPA, 2019a. Letter to: Kevin Mooney, General Electric Company. Regarding: EPA Approval of, and Certificate of Completion for, General Electric's submittal titled Final Completion Report for Removal Action for Housatonic River Floodplain--Current Residential Properties Downstream of the Confluence, GE-Pittsfield/Housatonic River Site, dated February, 2019. GE-Pittsfield/Housatonic River Site. March 12, 2019.

EPA, 2019b. *Climate Resilience Technical Fact Sheet: Contaminated Sediment Sites*. EPA 542-F-19-003. October 2019.

EPA, 2020. *Revised Final Permit Modification to the 2016 Reissued RCRA Permit and Selection of CERCLA Remedial Action and Operation & Maintenance for Rest of River*. December 2020.

EPA Database, 2023. Enforcement and Compliance History Online, Detailed Facility Report, Pollutant Loading Report (DMR), Pittsfield Wastewater Treatment Facility NPDES ID: MA0101681, Reporting Period 2019–2023. Accessed August 03, 2023. Available at: echo.epa.gov.

EPA and GE, 2000. Consent Decree in *United States of America, State of Connecticut, and Commonwealth of Massachusetts v. General Electric Company*. Civil Action Nos. 99-30225, 99-30226, 99-30227-MAP, entered by the United States District Court for the District of Massachusetts. October 27, 2000.

FEMA, 1987. *Flood Insurance Study Report*. FEMA Flood Map Service Center. Product ID 250037V000. Available at: https://msc.fema.gov/portal/advanceSearch.

GE (General Electric Company), 2012. Letter to EPA. Regarding: GE-Pittsfield/Housatonic River Site Upper 1/2-Mile Reach of Housatonic River (GECD800), 2012 Deposited Sediment and Isolation Layer Sampling Report. November 20, 2012.

GE, 2021. Letter to EPA. Regarding: Further Evaluation Regarding Vernal Pools in Reach 5A. February 4, 2021.

Hale, S.E., S. Kwon, U. Ghosh, and D. Werner, 2010. "Polychlorinated Biphenyl Sorption to Activated Carbon and the Attenuation Caused By Sediment." *Global NEST Journal* 12(3):318-326.

ITRC (Interstate Technology and Regulatory Council), 2014. *Contaminated Sediments Remediation: Remedy Selection for Contaminated Sediments*. August 2014.

Maynord, S., 1998. *Appendix A: Armor Layer Design*. An appendix to *Assessment and Remediation of Contaminated Sediments (ARCS) Program: Guidance for In-Situ Subaqueous Capping of Contaminated Sediment*. Prepared for the U.S. Environmental Protection Agency, Great Lakes National Program Office, Chicago, Illinois. EPA 905-B96-004. September 1998.

McDonough, K.M., J.L Fairey, G. Lowr, 2008. "Adsorption of Polychlorinated Biphenyls to Activated Carbon: Equilibrium Isotherms and a Preliminary Assessment Of The Effect Of Dissolved Organic Matter and Biofilm Loadings." *Water Research* 42 (2008):575–584.

MDFW (Massachusetts Division of Fisheries and Wildlife), 2012. Core Habitat Area Figures for Housatonic River Primary Study Area (PSA), and July 31, 2012 letter from MDFW. Attachment B to EPA's Final Revised Permit. July 2012.

NE CASC (Northeast Climate Adaption Science Center), 2018. *Massachusetts Climate Change Projections – Statewide and for Major Drainage Basins: Temperature, Precipitation, and Sea Level Rise Projections*. March 2018.

Patmont, C.R., U. Ghosh, P. LaRosa, C.A. Menzie, R.G. Luthy, M.S. Greenberg, G. Cornelissen, E. Eek, J. Collins, J. Hull, T. Hjartland, E. Glaza, J. Bleiler, and J. Quadrini, 2014. "In Situ Sediment Treatment Using Activated Carbon: A Demonstrated Sediment Cleanup Technology." *Integrated Environmental Assessment and Management* 11(2):195–207.

Palermo, M., S. Maynord, J. Miller, and D. Reible, 1998. *Guidance for In-Situ Subaqueous Capping of Contaminated Sediments*. EPA 905-B96-004, Great Lakes National Program Office, Chicago, Illinois. September 1998.

Quantum Spatial (Quantum Spatial, Inc.), 2016. *Maine and Massachusetts 2015 QL1 and QL2 LiDAR Project Report*. Prepared for U.S. Geological Survey. March 18, 2016.

Reible, D., 2017. *CapSim 3.5 Quick-Start Manual*. Available at: https://www.depts.ttu.edu/ceweb/groups/reiblesgroup/downloads/CapSim%203.6%20Quick%20Start%20Manual.docx.

Rosgen, D., 2006. *Watershed Assessment of River Stability and Sediment Supply*. Fort Collins, Colorado: Wildland Hydrology, Inc.

Rosgen, D.L., 2011. Natural Channel Design: Fundamental Concepts, Assumptions, and Methods. In A. Simon, S.J. Bennett, and J.M. Castro (Eds.), *Stream Restoration in Dynamic Fluvial Systems: Scientific Approaches, Analyses, and Tools*, Geophysical Monograph Series 194, pp. 69–93. Washington, D.C.: American Geophysical Union.

Shen, X., D. Lampert, S. Ogle, and D. Reible, 2018. "A Software Tool for Simulating Contaminant Transport and Remedial Effectiveness in Sediment Environments." *Environmental Modelling and Software* 109:104–113. Available at: https://doi.org/10.1016/j.envsoft.2018.08.014.

USACE (U.S. Army Corps of Engineers), 1994. *Hydraulic Design of Flood Control Channels.* Engineering Manual. EM 1110-2-1601. June 1994.

USACE, 2022. Hydrologic Engineering Center – River Analysis System (HEC-RAS) version 6.3.1 modeling software. Available at: https://www.hec.usace.army.mil/software/hec-ras/download.aspx.

Weston, R.F., 2002. *Final Basis of Design Document 1.5-Mile Reach Removal Action: Phase 1*. Prepared for the United States Army Corps of Engineers. May 2002.

Weston Solutions (Weston Solutions, Inc.), 2014. Memorandum to: Environmental Protection Agency. Regarding: Derivation of Removal Volumes and Removal Acreages for SED 9/FP 4 MOD. GE-Pittsfield/Housatonic River Project, Task Order 2. W.O. No. 20502.169.095.0270. May 15, 2014.

Tables

Table 6-1
Applicable or Relevant and Appropriate Requirements for Reach 5A Remedial Activities[1]

Statute/Regulation	Citation	Synopsis of Requirements	Status	Action(s) to Be Taken to Comply with ARARs[2]
Chemical-Specific ARARs				
Federal ARARs				
None				
State ARARs				
Numeric Massachusetts Water Quality Criteria for PCBs—Massachusetts Surface Water Quality Standards	314 CMR 4.05(5)(e)	Freshwater chronic aquatic life criterion (based on protection of mink): 0.014 µg/L. Human Health criterion based on human consumption of water and organisms: 0.000064 µg/L.	Relevant and appropriate	Considered by EPA in selecting the remedy and Performance Standards for Reach 5A. The freshwater chronic aquatic life criterion of 0.014 µg/L will be met by the selected remedy. Regarding the human health criterion of 0.000064 µg/L based on human consumption of water and organisms, EPA, in consultation with the Commonwealth, has waived this criterion on the ground that achievement of this ARAR is technically impracticable, given that, based on current data, it is not predicted to be met by the selected remedy or any other sediment alternative in Massachusetts. To be protective of human health and the environment, as specified in the Revised Final Permit, EPA established alternative criteria (that are not ARARs) for this waived criterion.
To Be Considered				
Clean Water Act, National Recommended Water Quality Criteria for PCBs	National Recommended Water Quality Criteria: 2002, EPA-822-R-02-047, EPA Office of Water, Office of Science and Technology (November 2002)	Freshwater chronic aquatic life criterion (based on protection of mink): 0.014 µg/L. Human health criterion based on human consumption of water and organisms: 0.000064 µg/L.	To be considered	See the above entry for the Massachusetts Water Quality Standards.
Cancer Slope Factors	EPA Integrated Risk Information System	Guidance values used to evaluate the potential carcinogenic hazard caused by exposure to PCBs.	To be considered	Considered by EPA in selecting the remedy and Performance Standards for Reach 5A.
Reference Doses	EPA Integrated Risk Information System	Guidance values used to evaluate the noncancer hazards associated with exposure to PCBs.	To be considered	Considered by EPA in selecting the remedy and Performance Standards for Reach 5A.
PCBs: Cancer Dose Response Assessment and Application in Environmental Mixtures (EPA 1996)	EPA/600/P-96/001F (National Center for Environmental Assessment, Office of Research and Development, September 1996)	Guidance describing EPA's reassessment regarding the carcinogenicity of PCBs.	To be considered	Considered by EPA in establishing EPA's Cancer Slope Factors.
Guidelines for Carcinogenic Risk Assessment (EPA 2005)	EPA/630/P-03/001F (EPA Risk Assessment Forum, March 2005)	Framework and guidelines for assessing potential cancer risks from exposure to pollutants and other environmental agents.	To be considered	Considered by EPA in selecting the remedy and Performance Standards for Reach 5A.
Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens	EPA/630/R-03/003F (EPA Risk Assessment Forum, March 2005)	Guidance on issues related to assessing cancer risks associated with early-life exposures, including an adjustment for carcinogens acting through a mutagenic mode of action.	To be considered	Considered by EPA in selecting the remedy and Performance Standards for Reach 5A.
Massachusetts Fish Consumption Advisory	Massachusetts Department of Public Health, Freshwater Fish Consumption Advisory List (2007)	Advises that the public should not consume any fish from the Housatonic River from Dalton to Sheffield due to PCBs; also includes frogs and turtles.	To be considered	Considered by EPA in adopting the Final Revised Permit requirements relating to biota consumption advisories (Section II.B.7.a) and by GE in its Biota Consumption Advisory Outreach Plan for the Housatonic Rest of River in Massachusetts.
Massachusetts Waterfowl Consumption Advisory	Massachusetts Department of Public Health, Provisional Waterfowl Consumption Advisory (1999)	Advises that the public should avoid eating all mallards and wood ducks from the Housatonic River and its impoundments from Pittsfield to Rising Pond.	To be considered	Considered by EPA in adopting the Final Revised Permit requirements relating to biota consumption advisories (Section II.B.7.a) and by GE in its Biota Consumption Advisory Outreach Plan for the Housatonic Rest of River in Massachusetts.

Table 6-1
Applicable or Relevant and Appropriate Requirements for Reach 5A Remedial Activities[1]

Statute/Regulation	Citation	Synopsis of Requirements	Status	Action(s) to Be Taken to Comply with ARARs[2]
Location-Specific ARARs				
Federal ARARs				
Clean Water Act—Section 404 and implementing regulations	33 USC 1344 33 CFR Parts 320-323, 325, and 332 (ACOE) 40 CFR Part 230 (EPA)	For the discharge of dredged or fill material into waters of the U.S., including wetlands, there must be no practicable alternative with less adverse effect on the aquatic ecosystem; the discharge cannot cause or contribute, after consideration of disposal site dilution and dispersion, to violation of any applicable water quality standard, violate an applicable toxic effluent standard, jeopardize existence of endangered or threatened species; or contribute to significant degradation of waters of the U.S. The discharger must take appropriate and practicable steps to minimize potential adverse impacts of the discharge on the aquatic ecosystem. Mitigation/restoration is required for unavoidable impacts on resources.	Applicable	Remedial activities that will involve the discharge of dredged or fill material into the Housatonic River, backwaters, other waterbodies, and/or wetlands (including vernal pools) will be conducted in accordance with these requirements. EPA has determined that there is no practicable alternative with less adverse effect on the aquatic ecosystem (including wetlands and vernal pools), and that the remedy will not cause or contribute to violation of any applicable water quality standard, violate an applicable toxic effluent standard, jeopardize the existence of endangered or threatened species, or contribute to significant degradation of waters of the U.S. Implementation of the Reach 5A remediation will include appropriate and practicable steps to minimize potential adverse impacts of the discharge on the river, backwaters, other waterbodies and wetlands (including vernal pools). In particular, excavation, capping, filling, and grading work, as well as construction of access roads and staging areas, will be managed in a manner that limits impacts to adjacent site areas and avoids the uncontrolled discharge of stormwater runoff beyond designated areas, and will provide for management of construction-based stormwater. If necessary, mitigation/restoration will be conducted consistent with these regulations.
Floodplain Management and Protection of Wetlands	44 CFR Part 9	Regulation sets forth policy, procedures, and responsibilities to implement and enforce Executive Order 11988, Floodplain Management, and Executive Order 11990, Protection of Wetlands.	Relevant and appropriate	The Reach 5A remedial activities, including excavation, backfilling, capping, and placement of a sediment/soil amendment will reduce human health and environmental risks in wetlands and the floodplain. Those activities will be conducted in accordance with the policy, procedure, and responsibilities stated in this regulation to implement the cited Executive Orders. See also the entries below on these Executive Orders.
Fish and Wildlife Coordination Act	16 USC 662 et seq.	Sets forth requirements for federal actions that may modify a water body, including consultation with federal and state resource agencies.	Applicable to EPA; relevant and appropriate to work in Rest of River waterbodies.	The Reach 5A remedial activities will modify the river, backwaters, and other waterbodies. As part of the remedy, sections of the river may be partially impounded or diverted to facilitate implementation of the sediment removal. If such impoundment or diversion occurs, it would be conducted on a temporary and relatively short-term basis similar to remedial approaches described in EPA's *Contaminated Sediment Remediation Guidance* (December 2005). The U.S. Fish and Wildlife Service and Massachusetts Division of Fisheries and Wildlife are stakeholders for this project and will be included in the review of the remedial design and remedial action documents.
Resource Conservation and Recovery Act (RCRA) requirements for hazardous waste facilities in floodplains	40 CFR 264.1(j)(7) 40 CFR 264.18(b)	Remediation waste management sites must be designed, constructed, operated, and maintained to prevent washout of any hazardous waste by a 100-year flood, unless procedures are in effect to have waste removed safely before flood waters reach the facility or there will be no adverse effects on human health or the environment if washout occurs.	Potentially relevant and appropriate	The remedy does not include disposal pursuant to these regulations, but will include stockpiling of removed materials at temporary staging areas. Where practicable, these areas will be located outside the 100-year floodplain. To the extent that any are located in the 100-year floodplain, flood protection measures will be implemented to prevent washout.
National Historic Preservation Act (NHPA) and regulations	54 USC 300101 et seq., including Section 306108 (Section 106 of NHPA) 36 CFR Part 800	A federal agency must take into account the project's effect on properties included or eligible for inclusion in the National Register of Historic Places (NRHP).	Applicable to EPA; relevant and appropriate to work that could affect properties included or eligible for inclusion in the NRHP	Pre-design and design activities include a Cultural Resource Assessment (CRA) and Cultural Resource Survey (CRS) to determine whether the remediation or support activities would adversely affect any properties that are included or eligible for inclusion in the NRHP. If any such properties are identified, activities will be conducted, in coordination with the relevant federal, state, and tribal authorities, to avoid or mitigate impacts on those properties to the extent required by the substantive provisions of these regulations.
Archaeological and Historic Preservation Act	54 USC 312501 et seq.	When a federal agency finds, or is notified, that its activities in connection with a federal construction project may cause irreparable loss or destruction of significant scientific, prehistorical, historical, or archeological data, such agency shall notify the U.S. Department of the Interior. If the U.S. Department of the Interior determines the data are significant and may be irrevocably lost or destroyed, it is to conduct a survey and other investigation of the affected area and recover and preserve such data as necessary in the public interest.	Applicable to EPA; relevant and appropriate to work in areas where archaeological or historic data may be present	Pre-design and design activities include a CRA and CRS to determine whether the remediation or support activities could cause an irreparable loss or destruction of significant scientific, prehistorical, historical, or archeological data. If so, EPA will make the notification required by this act, and the substantive requirements of this act will be met.
Endangered Species Act and Regulations	16 USC 1536(a)-(d) 50 CFR Part 402, Subparts A&B 50 CFR 17	A federal agency must determine whether a federally authorized project is likely to jeopardize the continued existence of a listed threatened or endangered (T&E) species or result in destruction or adverse modification of its critical habitat. If so, "reasonable and prudent" measures must be taken to avoid and/or minimize such effects.	Applicable to EPA; relevant and appropriate to work that could affect T&E species or their habitat	GE's Baseline Restoration Assessment (BRA) for Reach 5A identified habitat for and the potential presence of one federally listed T&E species within the limits of Reach 5A (the northern long-eared bat, an endangered species), as well as one candidate species for listing (the monarch butterfly). An assessment will be made regarding the impact of the Reach 5A remedy on those species or their habitat. If the remedy will adversely affect a listed T&E species or its habitat, GE will conduct reasonable and prudent measures to avoid or minimize such effects and/or restore the impacted habitat, as will be described in the Restoration Plan for Reach 5A.

Table 6-1
Applicable or Relevant and Appropriate Requirements for Reach 5A Remedial Activities[1]

Statute/Regulation	Citation	Synopsis of Requirements	Status	Action(s) to Be Taken to Comply with ARARs[2]
State ARARs				
Massachusetts Waterways Law and Regulations	MGL Ch. 91 310 CMR 9.00, including 9.40	Regulates construction, placement, excavation, alteration, removal, or use of fill or structures in waterways. Among the requirements is 310 CMR 9.40, Standards for Dredging and Dredged Material Disposal, which includes restrictions on improvement dredging.	Applicable	The Reach 5A remedial activities include construction, placement, excavation, alteration, removal, and use activities in the Housatonic River. Except as otherwise provided herein, those activities will meet the substantive environmental standards of these regulations and will limit impacts. The remedy will include sediment removal (dredging) within an Area of Critical Environmental Concern (ACEC). If the dredging in the ACEC is governed by 310 CMR 9.40, it is permitted as an Ecological Restoration Project. If it is deemed not to be an Ecological Restoration Project, EPA, in consultation with the Commonwealth, has waived, pursuant to CERCLA 121(d)(4)(C), the provision of 310 CMR 9.40 that prohibits dredging in an ACEC.
Massachusetts Clean Water Act—Water Quality Certification Regulations	314 CMR 9.00 et seq., including 9.06-9.07	For discharge of dredged or fill material to waters of the U.S within Massachusetts, the criteria in Section 9.06 include, without limitation, the following: (a) no discharge is permitted if there is a practicable alternative that would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences; (b) no discharge is permitted unless appropriate and practicable steps have been taken to avoid and minimize potential adverse impacts to bordering or isolated vegetated wetlands or land under water; (c) no discharge is permitted to Outstanding Resource Waters, including certified vernal pools, except as specified in 9.06(3) or 9.08; (d) no discharge is permitted for the impoundment or detention of stormwater for purposes of controlling sedimentation or other pollutant attenuation; (e) stormwater is to be controlled with BMPs; and (f) no discharge shall be permitted in rare circumstances where the activity will result in substantial adverse impacts to the physical, chemical, or biological integrity of surface waters. For dredging and dredged material management, the criteria in Section 9.07 include, without limitation, the following: (a) no dredging is allowed if there is a practicable alternative that would have less impact on the aquatic ecosystem; (b) no dredging is permitted unless appropriate and practicable steps have been taken to avoid, minimize or mitigate adverse effects on land under water; (c) no dredging is allowed that will have adverse effect on specified habitat sites of rare species except under certain conditions; (d) dredging and dredged material management must be conducted to ensure protection of human health, public safety, public welfare and the environment,; (e) dredged material shall not be disposed of if a feasible alternative exists that involves the reuse, recycling, or contaminant destruction and/or detoxification; (f) no dredging is permitted in Outstanding Resource Waters (including certified vernal pools) except as provided in 9.07(1)(k); (g) no dredging is permitted in rare circumstances where the activity will result in substantial adverse impacts to the physical, chemical, or biological integrity of waters; (h) dredging must be conducted to meet performance standards in Section 9.07(3) designed to minimize impacts on the aquatic ecosystem and protect human health; and (i) placement of dredged material in an intermediate facility for sediment management (dewatering, processing, etc.) prior to disposal or reuse must meet certain requirements in Section 9.07(4), including requirements governing method of placement/storage of dredged material and siting criteria.	Applicable	The Reach 5A remedial activities that involve discharge of dredged or fill material to waterbodies or wetlands—including dredging, backfilling, capping, and application of a sediment amendment—will be conducted in accordance with these regulations. In particular, without limitation: • EPA has determined that there is no practicable alternative to the selected remedy that would have less adverse impact on the aquatic ecosystem. • The remedy includes activities to avoid and minimize potential adverse impacts to bordering or isolated vegetated wetlands or land under water. • Any discharge to Outstanding Resource Waters, including certified vernal pools, would satisfy the substantive requirements of Section 9.08 because all reasonable measures will be taken to avoid, minimize, or mitigate adverse effects on the environment and the remedy is justified by an overriding public interest. • There will be no discharge of dredged or fill material for impoundment or detention of stormwater for purposes of controlling sedimentation or other pollutant attenuation. • The remedy will use BMPs to control stormwater. • The remedy will not include activities that result in substantial adverse impacts to the physical, chemical, or biological integrity of surface waters. The Reach 5A remedial activities that involve dredging or dredged material management – including excavation/dredging of river, backwater, and other waterbody sediments and management of the removed materials – will be conducted in accordance with these regulations. In particular, without limitation: • EPA has determined that there is no practicable alternative to the selected remedy that would have less adverse impact on the aquatic ecosystem. • The remedy includes appropriate and practicable steps to avoid, minimize or mitigate adverse effects on land under water. • Remedial work that may affect the specified habitat of state-listed rare species will be carried out in accordance with the Massachusetts Endangered Species Act (MESA), including, where necessary, the requirement for a conservation and management plan. • Dredging and dredged material management will be conducted in a manner that ensures protection of human health, public safety, public welfare, and the environment. • There is no feasible alternative to the disposal of dredged material involving reuse, recycling, or contaminant destruction and/or detoxification. • Any dredging in Outstanding Resource Waters (including certified vernal pools) will satisfy the substantive requirements of Section 9.07(1)(k) because it will constitute an Ecological Restoration Project. • The dredging will not result in substantial adverse impacts to the physical, chemical, or biological integrity of waters. • The dredging will meet the performance standards in Section 9.07(3) through design and implementation requirements approved by EPA. • Temporary staging areas for removed sediments and soils will meet the requirements for an intermediate facility in 314 CMR 9.07(4) except as otherwise approved by EPA. In particular, those temporary staging areas will not have a permanent adverse impact on rare species habitat or the ACEC.

Table 6-1
Applicable or Relevant and Appropriate Requirements for Reach 5A Remedial Activities[1]

Statute/Regulation	Citation	Synopsis of Requirements	Status	Action(s) to Be Taken to Comply with ARARs[2]
Massachusetts Wetlands Protection Act and Regulations	MGL c. 131, Section 40 310 CMR 10.00, including 10.53	These requirements govern removal, dredging, filling, or altering of "Resource Areas," including riverbanks, Riverfront Areas, inland wetlands, land subject to flooding and certain other areas. Provisions include Section 10.53(3), which authorizes certain projects as "limited projects," including, in 10.53(3)(q), actions responding to a release or threat of release of oil and/or hazardous materials in accordance with the Massachusetts Contingency Plan (MCP), where (a) there is no practicable alternative consistent with the MCP that would be less damaging to Resource Areas, and (b) steps are taken to avoid or minimize impacts to Resource Areas, including meeting specific standards to the maximum extent practicable. Further, under 310 CMR 10.59, the action must have no adverse effect on estimated habitat of state-listed rare wildlife species.	Applicable	The Reach 5A remedial activities that will affect Resource Areas under this Act will meet the substantive requirements of these regulations. In particular, those activities, as CERCLA response actions and thus considered adequately regulated under the MCP, will constitute limited projects under these regulations and will meet the requirements for such projects. Specifically, EPA has determined that there is no practicable alternative consistent with the MCP that would be less damaging to Resource Areas; and steps will be taken to avoid or minimize impacts to Resource Areas, including meeting the specific standards in the regulations to the maximum extent practicable. Where the remedial activities affect the estimated habitat of state-listed wildlife species, such activities will be carried out in accordance with MESA, including, where necessary, the requirement for a conservation and management plan, so as to comply with 310 CMR 10.59.
Massachusetts Site Suitability Criteria	310 CMR 16.40(3),(4)	Site suitability criteria for solid waste handling facilities, including facility-specific and general site suitability criteria.	Potentially applicable to the temporary management of excavated materials	The Reach 5A remedy will include the temporary management of excavated materials at temporary staging areas prior to transport for disposal. To the extent that the criteria in Section 16.40 apply to such temporary management of materials during implementation of the remedy and that the materials temporarily managed on-site constitute solid waste under these regulations, these criteria will be met except as follows: For any such requirements that would prohibit or restrict such temporary solid waste management locations during implementation of the remedy—including the prohibition on the location of such management facilities within the ACEC (or at locations outside of but adjacent to the ACEC where such locations would fail to protect the outstanding resources of the ACEC) or in a Resource Area or Riverfront Area—EPA, in consultation with the Commonwealth, has waived those requirements pursuant to CERCLA 121(d)(4)(C) on the ground that compliance with them would create a greater risk to human health and the environment than implementation of the selected remedy.
Massachusetts Facility Location Standards	310 CMR 30.700-708	Location standards for hazardous waste management facilities, including temporary storage units for waste defined by the state regulations as hazardous waste. They include, are not limited to, a prohibition on the location of any such facility in the 100-year floodplain or in an ACEC, as well as various other locational requirements for the active portion of the facility. Note that waste containing PCBs at a concentration equal to or greater 50 mg/kg constitutes hazardous waste under the Massachusetts regulations. Note further that these regulations exempt: (a) temporary storage of dredged materials at an intermediate facility when managed under a state water quality certification and under Section 404 of the federal Clean Water Act; or (b) facilities for wastes with a PCB concentration equal to or greater than 50 mg/kg if such facilities comply with EPA's TSCA regulations (40 CFR Part 761) except with respect to a facility located in an ACEC (see 310 CMR 30.501(3)(a)).	Potentially applicable to the temporary management of excavated materials	The Reach 5A remedy will include the temporary management of excavated materials at temporary staging areas prior to transport for disposal. To the extent that the provisions of these regulations apply to the temporary management of materials during implementation of the remedy, that the materials temporarily managed on site constitute hazardous waste under these regulations, and that their temporary management is not subject to any regulatory exemption, these location requirements will be met except as follows: For any such requirements that would prohibit or restrict such temporary hazardous waste management locations during implementation of the remedy – including the prohibition on the location of such management facilities within the ACEC (or at the locations outside of but adjacent to or in close proximity to the ACEC where such locations would not be protective of the outstanding resources of the ACEC) – EPA, in consultation with the Commonwealth, has waived those requirements pursuant to CERCLA 121(d)(4)(C) on the ground that compliance with them would create a greater risk to human health and the environment than implementation of the selected remedy. It should be noted that, wherever practicable, temporary staging areas for excavated material will be located outside the 100-year floodplain. Where this is not practicable due to lack of access or topography considerations, floodproofing will used to prevent floodwaters from coming into contact with hazardous waste.
Massachusetts Historical Commission Act and Regulations	MGL c. 9, Section 27C 950 CMR 71.07	If the Massachusetts Historical Commission (MHC) determines that a state-authorized project could cause a change in the historical, architectural, archaeological, or cultural qualities of a property on the State Register of Historic Places (SRHP), these provisions establish a process for notification, determination of adverse impact, and evaluation of alternatives to avoid, minimize, or mitigate such impacts	Relevant and appropriate	Pre-design and design activities include a CRA and CRS to determine whether the remediation or support activities could cause a change in the historical, architectural, archaeological, or cultural qualities of a property on the SRHP. If any such impacts are identified, the substantive requirements of these regulations will be met in coordination with the MHC, as well as EPA and relevant tribal authorities.
MESA and Regulations	MGL c. 131A 321 CMR 10.00, Parts I, II, and V 321 CMR 10.00, Part IV	Under Parts I, II, and V, a proposed activity in mapped Priority Habitat for a state-listed threatened or endangered species or species of special concern, or other area where such a species has occurred may not result in a "take" of such species, unless it has been authorized by a conservation and management permit. A conservation and management permit may be issued provided that an adequate assessment of alternatives to both temporary and permanent impacts to state-listed species has taken place, an insignificant portion of the local population would be impacted by the project or activity, and the project proponent agrees to carry out a conservation and management plan is carried out that provides a long-term net benefit to the conservation of the state-listed species. Under Part IV, projects that will alter a designated Significant Habitat must be reviewed to ensure that they will not reduce the viability of the habitat to sustain an endangered or threatened species.	Applicable	As determined during the BRA for Reach 5A, some of the Reach 5A remedial activities will take place in Priority Habitats for state-listed species. The development of Core Habitat Areas, in consultation with the Commonwealth, and implementation of the Revised Final Permit's requirements relating to such Core Habitat Areas will result in the avoidance or minimization of adverse impacts to such species in many areas. To the extent that remediation or support activities have unavoidable impacts that will result in a take of state-listed species, although a conservation and management permit is not required, the substantive provisions of these regulations will be followed, including, where necessary, the development of a conservation and management plan providing for a long-term net benefit to the affected state-listed species. There are no designated Significant Habitats in Reach 5A. To the extent that a Significant Habitat is designated in that area in the future, this provision will be complied with.

Table 6-1
Applicable or Relevant and Appropriate Requirements for Reach 5A Remedial Activities[1]

Statute/Regulation	Citation	Synopsis of Requirements	Status	Action(s) to Be Taken to Comply with ARARs[2]
Massachusetts ACEC	301 CMR 12.11(1)(c)	Provides for establishment of ACEC in the state. ACEC designation affects other state laws and regulations.	Relevant and appropriate	The ACEC regulations pertain to state agency actions and are not applicable to the federal EPA action. However, the Reach 5A remedy will comply with the substantive requirements of 301 CMR 12.11(1)(c), which may be relevant and appropriate, by advancing the values of 301 CMR 12.11(1)(c), while avoiding adverse effects on identified values in Section 12.11(1)(c).
To Be Considered				
Executive Order for Floodplain Management	Executive Order 11988 (1977)	Federal agencies proposing action in a floodplain are required to consider alternatives to avoid adverse effects on the floodplain, and if there is no practicable alternative, must design or modify the action to minimize harm to or within the floodplain.	To be considered	The Reach 5A remedial activities in or affecting the floodplain will be conducted in accordance with the substantive requirements in this Executive Order. There is no practicable alternative to the selected remedial activities in the floodplain, and the remedy will be designed to minimize harm to or within the floodplain to the extent practicable and consistent with the Revised Final Permit requirements.
Executive Order for Protection of Wetlands	Executive Order 11990 (1977)	Federal agencies are required to avoid adversely impacting wetlands unless there is no practicable alternative and the proposed action includes all practicable measures to minimize harm to wetlands that may result from such use.	To be considered	The Reach 5A remedial activities in or affecting wetlands will be conducted in accordance with the substantive requirements in this Executive Order. There is no practicable alternative to the selected remediation activities in the wetlands, and the remedy will be designed to minimize harm in and to the wetlands to the extent practicable and consistent with the Revised Final Permit requirements.
Action-Specific ARARs				
Federal ARARs				
TSCA Regulations on Cleanup of PCB Remediation Waste	40 CFR 761.61(c)	Provides for risk-based approval of PCB sampling, cleanup, storage, and disposal methods through an EPA determination that such method(s) will not pose an unreasonable risk of injury to health or the environment	Applicable	Attachment D to the Revised Final Permit contains a risk-based determination by EPA under this provision that the remedy specified in the Revised Final Permit will not pose an unreasonable risk of injury to health or the environment as long as it complies with the conditions set out in that determination, which the Reach 5A remedy will do.
TSCA Regulations on Storage of PCB Remediation Waste	40 CFR 761.50 40 CFR 761.65 40 CFR 761.61(c)	General and specific requirements for storage of PCB Remediation Waste. Regulations include specific provisions for storage of PCB Remediation Waste in piles at the cleanup site or site of generation for up to 180 days (761.65(c)(9)). Also allows for risk-based approval by EPA of alternate storage method (761.61(c)), based on demonstration that it will not pose an unreasonable risk of injury to health or the environment.	Applicable	The Reach 5A remedy will comply with these provisions. The remedy will include temporary storage of excavated PCB-containing sediments and soils on-site. EPA's risk-based approval contained in Attachment D to the Revised Final Permit covers the storage of such materials in accordance with the requirements of the Revised Final Permit. The temporary storage of PCB-containing sediments and soils excavated in Reach 5A will meet the applicable requirements established in or under the Revised Final Permit for such storage.
TSCA Regulations on Discharge of PCB-containing Water	40 CFR 761.50(a)(3)	Prohibits discharge of water containing PCBs to navigable waters unless PCB concentration is <3 mg/L or discharge is in accordance with NPDES discharge limits.	Applicable	Any discharge to navigable waters will comply with this provision.
TSCA Regulations on Decontamination	40 CFR 761.79	Establishes decontamination standards and procedures for removing PCBs from water, organic liquids, and various types of surfaces.	Applicable	Any decontamination activities conducted as part of the Reach 5A remedy will comply with these requirements.
Clean Water Act and NPDES Regulations	33 USC 1342 40 CFR 122, including, but not limited to, 122.3(d) and 122.44(a) and (e) 40 CFR 125.1-125.3	These standards include that point source discharge must meet technology-based effluent limitations (including those based on best available technology for toxic and non-conventional pollutants and those based on best conventional technology for conventional pollutants) and effluent limitations and conditions necessary to meet state water quality standards, except that discharges in compliance with instructions of the EPA On-Scene Coordinator (OSC) are exempt from these requirements (122.3(d)).	Applicable	The Reach 5A remedy will include dewatering of excavated sediments and wetland soils. At this stage, it has not been determined whether water from the remedial activities, such as from dewatering or other processing of sediments and wetland soils, will be then discharged into the river, or whether such the water will be transported to GE's water treatment plant in Pittsfield for treatment, or whether another technique will be used. In any case, if Reach 5A remedial activities include discharge into the river, such discharge will meet these requirements, including any alternative discharge requirements established by the EPA OSC (such as was done for the remediation of the 1.5 Mile Reach of the Housatonic River).
Clean Water Act—NPDES Regulations (stormwater discharges)	40 CFR 122.26(c)(1)(ii)(C) 40 CFR 122.44(k)	BMPs must be employed to control pollutants in stormwater discharges during construction activities.	Applicable	Erosion and sedimentation control measures and BMPs will be implemented for relevant ground-disturbance activities to comply with these stormwater requirements.
RCRA Regulations on Identification of Hazardous Waste	40 CFR 261	Establishes standards for determining whether a waste constitutes hazardous waste under RCRA.	Potentially applicable	Waste characterization sampling of soils, sediments, and debris (as applicable) subject to removal has been or will be conducted consistent with these requirements to determine whether they constitute hazardous waste under RCRA.
RCRA Regulations for Generators of Hazardous Waste	40 CFR 262.30-33	Pre-transportation requirements for generators of hazardous waste.	Potentially applicable	If RCRA hazardous wastes are identified and these materials are removed from the Area of Contamination but remain on site during Reach 5A remedy implementation, these requirements will be met.
RCRA regulations on Less-than-90-day Accumulation of Hazardous Waste	40 CFR 262.34	Provides for on-site accumulation of hazardous waste in certain circumstances, provided compliance with other specified requirements.	Potentially applicable	If RCRA hazardous wastes are identified and these materials are removed from the Area of Contamination but remain on site during Reach 5A remedy implementation, these requirements will be met.
RCRA Regulations for Hazardous Waste Management Facilities—General	40 CFR 264.1(j)	General requirements for hazardous waste management facilities (waste analysis, security, precautions regarding ignition or reaction of wastes, preventing washout of units)	Potentially applicable	If RCRA hazardous wastes are identified and these materials are removed from the Area of Contamination but remain on site during Reach 5A remedy implementation, these requirements will be met.
State ARARs				
Massachusetts Clean Waters Act—Water Quality Certification Regulations	314 CMR 9.01-9.08	See synopsis of requirements in the location-specific entry for this ARAR.	Applicable	See the location-specific entry for this ARAR.

Table 6-1
Applicable or Relevant and Appropriate Requirements for Reach 5A Remedial Activities[1]

Statute/Regulation	Citation	Synopsis of Requirements	Status	Action(s) to Be Taken to Comply with ARARs[2]
Massachusetts Clean Water Act and Wetlands Protection Act—Stormwater Management Standards	310 CMR 10.05(6)(k) 314 CMR 9.06(6)(a)	Projects subject to regulation under the Wetlands Protection Act or that involve discharge of dredged or fill material must incorporate stormwater BMPs to attenuate pollutants in stormwater discharges, as well as to provide a setback from receiving waters and wetlands, in accordance with 10 specified stormwater management standards.	Applicable	Erosion and sedimentation control measures and BMPs will be implemented for relevant ground-disturbance activities to comply with these stormwater requirements.
Massachusetts Hazardous Waste Regulations on Identification and Listing of Hazardous Waste	310 CMR 30.100	Establishes criteria and lists for determining whether a waste is a hazardous waste under state law. Note: Waste containing PCBs at a concentration equal to or greater 50 mg/kg constitutes a listed hazardous waste under the Massachusetts regulations, but the Massachusetts hazardous waste regulations do not apply to facilities for such waste that comply with EPA's TSCA regulations (40 CFR Part 761) except with respect to a facility located in an ACEC (see 310 CMR 30.501(3)(a)).	Applicable	Waste characterization sampling of soils, sediments, and debris (as applicable) subject to removal has been or will be conducted consistent with these regulations to determine whether they constitute hazardous waste under state law on a basis other than containing PCB concentrations at or above 50 mg/kg. Note: With to the waste containing PCB concentrations at or above 50 mg/kg, any facilities for the storage of such waste as part of the Reach 5A remedy will comply with the TSCA regulations (by virtue of EPA's risk-based determination in Attachment D to the Revised Final Permit), and the prohibition on the location of such a facility in an ACEC has been waived by EPA, after consultation with the Commonwealth, pursuant to CERCLA 121(d)(4)(C).
Massachusetts hazardous waste regulations for generators	310 CMR 30.321-324	Pre-transport requirements for generators of hazardous waste	Potentially applicable	To the extent that non-PCB hazardous wastes under state law are identified and these materials are removed from the Area of Contamination but remain on site during Reach 5A remedy implementation, these pre-transport requirements will be met.
Massachusetts hazardous waste management—general requirements	310 CMR 30.513, 514, 524, 560	General requirements for hazardous waste management facilities	Potentially applicable	To the extent that non-PCB hazardous wastes under state law are identified and these materials are removed from the Area of Contamination but remain on site during Reach 5A remedy implementation, these general requirements will be met.
Massachusetts hazardous waste regulations—technical requirements for storage	310 CMR 602, 640, 580, 660.	Requirements related to storage of hazardous waste.	Potentially applicable	To the extent that non-PCB hazardous wastes under state law are identified and these materials are removed from the Area of Contamination but remain on site during Reach 5A remedy implementation, the substantive requirements of these regulations will be met.
Massachusetts Air Pollution Control Regulations	310 CMR 7.00, 7.01, 7.06, 7.09, 7.10, and 7.11	These provisions regulate air emissions, dust, odor, and noise, among other things.	Applicable	The Reach 5A remedy will comply with the air monitoring and air emission control requirements set forth in the Quality of Life Compliance Plan and in the Ambient Air Monitoring Plan to be included in the Project Operations Plan, and will comply with the noise and odor monitoring and control requirements set forth in the Quality of Life Compliance Plan. In addition, control and mitigation of dust emissions will be implemented, as needed, during construction of staging areas and access roads, floodplain excavations, and soil/sediment handling operations.
To Be Considered				
TSCA PCB Spill Cleanup Policy	40 CFR Part 761, Subpart G	Policy used to determine adequacy of cleanup of spills resulting from the release of materials containing PCBs at concentration of 50 mg/kg or greater.	To be considered	Will be considered in the event of any new spill that results from the release of PCBs at a concentration of 50 mg/kg or greater during the Reach 5A remedial construction.
EPA Contaminated Sediment Remediation Guidance	EPA-540-R-05-012 OSWER 9355.0-85 (December 2005)	Provides guidance on remediation of contaminated sediment sites.	To be considered	The guidance was considered by EPA in remedy selection. In addition, in accordance with Section II.B.2.i of the Revised Final Permit, this guidance has been and will continue to be considered during design of the engineered cap for Reach 5A sediments, and it will also be considered in identification of sediment removal methods within the main channel and for operation and maintenance planning.
EPA Guidance for In-Situ Subaqueous Capping of Contaminated Sediments	EPA 905-B96-004, Great Lakes National Program Office (September 1998)	Provides technical guidance for subaqueous, in-situ capping as a remediation technique for contaminated sediments.	To be considered	In accordance with Section II.B.2.i of the Revised Final Permit, this guidance has been and will continue to be considered during design of the engineered cap for Reach 5A sediments.

Notes:

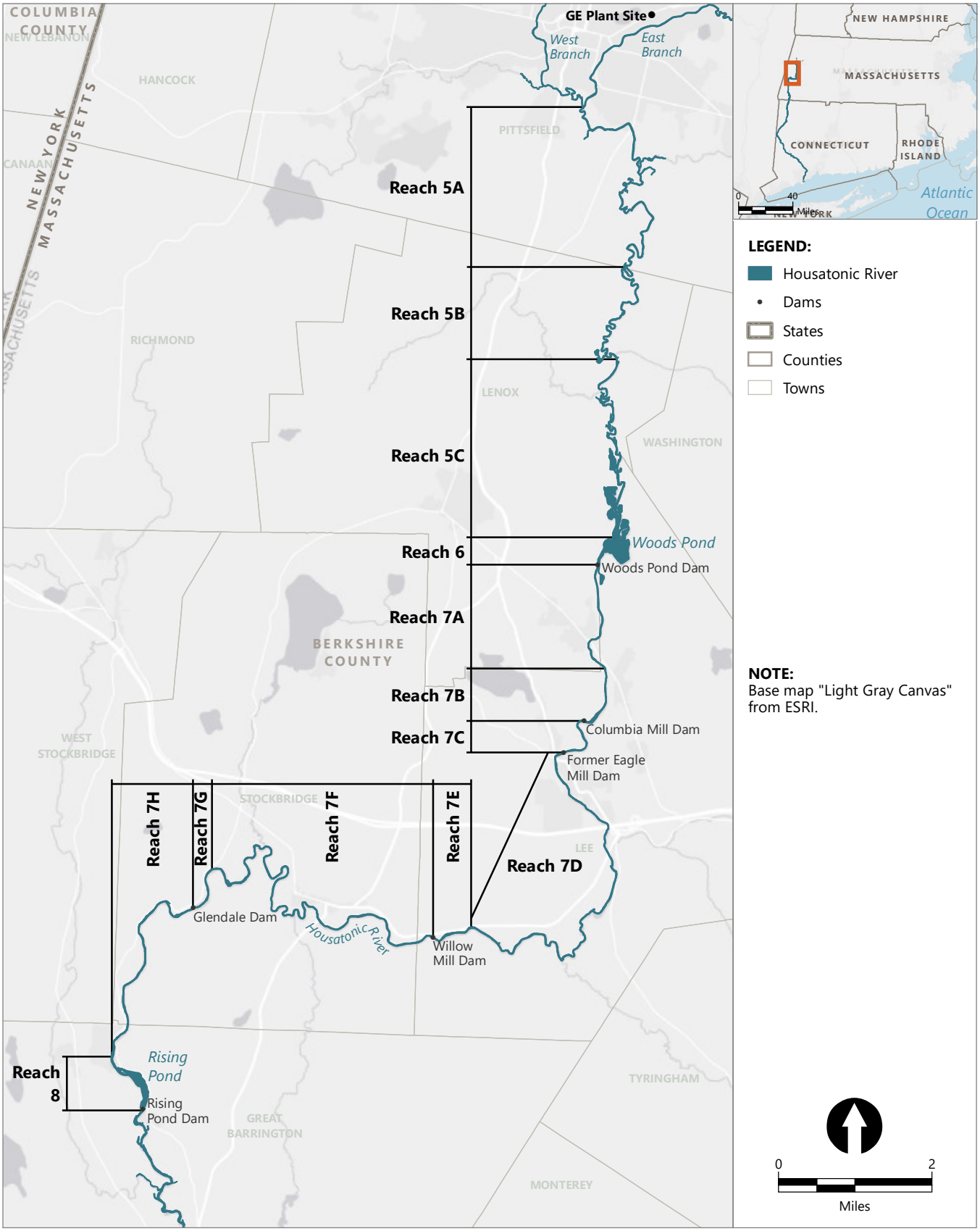
1. This table has been adapted from Attachment C of the Revised Final Permit with a number of modifications and updates. Note that this table does not include ARARs for the Upland Disposal Facility design, construction, or operation. Those ARARs were presented in the Upland Disposal Facility Conceptual Design Plan (Arcadis 2022) submitted to EPA on December 6, 2022.
2. Compliance with ARARs refers to compliance with the substantive requirements, criteria, or limitations of each provision, not any administrative or procedural requirements included therein.

µg: microgram
ACEC: Area of Critical Environmental Concern
ARAR: applicable or relevant and appropriate requirement
BMP: best management practice
BRA: Baseline Restoration Assessment
CFR: Code of Federal Regulations
CMR: Code of Massachusetts Regulations
CRA: Cultural Resource Assessment
CRS: Cultural Resource Survey
EPA: U.S. Environmental Protection Agency
GE: General Electric Company
kg: kilogram
L: liter
MCP: Massachusetts Contingency Plan

Table 6-1
Applicable or Relevant and Appropriate Requirements for Reach 5A Remedial Activities[1]

MESA: Massachusetts Endangered Species Act
mg: milligram
MGL: Massachusetts General Law
MHC: Massachusetts Historical Commission
NHPA: National Historic Preservation Act
NPDES: National Pollutant Discharge Elimination System
NRHP: National Register of Historic Places
OSC: On-Scene Coordinator
PCB: polychlorinated biphenyl
RCRA: Resource Conservation and Recovery Act
SRHP: State Register of Historic Places
T&E: threatened or endangered
TSCA: Toxic Substances Control Act
USC: United States Code

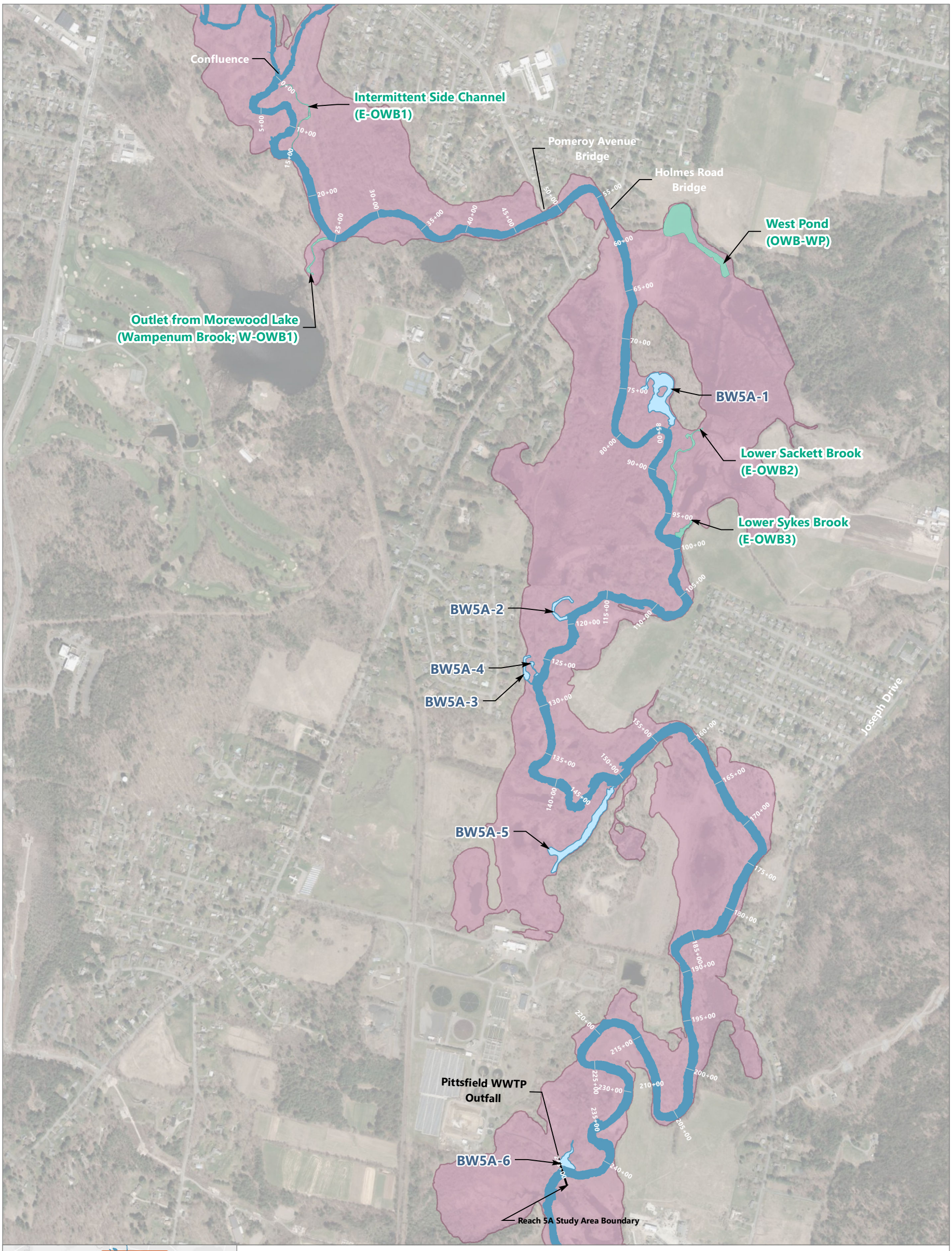
Figures

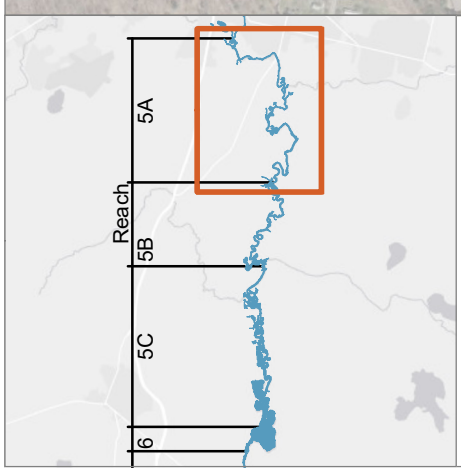


Publish Date: 2023/08/07, 6:56 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\New folder\AQ_RDRA_Fig2_SiteMapOverviewReach5to8.mxd

ANCHOR QEA

Figure 1-1
Housatonic River Map (Subreaches in Reaches 5 and 7)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River





LEGEND:

0+00 River Stationing

- 1 mg/kg PCB Isopleth
- Channel (AECOM and Anchor QEA 2020)
- Backwaters (AECOM and Anchor QEA 2020)
- Other Waterbody

NOTE:
BW: Backwater
OWB: Other Waterbody
WP: West Pond
WWTP: Wastewater Treatment Plant

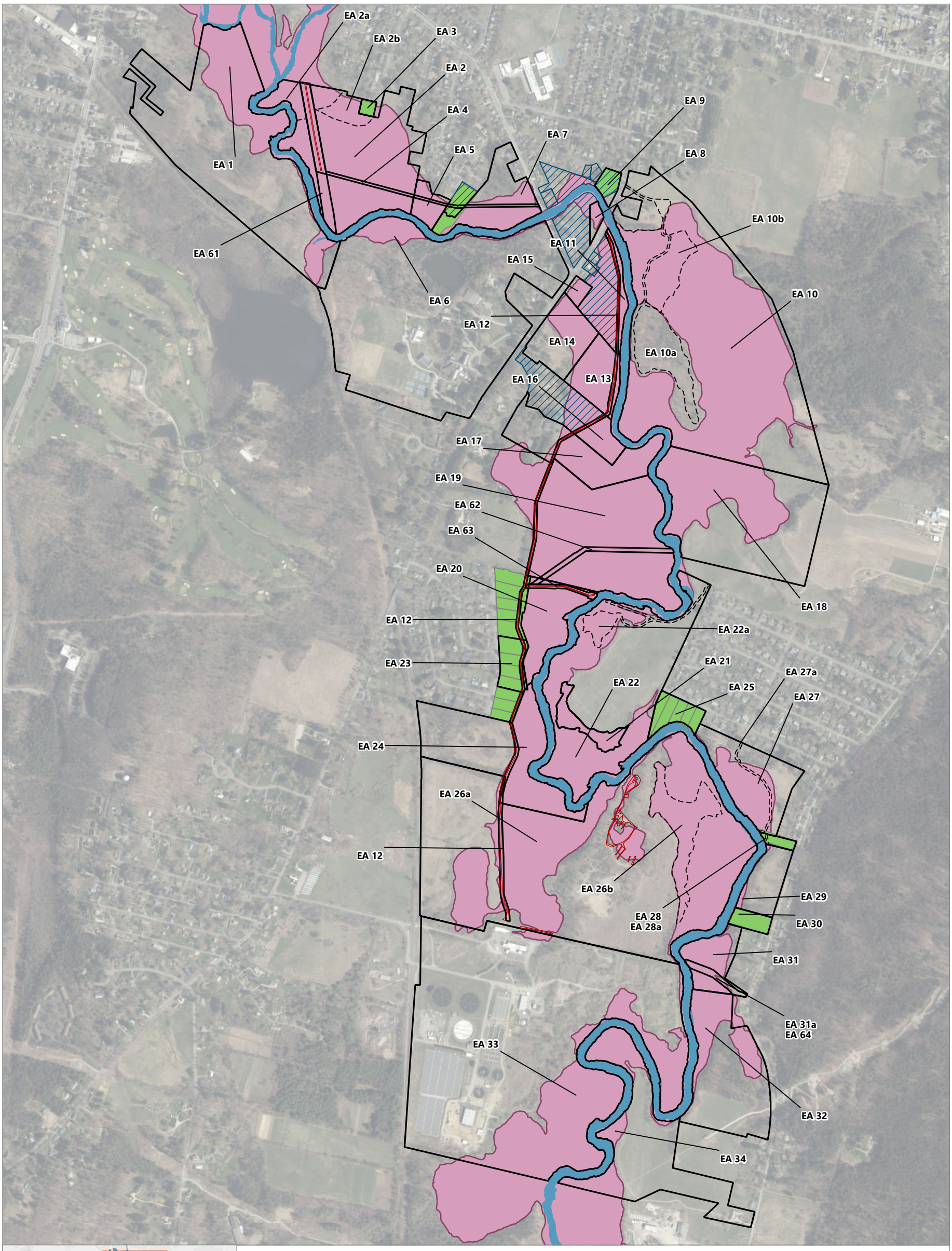
0 1,000
Feet

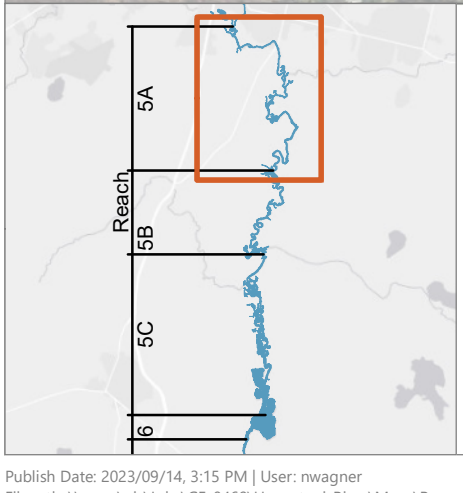
Publish Date: 2023/09/22, 10:06 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig1-2_Reach5ABaseMap.mxd

ANCHOR QEA

Figure 1-2
Reach 5A Site Map

Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River





LEGEND:

- Floodplain Exposure Area Boundary
- Floodplain Exposure Subarea Boundary
- Frequently Used Subarea
- Actual/Potential Lawn Properties
- Reach 5A Floodplain Residential Properties
- Reach 5A Floodplain Non-Residential Exposure Areas (up to 1 mg/kg PCB Isopleth)
- Channel (AECOM and Anchor QEA 2020)

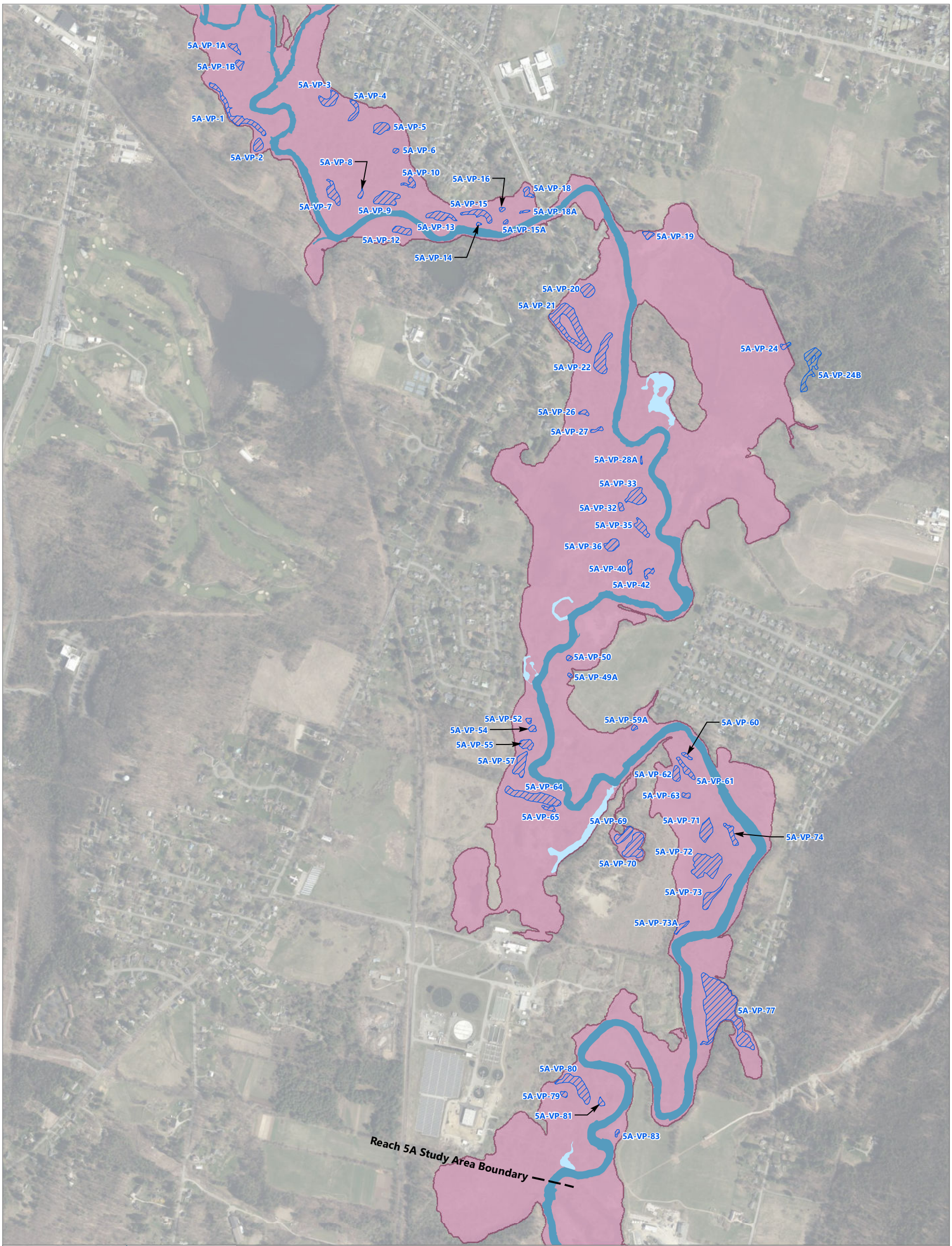
NOTE:
1. Aerial imagery from MassGIS 2021.

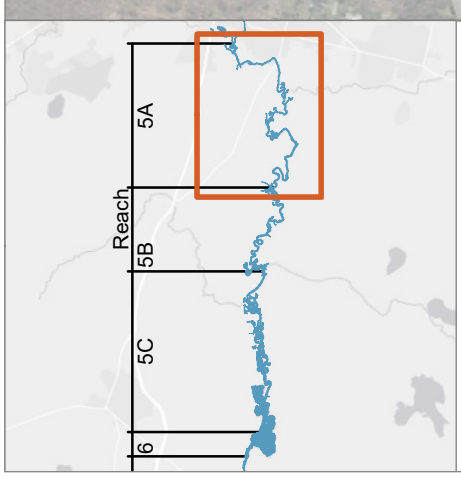
0 1,000
Feet

Publish Date: 2023/09/14, 3:15 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig1-3_ExposureAreas.mxd

ANCHOR QEA

Figure 1-3
Floodplain Exposure Areas, Subareas, and Frequently Used Subareas in Reach 5A
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River





LEGEND:

- 1 mg/kg PCB Isopleth
- Channel (AECOM and Anchor QEA 2020)
- Backwaters (AECOM and Anchor QEA 2020)
- Vernal Pools (AECOM 2020, GE 2021)

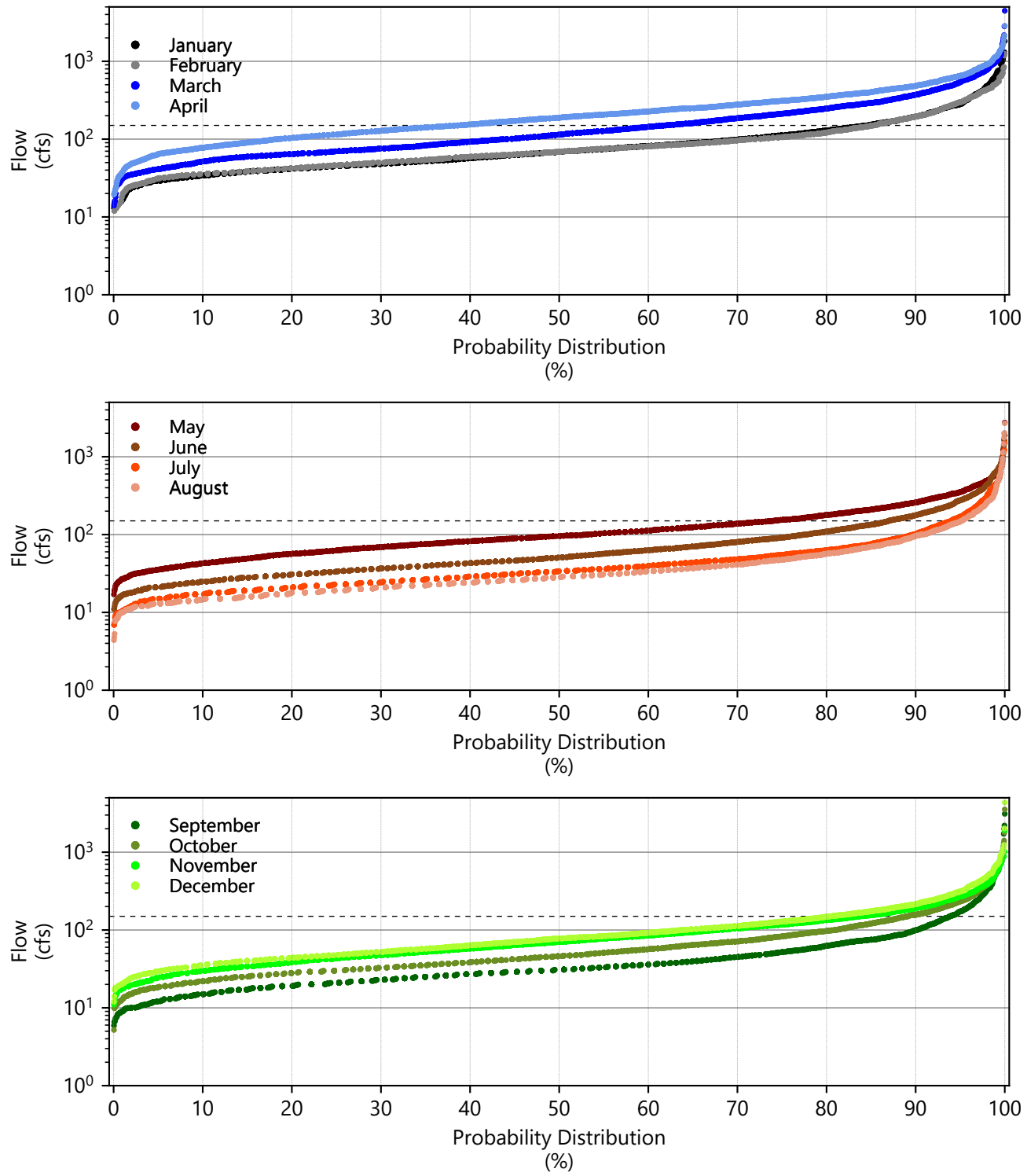
NOTE:
1. Aerial imagery from MassGIS 2021.

0 1,000
Feet

Publish Date: 2023/08/07, 7:00 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\Reorganize\AQ_RDRA_Fig1-3_Floodplain.mxd

ANCHOR QEA

Figure 1-4
Vernal Pools in Reach 5A
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



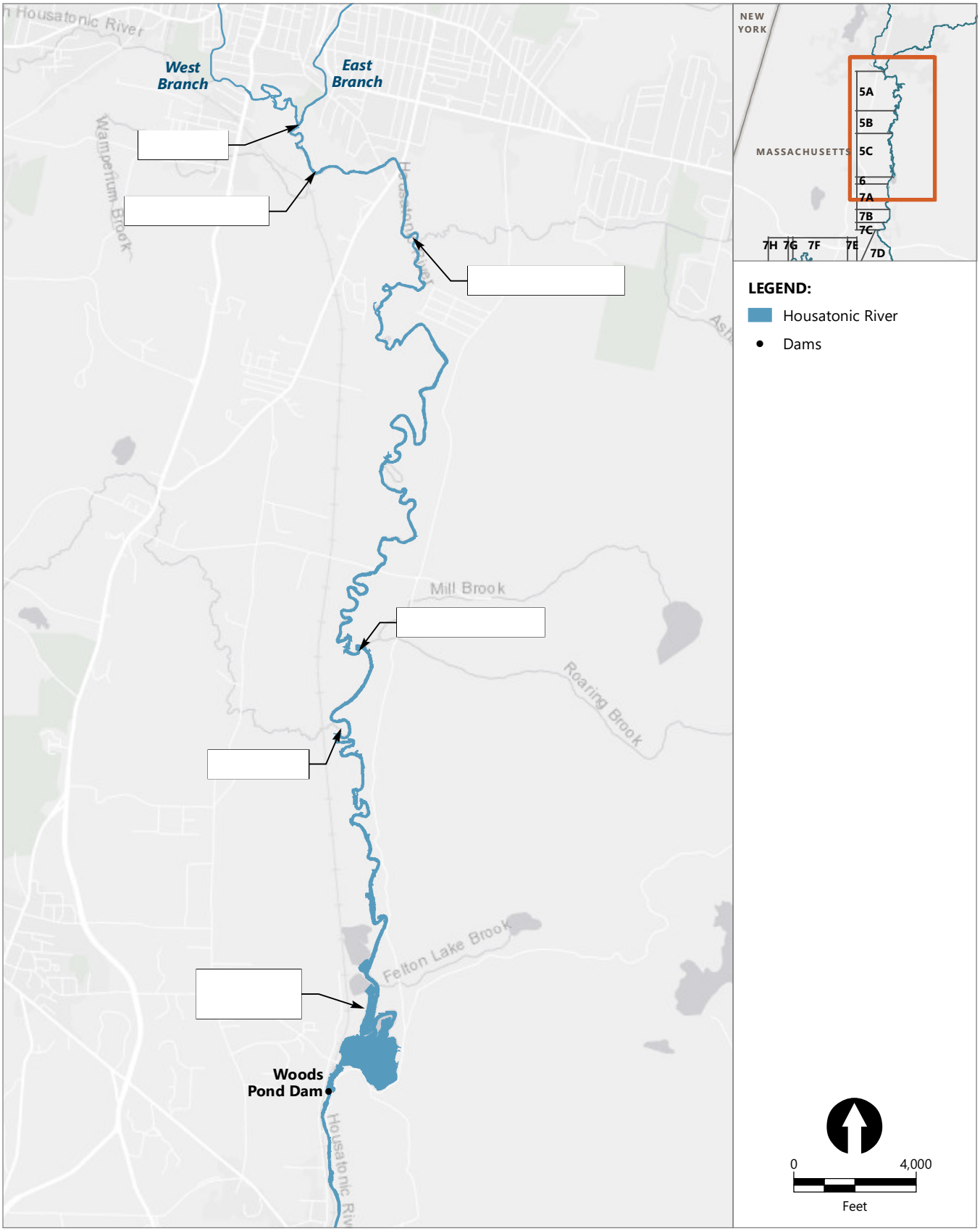
Data shown: March 8, 1936 - June 6, 2023. Each point represents a daily average flow. Dashed line at 150 cfs represents bottom of the bank.

Publish Date: 09/14/2023 10:27 AM | User: WCL-HELEN
\\WCL-FS1\Syracuse\Projects\GE\Housatonic_Rest-of-River\Remedial_Design\Reach_5A\ANALYSIS\Sediment\Spatial_Vertical_Analysis\Python\flow_probplpt_coltsville.py

ANCHOR QEA

Figure 3-1
Cumulative Frequency Distribution of Flow at USGS Coltsville Gage by Month

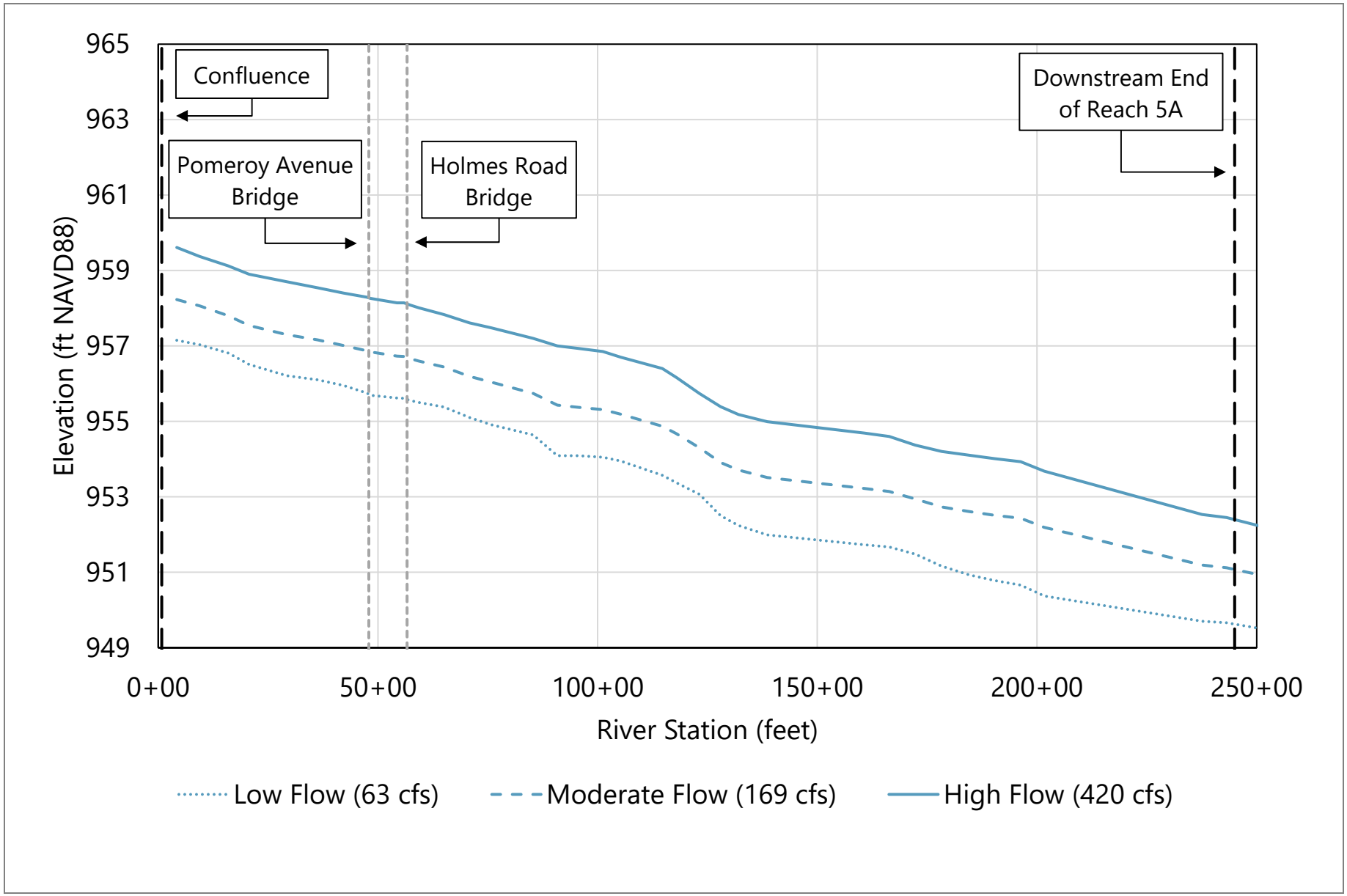
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



Publish Date: 2023/09/15, 7:35 AM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig3-2_FlowChange.mxd

ANCHOR QEA

Figure 3-2
Flow Input Locations in HEC-RAS Model
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



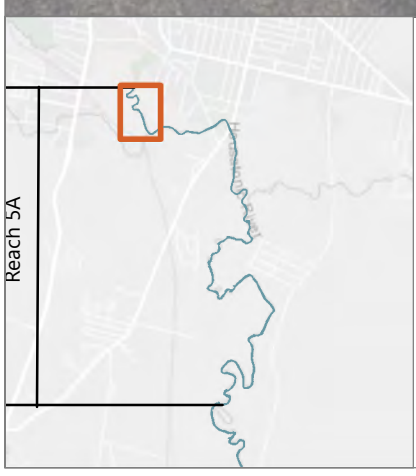
Filepath: \\WCL-FS1\Syracuse\Projects\GE\Housatonic_Rest-of-River\Remedial_Design\Reach_5A\DOCUMENTS\Concept_RDRA_Work_Plan\Working\Figures\Figure 3-3 Predicted WSEs.docx

ANCHOR QEA

Figure 3-3

Predicted Water Surface Elevations for Low, Moderate, and High Flow Conditions in Reach 5A

Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



LEGEND:

- Roads
- Top of Bank
- 0+00 River Stationing
- 1 mg/kg PCB Isopleth
- River Channel - Bottom of Bank

Water Depth in Feet at 150 cfs

0 - 1	4.1 - 5	8.1 - 9
1.1 - 2	5.1 - 6	9.1 - 10
2.1 - 3	6.1 - 7	>10
3.1 - 4	7.1 - 8	

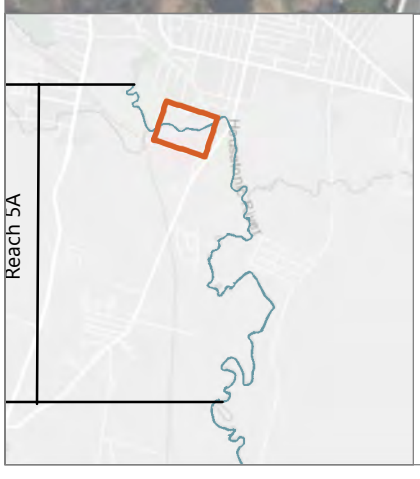
0 150
Feet

NOTES:
1. Aerial Imagery from MassGIS, 2021.
2. Water depths are based on an April 2022 bathymetry survey and water surface elevations from the conceptual design HEC-RES model.

Publish Date: 2023/09/28, 2:29 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig3_4_WaterDepth150cfs_new.mxd

ANCHOR QEA

Figure 3-4a
Estimated Water Depths in Reach 5A Corresponding to Flow of 150 cfs at the USGS Coltsville Gage
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



LEGEND:

- Roads
- Top of Bank
- 0+00 River Stationing
- 1 mg/kg PCB Isopleth
- River Channel - Bottom of Bank

Water Depth in Feet at 150 cfs

0 - 1	4.1 - 5	8.1 - 9
1.1 - 2	5.1 - 6	9.1 - 10
2.1 - 3	6.1 - 7	>10
3.1 - 4	7.1 - 8	

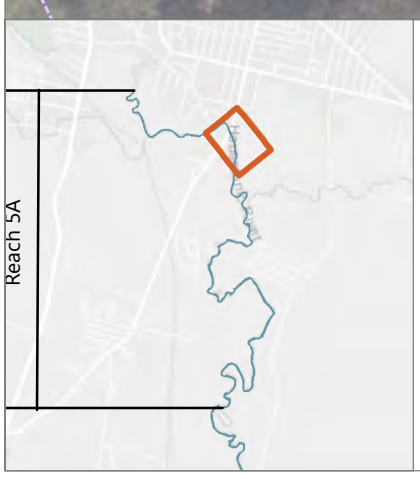
0 150
Feet

NOTES:
1. Aerial Imagery from MassGIS, 2021.
2. Water depths are based on an April 2022 bathymetry survey and water surface elevations from the conceptual design HEC-RES model.

Publish Date: 2023/09/28, 2:29 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig3_4_WaterDepth150cfs_new.mxd

ANCHOR QEA

Figure 3-4b
Estimated Water Depths in Reach 5A Corresponding to Flow of 150 cfs at the USGS Coltsville Gage
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



LEGEND:

- Roads
- Top of Bank
- 0+00 River Stationing
- 1 mg/kg PCB Isopleth
- River Channel - Bottom of Bank

Water Depth in Feet at 150 cfs

0 - 1	4.1 - 5	8.1 - 9
1.1 - 2	5.1 - 6	9.1 - 10
2.1 - 3	6.1 - 7	>10
3.1 - 4	7.1 - 8	

0 150
Feet

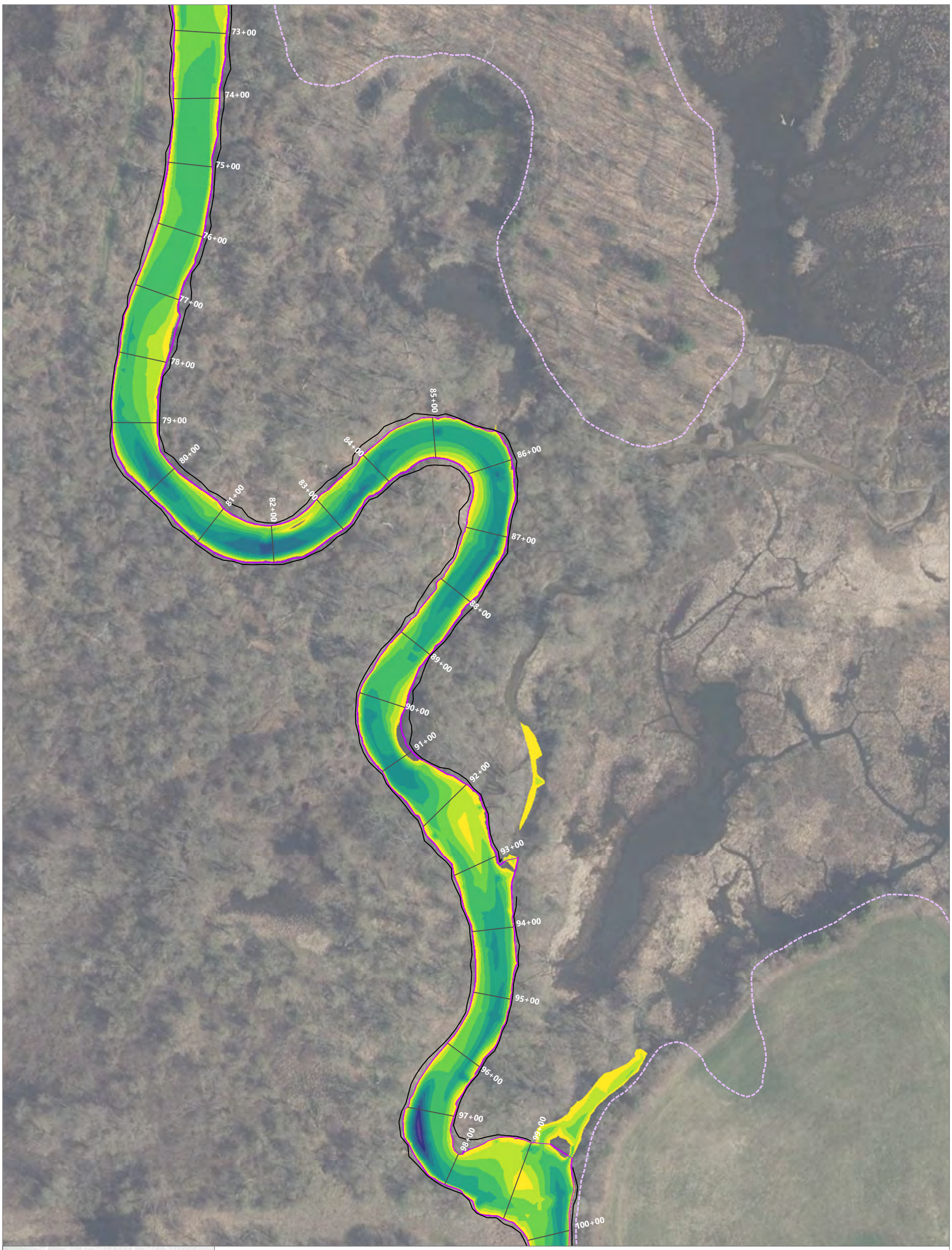
NOTES:
1. Aerial Imagery from MassGIS, 2021.
2. Water depths are based on an April 2022 bathymetry survey and water surface elevations from the conceptual design HEC-RES model.

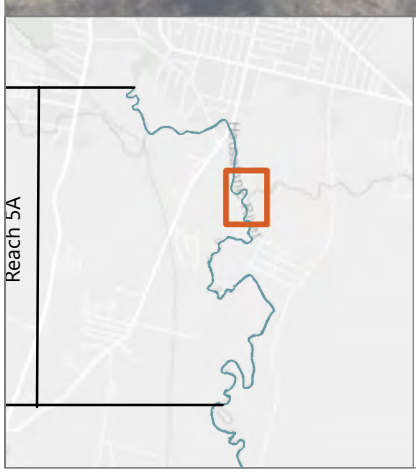
Publish Date: 2023/09/28, 2:30 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig3_4_WaterDepth150cfs_new.mxd

ANCHOR QEA

Figure 3-4c
Estimated Water Depths in Reach 5A Corresponding to Flow of 150 cfs at the USGS Coltsville Gage

Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River





LEGEND:

- Roads
- Top of Bank
- 0+00 River Stationing
- 1 mg/kg PCB Isopleth
- River Channel - Bottom of Bank

Water Depth in Feet at 150 cfs

0 - 1	4.1 - 5	8.1 - 9
1.1 - 2	5.1 - 6	9.1 - 10
2.1 - 3	6.1 - 7	>10
3.1 - 4	7.1 - 8	

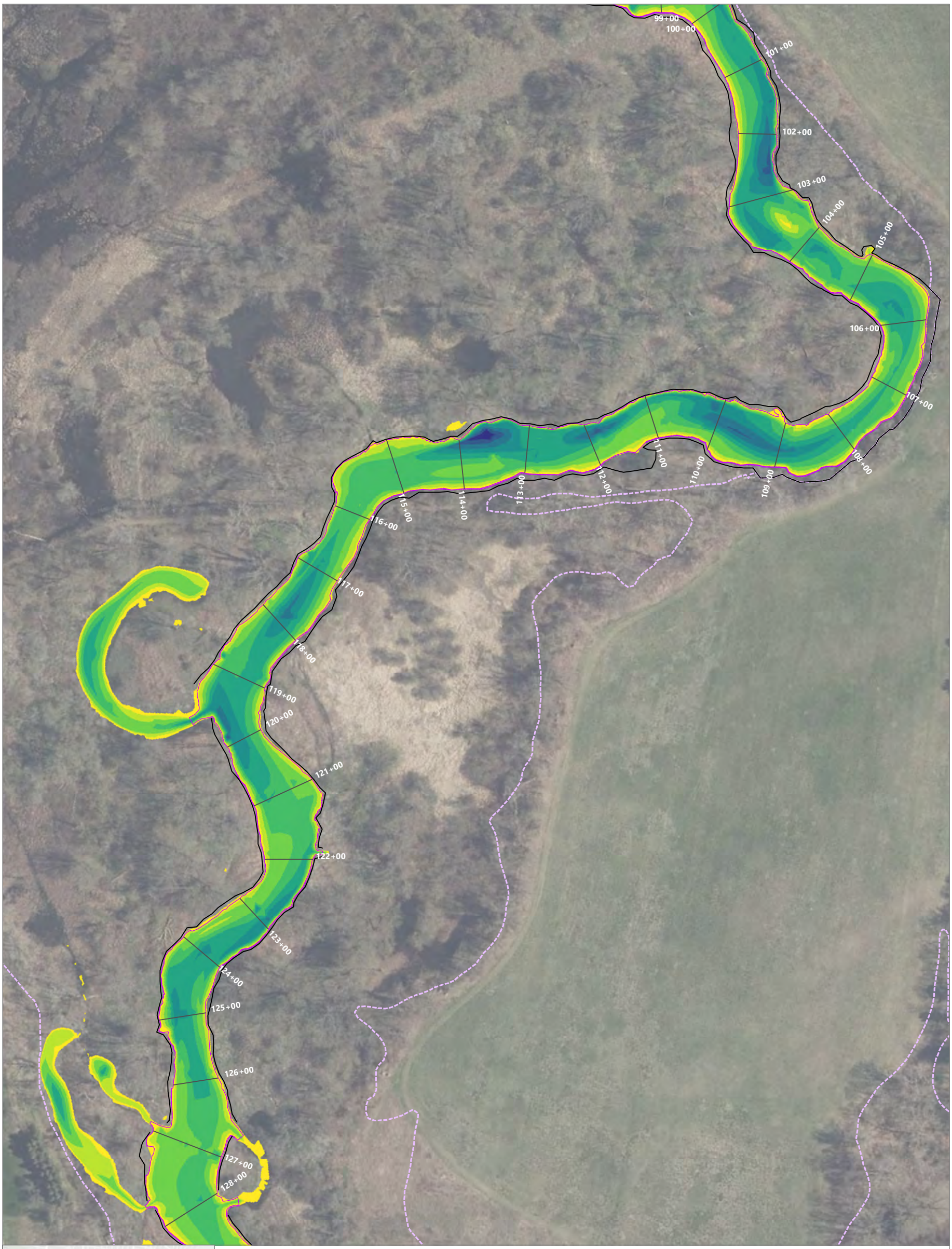
0 150
Feet

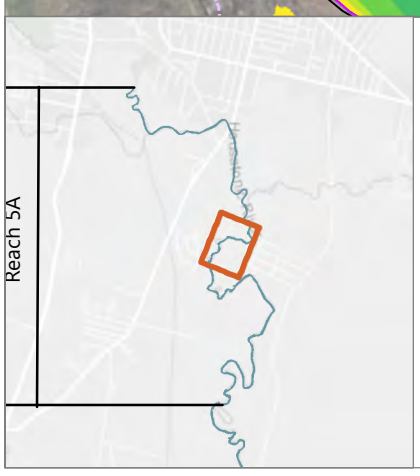
NOTES:
1. Aerial Imagery from MassGIS, 2021.
2. Water depths are based on an April 2022 bathymetry survey and water surface elevations from the conceptual design HEC-RES model.

Publish Date: 2023/09/28, 2:30 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig3_4_WaterDepth150cfs_new.mxd

ANCHOR QEA

Figure 3-4d
Estimated Water Depths in Reach 5A Corresponding to Flow of 150 cfs at the USGS Coltsville Gage
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River





LEGEND:

- Roads
- Top of Bank
- 0+00 River Stationing
- 1 mg/kg PCB Isopleth
- River Channel - Bottom of Bank

Water Depth in Feet at 150 cfs

0 - 1	4.1 - 5	8.1 - 9
1.1 - 2	5.1 - 6	9.1 - 10
2.1 - 3	6.1 - 7	>10
3.1 - 4	7.1 - 8	

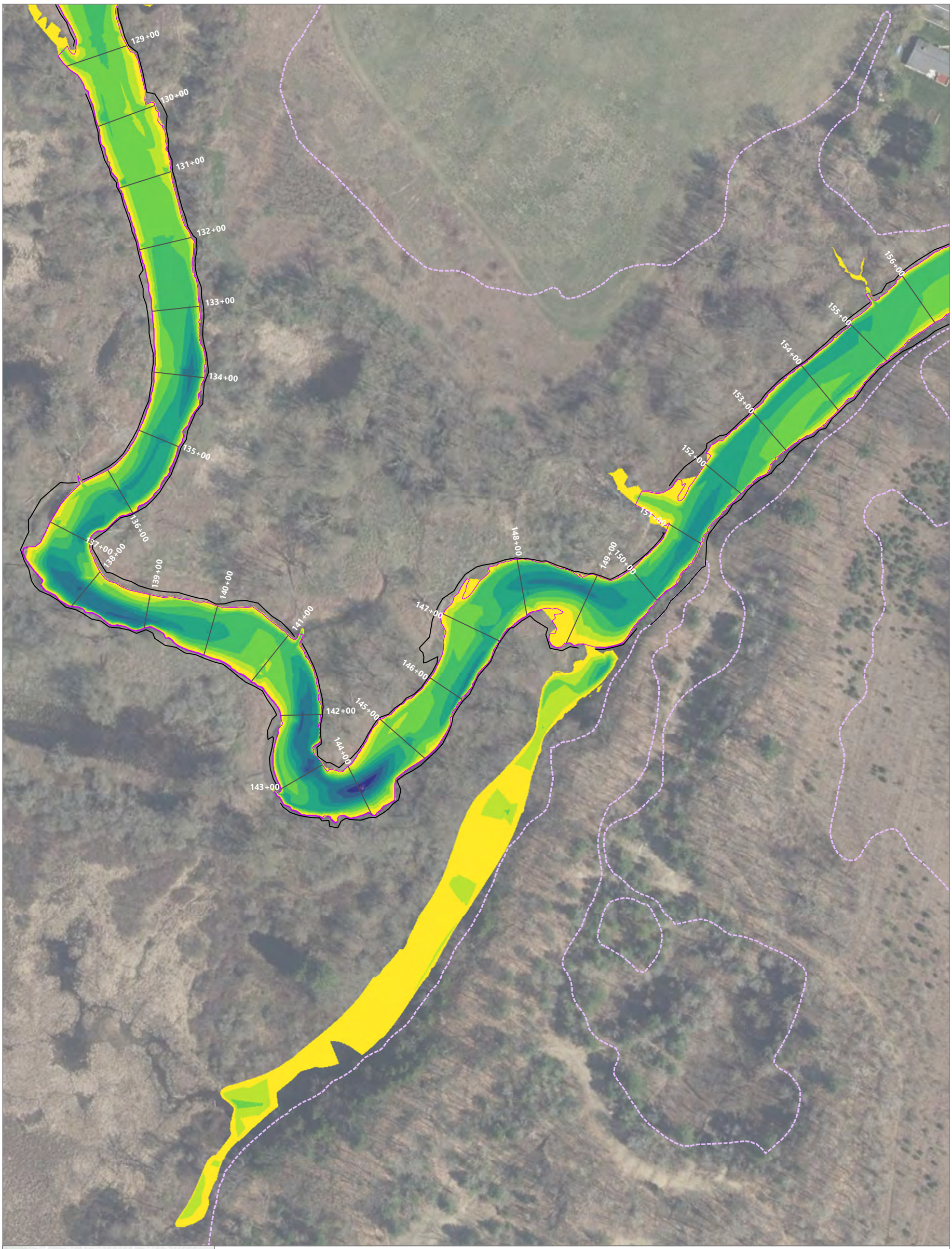
0 150
Feet

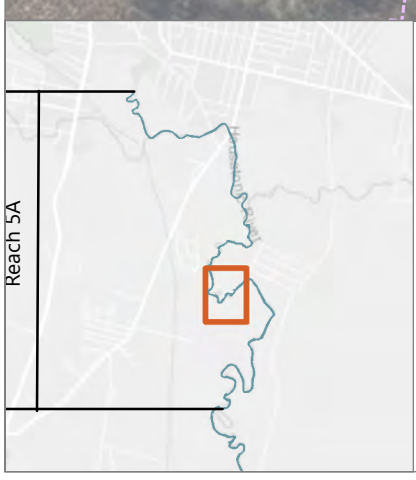
NOTES:
1. Aerial Imagery from MassGIS, 2021.
2. Water depths are based on an April 2022 bathymetry survey and water surface elevations from the conceptual design HEC-RES model.

Publish Date: 2023/09/28, 2:30 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig3_4_WaterDepth150cfs_new.mxd

ANCHOR QEA

Figure 3-4e
Estimated Water Depths in Reach 5A Corresponding to Flow of 150 cfs at the USGS Coltsville Gage





LEGEND:

- Roads
- Top of Bank
- 0+00 River Stationing
- 1 mg/kg PCB Isopleth
- River Channel - Bottom of Bank

Water Depth in Feet at 150 cfs

0 - 1	4.1 - 5	8.1 - 9
1.1 - 2	5.1 - 6	9.1 - 10
2.1 - 3	6.1 - 7	>10
3.1 - 4	7.1 - 8	

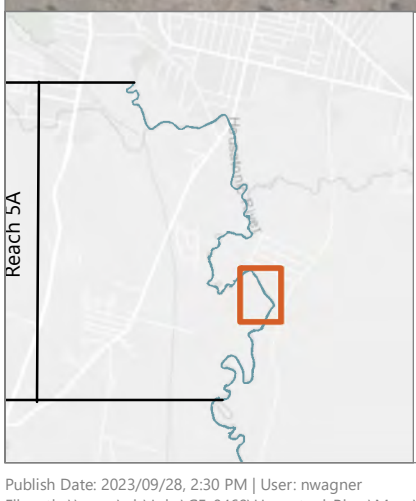
0 150
Feet

NOTES:
1. Aerial Imagery from MassGIS, 2021.
2. Water depths are based on an April 2022 bathymetry survey and water surface elevations from the conceptual design HEC-RES model.

Publish Date: 2023/09/28, 2:30 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig3_4_WaterDepth150cfs_new.mxd

ANCHOR QEA

Figure 3-4f
Estimated Water Depths in Reach 5A Corresponding to Flow of 150 cfs at the USGS Coltsville Gage
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



LEGEND:

- Roads
- Top of Bank
- 0+00 River Stationing
- 1 mg/kg PCB Isopleth
- River Channel - Bottom of Bank

Water Depth in Feet at 150 cfs

0 - 1	4.1 - 5	8.1 - 9
1.1 - 2	5.1 - 6	9.1 - 10
2.1 - 3	6.1 - 7	>10
3.1 - 4	7.1 - 8	

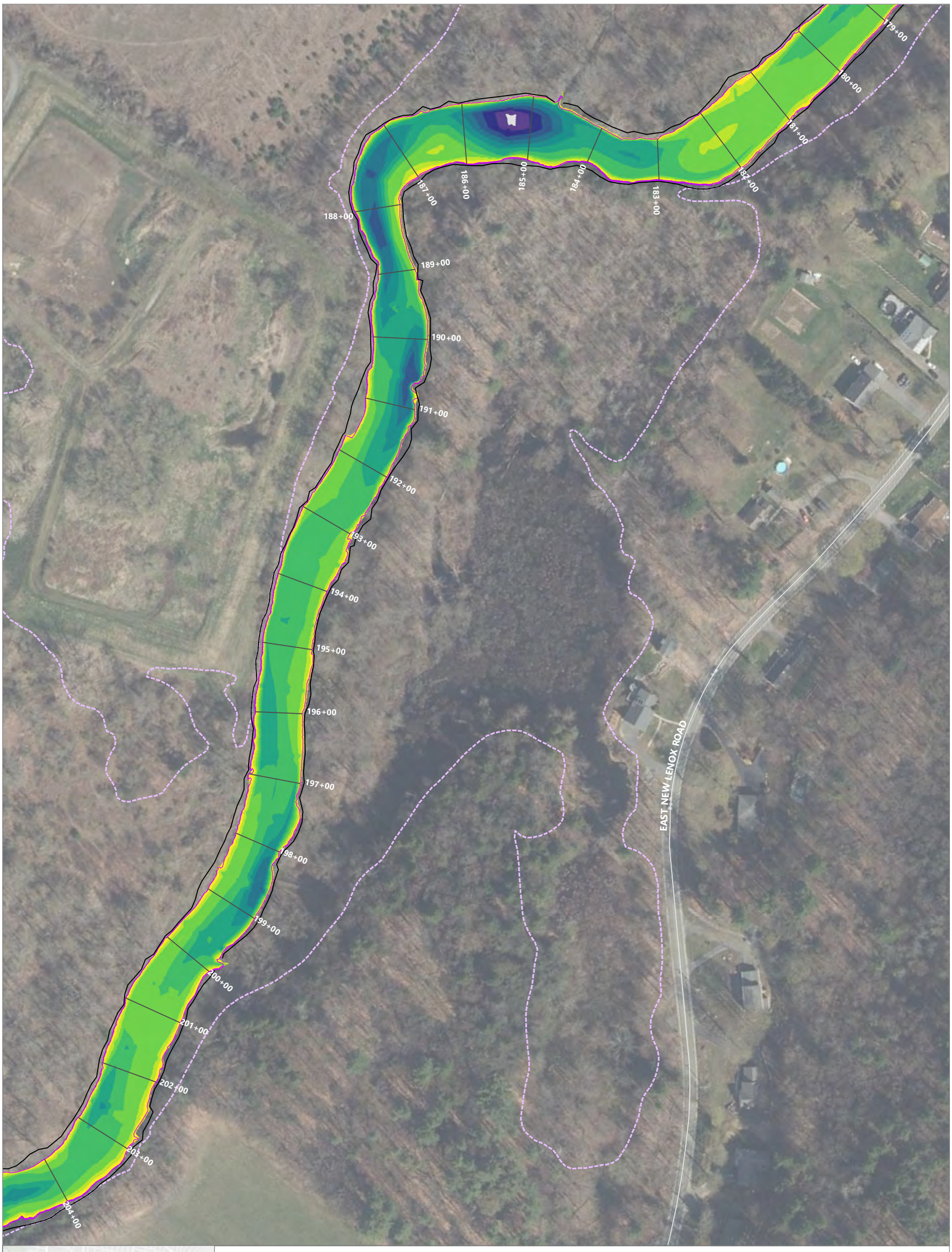
0 150
Feet

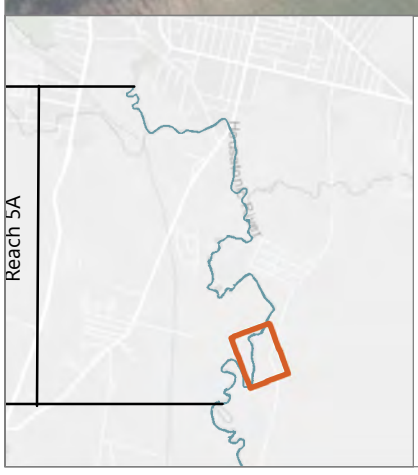
NOTES:
1. Aerial Imagery from MassGIS, 2021.
2. Water depths are based on an April 2022 bathymetry survey and water surface elevations from the conceptual design HEC-RES model.

Publish Date: 2023/09/28, 2:30 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig3_4_WaterDepth150cfs_new.mxd

ANCHOR QEA

Figure 3-4g
Estimated Water Depths in Reach 5A Corresponding to Flow of 150 cfs at the USGS Coltsville Gage
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River





LEGEND:

- Roads
- Top of Bank
- 0+00 River Stationing
- 1 mg/kg PCB Isopleth
- River Channel - Bottom of Bank

Water Depth in Feet at 150 cfs

0 - 1	4.1 - 5	8.1 - 9
1.1 - 2	5.1 - 6	9.1 - 10
2.1 - 3	6.1 - 7	>10
3.1 - 4	7.1 - 8	

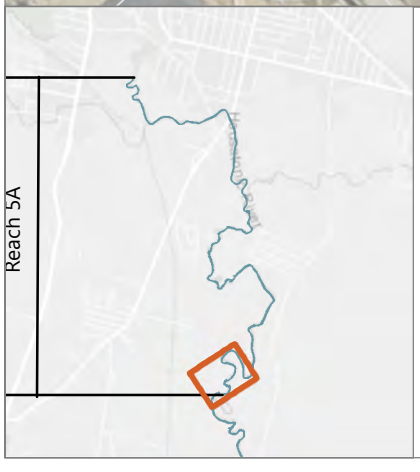
0 150
Feet

NOTES:
1. Aerial Imagery from MassGIS, 2021.
2. Water depths are based on an April 2022 bathymetry survey and water surface elevations from the conceptual design HEC-RES model.

Publish Date: 2023/09/28, 2:31 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig3_4_WaterDepth150cfs_new.mxd

ANCHOR QEA

Figure 3-4h
Estimated Water Depths in Reach 5A Corresponding to Flow of 150 cfs at the USGS Coltsville Gage
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



LEGEND:

- Roads
- Top of Bank
- 0+00 River Stationing
- 1 mg/kg PCB Isopleth
- River Channel - Bottom of Bank

Water Depth in Feet at 150 cfs

0 - 1	4.1 - 5	8.1 - 9
1.1 - 2	5.1 - 6	9.1 - 10
2.1 - 3	6.1 - 7	>10
3.1 - 4	7.1 - 8	

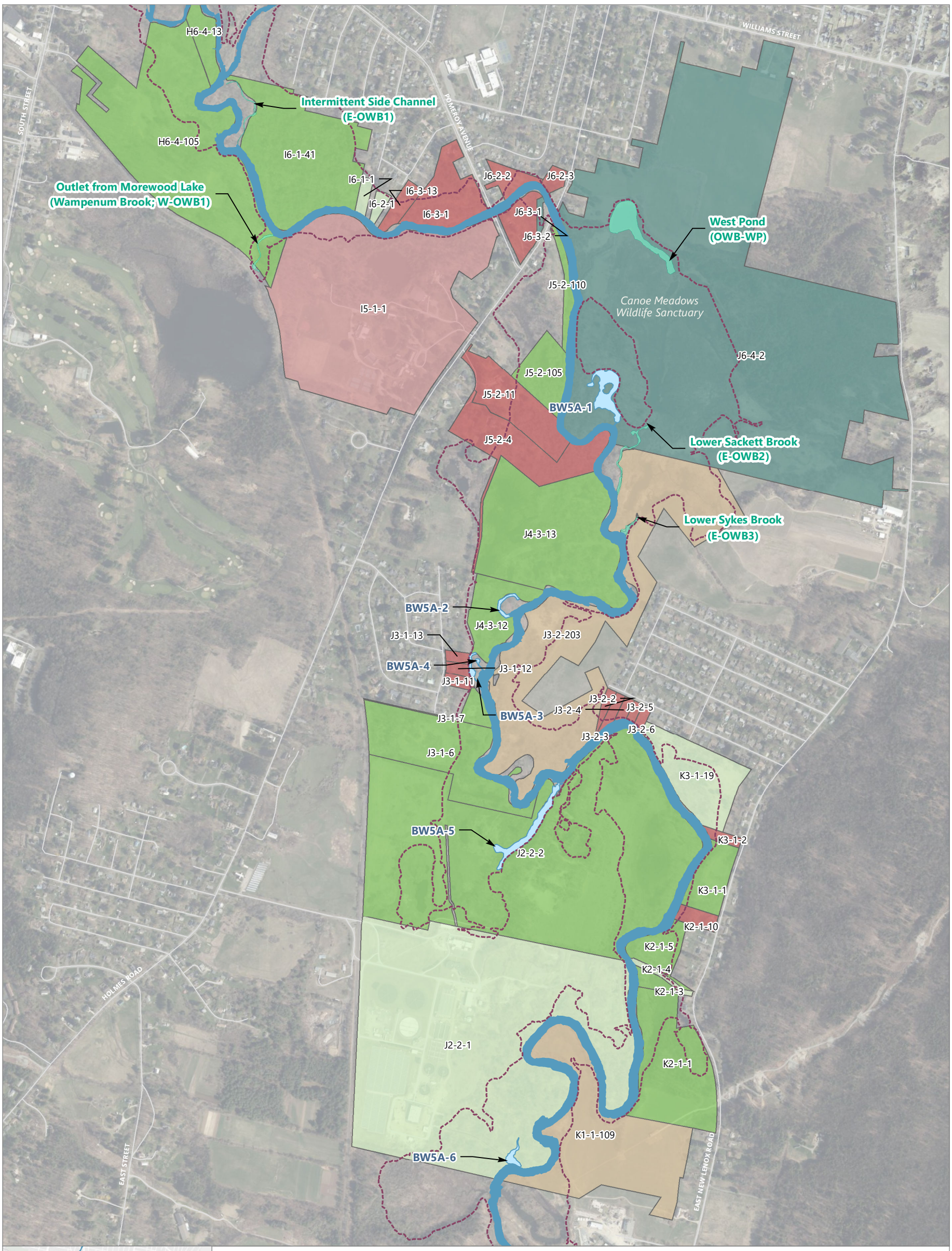
0 150
Feet

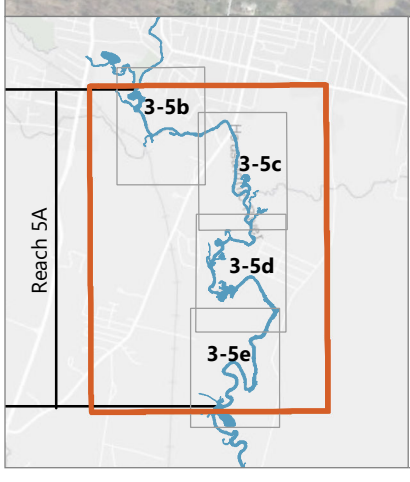
NOTES:
1. Aerial Imagery from MassGIS, 2021.
2. Water depths are based on an April 2022 bathymetry survey and water surface elevations from the conceptual design HEC-RES model.

Publish Date: 2023/09/28, 2:31 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig3_4_WaterDepth150cfs_new.mxd

ANCHOR QEA

Figure 3-4i
Estimated Water Depths in Reach 5A Corresponding to Flow of 150 cfs at the USGS Coltsville Gage





LEGEND:

- 0+00 River Stationing
- 1 mg/kg PCB Isopleth
- Channel (AECOM, Anchor QEA 2023)
- Backwaters (AECOM and Anchor QEA 2020)
- Other Waterbody
- Commonwealth of MA
- City of Pittsfield
- General Electric Co.
- MA Audubon Society
- Private (Residential)
- Private (Non-Residential)

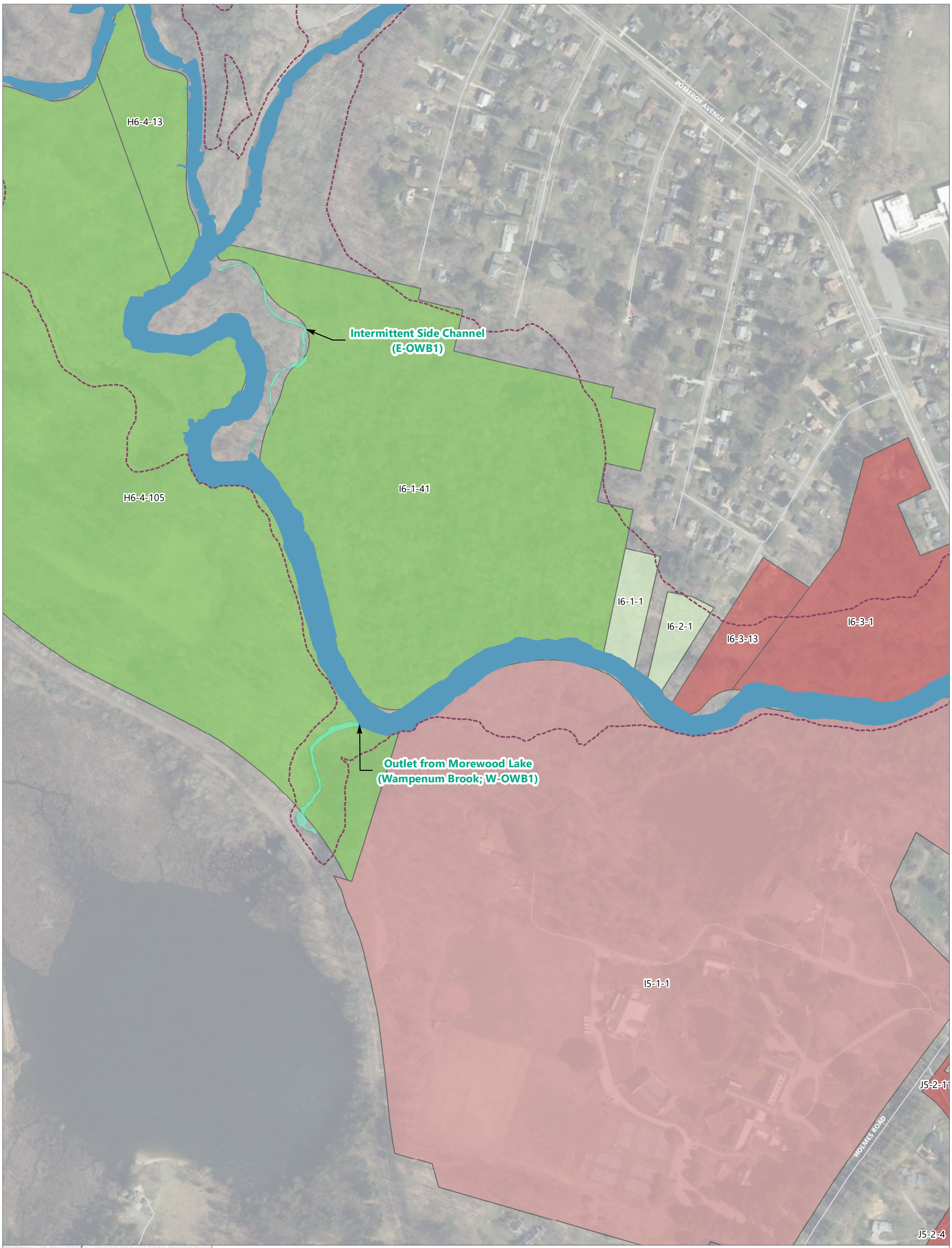
NOTES:
1. Aerial imagery from MassGIS 2021.
2. Parcel boundaries and ownership information from MassGIS 2023.

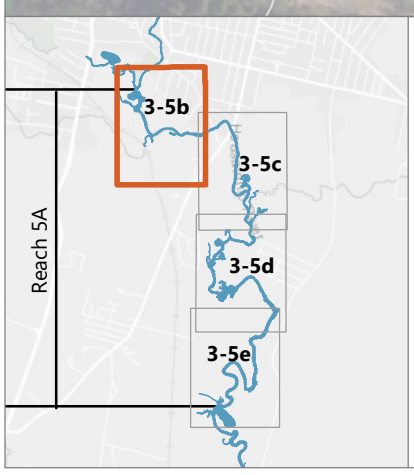
0 1,000
Feet

Publish Date: 2023/09/28, 2:31 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig3_5_PropertyOwnership.mxd

ANCHOR QEA

Figure 3-5a
Riparian Property Ownership in Reach 5A
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River





LEGEND:

- 0+00 River Stationing
- 1 mg/kg PCB Isopleth
- Channel (AECOM, Anchor QEA 2023)
- Other Waterbody
- Commonwealth of MA
- City of Pittsfield
- General Electric Co.
- MA Audubon Society
- Private (Residential)
- Private (Non-Residential)

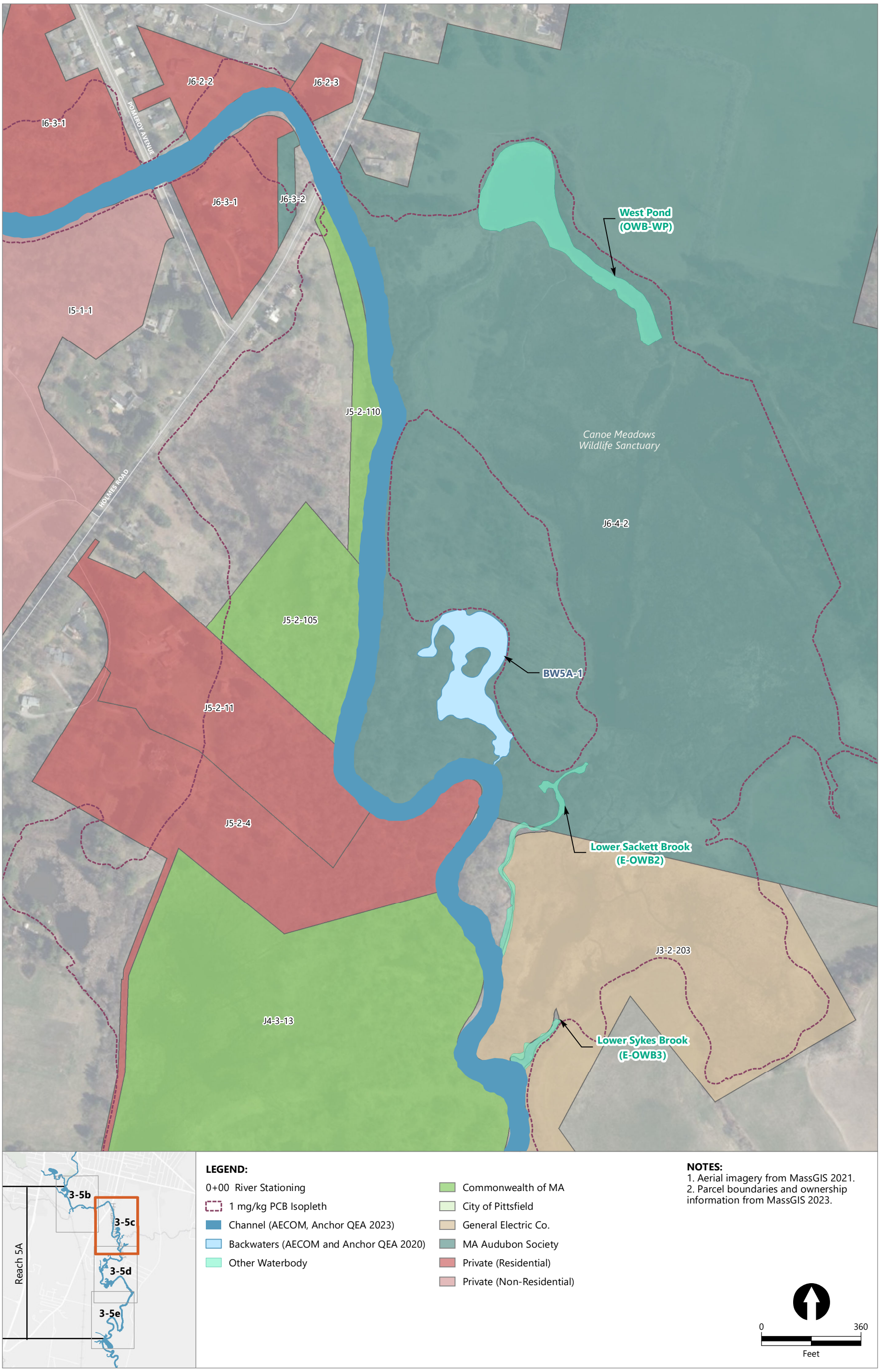
NOTES:
1. Aerial imagery from MassGIS 2021.
2. Parcel boundaries and ownership information from MassGIS 2023.

0 360
Feet

Publish Date: 2023/09/28, 2:31 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig3_5_PropertyOwnership.mxd

ANCHOR QEA

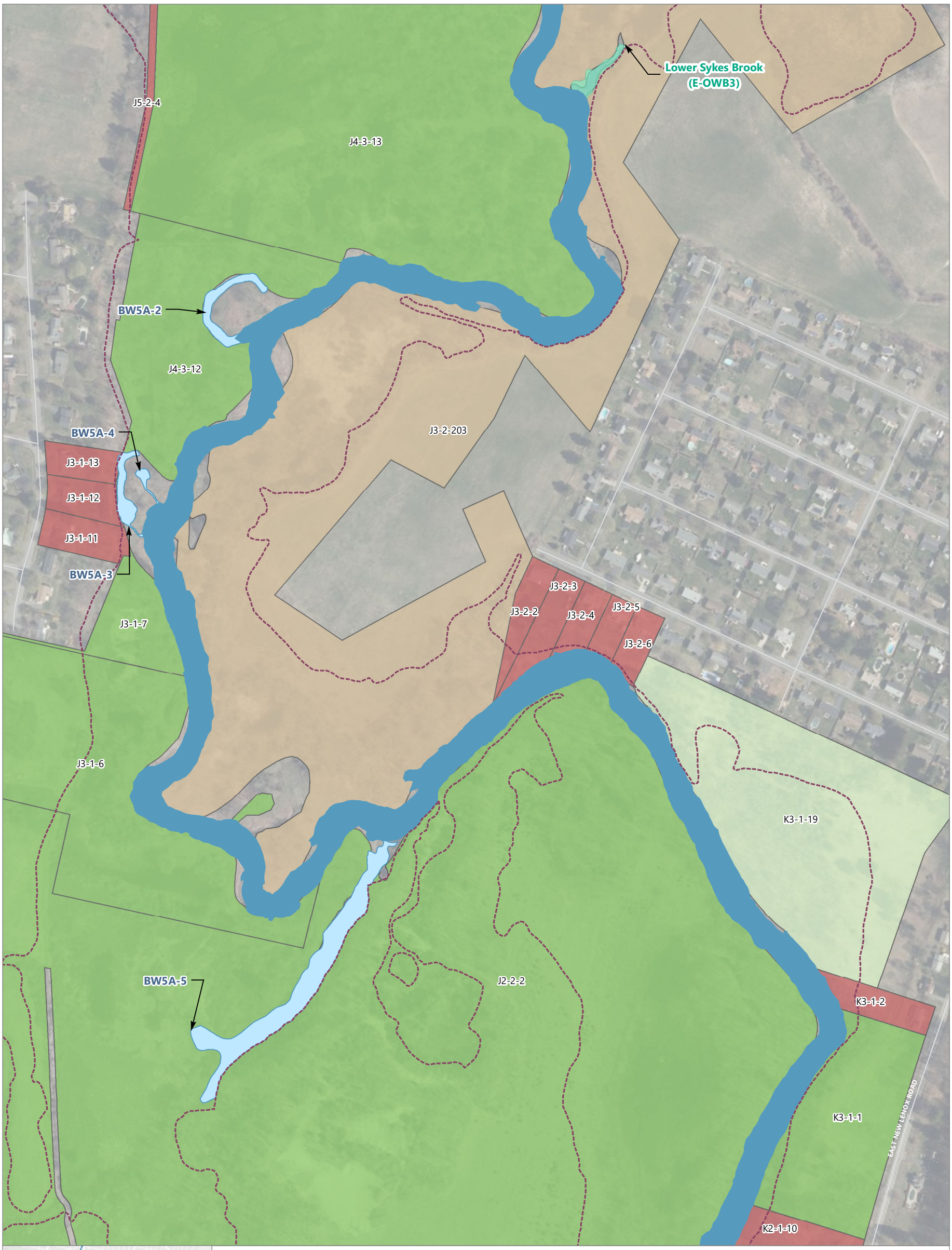
Figure 3-5b
Riparian Property Ownership in Reach 5A
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River

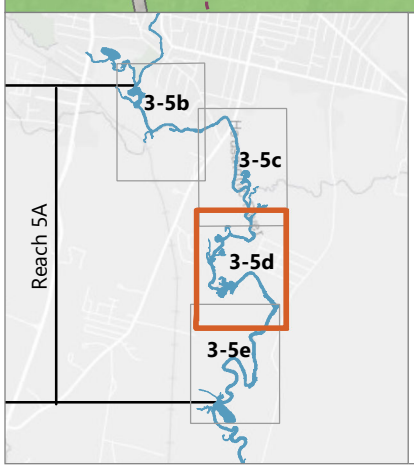


Publish Date: 2023/09/28, 2:31 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig3_5_PropertyOwnership.mxd

ANCHOR QEA

Figure 3-5c
Riparian Property Ownership in Reach 5A
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River





LEGEND:

- 0+00 River Stationing
- 1 mg/kg PCB Isopleth
- Channel (AECOM, Anchor QEA 2023)
- Backwaters (AECOM and Anchor QEA 2020)
- Other Waterbody
- Commonwealth of MA
- City of Pittsfield
- General Electric Co.
- MA Audubon Society
- Private (Residential)
- Private (Non-Residential)

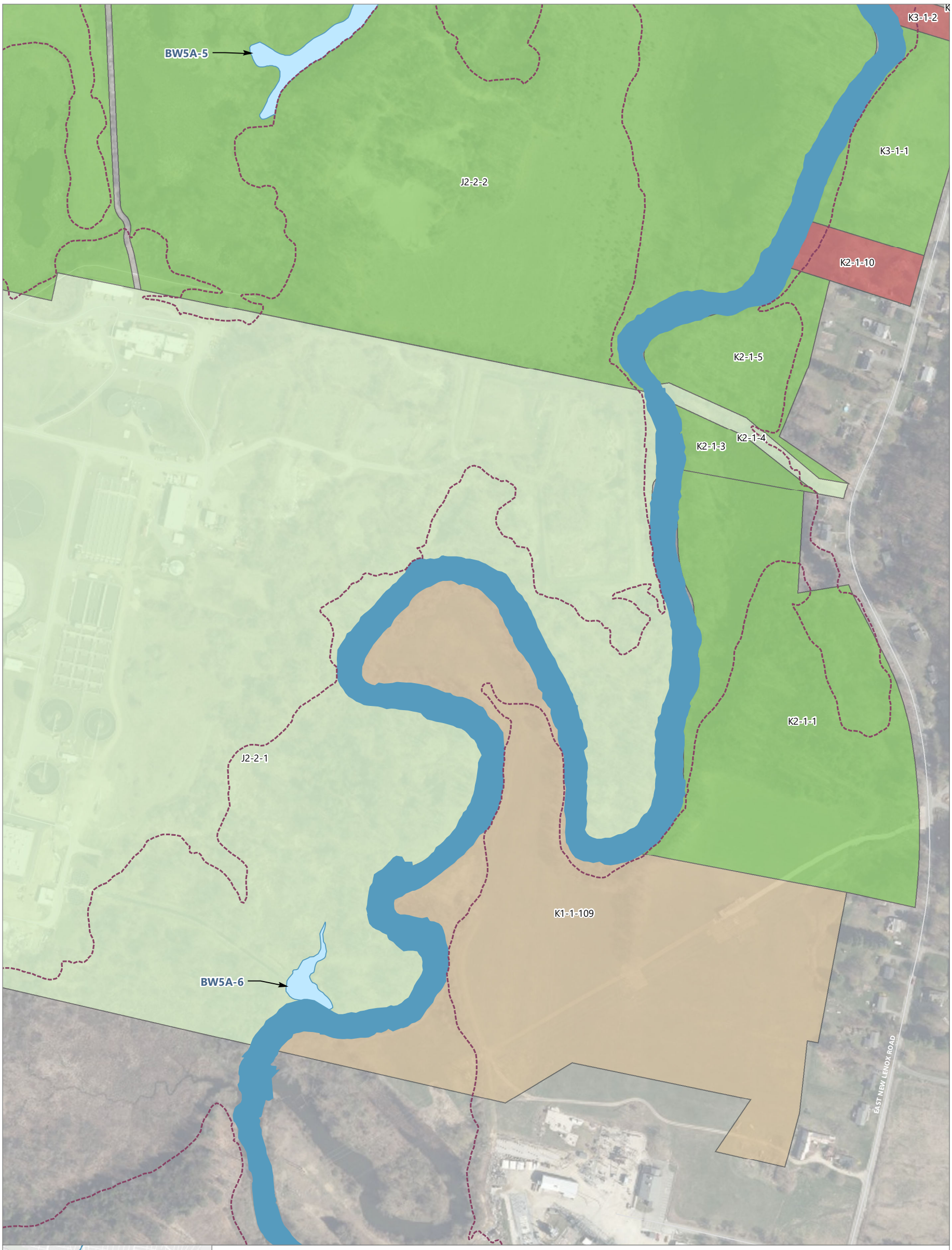
NOTES:
1. Aerial imagery from MassGIS 2021.
2. Parcel boundaries and ownership information from MassGIS 2023.

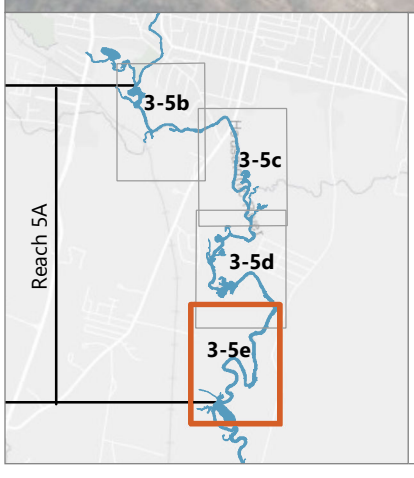
0 360
Feet

Publish Date: 2023/09/28, 2:32 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig3_5_PropertyOwnership.mxd

ANCHOR QEA

Figure 3-5d
Riparian Property Ownership in Reach 5A
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River





LEGEND:

- 0+00 River Stationing
- 1 mg/kg PCB Isopleth
- Channel (AECOM, Anchor QEA 2023)
- Backwaters (AECOM and Anchor QEA 2020)
- Commonwealth of MA
- City of Pittsfield
- General Electric Co.
- MA Audubon Society
- Private (Residential)
- Private (Non-Residential)

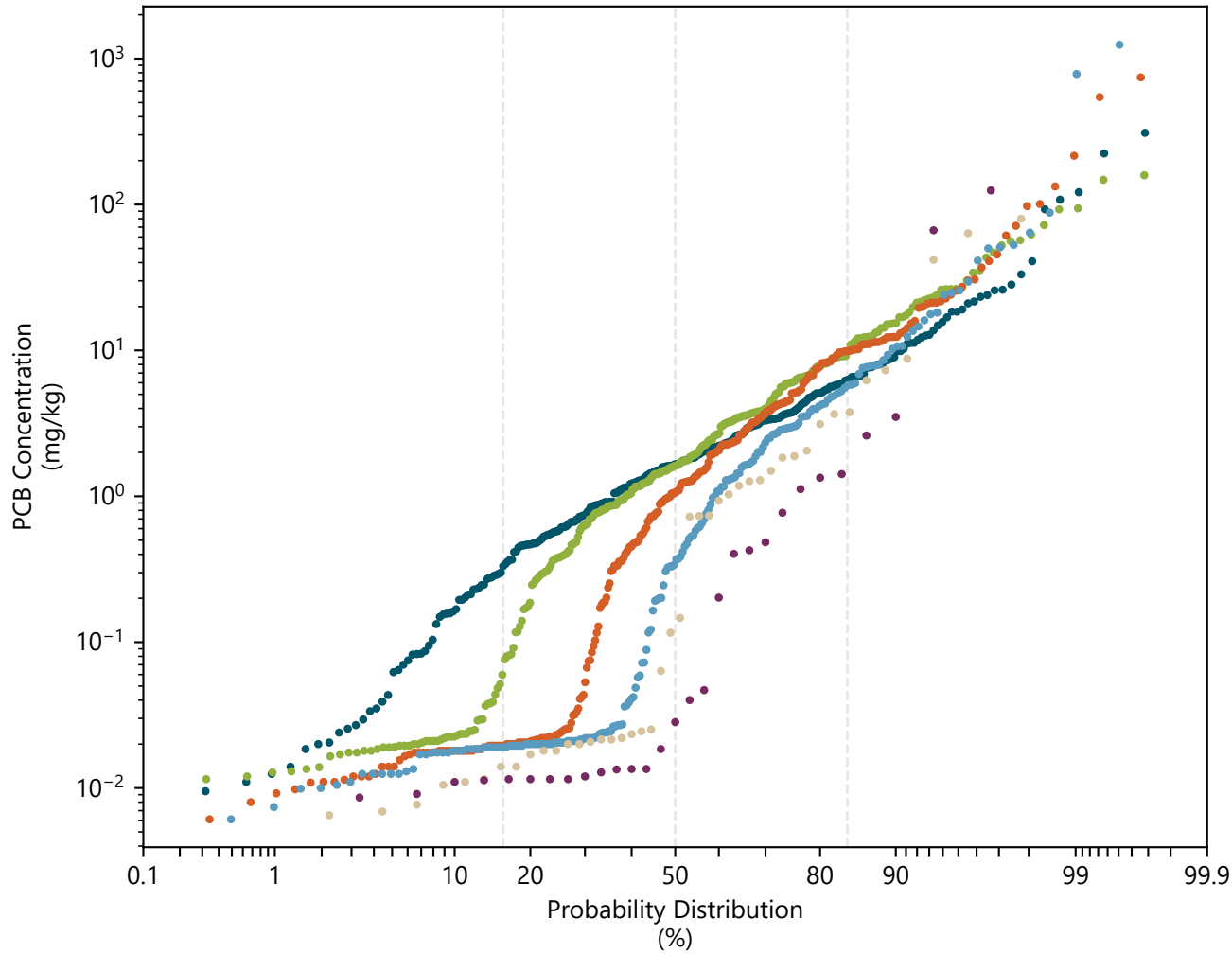
NOTES:
1. Aerial imagery from MassGIS 2021.
2. Parcel boundaries and ownership information from MassGIS 2023.

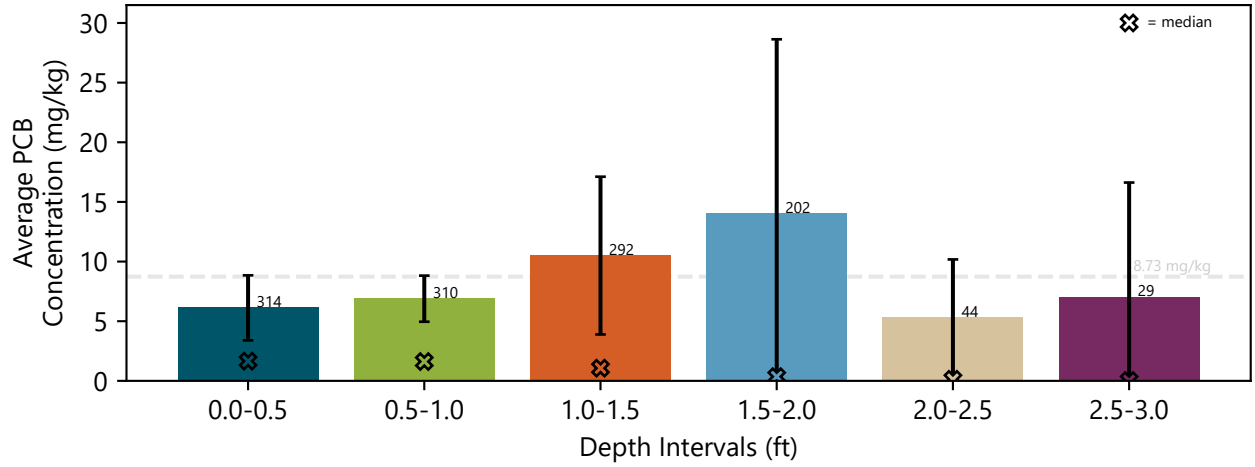
0 360
Feet

Publish Date: 2023/09/28, 2:32 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig3_5_PropertyOwnership.mxd

ANCHOR QEA

Figure 3-5e
Riparian Property Ownership in Reach 5A
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River





Non-detect values are plotted at half of the reporting limit.
Field duplicates are excluded from plots.
The average concentration of all core samples is shown as a dashed line in the bar plot.
Number of samples used to calculate averages are displayed above each bar.
Error bars represent +/- 2 standard errors of the mean.

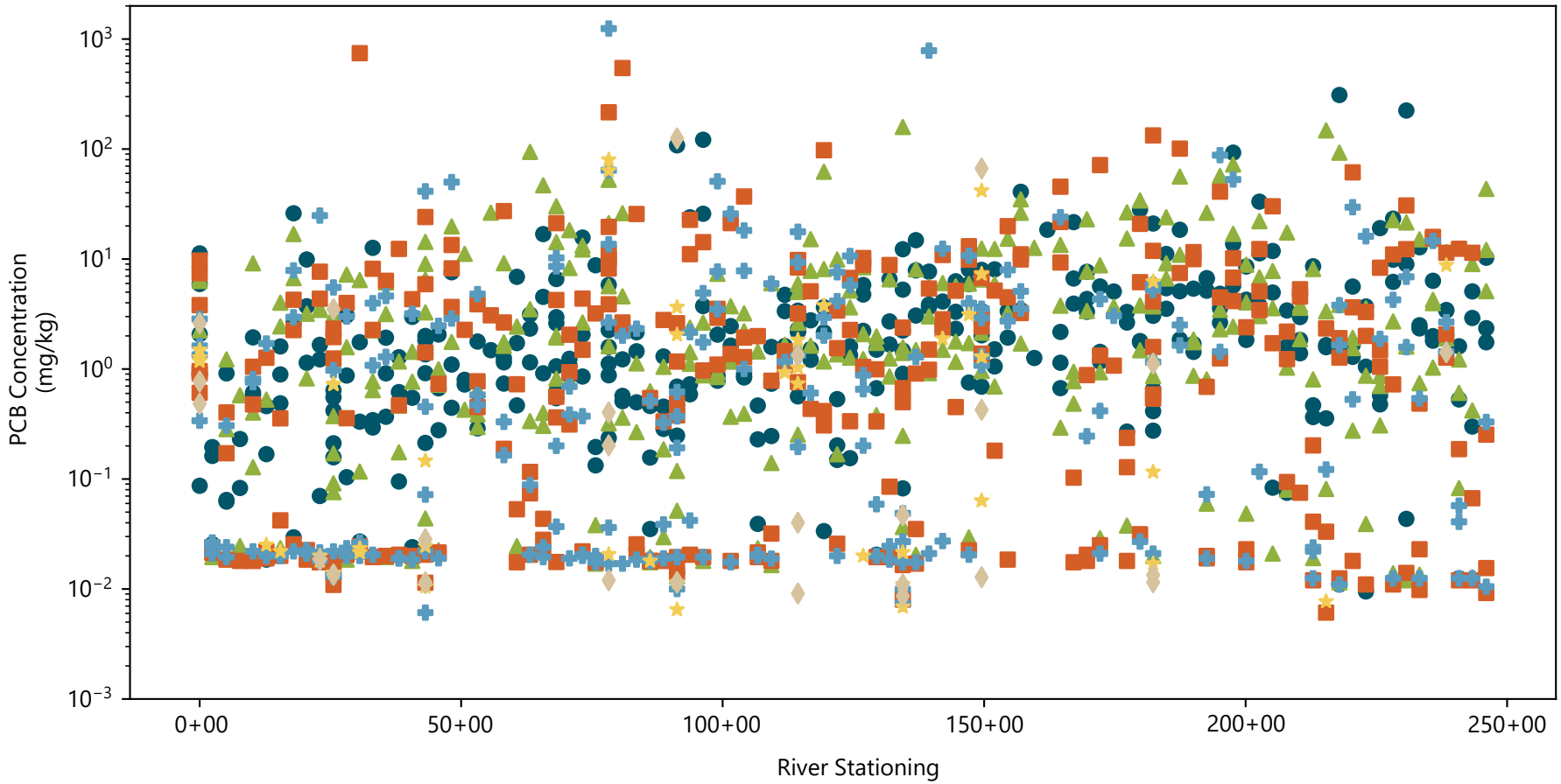
- 0.0-0.5 ft
- 0.5-1.0 ft
- 1.0-1.5 ft
- 1.5-2.0 ft
- 2.0-2.5 ft
- 2.5-3.0 ft

Publish Date: 08/16/2023 10:15 AM | User: WCL-HELEN
\\WCL-FS1\Syracuse\Projects\GE\Housatonic_Rest-of-River\Remedial_Design\Reach_5A\ANALYSIS\Sediment\Spatial_Vertical_Analysis\Python\river_data_comparison.py

ANCHOR QEA

Figure 4-1
Summary of In-River PDI Sediment PCB Data in Reach 5A

Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River



Non-detect values are plotted at half of the reporting limit. Field duplicates are excluded from plot.

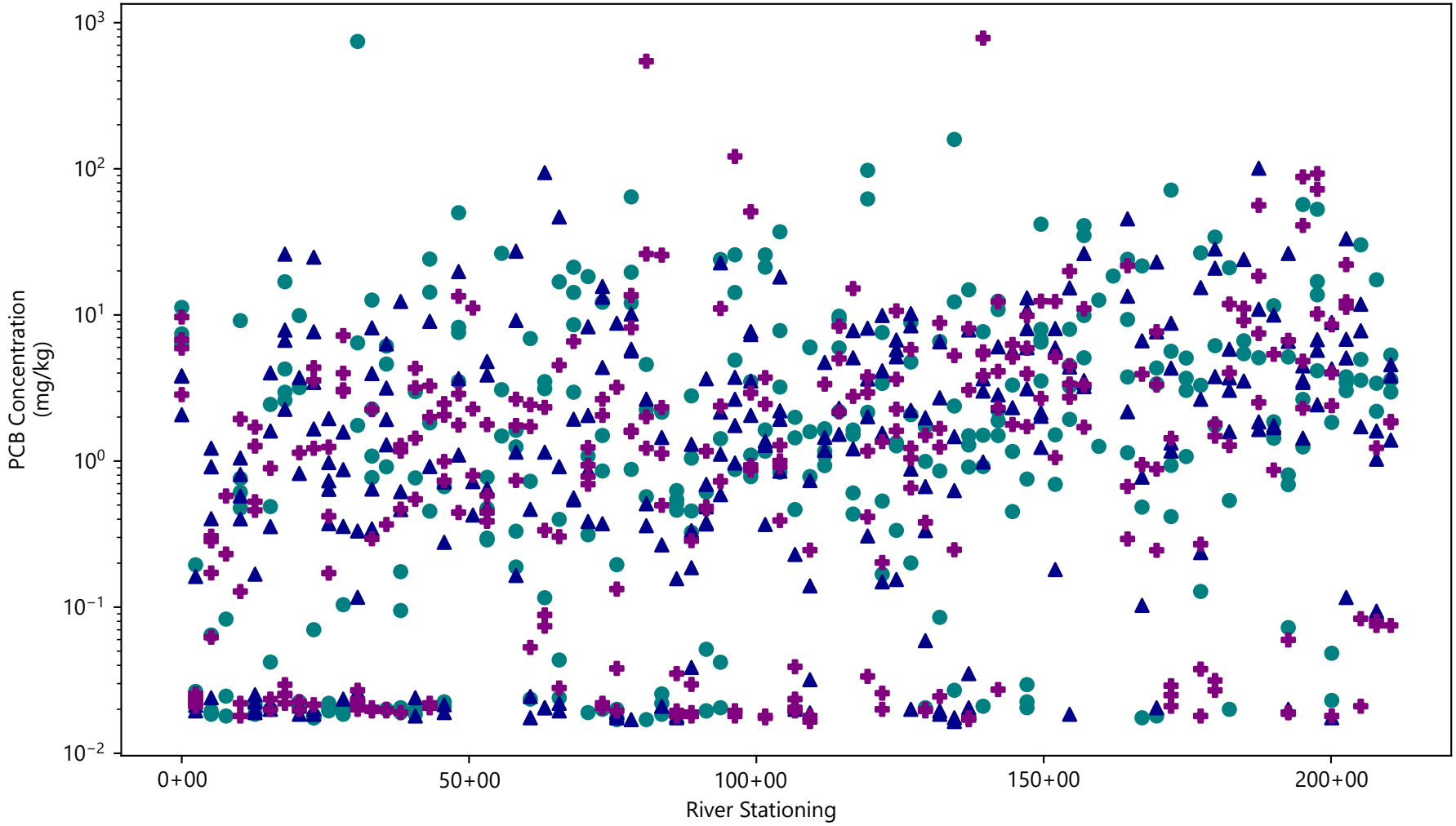
- 0.0-0.5 ft
- 0.5-1.0 ft
- 1.0-1.5 ft
- 1.5-2.0 ft
- 2.0-2.5 ft
- 2.5-3.0 ft

Publish Date: 06/20/2023 11:53 AM | User: WCL-HELEN
\\WCL-FS1\Syracuse\Projects\GE\Housatonic_Rest-of-River\Remedial_Design\Reach_5A\ANALYSIS\Sediment\Spatial_Vertical_Analysis\Python\river_data_comparison.py

ANCHOR QEA

Figure 4-2a
Spatial Distribution of In-River PDI Sediment PCBs by Depth

Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River



Non-detect values are plotted at half of the reporting limit. Field duplicates are excluded from plots.

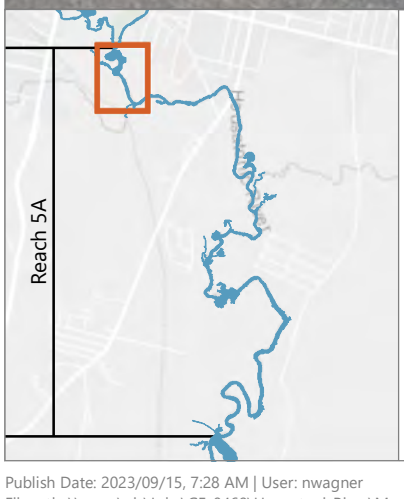
Western Side of Channel
Center of Channel
Eastern Side of Channel

Publish Date: 09/18/2023 14:11 PM | User: SAR-AHER
\\WCL-FS1\Syracuse\Projects\GE\Housatonic_Rest-of-River\Remedial_Design\Reach_5A\ANALYSIS\Sediment\Spatial_Vertical_Analysis\Python\main.py

ANCHOR QEA

Figure 4-2b
Spatial Distribution of In-River PDI Sediment PCBs Across Transects

Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River



LEGEND:

0+00 River Stationing

River Channel

Backwaters

Sediment Sample Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1.1 - 10
- 10.1 - 25
- 25.1 - 50
- 50.1 - 100
- > 100

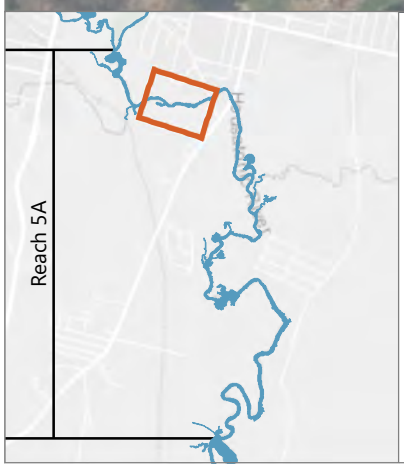
NOTES:
1. Depth-weighted average PCB concentrations were calculated two ways: 1) assuming the minimum corresponding design cap thickness; and 2) including additional intervals at depth to account for uncertainty with over-dredging or cap over-placement. The PCB values shown represent the higher of the two calculated PCB average concentrations.
2. The four core locations that have depth-weighted average PCB concentrations that exceed 100 mg/kg are labeled with the corresponding location ID.
3. Aerial imagery from MassGIS 2021.

0 160
Feet

Publish Date: 2023/09/15, 7:28 AM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-3_River_PCB_TPs.mxd

ANCHOR QEA

Figure 4-3a
Depth-Weighted Average In-River Sediment PCB Concentrations (Thiessen Polygons)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River



LEGEND:

0+00 River Stationing

River Channel

Backwaters

Sediment Sample Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1.1 - 10
- 10.1 - 25
- 25.1 - 50
- 50.1 - 100
- > 100

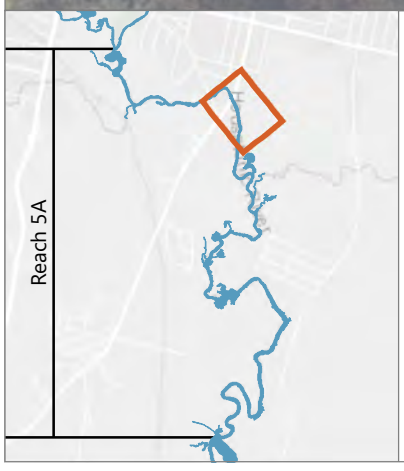
NOTES:
1. Depth-weighted average PCB concentrations were calculated two ways: 1) assuming the minimum corresponding design cap thickness; and 2) including additional intervals at depth to account for uncertainty with over-dredging or cap over-placement. The PCB values shown represent the higher of the two calculated PCB average concentrations.
2. The four core locations that have depth-weighted average PCB concentrations that exceed 100 mg/kg are labeled with the corresponding location ID.
3. Aerial imagery from MassGIS 2021.

0 160
Feet

Publish Date: 2023/09/15, 7:29 AM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-3_River_PCB_TPs.mxd

ANCHOR QEA

Figure 4-3b
Depth-Weighted Average In-River Sediment PCB Concentrations (Thiessen Polygons)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River



LEGEND:

0+00 River Stationing

River Channel

Backwaters

Sediment Sample Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1.1 - 10
- 10.1 - 25
- 25.1 - 50
- 50.1 - 100
- > 100

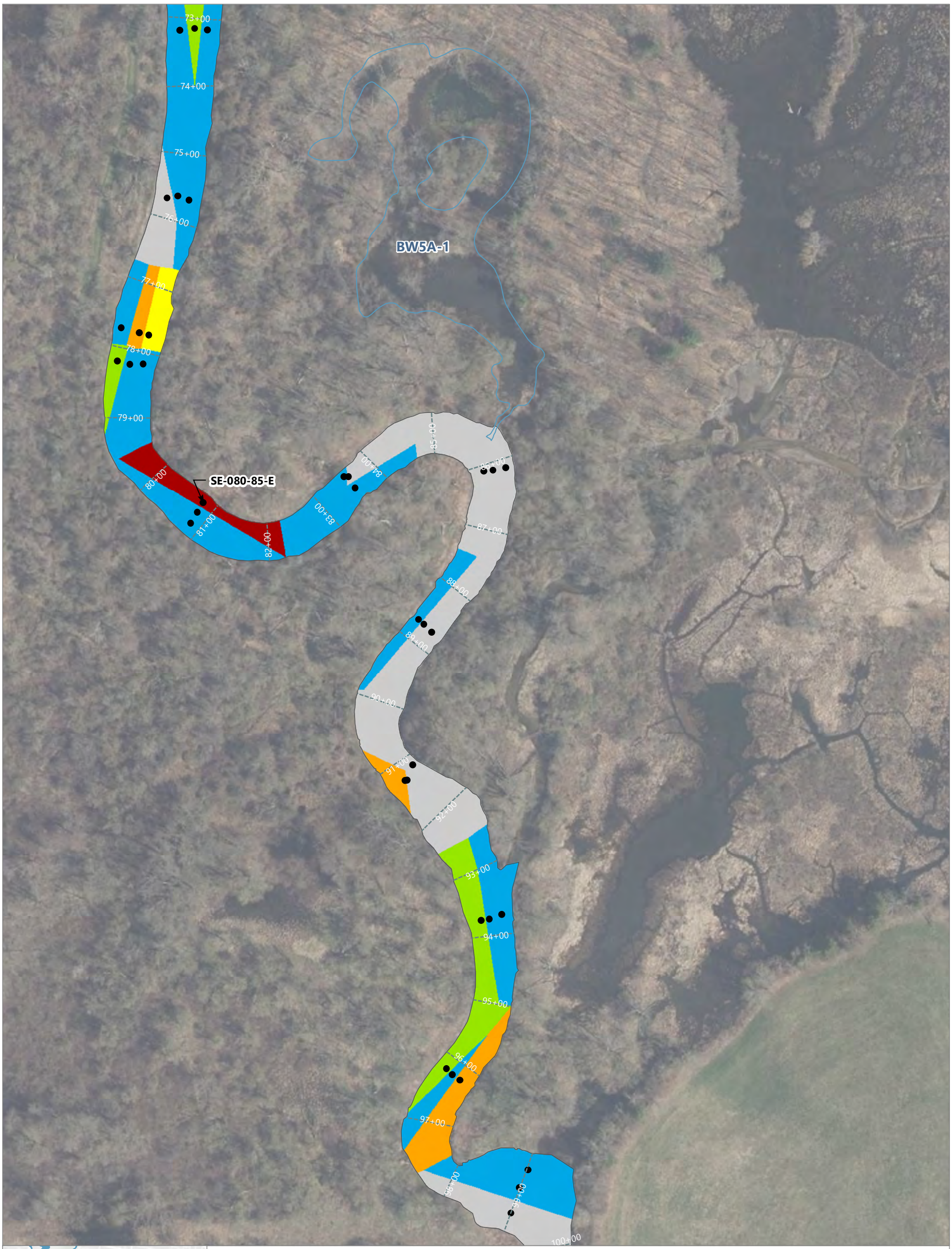
NOTES:
1. Depth-weighted average PCB concentrations were calculated two ways: 1) assuming the minimum corresponding design cap thickness; and 2) including additional intervals at depth to account for uncertainty with over-dredging or cap over-placement. The PCB values shown represent the higher of the two calculated PCB average concentrations.
2. The four core locations that have depth-weighted average PCB concentrations that exceed 100 mg/kg are labeled with the corresponding location ID.
3. Aerial imagery from MassGIS 2021.

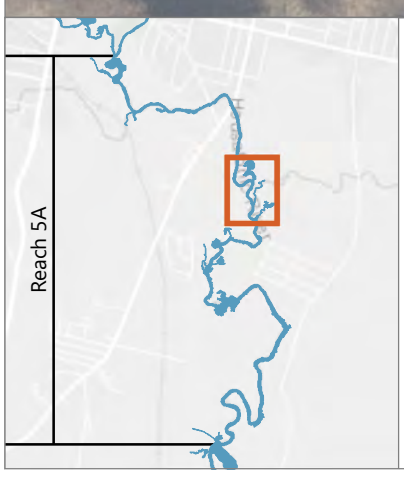
0 160
Feet

Publish Date: 2023/09/15, 7:29 AM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-3_River_PCB_TPs.mxd

ANCHOR QEA

Figure 4-3c
Depth-Weighted Average In-River Sediment PCB Concentrations (Thiessen Polygons)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River





LEGEND:

0+00 River Stationing

River Channel

Backwaters

Sediment Sample Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1.1 - 10
- 10.1 - 25
- 25.1 - 50
- 50.1 - 100
- > 100

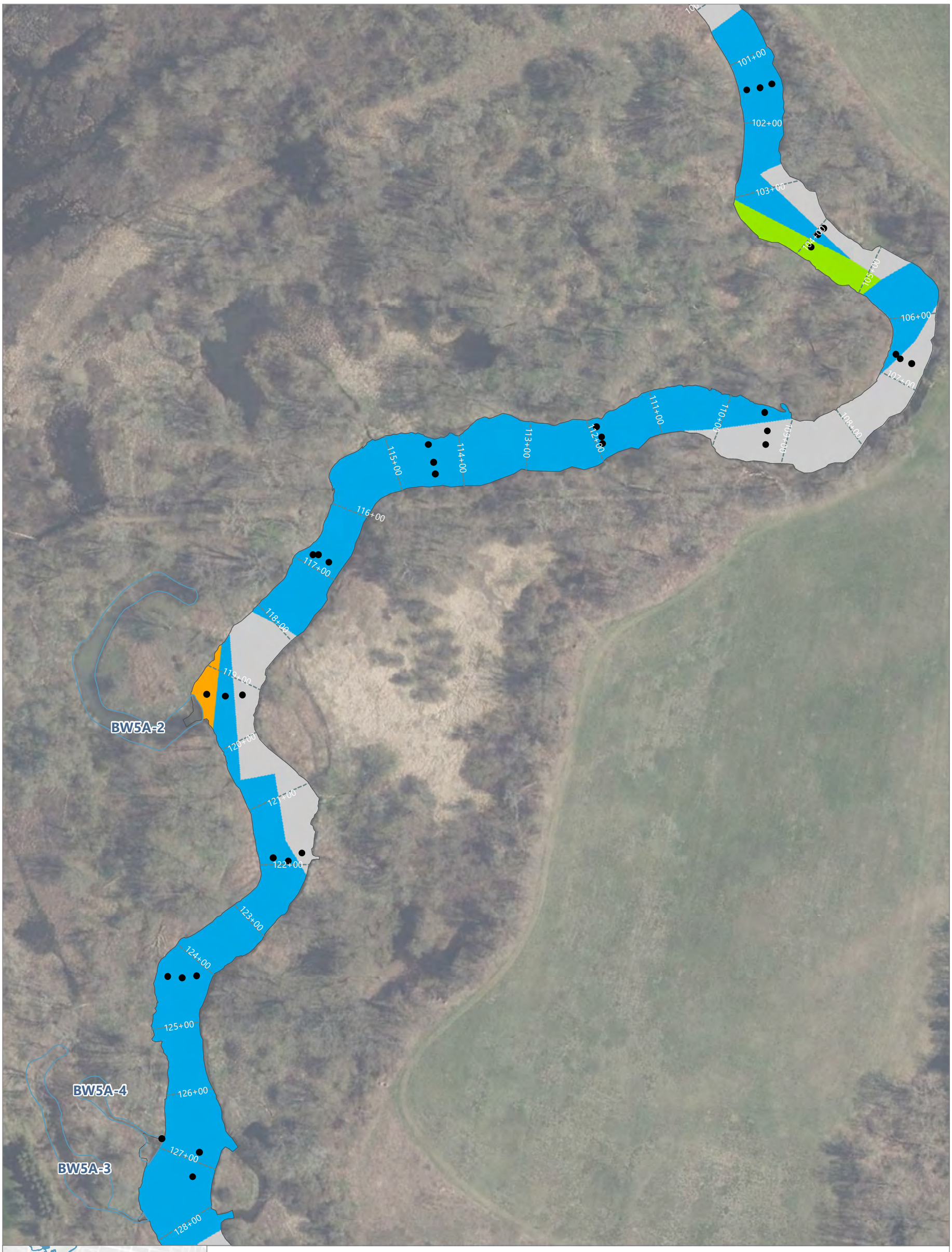
NOTES:
1. Depth-weighted average PCB concentrations were calculated two ways: 1) assuming the minimum corresponding design cap thickness; and 2) including additional intervals at depth to account for uncertainty with over-dredging or cap over-placement. The PCB values shown represent the higher of the two calculated PCB average concentrations.
2. The four core locations that have depth-weighted average PCB concentrations that exceed 100 mg/kg are labeled with the corresponding location ID.
3. Aerial imagery from MassGIS 2021.

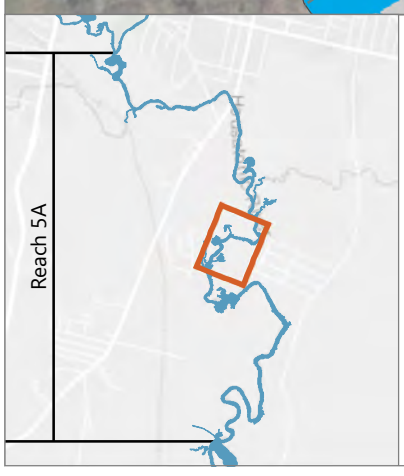
0 160
Feet

Publish Date: 2023/09/15, 7:29 AM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-3_River_PCB_TPs.mxd

ANCHOR QEA

Figure 4-3d
Depth-Weighted Average In-River Sediment PCB Concentrations (Thiessen Polygons)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River





LEGEND:

0+00 River Stationing

River Channel

Backwaters

Sediment Sample Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1.1 - 10
- 10.1 - 25
- 25.1 - 50
- 50.1 - 100
- > 100

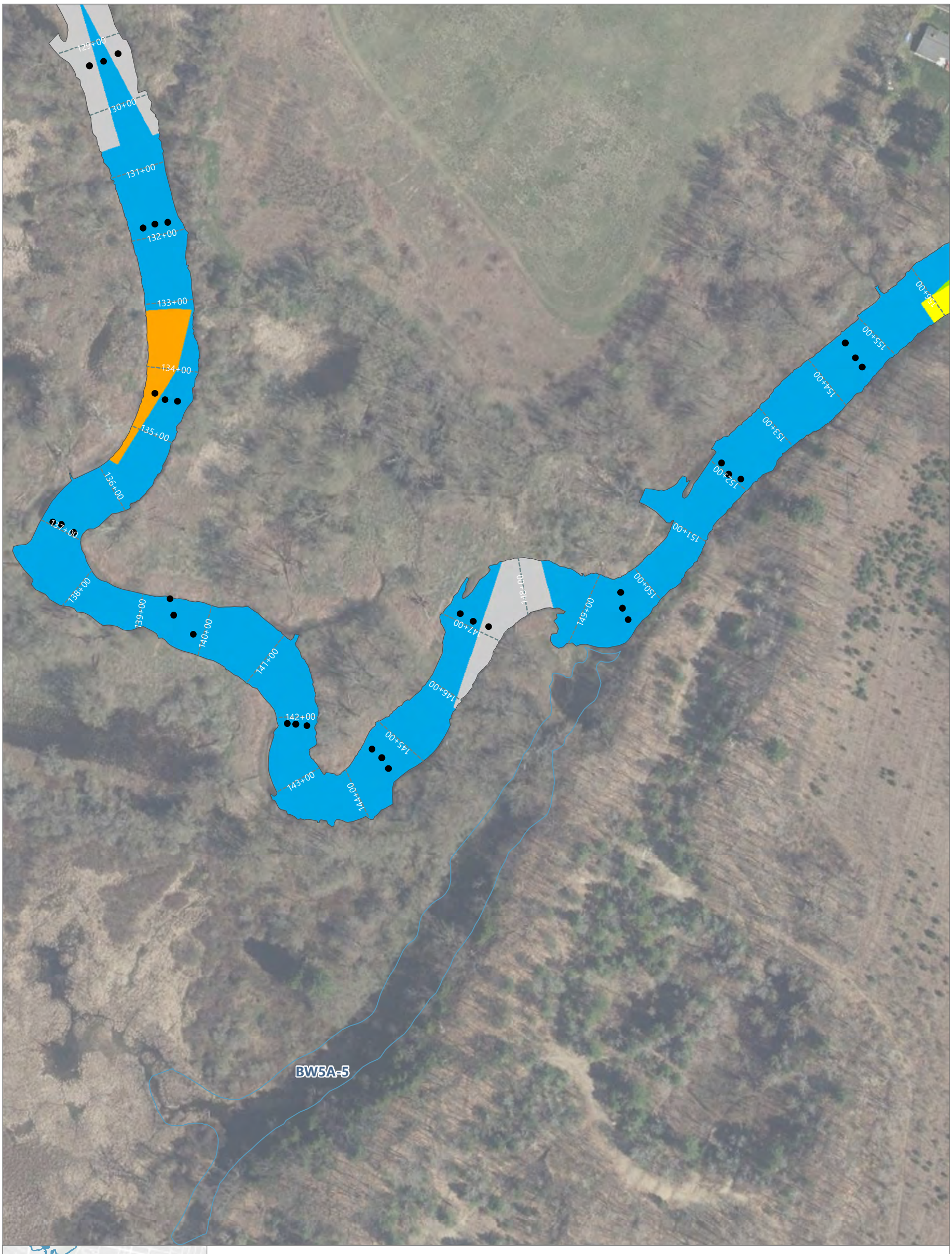
NOTES:
1. Depth-weighted average PCB concentrations were calculated two ways: 1) assuming the minimum corresponding design cap thickness; and 2) including additional intervals at depth to account for uncertainty with over-dredging or cap over-placement. The PCB values shown represent the higher of the two calculated PCB average concentrations.
2. The four core locations that have depth-weighted average PCB concentrations that exceed 100 mg/kg are labeled with the corresponding location ID.
3. Aerial imagery from MassGIS 2021.

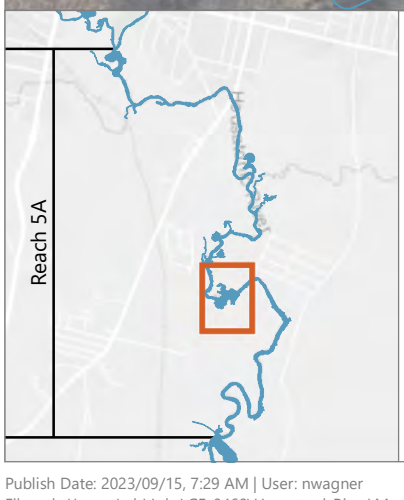
0 160
Feet

Publish Date: 2023/09/15, 7:29 AM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-3_River_PCB_TPs.mxd

ANCHOR QEA

Figure 4-3e
Depth-Weighted Average In-River Sediment PCB Concentrations (Thiessen Polygons)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River





LEGEND:

0+00 River Stationing

River Channel

Backwaters

Sediment Sample Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1.1 - 10
- 10.1 - 25
- 25.1 - 50
- 50.1 - 100
- > 100

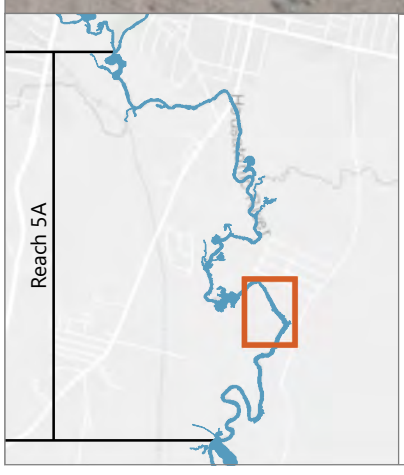
NOTES:
1. Depth-weighted average PCB concentrations were calculated two ways: 1) assuming the minimum corresponding design cap thickness; and 2) including additional intervals at depth to account for uncertainty with over-dredging or cap over-placement. The PCB values shown represent the higher of the two calculated PCB average concentrations.
2. The four core locations that have depth-weighted average PCB concentrations that exceed 100 mg/kg are labeled with the corresponding location ID.
3. Aerial imagery from MassGIS 2021.

0 160
Feet

Publish Date: 2023/09/15, 7:29 AM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-3_River_PCB_TPs.mxd

ANCHOR QEA

Figure 4-3f
Depth-Weighted Average In-River Sediment PCB Concentrations (Thiessen Polygons)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River



LEGEND:

0+00 River Stationing

River Channel

Backwaters

Sediment Sample Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1.1 - 10
- 10.1 - 25
- 25.1 - 50
- 50.1 - 100
- > 100

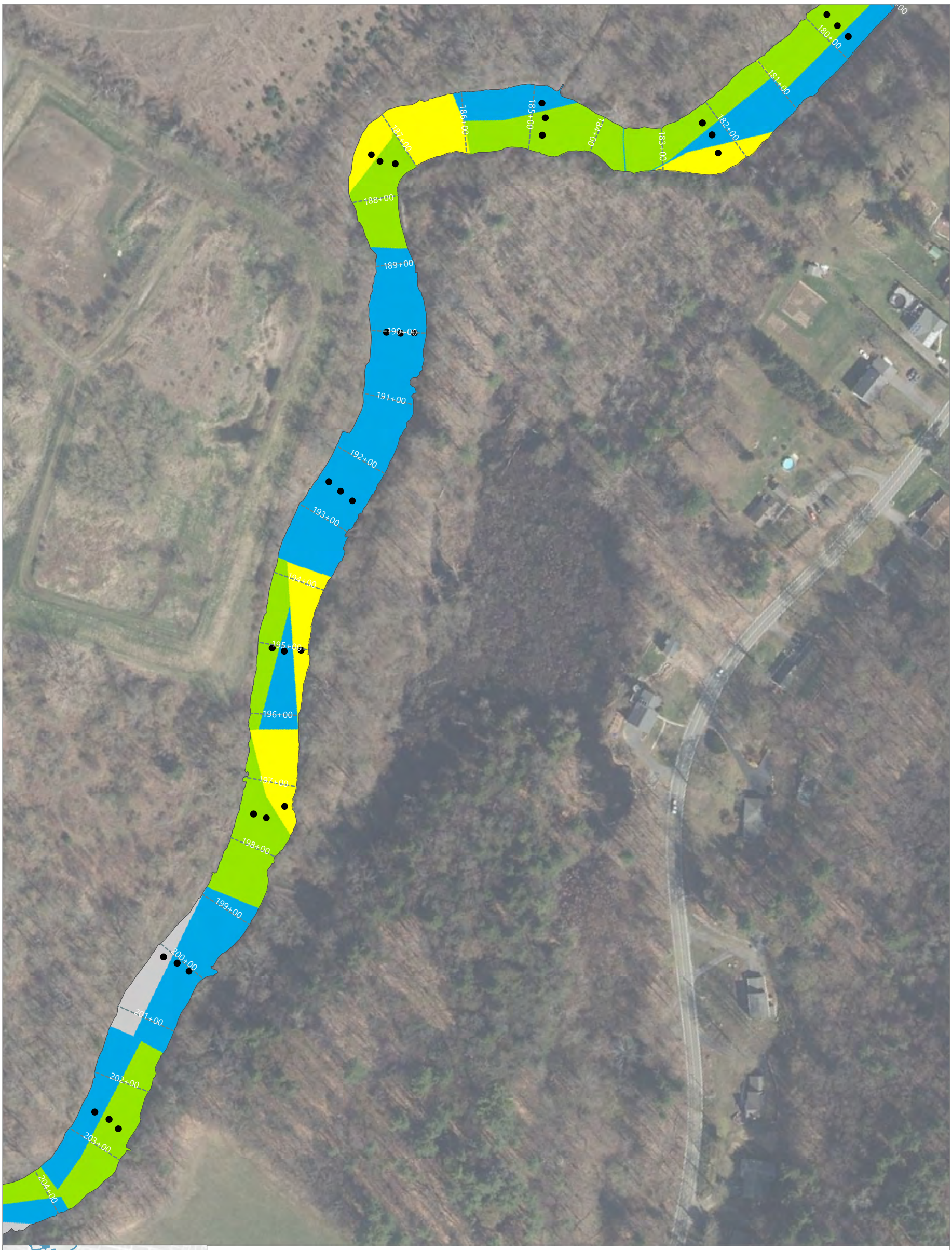
NOTES:
1. Depth-weighted average PCB concentrations were calculated two ways: 1) assuming the minimum corresponding design cap thickness; and 2) including additional intervals at depth to account for uncertainty with over-dredging or cap over-placement. The PCB values shown represent the higher of the two calculated PCB average concentrations.
2. The four core locations that have depth-weighted average PCB concentrations that exceed 100 mg/kg are labeled with the corresponding location ID.
3. Aerial imagery from MassGIS 2021.

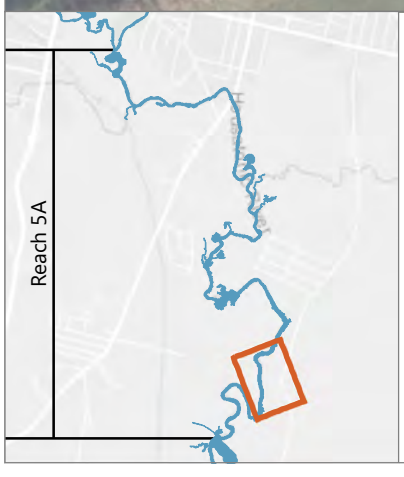
0 160
Feet

Publish Date: 2023/09/15, 7:29 AM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-3_River_PCB_TPs.mxd

ANCHOR QEA

Figure 4-3g
Depth-Weighted Average In-River Sediment PCB Concentrations (Thiessen Polygons)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River





LEGEND:

0+00 River Stationing

River Channel

Backwaters

Sediment Sample Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1.1 - 10
- 10.1 - 25
- 25.1 - 50
- 50.1 - 100
- > 100

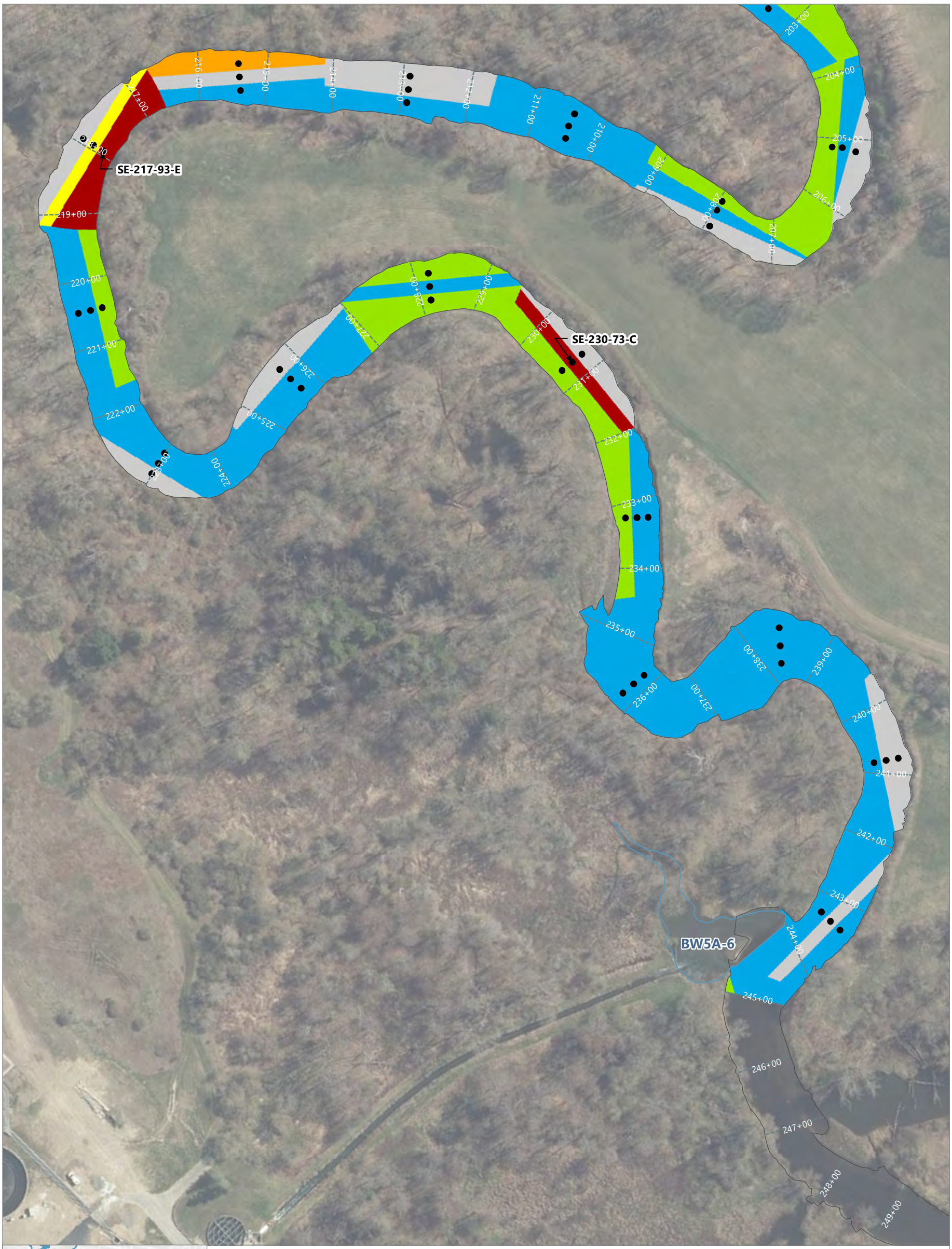
NOTES:
1. Depth-weighted average PCB concentrations were calculated two ways: 1) assuming the minimum corresponding design cap thickness; and 2) including additional intervals at depth to account for uncertainty with over-dredging or cap over-placement. The PCB values shown represent the higher of the two calculated PCB average concentrations.
2. The four core locations that have depth-weighted average PCB concentrations that exceed 100 mg/kg are labeled with the corresponding location ID.
3. Aerial imagery from MassGIS 2021.

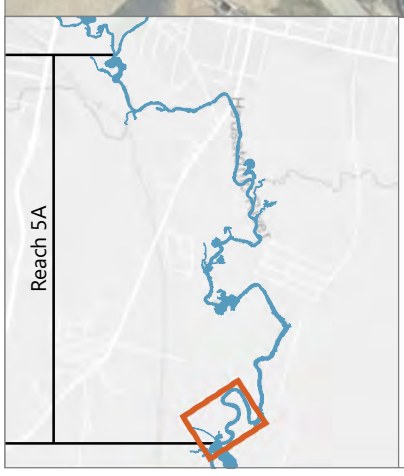
0 160
Feet

Publish Date: 2023/09/15, 7:29 AM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-3_River_PCB_TPs.mxd

ANCHOR QEA

Figure 4-3h
Depth-Weighted Average In-River Sediment PCB Concentrations (Thiessen Polygons)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River





LEGEND:

0+00 River Stationing

River Channel

Backwaters

Sediment Sample Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1.1 - 10
- 10.1 - 25
- 25.1 - 50
- 50.1 - 100
- > 100

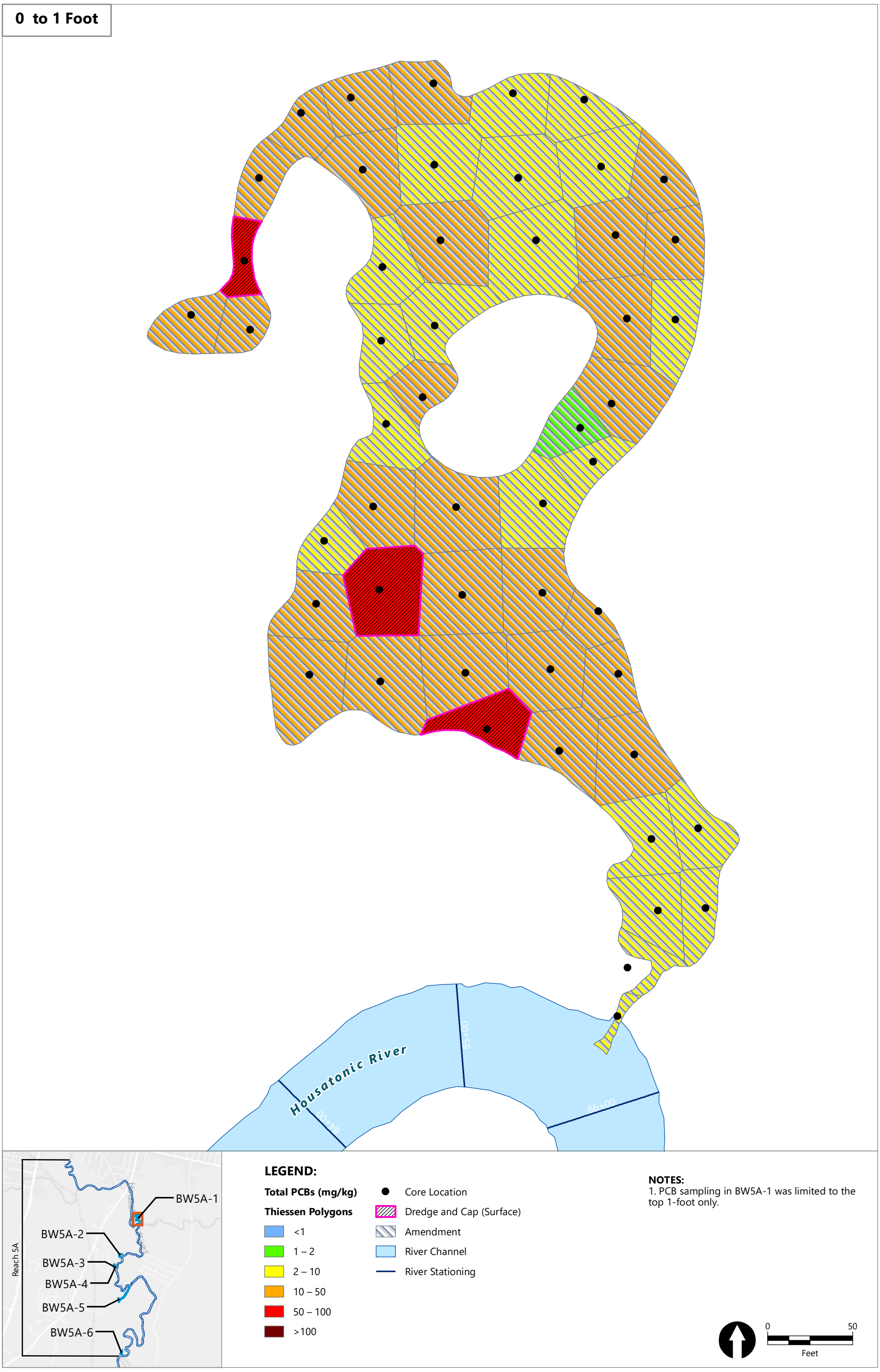
NOTES:
1. Depth-weighted average PCB concentrations were calculated two ways: 1) assuming the minimum corresponding design cap thickness; and 2) including additional intervals at depth to account for uncertainty with over-dredging or cap over-placement. The PCB values shown represent the higher of the two calculated PCB average concentrations.
2. The four core locations that have depth-weighted average PCB concentrations that exceed 100 mg/kg are labeled with the corresponding location ID.
3. Aerial imagery from MassGIS 2021.

0 160
Feet

Publish Date: 2023/09/15, 7:30 AM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-3_River_PCB_TPs.mxd

ANCHOR QEA

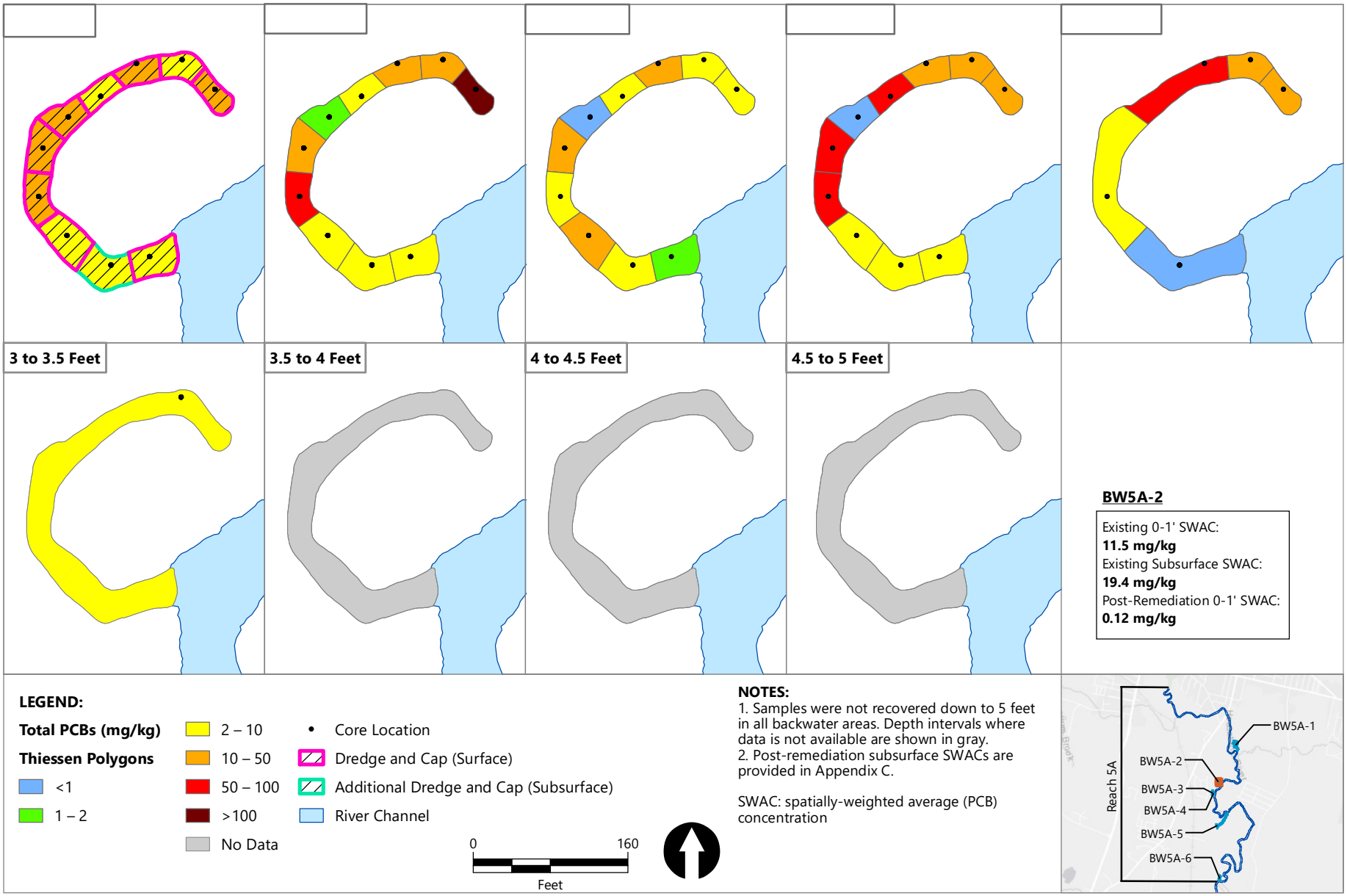
Figure 4-3i
Depth-Weighted Average In-River Sediment PCB Concentrations (Thiessen Polygons)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River



Publish Date: 2023/09/28, 10:11 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-4a_BW5A-1only.mxd

ANCHOR QEA

Figure 4-4a
Backwater Remedial Extents and Sediment PCB Concentrations by Depth (BW5A-1)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River

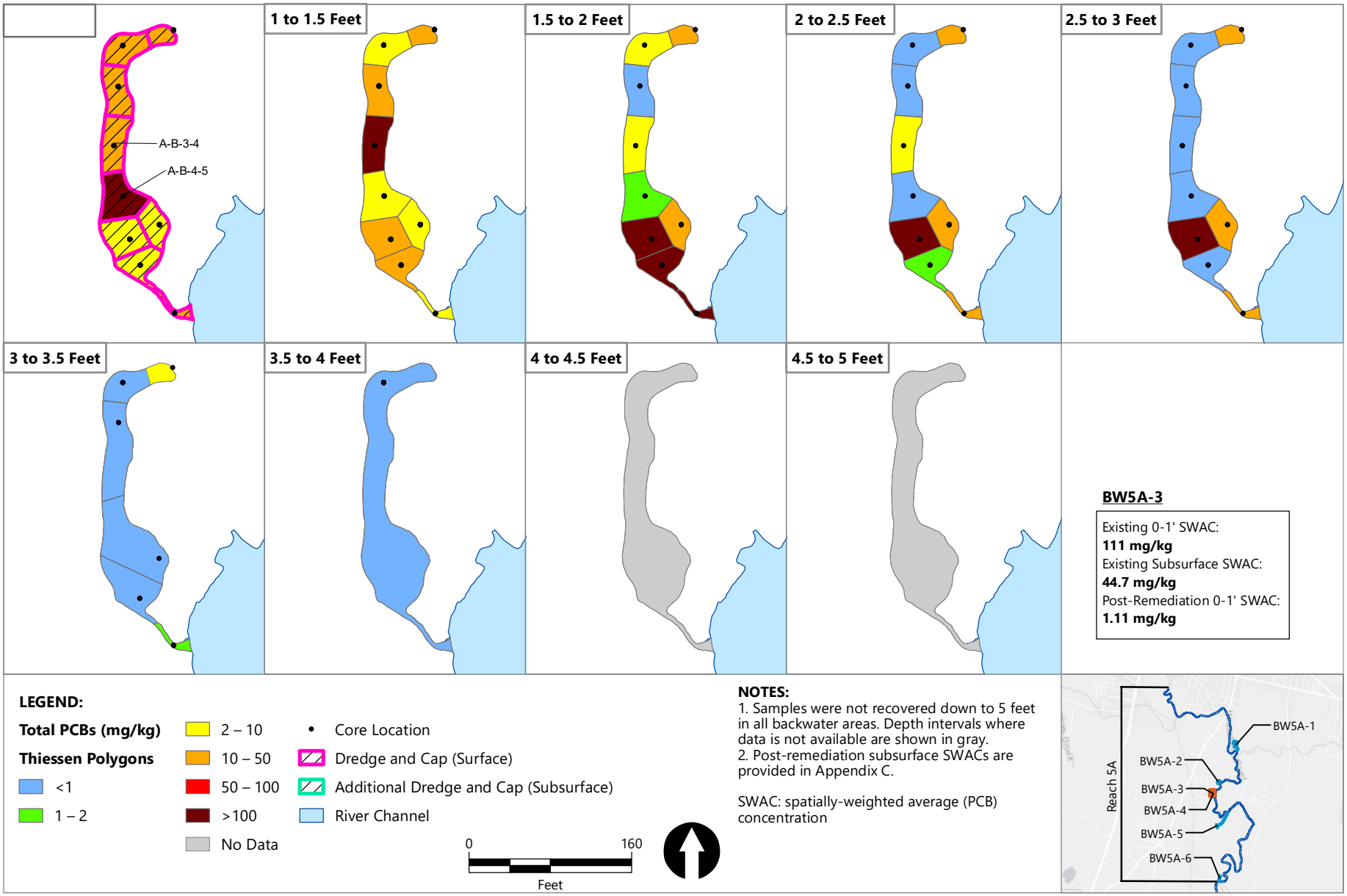


Publish Date: 2023/09/14, 11:29 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-4_BW_RemedialAreas.mxd

ANCHOR QEA

Figure 4-4b
Backwater Remedial Extents and Sediment PCB Concentrations by Depth (BW5A-2)

Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River

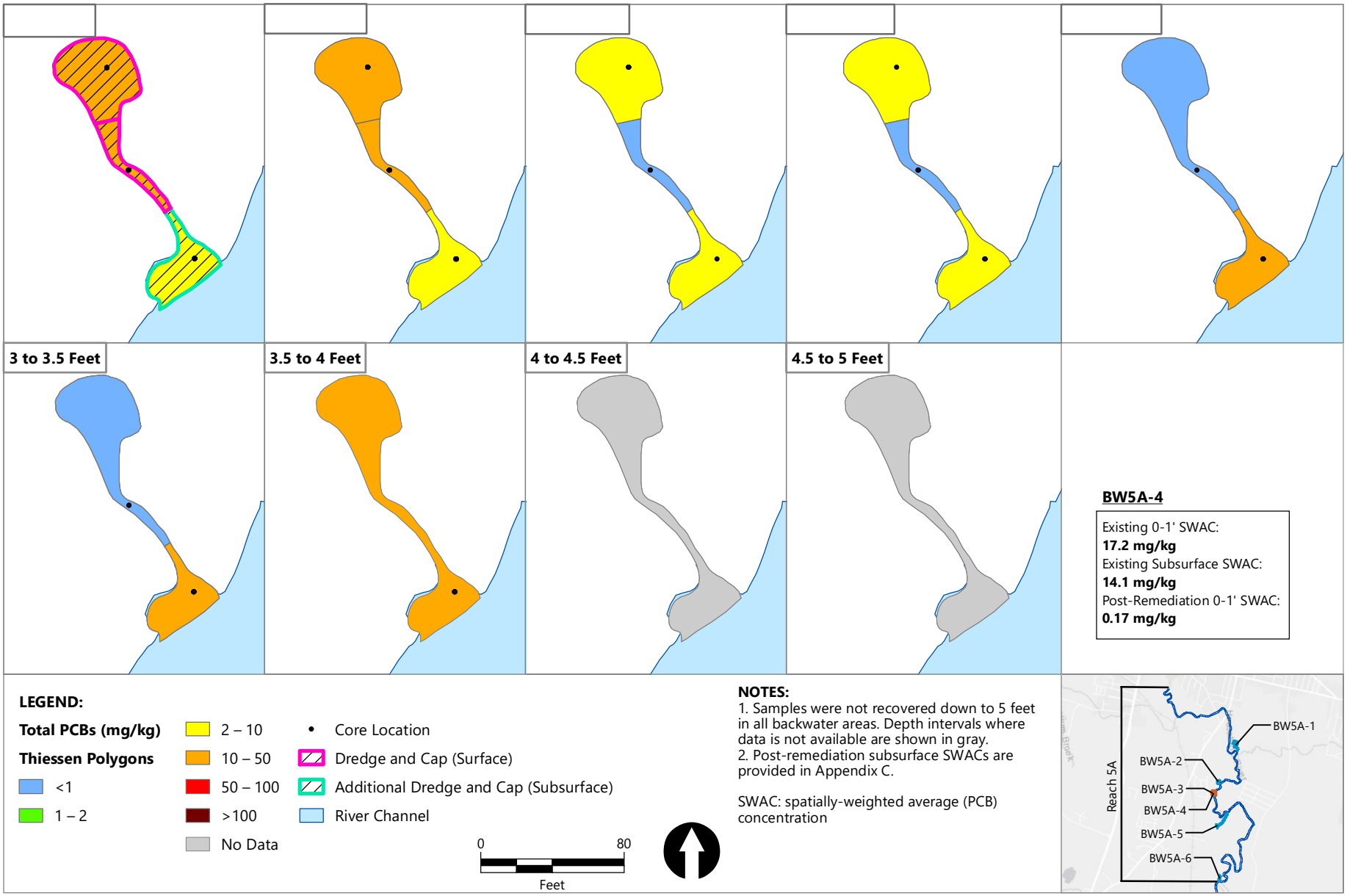


Publish Date: 2023/09/14, 11:29 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-4_BW_RemedialAreas.mxd

ANCHOR QEA

Figure 4-4c
Backwater Remedial Extents and Sediment PCB Concentrations by Depth (BW5A-3)

Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River

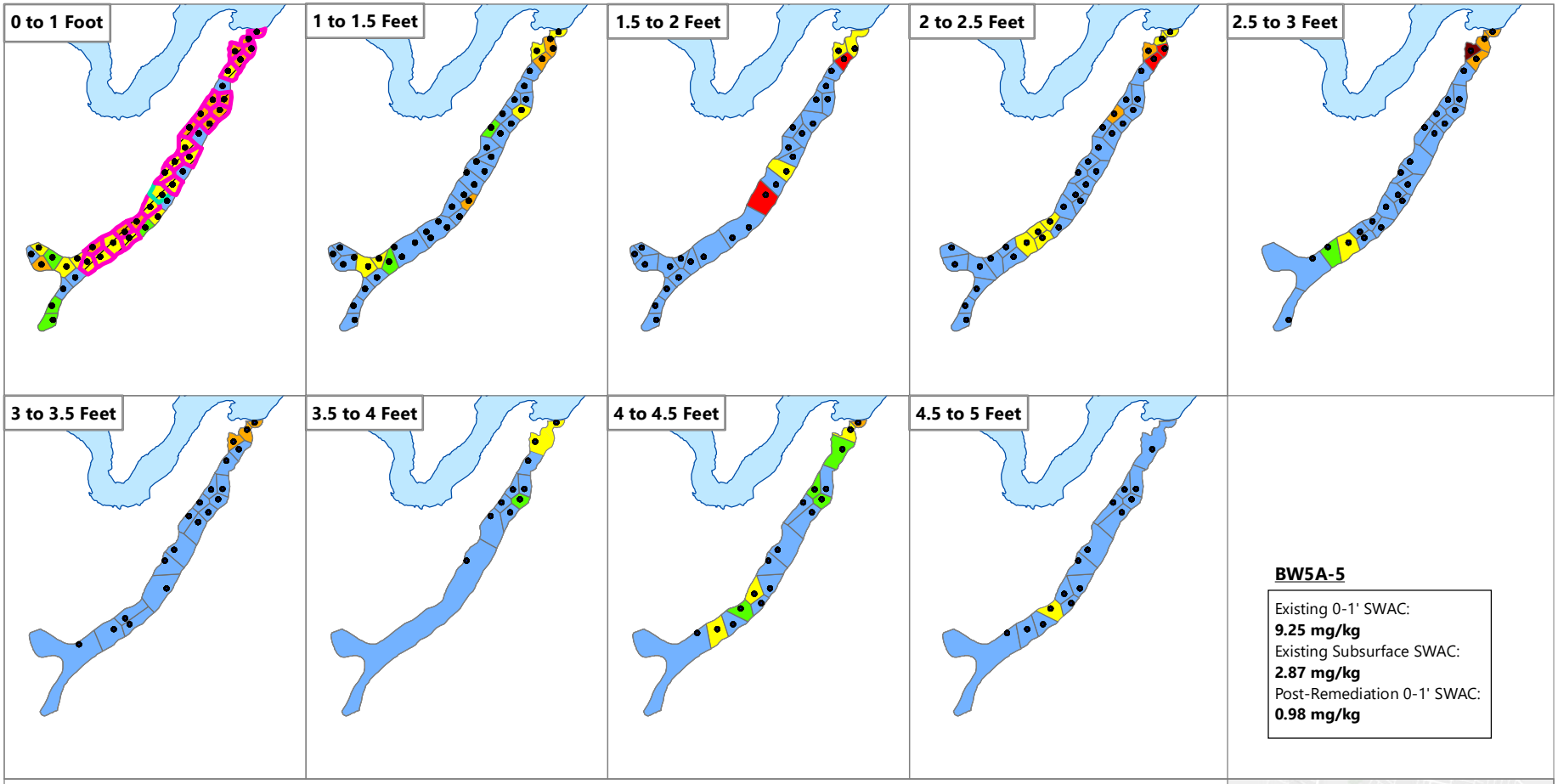


Publish Date: 2023/09/14, 11:29 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-4_BW_RemedialAreas.mxd

ANCHOR QEA

Figure 4-4d
Backwater Remedial Extents and Sediment PCB Concentrations by Depth (BW5A-4)

Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River



BW5A-5

Existing 0-1' SWAC:
9.25 mg/kg
Existing Subsurface SWAC:
2.87 mg/kg
Post-Remediation 0-1' SWAC:
0.98 mg/kg

LEGEND:

Total PCBs (mg/kg)

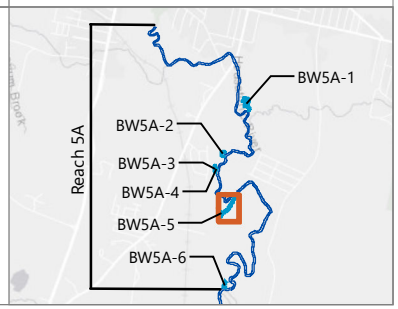
Thiessen Polygons

- <1
- 1 – 2
- 2 – 10
- 10 – 50
- 50 – 100
- >100
- No Data
- Core Location
- Dredge and Cap (Surface)
- Additional Dredge and Cap (Subsurface)
- River Channel

0 560
Feet

NOTES:
1. Samples were not recovered down to 5 feet in all backwater areas. Depth intervals where data is not available are shown in gray.
2. Post-remediation subsurface SWACs are provided in Appendix C.

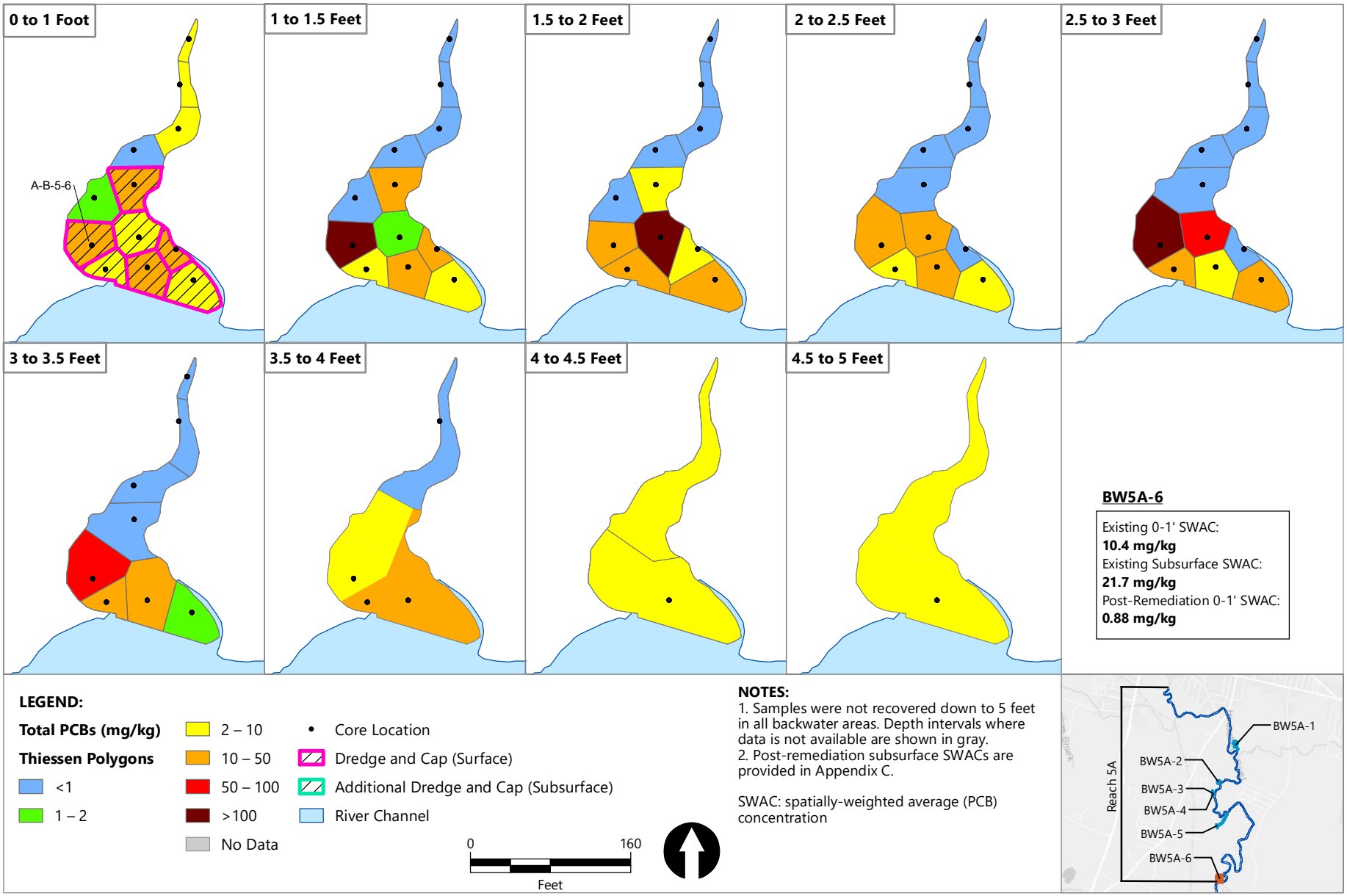
SWAC: spatially-weighted average (PCB) concentration



Publish Date: 2023/09/14, 11:29 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-4_BW_RemedialAreas.mxd

ANCHOR QEA

Figure 4-4e
Backwater Remedial Extents and Sediment PCB Concentrations by Depth (BW5A-5)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River

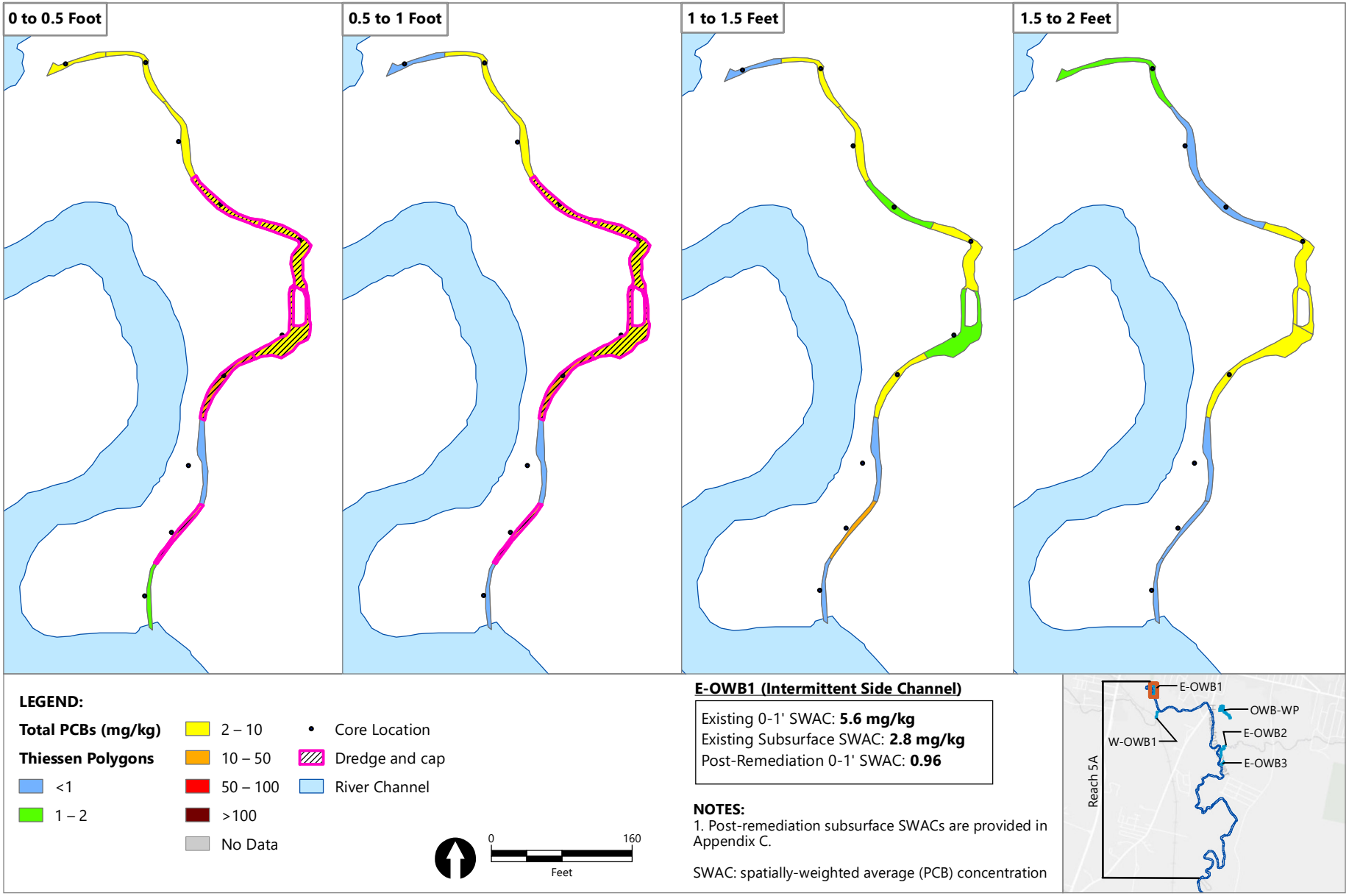


Publish Date: 2023/09/14, 11:29 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-4_BW_RemedialAreas.mxd

ANCHOR QEA

Figure 4-4f
Backwater Remedial Extents and Sediment PCB Concentrations by Depth (BW5A-6)

Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River

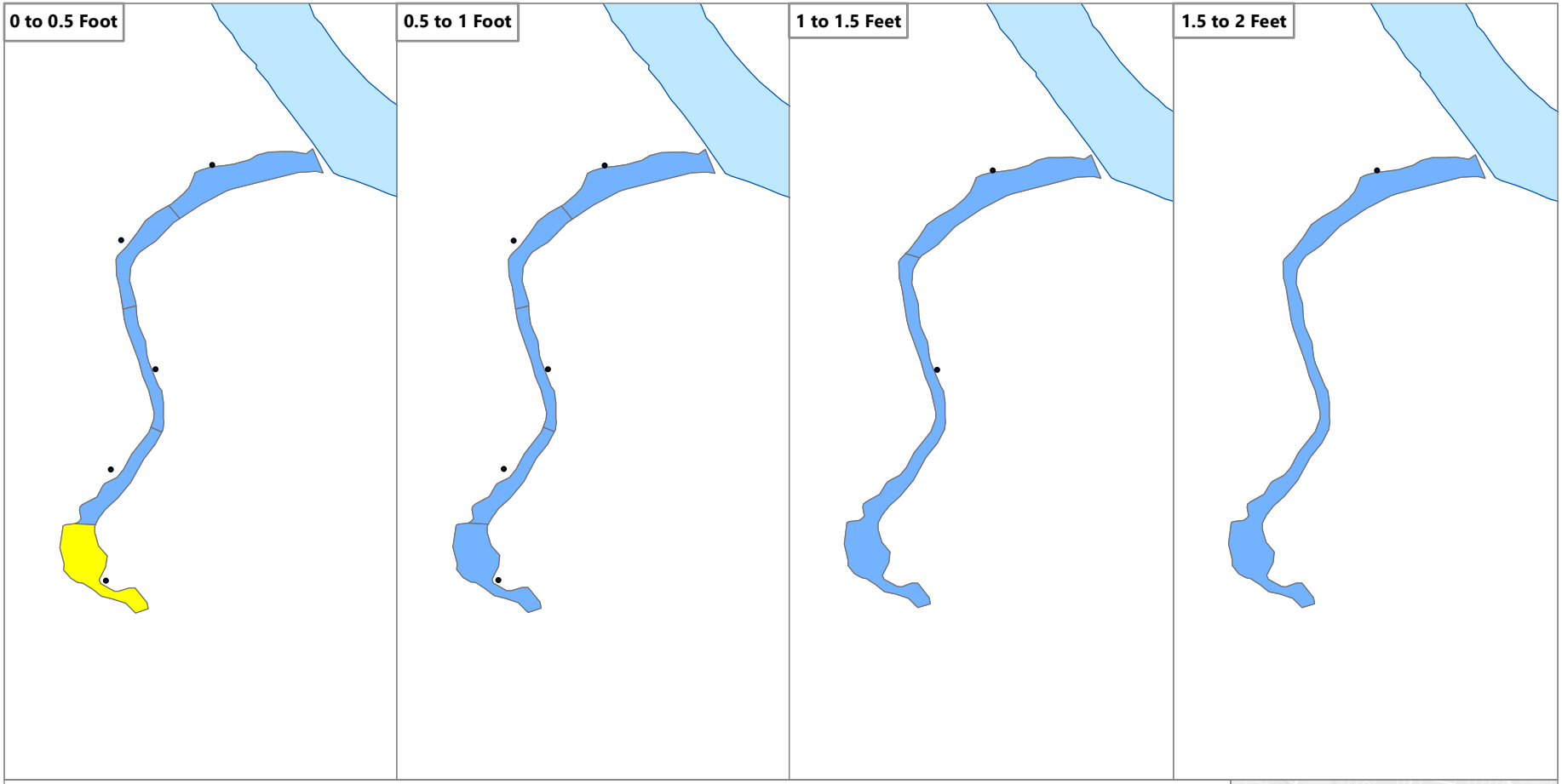


Publish Date: 2023/09/14, 9:36 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-5_OWB_RemedialAreas.mxd

ANCHOR QEA

Figure 4-5a
Other Waterbody Remedial Extents and Sediment PCB Concentrations by Depth (Intermittent Side Channel; E-OWB1)

Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River



LEGEND:

Total PCBs (mg/kg)

Thiessen Polygons

- <1
- 1 – 2
- 2 – 10
- 10 – 50
- 50 – 100
- >100
- No Data
- Core Location
- Dredge and cap
- River Channel

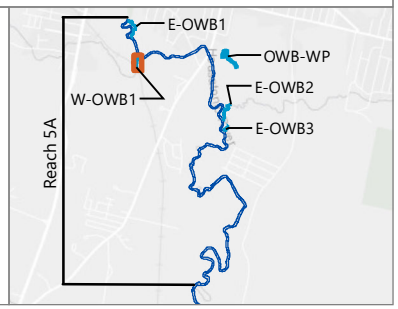
0 140 Feet

W-OWB1 (Outlet from Morewood Lake)

Existing 0-1' SWAC: **0.4 mg/kg**
Existing Subsurface SWAC: **0.04 mg/kg**
Post-Remediation 0-1' SWAC: **N/A**

NOTES:
1. Post-remediation subsurface SWACs are provided in Appendix C.

SWAC: spatially-weighted average (PCB) concentration

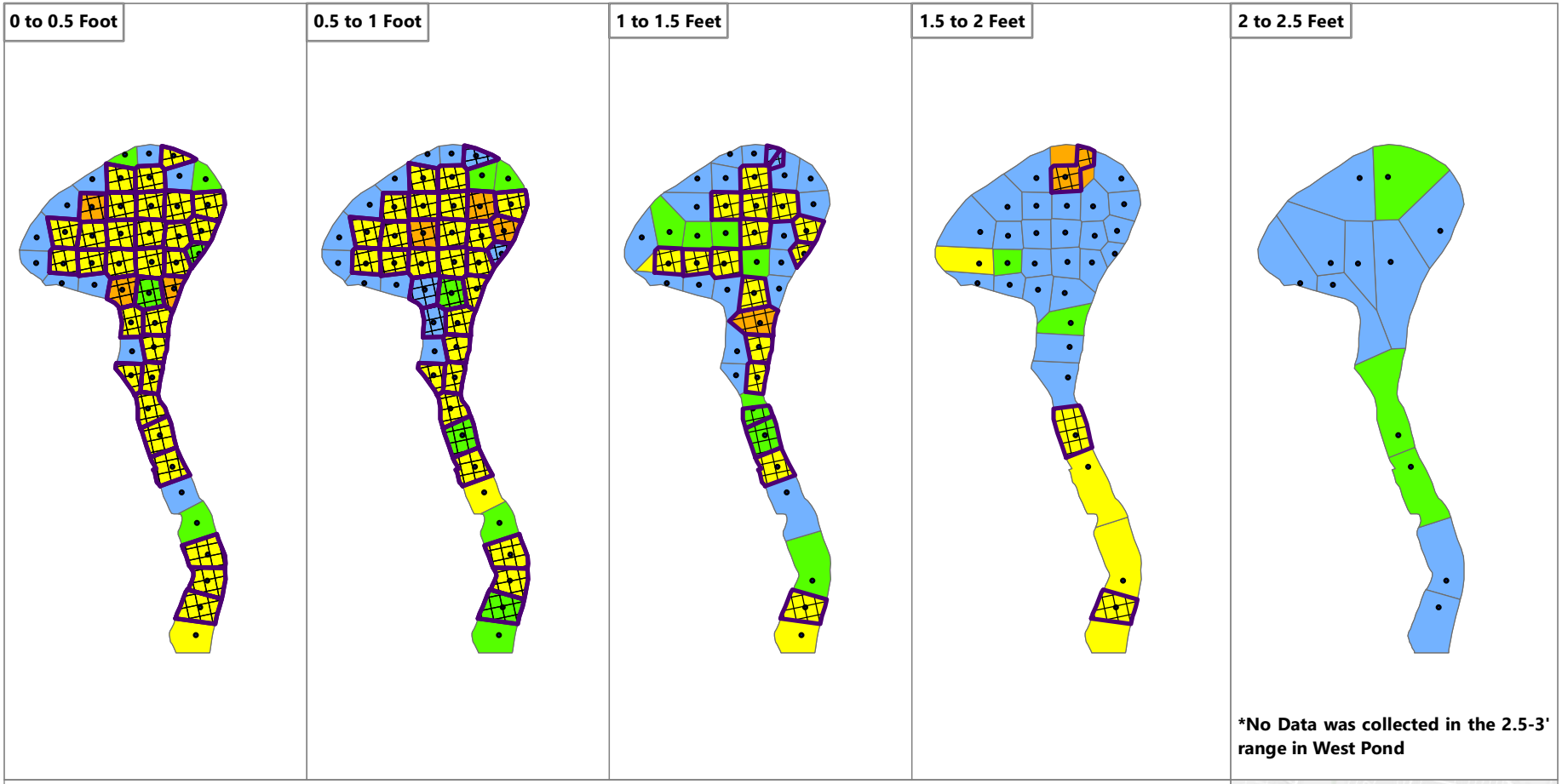


Publish Date: 2023/09/14, 9:36 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-5_OWB_RemedialAreas.mxd

ANCHOR QEA

Figure 4-5b
Other Waterbody Remedial Extents and Sediment PCB Concentrations by Depth (Outlet from Morewood Lake; W-OWB1)

Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River



LEGEND:

Total PCBs (mg/kg)

Thiessen Polygons

- <1
- 1 – 2
- 2 – 10
- 10 – 50
- 50 – 100
- >100
- No Data
- Core Location
- Dredge and backfill
- River Channel

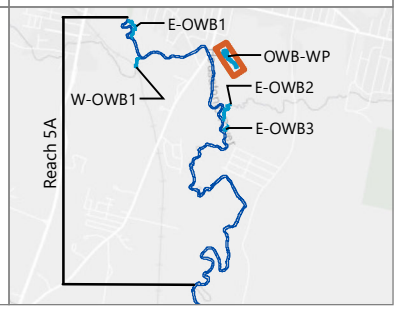
0 300 Feet

OWB-WP (West Pond)

Existing 0-1' SWAC: **4.4 mg/kg**
Existing Subsurface SWAC: **1.8 mg/kg**
Post-Remediation 0-1' SWAC: **0.99**

NOTES:
1. Post-remediation subsurface SWACs are provided in Appendix C.

SWAC: spatially-weighted average (PCB) concentration

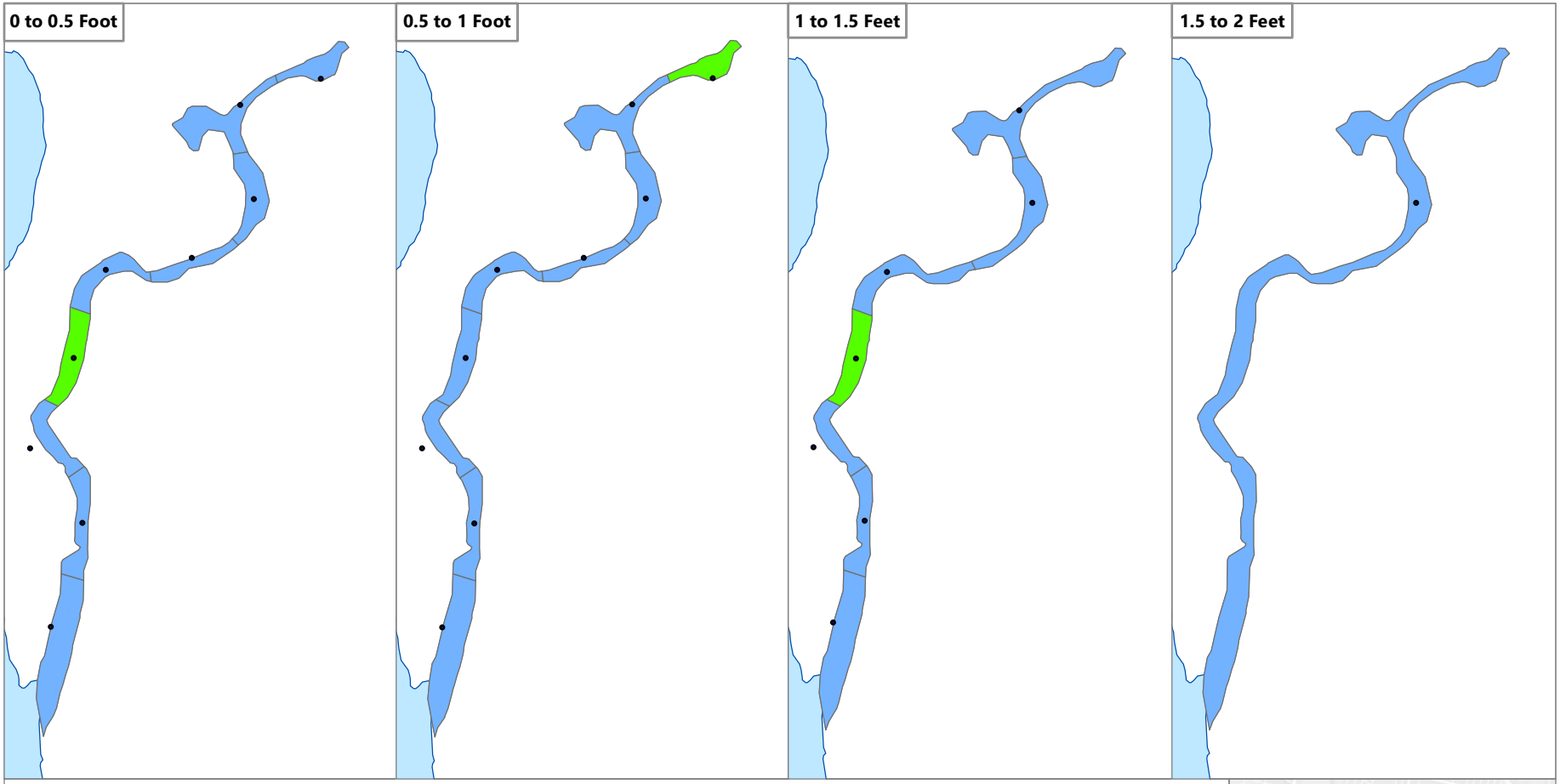


Publish Date: 2023/09/14, 11:57 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-5c_WP_RemedialAreas.mxd

ANCHOR QEA

Figure 4-5c
Other Waterbody Remedial Extents and Sediment PCB Concentrations by Depth (West Pond; OWB-WP)

Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River



LEGEND:

Total PCBs (mg/kg)

Thiessen Polygons

- <1
- 1 – 2
- 2 – 10
- 10 – 50
- 50 – 100
- >100
- No Data
- Core Location
- Dredge and cap
- River Channel

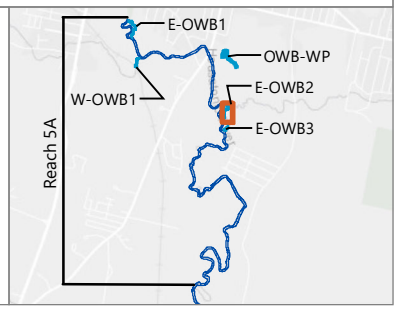
0 160 Feet

E-OWB2 (Lower Sackett Brook)

Existing 0-1' SWAC: **0.3 mg/kg**
Existing Subsurface SWAC: **0.2 mg/kg**
Post-Remediation 0-1' SWAC: **N/A**

NOTES:
1. Post-remediation subsurface SWACs are provided in Appendix C.

SWAC: spatially-weighted average (PCB) concentration

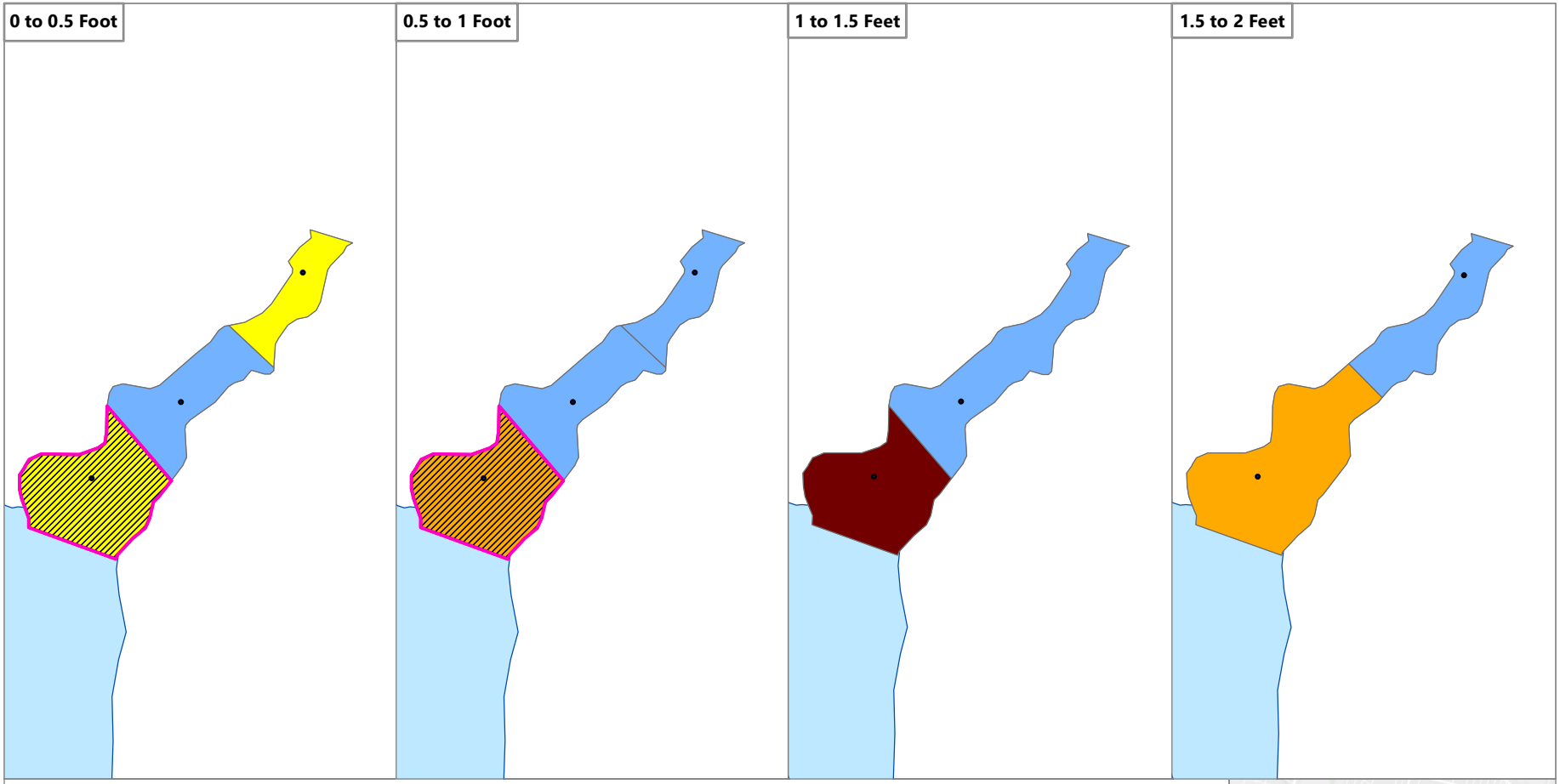


Publish Date: 2023/09/14, 9:37 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-5_OWB_RemedialAreas.mxd

ANCHOR QEA

Figure 4-5d
Other Waterbody Remedial Extents and Sediment PCB Concentrations by Depth (Lower Sackett Brook; E-OWB2)

Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River



LEGEND:

Total PCBs (mg/kg)

Thiessen Polygons

- <1
- 1 – 2
- 2 – 10
- 10 – 50
- 50 – 100
- >100
- No Data
- Core Location
- Dredge and cap
- River Channel

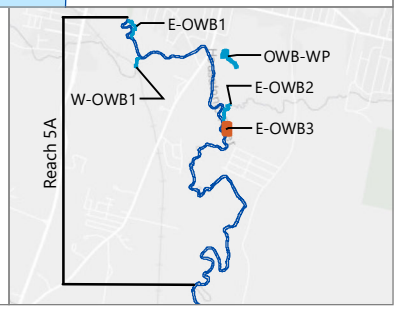
0 80 Feet

E-OWB3 (Lower Sykes Brook)

Existing 0-1' SWAC: **8.6 mg/kg**
Existing Subsurface SWAC: **43.1 mg/kg**
Post-Remediation 0-1' SWAC: **0.31**

NOTES:
1. Post-remediation subsurface SWACs are provided in Appendix C.

SWAC: spatially-weighted average (PCB) concentration

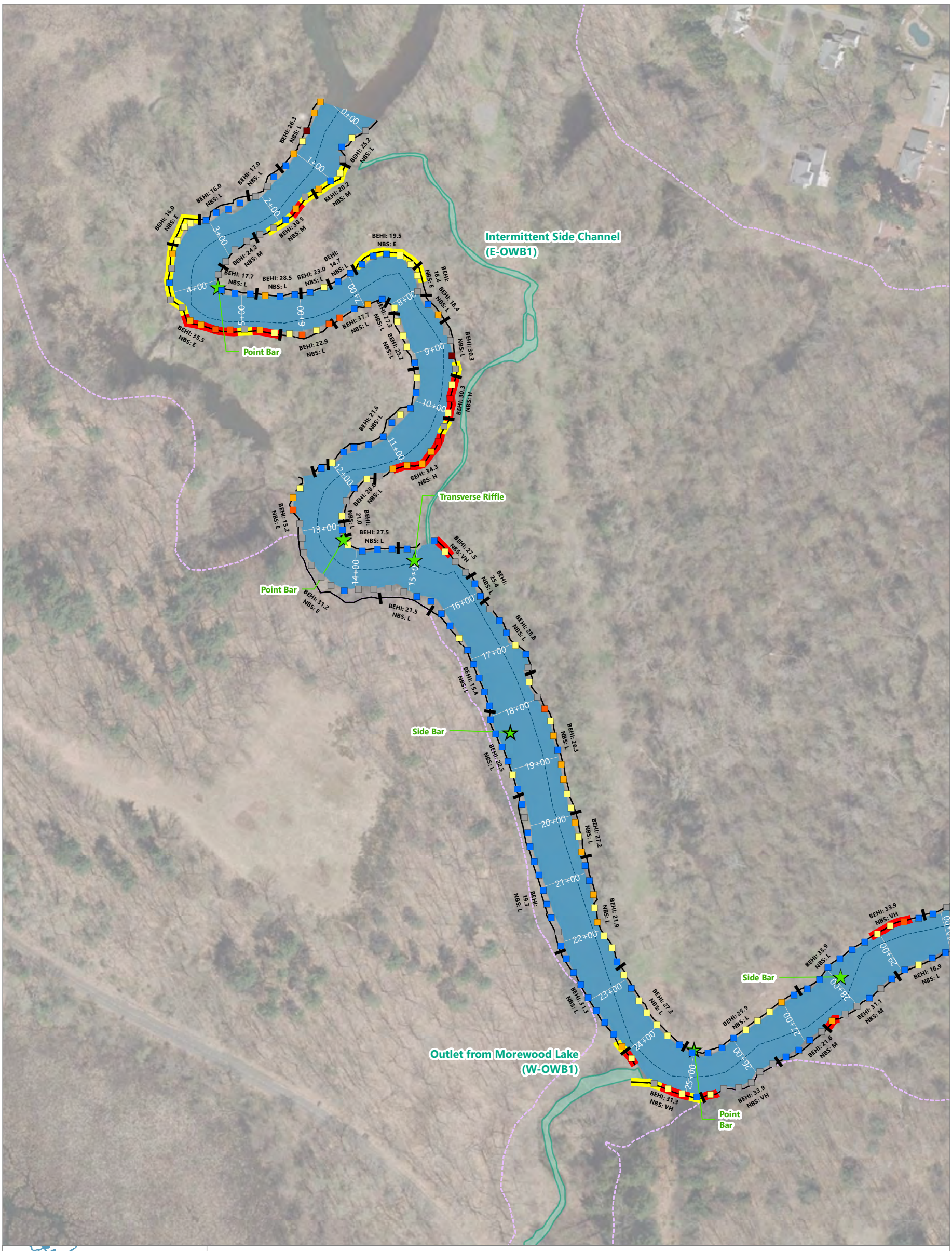


Publish Date: 2023/09/14, 9:37 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-5_OWB_RemedialAreas.mxd

ANCHOR QEA

Figure 4-5e
Other Waterbody Remedial Extents and Sediment PCB Concentrations by Depth (Lower Sykes Brook; E-OWB3)

Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River



LEGEND:

0+00 River Stationing
Top of Bank
Erodiblity Survey Segment
River Channel
Backwaters
Other Waterbody
1 mg/kg PCB Isopleth
Thalweg
Channel Features[2]

PDI Riverbank Soil Sample[1]
Average Total PCBs (mg/kg)
<1
1 – 5
5 – 10
10 – 25
25 – 50
50 – 100
> 100

Riverbank Remediation
Remediation Required (PCB >= 5 mg/kg, BEHI >= 27, NBS > Low)
Supplemental Remediation Areas

0 180
Feet

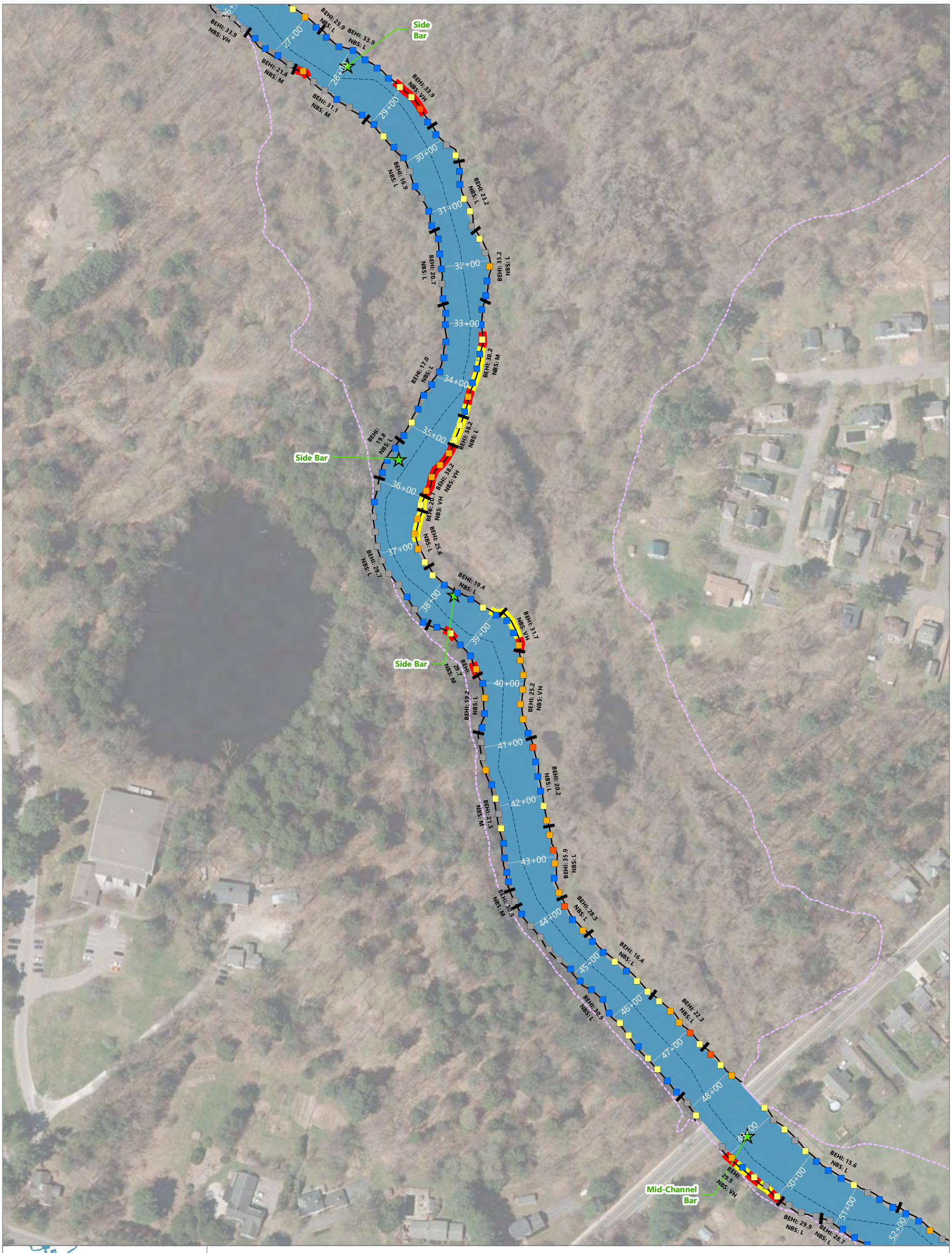
NOTES:
1. The PCB riverbank soil sampling results shown are average concentrations for surficial (0- to 12-inch) samples collected from the toe, midpoint, and top of the riverbank at each location.
2. Channel features observed during bank erosion surveys conducted in 2022.

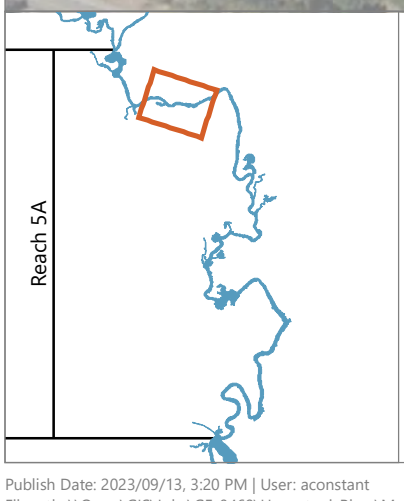
BEHI: Bank Erodibility Hazard Index
NBS: Near Bank Stress

Publish Date: 2023/09/13, 3:20 PM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-6_RiverbankRemediation.mxd

ANCHOR QEA

Figure 4-6a
Riverbank Soil PCB Results, Riverbank Erodibility, and Conceptual Riverbank Remedial Extents
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River





LEGEND:

0+00 River Stationing
Top of Bank
Erodiblity Survey Segment
River Channel
Backwaters
1 mg/kg PCB Isopleth
Thalweg
Channel Features[2]

PDI Riverbank Soil Sample[1]
Average Total PCBs (mg/kg)
<1
1 – 5
5 – 10
10 – 25
25 – 50
50 – 100
> 100

Riverbank Remediation
Remediation Required (PCB >= 5 mg/kg, BEHI >= 27, NBS > Low)
Supplemental Remediation Areas

0 180
Feet

NOTES:
1. The PCB riverbank soil sampling results shown are average concentrations for surficial (0- to 12-inch) samples collected from the toe, midpoint, and top of the riverbank at each location.
2. Channel features observed during bank erosion surveys conducted in 2022.

BEHI: Bank Erodibility Hazard Index
NBS: Near Bank Stress

Publish Date: 2023/09/13, 3:20 PM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-6_RiverbankRemediation.mxd

ANCHOR QEA

Figure 4-6b
Riverbank Soil PCB Results, Riverbank Erodibility, and Conceptual Riverbank Remedial Extents
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River

LEGEND:

0+00 River Stationing
Top of Bank
Erodiblity Survey Segment
River Channel
Backwaters
Other Waterbody
1 mg/kg PCB Isopleth
Thalweg
Channel Features[2]

PDI Riverbank Soil Sample[1]
Average Total PCBs (mg/kg)
<1
1 – 5
5 – 10
10 – 25
25 – 50
50 – 100
> 100

Riverbank Remediation
Remediation Required (PCB >= 5 mg/kg, BEHI >= 27, NBS > Low)
Supplemental Remediation Areas

0 180
Feet

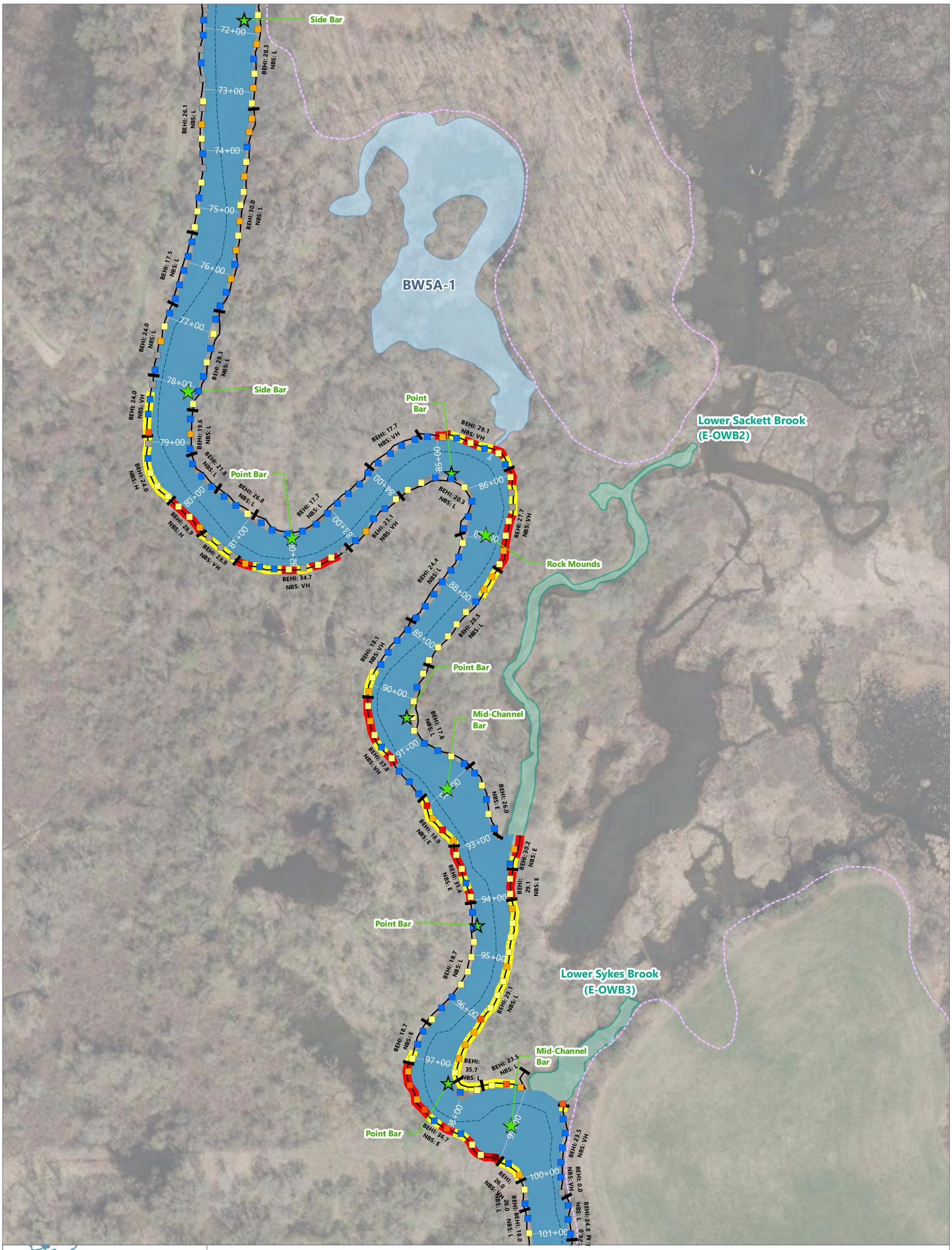
NOTES:
1. The PCB riverbank soil sampling results shown are average concentrations for surficial (0- to 12-inch) samples collected from the toe, midpoint, and top of the riverbank at each location.
2. Channel features observed during bank erosion surveys conducted in 2022.

BEHI: Bank Erodibility Hazard Index
NBS: Near Bank Stress

Publish Date: 2023/09/13, 3:21 PM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-6_RiverbankRemediation.mxd

ANCHOR QEA

Figure 4-6c
Riverbank Soil PCB Results, Riverbank Erodibility, and Conceptual Riverbank Remedial Extents
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River



LEGEND:

- 0+00 River Stationing
- Top of Bank
- Erodiblity Survey Segment
- River Channel
- Backwaters
- Other Waterbody
- 1 mg/kg PCB Isopleth
- Thalweg
- Channel Features[2]

PDI Riverbank Soil Sample[1]
Average Total PCBs (mg/kg)

- <1
- 1 – 5
- 5 – 10
- 10 – 25
- 25 – 50
- 50 – 100
- > 100

Riverbank Remediation

- Remediation Required (PCB >= 5 mg/kg, BEHI >= 27, NBS > Low)
- Supplemental Remediation Areas

0 180
Feet

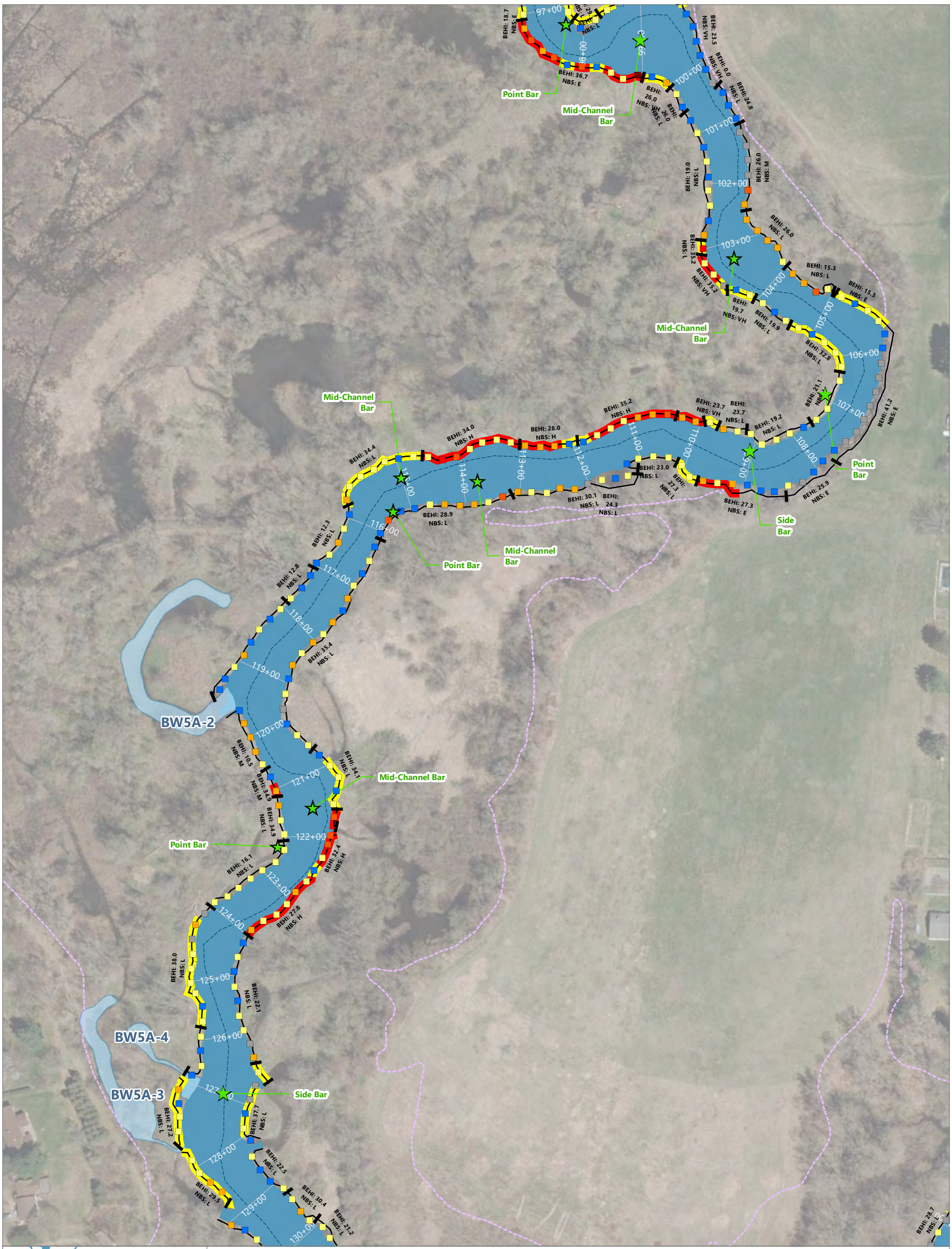
NOTES:
1. The PCB riverbank soil sampling results shown are average concentrations for surficial (0- to 12-inch) samples collected from the toe, midpoint, and top of the riverbank at each location.
2. Channel features observed during bank erosion surveys conducted in 2022.

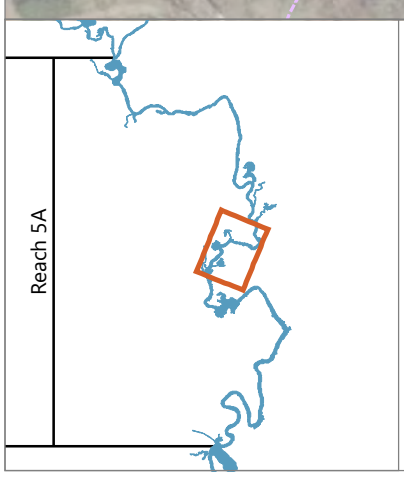
BEHI: Bank Erodibility Hazard Index
NBS: Near Bank Stress

Publish Date: 2023/09/13, 3:21 PM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-6_RiverbankRemediation.mxd

ANCHOR QEA

Figure 4-6d
Riverbank Soil PCB Results, Riverbank Erodibility, and Conceptual Riverbank Remedial Extents
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River





LEGEND:

0+00 River Stationing
Top of Bank
Erodiblity Survey Segment
River Channel
Backwaters
Other Waterbody
1 mg/kg PCB Isopleth
Thalweg
Channel Features[2]

PDI Riverbank Soil Sample[1]
Average Total PCBs (mg/kg)

- <1
- 1 – 5
- 5 – 10
- 10 – 25
- 25 – 50
- 50 – 100
- > 100

Riverbank Remediation

- Remediation Required (PCB >= 5 mg/kg, BEHI >= 27, NBS > Low)
- Supplemental Remediation Areas

0 180
Feet

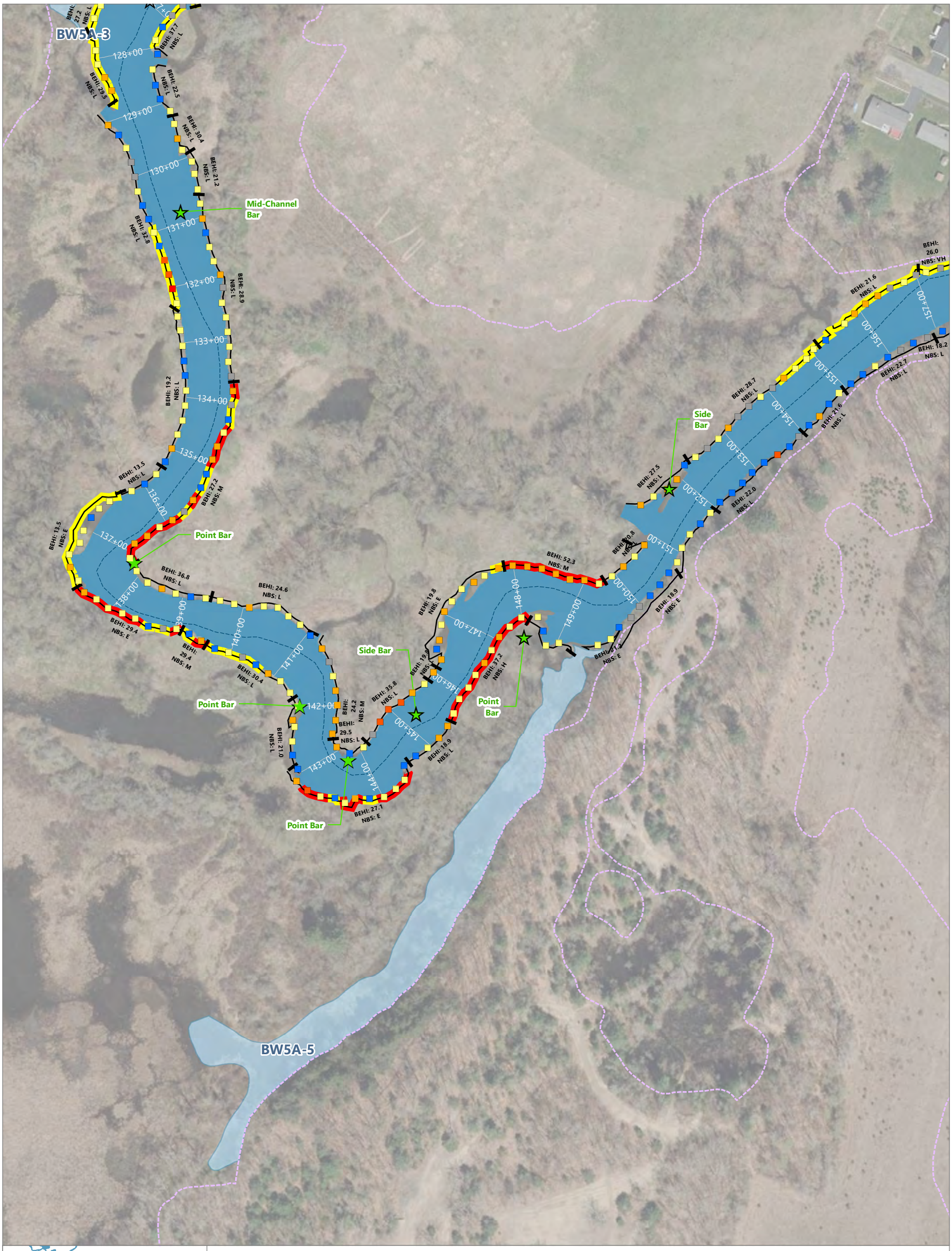
NOTES:
1. The PCB riverbank soil sampling results shown are average concentrations for surficial (0- to 12-inch) samples collected from the toe, midpoint, and top of the riverbank at each location.
2. Channel features observed during bank erosion surveys conducted in 2022.

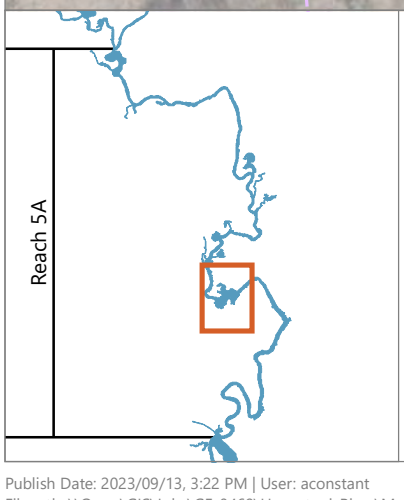
BEHI: Bank Erodibility Hazard Index
NBS: Near Bank Stress

Publish Date: 2023/09/13, 3:21 PM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-6_RiverbankRemediation.mxd

ANCHOR QEA

Figure 4-6e
Riverbank Soil PCB Results, Riverbank Erodibility, and Conceptual Riverbank Remedial Extents
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River





LEGEND:

- 0+00 River Stationing
- Top of Bank
- Erodiblity Survey Segment
- River Channel
- Backwaters
- 1 mg/kg PCB Isopleth
- Thalweg
- Channel Features[2]

PDI Riverbank Soil Sample[1]

Average Total PCBs (mg/kg)

- <1
- 1 – 5
- 5 – 10
- 10 – 25
- 25 – 50
- 50 – 100
- > 100

Riverbank Remediation

- Remediation Required (PCB >= 5 mg/kg, BEHI >= 27, NBS > Low)
- Supplemental Remediation Areas

0 180 Feet

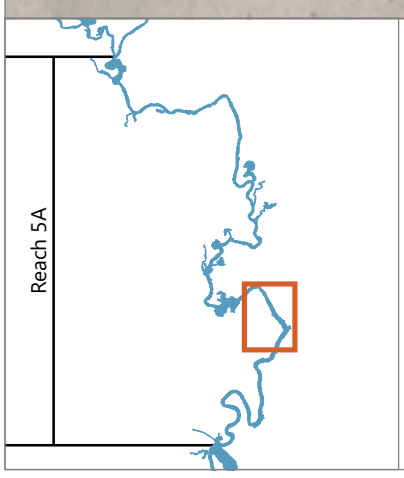
NOTES:
1. The PCB riverbank soil sampling results shown are average concentrations for surficial (0- to 12-inch) samples collected from the toe, midpoint, and top of the riverbank at each location.
2. Channel features observed during bank erosion surveys conducted in 2022.

BEHI: Bank Erodibility Hazard Index
NBS: Near Bank Stress

Publish Date: 2023/09/13, 3:22 PM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-6_RiverbankRemediation.mxd

ANCHOR QEA

Figure 4-6f
Riverbank Soil PCB Results, Riverbank Erodibility, and Conceptual Riverbank Remedial Extents
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River



LEGEND:

- 0+00 River Stationing
- Top of Bank
- Erodiblity Survey Segment
- River Channel
- Backwaters
- 1 mg/kg PCB Isopleth
- Thalweg
- Channel Features[2]

PDI Riverbank Soil Sample[1]

Average Total PCBs (mg/kg)

- <1
- 1 – 5
- 5 – 10
- 10 – 25
- 25 – 50
- 50 – 100
- > 100

Riverbank Remediation

- Remediation Required (PCB >= 5 mg/kg, BEHI >= 27, NBS > Low)
- Supplemental Remediation Areas

0 180
Feet

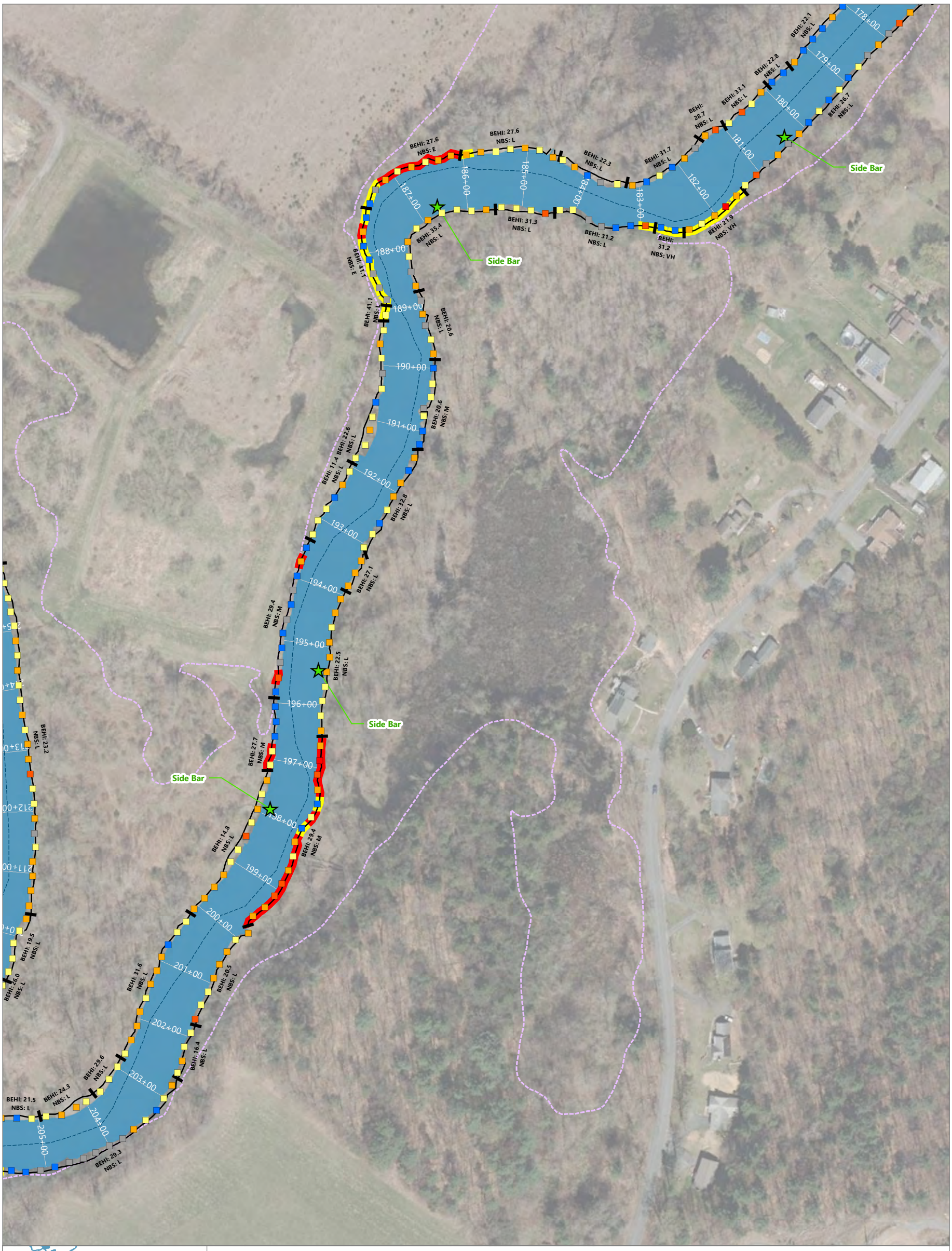
NOTES:
1. The PCB riverbank soil sampling results shown are average concentrations for surficial (0- to 12-inch) samples collected from the toe, midpoint, and top of the riverbank at each location.
2. Channel features observed during bank erosion surveys conducted in 2022.

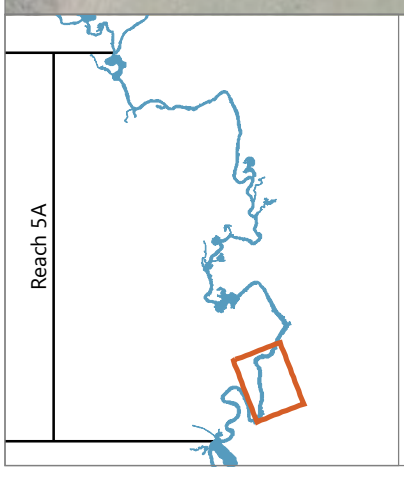
BEHI: Bank Erodibility Hazard Index
NBS: Near Bank Stress

Publish Date: 2023/09/13, 3:22 PM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-6_RiverbankRemediation.mxd

ANCHOR QEA

Figure 4-6g
Riverbank Soil PCB Results, Riverbank Erodibility, and Conceptual Riverbank Remedial Extents
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River





LEGEND:

0+00 River Stationing
Top of Bank
Erodiblity Survey Segment
River Channel
Backwaters
1 mg/kg PCB Isopleth
Thalweg
Channel Features[2]

PDI Riverbank Soil Sample[1]
Average Total PCBs (mg/kg)
<1
1 – 5
5 – 10
10 – 25
25 – 50
50 – 100
> 100

Riverbank Remediation
Remediation Required (PCB >= 5 mg/kg, BEHI >= 27, NBS > Low)
Supplemental Remediation Areas

0 180
Feet

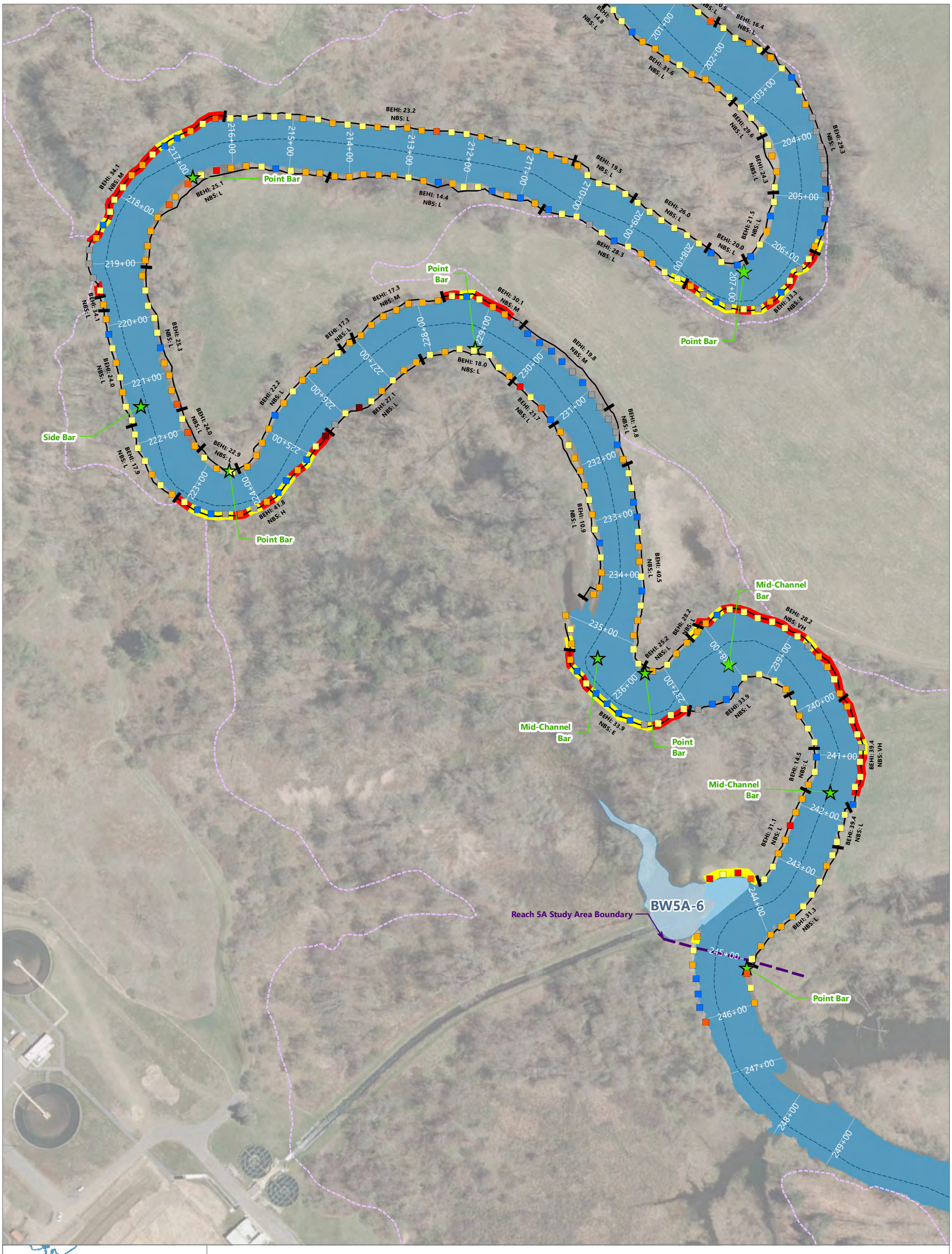
NOTES:
1. The PCB riverbank soil sampling results shown are average concentrations for surficial (0- to 12-inch) samples collected from the toe, midpoint, and top of the riverbank at each location.
2. Channel features observed during bank erosion surveys conducted in 2022.

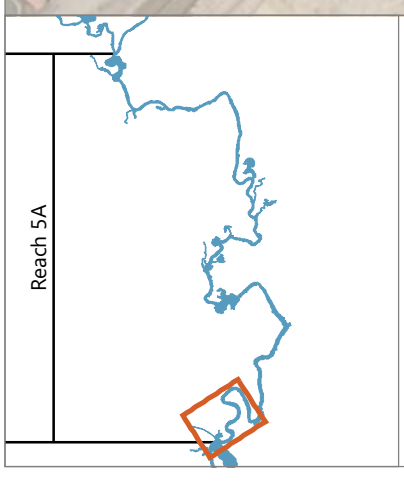
BEHI: Bank Erodibility Hazard Index
NBS: Near Bank Stress

Publish Date: 2023/09/13, 3:23 PM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-6_RiverbankRemediation.mxd

ANCHOR QEA

Figure 4-6h
Riverbank Soil PCB Results, Riverbank Erodibility, and Conceptual Riverbank Remedial Extents
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River





LEGEND:

0+00 River Stationing
Top of Bank
Erodiblity Survey Segment
River Channel
Backwaters
1 mg/kg PCB Isopleth
Thalweg
Channel Features[2]

PDI Riverbank Soil Sample[1]
Average Total PCBs (mg/kg)
<1
1 – 5
5 – 10
10 – 25
25 – 50
50 – 100
> 100

Riverbank Remediation
Remediation Required (PCB >= 5 mg/kg, BEHI >= 27, NBS > Low)
Supplemental Remediation Areas

0 180
Feet

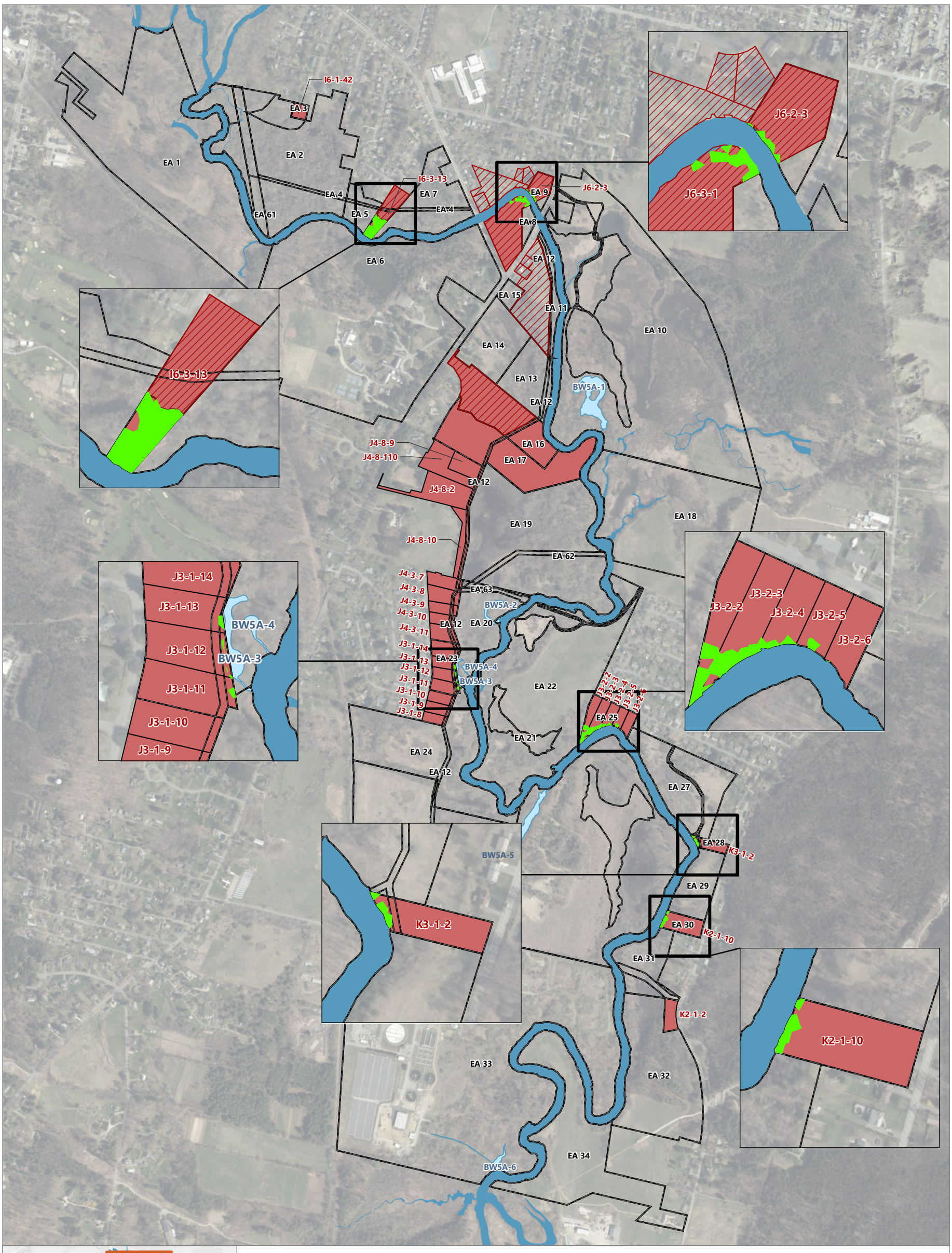
NOTES:
1. The PCB riverbank soil sampling results shown are average concentrations for surficial (0- to 12-inch) samples collected from the toe, midpoint, and top of the riverbank at each location.
2. Channel features observed during bank erosion surveys conducted in 2022.

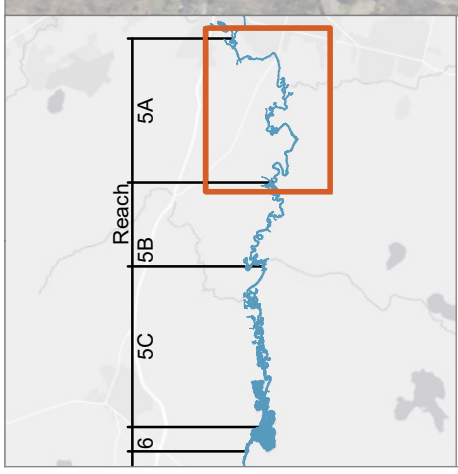
BEHI: Bank Erodibility Hazard Index
NBS: Near Bank Stress

Publish Date: 2023/09/13, 3:23 PM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-6_RiverbankRemediation.mxd

ANCHOR QEA

Figure 4-6i
Riverbank Soil PCB Results, Riverbank Erodibility, and Conceptual Riverbank Remedial Extents
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River





LEGEND:

- Housatonic River
- Residential Properties
- Non-Residential Exposure Areas
- Actual/Potential Lawn Properties
- Backwaters (AECOM and Anchor QEA 2020)
- Residential Soil Removal

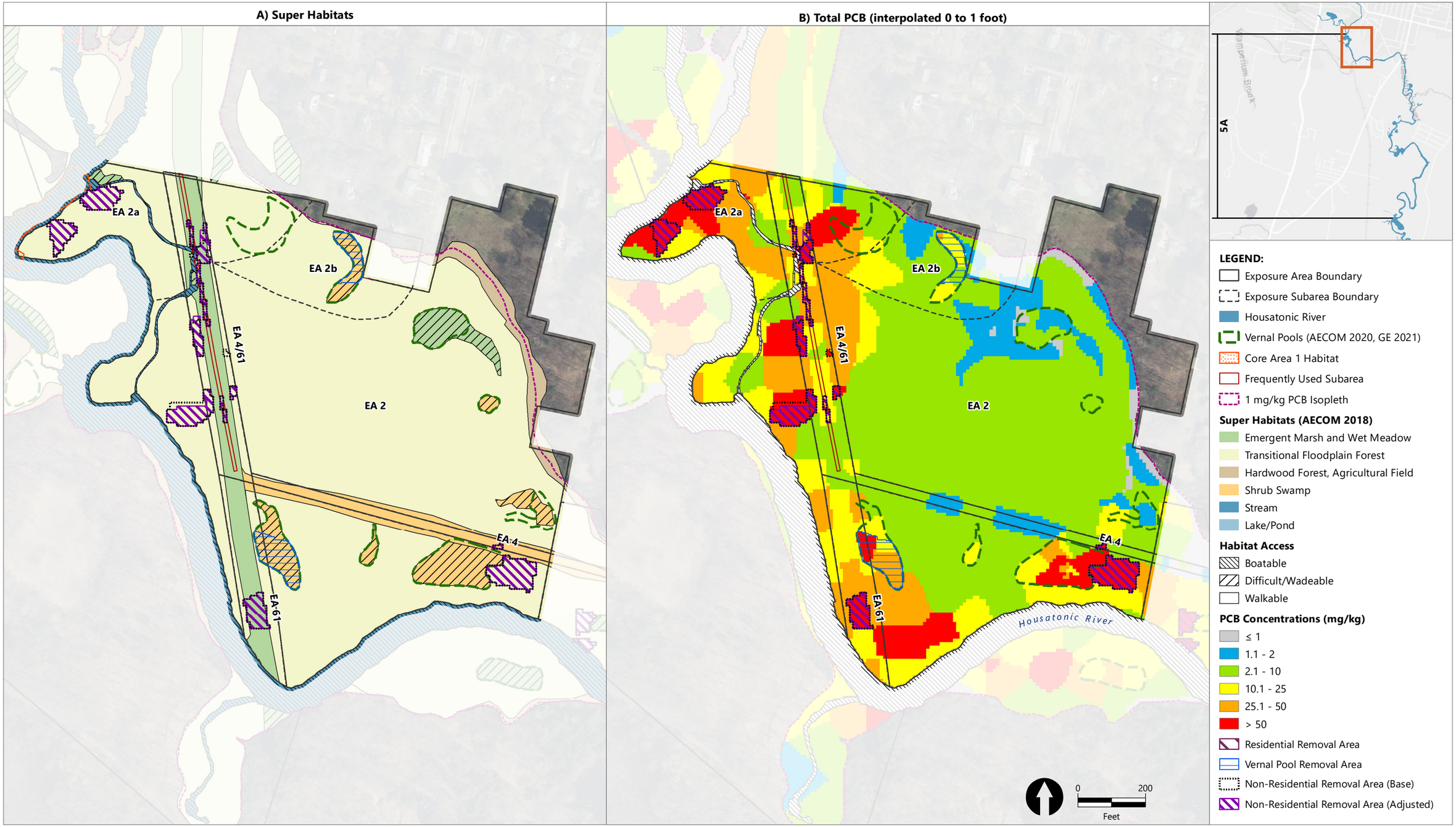
NOTE:
1. Aerial imagery from MassGIS 2021.

0 1,000
Feet

Publish Date: 2023/09/28, 2:35 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-7_ResidentialRemOverview.mxd

ANCHOR QEA

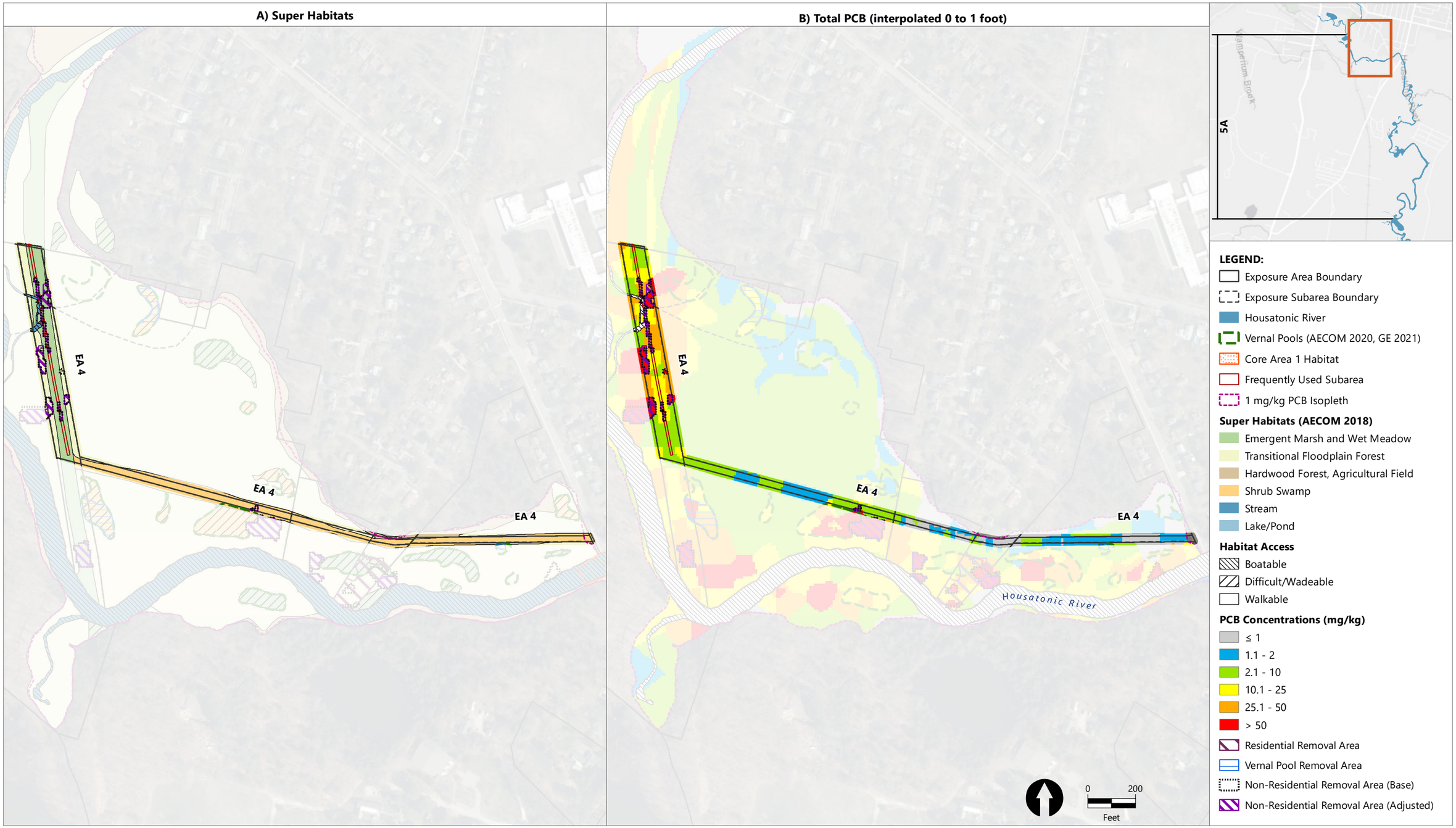
Figure 4-7
Residential Floodplain Preliminary Remediation Areas
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



Publish Date: 2023/09/25, 3:55 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-8_FPNonRes.mxd

ANCHOR QEA

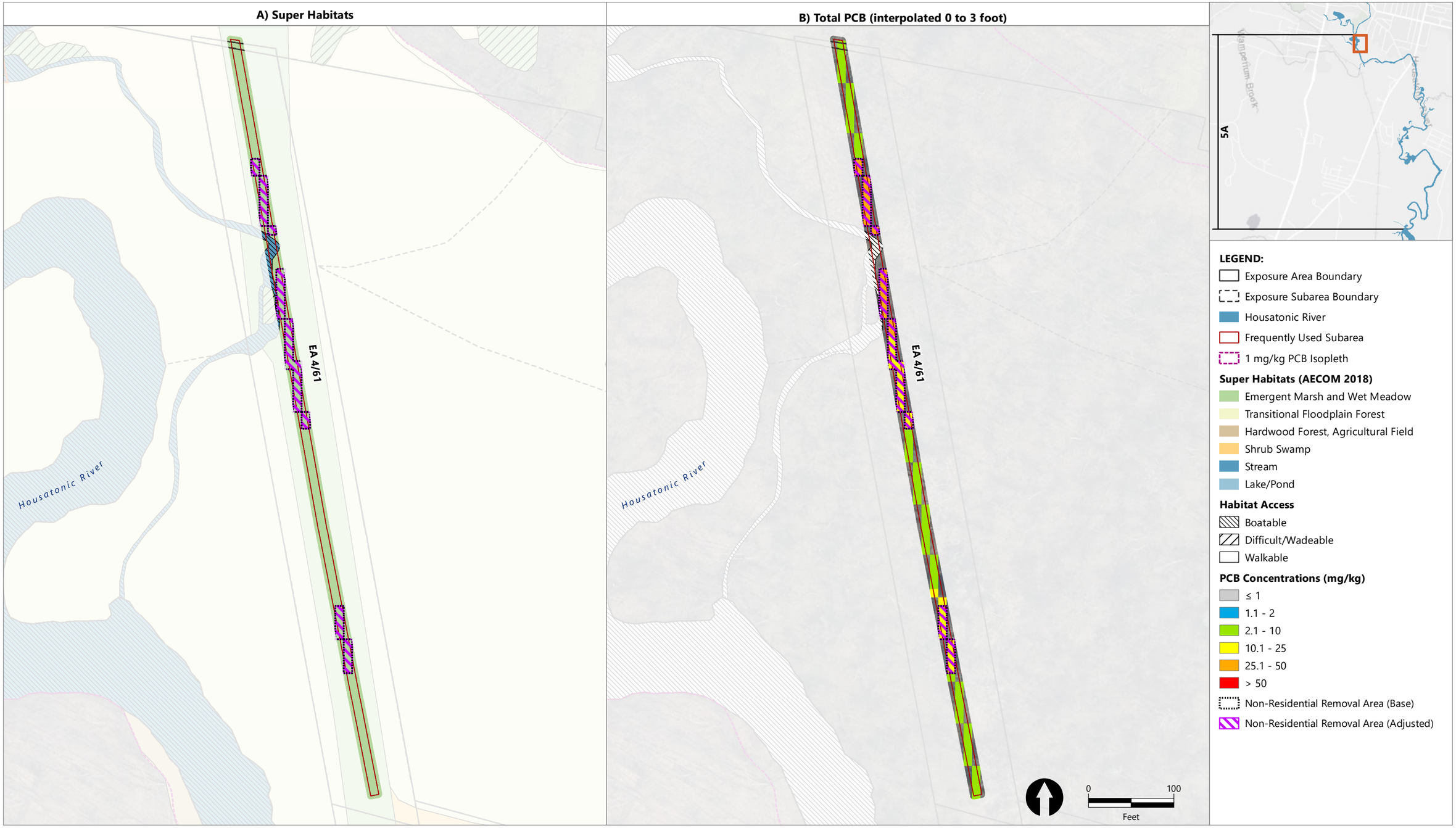
Figure 4-8a
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 2)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



Publish Date: 2023/09/25, 3:55 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-8_FPNonRes.mxd

ANCHOR QEA

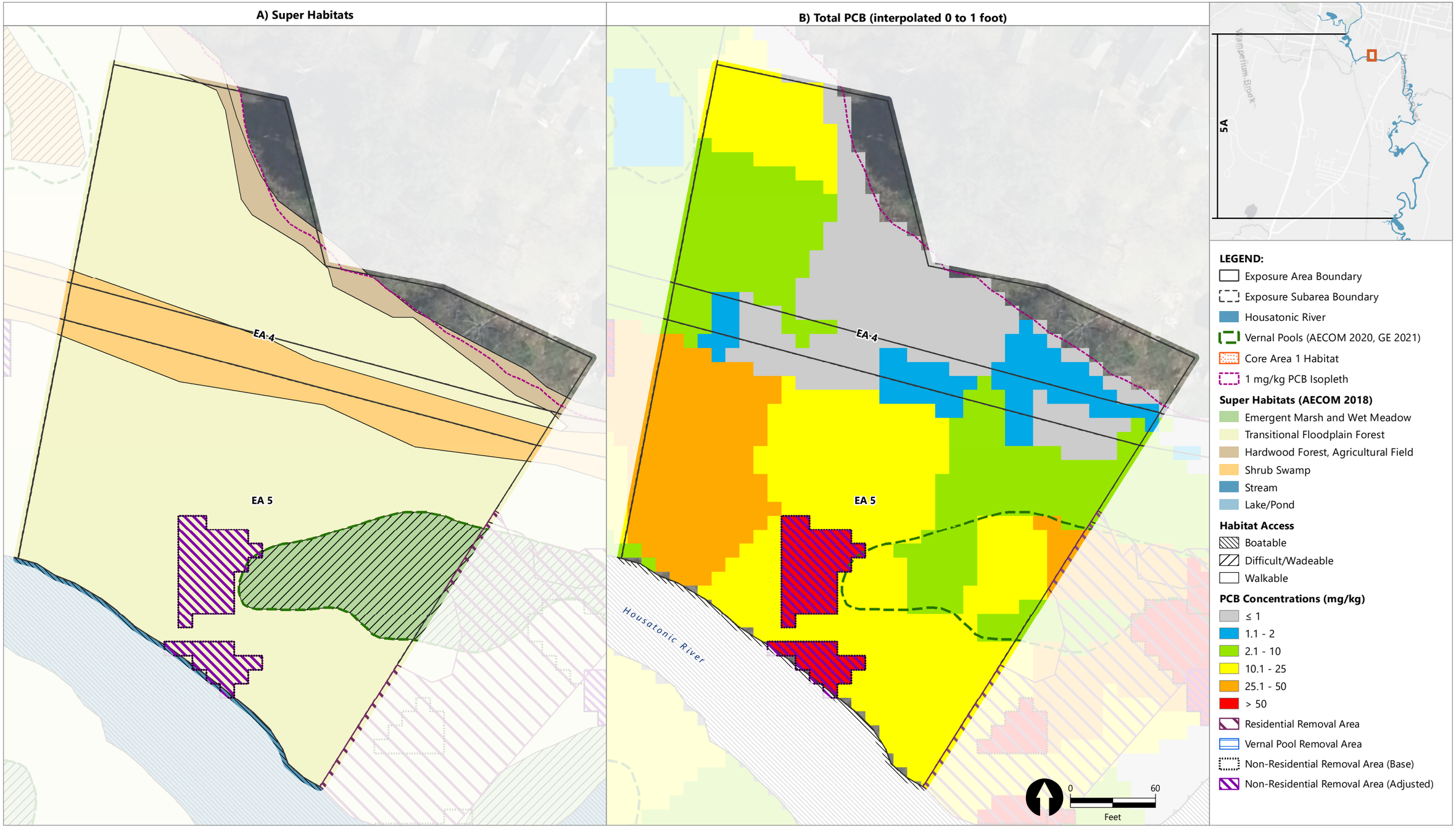
Figure 4-8b
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 4)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



Publish Date: 2023/09/25, 4:00 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-8c_FPNonRes_wFUSA.mxd

ANCHOR QEA

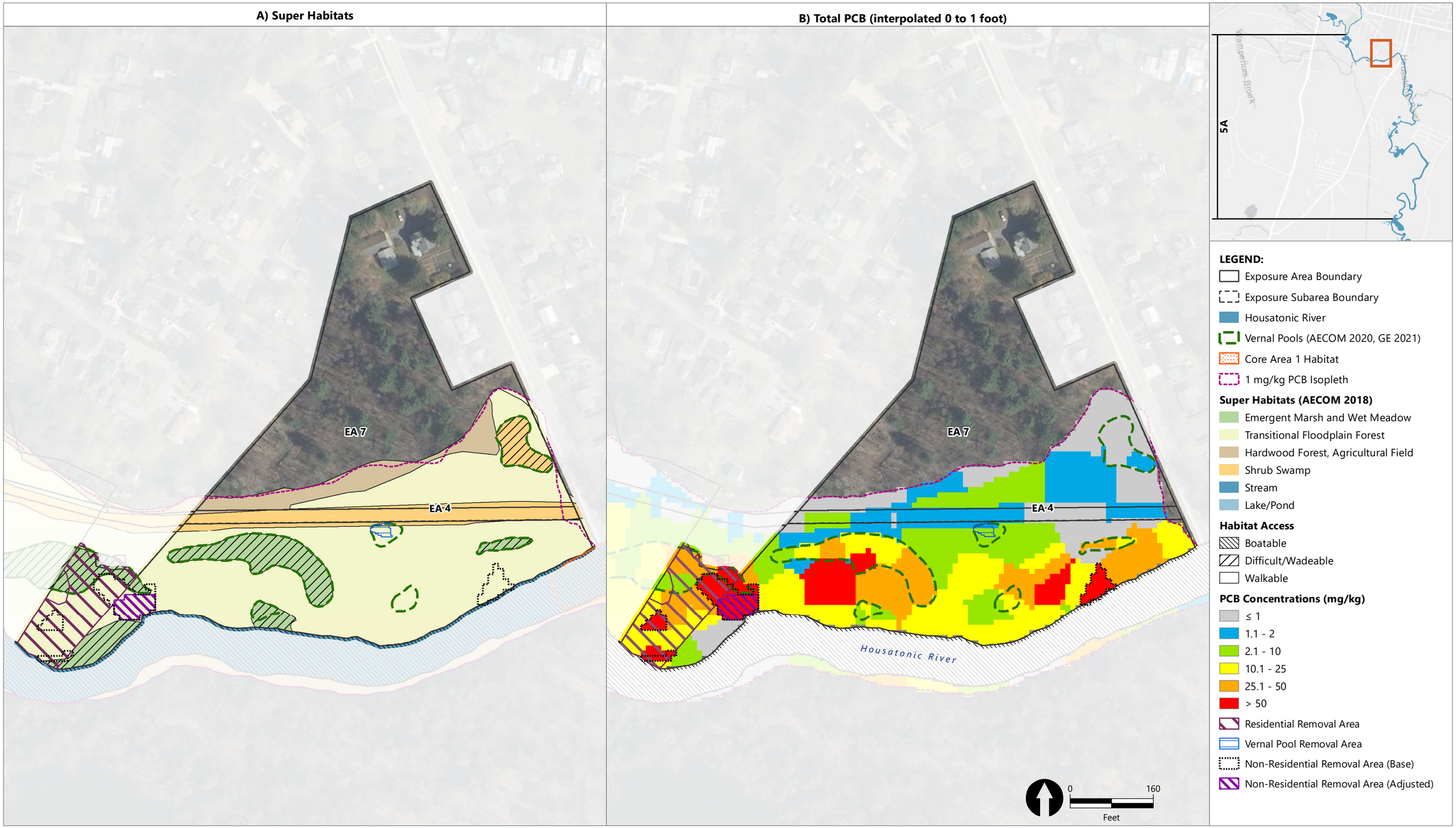
Figure 4-8c
Non-Residential Floodplain Preliminary Remediation Areas (Frequently Used Subarea 4/61)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



Publish Date: 2023/09/25, 3:56 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-8_FPNonRes.mxd

ANCHOR QEA

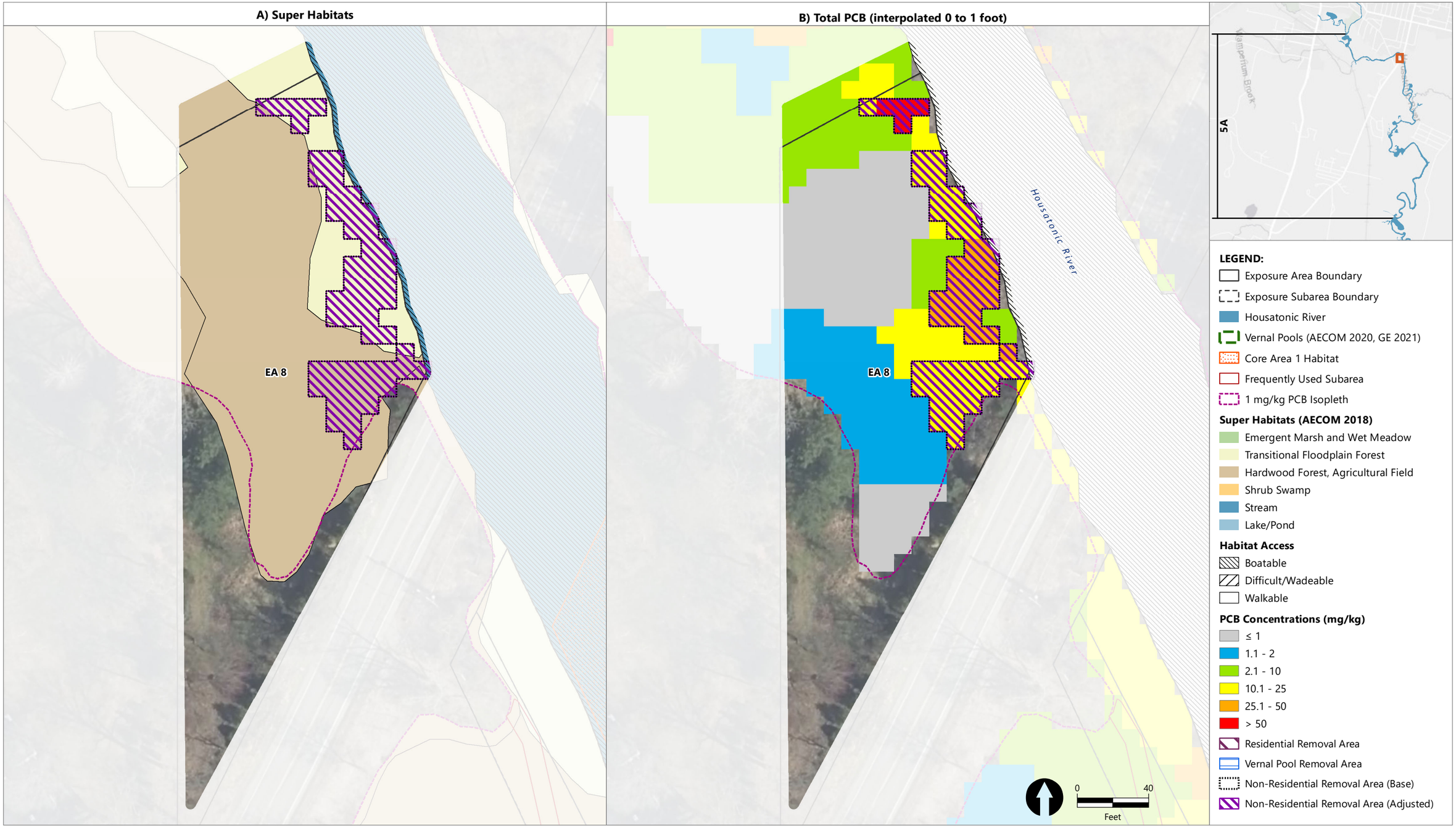
Figure 4-8d
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 5)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



Publish Date: 2023/09/25, 3:56 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-8_FPNonRes.mxd

ANCHOR QEA

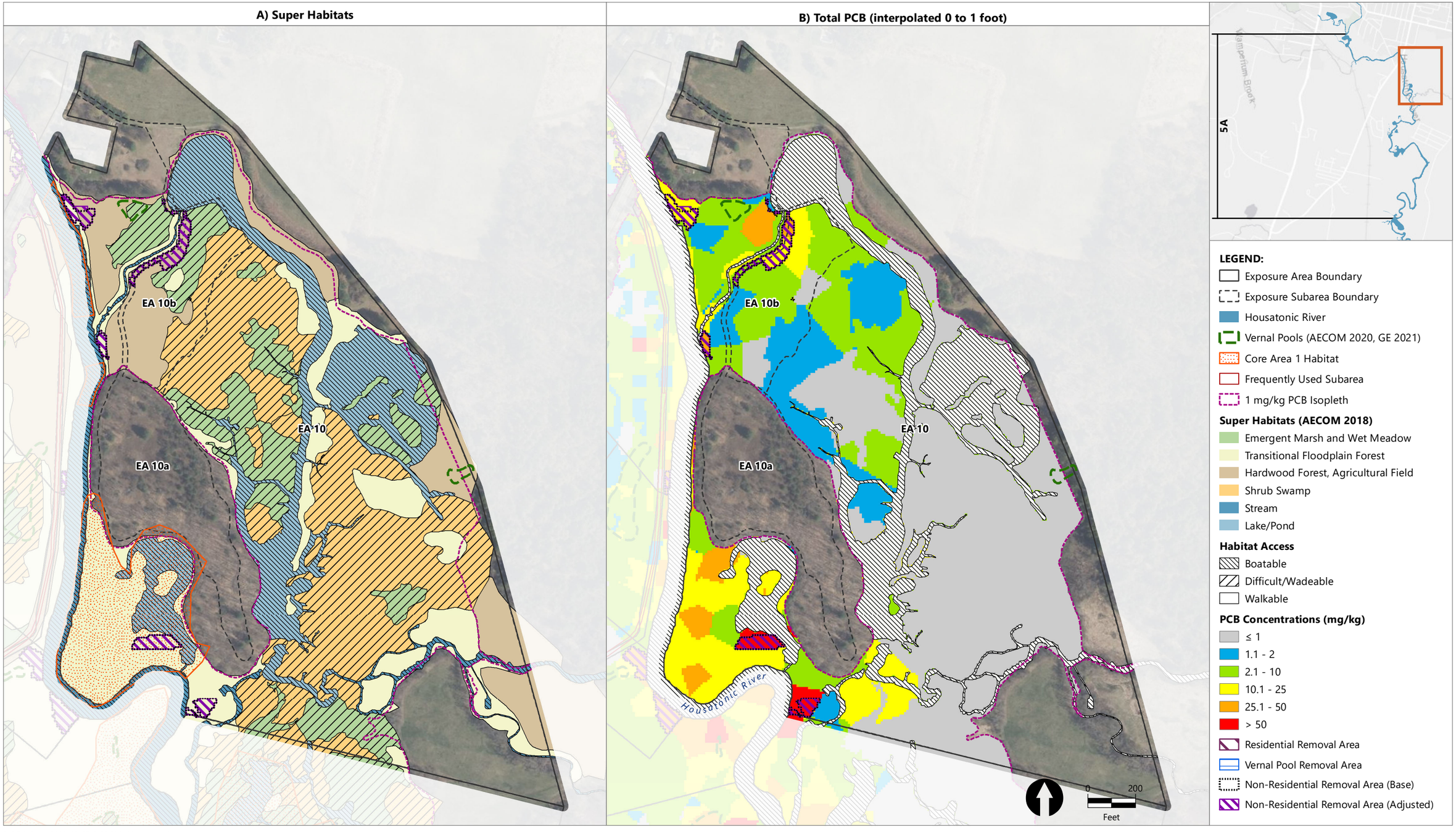
Figure 4-8e
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 7)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



Publish Date: 2023/09/25, 3:56 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-8_FPNonRes.mxd

ANCHOR QEA

Figure 4-8f
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 8)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River

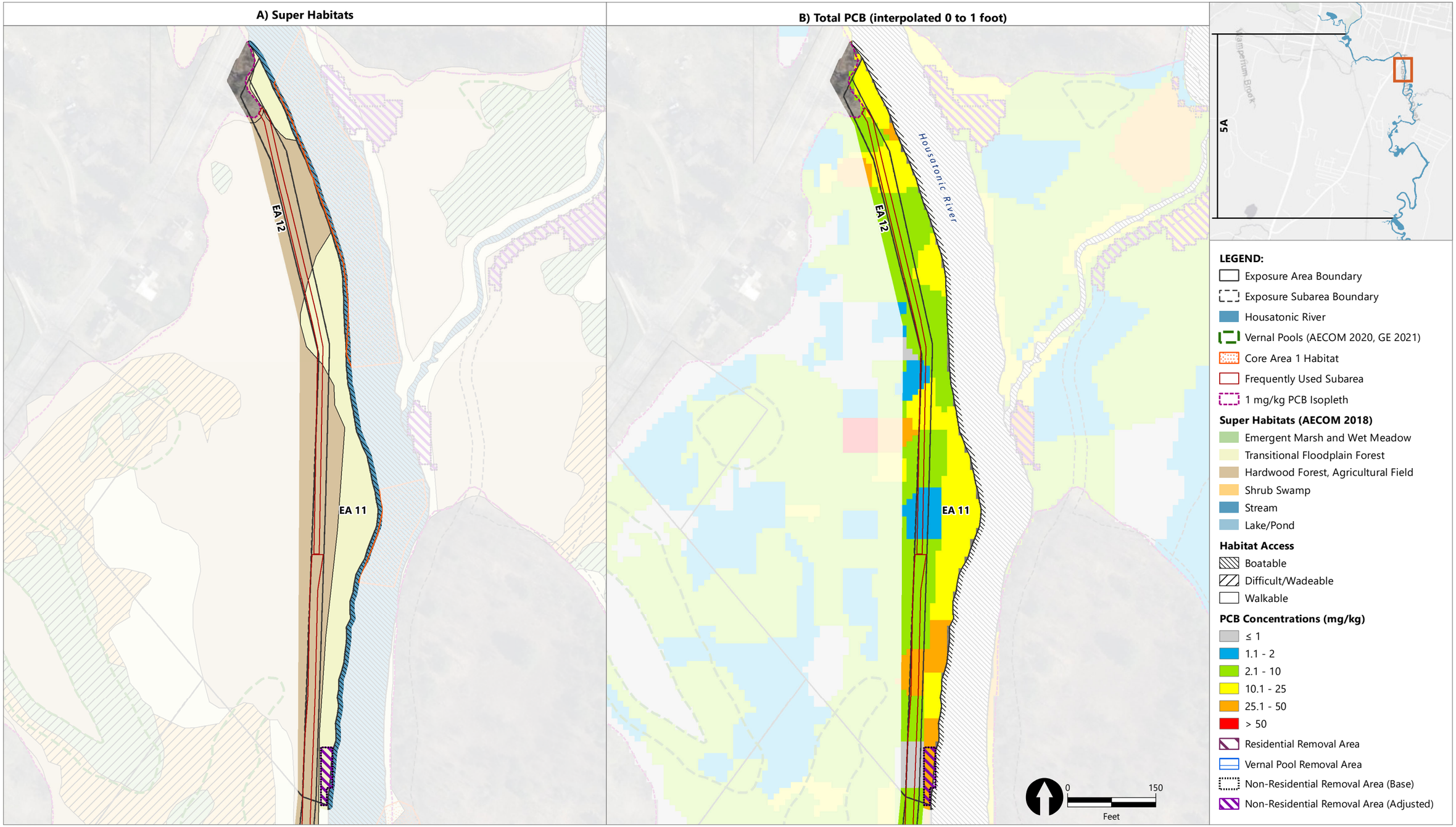


Publish Date: 2023/09/25, 3:56 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-8_FPNonRes.mxd

ANCHOR QEA

Figure 4-8g
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 10)

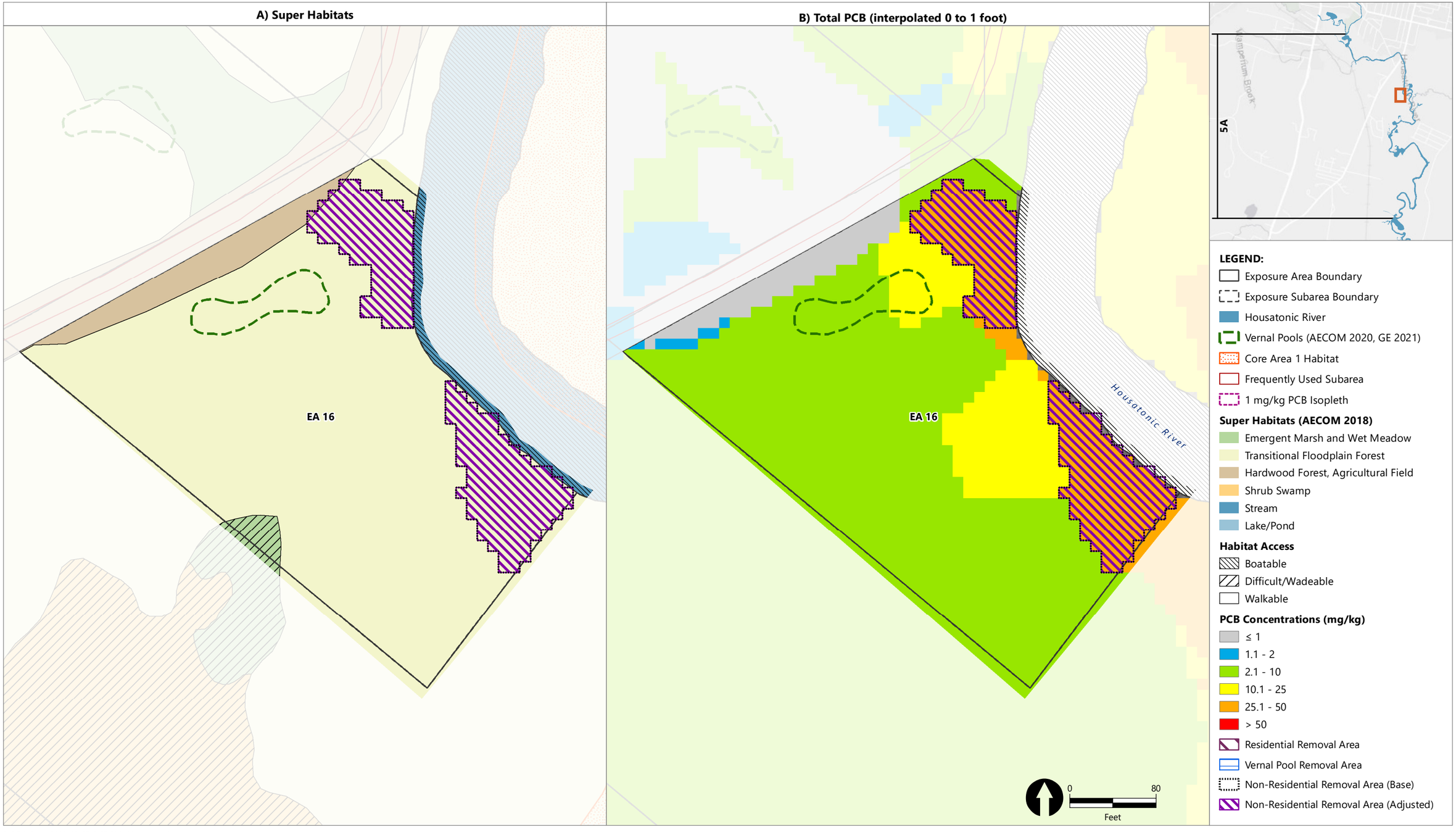
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



Publish Date: 2023/09/25, 3:57 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-8_FPNonRes.mxd

ANCHOR QEA

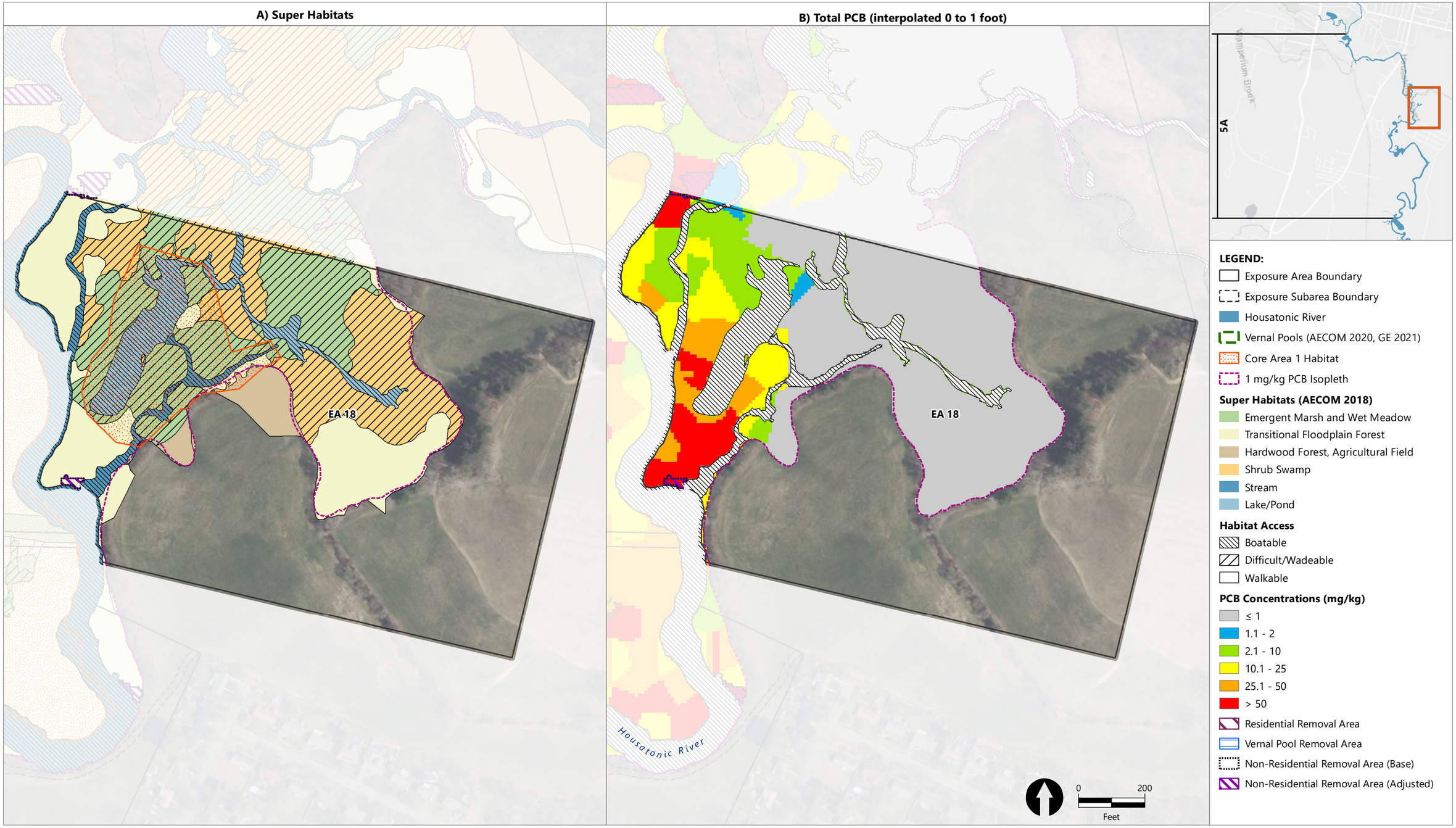
Figure 4-8h
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 11)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



Publish Date: 2023/09/25, 3:57 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-8_FPNonRes.mxd

ANCHOR QEA

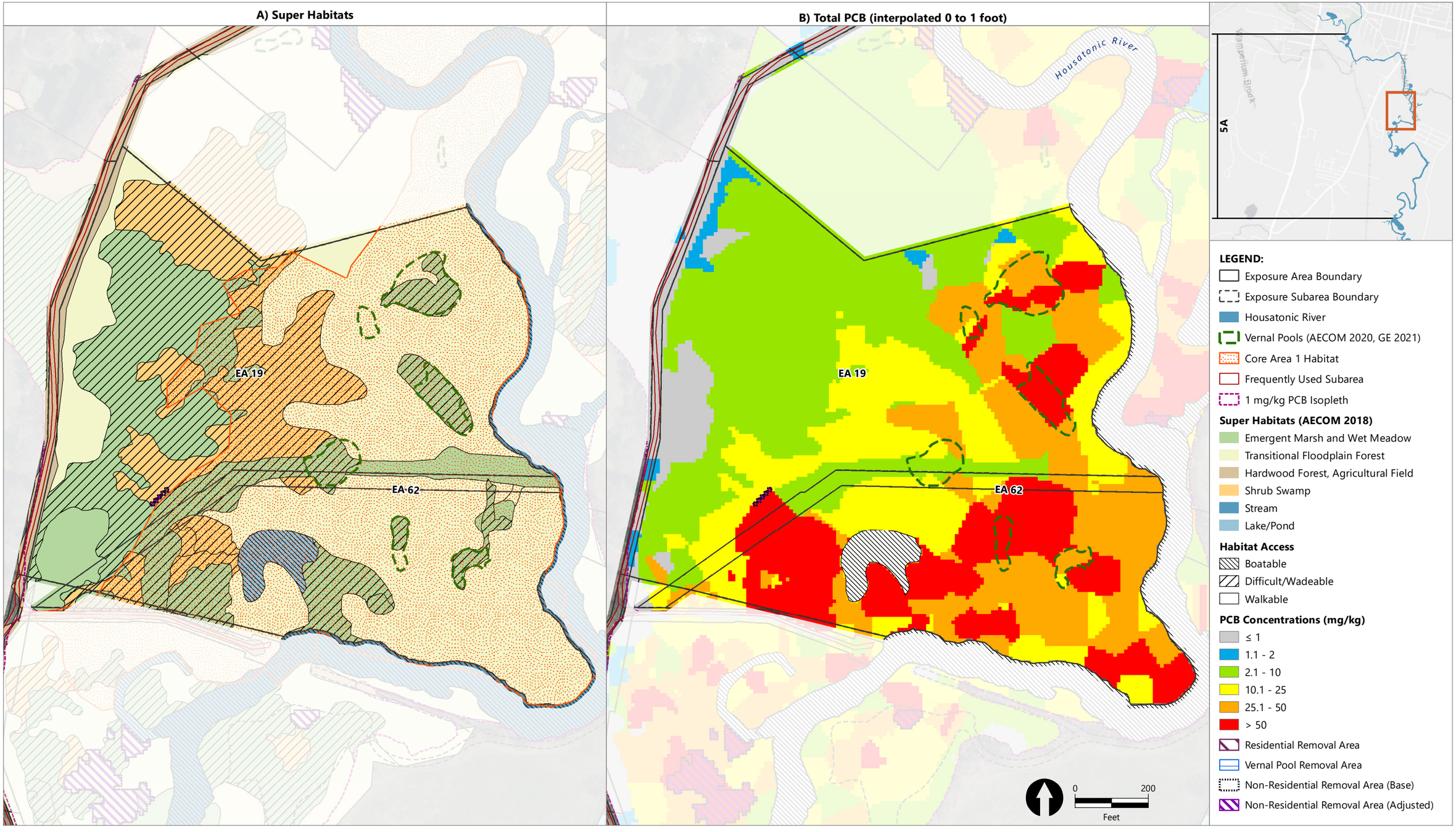
Figure 4-8i
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 16)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



Publish Date: 2023/09/25, 3:57 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-8_FPNonRes.mxd

ANCHOR QEA

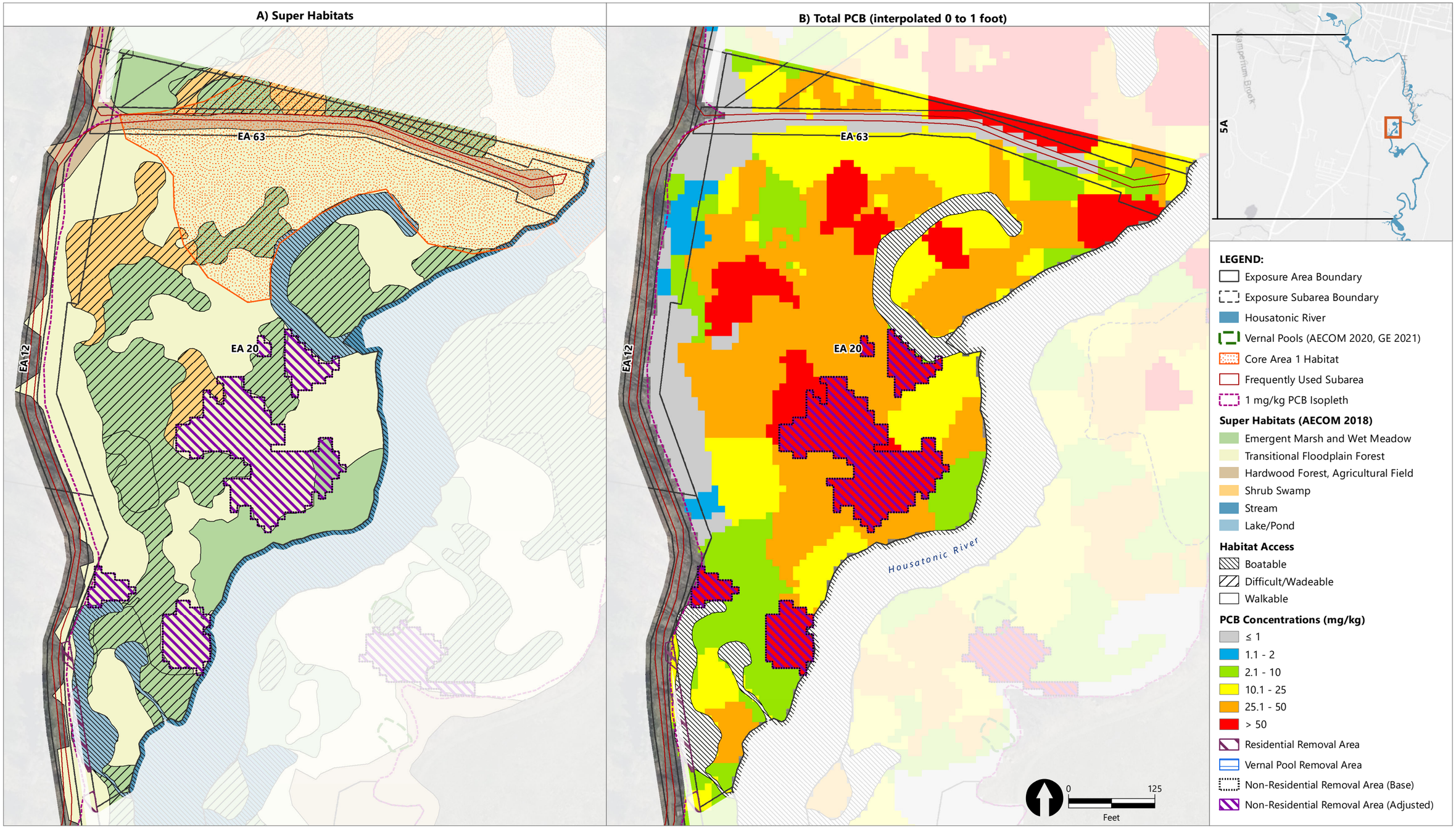
Figure 4-8j
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 18)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



Publish Date: 2023/09/25, 3:57 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-8_FPNonRes.mxd

ANCHOR QEA

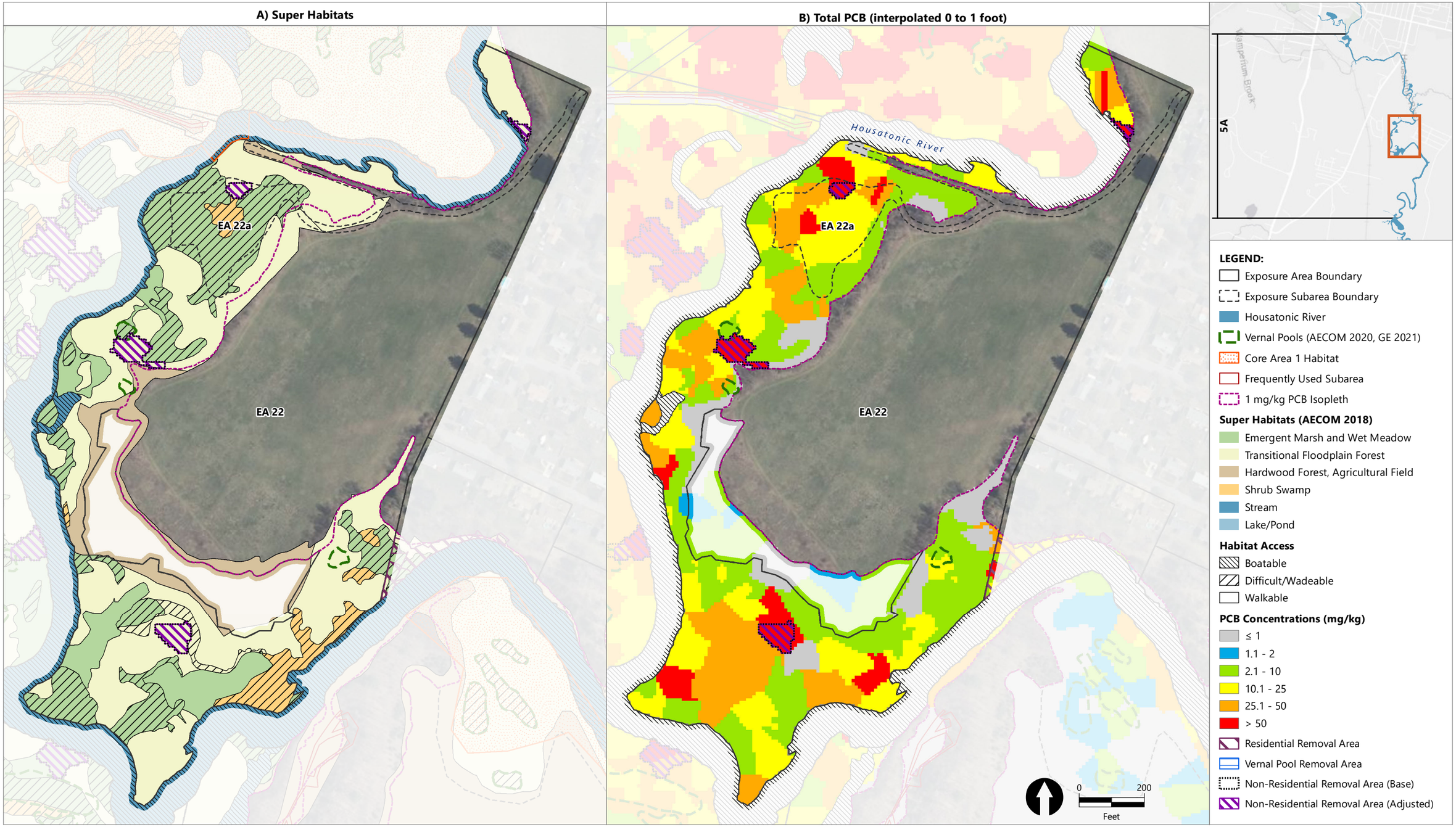
Figure 4-8k
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Areas 19)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



Publish Date: 2023/09/25, 3:58 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-8_FPNonRes.mxd

ANCHOR QEA

Figure 4-8l
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 20)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



Publish Date: 2023/09/25, 3:58 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-8_FPNonRes.mxd

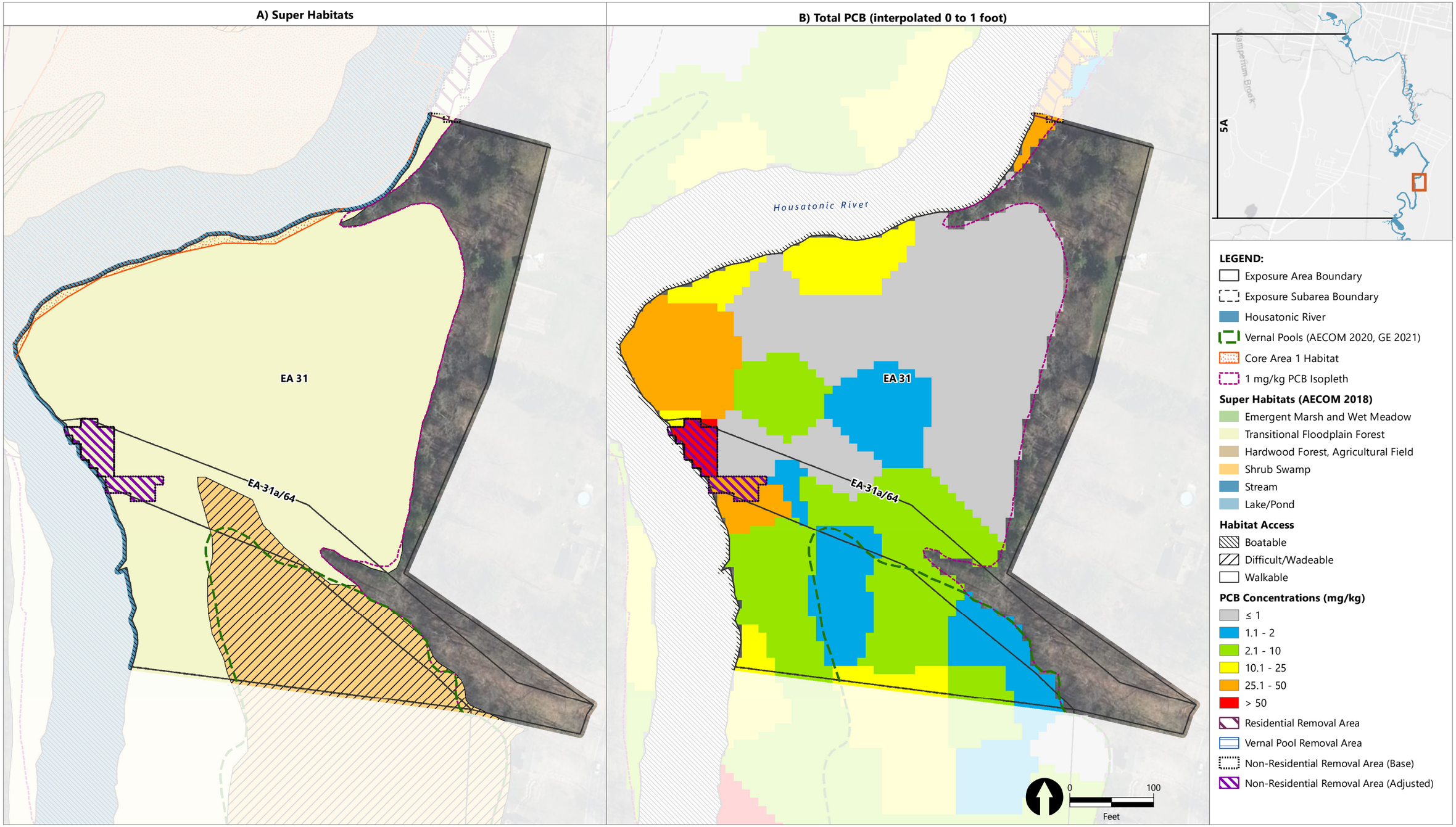
ANCHOR QEA

Figure 4-8m
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 22)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River

Publish Date: 2023/09/25, 3:58 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-8_FPNonRes.mxd

ANCHOR QEA

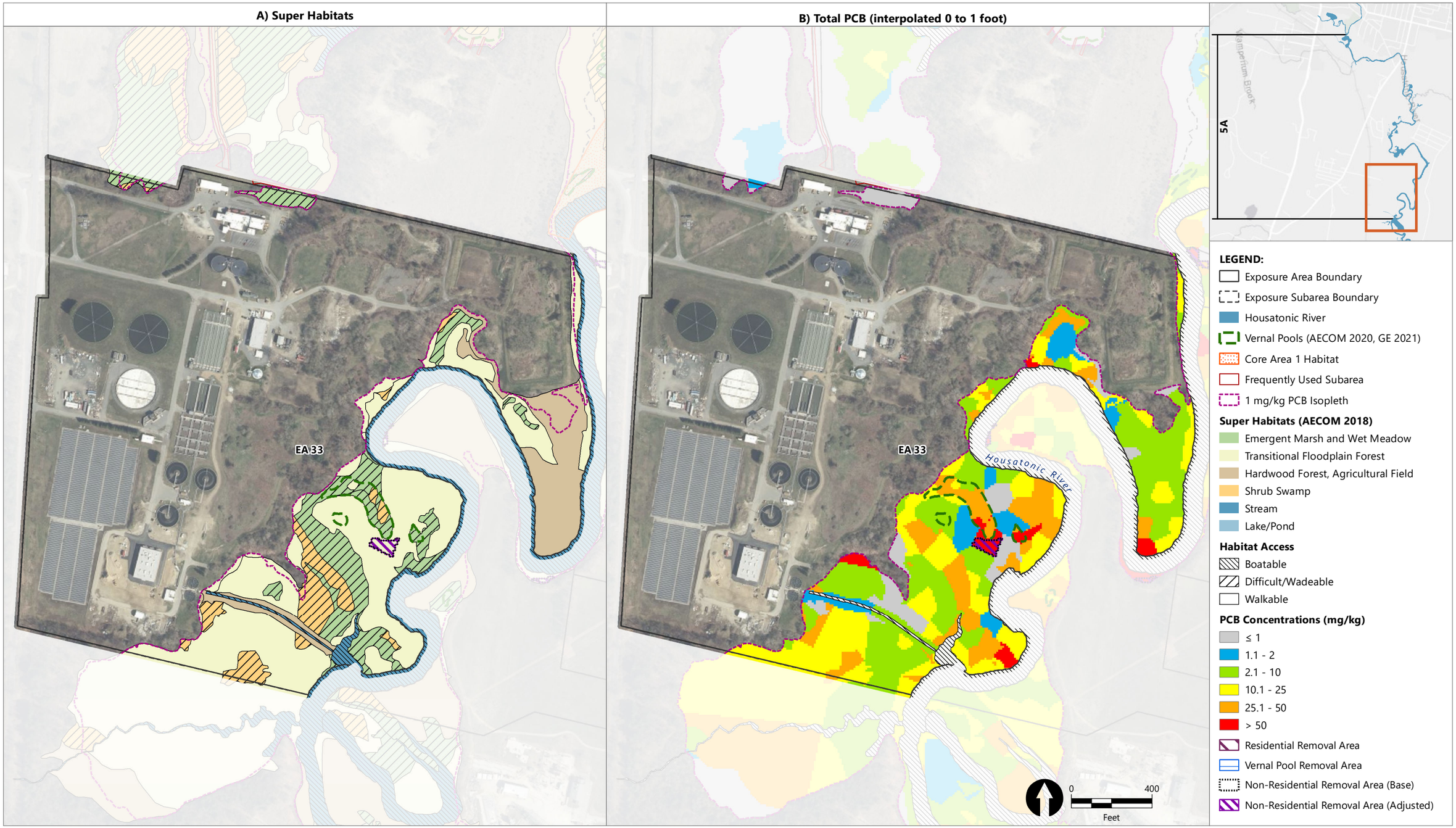
Figure 4-8n
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Areas 24)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



Publish Date: 2023/09/25, 3:58 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-8_FPNonRes.mxd

ANCHOR QEA

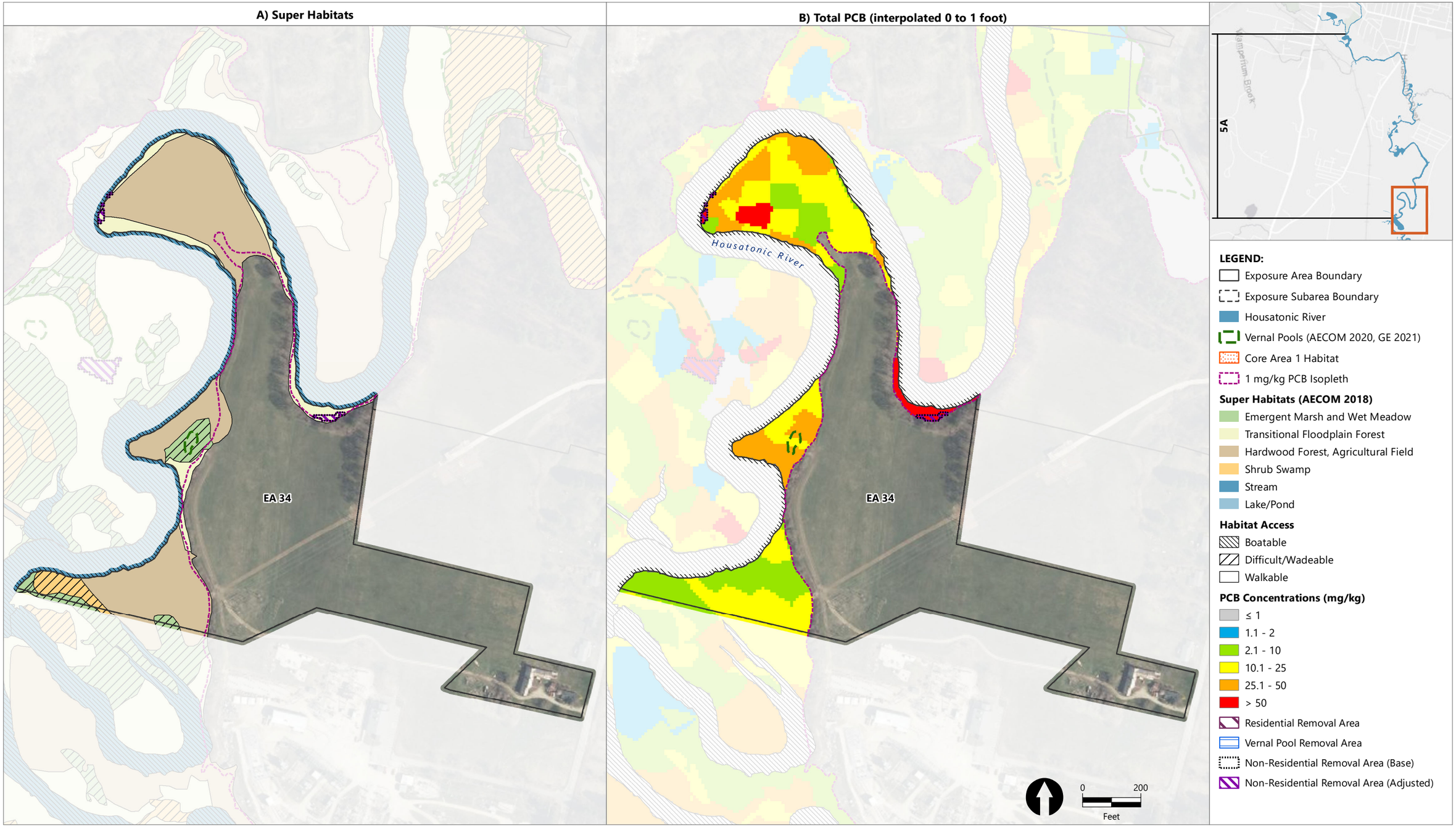
Figure 4-8o
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Areas 31)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



Publish Date: 2023/09/25, 3:59 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-8_FPNonRes.mxd

ANCHOR QEA

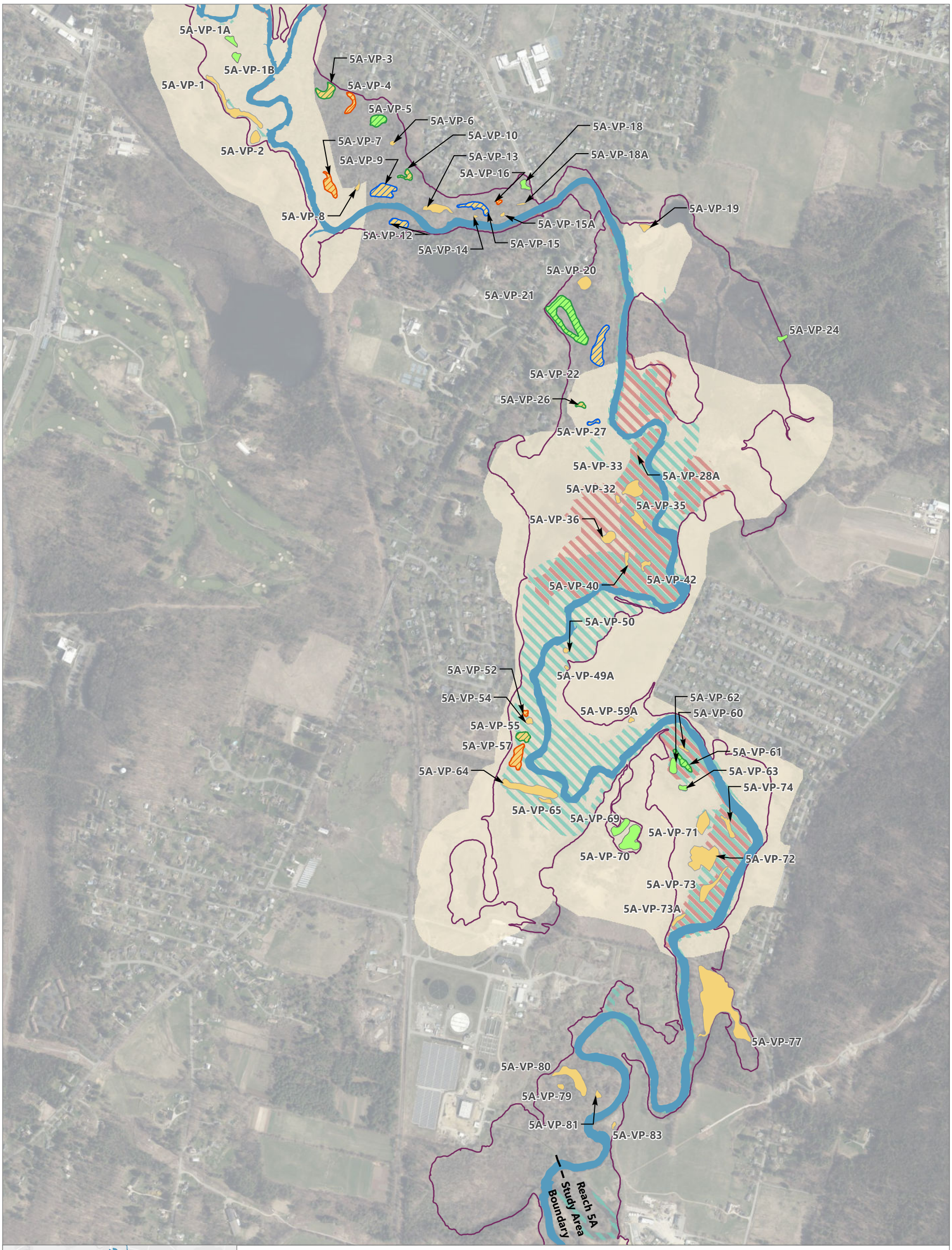
Figure 4-8p
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 33)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River

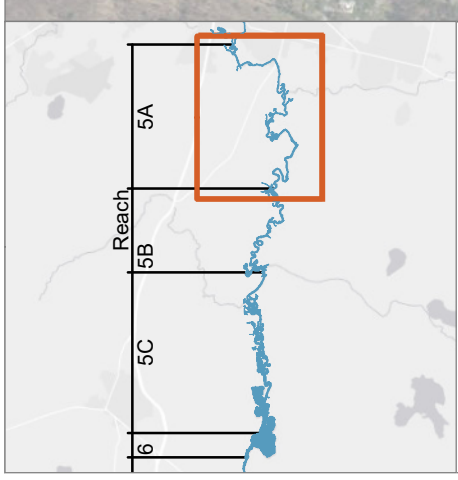


Publish Date: 2023/09/25, 3:59 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-8_FPNonRes.mxd

ANCHOR QEA

Figure 4-8q
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 34)
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River





LEGEND:

- 1 mg/kg PCB Isopleth
- Channel (AECOM and Anchor QEA 2020)
- Core Area 1 Habitat
- Core Area 2 Habitat
- Core Area 3 Habitat (2022 NHESP Data)

0 1,000
Feet

Vernal Pools

SWAC (mg/kg)

- ≤3.3 (No Remediation Required)
- >3.3 (Remediation Required)

Vernal Pools Selected for Pilot Study

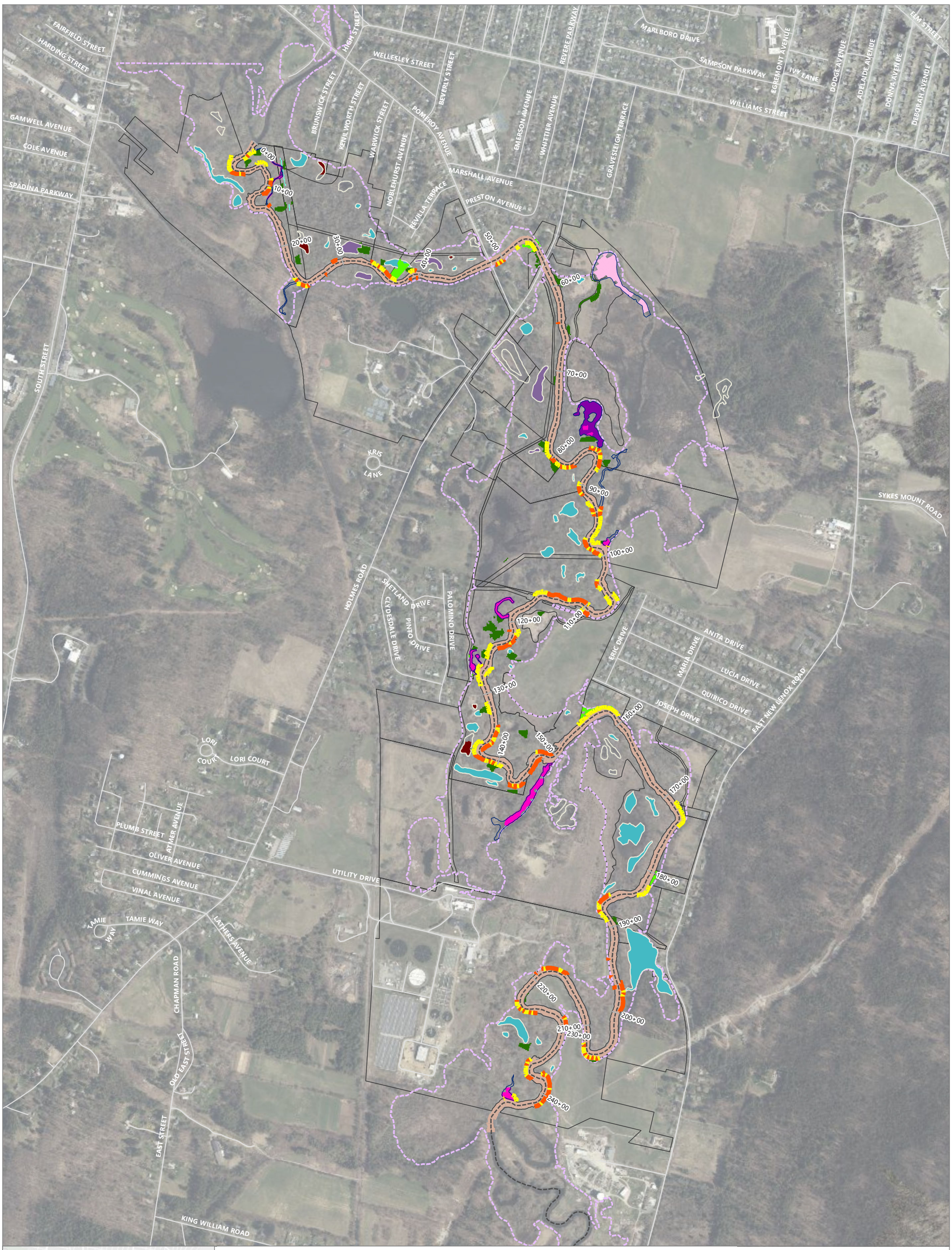
- Excavation/Restoration
- Amendment
- Control

NOTES:
1. Aerial imagery from MassGIS 2021.
2. Core Area 3 habitat was developed using 2022 Natural Heritage & Endangered Species Program data.

Publish Date: 2023/09/28, 8:54 AM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-9_VernalPoolSWAC.mxd

ANCHOR QEA

Figure 4-9
Vernal Pools and Core Habitat Areas in Reach 5A
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



LEGEND:

0+00 River Stationing
River Centerline
Roads
Exposure Areas
1 mg/kg PCB Isopleth

Vernal Pools
- Pilot Pool (Amendment)
- Pilot Pool (Excavation)
- Non-Pilot Pool (Remediation Needed;TBD)
- No Remediation Needed

Backwaters/Other Waterbodies
- Amendment
- Sediment Removal/Cap
- Sediment Removal/Backfill
- No Remediation Needed

In-River Sediment Remediation Area

Floodplain Remediation
- Residential Soil Removal
- Non-Residential Soil Removal (0-1ft)
- Non-Residential Soil Removal (0-3ft)

Riverbank Remediation
- Remediation Required
- Supplemental Remediation Areas

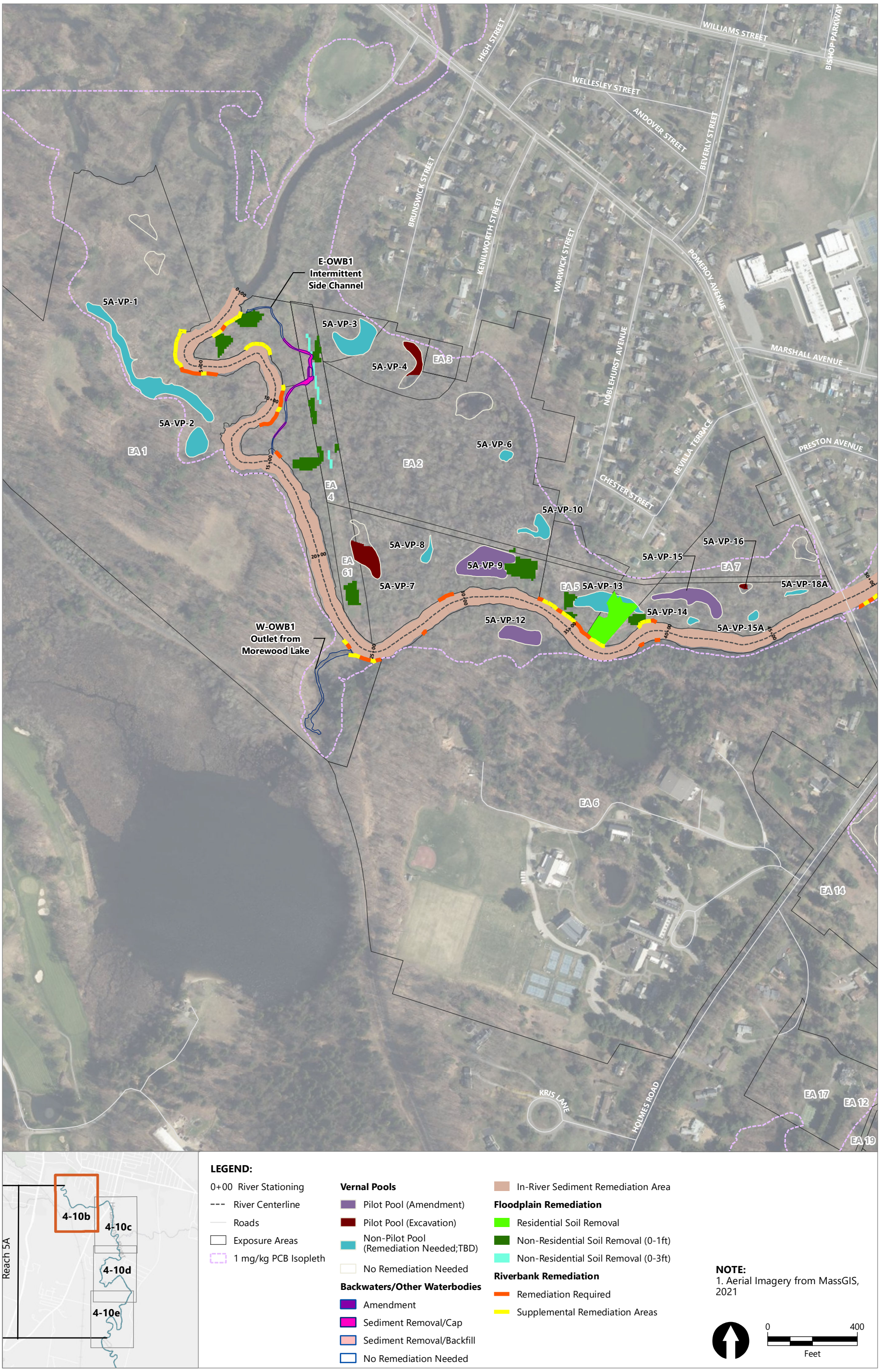
NOTE:
1. Aerial Imagery from MassGIS, 2021

0 1,100
Feet

Publish Date: 2023/09/28, 2:32 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-10_PreliminaryRemediation.mxd

ANCHOR QEA

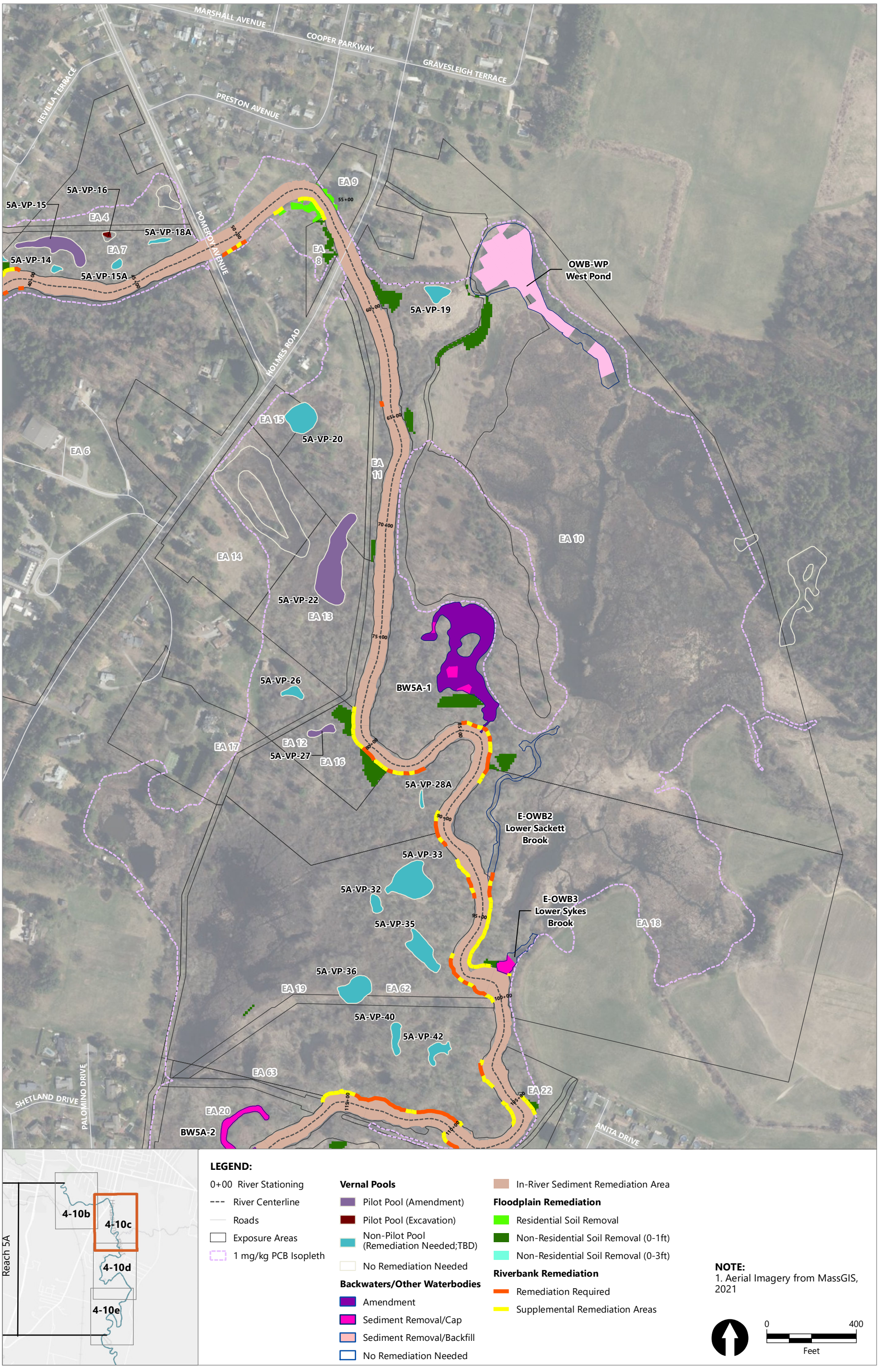
Figure 4-10a
Preliminary Remediation Areas for Reach 5A
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



Publish Date: 2023/09/28, 2:32 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-10_PreliminaryRemediation.mxd

ANCHOR QEA

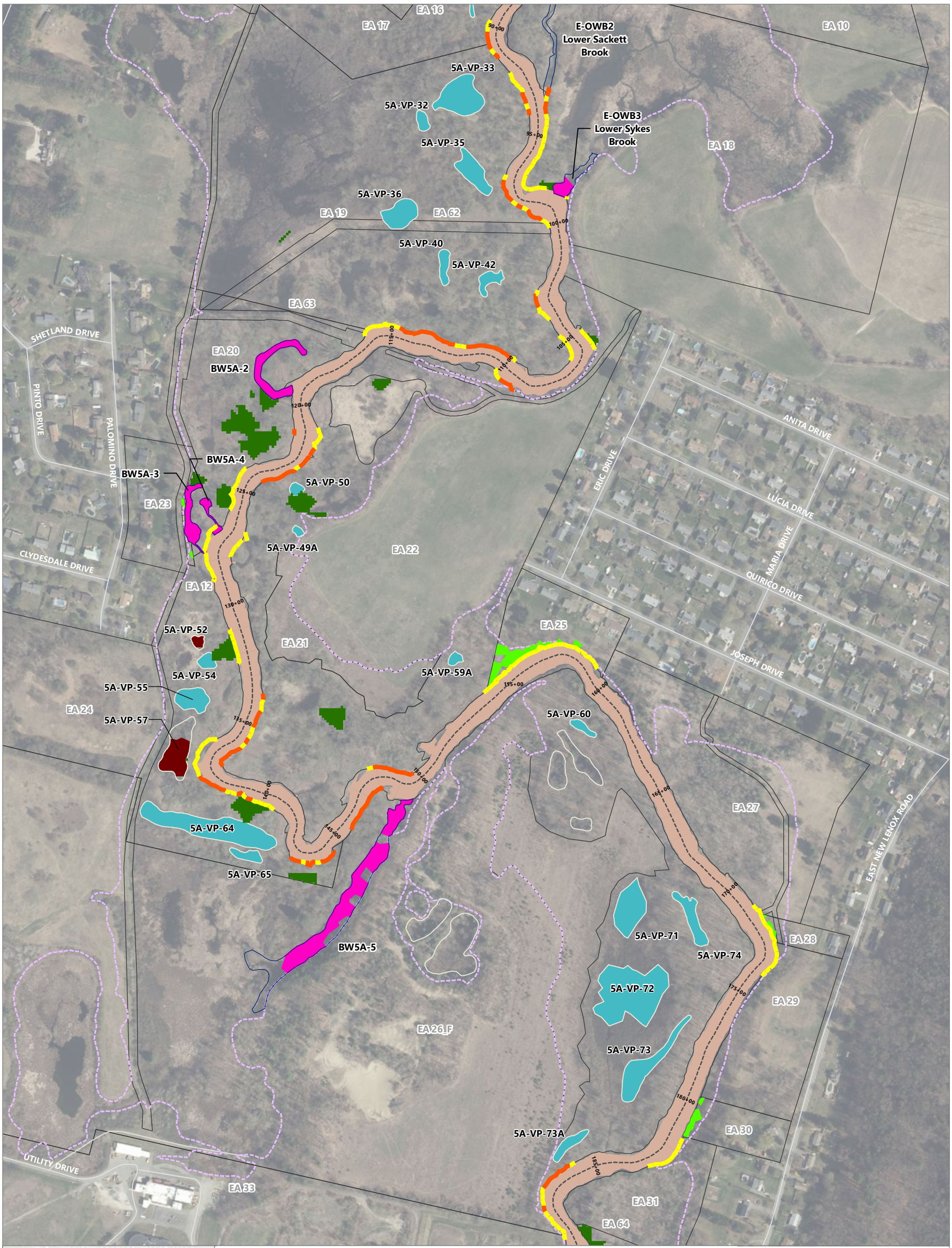
Figure 4-10b
Preliminary Remediation Areas for Reach 5A
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



Publish Date: 2023/09/28, 2:33 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-10_PreliminaryRemediation.mxd

ANCHOR QEA

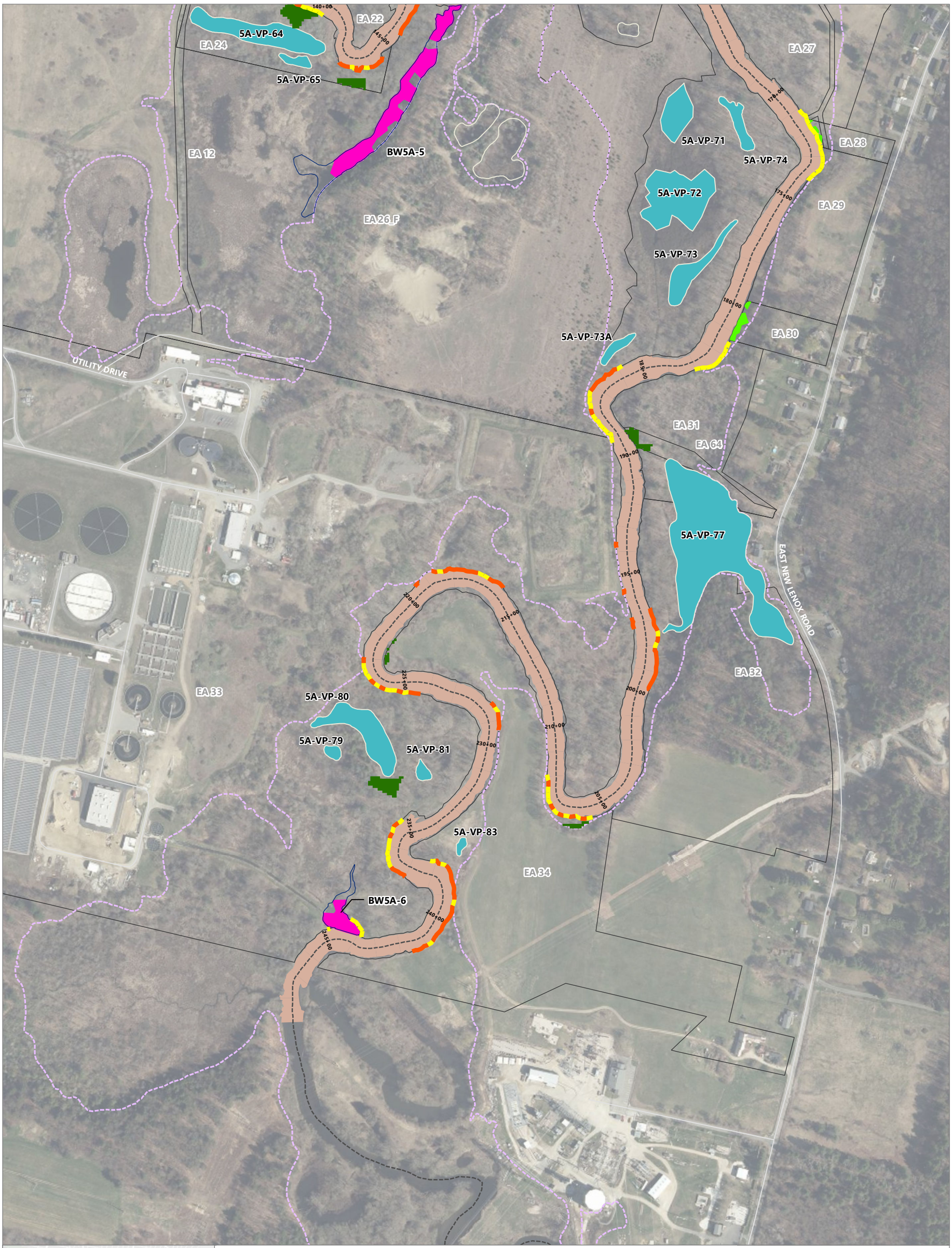
Figure 4-10c
Preliminary Remediation Areas for Reach 5A
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River

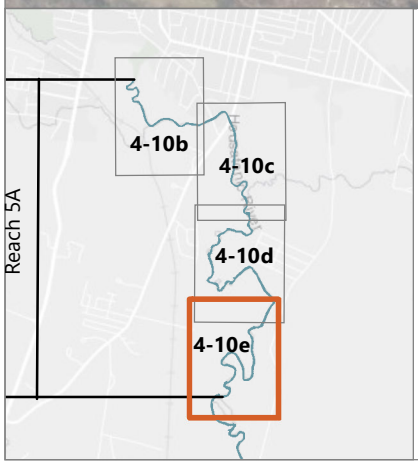


Publish Date: 2023/09/28, 2:33 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-10_PreliminaryRemediation.mxd

ANCHOR QEA

Figure 4-10d
Preliminary Remediation Areas for Reach 5A
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River





LEGEND:

0+00 River Stationing
River Centerline
Roads
Exposure Areas
1 mg/kg PCB Isopleth

Vernal Pools
- Pilot Pool (Amendment)
- Pilot Pool (Excavation)
- Non-Pilot Pool (Remediation Needed;TBD)
- No Remediation Needed

Backwaters/Other Waterbodies
- Amendment
- Sediment Removal/Cap
- Sediment Removal/Backfill
- No Remediation Needed

In-River Sediment Remediation Area

Floodplain Remediation
- Residential Soil Removal
- Non-Residential Soil Removal (0-1ft)
- Non-Residential Soil Removal (0-3ft)

Riverbank Remediation
- Remediation Required
- Supplemental Remediation Areas

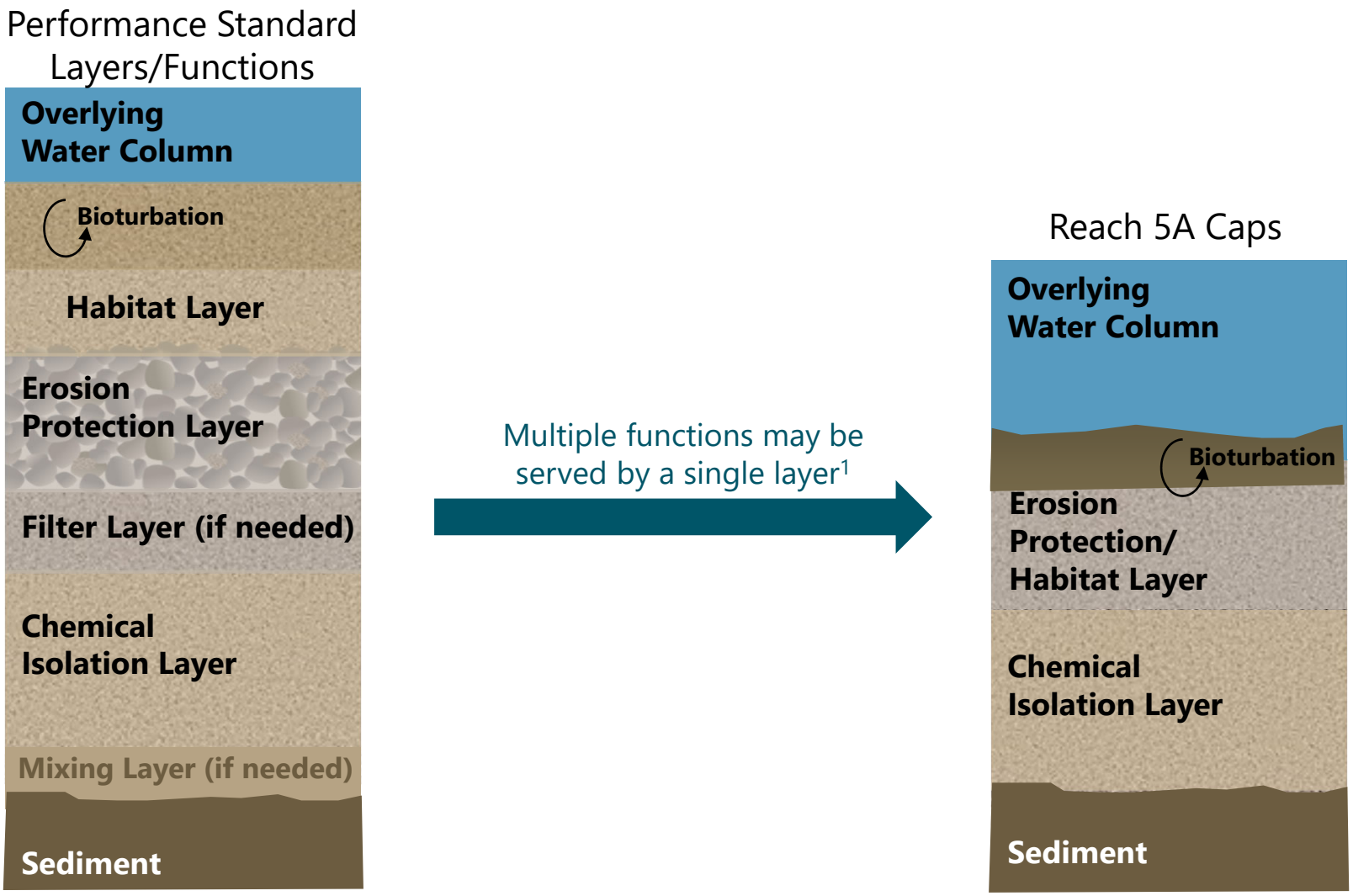
NOTE:
1. Aerial Imagery from MassGIS, 2021

0 400
Feet

Publish Date: 2023/09/28, 2:33 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig4-10_PreliminaryRemediation.mxd

ANCHOR QEA

Figure 4-10e
Preliminary Remediation Areas for Reach 5A
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River

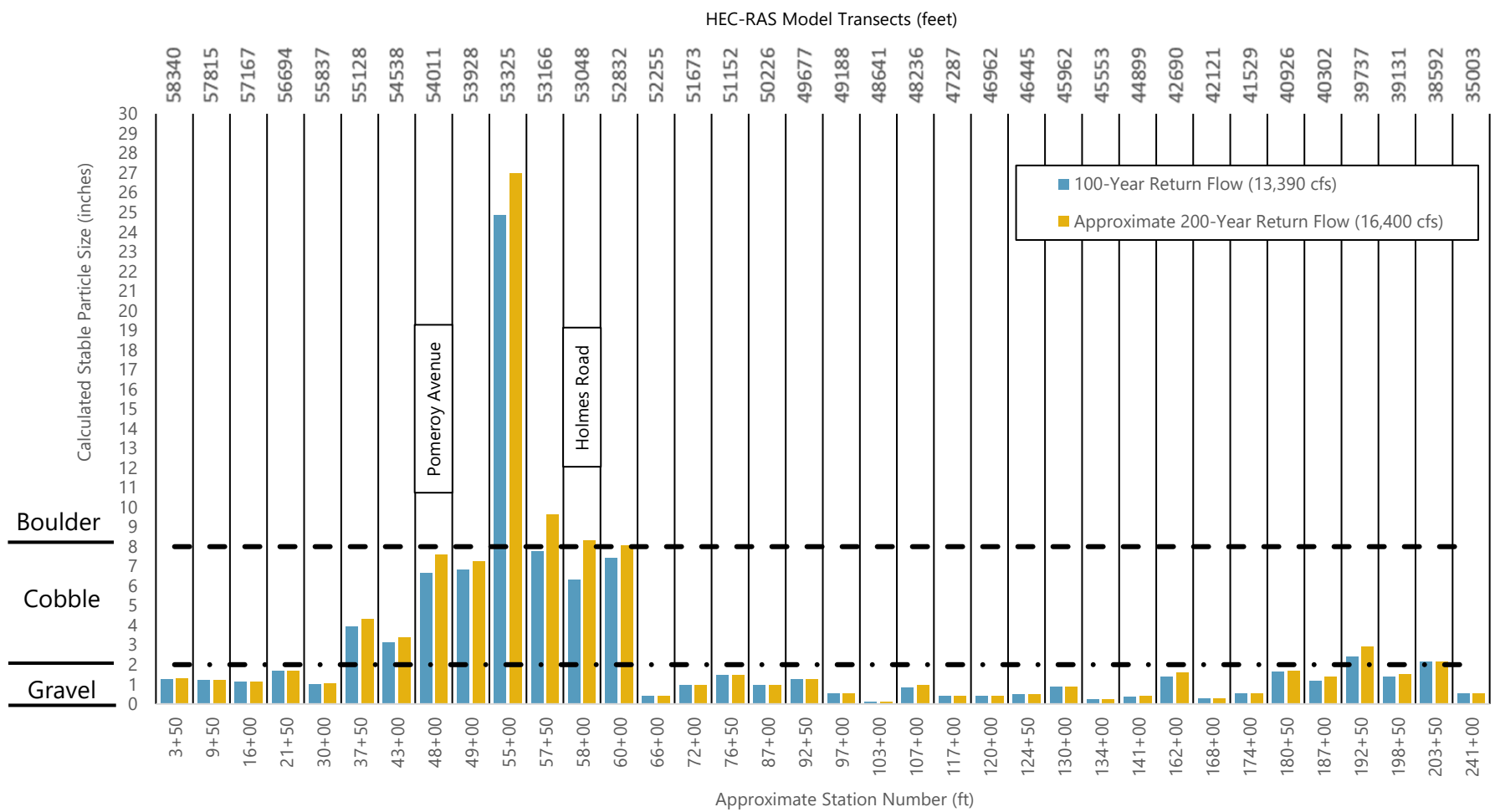


1. The Revised Final Permit indicates that a single layer may serve multiple functions, which is consistent with EPA (1998) guidance on cap design.

Filepath: \\WCL-FS1\Syracuse\Projects\GE\Housatonic_Rest-of-River\Remedial_Design\Reach_5A\DOCUMENTS\Concept_RDRA_Work_Plan\Figures\Figure 5-1 Perf Stand Cap Design.pptx

ANCHOR QEA

Figure 5-1
Performance Standards and Conceptual Cap Design for Reach 5A
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



Notes:

1. A 1-dimensional HEC-RAS model was used to simulate flows with various recurrence intervals, including 1-, 2-, 5-, 10-, 25-, 50-, 100-, and 200-year return periods.
2. Stable particle sizes were calculated as described in Appendix A (Engineered Cap Modeling and Design Evaluation Summary).
3. Where the controlling flow was less than the 100-year or approximate 200-year return flows, the stable particle size shown is based on that lower controlling flow (e.g., a 50-year return period).

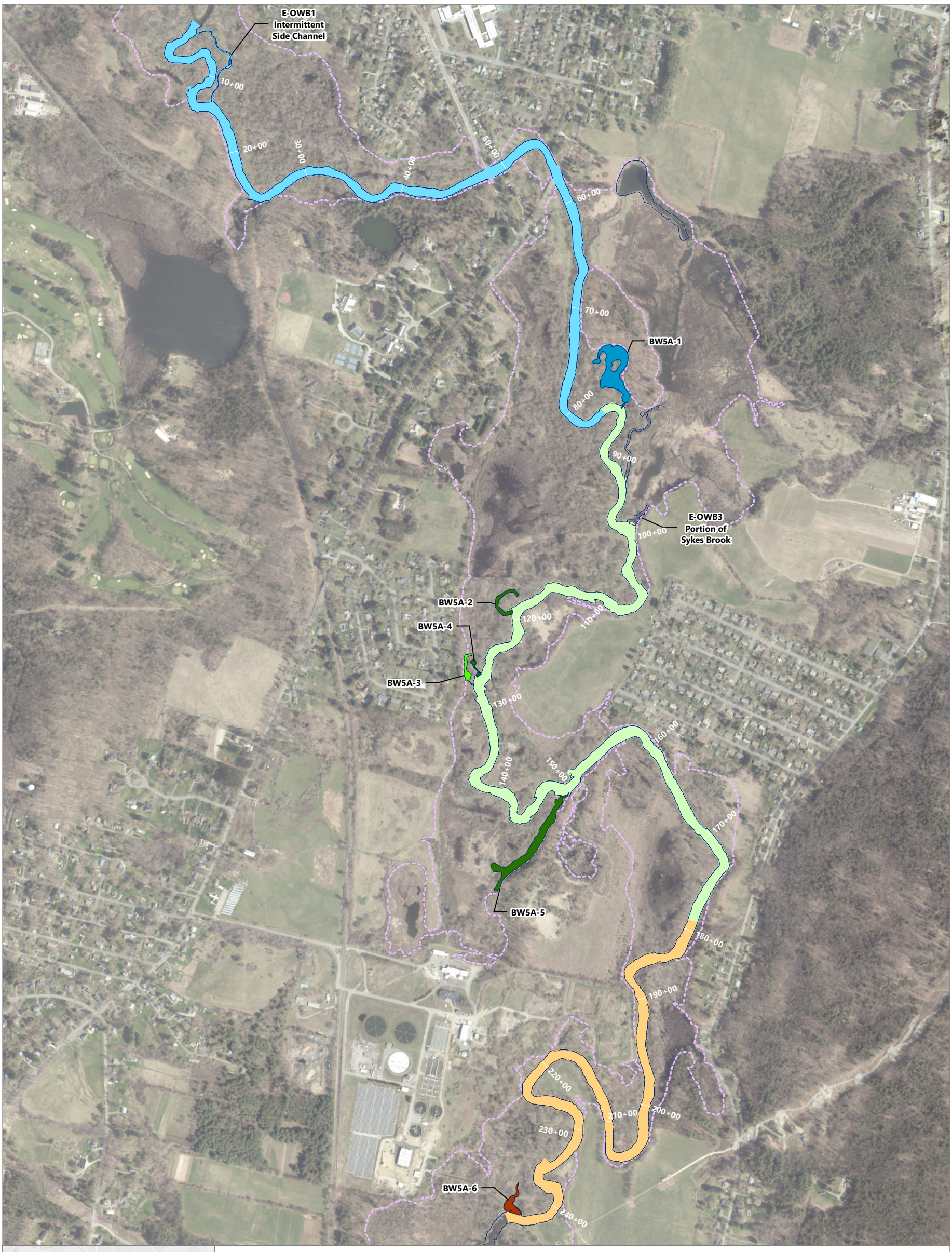
Filepath: \\WCL-FS1\Syracuse\Projects\GE\Housatonic_Rest-of-River\Remedial_Design\Reach_5A\ANALYSIS\Cap_Design\Armor_Design\D50_calcs\230621_D50-Design (1)-20230811 - RDRA Figure .xlsx

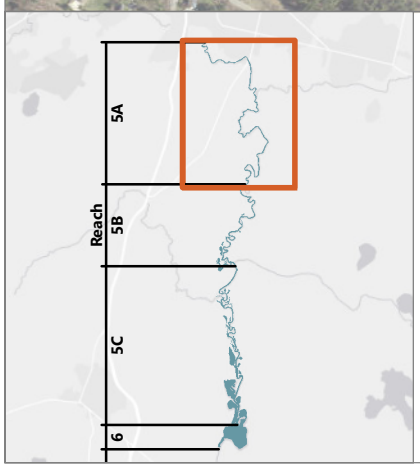
ANCHOR QEA

Figure 5-2

Calculated Stable Particle Sizes at Each HEC-RAS Transect in Reach 5A

Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River





LEGEND:

0+00 River Stationing

1 mg/kg PCB Isopleth

Cap Simulation

Upper Portion of Reach 5A

- Main Channel Reach 5A and Intermittent Side Channel
- BW5A-1

Middle Portion of Reach 5A

- Main Channel Reach 5A and Sykes Brook
- BW5A-2, BW5A-4, and BW5A-5
- BW5A-3

Lower Portion of Reach 5A

- Main Channel Reach 5A
- BW5A-6

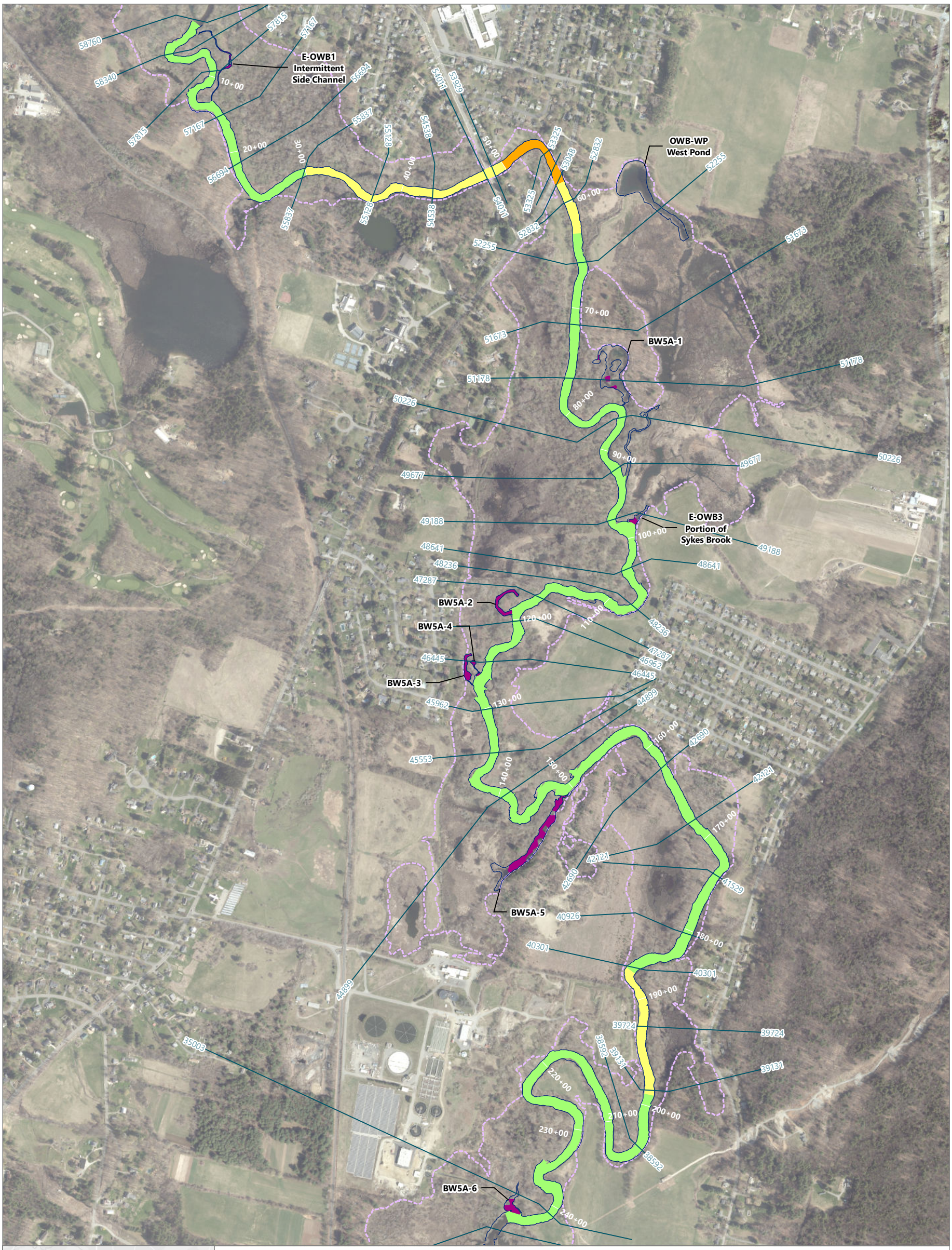
NOTE:
1. Aerial Imagery from MassGIS, 2021

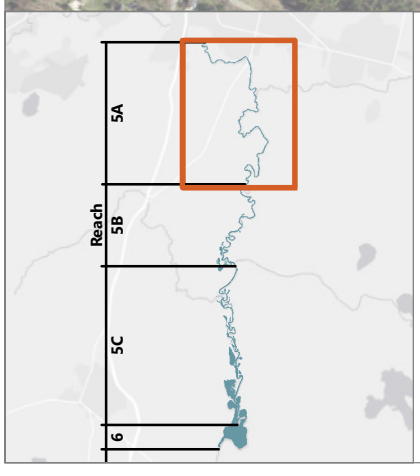
0 1,000
Feet

Publish Date: 2023/09/28, 2:35 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig5-3_CapModelSimulation.mxd

ANCHOR QEA

Figure 5-3
Extents of Cap Model Simulation Areas in Reach 5A
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River





LEGEND:

0+00 River Stationing

HEC-RAS Transect

1 mg/kg PCB Isopleth

Cap Type A
(Gravel Armor Cap)

Cap Type B
(Cobble Armor Cap)

Cap Type C
(Alternate Cap Type or Boulder Cap)

Cap Type D
(Sand Cap)

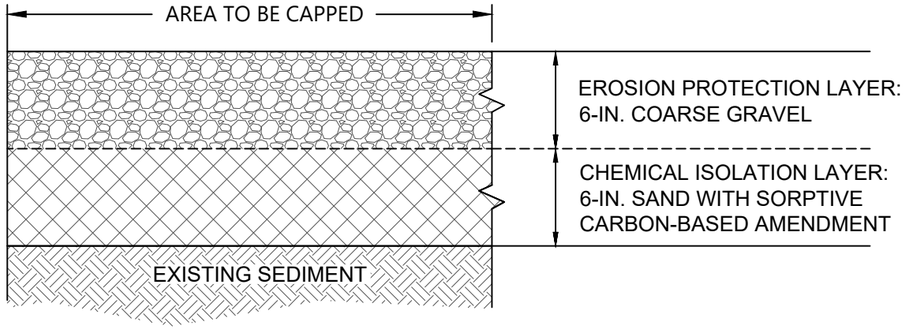
NOTE:
1. Aerial Imagery from MassGIS, 2021

0 1,000
Feet

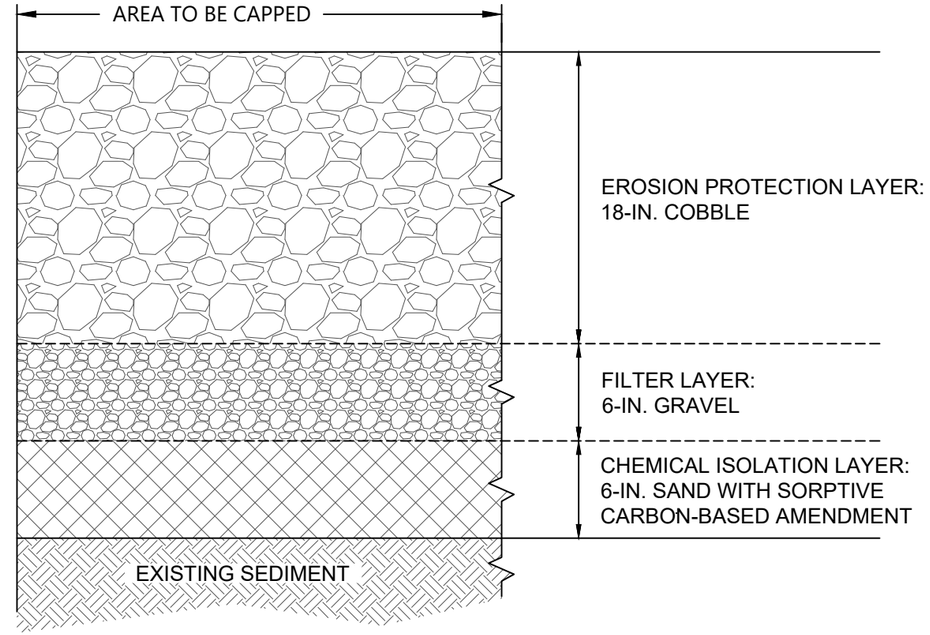
Publish Date: 2023/09/28, 2:36 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig5-4_CapTypes.mxd

ANCHOR QEA

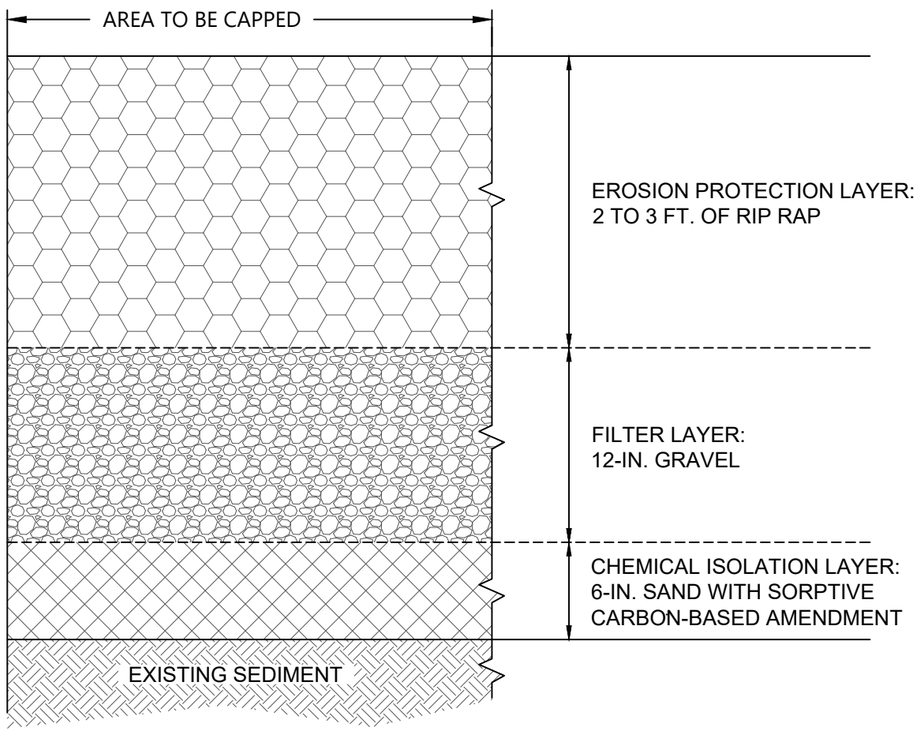
Figure 5-4
Extents of Conceptual Cap Types in Reach 5A
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



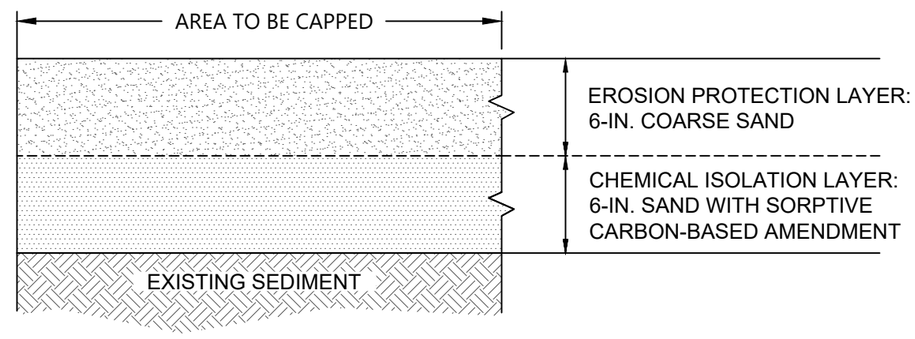
TYPE A: GRAVEL ARMOR CAP
NOT TO SCALE



TYPE B: COBBLE ARMOR CAP
NOT TO SCALE



TYPE C: ALTERNATE CAP TYPE OR BOULDER CAP
NOT TO SCALE



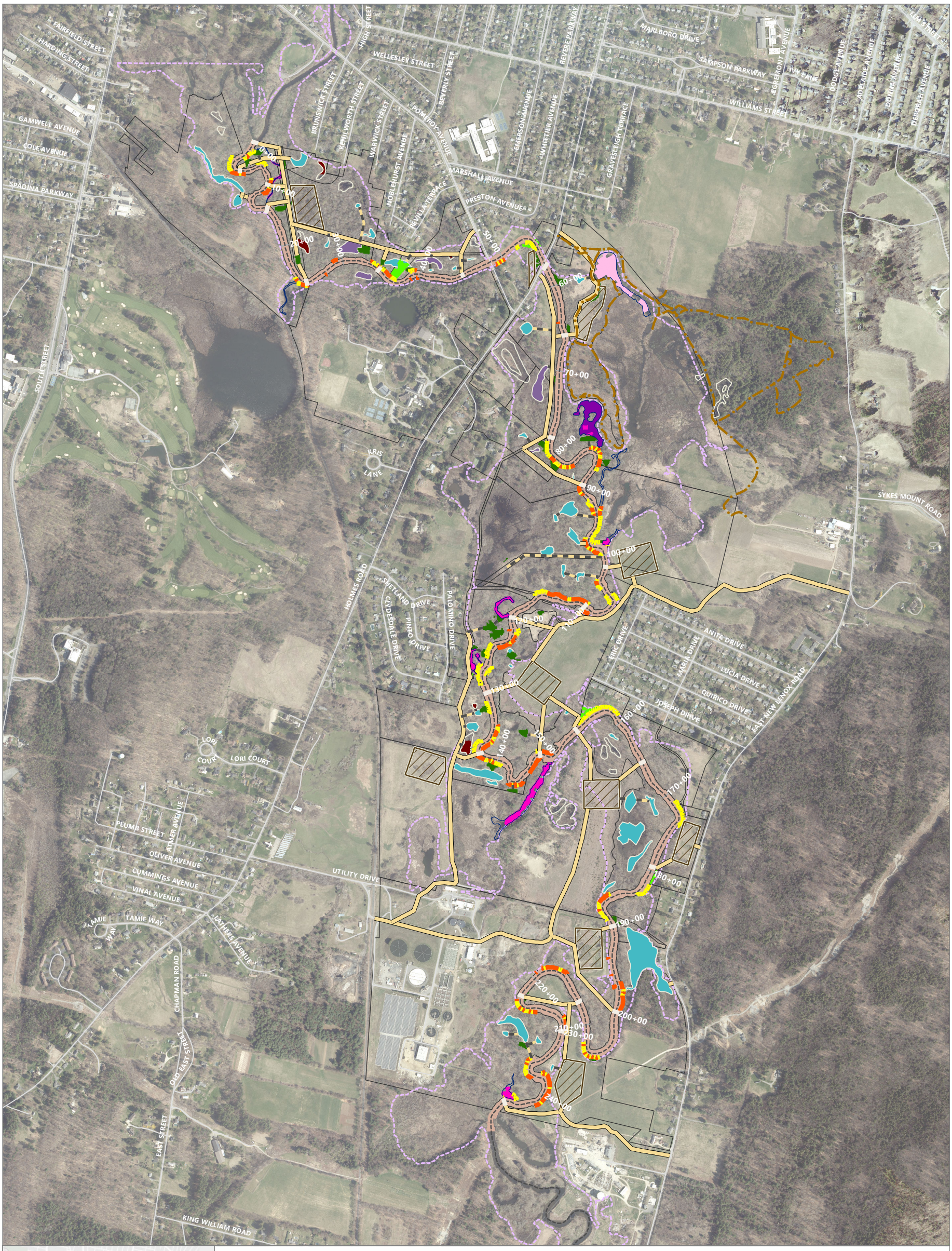
TYPE D: SAND CAP
NOT TO SCALE

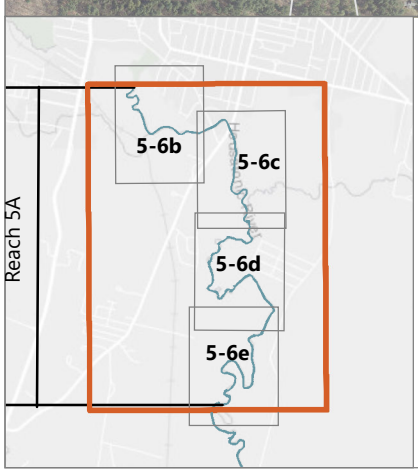
Publish Date: 2023/09/13 3:44 PM | User: psciaba
Filepath: K:\Projects\0469-General Electric\Housatonic - Rest of River Remedial Design\0469-RP-026 - Conceptual Cap Types.dwg Figure 5-5

ANCHOR QEA

Figure 5-5
Conceptual Cap Types for Reach 5A

Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River - Rest of River





LEGEND:

- 0+00 River Stationing
- Roads
- River Centerline
- 1 mg/kg PCB Isopleth
- Exposure Areas
- Canoe Meadows Trails
- River Access Point
- Primary Upland Access Road
- Secondary Upland Access Road
- Staging Area

Vernal Pools

- Pilot Pool (Amendment)
- Pilot Pool (Excavation)
- Non-Pilot Pool (Remediation Needed;TBD)
- No Remediation Needed

Backwaters/Other Waterbodies

- Amendment
- Sediment Removal/Cap
- Sediment Removal/Backfill
- No Remediation Needed
- In-River Sediment Remediation Area

Floodplain Remediation

- Residential Soil Removal
- Non-Residential Soil Removal (0-1ft)
- Non-Residential Soil Removal (0-3ft)

Riverbank Remediation

- Remediation Required
- Supplemental Remediation Areas

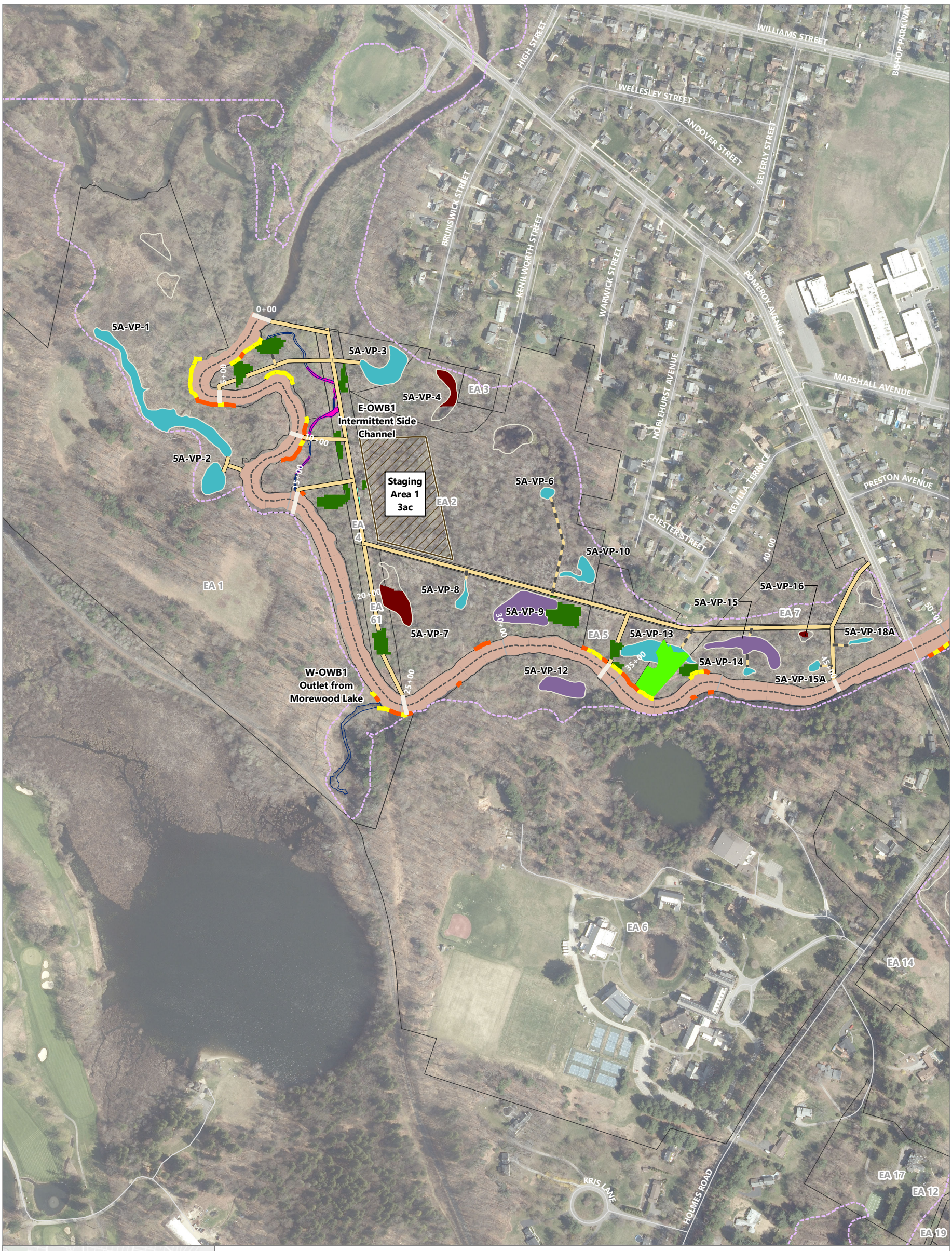
NOTE:
1. Aerial Imagery from MassGIS, 2021

0 1,100
Feet

Publish Date: 2023/09/28, 2:36 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig5_6_StagingandAccess.mxd

ANCHOR QEA

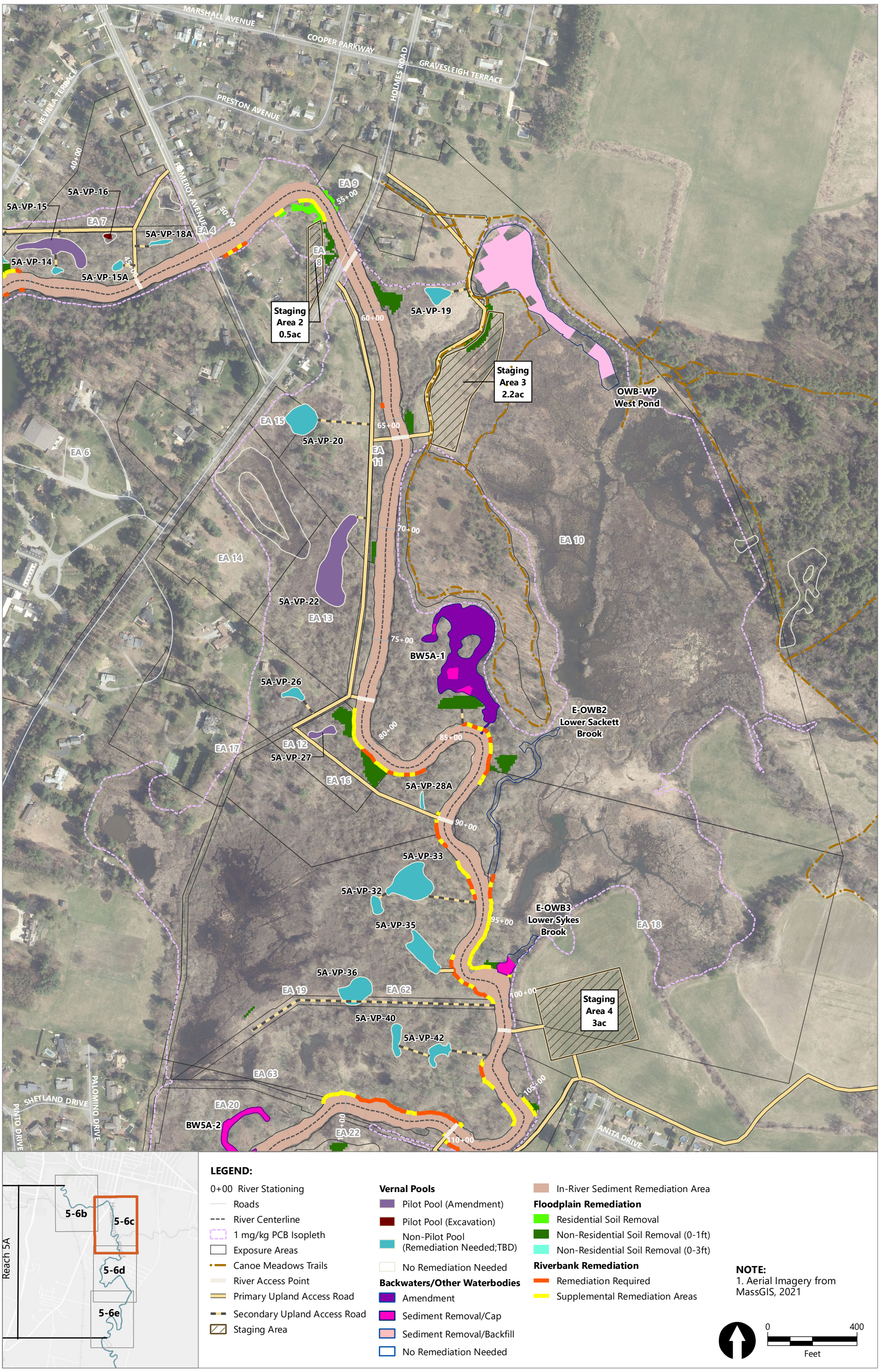
Figure 5-6a
Preliminary Staging Area and Temporary Access Road Locations for Reach 5A
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



Publish Date: 2023/09/28, 2:36 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig5_6_StagingandAccess.mxd

ANCHOR QEA

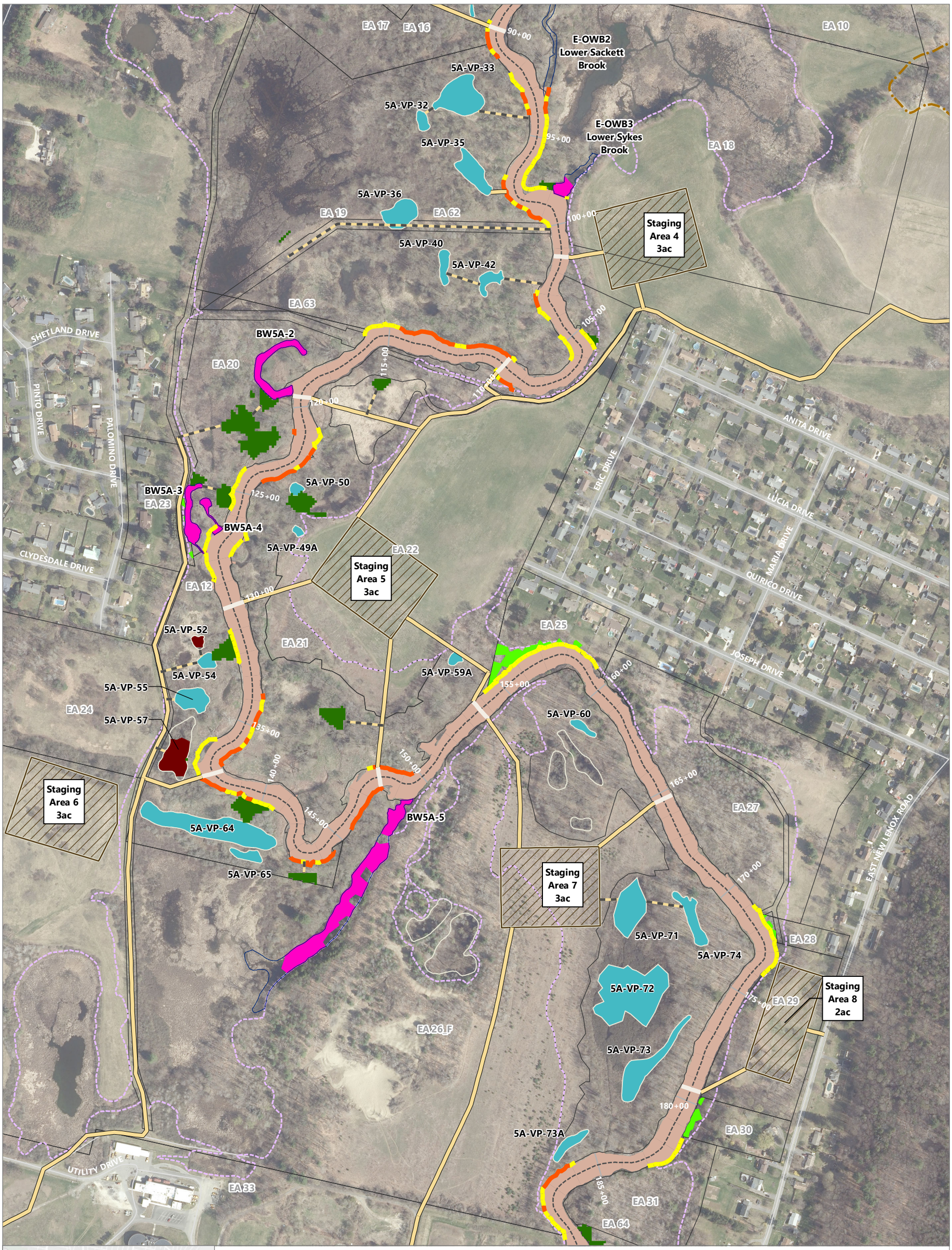
Figure 5-6b
Preliminary Staging Area and Temporary Access Road Locations for Reach 5A
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



Publish Date: 2023/09/28, 2:37 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig5_6_StagingandAccess.mxd

ANCHOR QEA

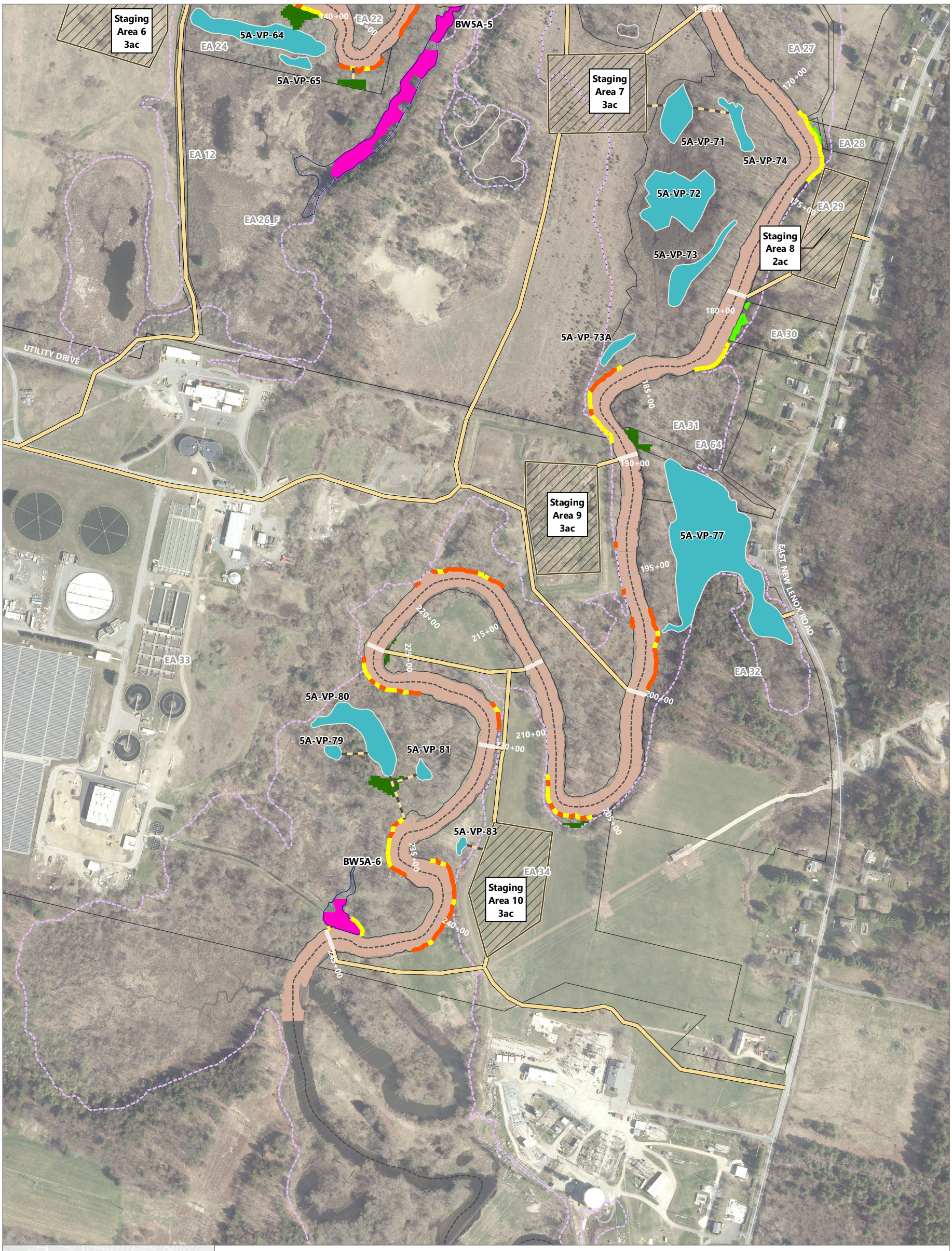
Figure 5-6c
Preliminary Staging Area and Temporary Access Road Locations for Reach 5A
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



Publish Date: 2023/09/28, 2:37 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig5_6_StagingandAccess.mxd

ANCHOR QEA

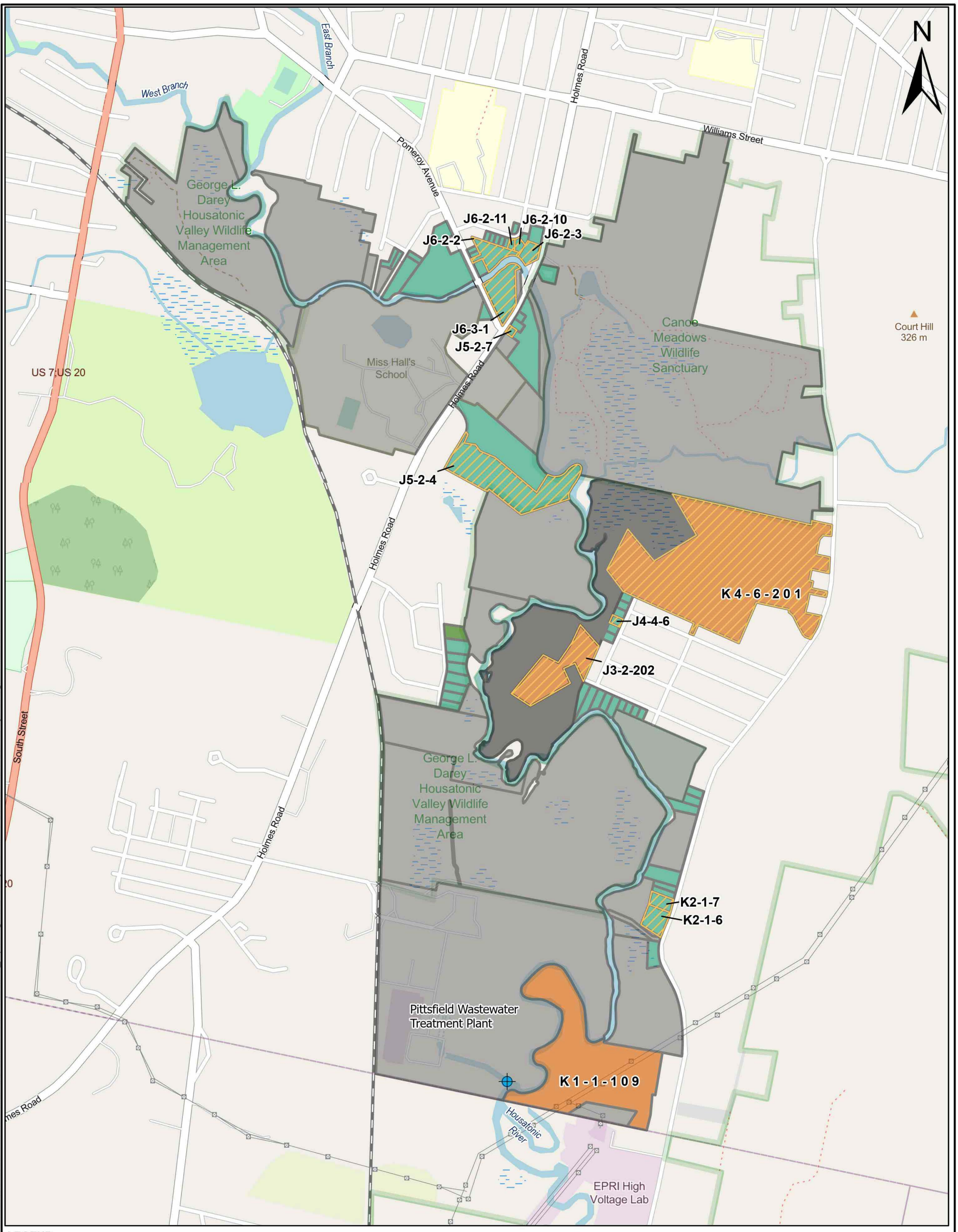
Figure 5-6d
Preliminary Staging Area and Temporary Access Road Locations for Reach 5A
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



Publish Date: 2023/09/28, 2:37 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AQ_RDRA_Fig5_6_StagingandAccess.mxd

ANCHOR QEA

Figure 5-6e
Preliminary Staging Area and Temporary Access Road Locations for Reach 5A
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A
Housatonic River – Rest of River



LEGEND

- NPDES DISCHARGE POINT
- RESIDENTIAL
- RESIDENTIAL (DESIGNATED AS EXEMPT PROPERTY IN MASSGIS)
- AGRICULTURAL/HORTICULTURAL
- OTHER/AGRICULTURAL/HORTICULTURAL (DESIGNATED AS RESIDENTIAL IN MASSGIS)
- OTHER
- WATER WITHDRAWAL AND USES SURVEY SENT TO PROPERTY OWNER

NOTES:

1. PROJECTION: WGS 1984 WEB MERCATOR AUXILIARY SPHERE
2. BASEMAP SOURCE: OPEN STREET MAP, ACCESSED 9/22/2023
3. STREAMS OBTAINED FROM MASSGIS AT: HTTPS://WWW.MASS.GOV/INFO-DETAILS/MASSGIS-DATA-MAJOR-PONDS-AND-MAJOR-STREAMS, ACCESSED 9/22/2023
4. TAX PARCEL DATASET OBTAINED FROM MASSGIS AT: HTTPS://WWW.MASS.GOV/INFO-DETAILS/MASSGIS-DATA-PROPERTY-TAX-PARCELS
5. MAP SCALE IS 1:18,100
6. SHADED PARCELS REPRESENT PARCELS THAT ARE LOCATED IN REACH 5A AND WITHIN 500 FEET OF THE RIVER.

0 1,000 2,000

GRAPHIC SCALE IN FEET

GENERAL ELECTRIC COMPANY
CONCEPTUAL REMEDIAL DESIGN / REMEDIAL ACTION WORK PLAN FOR REACH 5A

OUTREACH TO REACH 5A PARCELS WITHIN 500 FEET OF RIVER

ARCADIS

FIGURE
9-1

Path: T:_ENV\GE\GE_Housatonic\ArcPro Projects\GE Housatonic WWU Outreach\GE Housatonic WWU Outreach_aprx\Figure 9-1 Layout - 11x17 Portrait Last Saved By: MNugent 9/22/2023

Appendix A
Engineered Cap Modeling and Design Evaluations

September 2023
Housatonic River – Rest of River

Engineered Cap Modeling and Design Evaluations

Prepared for General Electric Company
Pittsfield, Massachusetts

September 2023
Housatonic River – Rest of River

Engineered Cap Modeling and Design Evaluations

Prepared for
General Electric Company
1 Plastics Avenue
Pittsfield, Massachusetts 01201

Prepared by
Anchor QEA, LLC
290 Elwood Davis Road
Liverpool, New York 13088

Project Number: 230469-02.01

TABLE OF CONTENTS

1 Introduction 1

1.1 Background 1

1.2 Cap Design Evaluation Scope and Requirements 1

1.2.1 Areas to be Capped 1

1.2.2 Cap Layers 4

2 Erosion Protection Layer Design Evaluations 7

2.1 River Currents 8

2.2 Other Erosional Forces 13

2.3 Erosion Protection Layer Thickness 13

2.4 Geotechnical Filter Considerations 13

3 Chemical Isolation Layer Design Evaluations 15

3.1 Chemical Transport Modeling Approach 15

3.1.1 Chemical Isolation Cap Performance Standards 15

3.1.2 Model Framework 16

3.1.3 Model Domain and Layers 16

3.1.4 Delineation of Reach 5A Cap Sub-Areas 17

3.2 Model Inputs 21

3.2.1 Groundwater Seepage Rates 25

3.2.2 Partitioning Coefficients 27

3.2.3 Porewater PCB Concentrations 30

3.2.4 Surface Water PCB Concentrations 34

3.2.5 Organic Carbon Concentrations 35

3.3 Simulation Setup and Iterative Approach 36

3.4 Model Results 37

3.5 Seepage Rate Sensitivity Analysis 39

3.6 Recommended Chemical Isolation Layer Configuration 42

4 Conceptual Cap Design Summary 44

5 References 45

TABLES

Table 3-1 Input Parameter Values for the Chemical Isolation Cap Model 21

Table 3-2 Seepage Rates Calculated from Data Collected at 10 Locations throughout Reach 5A 25

Table 3-3 Chemical-Specific Partition Coefficients 29

Table 3-4 OC-Normalized Total PCB Concentrations in Sediments Below 1 Foot in Areas to Be Capped 30

Table 3-5 Freely Dissolved Porewater Concentrations 33

Table 3-6 Surface Water PCB Concentrations Used in Cap Model 35

Table 3-7 Organic Carbon Concentrations Specified in Cap Layers 35

Table 3-8 Cap Design Model Results 39

Table 3-9 Seepage Rates Used in Cap Model Evaluations 40

Table 3-10 Sensitivity Analysis: f_{OC} Required in Chemical Isolation Layer to Meet Performance Standards for Upper- and Lower-Bound Seepage Rates 41

Table 3-11 Recommended Chemical Isolation Layer Amendment Dose 43

Table 4-1 Conceptual Engineered Cap Types 44

FIGURES

Figure 1-1 Reach 5A Areas Identified for Capping

Figure 2-1 Calculated Stable Particle Sizes at Each HEC-RAS Transect for Reach 5A

Figure 2-2 Erosion Protection Layer Materials

Figure 3-1 Model Domain and Processes Simulated by the Model

Figure 3-2 Extents of Cap Model Simulations in Reach 5A

Figure 3-3 Average Homolog Distribution of PDI Sediment Samples Analyzed for Congener-Specific PCBs

Figure 3-4 Iterative Process of Simulation Approach

Figure 3-5a Model-Predicted PCB Flux and Concentration Compared to Performance Standards: Reach 5A-1

Figure 3-5b Model-Predicted PCB Flux and Concentration Compared to Performance Standards: BW5A-1

Figure 3-5c Model-Predicted PCB Flux and Concentration Compared to Performance Standards: Reach 5A-2

Figure 3-5d Model-Predicted PCB Flux and Concentration Compared to Performance Standards: BW5A-2, BW5A-4, BW5A-5

Figure 3-5e Model-Predicted PCB Flux and Concentration Compared to Performance Standards: BW5A-3
Figure 3-5f Model-Predicted PCB Flux and Concentration Compared to Performance Standards: Reach 5A-3
Figure 3-5g Model-Predicted PCB Flux and Concentration Compared to Performance Standards: BW5A-6

ATTACHMENTS

Attachment A HEC-RAS Model Results and Stable Particle Size Calculation
Attachment B Groundwater Seepage Rates
Attachment C PCB Homolog Partition Coefficients

ABBREVIATIONS

µg/L	micrograms per liter
AC	activated carbon
BTZ	bioturbation zone
cfs	cubic feet per second
cm	centimeter
cm^2	square centimeter
Conceptual RD/RA Work Plan	*Conceptual Remedial Design/Remediation Action Work Plan for Reach 5A*
D_{15}	15th percentile particle size
D_{50}	median (50th percentile) particle size
D_{85}	85th percentile particle size
D_{100}	maximum particle diameter
DOC	dissolved organic carbon
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FMD	*Final Model Documentation Report*
f_{OC}	fraction organic carbon
g/cm^3	grams per cubic centimeter
GE	General Electric Company
HEC-RAS	Hydrologic Engineering Center – River Analysis System
ITRC	Interstate Technology and Regulatory Council
K_d	partition coefficient
K_{DOC}	dissolved organic carbon partition coefficient
K_{OC}	organic carbon partition coefficient
K_{OW}	octanol/water partition coefficient
L/kg	liters per kilogram
mg/kg	milligrams per kilogram
NC	not calculated
OC	organic carbon
Other Waterbodies	Other waterbodies in Reach 5A containing sediment
PCB	polychlorinated biphenyl
PDI	pre-design investigation
PDI Summary Report for Sediment and Riverbanks	*Pre-Design Investigation Summary Report for Reach 5A Sediment and Riverbanks*

Revised Final Permit	Revised Final Resource Conservation and Recovery Act Permit Modification
RFI	RCRA Facility Investigation
ROR	Rest of River
SPME	solid-phase microextraction
Subaqueous Capping Guidance	*Guidance for In-Situ Subaqueous Capping of Contaminated Sediments*
TOC	total organic carbon
TSS	total suspended solids
UCL	upper confidence limit
USACE	U.S. Army Corps of Engineers
yr^{-1}	per year

1 Introduction

1.1 Background

The Revised Final Resource Conservation and Recovery Act Corrective Action Permit (Revised Final Permit) issued by the U.S. Environmental Protection Agency (EPA) to the General Electric Company (GE) for the Housatonic Rest of River (ROR) (EPA 2020) requires installation of an engineered cap for certain waterbodies in the ROR and sets forth Performance Standards for those caps. The ROR is defined as that portion of the Housatonic River and its backwaters and floodplain (excluding certain actual/potential lawn areas) located downstream of the confluence of the East and West Branches of the Housatonic River (Confluence). Section 4.3.3.1 of GE's *Final Revised Rest of River Statement of Work* (Anchor QEA et al. 2021) submitted under the Revised Final Permit stated that the Conceptual Remedial Design/Remedial Action Work Plan for each ROR remediation area that involves installation of an engineered cap would include preliminary design evaluations for such cap(s). This report describes the engineered cap design evaluations conducted for the sediments of Reach 5A, including the main channel and associated backwaters and other waterbodies in Reach 5A (referred to hereafter as "Other Waterbodies").[1] It is being submitted as an appendix to the *Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A* (Conceptual RD/RA Work Plan) in support of the remedial design for Reach 5A.

1.2 Cap Design Evaluation Scope and Requirements

As stated in the Revised Final Permit, the engineered caps are required to be designed "to physically isolate contaminated sediments from potential ecological and human receptors, and minimize the transport of PCBs from the sediment beneath the caps to the bioavailable surface layer and the water column" (Section II.B.2.i.(2)). The conceptual designs for the engineered caps in Reach 5A were designed in accordance with guidance set forth in EPA's *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites* (EPA 2005), EPA's *Guidance for In-Situ Subaqueous Capping of Contaminated Sediments* (Subaqueous Capping Guidance; Palermo et al. 1998), and the Interstate Technology and Regulatory Council's (ITRC's) *Contaminated Sediments Remediation: Remedy Selection for Contaminated Sediments* (ITRC 2014).

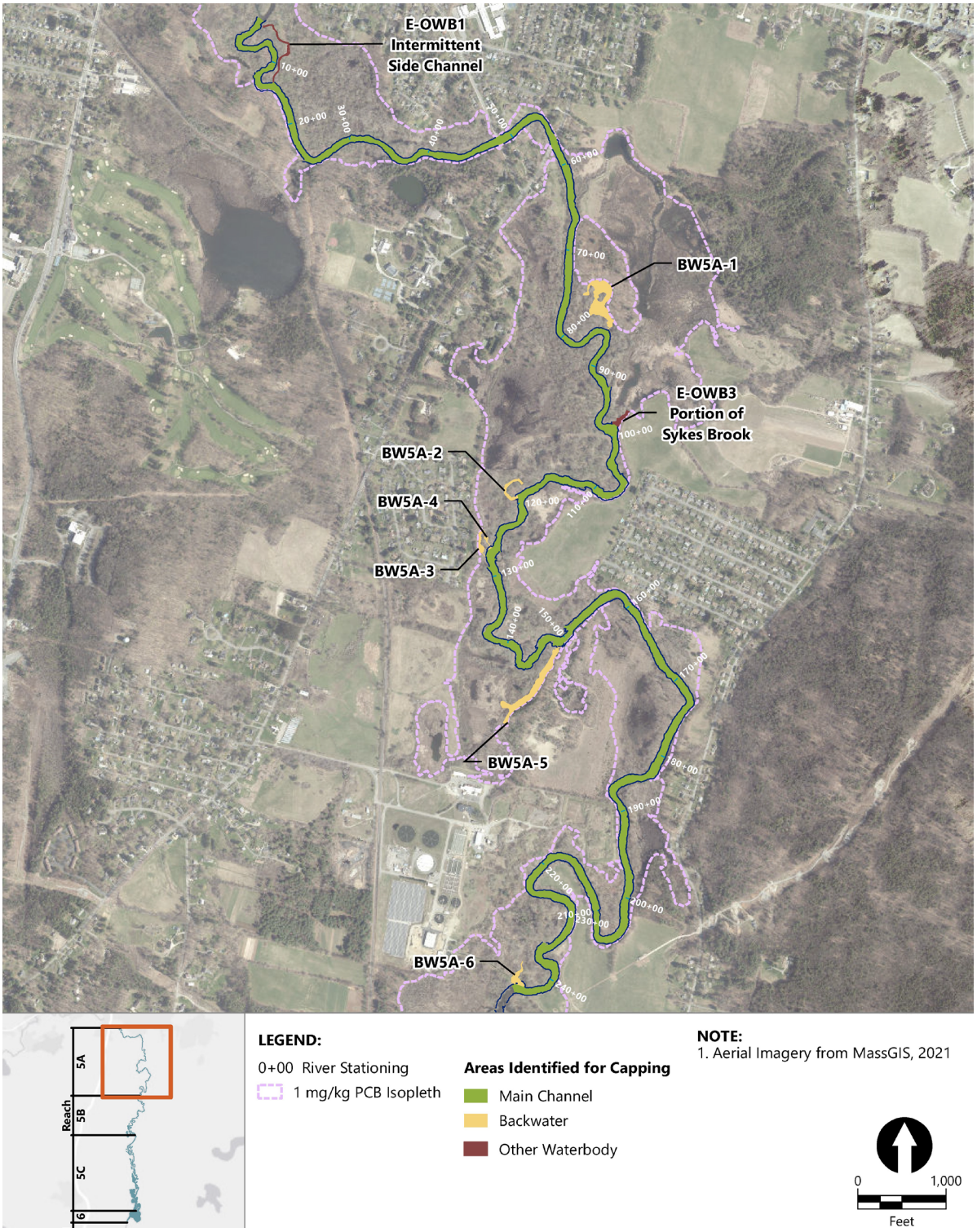
1.2.1 Areas to be Capped

The Performance Standards for riverbed and backwater sediments set forth in the Revised Final Permit require that an engineered cap be placed over the entire riverbed in Reach 5A and in portions of backwater areas requiring removal to achieve polychlorinated biphenyl (PCB) concentration

[1] There are five Other Waterbodies in Reach 5A. They are the outlet from Morewood Lake (i.e., Wampenum Brook), two streams flowing from east to west into the Housatonic River on and just south of the Massachusetts Audubon parcel (i.e., portions of Sackett Brook and Sykes Brook), West Pond, and the intermittently flowing side channel located east of the Confluence (referred to herein as the Intermittent Side Channel).

requirements in those areas. Evaluations of the PCB data in the six backwaters in Reach 5A (i.e., BW5A-1 through BW5A-6) were conducted to identify the required extent of removal and capping in these backwaters (see Section 4.2.2 of the Conceptual RD/RA Work Plan). Also, as discussed in Section 2.2.2 of the Conceptual RD/RA Work Plan, GE has elected to evaluate the five Other Waterbodies in Reach 5A against the Performance Standards for backwaters. These evaluations concluded that engineered caps will be placed in two of those areas—namely, the Intermittent Side Channel and a portion of Sykes Brook. The areas to be capped are shown on Figure 1-1.

Figure 1-1
Reach 5A Areas Identified for Capping



1.2.2 Cap Layers

The Performance Standards for engineered caps set forth in the Revised Final Permit (Section II.B.2.i.(1)(a)) require that engineered caps constructed in the ROR include the following layers or functions: a mixing layer, a chemical isolation layer, an erosion protection layer, a geotechnical filter layer, a bioturbation layer, and a habitat layer. The Revised Final Permit indicates that a single layer can serve multiple functions, which is consistent with EPA's Subaqueous Capping Guidance (Palermo et al. 1998). The specific layers and their need for inclusion in the Reach 5A caps are based on the design evaluations presented in this report and discussed in the following subsections.

1.2.2.1 Mixing Layer

The Performance Standards for engineered caps state that the cap shall include a "mixing layer to prevent contamination of the chemical isolation layer due to mixing with underlying contaminated sediment during cap placement, taking into account geotechnical considerations, placement techniques, and other factors as appropriate" (Section II.B.2.i.(1)(a)(i)). The need for a mixing layer was evaluated; and at this conceptual stage of design, it has been determined that a separate mixing layer is not necessary for the following reasons: The concept of a dedicated mixing layer was included in EPA's Subaqueous Capping Guidance (Palermo et al. 1998) based on experience in constructing caps at that time. However, experience from capping projects conducted since that time indicates that contemporary placement techniques have been able to place materials with minimal mixing (e.g., less than one inch) (Anchor Environmental 2007; Shaw et al. 2008). As part of the Silver Lake Pilot Study (Arcadis BBL 2008), during which cap material was placed through the water column onto very soft sediment, data indicated that mixing was limited to the bottom one inch (or less) of the chemical isolation material in places where a base layer of geofabric was not installed. Based on simple soil mechanics, mixing of cap materials and sediments is mainly a concern for fine unconsolidated sediments (Palermo et al. 1998). In Reach 5A, the coarse nature of the native sediment bed (i.e., more than 90% sand and gravel as noted in Section 3.4 of the Conceptual RD/RA Work Plan) does not present a mixing challenge for placement of granular cap materials. The mixing potential is reduced further because the existing sediment surface will be excavated to facilitate placement of the cap. As described in Section 5.4 of the Conceptual RD/RA Work Plan, the conceptual design approach for sediment removal and capping contemplates placement of the cap in dry (i.e., dewatered) conditions that would allow for more precise placement techniques that will mitigate potential mixing.

1.2.2.2 Chemical Isolation Layer

The Performance Standards for engineered caps state that the cap shall include a "chemical isolation layer sufficient to minimize (reduce by 99%) the flux of PCB concentrations through the isolation layer" (Section II.B.2.i.(1)(a)(ii)). Detailed evaluations conducted to identify the thickness and

amendment content required to meet these Performance Standards are described in Section 3 of this report.

1.2.2.3 Erosion Protection Layer

The Performance Standards for engineered caps state that the cap shall include an "erosion protection layer to prevent erosion in accordance with federal and state requirements and consistent with pertinent EPA or U.S. Army Corps of Engineers (USACE) guidance" (Section II.B.2.i.(1)(a)(iii)). Detailed evaluations conducted to identify the stable particle size and thickness of the erosion protection layer for the Reach 5A caps are described in Section 2 of this report.

1.2.2.4 Geotechnical Filter Layer

The Performance Standards for engineered caps state that the cap shall include a "geotechnical filter layer, as needed based on the design evaluation, to prevent mixing between other layers" (Section II.B.2.i.(1)(a)(iv)). Depending on the size of the erosion protection layer material, a geotechnical filter layer will be included in the Reach 5A caps as well. Evaluations of filter layer requirements are described in Section 2 of this report.

1.2.2.5 Bioturbation Layer

The Performance Standards for engineered caps state that the cap shall include a "bioturbation layer to prevent bioturbation from impacting underlying layers" (Section II.B.2.i.(1)(a)(v)). EPA's Subaqueous Capping Guidance (Palermo et al. 1998) discusses bioturbation layers as a separate layer to be included in caps in cases in which the erosion protection layer may consist of a relatively thin layer of finer-grained materials (like sands) to make sure organisms could not burrow down through the chemical isolation layer and come into contact with the underlying sediment, which would result in exposure of the organisms to contaminants and affecting the integrity of the cap by providing a means by which contaminants could be transported to the cap surface. However, for the Reach 5A engineered caps, the erosion protection layer is sufficiently thick (see Section 2) that it is equal to or thicker than the depth of bioturbation for the types of organisms known to be present in Reach 5A based on the ecological characterization performed as part of the site investigations (e.g., as summarized in Appendix B.4 of EPA's *Final Model Documentation Report* [FMD; EPA 2006]).[2] Additionally, as discussed in Section 3 of this report, the chemical transport model used to design the chemical isolation explicitly represents the contaminant mixing effects of bioturbation at the cap's surface.

[2] Table 3 of Appendix B.4 to the FMD indicates that in Reach 5A, the biologically mixed depth interval extends from 0 to 4 cm below the sediment surface, and the biologically influenced depth interval extends from 4 to 10 cm below the sediment surface.

1.2.2.6 Habitat Layer

The Performance Standards for engineered caps state that the cap shall include a "habitat layer to provide functions and values equivalent to the pre-existing surficial sediment substrate" (Section II.B.2.i.(1)(a)(vi)). As determined by the evaluations discussed in Section 2 of this report, a gravel-sized material is the predominant erosion protection layer material, with some areas requiring sand (backwaters), cobble, or boulder-sized materials. As noted above, the existing sediments in Reach 5A are composed primarily of sands and gravels; therefore, in much of Reach 5A, the proposed material is similar to the pre-existing surficial sediment substrate, as required by the Performance Standards. In addition, it is expected that varying thicknesses of native sandy sediment will deposit above the erosion protection layer (i.e., filling voids of the larger materials [cobbles and riprap] and covering that layer) such that the resulting substrate will be similar to the current substrate and will provide equivalent habitat functions and values (as has been observed upstream in the East Branch in areas remediated by GE and EPA [GE 2012]).

1.2.2.7 Summary

The erosion protection layer design developed for Reach 5A caps can effectively provide two other functions—habitat for benthic and aquatic organisms and protection against bioturbation penetrating down into the sediment beneath the cap. In addition, it has been determined that a separate mixing layer is unnecessary due to the nature of the existing sediments, the removal of the surface sediment, and the anticipated construction methods (i.e., potential for placing the cap in dewatered conditions). Thus, the engineered cap design for Reach 5A consists of primarily two distinct layers, a chemical isolation layer and an erosion protection layer. Depending on the size of the erosion protection layer material, a geotechnical filter layer will also be included in some areas. Details of the erosion protection layer design evaluations (including evaluations of filter layer requirements) are discussed in Section 2 of this report, and a detailed description of the chemical isolation layer design evaluations is provided in Section 3. These evaluations included modeling calculations, consistent with EPA's Subaqueous Capping Guidance (Palermo et al. 1998).

2 Erosion Protection Layer Design Evaluations

As described in the Revised Final Permit, the engineered caps will include an erosion protection layer (armor layer) to prevent erosion in accordance with federal and state requirements and consistent with pertinent EPA or USACE guidance. EPA's Subaqueous Capping Guidance (Palermo et al. 1998) states the following (on page 31):

> "The cap component for stabilization/erosion protection has a dual function. On the one hand, this component of the cap is intended to stabilize the contaminated sediments being capped, and prevent them from being resuspended and transported offsite. The other function of this component is to make the cap itself resistant to erosion. These functions may be accomplished by a single component, or may require two separate components in an in-situ cap."

River currents, particularly during high-flow events, can result in elevated current velocities and bed shear stresses and have the potential to erode or resuspend sediment or cap material. As described in the Revised Final Permit, the design flow event for the erosion protection layer is a flow event up to and including the applicable return interval event, which is to be calculated using up-to-date flow data, with additional considerations for the potential impacts of climate change on cap performance, and appropriate measures to mitigate them. EPA's *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites* (EPA 2005) states the following (on page 5-9):

> "The design of the erosion protection features of an in-situ cap (i.e., armor layers) should be based on the magnitude and probability of occurrence of relatively extreme erosive forces estimated at the capping site. Generally, in-situ caps should be designed to withstand forces with a probability of 0.01 per year, for example, the 100-year storm."

The erosion protection layer (i.e., often referred to as an armor layer) will be placed above the chemical isolation layer and will be designed to protect it from erosional processes in the river.

The conceptual design of the erosion protection layer was initially developed using a design flow rate with a 100-year return period based on up-to-date flow information (i.e., through 2022) from the USGS Coltsville gage. However, a wide range of flows was evaluated to understand current velocities in the river channel under various conditions, including lower flows during which a greater proportion of the flow remains in-channel and higher flows that were evaluated to assess the potential impacts of climate change on cap performance. This section describes the design of the erosion protection layer.

2.1 River Currents

The stable particle size (e.g., expressed as median diameter [D_{50}]) required to resist a design current velocity was estimated in accordance with Appendix A to EPA's Subaqueous Capping Guidance (Maynord 1998). The method shown in Equation 2-1 is based on the USACE's *Hydraulic Design of Flood Control Channels* (USACE 1994). This method uses velocity and flow depth to determine the stable median armor stone size (D_{50}).

Equation 2-1

$$D_{50} = S_f C_s C_v C_T C_G d \left[\left(\frac{\gamma_w}{\gamma_s - \gamma_w} \right)^{\frac{1}{2}} \frac{V}{\sqrt{K_1 g d}} \right]^{2.5} \text{ where:}$$

D_{50}	=	median particle size in feet
Sf	=	safety factor = 1.5 (minimum 1.1)
Cs	=	stability coefficient for incipient failure = 0.30 for angular rock
C_V	=	velocity distribution coefficient
	=	1.0 for straight channels
	=	1.283-.2log(R/W) for outside of bends (1 for R/W > 26), where R is the centerline radius of bend and W is the water surface width
C_T	=	blanket thickness coefficient = 1.0 for flood flows
C_G	=	gradation coefficient = $(D85/D15)^{1/3}$
D_{85}/D_{15}	=	gradation uniformity coefficient = 3.5 (typical range = 1.8 to 3.5)
d	=	water depth in feet
γ_s	=	unit weight of stone = 165 pounds per cubic foot
γ_w	=	unit weight of water = 62.4 pounds per cubic foot
V	=	depth-averaged velocity in feet per second
K_1	=	side slope correction factor = 1 (for a flat slope)
g	=	acceleration due to gravity = 32.2 feet per second squared

To obtain the current velocity and flow depth under a range of flow conditions, the calibrated 1D Hydrologic Engineering Center – River Analysis System (HEC-RAS) hydraulic model was used. The HEC-RAS model was used to simulate flows associated with various recurrence intervals, including 1-, 2-, 5-, 10-, 25-, 50-, 100-, 200-, and 500-year return periods (as determined by the updated hydrologic analysis). Outputs from these model simulations, including water surface elevations, water depths, and current velocities, were used in the design of the erosion protection layer. Details regarding the hydrologic analysis and hydraulic model development and calibration are provided in Appendix G to the Conceptual RD/RA Work Plan (Hydrologic/Hydraulic Analysis and Modeling of Reaches 5 and 6).

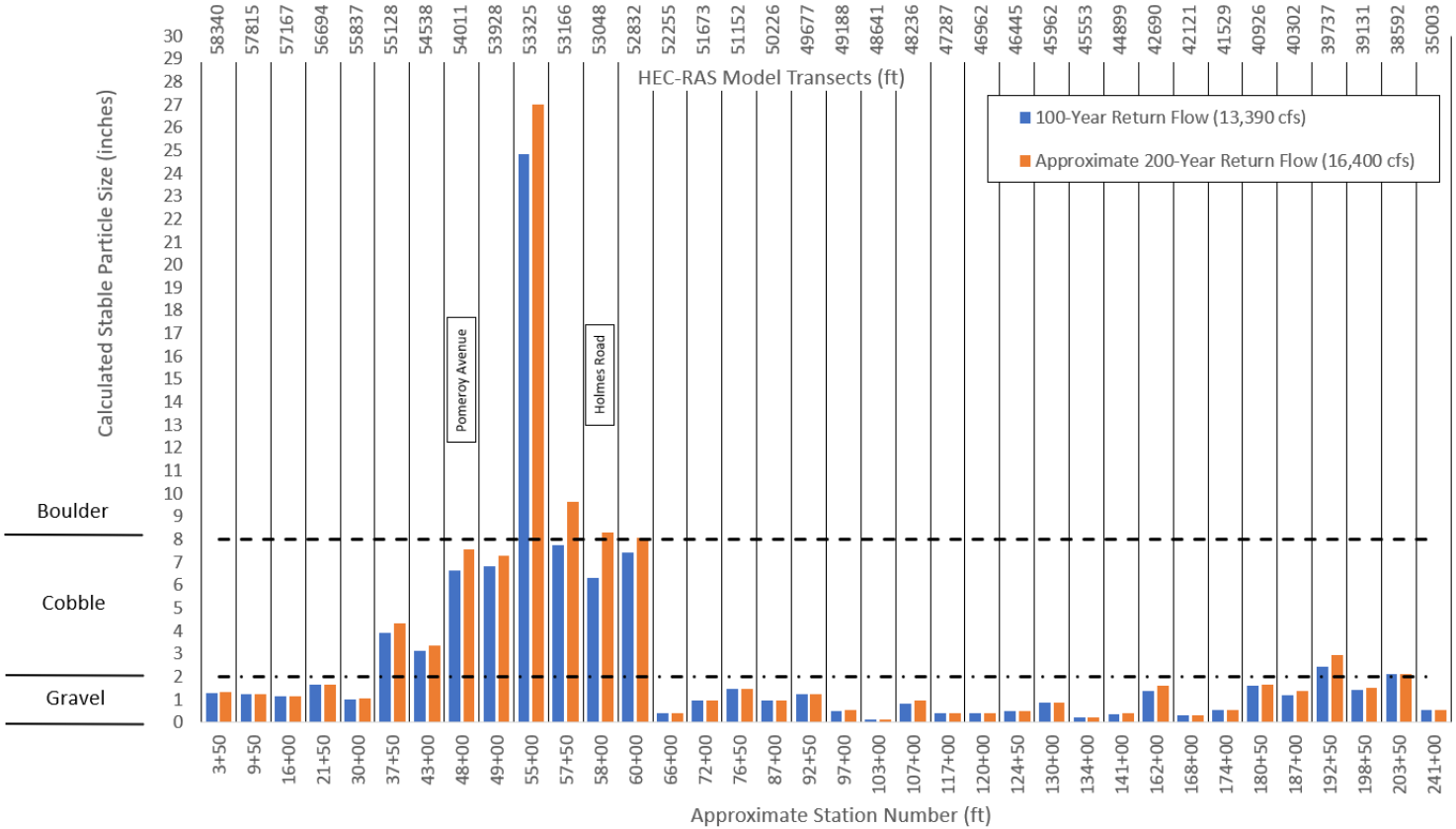
The median armor stone size (D_{50}) was computed at each HEC-RAS transect in Reach 5A for each of the flow events simulated. The conceptual design of the erosion protection layer was initially developed using a design flow rate with a 100-year return period based on up-to-date flow information (i.e., through 2022) from the USGS Coltsville gage. However, a wide range of flows was evaluated to understand velocities in the river channel under various conditions, including lower flows during which a greater proportion of the flow remains in-channel and higher flows that were evaluated to assess the potential impacts of climate change on cap performance. Because the updated 100-year return period flow (i.e., 13,390 cubic feet per second [cfs]) at the Confluence has increased by 8.1% from the value calculated by the Federal Emergency Management Agency (FEMA) in 1987,[3] a flow of 16,400 cfs at the Confluence was used to account for the potential impacts of climate change. This flow represents an approximately 23% increase relative to the current 100-year return period flow estimate and is approximately equal to the current 200-year return period flow.

The model was, therefore, used to simulate flows with various recurrence intervals, including 1-, 2-, 5-, 10-, 25-, 50-, 100-, and 200-year return periods. Stable particles sizes for each flow event were computed throughout Reach 5A based on the hydraulic model output and using Equation 2-1. Attachment A presents the HEC-RAS model results and computed D_{50} for each flow event and HEC-RAS transect.

Figure 2-1 shows a comparison of the calculated stable particle size (D_{50}) at each of the HEC-RAS model transects in Reach 5A for flows up to and including the 200-year return period.

[3] The 1987 100-year flow value (12,386 cfs) is from FEMA's Flood Insurance Study report (FEMA 1987), and the updated value (13,390 cfs) is based on return period analysis of long-term data from the USGS Coltsville gage using USACE Hydrologic Engineering Center's Statistical Software Package (HEC-SSP) (Bartles et al. 2022; England et al. 2019) and the flow increment values presented in Appendix G to the Conceptual RD/RA Work Plan.

Figure 2-1
Calculated Stable Particle Sizes at Each HEC-RAS Transect for Reach 5A



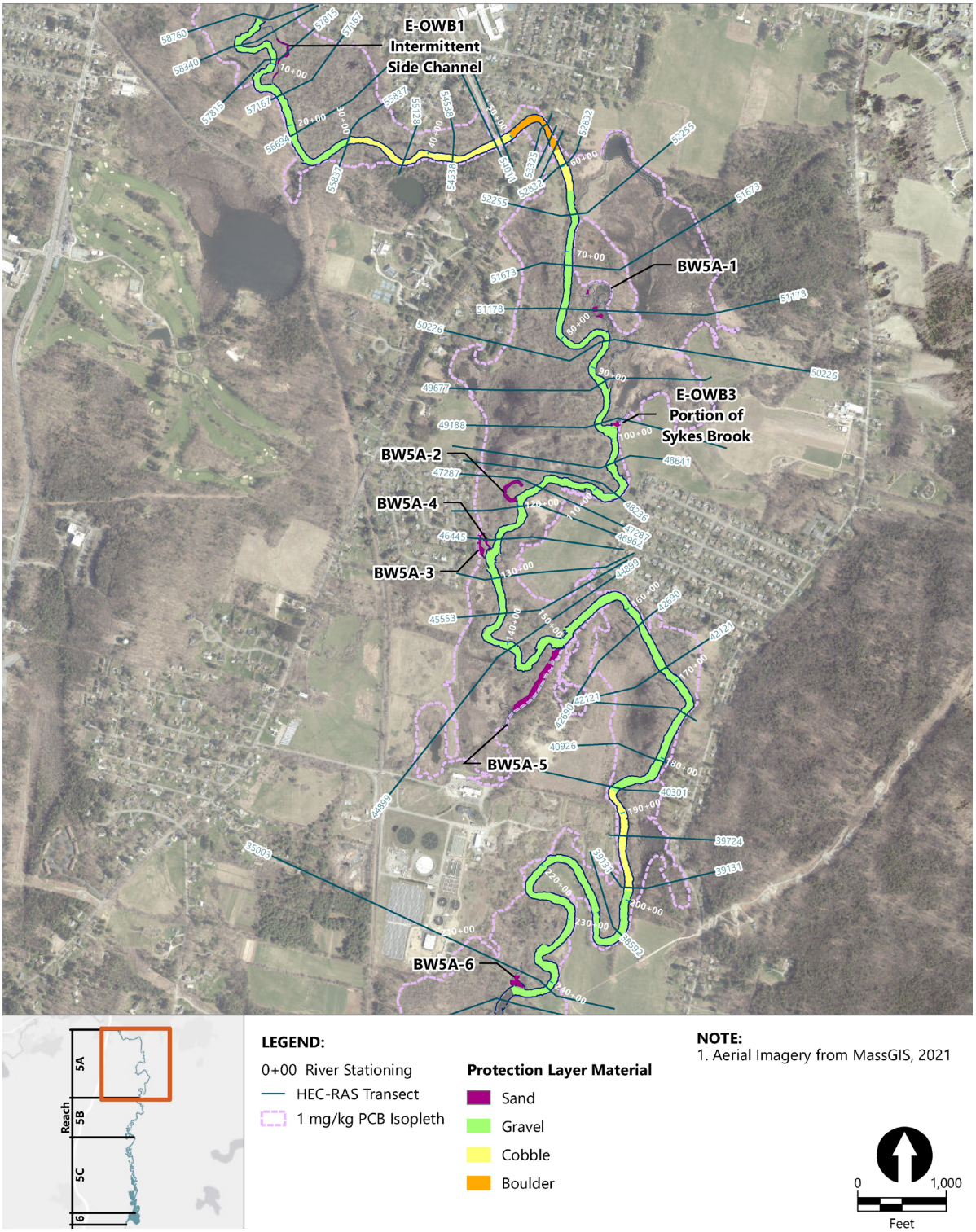
Notes:

1. A 1D HEC-RAS model was used to simulate flows with various recurrence intervals, including 1-, 2-, 5-, 10-, 25-, 50-, 100-, and 200-year return periods.
2. Stable particle sizes were calculated as described in this appendix.
3. Where the controlling flow was less than the 100-year or approximate 200-year return flows, the stable particle size shown is based on that lower controlling flow (e.g., a 50-year return period).
4. Station numbers represent data at each HEC-RAS model transect but are not representative of the river stationing scale

The results of this evaluation indicate that a coarse gravel erosion protection layer (with a D_{50} of approximately two inches) is sufficient to protect the chemical isolation layer material from erosive forces throughout most (i.e., more than 80%) of Reach 5A (areas shown in green on Figure 2-2). Between Stations 30+00 and 63+00,[4] river current velocities are calculated to be higher because flows are generally confined to the river channel due to higher riverbanks in this area, there is a sharp bend in the river, and flow constrictions are created by bridge abutments at Pomeroy Avenue and Holmes Road. Therefore, larger materials such as cobble (with a D_{50} in the six- to eight-inch range) or boulder sized materials (with a D_{50} of approximately two feet) are required for erosion protection in this area (areas shown in orange on Figure 2-2). In addition, the hydraulic model predicts increased current velocities between Stations 187+00 and 199+00 that require cobble-sized materials for erosion protection (areas shown in yellow on Figure 2-2). Within the backwaters and Other Waterbodies, sand was assumed based on the relatively low velocity conditions in these areas (areas shown in purple on Figure 2-2). Table 4-1 presents the stable particle size and thickness for the erosion protection layer by cap type.

[4] River stations were established for Reach 5A during the pre-design investigation (PDI) for sediments and riverbanks to provide a locational reference to support the PDI, remedial design, and construction. For each river station, the value to the left of the plus symbol in the number is in hundreds of feet from the first station, and the value to the right of the plus symbol is in feet. The stationing begins with Station 0+00 at the Confluence and extends to the downstream end of Reach 5A at Station 245+00 (located 24,500 feet from Station 0+00 or approximately 4.6 miles). Stations 30+00 and 63+00 are located approximately 3,000 and 6,300 feet downstream of Station 0+00 along the river centerline, respectively.

Figure 2-2
Erosion Protection Layer Materials



2.2 Other Erosional Forces

Because the ROR is not a navigable waterway, the river currents and flood flows are the dominant factors contributing to potential erosion; effects from vessel wakes and propellor wash, which are often important considerations for cap design, are not relevant in Reach 5A.

Winds blowing across the surface of bodies of water transmit energy to the water, and waves are formed. The size of these wind-generated waves depends on the wind velocity, the length of time the wind is blowing, and the extent of open water over which it blows (fetch). Because of the ROR sinuosity, fetch distances on the ROR are limited. As such, wind-generated waves are not a significant force compared with river currents.

Trees falling in the ROR have the potential to damage the cap. In addition to the potential damage that can result from the physical impact of a tree falling on the cap, a fallen tree can block flow and result in accumulation of sediment and debris on a localized scale. These fallen trees and accumulated debris and sediment can restrict flow and cause localized scour holes, especially in finer-grained material that would be expected to deposit on top of the cap. The Reach 5A remedial design will evaluate this as part of riverbank remediation/stabilization. Also, riverbed, riverbanks, and the cap will be monitored to evaluate if fallen trees and any accumulation of debris are impacting the performance of the cap.

2.3 Erosion Protection Layer Thickness

Maynord (1998) recommends that the thickness of the erosion protection layer be twice the median particle diameter (i.e., $2 \times D_{50}$) or 1.5 times the maximum particle diameter (i.e., $1.5 \times D_{100}$), whichever is greater. The D_{100} is the maximum particle size of the erosion protection layer material gradation and will be determined during final design. For the conceptual design, the minimum erosion protection layer thickness is based on twice the D_{50}. Table 4-1 presents the stable particle size and thickness for the erosion protection layer by cap type.

2.4 Geotechnical Filter Considerations

As described in the Revised Final Permit, "the use of a geotechnical filter layer between the chemical isolation layer material and erosion protection layer material shall be evaluated and may be necessary for those areas requiring cobble or larger sized material in the erosion protection layer" (Section II.B.2.i.(2)(d)).

Where needed, a filter layer provides an interface between the erosion protection layer and the protected material and is an essential element for protecting contaminated sediments (Maynord 1998). The filter prevents migration of one granular material through another (often referred to as "piping"), distributes the weight of overlying armor units to provide more uniform settlement, and

permits relief of hydrostatic pressures within the soils. A filter layer is often required when using a larger-diameter material for the erosion protection layer of an engineered cap.

Standard geotechnical filter criteria include recommended particle size ratios between base and overlying materials (e.g., sand chemical isolation layer and overlying erosion protection layer materials). The primary filter criteria particle size relationship applicable to subaqueous capping materials is the ratio of D_{15} of the erosion protection material to D_{85} of the underlying base layer. D_{15} is the 15th percentile particle size (15 percent of the particles are smaller than this size), and D_{85} is the 85th percentile particle size (85 percent of the particles are smaller than this size). This relationship relates to the ability of the base layer material (i.e., the chemical isolation layer sand) to pass through the void spaces in the overlying larger material (i.e., the erosion protection layer armor stone consisting of gravel-, cobble-, or boulder-sized material). Meeting the recommended filter criteria minimizes the potential for the loss of the base material by the creation of internal filters in the armor stone voids. The potential for piping (the loss of material) can be minimized by using well-graded gradations for the two materials.

For the conceptual design, the design evaluations for the erosion protection and chemical isolation layers indicate that a gravel filter will be required for the Reach 5A caps that have cobble- and boulder-sized erosion protection layers (i.e., between Stations 30+00 and 63+00 and between Stations 187+00 and 199+00). Where required, the gravel filter layer will be placed between the erosion protection layer and chemical isolation layer.

Where needed, the geotechnical filter layer, including its gradation, will be evaluated and designed for compatibility with the erosion protection layer material and the underlying chemical isolation layer material of the engineered cap as part of final design.

3 Chemical Isolation Layer Design Evaluations

3.1 Chemical Transport Modeling Approach

The design evaluations presented in this section were based on numerical modeling, the primary purpose of which was to simulate the transport of dissolved-phase PCBs within a candidate cap design in order to identify the cap configuration (thickness and composition) needed to meet the chemical isolation capping Performance Standards, which are defined in Section 3.1.1. To account for the range in mobility of the PCB congeners that make up the total PCB concentration, individual PCB homologs were simulated using the cap model. The modeling documented in this appendix was performed in accordance with industry standard cap design guidance set forth by EPA (EPA 2005; Palermo et al. 1998) and the ITRC (2014; 2023).

3.1.1 Chemical Isolation Cap Performance Standards

As described in the Revised Final Permit, the chemical isolation layer will be "sufficient to minimize (reduce by 99%) the flux of PCB concentrations through the isolation layer" (Section II.B.2.i.(1)(a)(ii)). In backwater areas, removal and capping will be performed to achieve a spatially weighted average concentration of 1 mg/kg total PCB in each averaging area, assuming, as required, a "PCB concentration equal to 1% of the existing average surficial concentration [of the given backwater] […] as the PCB concentration in capped areas" (Section II.B.2.d.(1)(a)(i)). As stated in Section 1.2, engineered caps will also be placed in two of the Other Waterbodies, and those areas were evaluated using methodology consistent with that used for the backwaters.

To meet the requirements for engineered caps in the Revised Final Permit, the chemical isolation layer was designed to meet the following criteria using the modeling evaluation described herein:

- For the main channel:
  - Achieve 99% reduction in total PCB mass flux across the chemical isolation layer throughout a 100-year timeframe based on model calculations.
- For the backwaters and Other Waterbodies:
  - Achieve 99% reduction in total PCB mass flux across the chemical isolation layer within a 100-year timeframe based on model calculations; and
  - Achieve total PCB concentrations within the surficial six inches of the cap that are less than 1% of the existing average surficial concentration (i.e., that used as the replacement value in the evaluation to identify areas requiring capping within the given backwater area).

3.1.2 Model Framework

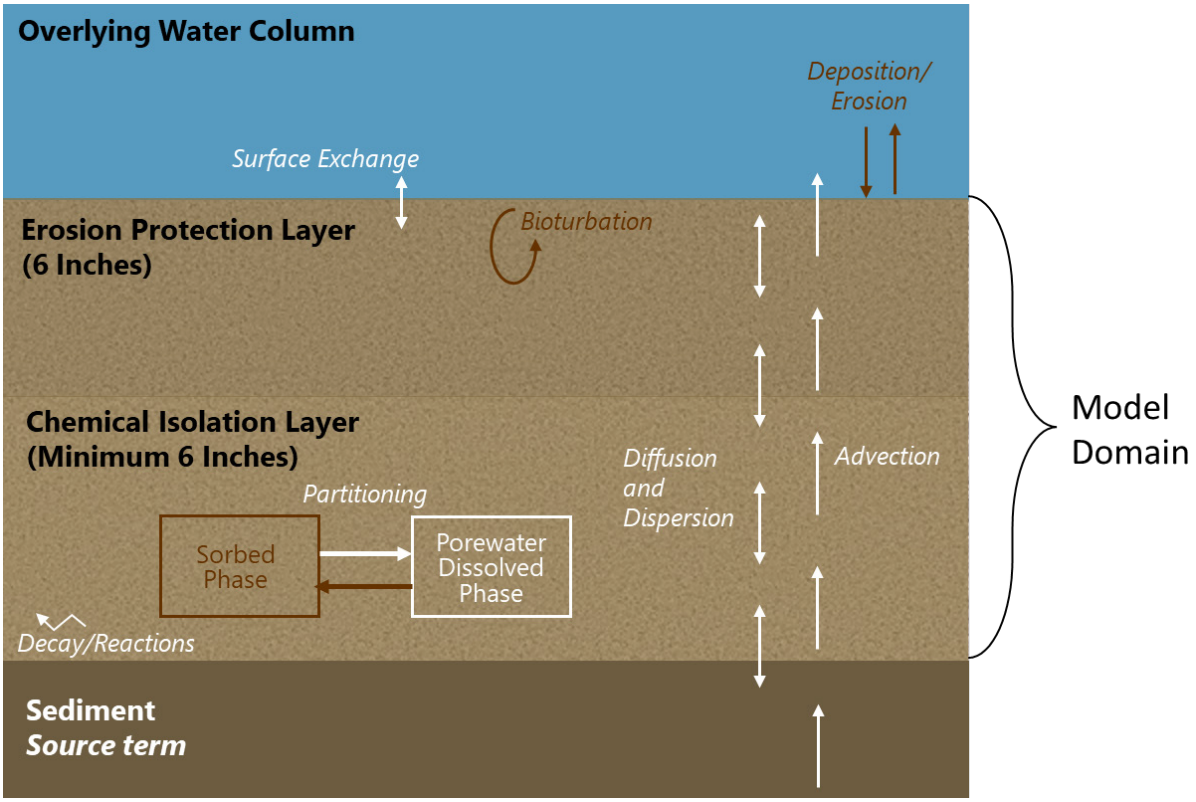
CapSim (version 3.8), a 1D model of chemical transport in sediment and cap systems, was used for this evaluation. This model simulates the time-variable fate and transport of chemicals (dissolved and sorbed phases, including partitioning between these phases) under the processes of advection, diffusion and dispersion, biodegradation, bioturbation and bioirrigation, and exchange with the overlying surface water, consistent with the requirements of the Revised Final Permit. The cap model predicts contaminant mass flux and concentrations (for both porewater and sorbed phase) vertically throughout the simulated cap profile over time. This model and its predecessors have been used to support the evaluation and design of sediment caps at numerous sites around the United States and internationally (e.g., Onondaga Lake [Parsons and Anchor QEA 2012]; Lower Fox River [Tetra Tech et al. 2019]; Hamilton Harbour US Steel Channel [Anchor QEA 2020]). Details on the model structure, underlying theory, and governing equations are provided in the model's associated literature (Shen et al. 2018; Go et al. 2009; Lampert and Reible 2009).

3.1.3 Model Domain and Layers

The model evaluations were conducted to support the design of the chemical isolation layer for the Reach 5A caps. As described in Sections 1 and 2, the cap design for Reach 5A consists of two distinct layers, a chemical isolation layer and an erosion protection layer, with a geotechnical filter layer being included between them in some portions of Reach 5A.[5] The model was initially set up to simulate PCB transport through a six-inch layer of sand chemical isolation material. That layer is simulated to be overlain by at least six inches of erosion protection material (erosion protection evaluations are presented in Section 2 of this report). The erosion protection layer varies across Reach 5A and consists of six inches of gravel-sized material in most of the reach, with larger sized materials placed to depths of up to three feet in some areas (i.e., areas where the erosion protection layer is cobble- to boulder-sized material and an underlying filter layer is required), as illustrated on Figure 2-2. Simulating the erosion protection layer as six inches thick is conservative for areas where more than six inches of material is required. The model simulates bioturbation (mixing of particles by biological activity) at the top of the erosion protection layer over a specified thickness; this thickness is referred to hereinafter as the bioturbation zone (BTZ). A schematic showing the cap layers represented in the model and the processes simulated by the model is provided on Figure 3-1.

[5] As discussed in Section 1 of this report and Section 5 of the Conceptual RD/RA Work Plan, the Revised Final Permit requires consideration of layers for mixing, habitat, and bioturbation. These engineered cap design evaluations considered these functions and determined that dedicated layers are not needed for these functions because they can be effectively met by the two primary layers.

Figure 3-1
Model Domain and Processes Simulated by the Model



Note:
Decay/reactions and deposition/erosion were not included in the modeling of Reach 5A caps.

The underlying sediment was not included as part of the model domain in this modeling evaluation (i.e., the sediment was not simulated explicitly). Rather, the porewater PCB concentrations in the sediment beneath the cap were conservatively represented as an infinite source (i.e., constant concentration boundary condition). This approach is conservative because it assumes that no attenuation or loss of PCB mass occurs in the sediments beneath the cap over time. The model similarly does not simulate the water column, but rather uses its concentration as a boundary condition.

3.1.4 Delineation of Reach 5A Cap Sub-Areas

To optimize the chemical isolation layer design and take into account spatial variations in the physical, chemical, and biological properties and characteristics that affect cap design, Reach 5A was subdivided into seven unique cap modeling areas based on the following factors:

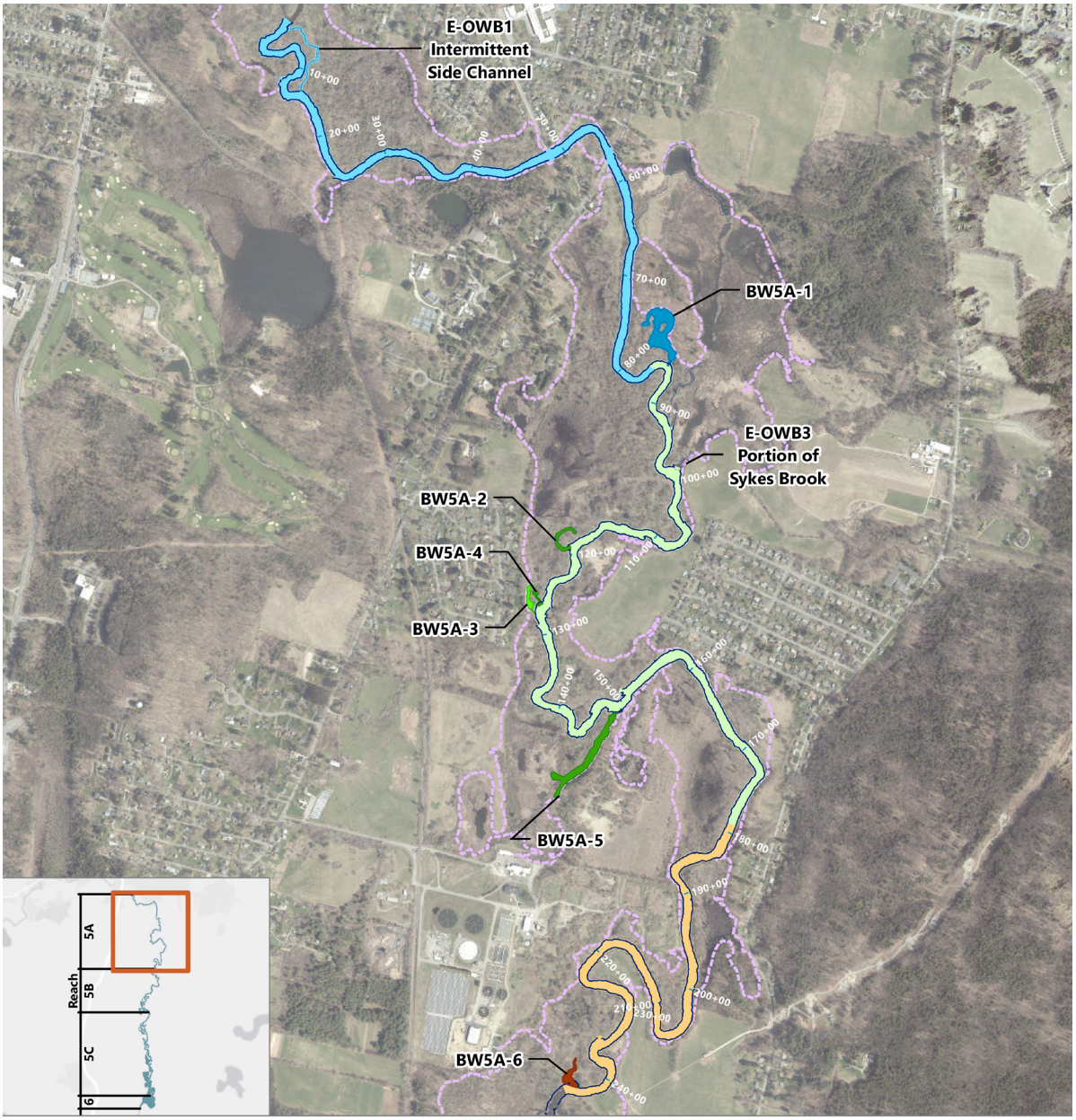
1. Observed differences in groundwater seepage rates;
2. Differences in waterbody type (i.e., main channel, backwaters, and Other Waterbodies);

3. Observed differences in porewater PCB concentrations; and
4. Constructability considerations.

Figure 3-2 shows the seven unique cap modeling areas, referred to hereafter as sub-areas, that were simulated with the model (differentiated by color). They are:

- Upper portion of the Reach 5A main channel and the Intermittent Side Channel (E-OWB1);
- Middle portion of the Reach 5A main channel and lower portion of Sykes Brook (E-OWB3);
- Lower portion of the Reach 5A main channel;
- BW5A-1;
- BW5A-2, BW5A-4, and BW5A-5;
- BW5A-3; and
- BW5A-6.

Figure 3-2
Extents of Cap Model Simulations in Reach 5A



LEGEND:

0+00 River Stationing

1 mg/kg PCB Isopleth

Cap Simulation

Upper Portion of Reach 5A

Main Channel Reach 5A and Intermittent Side Channel

BW5A-1

Middle Portion of Reach 5A

Main Channel Reach 5A and Sykes Brook

BW5A-2, BW5A-4, and BW5A-5

BW5A-3

Lower Portion of Reach 5A

Main Channel Reach 5A

BW5A-6

0 1,000
Feet

NOTE:
1. Aerial Imagery from MassGIS, 2021

The rationale for the delineation of these sub-areas based on these factors is as follows:

- **Groundwater Seepage Rates:** Reach 5A was first subdivided geographically based on observed spatial differences in groundwater seepage rates. As discussed in detail in Section 3.2.1 and Attachment B, data collected to date indicate three distinct regions within Reach 5A, characterized by prominent differences in groundwater seepage rates (upper, middle, and lower portions of Reach 5A). Caps in these three regions were evaluated separately based on the differences in observed seepage rates. These delineations are further discussed in Section 3.2.1.
- **Waterbody Type:** Within each of the three regions delineated based on differences in seepage rates, areas designated as the main channel and Other Waterbodies were modeled separately from the backwaters due to differences in: (1) expected bioturbation depths (i.e., consistent with EPA's FMD, bioturbation is expected to be deeper in the backwaters based on the presence of finer substrate with greater organic content, and concomitant differences in infauna); and (2) TOC content of the existing surface sediments (i.e., TOC is generally higher in the backwaters than in the main channel). Thus, in the upper portion of Reach 5A, the main channel and the Intermittent Side Channel (one of the Other Waterbodies) were evaluated separately from backwater BW5A-1. In the middle portion of Reach 5A, caps in the main channel and the portion of Sykes Brook to be capped were evaluated separately from the backwaters (BW5A-2 through BW5A-5). In the lower portion of Reach 5A, the main channel was evaluated separately from backwater BW5A-6.
- **Porewater PCB Concentrations:** Meeting the Performance Standard of 99% reduction in PCB mass flux across the chemical isolation layer is independent of the porewater concentration beneath the cap. However, the model-predicted concentration at the top of the cap, and hence the replacement value used in the delineation of cap areas in backwaters, is dependent on the porewater concentrations in sediment beneath the cap. Therefore, starting with the delineation based on differences in seepage rates and waterbody type discussed above, cap areas were further delineated based on differences in PCB porewater concentration. These delineations are further discussed in Section 3.2.3.
- **Constructability:** For the purposes of efficiency during construction, the proximity of capping areas to one another and the relative size of each were also taken into consideration in delineating the sub-areas. In the upper portion of Reach 5A (blue shading on Figure 3-2), the Intermittent Side Channel is relatively small and in close proximity to the main channel. As discussed in Section 3.2.3, PCB concentrations in the Intermittent Side Channel and Sykes Brook are lower than those in the adjacent main channel. Therefore, these cap areas were assigned the same cap design as the adjacent main channel (and thus were not simulated explicitly in the model).

3.2 Model Inputs

The model uses several input parameters that describe chemical-specific properties, cap and sediment material properties, and chemical mass transfer rates. These input parameters were developed based on site-specific data (including the large dataset on PCB concentrations generated as part of the PDI),[6] previous site-specific modeling conducted by EPA, information from literature, and experience with cap design at other similar sites. To the extent possible, input parameters were consistent with the PCB fate and transport model that EPA developed and calibrated to simulate PCBs in the Housatonic River surface water and sediment, as documented in the FMD. A listing of model input parameters, the values used for this modeling evaluation, and the source(s) from which they were derived are provided in Table 3-1. More details describing the key model inputs (i.e., those to which the model is most sensitive) and chemical-specific properties are provided in Sections 3.2.1 through 3.2.5.

Table 3-1
Input Parameter Values for the Chemical Isolation Cap Model

Model Input Parameter	Value	Data Source
Chemical-Specific Properties		
Porewater PCB concentration (µg/L) (boundary condition for bottom of model domain)	See Table 3-5	Values based on sediment sample PCB concentrations from the PDI converted to porewater concentrations for individual PCB homologs using site-specific partition coefficients and data on PCB homolog composition. See Section 3.2.3 for details.
Organic carbon (OC) partition coefficient Log K_{OC} (Log L/kg)	See Table 3-3	Site-specific values were developed for the PCB homologs based on PDI data. See Section 3.2.2 for details.
Dissolved organic carbon (DOC) partition coefficient Log K_{DOC} (Log L/kg)	See Table 3-3	Based on 0.1 times K_{OW}, which is consistent with literature and site-specific modeling of PCB partitioning documented in the FMD. K_{OW} values are shown in Table 3-4 and were developed from literature (Hawker and Connell 1988; de Bruijn et al. 1989). See Section 3.2.2 for details.

[6] Those data are presented in GE's *Pre-Design Investigation Summary Report for Reach 5A Sediment and Riverbanks* (PDI Summary Report for Sediment and Riverbanks; Anchor QEA and AECOM 2023), being submitted concurrently with the Conceptual RD/RA Work Plan.

Model Input Parameter	Value	Data Source
Molecular diffusivity (cm^2/s)	Homolog-specific, increasing from 3.3E-6 for mono-PCBs to 6.5E-6 for deca-PCB	Values based on empirical relationship with PCB homolog molecular weight (Schwarzenbach et al. 1993). The model calculates the effective diffusion coefficient multiplying the input molecular diffusivity value by a tortuosity factor that is a function of the material porosity (Lampert and Reible 2009).
Chemical first-order chemical biodegradation rate (yr^{-1})	0	Assumed no biodegradation.
Surface water PCB concentration (µg/L) (boundary condition for top of model domain)	See Table 3-6	Based on concentrations measured at Pomeroy Avenue Bridge and South Street Bridge collected from March to November 2022 (Anchor QEA and Arcadis 2023). See Section 3.2.4 for details.
Erosion Protection Layer Properties		
Erosion protection layer thickness (cm)	15	Conservatively represented as a 15 cm (six-inch) layer of gravel or cobble/boulder that has infilled, as discussed in Section 3.1.3.
Total porosity	0.35	Typical value for range of gravel sized materials (e.g., Domenico and Schwartz 1990) and taken to be representative of larger sized materials, considering that boulder- or cobble-sized material is expected to be infilled by deposition of native sandy sediments over time and recognizing that the armor materials often have a gradation that may include sand and gravel-sized materials.
Dry bulk density (g/cm^3)	1.69	Calculated based on typical particle density of 2.6 g/cm^3 for inorganic minerals and representative porosity (see previous row).
Fraction organic carbon within the BTZ f_{OC} (%)	See Table 3-7	Location-specific f_{OC} in the BTZ (top 10 cm or top 15 cm; see below) considering that over time, the materials in the BTZ will equilibrate to the f_{OC} of depositing solids. The location-specific value is based on the average surface sediment f_{OC} within the sub-area based on PDI sampling data. See Section 3.2.5 for details.
Fraction organic carbon below the BTZ f_{OC} (%)	0.1%	In the main channel and Other Waterbodies, where the BTZ thickness is 10 cm, the bottom 5 cm of the simulated erosion protection layer is set to a nominal f_{OC} of 0.1%.
Porewater DOC concentration (mg/L)	See Table 3-7	Based on average porewater DOC concentration measured during PDI sampling within each sub-area. See Section 3.2.5 for details.

Model Input Parameter	Value	Data Source
Chemical Isolation Layer Properties		
Chemical isolation layer thickness (cm)	15	Design variable. Started with a thickness of six inches (15 cm) and increased based on iterative model simulations as needed to meet Performance Standards. See Section 3.3 for details.
Total porosity	0.4	Typical value for sand (e.g., Domenico and Schwartz 1990).
Dry bulk density (g/cm^3)	1.56	Calculated based on typical particle density of 2.6 g/cm^3 for inorganic minerals and representative porosity (see previous row).
f_{OC} (%)	Design variable	This input was used to represent sorptive amendment content for the chemical isolation layer. Started with a sand only chemical isolation layer, assuming a nominal f_{OC} of 0.1%. Iteratively increased f_{OC} as necessary to meet Performance Standards.
Porewater DOC concentration (mg/L)	See Table 3-7	Based on average porewater DOC concentration measured during PDI sampling within each sub-area. Values vary between 3.0 and 24 by sub-area. See Section 3.2.5 for details.
Chemical-Independent Mass Transport Properties		
Boundary layer mass transfer coefficient (cm/hour)	0.04	Appendix B-10 of the FMD developed a site-specific value of 1-2 cm/day for use in EPA's PCB fate and transport model. The lower end of this range was used in the cap modeling to account for the fact that groundwater seepage is explicitly simulated in the cap model but was not in EPA's PCB fate and transport model.
Groundwater seepage rate (cm/day)	Upper Portion: 1 cm/day Middle Portion: 0 cm/day Lower Portion: 5 cm/day	Seepage rates calculated from paired vertical hydraulic conductivity and hydraulic gradients measured during the PDI. Different values specified for three portions (upper, middle, lower) of Reach 5A based on observed spatial patterns in the data. Because the model is sensitive to this parameter and because of the short timeframe over which data were collected at the time these evaluations were conducted, a sensitivity analysis was performed. See Sections 3.2.1 and 3.5 for details.
Tortuosity factor for molecular diffusion	Varies with porosity	Model uses an empirical relationship with porosity to calculate a tortuosity factor that is multiplied by the chemical-specific molecular diffusivity to result in an effective diffusion coefficient associated with porous media flow. The Millington and Quirk (1961) relationship was used, because this is applicable to granular material (Lampert and Reible 2009).

Model Input Parameter	Value	Data Source
Net sedimentation rate (cm/year)	0	Conservatively, no net sedimentation was assumed in the model. It is expected that a transient zone of new native sandy sediment will develop atop the cap to some thickness (and fill in space between large armor stone) and that this zone will likely be in dynamic equilibrium. That is, although no net sedimentation is assumed, it does not mean there is no (gross) sedimentation.
Dispersion length (cm)	1	Dispersion length was calculated from the relationship developed by Neuman (1990), which relates dispersion to model domain length, which resulted in a value that is less than 1 cm. Based on recommendations from Reible (Lampert and Reible 2009), dispersion length was set to 1 cm.
Bioturbation depth (cm) (equals BTZ thickness)	Main channel and Other Waterbodies: 10 Backwaters: 15	The literature review presented in Appendix B4 of the FMD conceptualizes the BTZ as a biologically mixed interval (0 to 4 cm in Reach 5A) and a biologically influenced interval (0 to 10 cm in Reach 5A) the literature review also indicated deeper mixing occurs in depositional areas with high f_{OC}. Therefore, a bioturbation depth of 10 cm was used in the main channel and Other Waterbodies. In backwaters where f_{OC} is higher, a bioturbation depth of 15 cm was used. These values are consistent with recommendations from USACE guidance on cap design (Clarke et al. 2001).
Particle biodiffusion coefficient (cm^2/year)	Main channel and Other Waterbodies: 0.3 Backwaters: 1	Parameter represents bioturbation rate applied to particulate phase PCBs; 0.3 cm^2/year is a typical value representing riverine environments (Thibodeaux and Mackay 2011) and was used in the model for the main channel and Other Waterbodies. The FMD states that in the softer sediments of the backwaters, bioturbation is expected to be three times faster than in the river channel. Therefore, in the backwaters, a value of 1 cm^2/year was used.
Porewater biodiffusion coefficient (cm^2/year)	Main channel and Other Waterbodies: 30 Backwaters: 100	Parameter represents bioturbation rate applied to dissolved phase PCBs. This value is 10 times higher than the particle biodiffusion coefficient based on literature (Reible 2012; Thibodeaux and Mackay 2011).
Consolidation thickness (cm) and time (years) to reach 90% consolidation for underlying sediment	None	Because sediments will be removed to accommodate a cap, the effects of consolidation, which can result in an additional upward flux of porewater, are expected to be negligible. This assumption will be re-evaluated during final design.

3.2.1 Groundwater Seepage Rates

Groundwater seepage rates were calculated from PDI data collected at 10 locations throughout Reach 5A, including one backwater area (BW5A-1). Pressure transducers measured hydraulic head within the sediments and water surface elevations every five minutes in paired piezometers during September through November 2022; these data were used to calculate vertical hydraulic gradients for each measurement period (approximately monthly), as described in Attachment B. Long-term average vertical hydraulic gradients were then calculated for that period. Sediment cores were collected at each of the 10 locations, and vertical hydraulic conductivity was measured from these cores using the gravity drainage method, as described in Attachment B.

The seepage rates were calculated from the paired vertical hydraulic gradient (i_v) values and vertical hydraulic conductivity (K_v) values using Darcy's Law (Equation 3-1).

Equation 3-1

$$q = K_v \, i_v$$

where:

q	=	seepage rate [L/T]
K_v	=	representative, bulk vertical hydraulic conductivity between shallow and deep piezometers [L/T]
i_v	=	average vertical hydraulic gradient measured using shallow and deep piezometers [L/L]

The vertical hydraulic conductivity, long-term average vertical hydraulic gradients, and resulting long-term average seepage rates are listed in Table 3-2.

Table 3-2
Seepage Rates Calculated from Data Collected at 10 Locations throughout Reach 5A

Piezometer ID	K_v (cm/sec)	i_v (feet/feet)	Long-Term Average Seepage Rate (cm/day)
PZ01 - ST25	8.2E-04	+4.8E-04	+0.034
PZ02 - ST43	4.8E-03	+8.9E-04	+0.37
PZ03 - ST69	3.8E-03	+1.2E-02	+3.9
PZ04 - BW5A1	4.3E-04	NA	NA
PZ05 - ST98	1.4E-02	-2.1E-03	-2.6
PZ06 - ST122	6.3E-03	-5.2E-04	-0.28
PZ07 - ST134	5.1E-04	-3.9E-03	-0.17
PZ08 - ST167	1.1E-03	+7.5E-04	+0.071

Piezometer ID	K_v (cm/sec)	i_v (feet/feet)	Long-Term Average Seepage Rate (cm/day)
PZ09 - ST190	1.1E-03	+4.9E-02	+4.6
PZ10 - ST230	5.1E-02	+2.9E-02	+130

Note:
NA: No acceptable vertical hydraulic gradient could be calculated based on the data collected to date at this location (see Attachment B), so it is not yet possible to calculate a seepage rate. Data collection is ongoing, and values will be updated for final design.

The seepage rates listed in Table 3-2 exhibit spatial variation that allows Reach 5A to be separated into the following three zones: (1) positive upwelling in the upper portion of Reach 5A (locations PZ01 through PZ03); (2) downward or near-zero seepage rate in the middle portion of Reach 5A (locations PZ05 through PZ08); and (3) positive upwelling at a relatively higher rate in the lower portion of Reach 5A (locations PZ09 and PZ10). Because the goal of the ROR remedy is to reduce PCB mass flux to the water column and minimize uptake from biota, both of which are assessed on an area-wide basis, it is appropriate to evaluate capping with a central tendency seepage rate representing each of these three zones. Seepage rates were therefore defined in the modeling for the three zones as follows:

1. For the upper portion of Reach 5A to between River Stations 0+00 and 84+00 (hereafter referred to as "Main Channel Reach 5A-1"; blue-shaded areas on Figure 3-2) and the associated backwaters and Other Waterbodies, a mid-range seepage rate of 1 cm/day was used to represent the range of observed seepage rates in this section of river.
2. Within the middle-portion of Reach 5A, where seepage is downward, the seepage rate in the model to represent the main channel between Stations 84+00 and 179+00 (hereafter referred to as "Main Channel Reach 5A-2"; green-shaded areas on Figure 3-2) and associated Other Waterbodies and backwaters was conservatively set to 0 cm/day.
3. In the lower portion of Reach 5A (yellow/orange shaded areas on Figure 3-2), seepage rates were measured at two locations—PZ09 (4.7 cm/day) and PZ10 (130 cm/day), but the value at PZ10 is considered non-representative (see Attachment B), so the seepage rate used in the model for the lower-portion of Reach 5A between Stations 179+00 and 245+00 (hereafter referred to as "Main Channel Reach 5A-3") was set to 5 cm/day.

Because model results are sensitive to seepage rates, a range of values was evaluated as part of a sensitivity analysis conducted with the model (see Section 3.5).

As noted above, data collection for groundwater seepage rates is ongoing. Vertical hydraulic gradients continue to be measured using piezometers. Also, seepage meters were deployed at four of the 10 piezometer locations, as described in GE's PDI Summary Report for Sediment and Riverbanks (Anchor QEA and AECOM 2023). Finally, additional K_v measurements are planned to be collected as part of the supplemental data collection activities described in Appendix J to the

Conceptual RD/RA Work Plan, which will help refine the long-term seepage rate estimates, particularly for location PZ-10. These additional data will be incorporated into the calculation of long-term seepage rates during final design.

3.2.2 Partitioning Coefficients

Partitioning of chemicals between the dissolved and sorbed phases is described in the CapSim model by the chemical-specific equilibrium partition coefficient (K_d). For organic chemicals, such as PCBs, K_d is represented by the OC partition coefficient (K_{OC}) times the fraction OC (f_{OC}), consistent with the formulations used in EPA's PCB fate and transport model documented in the FMD. Site-specific partition coefficients were used in the cap design modeling in the following two ways: (1) to estimate the porewater chemical concentrations beneath the cap based on measured sediment concentrations; and (2) to simulate sorption of PCBs to the various layers of cap materials represented in the model (see Section 3.1.3 and Table 3-1). As stated previously, individual PCB homologs were simulated by the cap model to account for the range in mobility of the PCB congeners that make up the total PCB concentration. Thus, partition coefficients were developed for each of the 10 PCB homologs.

Using the equilibrium partitioning formula shown by Equation 3-2, site-specific K_{OC} values were developed from paired sediment and porewater PCB homolog concentrations measured in samples collected from 20 locations throughout Reach 5A, including some of its backwaters, as part of the PDI (see PDI Summary Report for Sediment and Riverbanks [Anchor QEA and AECOM 2023]).

Equation 3-2

$$K_{OC} = \frac{C_s}{f_{OC} \cdot C_w}$$

where:

K_{OC}	=	OC partition coefficient (L^3/M)
C_s	=	PCB concentration in sediment [M/M]
f_{OC}	=	fraction OC concentration [M/M]
C_w	=	PCB concentration of chemical in freely dissolved porewater [M/L^3]

The partitioning formulation used in the cap model represents three phases—sorbed, freely dissolved, and DOC-bound—consistent with the EPA fate and transport model documented in the FMD. PCB porewater concentrations were measured during the PDI using solid-phase microextraction (SPME) passive samplers (as described in GE's *Revised Pre-Design Investigation Work Plan for Reach 5A Sediment and Riverbanks* [Anchor QEA and AECOM 2022]), which provided a measurement of the freely dissolved phase PCB concentration. Thus, for each PCB homolog group,

measured bulk sediment PCB concentrations, on an OC-normalized basis (i.e., C_s/f_{OC})[7] were plotted against measured freely dissolved porewater PCB concentrations. This produces a relationship with a slope that is equivalent to K_{OC} if a regression is performed on a linear scale with the intercept forced to zero. Because such regressions can be strongly influenced by a limited number of high concentration data pairs (and the uncertainty in those few data pairs), the analysis was performed on a log-transformed basis. On a log-transformed basis, the intercept of the regression is equal to the K_{OC}, with the slope of the regression forced to a value of one. Homolog PCB concentrations were calculated as the sum of individual congeners that make up each PCB homolog group for the regression analysis. To reduce uncertainty, only detected concentrations were used in the regression analysis. The homolog-specific partition coefficients were calculated using the results of the intercept from the log-transformed regression.[8] The regression analyses are shown in Attachment C, and the resulting log K_{OC} values are listed in Table 3-3. This approach assumes similar partitioning among the 20 locations that were sampled and that a single site-specific coefficient can describe partitioning across the reach. Exploratory analysis of the data was performed to confirm that there were no obvious spatial differences in the partition coefficients; the degree of scatter exhibited by the figures is consistent with similar studies conducted for other projects, including the partitioning study conducted for the Housatonic River in 2001, as documented in the RCRA Facility Investigation (RFI) Report (QEA and BBL 2003). The relationships between the two phases are well explained by the partition coefficient regression lines in most cases (i.e., the data generally follow the regression lines), although some homologs exhibit a higher degree of variability than others. Variability is not uncommon in site-specific partitioning data relationships such as these (based on review of similar data from other projects),[9] due to sampling and analytical variability associated with combining three independent measurements (sorbed phase PCB, porewater PCB, sediment TOC).

Because the sediment porewater concentrations measured during the PDI and the values calculated from bulk sediment PCB measurements specified as the source term in the model (see Section 3.2.3) are on a freely dissolved basis, the model was configured to explicitly simulate partitioning of PCBs in the DOC-bound phase, as quantified by the input values for porewater DOC concentration (also measured as part of the PDI porewater study; see Table 3-1) and K_{DOC}. Consistent with literature and

[7] f_{OC} values less than 0.2% were set to 0.2% to account for sorption to mineral surfaces that occurs at these low organic carbon contents, consistent with the data treatment used in the partitioning evaluations documented in the FMD.

[8] When the underlying regression equation (i.e., sorbed phase concentration equals freely dissolved-phase concentration times partition coefficient) is log-transformed, it becomes a least squares regression analysis with slope forced to a value of one (i.e., log of sorbed phase concentration equals log of freely dissolved-phase concentration plus log of partition coefficient). The partition coefficient from this regression equation (i.e., the intercept) is mathematically equivalent to the average log ratio of the individual concentration data pairs.

[9] For example, standard errors for calculated site-specific K_{OC} values in the range of 0.1 to 0.3 log units were found in similar analyses conducted for paired porewater-sediment samples from Onondaga Lake (Parsons and Anchor QEA 2012) and Newtown Creek (Anchor QEA 2023).

the FMD, K_{DOC} was specified as 10 percent of the PCB homolog's K_{OW}. K_{OW} values were developed from literature values reported by Hawker and Connell (1988) and de Bruijn et al. (1989).[10]

Table 3-3
Chemical-Specific Partition Coefficients

Chemical Name	Log K_{OC} (log L/kg)	Log K_{DOC} (log L/kg)	Log K_{OW} (log L/kg)
PCB-mono	5.3	4.0	5.0
PCB-di	5.5	4.5	5.5
PCB-tri	5.7	4.9	5.9
PCB-tetra	5.9	5.4	6.4
PCB-penta	6.2	5.8	6.8
PCB-hexa	6.4	6.2	7.2
PCB-hepta	6.7	6.6	7.6
PCB-octa	6.9	6.9	7.9
PCB-nona	7.1	7.2	8.3
PCB-deca	7.4	7.6	8.6

The site- and homolog-specific log K_{OC} values (5.3 to 7.4 log L/kg) are within the range of log K_{OC} values reported in the literature (e.g., converted from K_{OW} using relationship developed by Di Toro [1985]) of 4.9 to 8.4 log L/kg. In addition, the site-specific K_{OC} values on a total PCB basis are within the range of those calculated from porewater samples collected in 2001 and summarized in the RFI Report (Figure 8-22 of QEA and BBL 2003). As shown on Figure 11 of Attachment C, the total PCB log K_{OC} of 6.2 log L/kg calculated from the more recent PDI is similar to the Reach 5 values presented in the RFI Report (QEA and BBL 2003) and the log K_{OC} value of 6.5 log L/kg used in EPA's fate and transport modeling presented in the FMD. For this evaluation, the K_{OC} values calculated from the more recent PDI dataset were used for this evaluation because the porewater concentrations from the PDI were measured using a more modern sampling method (SPME) that directly measured the freely dissolved phase, rather than a separation based method that measured the freely dissolved plus DOC-bound PCB together, and because the more recent samples were analyzed by a more accurate PCB congener analytical method.

[10] Average log K_{OW} values for PCBs were developed by arithmetically averaging results from individual congeners within each homolog group. Log K_{OW} values for PCBs, as cited by Hawker and Connell (1988), are widely used, although they were measured by a generator column. Log K_{OW} values measured by the "slow-stirring" method are considered more accurate (OECD 2006). Therefore, the Hawker and Connell PCB log K_{OW} values were adjusted based on a correlation with log K_{OW} values measured by de Bruijn et al. (1989) using the "slow-stirring" method (de Bruijn's log K_{OW} values were not used directly because that study measured only 20 PCB congeners).

3.2.3 Porewater PCB Concentrations

The porewater concentration input defines the source term in the cap model and corresponds to the contaminant concentrations present in the porewater immediately beneath the cap. Porewater and paired bulk sediment samples were collected at 20 locations within Reach 5A and analyzed for congener-specific PCBs as part of the PDI, as described in Section 3.2.2. The objective of this component of the PDI was to use the 20 porewater samples to support calculation of site-specific partition coefficients (as presented in Section 3.2.2), which could then be used to convert the larger sediment PCB dataset collected under the PDI (i.e., over 1,900 sediment samples in the main channel, backwaters, and Other Waterbodies, as described in Section 3.2.1 of the Conceptual RD/RA Work Plan) to corresponding porewater PCB concentrations to fully characterize spatial variations in Reach 5A sediment porewater PCB concentrations for use in cap design model evaluations. The conversion from sediment Aroclor-based PCB concentrations to PCB homolog porewater concentrations in this approach was a multi-step process that is described in the remainder of this section.

Step 1: Calculate Sediment PCB Concentration Statistics for Each Sub-Area for Selected Depth Intervals of Interest

Summary statistics for the sediment total PCB concentrations in areas to be capped are shown in Table 3-4. Because a minimum of one foot of sediment will be removed to accommodate the engineered caps, the sediment concentrations below one foot were considered reflective of the PCB concentrations that would be present beneath the engineered caps and, therefore, used for the capping evaluations for the purpose of defining concentrations beneath the cap. These concentrations are shown on an OC-normalized basis because the conversion to porewater concentration is based on dividing the OC-normalized sediment concentration by the K_{OC} as per Equation 3-2.

Table 3-4
OC-Normalized Total PCB Concentrations in Sediments Below 1 Foot in Areas to Be Capped

Area	Sample Count	OC Normalized Sediment Total PCB Concentration (mg/kg OC)						
		Minimum	Mean	95% UCL on the Mean	50th Percentile	75th Percentile	95th Percentile	Maximum
Main Channel Reach 5A-1	226	0.887	1,150	5,470	36.9	333	3,110	125,000
BW5A-1[a]	0	—	—	—	—	—	—	—
Intermittent Side Channel	11	1.48	228	362	177	328	615	793
Main Channel Reach 5A-2	215	0.474	2,210	12,700	190	1,000	5,100	208,000
Sykes Brook	2	331	766	NC	766	983	1,160	1,200

Area	Sample Count	OC Normalized Sediment Total PCB Concentration (mg/kg OC)						
		Minimum	Mean	95% UCL on the Mean	50th Percentile	75th Percentile	95th Percentile	Maximum
BW5A-2	36	5.52	3,510	6,630	1420	2,960	14,300	33,500
BW5A-3	39	0.605	13,600	61,300	840	1,850	44,700	257,000
BW5A-4	14	5.34	1,980	5,160	338	3,060	7,390	11,700
BW5A-5	119	0.364	515	1,160	4.90	52.7	3,050	12,900
Main Channel Reach 5A-3	126	0.294	1,370	2,120	150	1,170	5,520	33,600
BW5A-6	42	0.480	889	1,310	581	1,090	3,040	6,240

Notes:
NC: not calculated due to insufficient number of samples
Concentrations reported to three significant figures.

a. Samples were not collected from sediment depths below one foot in this area. Average concentration in the surface samples within BW5A-1 is 841 mg/kg OC, and the maximum concentration is 1,287 mg/kg OC.

Because the goal of the remedy is to reduce PCB flux to the water column and PCB uptake from biota, a statistic that represents an area-wide average is appropriate. Conservatively, simulations were conducted using 95% upper confidence limits (UCL) on the mean of PCB concentrations, which were calculated using the EPA ProUCL software (version 5.1; Singh and Singh 2015). As shown in Table 3-4, the 95% UCL on the mean is greater than the 75th percentile PCB concentration and, in some areas, also greater than the 95th percentile PCB concentration, which illustrates that this represents an upper-bound concentration relative to the full data distributions.

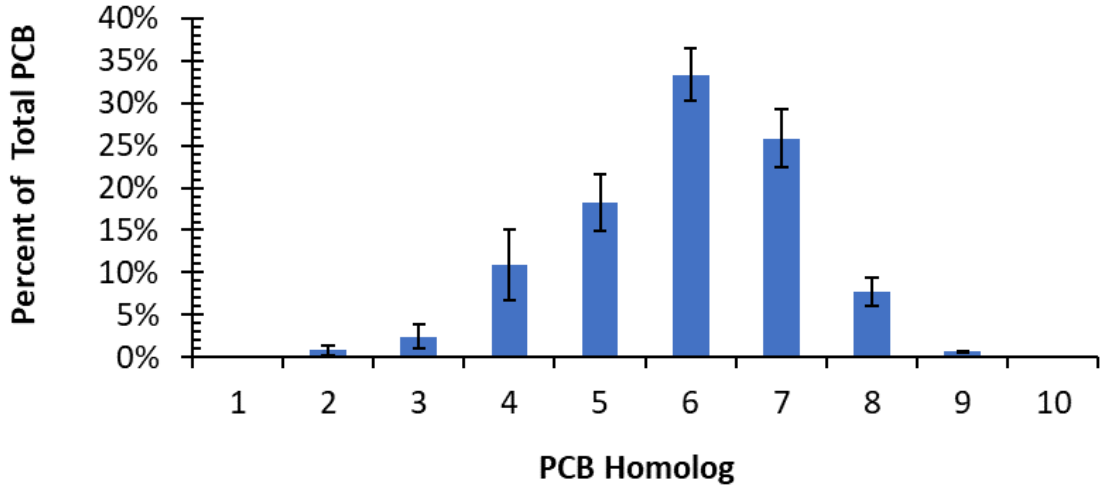
Step 2: Combine Sub-Areas Having Similar Concentrations, After Accounting for Delineation Based on Seepage Rates, Waterbody Type, and Constructability Considerations

Backwaters BW5A-2 through BW5A-5 are geographically close to one another and were, therefore, assigned the same seepage rate, as discussed in Section 3.2.1. As shown in Table 3-4, PCB concentrations in backwaters BW5A-2, BW5A-4, and BW5A-5 (green shading on Figure 3-2) are within the same order of magnitude (range of 1,160 to 6,630 mg/kg OC); therefore, BW5A-2, having the highest concentration among these three backwaters (6,630 mg/kg), was conservatively selected to represent the conditions of those three backwaters collectively in the modeling evaluation. PCB concentrations in backwater BW5A-3 were an order of magnitude greater than the other three backwaters in this sub-area; therefore, BW5A-3 was evaluated separately in the modeling.

Step 3: Calculate PCB Homolog Concentrations from Total PCB Concentrations

As stated previously, individual PCB homologs were simulated by the cap model to account for the range in mobility of the PCB congeners that make up the total. Therefore, the reported PCB concentrations in sediment were first converted to individual PCB homolog concentrations using the average homolog distribution from the 20 sediment samples collected as part of the PDI porewater partitioning study that were analyzed for congener-specific-PCBs (see Figure 3-3).

Figure 3-3
Average Homolog Distribution of PDI Sediment Samples Analyzed for Congener-Specific PCBs



Note:
Error bars represent +/- 2 standard errors of the mean

The average homolog distribution shown on Figure 3-3 is generally consistent with that measured in historical sampling (as documented in the RFI Report) and is consistent with an Aroclor 1260-dominated signature, which is what has consistently been reported for this site, as noted in the RFI Report.

Step 4: Apply Aroclor to Congener Conversion Factor

Because the larger sediment PCB data set was analyzed for PCBs using an Aroclor-based method (consistent with nearly all of the historical sampling conducted for the RFI, risk assessments, and the Corrective Measures Study [see Arcadis et al. 2010]) and the partitioning coefficients were developed using congener-specific PCB data, the evaluation explicitly considered differences in these two methods when converting from sediment Aroclor PCB data to PCB homolog concentrations. The data collected as part of the PDI partitioning study indicates that congener-based total PCB concentrations in sediment samples are generally higher than those measured by Aroclor method. The central tendency value of the ratio of paired congener-based to Aroclor-based PCB concentrations is approximately 1.7, when calculated using both log-transformed and untransformed data. Thus, the Aroclor-based PCB sediment concentration data were multiplied by a factor of 1.7 for converting to sediment PCB homolog concentrations.

Step 5: Use K_{OC} to Convert to Porewater PCB Homolog Concentrations

The calculated sediment PCB homolog concentrations were lastly converted to porewater PCB homolog concentrations using the site-specific log K_{OC} values listed in Table 3-3 and Equation 3-2. Calculated porewater PCB homolog concentrations based on the 95% UCL of the mean sediment concentrations (OC-normalized) are listed in Table 3-5. The sediment-derived freely dissolved porewater concentrations shown in Table 3-5 are at the upper end of the range or higher when compared to the total PCB concentrations measured in the 20 porewater samples (0.0013 to 5.3 micrograms per liter [µg/L] total PCBs). The lowest freely dissolved total PCB concentration in Table 3-5 (1.1 µg/L for BW5A-1 and BW5A-6) is greater than the total PCB concentration in 17 of the 20 porewater samples. It should be noted that some of the total PCB concentrations used in the model (e.g., BW5A-2 at 59 µg/L) are approaching solubility limits for several PCB Aroclor mixtures, including Aroclor 1260 (e.g., Yalkowsky et al. 2010), which highlights the conservatism of these porewater PCB concentration inputs.

Table 3-5
Freely Dissolved Porewater Concentrations

Chemical Name	Freely Dissolved Porewater Concentration (µg/L)						
	Main Channel Reach 5A-1[a]	BW5A-1	Main Channel Reach 5A-2[b]	BW5A-2[c]	BW5A-3	Main Channel Reach 5A-3[d]	BW5A-6
PCB-mono	1.4E-02	3.4E-03	3.3E-02	1.7E-02	1.6E-01	5.5E-03	3.4E-03
PCB-di	2.6E-01	6.0E-02	5.9E-01	3.1E-01	2.9E+00	9.9E-02	6.1E-02
PCB-tri	5.0E-01	1.2E-01	1.1E+00	6.0E-01	5.5E+00	1.9E-01	1.2E-01
PCB-tetra	1.3E+00	3.1E-01	3.0E+00	1.6E+00	1.5E+01	5.1E-01	3.1E-01
PCB-penta	1.0E+00	2.4E-01	2.4E+00	1.2E+00	1.1E+01	3.9E-01	2.4E-01
PCB-hexa	1.1E+00	2.7E-01	2.7E+00	1.4E+00	1.3E+01	4.4E-01	2.7E-01
PCB-hepta	5.0E-01	1.2E-01	1.2E+00	6.1E-01	5.6E+00	1.9E-01	1.2E-01
PCB-octa	8.7E-02	2.0E-02	2.0E-01	1.1E-01	9.7E-01	3.4E-02	2.1E-02
PCB-nona	4.5E-03	1.0E-03	1.0E-02	5.4E-03	5.0E-02	1.7E-03	1.1E-03
PCB-deca	1.2E-04	2.8E-05	2.8E-04	1.4E-04	1.3E-03	4.6E-05	2.9E-05
Total PCB[e]	4.8E+00	1.1E+00	1.1E+01	5.9E+00	5.4E+01	1.9E+00	1.1E+00

Notes:

a. Concentrations in the Main Channel Reach 5A-1 were used for the cap modeling that represents the main channel (Stations 00+00 to 84+00) and the Intermittent Side Channel.
b. Concentrations in the Main Channel Reach 5A-2 were used for the cap modeling that represents the main channel (between Stations 84+00 to 179+00) and Sykes Brook.
c. Concentrations in BW5A-2 were used for the cap modeling that represents the BW5A-2, BW5A-4, and BW5A-5.
d. Concentrations in the Main Channel Reach 5A-3 were used for the cap modeling that represents the main channel (between Stations 179+00 to 245+00).
e. Total PCBs are included for reference only; total PCBs were not simulated with the model. PCBs were simulated by homolog group, and results were summed to calculate total PCB flux and concentration for comparison to the Performance Standards.

3.2.4 Surface Water PCB Concentrations

Surface water concentrations represent the boundary condition at the top of the cap in the model and are used in the cap model to compute the surface exchange flux between porewater and surface water at the cap/surface water interface. These concentrations were based on the average concentrations measured at the Pomeroy Avenue Bridge and South Street Bridge locations from samples collected between March and November 2022 as part of the interim baseline sampling program (Anchor QEA and Arcadis 2023). Surface water PCB concentrations were measured from whole water samples. For purposes of the cap modeling, these concentrations were converted to freely dissolved surface water concentrations, on a homolog-specific basis, using Equation 3-3, which is the same three-phase PCB partitioning formulation used for porewater (see Sections 3.2.2 and 3.2.3) and used in EPA's PCB fate and transport model documented in the FMD.

Equation 3-3

$$C_f = \frac{C_w}{1 + mdoc \cdot k_{doc} + TSS \cdot K_{OC} \cdot f_{OC}}$$

where:

C_f	=	freely dissolved surface water PCB homolog concentration (M/L^3)
C_w	=	sample-specific whole water surface water PCB homolog concentration measured during interim baseline sampling (Anchor QEA and Arcadis 2023) (M/L^3)
mdoc	=	surface water DOC concentration, specified to be 5 mg/L based on historical surface water data (Figure 8-6 of the RFI Report [QEA and BBL 2003]) (M/L^3)
K_{doc}	=	DOC partition coefficient, from Table 3-3 (L^3/M)
TSS	=	average total suspended sediment concentrations in surface water measured during interim baseline sampling (Anchor QEA and Arcadis 2023) (M/L^3)
K_{OC}	=	OC partition coefficient (see Table 3-3) (L^3/M)
f_{OC}	=	fraction OC of suspended sediments in surface water, specified to be 10% based on historical surface water data (see Figure 8-5 of the RFI Report [QEA and BBL 2003) (M/M)

Freely dissolved surface water concentrations were calculated separately for each sample collected from Pomeroy Avenue Bridge and South Street Bridge. The average freely dissolved concentrations from these two locations were then averaged to represent the PCB concentrations of surface water in Reach 5A. The calculated freely dissolved surface water PCB concentrations used in the cap model are listed in Table 3-6.

Table 3-6
Surface Water PCB Concentrations Used in Cap Model

Chemical Name	Freely Dissolved Surface Water Concentration (ng/L)
PCB-mono	0.093
PCB-di	5.6
PCB-tri	1.6
PCB-tetra	0.92
PCB-penta	0.12
PCB-hexa	0.29
PCB-hepta	0.092
PCB-octa	0.0058
PCB-nona	0.0011
PCB-deca	0.00039
Total PCB[a]	8.7

Note:
a. Total PCB is included for reference only; total PCB was not simulated with the model. PCBs were simulated by homolog group.

3.2.5 Organic Carbon Concentrations

OC within the cap affects the transport of PCBs within the cap through the process of sorption. Because porewater PCB concentrations presented in Section 3.2.3 are input to the model on a freely dissolved basis, partitioning to the DOC-bound phase was explicitly simulated in the model. Porewater DOC concentrations specified in the model were based on the average DOC concentrations reported from the porewater samples collected as part of the PDI for each cap sub-area. These values were input to the model for each model computational layer discussed in Section 3.1.3 and are listed in Table 3-7.

The f_{OC} in the BTZ (top 10 cm in the main channel and Other Waterbodies or top 15 cm in the backwaters; see Table 3-1) considering that, over time, the materials in the BTZ will equilibrate with the f_{OC} of depositing solids. The area-specific values used in the model were based on the average f_{OC} measured in surface sediment samples collected during the PDI and are listed in Table 3-7.

Table 3-7
Organic Carbon Concentrations Specified in Cap Layers

Sub-Area	DOC (mg/L)	F_{OC} of Bioturbation Zone (% by weight)
Main Channel Reach 5A-1 (Transects 1 to 84) and Intermittent Side Channel	3.2	0.9%
BW5A-1	4.2	8.8%
Main Channel Reach 5A-2 (Transects 84 to 179) and Sykes Brook	3.0	0.7%

Sub-Area	DOC (mg/L)	F_{OC} of Bioturbation Zone (% by weight)
BW5A-2, BW5A-4, BW5A-5	15[a]	2.9%
BW5A-3	15[a]	1.8%
Main Channel Reach 5A-3 (Transects179 to 245)	24[b]	0.8%
BW5A-6	24[b]	2.9%

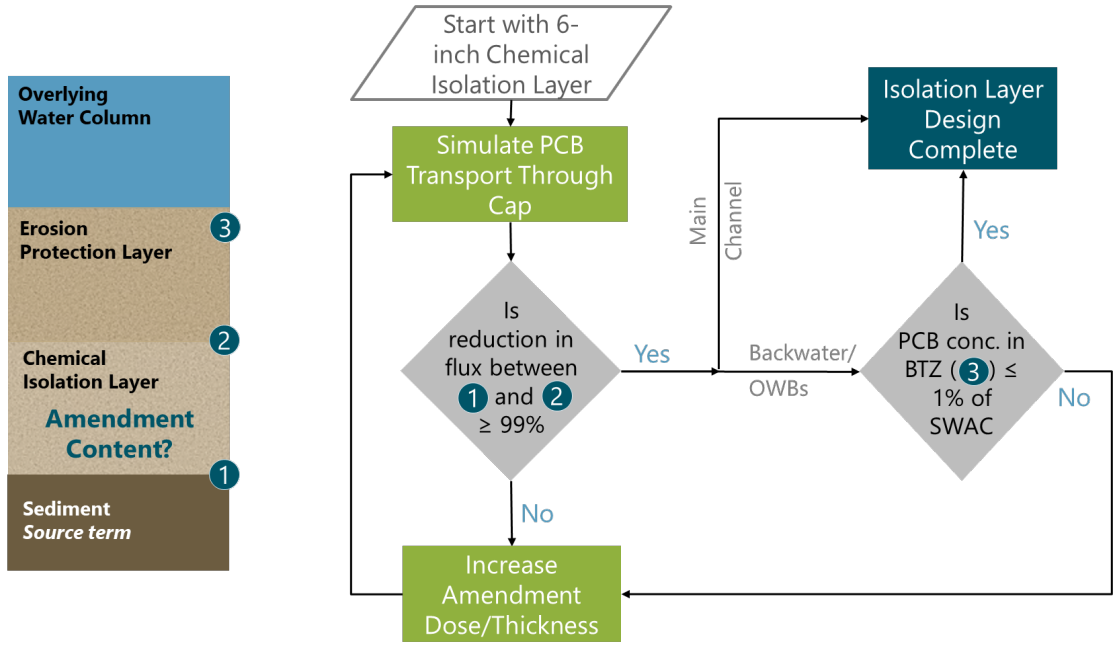
Notes:

a. The DOC concentration measured in BW5A-5 was also used to represent DOC in backwaters BW5A-2, BW5A-3, and BW5A-4.
b. The average DOC concentration from samples collected in the adjacent main channel sub-area (Locations ST197-PW18, ST215-PW19, and ST230-PW20) was used to represent DOC in backwater BW5A-6.

3.3 Simulation Setup and Iterative Approach

As described in Section 3.1.3, initially, a six-inch sand chemical isolation layer was evaluated with the model (represented by f_{OC} of 0.1%). In each of the seven sub-areas, the transport of PCBs was simulated for each of the 10 PCB homolog groups (mono- through decachlorobiphenyl) for a 100-year period. Model-predicted PCB mass fluxes and PCB concentrations for each homolog were summed to calculate the total PCB mass flux across the chemical isolation layer (i.e., by comparing predicted values at the bottom and top of that layer in the model) and the total PCB concentration within the BTZ. PCB mass fluxes predicted by the model at the sediment-cap interface and the interface between the chemical isolation layer and erosion protection layer were used to calculate percent reduction in total PCB mass flux across the chemical isolation layer throughout the course of the 100-year simulations. The total PCB concentration within the BTZ and the calculated percent reduction in total PCB mass flux were then compared to the Performance Standards summarized in Section 3.1.1. The model was then run iteratively by adjusting the amendment content and/or thickness of the chemical isolation layer, as needed, to achieve predicted reductions in the PCB mass flux across the chemical isolation layer of 99% throughout the simulation. In the backwater and Other Waterbodies, if a 99% reduction in PCB mass flux across the chemical isolation layer was achieved, but the sorbed phase total PCB concentration predicted in the BTZ was greater than 1% of the existing average surficial concentration of that backwater at the end of the 100-year simulation, additional iterative model simulations were conducted with higher amendment content and/or increased thickness of the chemical isolation layer until both criteria were satisfied, as illustrated on Figure 3-4.

Figure 3-4
Iterative Process of Simulation Approach



For the purposes of this conceptual design, f_{OC} was represented in the model as a generic carbon-based sorptive amendment for PCBs. Using f_{OC} at this stage in the design provides flexibility in selecting the appropriate amendment(s) during the final design. For example, literature suggests that activated carbon (AC) is 10 to 100 times more sorptive than natural TOC (Arp et al. 2009; Hale et al. 2009; McDonough et al. 2008). As such, a f_{OC} of 10% could be achieved using a dose of AC of 1% by weight or less.

3.4 Model Results

Model results indicated that for the middle portion of Reach 5A (main channel, BW5A-2, and BW5A-3), where measured groundwater seepage rates were negative (simulated as 0 cm/day), a 15 cm-thick sand chemical isolation layer is sufficient to achieve a 99% reduction in PCB mass flux through the chemical isolation layer for the duration of the 100-year simulation. In addition, model-predicted sorbed phase concentrations with the bioturbation zone are less than the replacement values within the backwaters in this portion of Reach 5A.

In the upper portion of Reach 5A (Main Channel Reach 5A-1 and BW5A-1) and the lower portion of Reach 5A (Main Channel Reach 5A-3 and BW5A-6), the model results showed that the Performance Standards would not be attained with a sand-only chemical isolation layer. Therefore, the model was run iteratively for each of the corresponding sub-areas, increasing the specified f_{OC} of the chemical isolation layer until the Performance Standards were predicted to be met. The model results, which

are shown in Table 3-8, indicate that 1.4% f_{OC} is required to meet the Performance Standards in the Main Channel Reach 5A-1, and 1.9% f_{OC} is required to achieve the Performance Standards in BW5A-1. In the lower portion of Reach 5A, where seepage rates are highest, model results indicate that 50% f_{OC} is required to meet Performance Standards in the main channel (Main Channel Reach 5A-3), and 60% f_{OC} is required to meet Performance Standards in BW5A-6.

Time series of model-predicted total PCB mass flux at the bottom and top of the chemical isolation layer and total PCB concentrations within the BTZ are shown for each sub-area on Figures 3-5a through 3-5g. The top panel in these figures compares the model-predicted total PCB mass fluxes at the bottom and top of the chemical isolation layer, which were used to calculate the percent reduction in total PCB mass flux across the layer.[11] The model initiates with a zero PCB mass flux at the start of the model-simulation. Due to the very large initial concentration gradient between the boundary condition (constant porewater concentration beneath the cap) and the initial zero concentration within the bottom of the cap, diffusion- and dispersion-dominated flux causes the total PCB mass flux to increase to a relatively high value and peak very early in the simulation. As concentrations begin to build within the bottom of the cap just above the sediment interface, the concentration gradients are reduced; and as a result, the model-predicted flux decreases until it eventually comes to a steady-state value that is dominated by the advection flux driven by groundwater seepage. The model-predicted fluxes at the top of the chemical isolation layer increase more gradually over the course of the model-simulation. These figures show that the reduction in total PCB mass flux across the chemical isolation layer remains greater than 99% throughout the 100-year simulations for the f_{OC} contents determined during this iterative cap design modeling evaluation. The bottom panel in these figures shows the PCB concentrations for each PCB homolog group and the corresponding total PCB concentrations predicted by the model within the BTZ (as a vertical average) over the course of the 100-year simulation. Within the backwaters, these figures show that the total PCB concentrations within the BTZ are predicted to remain less than the replacement value defined as part of delineating the cap areas for the f_{OC} contents developed during this iterative cap design modeling evaluation.

[11] This is a conservative approach because it compares flux at the top of the chemical isolation layer to the top of capped sediments. Reductions are even greater if the predicted flux at the top of the chemical isolation layer is compared to the current PCB mass flux from uncapped sediments because the additional transport associated with porewater exchange from surface sediment that occurs for uncapped conditions is absent when the contaminated sediments are a foot or more below the cap/surface water interface.

Table 3-8
Cap Design Model Results

Sub-Area	Seepage Rate (cm/day)	f_{OC} Required to Achieve Performance Standards (%)	Percent Reduction in PCB Mass Flux (%)	Concentration within BTZ at 100 years (mg/kg)
Upper Portion of Reach 5A				
Main Channel Reach 5A-1 (Transects 1 to 84) and Intermittent Side Channel	1.0	1.4%	99.0%	0.045
BW5A-1		1.9%	99.2%	0.027
Middle-Portion of Reach 5A				
Main Channel Reach 5A-2 (Transects 84 to 179) and Sykes Brook	0.0	0.1% (sand only)	100%[a]	0.0082
BW5A-2, BW5A-4, BW5A-5		0.1% (sand only)	100% [a]	0.011
BW5A-3		0.1% (sand only)	99.9%	0.010
Lower Portion of Reach 5A				
Main Channel Reach 5A-3 (Transects179 to 245)	5.0	50%	99.2%	0.11
BW5A-6		60%	99.7%	0.059

Notes:
f_{OC} and concentration within the bioturbation zone were rounded to two significant figures. Percent reduction in PCB mass flux was rounded to three significant figures.
a. Value is 99.96%, but when rounded to three significant figures, it shows as 100%.

As stated in Section 3.3, for the purposes of this conceptual design, f_{OC} was represented in the model as a generic carbon-based sorptive amendment for PCBs, which has been shown to be 10 to 100 times more sorptive than AC. Thus, a f_{OC} of 60% by weight for BW5A-6 determined through the iterative modeling process described herein could be achieved using a dose of AC of 6% by weight or less. The amendment contents listed in this table were adjusted based on constructability factors and to include added conservatism when determining the recommended values presented in Section 4.

3.5 Seepage Rate Sensitivity Analysis

A sensitivity analysis was conducted to evaluate a range of seepage rates for each of the sub-areas. The sensitivity analysis consisted of running the model with higher and lower values for groundwater seepage rate (based on observed temporal and spatial variability in the data) and comparing the predicted cap chemical isolation performance to that described in Section 3.4 (referred to hereafter as the base case). The results from this analysis were considered in determining the recommended chemical isolation amendment contents presented in Section 4.

The seepage rates used in the sensitivity analysis were developed as follows:

- The upper portion of Reach 5A (Main Channel Reach 5A-1 and BW5A-1, which used a seepage rate of 1 cm/day in the base case) was evaluated with a lower-bound seepage rate of 0.3 cm/day and an upper-bound seepage rate of 4.0 cm/day, representing the range of average seepage rates observed across three seepage measurement stations located in that portion of Reach 5A (see Table 3-2 and Attachment B).
- Although the average long-term seepage rates in the middle portion of Reach 5A are as low as -2.6 cm/day (PZ5; see Attachment B), the lower-bound value used for sensitivity analysis was conservatively kept at 0 cm/day (i.e., same as base case). A seepage rate of 0.5 cm/day, which is the maximum monthly average seepage rate measured from PZ08 (Aug 10 - Sept 8, 2022; see Attachment B), was used as an upper-bound seepage rate for the middle portion of Reach 5A.
- For the sensitivity analysis in the lower portion of Reach 5A (along with BW5A-6) a range of seepage rates representing values twofold lower and higher than the base case rate of 5 cm/day was used, based on professional judgement.

The seepage rates used in the sensitivity analysis are listed in Table 3-9.

Table 3-9
Seepage Rates Used in Cap Model Evaluations

Sub-Area	Waterbody	Base Case Seepage Rate (cm/day)	Lower-Bound Sensitivity Analysis Seepage Rate (cm/day)	Upper-Bound Sensitivity Analysis Seepage Rate (cm/day)
Upper-Portion	Main Channel Reach 5A-1 (< Transect 84) Intermittent Side Channel BW5A-1	1	0.3	4
Middle-Portion	Main Channel Reach 5A-2 (Transects 84 to 179) and Sykes Brook BW5A-2, BW5A-4, BW5A-5 BW5A-3	0	NA	0.5
Lower Portion	Main Channel Reach 5A-3 (Transects179 to 245) BW5A-6	5	2.5	10

The iterative modeling process was repeated for these lower- and upper-bound seepage rates in each sub-area for the sensitivity analysis. The model was run iteratively to identify the f_{OC} required to achieve the Performance Standards for these upper- and lower-bound seepage rates using the same approach described in Section 3.3. Table 3-10 lists the percent f_{OC} required to achieve the

Performance Standards based on model predictions for the upper and lower-bound seepage rates. The f_{OC} values required to meet the Performance Standards are within a factor of two to four times higher and lower than the base case design f_{OC} for the upper- and lower-bound sensitivity analysis seepage rates, respectively. These results indicate that the model is somewhat sensitive to seepage rate. Because seepage data continue to be collected, and these results indicate that the model is sensitive to seepage rates, these sensitivity analysis results were considered in developing the recommended amendment dosing developed at this conceptual stage of the design (as discussed in Section 3.6).

Table 3-10
Sensitivity Analysis: f_{OC} Required in Chemical Isolation Layer to Meet Performance Standards for Upper- and Lower-Bound Seepage Rates

Reach ID	Base Case f_{OC} Required to Achieve Performance Standards (%)	Lower-Bound f_{OC} Required to Achieve Performance Standards (%)	Upper-Bound f_{OC} Required to Achieve Performance Standards (%)
Upper Portion Reach 5A			
Main Channel Reach 5A-1 (Transects 1 to 84)	1.4%	0.5%	6%
BW5A-1	1.9%	0.6%	8%
Middle Portion Reach 5A			
Main Chanel Reach 5A-2 (Transects 84 to 179)	0.1% (sand only)	NA	0.7%
BW5A-2	0.1% (sand only)	NA	4%
BW5A-3	0.1% (sand only)	NA	4%
Lower Portion Reach 5A			
Main Channel Reach 5A-3 (Transects 179 to 245)	50%	25%	95%
BW5A-6	60%	30%	120%

As previously discussed, vertical hydraulic gradients continue to be measured at all 10 locations. In addition, seepage meters were deployed at four of the piezometer locations—PZ2, PZ5, PZ9, and PZ10. The additional hydraulic gradient data as well as the direct measure of seepage from the seepage meters will be incorporated into the calculation of long-term seepage rates to refine the sensitivity analysis as appropriate for the final design. It is possible, with a longer dataset, that the range values used in the sensitivity analysis could be smaller or the sensitivity analysis could be abandoned altogether.

3.6 Recommended Chemical Isolation Layer Configuration

The chemical isolation layer modeling results show that a six-inch chemical isolation layer consisting of sand with a carbon-based sorptive amendment is sufficient to meet the Performance Standards (i.e., reduce total PCB mass flux through the chemical isolation layer by 99% and maintain total PCB concentrations in the BTZ to levels less than the replacement value for backwater areas and Other Waterbodies) in each of the seven cap areas. Table 3-11 summarizes the chemical isolation layer thickness and amendment requirements recommended for each sub-area based on the modeling, including a recommended amendment dose on an AC equivalent basis. These amendment doses were determined based on model results presented in Section 3.4 and the groundwater seepage rate sensitivity analysis presented in Section 3.5, as well as conservatism considerations and constructability factors. As additional data become available and the design is refined, the final recommended amendment type(s) and dosage(s) will be refined during final design. In particular, an evaluation of carbon-based sorptive amendment types and doses to be used for the chemical isolation layer will be conducted as part of the treatability studies described in Appendix H to the Conceptual RD/RA Work Plan (the Treatability Study Work Plan for Reach 5A).

Table 3-11
Recommended Chemical Isolation Layer Amendment Dose

Area	Area (acres)	Base Case Groundwater Seepage Rate (cm/day)	Chemical Isolation Layer Thickness	f_{OC} Identified from Chemical Isolation Layer Modeling (%)	Recommended f_{OC} (% by weight)	Recommended AC (% by weight)[a]
Main Channel 5A-1	15.3	1	6 inches	1.4%	2% to 3%	1%
Intermittent Side Channel	0.1					
BW5A-1	0.1	1	6 inches	1.9%	3% to 5%	1%
Main Channel 5A-2	18.9	0	6 inches	0.1%	1%	1%
Sykes Brook	0.1					
BW5A-2	0.3	0	6 inches	0.1%	2% to 3%	1%
BW5A-4	0.1					
BW5A-5	0.8					
BW5A-3	0.2	0	6 inches	0.1%	2% to 3%	1%
Main Channel 5A-3	13.6	5	6 inches	50%	50% to 100%	7%
BW5A-6	0.3	5	6 inches	60%	50% to 100%	7%

Notes:
Areas in bold font are the seven areas that were explicitly evaluated with the model; the cap configuration identified to meet the Performance Standards in those areas is considered representative of conditions in the corresponding areas that are not shown in bold font.

a. Literature suggests that AC is 10 to 100 times more sorptive than f_{OC}; thus, for purposes of this conceptual design, it was conservatively assumed that AC is 10 times more sorptive than f_{OC}. For constructability reasons, the recommended AC application is no less than 1% by weight.

4 Conceptual Cap Design Summary

Based on the results of the erosion protection and chemical isolation evaluations presented in Sections 2 and 3, respectively, the conceptual cap design resulted in the designation of four cap types for Reach 5A. They are summarized in Table 5-2 of the Conceptual RD/RA Work Plan and Table 4-1. Figure 5-4 of the Conceptual RD/RA Work Plan shows the extents of where these different cap types will be applied in Reach 5A, and Figure 5-5 of the Conceptual RD/RA Work Plan shows schematic cross-sections of each cap type. The Final RD/RA Work Plan will present updated evaluations and final cap details, including final material and placement specifications and cross sections.

Table 4-1
Conceptual Engineered Cap Types

Cap Type	Conceptual Erosion Protection Layer Design	Conceptual Chemical Isolation Layer Design
Type A	• Erosion Protection Layer: Minimum six-inch-thick layer of coarse gravel (with a D_{50} of two inches)	• Minimum six-inch-thick layer of sand with a carbon-based sorptive amendment[a] – Main Channel 5A-1: 1% AC – Main Channel 5A-2: 1% AC – Main Channel 5A-3: 7% AC
Type B	• Geotechnical Filter Layer: Minimum six-inch-thick layer of gravel • Erosion Protection Layer: Minimum 18-inch-thick layer of cobble (with a D_{50} of six to eight inches)	• Minimum six-inch-thick layer sand with a carbon-based sorptive amendment – Main Channel 5A-1: 1% AC – Main Channel 5A-3: 7% AC
Type C	• Geotechnical Filter Layer: Minimum 12-inch-thick layer of gravel • Erosion Protection Layer: two to three feet of riprap[b]	• Minimum six-inch-thick layer sand with a carbon-based sorptive amendment[a] – Main Channel 5A-1: 1% AC
Type D	• Erosion Protection Layer: Minimum six-inch-thick layer of coarse sand[c]	• Minimum six-inch-thick layer of sand with a carbon-based sorptive amendment[a] – Intermittent Side Channel: 1% AC – Sykes Brook: 1% AC – BW5A-1 through BW5A-5: 1% AC – BW5A-6: 7% AC

Notes:

a. The amendment dose will vary by location in accordance with Table 3-10. The type(s) and dosage(s) for the carbon-based amendment will be determined during final design.
b. During final design, an alternate engineered cap may be evaluated for Cap Type C (e.g., articulated concrete mats, marine armored mattress).
c. The conceptual design assumes that the erosion protection layer for the backwater areas and Other Waterbodies will consist of a coarse sand material due to the low velocity characteristics associated with these areas. Final details of the erosion protection layer for these areas will be determined during final design.

The factors that will be considered in selecting the materials for the engineered caps are discussed in Section 5.3.4 of the Conceptual RD/RA Work Plan.

5 References

Anchor Environmental, 2007. *Annual Data Evaluation Monitoring Report – Year 0 Long-Term Pilot Cap Monitoring*. Removal Action NW Natural "GASCO" Site. Prepared for U.S. Environmental Protection Agency, Region 10. June 2007.

Anchor QEA, 2020. *Amendment to Sediment Cap Design Report*. Randle Reef Sediment Remediation Project. Prepared for Riggs Engineering Ltd. July 2020.

Anchor QEA, 2023. *Remedial Investigation Report*. Remedial Investigation/Feasibility Study, Newtown Creek. March 2023.

Anchor QEA, AECOM, and Arcadis, 2021. *Final Revised Rest of River Statement of Work*. Housatonic River – Rest of River. Prepared for General Electric Company, Pittsfield, Massachusetts. September 2021.

Anchor QEA and AECOM, 2022. *Revised Pre-Design Investigation Work Plan for Reach 5A Sediment and Riverbanks*. Housatonic River – Rest of River. Prepared for General Electric Company. May 2, 2022.

Anchor QEA and AECOM, 2023. *Pre-Design Investigation Summary Report for Reach 5A Sediment and Riverbanks*. Housatonic River – Rest of River. Prepared for General Electric Company, Pittsfield, Massachusetts. September 2023.

Anchor QEA and Arcadis (Anchor QEA, LLC, and Arcadis U.S., Inc.), 2023. *Interim Baseline Surface Water Monitoring Report*. Prepared for General Electric Company. March 2023.

Arcadis, Anchor QEA, and AECOM, 2010. *Housatonic River – Rest of River, Revised Corrective Measures Study Report*. Prepared for General Electric Company, Pittsfield, Massachusetts. October 2010.

Arcadis BBL, 2008. Pilot Study Report for Silver Lake Sediments. Prepared for General Electric Company, Pittsfield, MA. January 2008.

Arp, H.P.H., G.D. Breedveld, and G. Cornelissen, 2009. "Estimating the In Situ Sediment-Porewater Distribution of PAHs and Chlorinated Aromatic Hydrocarbons in Anthropogenic Impacted Sediments." *Environ. Sci. Technol*. 43:5576–5585.

Bartles, M., B. Faber, M. Fleming, G. Karlovits, and J. Slaughter, 2022. *HEC-SSP Statistical Software Package User's Manual*. Version 2.2. Prepared on behalf of U.S. Army Corps of Engineers. January 2022.

de Bruijn, J., F. Busser, W. Seinen, and J. Hermens, 1989. "Determination of Octanol/Water Partition Coefficients for Hydrophobic Organic Chemicals with the 'Slow-Stirring' Method." *Environmental Toxicology and Chemistry* 8(6):499–512.

Clarke, D.G., M.R. Palermo, and T.C. Sturgis, 2001. "Subaqueous Cap Design: Selection of Bioturbation Profiles, Depths, and Rates." DOER Technical Notes Collection (ERDC TN-DOER-C21), U.S. Army Engineer Research and Development Center, Vicksburg, Mississippi.

Di Toro, D.M., 1985. "A Particle Interaction Model of Reversible Organic Chemical Sorption." *Chemosphere* 14(10):1503–1538.

Domenico, P.A., and F.W. Schwartz, 1990. *Physical and Chemical Hydrogeology*. New York: John Wiley & Sons, Inc.

England, J.F., Jr., T.A. Cohn, B.A., Faber, J.R. Stedinger, W.O. Thomas, Jr., A.G. Veilleux, J.E. Kiang, and R.R. Mason, Jr., 2019. "Guidelines for Determining Flood Flow Frequency — Bulletin 17C." *U.S. Geological Survey Techniques and Methods*. Version 1.1, Book 4, Chapter B5:148.

EPA (U.S. Environmental Protection Agency), 2005. *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites*. EPA-540-R-05-012, Office of Solid Waste and Emergency Response.

EPA, 2006. *Final Model Documentation Report: Modeling Study of PCB Contamination in the Housatonic River*. Prepared by Weston Solutions, Inc., West Chester, PA. Prepared for the U.S. Army Corps of Engineers, New England District, and the U.S. Environmental Protection Agency, New England Region, November 2006.

EPA, 2020. *Revised Final Permit Modification to the 2016 Reissued RCRA Permit and Selection of CERCLA Remedial Action and Operation & Maintenance for Rest of River*. December 2020.

FEMA (Federal Emergency Management Agency), 1987. Flood Insurance Study report. FEMA Flood Map Service Center. Product ID 250037V000.

GE (General Electric Company), 2012. Letter to: Dean Tagliaferro, EPA. Regarding: GE-Pittsfield/Housatonic River Site Upper ½-Mile Reach of Housatonic River (GECD800) 2012 Deposited Sediment and Isolation Layer Sampling Report. November 20, 2012.

Go, J., D.J. Lampert, J.A. Stegemann, and D.D. Reible, 2009. "Predicting Contaminant Fate and Transport in Sediment Caps: Mathematical Modeling Approaches." *Appl. Geochem.* 24(2009):1347-1353.

Hale, S.E., S. Kwon, U. Ghosh, and D. Werner, 2010. "Polychlorinated Biphenyl Sorption to Activated Carbon and the Attenuation Caused by Sediment." *Global NEST Journal* 12(3):318–326.

Hawker and Connell (Hawker, D.W., and D.W. Connell), 1988. "Octanol-Water Partition Coefficients of Polychlorinated Biphenyl Congeners." *Environmental Science and Technology* 22(4):382–387.

ITRC (Interstate Technology and Regulatory Council), 2014. *Contaminated Sediments Remediation: Remedy Selection for Contaminated Sediments (CS-2)*. Washington, D.C.: Interstate Technology and Regulatory Council, Contaminated Sediments Team.

ITRC, 2023. *Sediment Cap Chemical Isolation Guidance (SD-1)*. Washington, D.C.: Interstate Technology & Regulatory Council.

Lampert, D.J., and D. Reible, 2009. "An Analytical Modeling Approach for Evaluation of Capping of Contaminated Sediments." *Soil and Sediment Contamination: An International Journal* 18(4):470-488.

Maynord, S., 1998. "Armor Layer Design." Appendix A to *Guidance for In-Situ Subaqueous Capping of Contaminated Sediment*. EPA 905-B96-004. Prepared for the U.S. Environmental Protection Agency.

McDonough, K.M., J.L. Fairey, and G.V. Lowry, 2008. "Adsorption of Polychlorinated Biphenyls to Activated Carbon: Equilibrium Isotherms and a Preliminary Assessment of the Effect of Dissolved Organic Matter and Biofilm Loadings" Water Research 42: 575–584.

Millington, R.J., and J.P. Quirk, 1961. "Permeability of Porous Solids." *T. Faraday Soc.* 57:1200–1207.

Neuman, S.P., 1990. "Universal Scaling of Hydraulic Conductivities and Dispersivities in Geologic Media." *Water Resour. Res.* 26(8):1749-1758.

OECD (Organisation for Economic Co-operation and Development), 2006. *OECD Guidelines for the Testing of Chemicals, Test No. 123: Partition Coefficient (1-Octanol/Water): Slow-Stirring Method*.

Palermo, M., S. Maynord, J. Miller, and D. Reible, 1998. *Guidance for In-Situ Subaqueous Capping of Contaminated Sediments*. EPA 905-B96-004. Great Lakes National Program Office, Chicago, Illinois.

Parsons and Anchor QEA, 2012. *Onondaga Lake Capping, Dredging, Habitat and Profundal Zone (SMU 8) Final Design*. Appendix B – Cap Modeling. Prepared for Honeywell. March 2012.

QEA and BBL (Quantitative Environmental Analysis, LLC and Blasland, Bouck and Lee, Inc.). *Housatonic River – Rest of River RCRA Facility Investigation Report*. Prepared for General Electric Company, Pittsfield, Massachusetts. September 2003.

Reible, D., 2012. "Model of 2 Layer Sediment Cap, Description and Parameters." Version - 2 Layer Analytical Model v.1.18 and Active Cap Layer Model v 4.1. Available at: https://www.depts.ttu.edu/ceweb/groups/reiblesgroup/downloads/2%20layer%20analytical%20model%20description.doc.

Reible, D., 2017. *CapSim 3.5 Quick-Start Manual*. Available at: https://www.depts.ttu.edu/ceweb/groups/reiblesgroup/downloads/CapSim%203.6%20Quick%20Start%20Manual.docx.

Schwarzenbach, R.P., P.M. Gschwend, and D.M. Imboden, 1993. *Environmental Organic Chemistry*. New York: John Wiley & Sons, Inc.

Shaw Environmental and Infrastructure, Inc., Anchor Environmental, LLC, and Foth Infrastructure and Environment, LLC, 2008. *Lower Fox River Phase 1 Remedial Action Draft Summary Report 2007*. Prepared for NCR Corporation and U.S. Paper Mills Corporation. February 21, 2008.

Shen, X., D. Lampert, S. Ogle, and D. Reible, 2018. "A Software Tool for Simulating Contaminant Transport and Remedial Effectiveness in Sediment Environments." *Environmental Modelling and Software* 109:104–113. Available at: https://doi.org/10.1016/j.envsoft.2018.08.014.

Singh, A., and A.K. Singh. 2015. *ProUCL Version 5.1.002 Technical Guide. Statistical Software for Environmental Applications for Data Sets with and without Nondetect Observations*. Prepared for ORD Site Characterization and Monitoring Support Center Superfund Technology Liaison, Region 4. U.S. Environmental Protection Agency.

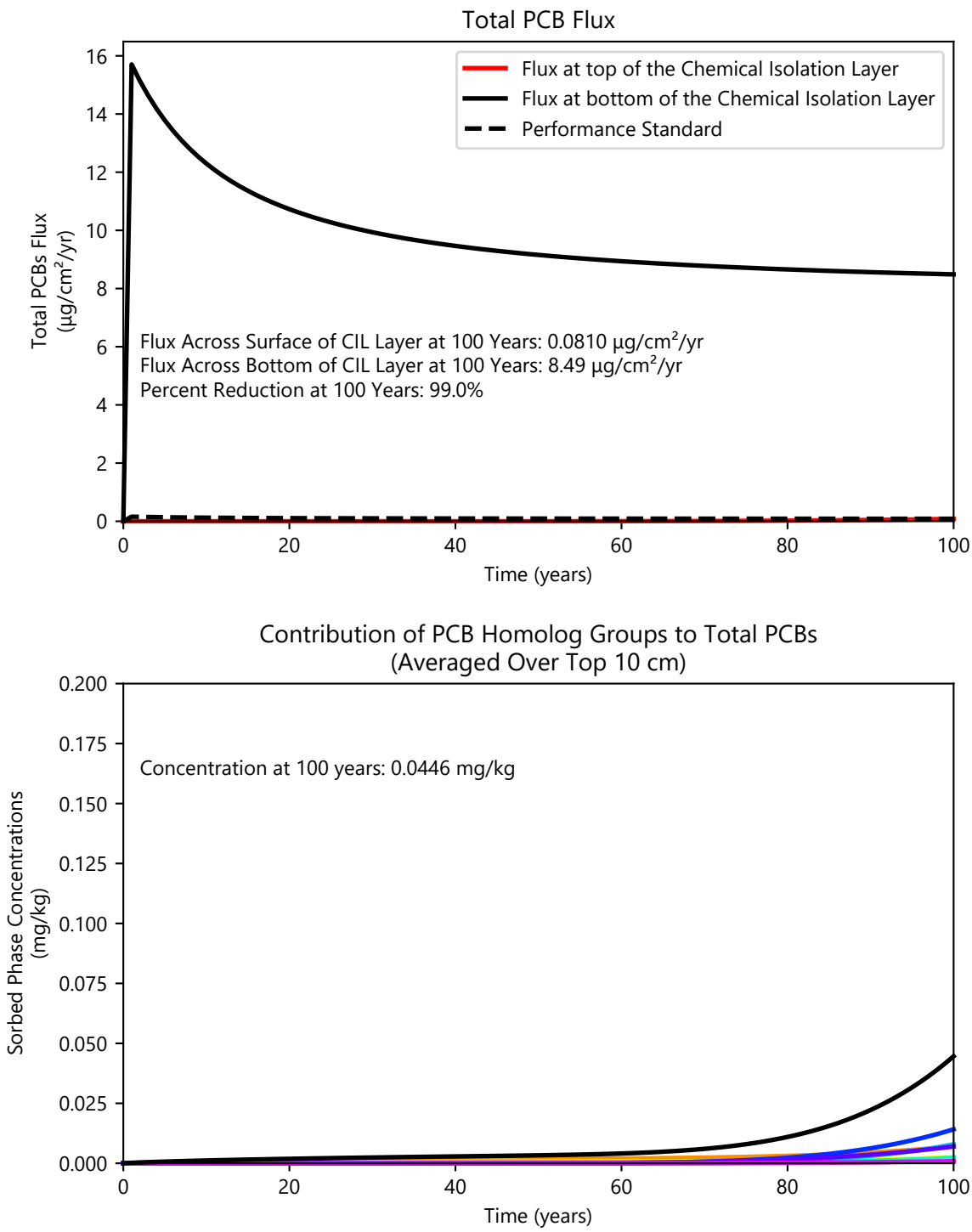
Tetra Tech EC, Inc., Anchor QEA, LLC, J.F. Brennan Company, Inc., Stuyvesant Projects Realization, Inc., O'Brien and Gere Engineers, Inc. (Part of Ramboll), and Foth Infrastructure and Environment, LLC, 2019. Addendum to the Final 2019 Update to Phase 2b Remedial Action Work Plan – Manufactured Gas Plant North Focus Area Lower Fox River And Green Bay Site Operable Units 2–5. Prepared for Wisconsin Department of Natural Resources and U.S. Environmental Protection Agency. August 2019.

Thibodeaux, L.J., and D. Mackay, 2011. *Handbook of Chemical Mass Transport in the Environment*. Boca Raton, Florida: CRC Press.

USACE (U.S. Army Corps of Engineers), 1994. Hydraulic Design of Flood Control Channels. Engineering Manual EM 1110-2-1601. June 1994.

Yalkowsky, S.H., Y. He, and P. Jain, 2010. *Handbook of Aqueous Solubility Data*. 2nd Edition. Boca Raton, Florida: CRC Press.

Figures



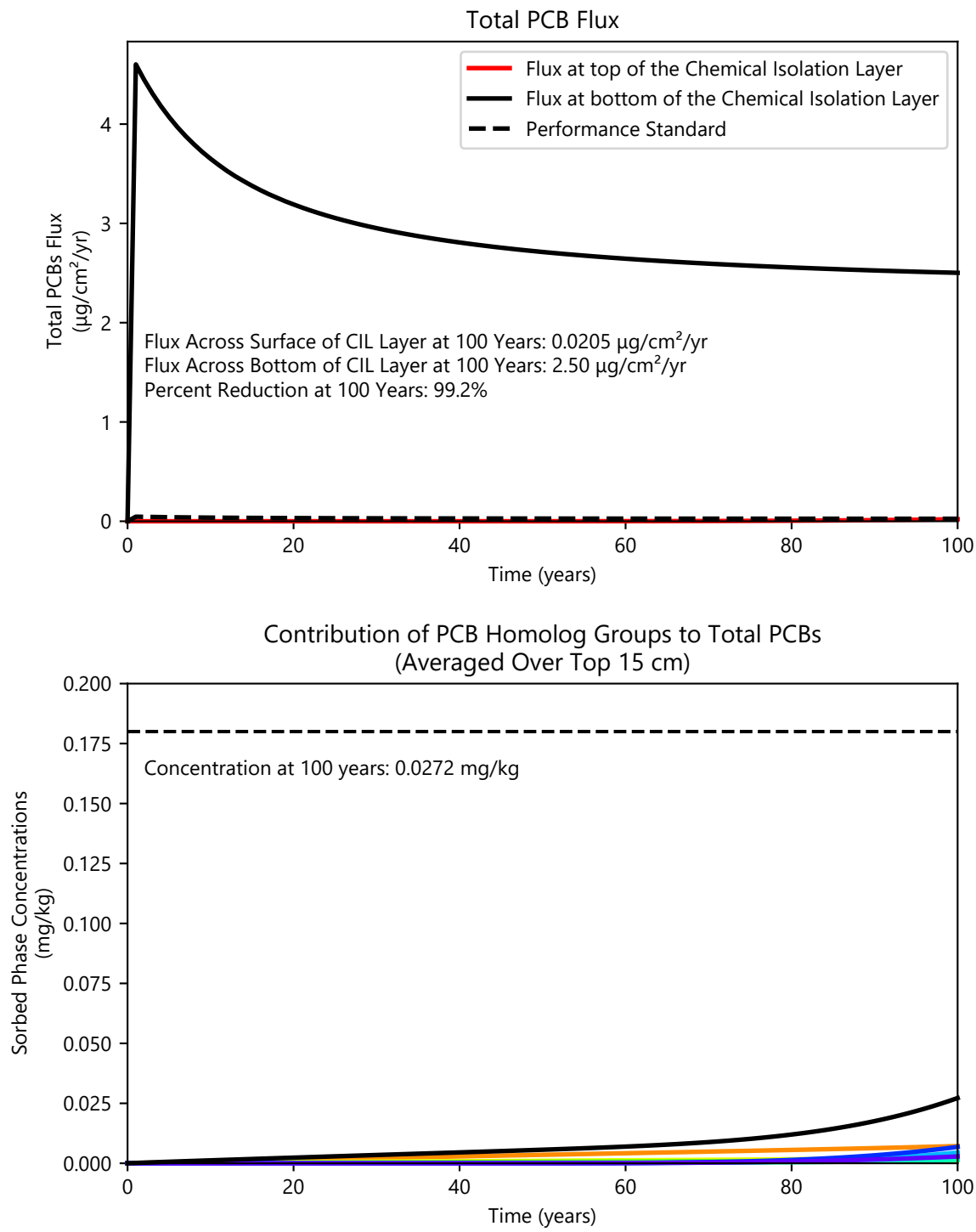
Notes:
The dotted black line represents the performance standard.
Surface of the chemical isolation layer is at a depth of 15 cm from the surface of the cap.
Bottom of the chemical isolation layer is at a depth of 30 cm from the surface of the cap.
Chemical isolation layer contains 1.4% by weight f_{OC}.

PCB-mono, PCB-di, PCB-tri, PCB-tetra, PCB-penta, PCB-hexa, PCB-hepta, PCB-octa, PCB-nona, PCB-deca, TPCB, Performance Standard

Publish Date: 09/26/2023 14:52 PM | User: BAL-DGRA2
File Path: \\WCL-FS1\Syracuse\Projects\GE\Housatonic_Rest-of-River\Remedial_Design\Reach_5A\MODEL\Cap_Design\CapSim3o8\Python\CapSim_Plots_Batch.py

ANCHOR QEA

Figure 3-5a
Model-Predicted PCB Flux and Concentration Compared to Performance Standards: Reach 5A-1
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River



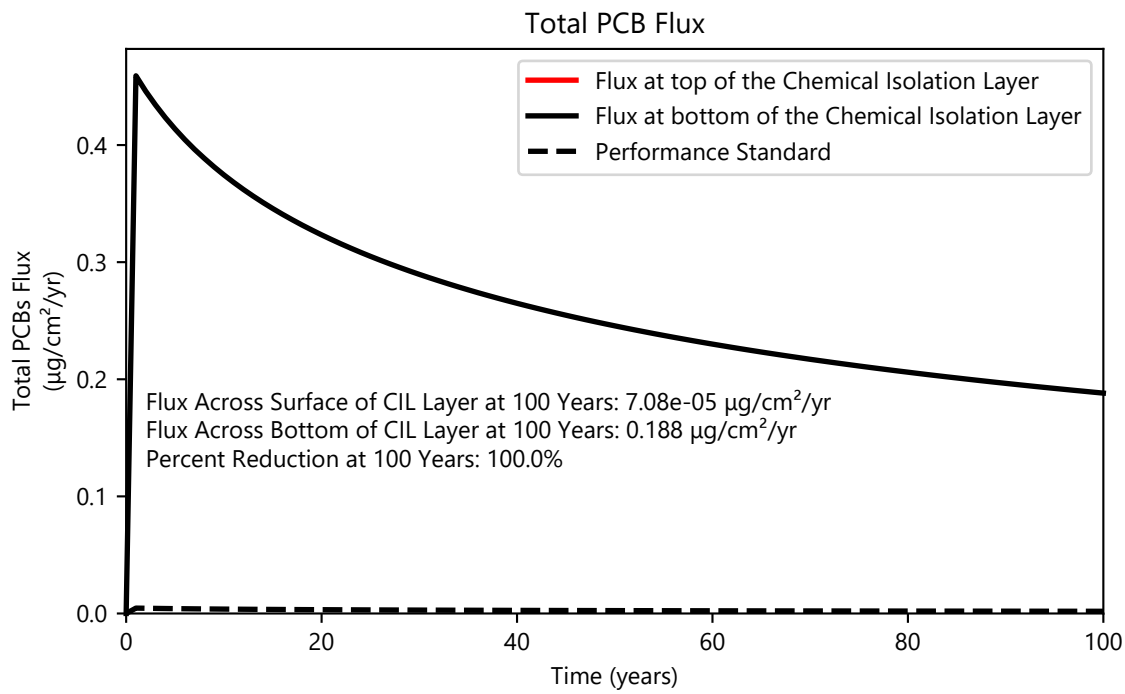
Notes:
The dotted black line represents the performance standard.
Surface of the chemical isolation layer is at a depth of 15 cm from the surface of the cap.
Bottom of the chemical isolation layer is at a depth of 30 cm from the surface of the cap.
Chemical isolation layer contains 1.9% by weight f_{OC}.

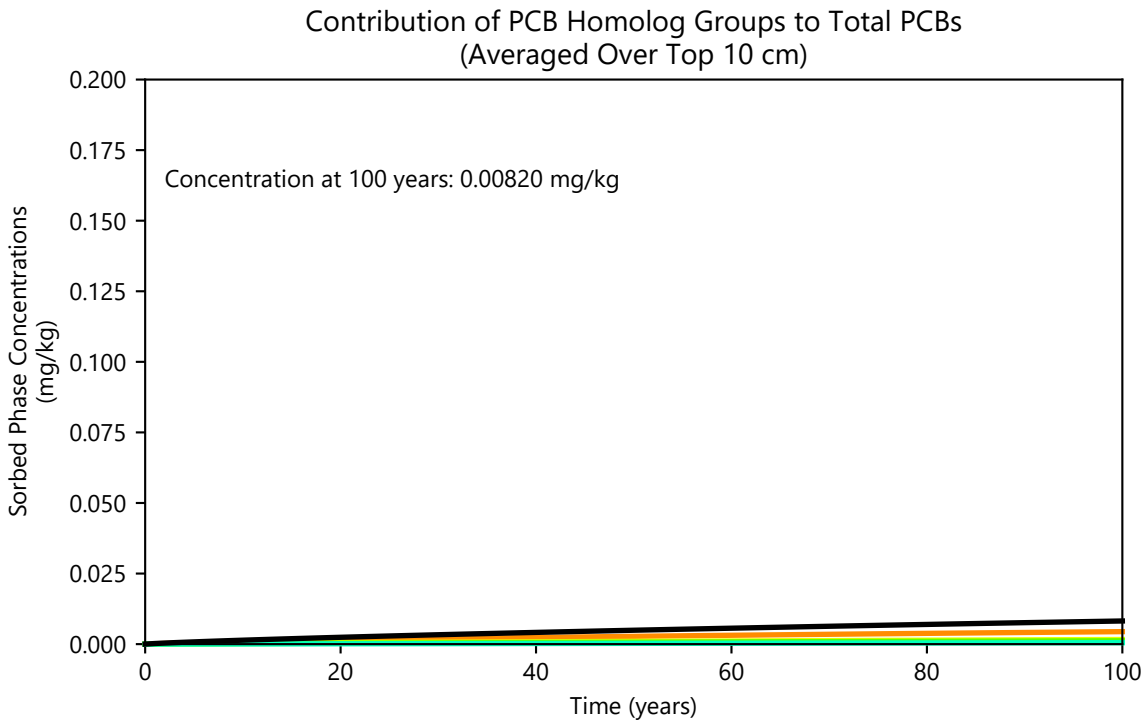
PCB-mono, PCB-di, PCB-tri, PCB-tetra, PCB-penta, PCB-hexa, PCB-hepta, PCB-octa, PCB-nona, PCB-deca, TPCB, Performance Standard

Publish Date: 09/26/2023 14:52 PM | User: BAL-DGRA2
File Path: \\WCL-FS1\Syracuse\Projects\GE\Housatonic_Rest-of-River\Remedial_Design\Reach_5A\MODEL\Cap_Design\CapSim3o8\Python\CapSim_Plots_Batch.py

ANCHOR QEA

Figure 3-5b
Model-Predicted PCB Flux and Concentration Compared to Performance Standards: BW5A-1
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River





Notes:
The dotted black line represents the performance standard.
Surface of the chemical isolation layer is at a depth of 15 cm from the surface of the cap.
Bottom of the chemical isolation layer is at a depth of 30 cm from the surface of the cap.
Chemical isolation layer contains 0.1% by weight f_{OC}.

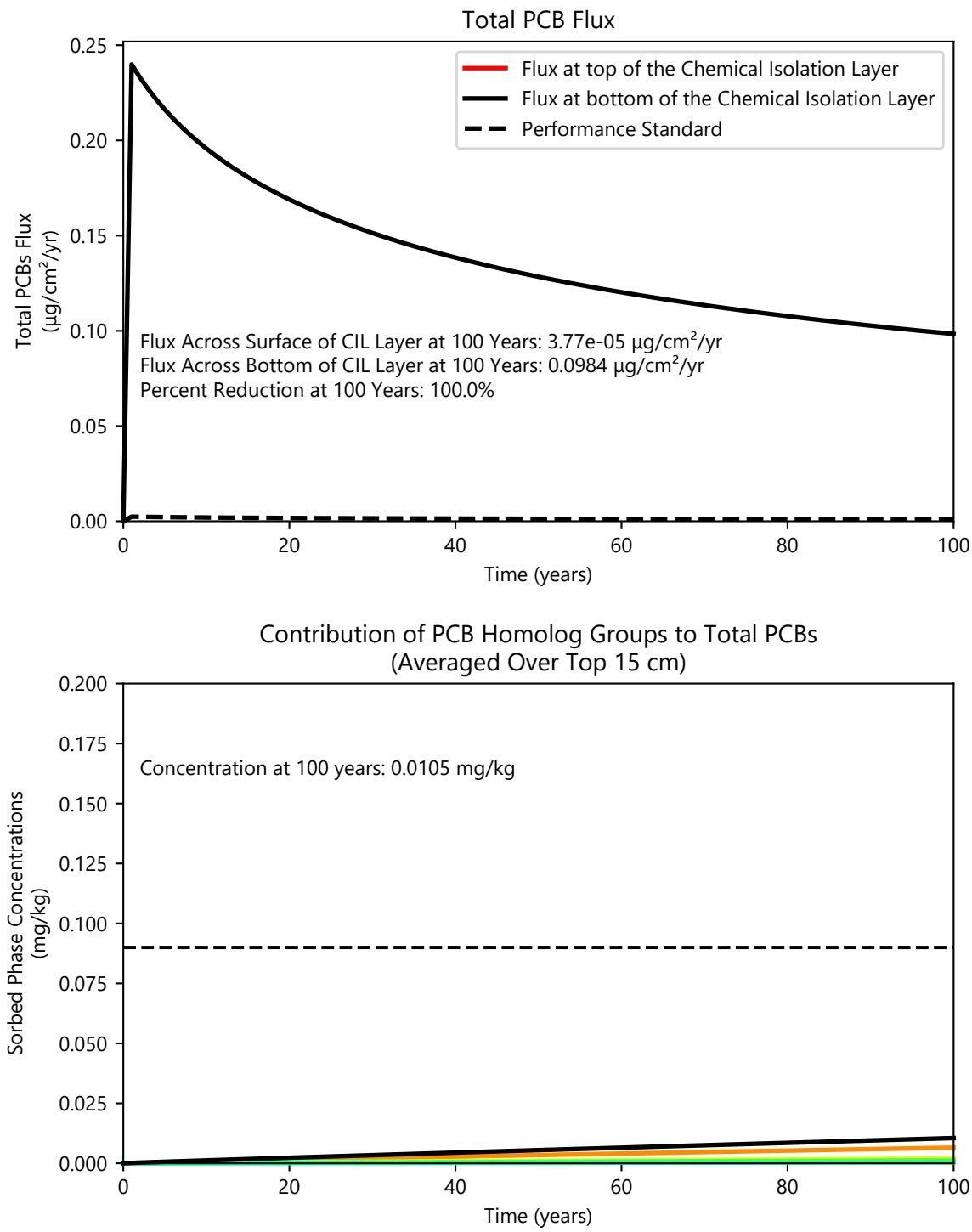
PCB-mono
PCB-di
PCB-tri
PCB-tetra
PCB-penta
PCB-hexa
PCB-hepta
PCB-octa
PCB-nona
PCB-deca
TPCB
Performance Standard

Publish Date: 09/26/2023 14:51 PM | User: BAL-DGRA2
File Path: \\WCL-FS1\Syracuse\Projects\GE\Housatonic_Rest-of-River\Remedial_Design\Reach_5A\MODEL\Cap_Design\CapSim3o8\Python\CapSim_Plots_Batch.py

ANCHOR QEA

Figure 3-5c
Model-Predicted PCB Flux and Concentration Compared to Performance Standards: Reach 5A-2

Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River



Notes:
The dotted black line represents the performance standard.
Surface of the chemical isolation layer is at a depth of 15 cm from the surface of the cap.
Bottom of the chemical isolation layer is at a depth of 30 cm from the surface of the cap.
Chemical isolation layer contains 0.1% by weight f_{OC}.
Replacement values for BW5A-2, BW5A-4, and BW5A-5 are 0.12, 0.17, and 0.09 mg/kg. Only 0.09 mg/kg shown.

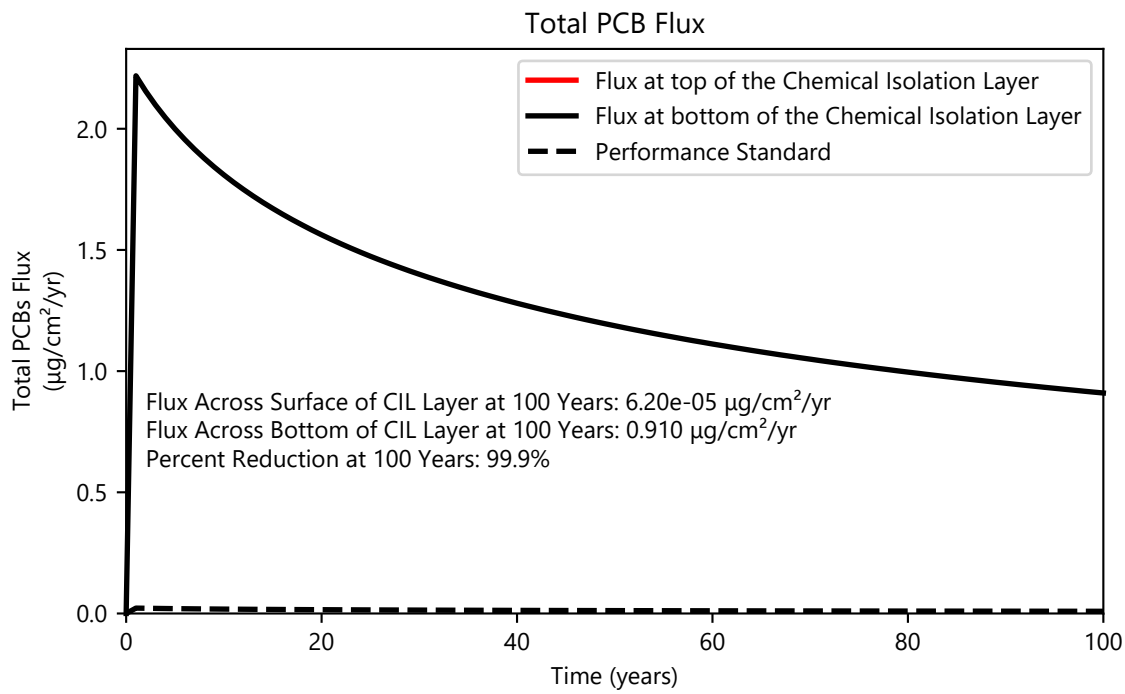
PCB-mono, PCB-di, PCB-tri, PCB-tetra, PCB-penta, PCB-hexa, PCB-hepta, PCB-octa, PCB-nona, PCB-deca, TPCB, Performance Standard

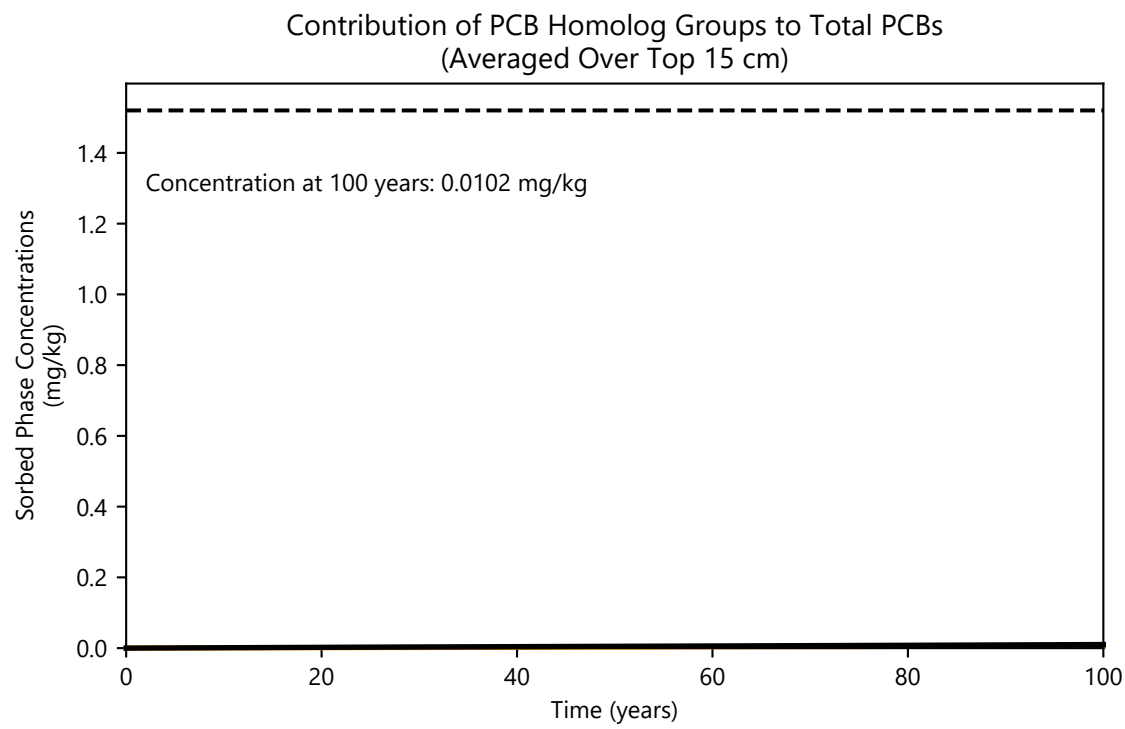
Publish Date: 09/26/2023 14:52 PM | User: BAL-DGRA2
File Path: \\WCL-FS1\Syracuse\Projects\GE\Housatonic_Rest-of-River\Remedial_Design\Reach_5A\MODEL\Cap_Design\CapSim3o8\Python\CapSim_Plots_Batch.py

ANCHOR QEA

Figure 3-5d
Model-Predicted PCB Flux and Concentration Compared to Performance Standards: BW5A-2, BW5A-4, BW5A-5

Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River





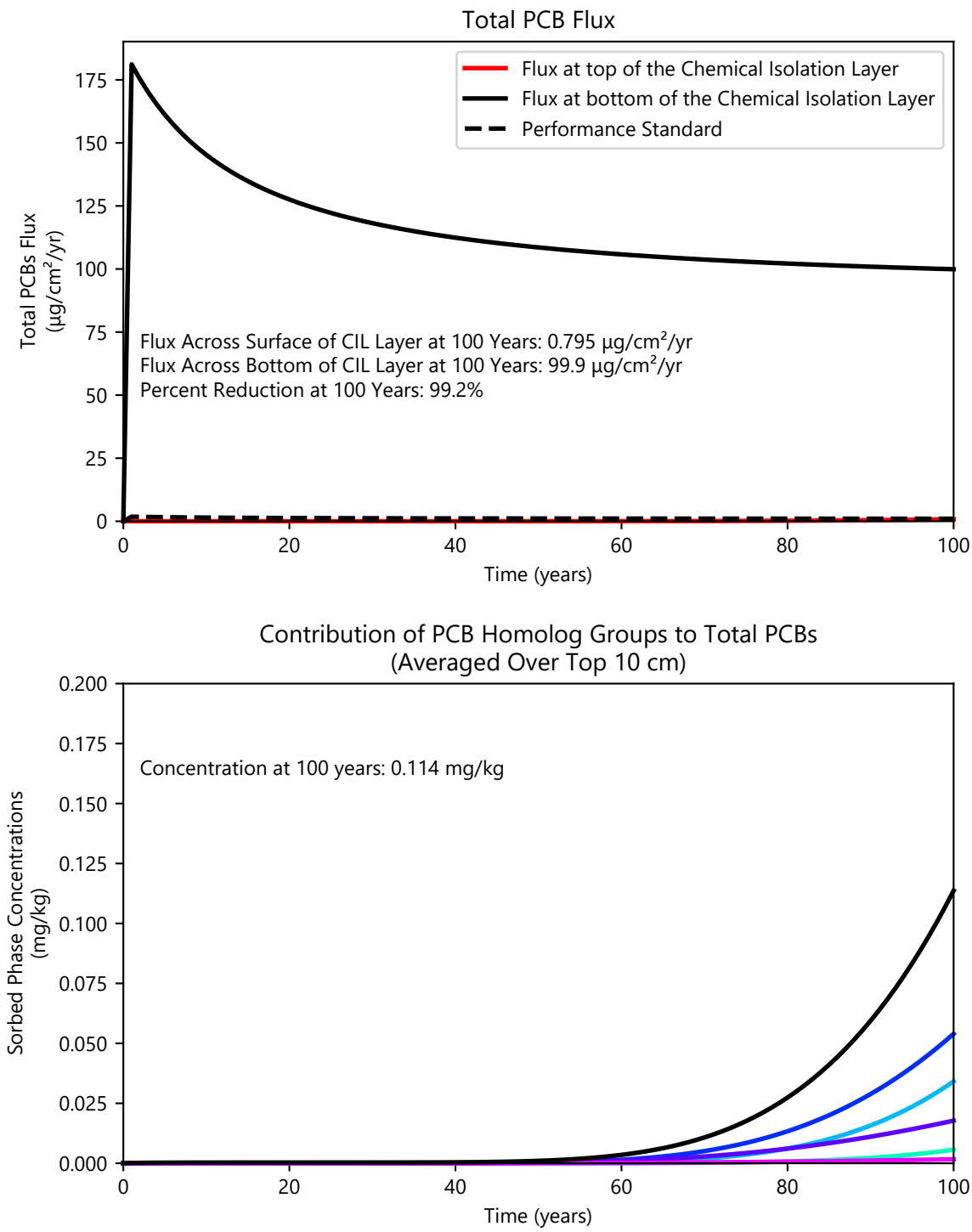
Notes:
The dotted black line represents the performance standard.
Surface of the chemical isolation layer is at a depth of 15 cm from the surface of the cap.
Bottom of the chemical isolation layer is at a depth of 30 cm from the surface of the cap.
Chemical isolation layer contains 0.1% by weight f_{OC}.

PCB-mono, PCB-di, PCB-tri, PCB-tetra, PCB-penta, PCB-hexa, PCB-hepta, PCB-octa, PCB-nona, PCB-deca, TPCB, Performance Standard

Publish Date: 09/26/2023 14:52 PM | User: BAL-DGRA2
File Path: \\WCL-FS1\Syracuse\Projects\GE\Housatonic_Rest-of-River\Remedial_Design\Reach_5A\MODEL\Cap_Design\CapSim3o8\Python\CapSim_Plots_Batch.py

ANCHOR QEA

Figure 3-5e
Model-Predicted PCB Flux and Concentration Compared to Performance Standards: BW5A-3
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River



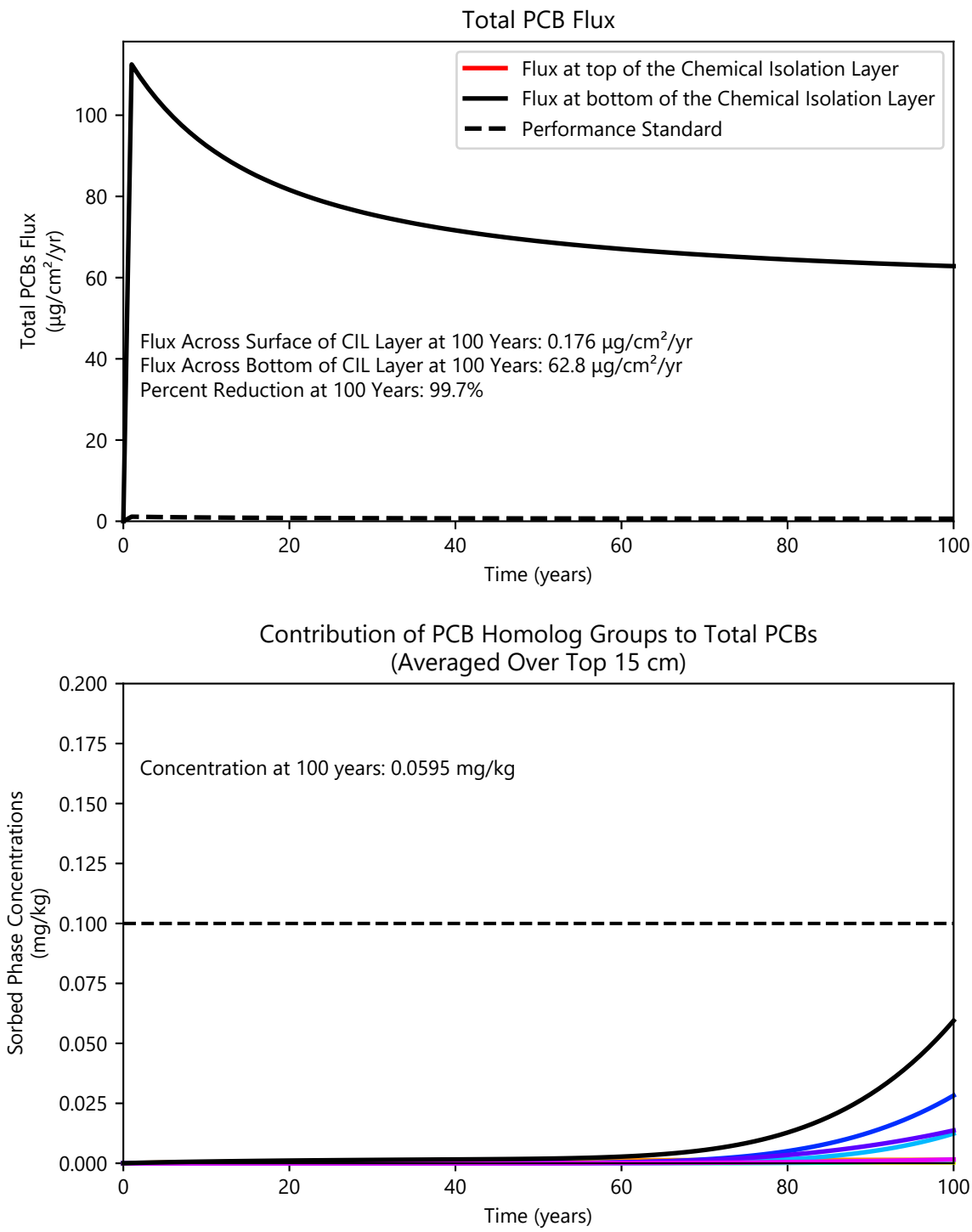
Notes:
The dotted black line represents the performance standard.
Surface of the chemical isolation layer is at a depth of 15 cm from the surface of the cap.
Bottom of the chemical isolation layer is at a depth of 30 cm from the surface of the cap.
Chemical isolation layer contains 50.0% by weight f_{OC}.

PCB-mono, PCB-di, PCB-tri, PCB-tetra, PCB-penta, PCB-hexa, PCB-hepta, PCB-octa, PCB-nona, PCB-deca, TPCB, Performance Standard

Publish Date: 09/26/2023 14:52 PM | User: BAL-DGRA2
File Path: \\WCL-FS1\Syracuse\Projects\GE\Housatonic_Rest-of-River\Remedial_Design\Reach_5A\MODEL\Cap_Design\CapSim3o8\Python\CapSim_Plots_Batch.py

ANCHOR QEA

Figure 3-5f
Model-Predicted PCB Flux and Concentration Compared to Performance Standards: Reach 5A-3
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River



Notes:
The dotted black line represents the performance standard.
Surface of the chemical isolation layer is at a depth of 15 cm from the surface of the cap.
Bottom of the chemical isolation layer is at a depth of 30 cm from the surface of the cap.
Chemical isolation layer contains 60.0% by weight f_{OC}.

PCB-mono, PCB-di, PCB-tri, PCB-tetra, PCB-penta, PCB-hexa, PCB-hepta, PCB-octa, PCB-nona, PCB-deca, TPCB, Performance Standard

Publish Date: 09/26/2023 14:52 PM | User: BAL-DGRA2
File Path: \\WCL-FS1\Syracuse\Projects\GE\Housatonic_Rest-of-River\Remedial_Design\Reach_5A\MODEL\Cap_Design\CapSim3o8\Python\CapSim_Plots_Batch.py

ANCHOR QEA

Figure 3-5g
Model-Predicted PCB Flux and Concentration Compared to Performance Standards: BW5A-6
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River

Attachment A
HEC-RAS Model Results and Stable Particle Size Calculation

Table 1
HEC-RAS Model Results and Stable Particle Size Calculation: Low Flow

Reach	HEC-RAS Transect Number	Radius Curvature (R, feet)	Hydraulic Depth (feet)	Channel Velocity (feet per second)	Channel Width (W, feet)	R/W	Velocity Distribution Coefficent, Cv (1.0 for Straight Channels)	Computed Stable Particle Size (feet)	Computed Stable Particle Size (inches)
Reach 5	58340	80.96	4.54	0.63	68.92	1.17	1.27	0.00	0.0
Reach 5	57815	132.13	2.09	2.33	40.64	3.25	1.18	0.04	0.5
Reach 5	57167	498.72	2.47	1.44	55.49	8.99	1.09	0.01	0.1
Reach 5	56694	NA	1.31	2.42	62.34	NA	1.00	0.04	0.5
Reach 5	55837	524.32	2.27	1.18	73.97	7.09	1.11	0.01	0.1
Reach 5	55128	141.49	2.84	1.22	57.23	2.47	1.20	0.01	0.1
Reach 5	54538	811.44	1.88	1.51	69.63	11.65	1.07	0.01	0.1
Reach 5	54011	NA	1.72	1.44	80.04	NA	1.00	0.01	0.1
Reach 5	53929	NA	1.36	1.72	84.91	NA	1.00	0.02	0.2
Reach 5	53325	147.08	3.85	1.03	49.94	2.95	1.19	0.00	0.1
Reach 5	53166	NA	3.05	0.78	83.79	NA	1.00	0.00	0.0
Reach 5	53048	NA	1.87	1.09	97.27	NA	1.00	0.01	0.1
Reach 5	52832	NA	2.5	1.14	69.26	NA	1.00	0.01	0.1
Reach 5	52255	NA	2.52	1.14	68.61	NA	1.00	0.01	0.1
Reach 5	51673	NA	1.62	1.62	75.21	NA	1.00	0.01	0.2
Reach 5	51178	NA	2.05	1.44	67.11	NA	1.00	0.01	0.1
Reach 5	50226	92.32	2.92	1.11	60.85	1.52	1.24	0.01	0.1
Reach 5	49677	113.35	0.81	3.06	79.96	1.42	1.25	0.10	1.2
Reach 5	49188	119.95	4.02	0.7	70.2	1.71	1.23	0.00	0.0
Reach 5	48641	159.59	3.75	0.57	93.51	1.71	1.23	0.00	0.0
Reach 5	48236	157.74	2.24	1.53	57.73	2.73	1.19	0.01	0.2
Reach 5	47287	172.66	2.46	1.06	76.01	2.27	1.21	0.01	0.1
Reach 5	46962	172.37	3.19	1.06	58.37	2.95	1.19	0.00	0.1
Reach 5	46445	175.94	2.68	1.32	55.95	3.14	1.18	0.01	0.1
Reach 5	45962	NA	1.3	1.85	82.46	NA	1.00	0.02	0.3
Reach 5	45553	200.1	3.01	0.95	69.41	2.88	1.19	0.00	0.0
Reach 5	44899	183	1.8	1.28	89.4	2.05	1.22	0.01	0.1
Reach 5	44135	203.41	3.22	1	82.22	2.47	1.20	0.00	0.1
Reach 5	43344	180	2.15	0.9	80	2.25	1.21	0.00	0.0
Reach 5	42690	NA	3.74	0.89	62.02	NA	1.00	0.00	0.0
Reach 5	42121	NA	2.63	1.08	72.55	NA	1.00	0.00	0.1
Reach 5	41529	228.77	2.92	1.15	61.55	3.72	1.17	0.01	0.1
Reach 5	40926	341.54	1.63	1.5	84.52	4.04	1.16	0.01	0.2
Reach 5	40301	269.55	2.29	0.82	109.29	2.47	1.20	0.00	0.0

Table 1
HEC-RAS Model Results and Stable Particle Size Calculation: Low Flow

Reach	HEC-RAS Transect Number	Radius Curvature (R, feet)	Hydraulic Depth (feet)	Channel Velocity (feet per second)	Channel Width (W, feet)	R/W	Velocity Distribution Coefficent, Cv (1.0 for Straight Channels)	Computed Stable Particle Size (feet)	Computed Stable Particle Size (inches)
Reach 5	39724	NA	2.08	1.23	80.5	NA	1.00	0.01	0.1
Reach 5	39131	NA	2.9	0.96	74.16	NA	1.00	0.00	0.0
Reach 5	38592	146.02	1.89	1.71	63.68	2.29	1.21	0.02	0.2
Reach 5	35003	137.35	3.93	0.78	67.8	2.03	1.22	0.00	0.0

Note:

NA: Not Applicable for a straight channel

Table 2
HEC-RAS Model Results and Stable Particle Size Calculation: Moderate Flow

Reach	HEC-RAS Transect Number	Radius Curvature (R, feet)	Hydraulic Depth (feet)	Channel Velocity (feet per second)	Channel Width (W, feet)	R/W	Velocity Distribution Coefficent, Cv (1.0 for Straight Channels)	Computed Stable Particle Size (feet)	Computed Stable Particle Size (inches)
Reach 5	58340	80.96	5.42	0.94	71.71	1.13	1.27	0.00	0.0
Reach 5	57815	132.13	2.75	2.82	47.33	2.79	1.19	0.06	0.7
Reach 5	57167	498.72	3.15	1.87	62.19	8.02	1.10	0.02	0.2
Reach 5	56694	NA	2.15	2.44	69.8	NA	1.00	0.04	0.4
Reach 5	55837	524.32	3.12	1.45	80.87	6.48	1.12	0.01	0.1
Reach 5	55128	141.49	3.65	1.62	61.79	2.29	1.21	0.01	0.2
Reach 5	54538	811.44	2.75	1.76	75.79	10.71	1.07	0.02	0.2
Reach 5	54011	NA	2.71	1.6	84.43	NA	1.00	0.01	0.1
Reach 5	53929	NA	2.4	1.71	89.46	NA	1.00	0.01	0.2
Reach 5	53325	147.08	4.64	1.46	53.97	2.73	1.19	0.01	0.1
Reach 5	53166	NA	4.01	1.04	87.7	NA	1.00	0.00	0.0
Reach 5	53048	NA	2.76	1.24	107.25	NA	1.00	0.01	0.1
Reach 5	52832	NA	3.36	1.45	75.39	NA	1.00	0.01	0.1
Reach 5	52255	NA	3.32	1.47	74.96	NA	1.00	0.01	0.1
Reach 5	51673	NA	2.54	1.77	81.46	NA	1.00	0.02	0.2
Reach 5	51178	NA	2.91	1.68	74.84	NA	1.00	0.01	0.2
Reach 5	50226	92.32	3.59	1.46	69.6	1.33	1.26	0.01	0.1
Reach 5	49677	113.35	1.92	2	95.81	1.18	1.27	0.03	0.3
Reach 5	49188	119.95	4.94	0.97	76.29	1.57	1.24	0.00	0.0
Reach 5	48641	159.59	4.93	0.78	95.15	1.68	1.24	0.00	0.0
Reach 5	48236	157.74	3.35	1.8	60.9	2.59	1.20	0.02	0.2
Reach 5	47287	172.66	3.6	1.26	80.8	2.14	1.21	0.01	0.1
Reach 5	46962	172.37	4.39	1.39	60	2.87	1.19	0.01	0.1
Reach 5	46445	175.94	3.78	1.65	58.6	3.00	1.18	0.01	0.2
Reach 5	45962	NA	2.56	1.58	90.32	NA	1.00	0.01	0.1
Reach 5	45553	200.1	4.3	1.17	73.1	2.74	1.19	0.01	0.1
Reach 5	44899	183	3.15	1.35	96.71	1.89	1.22	0.01	0.1
Reach 5	44135	203.41	4.48	1.1	87.9	2.31	1.21	0.01	0.1
Reach 5	43344	180	3.53	1.2	84	2.14	1.21	0.01	0.1
Reach 5	42690	NA	5.09	1.26	64	NA	1.00	0.01	0.1
Reach 5	42121	NA	4.04	1.37	74.06	NA	1.00	0.01	0.1
Reach 5	41529	228.77	4.29	1.52	63.4	3.61	1.17	0.01	0.1
Reach 5	40926	341.54	3.1	1.49	89.2	3.83	1.16	0.01	0.1
Reach 5	40301	269.55	3.84	0.94	114.6	2.35	1.21	0.00	0.0

Table 2
HEC-RAS Model Results and Stable Particle Size Calculation: Moderate Flow

Reach	HEC-RAS Transect Number	Radius Curvature (R, feet)	Hydraulic Depth (feet)	Channel Velocity (feet per second)	Channel Width (W, feet)	R/W	Velocity Distribution Coefficent, Cv (1.0 for Straight Channels)	Computed Stable Particle Size (feet)	Computed Stable Particle Size (inches)
Reach 5	39724	NA	3.73	1.33	83.3	NA	1.00	0.01	0.1
Reach 5	39131	NA	4.47	1.17	78.9	NA	1.00	0.00	0.1
Reach 5	38592	146.02	3.37	1.67	73.3	1.99	1.22	0.02	0.2
Reach 5	35003	137.35	5.13	1.11	72.5	1.89	1.22	0.01	0.1

Note:

NA: Not Applicable for a straight channel

Table 3
HEC-RAS Model Results and Stable Particle Size Calculation: High Flow

Reach	HEC-RAS Transect Number	Radius Curvature (R, feet)	Hydraulic Depth (feet)	Channel Velocity (feet per second)	Channel Width (W, feet)	R/W	Velocity Distribution Coefficent, Cv (1.0 for Straight Channels)	Computed Stable Particle Size (feet)	Computed Stable Particle Size (inches)
Reach 5	58340	80.96	6.57	1.37	74.7	1.08	1.27	0.01	0.1
Reach 5	57815	132.13	3.57	3.34	56.1	2.36	1.21	0.09	1.0
Reach 5	57167	498.72	4.34	2.38	64.7	7.71	1.10	0.03	0.4
Reach 5	56694	NA	3.43	2.69	72.3	NA	1.00	0.04	0.5
Reach 5	55837	524.32	4.43	1.81	83.2	6.30	1.12	0.02	0.2
Reach 5	55128	141.49	4.99	2.14	62.53	2.26	1.21	0.03	0.3
Reach 5	54538	811.44	4.1	2.12	76.8	10.57	1.08	0.02	0.3
Reach 5	54011	NA	4.11	1.91	85.1	NA	1.00	0.02	0.2
Reach 5	53929	NA	3.83	1.95	89.6	NA	1.00	0.02	0.2
Reach 5	53325	147.08	6.04	2.04	54.1	2.72	1.19	0.02	0.3
Reach 5	53166	NA	5.42	1.4	87.7	NA	1.00	0.01	0.1
Reach 5	53048	NA	4.13	1.48	109	NA	1.00	0.01	0.1
Reach 5	52832	NA	4.74	1.86	75.9	NA	1.00	0.02	0.2
Reach 5	52255	NA	4.65	1.88	76.3	NA	1.00	0.02	0.2
Reach 5	51673	NA	3.92	2.06	82.6	NA	1.00	0.02	0.2
Reach 5	51178	NA	4.35	2.05	75.1	NA	1.00	0.02	0.2
Reach 5	50226	92.32	5.05	1.89	69.6	1.33	1.26	0.02	0.2
Reach 5	49677	113.35	3.47	1.99	96.5	1.17	1.27	0.02	0.3
Reach 5	49188	119.95	6.45	1.35	77	1.56	1.24	0.01	0.1
Reach 5	48641	159.59	6.47	1.08	95.2	1.68	1.24	0.00	0.1
Reach 5	48236	157.74	4.86	2.25	60.9	2.59	1.20	0.03	0.4
Reach 5	47287	172.66	5.13	1.6	80.8	2.14	1.21	0.01	0.1
Reach 5	46962	172.37	5.88	1.86	60	2.87	1.19	0.02	0.2
Reach 5	46445	175.94	5.21	2.16	58.6	3.00	1.18	0.03	0.3
Reach 5	45962	NA	4.03	1.76	90.9	NA	1.00	0.01	0.2
Reach 5	45553	200.1	5.77	1.58	73.1	2.74	1.19	0.01	0.1
Reach 5	44899	183	4.6	1.53	97.7	1.87	1.23	0.01	0.1
Reach 5	44135	203.41	5.95	1.3	87.9	2.31	1.21	0.01	0.1
Reach 5	43344	180	5	1.4	84	2.14	1.21	0.01	0.1
Reach 5	42690	NA	6.56	1.63	64	NA	1.00	0.01	0.1
Reach 5	42121	NA	5.44	1.66	74.9	NA	1.00	0.01	0.1
Reach 5	41529	228.77	5.72	1.89	63.4	3.61	1.17	0.02	0.2
Reach 5	40926	341.54	4.57	1.69	89.2	3.83	1.16	0.01	0.2
Reach 5	40301	269.55	5.33	1.12	114.6	2.35	1.21	0.01	0.1

Table 3
HEC-RAS Model Results and Stable Particle Size Calculation: High Flow

Reach	HEC-RAS Transect Number	Radius Curvature (R, feet)	Hydraulic Depth (feet)	Channel Velocity (feet per second)	Channel Width (W, feet)	R/W	Velocity Distribution Coefficent, Cv (1.0 for Straight Channels)	Computed Stable Particle Size (feet)	Computed Stable Particle Size (inches)
Reach 5	39724	NA	5.22	1.58	83.3	NA	1.00	0.01	0.1
Reach 5	39131	NA	5.96	1.46	78.9	NA	1.00	0.01	0.1
Reach 5	38592	146.02	4.87	1.92	73.3	1.99	1.22	0.02	0.2
Reach 5	35003	137.35	6.47	1.47	72.5	1.89	1.22	0.01	0.1

Note:
NA: Not Applicable for a straight channel

Table 4
HEC-RAS Model Results and Stable Particle Size Calculation: 1-Year Return Interval Flow

Reach	HEC-RAS Transect Number	Radius Curvature (R, feet)	Hydraulic Depth (feet)	Channel Velocity (feet per second)	Channel Width (W, feet)	R/W	Velocity Distribution Coefficent, Cv (1.0 for Straight Channels)	Computed Stable Particle Size (feet)	Computed Stable Particle Size (inches)
Reach 5	58340	80.96	8.08	1.75	74.7	1.08	1.27	0.01	0.2
Reach 5	57815	132.13	5.06	3.69	56.1	2.36	1.21	0.10	1.2
Reach 5	57167	498.72	5.87	2.77	64.7	7.71	1.10	0.04	0.5
Reach 5	56694	NA	5.03	2.87	72.3	NA	1.00	0.04	0.5
Reach 5	55837	524.32	6.07	2.14	83.2	6.30	1.12	0.02	0.3
Reach 5	55128	141.49	6.58	2.6	62.9	2.25	1.21	0.04	0.5
Reach 5	54538	811.44	5.75	2.43	76.8	10.57	1.08	0.03	0.4
Reach 5	54011	NA	5.78	2.19	85.1	NA	1.00	0.02	0.3
Reach 5	53929	NA	5.5	2.18	89.6	NA	1.00	0.02	0.3
Reach 5	53325	147.08	7.69	2.58	54.1	2.72	1.19	0.04	0.4
Reach 5	53166	NA	7.09	1.72	87.7	NA	1.00	0.01	0.1
Reach 5	53048	NA	5.8	1.7	109	NA	1.00	0.01	0.1
Reach 5	52832	NA	6.41	2.2	75.9	NA	1.00	0.02	0.3
Reach 5	52255	NA	6.34	2.2	76.3	NA	1.00	0.02	0.3
Reach 5	51673	NA	5.64	2.32	82.6	NA	1.00	0.03	0.3
Reach 5	51178	NA	6.09	2.36	75.1	NA	1.00	0.03	0.3
Reach 5	50226	92.32	6.83	2.24	69.6	1.33	1.26	0.03	0.3
Reach 5	49677	113.35	5.31	2.1	96.5	1.17	1.27	0.03	0.3
Reach 5	49188	119.95	8.29	1.69	77	1.56	1.24	0.01	0.2
Reach 5	48641	159.59	8.29	1.51	95.2	1.68	1.24	0.01	0.1
Reach 5	48236	157.74	6.62	2.92	60.9	2.59	1.20	0.05	0.6
Reach 5	47287	172.66	6.86	2.11	80.8	2.14	1.21	0.02	0.3
Reach 5	46962	172.37	7.54	2.52	60	2.87	1.19	0.03	0.4
Reach 5	46445	175.94	7.09	1.65	58.6	3.00	1.18	0.01	0.1
Reach 5	45962	NA	6.04	1.89	90.9	NA	1.00	0.01	0.2
Reach 5	45553	200.1	7.82	1.94	73.1	2.74	1.19	0.02	0.2
Reach 5	44899	183	6.66	1.82	97.7	1.87	1.23	0.02	0.2
Reach 5	44135	203.41	7.99	1.4	87.9	2.31	1.21	0.01	0.1
Reach 5	43344	180	7.04	1.8	84	2.14	1.21	0.02	0.2
Reach 5	42690	NA	8.58	2.15	64	NA	1.00	0.02	0.2
Reach 5	42121	NA	7.46	2.06	74.9	NA	1.00	0.02	0.2
Reach 5	41529	228.77	7.71	2.41	63.4	3.61	1.17	0.03	0.4
Reach 5	40926	341.54	6.57	2.01	89.2	3.83	1.16	0.02	0.2
Reach 5	40301	269.55	7.35	1.39	114.6	2.35	1.21	0.01	0.1

Table 4
HEC-RAS Model Results and Stable Particle Size Calculation: 1-Year Return Interval Flow

Reach	HEC-RAS Transect Number	Radius Curvature (R, feet)	Hydraulic Depth (feet)	Channel Velocity (feet per second)	Channel Width (W, feet)	R/W	Velocity Distribution Coefficent, Cv (1.0 for Straight Channels)	Computed Stable Particle Size (feet)	Computed Stable Particle Size (inches)
Reach 5	39724	NA	7.23	1.96	83.3	NA	1.00	0.02	0.2
Reach 5	39131	NA	7.97	1.88	78.9	NA	1.00	0.01	0.2
Reach 5	38592	146.02	6.85	2.36	73.3	1.99	1.22	0.03	0.4
Reach 5	35003	137.35	8.19	1.99	72.5	1.89	1.22	0.02	0.2

Note:
NA: Not Applicable for a straight channel

Table 5
HEC-RAS Model Results and Stable Particle Size Calculation: 2-Year Return Interval Flow

Reach	HEC-RAS Transect Number	Radius Curvature (R, feet)	Hydraulic Depth (feet)	Channel Velocity (feet per second)	Channel Width (W, feet)	R/W	Velocity Distribution Coefficent, Cv (1.0 for Straight Channels)	Computed Stable Particle Size (feet)	Computed Stable Particle Size (inches)
Reach 5	58340	80.96	11.55	3.57	74.7	1.08	1.27	0.08	1.0
Reach 5	57815	132.13	8.77	3.05	56.1	2.36	1.21	0.05	0.7
Reach 5	57167	498.72	9.56	3.62	64.7	7.71	1.10	0.07	0.9
Reach 5	56694	NA	8.5	4.76	72.3	NA	1.00	0.14	1.7
Reach 5	55837	524.32	9.66	2.81	83.2	6.30	1.12	0.04	0.5
Reach 5	55128	141.49	10.08	3.98	62.9	2.25	1.21	0.10	1.2
Reach 5	54538	811.44	9.19	3.85	76.8	10.57	1.08	0.09	1.0
Reach 5	54011	NA	9.11	3.97	85.1	NA	1.00	0.09	1.0
Reach 5	53929	NA	8.82	3.88	89.6	NA	1.00	0.08	1.0
Reach 5	53325	147.08	10.7	5.31	54.1	2.72	1.19	0.21	2.5
Reach 5	53166	NA	10.19	3.42	87.7	NA	1.00	0.06	0.7
Reach 5	53048	NA	8.87	3.21	109	NA	1.00	0.05	0.6
Reach 5	52832	NA	9.3	4.33	75.9	NA	1.00	0.11	1.3
Reach 5	52255	NA	9.33	2.36	76.3	NA	1.00	0.02	0.3
Reach 5	51673	NA	8.5	3.78	82.6	NA	1.00	0.08	0.9
Reach 5	51178	NA	8.73	4.54	75.1	NA	1.00	0.12	1.5
Reach 5	50226	92.32	9.32	3.53	69.6	1.33	1.26	0.08	1.0
Reach 5	49677	113.35	7.81	2.74	96.5	1.17	1.27	0.05	0.5
Reach 5	49188	119.95	10.8	2.13	77	1.56	1.24	0.02	0.3
Reach 5	48641	159.59	10.86	1.01	95.2	1.68	1.24	0.00	0.0
Reach 5	48236	157.74	9.32	2.49	60.9	2.59	1.20	0.03	0.4
Reach 5	47287	172.66	9.7	2.21	80.8	2.14	1.21	0.02	0.3
Reach 5	46962	172.37	10.61	1.38	60	2.87	1.19	0.01	0.1
Reach 5	46445	175.94	10.21	2.15	58.6	3.00	1.18	0.02	0.3
Reach 5	45962	NA	9.15	2.48	90.9	NA	1.00	0.03	0.3
Reach 5	45553	200.1	11.05	1.46	73.1	2.74	1.19	0.01	0.1
Reach 5	44899	183	10	1.38	97.7	1.87	1.23	0.01	0.1
Reach 5	44135	203.41	11.5	1.6	87.9	2.31	1.21	0.01	0.1
Reach 5	43344	180	10.39	2.1	84	2.14	1.21	0.02	0.2
Reach 5	42690	NA	12	2.84	64	NA	1.00	0.03	0.4
Reach 5	42121	NA	10.91	2.22	74.9	NA	1.00	0.02	0.2
Reach 5	41529	228.77	11.27	2.37	63.4	3.61	1.17	0.03	0.3
Reach 5	40926	341.54	10.11	2.64	89.2	3.83	1.16	0.04	0.4
Reach 5	40301	269.55	10.8	2.63	114.6	2.35	1.21	0.04	0.4

Table 5
HEC-RAS Model Results and Stable Particle Size Calculation: 2-Year Return Interval Flow

Reach	HEC-RAS Transect Number	Radius Curvature (R, feet)	Hydraulic Depth (feet)	Channel Velocity (feet per second)	Channel Width (W, feet)	R/W	Velocity Distribution Coefficent, Cv (1.0 for Straight Channels)	Computed Stable Particle Size (feet)	Computed Stable Particle Size (inches)
Reach 5	39724	NA	10.47	3.92	83.3	NA	1.00	0.08	1.0
Reach 5	39131	NA	11.21	2.91	78.9	NA	1.00	0.04	0.5
Reach 5	38592	146.02	9.66	4.85	73.3	1.99	1.22	0.17	2.1
Reach 5	35003	137.35	10.66	2.48	72.5	1.89	1.22	0.03	0.4

Note:
NA: Not Applicable for a straight channel

Table 6
HEC-RAS Model Results and Stable Particle Size Calculation: 5-Year Return Interval Flow

Reach	HEC-RAS Transect Number	Radius Curvature (R, feet)	Hydraulic Depth (feet)	Channel Velocity (feet per second)	Channel Width (W, feet)	R/W	Velocity Distribution Coefficent, Cv (1.0 for Straight Channels)	Computed Stable Particle Size (feet)	Computed Stable Particle Size (inches)
Reach 5	58340	80.96	13.22	3.44	74.7	1.08	1.27	0.07	0.8
Reach 5	57815	132.13	10.41	3.35	56.1	2.36	1.21	0.07	0.8
Reach 5	57167	498.72	11.2	4.01	64.7	7.71	1.10	0.09	1.1
Reach 5	56694	NA	10.46	3.29	72.3	NA	1.00	0.05	0.6
Reach 5	55837	524.32	11.5	3.21	83.2	6.30	1.12	0.05	0.6
Reach 5	55128	141.49	11.84	4.89	62.9	2.25	1.21	0.16	2.0
Reach 5	54538	811.44	10.91	4.73	76.8	10.57	1.08	0.14	1.7
Reach 5	54011	NA	10.63	5.44	85.1	NA	1.00	0.18	2.2
Reach 5	53929	NA	10.3	5.32	89.6	NA	1.00	0.17	2.1
Reach 5	53325	147.08	11.78	7.64	54.1	2.72	1.19	0.50	6.0
Reach 5	53166	NA	11.37	4.9	87.7	NA	1.00	0.14	1.7
Reach 5	53048	NA	10.01	4.57	109	NA	1.00	0.12	1.4
Reach 5	52832	NA	10.23	6.13	75.9	NA	1.00	0.25	3.0
Reach 5	52255	NA	10.36	2.7	76.3	NA	1.00	0.03	0.4
Reach 5	51673	NA	9.61	3.72	82.6	NA	1.00	0.07	0.9
Reach 5	51178	NA	10.08	3.19	75.1	NA	1.00	0.05	0.6
Reach 5	50226	92.32	10.91	2.38	69.6	1.33	1.26	0.03	0.3
Reach 5	49677	113.35	9.48	1.67	96.5	1.17	1.27	0.01	0.1
Reach 5	49188	119.95	12.46	2.34	77	1.56	1.24	0.03	0.3
Reach 5	48641	159.59	12.52	1.13	95.2	1.68	1.24	0.00	0.1
Reach 5	48236	157.74	10.98	2.73	60.9	2.59	1.20	0.04	0.5
Reach 5	47287	172.66	11.36	2.39	80.8	2.14	1.21	0.03	0.3
Reach 5	46962	172.37	12.28	1.42	60	2.87	1.19	0.01	0.1
Reach 5	46445	175.94	11.88	2.48	58.6	3.00	1.18	0.03	0.4
Reach 5	45962	NA	10.79	2.98	90.9	NA	1.00	0.04	0.5
Reach 5	45553	200.1	12.68	1.69	73.1	2.74	1.19	0.01	0.1
Reach 5	44899	183	11.63	1.67	97.7	1.87	1.23	0.01	0.1
Reach 5	44135	203.41	13.19	1.9	87.9	2.31	1.21	0.02	0.2
Reach 5	43344	180	11.88	2.3	84	2.14	1.21	0.03	0.3
Reach 5	42690	NA	13.56	3.45	64	NA	1.00	0.06	0.7
Reach 5	42121	NA	12.47	2.44	74.9	NA	1.00	0.02	0.3
Reach 5	41529	228.77	12.82	2.73	63.4	3.61	1.17	0.04	0.4
Reach 5	40926	341.54	11.61	3.27	89.2	3.83	1.16	0.06	0.7
Reach 5	40301	269.55	12.33	2.68	114.6	2.35	1.21	0.04	0.4

Table 6
HEC-RAS Model Results and Stable Particle Size Calculation: 5-Year Return Interval Flow

Reach	HEC-RAS Transect Number	Radius Curvature (R, feet)	Hydraulic Depth (feet)	Channel Velocity (feet per second)	Channel Width (W, feet)	R/W	Velocity Distribution Coefficent, Cv (1.0 for Straight Channels)	Computed Stable Particle Size (feet)	Computed Stable Particle Size (inches)
Reach 5	39724	NA	12.12	3.64	83.3	NA	1.00	0.06	0.8
Reach 5	39131	NA	12.79	3.53	78.9	NA	1.00	0.06	0.7
Reach 5	38592	146.02	11.3	4.99	73.3	1.99	1.22	0.18	2.1
Reach 5	35003	137.35	12.37	2.69	72.5	1.89	1.22	0.04	0.4

Note:
NA: Not Applicable for a straight channel

Table 7
HEC-RAS Model Results and Stable Particle Size Calculation: 10-Year Return Interval Flow

Reach	HEC-RAS Transect Number	Radius Curvature (R, feet)	Hydraulic Depth (feet)	Channel Velocity (feet per second)	Channel Width (W, feet)	R/W	Velocity Distribution Coefficent, Cv (1.0 for Straight Channels)	Computed Stable Particle Size (feet)	Computed Stable Particle Size (inches)
Reach 5	58340	80.96	14.54	3.69	74.7	1.08	1.27	0.08	1.0
Reach 5	57815	132.13	11.74	3.41	56.1	2.36	1.21	0.07	0.8
Reach 5	57167	498.72	12.56	4.04	64.7	7.71	1.10	0.09	1.1
Reach 5	56694	NA	11.83	3.3	72.3	NA	1.00	0.05	0.6
Reach 5	55837	524.32	12.87	3.4	83.2	6.30	1.12	0.06	0.7
Reach 5	55128	141.49	13.17	5.38	62.9	2.25	1.21	0.20	2.4
Reach 5	54538	811.44	12.23	5.19	76.8	10.57	1.08	0.17	2.0
Reach 5	54011	NA	11.8	6.36	85.1	NA	1.00	0.26	3.2
Reach 5	53929	NA	11.43	6.26	89.6	NA	1.00	0.26	3.1
Reach 5	53325	147.08	12.55	9.28	54.1	2.72	1.19	0.80	9.5
Reach 5	53166	NA	12.26	5.93	87.7	NA	1.00	0.22	2.6
Reach 5	53048	NA	10.86	5.5	109	NA	1.00	0.19	2.2
Reach 5	52832	NA	11.03	7.09	75.9	NA	1.00	0.35	4.2
Reach 5	52255	NA	11.39	1.95	76.3	NA	1.00	0.01	0.2
Reach 5	51673	NA	10.7	3.55	82.6	NA	1.00	0.06	0.8
Reach 5	51178	NA	11.17	3.31	75.1	NA	1.00	0.05	0.6
Reach 5	50226	92.32	12.03	2.25	69.6	1.33	1.26	0.02	0.3
Reach 5	49677	113.35	10.6	1.72	96.5	1.17	1.27	0.01	0.2
Reach 5	49188	119.95	13.58	2.49	77	1.56	1.24	0.03	0.4
Reach 5	48641	159.59	13.64	1.21	95.2	1.68	1.24	0.00	0.1
Reach 5	48236	157.74	12.1	2.92	60.9	2.59	1.20	0.04	0.5
Reach 5	47287	172.66	12.49	2.51	80.8	2.14	1.21	0.03	0.4
Reach 5	46962	172.37	13.41	1.46	60	2.87	1.19	0.01	0.1
Reach 5	46445	175.94	13.01	2.65	58.6	3.00	1.18	0.03	0.4
Reach 5	45962	NA	11.9	3.28	90.9	NA	1.00	0.05	0.6
Reach 5	45553	200.1	13.81	1.75	73.1	2.74	1.19	0.01	0.1
Reach 5	44899	183	12.75	1.86	97.7	1.87	1.23	0.01	0.2
Reach 5	44135	203.41	14.36	2	87.9	2.31	1.21	0.02	0.2
Reach 5	43344	180	12.9	2.5	84	2.14	1.21	0.03	0.4
Reach 5	42690	NA	14.65	3.8	64	NA	1.00	0.07	0.8
Reach 5	42121	NA	13.57	2.43	74.9	NA	1.00	0.02	0.3
Reach 5	41529	228.77	13.92	2.88	63.4	3.61	1.17	0.04	0.5
Reach 5	40926	341.54	12.69	3.62	89.2	3.83	1.16	0.07	0.9
Reach 5	40301	269.55	13.39	3.06	114.6	2.35	1.21	0.05	0.6

Table 7
HEC-RAS Model Results and Stable Particle Size Calculation: 10-Year Return Interval Flow

Reach	HEC-RAS Transect Number	Radius Curvature (R, feet)	Hydraulic Depth (feet)	Channel Velocity (feet per second)	Channel Width (W, feet)	R/W	Velocity Distribution Coefficent, Cv (1.0 for Straight Channels)	Computed Stable Particle Size (feet)	Computed Stable Particle Size (inches)
Reach 5	39724	NA	13.13	4.22	83.3	NA	1.00	0.09	1.1
Reach 5	39131	NA	13.79	3.9	78.9	NA	1.00	0.07	0.9
Reach 5	38592	146.02	12.39	4.82	73.3	1.99	1.22	0.16	1.9
Reach 5	35003	137.35	13.54	2.8	72.5	1.89	1.22	0.04	0.5

Note:
NA: Not Applicable for a straight channel

Table 8
HEC-RAS Model Results and Stable Particle Size Calculation: 25-Year Return Interval Flow

Reach	HEC-RAS Transect Number	Radius Curvature (R, feet)	Hydraulic Depth (feet)	Channel Velocity (feet per second)	Channel Width (W, feet)	R/W	Velocity Distribution Coefficent, Cv (1.0 for Straight Channels)	Computed Stable Particle Size (feet)	Computed Stable Particle Size (inches)
Reach 5	58340	80.96	15.91	3.87	74.7	1.08	1.27	0.09	1.1
Reach 5	57815	132.13	13.12	3.47	56.1	2.36	1.21	0.07	0.8
Reach 5	57167	498.72	13.96	4.07	64.7	7.71	1.10	0.09	1.1
Reach 5	56694	NA	13.23	3.34	72.3	NA	1.00	0.05	0.6
Reach 5	55837	524.32	14.28	3.57	83.2	6.30	1.12	0.07	0.8
Reach 5	55128	141.49	14.55	5.8	62.9	2.25	1.21	0.24	2.9
Reach 5	54538	811.44	13.6	5.59	76.8	10.57	1.08	0.20	2.4
Reach 5	54011	NA	13.01	7.21	85.1	NA	1.00	0.35	4.2
Reach 5	53929	NA	12.61	7.14	89.6	NA	1.00	0.35	4.1
Reach 5	53325	147.08	13.4	10.75	54.1	2.72	1.19	1.13	13.6
Reach 5	53166	NA	13.21	6.92	87.7	NA	1.00	0.32	3.8
Reach 5	53048	NA	11.78	6.38	109	NA	1.00	0.27	3.2
Reach 5	52832	NA	11.96	7.82	75.9	NA	1.00	0.44	5.3
Reach 5	52255	NA	12.43	1.85	76.3	NA	1.00	0.01	0.1
Reach 5	51673	NA	11.77	3.45	82.6	NA	1.00	0.06	0.7
Reach 5	51178	NA	12.24	3.39	75.1	NA	1.00	0.05	0.6
Reach 5	50226	92.32	13.11	2.19	69.6	1.33	1.26	0.02	0.3
Reach 5	49677	113.35	11.69	1.78	96.5	1.17	1.27	0.01	0.2
Reach 5	49188	119.95	14.67	2.63	77	1.56	1.24	0.03	0.4
Reach 5	48641	159.59	14.73	1.3	95.2	1.68	1.24	0.01	0.1
Reach 5	48236	157.74	13.19	3.11	60.9	2.59	1.20	0.05	0.6
Reach 5	47287	172.66	13.57	2.62	80.8	2.14	1.21	0.03	0.4
Reach 5	46962	172.37	14.5	1.52	60	2.87	1.19	0.01	0.1
Reach 5	46445	175.94	14.1	2.87	58.6	3.00	1.18	0.04	0.5
Reach 5	45962	NA	12.97	3.55	90.9	NA	1.00	0.06	0.7
Reach 5	45553	200.1	14.88	1.79	73.1	2.74	1.19	0.01	0.1
Reach 5	44899	183	13.82	2.06	97.7	1.87	1.23	0.02	0.2
Reach 5	44135	203.41	15.49	2.2	87.9	2.31	1.21	0.02	0.3
Reach 5	43344	180	13.86	2.6	84	2.14	1.21	0.03	0.4
Reach 5	42690	NA	15.69	4.13	64	NA	1.00	0.08	1.0
Reach 5	42121	NA	14.62	2.42	74.9	NA	1.00	0.02	0.3
Reach 5	41529	228.77	14.97	2.98	63.4	3.61	1.17	0.04	0.5
Reach 5	40926	341.54	13.73	3.97	89.2	3.83	1.16	0.09	1.1
Reach 5	40301	269.55	14.4	3.42	114.6	2.35	1.21	0.06	0.8

Table 8
HEC-RAS Model Results and Stable Particle Size Calculation: 25-Year Return Interval Flow

Reach	HEC-RAS Transect Number	Radius Curvature (R, feet)	Hydraulic Depth (feet)	Channel Velocity (feet per second)	Channel Width (W, feet)	R/W	Velocity Distribution Coefficent, Cv (1.0 for Straight Channels)	Computed Stable Particle Size (feet)	Computed Stable Particle Size (inches)
Reach 5	39724	NA	14.09	4.79	83.3	NA	1.00	0.12	1.5
Reach 5	39131	NA	14.75	4.23	78.9	NA	1.00	0.09	1.1
Reach 5	38592	146.02	13.41	4.68	73.3	1.99	1.22	0.14	1.7
Reach 5	35003	137.35	14.62	2.93	72.5	1.89	1.22	0.04	0.5

Note:
NA: Not Applicable for a straight channel

Table 9
HEC-RAS Model Results and Stable Particle Size Calculation: 50-Year Return Interval Flow

Reach	HEC-RAS Transect Number	Radius Curvature (R, feet)	Hydraulic Depth (feet)	Channel Velocity (feet per second)	Channel Width (W, feet)	R/W	Velocity Distribution Coefficent, Cv (1.0 for Straight Channels)	Computed Stable Particle Size (feet)	Computed Stable Particle Size (inches)
Reach 5	58340	80.96	17.76	4.09	74.7	1.08	1.27	0.10	1.2
Reach 5	57815	132.13	14.98	3.59	56.1	2.36	1.21	0.07	0.9
Reach 5	57167	498.72	15.84	4.14	64.7	7.71	1.10	0.09	1.1
Reach 5	56694	NA	15.12	3.43	72.3	NA	1.00	0.05	0.6
Reach 5	55837	524.32	16.16	3.81	83.2	6.30	1.12	0.08	0.9
Reach 5	55128	141.49	16.39	6.35	62.9	2.25	1.21	0.29	3.5
Reach 5	54538	811.44	15.44	6.08	76.8	10.57	1.08	0.24	2.8
Reach 5	54011	NA	14.66	8.25	85.1	NA	1.00	0.48	5.7
Reach 5	53929	NA	14.18	8.17	89.6	NA	1.00	0.47	5.6
Reach 5	53325	147.08	14.53	12.6	54.1	2.72	1.19	1.65	19.8
Reach 5	53166	NA	14.44	8.29	87.7	NA	1.00	0.49	5.8
Reach 5	53048	NA	12.98	7.59	109	NA	1.00	0.40	4.8
Reach 5	52832	NA	13.27	8.63	75.9	NA	1.00	0.55	6.6
Reach 5	52255	NA	13.83	1.78	76.3	NA	1.00	0.01	0.1
Reach 5	51673	NA	13.21	3.41	82.6	NA	1.00	0.05	0.6
Reach 5	51178	NA	13.68	3.45	75.1	NA	1.00	0.05	0.7
Reach 5	50226	92.32	14.57	2.18	69.6	1.33	1.26	0.02	0.3
Reach 5	49677	113.35	13.15	1.89	96.5	1.17	1.27	0.02	0.2
Reach 5	49188	119.95	16.13	2.81	77	1.56	1.24	0.04	0.5
Reach 5	48641	159.59	16.19	1.41	95.2	1.68	1.24	0.01	0.1
Reach 5	48236	157.74	14.64	3.37	60.9	2.59	1.20	0.06	0.7
Reach 5	47287	172.66	15.04	2.65	80.8	2.14	1.21	0.03	0.4
Reach 5	46962	172.37	15.97	1.48	60	2.87	1.19	0.01	0.1
Reach 5	46445	175.94	15.59	2.85	58.6	3.00	1.18	0.04	0.5
Reach 5	45962	NA	14.47	3.81	90.9	NA	1.00	0.07	0.8
Reach 5	45553	200.1	16.4	1.83	73.1	2.74	1.19	0.01	0.2
Reach 5	44899	183	15.32	2.38	97.7	1.87	1.23	0.03	0.3
Reach 5	44135	203.41	17.06	2.5	87.9	2.31	1.21	0.03	0.3
Reach 5	43344	180	15.2	2.9	84	2.14	1.21	0.04	0.5
Reach 5	42690	NA	17.15	4.5	64	NA	1.00	0.10	1.2
Reach 5	42121	NA	16.1	2.37	74.9	NA	1.00	0.02	0.2
Reach 5	41529	228.77	16.47	3.03	63.4	3.61	1.17	0.04	0.5
Reach 5	40926	341.54	15.21	4.36	89.2	3.83	1.16	0.11	1.3
Reach 5	40301	269.55	15.86	3.84	114.6	2.35	1.21	0.08	1.0

Table 9
HEC-RAS Model Results and Stable Particle Size Calculation: 50-Year Return Interval Flow

Reach	HEC-RAS Transect Number	Radius Curvature (R, feet)	Hydraulic Depth (feet)	Channel Velocity (feet per second)	Channel Width (W, feet)	R/W	Velocity Distribution Coefficent, Cv (1.0 for Straight Channels)	Computed Stable Particle Size (feet)	Computed Stable Particle Size (inches)
Reach 5	39724	NA	15.5	5.45	83.3	NA	1.00	0.17	2.0
Reach 5	39131	NA	16.16	4.58	78.9	NA	1.00	0.11	1.3
Reach 5	38592	146.02	14.89	4.47	73.3	1.99	1.22	0.13	1.5
Reach 5	35003	137.35	16.32	2.95	72.5	1.89	1.22	0.04	0.5

Note:
NA: Not Applicable for a straight channel

Table 10
HEC-RAS Model Results and Stable Particle Size Calculation: 100-Year Return Interval Flow

Reach	HEC-RAS Transect Number	Radius Curvature (R, feet)	Hydraulic Depth (feet)	Channel Velocity (feet per second)	Channel Width (W, feet)	R/W	Velocity Distribution Coefficent, Cv (1.0 for Straight Channels)	Computed Stable Particle Size (feet)	Computed Stable Particle Size (inches)
Reach 5	58340	80.96	19.32	4.21	74.7	1.08	1.27	0.11	1.3
Reach 5	57815	132.13	16.54	3.62	56.1	2.36	1.21	0.07	0.9
Reach 5	57167	498.72	17.42	4.17	64.7	7.71	1.10	0.09	1.1
Reach 5	56694	NA	16.7	3.49	72.3	NA	1.00	0.05	0.6
Reach 5	55837	524.32	17.75	3.96	83.2	6.30	1.12	0.08	1.0
Reach 5	55128	141.49	17.96	6.7	62.9	2.25	1.21	0.33	3.9
Reach 5	54538	811.44	17.02	6.38	76.8	10.57	1.08	0.26	3.1
Reach 5	54011	NA	16.13	8.84	85.1	NA	1.00	0.55	6.7
Reach 5	53929	NA	15.44	8.88	89.6	NA	1.00	0.57	6.8
Reach 5	53325	147.08	15.48	13.89	54.1	2.72	1.19	2.07	24.8
Reach 5	53166	NA	15.43	9.35	87.7	NA	1.00	0.65	7.7
Reach 5	53048	NA	13.94	8.52	109	NA	1.00	0.52	6.3
Reach 5	52832	NA	14.34	9.13	75.9	NA	1.00	0.62	7.4
Reach 5	52255	NA	14.95	1.75	76.3	NA	1.00	0.01	0.1
Reach 5	51673	NA	14.34	3.4	82.6	NA	1.00	0.05	0.6
Reach 5	51178	NA	14.83	3.5	75.1	NA	1.00	0.06	0.7
Reach 5	50226	92.32	15.72	2.18	69.6	1.33	1.26	0.02	0.3
Reach 5	49677	113.35	14.3	1.97	96.5	1.17	1.27	0.02	0.2
Reach 5	49188	119.95	17.29	2.92	77	1.56	1.24	0.04	0.5
Reach 5	48641	159.59	17.34	1.5	95.2	1.68	1.24	0.01	0.1
Reach 5	48236	157.74	15.79	3.57	60.9	2.59	1.20	0.07	0.8
Reach 5	47287	172.66	16.2	2.59	80.8	2.14	1.21	0.03	0.4
Reach 5	46962	172.37	17.14	1.46	60	2.87	1.19	0.01	0.1
Reach 5	46445	175.94	16.78	2.74	58.6	3.00	1.18	0.03	0.4
Reach 5	45962	NA	15.67	3.91	90.9	NA	1.00	0.07	0.9
Reach 5	45553	200.1	17.61	1.85	73.1	2.74	1.19	0.01	0.2
Reach 5	44899	183	16.54	2.53	97.7	1.87	1.23	0.03	0.4
Reach 5	44135	203.41	18.32	2.7	87.9	2.31	1.21	0.03	0.4
Reach 5	43344	180	16.33	3.2	84	2.14	1.21	0.05	0.6
Reach 5	42690	NA	18.36	4.76	64	NA	1.00	0.11	1.4
Reach 5	42121	NA	17.31	2.34	74.9	NA	1.00	0.02	0.2
Reach 5	41529	228.77	17.69	3.06	63.4	3.61	1.17	0.04	0.5
Reach 5	40926	341.54	16.41	4.73	89.2	3.83	1.16	0.13	1.6
Reach 5	40301	269.55	17.05	4.13	114.6	2.35	1.21	0.10	1.2

Table 10
HEC-RAS Model Results and Stable Particle Size Calculation: 100-Year Return Interval Flow

Reach	HEC-RAS Transect Number	Radius Curvature (R, feet)	Hydraulic Depth (feet)	Channel Velocity (feet per second)	Channel Width (W, feet)	R/W	Velocity Distribution Coefficent, Cv (1.0 for Straight Channels)	Computed Stable Particle Size (feet)	Computed Stable Particle Size (inches)
Reach 5	39724	NA	16.66	5.92	83.3	NA	1.00	0.20	2.4
Reach 5	39131	NA	17.34	4.77	78.9	NA	1.00	0.12	1.4
Reach 5	38592	146.02	16.11	4.34	73.3	1.99	1.22	0.11	1.4
Reach 5	35003	137.35	17.64	3.02	72.5	1.89	1.22	0.05	0.5

Note:
NA: Not Applicable for a straight channel

Table 11
HEC-RAS Model Results and Stable Particle Size Calculation: 200-Year Return Interval Flow

Reach	HEC-RAS Transect Number	Radius Curvature (R, feet)	Hydraulic Depth (feet)	Channel Velocity (feet per second)	Channel Width (W, feet)	R/W	Velocity Distribution Coefficent, Cv (1.0 for Straight Channels)	Computed Stable Particle Size (feet)	Computed Stable Particle Size (inches)
Reach 5	58340	80.96	21.28	4.3	74.7	1.08	1.27	0.11	1.3
Reach 5	57815	132.13	18.51	3.63	56.1	2.36	1.21	0.07	0.8
Reach 5	57167	498.72	19.4	4.2	64.7	7.71	1.10	0.09	1.1
Reach 5	56694	NA	18.69	3.55	72.3	NA	1.00	0.05	0.7
Reach 5	55837	524.32	19.74	4.1	83.2	6.30	1.12	0.09	1.0
Reach 5	55128	141.49	19.94	7.03	62.9	2.25	1.21	0.36	4.3
Reach 5	54538	811.44	19.02	6.64	76.8	10.57	1.08	0.28	3.4
Reach 5	54011	NA	18.03	9.41	85.1	NA	1.00	0.63	7.6
Reach 5	53929	NA	17.18	9.21	89.6	NA	1.00	0.60	7.3
Reach 5	53325	147.08	17.18	14.51	54.1	2.72	1.19	2.25	27.0
Reach 5	53166	NA	17.01	10.3	87.7	NA	1.00	0.80	9.6
Reach 5	53048	NA	15.07	9.59	109	NA	1.00	0.69	8.3
Reach 5	52832	NA	15.65	9.51	75.9	NA	1.00	0.67	8.1
Reach 5	52255	NA	16.29	1.74	76.3	NA	1.00	0.01	0.1
Reach 5	51673	NA	15.68	3.43	82.6	NA	1.00	0.05	0.6
Reach 5	51178	NA	16.17	3.57	75.1	NA	1.00	0.06	0.7
Reach 5	50226	92.32	17.08	2.19	69.6	1.33	1.26	0.02	0.3
Reach 5	49677	113.35	15.66	2.09	96.5	1.17	1.27	0.02	0.2
Reach 5	49188	119.95	18.65	3.01	77	1.56	1.24	0.04	0.5
Reach 5	48641	159.59	18.7	1.6	95.2	1.68	1.24	0.01	0.1
Reach 5	48236	157.74	17.15	3.8	60.9	2.59	1.20	0.08	1.0
Reach 5	47287	172.66	17.56	2.52	80.8	2.14	1.21	0.03	0.3
Reach 5	46962	172.37	18.51	1.45	60	2.87	1.19	0.01	0.1
Reach 5	46445	175.94	18.17	2.64	58.6	3.00	1.18	0.03	0.4
Reach 5	45962	NA	17.09	3.91	90.9	NA	1.00	0.07	0.9
Reach 5	45553	200.1	19.03	1.89	73.1	2.74	1.19	0.01	0.2
Reach 5	44899	183	17.95	2.71	97.7	1.87	1.23	0.03	0.4
Reach 5	44135	203.41	20.2	3.37	87.9	2.31	1.21	0.06	0.7
Reach 5	43344	180	19.7	4.01	84	2.14	1.21	0.09	1.1
Reach 5	42690	NA	19.75	5.09	64	NA	1.00	0.13	1.6
Reach 5	42121	NA	18.72	2.32	74.9	NA	1.00	0.02	0.2
Reach 5	41529	228.77	19.11	3.12	63.4	3.61	1.17	0.05	0.6
Reach 5	40926	341.54	17.84	4.82	89.2	3.83	1.16	0.14	1.7
Reach 5	40301	269.55	18.48	4.41	114.6	2.35	1.21	0.11	1.4

Table 11
HEC-RAS Model Results and Stable Particle Size Calculation: 200-Year Return Interval Flow

Reach	HEC-RAS Transect Number	Radius Curvature (R, feet)	Hydraulic Depth (feet)	Channel Velocity (feet per second)	Channel Width (W, feet)	R/W	Velocity Distribution Coefficent, Cv (1.0 for Straight Channels)	Computed Stable Particle Size (feet)	Computed Stable Particle Size (inches)
Reach 5	39724	NA	18.04	6.44	83.3	NA	1.00	0.24	2.9
Reach 5	39131	NA	18.74	4.96	78.9	NA	1.00	0.13	1.5
Reach 5	38592	146.02	17.56	4.25	73.3	1.99	1.22	0.11	1.3
Reach 5	35003	137.35	19.27	2.95	72.5	1.89	1.22	0.04	0.5

Note:
NA: Not Applicable for a straight channel

Attachment B
Groundwater Seepage Rates

Groundwater Seepage Rates

1 Introduction

This document describes data collection and evaluation to estimate groundwater seepage rates within Reach 5A. Seepage rates were estimated by measuring the vertical hydraulic gradient and vertical hydraulic conductivity within the top several feet of sediment. The product of these two parameters is the groundwater seepage rate expressed as a Darcy flux, with units of length per unit time.

Vertical hydraulic gradient data were measured using pairs of piezometers installed at 10 locations along Reach 5A. Each pair included a shallow piezometer screened across the mudline and a deep piezometer screened several feet below the mudline. Hydraulic head data were recorded using pressure transducers for several months in the second half of 2022. These long temporal datasets capture short-term and seasonal fluctuations and, therefore, are useful for calculating long-term average vertical hydraulic gradients covering a wide range of temporal conditions. Vertical hydraulic conductivity data were measured using sediment core samples retained within the sampling core liners via a gravity drainage test procedure.

The resulting seepage rate estimates were used to support the cap modeling described in the document titled *Engineered Cap Modeling and Design Evaluations* (an appendix to *the Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A*) to which the present document is an attachment. In addition to the preliminary seepage rates discussed herein, the transducers continue to collect hydraulic head data to characterize vertical hydraulic gradients (and, therefore, seepage rates). In addition, seepage meters have been used to directly measure seepage rates for periods of up to a few days at four of the 10 locations. The additional transducer data and seepage meter data are still being evaluated and will be used to support the final remedial design.

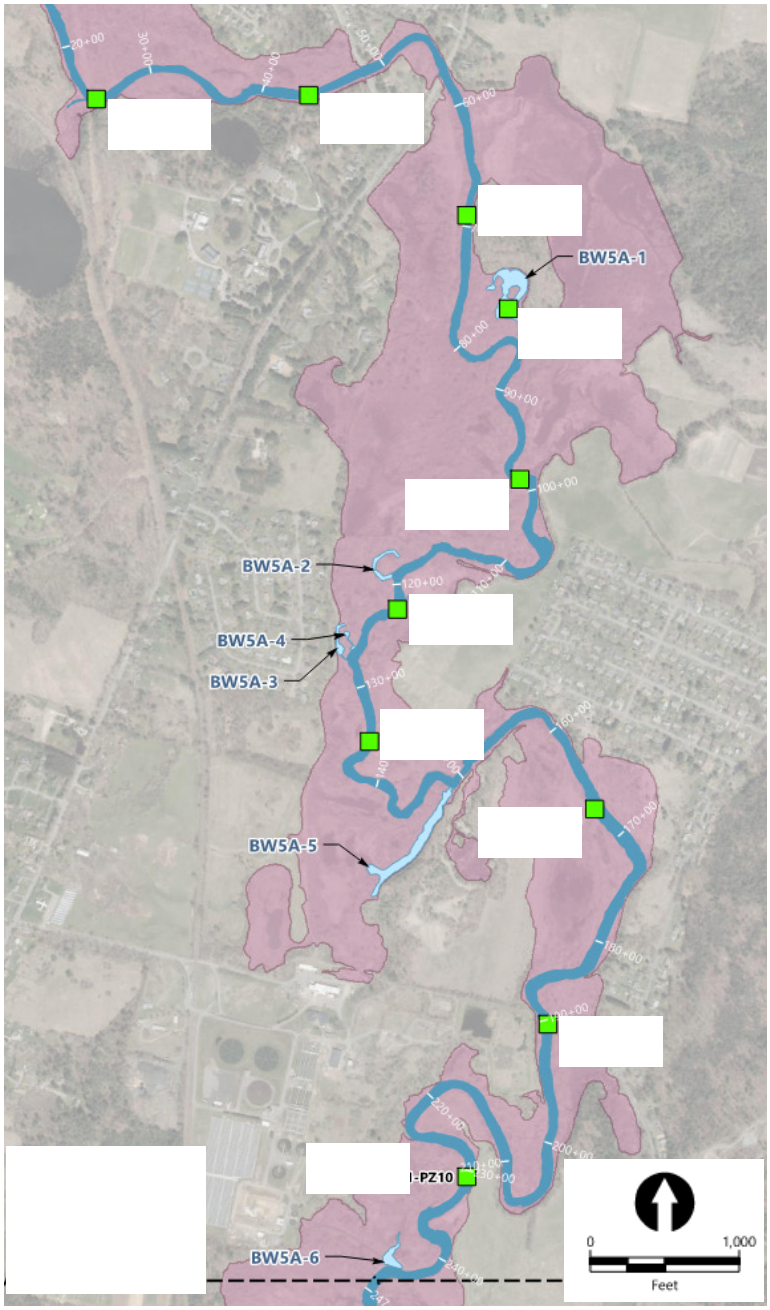
The remainder of this document provides details regarding data collection and evaluation processes.

2 Vertical Hydraulic Gradient

2.1 Vertical Hydraulic Gradient Data Collection

Piezometer pairs were installed at 10 locations within Reach 5A to measure vertical hydraulic gradients in sediment beneath the river from September through November 2022 (Figure 1). Piezometer locations were as follows: ST25 (PZ1), ST43 (PZ2), ST69 (PZ3), BW5A1 (PZ4), ST98 (PZ5), ST122 (PZ6), ST134 (PZ7), ST167 (PZ8), ST190 (PZ9), and ST230 (PZ10).

Figure 1
Piezometer Pair Locations in Reach 5A



Each piezometer pair was constructed using two-inch (inner diameter) schedule 40 PVC materials and included one "shallow" piezometer and one "deep" piezometer. Pressure transducers were placed in the piezometers, and the piezometers were tightly capped to measure hydraulic heads beneath the river. Shallow piezometers were installed with one-foot-long screens vertically centered approximately 0.1 foot below the sediment surface, and the deep piezometers were installed with

one-foot-long screens vertically centered approximately 5.5 feet below the sediment surface. The shallow piezometer screen intervals extend above the sediment surface and record the hydraulic head of the river at sediment surface. Each of the deep piezometers has a 0.010-inch slotted screen at the bottom, and they were pushed to the target depth in the sediment. The top of each piezometer was cut approximately 0.5 to 1.5 feet above the mudline and capped with a water-tight, pressure-fit well cap; the cap was removed as required to perform transducer calibration and retrieve the transducer for data downloading.

Self-contained pressure transducers with internal dataloggers were programmed to record pressure data every five minutes; each transducer was connected to a tether and lowered to the bottom of the piezometer. The tether length allowed the transducer to rest on the bottom of each piezometer so the vertical position of the transducer during data collection remained consistent.

Data were downloaded from the transducers by field staff in accordance with the Standard Operating Procedure (SOP) for Vertical Hydraulic Gradient and Hydraulic Conductivity Data Collection in Sediment, which was an appendix to General Electric's (GE's) *Revised Pre-Design Investigation Work Plan for Reach 5A Sediment and Riverbanks* (Anchor QEA and Arcadis 2022) and was subsequently provided as Appendix K to GE's 2023 *Field Sampling Plan/Quality Assurance Project Plan* (Arcadis 2023). Transducer data downloads occurred on the following dates:

- September 8 and 9, 2022;
- September 29 and October 3, 2022;
- November 28, 29, and 30, 2022; and
- December 13, 2022.

During the transducer deployment period, each piezometer was tightly capped, allowing the transducers to record the pressure surrounding the piezometer screen. However, the piezometer caps were removed for transducer data collection and calibration. The data measured during each vertical hydraulic gradient (i_v) recording period and calibration period were used to calculate the i_v within the sediment. Calculations and results are discussed further in the next section.

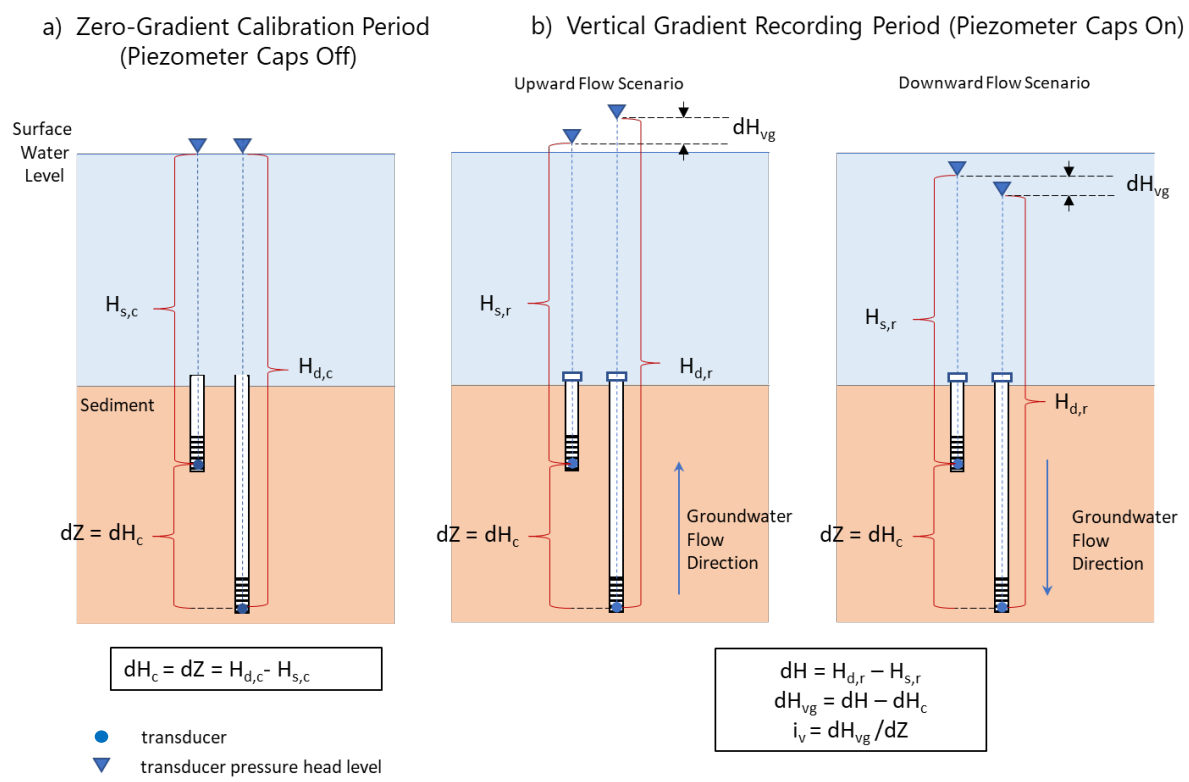
2.2 Vertical Hydraulic Gradient Calculation

Figure 2 illustrates conditions during the "zero-gradient" calibration period and the i_v data-recording period. During the "zero-gradient" calibration period (Figure 2, left diagram), the piezometer caps were removed for a minimum of one hour, with each transducer at the bottom of the piezometer. During this period, the inside of each piezometer was directly connected to the river so the pressure values recorded by the shallow transducer ($H_{s,c}$) and deep transducer ($H_{d,c}$) simply indicate the depth of each transducer below the river surface. The average hydraulic head difference during this period

(dH_c) is used in calculating i_v and represents the vertical separation distance between the shallow and deep piezometer screens (dZ).

During the i_v data-recording period, the piezometers were tightly capped. The pressures recorded by the shallow transducer ($H_{s,r}$) and the deep transducer ($H_{d,r}$) under this condition represent the hydraulic head in the sediment surrounding each piezometer screen. In the case of upward porewater flow, the hydraulic heads in the sediment increase with increasing depth below the river and are greater than the head of the river (Figure 2, middle diagram). In the case of downward flow, the converse occurs (Figure 2, right diagram). The total hydraulic head difference between the transducers during this period was dH. By subtracting dH_c from dH, the gradient-induced head difference (dH_{vg}) can be calculated, which is caused by the vertical component of the hydraulic gradient associated with seepage to or from the river.

Figure 2
Schematic of Piezometer Pairs During Calibration and Vertical Gradient Recording Periods



Equation 1 is used to calculate the i_v during the routine data collection period. i_v values were calculated for each pair of transducer measurements, which were collected every five minutes at the shallow piezometer and the adjacent deep piezometer.

Equation 1

$$i_v = (dH - dH_c) / dZ$$

where:

i_v	=	vertical hydraulic gradient (calculated every five minutes) [dimensionless]
dH	=	head difference measured with piezometers tightly sealed (pressure recorded in deep piezometer minus pressure recorded in shallow piezometer, expressed as equivalent feet of water) [feet]
dH_c	=	calibrated "zero-gradient" head difference [feet]
dZ	=	vertical separation between piezometer screen midpoints [feet]

2.3 Vertical Hydraulic Gradient Results

Hydrographs presented in Annex A show the water level data and resulting i_v measured every five minutes throughout the routine data collection period at nine of the 10 data collection locations. The PZ4 location is in a backwater area where surface water was not continually present above the piezometers during the preliminary data collection period; therefore, no hydrograph was prepared for that piezometer pair. These datasets include all i_v recording periods, which were combined to create a continuous record for each location and include the following information:

- **Relative River Level Data:** The top panel in the hydrographs in Annex A shows the relative changes in river level during the transducer data collection period. These data are provided for reference and can be compared to the hydraulic heads recorded at the piezometers and the calculated hydraulic gradient values. The shallow piezometers were installed with screened intervals that extend into the water column of the river, which provides a direct hydraulic connection to the overlying surface water and provides the relative river level data shown in the figures. During the data collection period, the relative river level changes recorded at the shallow piezometers were similar to those recorded by the USGS river gage at Coltsville.
- **Water Level Above Transducer:** The second panel on the hydrographs in Annex A summarizes the transducer pressures (or hydraulic heads) recorded during the gradient recording period, converted into an equivalent water level height above the transducer in each piezometer. These charts show that both transducers in each pair recorded similar pressure changes throughout the data recording period, which confirms that they are hydraulically connected via the sediment column. Also, the general magnitudes of pressure changes measured in the piezometers closely matched those of the river.

- **Gradient-Induced Head Difference:** The third panel on the hydrographs in Annex A summarizes the gradient-induced head difference between the two piezometers, which is equivalent to the numerator of Equation 1.
- **Vertical Hydraulic Gradient:** The fourth panel on the hydrographs in Annex A summarizes the i_v, as calculated by Equation 1. The i_v values shown in the plots exclude recording periods during piezometer servicing and zero-gradient calibration periods, which do not accurately reflect ambient hydraulic gradient conditions. The results from each measurement period and the full dataset, excluding calibration periods, were arithmetically averaged to determine the average i_v values, which are summarized in Table 1.

Table 1
Arithmetic Average Vertical Hydraulic Gradients

Piezometer	Average Vertical Gradient (i_v)			
	Aug 10 to Sept 8, 2022	Sept 8 to Oct 3, 2022	Oct 3 to Nov 28, 2022	Entire Recording Period
PZ1 - ST25	5.6E-04	3.1E-04	5.0E-04	+4.8E-04
PZ2 - ST43	-3.5E-04	1.1E-03	1.4E-03	+8.9E-04
PZ3 - ST69	5.9E-03	1.2E-02	1.4E-02	+1.2E-02
PZ4 - BW5A1[a]	NA	NA	NA	NA
PZ5 - ST98[b]	-2.2E-03	-2.0E-03	NA	-2.1E-03
PZ6 - ST122	-9.5E-05	-5.2E-04	-7.4E-04	-5.2E-04
PZ7 - ST134	-4.9E-03	-1.8E-03	-4.1E-03	-3.9E-03
PZ8 - ST167	5.7E-03	-2.1E-03	-6.8E-04	+7.5E-04
PZ9 - ST190	4.5E-02	5.4E-02	NA	+4.9E-02
PZ10 - ST230[c]	3.3E-02	2.3E-02	NA	+2.9E-02

Notes:

a. NA: Not applicable. As noted previously, surface water was not present above the PZ4 piezometers during this data collection period, so no i_v was calculated.
b. Data collected at PZ5 between October 3 and November 29, 2022, were excluded from the average i_v value due to an apparent shift in the transducer position during zero-gradient calibration period. These data are shown in gray on the hydrograph, where a drop in the i_v is observed at the start of the October 3 deployment period.
c. Data collected at PZ10 between October 3 and November 30, 2022, were excluded from the average i_v value due to an apparent shift in the transducer position during zero-gradient calibration period. These data are shown in gray on the hydrograph, where an increase in the i_v is observed at the start of the October 3 deployment period.

Annex B presents a more detailed data summary with results for individual data recording periods, which provides a range of i_v values for each location.

At station BW5A1 (PZ4), the water level dropped below the tops of the piezometers, which did not allow for accurate calculation of i_v. After this issue was identified, the field procedure was updated to include additional procedures to support i_v evaluation in situations where the piezometers extend above the river level. At station ST190 (PZ9), the piezometers were inaccessible by field staff due to

high river levels during retrieval, and the data were unable to be collected on November 29, 2022. As noted previously, transducers continue to collect hydraulic head data.

Some data were excluded from the final average i_v values due to apparent transducer displacement during zero-gradient calibration. During the zero gradient calibration event on October 3, 2022, transducers at PZ5 and PZ10 apparently shifted in elevation (see Table 1 notes), which created discontinuity between the recording periods that is visible at the beginning of the gray data shown in Figures 4 and 9 of Annex A. Due to the uncertainty in the transducer elevation, data collected during the periods shown in gray were excluded from the average i_v calculation.

Upstream locations PZ1 and PZ2 and downstream locations PZ8, PZ9, and PZ10 indicated positive i_v beneath the river, which signifies generally upward porewater seepage into the river. Locations PZ5, PZ6, and PZ7 near the middle of the study area indicate negative i_v, which signifies generally downward porewater seepage from the river down into the sediment.

3 Vertical Hydraulic Conductivity

3.1 Data Collection and Evaluation

Vertical hydraulic conductivity (K_v) data were measured using sediment core samples collected from the deep piezometer borehole at each of the 10 groundwater seepage data collection locations discussed in the previous section, with measurements made in accordance with GE's SOP for Vertical Hydraulic Gradient and Hydraulic Conductivity Data Collection in Sediment (referenced above in Section 2.1). These sediment cores were collected in August 2022 using two-inch diameter, four-foot-long rigid plastic liners from the mudline to a target depth of approximately six feet below mudline (blm). Target depth intervals, core penetration, and recovery lengths at each sampling location are summarized in Table 2.

Table 2
Summary of Sediment Core Target Intervals, Penetration, and Recovery

Location ID	Target Interval (feet)	Penetration (feet)	Recovery (feet)
ST25-PZ1	0 to 3 ft.	3.0	1.27
	3 to 6 ft.	6.0	1.92
ST43-PZ2	0 to 4 ft.	4.0	1.60
ST69-PZ3	0 to 4 ft.	4.0	1.26
BW5A1-PZ4	0 to 3 ft.	3.0	1.21
	3 to 6 ft.	6.0	2.59
ST98-PZ5	0 to 4 ft.	4.0	2.19
ST122-PZ6	0 to 4 ft.	4.0	2.25
ST134-PZ7	0 to 4 ft.	4.0	1.79

Location ID	Target Interval (feet)	Penetration (feet)	Recovery (feet)
ST167-PZ8	0 to 4 ft.	4.0	2.14
ST190-PZ9	0 to 4 ft.	4.0	2.13
ST230-PZ10	0 to 4 ft.	4.0	1.90

Due to limited sample recovery, the K_v test sample lengths did not represent the entire six-foot thickness of sediment between the shallow and deep piezometer screens. The vertical thickness of sediment tested at these locations ranged from approximately 1.3 to 3.8 feet. These limited vertical thicknesses of tested sediment create some degree of uncertainty in the K_v over the full depth interval between the piezometers. Therefore, the calculated K_v values and resulting seepage rates are considered preliminary estimates.

After collecting each sediment core sample, the core liner was capped, maintained in a vertical position, and transported to Building 59 at the GE facility in Pittsfield, Massachusetts, to conduct the K_v tests. The core liner was then secured in place vertically to enable staff to measure K_v data. The bottom cap on the liner was replaced with a perforated cap lined with steel wool, and the core sample was allowed to drain freely under the force of gravity. Water that drained from the core liner was collected in a measuring cup and then periodically transferred into a graduated cylinder to measure the volume of drained water.

The volume of water that drained from the samples during these tests ranged from 23 milliliters (mL) to 155 mL over a period of one hour or less. The hydraulic gradient within the test core liner was maintained relatively constant by the force of gravity and the limited volume of flow. The following data were measured and recorded during the drainage period:

- **dH:** Total height of water above the liner bottom, including saturated core material and water column above sediment (by visual inspection from outside of liner). These data were measured and recorded at the beginning and end of the period of flow rate data collection (Q [described below]). Additional water-level and time-of-measurement data were collected periodically along with incremental flow measurements.
- **dL:** Length of test sample in liner (by visual inspection from outside the liner).
- **Q:** Flow rate of water by free gravity drainage from the bottom of the core, calculated from the following:
  - Start time and stop time (expressed as HH:MM:SS)
  - Volume of water collected between start time and stop time

The data discussed in the bullets above were tabulated and used to calculate K_v for each test interval and the representative bulk K_v for the tested portion of the sediment column. These data and the results are summarized in tables and graphs in Annex C.

The K_v of each tested sediment sample was calculated as follows using a form of Darcy's Law:

Equation 2

$$K_v = Q/(A\ i_v)$$

where:

K_v	=	vertical hydraulic conductivity of test sample [cm/s]
Q	=	average flow rate during period of approximately constant flow [cm^3/s]
A	=	circular area of the bottom of the cylindrical core sample [cm^2]
i_v	=	vertical hydraulic gradient through the test sample [dimensionless]

The vertical hydraulic gradient during the test was calculated as follows:

Equation 3

$$i_v = dH/dL$$

where:

dH	=	head difference between the top and the bottom of the saturated sediment sample, which is equal to the height of the water level in the liner, measured from the bottom of the liner [cm]
dL	=	vertical length of the sediment sample [cm]

Each dataset was plotted as cumulative flow volume versus time. The data typically showed an initial period of slightly faster porewater drainage (red data points in graphs in Annex C), after which the drainage rate stabilized, as indicated by a linear data trend with a relatively constant slope (blue data on graphs in Annex C). The linear portion of the data, which indicated steady-state flow conditions, were used to calculate K_v.

In cases when the water level in the liner was above the top of the saturated sediment sample, i_v is greater than 1.0. When the water level reached the top of the sample, dH and dL are equal, making i_v equal to 1.0.

Hydraulic gradients measured during the period of linear data (steady-state flow) decreased by between 0% and 15% for the various tests, with larger changes observed in samples that drained

larger volumes of water. The average i_v value during the period of steady-state flow was used in calculating K_v, so the maximum error in the gradient value (between the maximum or minimum i_v value and the average i_v value) was 7%. The calculated K_v value is proportional to i_v, so the maximum error in K_v that could occur due to i_v changes is 7%. Given that K_v values for geologic materials range by several orders of magnitude, this error is considered negligible, supporting the use of the steady-state flow relationship in Equation 2.

Individual K_v values were calculated for each sediment core. For locations where two cores were collected, such as PZ1 and PZ4, the representative bulk K_v value was calculated using the test results and the weighted harmonic mean formula shown in Equation 4.

Equation 4

$$K_v = \frac{Z}{\sum \frac{Z_i}{K_{vi}}}$$

where:

K_v	=	representative, bulk vertical hydraulic conductivity for the sediment between the shallow and deep piezometer [cm/s]
Z	=	representative total depth interval of sampled sediment (for example, 0-foot to six-foot depth interval) [cm]
Z_i	=	representative vertical length of each individual test sample [cm]
K_{vi}	=	representative vertical hydraulic conductivity of either the shallow or deep sediment sample [cm/s]

In calculating the weighted harmonic mean, two different methods were used regarding the values of Z_i and Z to account for the fact that the length of recovered sediment samples typically differed from the three-foot-long, core-tube push length. In the first case, it was assumed that each sample represented the full three-foot-long interval from which it was collected. In this case, Z_i was assumed to be equal to three, and Z was assumed to be equal to six. In the second case, Z_i was assumed to be equal to only the recovered interval length, and Z was assumed to be equal to the sum of the recovered lengths of both samples. After calculating harmonic mean K_v values using both methods, the average of those two results was calculated and is considered the representative bulk K_v value.

3.2 Vertical Hydraulic Conductivity Results

The calculated K_v values (in centimeters per second) are shown in Table 3.

Table 3
Calculated Vertical Hydraulic Conductivity Values

Piezometer ID	Harmonic Mean K_v (cm/sec)
PZ1 - ST25[1]	8.2E-04
PZ2 - ST43	4.8E-03
PZ3 - ST69	3.8E-03
PZ4 - BW5A1[a]	4.3E-04
PZ5 - ST98	1.4E-02
PZ6 - ST122	6.3E-03
PZ7 - ST134	5.1E-04
PZ8 - ST167	1.1E-03
PZ9 - ST190	1.1E-03
PZ10 - ST230	5.1E-02

Note:

a. K_v values for PZ1 and PZ4 were calculated using the harmonic mean of two separate cores. Both PZ1 and PZ4 included two cores representing 0 to three feet and three to six feet below sediment surface. The harmonic mean was used to determine the average K_v value over the entire length of the coring depth. Two tests were performed on the 0 to three feet core collected at PZ01 and on the three to six feet core collected at PZ4. The two test results were averaged to determine the representative K_v value for those collection intervals.

Given that K_v values for geologic materials range by several orders of magnitude, these results are reasonably consistent (within approximately two orders of magnitude) and are consistent with expectations based on the texture of the sediment (sands and gravels with some fines).

Nevertheless, it is important to reiterate that the K_v test sample lengths did not represent the entire six-foot thickness of sediment between the shallow and deep piezometer screens. It is anticipated that geotechnical borings will be collected during the supplemental; data collection activities in Reach 5A to measure K_v over the full six-foot interval at some or all of these locations.

4 Seepage Rates

Based on the i_v and K_v results discussed in the two preceding sections, the seepage rate (equal to Darcy flux, porewater discharge, or groundwater discharge) within the sediment was calculated using Equation 5.

Equation 5

$$q = K_v \, i_v$$

where:

q	=	seepage rate [cm/s]
K_v	=	representative, bulk vertical hydraulic conductivity between shallow and deep piezometers [cm/s]
i_v	=	average vertical hydraulic gradient measured using shallow and deep piezometers [dimensionless]

The resulting seepage rates are summarized in Table 4.

Table 4
Summary of Seepage Rate Values

Piezometer ID	Kv (cm/sec)	i_v (feet/feet)	Seepage Rate (cm/sec)	Seepage Rate (cm/day)
PZ01 - ST25	8.2E-04	+4.8E-04	+3.9E-07	+0.034
PZ02 - ST43	4.8E-03	+8.9E-04	+4.3E-06	+0.37
PZ03 - ST69	3.8E-03	+1.2E-02	+4.6E-05	+3.9
PZ04 - BW5A11	4.3E-04	NA	NA	NA
PZ05 - ST98	1.4E-02	-2.1E-03	-2.9E-05	-2.6
PZ06 - ST122	6.3E-03	-5.2E-04	-3.3E-06	-0.28
PZ07 - ST134	5.1E-04	-3.9E-03	-2.0E-06	-0.17
PZ08 - ST167	1.1E-03	+7.5E-04	+8.3E-07	+0.071
PZ09 - ST190	1.1E-03	+4.9E-02	+5.4E-05	+4.6
PZ10 - ST230	5.1E-02	+2.9E-02	+1.5E-03	+130

Note:
As mentioned previously, no vertical hydraulic gradient could be calculated at PZ4; thus, no seepage rate was calculated for that location.

Annex B presents a more detailed data summary with seepage rate estimates for individual data recording periods, which provides a range of seepage rates for each location.

The calculated seepage rate at location PZ10 is anomalously high and unlikely to represent actual seepage conditions. The K_v test sample from this location covered only 1.9 feet of the sediment column. It is anticipated that a geotechnical boring will be collected during the supplemental data collection activities to measure K_v over the full six-foot interval at PZ10, which will improve the accuracy of the seepage rate calculation for this location. A seepage meter was also deployed at this

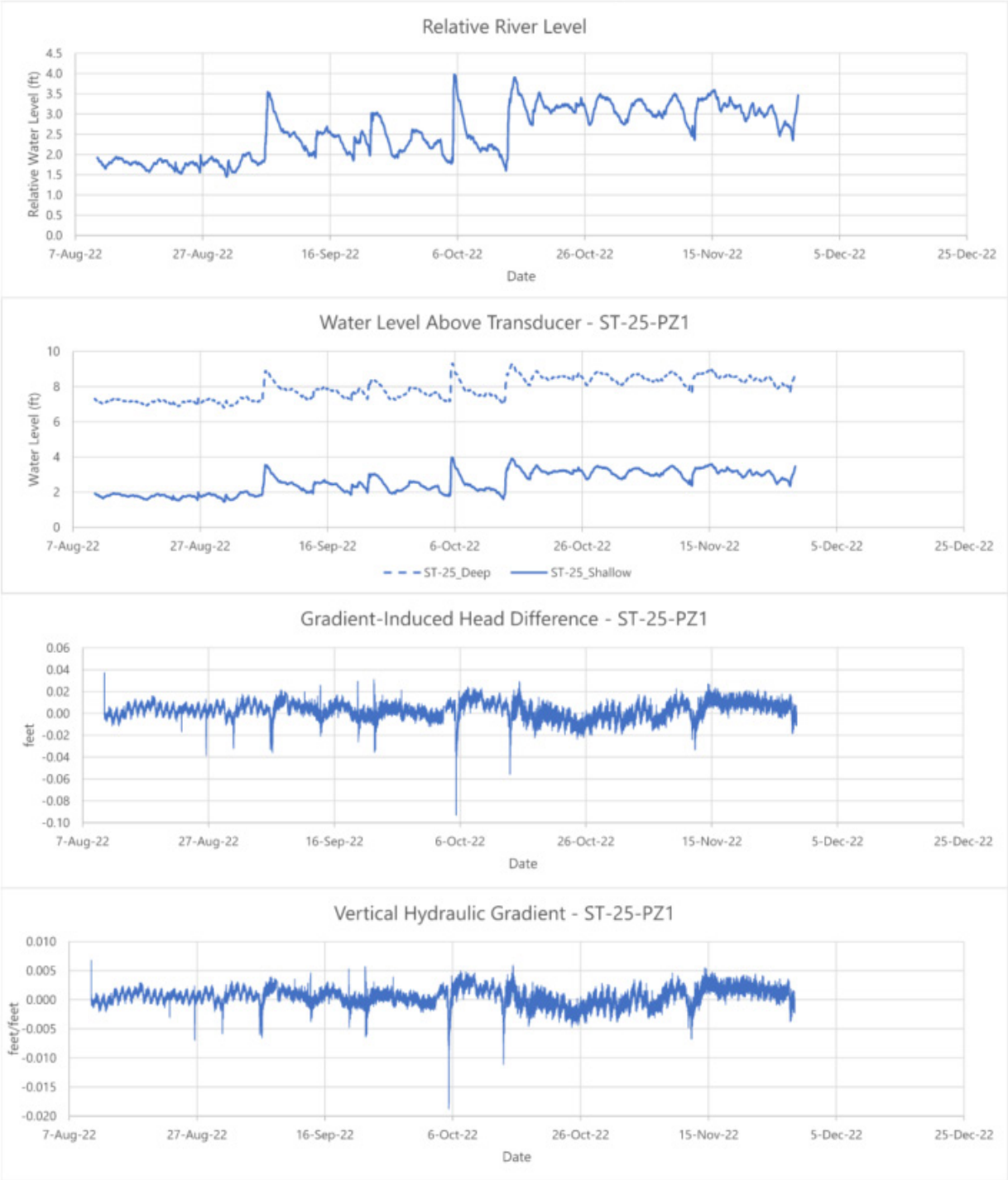
location to provide an additional means of measuring the seepage rate. These new data will be used to update seepage rates used in the cap design for the final design.

5 References

Anchor QEA and AECOM, 2022. *Revised Pre-Design Investigation Work Plan for Reach 5A Sediment and Riverbanks*. Housatonic River – Rest of River. Prepared for General Electric Company, Pittsfield, Massachusetts. May 2, 2022.

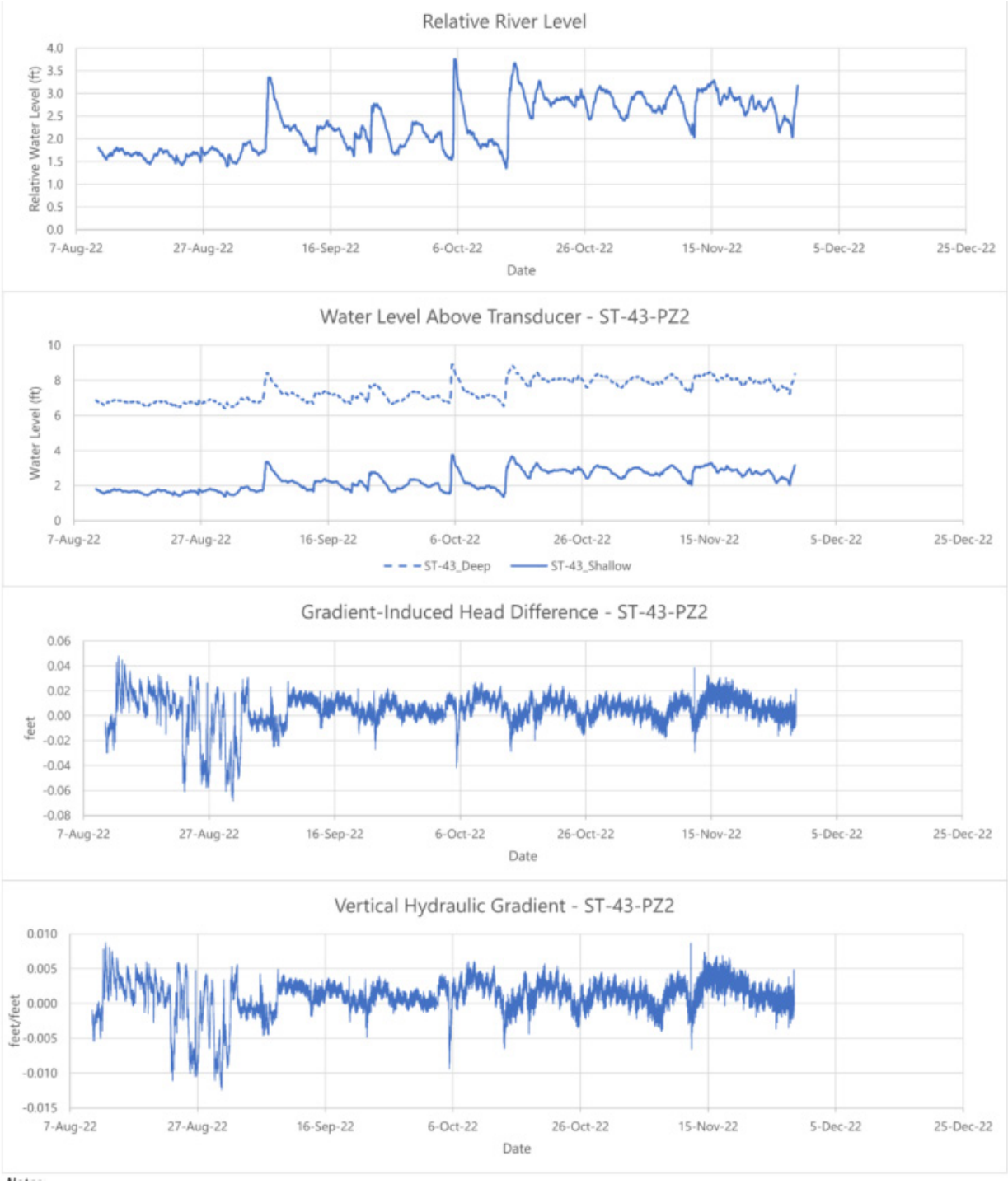
Arcadis, 2023. *Field Sampling Plan/Quality Assurance Project Plan*. GE-Pittsfield/Housatonic River Site. Prepared for General Electric Company, Pittsfield, Massachusetts. Revised July 2023.

Annex A
Vertical Hydraulic Gradient Hydrographs



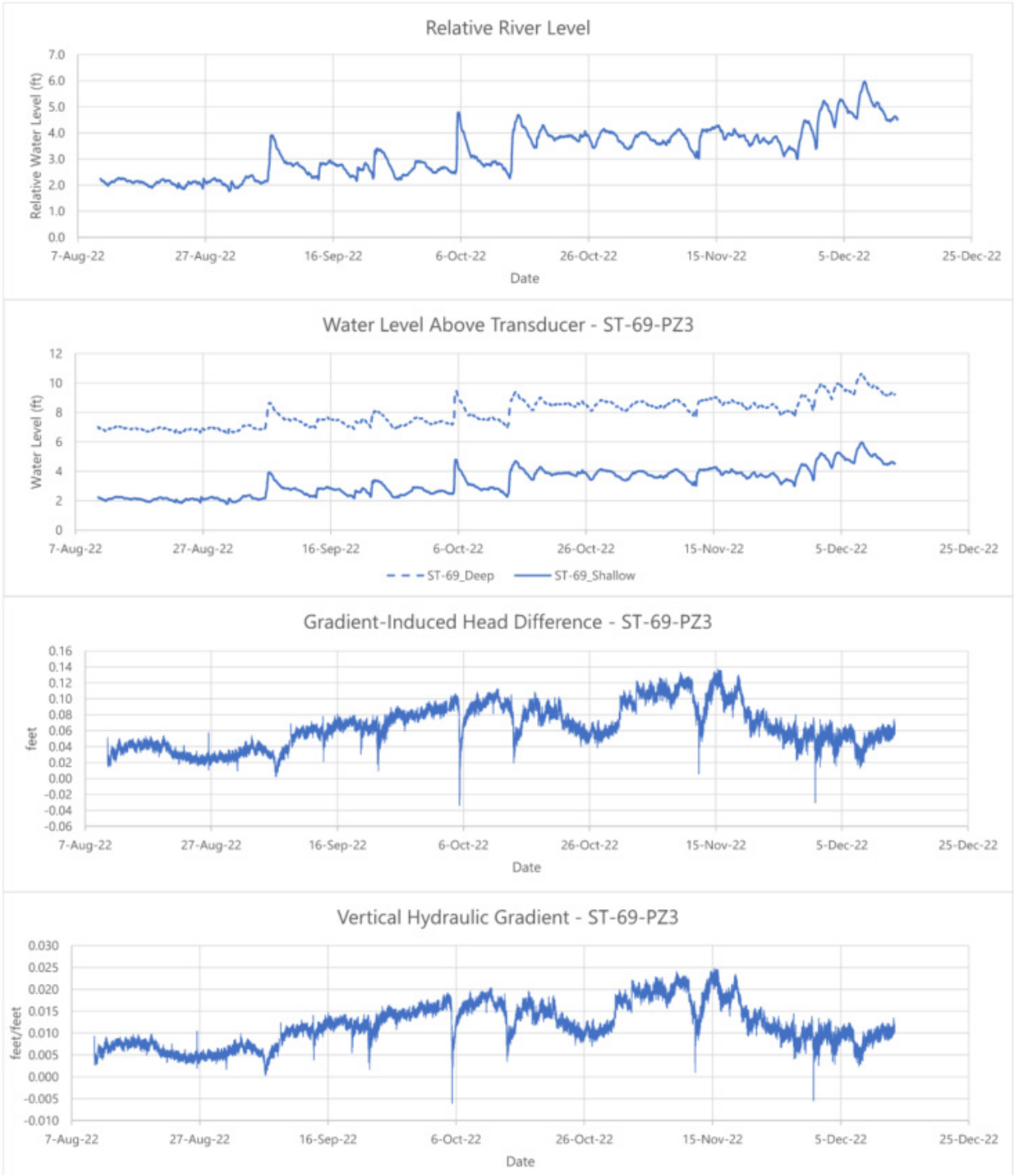
Notes:
Continuous water-level measurements corrected for barometric pressure.
Dashed line in second panel from top corresponds to the deep piezometer.
Gradient-induced head difference plotted in the third panel from the top calculated by taking the difference in water level elevations between the shallow and deep piezometers during the gradient measurement periods and subtracting the average zero-gradient head difference.
A positive vertical gradient equals upward flow and a negative vertical gradient equals downward flow.
Data shown in the Relative River Level plot is based on transducer data from the Shallow piezometer.

Figure 1
Hydrographs of Measured Water Levels and Hydraulic Gradients at ST25/PZ1
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River



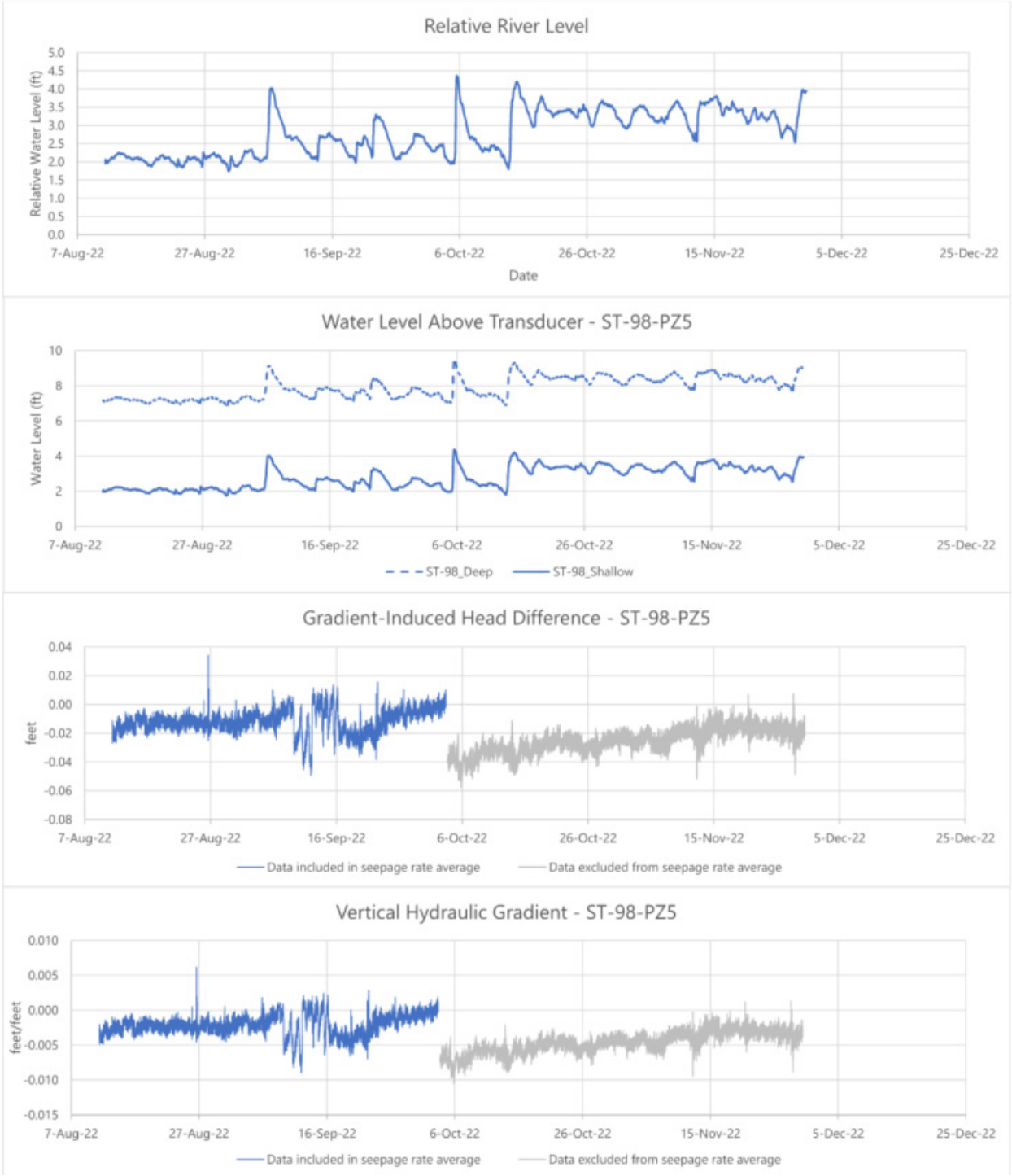
Notes:
Continuous water-level measurements corrected for barometric pressure.
Dashed line in second panel from top corresponds to the deep piezometer.
Gradient-induced head difference plotted in the third panel from the top calculated by taking the difference in water level elevations between the shallow and deep piezometers during the gradient measurement periods and subtracting the average zero-gradient head difference.
A positive vertical gradient equals upward flow and a negative vertical gradient equals downward flow.
Data shown in the Relative River Level plot is based on transducer data from the Shallow piezometer.

Figure 2
Hydrographs of Measured Water Levels and Hydraulic Gradients at ST43/PZ02
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River



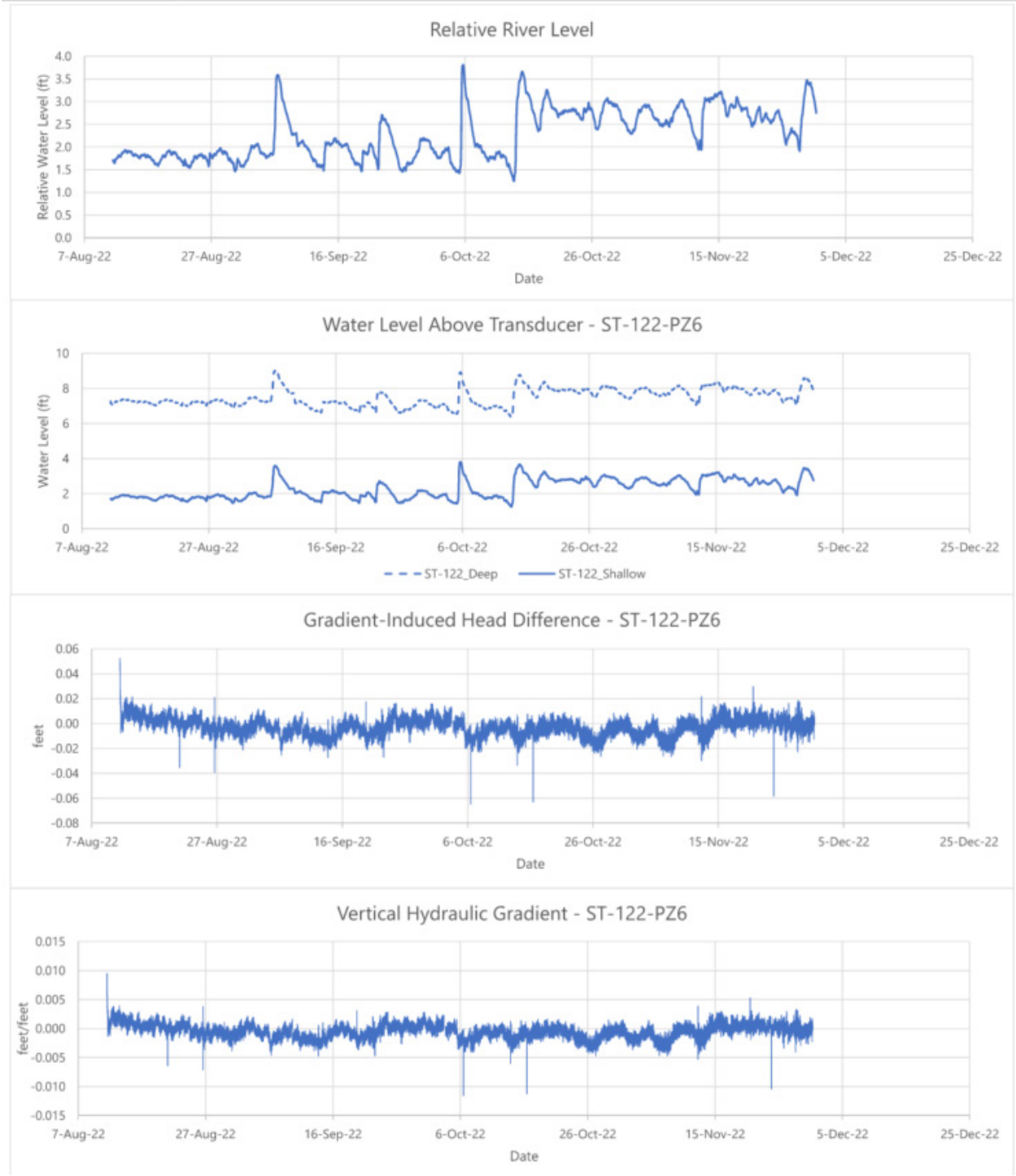
Notes:
Continuous water-level measurements corrected for barometric pressure.
Dashed line in second panel from top corresponds to the deep piezometer.
Gradient-induced head difference plotted in the third panel from the top calculated by taking the difference in water level elevations between the shallow and deep piezometers during the gradient measurement periods and subtracting the average zero-gradient head difference.
A positive vertical gradient equals upward flow and a negative vertical gradient equals downward flow.
Data shown in the Relative River Level plot is based on transducer data from the Shallow piezometer.

Figure 3
Hydrographs of Measured Water Levels and Hydraulic Gradients at ST69/PZ03
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River



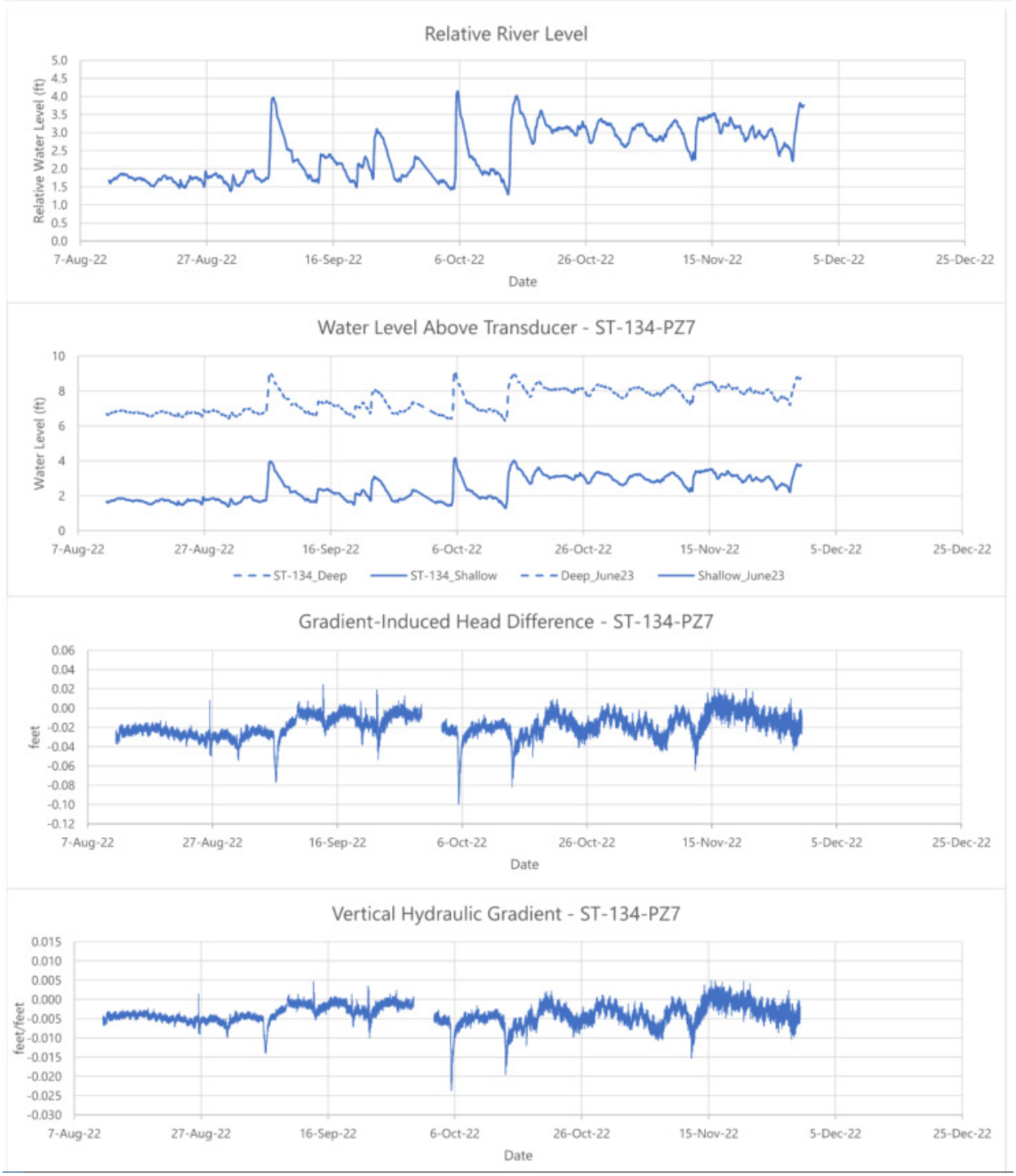
Notes:
Continuous water-level measurements corrected for barometric pressure.
Dashed line in second panel from top corresponds to the deep piezometer.
Gradient-induced head difference plotted in the third panel from the top calculated by taking the difference in water level elevations between the shallow and deep piezometers during the gradient measurement periods and subtracting the average zero-gradient head difference.
A positive vertical gradient equals upward flow and a negative vertical gradient equals downward flow.
Data shown in the Relative River Level plot is based on transducer data from the Shallow piezometer.

Figure 4
Hydrographs of Measured Water Levels and Hydraulic Gradients at ST98/PZ5
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River



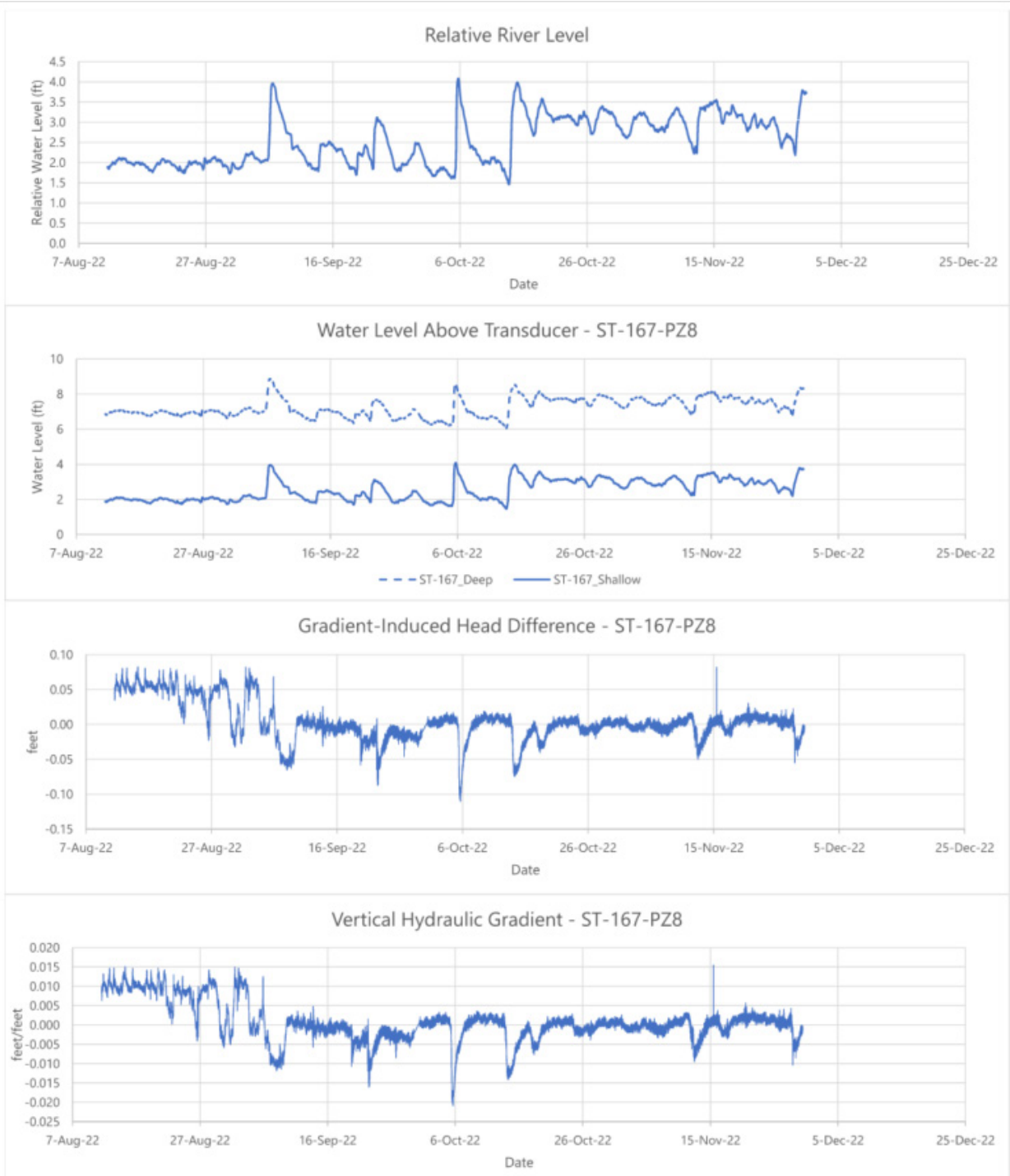
Notes:
Continuous water-level measurements corrected for barometric pressure.
Dashed line in second panel from top corresponds to the deep piezometer.
Gradient-induced head difference plotted in the third panel from the top calculated by taking the difference in water level elevations between the shallow and deep piezometers during the gradient measurement periods and subtracting the average zero-gradient head difference.
A positive vertical gradient equals upward flow and a negative vertical gradient equals downward flow.
Data shown in the Relative River Level plot is based on transducer data from the Shallow piezometer.

Figure 5
Hydrographs of Measured Water Levels and Hydraulic Gradients at ST122/PZ6
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River



Notes:
Continuous water-level measurements corrected for barometric pressure.
Dashed line in second panel from top corresponds to the deep piezometer.
Gradient-induced head difference plotted in the third panel from the top calculated by taking the difference in water level elevations between the shallow and deep piezometers during the gradient measurement periods and subtracting the average zero-gradient head difference.
A positive vertical gradient equals upward flow and a negative vertical gradient equals downward flow.
Data shown in the Relative River Level plot is based on transducer data from the Shallow piezometer.

Figure 6
Hydrographs of Measured Water Levels and Hydraulic Gradients at ST134/PZ7
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River

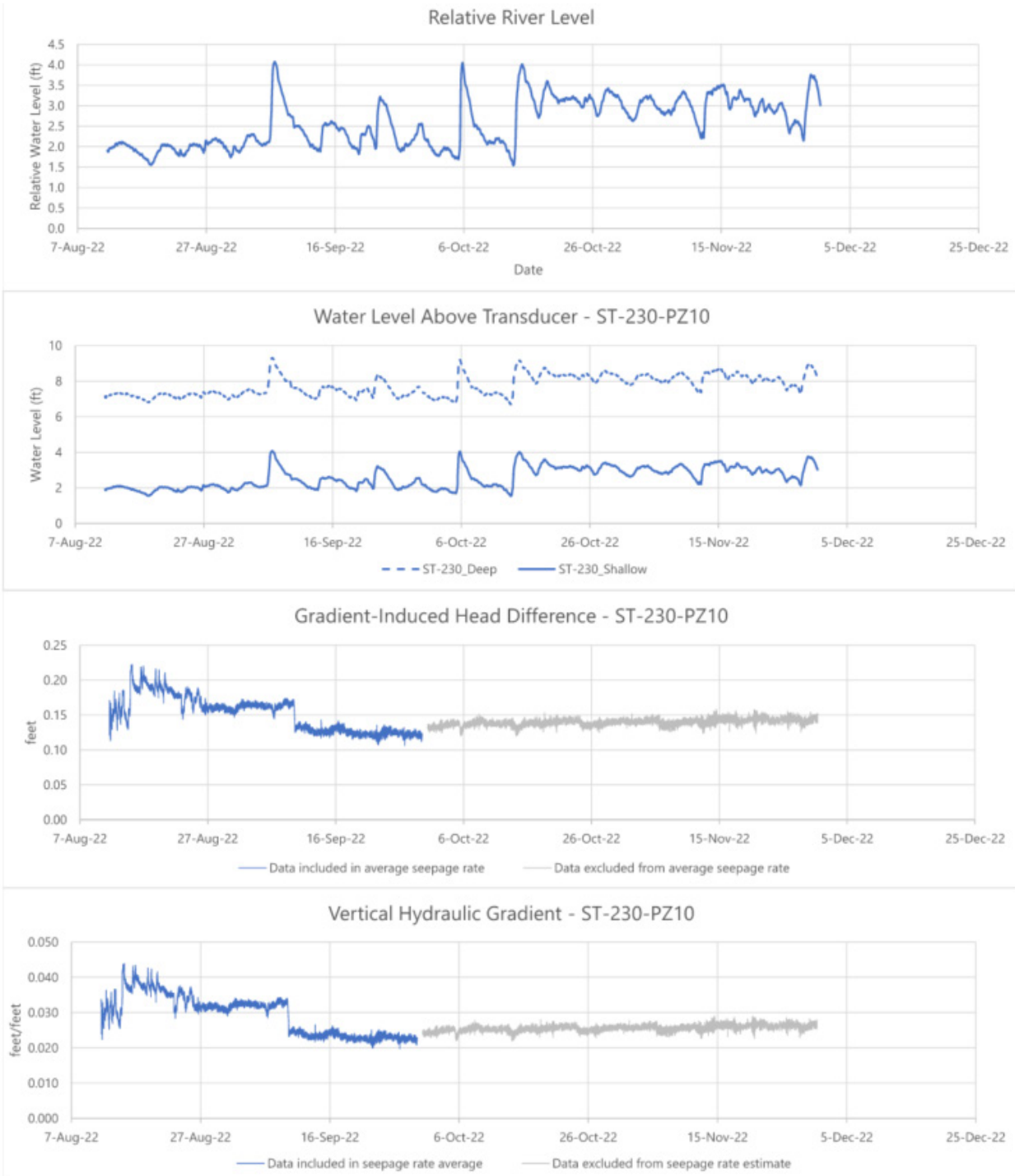


Notes:
Continuous water-level measurements corrected for barometric pressure.
Dashed line in second panel from top corresponds to the deep piezometer.
Gradient-induced head difference plotted in the third panel from the top calculated by taking the difference in water level elevations between the shallow and deep piezometers during the gradient measurement periods and subtracting the average zero-gradient head difference.
A positive vertical gradient equals upward flow and a negative vertical gradient equals downward flow.
Data shown in the Relative River Level plot is based on transducer data from the Shallow piezometer.

Figure 7
Hydrographs of Measured Water Levels and Hydraulic Gradients at ST167/PZ8
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River

Notes:
Continuous water-level measurements corrected for barometric pressure.
Dashed line in second panel from top corresponds to the deep piezometer.
Gradient-induced head difference plotted in the third panel from the top calculated by taking the difference in water level elevations between the shallow and deep piezometers during the gradient measurement periods and subtracting the average zero-gradient head difference.
A positive vertical gradient equals upward flow and a negative vertical gradient equals downward flow.
Data shown in the Relative River Level plot is based on transducer data from the Shallow piezometer.

Figure 8
Hydrographs of Measured Water Levels and Hydraulic Gradients at ST190/PZ9
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River



Notes:
Continuous water-level measurements corrected for barometric pressure.
Dashed line in second panel from top corresponds to the deep piezometer.
Gradient-induced head difference plotted in the third panel from the top calculated by taking the difference in water level elevations between the shallow and deep piezometers during the gradient measurement periods and subtracting the average zero-gradient head difference.
A positive vertical gradient equals upward flow and a negative vertical gradient equals downward flow.
Data shown in the Relative River Level plot is based on transducer data from the Shallow piezometer.

Figure 9
Hydrographs of Measured Water Levels and Hydraulic Gradients at ST230/PZ10
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River

Annex B
Detailed Summary of Seepage Data and Results

Annex B
Detailed Summary of Seepage Data and Results

Parameter	Data Recording Period	Unit	PZ1 ST-25	PZ2 ST-43	PZ3 ST-69	PZ4 BW5A1	PZ5 ST-98	PZ6 ST-122	PZ7 ST-134	PZ8 ST-167	PZ9 ST-190	PZ10 ST-230
Vertical Hydraulic Conductivity, Kv	NA	cm/sec	8.2E-04	4.8E-03	3.8E-03	4.3E-04	1.4E-02	6.3E-03	5.1E-04	1.1E-03	1.1E-03	5.1E-02
Avg Vertical Gradient, Iv	Aug 10 - Sept 8, 2022	--	0.00056	-0.00035	0.0059	NA	-0.0022	-0.000095	-0.0049	0.0057	0.045	0.033
	Sept 8 - Oct 3, 2022	--	0.00031	0.0011	0.012	NA	-0.0020	-0.00052	-0.0018	-0.0021	0.054	0.023
	Oct 3 - Nov 28, 2022	--	0.00050	0.0014	0.014	NA	NA	-0.00074	-0.0041	-0.00068	NA	NA
	Entire Recording Period	--	0.00048	0.00089	0.012	NA	-0.0021	-0.00052	-0.0039	0.00075	0.049	0.029
Vertical Groundwater Flux, Kv*Iv	Aug 10 - Sept 8, 2022	cm/day	0.040	-0.14	1.9	NA	-2.7	-0.052	-0.22	0.54	4.3	150
	Sept 8 - Oct 3, 2022	cm/day	0.022	0.48	4.1	NA	-2.5	-0.28	-0.078	-0.20	5.1	100
	Oct 3 - Nov 28, 2022	cm/day	0.036	0.59	4.6	NA	NA	-0.40	-0.18	-0.065	NA	NA
	Entire Recording Period	cm/day	0.034	0.37	3.9	NA	-2.6	-0.28	-0.17	0.071	4.6	130

Notes:
Vertical hydraulic gradients not available at PZ4 BW5A1 because little or no surface water present at that location
PZ9 ST190 was inaccessible in November and December 2022 due to high river level
Data collected at PZ5 and PZ10 between October adn November 2022 were excluded from the average iv value due to an apparent shift in the transducer position during zero-gradient calibration period. These data are shown in gray on the hydrograph, where a drop in the iv is observed at the start of the October 3rd deployment period.

Annex C
Vertical Hydraulic Conductivity Measurements

ANCHOR QEA

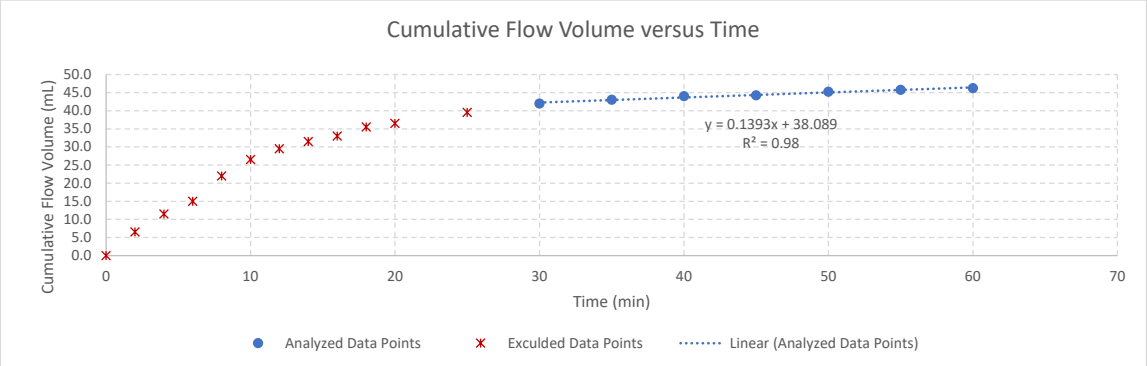
Calculation of Vertical Hydraulic Conductivity by Gravity Drainage
GE - Housatonic

Core ID: ST25-PZ1
Note: Analysis No.1
Staff: A. Olsen, J. Ramey-Lariviere

Sample Depth In (Ft)	**0-3**	**feet**
Sediment Sample Length (ft)	**1.27**	**feet**
Total Core Tube Length (ft)	**3.00**	**feet**
Core Diameter (in)	**2.00**	**inches**
Core Diameter (in)	**5.08**	**cm**
Flow Area (A)	**20.3**	**cm^2**

Kv Calculation (cm/sec)
Kv = Q / (AI)
1.1E-04

Time									**Flow Volume (mL)**	
Incremental			**Cumulative**		**Water Level**					
Date	**Time Elapsed (HH:MM:SS)**	**Seconds**	**Seconds**	**Minutes**	**From Top (in)**	**From Top (Feet)**	**From Bottom (Feet)**	**Hydraulic Gradient**	**Incremental**	**Cumulative**
8/12/2022	0:00:00	0	0	0.0	Water Level Within Sample			1.00	0	0
8/12/2022	0:02:00	120	120	2.0				1.00	6.5	6.5
8/12/2022	0:04:00	120	240	4.0				1.00	5.0	11.5
8/12/2022	0:06:00	120	360	6.0				1.00	3.5	15.0
8/12/2022	0:08:00	120	480	8.0				1.00	7.0	22.0
8/12/2022	0:10:00	120	600	10.0				1.00	4.5	26.5
8/12/2022	0:12:00	120	720	12.0				1.00	3.0	29.5
8/12/2022	0:14:00	120	840	14.0				1.00	2.0	31.5
8/12/2022	0:16:00	120	960	16.0				1.00	1.5	33.0
8/12/2022	0:18:00	120	1080	18.0				1.00	2.5	35.5
8/12/2022	0:20:00	120	1200	20.0				1.00	1.0	36.5
8/12/2022	0:25:00	300	1500	25.0				1.00	3.0	39.5
8/12/2022	0:30:00	300	1800	30.0				1.00	2.5	42.0
8/12/2022	0:35:00	300	2100	35.0				1.00	1.0	43.0
8/12/2022	0:40:00	300	2400	40.0				1.00	1.0	44.0
8/12/2022	0:45:00	300	2700	45.0				1.00	0.25	44.3
8/12/2022	0:50:00	300	3000	50.0				1.00	1.0	45.3
8/12/2022	0:55:00	300	3300	55.0				1.00	0.5	45.8
8/12/2022	1:00:00	300	3600	60.0				1.00	0.5	46.3
Best-Fit Line		Final Time	3600			Average Hydraulic Gradient (I):		**1.00**	Final Volume	46.25
Best-Fit Line Y Intercept:			38.089			Best-Fit Flow Rate (Q, mL/sec):		0.0023		



Note: Test and calculation methods described in Gefell, M.J., M. LaRue, and K. Russell, 2019. "Vertical Hydraulic Conductivity Measurement by Gravity Drainage." *Groundwater* 57(4):511–516.

ANCHOR QEA

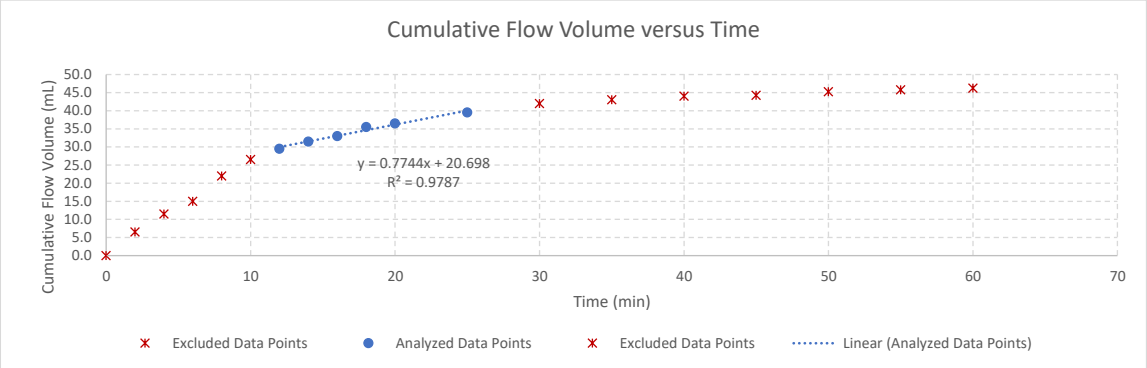
Calculation of Vertical Hydraulic Conductivity by Gravity Drainage
GE - Housatonic

Core ID: ST25-PZ1
Note: Analysis No.2
Staff: A. Olsen, J. Ramey-Lariviere

Sample Depth In (Ft)	**0-3**	**feet**
Sediment Sample Length (ft)	**1.27**	**feet**
Total Core Tube Length (ft)	**3.00**	**feet**
Core Diameter (in)	**2.00**	**inches**
Core Diameter (in)	**5.08**	**cm**
Flow Area (A)	**20.3**	**cm^2**

Kv Calculation (cm/sec)
Kv = Q / (AI)
6.4E-04

Time									**Flow Volume (mL)**	
Incremental			**Cumulative**		**Water Level**					
Date	**Time Elapsed (HH:MM:SS)**	**Seconds**	**Seconds**	**Minutes**	**From Top (in)**	**From Top (Feet)**	**From Bottom (Feet)**	**Hydraulic Gradient**	**Incremental**	**Cumulative**
8/12/2022	0:00:00	0	0	0.0	Water Level Within Sample			1.00	0	0
8/12/2022	0:02:00	120	120	2.0				1.00	6.5	6.5
8/12/2022	0:04:00	120	240	4.0				1.00	5.0	11.5
8/12/2022	0:06:00	120	360	6.0				1.00	3.5	15.0
8/12/2022	0:08:00	120	480	8.0				1.00	7.0	22.0
8/12/2022	0:10:00	120	600	10.0				1.00	4.5	26.5
8/12/2022	0:12:00	120	720	12.0				1.00	3.0	29.5
8/12/2022	0:14:00	120	840	14.0				1.00	2.0	31.5
8/12/2022	0:16:00	120	960	16.0				1.00	1.5	33.0
8/12/2022	0:18:00	120	1080	18.0				1.00	2.5	35.5
8/12/2022	0:20:00	120	1200	20.0				1.00	1.0	36.5
8/12/2022	0:25:00	300	1500	25.0				1.00	3.0	39.5
8/12/2022	0:30:00	300	1800	30.0				1.00	2.5	42.0
8/12/2022	0:35:00	300	2100	35.0				1.00	1.0	43.0
8/12/2022	0:40:00	300	2400	40.0				1.00	1.0	44.0
8/12/2022	0:45:00	300	2700	45.0				1.00	0.25	44.3
8/12/2022	0:50:00	300	3000	50.0				1.00	1.0	45.3
8/12/2022	0:55:00	300	3300	55.0				1.00	0.5	45.8
8/12/2022	1:00:00	300	3600	60.0				1.00	0.5	46.3
Best-Fit Line		Final Time	3600			Average Hydraulic Gradient (I):		**1.00**	Final Volume	46.25
Best-Fit Line Y Intercept:			20.698			Best-Fit Flow Rate (Q, mL/sec):		0.0129		



Note: Test and calculation methods described in Gefell, M.J., M. LaRue, and K. Russell, 2019. "Vertical Hydraulic Conductivity Measurement by Gravity Drainage." *Groundwater* 57(4):511–516.

ANCHOR QEA

Calculation of Vertical Hydraulic Conductivity by Gravity Drainage
GE - Housatonic

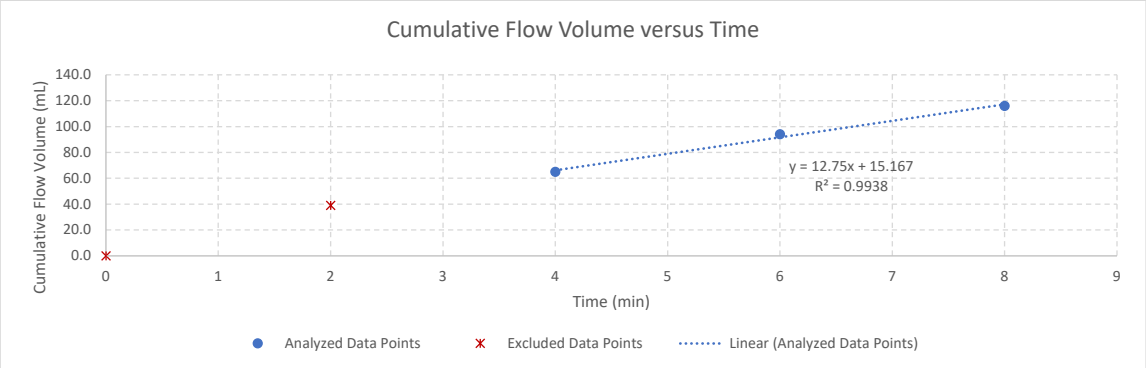
Core ID: ST25-PZ1

Staff: A. Olsen, J. Ramey-Lariviere

Sample Depth In (Ft)	**3-6**	**feet**
Sediment Sample Length (ft)	**1.92**	**feet**
Total Core Tube Length (ft)	**3.00**	**feet**
Core Diameter (in)	**2.00**	**inches**
Core Diameter (in)	**5.08**	**cm**
Flow Area (A)	**20.3**	**cm^2**

Kv Calculation (cm/sec)
Kv = Q / (AI)
1.0E-02

Time									**Flow Volume (mL)**	
Incremental			**Cumulative**		**Water Level**					
Date	**Time Elapsed (HH:MM:SS)**	**Seconds**	**Seconds**	**Minutes**	**From Top (in)**	**From Top (Feet)**	**From Bottom (Feet)**	**Hydraulic Gradient**	**Incremental**	**Cumulative**
8/12/2022	0:00:00	0	0	0.0	12	1.00	2.00	1.04	0	0
8/12/2022	0:02:00	120	120	2.0	13	1.08	1.92	1.00	39.0	39.0
8/12/2022	0:04:00	120	240	4.0	Water Level Within Sample			1.00	26.0	65.0
8/12/2022	0:06:00	120	360	6.0				1.00	29.0	94.0
8/12/2022	0:08:00	120	480	8.0				1.00	22.0	116.0
Best-Fit Line		Final Time	480			Average Hydraulic Gradient (I):		**1.00**	Final Volume	116
Best-Fit Line Y Intercept:			15.67			Best-Fit Flow Rate (Q, mL/sec):		0.2125		



Note: Test and calculation methods described in Gefell, M.J., M. LaRue, and K. Russell, 2019. "Vertical Hydraulic Conductivity Measurement by Gravity Drainage." *Groundwater* 57(4):511–516.

CALCULATION OF HARMONIC MEAN VERTICAL HYDRAULIC CONDUCTIVITY FROM GRAVITY DRAINAGE TEST RESULTS

General Electric Company – Housatonic River Reach 5A

ST25-PZ1

Sample Depth Interval (ft) Top	Bottom	Interval Length Z	Sample Length ft z	Kv cm/sec	Midpoint Depth (ft)	Based on Whole Sample Depth Interval Z / Kv	Based on Recovered Sample Length Only z / Kv	**Average of Harmonic Mean Values**
0	3	3	1.27	3.8E-04	1.5	7.9E+03	3.3E+03	
3	6	3	1.92	1.0E-02	4.5	3.0E+02	1.9E+02	
Total		6	3.19	**Harmonic Mean Kv (cm/sec)-->**		7.3E-04	9.0E-04	**8.2E-04**

Notes:

1) Kv for 0-3 foot inteval is average of two analyses.

2) Average of harmonic mean values used in seepage calculations.

ANCHOR QEA

Calculation of Vertical Hydraulic Conductivity by Gravity Drainage
GE - Housatonic

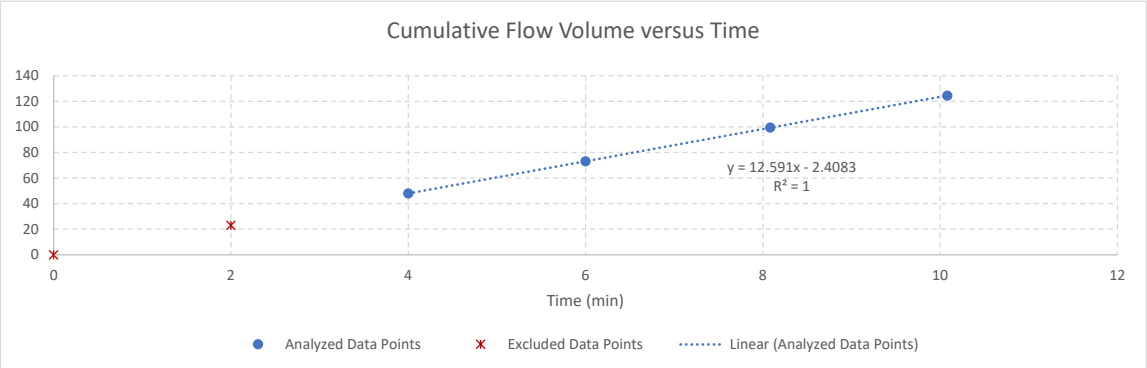
Core ID: ST43-PZ2

Staff: A. Olsen, J. Ramey-Lariviere

Sample Depth In (Ft)	**0-4**	**feet**
Sediment Sample Length (ft)	**1.59**	**feet**
Total Core Tube Length (ft)	**4.00**	**feet**
Core Diameter (in)	**2.00**	**inches**
Core Diameter (in)	**5.08**	**cm**
Flow Area (A)	**20.3**	**cm^2**

Kv Calculation (cm/sec)
Kv = Q / (AI)
4.8E-03

Time									**Flow Volume (mL)**	
Incremental			**Cumulative**		**Water Level**					
Date	**Time Elapsed (HH:MM:SS)**	**Seconds**	**Seconds**	**Minutes**	**From Top (in)**	**From Top (Feet)**	**From Bottom (Feet)**	**Hydraulic Gradient**	**Incremental**	**Cumulative**
8/12/2022	0:00:00	0	0	0.0	4 3/4	0.40	3.60	2.27	0	0
8/12/2022	0:02:00	120	120	2.0	5 1/2	0.46	3.54	2.23	23.0	23
8/12/2022	0:04:00	120	240	4.0	6	0.50	3.50	2.20	25.0	48
8/12/2022	0:06:00	120	360	6.0	6 4/7	0.55	3.45	2.17	25.0	73
8/12/2022	0:08:05	125	485	8.1	7 1/8	0.59	3.41	2.14	26.5	99.5
8/12/2022	0:10:05	120	605	10.1	7 5/8	0.64	3.36	2.12	25.0	124.5
Best-Fit Line		Final Time	605			Average Hydraulic Gradient (I):		**2.16**	Final Volume	124.5
Best-Fit Line Y Intercept:			-2.4083			Best-Fit Flow Rate (Q, mL/sec):		0.2099		



Note: Test and calculation methods described in Gefell, M.J., M. LaRue, and K. Russell, 2019. "Vertical Hydraulic Conductivity Measurement by Gravity Drainage." *Groundwater* 57(4):511–516.

ANCHOR QEA

Calculation of Vertical Hydraulic Conductivity by Gravity Drainage

GE - Housatonic

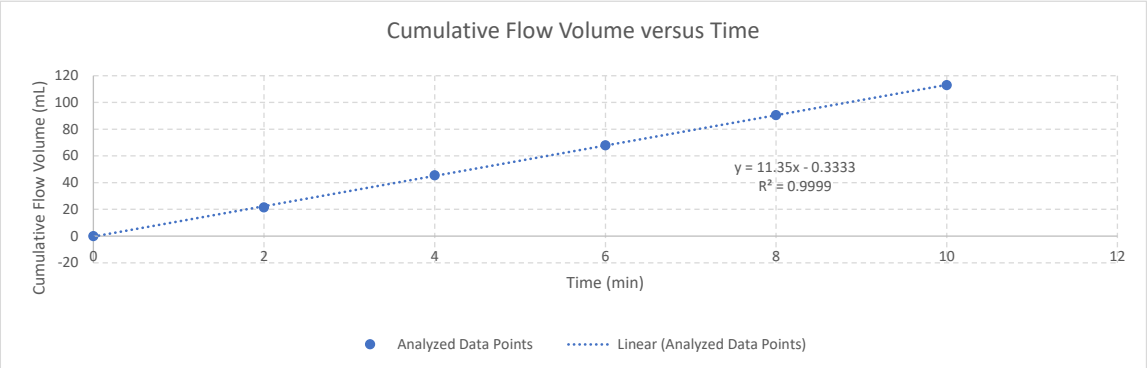
Core ID: ST69-PZ3

Staff: A. Olsen, J. Ramey-Lariviere

Sample Depth In (Ft)	**0-4**	**feet**
Sediment Sample Length (ft)	**1.26**	**feet**
Total Core Tube Length (ft)	**4.00**	**feet**
Core Diameter (in)	**2.00**	**inches**
Core Diameter (in)	**5.08**	**cm**
Flow Area (A)	**20.3**	**cm^2**

Kv Calculation (cm/sec)
Kv = Q / (AI)
3.8E-03

Time									**Flow Volume (mL)**	
Incremental			**Cumulative**		**Water Level**					
Date	**Time Elapsed (HH:MM:SS)**	**Seconds**	**Seconds**	**Minutes**	**From Top (in)**	**From Top (Feet)**	**From Bottom (Feet)**	**Hydraulic Gradient**	**Incremental**	**Cumulative**
8/12/2022	0:00:00	0	0	0.0	9 1/2	0.79	3.21	2.55	0	0
8/12/2022	0:02:00	120	120	2.0	10 1/4	0.85	3.15	2.50	21.5	21.5
8/12/2022	0:04:00	120	240	4.0	10 3/4	0.90	3.10	2.46	24.0	45.5
8/12/2022	0:06:00	120	360	6.0	11 1/4	0.94	3.06	2.43	22.5	68
8/12/2022	0:08:00	120	480	8.0	11 5/8	0.97	3.03	2.41	22.5	90.5
8/12/2022	0:10:00	120	600	10.0	12 1/4	1.02	2.98	2.36	22.5	113
Best-Fit Line		Final Time	600			Average Hydraulic Gradient (I):		**2.45**	Final Volume	113
Best-Fit Line Y Intercept:			0.5			Best-Fit Flow Rate (Q, mL/sec):		0.1892		



Note: Test and calculation methods described in Gefell, M.J., M. LaRue, and K. Russell, 2019. "Vertical Hydraulic Conductivity Measurement by Gravity Drainage." *Groundwater* 57(4):511–516.

ANCHOR QEA

Calculation of Vertical Hydraulic Conductivity by Gravity Drainage
GE - Housatonic

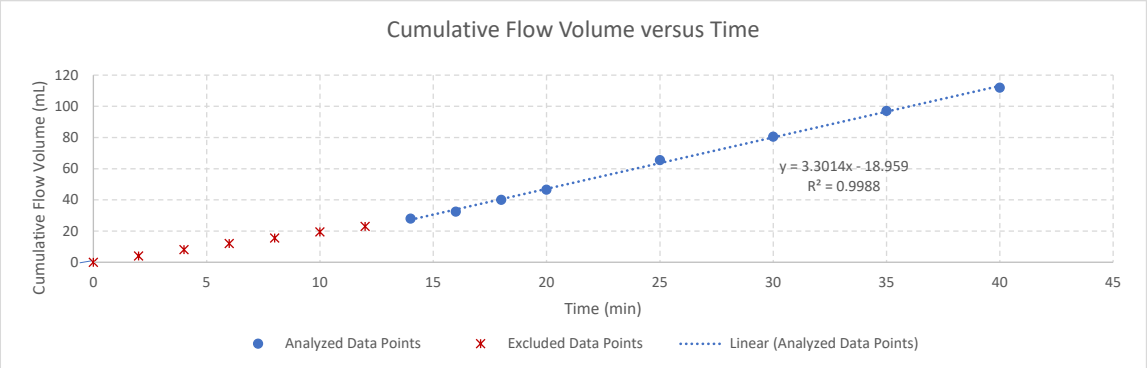
Core ID: BW5A1-PZ4

Staff: A. Olsen, J. Ramey-Lariviere

Sample Depth In (Ft)	**0-3**	**feet**
Sediment Sample Length (ft)	**1.21**	**feet**
Total Core Tube Length (ft)	**3.00**	**feet**
Core Diameter (in)	**2.00**	**inches**
Core Diameter (in)	**5.08**	**cm**
Flow Area (A)	**20.3**	**cm^2**

Kv Calculation (cm/sec)
Kv = Q / (AI)
2.6E-03

Time									**Flow Volume (mL)**	
Incremental			**Cumulative**		**Water Level**					
Date	**Time Elapsed (HH:MM:SS)**	**Seconds**	**Seconds**	**Minutes**	**From Top (in)**	**From Top (Feet)**	**From Bottom (Feet)**	**Hydraulic Gradient**	**Incremental**	**Cumulative**
8/12/2022	0:00:00	0	0	0.0	19 1/4	1.60	1.40	1.15	0	0
8/12/2022	0:02:00	120	120	2.0	19 1/2	1.62	1.38	1.14	4.0	4
8/12/2022	0:04:00	120	240	4.0	19 5/8	1.63	1.37	1.13	4.0	8
8/12/2022	0:06:00	120	360	6.0	19 2/3	1.64	1.36	1.12	4.0	12
8/12/2022	0:08:00	120	480	8.0	19 3/4	1.65	1.35	1.12	3.5	15.5
8/12/2022	0:10:00	120	600	10.0	19 4/5	1.65	1.35	1.12	4.0	19.5
8/12/2022	0:12:00	120	720	12.0	19 4/5	1.65	1.35	1.12	3.5	23
8/12/2022	0:14:00	120	840	14.0	19 13/16	1.65	1.35	1.12	5.0	28
8/12/2022	0:16:00	120	960	16.0	19 15/16	1.66	1.34	1.11	4.5	32.5
8/12/2022	0:18:00	120	1080	18.0	20 1/16	1.67	1.33	1.10	7.5	40
8/12/2022	0:20:00	120	1200	20.0	20 3/16	1.68	1.32	1.09	6.5	46.5
8/12/2022	0:25:00	300	1500	25.0	20 5/8	1.72	1.28	1.06	19.0	65.5
8/12/2022	0:30:00	300	1800	30.0	21	1.75	1.25	1.03	15.0	80.5
8/12/2022	0:35:00	300	2100	35.0	21 3/8	1.78	1.22	1.01	16.5	97
8/12/2022	0:40:00	300	2400	40.0	21 13/16	1.82	1.18	0.98	15.0	112
Best-Fit Line		Final Time	2400			Average Hydraulic Gradient (I):		**1.06**	Final Volume	112
Best-Fit Line Y Intercept:			-14.128			Best-Fit Flow Rate (Q, mL/sec):		0.0550		



Note: Test and calculation methods described in Gefell, M.J., M. LaRue, and K. Russell, 2019. "Vertical Hydraulic Conductivity Measurement by Gravity Drainage." *Groundwater* 57(4):511–516.

ANCHOR QEA

Calculation of Vertical Hydraulic Conductivity by Gravity Drainage

GE - Housatonic

Core ID: BW5A1-PZ4

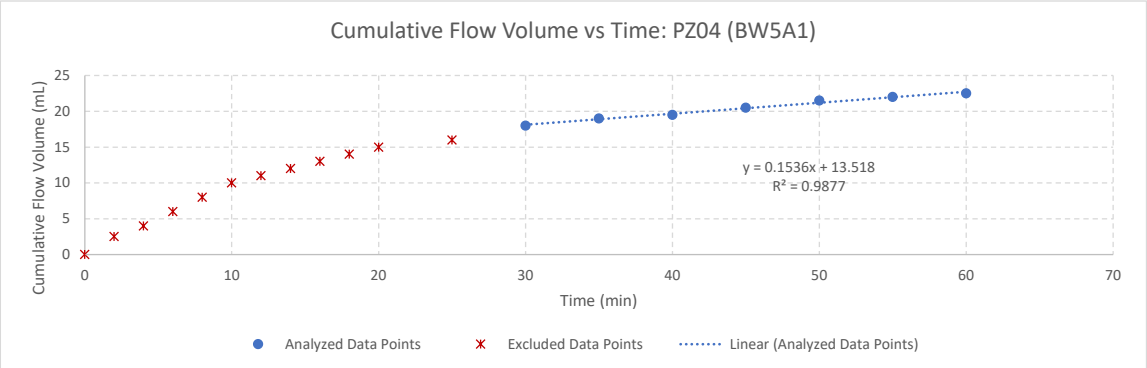
Note: Analysis No. 1

Staff: A. Olsen, J. Ramey-Lariviere

Sample Depth In (Ft)	**3-6**	**feet**
Sediment Sample Length (ft)	**2.59**	**feet**
Total Core Tube Length (ft)	**3.00**	**feet**
Core Diameter (in)	**2.00**	**inches**
Core Diameter (in)	**5.08**	**cm**
Flow Area (A)	**20.3**	**cm^2**

Kv Calculation (cm/sec)
Kv = Q / (AI)
1.3E-04

Time									**Flow Volume (mL)**	
Incremental			**Cumulative**		**Water Level**					
Date	**Time Elapsed (HH:MM:SS)**	**Seconds**	**Seconds**	**Minutes**	**From Top (in)**	**From Top (Feet)**	**From Bottom (Feet)**	**Hydraulic Gradient**	**Incremental**	**Cumulative**
8/12/2022	0:00:00	0	0	0.0	4 1/2	0.37	2.63	1.01	0	0
8/12/2022	0:02:00	120	120	2.0	4 5/8	0.39	2.61	1.01	2.5	2.5
8/12/2022	0:04:00	120	240	4.0	4 2/3	0.39	2.61	1.01	1.5	4
8/12/2022	0:06:00	120	360	6.0	4 2/3	0.39	2.61	1.01	2.0	6
8/12/2022	0:08:00	120	480	8.0	4 4/5	0.40	2.60	1.00	2.0	8
8/12/2022	0:10:00	120	600	10.0	4 4/5	0.40	2.60	1.00	2.0	10
8/12/2022	0:12:00	120	720	12.0	4 7/8	0.41	2.59	1.00	1.0	11
8/12/2022	0:14:00	120	840	14.0	4 7/8	0.41	2.59	1.00	1.0	12
8/12/2022	0:16:00	120	960	16.0	4 7/8	0.41	2.59	1.00	1.0	13
8/12/2022	0:18:00	120	1080	18.0	4 15/16	0.41	2.59	1.00	1.0	14
8/12/2022	0:20:00	120	1200	20.0	4 15/16	0.41	2.59	1.00	1.0	15
8/12/2022	0:25:00	300	1500	25.0	4 15/16	0.41	2.59	1.00	1.0	16
8/12/2022	0:30:00	300	1800	30.0	5	0.42	2.58	1.00	2.0	18
8/12/2022	0:35:00	300	2100	35.0	5 1/16	0.42	2.58	1.00	1.0	19
8/12/2022	0:40:00	300	2400	40.0	5	0.42	2.58	1.00	0.5	19.5
8/12/2022	0:45:00	300	2700	45.0	5 1/8	0.43	2.57	1.00	1.0	20.5
8/12/2022	0:50:00	300	3000	50.0	5 1/8	0.43	2.57	1.00	1.0	21.5
8/12/2022	0:55:00	300	3300	55.0	5 1/8	0.43	2.57	1.00	0.5	22
8/12/2022	1:00:00	300	3600	60.0	5 1/8	0.43	2.57	1.00	0.5	22.5
Best-Fit Line		Final Time	3600			Average Hydraulic Gradient (I):		**1.00**	Final Volume	22.5
Best-Fit Line Y Intercept:			13.518			Best-Fit Flow Rate (Q, mL/sec):		0.0026		



Note: Test and calculation methods described in Gefell, M.J., M. LaRue, and K. Russell, 2019. "Vertical Hydraulic Conductivity Measurement by Gravity Drainage." *Groundwater* 57(4):511–516.

ANCHOR QEA

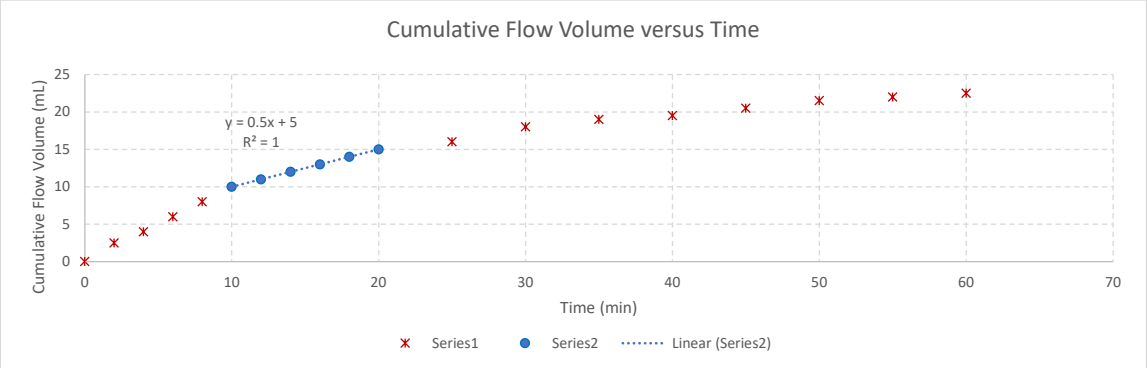
Calculation of Vertical Hydraulic Conductivity by Gravity Drainage
GE - Housatonic

Core ID: BW5A1-PZ4
Note: Analysis No.2
Staff: A. Olsen, J. Ramey-Lariviere

Sample Depth In (Ft)	**3-6**	**feet**
Sediment Sample Length (ft)	**2.59**	**feet**
Total Core Tube Length (ft)	**3.00**	**feet**
Core Diameter (in)	**2.00**	**inches**
Core Diameter (in)	**5.08**	**cm**
Flow Area (A)	**20.3**	**cm^2**

Kv Calculation (cm/sec)
Kv = Q / (AI)
4.1E-04

Time									**Flow Volume (mL)**	
Incremental			**Cumulative**		**Water Level**					
Date	**Time Elapsed (HH:MM:SS)**	**Seconds**	**Seconds**	**Minutes**	**From Top (in)**	**From Top (Feet)**	**From Bottom (Feet)**	**Hydraulic Gradient**	**Incremental**	**Cumulative**
8/12/2022	0:00:00	0	0	0.0	4 1/2	0.37	2.63	1.01	0	0
8/12/2022	0:02:00	120	120	2.0	4 5/8	0.39	2.61	1.01	2.5	2.5
8/12/2022	0:04:00	120	240	4.0	4 2/3	0.39	2.61	1.01	1.5	4
8/12/2022	0:06:00	120	360	6.0	4 2/3	0.39	2.61	1.01	2.0	6
8/12/2022	0:08:00	120	480	8.0	4 4/5	0.40	2.60	1.00	2.0	8
8/12/2022	0:10:00	120	600	10.0	4 4/5	0.40	2.60	1.00	2.0	10
8/12/2022	0:12:00	120	720	12.0	4 7/8	0.41	2.59	1.00	1.0	11
8/12/2022	0:14:00	120	840	14.0	4 7/8	0.41	2.59	1.00	1.0	12
8/12/2022	0:16:00	120	960	16.0	4 7/8	0.41	2.59	1.00	1.0	13
8/12/2022	0:18:00	120	1080	18.0	4 15/16	0.41	2.59	1.00	1.0	14
8/12/2022	0:20:00	120	1200	20.0	4 15/16	0.41	2.59	1.00	1.0	15
8/12/2022	0:25:00	300	1500	25.0	4 15/16	0.41	2.59	1.00	1.0	16
8/12/2022	0:30:00	300	1800	30.0	5	0.42	2.58	1.00	2.0	18
8/12/2022	0:35:00	300	2100	35.0	5 1/16	0.42	2.58	1.00	1.0	19
8/12/2022	0:40:00	300	2400	40.0	5	0.42	2.58	1.00	0.5	19.5
8/12/2022	0:45:00	300	2700	45.0	5 1/8	0.43	2.57	1.00	1.0	20.5
8/12/2022	0:50:00	300	3000	50.0	5 1/8	0.43	2.57	1.00	1.0	21.5
8/12/2022	0:55:00	300	3300	55.0	5 1/8	0.43	2.57	1.00	0.5	22
8/12/2022	1:00:00	300	3600	60.0	5 1/8	0.43	2.57	1.00	0.5	22.5
Best-Fit Line		Final Time	3600			Average Hydraulic Gradient (I):		**1.00**	Final Volume	22.5
Best-Fit Line Y Intercept:			6.1422			Best-Fit Flow Rate (Q, mL/sec):		0.0083		



Note: Test and calculation methods described in Gefell, M.J., M. LaRue, and K. Russell, 2019. "Vertical Hydraulic Conductivity Measurement by Gravity Drainage." *Groundwater* 57(4):511–516.

CALCULATION OF HARMONIC MEAN VERTICAL HYDRAULIC CONDUCTIVITY FROM GRAVITY DRAINAGE TEST RESULTS

General Electric Company – Housatonic River Reach 5A

BW5A1-PZ4

Sample Depth Interval (ft) Top	Bottom	Interval Length Z	Sample Length ft z	Kv cm/sec	Midpoint Depth (ft)	Based on Whole Sample Depth Interva Z / Kv	Based on Recovered Sample Length Only z / Kv	**Average of Harmonic Mean Values**
0	3	3	1.21	2.6E-03	1.5	1.2E+03	4.7E+02	
3	6	3	2.59	2.7E-04	4.5	1.1E+04	9.6E+03	
Total		6	3.80	**Harmonic Mean Kv (cm/sec)-->**		4.9E-04	3.8E-04	**4.3E-04**

Notes:

1) Kv for 3-6 foot inteval is average of two analyses.

2) Average of harmonic mean values used in seepage calculations.

ANCHOR QEA

Calculation of Vertical Hydraulic Conductivity by Gravity Drainage

GE - Housatonic

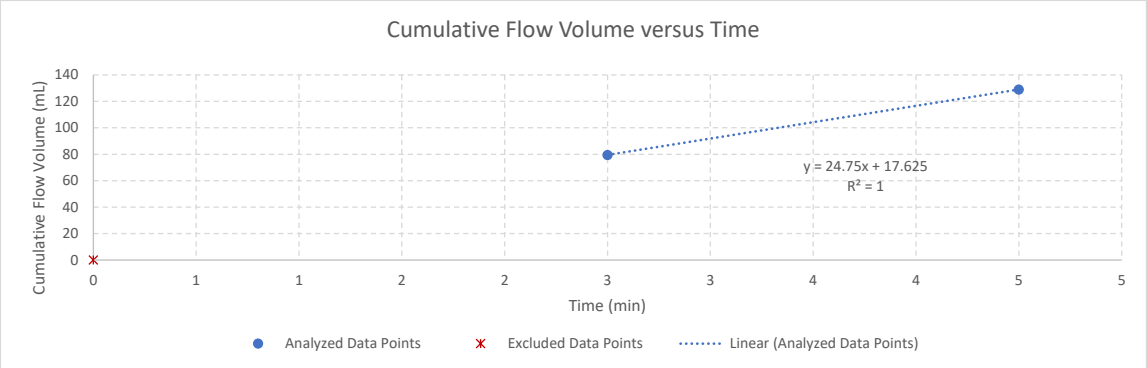
Core ID: ST98-PZ5

Staff: A. Olsen, J. Ramey-Lariviere

Sample Depth In (Ft)	**0-4**	**feet**
Sediment Sample Length (ft)	**2.19**	**feet**
Total Core Tube Length (ft)	**4.00**	**feet**
Core Diameter (in)	**2.00**	**inches**
Core Diameter (in)	**5.08**	**cm**
Flow Area (A)	**20.3**	**cm^2**

Kv Calculation (cm/sec)
Kv = Q / (AI)
1.4E-02

Time									**Flow Volume (mL)**	
Incremental			**Cumulative**		**Water Level**					
Date	**Time Elapsed (HH:MM:SS)**	**Seconds**	**Seconds**	**Minutes**	**From Top (in)**	**From Top (Feet)**	**From Bottom (Feet)**	**Hydraulic Gradient**	**Incremental**	**Cumulative**
8/12/2022	0:00:00	0	0	0.0	8	0.67	3.33	1.52	0	0
8/12/2022	0:02:30	150	150	2.5	9 7/8	0.82	3.18	1.45	79.5	79.5
8/12/2022	0:04:30	120	270	4.5	12 3/4	1.06	2.94	1.34	49.5	129.0
Best-Fit Line		Final Time	270			Average Hydraulic Gradient (I):		**1.44**	Final Volume	129
Best-Fit Line Y Intercept:			17.625			Best-Fit Flow Rate (Q, mL/sec):		0.4125		



Note: Test and calculation methods described in Gefell, M.J., M. LaRue, and K. Russell, 2019. "Vertical Hydraulic Conductivity Measurement by Gravity Drainage." *Groundwater* 57(4):511–516.

ANCHOR QEA

Calculation of Vertical Hydraulic Conductivity by Gravity Drainage
GE - Housatonic

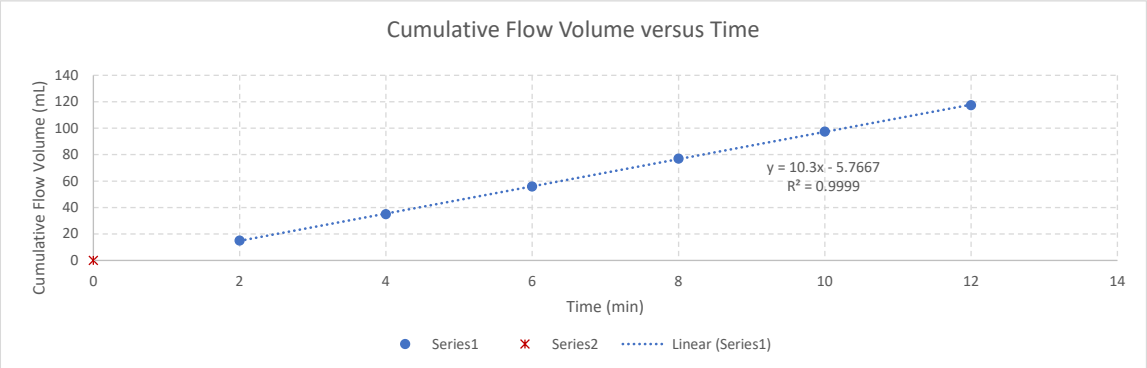
Core ID: ST122-PZ6

Staff: A. Olsen, J. Ramey-Lariviere

Sample Depth In (Ft)	**0-4**	**feet**
Sediment Sample Length (ft)	**2.25**	**feet**
Total Core Tube Length (ft)	**4.00**	**feet**
Core Diameter (in)	**2.00**	**inches**
Core Diameter (in)	**5.08**	**cm**
Flow Area (A)	**20.3**	**cm^2**

Kv Calculation (cm/sec)
Kv = Q / (AI)
6.3E-03

Time									**Flow Volume (mL)**	
Incremental			**Cumulative**		**Water Level**					
Date	**Time Elapsed (HH:MM:SS)**	**Seconds**	**Seconds**	**Minutes**	**From Top (in)**	**From Top (Feet)**	**From Bottom (Feet)**	**Hydraulic Gradient**	**Incremental**	**Cumulative**
8/12/2022	0:00:00	0	0	0.0	0	0.00	4.00	1.78	0	0
8/12/2022	0:02:00	120	120	2.0	10 3/4	0.90	3.10	1.38	15.0	15
8/12/2022	0:04:00	120	240	4.0	11 1/4	0.94	3.06	1.36	20.0	35
8/12/2022	0:06:00	120	360	6.0	11 1/2	0.96	3.04	1.35	21.0	56
8/12/2022	0:08:00	120	480	8.0	12	1.00	3.00	1.33	21.0	77
8/12/2022	0:10:00	120	600	10.0	12 1/3	1.03	2.97	1.32	20.5	97.5
8/12/2022	0:12:00	120	720	12.0	12 3/4	1.06	2.94	1.31	20.0	117.5
Best-Fit Line		Final Time	720			Average Hydraulic Gradient (I):		**1.34**	Final Volume	117.5
Best-Fit Line Y Intercept:			-5.25			Best-Fit Flow Rate (Q, mL/sec):		0.1717		



Note: Test and calculation methods described in Gefell, M.J., M. LaRue, and K. Russell, 2019. "Vertical Hydraulic Conductivity Measurement by Gravity Drainage." *Groundwater* 57(4):511–516.

ANCHOR QEA

Calculation of Vertical Hydraulic Conductivity by Gravity Drainage
GE - Housatonic

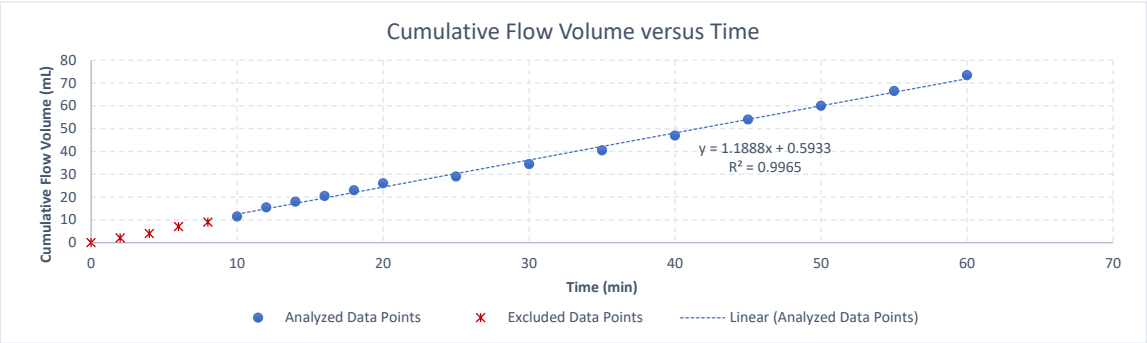
Core ID: ST134-PZ7

Staff: A. Olsen, J. Ramey-Lariviere

Sample Depth In (Ft)	**0-4**	**feet**
Sediment Sample Length (ft)	**1.79**	**feet**
Total Core Tube Length (ft)	**4.00**	**feet**
Core Diameter (in)	**2.00**	**inches**
Core Diameter (in)	**5.08**	**cm**
Flow Area (A)	**20.3**	**cm^2**

Kv Calculation (cm/sec)
Kv = Q / (AI)
5.1E-04

Time									**Flow Volume (mL)**	
Incremental			**Cumulative**		**Water Level**					
Date	**Time Elapsed (HH:MM:SS)**	**Seconds**	**Seconds**	**Minutes**	**From Top (in)**	**From Top (Feet)**	**From Bottom (Feet)**	**Hydraulic Gradient**	**Incremental**	**Cumulative**
8/12/2022	0:00:00	0	0	0.0	5	0.42	3.58	2.00	0	0
8/12/2022	0:02:00	120	120	2.0	5 1/4	0.44	3.56	1.99	2.0	2
8/12/2022	0:04:00	120	240	4.0	5 3/8	0.45	3.55	1.98	2.0	4
8/12/2022	0:06:00	120	360	6.0	5 4/7	0.46	3.54	1.98	3.0	7
8/12/2022	0:08:00	120	480	8.0	5 3/5	0.47	3.53	1.97	2.0	9
8/12/2022	0:10:00	120	600	10.0	5 5/8	0.47	3.53	1.97	2.5	11.5
8/12/2022	0:12:00	120	720	12.0	5 2/3	0.47	3.53	1.97	4.0	15.5
8/12/2022	0:14:00	120	840	14.0	5 3/4	0.48	3.52	1.97	2.5	18
8/12/2022	0:16:00	120	960	16.0	5 15/16	0.49	3.51	1.96	2.5	20.5
8/12/2022	0:18:00	120	1080	18.0	6	0.50	3.50	1.96	2.5	23
8/12/2022	0:20:00	120	1200	20.0	6 1/16	0.51	3.49	1.95	3.0	26
8/12/2022	0:25:00	300	1500	25.0	6 7/8	0.57	3.43	1.91	3.0	29
8/12/2022	0:30:00	300	1800	30.0	7 1/16	0.59	3.41	1.91	5.5	34.5
8/12/2022	0:35:00	300	2100	35.0	7 1/4	0.60	3.40	1.90	6.0	40.5
8/12/2022	0:40:00	300	2400	40.0	7 3/8	0.61	3.39	1.89	6.5	47
8/12/2022	0:45:00	300	2700	45.0	7 1/2	0.62	3.38	1.89	7.0	54
8/12/2022	0:50:00	300	3000	50.0	7 5/8	0.64	3.36	1.88	6.0	60
8/12/2022	0:55:00	300	3300	55.0	7 3/4	0.65	3.35	1.87	6.5	66.5
8/12/2022	1:00:00	300	3600	60.0	7 7/8	0.66	3.34	1.87	7.0	73.5
Best-Fit Line		Final Time	3600			Average Hydraulic Gradient (I):		**1.92**	Final Volume	73.5
Best-Fit Line Y Intercept:			0.5933			Best-Fit Flow Rate (Q, mL/sec):		0.0198		



Note: Test and calculation methods described in Gefell, M.J., M. LaRue, and K. Russell, 2019. "Vertical Hydraulic Conductivity Measurement by Gravity Drainage." *Groundwater* 57(4):511–516.

ANCHOR QEA

Calculation of Vertical Hydraulic Conductivity by Gravity Drainage
GE - Housatonic

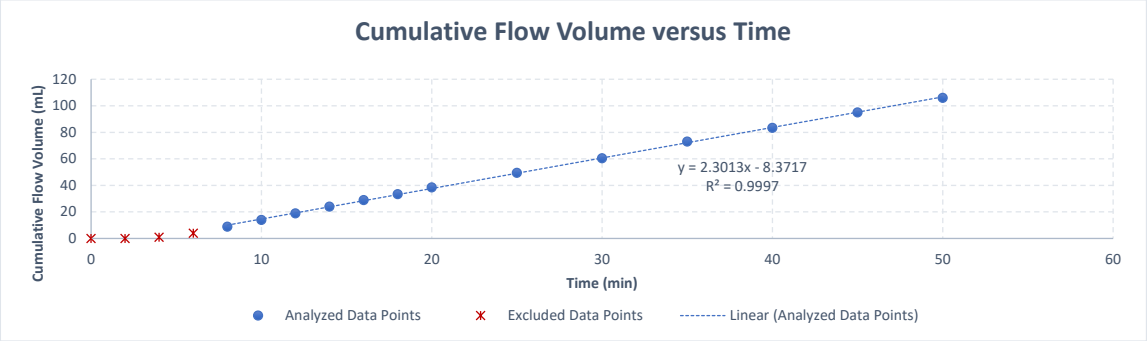
Core ID: ST167-PZ8

Staff: A. Olsen, J. Ramey-Lariviere

Sample Depth In (Ft)	**0-4**	**feet**
Sediment Sample Length (ft)	**2.14**	**feet**
Total Core Tube Length (ft)	**4.00**	**feet**
Core Diameter (in)	**2.00**	**inches**
Core Diameter (in)	**5.08**	**cm**
Flow Area (A)	**20.3**	**cm^2**

Kv Calculation (cm/sec)
Kv = Q / (AI)
1.1E-03

Time									**Flow Volume (mL)**	
Incremental			**Cumulative**		**Water Level**					
Date	**Time Elapsed (HH:MM:SS)**	**Seconds**	**Seconds**	**Minutes**	**From Top (in)**	**From Top (Feet)**	**From Bottom (Feet)**	**Hydraulic Gradient**	**Incremental**	**Cumulative**
8/12/2022	0:00:00	0	0	0.0	3 3/8	0.28	3.72	1.73	0	0
8/12/2022	0:02:00	120	120	2.0	3 3/4	0.31	3.69	1.72	0.0	0
8/12/2022	0:04:00	120	240	4.0	3 7/8	0.32	3.68	1.71	1.0	1
8/12/2022	0:06:00	120	360	6.0	4	0.33	3.67	1.71	3.0	4
8/12/2022	0:08:00	120	480	8.0	4	0.34	3.66	1.71	5.0	9
8/12/2022	0:10:00	120	600	10.0	4 1/4	0.35	3.65	1.70	5.0	14
8/12/2022	0:12:00	120	720	12.0	4 3/8	0.36	3.64	1.69	5.0	19
8/12/2022	0:14:00	120	840	14.0	4 1/2	0.37	3.63	1.69	5.0	24
8/12/2022	0:16:00	120	960	16.0	4 9/16	0.38	3.62	1.69	5.0	29
8/12/2022	0:18:00	120	1080	18.0	4 5/8	0.39	3.61	1.69	4.5	33.5
8/12/2022	0:20:00	120	1200	20.0	4 3/4	0.40	3.60	1.68	5.0	38.5
8/12/2022	0:25:00	300	1500	25.0	5	0.42	3.58	1.67	11.0	49.5
8/12/2022	0:30:00	300	1800	30.0	5 5/16	0.44	3.56	1.66	11.0	60.5
8/12/2022	0:35:00	300	2100	35.0	5 1/2	0.46	3.54	1.65	12.5	73
8/12/2022	0:40:00	300	2400	40.0	5 13/16	0.48	3.52	1.64	10.5	83.5
8/12/2022	0:45:00	300	2700	45.0	6	0.50	3.50	1.63	11.5	95
8/12/2022	0:50:00	300	3000	50.0	6 1/4	0.52	3.48	1.62	11.0	106
Best-Fit Line		Final Time	3000			Average Hydraulic Gradient (I):		**1.67**	Final Volume	106
Best-Fit Line Y Intercept:			-8.3717			Best-Fit Flow Rate (Q, mL/sec):		0.0384		



Note: Test and calculation methods described in Gefell, M.J., M. LaRue, and K. Russell, 2019. "Vertical Hydraulic Conductivity Measurement by Gravity Drainage." *Groundwater* 57(4):511–516.

ANCHOR QEA

Calculation of Vertical Hydraulic Conductivity by Gravity Drainage
GE - Housatonic

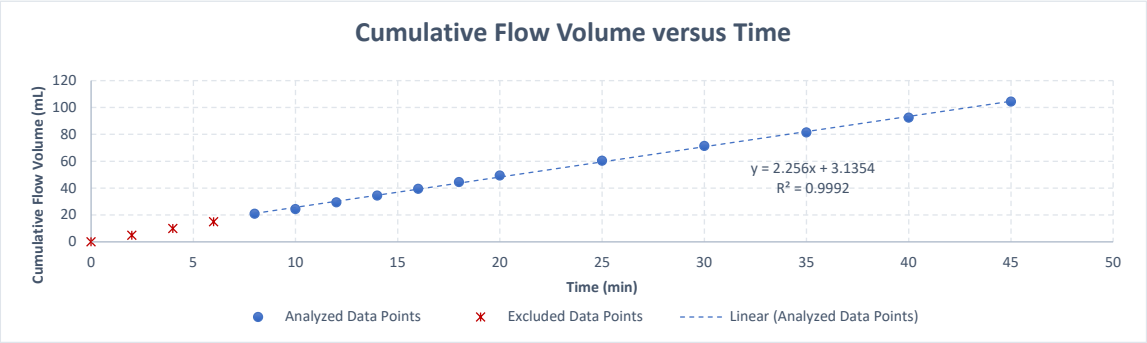
Core ID: ST190-PZ9

Staff: A. Olsen, J. Ramey-Lariviere

Sample Depth In (Ft)	**0-4**	**feet**
Sediment Sample Length (ft)	**2.13**	**feet**
Total Core Tube Length (ft)	**4.00**	**feet**
Core Diameter (in)	**2**	**inches**
Core Diameter (in)	**5.08**	**cm**
Flow Area (A)	**20.3**	**cm^2**

Kv Calculation (cm/sec)
Kv = Q / (AI)
1.1E-03

Time									**Flow Volume (mL)**	
Incremental			**Cumulative**		**Water Level**					
Date	**Time Elapsed (HH:MM:SS)**	**Seconds**	**Seconds**	**Minutes**	**From Top (in)**	**From Top (Feet)**	**From Bottom (Feet)**	**Hydraulic Gradient**	**Incremental**	**Cumulative**
8/12/2022	0:00:00	0	0	0.0	3	0.25	3.75	1.76	0	0
8/12/2022	0:02:00	120	120	2.0	3 1/4	0.27	3.73	1.75	5.0	5
8/12/2022	0:04:00	120	240	4.0	3 3/8	0.28	3.72	1.75	5.0	10
8/12/2022	0:06:00	120	360	6.0	3 1/2	0.29	3.71	1.74	5.0	15
8/12/2022	0:08:00	120	480	8.0	3 5/8	0.30	3.70	1.74	6.0	21
8/12/2022	0:10:00	120	600	10.0	3 3/4	0.31	3.69	1.73	3.5	24.5
8/12/2022	0:12:00	120	720	12.0	3 7/8	0.32	3.68	1.73	5.0	29.5
8/12/2022	0:14:00	120	840	14.0	4	0.33	3.67	1.72	5.0	34.5
8/12/2022	0:16:00	120	960	16.0	4 1/16	0.34	3.66	1.72	5.0	39.5
8/12/2022	0:18:00	120	1080	18.0	4 1/8	0.34	3.66	1.72	5.0	44.5
8/12/2022	0:20:00	120	1200	20.0	4 1/4	0.35	3.65	1.71	5.0	49.5
8/12/2022	0:25:00	300	1500	25.0	4 1/2	0.37	3.63	1.70	11.0	60.5
8/12/2022	0:30:00	300	1800	30.0	4 3/4	0.40	3.60	1.69	11.0	71.5
8/12/2022	0:35:00	300	2100	35.0	5	0.42	3.58	1.68	10.0	81.5
8/12/2022	0:40:00	300	2400	40.0	5 1/4	0.44	3.56	1.67	11.0	92.5
8/12/2022	0:45:00	300	2700	45.0	5 1/2	0.46	3.54	1.66	12.0	104.5
Best-Fit Line		Final Time	2700			Average Hydraulic Gradient (I):		**1.71**	Final Volume	104.5
Best-Fit Line Y Intercept:			3.1354			Best-Fit Flow Rate (Q, mL/sec):		0.0376		



Note: Test and calculation methods described in Gefell, M.J., M. LaRue, and K. Russell, 2019. "Vertical Hydraulic Conductivity Measurement by Gravity Drainage." *Groundwater* 57(4):511–516.

Calculation of Vertical Hydraulic Conductivity by Gravity Drainage

GE - Housatonic

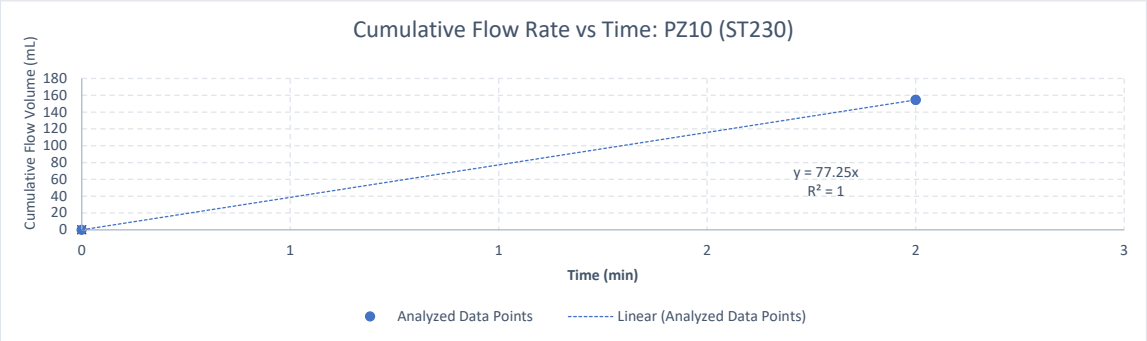
Core ID: ST230-PZ10

Staff: A. Olsen, J. Ramey-Lariviere

Sample Depth In (Ft)	**0-4**	**feet**
Sediment Sample Length (ft)	**1.90**	**feet**
Total Core Tube Length (ft)	**4.00**	**feet**
Core Diameter (in)	**2.00**	**inches**
Core Diameter (in)	**5.08**	**cm**
Flow Area (A)	**20.3**	**cm^2**

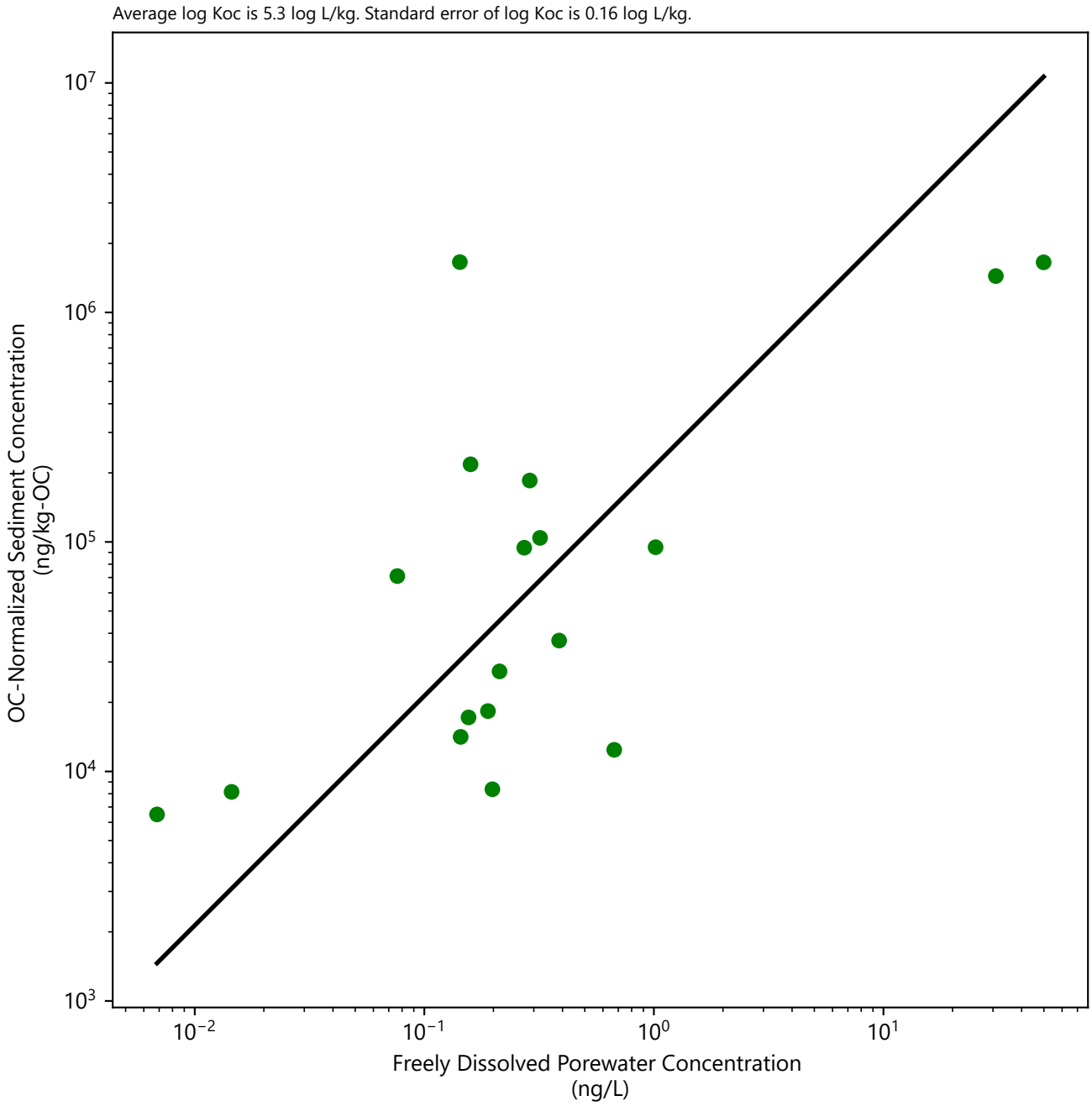
Kv Calculation (cm/sec)
Kv = Q / (AI)
5.1E-02

Time									**Flow Volume (mL)**	
Incremental			**Cumulative**		**Water Level**					
Date	**Time Elapsed (HH:MM:SS)**	**Seconds**	**Seconds**	**Minutes**	**From Top (in)**	**From Top (Feet)**	**From Bottom (Feet)**	**Hydraulic Gradient**	**Incremental**	**Cumulative**
8/12/2022	0:00:00	0	0	0.0	17 1/2	1.46	2.54	1.34	0	0
8/12/2022	0:02:00	120	120	2.0	21.5	1.79	2.21	1.16	154.5	154.5
Best-Fit Line		Final Time	120			Average Hydraulic Gradient (I):		**1.25**	Final Volume	154.5
Best-Fit Line Y Intercept:			-115.25			Best-Fit Flow Rate (Q, mL/sec):		1.2876		



Note: Test and calculation methods described in Gefell, M.J., M. LaRue, and K. Russell, 2019. "Vertical Hydraulic Conductivity Measurement by Gravity Drainage." *Groundwater* 57(4):511–516.

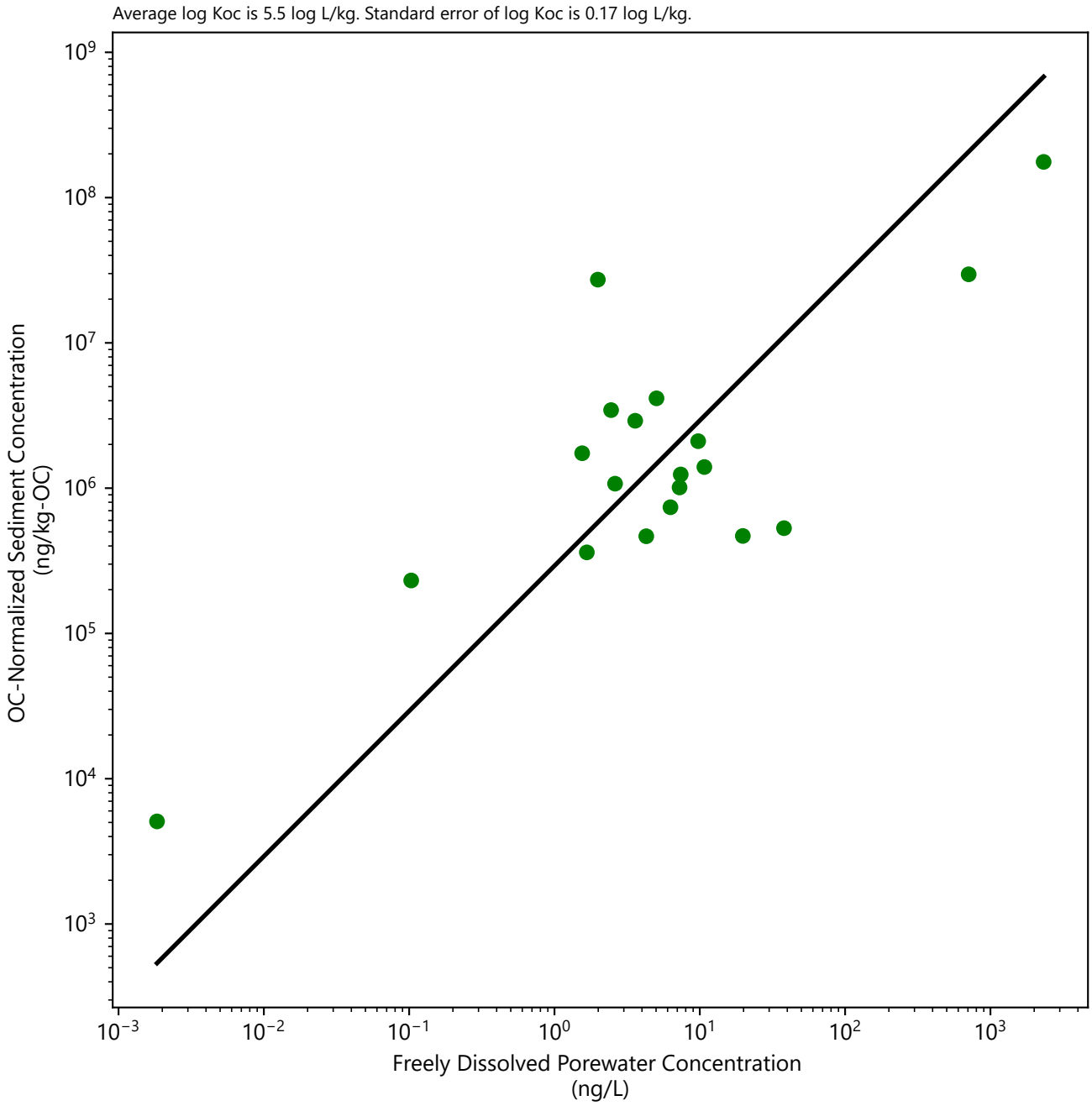
Attachment C
PCB Homolog Partition Coefficients



Notes:
1. TOC values less than 0.2% were set to 0.2%.
2. One-sided Grubbs test (alpha = 0.05) showed that sample BW5A5-PW13 is an outlier for penta-, hexa-, hepta-, octa-, nona-, deca-PCB homologs and total PCB. Although not an outlier for tri-PCB and tetra-PCB, this sample was removed from the regression evaluation for each homolog.
3. The black line represents the log-transformed regression based on Equation 3-2 in Appendix A.
4. Non-detect freely dissolved porewater or sediment concentrations were excluded from the analysis and not shown on the plots.

ANCHOR QEA

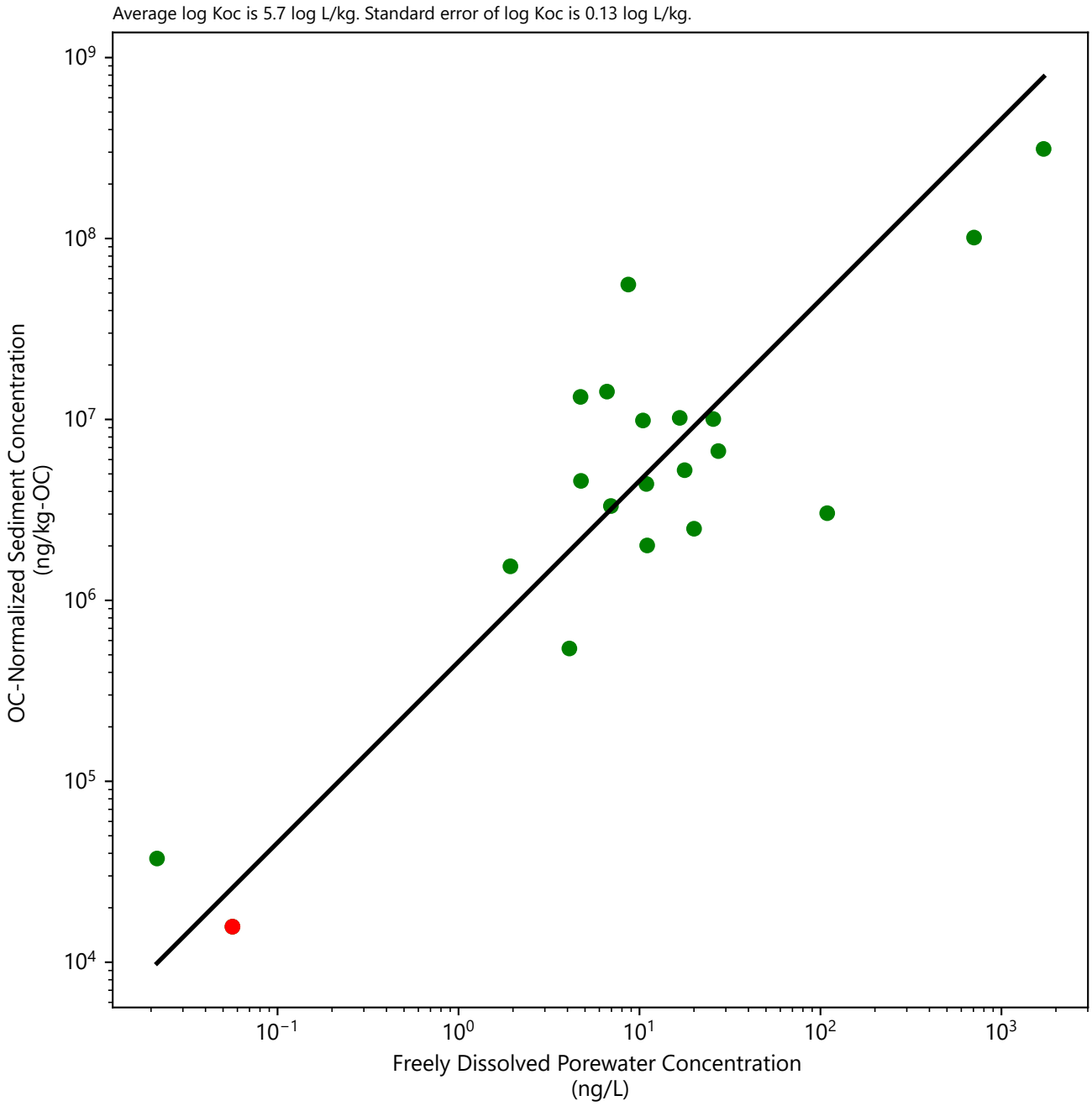
Figure 1
Partitioning Evaluation - Monochlorobiphenyl
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River



Notes:
1. TOC values less than 0.2% were set to 0.2%.
2. One-sided Grubbs test (alpha = 0.05) showed that sample BW5A5-PW13 is an outlier for penta-, hexa-, hepta-, octa-, nona-, deca-PCB homologs and total PCB. Although not an outlier for tri-PCB and tetra-PCB, this sample was removed from the regression evaluation for each homolog.
3. The black line represents the log-transformed regression based on Equation 3-2 in Appendix A.
4. Non-detect freely dissolved porewater or sediment concentrations were excluded from the analysis and not shown on the plots.

ANCHOR QEA

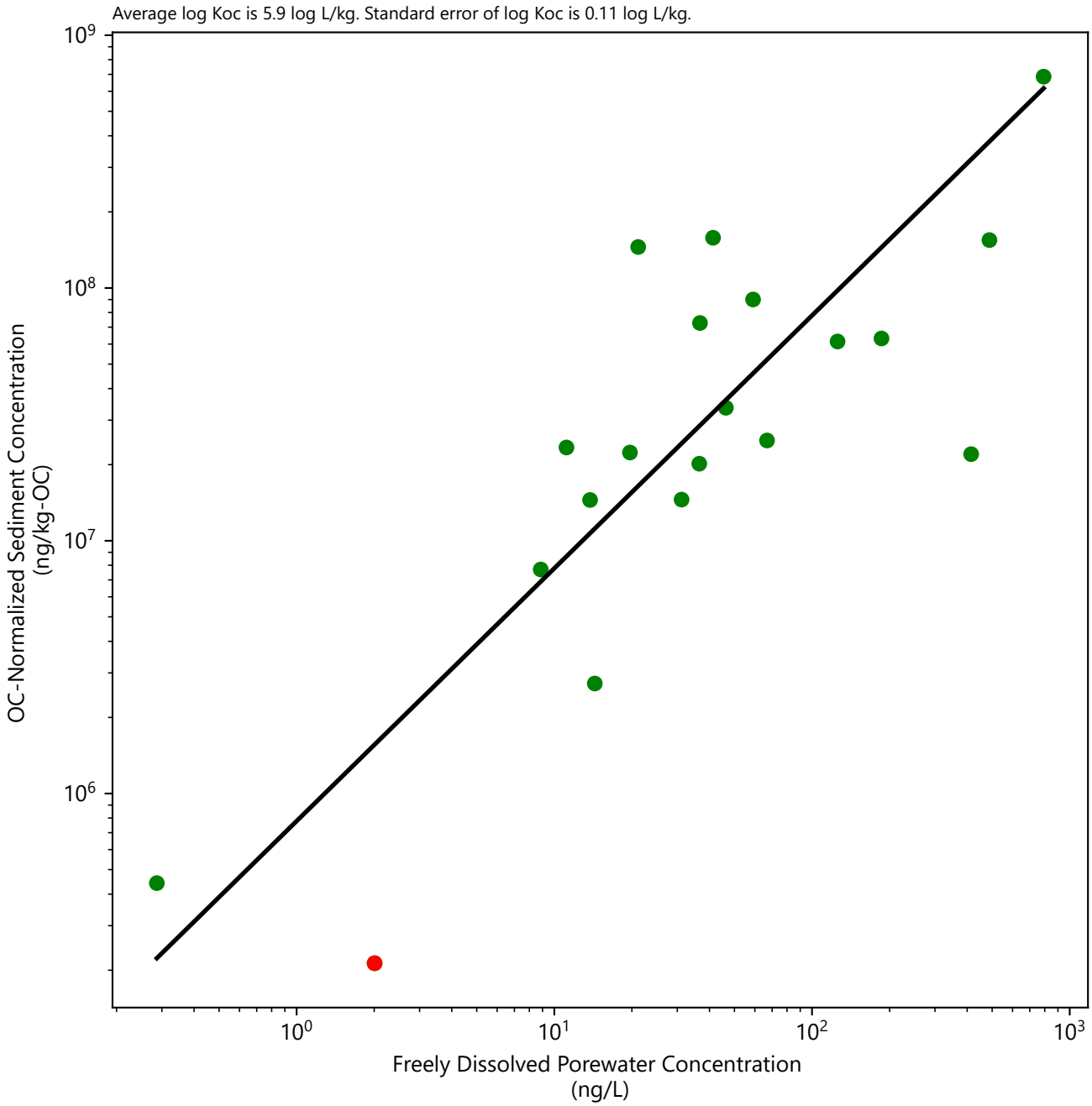
Figure 2
Partitioning Evaluation - Dichlorobiphenyl
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River



Notes:
1. TOC values less than 0.2% were set to 0.2%.
2. One-sided Grubbs test (alpha = 0.05) showed that sample BW5A5-PW13 is an outlier for penta-, hexa-, hepta-, octa-, nona-, deca-PCB homologs and total PCB. Although not an outlier for tri-PCB and tetra-PCB, this sample was removed from the regression evaluation for each homolog.
3. The black line represents the log-transformed regression based on Equation 3-2 in Appendix A.
4. Non-detect freely dissolved porewater or sediment concentrations were excluded from the analysis and not shown on the plots.

ANCHOR QEA

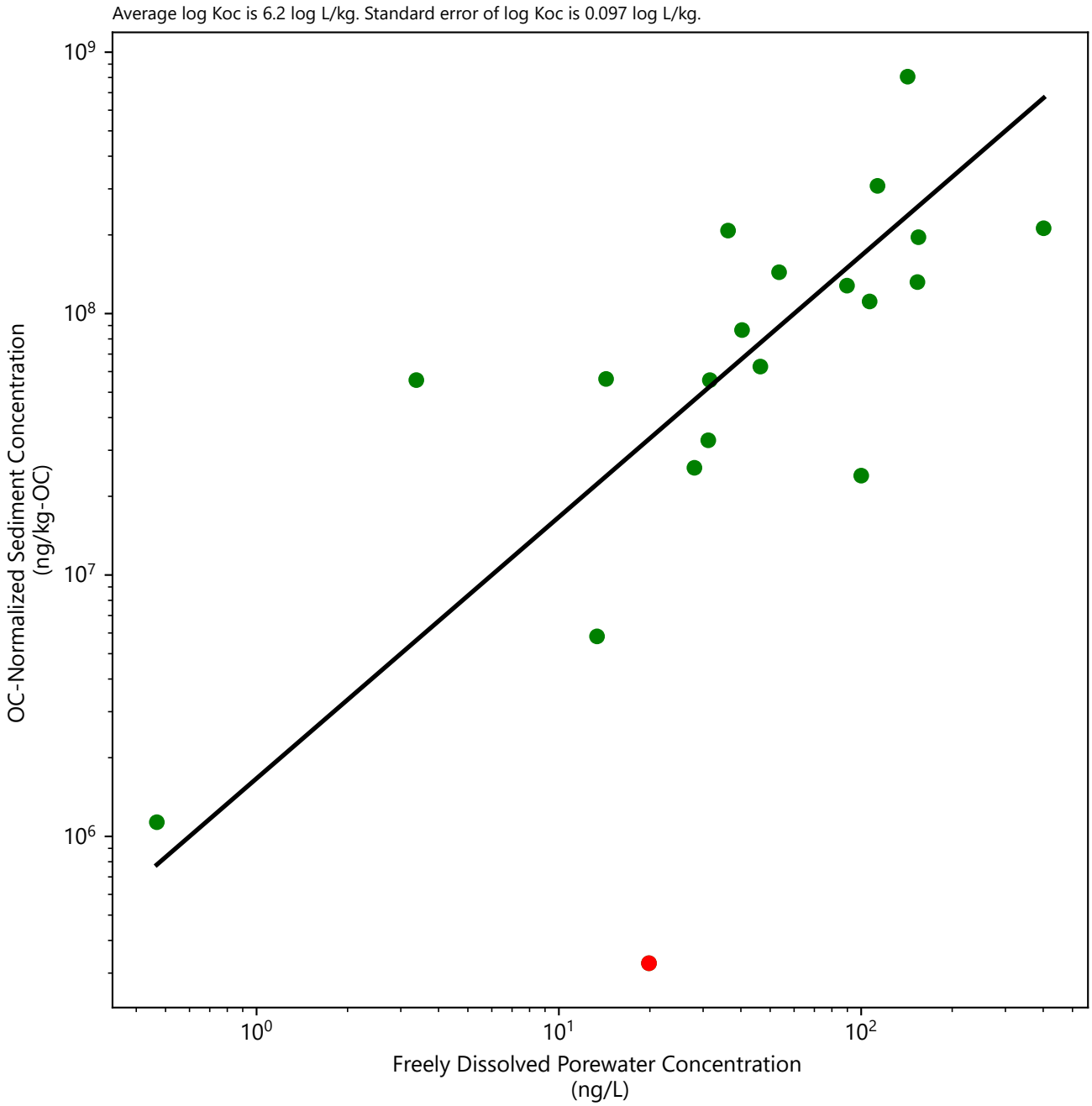
Figure 3
Partitioning Evaluation - Trichlorobiphenyl
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River



Notes:
1. TOC values less than 0.2% were set to 0.2%.
2. One-sided Grubbs test (alpha = 0.05) showed that sample BW5A5-PW13 is an outlier for penta-, hexa-, hepta-, octa-, nona-, deca-PCB homologs and total PCB. Although not an outlier for tri-PCB and tetra-PCB, this sample was removed from the regression evaluation for each homolog.
3. The black line represents the log-transformed regression based on Equation 3-2 in Appendix A.
4. Non-detect freely dissolved porewater or sediment concentrations were excluded from the analysis and not shown on the plots.

ANCHOR QEA

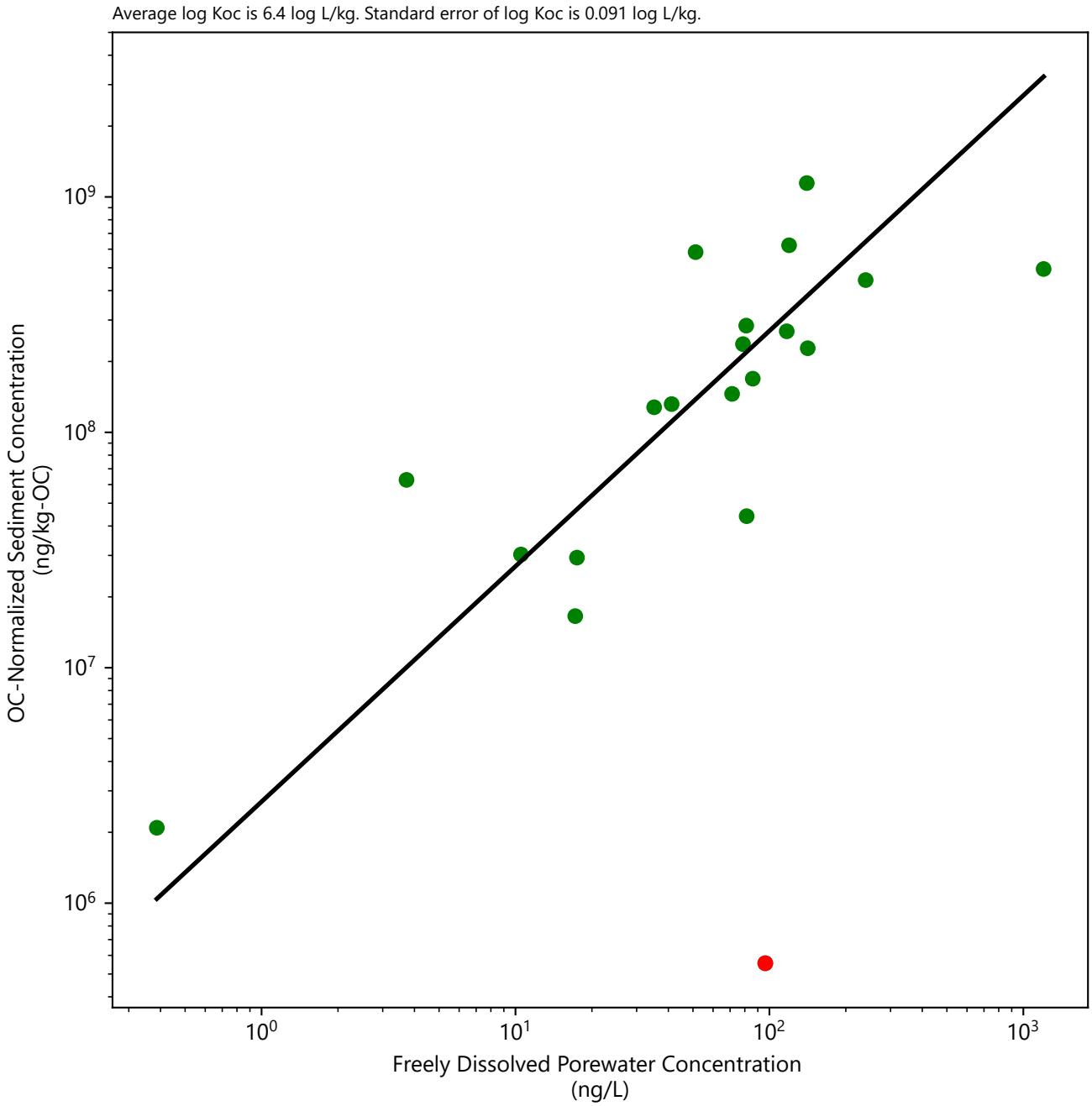
Figure 4
Partitioning Evaluation - Tetrachlorobiphenyl
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River



Notes:
1. TOC values less than 0.2% were set to 0.2%.
2. One-sided Grubbs test (alpha = 0.05) showed that sample BW5A5-PW13 is an outlier for penta-, hexa-, hepta-, octa-, nona-, deca-PCB homologs and total PCB. Although not an outlier for tri-PCB and tetra-PCB, this sample was removed from the regression evaluation for each homolog.
3. The black line represents the log-transformed regression based on Equation 3-2 in Appendix A.
4. Non-detect freely dissolved porewater or sediment concentrations were excluded from the analysis and not shown on the plots.

ANCHOR QEA

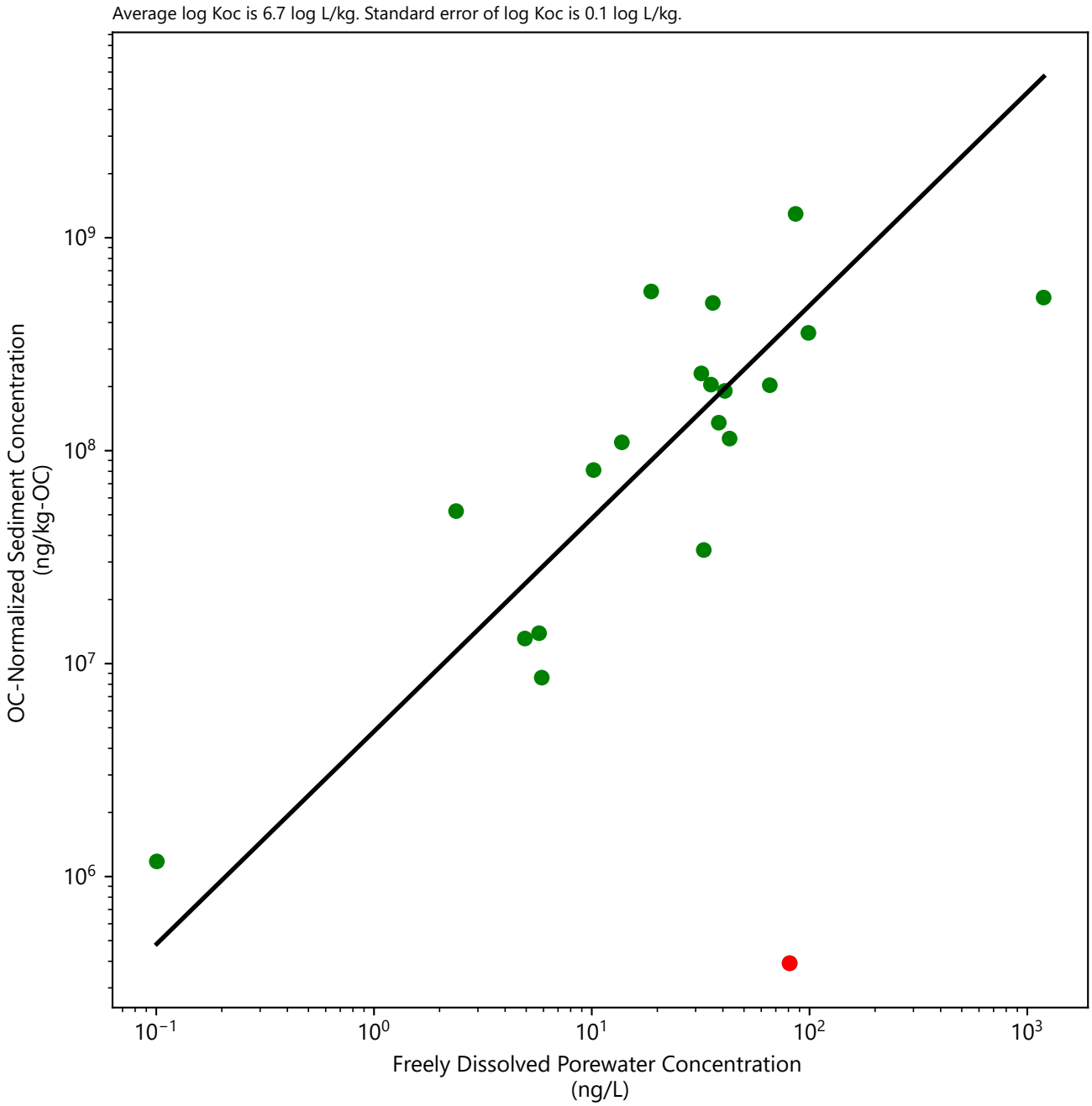
Figure 5
Partitioning Evaluation - Pentachlorobiphenyl
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River



Notes:
1. TOC values less than 0.2% were set to 0.2%.
2. One-sided Grubbs test (alpha = 0.05) showed that sample BW5A5-PW13 is an outlier for penta-, hexa-, hepta-, octa-, nona-, deca-PCB homologs and total PCB. Although not an outlier for tri-PCB and tetra-PCB, this sample was removed from the regression evaluation for each homolog.
3. The black line represents the log-transformed regression based on Equation 3-2 in Appendix A.
4. Non-detect freely dissolved porewater or sediment concentrations were excluded from the analysis and not shown on the plots.

ANCHOR QEA

Figure 6
Partitioning Evaluation - Hexachlorobiphenyl
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River

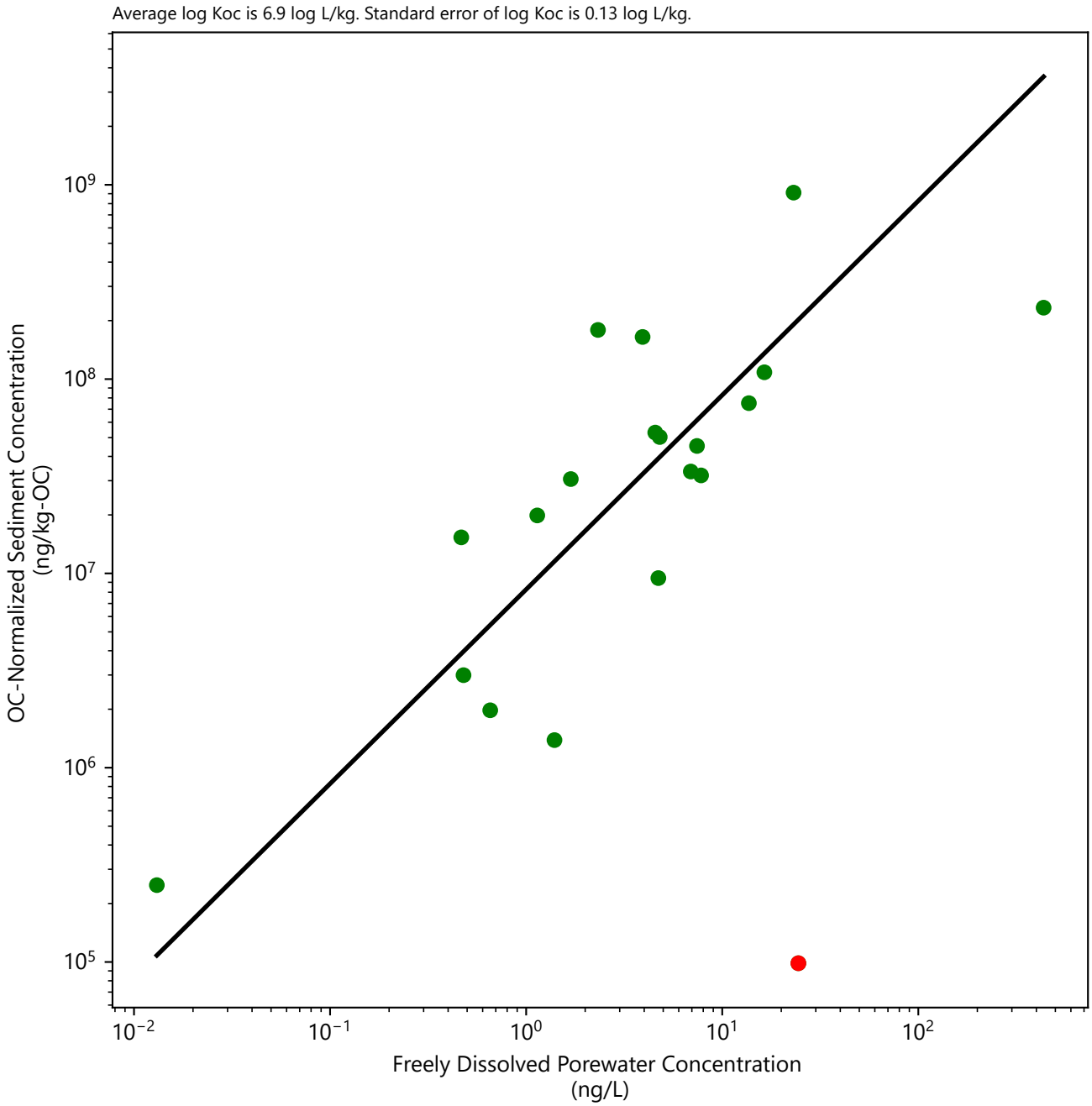


Notes:
1. TOC values less than 0.2% were set to 0.2%.
2. One-sided Grubbs test (alpha = 0.05) showed that sample BW5A5-PW13 is an outlier for penta-, hexa-, hepta-, octa-, nona-, deca-PCB homologs and total PCB. Although not an outlier for tri-PCB and tetra-PCB, this sample was removed from the regression evaluation for each homolog.
3. The black line represents the log-transformed regression based on Equation 3-2 in Appendix A.
4. Non-detect freely dissolved porewater or sediment concentrations were excluded from the analysis and not shown on the plots.

Publish Date: 09/21/2023 11:23 AM | User: SEA-JLIN2
\\WCL-FS1\Syracuse\Projects\GE\Housatonic_Rest-of-River\Remedial_Design\Reach_5A\ANALYSIS\Sediment\Partitioning\Partition calcs_Housatonic.py

ANCHOR QEA

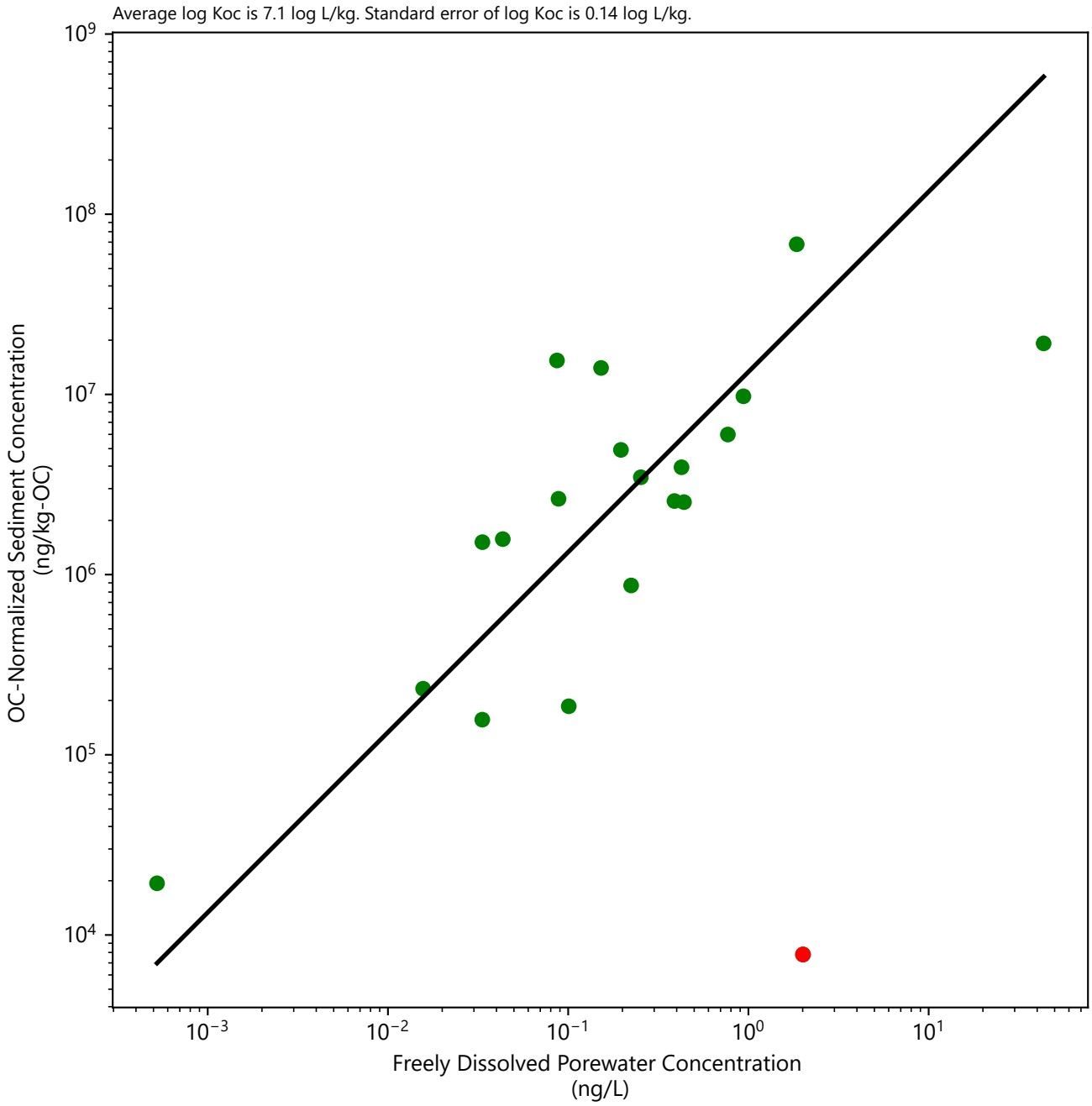
Figure 7
Partitioning Evaluation - Heptachlorobiphenyl
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River



Notes:
1. TOC values less than 0.2% were set to 0.2%.
2. One-sided Grubbs test (alpha = 0.05) showed that sample BW5A5-PW13 is an outlier for penta-, hexa-, hepta-, octa-, nona-, deca-PCB homologs and total PCB. Although not an outlier for tri-PCB and tetra-PCB, this sample was removed from the regression evaluation for each homolog.
3. The black line represents the log-transformed regression based on Equation 3-2 in Appendix A.
4. Non-detect freely dissolved porewater or sediment concentrations were excluded from the analysis and not shown on the plots.

ANCHOR QEA

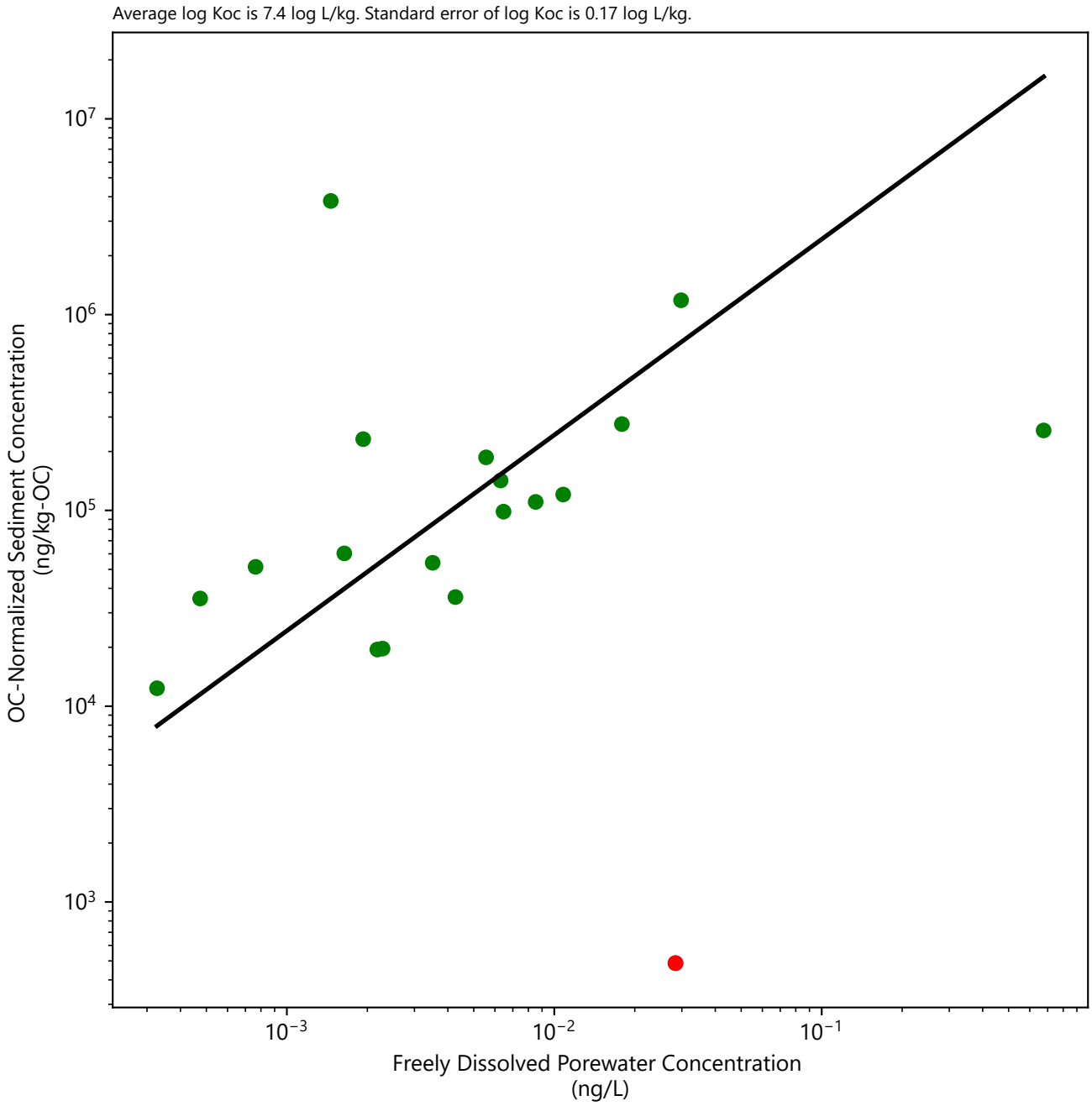
Figure 8
Partitioning Evaluation - Octachlorobiphenyl
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River



Notes:
1. TOC values less than 0.2% were set to 0.2%.
2. One-sided Grubbs test (alpha = 0.05) showed that sample BW5A5-PW13 is an outlier for penta-, hexa-, hepta-, octa-, nona-, deca-PCB homologs and total PCB. Although not an outlier for tri-PCB and tetra-PCB, this sample was removed from the regression evaluation for each homolog.
3. The black line represents the log-transformed regression based on Equation 3-2 in Appendix A.
4. Non-detect freely dissolved porewater or sediment concentrations were excluded from the analysis and not shown on the plots.

ANCHOR QEA

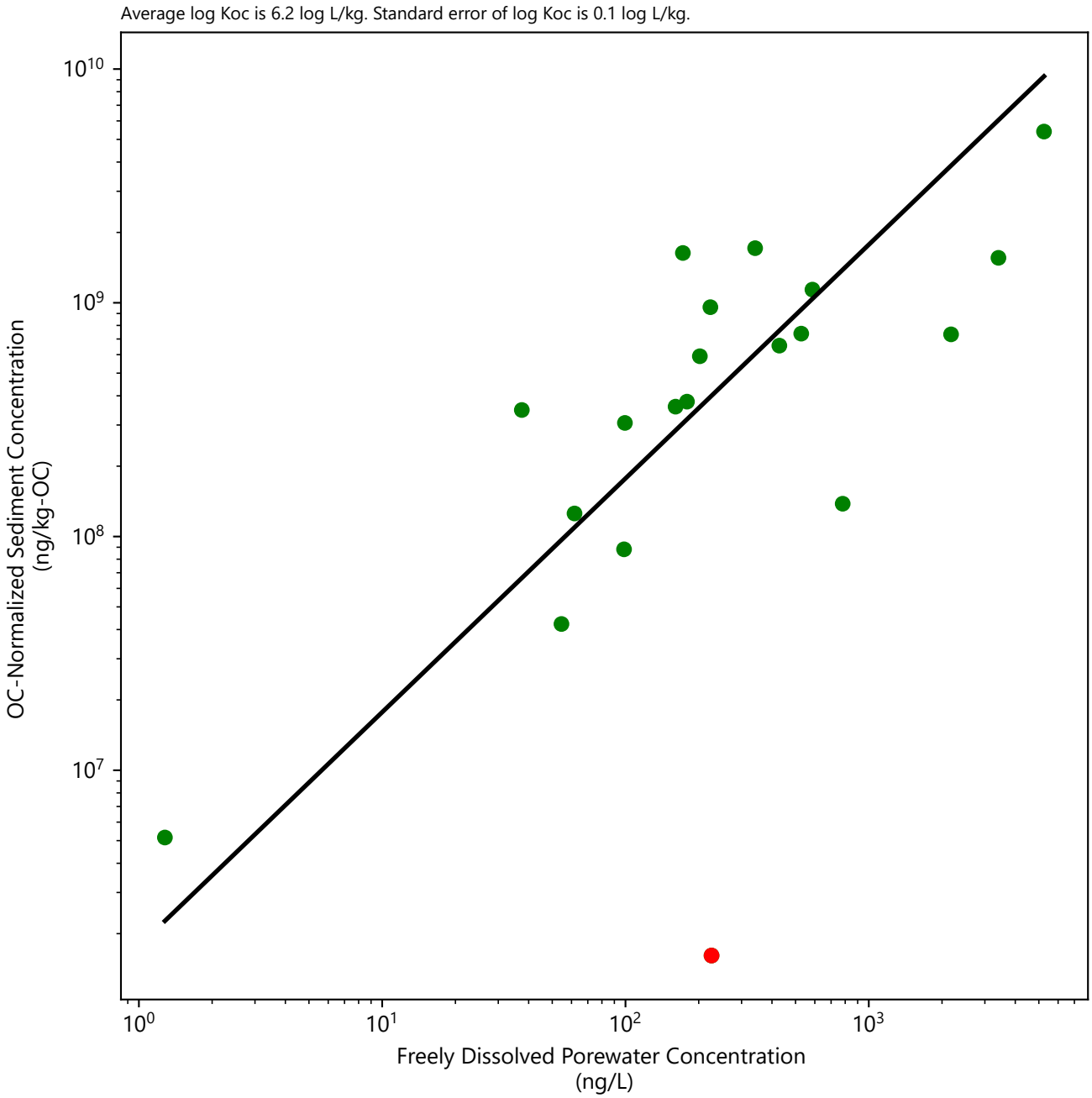
Figure 9
Partitioning Evaluation - Nonachlorobiphenyl
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River



Notes:
1. TOC values less than 0.2% were set to 0.2%.
2. One-sided Grubbs test (alpha = 0.05) showed that sample BW5A5-PW13 is an outlier for penta-, hexa-, hepta-, octa-, nona-, deca-PCB homologs and total PCB. Although not an outlier for tri-PCB and tetra-PCB, this sample was removed from the regression evaluation for each homolog.
3. The black line represents the log-transformed regression based on Equation 3-2 in Appendix A.
4. Non-detect freely dissolved porewater or sediment concentrations were excluded from the analysis and not shown on the plots.

ANCHOR QEA

Figure 10
Partitioning Evaluation - Decachlorobiphenyl
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River



Notes:
1. TOC values less than 0.2% were set to 0.2%.
2. One-sided Grubbs test (alpha = 0.05) showed that sample BW5A5-PW13 is an outlier for penta-, hexa-, hepta-, octa-, nona-, deca-PCB homologs and total PCB. Although not an outlier for tri-PCB and tetra-PCB, this sample was removed from the regression evaluation for each homolog.
3. The black line represents the log-transformed regression based on Equation 3-2 in Appendix A.
4. Non-detect freely dissolved porewater or sediment concentrations were excluded from the analysis and not shown on the plots.

ANCHOR QEA

Figure 11
Partitioning Evaluation - Total PCB (U=0)
Engineered Cap Modeling and Design Evaluations
Housatonic River – Rest of River

Appendix B
PCB Evaluations for River Sediment

Table B-1
Main Channel PCB Concentrations by Depth Interval: Removal Depth Based on Minimum Design Cap Thickness

Location ID	Depth Range of Core Data[1]		Cap Type	Removal Depth (feet)	PCB Concentration Removed (mg/kg)								Depth-Weighted Average PCB (mg/kg)[3,4]	Area (square feet)	On-Site Disposal Volume (cubic feet)[4]	PCB x Volume[4]
	Start Depth (feet)	End Depth (feet)			0–0.5 Feet	0.5–1 Feet	1–1.5 Feet	1.5–2 Feet	2–2.5 Feet[2]	2.5–3 Feet	3–3.5 Feet	3.5–4 Feet				
SE-000-00-C	0	1	Cap Type A	1	2.08	3.83							2.95	707	707	2,089
SE-000-00-E	0	1	Cap Type A	1	5.93	6.77							6.35	4,902	4,902	31,126
SE-000-00-W	0	1	Cap Type A	1	11.25	6.32							8.79	3,540	3,540	31,101
SE-002-42-C	0	1	Cap Type A	1	0.16	0.04							0.10	3,401	3,401	335
SE-002-42-E	0	1	Cap Type A	1	0.05	0.04							0.04	5,100	5,100	222
SE-002-42-W	0	1	Cap Type A	1	0.19	0.04							0.12	5,004	5,004	585
SE-005-13-C	0	1	Cap Type A	1	0.91	1.22							1.07	4,291	4,291	4,585
SE-005-13-E	0	1	Cap Type A	1	0.06	0.28							0.17	9,545	9,545	1,653
SE-005-13-W	0	1	Cap Type A	1	0.06	0.03							0.05	3,824	3,824	188
SE-007-71-E	0	1	Cap Type A	1	0.23	0.58							0.40	2,426	2,426	980
SE-007-71-W	0	1	Cap Type A	1	0.08	0.02							0.05	12,872	12,872	692
SE-010-20-C	0	1	Cap Type A	1	0.58	0.40							0.49	5,930	5,930	2,902
SE-010-20-E	0	1	Cap Type A	1	1.94	0.13							1.03	5,930	5,930	6,128
SE-010-20-W	0	1	Cap Type A	1	0.61	9.14							4.88	8,682	8,682	42,332
SE-012-76-C	0	1	Cap Type A	1	0.17	0.04							0.10	3,661	3,661	381
SE-012-76-E	0	1	Cap Type A	1	0.46	0.53							0.49	11,386	11,386	5,619
SE-012-76-W	0	1	Cap Type A	1	0.03	0.04							0.04	2,403	2,403	84
SE-015-43-C	0	1	Cap Type A	1	1.61	4.01							2.81	2,523	2,523	7,085
SE-015-43-E	0	1	Cap Type A	1	0.89	0.04							0.47	1,452	1,452	679
SE-015-43-W	0	1	Cap Type A	1	0.49	2.44							1.46	12,590	12,590	18,432
SE-017-96-C	0	1	Cap Type A	1	26.06	6.70							16.38	6,014	6,014	98,514
SE-017-96-E	0	1	Cap Type A	1	0.05	0.05							0.05	6,823	6,823	334
SE-017-96-W	0	1	Cap Type A	1	2.61	16.87							9.74	6,690	6,690	65,158
SE-020-47-C	0	1	Cap Type A	1	3.72	0.82							2.27	4,428	4,428	10,057
SE-020-47-E	0	1	Cap Type A	1	1.14	0.04							0.59	4,363	4,363	2,566
SE-020-47-W	0	1	Cap Type A	1	9.90	3.18							6.54	9,169	9,169	59,967
SE-022-98-C	0	1	Cap Type A	1	1.66	3.45							2.55	5,075	5,075	12,964
SE-022-98-E	0	1	Cap Type A	1	1.22	3.56							2.39	5,725	5,725	13,690
SE-022-98-W	0	1	Cap Type A	1	0.07	0.03							0.05	5,897	5,897	298
SE-025-59-C	0	1	Cap Type A	1	0.64	0.37							0.51	5,176	5,176	2,622
SE-025-59-E	0	0.5	Cap Type A	1	0.42	3.11							1.76	9,930	4,965	8,760
SE-025-59-E-R	0.5	1	Cap Type A	1	0.42	3.11							1.76	9,930	4,965	8,760
SE-025-59-W-R	0	1	Cap Type A	1	0.21	0.08							0.14	3,680	3,680	528
SE-028-11-C	0	1	Cap Type A	1	0.87	1.58							1.23	5,622	5,622	6,893
SE-028-11-E	0	1	Cap Type A	1	3.07	7.22							5.14	4,809	4,809	24,742
SE-028-11-W	0	1	Cap Type A	1	0.10	0.03							0.07	7,777	7,777	532
SE-030-61-C	0	2.3	Cap Type B	2.3	0.33	0.12	0.04	0.03	0.04				0.12	4,476	10,445	1,220
SE-030-61-E	0	2.3	Cap Type B	2.3	0.05	0.04	0.04	0.04	0.02				0.04	3,255	7,595	290
SE-030-61-W	0	2.3	Cap Type B	2.3	1.75	6.44	744.00	0.03	0.04				**161.20**	8,729		
SE-033-10-C	0	2.3	Cap Type B	2.3	0.34	0.64	8.16	3.97	0.04				2.82	3,092	7,216	20,320
SE-033-10-E	0	2.3	Cap Type B	2.3	0.29	2.25	0.04	0.04	0.04				0.57	4,035	9,414	5,327

Table B-1
Main Channel PCB Concentrations by Depth Interval: Removal Depth Based on Minimum Design Cap Thickness

Location ID	Depth Range of Core Data[1]		Cap Type	Removal Depth (feet)	PCB Concentration Removed (mg/kg)								Depth-Weighted Average PCB (mg/kg)[3,4]	Area (square feet)	On-Site Disposal Volume (cubic feet)[4]	PCB x Volume[4]
	Start Depth (feet)	End Depth (feet)			0–0.5 Feet	0.5–1 Feet	1–1.5 Feet	1.5–2 Feet	2–2.5 Feet[2]	2.5–3 Feet	3–3.5 Feet	3.5–4 Feet				
SE-033-10-W	0	2.3	Cap Type B	2.3	12.64	0.77	2.27	1.08	0.04				3.60	8,416	19,636	70,639
SE-035-62-C	0	2.3	Cap Type B	2.3	1.93	3.16	6.34	1.29	0.04				2.73	5,609	13,089	35,740
SE-035-62-E	0	2.3	Cap Type B	2.3	0.37	0.04	0.04	1.29	0.04				0.38	6,960	16,240	6,110
SE-035-62-W	0	2.3	Cap Type B	2.3	0.91	6.12	0.04	4.61	0.04				2.51	5,711	13,325	33,421
SE-038-10-C	0	2.3	Cap Type B	2.3	0.62	0.47	12.36	0.03	0.00				2.89	4,805	11,211	32,381
SE-038-10-E	0	2.3	Cap Type B	2.3	1.28	1.17	0.47	0.03	0.00				0.63	6,799	15,864	10,049
SE-038-10-W	0	2.3	Cap Type B	2.3	0.09	0.17	0.04	0.03	0.00				0.07	4,449	10,381	763
SE-040-65-C	0	2.3	Cap Type B	2.3	0.04	0.03	0.04	0.03	0.00				0.03	6,687	15,604	489
SE-040-65-E	0	2.3	Cap Type B	2.3	0.55	1.44	4.32	3.18	0.00				2.03	3,403	7,941	16,123
SE-040-65-W	0	2.3	Cap Type B	2.3	2.98	0.77	0.04	0.03	0.00				0.82	7,751	18,087	14,809
SE-043-16-C	0	1.0	Cap Type B	2.3	0.92	9.04	1.42	41.30	0.15				11.31	4,788	4,788	54,147
SE-043-16-C-R	1	2.3	Cap Type B	2.3	0.92	9.04	1.42	41.30	0.15				11.31	4,788	6,385	72,196
SE-043-16-E	0	2.0	Cap Type B	2.3	2.00	3.27	0.04	0.04	0.00				1.15	6,977	13,954	15,995
SE-043-16-E-R	2	2.3	Cap Type B	2.3	2.00	3.27	0.04	0.04	0.00				1.15	6,977	2,326	2,666
SE-043-16-W	0	2.0	Cap Type B	2.3	1.83	14.32	24.10	0.45	0.02				8.72	5,770	11,540	100,679
SE-043-16-W-R	2	2.3	Cap Type B	2.3	1.83	14.32	24.10	0.45	0.02				8.72	5,770	1,923	16,780
SE-045-68-C	0	2.3	Cap Type B	2.3	0.28	0.72	0.04	0.03	0.00				0.23	4,559	10,638	2,444
SE-045-68-E	0	2.3	Cap Type B	2.3	2.06	0.99	0.73	2.47	0.00				1.34	4,633	10,811	14,505
SE-045-68-W	0	2.3	Cap Type B	2.3	0.67	0.04	0.04	0.03	0.00				0.17	6,579	15,351	2,573
SE-048-18-C	0	2.3	Cap Type B	2.3	1.10	19.79	3.67	2.88	0.00				5.88	7,366	17,188	101,046
SE-048-18-E	0	2.3	Cap Type B	2.3	0.44	1.76	13.42	2.88	0.00				3.97	4,855	11,328	44,926
SE-048-18-W	0	2.3	Cap Type B	2.3	7.58	3.50	8.23	50.03	0.00				14.86	9,152	21,355	317,318
SE-050-67-C	0	4	Cap Type C	4	0.72	0.43	2.27	0.47	0.00	0.01	0.01	0.01	0.49	12,702	50,807	24,854
SE-050-67-E	0	4	Cap Type C	4	0.80	11.15	2.27	0.47	0.00	0.01	0.01	0.01	1.84	5,989	23,956	44,053
SE-053-14-C	0	4	Cap Type C	4	0.48	0.65	3.88	4.80	0.00	0.01	0.01	0.01	1.23	4,435	17,739	21,782
SE-053-14-E	0	4	Cap Type C	4	1.78	0.39	0.45	0.58	0.00	0.01	0.01	0.01	0.40	3,421	13,683	5,498
SE-053-14-W	0	4	Cap Type C	4	0.29	0.30	0.77	0.47	0.00	0.01	0.01	0.01	0.23	10,599	42,395	9,810
SE-055-67-W	0	4	Cap Type C	4	1.48	26.39	3.08	0.47	0.00	0.01	0.01	0.01	3.93	14,345	57,378	225,528
SE-058-17-C	0	2.3	Cap Type B	2.3	1.15	9.16	27.30	0.16	0.00				8.10	5,374	12,539	101,506
SE-058-17-E	0	2.3	Cap Type B	2.3	0.74	1.75	2.65	0.16	0.00				1.14	7,157	16,699	18,986
SE-058-17-W	0	2.3	Cap Type B	2.3	1.25	1.62	0.19	0.33	0.00				0.73	7,888	18,405	13,395
SE-060-66-C	0	2.3	Cap Type B	2.3	0.47	0.04	0.03	0.33	0.00				0.19	5,660	13,207	2,479
SE-060-66-E	0	2.3	Cap Type B	2.3	1.72	2.43	0.05	0.16	0.00				0.94	5,598	13,063	12,241
SE-060-66-W	0	2.3	Cap Type B	2.3	6.89	0.04	0.73	0.33	0.00				1.71	8,711	20,326	34,814
SE-063-17-C	0	1	Cap Type A	1	1.15	94.20							47.67	5,170	5,170	246,477
SE-063-17-E	0	1	Cap Type A	1	2.33	0.34							1.33	6,581	6,581	8,772
SE-063-17-W	0	1	Cap Type A	1	3.13	3.50							3.31	7,351	7,351	24,343
SE-065-69-C	0	1	Cap Type A	1	0.92	46.83							23.87	4,922	4,922	117,494
SE-065-69-E	0	1	Cap Type A	1	4.53	0.30							2.42	4,732	4,732	11,435
SE-065-69-W	0	1	Cap Type A	1	16.86	0.40							8.63	8,431	8,431	72,756
SE-068-20-C	0.5	1	Cap Type A	1	1.06	1.93							1.50	3,706	1,853	2,775

Table B-1
Main Channel PCB Concentrations by Depth Interval: Removal Depth Based on Minimum Design Cap Thickness

Location ID	Depth Range of Core Data[1]		Cap Type	Removal Depth (feet)	PCB Concentration Removed (mg/kg)								Depth-Weighted Average PCB (mg/kg)[3,4]	Area (square feet)	On-Site Disposal Volume (cubic feet)[4]	PCB x Volume[4]
	Start Depth (feet)	End Depth (feet)			0–0.5 Feet	0.5–1 Feet	1–1.5 Feet	1.5–2 Feet	2–2.5 Feet[2]	2.5–3 Feet	3–3.5 Feet	3.5–4 Feet				
SE-068-20-C-R	0	0.5	Cap Type A	1	1.06	1.93							1.50	3,706	1,853	2,775
SE-068-20-E	0	0.5	Cap Type A	1	6.58	2.01							4.29	6,754	3,377	14,502
SE-068-20-E-R	0.5	1	Cap Type A	1	6.58	2.01							4.29	6,754	3,377	14,502
SE-068-20-W	0	0.5	Cap Type A	1	2.96	30.20							16.58	5,825	2,912	48,289
SE-068-20-W-R	0.5	1	Cap Type A	1	2.96	30.20							16.58	5,825	2,912	48,289
SE-070-71-C	0	1	Cap Type A	1	0.87	8.29							4.58	5,225	5,225	23,919
SE-070-71-E	0	1	Cap Type A	1	1.24	0.78							1.01	6,865	6,865	6,944
SE-070-71-W	0	1	Cap Type A	1	1.08	18.29							9.69	6,745	6,745	65,333
SE-073-21-C	0	1	Cap Type A	1	15.66	13.22							14.44	5,212	5,212	75,267
SE-073-21-E	0	1	Cap Type A	1	2.06	2.65							2.35	6,629	6,629	15,594
SE-073-21-W	0	1	Cap Type A	1	0.86	12.21							6.53	7,591	7,591	49,587
SE-075-71-C	0	1	Cap Type A	1	8.78	0.03							4.41	5,961	5,961	26,263
SE-075-71-E	0	1	Cap Type A	1	0.13	0.04							0.09	4,380	4,380	375
SE-075-71-W	0	1	Cap Type A	1	0.20	0.03							0.11	5,516	5,516	624
SE-078-22-C	0	1	Cap Type A	1	5.82	5.66							5.74	5,401	5,401	31,002
SE-078-22-C-R	0	1	Cap Type A	1	2.26	21.20							11.73	2,420	2,420	28,387
SE-078-22-E	0	1	Cap Type A	1	1.59	1.61							1.60	3,118	3,118	4,985
SE-078-22-E-R	0	1	Cap Type A	1	1.12	52.50							26.81	3,712	3,712	99,505
SE-078-22-W	0	1	Cap Type A	1	0.88	12.08							6.48	2,189	2,189	14,178
SE-078-22-W-R	0	1	Cap Type A	1	0.24	0.32							0.28	3,219	3,219	895
SE-080-85-C	0	1	Cap Type A	1	0.51	0.36							0.44	4,827	4,827	2,102
SE-080-85-E	0	1	Cap Type A	1	1.23	26.10							**13.66**	6,835		
SE-080-85-W	0	1	Cap Type A	1	0.57	4.58							2.57	4,422	4,422	11,386
SE-083-54-C	0	1	Cap Type A	1	1.45	0.27							0.86	4,317	4,317	3,706
SE-083-54-E	0	1	Cap Type A	1	0.50	1.13							0.81	3,419	3,419	2,774
SE-083-54-W	0	1	Cap Type A	1	2.16	0.04							1.10	6,452	6,452	7,091
SE-086-13-C	0	1	Cap Type A	1	0.16	0.03							0.09	3,110	3,110	292
SE-086-13-E	0	1	Cap Type A	1	0.04	0.04							0.04	2,180	2,180	76
SE-086-13-W	0	1	Cap Type A	1	0.46	0.63							0.54	12,006	12,006	6,537
SE-088-70-C	0	1	Cap Type A	1	1.30	0.19							0.74	3,503	3,503	2,605
SE-088-70-E	0	1	Cap Type A	1	0.29	0.03							0.16	6,189	6,189	975
SE-088-70-W	0	1	Cap Type A	1	0.46	1.05							0.75	4,464	4,464	3,353
SE-091-28-C-R	0	1	Cap Type A	1	108.00	0.47							54.23	2,070	2,070	112,280
SE-091-28-E	0	1	Cap Type A	1	0.47	0.49							0.48	8,357	8,357	4,003
SE-091-28-W	0	1	Cap Type A	1	0.61	0.05							0.33	8,554	8,554	2,846
SE-093-75-C	0	1	Cap Type A	1	0.59	1.11							0.85	3,810	3,810	3,244
SE-093-75-E	0	1	Cap Type A	1	0.73	2.38							1.55	5,714	5,714	8,870
SE-093-75-W	0	1	Cap Type A	1	23.96	1.42							12.69	7,383	7,383	93,707
SE-096-27-C	0	1	Cap Type A	1	3.74	2.65							3.19	3,103	3,103	9,908
SE-096-27-E	0	1	Cap Type A	1	121.49	0.03							60.76	8,541	8,541	518,937
SE-096-27-W	0	1	Cap Type A	1	25.80	0.88							13.34	5,266	5,266	70,232

Table B-1
Main Channel PCB Concentrations by Depth Interval: Removal Depth Based on Minimum Design Cap Thickness

Location ID	Depth Range of Core Data[1]		Cap Type	Removal Depth (feet)	PCB Concentration Removed (mg/kg)								Depth-Weighted Average PCB (mg/kg)[3,4]	Area (square feet)	On-Site Disposal Volume (cubic feet)[4]	PCB x Volume[4]
	Start Depth (feet)	End Depth (feet)			0–0.5 Feet	0.5–1 Feet	1–1.5 Feet	1.5–2 Feet	2–2.5 Feet[2]	2.5–3 Feet	3–3.5 Feet	3.5–4 Feet				
SE-099-02-C	0	1	Cap Type A	1	2.05	7.34							4.70	7,033	7,033	33,033
SE-099-02-E	0	1	Cap Type A	1	0.87	0.94							0.90	5,413	5,413	4,885
SE-099-02-W	0	1	Cap Type A	1	0.78	0.85							0.81	12,102	12,102	9,851
SE-101-54-C	0	1	Cap Type A	1	1.28	0.37							0.82	4,071	4,071	3,355
SE-101-54-E	0	1	Cap Type A	1	2.45	3.72							3.09	3,146	3,146	9,715
SE-101-54-W	0	1	Cap Type A	1	1.63	1.17							1.40	7,183	7,183	10,056
SE-104-10-C	0	1	Cap Type A	1	0.85	2.21							1.53	5,238	5,238	8,014
SE-104-10-E	0	1	Cap Type A	1	0.91	0.39							0.65	7,138	7,138	4,661
SE-104-10-W	0	1	Cap Type A	1	0.84	3.21							2.02	7,174	7,174	14,516
SE-106-72-C	0	1	Cap Type A	1	0.23	0.04							0.13	5,005	5,005	667
SE-106-72-E	0	1	Cap Type A	1	0.04	0.04							0.04	4,230	4,230	172
SE-106-72-W	0	1	Cap Type A	1	0.47	1.44							0.95	8,395	8,395	8,008
SE-109-32-C	0	1	Cap Type A	1	0.74	0.14							0.44	6,055	6,055	2,649
SE-109-32-E	0	1	Cap Type A	1	0.25	0.03							0.14	7,423	7,423	1,020
SE-109-32-W	0	1	Cap Type A	1	1.59	6.03							3.81	6,918	6,918	26,356
SE-111-89-C	0	1	Cap Type A	1	4.73	1.19							2.96	4,162	4,162	12,313
SE-111-89-E	0	1	Cap Type A	1	3.36	1.19							2.27	5,052	5,052	11,485
SE-111-89-W	0	1	Cap Type A	1	1.62	1.66							1.64	7,868	7,868	12,912
SE-114-39-C-R	0	1	Cap Type A	1	3.20	3.25							3.23	5,469	5,469	17,637
SE-114-39-E	0.5	1	Cap Type A	1	3.39	5.03							4.21	7,022	3,511	14,772
SE-114-39-E-R	0	0.5	Cap Type A	1	3.39	5.03							4.21	7,022	3,511	14,772
SE-114-39-W	0	1	Cap Type A	1	2.18	5.94							4.06	7,776	7,776	31,582
SE-116-83-C	0	1	Cap Type A	1	1.21	7.81							4.51	4,572	4,572	20,625
SE-116-83-E	0	1	Cap Type A	1	2.77	15.16							8.97	5,906	5,906	52,954
SE-116-83-W	0	1	Cap Type A	1	1.52	1.63							1.57	4,998	4,998	7,867
SE-119-36-C	0	1	Cap Type A	1	3.64	8.11							5.88	4,816	4,816	28,308
SE-119-36-E	0	1	Cap Type A	1	0.03	1.17							0.60	12,212	12,212	7,356
SE-119-36-W	0	1	Cap Type A	1	2.15	62.21							32.18	3,010	3,010	96,864
SE-121-90-C	0	1	Cap Type A	1	0.15	9.90							5.03	3,323	3,323	16,707
SE-121-90-E	0	1	Cap Type A	1	0.20	1.36							0.78	6,177	6,177	4,822
SE-121-90-W	0	1	Cap Type A	1	0.53	0.17							0.35	9,533	9,533	3,338
SE-124-36-C	0	1	Cap Type A	1	0.15	5.17							2.66	5,205	5,205	13,857
SE-124-36-E	0	1	Cap Type A	1	1.61	3.63							2.62	8,099	8,099	21,234
SE-124-36-W	0	1	Cap Type A	1	1.33	1.27							1.30	3,637	3,637	4,736
SE-126-88-C4	0	1	Cap Type A	1	2.22	8.42							5.32	11,750	11,750	62,533
SE-126-88-E4	0	1	Cap Type A	1	5.81	1.23							3.52	6,025	6,025	21,192
SE-126-88-W4	0	1	Cap Type A	1	4.76	2.08							3.42	7,801	7,801	26,665
SE-129-41-C	0	1	Cap Type A	1	0.67	1.98							1.32	5,836	5,836	7,724
SE-129-41-E	0	1	Cap Type A	1	1.50	0.38							0.94	5,518	5,518	5,186
SE-129-41-W	0	1	Cap Type A	1	0.04	1.73							0.88	8,027	8,027	7,080
SE-131-91-C	0	1	Cap Type A	1	2.71	6.54							4.62	4,681	4,681	21,648

Table B-1
Main Channel PCB Concentrations by Depth Interval: Removal Depth Based on Minimum Design Cap Thickness

Location ID	Depth Range of Core Data[1]		Cap Type	Removal Depth (feet)	PCB Concentration Removed (mg/kg)								Depth-Weighted Average PCB (mg/kg)[3,4]	Area (square feet)	On-Site Disposal Volume (cubic feet)[4]	PCB x Volume[4]
	Start Depth (feet)	End Depth (feet)			0–0.5 Feet	0.5–1 Feet	1–1.5 Feet	1.5–2 Feet	2–2.5 Feet[2]	2.5–3 Feet	3–3.5 Feet	3.5–4 Feet				
SE-131-91-E	0	1	Cap Type A	1	1.67	1.25							1.46	6,569	6,569	9,588
SE-131-91-W	0	1	Cap Type A	1	6.57	0.86							3.71	8,201	8,201	30,467
SE-134-45-C	0	1	Cap Type A	1	1.47	0.63							1.05	5,704	5,704	5,980
SE-134-45-E	0	0.5	Cap Type A	1	5.27	1.40							3.33	3,971	1,985	6,621
SE-134-45-E-R	0.5	1	Cap Type A	1	5.27	1.40							3.33	3,971	1,985	6,621
SE-134-45-W	0	1	Cap Type A	1	12.28	158.80							85.54	8,032	8,032	687,069
SE-136-95-C	0	1	Cap Type A	1	7.89	0.04							3.96	3,219	3,219	12,758
SE-136-95-E	0	1	Cap Type A	1	3.06	8.07							5.57	12,979	12,979	72,247
SE-136-95-W	0	1	Cap Type A	1	14.84	1.49							8.17	3,894	3,894	31,793
SE-139-45-C	0	1	Cap Type A	1	3.65	3.01							3.33	3,551	3,551	11,832
SE-139-45-E	0	1	Cap Type A	1	3.85	5.59							4.72	4,099	4,099	19,344
SE-139-45-W	0	1	Cap Type A	1	7.68	0.92							4.30	10,624	10,624	45,673
SE-142-07-C	0	1	Cap Type A	1	2.41	6.05							4.23	3,042	3,042	12,866
SE-142-07-E	0	1	Cap Type A	1	4.11	12.32							8.21	5,629	5,629	46,242
SE-142-07-W	0	1	Cap Type A	1	2.22	1.50							1.86	8,993	8,993	16,700
SE-144-57-C	0	1	Cap Type A	1	2.32	5.65							3.98	5,151	5,151	20,525
SE-144-57-E	0	1	Cap Type A	1	6.28	1.78							4.03	5,465	5,465	22,007
SE-144-57-W	0	1	Cap Type A	1	3.31	1.16							2.24	8,099	8,099	18,131
SE-147-09-C	0	1	Cap Type A	1	8.05	5.96							7.01	5,698	5,698	39,917
SE-147-09-E	0	1	Cap Type A	1	5.91	1.72							3.81	3,223	3,223	12,297
SE-147-09-W	0	1	Cap Type A	1	0.75	0.05							0.40	10,371	10,371	4,180
SE-149-52-C	0.5	1	Cap Type A	1	3.36	2.14							2.75	4,678	2,339	6,435
SE-149-52-C-R	0	0.5	Cap Type A	1	3.36	2.14							2.75	4,678	2,339	6,435
SE-149-52-E	0	1	Cap Type A	1	2.68	12.43							7.56	11,482	11,482	86,761
SE-149-52-W	0	1	Cap Type A	1	7.97	6.51							7.24	3,392	3,392	24,556
SE-152-01-C	0	1	Cap Type A	1	8.06	5.93							6.99	8,581	8,581	60,017
SE-152-01-E	0	1	Cap Type A	1	1.06	12.37							6.71	5,115	5,115	34,337
SE-152-01-W	0	1	Cap Type A	1	1.51	0.69							1.10	6,135	6,135	6,760
SE-154-51-C	0	1	Cap Type A	1	4.40	15.30							9.85	5,369	5,369	52,884
SE-154-51-E	0	1	Cap Type A	1	3.37	4.50							3.93	7,639	7,639	30,035
SE-154-51-W	0	1	Cap Type A	1	1.93	3.25							2.59	7,534	7,534	19,498
SE-157-01-C	0	1	Cap Type A	1	3.43	26.31							14.87	4,446	4,446	66,116
SE-157-01-E	0	1	Cap Type A	1	3.31	1.71							2.51	6,589	6,589	16,531
SE-157-01-W	0	1	Cap Type A	1	40.85	34.93							37.89	10,733	10,733	406,683
SE-159-59-W	0	1	Cap Type A	1	1.26	12.63							6.95	15,625	15,625	108,517
SE-162-09-W	0	1	Cap Type A	1	18.46	12.63							15.54	17,275	17,275	268,535
SE-164-59-C	0	1	Cap Type A	1	2.17	13.44							7.81	5,143	5,143	40,151
SE-164-59-E	0	1	Cap Type A	1	0.67	0.29							0.48	6,277	6,277	3,022
SE-164-59-W	0	1	Cap Type A	1	1.14	3.76							2.45	9,792	9,792	24,014
SE-167-11-C	0	1	Cap Type A	1	6.65	0.78							3.71	8,175	8,175	30,355
SE-167-11-E	0	1	Cap Type A	1	3.93	0.94							2.44	8,944	8,944	21,801

Table B-1
Main Channel PCB Concentrations by Depth Interval: Removal Depth Based on Minimum Design Cap Thickness

Location ID	Depth Range of Core Data[1]		Cap Type	Removal Depth (feet)	PCB Concentration Removed (mg/kg)								Depth-Weighted Average PCB (mg/kg)[3,4]	Area (square feet)	On-Site Disposal Volume (cubic feet)[4]	PCB x Volume[4]
	Start Depth (feet)	End Depth (feet)			0–0.5 Feet	0.5–1 Feet	1–1.5 Feet	1.5–2 Feet	2–2.5 Feet[2]	2.5–3 Feet	3–3.5 Feet	3.5–4 Feet				
SE-167-11-W	0	1	Cap Type A	1	21.65	0.48							11.07	5,670	5,670	62,748
SE-169-65-C	0	1	Cap Type A	1	7.65	23.00							15.33	4,082	4,082	62,554
SE-169-65-E	0	1	Cap Type A	1	3.32	7.68							5.50	5,786	5,786	31,811
SE-169-65-W	0	1	Cap Type A	1	4.33	3.37							3.85	8,900	8,900	34,297
SE-172-16-C	0	1	Cap Type A	1	1.17	8.77							4.97	6,437	6,437	31,992
SE-172-16-E	0	1	Cap Type A	1	1.43	0.05							0.74	4,133	4,133	3,067
SE-172-16-W	0	1	Cap Type A	1	5.64	0.93							3.29	14,276	14,276	46,903
SE-174-79-W	0	1	Cap Type A	1	5.07	3.68							4.38	16,459	16,459	72,047
SE-177-31-C	0	1	Cap Type A	1	2.65	15.38							9.01	5,162	5,162	46,525
SE-177-31-E	0	1	Cap Type A	1	0.27	0.04							0.15	7,397	7,397	1,138
SE-177-31-W	0	1	Cap Type A	1	3.30	26.59							14.95	5,745	5,745	85,866
SE-179-81-C	0	1	Cap Type A	1	28.27	3.78							16.03	5,584	5,584	89,493
SE-179-81-E	0	1	Cap Type A	1	1.80	1.48							1.64	7,777	7,777	12,738
SE-179-81-W	0	1	Cap Type A	1	1.75	34.09							17.92	7,944	7,944	142,358
SE-182-31-C	0	0.5	Cap Type A	1	3.05	3.81							3.43	6,780	3,390	11,622
SE-182-31-C-R	0.5	1	Cap Type A	1	3.05	3.81							3.43	6,780	3,390	11,622
SE-182-31-E	0	0.5	Cap Type A	1	4.02	4.77							4.39	5,279	2,640	11,600
SE-182-31-E-R	0.5	1	Cap Type A	1	4.02	4.77							4.39	5,279	2,640	11,600
SE-182-31-W	0	0.5	Cap Type A	1	21.03	0.86							10.95	10,312	5,156	56,435
SE-182-31-W-R	0.5	1	Cap Type A	1	21.03	0.86							10.95	10,312	5,156	56,435
SE-184-82-C	0	1	Cap Type A	1	3.53	23.98							13.75	4,476	4,476	61,569
SE-184-82-E	0	1	Cap Type A	1	11.12	9.13							10.13	9,021	9,021	91,350
SE-184-82-W	0	1	Cap Type A	1	5.43	6.65							6.04	6,550	6,550	39,552
SE-187-42-C	0	2.3	Cap Type B	2.3	1.85	10.93	100.90	1.64	0.02				24.72	4,381	10,222	252,642
SE-187-42-E	0	2.3	Cap Type B	2.3	18.45	56.22	7.46	2.52	0.02				18.14	12,653	29,524	535,597
SE-187-42-W	0	2.3	Cap Type B	2.3	5.09	10.93	100.90	1.64	0.02				25.41	3,827	8,931	226,927
SE-190-03-C	0	2.3	Cap Type B	2.3	1.69	1.75	9.98	0.07	0.02				2.89	5,337	12,453	36,045
SE-190-03-E	0	2.3	Cap Type B	2.3	5.38	0.87	9.98	2.52	0.02				4.02	4,202	9,805	39,406
SE-190-03-W	0	2.3	Cap Type B	2.3	1.43	1.86	11.56	0.07	0.02				3.20	8,834	20,612	65,969
SE-192-56-C	0	2.3	Cap Type B	2.3	6.59	26.33	0.02	0.07	0.01				7.08	5,820	13,580	96,081
SE-192-56-E	0	2.3	Cap Type B	2.3	6.70	0.06	0.03	0.03	0.01				1.46	7,793	18,185	26,625
SE-192-56-W	0	2.3	Cap Type B	2.3	5.16	0.80	0.69	0.07	0.01				1.44	6,822	15,918	22,941
SE-195-10-C	0	2.3	Cap Type B	2.3	3.57	3.45	4.48	1.43	0.01				2.77	5,324	12,423	34,441
SE-195-10-E	0	2.3	Cap Type B	2.3	4.83	2.30	40.98	88.00	0.01				29.17	5,929	13,833	403,494
SE-195-10-W	0	2.3	Cap Type B	2.3	2.64	56.96	1.25	1.43	0.01				13.35	6,878	16,048	214,213
SE-197-61-C	0	2.3	Cap Type B	2.3	5.72	2.43	6.77	52.83	0.01				14.52	5,768	13,460	195,428
SE-197-61-E	0	2.3	Cap Type B	2.3	92.75	72.37	10.16	52.83	0.01				48.88	7,178	16,750	818,778
SE-197-61-W	0	2.3	Cap Type B	2.3	13.73	16.92	4.15	52.83	0.01				18.78	6,923	16,153	303,332
SE-200-12-C	0	1	Cap Type A	1	4.27	8.89							6.58	5,410	5,410	35,577
SE-200-12-E	0	1	Cap Type A	1	8.56	4.03							6.29	9,994	9,994	62,899
SE-200-12-W	0	1	Cap Type A	1	1.84	0.05							0.94	5,874	5,874	5,544

Table B-1
Main Channel PCB Concentrations by Depth Interval: Removal Depth Based on Minimum Design Cap Thickness

Location ID	Depth Range of Core Data[1]		Cap Type	Removal Depth (feet)	PCB Concentration Removed (mg/kg)								Depth-Weighted Average PCB (mg/kg)[3,4]	Area (square feet)	On-Site Disposal Volume (cubic feet)[4]	PCB x Volume[4]
	Start Depth (feet)	End Depth (feet)			0–0.5 Feet	0.5–1 Feet	1–1.5 Feet	1.5–2 Feet	2–2.5 Feet[2]	2.5–3 Feet	3–3.5 Feet	3.5–4 Feet				
SE-202-64-C	0	1	Cap Type A	1	33.22	6.82							20.02	5,221	5,221	104,514
SE-202-64-E	0	1	Cap Type A	1	11.27	22.09							16.68	6,981	6,981	116,447
SE-202-64-W	0	1	Cap Type A	1	3.77	3.03							3.40	9,250	9,250	31,450
SE-205-17-C	0	1	Cap Type A	1	11.83	7.79							9.81	4,485	4,485	44,000
SE-205-17-E	0	1	Cap Type A	1	0.08	0.04							0.06	4,885	4,885	294
SE-205-17-W	0	1	Cap Type A	1	4.96	3.57							4.27	10,120	10,120	43,177
SE-207-91-C	0	1	Cap Type A	1	1.61	1.03							1.32	5,253	5,253	6,923
SE-207-91-E	0	1	Cap Type A	1	0.13	0.14							0.13	5,146	5,146	695
SE-207-91-W	0	1	Cap Type A	1	3.41	17.40							10.40	7,209	7,209	74,996
SE-210-40-C	0	1	Cap Type A	1	1.39	3.82							2.60	4,994	4,994	13,007
SE-210-40-E	0	1	Cap Type A	1	1.84	1.87							1.85	7,541	7,541	13,974
SE-210-40-W	0	1	Cap Type A	1	2.97	3.60							3.28	5,992	5,992	19,673
SE-212-90-C	0	1	Cap Type A	1	0.47	0.81							0.64	4,782	4,782	3,044
SE-212-90-E	0	1	Cap Type A	1	8.59	8.12							8.36	7,301	7,301	61,003
SE-212-90-W	0	1	Cap Type A	1	0.37	0.02							0.19	7,030	7,030	1,354
SE-215-39-C	0	1	Cap Type A	1	0.36	0.08							0.22	5,027	5,027	1,099
SE-215-39-E	0	1	Cap Type A	1	1.58	3.34							2.46	7,445	7,445	18,314
SE-215-39-W	0	1	Cap Type A	1	1.65	147.80							74.73	6,730	6,730	502,876
SE-217-93-C	0	1	Cap Type A	1	1.40	92.70							47.05	4,535	4,535	213,365
SE-217-93-E	0	1	Cap Type A	1	310.00	3.83							**156.91**	9,243		
SE-217-93-W	0	1	Cap Type A	1	0.00	0.00							0.00	4,765	4,765	24
SE-220-47-C	0	1	Cap Type A	1	1.66	1.92							1.79	4,436	4,436	7,941
SE-220-47-E	0	1	Cap Type A	1	1.29	1.55							1.42	6,162	6,162	8,750
SE-220-47-W	0	1	Cap Type A	1	5.62	0.28							2.95	7,073	7,073	20,847
SE-223-00-C	0	1	Cap Type A	1	3.70	0.87							2.29	3,596	3,596	8,217
SE-223-00-E	0	1	Cap Type A	1	1.05	3.56							2.30	12,497	12,497	28,806
SE-223-00-W	0	1	Cap Type A	1	0.01	0.04							0.02	3,365	3,365	82
SE-225-70-C	0	1	Cap Type A	1	19.10	0.87							9.98	5,049	5,049	50,399
SE-225-70-E	0	1	Cap Type A	1	0.48	0.70							0.59	5,596	5,596	3,296
SE-225-70-W	0	1	Cap Type A	1	0.57	0.31							0.44	9,300	9,300	4,101
SE-228-20-C	0	1	Cap Type A	1	6.20	2.71							4.45	4,829	4,829	21,513
SE-228-20-E	0	1	Cap Type A	1	23.30	0.01							11.66	5,415	5,415	63,125
SE-228-20-W	0	1	Cap Type A	1	9.86	22.60							16.23	10,474	10,474	169,990
SE-230-73-C	0	1	Cap Type A	1	224.00	21.50							**122.75**	4,871		
SE-230-73-E	0	1	Cap Type A	1	0.04	0.01							0.02	5,055	5,055	123
SE-230-73-W	0	1	Cap Type A	1	8.97	1.60							5.29	7,365	7,365	38,923
SE-233-25-C	0	1	Cap Type A	1	2.50	0.74							1.62	4,049	4,049	6,566
SE-233-25-E	0	1	Cap Type A	1	2.34	0.01							1.17	4,731	4,731	5,550
SE-233-25-W	0	1	Cap Type A	1	12.80	15.10							13.95	7,042	7,042	98,230
SE-235-82-C	0	1	Cap Type A	1	1.81	4.26							3.04	4,358	4,358	13,228
SE-235-82-E	0	1	Cap Type A	1	6.34	3.97							5.16	15,032	15,032	77,491
SE-235-82-W	0	1	Cap Type A	1	1.99	1.03							1.51	4,362	4,362	6,586

Table B-1
Main Channel PCB Concentrations by Depth Interval: Removal Depth Based on Minimum Design Cap Thickness

Location ID	Depth Range of Core Data[1]		Cap Type	Removal Depth (feet)	PCB Concentration Removed (mg/kg)								Depth-Weighted Average PCB (mg/kg)[3,4]	Area (square feet)	On-Site Disposal Volume (cubic feet)[4]	PCB x Volume[4]
	Start Depth (feet)	End Depth (feet)			0–0.5 Feet	0.5–1 Feet	1–1.5 Feet	1.5–2 Feet	2–2.5 Feet[2]	2.5–3 Feet	3–3.5 Feet	3.5–4 Feet				
SE-238-37-C	0	1	Cap Type A	1	2.04	11.60							6.82	4,931	4,931	33,629
SE-238-37-E	0	1	Cap Type A	1	3.44	1.42							2.43	4,255	4,255	10,340
SE-238-37-W	0	1	Cap Type A	1	3.40	1.90							2.65	14,011	14,011	37,129
SE-240-80-C	0	1	Cap Type A	1	0.02	1.22							0.62	4,152	4,152	2,576
SE-240-80-E	0	1	Cap Type A	1	1.61	0.08							0.85	3,253	3,253	2,754
SE-240-80-W	0	1	Cap Type A	1	0.53	0.61							0.57	10,120	10,120	5,748
SE-243-34-C	0	1	Cap Type A	1	0.30	0.42							0.36	4,437	4,437	1,597
SE-243-34-E	0	1	Cap Type A	1	2.91	0.01							1.46	4,451	4,451	6,505
SE-243-34-W	0	1	Cap Type A	1	5.08	9.01							7.05	14,241	14,241	100,329
													Reach 5A Total	**1,889,647**	**2,290,227**	**13,586,962**
															Volume-Weighted Average PCB (mg/kg)	**5.9**

Notes:

1. The depth range shown represents the intervals where data for a core is applied. For co-located cores where supplemental sampling was conducted, the maximum value for each interval is used.

2. Within Cap Type B areas, the removal thickness is 4 inches for depth interval 2 to 2.5 feet. All other removal thicknesses are 6 inches.

3. Depth-weighted average PCB values presented here (Table B-1) are based on the minimum design cap thickness. Table B-2 provides the depth-weighted average, which includes additional depth intervals to account for uncertainty. Both depth-weighted average estimates are considered in the disposal PCB evaluation to identify locations exceeding 100 mg/kg.

4. Cores SE-030-61-W, SE-080-85-E, SE-217-93-E, and SE-230-73-C (shaded gray and bold) have depth-weighted average PCBs greater than 100 mg/kg and require off-site disposal. SE-080-85-E only exceeds 100 mg/kg when including additional depth intervals to account for uncertainty (see Table B-2). These cores are excluded from the volume-weighted average calculation for material to be placed in the Upland Disposal Facility, which is based on the minimum design cap thickness.

mg/kg: milligram per kilogram

PCB: polychlorinated biphenyl

Table B-2
Main Channel PCB Concentrations by Depth Interval: Removal Depth Includes Additional Depth Intervals for Uncertainty

Location ID	Depth Range of Core Data[1]		Cap Type	Removal Depth (feet)[2]	PCB Concentration Removed (mg/kg)										Depth-Weighted Average PCB (mg/kg)[4,5]
	Start Depth (feet)	End Depth (feet)			0–0.5 Feet	0.5–1 Feet	1–1.5 Feet	1.5–2 Feet	2–2.5 Feet	2.5–3 Feet	3–3.5 Feet[3]	3.5–4 Feet	4–4.5 Feet	4.5–5 Feet	
SE-000-00-C	0	1.5	Cap Type A	1.5	2.08	3.83	3.81								3.24
SE-000-00-E	0	1.5	Cap Type A	1.5	5.93	6.77	9.68								7.46
SE-000-00-W	0	1.5	Cap Type A	1.5	11.25	6.32	7.42								8.33
SE-002-42-C	0	1.5	Cap Type A	1.5	0.16	0.04	0.02								0.07
SE-002-42-E	0	1.5	Cap Type A	1.5	0.05	0.04	0.04								0.04
SE-002-42-W	0	1.5	Cap Type A	1.5	0.19	0.04	0.04								0.09
SE-005-13-C	0	1.5	Cap Type A	1.5	0.91	1.22	0.40								0.85
SE-005-13-E	0	1.5	Cap Type A	1.5	0.06	0.28	0.17								0.17
SE-005-13-W	0	1.5	Cap Type A	1.5	0.06	0.03	0.03								0.04
SE-007-71-E	0	1.5	Cap Type A	1.5	0.23	0.58	0.03								0.28
SE-007-71-W	0	1.5	Cap Type A	1.5	0.08	0.02	0.03								0.05
SE-010-20-C	0	1.5	Cap Type A	1.5	1.94	0.13	0.03								0.70
SE-010-20-E	0	1.5	Cap Type A	1.5	1.94	0.13	0.03								0.70
SE-010-20-W	0	1.5	Cap Type A	1.5	0.61	9.14	0.48								3.41
SE-012-76-C	0	1.5	Cap Type A	1.5	0.17	0.04	0.03								0.08
SE-012-76-E	0	1.5	Cap Type A	1.5	0.46	0.53	1.27								0.75
SE-012-76-W	0	1.5	Cap Type A	1.5	0.03	0.04	0.04								0.04
SE-015-43-C	0	1.5	Cap Type A	1.5	1.61	4.01	0.36								1.99
SE-015-43-E	0	1.5	Cap Type A	1.5	0.89	0.04	0.04								0.32
SE-015-43-W	0	1.5	Cap Type A	1.5	0.49	2.44	0.04								0.99
SE-017-96-C	0	1.5	Cap Type A	1.5	26.06	6.70	2.26								11.67
SE-017-96-E	0	1.5	Cap Type A	1.5	0.05	0.05	0.05								0.05
SE-017-96-W	0	1.5	Cap Type A	1.5	2.61	16.87	4.26								7.91
SE-020-47-C	0	1.5	Cap Type A	1.5	3.72	0.82	0.03								1.53
SE-020-47-E	0	1.5	Cap Type A	1.5	1.14	0.04	0.04								0.41
SE-020-47-W	0	1.5	Cap Type A	1.5	9.90	3.18	0.04								4.37
SE-022-98-C	0	1.5	Cap Type A	1.5	1.66	3.45	7.67								4.26
SE-022-98-E	0	1.5	Cap Type A	1.5	1.22	3.56	4.36								3.05
SE-022-98-W	0	1.5	Cap Type A	1.5	0.07	0.03	0.03								0.04
SE-025-59-C	0	1.5	Cap Type A	1.5	0.64	0.37	1.95								0.99
SE-025-59-E	0	0.5	Cap Type A	1.5	0.42	3.11	2.33								1.95
SE-025-59-E-R	0.5	1.5	Cap Type A	1.5	0.42	3.11	2.33								1.95
SE-025-59-W-R	0	1.5	Cap Type A	1.5	0.21	0.08	0.04								0.11
SE-028-11-C	0	1.5	Cap Type A	1.5	0.87	1.58	0.36								0.94
SE-028-11-E	0	1.5	Cap Type A	1.5	3.07	7.22	3.99								4.76
SE-028-11-W	0	1.5	Cap Type A	1.5	0.10	0.03	0.04								0.06
SE-030-61-C	0	3.3	Cap Type B	3.3	0.33	0.12	0.04	0.03	0.04	3.50	3.50				0.96
SE-030-61-E	0	3.3	Cap Type B	3.3	0.05	0.04	0.04	0.04	0.02	3.50	3.50				0.90
SE-030-61-W	0	3.3	Cap Type B	3.3	1.75	6.44	744.00	0.03	0.04	3.50	3.50				**113.7**
SE-033-10-C	0	3.3	Cap Type B	3.3	0.34	0.64	8.16	3.97	0.04	3.50	3.50				2.84
SE-033-10-E	0	3.3	Cap Type B	3.3	0.29	2.25	0.04	0.04	0.04	3.50	3.50				1.27
SE-033-10-W	0	3.3	Cap Type B	3.3	12.64	0.77	2.27	1.08	0.04	3.50	3.50				3.39

Table B-2
Main Channel PCB Concentrations by Depth Interval: Removal Depth Includes Additional Depth Intervals for Uncertainty

Location ID	Depth Range of Core Data[1]		Cap Type	Removal Depth (feet)[2]	PCB Concentration Removed (mg/kg)										Depth-Weighted Average PCB (mg/kg)[4,5]
	Start Depth (feet)	End Depth (feet)			0–0.5 Feet	0.5–1 Feet	1–1.5 Feet	1.5–2 Feet	2–2.5 Feet	2.5–3 Feet	3–3.5 Feet[3]	3.5–4 Feet	4–4.5 Feet	4.5–5 Feet	
SE-035-62-C	0	3.3	Cap Type B	3.3	1.93	3.16	6.34	1.29	0.04	0.01	0.01				1.91
SE-035-62-E	0	3.3	Cap Type B	3.3	0.37	0.04	0.04	1.29	0.04	0.01	0.01				0.27
SE-035-62-W	0	3.3	Cap Type B	3.3	0.91	6.12	0.04	4.61	0.04	0.01	0.01				1.76
SE-038-10-C	0	3.3	Cap Type B	3.3	0.62	0.47	12.36	0.03	0.00	0.01	0.01				2.02
SE-038-10-E	0	3.3	Cap Type B	3.3	1.28	1.17	0.47	0.03	0.00	0.01	0.01				0.44
SE-038-10-W	0	3.3	Cap Type B	3.3	0.09	0.17	0.04	0.03	0.00	0.01	0.01				0.05
SE-040-65-C	0	3.3	Cap Type B	3.3	0.04	0.03	0.04	0.03	0.00	0.01	0.01				0.02
SE-040-65-E	0	3.3	Cap Type B	3.3	0.55	1.44	4.32	3.18	0.00	0.01	0.01				1.42
SE-040-65-W	0	3.3	Cap Type B	3.3	2.98	0.77	0.04	0.03	0.00	0.01	0.01				0.57
SE-043-16-C	0	1	Cap Type B	3.3	0.92	9.04	1.42	41.30	0.15	0.03	0.03				7.93
SE-043-16-C-R	1	3.3	Cap Type B	3.3	0.92	9.04	1.42	41.30	0.15	0.03	0.03				7.93
SE-043-16-E	0	2	Cap Type B	3.3	2.00	3.27	0.04	0.04	0.00	0.01	0.01				0.80
SE-043-16-E-R	2	3.3	Cap Type B	3.3	2.00	3.27	0.04	0.04	0.00	0.01	0.01				0.80
SE-043-16-W	0	2	Cap Type B	3.3	1.83	14.32	24.10	0.45	0.02	0.01	0.01				6.11
SE-043-16-W-R	2	3.3	Cap Type B	3.3	1.83	14.32	24.10	0.45	0.02	0.01	0.01				6.11
SE-045-68-C	0	3.3	Cap Type B	3.3	0.28	0.72	0.04	0.03	0.00	0.01	0.01				0.16
SE-045-68-E	0	3.3	Cap Type B	3.3	2.06	0.99	0.73	2.47	0.00	0.01	0.01				0.94
SE-045-68-W	0	3.3	Cap Type B	3.3	0.67	0.04	0.04	0.03	0.00	0.01	0.01				0.12
SE-048-18-C	0	3.3	Cap Type B	3.3	1.10	19.79	3.67	2.88	0.00	0.01	0.01				4.12
SE-048-18-E	0	3.3	Cap Type B	3.3	0.44	1.76	13.42	2.88	0.00	0.01	0.01				2.78
SE-048-18-W	0	3.3	Cap Type B	3.3	7.58	3.50	8.23	50.03	0.00	0.01	0.01				10.40
SE-050-67-C	0	5.0	Cap Type C	5	0.72	0.43	2.27	0.47	0.00	0.01	0.01	0.01	0.01	0.01	0.39
SE-050-67-E	0	5.0	Cap Type C	5	0.80	11.15	2.27	0.47	0.00	0.01	0.01	0.01	0.01	0.01	1.47
SE-053-14-C	0	5.0	Cap Type C	5	0.48	0.65	3.88	4.80	0.00	0.01	0.01	0.01	0.01	0.01	0.98
SE-053-14-E	0	5.0	Cap Type C	5	1.78	0.39	0.45	0.58	0.00	0.01	0.01	0.01	0.01	0.01	0.32
SE-053-14-W	0	5.0	Cap Type C	5	0.29	0.30	0.77	0.47	0.00	0.01	0.01	0.01	0.01	0.01	0.19
SE-055-67-W	0	5.0	Cap Type C	5	1.48	26.39	3.08	0.47	0.00	0.01	0.01	0.01	0.01	0.01	3.15
SE-058-17-C	0	3.3	Cap Type B	3.3	1.15	9.16	27.30	0.16	0.00	0.01	0.01				5.67
SE-058-17-E	0	3.3	Cap Type B	3.3	0.74	1.75	2.65	0.16	0.00	0.01	0.01				0.80
SE-058-17-W	0	3.3	Cap Type B	3.3	1.25	1.62	0.19	0.33	0.00	0.01	0.01				0.51
SE-060-66-C	0	3.3	Cap Type B	3.3	0.47	0.04	0.03	0.33	0.00	0.01	0.01				0.13
SE-060-66-E	0	3.3	Cap Type B	3.3	1.72	2.43	0.05	0.16	0.00	0.01	0.01				0.66
SE-060-66-W	0	3.3	Cap Type B	3.3	6.89	0.04	0.73	0.33	0.00	0.01	0.01				1.20
SE-063-17-C	0	1.5	Cap Type A	1.5	1.15	94.20	0.04								31.80
SE-063-17-E	0	1.5	Cap Type A	1.5	2.33	0.34	0.07								0.91
SE-063-17-W	0	1.5	Cap Type A	1.5	3.13	3.50	0.12								2.25
SE-065-69-C	0	1.5	Cap Type A	1.5	0.92	46.83	0.04								15.93
SE-065-69-E	0	1.5	Cap Type A	1.5	4.53	0.30	0.05								1.63
SE-065-69-W	0	1.5	Cap Type A	1.5	16.86	0.40	0.04								5.77
SE-068-20-C	0.5	1.5	Cap Type A	1.5	1.06	1.93	0.56								1.18
SE-068-20-C-R	0	0.5	Cap Type A	1.5	1.06	1.93	0.56								1.18
SE-068-20-E	0	0.5	Cap Type A	1.5	6.58	2.01	0.02								2.87

Table B-2
Main Channel PCB Concentrations by Depth Interval: Removal Depth Includes Additional Depth Intervals for Uncertainty

Location ID	Depth Range of Core Data[1]		Cap Type	Removal Depth (feet)[2]	PCB Concentration Removed (mg/kg)										Depth-Weighted Average PCB (mg/kg)[4,5]
	Start Depth (feet)	End Depth (feet)			0–0.5 Feet	0.5–1 Feet	1–1.5 Feet	1.5–2 Feet	2–2.5 Feet	2.5–3 Feet	3–3.5 Feet[3]	3.5–4 Feet	4–4.5 Feet	4.5–5 Feet	
SE-068-20-E-R	0.5	1.5	Cap Type A	1.5	6.58	2.01	0.02								2.87
SE-068-20-W	0.5	1.5	Cap Type A	1.5	2.96	30.20	21.20								18.12
SE-068-20-W-R	0	0.5	Cap Type A	1.5	2.96	30.20	21.20								18.12
SE-070-71-C	0	1.5	Cap Type A	1.5	0.87	8.29	2.05								3.73
SE-070-71-E	0	1.5	Cap Type A	1.5	1.24	0.78	0.94								0.99
SE-070-71-W	0	1.5	Cap Type A	1.5	1.08	18.29	0.31								6.56
SE-073-21-C	0	1.5	Cap Type A	1.5	15.66	13.22	4.37								11.08
SE-073-21-E	0	1.5	Cap Type A	1.5	2.06	2.65	0.04								1.58
SE-073-21-W	0	1.5	Cap Type A	1.5	0.86	12.21	1.50								4.85
SE-075-71-C	0	1.5	Cap Type A	1.5	8.78	0.03	0.03								2.95
SE-075-71-E	0	1.5	Cap Type A	1.5	0.13	0.04	3.20								1.12
SE-075-71-W	0	1.5	Cap Type A	1.5	0.20	0.03	0.03								0.09
SE-078-22-C	0	1.5	Cap Type A	1.5	5.82	5.66	10.14								7.21
SE-078-22-C-R	0	1.5	Cap Type A	1.5	2.26	21.20	215.90								79.79
SE-078-22-E	0	1.5	Cap Type A	1.5	1.59	1.61	8.19								3.80
SE-078-22-E-R	0	1.5	Cap Type A	1.5	1.12	52.50	11.30								21.64
SE-078-22-W	0	1.5	Cap Type A	1.5	0.88	12.08	19.59								10.85
SE-078-22-W-R	0	1.5	Cap Type A	1.5	0.24	0.32	3.88								1.48
SE-080-85-C	0	1.5	Cap Type A	1.5	0.51	0.36	2.65								1.17
SE-080-85-E	0	1.5	Cap Type A	1.5	1.23	26.10	545.00								**190.8**
SE-080-85-W	0	1.5	Cap Type A	1.5	0.57	4.58	2.24								2.46
SE-083-54-C	0	1.5	Cap Type A	1.5	1.45	0.27	0.02								0.58
SE-083-54-E	0	1.5	Cap Type A	1.5	0.50	1.13	25.67								9.10
SE-083-54-W	0	1.5	Cap Type A	1.5	2.16	0.04	0.05								0.75
SE-086-13-C	0	1.5	Cap Type A	1.5	0.16	0.03	0.03								0.07
SE-086-13-E	0	1.5	Cap Type A	1.5	0.04	0.04	0.03								0.03
SE-086-13-W	0	1.5	Cap Type A	1.5	0.46	0.63	0.55								0.54
SE-088-70-C	0	1.5	Cap Type A	1.5	1.30	0.19	0.33								0.61
SE-088-70-E	0	1.5	Cap Type A	1.5	0.29	0.03	0.03								0.12
SE-088-70-W	0	1.5	Cap Type A	1.5	0.46	1.05	2.79								1.43
SE-091-28-C-R	0	1.5	Cap Type A	1.5	108.00	0.47	2.61								37.03
SE-091-28-E	0	1.5	Cap Type A	1.5	0.47	0.49	1.17								0.71
SE-091-28-W	0	1.5	Cap Type A	1.5	0.61	0.05	0.04								0.23
SE-093-75-C	0	1.5	Cap Type A	1.5	0.59	1.11	22.72								8.14
SE-093-75-E	0	1.5	Cap Type A	1.5	0.73	2.38	11.07								4.73
SE-093-75-W	0	1.5	Cap Type A	1.5	23.96	1.42	0.04								8.47
SE-096-27-C	0	1.5	Cap Type A	1.5	3.74	2.65	0.97								2.45
SE-096-27-E	0	1.5	Cap Type A	1.5	121.49	0.03	0.03								40.52
SE-096-27-W	0	1.5	Cap Type A	1.5	25.80	0.88	14.24								13.64
SE-099-02-C	0	1.5	Cap Type A	1.5	2.05	7.34	3.53								4.31
SE-099-02-E	0	1.5	Cap Type A	1.5	0.87	0.94	2.92								1.58
SE-099-02-W	0	1.5	Cap Type A	1.5	0.78	0.85	1.10								0.91

Table B-2
Main Channel PCB Concentrations by Depth Interval: Removal Depth Includes Additional Depth Intervals for Uncertainty

Location ID	Depth Range of Core Data[1]		Cap Type	Removal Depth (feet)[2]	PCB Concentration Removed (mg/kg)										Depth-Weighted Average PCB (mg/kg)[4,5]
	Start Depth (feet)	End Depth (feet)			0–0.5 Feet	0.5–1 Feet	1–1.5 Feet	1.5–2 Feet	2–2.5 Feet	2.5–3 Feet	3–3.5 Feet[3]	3.5–4 Feet	4–4.5 Feet	4.5–5 Feet	
SE-101-54-C	0	1.5	Cap Type A	1.5	1.28	0.37	1.37								1.01
SE-101-54-E	0	1.5	Cap Type A	1.5	2.45	3.72	0.03								2.07
SE-101-54-W	0	1.5	Cap Type A	1.5	1.63	1.17	21.22								8.01
SE-104-10-C	0	1.5	Cap Type A	1.5	0.85	2.21	1.93								1.66
SE-104-10-E	0	1.5	Cap Type A	1.5	0.91	0.39	1.28								0.86
SE-104-10-W	0	1.5	Cap Type A	1.5	0.84	3.21	37.05								13.70
SE-106-72-C	0	1.5	Cap Type A	1.5	0.23	0.04	0.04								0.10
SE-106-72-E	0	1.5	Cap Type A	1.5	0.04	0.04	0.04								0.04
SE-106-72-W	0	1.5	Cap Type A	1.5	0.47	1.44	1.99								1.30
SE-109-32-C	0	1.5	Cap Type A	1.5	0.74	0.14	0.03								0.30
SE-109-32-E	0	1.5	Cap Type A	1.5	0.25	0.03	0.03								0.10
SE-109-32-W	0	1.5	Cap Type A	1.5	1.59	6.03	0.78								2.80
SE-111-89-C	0	1.5	Cap Type A	1.5	4.73	1.19	1.45								2.46
SE-111-89-E	0	1.5	Cap Type A	1.5	3.36	1.19	1.45								2.00
SE-111-89-W	0	1.5	Cap Type A	1.5	1.62	1.66	1.09								1.46
SE-114-39-C-R	0	1.5	Cap Type A	1.5	3.20	3.25	3.20								3.22
SE-114-39-E	0.5	1.5	Cap Type A	1.5	3.39	5.03	9.69								6.03
SE-114-39-E-R	0	0.5	Cap Type A	1.5	3.39	5.03	9.69								6.03
SE-114-39-W	0	1.5	Cap Type A	1.5	2.18	5.94	9.80								5.97
SE-116-83-C	0	1.5	Cap Type A	1.5	1.21	7.81	5.09								4.70
SE-116-83-E	0	1.5	Cap Type A	1.5	2.77	15.16	5.09								7.67
SE-116-83-W	0	1.5	Cap Type A	1.5	1.52	1.63	0.43								1.19
SE-119-36-C	0	1.5	Cap Type A	1.5	3.64	8.11	0.31								4.02
SE-119-36-E	0	1.5	Cap Type A	1.5	0.03	1.17	0.41								0.54
SE-119-36-W	0	1.5	Cap Type A	1.5	2.15	62.21	97.60								53.99
SE-121-90-C	0	1.5	Cap Type A	1.5	0.15	9.90	1.55								3.87
SE-121-90-E	0	1.5	Cap Type A	1.5	0.20	1.36	0.03								0.53
SE-121-90-W	0	1.5	Cap Type A	1.5	0.53	0.17	3.40								1.37
SE-124-36-C	0	1.5	Cap Type A	1.5	0.15	5.17	6.74								4.02
SE-124-36-E	0	1.5	Cap Type A	1.5	1.61	3.63	2.27								2.50
SE-124-36-W	0	1.5	Cap Type A	1.5	1.33	1.27	0.34								0.98
SE-126-88-C4	0	1.5	Cap Type A	1.5	2.22	8.42	10.21								6.95
SE-126-88-E4	0	1.5	Cap Type A	1.5	5.81	1.23	1.04								2.69
SE-126-88-W4	0	1.5	Cap Type A	1.5	4.76	2.08	8.87								5.24
SE-129-41-C	0	1.5	Cap Type A	1.5	0.67	1.98	0.33								0.99
SE-129-41-E	0	1.5	Cap Type A	1.5	1.50	0.38	0.04								0.64
SE-129-41-W	0	1.5	Cap Type A	1.5	0.04	1.73	0.99								0.92
SE-131-91-C	0	1.5	Cap Type A	1.5	2.71	6.54	0.03								3.09
SE-131-91-E	0	1.5	Cap Type A	1.5	1.67	1.25	8.82								3.91
SE-131-91-W	0	1.5	Cap Type A	1.5	6.57	0.86	0.09								2.51
SE-134-45-C	0	1.5	Cap Type A	1.5	1.47	0.63	0.03								0.71
SE-134-45-E	0	0.5	Cap Type A	1.5	5.27	1.40	0.50								2.39

Table B-2
Main Channel PCB Concentrations by Depth Interval: Removal Depth Includes Additional Depth Intervals for Uncertainty

Location ID	Depth Range of Core Data[1]		Cap Type	Removal Depth (feet)[2]	PCB Concentration Removed (mg/kg)										Depth-Weighted Average PCB (mg/kg)[4,5]
	Start Depth (feet)	End Depth (feet)			0–0.5 Feet	0.5–1 Feet	1–1.5 Feet	1.5–2 Feet	2–2.5 Feet	2.5–3 Feet	3–3.5 Feet[3]	3.5–4 Feet	4–4.5 Feet	4.5–5 Feet	
SE-134-45-E-R	0.5	1.5	Cap Type A	1.5	5.27	1.40	0.50								2.39
SE-134-45-W	0	1.5	Cap Type A	1.5	12.28	158.80	2.38								57.82
SE-136-95-C	0	1.5	Cap Type A	1.5	7.89	0.04	0.04								2.65
SE-136-95-E	0	1.5	Cap Type A	1.5	3.06	8.07	0.03								3.72
SE-136-95-W	0	1.5	Cap Type A	1.5	14.84	1.49	0.91								5.75
SE-139-45-C	0	1.5	Cap Type A	1.5	3.65	3.01	0.99								2.55
SE-139-45-E	0	1.5	Cap Type A	1.5	3.85	5.59	5.40								4.94
SE-139-45-W	0	1.5	Cap Type A	1.5	7.68	0.92	1.50								3.37
SE-142-07-C	0	1.5	Cap Type A	1.5	2.41	6.05	2.84								3.76
SE-142-07-E	0	1.5	Cap Type A	1.5	4.11	12.32	2.31								6.24
SE-142-07-W	0	1.5	Cap Type A	1.5	2.22	1.50	10.89								4.87
SE-144-57-C	0	1.5	Cap Type A	1.5	2.32	5.65	5.15								4.37
SE-144-57-E	0	1.5	Cap Type A	1.5	6.28	1.78	5.15								4.40
SE-144-57-W	0	1.5	Cap Type A	1.5	3.31	1.16	0.45								1.64
SE-147-09-C	0	1.5	Cap Type A	1.5	8.05	5.96	13.08								9.03
SE-147-09-E	0	1.5	Cap Type A	1.5	5.91	1.72	9.87								5.83
SE-147-09-W	0	1.5	Cap Type A	1.5	0.75	0.05	0.04								0.28
SE-149-52-C	0.5	1.5	Cap Type A	1.5	3.36	2.14	2.43								2.64
SE-149-52-C-R	0	0.5	Cap Type A	1.5	3.36	2.14	2.43								2.64
SE-149-52-E	0	1.5	Cap Type A	1.5	2.68	12.43	2.96								6.02
SE-149-52-W	0	1.5	Cap Type A	1.5	7.97	6.51	6.74								7.07
SE-152-01-C	0	1.5	Cap Type A	1.5	8.06	5.93	0.18								4.72
SE-152-01-E	0	1.5	Cap Type A	1.5	1.06	12.37	5.17								6.20
SE-152-01-W	0	1.5	Cap Type A	1.5	1.51	0.69	0.18								0.79
SE-154-51-C	0	1.5	Cap Type A	1.5	4.40	15.30	0.03								6.58
SE-154-51-E	0	1.5	Cap Type A	1.5	3.37	4.50	19.91								9.26
SE-154-51-W	0	1.5	Cap Type A	1.5	1.93	3.25	4.49								3.22
SE-157-01-C	0	1.5	Cap Type A	1.5	3.43	26.31	3.23								10.99
SE-157-01-E	0	1.5	Cap Type A	1.5	3.31	1.71	11.04								5.35
SE-157-01-W	0	1.5	Cap Type A	1.5	40.85	34.93	9.91								28.56
SE-159-59-W	0	1.5	Cap Type A	1.5	1.26	12.63	9.91								7.93
SE-162-09-W	0	1.5	Cap Type A	1.5	18.46	12.63	9.30								13.46
SE-164-59-C	0	1.5	Cap Type A	1.5	2.17	13.44	45.46								20.36
SE-164-59-E	0	1.5	Cap Type A	1.5	0.67	0.29	21.72								7.56
SE-164-59-W	0	1.5	Cap Type A	1.5	1.14	3.76	9.30								4.74
SE-167-11-C	0	1.5	Cap Type A	1.5	6.65	0.78	0.10								2.51
SE-167-11-E	0	1.5	Cap Type A	1.5	3.93	0.94	0.10								1.66
SE-167-11-W	0	1.5	Cap Type A	1.5	21.65	0.48	0.03								7.39
SE-169-65-C	0	1.5	Cap Type A	1.5	7.65	23.00	0.04								10.23
SE-169-65-E	0	1.5	Cap Type A	1.5	3.32	7.68	0.88								3.96
SE-169-65-W	0	1.5	Cap Type A	1.5	4.33	3.37	0.03								2.58
SE-172-16-C	0	1.5	Cap Type A	1.5	1.17	8.77	1.33								3.76

Table B-2
Main Channel PCB Concentrations by Depth Interval: Removal Depth Includes Additional Depth Intervals for Uncertainty

Location ID	Depth Range of Core Data[1]		Cap Type	Removal Depth (feet)[2]	PCB Concentration Removed (mg/kg)										Depth-Weighted Average PCB (mg/kg)[4,5]
	Start Depth (feet)	End Depth (feet)			0–0.5 Feet	0.5–1 Feet	1–1.5 Feet	1.5–2 Feet	2–2.5 Feet	2.5–3 Feet	3–3.5 Feet[3]	3.5–4 Feet	4–4.5 Feet	4.5–5 Feet	
SE-172-16-E	0	1.5	Cap Type A	1.5	1.43	0.05	0.04								0.51
SE-172-16-W	0	1.5	Cap Type A	1.5	5.64	0.93	71.48								26.02
SE-174-79-W	0	1.5	Cap Type A	1.5	5.07	3.68	1.07								3.28
SE-177-31-C	0	1.5	Cap Type A	1.5	2.65	15.38	0.24								6.09
SE-177-31-E	0	1.5	Cap Type A	1.5	0.27	0.04	0.03								0.11
SE-177-31-W	0	1.5	Cap Type A	1.5	3.30	26.59	0.13								10.01
SE-179-81-C	0	1.5	Cap Type A	1.5	28.27	3.78	20.89								17.65
SE-179-81-E	0	1.5	Cap Type A	1.5	1.80	1.48	0.06								1.11
SE-179-81-W	0	1.5	Cap Type A	1.5	1.75	34.09	6.16								14.00
SE-182-31-C	0	0.5	Cap Type A	1.5	3.05	3.81	1.59								2.81
SE-182-31-C-R	0.5	1.5	Cap Type A	1.5	3.05	3.81	1.59								2.81
SE-182-31-E	0	0.5	Cap Type A	1.5	4.02	4.77	133.00								47.26
SE-182-31-E-R	0.5	1.5	Cap Type A	1.5	4.02	4.77	133.00								47.26
SE-182-31-W	0	0.5	Cap Type A	1.5	21.03	0.86	4.11								8.67
SE-182-31-W-R	0.5	1.5	Cap Type A	1.5	21.03	0.86	4.11								8.67
SE-184-82-C	0	1.5	Cap Type A	1.5	3.53	23.98	4.11								10.54
SE-184-82-E	0	1.5	Cap Type A	1.5	11.12	9.13	7.46								9.24
SE-184-82-W	0	1.5	Cap Type A	1.5	5.43	6.65	7.46								6.51
SE-187-42-C	0	3.3	Cap Type B	3.3	1.85	10.93	100.90	1.64	0.02	0.01	0.01				17.30
SE-187-42-E	0	3.3	Cap Type B	3.3	18.45	56.22	7.46	2.52	0.02	0.01	0.01				12.70
SE-187-42-W	0	3.3	Cap Type B	3.3	5.09	10.93	100.90	1.64	0.02	0.01	0.01				17.79
SE-190-03-C	0	3.3	Cap Type B	3.3	1.69	1.75	9.98	0.07	0.02	0.01	0.01				2.03
SE-190-03-E	0	3.3	Cap Type B	3.3	5.38	0.87	9.98	2.52	0.02	0.01	0.01				2.82
SE-190-03-W	0	3.3	Cap Type B	3.3	1.43	1.86	11.56	0.07	0.02	0.01	0.01				2.24
SE-192-56-C	0	3.3	Cap Type B	3.3	6.59	26.33	0.02	0.07	0.01	0.01	0.01				4.95
SE-192-56-E	0	3.3	Cap Type B	3.3	6.70	0.06	0.03	0.03	0.01	0.01	0.01				1.03
SE-192-56-W	0	3.3	Cap Type B	3.3	5.16	0.80	0.69	0.07	0.01	0.01	0.01				1.01
SE-195-10-C	0	3.3	Cap Type B	3.3	3.57	3.45	4.48	1.43	0.01	0.01	0.01				1.94
SE-195-10-E	0	3.3	Cap Type B	3.3	4.83	2.30	40.98	88.00	0.01	0.01	0.01				20.42
SE-195-10-W	0	3.3	Cap Type B	3.3	2.64	56.96	1.25	1.43	0.01	0.01	0.01				9.35
SE-197-61-C	0	3.3	Cap Type B	3.3	5.72	2.43	6.77	52.83	0.01	0.01	0.01				10.17
SE-197-61-E	0	3.3	Cap Type B	3.3	92.75	72.37	10.16	52.83	0.01	0.01	0.01				34.22
SE-197-61-W	0	3.3	Cap Type B	3.3	13.73	16.92	4.15	52.83	0.01	0.01	0.01				13.15
SE-200-12-C	0	1.5	Cap Type A	1.5	4.27	8.89	0.03								4.39
SE-200-12-E	0	1.5	Cap Type A	1.5	8.56	4.03	2.40								4.99
SE-200-12-W	0	1.5	Cap Type A	1.5	1.84	0.05	0.04								0.64
SE-202-64-C	0	1.5	Cap Type A	1.5	33.22	6.82	5.07								15.04
SE-202-64-E	0	1.5	Cap Type A	1.5	11.27	22.09	12.32								15.23
SE-202-64-W	0	1.5	Cap Type A	1.5	3.77	3.03	3.44								3.41
SE-205-17-C	0	1.5	Cap Type A	1.5	11.83	7.79	1.72								7.11
SE-205-17-E	0	1.5	Cap Type A	1.5	0.08	0.04	1.72								0.61
SE-205-17-W	0	1.5	Cap Type A	1.5	4.96	3.57	30.17								12.90

Table B-2
Main Channel PCB Concentrations by Depth Interval: Removal Depth Includes Additional Depth Intervals for Uncertainty

Location ID	Depth Range of Core Data[1]		Cap Type	Removal Depth (feet)[2]	PCB Concentration Removed (mg/kg)										Depth-Weighted Average PCB (mg/kg)[4,5]
	Start Depth (feet)	End Depth (feet)			0–0.5 Feet	0.5–1 Feet	1–1.5 Feet	1.5–2 Feet	2–2.5 Feet	2.5–3 Feet	3–3.5 Feet[3]	3.5–4 Feet	4–4.5 Feet	4.5–5 Feet	
SE-207-91-C	0	1.5	Cap Type A	1.5	1.61	1.03	0.09								0.91
SE-207-91-E	0	1.5	Cap Type A	1.5	0.13	0.14	1.23								0.50
SE-207-91-W	0	1.5	Cap Type A	1.5	3.41	17.40	2.19								7.67
SE-210-40-C	0	1.5	Cap Type A	1.5	1.39	3.82	4.56								3.26
SE-210-40-E	0	1.5	Cap Type A	1.5	1.84	1.87	0.14								1.28
SE-210-40-W	0	1.5	Cap Type A	1.5	2.97	3.60	5.31								3.96
SE-212-90-C	0	1.5	Cap Type A	1.5	0.47	0.81	0.20								0.49
SE-212-90-E	0	1.5	Cap Type A	1.5	8.59	8.12	0.04								5.58
SE-212-90-W	0	1.5	Cap Type A	1.5	0.37	0.02	0.01								0.13
SE-215-39-C	0	1.5	Cap Type A	1.5	0.36	0.08	0.01								0.15
SE-215-39-E	0	1.5	Cap Type A	1.5	1.58	3.34	0.03								1.65
SE-215-39-W	0	1.5	Cap Type A	1.5	1.65	147.80	2.34								50.60
SE-217-93-C	0	1.5	Cap Type A	1.5	1.40	92.70	1.27								31.79
SE-217-93-E	0	1.5	Cap Type A	1.5	310.00	3.83	1.91								**105.2**
SE-217-93-W	0	1.5	Cap Type A	1.5	0.00	0.00	0.01								0.01
SE-220-47-C	0	1.5	Cap Type A	1.5	1.66	1.92	3.64								2.41
SE-220-47-E	0	1.5	Cap Type A	1.5	1.29	1.55	61.40								21.41
SE-220-47-W	0	1.5	Cap Type A	1.5	5.62	0.28	0.01								1.97
SE-223-00-C	0	1.5	Cap Type A	1.5	3.70	0.87	2.00								2.19
SE-223-00-E	0	1.5	Cap Type A	1.5	1.05	3.56	3.30								2.64
SE-223-00-W	0	1.5	Cap Type A	1.5	0.01	0.04	0.00								0.02
SE-225-70-C	0	1.5	Cap Type A	1.5	19.10	0.87	1.05								7.01
SE-225-70-E	0	1.5	Cap Type A	1.5	0.48	0.70	1.48								0.89
SE-225-70-W	0	1.5	Cap Type A	1.5	0.57	0.31	8.34								3.07
SE-228-20-C	0	1.5	Cap Type A	1.5	6.20	2.71	0.73								3.21
SE-228-20-E	0	1.5	Cap Type A	1.5	23.30	0.01	0.00								7.77
SE-228-20-W	0	1.5	Cap Type A	1.5	9.86	22.60	11.00								14.49
SE-230-73-C	0	1.5	Cap Type A	1.5	224.00	21.50	12.30								**85.93**
SE-230-73-E	0	1.5	Cap Type A	1.5	0.04	0.01	0.01								0.02
SE-230-73-W	0	1.5	Cap Type A	1.5	8.97	1.60	30.70								13.76
SE-233-25-C	0	1.5	Cap Type A	1.5	2.50	0.74	0.02								1.09
SE-233-25-E	0	1.5	Cap Type A	1.5	2.34	0.01	0.01								0.79
SE-233-25-W	0	1.5	Cap Type A	1.5	12.80	15.10	0.49								9.46
SE-235-82-C	0	1.5	Cap Type A	1.5	1.81	4.26	15.30								7.12
SE-235-82-E	0	1.5	Cap Type A	1.5	6.34	3.97	15.30								8.54
SE-235-82-W	0	1.5	Cap Type A	1.5	1.99	1.03	15.90								6.31
SE-238-37-C	0	1.5	Cap Type A	1.5	2.04	11.60	1.27								4.97
SE-238-37-E	0	1.5	Cap Type A	1.5	3.44	1.42	11.40								5.42
SE-238-37-W	0	1.5	Cap Type A	1.5	3.40	1.90	2.07								2.46
SE-240-80-C	0	1.5	Cap Type A	1.5	0.02	1.22	0.19								0.48
SE-240-80-E	0	1.5	Cap Type A	1.5	1.61	0.08	0.02								0.57
SE-240-80-W	0	1.5	Cap Type A	1.5	0.53	0.61	12.40								4.51

Table B-2

Main Channel PCB Concentrations by Depth Interval: Removal Depth Includes Additional Depth Intervals for Uncertainty

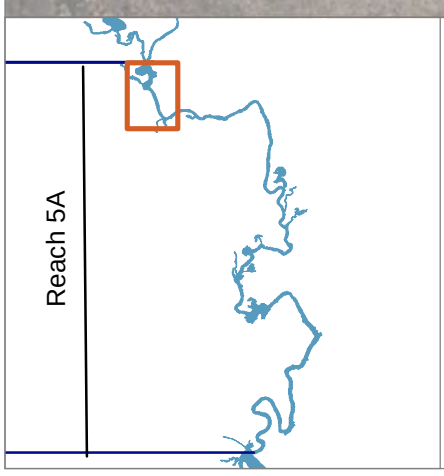
Location ID	Depth Range of Core Data[1]		Cap Type	Removal Depth (feet)[2]	PCB Concentration Removed (mg/kg)										Depth-Weighted Average PCB (mg/kg)[4,5]
	Start Depth (feet)	End Depth (feet)			0–0.5 Feet	0.5–1 Feet	1–1.5 Feet	1.5–2 Feet	2–2.5 Feet	2.5–3 Feet	3–3.5 Feet[3]	3.5–4 Feet	4–4.5 Feet	4.5–5 Feet	
SE-243-34-C	0	1.5	Cap Type A	1.5	0.30	0.42	0.07								0.26
SE-243-34-E	0	1.5	Cap Type A	1.5	2.91	0.01	0.02								0.98
SE-243-34-W	0	1.5	Cap Type A	1.5	5.08	9.01	11.40								8.50

Notes:

1. The depth range shown represents the intervals where data for a core is applied. For co-located cores where supplemental sampling was conducted, the maximum value for each interval is used.
2. Includes an additional 0.5 feet for Cap Type A and 1 foot for Cap Types B and C beyond the minimum required cap thickness to account for uncertainty
3. Within Cap Type B areas, the removal thickness is 4 inches for depth interval 3 to 3.5 feet. All other removal thicknesses are 6 inches.
4. Depth-weighted average PCB values presented here (Table B-2) include additional depth intervals to account for uncertainty. Table B-1 provides the depth-weighted average based on the minimum design cap thickness. Both depth-weighted average estimates are considered in the disposal PCB evaluation to identify locations exceeding 100 mg/kg.
5. Cores SE-030-61-W, SE-080-85-E, SE-217-93-E, and SE-230-73-C (shaded gray and bold) have depth-weighted average PCBs greater than 100 mg/kg and require off-site disposal. The depth-weighted average PCB of SE-230-73-C only exceeds 100 mg/kg when based on the minimum design cap thickness (see Table B-1).

mg/kg: milligram per kilogram

PCB: polychlorinated biphenyl



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

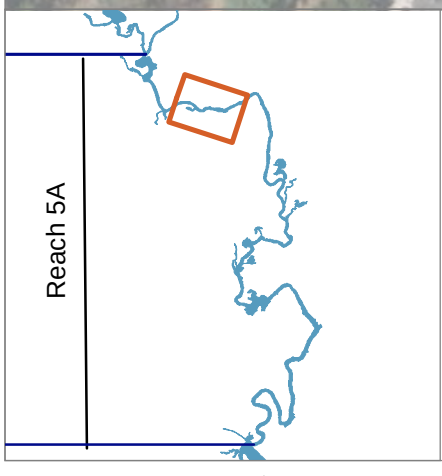
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:34 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-1a
In-River Sediment Thiessen Polygon Extents by Depth Interval (0 to 0.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

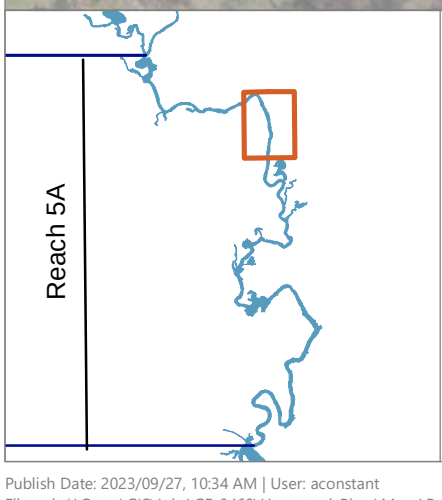
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:34 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-1b
In-River Sediment Thiessen Polygon Extents by Depth Interval (0 to 0.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

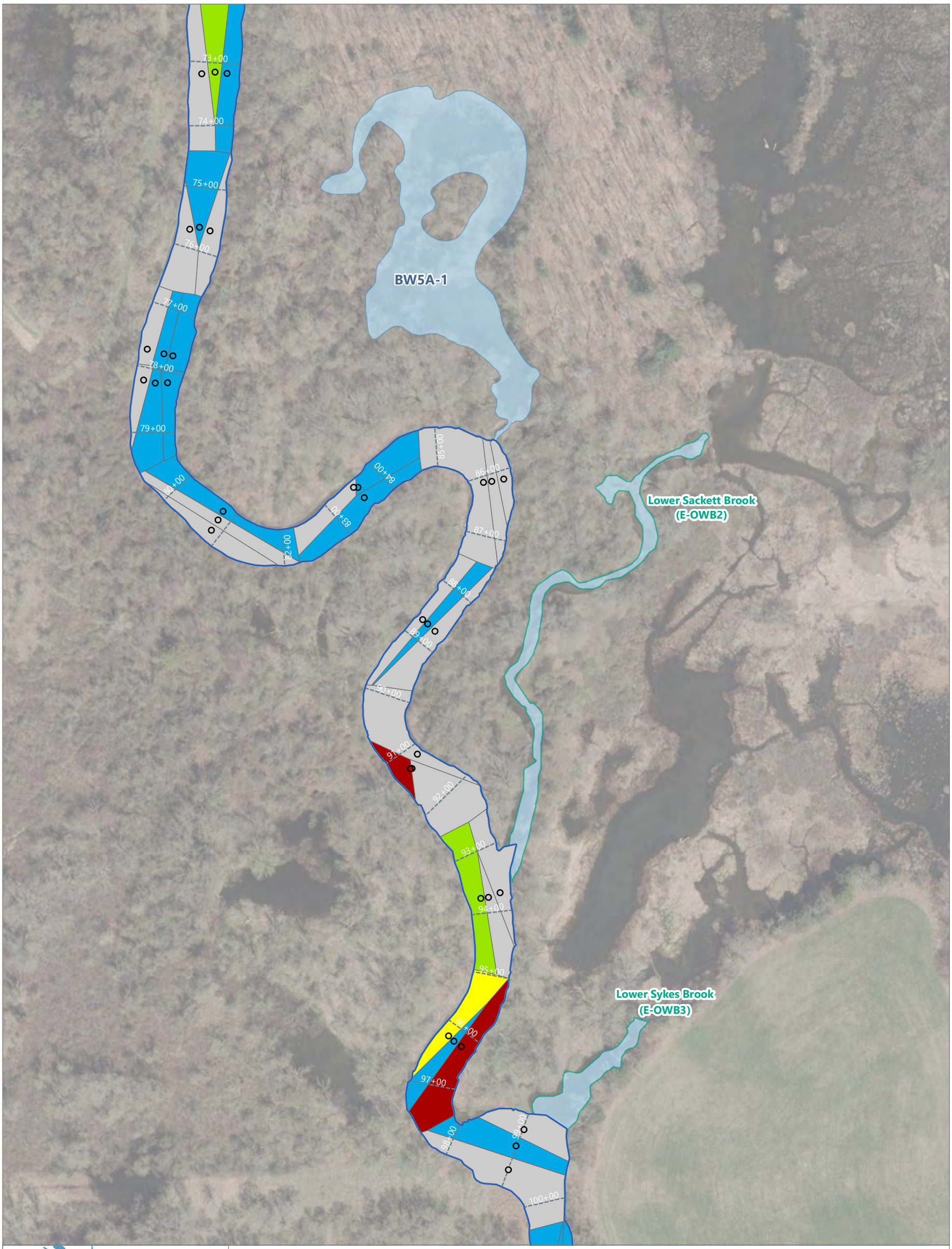
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

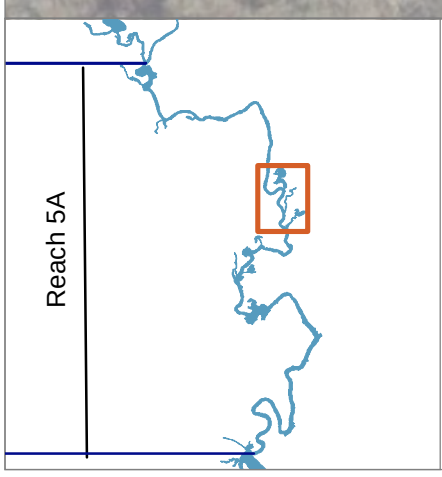
0 170
Feet

Publish Date: 2023/09/27, 10:34 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-1c
In-River Sediment Thiessen Polygon Extents by Depth Interval (0 to 0.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

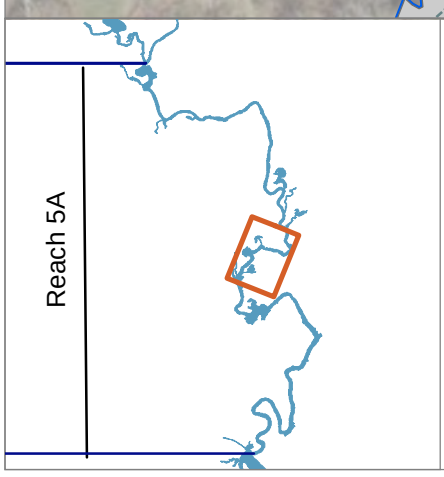
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:34 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-1d
In-River Sediment Thiessen Polygon Extents by Depth Interval (0 to 0.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

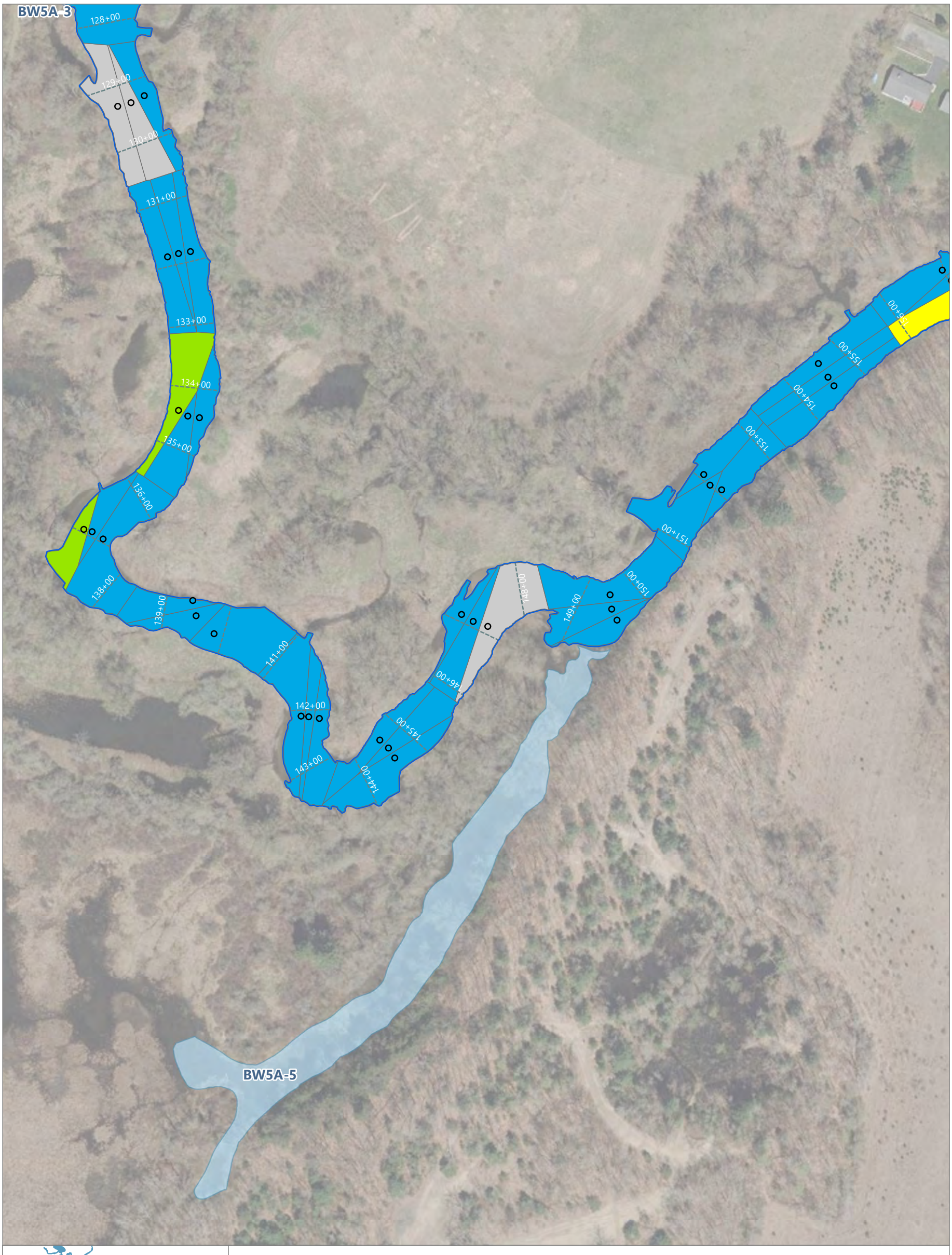
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

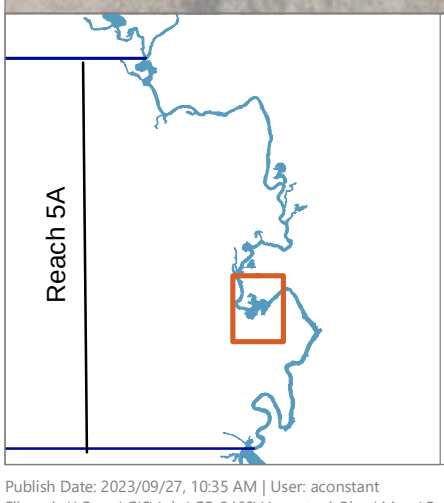
0 170
Feet

Publish Date: 2023/09/27, 10:34 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-1e
In-River Sediment Thiessen Polygon Extents by Depth Interval (0 to 0.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

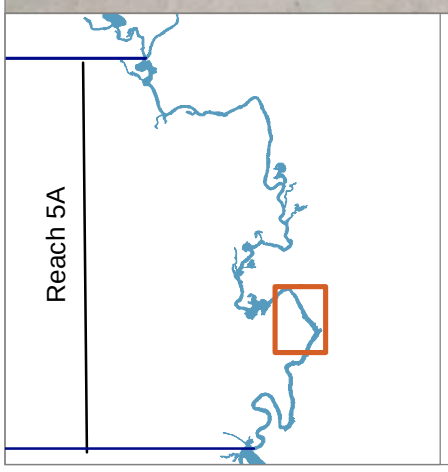
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:35 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-1f
In-River Sediment Thiessen Polygon Extents by Depth Interval (0 to 0.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

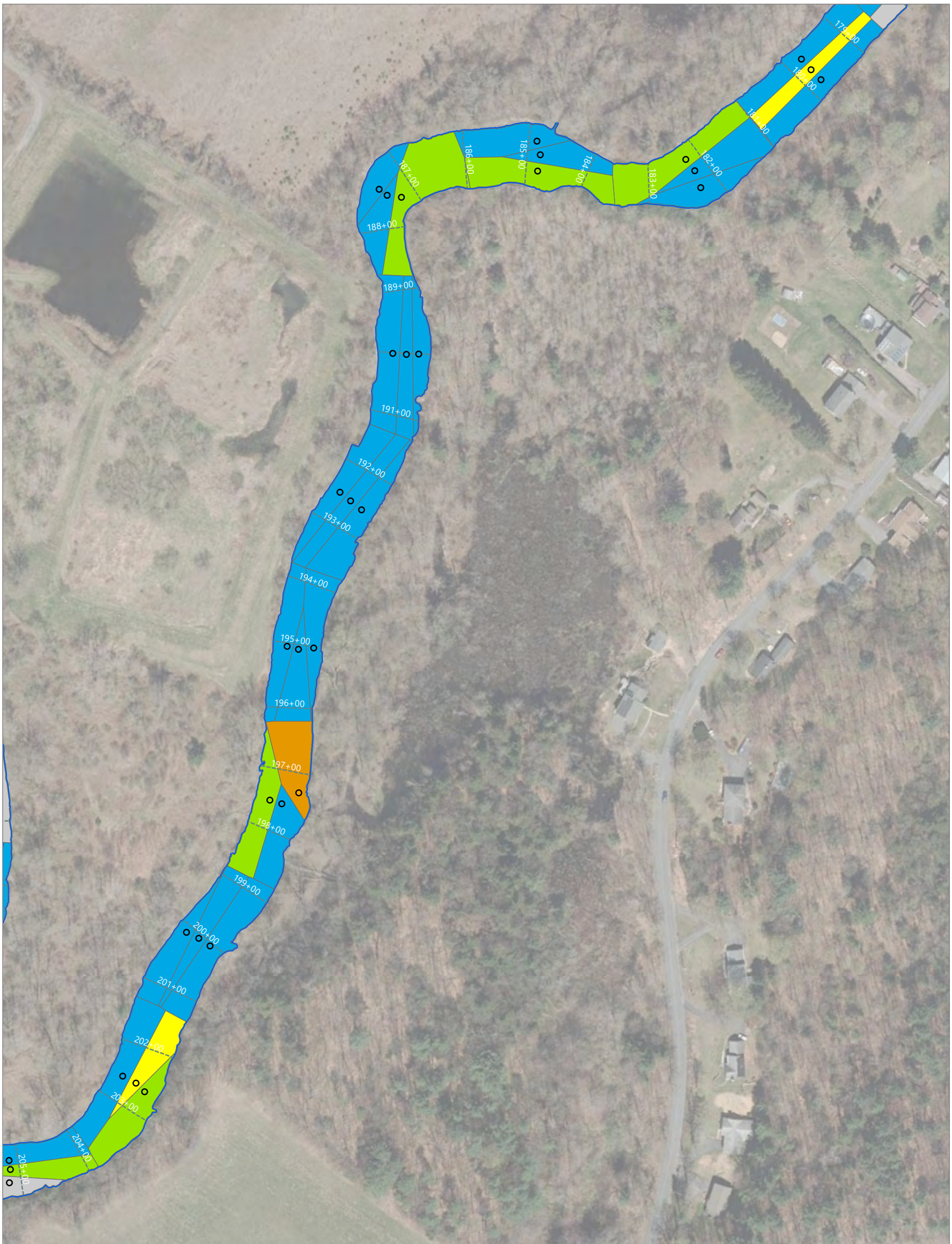
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

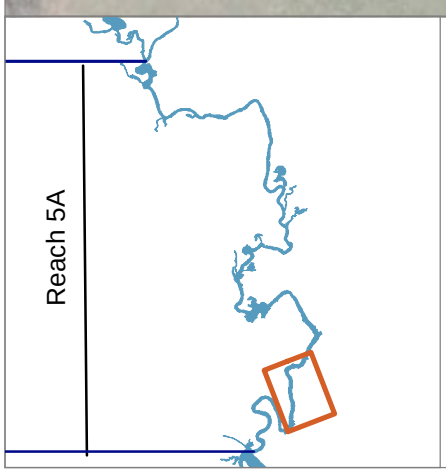
0 170
Feet

Publish Date: 2023/09/27, 10:35 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-1g
In-River Sediment Thiessen Polygon Extents by Depth Interval (0 to 0.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

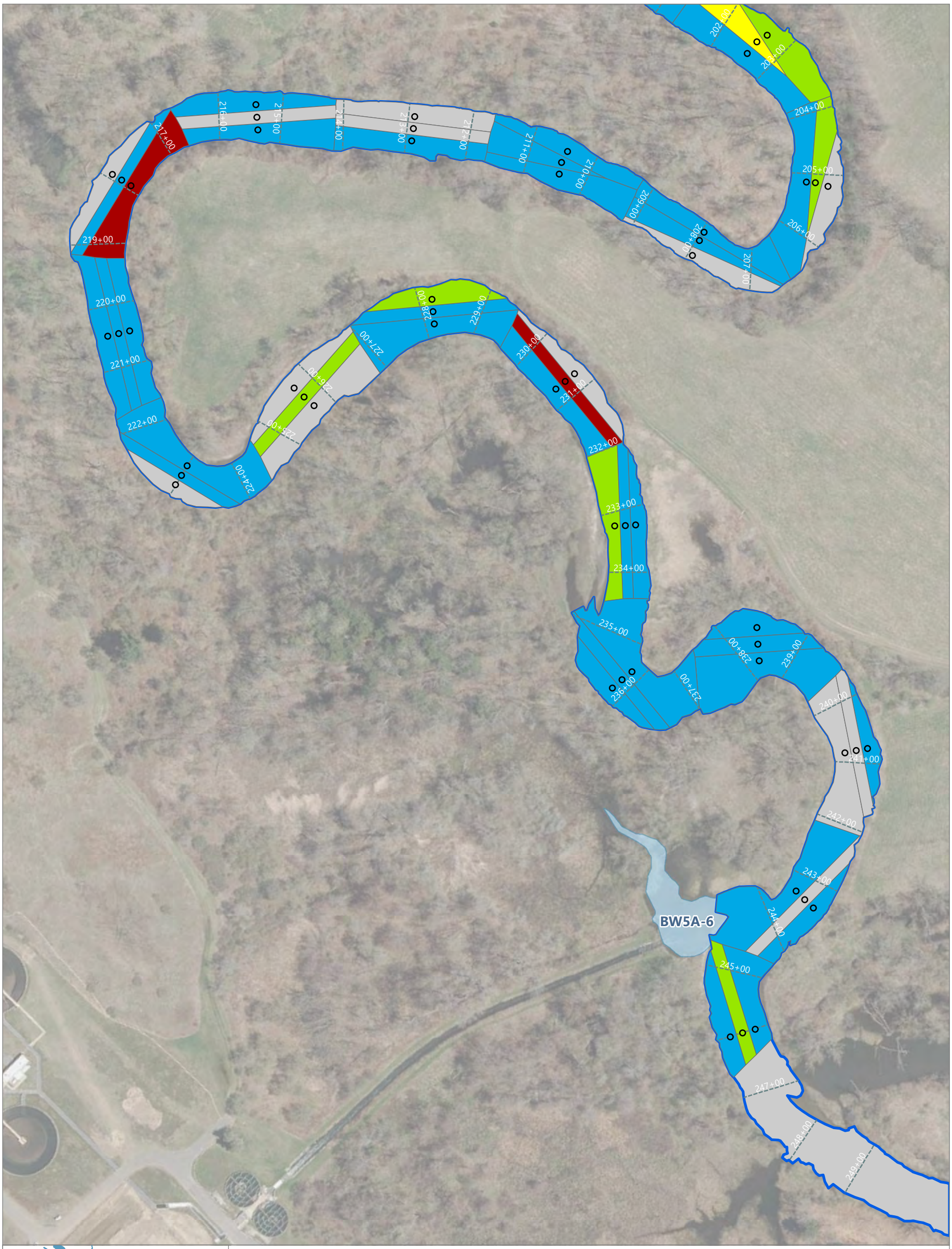
0 170
Feet

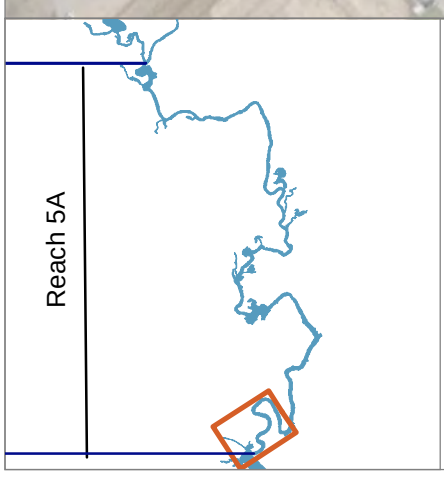
Publish Date: 2023/09/27, 10:35 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-1h
In-River Sediment Thiessen Polygon Extents by Depth Interval (0 to 0.5 ft)

PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

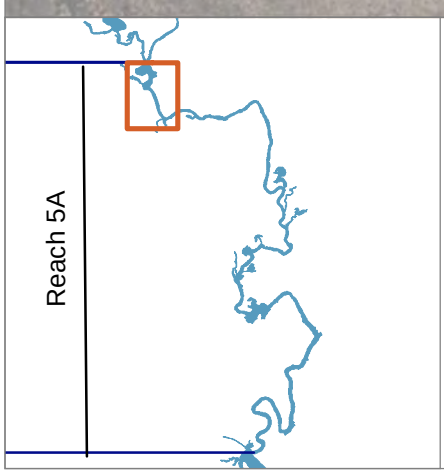
0 170
Feet

Publish Date: 2023/09/27, 10:35 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-1i
In-River Sediment Thiessen Polygon Extents by Depth Interval (0 to 0.5 ft)

PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

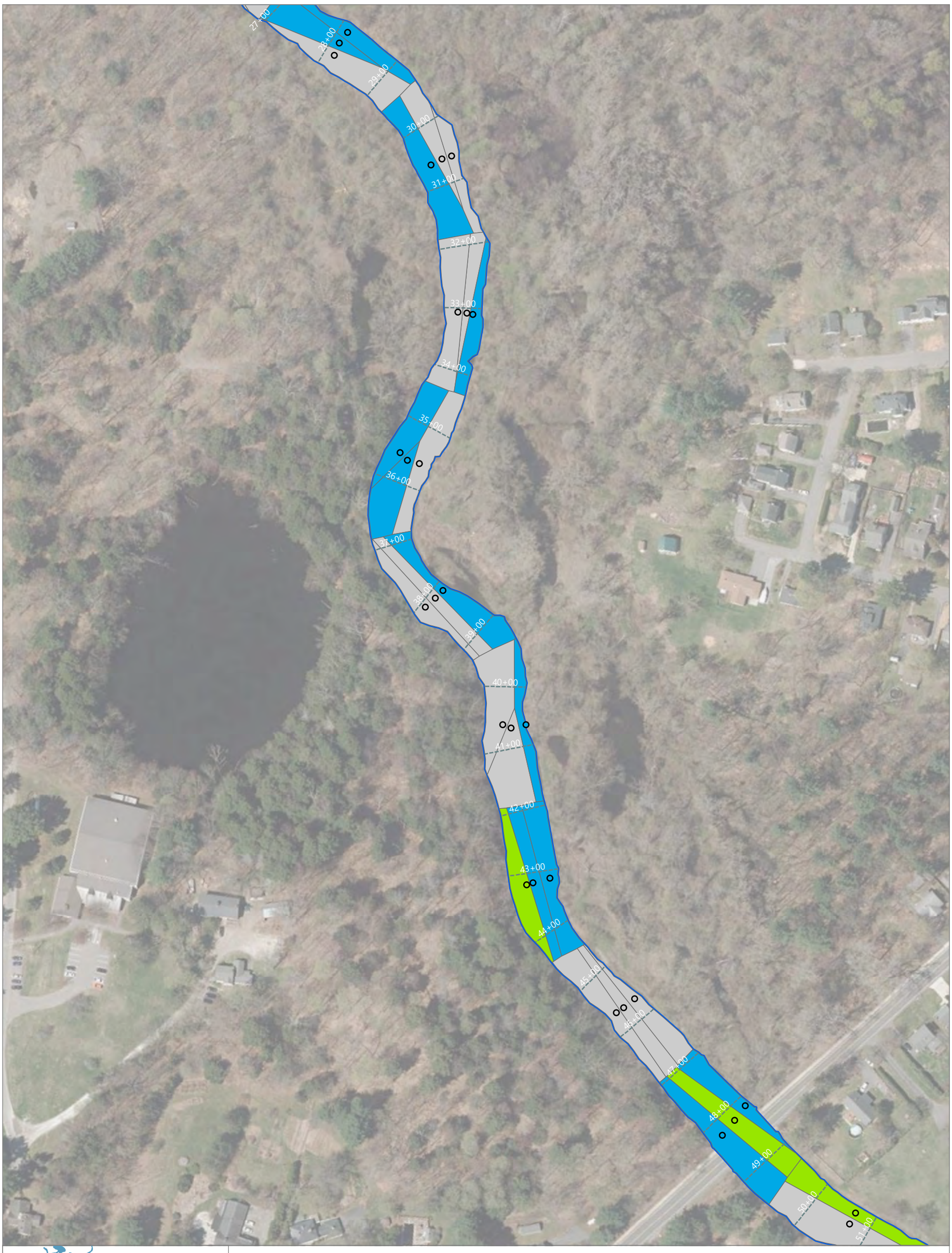
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

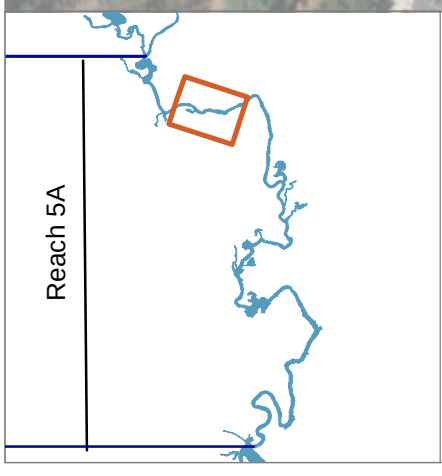
0 170
Feet

Publish Date: 2023/09/27, 10:35 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-2a
In-River Sediment Thiessen Polygon Extents by Depth Interval (0.5 to 1 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

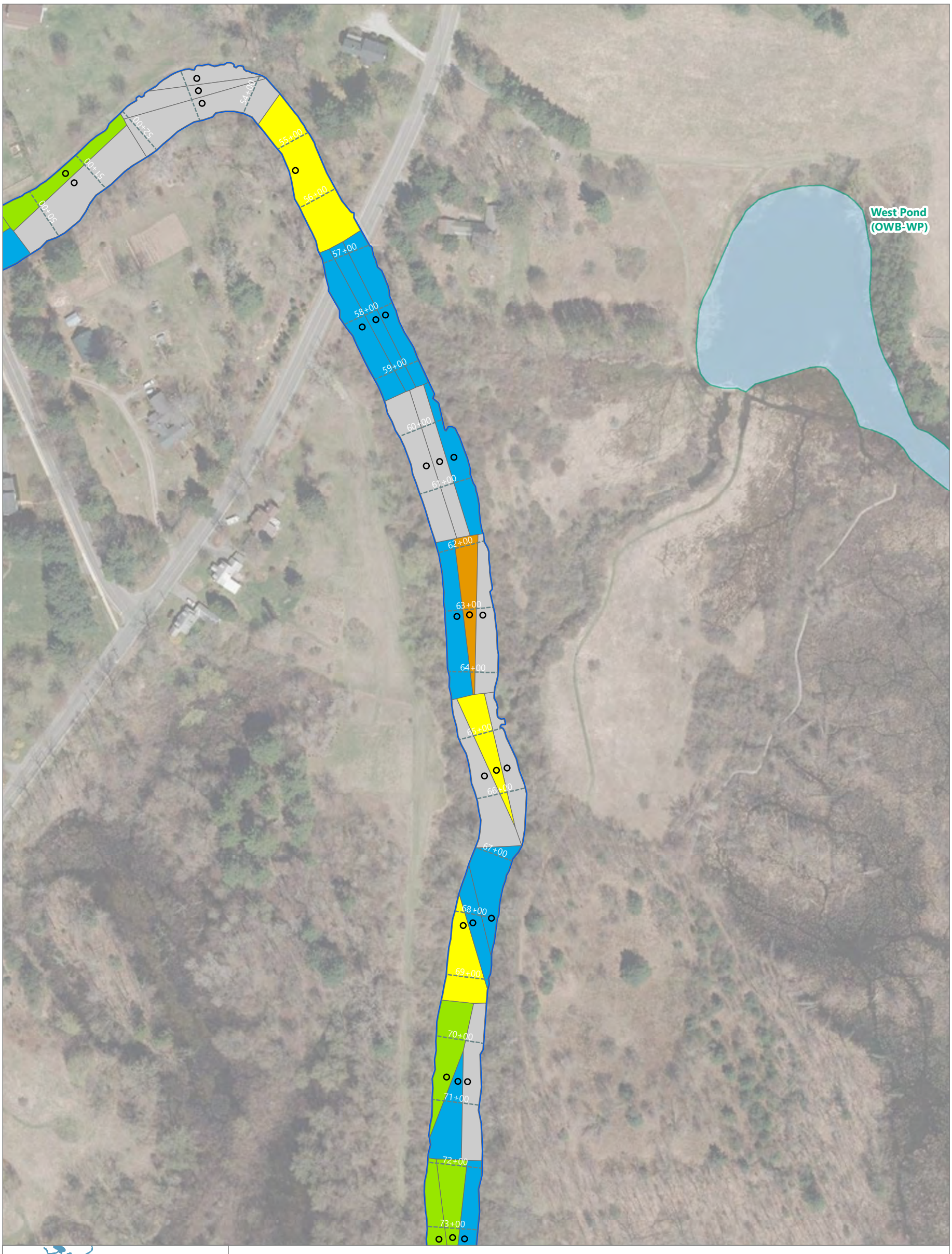
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

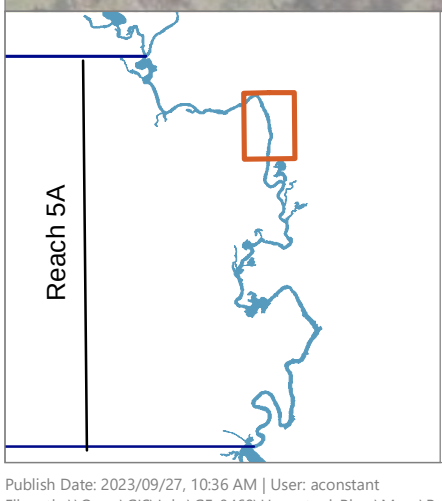
0 170
Feet

Publish Date: 2023/09/27, 10:35 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-2b
In-River Sediment Thiessen Polygon Extents by Depth Interval (0.5 to 1 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

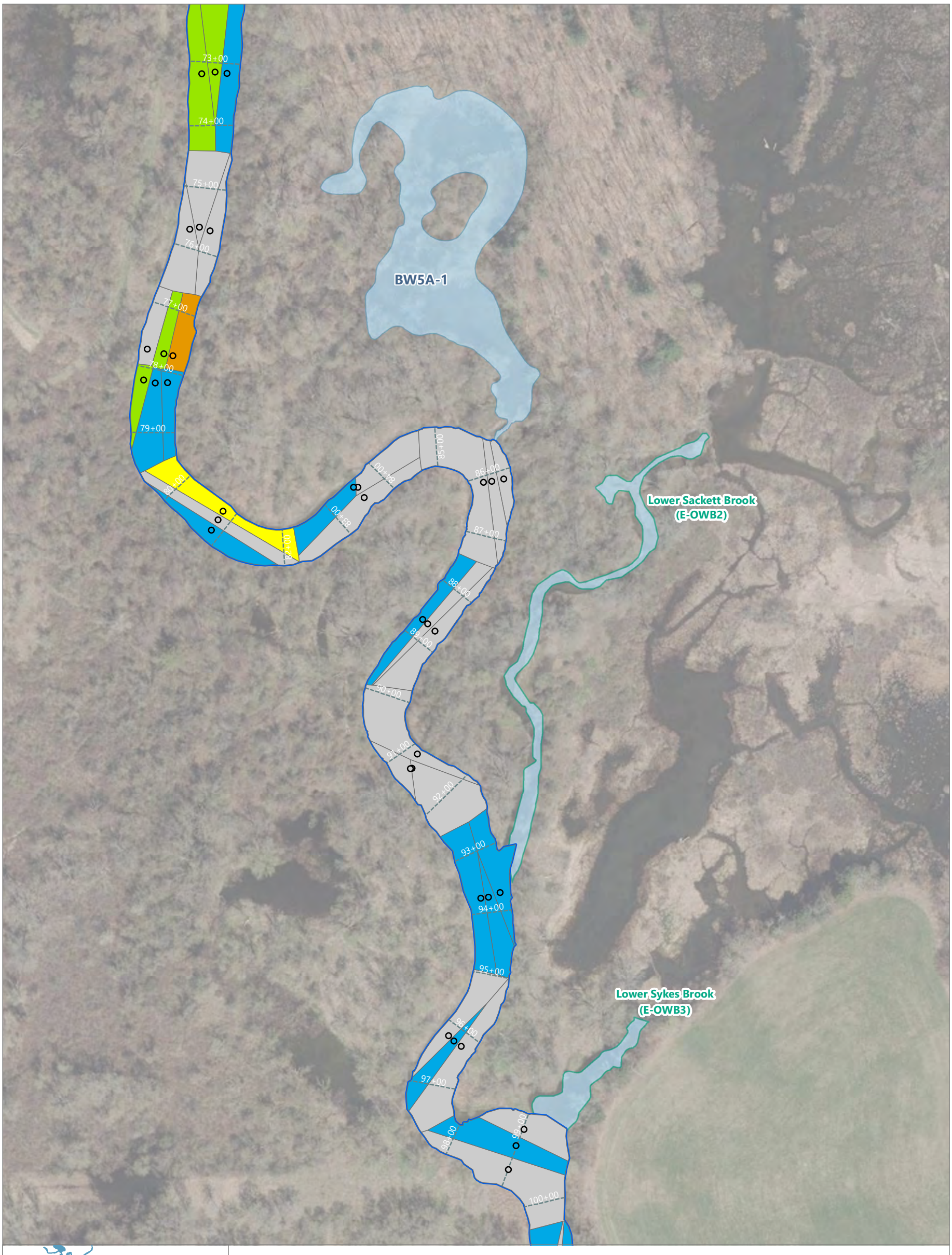
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

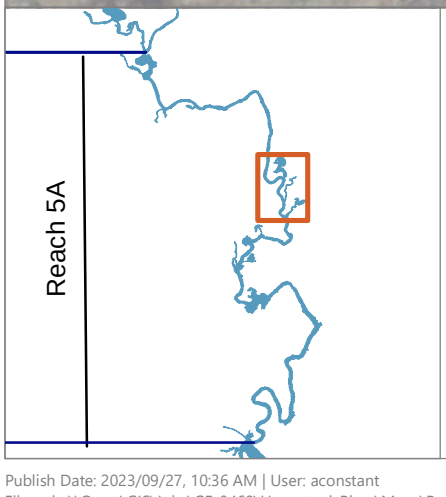
0 170
Feet

Publish Date: 2023/09/27, 10:36 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-2c
In-River Sediment Thiessen Polygon Extents by Depth Interval (0.5 to 1 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

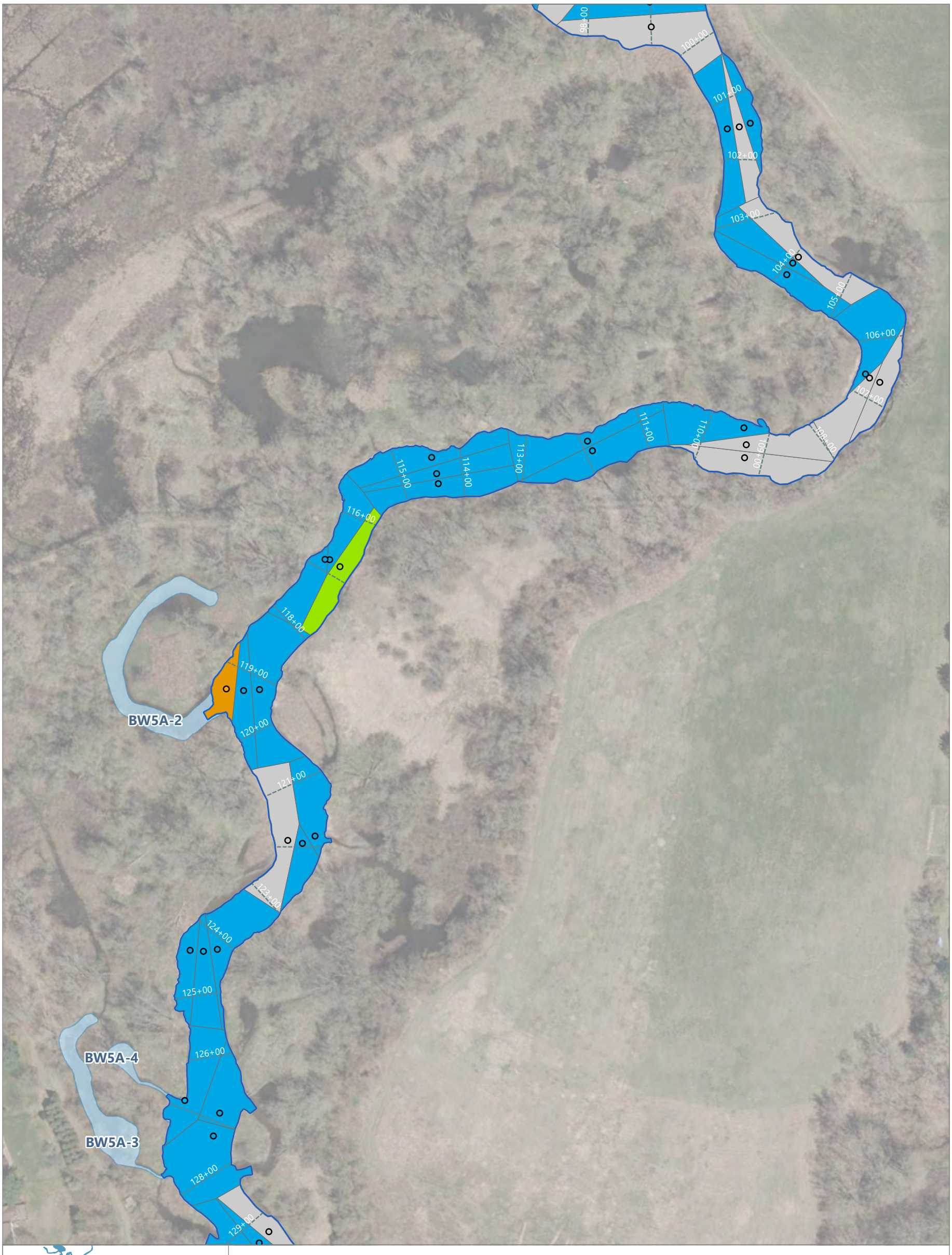
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

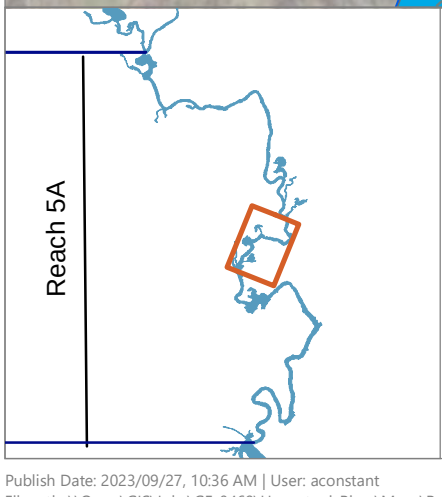
0 170
Feet

Publish Date: 2023/09/27, 10:36 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-2d
In-River Sediment Thiessen Polygon Extents by Depth Interval (0.5 to 1 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

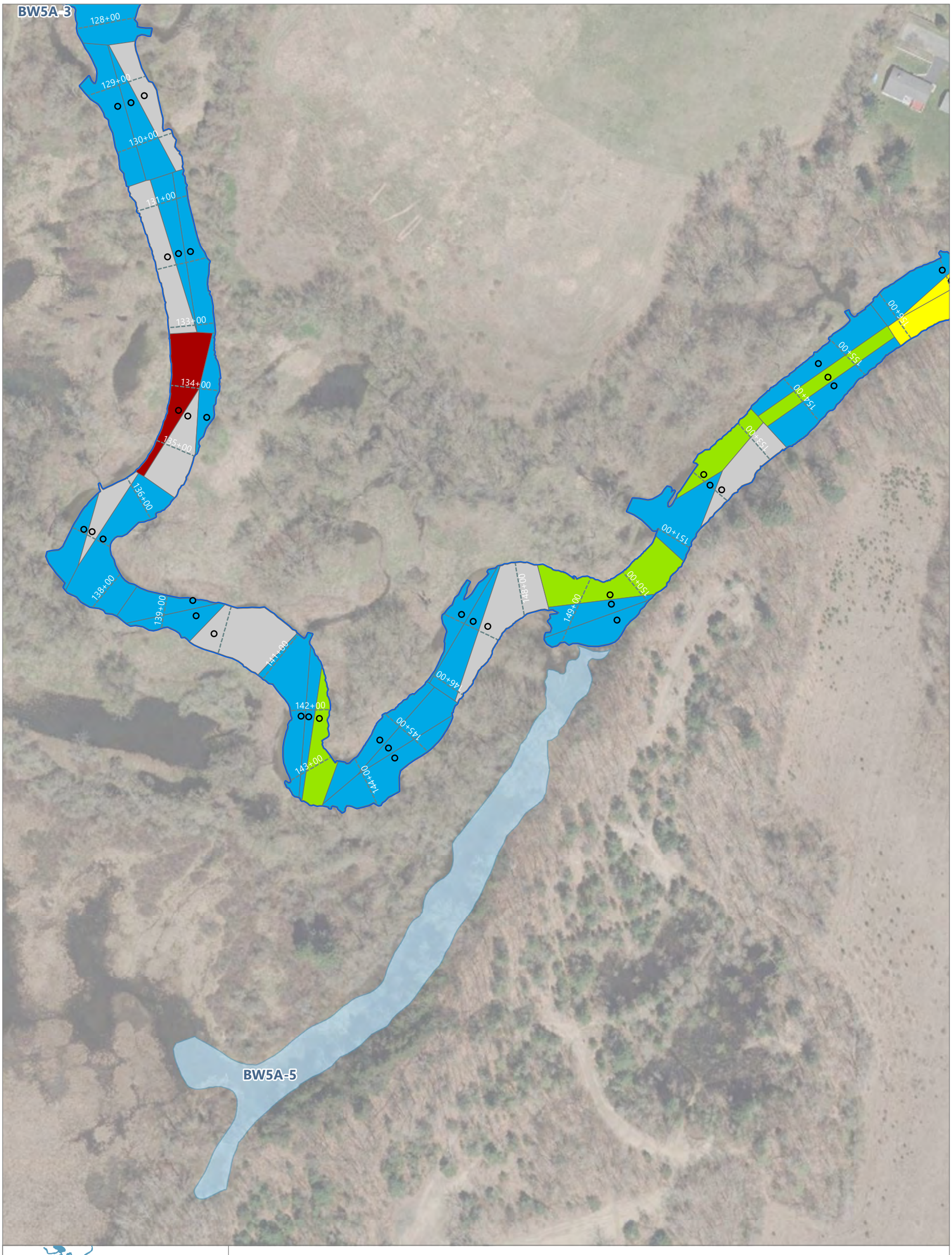
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

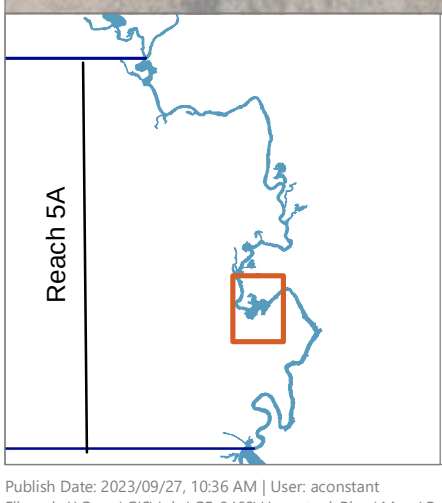
0 170
Feet

Publish Date: 2023/09/27, 10:36 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-2e
In-River Sediment Thiessen Polygon Extents by Depth Interval (0.5 to 1 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

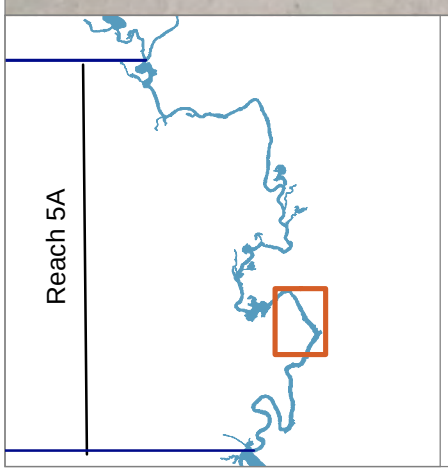
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:36 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-2f
In-River Sediment Thiessen Polygon Extents by Depth Interval (0.5 to 1 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

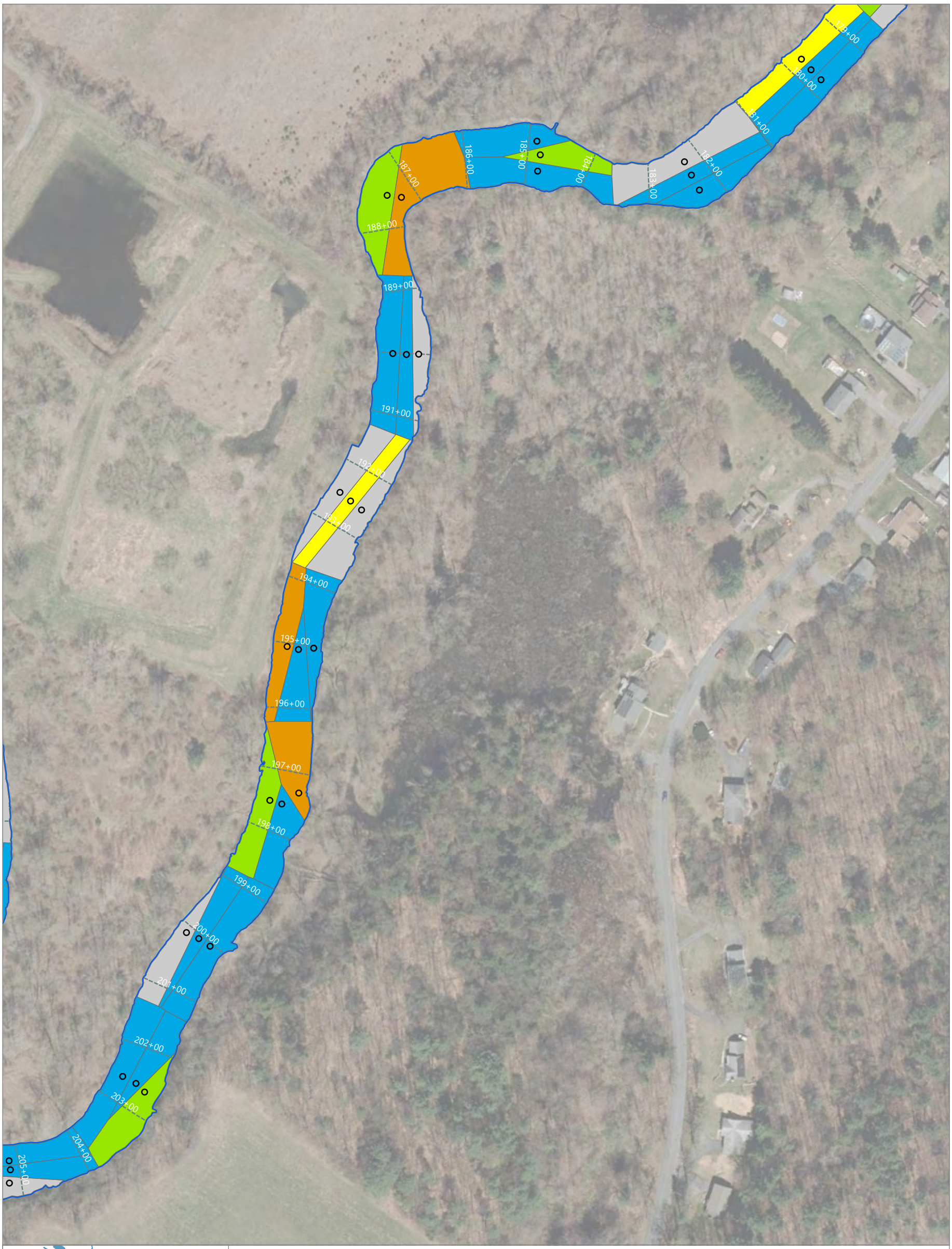
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

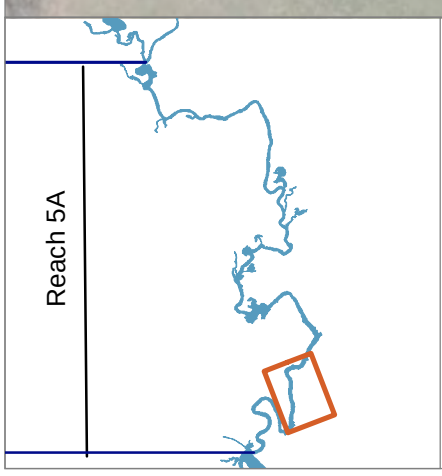
0 170
Feet

Publish Date: 2023/09/27, 10:36 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-2g
In-River Sediment Thiessen Polygon Extents by Depth Interval (0.5 to 1 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

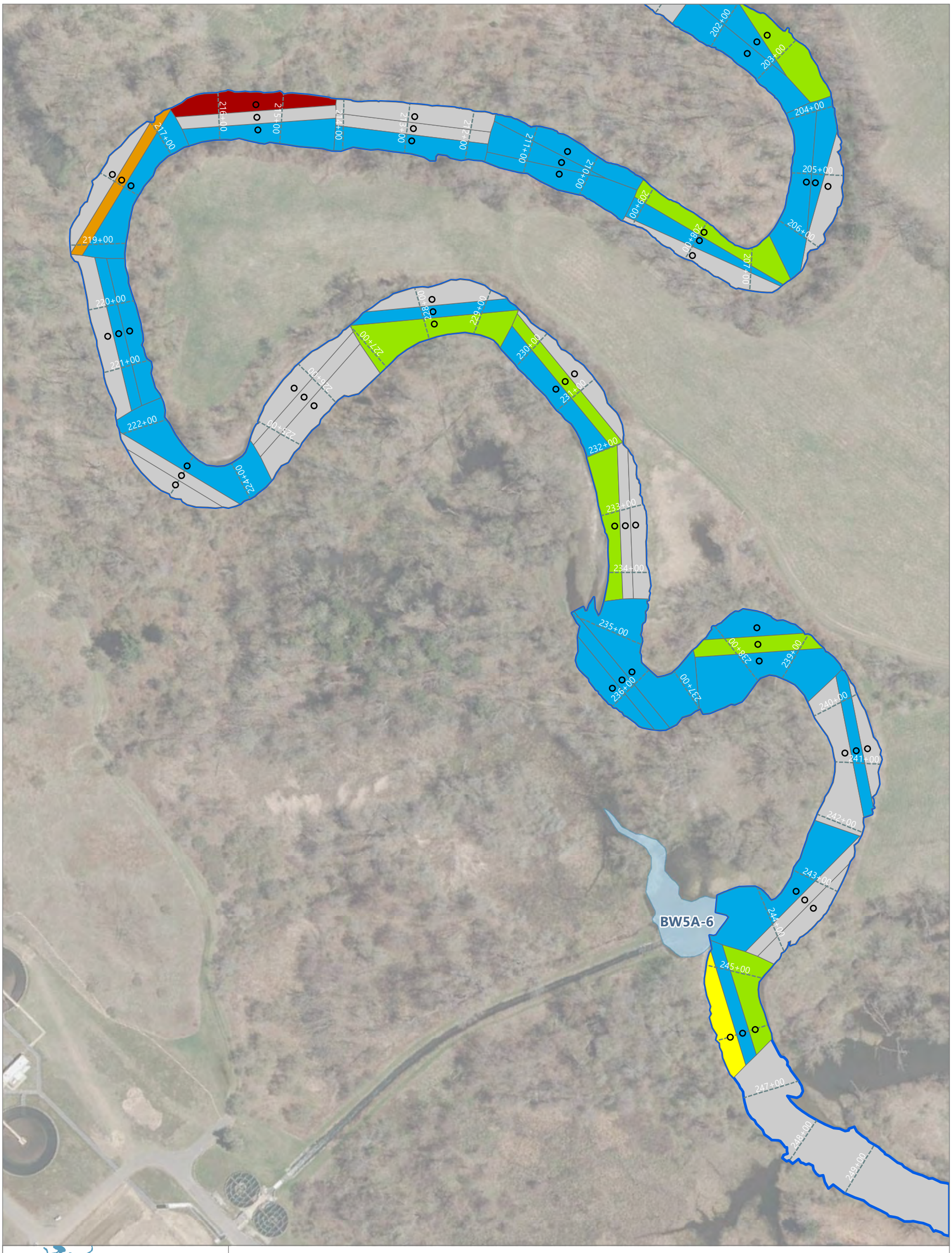
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

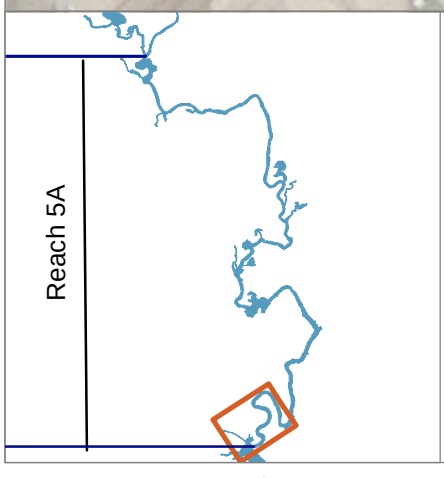
0 170
Feet

Publish Date: 2023/09/27, 10:36 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-2h
In-River Sediment Thiessen Polygon Extents by Depth Interval (0.5 to 1 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

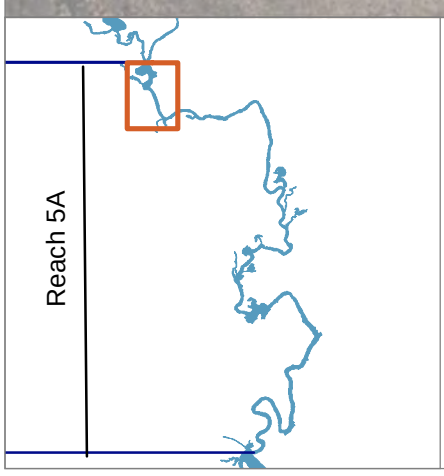
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:36 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-2i
In-River Sediment Thiessen Polygon Extents by Depth Interval (0.5 to 1 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

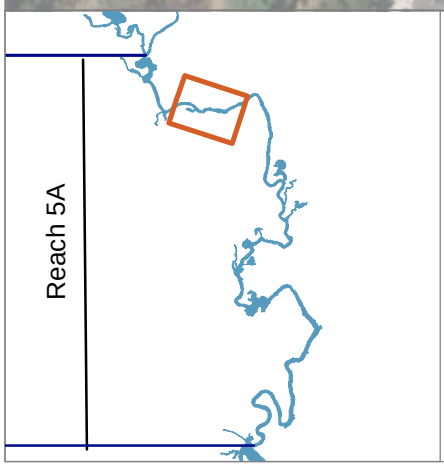
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:37 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-3a
In-River Sediment Thiessen Polygon Extents by Depth Interval (1 to 1.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

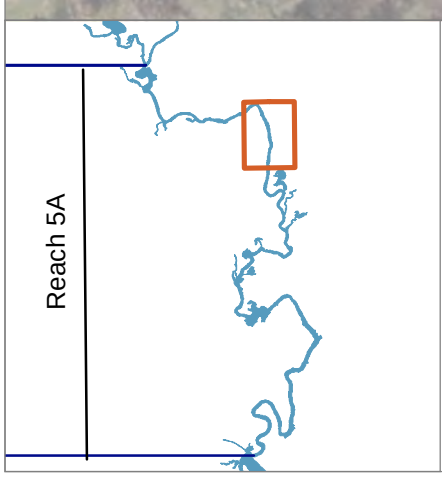
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:37 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-3b
In-River Sediment Thiessen Polygon Extents by Depth Interval (1 to 1.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

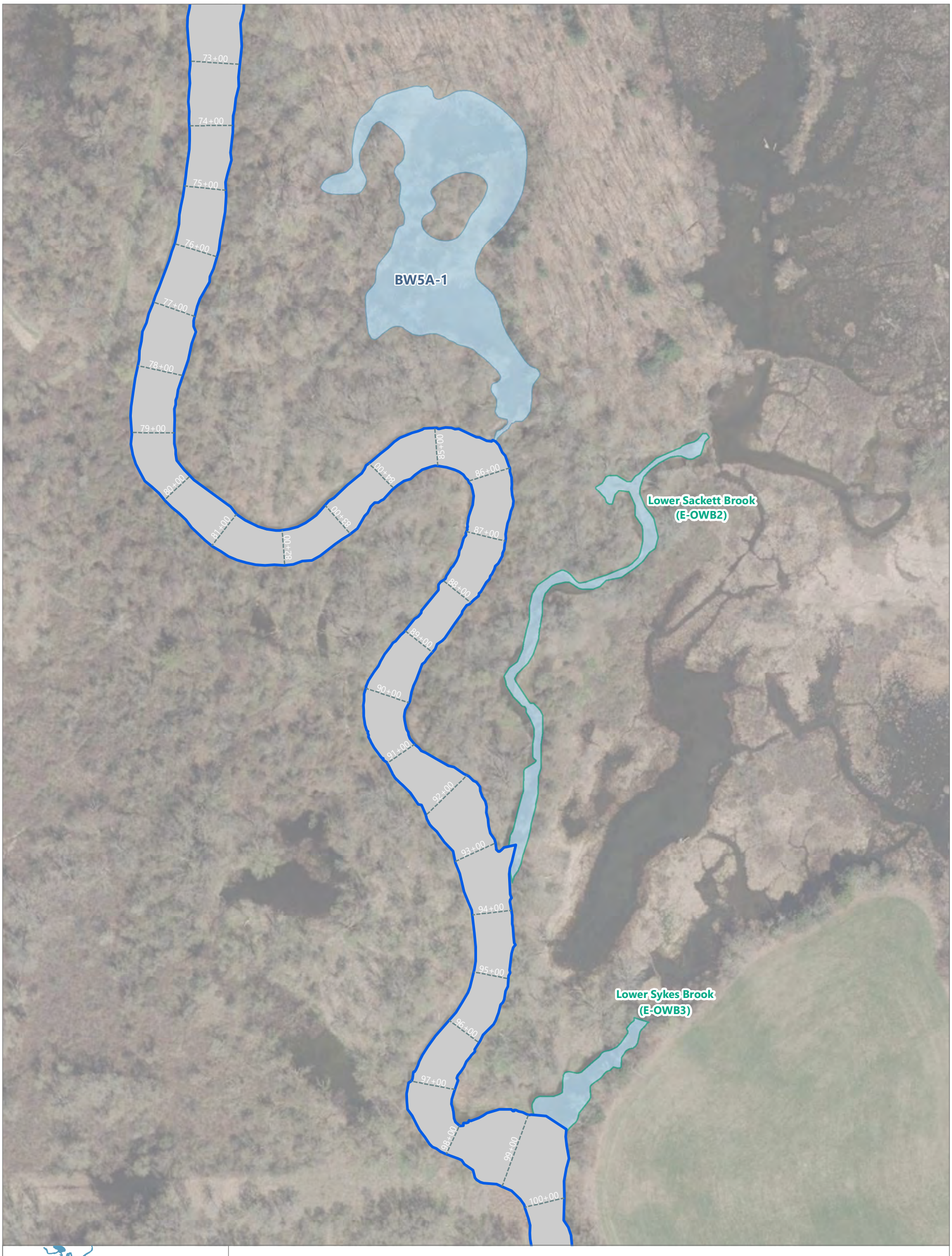
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

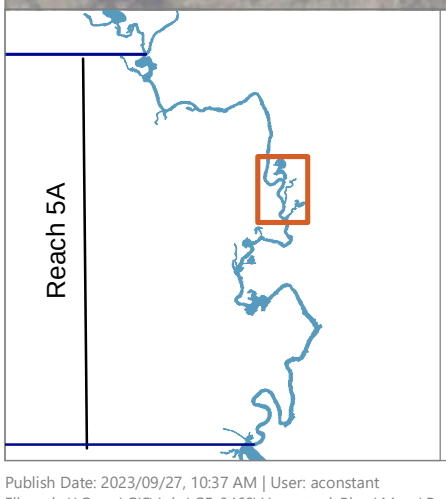
0 170
Feet

Publish Date: 2023/09/27, 10:37 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-3c
In-River Sediment Thiessen Polygon Extents by Depth Interval (1 to 1.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

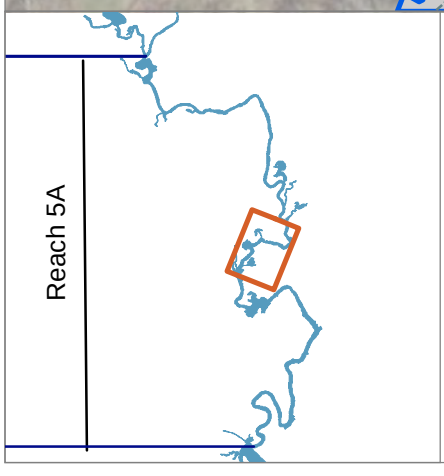
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:37 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-3d
In-River Sediment Thiessen Polygon Extents by Depth Interval (1 to 1.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

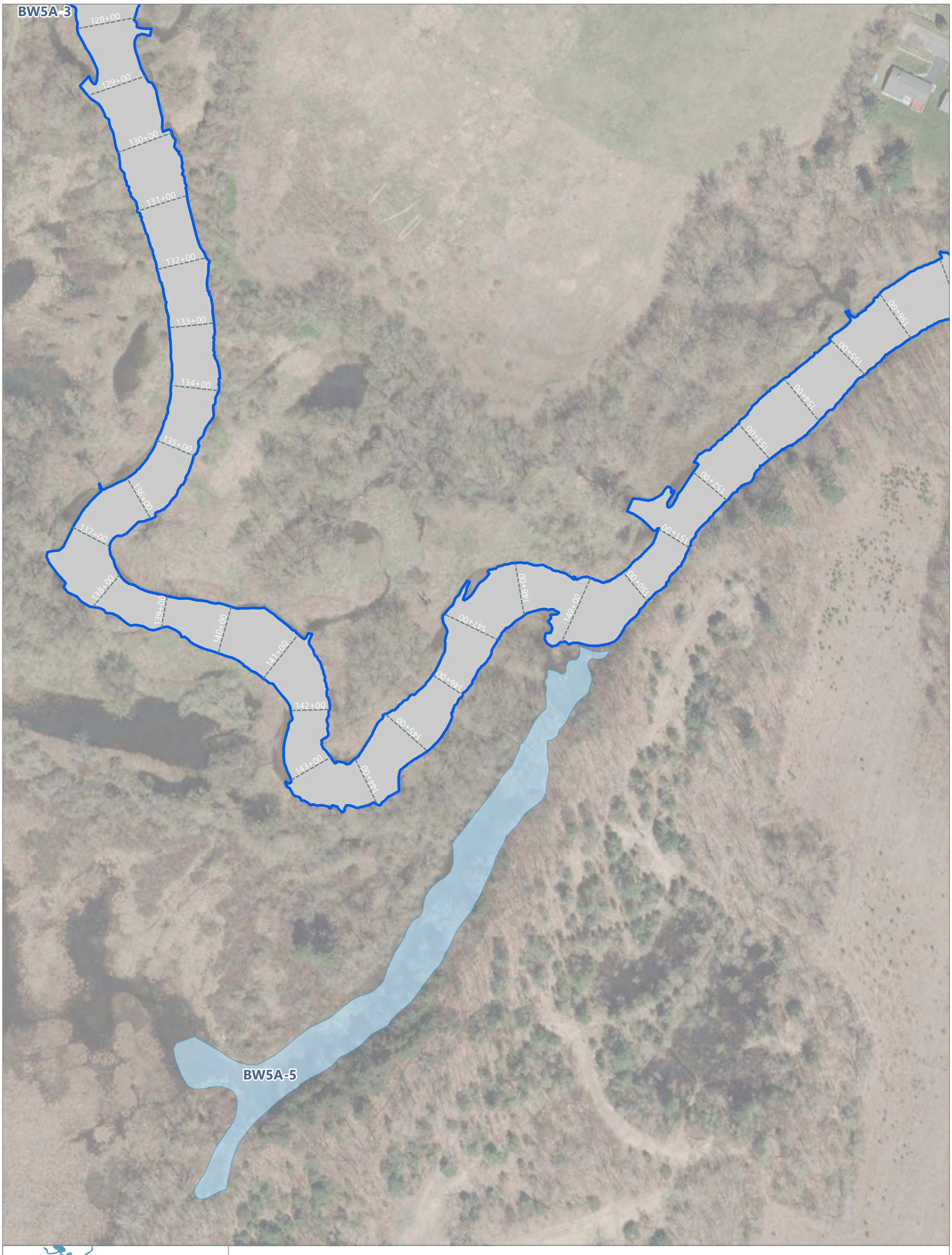
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

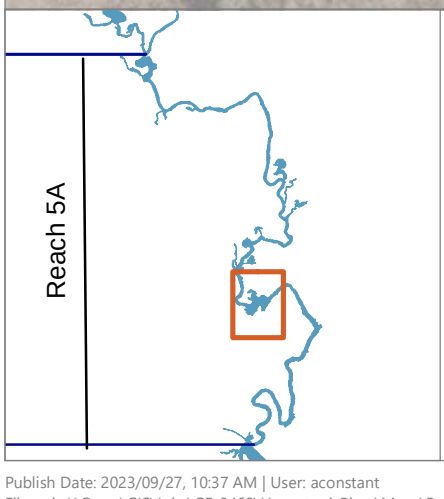
0 170
Feet

Publish Date: 2023/09/27, 10:37 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-3e
In-River Sediment Thiessen Polygon Extents by Depth Interval (1 to 1.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

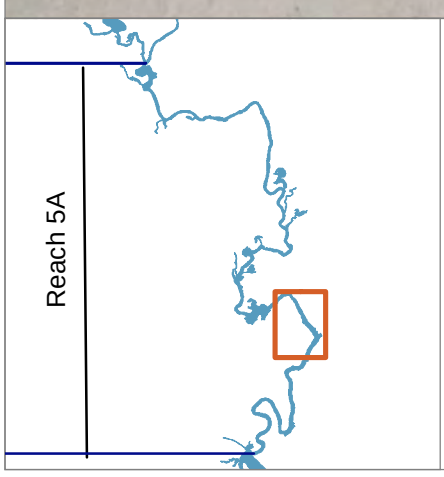
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:37 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-3f
In-River Sediment Thiessen Polygon Extents by Depth Interval (1 to 1.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

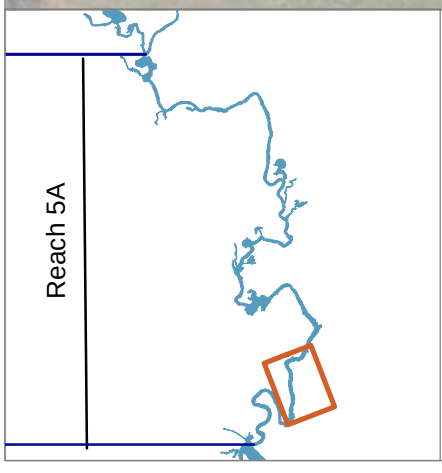
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:38 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-3g
In-River Sediment Thiessen Polygon Extents by Depth Interval (1 to 1.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

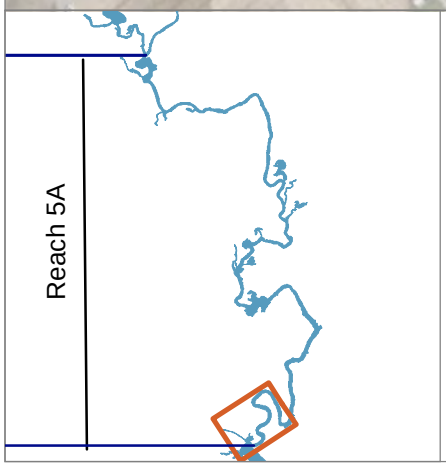
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:38 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-3h
In-River Sediment Thiessen Polygon Extents by Depth Interval (1 to 1.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

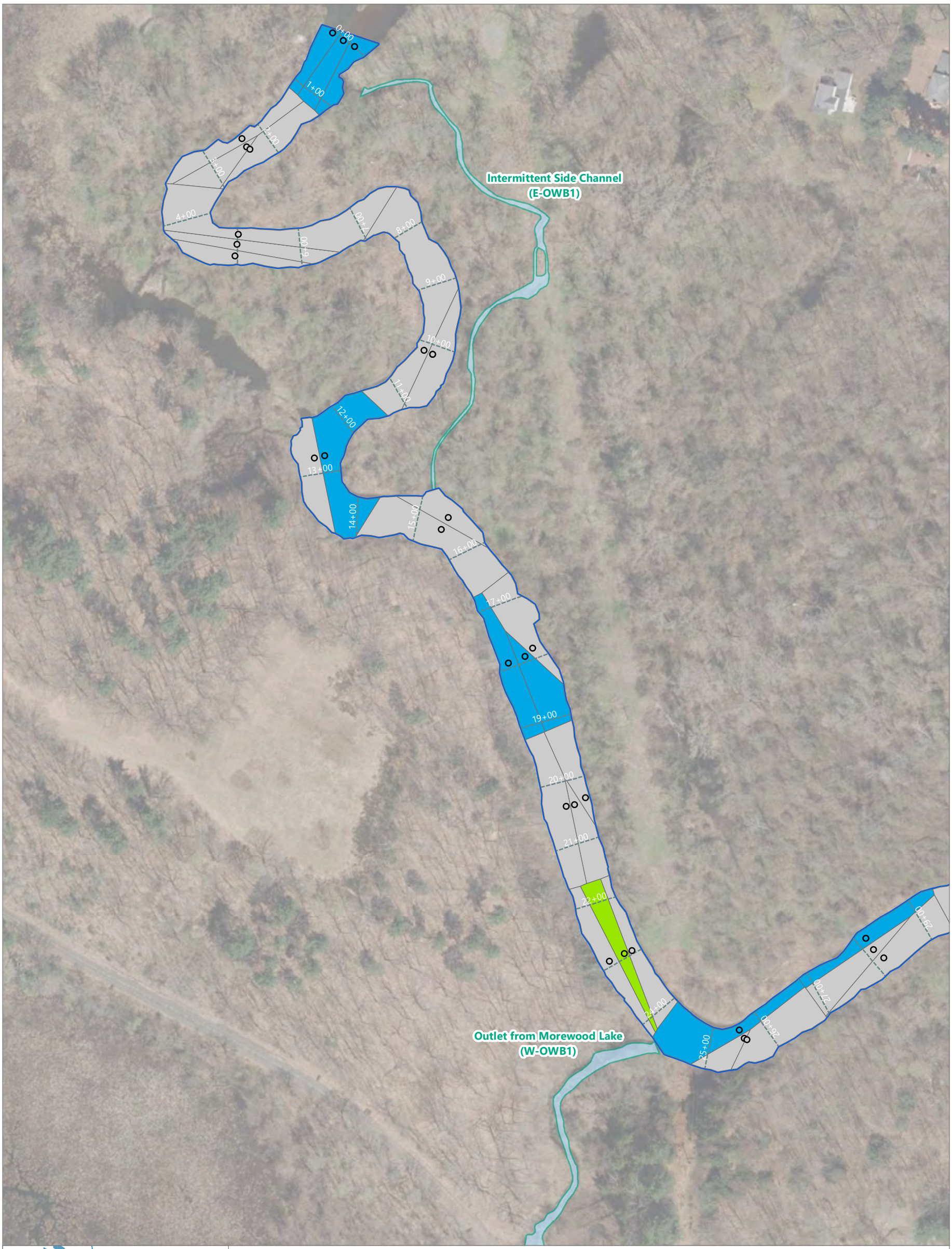
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

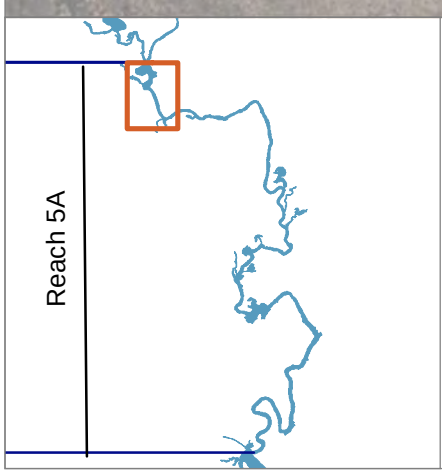
0 170
Feet

Publish Date: 2023/09/27, 10:38 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-3i
In-River Sediment Thiessen Polygon Extents by Depth Interval (1 to 1.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

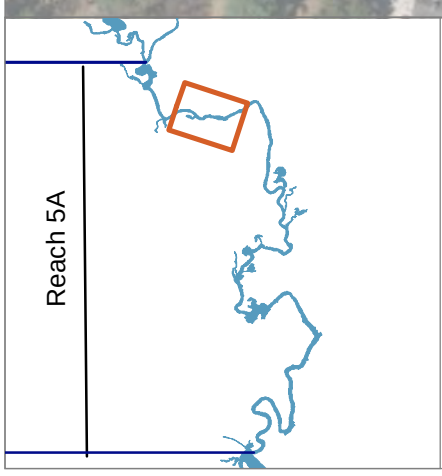
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:38 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-4a
In-River Sediment Thiessen Polygon Extents by Depth Interval (1.5 to 2 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

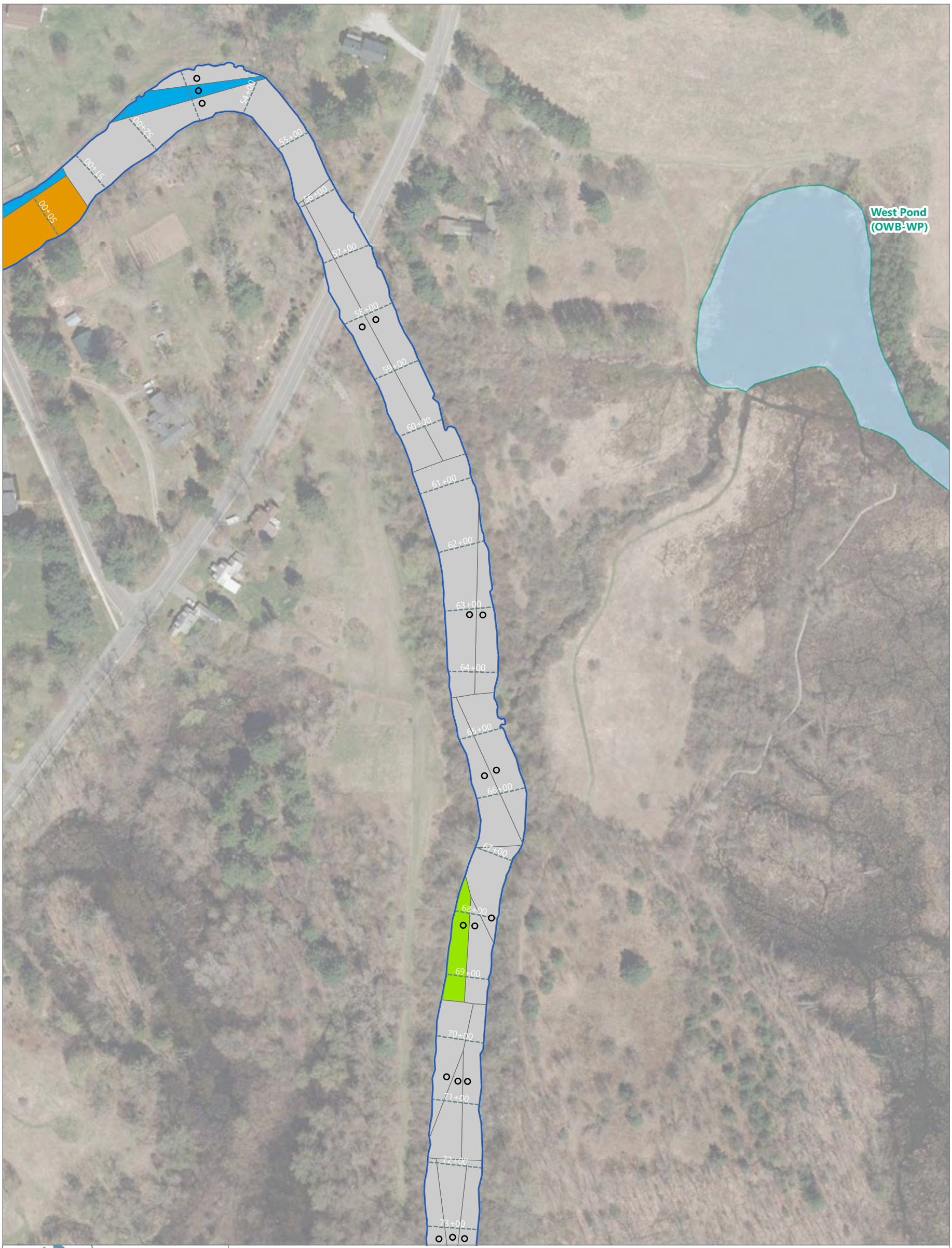
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

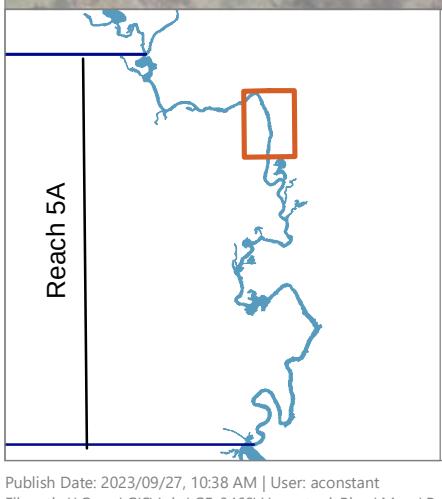
0 170
Feet

Publish Date: 2023/09/27, 10:38 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-4b
In-River Sediment Thiessen Polygon Extents by Depth Interval (1.5 to 2 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

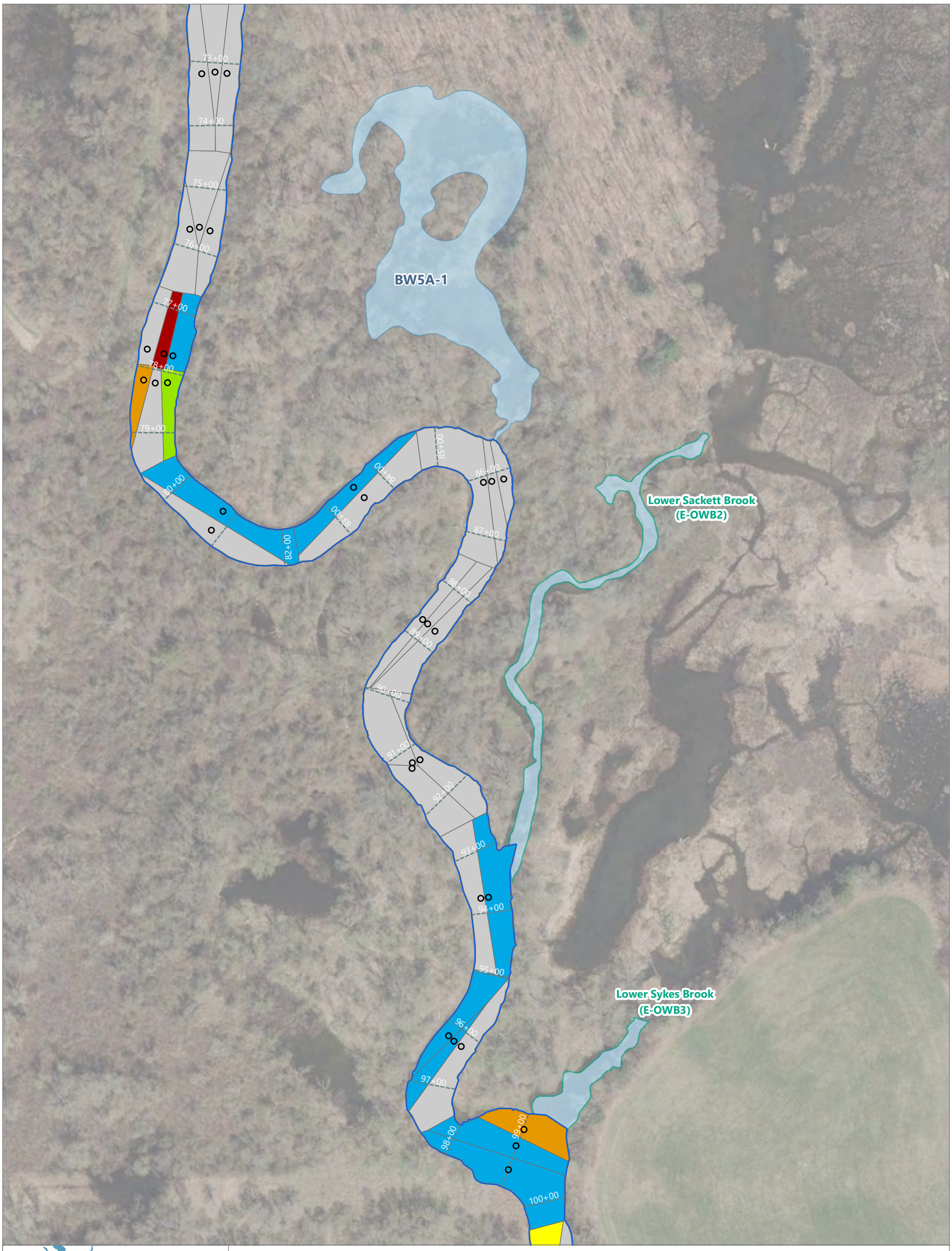
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

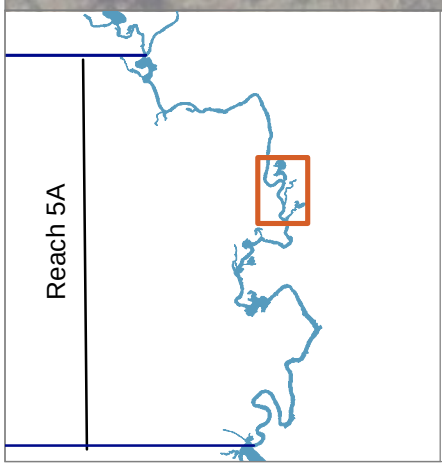
0 170
Feet

Publish Date: 2023/09/27, 10:38 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-4c
In-River Sediment Thiessen Polygon Extents by Depth Interval (1.5 to 2 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

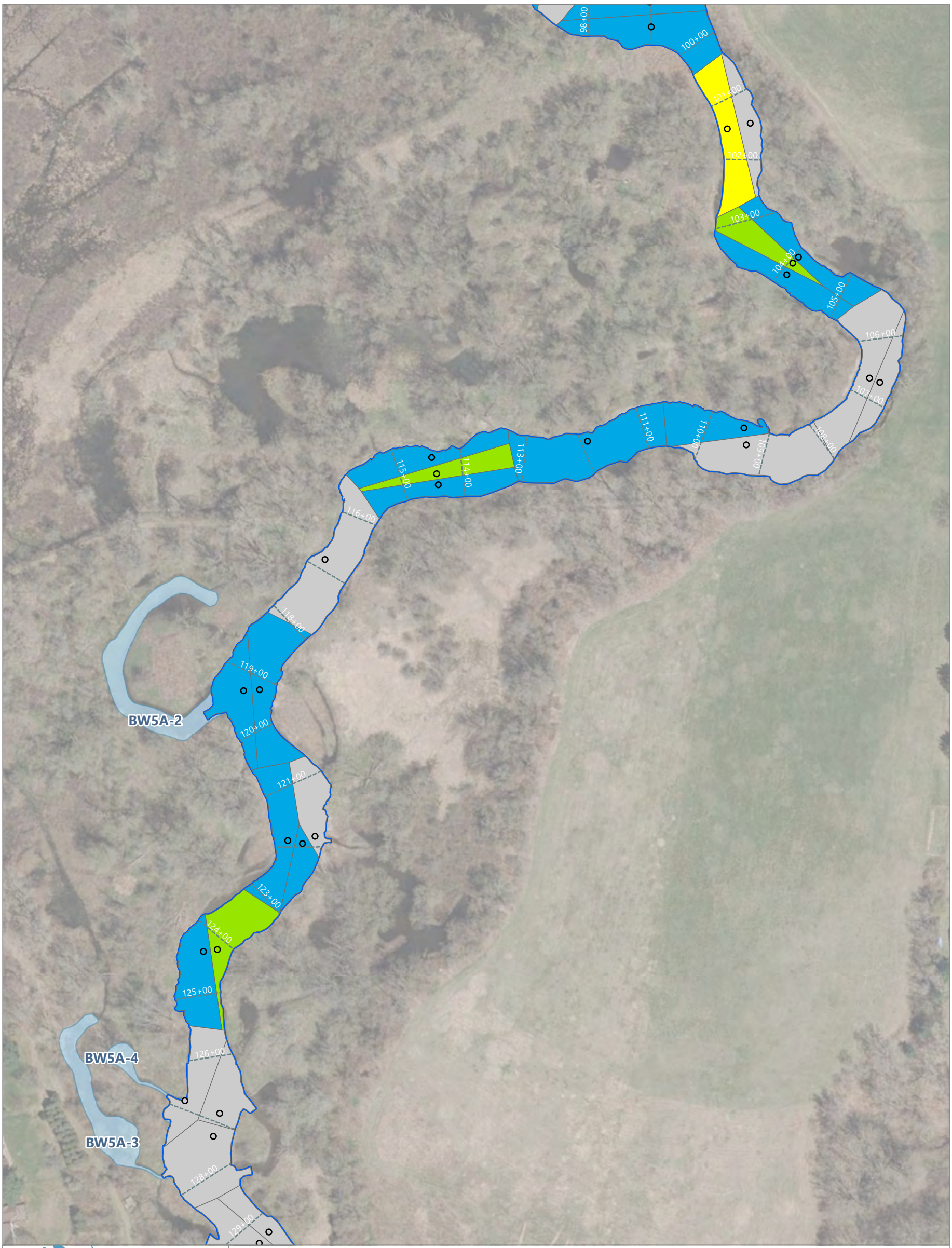
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

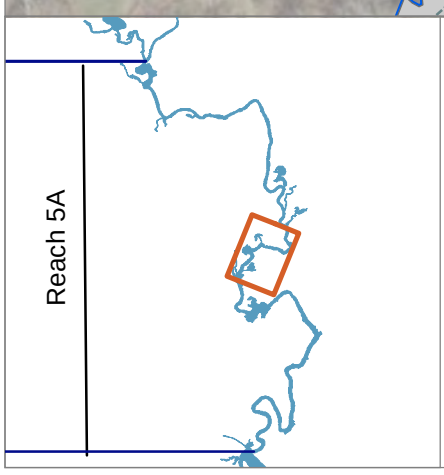
0 170
Feet

Publish Date: 2023/09/27, 10:38 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-4d
In-River Sediment Thiessen Polygon Extents by Depth Interval (1.5 to 2 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

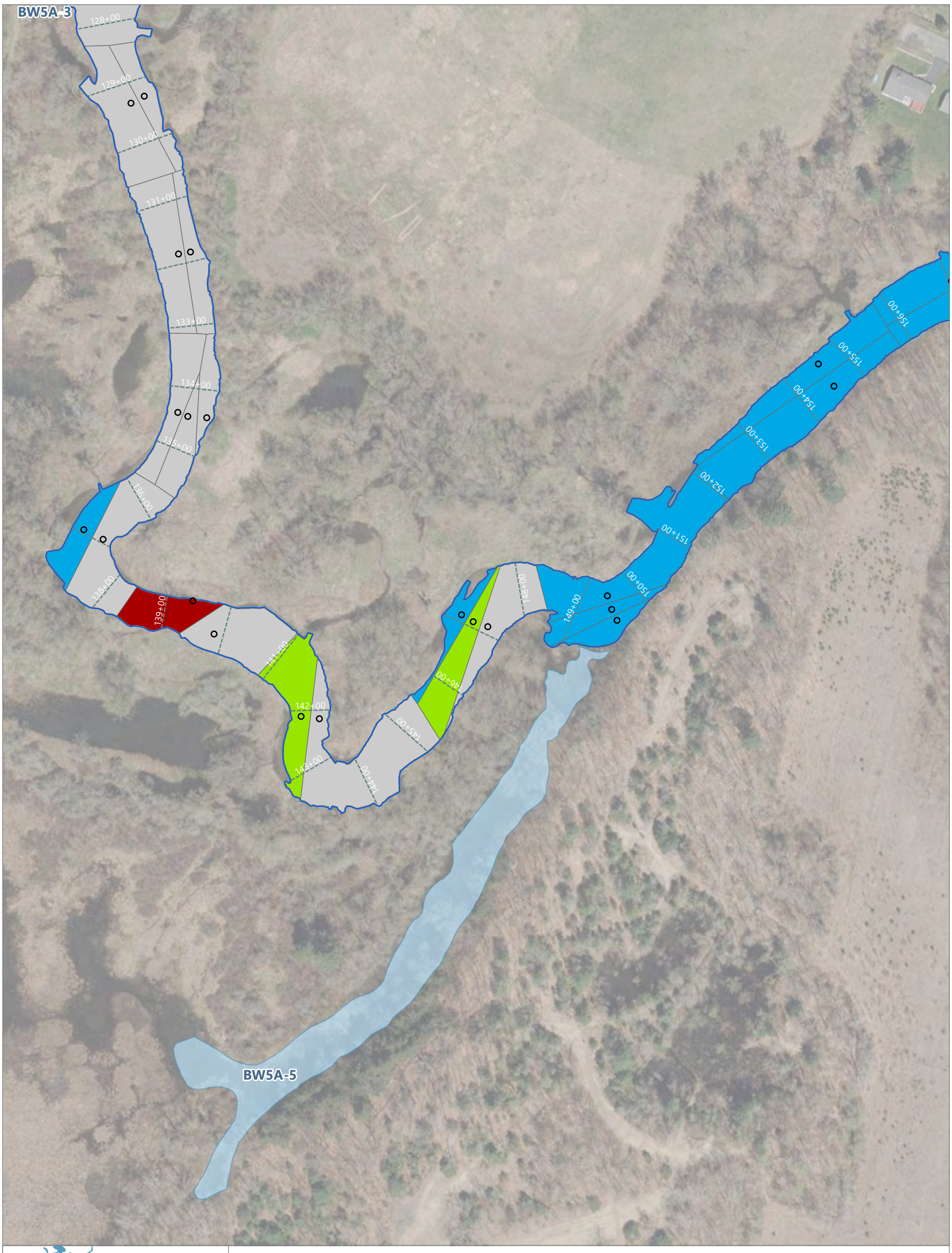
0 170
Feet

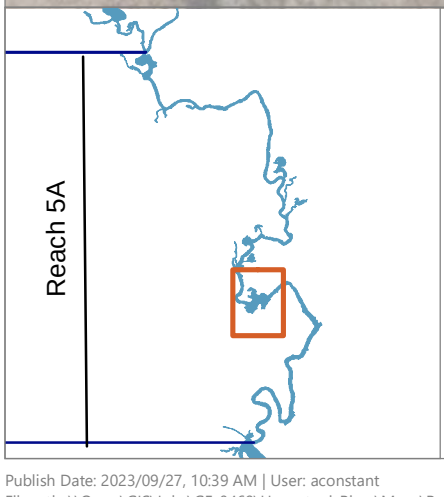
Publish Date: 2023/09/27, 10:39 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-4e
In-River Sediment Thiessen Polygon Extents by Depth Interval (1.5 to 2 ft)

PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

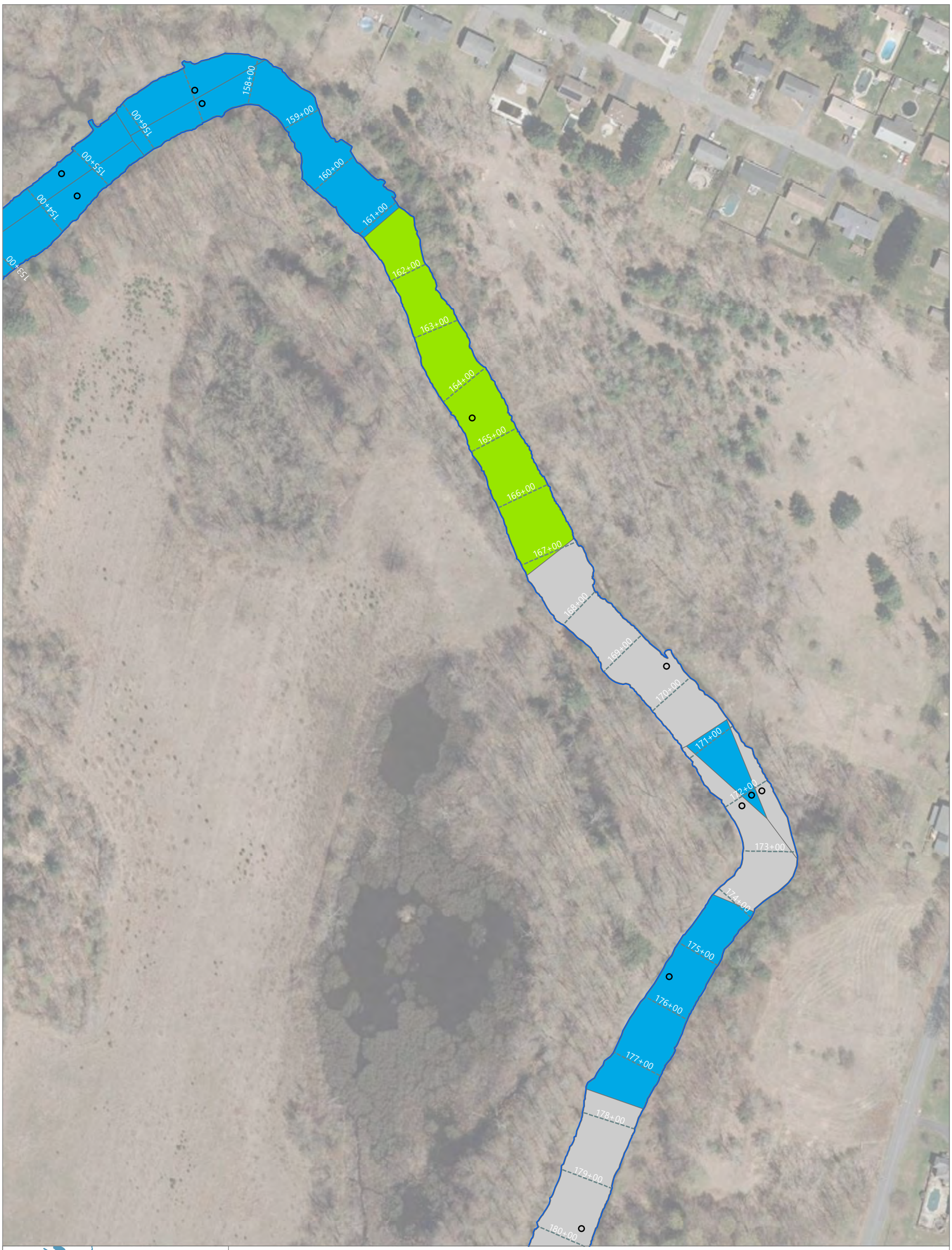
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

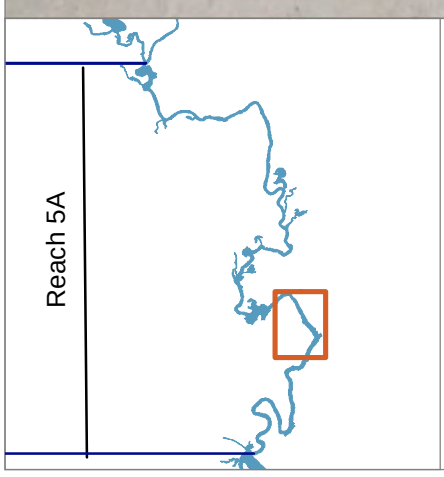
0 170
Feet

Publish Date: 2023/09/27, 10:39 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-4f
In-River Sediment Thiessen Polygon Extents by Depth Interval (1.5 to 2 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

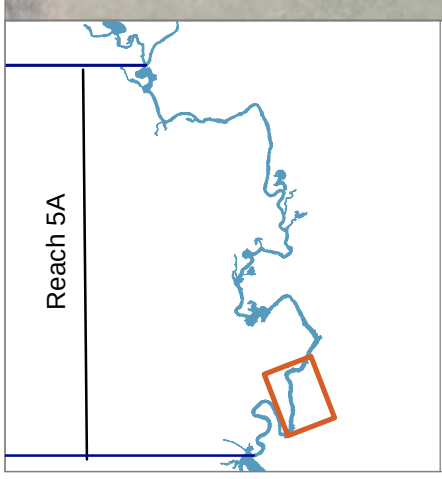
0 170
Feet

Publish Date: 2023/09/27, 10:39 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-4g
In-River Sediment Thiessen Polygon Extents by Depth Interval (1.5 to 2 ft)

PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

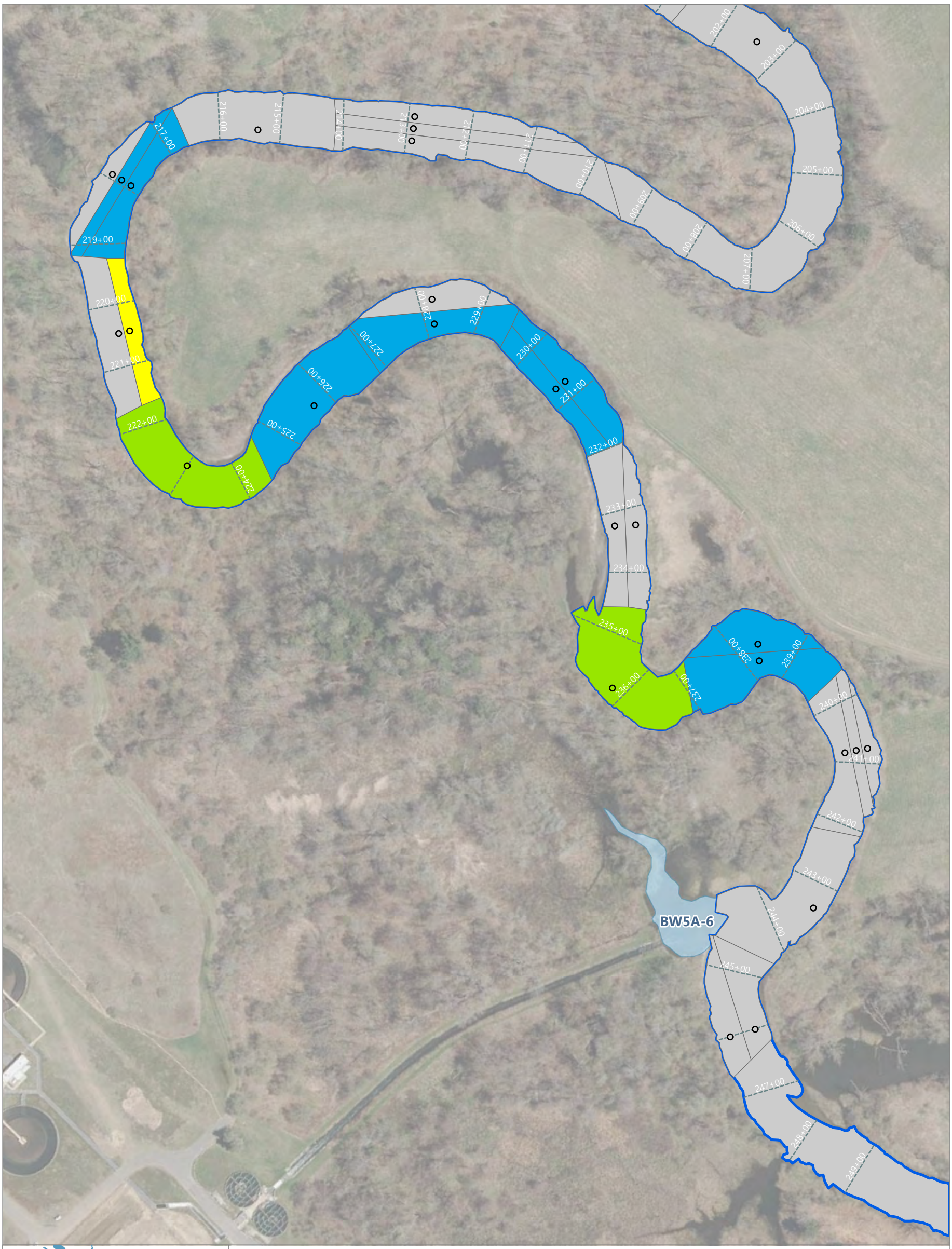
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

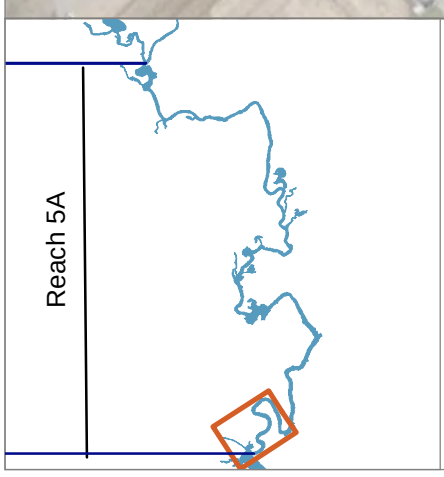
0 170
Feet

Publish Date: 2023/09/27, 10:39 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-4h
In-River Sediment Thiessen Polygon Extents by Depth Interval (1.5 to 2 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

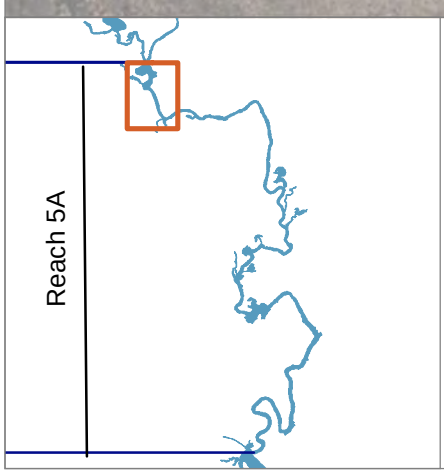
0 170
Feet

Publish Date: 2023/09/27, 10:39 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-4i
In-River Sediment Thiessen Polygon Extents by Depth Interval (1.5 to 2 ft)

PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

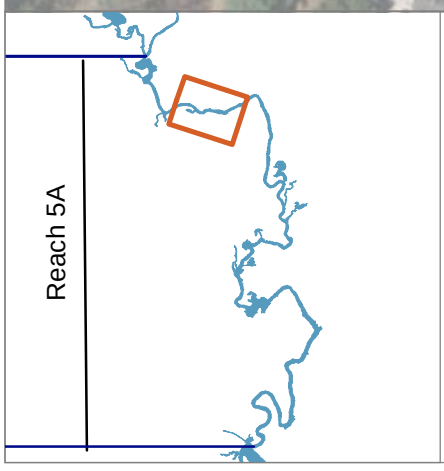
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:39 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-5a
In-River Sediment Thiessen Polygon Extents by Depth Interval (2 to 2.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

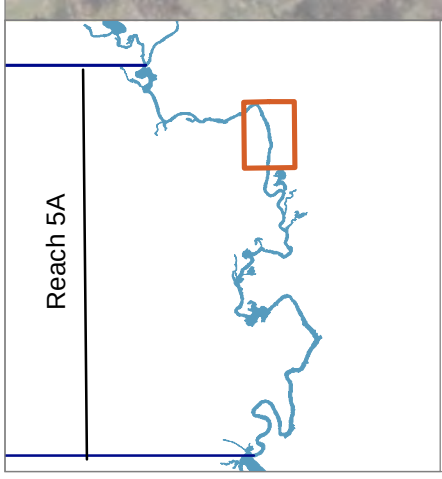
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:40 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-5b
In-River Sediment Thiessen Polygon Extents by Depth Interval (2 to 2.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

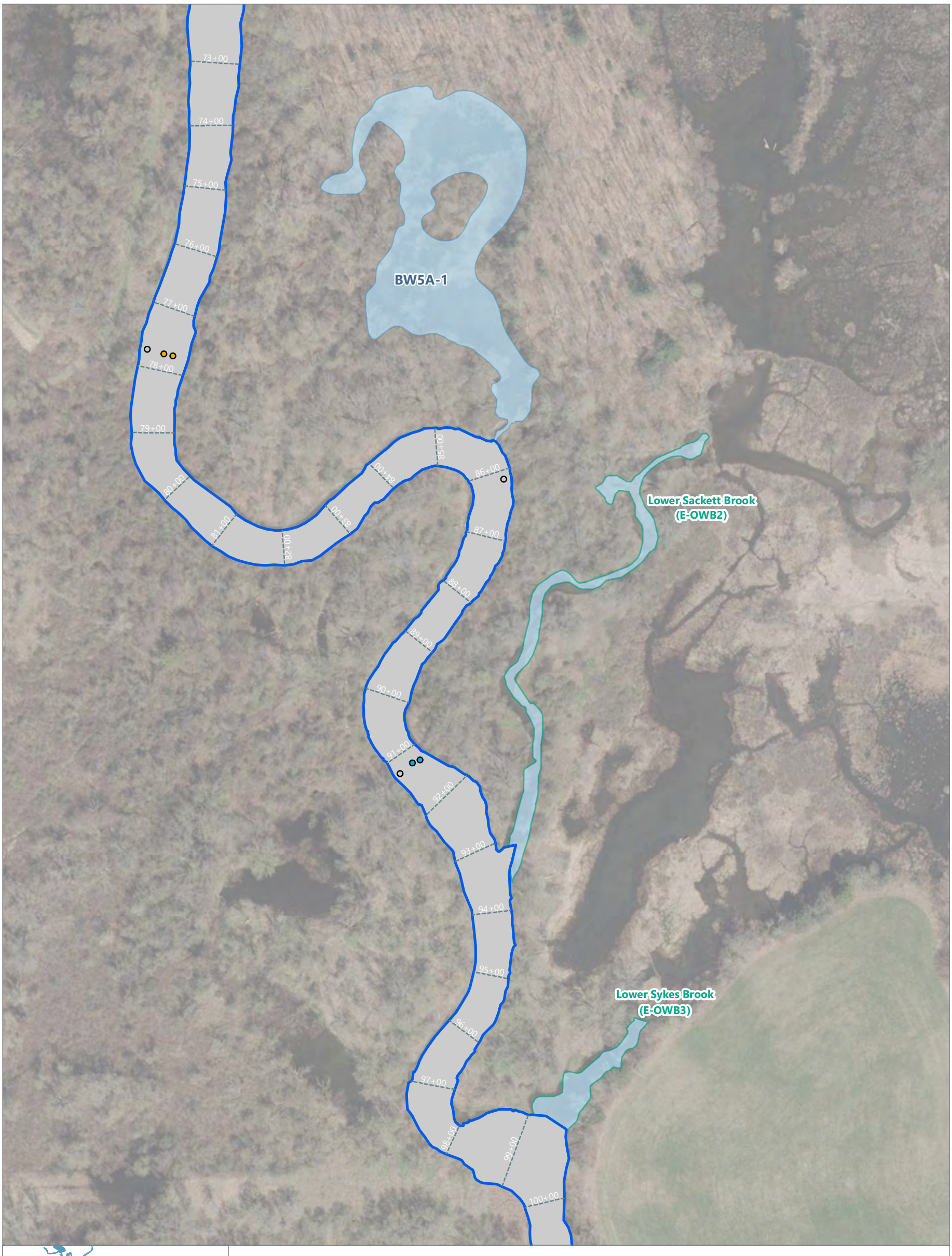
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

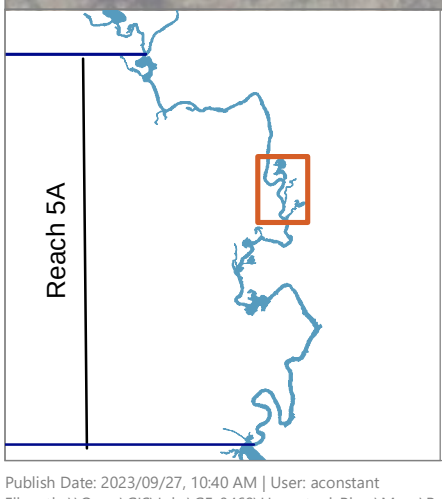
0 170
Feet

Publish Date: 2023/09/27, 10:40 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-5c
In-River Sediment Thiessen Polygon Extents by Depth Interval (2 to 2.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

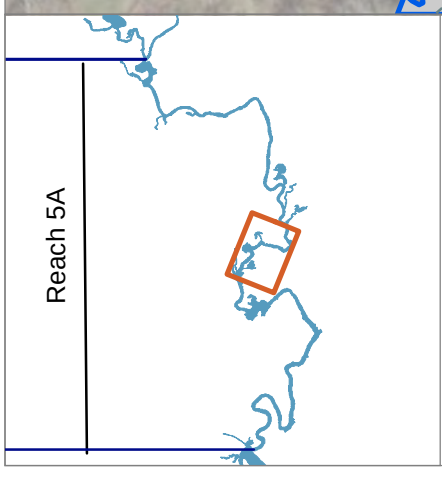
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:40 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-5d
In-River Sediment Thiessen Polygon Extents by Depth Interval (2 to 2.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

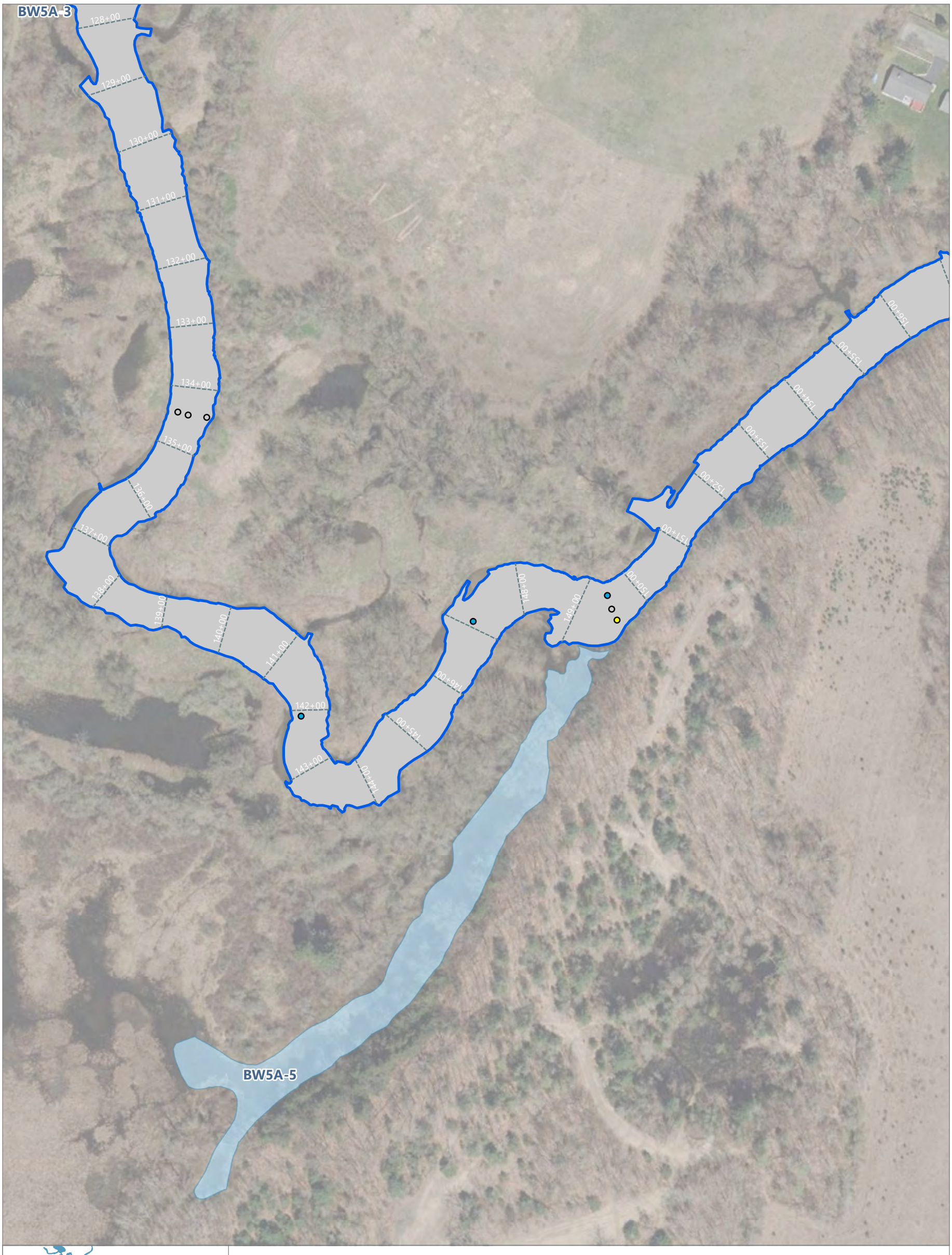
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

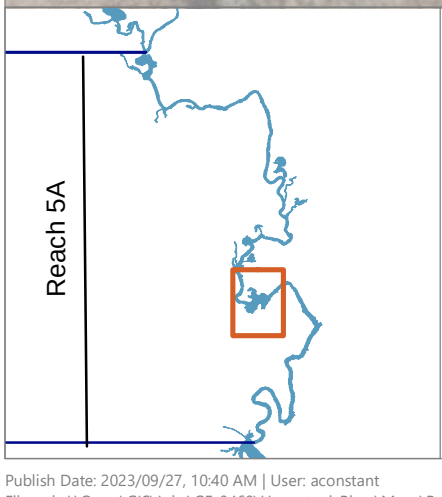
0 170
Feet

Publish Date: 2023/09/27, 10:40 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-5e
In-River Sediment Thiessen Polygon Extents by Depth Interval (2 to 2.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

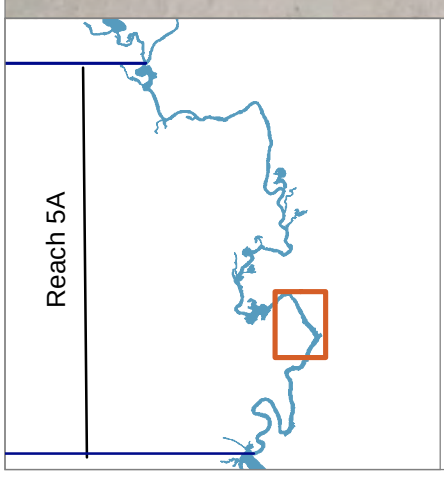
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:40 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-5f
In-River Sediment Thiessen Polygon Extents by Depth Interval (2 to 2.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

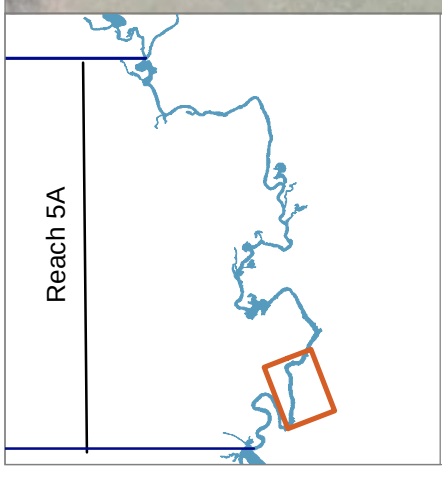
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:40 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-5g
In-River Sediment Thiessen Polygon Extents by Depth Interval (2 to 2.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

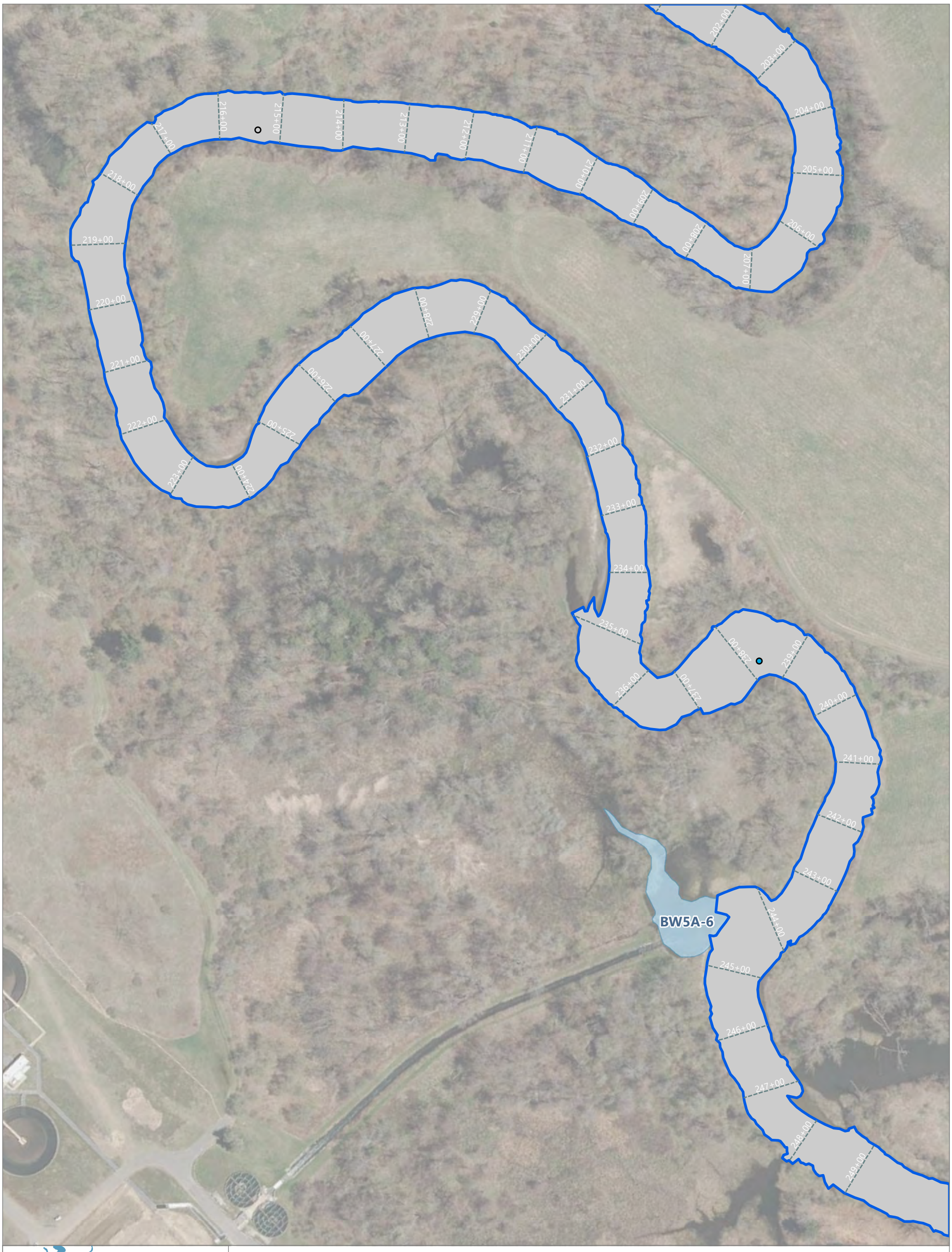
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

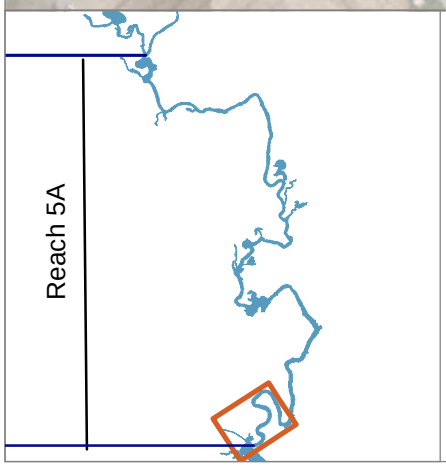
0 170
Feet

Publish Date: 2023/09/27, 10:40 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-5h
In-River Sediment Thiessen Polygon Extents by Depth Interval (2 to 2.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

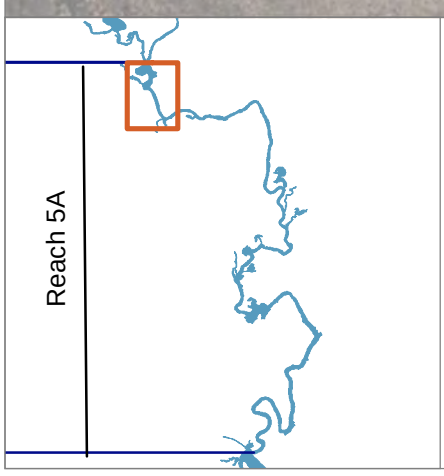
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:41 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-5i
In-River Sediment Thiessen Polygon Extents by Depth Interval (2 to 2.5 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

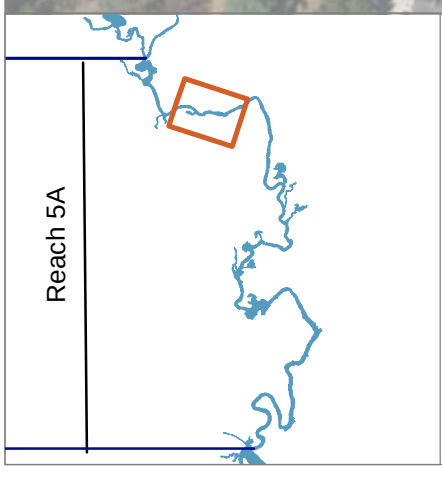
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:41 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-6a
In-River Sediment Thiessen Polygon Extents by Depth Interval (2.5 to 3 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

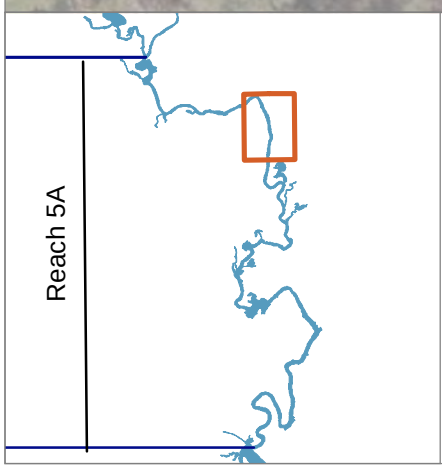
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:41 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-6b
In-River Sediment Thiessen Polygon Extents by Depth Interval (2.5 to 3 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

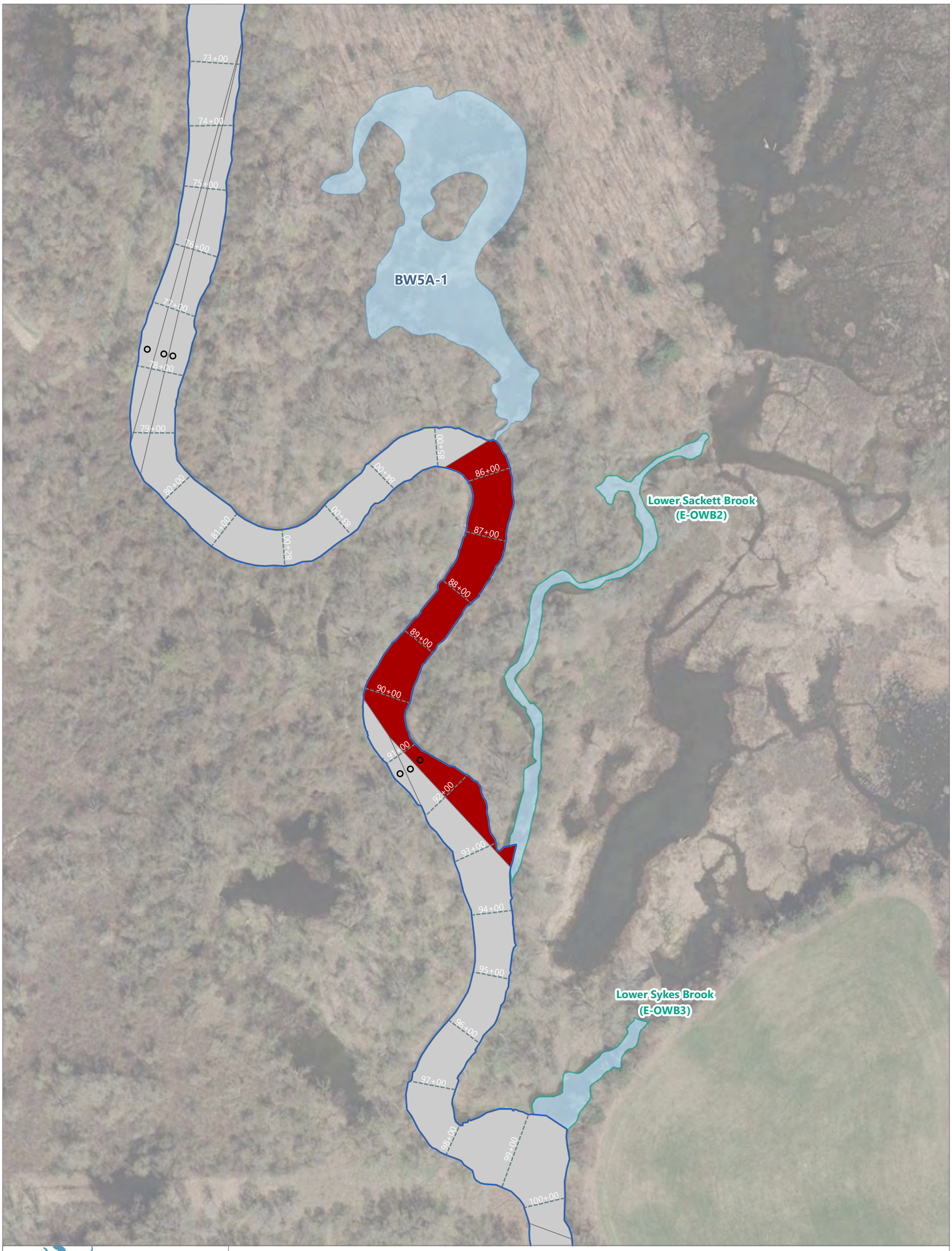
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

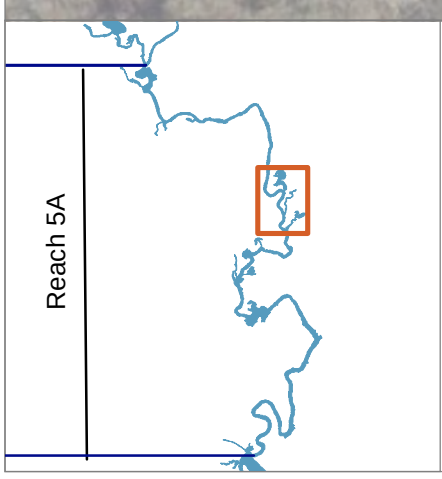
0 170
Feet

Publish Date: 2023/09/27, 10:41 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-6c
In-River Sediment Thiessen Polygon Extents by Depth Interval (2.5 to 3 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

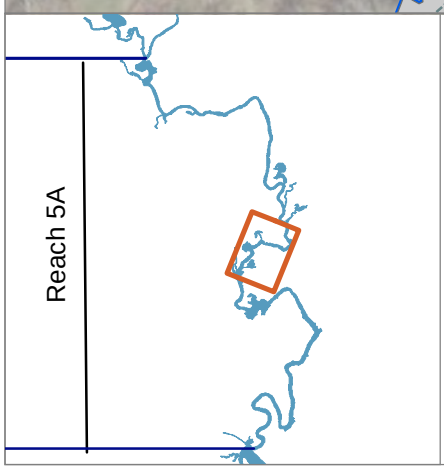
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:41 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-6d
In-River Sediment Thiessen Polygon Extents by Depth Interval (2.5 to 3 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

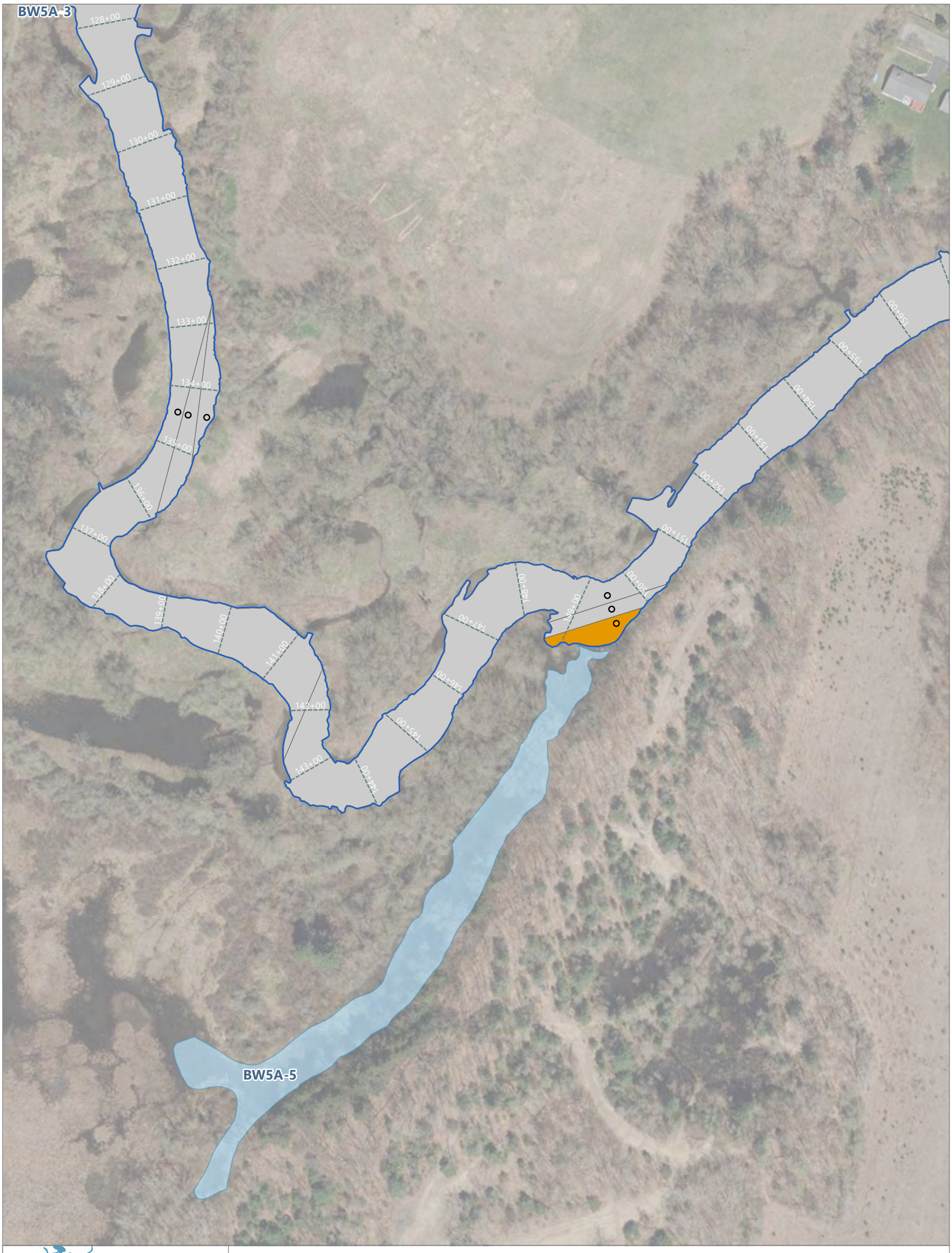
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

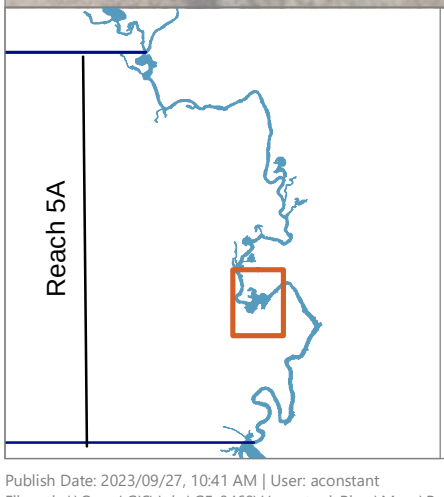
0 170
Feet

Publish Date: 2023/09/27, 10:41 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-6e
In-River Sediment Thiessen Polygon Extents by Depth Interval (2.5 to 3 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River





LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

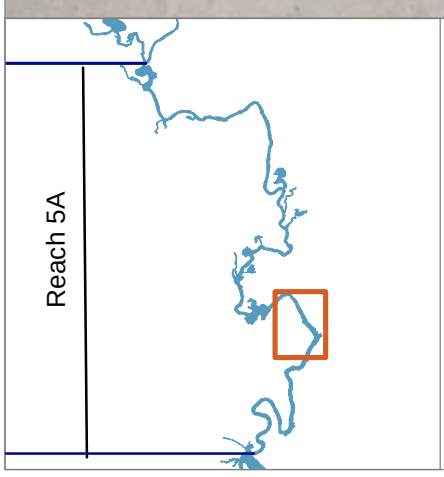
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:41 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-6f
In-River Sediment Thiessen Polygon Extents by Depth Interval (2.5 to 3 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

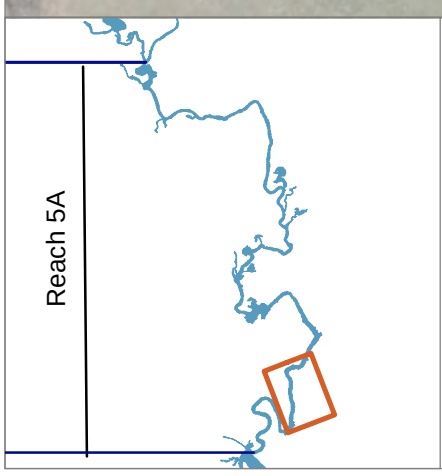
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:41 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-6g
In-River Sediment Thiessen Polygon Extents by Depth Interval (2.5 to 3 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

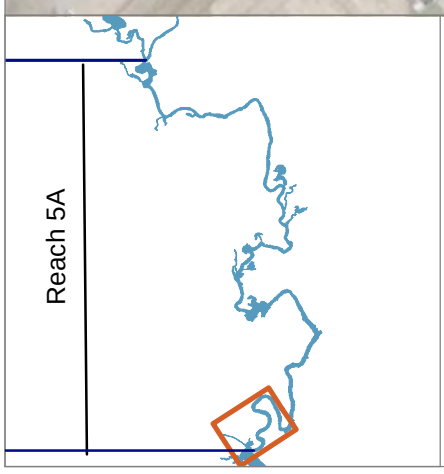
NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:42 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-6h
In-River Sediment Thiessen Polygon Extents by Depth Interval (2.5 to 3 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River



LEGEND:

- River Stationing
- Backwaters (AECOM & Anchor QEA 2020)
- Other Waterbody
- River Channel
- Core Location

Reach 5A In River Sediment

Total PCBs (mg/kg) Thiessen Polygons

- ≤ 1
- 1 - 10
- 10 - 25
- 25 - 50
- 50 - 100
- > 100

NOTES:
1. Aerial imagery from MassGIS 2021.
2. The maximum PCB concentrations are shown for depth intervals where multiple samples were collected as part of the 2022 and 2023 (supplemental) sediment sampling.

0 170
Feet

Publish Date: 2023/09/27, 10:42 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixB\AQ_RDRA_FigB-1toB-6_InRiver_TP_byDepth.mxd

ANCHOR QEA

Figure B-6i
In-River Sediment Thiessen Polygon Extents by Depth Interval (2.5 to 3 ft)
PCB Evaluations for River Sediment
Housatonic River - Rest of River

Appendix C
PCB Evaluations for Backwaters and Other Waterbodies

Table C-1
Spatially Weighted Average PCB Summary: BW5A-1 (within Core Area 1 Habitat)

Depth (feet)	Location ID	Total PCB (mg/kg)	Remedial Approach	Area (square feet)	Removal Volume (cy)
0–1	SE-BW5A-1-C-D-7-8	68.70	Dredge and cap	2,116	78
	SE-BW5A-1-D-E-9	66.30		1,283	48
	SE-BW5A-1-B-3-4	56.10		644	24
	SE-BW5A-1-B-4	46.70	Amendment Required	875	-
	SE-BW5A-1-C-7-8	43.10		1,543	-
	SE-BW5A-1-E-F-9-10	42.74		1,653	-
	SE-BW5A-1-C-D-2	42.60		1,376	-
	SE-BW5A-1-C-D-8-9	35.43		2,340	-
	SE-BW5A-1-G-3	35.27		1,223	-
	SE-BW5A-1-B-C-8-9	30.20		2,350	-
	SE-BW5A-1-D-E-7-8	23.11		2,350	-
	SE-BW5A-1-A-B-4	22.99		1,185	-
	SE-BW5A-1-C-D-6-7	22.56		1,960	-
	SE-BW5A-1-B-C-2-3	22.18		1,042	-
	SE-BW5A-1-D-E-8-9	20.53		2,088	-
	SE-BW5A-1-F-G-5-6	19.00		1,897	-
	SE-BW5A-1-G-3-4	17.63		1,420	-
	SE-BW5A-1-C-D-2-3	17.46		1,678	-
	SE-BW5A-1-D-E-3-4	17.05		2,226	-
	SE-BW5A-1-D-E-2	15.37		1,427	-
	SE-BW5A-1-C-2	15.22		982	-
	SE-BW5A-1-D-5	14.33		980	-
	SE-BW5A-1-F-G-9-10	14.23		1,960	-
	SE-BW5A-1-F-G-4-5	13.49		1,860	-
	SE-BW5A-1-D-E-6-7	12.98		2,364	-
	SE-BW5A-1-F-8-9	12.35		1,207	-
	SE-BW5A-1-F-G-3-4	11.19		1,797	-
	SE-BW5A-1-E-F-8-9	11.06		1,917	-
	SE-BW5A-1-F-8	10.11		678	-
	SE-BW5A-1-E-F-7-8	10.02		1,895	-
	SE-BW5A-1-D-E-4-5	9.76		1,639	-
	SE-BW5A-1-G-4-5	9.31		1,482	-
	SE-BW5A-1-E-F-6-7	8.59		2,062	-
	SE-BW5A-1-D-3-4	8.17		1,437	-
	SE-BW5A-1-E-F-2-3	7.52		2,126	-
	SE-BW5A-1-F-G-11-12	6.86		1,519	-
	SE-BW5A-1-E-F-3-4	6.13		2,643	-
	SE-BW5A-1-D-4-5	5.63		1,242	-
	SE-BW5A-1-F-12	5.57		548	-
	SE-BW5A-1-F-G-2-3	4.91		1,830	-
	SE-BW5A-1-F-G-10-11	4.76		1,533	-
	SE-BW5A-1-C-7	4.64		1,017	-
	SE-BW5A-1-C-D-5-6	4.64		1,361	-
	SE-BW5A-1-G-11-12	4.42		1,055	-
	SE-BW5A-1-G-10-11	3.88		1,318	-
	SE-BW5A-1-D-E-2-3	3.65		2,113	-
	SE-BW5A-1-F-13	3.39		220	-
	SE-BW5A-1-E-F-2	2.90		1,459	-
	SE-BW5A-1-F-6	2.88		866	-
	SE-BW5A-1-F-2	2.49		1,183	-
	SE-BW5A-1-F-5-6	1.36		992	-
		Total	-	**77,963**	**150**

Notes:

Remedial Approach: Removal of the top foot of sediment followed by engineered cap placement where PCB >50 mg/kg; amendment placement where PCB >1 mg/kg

-: not applicable

cy: cubic yard

mg/kg: milligram per kilogram

PCB: polychlorinated biphenyl

Table C-2
Spatially Weighted Average PCB Summary: BW5A-2

Depth (feet)	Location ID	Existing			Post-Cap		
		Total PCB (mg/kg)	Area (square feet)	Total PCB × Area	Total PCB[1] (mg/kg)	Total PCB × Area	Removal Volume (cy)
0–1	SE-BW5A-2-A-4	21.69	1,454	31,534	0.115	168	54
	SE-BW5A-2-A-B-3	20.46	1,239	25,352	0.115	143	46
	SE-BW5A-2-A-B-5	15.07	1,365	20,576	0.115	158	51
	SE-BW5A-2-D-1-2	14.33	1,028	14,727	0.115	119	38
	SE-BW5A-2-B-C-1-2	14.09	1,036	14,596	0.115	120	38
	SE-BW5A-2-B-C-5	8.97	1,761	15,797	0.115	203	65
	SE-BW5A-2-C-D-1	6.92	1,087	7,521	0.115	125	40
	SE-BW5A-2-D-5	6.69	1,605	10,736	0.115	185	59
	SE-BW5A-2-B-2	6.46	978	6,317	0.115	113	36
	SE-BW5A-2-C-D-5-6	3.767	1,783	6,718	0.115	206	66
		Total	13,336	153,874	-	1,539	494
0–1 feet Average Total PCB (mg/kg)				**11.5**		**0.12**	
1–1.5	SE-BW5A-2-A-4	13.02	1,454	18,929	0.115	168	-
	SE-BW5A-2-A-B-3	1.69	1,239	2,094	0.115	143	-
	SE-BW5A-2-A-B-5	55	1,365	75,095	0.115	158	-
	SE-BW5A-2-D-1-2	163.6	1,028	168,134	0.115	119	-
	SE-BW5A-2-B-C-1-2	12.94	1,036	13,405	0.115	120	-
	SE-BW5A-2-B-C-5	5.616	1,761	9,891	0.115	203	-
	SE-BW5A-2-C-D-1	39.91	1,087	43,377	0.115	125	-
	SE-BW5A-2-D-5	2.038	1,605	3,270	0.115	185	-
	SE-BW5A-2-B-2	9.53	978	9,319	0.115	113	-
	SE-BW5A-2-C-D-5-6	2.596	1,783	4,630	0.115	206	-
		Total	13,336	348,143	-	1,539	
1–1.5 feet Average Total PCB (mg/kg)				**26.1**		**0.12**	
1.5–2	SE-BW5A-2-A-4	24.6	1,454	35,764	0.115	168	-
	SE-BW5A-2-A-B-3	0.036	1,239	45	0.115	143	-
	SE-BW5A-2-A-B-5	8.58	1,365	11,715	0.115	158	-
	SE-BW5A-2-D-1-2	6.918	1,028	7,110	0.115	119	-
	SE-BW5A-2-B-C-1-2	14.05	1,036	14,555	0.115	120	-
	SE-BW5A-2-B-C-5	29.18	1,761	51,390	0.115	203	-
	SE-BW5A-2-C-D-1	9.98	1,087	10,847	0.115	125	-
	SE-BW5A-2-D-5	1.506	1,605	2,417	0.115	185	-
	SE-BW5A-2-B-2	7.81	978	7,637	0.115	113	-
	SE-BW5A-2-C-D-5-6	6.963	1,783	12,417	0.115	206	-
		Total	13,336	153,897	-	1,539	
1.5–2 feet Average Total PCB (mg/kg)				**11.5**		**0.12**	
2–2.5	SE-BW5A-2-A-4	67.04	1,454	97,465	0.115	168	-
	SE-BW5A-2-A-B-3	0.0222	1,239	28	0.115	143	-
	SE-BW5A-2-A-B-5	78.37	1,365	107,003	0.115	158	-
	SE-BW5A-2-D-1-2	15	1,028	15,416	0.115	119	-
	SE-BW5A-2-B-C-1-2	39.76	1,036	41,189	0.115	120	-
	SE-BW5A-2-B-C-5	7.18	1,761	12,645	0.115	203	-
	SE-BW5A-2-C-D-1	31.14	1,087	33,845	0.115	125	-
	SE-BW5A-2-D-5	5.496	1,605	8,820	0.115	185	-
	SE-BW5A-2-B-2	90.6	978	88,595	0.115	113	-
	SE-BW5A-2-C-D-5-6	3.405	1,783	6,072	0.115	206	-
		Total	13,336	411,077	-	1,539	
2–2.5 feet Average Total PCB (mg/kg)				**30.8**		**0.12**	
2.5–3	SE-BW5A-2-A-B-5	9.62	4,440	42,708	0.115	512	-
	SE-BW5A-2-D-1-2	32.95	1,028	33,863	0.115	119	-
	SE-BW5A-2-B-C-1-2	54.31	2,502	135,898	0.115	289	-
	SE-BW5A-2-C-D-1	37.3	1,087	40,540	0.115	125	-
	SE-BW5A-2-C-D-5-6	0.0637	4,279	273	0.115	494	-
		Total	13,336	253,282	-	1,539	
2.5-3 feet Average Total PCB (mg/kg)				**19.0**		**0.12**	
3–3.5	SE-BW5A-2-C-D-1	9.36	13,336	124,824	0.115	1,539	-
		Total	13,336	124,824	-	1,539	
3–3.5 feet Average Total PCB (mg/kg)				**9.4**		**0.12**	

Notes:

1. In areas where an engineered cap will be placed, the post-cap surface and subsurface total PCB values assume 1% of the existing average surficial total PCB concentration in accordance with Section II.B.2.d(1)(a) in the Revised Final Permit.

Remedial Approach: Removal of the top foot of sediment followed by engineered cap placement

Exceeds surface remedial criteria; dredge and cap

Exceeds subsurface remedial criteria; dredge and cap

-: not applicable

cy: cubic yard

mg/kg: milligram per kilogram

PCB: polychlorinated biphenyl

Table C-3
Spatially Weighted Average PCB Summary: BW5A-3

Depth (feet)	Location ID	Existing			Post-Cap		
		Total PCB (mg/kg)	Area (square feet)	Total PCB × Area	Total PCB[1] (mg/kg)	Total PCB × Area	Removal Volume (cy)
0–1	SE-BW5A-3-A-B-4-5	585	1,575	921,538	1.11	1,750	58
	SE-BW5A-3-B-1-2	35.54	447	15,879	1.11	496	17
	SE-BW5A-3-A-B-3-4	18.54	1,307	24,241	1.11	1,453	48
	SE-BW5A-3-A-B-2-3	16.39	1,217	19,953	1.11	1,353	45
	SE-BW5A-3-A-B-1-2	16.27	1,108	18,020	1.11	1,231	41
	SE-BW5A-3-B-7	15.28	272	4,160	1.11	303	10
	SE-BW5A-3-A-B-5-6	7.78	1,418	11,029	1.11	1,575	53
	SE-BW5A-3-B-5	7.225	921	6,654	1.11	1,023	34
	SE-BW5A-3-B-6	7.06	991	6,997	1.11	1,101	37
		Total	9,256	1,028,470		10,285	343
0–1 feet Average Total PCB (mg/kg)				**111**		**1.11**	
1–1.5	SE-BW5A-3-A-B-4-5	5.957	1,575	9,384	1.11	1,750	-
	SE-BW5A-3-B-1-2	27.8	447	12,421	1.11	496	-
	SE-BW5A-3-A-B-3-4	505	1,307	660,282	1.11	1,453	-
	SE-BW5A-3-A-B-2-3	12.37	1,217	15,059	1.11	1,353	-
	SE-BW5A-3-A-B-1-2	7.78	1,108	8,617	1.11	1,231	-
	SE-BW5A-3-B-7	6.17	272	1,680	1.11	303	-
	SE-BW5A-3-A-B-5-6	11.64	1,418	16,502	1.11	1,575	-
	SE-BW5A-3-B-5	9.027	921	8,313	1.11	1,023	-
	SE-BW5A-3-B-6	33.78	991	33,477	1.11	1,101	-
		Total	9,256	765,735		10,285	
1–1.5 feet Average Total PCB (mg/kg)				**82.7**		**1.11**	
1.5–2	SE-BW5A-3-A-B-4-5	1.68	1,575	2,646	1.11	1,750	-
	SE-BW5A-3-B-1-2	14.91	447	6,662	1.11	496	-
	SE-BW5A-3-A-B-3-4	9.01	1,307	11,780	1.11	1,453	-
	SE-BW5A-3-A-B-2-3	0.989	1,217	1,204	1.11	1,353	-
	SE-BW5A-3-A-B-1-2	6.241	1,108	6,912	1.11	1,231	-
	SE-BW5A-3-B-7	116	272	31,583	1.11	303	
	SE-BW5A-3-A-B-5-6	331	1,418	469,248	1.11	1,575	-
	SE-BW5A-3-B-5	34.7	921	31,957	1.11	1,023	-
	SE-BW5A-3-B-6	514.2	991	509,593	1.11	1,101	-
		Total	9,256	1,071,585		10,285	
1.5–2 feet Average Total PCB (mg/kg)				**115.8**		**1.11**	
2–2.5	SE-BW5A-3-A-B-4-5	0.9284	1,575	1,462	1.11	1,750	-
	SE-BW5A-3-B-1-2	11.02	447	4,924	1.11	496	-
	SE-BW5A-3-A-B-3-4	2.57	1,307	3,360	1.11	1,453	-
	SE-BW5A-3-A-B-2-3	0.27	1,217	329	1.11	1,353	-
	SE-BW5A-3-A-B-1-2	0.2607	1,108	289	1.11	1,231	
	SE-BW5A-3-B-7	46.07	272	12,543	1.11	303	-
	SE-BW5A-3-A-B-5-6	251.8	1,418	356,969	1.11	1,575	-
	SE-BW5A-3-B-5	47.43	921	43,681	1.11	1,023	-
	SE-BW5A-3-B-6	1.096	991	1,086	1.11	1,101	-
		Total	9,256	424,643		10,285	
2–2.5 feet Average Total PCB (mg/kg)				**45.9**		**1.11**	
2.5–3	SE-BW5A-3-A-B-4-5	0.414	1,575	652	1.11	1,750	-
	SE-BW5A-3-B-1-2	10.13	447	4,526	1.11	496	-
	SE-BW5A-3-A-B-3-4	0.0437	1,307	57	1.11	1,453	-
	SE-BW5A-3-A-B-2-3	0.0454	1,217	55	1.11	1,353	-
	SE-BW5A-3-A-B-1-2	0.038	1,108	42	1.11	1,231	-
	SE-BW5A-3-B-7	17.87	272	4,865	1.11	303	-
	SE-BW5A-3-A-B-5-6	120.8	1,418	171,254	1.11	1,575	-
	SE-BW5A-3-B-5	33.68	921	31,018	1.11	1,023	
	SE-BW5A-3-B-6	0.1621	991	161	1.11	1,101	-
		Total	9,256	212,631		10,285	
2.5–3 feet Average Total PCB (mg/kg)				**23.0**		**1.11**	
3–3.5	SE-BW5A-3-B-1-2	8.76	447	3,914	1.11	496	-
	SE-BW5A-3-A-B-2-3	0.0985	2,340	230	1.11	2,599	-
	SE-BW5A-3-A-B-1-2	0.0579	1,108	64	1.11	1,231	-
	SE-BW5A-3-B-7	1.282	272	349	1.11	303	-
	SE-BW5A-3-B-5	0.0487	3,233	157	1.11	3,592	-
	SE-BW5A-3-B-6	0.1705	1,857	317	1.11	2,063	-
		Total	9,256	5,032		10,285	
3–3.5 feet Average Total PCB (mg/kg)				**0.5**		**1.11**	
3.5–4	SE-BW5A-3-A-B-1-2	0.051	9,256	472	1.11	10,285	-
		Total	9,256	472		10,285	
3.5–4 feet Average Total PCB (mg/kg)				**0.1**		**1.11**	

Notes:

1. In areas where an engineered cap will be placed, the post-cap surface and subsurface total PCB values assume 1% of the existing average surficial total PCB concentration in accordance with Section II.B.2.d(1)(a) in the Revised Final Permit.

Remedial Approach: Removal of the top foot of sediment followed by engineered cap placement

Exceeds surface remedial criteria; dredge and cap

-: not applicable

cy: cubic yard

mg/kg: milligram per kilogram

PCB: polychlorinated biphenyl

Table C-4
Spatially Weighted Average PCB Summary: BW5A-4

Depth (feet)	Location ID	Existing			Post-Cap		
		Total PCB (mg/kg)	Area (square feet)	Total PCB × Area	Total PCB[1] (mg/kg)	Total PCB × Area	Removal Volume (cy)
0–1	SE-BW5A-4-A-B-2-3	42.06	417	17,554	0.17	72	15
	SE-BW5A-4-A-B-1-2	17.05	1,544	26,320	0.17	266	57
	SE-BW5A-4-A-B-3-4	6.55	942	6,171	0.17	162	35
		Total	2,903	50,045		500	108
0–1 feet Average Total PCB (mg/kg)				**17.2**		**0.17**	
1–1.5	SE-BW5A-4-A-B-2-3	10.128	417	4,227	0.2	72	-
	SE-BW5A-4-A-B-1-2	26.24	1,544	40,507	0.2	266	-
	SE-BW5A-4-A-B-3-4	9.465	942	8,917	0.2	162	-
		Total	2,903	53,651		500	
1–1.5 feet Average Total PCB (mg/kg)				**18.5**		**0.17**	
1.5–2	SE-BW5A-4-A-B-2-3	0.0498	417	21	0.2	72	-
	SE-BW5A-4-A-B-1-2	5.057	1,544	7,807	0.2	266	-
	SE-BW5A-4-A-B-3-4	5.775	942	5,441	0.2	162	-
		Total	2,903	13,268		500	
1.5–2 feet Average Total PCB (mg/kg)				**4.6**		**0.17**	
2–2.5	SE-BW5A-4-A-B-2-3	0.034	417	14	0.2	72	-
	SE-BW5A-4-A-B-1-2	3.123	1,544	4,821	0.2	266	-
	SE-BW5A-4-A-B-3-4	3.401	942	3,204	0.2	162	-
		Total	2,903	8,039		500	
2–2.5 feet Average Total PCB (mg/kg)				**2.8**		**0.17**	
2.5–3	SE-BW5A-4-A-B-2-3	0.034	1,961	67	0.2	338	-
	SE-BW5A-4-A-B-3-4	25.19	942	23,732	0.2	162	-
		Total	2,903	23,798		500	
2.5–3 feet Average Total PCB (mg/kg)				**8.2**		**0.17**	
3–3.5	SE-BW5A-4-A-B-2-3	0.037	1,961	73	0.2	338	-
	SE-BW5A-4-A-B-3-4	28.37	942	26,727	0.2	162	-
		Total	2,903	26,800		500	
3–3.5 feet Average Total PCB (mg/kg)				**9.2**		**0.17**	
3.5–4	SE-BW5A-4-A-B-3-4	41.26	2,903	119,785	0.2	500	-
		Total	2,903	119,785		500	
3.5–4 feet Average Total PCB (mg/kg)				**41.3**		**0.17**	

Notes:

1. In areas where an engineered cap will be placed, the post-cap surface and subsurface total PCB values assume 1% of the existing average surficial total PCB concentration in accordance with Section II.B.2.d(1)(a) in the Revised Final Permit.

Remedial Approach: Removal of the top foot of sediment followed by engineered cap placement

Exceeds surface remedial criteria; dredge and cap

Exceeds sub-surface remedial criteria; dredge and cap

-: not applicable

cy: cubic yard

mg/kg: milligram per kilogram

PCB: polychlorinated biphenyl

Table C-5
Spatially Weighted Average PCB Summary: BW5A-5

Depth (feet)	Location ID	Existing			Post-Cap		
		Total PCB (mg/kg)	Area (square feet)	Total PCB × Area	Total PCB[1] (mg/kg)	Total PCB × Area	Removal Volume (cy)
0–1	SE-BW5A-5-D-E-14-15	43.92	1,494	65,629	0.1	138	55
	SE-BW5A-5-B-3-4	37.9	1,507	57,120	0.1	139	56
	SE-BW5A-5-C-7-8	29.45	1,487	43,788	0.1	138	55
	SE-BW5A-5-C-D-6-7	28.88	1,707	49,302	0.1	158	63
	SE-BW5A-5-D-E-15-16	27.97	1,580	44,181	0.1	146	59
	SE-BW5A-5-C-8-9	23.05	1,441	33,215	0.1	133	53
	SE-BW5A-5-D-17-18	21.07	1,406	29,621	0.1	130	52
	SE-BW5A-5-C-6	15.85	1,380	21,876	0.1	128	51
	SE-BW5A-5-C-D-7-8	15.61	1,577	24,620	0.1	146	58
	SE-BW5A-5-C-6-7	15.32	1,438	22,034	0.1	133	53
	SE-BW5A-5-B-3	15.1	985	14,873	0.1	91	36
	SE-BW5A-5-A-B-2-3	14.33	977	14,004	0.1	90	36
	SE-BW5A-5-A-B-3-4	10.28	1,474	15,149	0.1	136	55
	SE-BW5A-5-C-D-10-11	9.23	1,483	13,690	0.1	137	55
	SE-BW5A-5-D-E-16-17	8.49	2,955	25,086	0.1	273	109
	SE-BW5A-5-D-18-19	7.09	1,964	13,928	0.1	182	73
	SE-BW5A-5-D-9-10	6.76	1,867	12,618	0.1	173	69
	SE-BW5A-5-D-E-11-12	6.36	1,944	12,366	0.1	180	72
	SE-BW5A-5-D-E-13-14	5.77	2,064	11,910	0.1	191	76
	SE-BW5A-5-D-11-12	5.4	1,517	8,190	0.1	140	56
	SE-BW5A-5-B-2	5.356	660	3,533	0.1	61	24
	SE-BW5A-5-E-15-16	5.24	1,644	8,617	0.1	152	61
	SE-BW5A-5-C-D-9-10	4.83	2,026	9,785	0.1	187	75
	SE-BW5A-5-D-E-17-18	3.76	2,056	7,730	0.1	190	76
	SE-BW5A-5-B-C-4-5	3.18	1,851	5,886	0.1	171	69
	SE-BW5A-5-D-E-12-13	2.84	2,095	5,950	0.1	194	78
	SE-BW5A-5-B-C-20	12.48	1,695	21,152	12.5	21,152	-
	SE-BW5A-5-A-B-19-20	5.59	1,155	6,454	5.6	6,454	-
	SE-BW5A-5-C-D-18-19	5.12	1,140	5,838	5.1	5,838	-
	SE-BW5A-5-C-D-19-20	4.9	2,126	10,416	4.9	10,416	-
	SE-BW5A-5-E-13-14	2.193	1,269	2,783	2.2	2,783	-
	SE-BW5A-5-E-14-15	1.865	1,478	2,756	1.9	2,756	-
	SE-BW5A-5-D-E-21-22	1.758	1,517	2,667	1.8	2,667	-
	SE-BW5A-5-B-C-19-20	1.716	1,825	3,131	1.7	3,131	-
	SE-BW5A-5-E-22-23	1.683	2,043	3,438	1.7	3,438	-
	SE-BW5A-5-E-12-13	0.864	1,273	1,100	0.9	1,100	-
	SE-BW5A-5-B-C-5-6	0.681	1,791	1,220	0.7	1,220	-
	SE-BW5A-5-C-D-8-9	0.585	2,103	1,231	0.6	1,231	-
	SE-BW5A-5-D-E-10-11	0.264	1,736	458	0.3	458	-
	SE-BW5A-5-D-20-21	0.1318	1,694	223	0.1	223	-
	SE-BW5A-5-A-B-20	0.05	1,138	57	0.1	57	-
	SE-BW5A-5-D-19-20	0.036	1,916	69	0.0	69	-
		Total	68,476	637,691		66,932	1,577
		0–1 feet Average Total PCB (mg/kg)		**9.3**		**0.98**	
1–1.5	SE-BW5A-5-B-3-4	14.98	1,507	22,577	0.1	139	-
	SE-BW5A-5-C-7-8	0.123	1,487	183	0.1	138	-
	SE-BW5A-5-C-D-6-7	2.942	1,707	5,022	0.1	158	-
	SE-BW5A-5-C-8-9	1.05	1,441	1,513	0.1	133	-
	SE-BW5A-5-C-6	0.2285	1,380	315	0.1	128	-
	SE-BW5A-5-C-D-7-8	0.161	1,577	254	0.1	146	-
	SE-BW5A-5-C-6-7	0.1053	1,438	151	0.1	133	-
	SE-BW5A-5-B-3	14.77	1,589	23,470	0.1	147	-
	SE-BW5A-5-A-B-3-4	6.611	1,542	10,197	0.1	143	-
	SE-BW5A-5-D-18-19	1.548	2,222	3,440	0.1	206	-
	SE-BW5A-5-D-9-10	0.0252	2,100	53	0.1	194	-
	SE-BW5A-5-D-E-11-12	0.2739	2,983	817	0.1	276	-
	SE-BW5A-5-D-E-13-14	0.259	2,183	565	0.1	202	-
	SE-BW5A-5-B-2	8.53	964	8,222	0.1	89	-
	SE-BW5A-5-C-D-9-10	0.0961	2,261	217	0.1	209	-
	SE-BW5A-5-D-E-17-18	0.11	6,423	706	0.1	594	-
	SE-BW5A-5-B-C-4-5	0.512	1,851	948	0.1	171	-
	SE-BW5A-5-D-E-12-13	0.075	2,190	164	0.1	203	-
	SE-BW5A-5-B-C-20	0.11	2,569	283	0.1	238	-
	SE-BW5A-5-A-B-19-20	0.0698	1,480	103	0.1	137	-
	SE-BW5A-5-C-D-18-19	9.7	1,167	11,320	0.1	108	-
	SE-BW5A-5-C-D-19-20	3.77	2,752	10,373	3.8	10,373	-
	SE-BW5A-5-E-13-14	0.0253	1,269	32	0.0	32	-
	SE-BW5A-5-E-14-15	0.0248	5,786	143	0.0	143	-
	SE-BW5A-5-D-E-21-22	0.037	1,517	56	0.0	56	-
	SE-BW5A-5-E-22-23	0.55	2,043	1,123	0.6	1,123	-
	SE-BW5A-5-E-12-13	10.14	1,273	12,904	10.1	12,904	-
	SE-BW5A-5-B-C-5-6	0.5923	1,791	1,061	0.6	1,061	-
	SE-BW5A-5-C-D-8-9	0.086	2,103	181	0.1	181	-
	SE-BW5A-5-D-E-10-11	0.1053	3,134	330	0.1	330	-
	SE-BW5A-5-D-20-21	0.039	1,694	66	0.0	66	-
	SE-BW5A-5-A-B-20	0.049	1,138	56	0.0	56	-
	SE-BW5A-5-D-19-20	0.036	1,916	69	0.0	69	-

Table C-5
Spatially Weighted Average PCB Summary: BW5A-5

Depth (feet)	Location ID	Existing			Post-Cap		
		Total PCB (mg/kg)	Area (square feet)	Total PCB × Area	Total PCB[1] (mg/kg)	Total PCB × Area	Removal Volume (cy)
		Total	68,476	116,917		30,287	
1–1.5 feet Average Total PCB (mg/kg)				**1.7**		**0.44**	
1.5–2	SE-BW5A-5-B-3-4	57.49	1,507	86,644	0.1	139	-
	SE-BW5A-5-C-8-9	0.088	1,675	147	0.1	155	-
	SE-BW5A-5-C-6	0.0451	2,145	97	0.1	198	-
	SE-BW5A-5-C-D-7-8	0.082	2,973	244	0.1	275	-
	SE-BW5A-5-C-6-7	0.044	2,237	98	0.1	207	-
	SE-BW5A-5-B-3	9.25	2,553	23,615	0.1	236	-
	SE-BW5A-5-A-B-3-4	3.847	1,542	5,934	0.1	143	-
	SE-BW5A-5-D-18-19	0.2237	2,222	497	0.1	206	-
	SE-BW5A-5-D-9-10	0.036	2,100	76	0.1	194	-
	SE-BW5A-5-D-E-11-12	0.08	3,031	242	0.1	280	-
	SE-BW5A-5-C-D-9-10	0.073	2,261	165	0.1	209	-
	SE-BW5A-5-D-E-17-18	0.12	6,423	771	0.1	594	-
	SE-BW5A-5-B-C-4-5	0.685	1,851	1,268	0.1	171	-
	SE-BW5A-5-D-E-12-13	59.1	5,180	306,111	0.1	479	-
	SE-BW5A-5-B-C-20	0.074	2,569	190	0.1	238	-
	SE-BW5A-5-A-B-19-20	0.1744	1,480	258	0.1	137	-
	SE-BW5A-5-C-D-18-19	0.282	1,167	329	0.1	108	-
	SE-BW5A-5-C-D-19-20	0.802	2,752	2,207	0.802	2,207	-
	SE-BW5A-5-E-14-15	0.04	7,473	299	0.0	299	-
	SE-BW5A-5-D-E-21-22	0.035	1,517	53	0.035	53	-
	SE-BW5A-5-E-22-23	0.036	2,043	74	0.036	74	-
	SE-BW5A-5-B-C-5-6	0.2812	1,791	504	0.281	504	-
	SE-BW5A-5-C-D-8-9	0.088	2,104	185	0.088	185	-
	SE-BW5A-5-D-E-10-11	2.309	3,134	7,237	2.3	7,237	-
	SE-BW5A-5-D-20-21	0.039	1,694	66	0.039	66	-
	SE-BW5A-5-A-B-20	0.057	1,138	65	0.057	65	-
	SE-BW5A-5-D-19-20	0.0772	1,916	148	0.077	148	-
		Total	68,476	437,523		14,807	
1.5–2 feet Average Total PCB (mg/kg)				**7.1**		**0.22**	
2–2.5	SE-BW5A-5-D-E-14-15	4.761	1,494	7,114	0.1	138	-
	SE-BW5A-5-B-3-4	98	1,507	147,698	0.1	139	-
	SE-BW5A-5-C-7-8	25.08	1,487	37,290	0.1	138	-
	SE-BW5A-5-C-D-6-7	0.054	1,707	92	0.1	158	-
	SE-BW5A-5-D-E-15-16	9.07	1,580	14,327	0.1	146	-
	SE-BW5A-5-C-8-9	0.083	1,441	120	0.1	133	-
	SE-BW5A-5-D-17-18	0.463	1,524	705	0.1	141	-
	SE-BW5A-5-C-6	0.057	2,203	126	0.1	204	-
	SE-BW5A-5-C-D-7-8	0.072	1,577	114	0.1	146	-
	SE-BW5A-5-C-6-7	0.093	1,697	158	0.1	157	-
	SE-BW5A-5-B-3	71.42	985	70,346	0.1	91	-
	SE-BW5A-5-A-B-2-3	5.087	977	4,971	0.1	90	-
	SE-BW5A-5-A-B-3-4	31.63	1,474	46,610	0.1	136	-
	SE-BW5A-5-C-D-10-11	0.922	1,621	1,494	0.1	150	-
	SE-BW5A-5-D-E-16-17	9.63	2,955	28,454	0.1	273	-
	SE-BW5A-5-D-E-11-12	0.082	1,944	159	0.1	180	-
	SE-BW5A-5-D-E-13-14	0.51	2,868	1,463	0.1	265	-
	SE-BW5A-5-D-11-12	0.86	1,517	1,304	0.1	140	-
	SE-BW5A-5-B-2	6.75	660	4,452	0.1	61	-
	SE-BW5A-5-E-15-16	2.043	1,644	3,360	0.1	152	-
	SE-BW5A-5-C-D-9-10	0.055	3,295	181	0.1	305	-
	SE-BW5A-5-D-E-17-18	0.059	2,763	163	0.1	256	-
	SE-BW5A-5-B-C-4-5	0.044	2,560	113	0.1	237	-
	SE-BW5A-5-D-E-12-13	0.067	2,095	140	0.1	194	-
	SE-BW5A-5-B-C-20	0.041	2,915	120	0.1	270	-
	SE-BW5A-5-A-B-19-20	0.1977	2,271	449	0.1	210	-
	SE-BW5A-5-C-D-18-19	0.086	2,628	226	0.1	243	-
	SE-BW5A-5-C-D-19-20	0.068	3,726	253	0.1	253	-
	SE-BW5A-5-E-14-15	0.04	1,806	72	0.0	72	-
	SE-BW5A-5-D-E-21-22	0.038	1,517	58	0.0	58	-
	SE-BW5A-5-E-22-23	0.035	2,043	71	0.0	71	-
	SE-BW5A-5-E-12-13	0.983	1,410	1,386	1.0	1,386	-
	SE-BW5A-5-C-D-8-9	0.082	2,127	174	0.1	174	-
	SE-BW5A-5-D-E-10-11	0.084	2,171	182	0.1	182	-
	SE-BW5A-5-D-20-21	0.038	2,286	87	0.0	87	-
		Total	68,476	374,034		7,039	

Table C-5
Spatially Weighted Average PCB Summary: BW5A-5

Depth (feet)	Location ID	Existing			Post-Cap		
		Total PCB (mg/kg)	Area (square feet)	Total PCB × Area	Total PCB[1] (mg/kg)	Total PCB × Area	Removal Volume (cy)
2–2.5 feet Average Total PCB (mg/kg)				**5.4**		**0.10**	
2.5–3	SE-BW5A-5-D-E-14-15	0.119	1,494	178	0.1	138	-
	SE-BW5A-5-B-3-4	30.6	1,838	56,233	0.1	170	-
	SE-BW5A-5-C-7-8	0.0969	1,487	144	0.1	138	-
	SE-BW5A-5-C-D-6-7	0.047	1,707	80	0.1	158	-
	SE-BW5A-5-D-E-15-16	0.118	1,580	186	0.1	146	-
	SE-BW5A-5-C-8-9	0.057	1,985	113	0.1	184	-
	SE-BW5A-5-D-17-18	1.013	3,195	3,237	0.1	296	-
	SE-BW5A-5-C-6	0.075	2,203	165	0.1	204	-
	SE-BW5A-5-C-D-7-8	0.05	1,577	79	0.1	146	-
	SE-BW5A-5-C-6-7	0.13	1,697	221	0.1	157	-
	SE-BW5A-5-A-B-2-3	13.2	1,562	20,616	0.1	145	-
	SE-BW5A-5-A-B-3-4	140.3	1,543	216,548	0.1	143	-
	SE-BW5A-5-C-D-10-11	0.078	4,742	370	0.1	439	-
	SE-BW5A-5-D-E-16-17	2.068	3,595	7,435	0.1	333	-
	SE-BW5A-5-D-E-11-12	0.058	2,483	144	0.1	230	-
	SE-BW5A-5-D-E-13-14	0.11	2,868	316	0.1	265	-
	SE-BW5A-5-D-11-12	0.12	1,574	189	0.1	146	-
	SE-BW5A-5-B-2	10.35	660	6,826	0.1	61	-
	SE-BW5A-5-E-15-16	0.035	1,644	58	0.1	152	-
	SE-BW5A-5-B-C-4-5	0.2384	2,560	610	0.1	237	-
	SE-BW5A-5-D-E-12-13	0.085	2,095	178	0.1	194	-
	SE-BW5A-5-C-D-18-19	0.056	13,443	753	0.1	1,244	-
	SE-BW5A-5-E-14-15	0.035	1,806	63	0.0	63	-
	SE-BW5A-5-E-22-23	0.037	4,394	163	0.0	163	-
	SE-BW5A-5-E-12-13	0.037	1,410	52	0.0	52	-
	SE-BW5A-5-C-D-8-9	0.056	3,332	187	0.1	187	-
		Total	68,476	315,143		5,788	
2.5–3 feet Average Total PCB (mg/kg)				**4.6**		**0.08**	
3–3.5	SE-BW5A-5-B-3-4	0.819	1,838	1,505	0.1	170	-
	SE-BW5A-5-C-7-8	0.0912	1,487	136	0.1	138	-
	SE-BW5A-5-C-D-6-7	0.0321	1,707	55	0.1	158	-
	SE-BW5A-5-D-E-15-16	0.119	3,078	366	0.1	285	-
	SE-BW5A-5-C-8-9	0.059	1,985	117	0.1	184	-
	SE-BW5A-5-C-6	0.067	2,203	148	0.1	204	-
	SE-BW5A-5-C-D-7-8	0.062	1,577	98	0.1	146	-
	SE-BW5A-5-C-6-7	0.067	1,697	114	0.1	157	-
	SE-BW5A-5-A-B-2-3	42.82	1,562	66,877	0.1	145	-
	SE-BW5A-5-A-B-3-4	30.7	1,543	47,384	0.1	143	-
	SE-BW5A-5-C-D-10-11	0.056	5,019	281	0.1	464	-
	SE-BW5A-5-D-E-16-17	0.12	5,248	630	0.1	486	-
	SE-BW5A-5-D-11-12	0.069	3,455	238	0.1	320	-
	SE-BW5A-5-B-2	24.43	660	16,113	0.1	61	-
	SE-BW5A-5-E-15-16	0.036	3,058	110	0.1	283	-
	SE-BW5A-5-B-C-4-5	0.035	2,560	90	0.1	237	-
	SE-BW5A-5-C-D-18-19	0.0294	19,381	570	0.1	1,793	-
	SE-BW5A-5-E-12-13	0.039	7,086	276	0.0	276	-
	SE-BW5A-5-C-D-8-9	0.048	3,332	160	0.0	160	-
		Total	68,476	135,267		5,808	
3–3.5 feet Average Total PCB (mg/kg)				**1.9**		**0.08**	
3.5–4	SE-BW5A-5-C-7-8	0.073	1,487	109	0.1	138	-
	SE-BW5A-5-C-D-6-7	1.432	1,707	2,445	0.1	158	-
	SE-BW5A-5-C-8-9	0.044	5,697	251	0.1	527	-
	SE-BW5A-5-C-6	0.0497	2,203	109	0.1	204	-
	SE-BW5A-5-C-D-7-8	0.0531	2,233	119	0.1	207	-
	SE-BW5A-5-C-6-7	0.059	1,697	100	0.1	157	-
	SE-BW5A-5-A-B-3-4	3.388	3,694	12,516	0.1	342	-
	SE-BW5A-5-D-11-12	0.512	45,289	23,188	0.1	4,190	-
	SE-BW5A-5-B-2	9.48	1,506	14,274	0.1	139	-
	SE-BW5A-5-B-C-4-5	0.044	2,963	130	0.1	274	-
		Total	68,476	53,240		6,335	

Table C-5
Spatially Weighted Average PCB Summary: BW5A-5

Depth (feet)	Location ID	Existing			Post-Cap		
		Total PCB (mg/kg)	Area (square feet)	Total PCB × Area	Total PCB[1] (mg/kg)	Total PCB × Area	Removal Volume (cy)
3.5–4 feet Average Total PCB (mg/kg)				**0.8**		**0.09**	
4–4.5	SE-BW5A-5-D-E-14-15	1.148	2,765	3,174	0.1	256	-
	SE-BW5A-5-B-3-4	1.827	4,728	8,637	0.1	437	-
	SE-BW5A-5-C-7-8	0.611	2,508	1,533	0.1	232	-
	SE-BW5A-5-C-D-6-7	1.177	1,707	2,009	0.1	158	-
	SE-BW5A-5-D-17-18	0.059	21,033	1,241	0.1	1,946	-
	SE-BW5A-5-C-6	0.2585	3,111	804	0.1	288	-
	SE-BW5A-5-C-D-7-8	0.102	4,226	431	0.1	391	-
	SE-BW5A-5-C-6-7	1.142	1,720	1,964	0.1	159	-
	SE-BW5A-5-A-B-2-3	5.237	1,845	9,663	0.1	171	-
	SE-BW5A-5-C-D-10-11	0.336	6,666	2,240	0.1	617	-
	SE-BW5A-5-D-E-16-17	5.81	3,841	22,316	0.1	355	-
	SE-BW5A-5-D-E-13-14	3.235	2,462	7,966	0.1	228	-
	SE-BW5A-5-D-11-12	0.685	3,454	2,366	0.1	320	-
	SE-BW5A-5-B-2	47.39	660	31,256	0.1	61	-
	SE-BW5A-5-E-15-16	0.2167	2,875	623	0.1	266	-
	SE-BW5A-5-E-13-14	0.479	1,579	757	0.5	757	-
	SE-BW5A-5-E-12-13	0.93	3,297	3,066	0.9	3,066	-
		Total	68,476	100,045		9,707	
4–4.5 feet Average Total PCB (mg/kg)				**1.3**		**0.14**	
4.5–5	SE-BW5A-5-D-E-14-15	3.51	2,765	9,704	0.1	256	-
	SE-BW5A-5-B-3-4	0.0587	7,232	425	0.1	669	-
	SE-BW5A-5-C-7-8	0.057	2,508	143	0.1	232	-
	SE-BW5A-5-C-D-6-7	0.054	1,707	92	0.1	158	-
	SE-BW5A-5-D-17-18	0.059	21,033	1,241	0.1	1,946	-
	SE-BW5A-5-C-6	0.054	3,111	168	0.1	288	-
	SE-BW5A-5-C-D-7-8	0.06	4,226	254	0.1	391	-
	SE-BW5A-5-C-6-7	0.062	1,720	107	0.1	159	-
	SE-BW5A-5-C-D-10-11	0.059	6,666	393	0.1	617	-
	SE-BW5A-5-D-E-16-17	0.12	3,841	461	0.1	355	-
	SE-BW5A-5-D-E-13-14	0.0496	2,462	122	0.1	228	-
	SE-BW5A-5-D-11-12	0.073	3,454	252	0.1	320	-
	SE-BW5A-5-E-15-16	0.036	2,875	103	0.1	266	-
	SE-BW5A-5-E-13-14	0.034	1,579	54	0.0	54	-
	SE-BW5A-5-E-12-13	0.036	3,297	119	0.0	119	-
		Total	68,476	13,637		6,057	
4.5–5 feet Average Total PCB (mg/kg)				**0.2**		**0.09**	

Notes:

1. In areas where an engineered cap will be placed, the post-cap surface and subsurface total PCB values assume 1% of the existing average surficial total PCB concentration in accordance with Section II.B.2.d(1)(a) in the Revised Final Permit.

Remedial Approach: Removal of the top foot of sediment followed by engineered cap placement

Exceeds surface remedial criteria; dredge and cap

Exceeds sub-surface remedial criteria; dredge and cap

Below remedial criteria

-: not applicable

cy: cubic yard

mg/kg: milligram per kilogram

PCB: polychlorinated biphenyl

Table C-6
Spatially Weighted Average PCB Summary: BW5A-6

Depth (feet)	Location ID	Existing			Post-Cap		
		Total PCB (mg/kg)	Area (square feet)	Total PCB × Area	Total PCB[1] (mg/kg)	Total PCB × Area	Removal Volume (cy)
0–1	SE-BW5A-6-B-C-4-5	35.03	1,712	59,973	0.1	178	63
	SE-BW5A-6-A-B-5-6	18.8	1,821	34,232	0.1	190	67
	SE-BW5A-6-B-C-6	13.53	1,613	21,829	0.1	168	60
	SE-BW5A-6-C-6	11.61	752	8,728	0.1	78	28
	SE-BW5A-6-B-C-5-6	6.08	1,709	10,393	0.1	178	63
	SE-BW5A-6-B-6	5.33	1,060	5,650	0.1	110	39
	SE-BW5A-6-C-D-6-7	4.5	1,893	8,518	0.1	197	70
	SE-BW5A-6-D-1-2	4.85	331	1,606	4.9	1,606	-
	SE-BW5A-6-C-D-3-4	4.4	1,220	5,366	4.4	5,366	-
	SE-BW5A-6-D-2-3	3.596	572	2,055	3.6	2,055	-
	SE-BW5A-6-A-B-4-5	1.62	1,635	2,648	1.6	2,648	-
	SE-BW5A-6-B-C-4	0.778	1,240	964	0.8	964	-
		Total	15,557	161,963		13,739	391
0–1 feet Average Total PCB (mg/kg)				**10.4**		**0.88**	
1–1.5	SE-BW5A-6-A-B-5-6	271	1,821	493,455	0.1	190	-
	SE-BW5A-6-B-C-4-5	33.96	1,712	58,141	0.1	178	-
	SE-BW5A-6-C-6	26.3	752	19,771	0.1	78	-
	SE-BW5A-6-B-C-6	12.02	1,613	19,392	0.1	168	-
	SE-BW5A-6-C-D-6-7	8.94	1,893	16,923	0.1	197	-
	SE-BW5A-6-B-6	8.44	1,060	8,947	0.1	110	-
	SE-BW5A-6-B-C-5-6	1.376	1,709	2,352	0.1	178	-
	SE-BW5A-6-C-D-3-4	0.055	1,220	67	0.055	67	-
	SE-BW5A-6-D-1-2	0.053	331	18	0.1	34	-
	SE-BW5A-6-B-C-4	0.052	1,240	64	0.052	64	-
	SE-BW5A-6-D-2-3	0.048	572	27	0.048	27	-
	SE-BW5A-6-A-B-4-5	0.04	1,635	65	0.04	65	-
		Total	15,557	619,223		1,358	
1–1.5 feet Average Total PCB (mg/kg)				**39.8**		**0.09**	
1.5–2	SE-BW5A-6-B-C-5-6	105.5	2,106	222,169	0.1	219	-
	SE-BW5A-6-A-B-5-6	32.7	1,821	59,542	0.1	190	-
	SE-BW5A-6-C-D-6-7	22.79	2,222	50,630	0.1	231	-
	SE-BW5A-6-B-6	15.22	1,525	23,214	0.1	159	-
	SE-BW5A-6-C-6	2.061	1,175	2,421	0.1	122	-
	SE-BW5A-6-B-C-4-5	2.03	1,712	3,475	0.1	178	-
	SE-BW5A-6-D-1-2	0.064	331	21	0.1	34	-
	SE-BW5A-6-C-D-3-4	0.047	1,220	57	0.047	57	-
	SE-BW5A-6-D-2-3	0.047	572	27	0.047	27	-
	SE-BW5A-6-A-B-4-5	0.042	1,635	69	0.042	69	-
	SE-BW5A-6-B-C-4	0.042	1,240	52	0.042	52	-
		Total	15,557	361,678		1,339	
1.5–2 feet Average Total PCB (mg/kg)				**23.2**		**0.09**	
2–2.5	SE-BW5A-6-B-C-5-6	33.8	1,760	59,478	0.1	183	-
	SE-BW5A-6-A-B-5-6	24.41	2,574	62,822	0.1	268	-
	SE-BW5A-6-B-C-6	12.29	1,613	19,828	0.1	168	-
	SE-BW5A-6-B-6	7.74	1,060	8,204	0.1	110	-
	SE-BW5A-6-C-D-6-7	2.587	1,893	4,897	0.1	197	-
	SE-BW5A-6-C-6	0.962	752	723	0.1	78	-
	SE-BW5A-6-B-C-4-5	0.646	2,544	1,643	0.1	265	-
	SE-BW5A-6-D-1-2	0.055	331	18	0.1	34	-
	SE-BW5A-6-C-D-3-4	0.041	1,220	50	0.041	50	-
	SE-BW5A-6-D-2-3	0.04	572	23	0.04	23	-
	SE-BW5A-6-B-C-4	0.038	1,240	47	0.038	47	-
		Total	15,557	157,734		1,424	
2–2.5 feet Average Total PCB (mg/kg)				**10.1**		**0.09**	
2.5–3	SE-BW5A-6-A-B-5-6	275	2,574	707,747	0.1	268	-
	SE-BW5A-6-B-C-5-6	62.4	1,760	109,805	0.1	183	-
	SE-BW5A-6-B-6	44.07	1,060	46,715	0.1	110	-
	SE-BW5A-6-C-D-6-7	10.02	1,893	18,968	0.1	197	-
	SE-BW5A-6-B-C-6	8.42	1,613	13,584	0.1	168	-
	SE-BW5A-6-C-6	0.346	752	260	0.1	78	-
	SE-BW5A-6-D-2-3	0.0872	572	50	0.0872	50	-
	SE-BW5A-6-D-1-2	0.069	331	23	0.1	34	-
	SE-BW5A-6-B-C-4-5	0.047	2,544	120	0.1	265	-
	SE-BW5A-6-B-C-4	0.045	1,240	56	0.045	56	-
	SE-BW5A-6-C-D-3-4	0.038	1,220	46	0.038	46	-
		Total	15,557	897,374		1,456	
2.5–3 feet Average Total PCB (mg/kg)				**57.7**		**0.09**	
3–3.5	SE-BW5A-6-A-B-5-6	66.2	2,929	193,899	0.1	305	-
	SE-BW5A-6-B-6	37.67	1,125	42,388	0.1	117	-
	SE-BW5A-6-B-C-6	20.01	2,994	59,900	0.1	312	-
	SE-BW5A-6-C-D-6-7	1.996	2,136	4,263	0.1	222	-
	SE-BW5A-6-D-1-2	0.052	331	17	0.1	34	-
	SE-BW5A-6-B-C-4-5	0.049	3,012	148	0.1	314	-
	SE-BW5A-6-D-2-3	0.046	1,250	58	0.046	58	-
	SE-BW5A-6-B-C-4	0.04	1,780	71	0.04	71	-
		Total	15,557	300,744		1,433	

Table C-6
Spatially Weighted Average PCB Summary: BW5A-6

Depth (feet)	Location ID	Existing			Post-Cap		
		Total PCB (mg/kg)	Area (square feet)	Total PCB × Area	Total PCB[1] (mg/kg)	Total PCB × Area	Removal Volume (cy)
3–3.5 feet Average Total PCB (mg/kg)				**19.3**		**0.09**	
3.5–4	SE-BW5A-6-B-6	13.32	1,125	14,988	0.1	117	-
	SE-BW5A-6-B-C-6	13.15	5,605	73,705	0.1	584	-
	SE-BW5A-6-A-B-5-6	7.53	5,565	41,901	0.1	579	-
	SE-BW5A-6-D-2-3	0.039	3,262	127	0.039	127	-
		Total	15,557	130,722		1,407	
3.5–4 feet Average Total PCB (mg/kg)				**8.4**		**0.09**	
4–4.5	SE-BW5A-6-B-C-6	7.98	15,557	124,145	0.1	1,620	-
		Total	15,557	124,145		1,620	
4–4.5 feet Average Total PCB (mg/kg)				**8.0**		**0.10**	
4.5–5	SE-BW5A-6-B-C-6	6.82	15,557	106,099	0.1	1,620	-
		Total	15,557	106,099		1,620	
4.5–5 feet Average Total PCB (mg/kg)				**6.8**		**0.10**	

Notes:

1. In areas where an engineered cap will be placed, the post-cap surface and subsurface total PCB values assume 1% of the existing average surficial total PCB concentration in accordance with Section II.B.2.d(1)(a) in the Revised Final Permit.

Remedial Approach: Removal of the top foot of sediment followed by engineered cap placement

Exceeds surface remedial criteria; dredge and cap

Below remedial criteria

-: not applicable

cy: cubic yard

mg/kg: milligram per kilogram

PCB: polychlorinated biphenyl

Table C-7
Spatially Weighted Average PCB Summary: Disposal

Area ID	Location ID	Area (square feet)	Existing		Disposal Volume[1,2] (cy)	
			0–1 feet Total PCB (mg/kg)	Total PCB × Area	On-Site (UDF)	Off-Site
Inside Core Area 1 Habitat						
BW5A-1	SE-BW5A-1-C-D-7-8	2,116	68.7	145,387	78	-
BW5A-1	SE-BW5A-1-D-E-9	1,283	66.3	85,071	48	-
BW5A-1	SE-BW5A-1-B-3-4	644	56.1	36,135	24	-
	Total (Core Area 1 Habitat)	4,044	-	266,593	150	-
Outside Core Area 1 Habitat						
BW5A-2	SE-BW5A-2-A-4	1,454	21.69	31,534	54	
BW5A-2	SE-BW5A-2-A-B-3	1,239	20.46	25,352	46	
BW5A-2	SE-BW5A-2-A-B-5	1,365	15.07	20,576	51	
BW5A-2	SE-BW5A-2-D-1-2	1,028	14.33	14,727	38	
BW5A-2	SE-BW5A-2-B-C-1-2	1,036	14.09	14,596	38	
BW5A-2	SE-BW5A-2-B-C-5	1,761	8.97	15,797	65	
BW5A-2	SE-BW5A-2-C-D-1	1,087	6.92	7,521	40	
BW5A-2	SE-BW5A-2-D-5	1,605	6.69	10,736	59	
BW5A-2	SE-BW5A-2-B-2	978	6.46	6,317	36	
BW5A-2	SE-BW5A-2-C-D-5-6	1,783	3.767	6,718	66	
BW5A-3	SE-BW5A-3-A-B-4-5	1,575	585	-	-	58
BW5A-3	SE-BW5A-3-A-B-3-4	1,307	262	-	-	48
BW5A-3	SE-BW5A-3-B-1-2	447	35.54	15,879	17	
BW5A-3	SE-BW5A-3-A-B-2-3	1,217	16.39	19,947	45	
BW5A-3	SE-BW5A-3-A-B-1-2	1,108	16.27	18,020	41	
BW5A-3	SE-BW5A-3-B-7	272	15.28	4,160	10	
BW5A-3	SE-BW5A-3-A-B-5-6	1,418	7.78	11,029	53	
BW5A-3	SE-BW5A-3-B-5	921	7.225	6,654	34	
BW5A-3	SE-BW5A-3-B-6	991	7.06	6,997	37	
BW5A-4	SE-BW5A-4-A-B-2-3	417	42.06	17,554	15	
BW5A-4	SE-BW5A-4-A-B-1-2	1,544	17.05	26,320	57	
BW5A-4	SE-BW5A-4-A-B-3-4	942	6.55	6,171	35	
BW5A-5	SE-BW5A-5-D-E-14-15	1,494	43.92	65,629	55	
BW5A-5	SE-BW5A-5-B-3-4	1,507	37.9	57,120	56	
BW5A-5	SE-BW5A-5-C-7-8	1,487	29.45	43,788	55	
BW5A-5	SE-BW5A-5-C-D-6-7	1,707	28.88	49,302	63	
BW5A-5	SE-BW5A-5-D-E-15-16	1,580	27.97	44,181	59	
BW5A-5	SE-BW5A-5-C-8-9	1,441	23.05	33,215	53	
BW5A-5	SE-BW5A-5-D-17-18	1,406	21.07	29,621	52	
BW5A-5	SE-BW5A-5-C-6	1,380	15.85	21,876	51	
BW5A-5	SE-BW5A-5-C-D-7-8	1,577	15.61	24,620	58	
BW5A-5	SE-BW5A-5-C-6-7	1,438	15.32	22,034	53	
BW5A-5	SE-BW5A-5-B-3	985	15.1	14,873	36	
BW5A-5	SE-BW5A-5-A-B-2-3	987	14.33	14,144	37	
BW5A-5	SE-BW5A-5-A-B-3-4	1,474	10.28	15,149	55	
BW5A-5	SE-BW5A-5-C-D-10-11	1,483	9.23	13,690	55	
BW5A-5	SE-BW5A-5-D-E-16-17	2,955	8.49	25,086	109	
BW5A-5	SE-BW5A-5-D-18-19	1,964	7.09	13,928	73	
BW5A-5	SE-BW5A-5-D-9-10	1,867	6.76	12,618	69	
BW5A-5	SE-BW5A-5-D-E-11-12	1,944	6.36	12,366	72	
BW5A-5	SE-BW5A-5-D-E-13-14	2,064	5.77	11,910	76	
BW5A-5	SE-BW5A-5-D-11-12	1,517	5.4	8,190	56	
BW5A-5	SE-BW5A-5-B-2	446	5.356	2,386	17	
BW5A-5	SE-BW5A-5-E-15-16	1,644	5.24	8,617	61	
BW5A-5	SE-BW5A-5-D-E-12-13	2,095	2.84	5,950	78	
BW5A-5	SE-BW5A-5-C-D-9-10	2,026	4.83	9,785	75	
BW5A-5	SE-BW5A-5-D-E-17-18	2,056	3.76	7,730	76	
BW5A-5	SE-BW5A-5-B-C-4-5	1,851	3.18	5,886	69	
BW5A-6	SE-BW5A-6-B-C-4-5	1,712	35.03	59,973	63	
BW5A-6	SE-BW5A-6-A-B-5-6 [2]	1,821	18.8	-	-	67
BW5A-6	SE-BW5A-6-B-C-6	1,613	13.53	21,829	60	
BW5A-6	SE-BW5A-6-C-6	752	11.61	8,728	28	
BW5A-6	SE-BW5A-6-B-C-5-6	1,709	6.08	10,393	63	
BW5A-6	SE-BW5A-6-B-6	1,060	5.33	5,650	39	
BW5A-6	SE-BW5A-6-C-D-6-7	1,893	4.5	8,518	70	
	Total (Outside Core Area 1 Habitat)	78,430	-	975,388	2,731	174
	Total (All Reach 5A Backwaters)[2]	**82,474**	**-**	**1,241,981**	**2,880**	**170**
			Volume-Weighted Average PCB (mg/kg)	**16.0**	**-**	**-**

Notes:

1. All quantities are preliminary estimates and may be subject to change during final design. Volumes represent in-place quantities and are based on a removal depth of one foot. The total volumes for all Reach 5A backwaters (in bold) are rounded.
2. Cores SE-BW5A-3-A-B-3-4, SE-BW5A-3-A-B-4-5, and SE-BW5A-6-A-B-5-6 (shaded gray) have total PCB concentrations greater than 100 mg/kg and require off-site disposal. For conservative purposes, core SE-BW5A-6-A-B-5-6 was identified as having a potential depth-weighted average PCB concentration exceeding 100 mg/kg based on the 0-to-1.5-foot average PCB (103 mg/kg). This accounts for potential dredging that may be needed for cap over-placement allowances.

-: not applicable
cy: cubic yard
mg/kg: milligram per kilogram
PCB: polychlorinated biphenyl
UDF: Upland Disposal Facility

Table C-8
Spatially Weighted Average PCB Summary: Intermittent Side Channel (E-OWB1)

Depth (feet)	Location ID	Existing			Post-Cap		
		TPCB (mg/kg)	Area (square feet)	TPCB × Area	TPCB[1] (mg/kg)	TPCB × Area	Removal Volume (cy)
0–1	SE-E-OWB1-07	13.325	675	8,993	0.06	38	25
	SE-E-OWB1-05	8.575	1,170	10,034	0.06	65	43
	SE-E-OWB1-09	6.57	347	2,283	0.06	19	13
	SE-E-OWB1-04	5.1165	636	3,256	0.06	36	24
	SE-E-OWB1-06	5.069	1,518	7,694	0.06	85	56
	SE-E-OWB1-03	5.98	670	4,005	5.98	4,005	-
	SE-E-OWB1-02	2.7295	559	1,525	2.73	1,525	-
	SE-E-OWB1-01	1.6705	399	666	1.67	666	-
	SE-E-OWB1-10	0.646	333	215	0.65	215	-
	SE-E-OWB1-08	0.048	620	30	0.05	30	-
		Total	6,927	38,701		6,685	161
		0–1 feet Average Total PCB (mg/kg)		**5.6**		**0.96**	
1–1.5	SE-E-OWB1-07	4.09	675	2,760	0.1	38	-
	SE-E-OWB1-05	4.54	1,170	5,312	0.1	65	-
	SE-E-OWB1-09	10.41	347	3,617	0.1	19	-
	SE-E-OWB1-04	1.469	636	935	0.1	36	-
	SE-E-OWB1-06	1.36	1,518	2,064	1.4	2,064	-
	SE-E-OWB1-03	3.409	670	2,283	0.1	37	-
	SE-E-OWB1-02	4.83	559	2,699	4.8	2,699	-
	SE-E-OWB1-01	0.04	399	16	0.04	16	-
	SE-E-OWB1-10	0.047	333	16	0.05	16	-
	SE-E-OWB1-08	0.038	620	24	0.04	24	-
		Total	6,927	19,727		5,014	
		1–1.5 feet Average Total PCB (mg/kg)		**2.8**		**0.72**	
1.5–2	SE-E-OWB1-07	5.81	1,747	10,152	0.1	98	-
	SE-E-OWB1-05	4.011	1,615	6,480	0.1	90	-
	SE-E-OWB1-09	0.032	347	11	0.1	19	-
	SE-E-OWB1-04	0.043	636	27	0.1	36	-
	SE-E-OWB1-03	0.039	670	26	0.1	37	-
	SE-E-OWB1-02	1.914	958	1,833	1.9	1,833	-
	SE-E-OWB1-10	0.046	333	15	0.05	15	-
	SE-E-OWB1-08	0.043	620	27	0.04	27	-
		Total	6,927	18,571		2,155	
		1.5–2 feet Average Total PCB (mg/kg)		**2.7**		**0.31**	

Notes:

1. Given that the Revised Final Permit did not establish specific Performance Standards or other requirements for the other waterbodies, PCB concentrations are evaluated against the Performance Standards for backwaters. In areas where an engineered cap will be placed, the post-cap surface and subsurface total PCB values assume 1% of the existing average surficial total PCB concentration in accordance with Section II.B.2.d(1)(a) in the Revised Final Permit.

Remedial Approach: Removal of the top foot of sediment followed by engineered cap placement

Exceeds surface remedial criteria; dredge and cap

Below surface remedial criteria; no remediation necessary

-: not applicable

cy: cubic yard

mg/kg: milligram per kilogram

TPCB: total polychlorinated biphenyls

Table C-9
Spatially Weighted Average PCB Summary: Outlet from Morewood Lake (W-OWB1)

Depth (feet)	Location ID	Existing		
		TPCB (mg/kg)	Area (square feet)	TPCB × Area
0–1	SE-W-OWB1-01	1.285	1,937	2,489
	SE-W-OWB1-03	0.126	964	121
	SE-W-OWB1-02	0.1015	1,194	121
	SE-W-OWB1-04	0.0551	1,243	68
	SE-W-OWB1-05	0.04	2,454	98
		Total	7,792	2,898
		0–1 feet Average Total PCB (mg/kg)		**0.4**
1–1.5	SE-W-OWB1-03	0.038	4,612	175
	SE-W-OWB1-05	0.042	3,180	134
		Total	7,792	309
		1–1.5 feet Average Total PCB (mg/kg)		**0.04**
1.5–2	SE-W-OWB1-05	0.043	7,792	335
		Total	7,792	335
		1.5–2 feet Average Total PCB (mg/kg)		**0.04**

Notes:
Remedial Approach: No remediation required
Below remedial criteria; no remediation necessary

mg/kg: milligram per kilogram
TPCB: total polychlorinated biphenys

Table C-10
Spatially Weighted Average PCB Summary: West Pond (OWB-WP)

Depth (feet)	Location ID[1]	Existing			Post-Backfill			
		SLWA TPCB (mg/kg)	Area (square feet)	TPCB × Area	TPCB[2] (mg/kg)	Area (square feet)	TPCB × Area	Removal Volume (cy)
0–1	SE-WP-D-E-4-5	12.74	2,503	31,869	-	-	-	93
	SE-WP-F-6-7	12.51	1,747	21,854	-	-	-	65
	SE-WP-C-D-3-4	8.47	2,291	19,407	-	-	-	85
	SE-WP-F-G-3-4	8.16	2,537	20,686	-	-	-	94
	SE-WP-B-C-5-6	7.74	2,143	16,573	-	-	-	79
	SE-WP-B-C-4-5	7.62	2,509	19,118	-	-	-	93
	SE-WP-F-7-8	7.60	2,211	16,795	-	-	-	82
	SE-WP-D-E-5-6	7.57	2,500	18,913	-	-	-	93
	SE-WP-D-E-6-7	7.26	2,370	17,203	-	-	-	88
	SE-WP-G-4-5	7.17	1,872	13,412	-	-	-	69
	SE-WP-E-F-4-5	6.91	2,482	17,136	-	-	-	92
	SE-WP-E-F-5-6	6.66	2,554	16,996	-	-	-	95
	SE-WP-C-D-5-6	6.58	2,084	13,705	-	-	-	77
	SE-WP-F-G-4-5	6.54	2,099	13,720	-	-	-	78
	SE-WP-E-F-9-10	6.53	1,756	11,457	-	-	-	65
	SE-WP-D-E-3-4	6.46	2,479	16,009	-	-	-	92
	SE-WP-E-F-10-11	6.11	2,343	14,301	-	-	-	87
	SE-WP-E-F-3-4	5.41	2,392	12,930	-	-	-	89
	SE-WP-F-G-5-6	5.38	1,933	10,387	-	-	-	72
	SE-WP-D-E-2-3	5.26	2,275	11,966	-	-	-	84
	SE-WP-G-H-3-4	5.17	2,438	12,594	-	-	-	90
	SE-WP-E-F-8-9	5.05	1,909	9,633	-	-	-	71
	SE-WP-F-12-13	4.65	2,760	12,825	-	-	-	102
	SE-WP-E-F-2-3	3.08	2,275	7,006	-	-	-	84
	SE-WP-C-D-4-5	4.38	2,377	10,416	-	-	-	88
	SE-WP-F-G-2	3.95	1,437	5,677	-	-	-	53
	SE-WP-G-16-17	3.93	3,228	12,691	-	-	-	120
	SE-WP-G-18-19	3.29	3,209	10,541	-	-	-	119
	SE-WP-F-11-12	3.26	2,809	9,149	-	-	-	104
	SE-WP-E-9	3.17	1,642	5,207	-	-	-	61
	SE-WP-G-H-17-18	3.09	2,730	8,424	-	-	-	101
	SE-WP-E-7-8	3.03	2,065	6,252	-	-	-	76
	SE-WP-E-F-6-7	1.72	2,380	4,105	-	-	-	88
	SE-WP-G-5	0.88	977	856	-	-	-	36
	SE-WP-G-19-20	2.75	3,860	10,633	2.7545	3,860	10,633	-
	SE-WP-F-G-13-14	1.95	2,984	5,824	1.9515	2,984	5,824	-
	SE-WP-G-H-2-3	1.64	1,999	3,276	1.6385	1,999	3,276	-
	SE-WP-G-15-16	1.36	3,379	4,592	1.359	3,379	4,592	-
	SE-WP-F-G-2-3	0.80	2,222	1,787	0.8045	2,222	1,787	-
	SE-WP-A-B-4-5	0.65	2,534	1,652	0.65205	2,534	1,652	-
	SE-WP-D-E-2	0.58	1,192	690	0.579	1,192	690	-
	SE-WP-B-C-3-4	0.30	2,736	834	0.3048	2,736	834	-
	SE-WP-A-B-5-6	0.30	2,059	616	0.2991	2,059	616	-
	SE-WP-E-8-9	0.29	1,904	562	0.29495	1,904	562	-
	SE-WP-B-C-6	0.20	1,325	264	0.19955	1,325	264	-
	SE-WP-C-D-6	0.11	1,932	211	0.109	1,932	211	-
	SE-WP-C-D-2-3	0.08	1,947	153	0.0785	1,947	153	-
	SE-WP-E-F-2	0.04	1,466	54	0.0365	1,466	54	-
		Total	108,856	480,962		31,541	31,148	2,864

Table C-10
Spatially Weighted Average PCB Summary: West Pond (OWB-WP)

Depth (feet)	Location ID[1]	Existing			Post-Backfill			
		SLWA TPCB (mg/kg)	Area (square feet)	TPCB × Area	TPCB[2] (mg/kg)	Area (square feet)	TPCB × Area	Removal Volume (cy)
0–1 feet Average Total PCB (mg/kg)				**4.42**			**0.99**	
1–1.5	SE-WP-D-E-4-5	1.561	2,503	3,906	1.561	2,503	3,906	-
	SE-WP-F-6-7	0.0377	1,747	66	0.0377	1,747	66	-
	SE-WP-C-D-3-4	0.035	3,375	118	0.035	3,375	118	-
	SE-WP-F-G-3-4	2.557	2,537	6,486	-	-	-	47
	SE-WP-B-C-5-6	3.79	2,143	8,120	-	-	-	40
		3.79	629	2,385	3.79	629	2385	-
	SE-WP-B-C-4-5	1.121	3,813	4,275	1.121	3,813	4,275	-
	SE-WP-F-7-8	19.28	3,075	59,289	-	-	-	57
	SE-WP-D-E-5-6	7.04	2,500	17,601	-	-	-	46
	SE-WP-D-E-6-7	0.0315	2,838	89	0.0315	2,838	89	-
	SE-WP-G-4-5	6.49	1,872	12,146	-	-	-	35
	SE-WP-E-F-4-5	6.99	2,482	17,347	-	-	-	46
	SE-WP-E-F-5-6	1.738	2,554	4,439	1.738	2,554	4,439	-
	SE-WP-C-D-5-6	5.61	2,084	11,693	-	-	-	39
	SE-WP-F-G-4-5	0.188	2,099	395	0.188	2,099	395	-
	SE-WP-E-F-9-10	8.01	1,756	14,065	-	-	-	33
	SE-WP-D-E-3-4	2.024	2,479	5,018	-	-	-	46
	SE-WP-E-F-10-11	1.472	1,323	1,947	-	-	-	25
		1.472	1,020	1,501	1.472	1,020	1,501	-
	SE-WP-E-F-3-4	3.76	2,392	8,995	-	-	-	44
	SE-WP-F-G-5-6	0.0312	1,933	60	0.0312	1,933	60	-
	SE-WP-D-E-2-3	0.061	2,275	139	0.061	2,275	139	-
	SE-WP-G-H-3-4	0.303	2,438	739	0.303	2,438	739	-
	SE-WP-E-F-8-9	4.45	1,921	8,550	-	-	-	36
	SE-WP-F-12-13	3.59	2,760	9,909	-	-	-	51
	SE-WP-E-F-2-3	2.739	2,298	6,295	-	-	-	43
	SE-WP-C-D-4-5	1.201	2,377	2,855	1.201	2,377	2,855	-
	SE-WP-G-18-19	4.515	3,209	14,488	-	-	-	59
	SE-WP-F-11-12	1.1	2,809	3,089	-	-	-	52
	SE-WP-E-9	0.836	1,642	1,373	0.836	1,642	1,373	-
	SE-WP-G-H-17-18	1.099	6,422	7,058	1.099	6,422	7,058	-
	SE-WP-E-F-6-7	2.09	2,489	5,202	-	-	-	46
	SE-WP-G-5	6.22	977	6,078	-	-	-	18
	SE-WP-G-19-20	6.295	3,860	24,300	6.295	3,860	24,300	-
	SE-WP-F-G-13-14	0.183	5,900	1,080	0.183	5,900	1,080	-
	SE-WP-G-H-2-3	0.603	2,001	1,207	0.603	2,001	1,207	-
	SE-WP-F-G-2-3	0.16	507	81	-	-	-	9
		0.16	2,642	423	0.16	2,642	423	-
	SE-WP-A-B-4-5	0.05	3,768	188	0.05	3,768	188	-
	SE-WP-D-E-2	0.056	1,192	67	0.056	1,192	67	-
	SE-WP-E-8-9	0.042	2,517	106	0.042	2,517	106	-
	SE-WP-B-C-6	0.12	1,610	193	0.12	1,610	193	-
	SE-WP-C-D-6	0.14	1,932	271	0.14	1,932	271	-
	SE-WP-C-D-2-3	0.034	2,206	75	0.034	2,206	75	-
	SE-WP-E-F-2	0.033	485	16	-	-	-	9
		0.033	1,466	48	0.033	1,466	48	-

Table C-10
Spatially Weighted Average PCB Summary: West Pond (OWB-WP)

Depth (feet)	Location ID[1]	Existing			Post-Backfill			
		SLWA TPCB (mg/kg)	Area (square feet)	TPCB × Area	TPCB[2] (mg/kg)	Area (square feet)	TPCB × Area	Removal Volume (cy)
1.5–2	SE-WP-D-E-4-5	0.071	2,503	178	0.071	2,503	178	-
	SE-WP-C-D-3-4	0.083	4,719	392	0.083	4,719	392	-
	SE-WP-F-G-3-4	0.057	3,026	173	0.057	3,026	173	-
	SE-WP-B-C-5-6	5.69	4,280	24,353	5.69	4,280	24,353	-
	SE-WP-B-C-4-5	0.032	6,072	194	0.032	6,072	194	-
	SE-WP-F-7-8	1.923	3,584	6,891	1.923	3,584	6,891	-
	SE-WP-D-E-5-6	0.079	2,500	198	0.079	2,500	198	-
	SE-WP-D-E-6-7	0.043	2,847	122	0.043	2,847	122	-
	SE-WP-G-4-5	0.17	1,872	318	0.17	1,872	318	-
	SE-WP-E-F-4-5	0.059	2,482	146	0.059	2,482	146	-
	SE-WP-E-F-5-6	0.069	2,579	178	0.069	2,579	178	-
	SE-WP-C-D-5-6	1.084	2,084	2,259	1.084	2,084	2,259	-
	SE-WP-F-G-4-5	0.139	2,099	292	0.139	2,099	292	-
	SE-WP-E-F-9-10	0.0675	4,600	310	0.0675	4,600	310	-
	SE-WP-D-E-3-4	0.17	2,481	422	0.17	2,481	422	-
	SE-WP-E-F-3-4	0.21	2,392	502	0.21	2,392	502	-
	SE-WP-F-G-5-6	0.034	2,576	88	0.034	2,576	88	-
	SE-WP-D-E-2-3	0.033	4,165	137	0.033	4,165	137	-
	SE-WP-G-H-3-4	0.033	2,438	80	0.033	2,438	80	-
	SE-WP-E-F-8-9	0.811	3,858	3,129	0.811	3,858	3,129	-
	SE-WP-F-12-13	5.63	7,157	40,294	5.63	7,157	40,294	-
	SE-WP-E-F-2-3	10.43	3,290	34,313	--	--	--	61
		10.43	2,316	24,160	10.43	2,316	24,160	-
	SE-WP-C-D-4-5	0.0741	2,377	176	0.0741	2,377	176	-
	SE-WP-G-18-19	9.37	3,209	30,068	--	--	--	59
		9.37	3,860	36,168	9.37	3,860	36,168	-
	SE-WP-F-11-12	7.5	4,131	30,986	--	--	--	77
	SE-WP-G-H-17-18	2.34	7,925	18,545	2.34	7,925	18,545	-
	SE-WP-E-F-6-7	0.0541	3,447	186	0.0541	3,447	186	-
	SE-WP-G-5	0.037	977	36	0.037	977	36	-
	SE-WP-G-H-2-3	0.1825	3,465	632	0.1825	3,465	632	-
	SE-WP-B-C-6	0.088	1,611	142	0.088	1,611	142	-
	SE-WP-C-D-6	0.18	1,932	348	0.18	1,932	348	-
2–2.5	SE-WP-D-E-5-6	0.071	6,258	444	0.071	6,258	444	-
	SE-WP-G-4-5	0.049	10,026	491	0.049	10,026	491	-
	SE-WP-E-F-5-6	0.342	14,285	4,885	0.342	14,285	4,885	-
	SE-WP-C-D-5-6	0.088	9,600	845	0.088	9,600	845	-
	SE-WP-D-E-2-3	0.034	11,084	377	0.034	11,084	377	-
	SE-WP-F-12-13	1.429	7,157	10,227	1.429	7,157	10,227	-
	SE-WP-E-F-2-3	1.15	11,664	13,414	1.15	11,664	13,414	-
	SE-WP-G-18-19	0.0766	7,069	541	0.0766	7,069	541	-
	SE-WP-F-11-12	1.842	9,732	17,926	1.842	9,732	17,926	-
	SE-WP-G-H-17-18	0.039	7,925	309	0.039	7,925	309	-
	SE-WP-B-C-6	0.07	7,190	503	0.07	7,190	503	-
	SE-WP-C-D-6	0.062	6,866	426	0.062	6,866	426	-
		Total	326,567	580,577		273,841	268,794	976
		Subsurface Average Total PCB (mg/kg)		**1.78**			**0.98**	

Notes:

1. Thiessen polygons are generated based on the data available per depth interval. Select polygons at depth are split with a portion of that extent targeted for remediation based on the remedial extent of shallower depth intervals.
2. The measured PCB concentration is used for subsurface intervals not dredged, regardless of the extent of backfill placement.

Remedial Approach: Dredge to achieve 1 mg/kg in the surface and subsurface, followed by backfill placement

Exceeds remedial criteria; dredge and backfill

Below remedial criteria; no remediation necessary

-: not applicable

cy: cubic yard

mg/kg: milligram per kilogram

TPCB: total polychlorinated biphenyls

Table C-11
Spatially Weighted Average PCB Summary: Lower Sackett Brook (E-OWB2)

Depth (feet)	Location ID	TPCB (mg/kg)	Area (square feet)	TPCB × Area
0–1	SE-E-OWB2-06	1.1505	1,938	2,229
	SE-E-OWB2-01	0.76595	1,241	951
	SE-E-OWB2-07	0.3257	1,396	455
	SE-E-OWB2-08	0.2712	1,790	485
	SE-E-OWB2-04	0.11935	1,065	127
	SE-E-OWB2-03	0.11215	1,870	210
	SE-E-OWB2-05	0.089	1,663	148
	SE-E-OWB2-02	0.0674	2,529	170
	SE-E-OWB2-09	0.06135	3,733	229
		Total	17,224	5,004
		0–1 feet Average Total PCB (mg/kg)		**0.29**
1-1.5'	SE-E-OWB2-06	1.711	1,938	3,315
	SE-E-OWB2-07	0.041	1,396	57
	SE-E-OWB2-08	0.042	1,790	75
	SE-E-OWB2-03	0.06	2,370	142
	SE-E-OWB2-05	0.045	2,227	100
	SE-E-OWB2-02	0.0451	3,770	170
	SE-E-OWB2-09	0.2008	3,733	750
		Total	17,224	4,610
		1–1.5 feet Average Total PCB (mg/kg)		**0.27**
1.5-2'	SE-E-OWB2-03	0.068	17,224	1,171
		Total	17,224	1,171
		1.5–2 feet Average Total PCB (mg/kg)		**0.07**

Notes:

Remedial Approach: No remediation required

Below remedial criteria; no remediation necessary

mg/kg: milligram per kilogram

TPCB: total polychlorinated biphenyls

Table C-12
Spatially Weighted Average PCB Summary: Lower Sykes Brook (E-OWB3)

Depth (feet)	Location ID	Existing			Post-Cap		
		TPCB (mg/kg)	Area (square feet)	TPCB × Area	TPCB[1] (mg/kg)	TPCB × Area	Removal Volume (cy)
0–1	SE-E-OWB3-03	17.733	3,916	69,440	0.09	336	145
	SE-E-OWB3-01	1.332	1,564	2,083	1.33	2,083	-
	SE-E-OWB3-02	0.056	2,868	161	0.06	161	-
		Total	8,348	71,683		2,580	145
0–1 feet Average Total PCB (mg/kg)				**8.59**		**0.31**	
1–1.5	SE-E-OWB3-03	118.4	3,916	463,637	0.09	336	-
	SE-E-OWB3-01	0.043	1,564	67	0.04	67	-
	SE-E-OWB3-02	0.039	2,868	112	0.04	112	-
		Total	8,348	463,816		515	
1–1.5 feet Average Total PCB (mg/kg)				**55.6**		**0.06**	
1.5–2	SE-E-OWB3-03	43.7	5,834	254,937	0.09	501	-
	SE-E-OWB3-01	0.039	2,514	98	0.04	98	-
		Total	8,348	255,035		599	
1.5–2 feet Average Total PCB (mg/kg)				**30.6**		**0.07**	

Notes:

1. Given that the Revised Final Permit did not establish specific Performance Standards or other requirements for the other waterbodies, PCB concentrations are evaluated against the Performance Standards for backwaters. In areas where an engineered cap will be placed, the post-cap surface and subsurface total PCB values assume 1% of the existing average surficial total PCB concentration in accordance with Section II.B.2.d(1)(a) in the Revised Final Permit.

Remedial Approach: Removal of the top foot of sediment followed by engineered cap placement

Exceeds surface remedial criteria; dredge and cap

Below surface remedial criteria; no remediation necessary

cy: cubic yard

mg/kg: milligram per kilogram

TPCB: total polychlorinated biphenyls

Table C-13
Spatially Weighted Average PCB Summary: Disposal

Area ID	Location ID	Area (square feet)	Target Dredge Depth (feet)	Required Removal (Neat)		Disposal Volume[1] (cy)
				Depth-Weighted Average Total PCB (mg/kg)	TPCB × Area	On-Site (UDF)
E-OWB1	SE-E-OWB1-07	675	1.0	13.33	8,993	25
E-OWB1	SE-E-OWB1-05	1,170	1.0	8.58	10,034	43
E-OWB1	SE-E-OWB1-09	347	1.0	6.57	2,283	13
E-OWB1	SE-E-OWB1-04	636	1.0	5.12	3,256	24
E-OWB1	SE-E-OWB1-06	1,518	1.0	5.07	7,694	56
OWB-WP	SE-WP-B-C-4-5	2,509	1.0	7.62	19,118	93
OWB-WP	SE-WP-B-C-5-6	2,143	1.5	6.42	13,755	119
OWB-WP	SE-WP-C-D-3-4	2,291	1.0	8.47	19,407	85
OWB-WP	SE-WP-C-D-4-5	2,377	1.0	4.38	10,416	88
OWB-WP	SE-WP-C-D-5-6	2,084	1.5	6.25	13,034	116
OWB-WP	SE-WP-D-E-2-3	2,275	1.0	5.26	11,966	84
OWB-WP	SE-WP-D-E-3-4	2,479	1.5	4.98	12,345	138
OWB-WP	SE-WP-D-E-4-5	2,503	1.0	12.74	31,869	93
OWB-WP	SE-WP-D-E-5-6	2,500	1.5	7.39	18,476	139
OWB-WP	SE-WP-D-E-6-7	2,370	1.0	7.26	17,203	88
OWB-WP	SE-WP-E-7-8	2,065	1.0	3.03	6,252	76
OWB-WP	SE-WP-E-9	1,642	1.0	3.17	5,207	61
OWB-WP	SE-WP-E-F-10-11	2,343	1.5	4.56	10,684	111
OWB-WP	SE-WP-E-F-2	485	1.5	0.01	5	9
OWB-WP	SE-WP-E-F-2-3	2,275	2.0	4.83	10,992	188
OWB-WP	SE-WP-E-F-3-4	2,392	1.5	4.86	11,619	133
OWB-WP	SE-WP-E-F-4-5	2,482	1.5	6.93	17,206	138
OWB-WP	SE-WP-E-F-5-6	2,554	1.0	6.66	16,996	95
OWB-WP	SE-WP-E-F-6-7	2,380	1.5	1.85	4,395	134
OWB-WP	SE-WP-E-F-8-9	1,909	1.5	4.85	9,255	106
OWB-WP	SE-WP-E-F-9-10	1,756	1.5	7.02	12,326	98
OWB-WP	SE-WP-F-11-12	2,809	2.0	3.78	10,613	233
OWB-WP	SE-WP-F-12-13	2,760	1.5	4.29	11,853	153
OWB-WP	SE-WP-F-6-7	1,747	1.0	12.51	21,854	65
OWB-WP	SE-WP-F-7-8	2,211	1.5	11.49	25,409	139
OWB-WP	SE-WP-F-G-2	1,437	1.0	3.95	5,677	53
OWB-WP	SE-WP-F-G-2-3	507	1.5	0.05	25	9
OWB-WP	SE-WP-F-G-3-4	2,537	1.5	6.29	15,953	141
OWB-WP	SE-WP-F-G-4-5	2,099	1.0	6.54	13,720	78
OWB-WP	SE-WP-F-G-5-6	1,933	1.0	5.38	10,387	72
OWB-WP	SE-WP-G-16-17	3,228	1.0	3.93	12,691	120
OWB-WP	SE-WP-G-18-19	3,209	2.0	5.11	16,409	238
OWB-WP	SE-WP-G-4-5	1,872	1.5	6.94	12,990	104
OWB-WP	SE-WP-G-5	977	1.5	2.66	2,599	54
OWB-WP	SE-WP-G-H-17-18	2,730	1.0	3.09	8,424	101
OWB-WP	SE-WP-G-H-3-4	2,438	1.0	5.17	12,594	90
E-OWB3	SE-E-OWB3-03	3,916	1.0	17.73	69,440	145
	Total	**86,569**	**-**	**-**	**555,423**	**4,150**
				Volume-Weighted Average PCB (mg/kg)	**6.4**	**-**

Notes:
1. All quantities are preliminary estimates and may be subject to change during final design. Volumes represent in-place quantities.

cy: cubic yard
mg/kg: milligram per kilogram
PCB: polychlorinated biphenyl
UDF: Upland Disposal Facility

Appendix D
PCB Evaluations for Riverbank Soils

Table D-1
Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
East	RB-E-000-00	25.2	Low	Non-Erodible Bank	0.3	No Remediation Required	-	-
East	RB-E-000-25	25.2	Low	Non-Erodible Bank	8.7	No Remediation Required	-	-
East	RB-E-000-49	25.2	Low	Non-Erodible Bank	2.9	No Remediation Required	-	-
East	RB-E-000-72	25.2	Low	Non-Erodible Bank	0.8	No Remediation Required	-	-
East	RB-E-000-89	20.2	Moderate	Non-Erodible Bank	6.5	Supplemental Remediation Area	25.8	167
East	RB-E-001-00	20.2	Moderate	Non-Erodible Bank	2.2	Supplemental Remediation Area	23.0	51
East	RB-E-001-24	20.2	Moderate	Non-Erodible Bank	16.8	Supplemental Remediation Area	25.4	427
East	RB-E-001-48	30.5	Moderate	Erodible Bank	0.2	Supplemental Remediation Area	24.6	6
East	RB-E-001-77	30.5	Moderate	Erodible Bank	24.7	Remediation Required	25.6	634
East	RB-E-001-92	30.5	Moderate	Erodible Bank	2.2	Supplemental Remediation Area	25.2	55
East	RB-E-002-13	30.5	Moderate	Erodible Bank	0.2	Supplemental Remediation Area	24.8	4
East	RB-E-002-38	30.5	Moderate	Erodible Bank	0.1	No Remediation Required	-	-
East	RB-E-002-62	24.2	Moderate	Non-Erodible Bank	0.1	No Remediation Required	-	-
East	RB-E-002-85	24.2	Moderate	Non-Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-003-13	24.2	Moderate	Non-Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-003-71	17.7	Low	Non-Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-004-51	17.7	Low	Non-Erodible Bank	3.5	No Remediation Required	-	-
East	RB-E-004-92	17.7	Low	Non-Erodible Bank	2.3	No Remediation Required	-	-
East	RB-E-005-13	17.7	Low	Non-Erodible Bank	1.9	No Remediation Required	-	-
East	RB-E-005-38	28.5	Low	Non-Erodible Bank	11.5	No Remediation Required	-	-
East	RB-E-005-62	28.5	Low	Non-Erodible Bank	2.7	No Remediation Required	-	-
East	RB-E-005-91	28.5	Low	Non-Erodible Bank	4.3	No Remediation Required	-	-
East	RB-E-006-28	23.0	Low	Non-Erodible Bank	1.5	No Remediation Required	-	-
East	RB-E-006-50	23.0	Low	Non-Erodible Bank	5.4	No Remediation Required	-	-
East	RB-E-006-77	14.7	Low	Non-Erodible Bank	2.0	No Remediation Required	-	-
East	RB-E-007-05	14.7	Low	Non-Erodible Bank	1.6	No Remediation Required	-	-
East	RB-E-007-28	19.5	Extreme	Non-Erodible Bank	2.4	Supplemental Remediation Area	25.4	61
East	RB-E-007-45	19.5	Extreme	Non-Erodible Bank	3.7	Supplemental Remediation Area	25.2	93
East	RB-E-007-58	19.5	Extreme	Non-Erodible Bank	3.1	Supplemental Remediation Area	23.8	75
East	RB-E-007-65	19.5	Extreme	Non-Erodible Bank	5.3	Supplemental Remediation Area	25.7	135
East	RB-E-007-73	19.5	Extreme	Non-Erodible Bank	7.5	Supplemental Remediation Area	25.2	189
East	RB-E-007-82	18.4	Extreme	Non-Erodible Bank	5.2	Supplemental Remediation Area	25.6	134
East	RB-E-008-05	18.4	Extreme	Non-Erodible Bank	0.1	No Remediation Required	-	-
East	RB-E-008-33	18.4	Low	Non-Erodible Bank	4.5	No Remediation Required	-	-
East	RB-E-008-54	18.4	Low	Non-Erodible Bank	12.5	No Remediation Required	-	-
East	RB-E-008-74	30.3	Low	Non-Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-008-99	30.3	Low	Non-Erodible Bank	0.2	No Remediation Required	-	-
East	RB-E-009-20	30.3	Low	Non-Erodible Bank	236.0	No Remediation Required	-	-
East	RB-E-009-37	30.3	Low	Non-Erodible Bank	0.1	Supplemental Remediation Area	27.2	3
East	RB-E-009-57	30.3	High	Erodible Bank	6.1	Remediation Required	25.3	154
East	RB-E-009-82	30.3	High	Erodible Bank	50.6	Remediation Required	23.9	1,209
East	RB-E-010-05	30.3	High	Erodible Bank	6.9	Remediation Required	24.8	170
East	RB-E-010-21	34.3	High	Erodible Bank	0.2	Supplemental Remediation Area	25.8	4
East	RB-E-010-41	34.3	High	Erodible Bank	75.1	Remediation Required	24.6	1,848
East	RB-E-010-61	34.3	High	Erodible Bank	19.9	Remediation Required	22.9	454
East	RB-E-010-72	34.3	High	Erodible Bank	19.6	Remediation Required	26.1	512
East	RB-E-010-94	34.3	High	Erodible Bank	12.2	Remediation Required	37.9	463
East	RB-E-011-33	34.3	High	Erodible Bank	0.1	No Remediation Required	-	-
East	RB-E-011-60	28.0	Low	Non-Erodible Bank	6.5	No Remediation Required	-	-
East	RB-E-011-95	28.0	Low	Non-Erodible Bank	1.3	No Remediation Required	-	-
East	RB-E-012-24	28.0	Low	Non-Erodible Bank	0.1	No Remediation Required	-	-
East	RB-E-012-83	28.0	Low	Non-Erodible Bank	7.7	No Remediation Required	-	-
East	RB-E-013-09	21.0	Low	Non-Erodible Bank	4.7	No Remediation Required	-	-
East	RB-E-013-64	27.5	Low	Non-Erodible Bank	5.3	No Remediation Required	-	-
East	RB-E-014-11	27.5	Low	Non-Erodible Bank	3.6	No Remediation Required	-	-
East	RB-E-014-42	27.5	Low	Non-Erodible Bank	3.1	No Remediation Required	-	-
East	RB-E-014-69	27.5	Low	Non-Erodible Bank	3.6	No Remediation Required	-	-
East	RB-E-014-88	27.5	Very High	Erodible Bank	4.1	No Remediation Required	-	-
East	RB-E-015-16	27.5	Very High	Erodible Bank	5.0	Remediation Required	12.5	62
East	RB-E-015-26	27.5	Very High	Erodible Bank	7.6	Remediation Required	24.9	189
East	RB-E-015-53	27.5	Very High	Erodible Bank	0.3	No Remediation Required	-	-
East	RB-E-015-69	27.5	Very High	Erodible Bank	0.2	No Remediation Required	-	-
East	RB-E-015-84	25.4	Low	Non-Erodible Bank	1.1	No Remediation Required	-	-
East	RB-E-016-15	25.4	Low	Non-Erodible Bank	1.1	No Remediation Required	-	-
East	RB-E-016-39	28.8	Low	Non-Erodible Bank	0.9	No Remediation Required	-	-
East	RB-E-016-63	28.8	Low	Non-Erodible Bank	2.1	No Remediation Required	-	-
East	RB-E-016-83	28.8	Low	Non-Erodible Bank	1.4	No Remediation Required	-	-
East	RB-E-017-02	28.8	Low	Non-Erodible Bank	8.8	No Remediation Required	-	-
East	RB-E-017-27	28.8	Low	Non-Erodible Bank	1.7	No Remediation Required	-	-
East	RB-E-017-48	28.8	Low	Non-Erodible Bank	0.6	No Remediation Required	-	-
East	RB-E-017-70	26.3	Low	Non-Erodible Bank	7.3	No Remediation Required	-	-
East	RB-E-017-98	26.3	Low	Non-Erodible Bank	0.2	No Remediation Required	-	-
East	RB-E-018-24	26.3	Low	Non-Erodible Bank	27.5	No Remediation Required	-	-
East	RB-E-018-45	26.3	Low	Non-Erodible Bank	6.8	No Remediation Required	-	-
East	RB-E-018-65	26.3	Low	Non-Erodible Bank	11.9	No Remediation Required	-	-
East	RB-E-018-92	26.3	Low	Non-Erodible Bank	1.3	No Remediation Required	-	-
East	RB-E-019-14	26.3	Low	Non-Erodible Bank	16.6	No Remediation Required	-	-
East	RB-E-019-42	26.3	Low	Non-Erodible Bank	22.7	No Remediation Required	-	-
East	RB-E-019-66	26.3	Low	Non-Erodible Bank	6.5	No Remediation Required	-	-
East	RB-E-019-89	26.3	Low	Non-Erodible Bank	5.8	No Remediation Required	-	-
East	RB-E-020-11	27.2	Low	Non-Erodible Bank	10.6	No Remediation Required	-	-
East	RB-E-020-38	27.2	Low	Non-Erodible Bank	6.1	No Remediation Required	-	-
East	RB-E-020-63	27.2	Low	Non-Erodible Bank	12.8	No Remediation Required	-	-
East	RB-E-020-89	21.9	Low	Non-Erodible Bank	4.1	No Remediation Required	-	-
East	RB-E-021-16	21.9	Low	Non-Erodible Bank	3.1	No Remediation Required	-	-

Table D-1
Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
East	RB-E-021-42	21.9	Low	Non-Erodible Bank	15.7	No Remediation Required	-	-
East	RB-E-021-62	21.9	Low	Non-Erodible Bank	6.1	No Remediation Required	-	-
East	RB-E-021-85	21.9	Low	Non-Erodible Bank	11.5	No Remediation Required	-	-
East	RB-E-022-15	21.9	Low	Non-Erodible Bank	6.8	No Remediation Required	-	-
East	RB-E-022-42	21.9	Low	Non-Erodible Bank	9.4	No Remediation Required	-	-
East	RB-E-022-63	21.9	Low	Non-Erodible Bank	4.6	No Remediation Required	-	-
East	RB-E-022-92	27.3	Low	Non-Erodible Bank	5.4	No Remediation Required	-	-
East	RB-E-023-20	27.3	Low	Non-Erodible Bank	3.6	No Remediation Required	-	-
East	RB-E-023-47	27.3	Low	Non-Erodible Bank	5.9	No Remediation Required	-	-
East	RB-E-023-69	27.3	Low	Non-Erodible Bank	5.5	No Remediation Required	-	-
East	RB-E-023-97	27.3	Low	Non-Erodible Bank	5.3	No Remediation Required	-	-
East	RB-E-024-23	27.3	Low	Non-Erodible Bank	5.7	No Remediation Required	-	-
East	RB-E-024-63	27.3	Low	Non-Erodible Bank	3.4	No Remediation Required	-	-
East	RB-E-024-97	25.9	Low	Non-Erodible Bank	4.9	No Remediation Required	-	-
East	RB-E-025-38	25.9	Low	Non-Erodible Bank	3.3	No Remediation Required	-	-
East	RB-E-025-72	25.9	Low	Non-Erodible Bank	3.2	No Remediation Required	-	-
East	RB-E-026-03	25.9	Low	Non-Erodible Bank	4.2	No Remediation Required	-	-
East	RB-E-026-26	25.9	Low	Non-Erodible Bank	6.1	No Remediation Required	-	-
East	RB-E-026-55	25.9	Low	Non-Erodible Bank	6.2	No Remediation Required	-	-
East	RB-E-026-76	25.9	Low	Non-Erodible Bank	5.8	No Remediation Required	-	-
East	RB-E-026-98	25.9	Low	Non-Erodible Bank	11.9	No Remediation Required	-	-
East	RB-E-027-27	25.9	Low	Non-Erodible Bank	2.4	No Remediation Required	-	-
East	RB-E-027-53	33.9	Low	Non-Erodible Bank	3.8	No Remediation Required	-	-
East	RB-E-027-76	33.9	Low	Non-Erodible Bank	3.1	No Remediation Required	-	-
East	RB-E-028-04	33.9	Low	Non-Erodible Bank	3.8	No Remediation Required	-	-
East	RB-E-028-29	33.9	Low	Non-Erodible Bank	2.9	No Remediation Required	-	-
East	RB-E-028-51	33.9	Low	Non-Erodible Bank	3.6	No Remediation Required	-	-
East	RB-E-028-75	33.9	Very High	Erodible Bank	3.3	No Remediation Required	-	-
East	RB-E-028-98	33.9	Very High	Erodible Bank	7.0	Remediation Required	25.1	176
East	RB-E-029-20	33.9	Very High	Erodible Bank	6.6	Remediation Required	25.1	165
East	RB-E-029-42	33.9	Very High	Erodible Bank	40.8	Remediation Required	24.9	1,017
East	RB-E-029-63	33.9	Very High	Erodible Bank	3.1	No Remediation Required	-	-
East	RB-E-029-88	33.9	Low	Non-Erodible Bank	4.1	No Remediation Required	-	-
East	RB-E-030-09	33.9	Low	Non-Erodible Bank	0.9	No Remediation Required	-	-
East	RB-E-030-28	33.9	Low	Non-Erodible Bank	6.5	No Remediation Required	-	-
East	RB-E-030-48	23.2	Low	Non-Erodible Bank	1.2	No Remediation Required	-	-
East	RB-E-030-72	23.2	Low	Non-Erodible Bank	1.3	No Remediation Required	-	-
East	RB-E-030-99	23.2	Low	Non-Erodible Bank	6.7	No Remediation Required	-	-
East	RB-E-031-18	23.2	Low	Non-Erodible Bank	7.2	No Remediation Required	-	-
East	RB-E-031-43	23.2	Low	Non-Erodible Bank	0.9	No Remediation Required	-	-
East	RB-E-031-65	35.2	Low	Non-Erodible Bank	7.9	No Remediation Required	-	-
East	RB-E-031-90	35.2	Low	Non-Erodible Bank	0.2	No Remediation Required	-	-
East	RB-E-032-07	35.2	Low	Non-Erodible Bank	12.8	No Remediation Required	-	-
East	RB-E-032-30	35.2	Low	Non-Erodible Bank	4.8	No Remediation Required	-	-
East	RB-E-032-52	35.2	Low	Non-Erodible Bank	2.9	No Remediation Required	-	-
East	RB-E-032-76	38.2	Moderate	Erodible Bank	4.6	No Remediation Required	-	-
East	RB-E-033-01	38.2	Moderate	Erodible Bank	4.2	No Remediation Required	-	-
East	RB-E-033-23	38.2	Moderate	Erodible Bank	7.0	Remediation Required	25.2	177
East	RB-E-033-44	38.2	Moderate	Erodible Bank	2.8	Supplemental Remediation Area	25.0	70
East	RB-E-033-67	38.2	Moderate	Erodible Bank	1.5	Supplemental Remediation Area	24.7	37
East	RB-E-033-92	38.2	Moderate	Erodible Bank	3.9	Supplemental Remediation Area	25.0	98
East	RB-E-034-16	38.2	Moderate	Erodible Bank	10.3	Remediation Required	25.0	256
East	RB-E-034-35	38.2	Moderate	Erodible Bank	4.0	Supplemental Remediation Area	25.1	99
East	RB-E-034-63	38.2	Low	Non-Erodible Bank	6.2	Supplemental Remediation Area	25.0	155
East	RB-E-034-87	38.2	Low	Non-Erodible Bank	6.4	Supplemental Remediation Area	25.0	159
East	RB-E-035-05	38.2	Very High	Erodible Bank	12.8	Remediation Required	25.1	322
East	RB-E-035-30	38.2	Very High	Erodible Bank	11.4	Remediation Required	25.1	287
East	RB-E-035-57	38.2	Very High	Erodible Bank	11.9	Remediation Required	24.7	294
East	RB-E-035-86	38.2	Very High	Erodible Bank	15.1	Remediation Required	25.3	382
East	RB-E-036-15	20.7	Very High	Non-Erodible Bank	8.7	Supplemental Remediation Area	25.1	219
East	RB-E-036-50	25.6	Low	Non-Erodible Bank	12.4	Supplemental Remediation Area	24.6	304
East	RB-E-036-77	25.6	Low	Non-Erodible Bank	11.3	Supplemental Remediation Area	25.1	283
East	RB-E-037-13	25.6	Low	Non-Erodible Bank	15.6	No Remediation Required	-	-
East	RB-E-037-46	25.6	Low	Non-Erodible Bank	5.8	No Remediation Required	-	-
East	RB-E-037-73	19.4	Low	Non-Erodible Bank	6.2	No Remediation Required	-	-
East	RB-E-038-06	19.4	Low	Non-Erodible Bank	4.2	No Remediation Required	-	-
East	RB-E-038-37	19.4	Low	Non-Erodible Bank	4.6	No Remediation Required	-	-
East	RB-E-038-59	19.4	Low	Non-Erodible Bank	4.6	No Remediation Required	-	-
East	RB-E-038-79	19.4	Low	Non-Erodible Bank	6.0	No Remediation Required	-	-
East	RB-E-039-04	19.4	Low	Non-Erodible Bank	3.1	Supplemental Remediation Area	25.3	78
East	RB-E-039-20	31.7	Very High	Erodible Bank	3.0	Supplemental Remediation Area	24.9	74
East	RB-E-039-32	31.7	Very High	Erodible Bank	2.7	Supplemental Remediation Area	23.7	65
East	RB-E-039-50	31.7	Very High	Erodible Bank	20.2	Remediation Required	25.8	521
East	RB-E-039-71	25.2	Very High	Non-Erodible Bank	11.8	No Remediation Required	-	-
East	RB-E-039-92	25.2	Very High	Non-Erodible Bank	14.7	No Remediation Required	-	-
East	RB-E-040-09	25.2	Very High	Non-Erodible Bank	12.3	No Remediation Required	-	-
East	RB-E-040-36	25.2	Very High	Non-Erodible Bank	12.2	No Remediation Required	-	-
East	RB-E-040-59	25.2	Very High	Non-Erodible Bank	14.7	No Remediation Required	-	-
East	RB-E-040-88	25.2	Very High	Non-Erodible Bank	4.7	No Remediation Required	-	-
East	RB-E-041-17	20.2	Low	Non-Erodible Bank	46.2	No Remediation Required	-	-
East	RB-E-041-46	20.2	Low	Non-Erodible Bank	3.3	No Remediation Required	-	-
East	RB-E-041-66	20.2	Low	Non-Erodible Bank	3.9	No Remediation Required	-	-
East	RB-E-041-92	20.2	Low	Non-Erodible Bank	3.5	No Remediation Required	-	-
East	RB-E-042-13	20.2	Low	Non-Erodible Bank	5.7	No Remediation Required	-	-
East	RB-E-042-38	20.2	Low	Non-Erodible Bank	22.3	No Remediation Required	-	-

Table D-1
Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
East	RB-E-042-62	35.9	Low	Non-Erodible Bank	10.3	No Remediation Required	-	-
East	RB-E-042-86	35.9	Low	Non-Erodible Bank	33.5	No Remediation Required	-	-
East	RB-E-043-10	35.9	Low	Non-Erodible Bank	12.2	No Remediation Required	-	-
East	RB-E-043-37	35.9	Low	Non-Erodible Bank	4.4	No Remediation Required	-	-
East	RB-E-043-74	35.9	Low	Non-Erodible Bank	19.9	No Remediation Required	-	-
East	RB-E-044-03	28.3	Low	Non-Erodible Bank	44.2	No Remediation Required	-	-
East	RB-E-044-29	28.3	Low	Non-Erodible Bank	4.4	No Remediation Required	-	-
East	RB-E-044-57	28.3	Low	Non-Erodible Bank	13.8	No Remediation Required	-	-
East	RB-E-044-85	16.4	Low	Non-Erodible Bank	2.6	No Remediation Required	-	-
East	RB-E-045-09	16.4	Low	Non-Erodible Bank	4.0	No Remediation Required	-	-
East	RB-E-045-36	16.4	Low	Non-Erodible Bank	5.7	No Remediation Required	-	-
East	RB-E-045-60	16.4	Low	Non-Erodible Bank	3.7	No Remediation Required	-	-
East	RB-E-045-80	16.4	Low	Non-Erodible Bank	9.3	No Remediation Required	-	-
East	RB-E-046-09	16.4	Low	Non-Erodible Bank	9.5	No Remediation Required	-	-
East	RB-E-046-32	22.3	Low	Non-Erodible Bank	9.0	No Remediation Required	-	-
East	RB-E-046-54	22.3	Low	Non-Erodible Bank	13.0	No Remediation Required	-	-
East	RB-E-046-78	22.3	Low	Non-Erodible Bank	13.7	No Remediation Required	-	-
East	RB-E-047-05	22.3	Low	Non-Erodible Bank	33.7	No Remediation Required	-	-
East	RB-E-047-32	22.3	Low	Non-Erodible Bank	7.4	No Remediation Required	-	-
East	RB-E-047-56	15.6	Low	Non-Erodible Bank	26.7	No Remediation Required	-	-
East	RB-E-047-82	15.6	Low	Non-Erodible Bank	8.5	No Remediation Required	-	-
East	RB-E-048-06	15.6	Low	Non-Erodible Bank	10.7	No Remediation Required	-	-
East	RB-E-048-82	15.6	Low	Non-Erodible Bank	6.9	No Remediation Required	-	-
East	RB-E-049-08	15.6	Low	Non-Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-049-33	15.6	Low	Non-Erodible Bank	5.2	No Remediation Required	-	-
East	RB-E-049-65	15.6	Low	Non-Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-049-84	15.6	Low	Non-Erodible Bank	9.8	No Remediation Required	-	-
East	RB-E-050-20	15.6	Low	Non-Erodible Bank	1.6	No Remediation Required	-	-
East	RB-E-050-46	15.6	Low	Non-Erodible Bank	4.4	No Remediation Required	-	-
East	RB-E-050-73	15.6	Low	Non-Erodible Bank	1.2	No Remediation Required	-	-
East	RB-E-050-96	15.6	Low	Non-Erodible Bank	5.2	No Remediation Required	-	-
East	RB-E-051-20	15.6	Low	Non-Erodible Bank	0.6	No Remediation Required	-	-
East	RB-E-051-41	15.6	Low	Non-Erodible Bank	4.3	No Remediation Required	-	-
East	RB-E-051-69	15.6	Low	Non-Erodible Bank	1.4	No Remediation Required	-	-
East	RB-E-051-88	20.2	Low	Non-Erodible Bank	4.8	No Remediation Required	-	-
East	RB-E-052-14	20.2	Low	Non-Erodible Bank	1.3	No Remediation Required	-	-
East	RB-E-052-44	20.2	Low	Non-Erodible Bank	11.8	No Remediation Required	-	-
East	RB-E-052-61	20.2	Low	Non-Erodible Bank	0.1	No Remediation Required	-	-
East	RB-E-052-85	20.2	Low	Non-Erodible Bank	4.6	No Remediation Required	-	-
East	RB-E-053-01	20.2	Low	Non-Erodible Bank	0.2	No Remediation Required	-	-
East	RB-E-053-24	20.2	Extreme	Non-Erodible Bank	0.9	No Remediation Required	-	-
East	RB-E-053-38	20.2	Extreme	Non-Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-053-59	20.2	Extreme	Non-Erodible Bank	0.3	No Remediation Required	-	-
East	RB-E-053-77	20.2	Extreme	Non-Erodible Bank	0.6	No Remediation Required	-	-
East	RB-E-053-96	0.0	Extreme	Non-Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-054-08	0.0	Extreme	Non-Erodible Bank	1.4	No Remediation Required	-	-
East	RB-E-054-29	0.0	Extreme	Non-Erodible Bank	1.3	No Remediation Required	-	-
East	RB-E-054-50	0.0	Extreme	Non-Erodible Bank	1.2	No Remediation Required	-	-
East	RB-E-054-74	0.0	Extreme	Non-Erodible Bank	1.7	No Remediation Required	-	-
East	RB-E-054-95	0.0	Extreme	Non-Erodible Bank	1.1	No Remediation Required	-	-
East	RB-E-055-19	0.0	Extreme	Non-Erodible Bank	1.8	No Remediation Required	-	-
East	RB-E-055-42	0.0	Extreme	Non-Erodible Bank	7.5	No Remediation Required	-	-
East	RB-E-055-64	0.0	Low	Non-Erodible Bank	4.8	No Remediation Required	-	-
East	RB-E-055-94	0.0	Low	Non-Erodible Bank	9.2	No Remediation Required	-	-
East	RB-E-056-18	0.0	Low	Non-Erodible Bank	4.0	No Remediation Required	-	-
East	RB-E-057-06	0.0	Low	Non-Erodible Bank	2.6	No Remediation Required	-	-
East	RB-E-057-32	27.9	Low	Non-Erodible Bank	4.0	No Remediation Required	-	-
East	RB-E-057-51	27.9	Low	Non-Erodible Bank	6.2	No Remediation Required	-	-
East	RB-E-057-77	27.9	Low	Non-Erodible Bank	2.0	No Remediation Required	-	-
East	RB-E-058-04	27.9	Low	Non-Erodible Bank	4.3	No Remediation Required	-	-
East	RB-E-058-28	27.9	Low	Non-Erodible Bank	5.2	No Remediation Required	-	-
East	RB-E-058-57	27.9	Low	Non-Erodible Bank	2.4	No Remediation Required	-	-
East	RB-E-058-80	27.9	Low	Non-Erodible Bank	3.7	No Remediation Required	-	-
East	RB-E-059-03	27.9	Low	Non-Erodible Bank	3.4	No Remediation Required	-	-
East	RB-E-059-27	27.9	Low	Non-Erodible Bank	2.7	No Remediation Required	-	-
East	RB-E-059-50	21.6	Low	Non-Erodible Bank	1.4	No Remediation Required	-	-
East	RB-E-059-79	21.6	Low	Non-Erodible Bank	1.3	No Remediation Required	-	-
East	RB-E-060-01	21.6	Low	Non-Erodible Bank	2.9	No Remediation Required	-	-
East	RB-E-060-22	21.6	Low	Non-Erodible Bank	1.1	No Remediation Required	-	-
East	RB-E-060-41	29.7	Low	Non-Erodible Bank	2.3	No Remediation Required	-	-
East	RB-E-060-63	29.7	Low	Non-Erodible Bank	8.3	No Remediation Required	-	-
East	RB-E-060-86	29.7	Low	Non-Erodible Bank	2.7	No Remediation Required	-	-
East	RB-E-061-09	29.7	Low	Non-Erodible Bank	4.2	No Remediation Required	-	-
East	RB-E-061-34	29.7	Low	Non-Erodible Bank	1.9	No Remediation Required	-	-
East	RB-E-061-54	29.7	Low	Non-Erodible Bank	5.5	No Remediation Required	-	-
East	RB-E-061-81	29.7	Low	Non-Erodible Bank	1.1	No Remediation Required	-	-
East	RB-E-062-05	29.7	Low	Non-Erodible Bank	8.2	No Remediation Required	-	-
East	RB-E-062-27	29.7	Low	Non-Erodible Bank	11.1	No Remediation Required	-	-
East	RB-E-062-47	29.7	Low	Non-Erodible Bank	6.9	No Remediation Required	-	-
East	RB-E-062-73	29.7	Low	Non-Erodible Bank	0.2	No Remediation Required	-	-
East	RB-E-062-96	29.7	Low	Non-Erodible Bank	7.5	No Remediation Required	-	-
East	RB-E-063-22	29.7	Low	Non-Erodible Bank	1.3	No Remediation Required	-	-
East	RB-E-063-46	29.7	Low	Non-Erodible Bank	2.7	No Remediation Required	-	-
East	RB-E-063-70	29.7	Low	Non-Erodible Bank	4.5	No Remediation Required	-	-
East	RB-E-063-90	23.0	Low	Non-Erodible Bank	1.8	No Remediation Required	-	-

Table D-1
Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
East	RB-E-064-16	23.0	Low	Non-Erodible Bank	8.2	No Remediation Required	-	-
East	RB-E-064-43	23.0	Low	Non-Erodible Bank	5.8	No Remediation Required	-	-
East	RB-E-064-70	23.0	Low	Non-Erodible Bank	5.2	No Remediation Required	-	-
East	RB-E-064-96	23.0	Low	Non-Erodible Bank	1.2	No Remediation Required	-	-
East	RB-E-065-23	23.0	Low	Non-Erodible Bank	2.4	No Remediation Required	-	-
East	RB-E-065-44	23.0	Low	Non-Erodible Bank	0.3	No Remediation Required	-	-
East	RB-E-065-68	23.0	Low	Non-Erodible Bank	2.0	No Remediation Required	-	-
East	RB-E-065-91	26.8	Low	Non-Erodible Bank	3.2	No Remediation Required	-	-
East	RB-E-066-10	26.8	Low	Non-Erodible Bank	2.8	No Remediation Required	-	-
East	RB-E-066-32	26.8	Low	Non-Erodible Bank	2.5	No Remediation Required	-	-
East	RB-E-066-48	26.8	Low	Non-Erodible Bank	2.0	No Remediation Required	-	-
East	RB-E-066-67	26.8	Low	Non-Erodible Bank	5.4	No Remediation Required	-	-
East	RB-E-066-81	26.8	Low	Non-Erodible Bank	4.4	No Remediation Required	-	-
East	RB-E-067-08	23.9	Low	Non-Erodible Bank	3.6	No Remediation Required	-	-
East	RB-E-067-38	23.9	Low	Non-Erodible Bank	8.5	No Remediation Required	-	-
East	RB-E-067-64	23.9	Low	Non-Erodible Bank	8.9	No Remediation Required	-	-
East	RB-E-067-92	24.8	Low	Non-Erodible Bank	11.8	No Remediation Required	-	-
East	RB-E-068-18	24.8	Low	Non-Erodible Bank	4.4	No Remediation Required	-	-
East	RB-E-068-42	24.8	Low	Non-Erodible Bank	3.2	No Remediation Required	-	-
East	RB-E-068-67	24.8	Low	Non-Erodible Bank	14.9	No Remediation Required	-	-
East	RB-E-068-93	24.8	Low	Non-Erodible Bank	3.6	No Remediation Required	-	-
East	RB-E-069-16	24.8	Low	Non-Erodible Bank	19.8	No Remediation Required	-	-
East	RB-E-069-45	24.8	Low	Non-Erodible Bank	3.5	No Remediation Required	-	-
East	RB-E-069-68	24.8	Low	Non-Erodible Bank	28.0	No Remediation Required	-	-
East	RB-E-069-94	24.8	Low	Non-Erodible Bank	14.6	No Remediation Required	-	-
East	RB-E-070-17	24.8	Low	Non-Erodible Bank	8.7	No Remediation Required	-	-
East	RB-E-070-48	24.8	Low	Non-Erodible Bank	13.8	No Remediation Required	-	-
East	RB-E-070-73	24.8	Low	Non-Erodible Bank	17.0	No Remediation Required	-	-
East	RB-E-070-93	28.3	Low	Non-Erodible Bank	4.6	No Remediation Required	-	-
East	RB-E-071-24	28.3	Low	Non-Erodible Bank	6.2	No Remediation Required	-	-
East	RB-E-071-49	28.3	Low	Non-Erodible Bank	4.9	No Remediation Required	-	-
East	RB-E-071-72	28.3	Low	Non-Erodible Bank	9.2	No Remediation Required	-	-
East	RB-E-071-92	28.3	Low	Non-Erodible Bank	17.2	No Remediation Required	-	-
East	RB-E-072-19	28.3	Low	Non-Erodible Bank	11.3	No Remediation Required	-	-
East	RB-E-072-46	28.3	Low	Non-Erodible Bank	4.8	No Remediation Required	-	-
East	RB-E-072-72	28.3	Low	Non-Erodible Bank	8.3	No Remediation Required	-	-
East	RB-E-072-93	28.3	Low	Non-Erodible Bank	22.6	No Remediation Required	-	-
East	RB-E-073-18	28.3	Low	Non-Erodible Bank	8.6	No Remediation Required	-	-
East	RB-E-073-43	30.0	Low	Non-Erodible Bank	12.1	No Remediation Required	-	-
East	RB-E-073-66	30.0	Low	Non-Erodible Bank	12.9	No Remediation Required	-	-
East	RB-E-073-95	30.0	Low	Non-Erodible Bank	3.9	No Remediation Required	-	-
East	RB-E-074-16	30.0	Low	Non-Erodible Bank	9.1	No Remediation Required	-	-
East	RB-E-074-41	30.0	Low	Non-Erodible Bank	12.2	No Remediation Required	-	-
East	RB-E-074-65	30.0	Low	Non-Erodible Bank	5.9	No Remediation Required	-	-
East	RB-E-074-89	30.0	Low	Non-Erodible Bank	5.1	No Remediation Required	-	-
East	RB-E-075-14	30.0	Low	Non-Erodible Bank	12.4	No Remediation Required	-	-
East	RB-E-075-38	30.0	Low	Non-Erodible Bank	9.8	No Remediation Required	-	-
East	RB-E-075-60	30.0	Low	Non-Erodible Bank	11.6	No Remediation Required	-	-
East	RB-E-075-86	30.0	Low	Non-Erodible Bank	1.6	No Remediation Required	-	-
East	RB-E-076-05	30.0	Low	Non-Erodible Bank	24.6	No Remediation Required	-	-
East	RB-E-076-51	30.0	Low	Non-Erodible Bank	4.5	No Remediation Required	-	-
East	RB-E-076-75	29.3	Low	Non-Erodible Bank	3.2	No Remediation Required	-	-
East	RB-E-077-00	29.3	Low	Non-Erodible Bank	7.0	No Remediation Required	-	-
East	RB-E-077-32	29.3	Low	Non-Erodible Bank	3.3	No Remediation Required	-	-
East	RB-E-077-55	29.3	Low	Non-Erodible Bank	7.2	No Remediation Required	-	-
East	RB-E-077-78	29.3	Low	Non-Erodible Bank	3.2	No Remediation Required	-	-
East	RB-E-078-05	29.3	Low	Non-Erodible Bank	2.7	No Remediation Required	-	-
East	RB-E-078-29	29.3	Low	Non-Erodible Bank	7.2	No Remediation Required	-	-
East	RB-E-078-56	19.6	Low	Non-Erodible Bank	3.5	No Remediation Required	-	-
East	RB-E-078-84	19.6	Low	Non-Erodible Bank	16.3	No Remediation Required	-	-
East	RB-E-079-15	19.6	Low	Non-Erodible Bank	2.8	No Remediation Required	-	-
East	RB-E-079-55	21.8	Low	Non-Erodible Bank	3.4	No Remediation Required	-	-
East	RB-E-079-86	21.8	Low	Non-Erodible Bank	1.9	No Remediation Required	-	-
East	RB-E-080-20	21.8	Low	Non-Erodible Bank	4.2	No Remediation Required	-	-
East	RB-E-080-41	26.8	Low	Non-Erodible Bank	4.9	No Remediation Required	-	-
East	RB-E-080-65	26.8	Low	Non-Erodible Bank	3.3	No Remediation Required	-	-
East	RB-E-080-90	26.8	Low	Non-Erodible Bank	9.3	No Remediation Required	-	-
East	RB-E-081-32	17.7	Low	Non-Erodible Bank	3.7	No Remediation Required	-	-
East	RB-E-081-59	17.7	Low	Non-Erodible Bank	2.2	No Remediation Required	-	-
East	RB-E-081-89	17.7	Low	Non-Erodible Bank	3.3	No Remediation Required	-	-
East	RB-E-082-25	17.7	Low	Non-Erodible Bank	2.4	No Remediation Required	-	-
East	RB-E-082-62	17.7	Low	Non-Erodible Bank	1.5	No Remediation Required	-	-
East	RB-E-082-90	17.7	Low	Non-Erodible Bank	1.8	No Remediation Required	-	-
East	RB-E-083-21	17.7	Low	Non-Erodible Bank	2.3	No Remediation Required	-	-
East	RB-E-083-45	17.7	Low	Non-Erodible Bank	1.5	No Remediation Required	-	-
East	RB-E-083-62	17.7	Low	Non-Erodible Bank	4.2	No Remediation Required	-	-
East	RB-E-083-87	17.7	Low	Non-Erodible Bank	1.4	No Remediation Required	-	-
East	RB-E-084-08	17.7	Very High	Non-Erodible Bank	4.3	No Remediation Required	-	-
East	RB-E-084-34	17.7	Very High	Non-Erodible Bank	1.3	No Remediation Required	-	-
East	RB-E-084-53	17.7	Very High	Non-Erodible Bank	2.5	No Remediation Required	-	-
East	RB-E-084-70	17.7	Very High	Non-Erodible Bank	1.4	No Remediation Required	-	-
East	RB-E-084-87	29.1	Very High	Erodible Bank	3.5	No Remediation Required	-	-
East	RB-E-085-07	29.1	Very High	Erodible Bank	19.1	Remediation Required	25.1	479
East	RB-E-085-23	29.1	Very High	Erodible Bank	3.5	Supplemental Remediation Area	24.8	87
East	RB-E-085-43	29.1	Very High	Erodible Bank	5.8	Remediation Required	25.1	146

Table D-1
Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
East	RB-E-085-60	29.1	Very High	Erodible Bank	4.9	Supplemental Remediation Area	25.1	122
East	RB-E-085-79	29.1	Very High	Erodible Bank	5.3	Remediation Required	25.6	136
East	RB-E-085-90	29.1	Very High	Erodible Bank	2.1	Supplemental Remediation Area	23.3	49
East	RB-E-086-05	27.7	Very High	Erodible Bank	5.7	Remediation Required	25.8	148
East	RB-E-086-21	27.7	Very High	Erodible Bank	1.0	Supplemental Remediation Area	25.3	25
East	RB-E-086-41	27.7	Very High	Erodible Bank	0.0	Supplemental Remediation Area	25.1	1
East	RB-E-086-60	27.7	Very High	Erodible Bank	8.2	Remediation Required	24.8	204
East	RB-E-086-84	27.7	Very High	Erodible Bank	7.5	Remediation Required	24.9	186
East	RB-E-087-09	27.7	Very High	Erodible Bank	11.4	Remediation Required	24.9	283
East	RB-E-087-28	27.7	Very High	Erodible Bank	5.6	Remediation Required	25.2	140
East	RB-E-087-48	28.5	Low	Non-Erodible Bank	12.1	Supplemental Remediation Area	25.0	303
East	RB-E-087-72	28.5	Low	Non-Erodible Bank	18.9	Supplemental Remediation Area	25.1	474
East	RB-E-087-92	28.5	Low	Non-Erodible Bank	4.2	No Remediation Required	-	-
East	RB-E-088-19	28.5	Low	Non-Erodible Bank	9.1	No Remediation Required	-	-
East	RB-E-088-42	28.5	Low	Non-Erodible Bank	7.3	No Remediation Required	-	-
East	RB-E-088-66	28.5	Low	Non-Erodible Bank	5.3	No Remediation Required	-	-
East	RB-E-088-90	28.5	Low	Non-Erodible Bank	7.3	No Remediation Required	-	-
East	RB-E-089-15	28.5	Low	Non-Erodible Bank	7.5	No Remediation Required	-	-
East	RB-E-089-46	17.6	Low	Non-Erodible Bank	8.3	No Remediation Required	-	-
East	RB-E-089-72	17.6	Low	Non-Erodible Bank	4.8	No Remediation Required	-	-
East	RB-E-090-06	17.6	Low	Non-Erodible Bank	6.8	No Remediation Required	-	-
East	RB-E-090-53	17.6	Low	Non-Erodible Bank	5.5	No Remediation Required	-	-
East	RB-E-090-88	17.6	Low	Non-Erodible Bank	6.5	No Remediation Required	-	-
East	RB-E-091-17	17.6	Low	Non-Erodible Bank	2.7	No Remediation Required	-	-
East	RB-E-091-47	17.6	Low	Non-Erodible Bank	3.1	No Remediation Required	-	-
East	RB-E-091-71	17.6	Low	Non-Erodible Bank	5.1	No Remediation Required	-	-
East	RB-E-091-92	17.6	Low	Non-Erodible Bank	4.3	No Remediation Required	-	-
East	RB-E-092-11	26.0	Extreme	Non-Erodible Bank	4.4	No Remediation Required	-	-
East	RB-E-092-23	26.0	Extreme	Non-Erodible Bank	7.2	No Remediation Required	-	-
East	RB-E-092-49	26.0	Extreme	Non-Erodible Bank	3.8	No Remediation Required	-	-
East	RB-E-092-68	26.0	Extreme	Non-Erodible Bank	8.2	No Remediation Required	-	-
East	RB-E-092-94	26.0	Extreme	Non-Erodible Bank	3.6	No Remediation Required	-	-
East	RB-E-093-32	30.2	Extreme	Erodible Bank	21.9	Remediation Required	37.8	827
East	RB-E-093-53	30.2	Extreme	Erodible Bank	1.7	Supplemental Remediation Area	24.2	42
East	RB-E-093-75	29.1	Extreme	Erodible Bank	9.3	Remediation Required	25.4	235
East	RB-E-093-96	29.1	Extreme	Erodible Bank	7.6	Remediation Required	25.3	193
East	RB-E-094-20	29.1	Low	Non-Erodible Bank	12.8	Supplemental Remediation Area	25.2	323
East	RB-E-094-43	29.1	Low	Non-Erodible Bank	6.1	Supplemental Remediation Area	24.5	149
East	RB-E-094-65	29.1	Low	Non-Erodible Bank	5.6	Supplemental Remediation Area	24.9	140
East	RB-E-094-87	29.1	Low	Non-Erodible Bank	8.5	Supplemental Remediation Area	25.1	214
East	RB-E-095-09	29.1	Low	Non-Erodible Bank	12.2	Supplemental Remediation Area	25.0	306
East	RB-E-095-31	29.1	Low	Non-Erodible Bank	7.2	Supplemental Remediation Area	25.1	180
East	RB-E-095-49	29.1	Low	Non-Erodible Bank	7.3	Supplemental Remediation Area	24.6	181
East	RB-E-095-71	29.1	Low	Non-Erodible Bank	9.9	Supplemental Remediation Area	25.3	250
East	RB-E-095-95	29.1	Low	Non-Erodible Bank	32.9	Supplemental Remediation Area	24.7	811
East	RB-E-096-20	29.1	Low	Non-Erodible Bank	10.9	Supplemental Remediation Area	25.3	274
East	RB-E-096-45	29.1	Low	Non-Erodible Bank	12.2	Supplemental Remediation Area	25.0	306
East	RB-E-096-80	29.1	Low	Non-Erodible Bank	10.6	Supplemental Remediation Area	25.0	264
East	RB-E-097-11	29.1	Low	Non-Erodible Bank	9.8	Supplemental Remediation Area	28.8	282
East	RB-E-097-60	35.7	Low	Non-Erodible Bank	2.2	Supplemental Remediation Area	19.1	42
East	RB-E-098-35	35.7	Low	Non-Erodible Bank	5.7	Supplemental Remediation Area	26.2	149
East	RB-E-098-56	23.5	Low	Non-Erodible Bank	5.9	Supplemental Remediation Area	26.0	153
East	RB-E-098-72	23.5	Low	Non-Erodible Bank	30.7	Supplemental Remediation Area	24.9	763
East	RB-E-098-95	23.5	Low	Non-Erodible Bank	21.9	No Remediation Required	-	-
East	RB-E-099-30	23.5	Very High	Non-Erodible Bank	35.0	Supplemental Remediation Area	12.6	440
East	RB-E-099-37	23.5	Very High	Non-Erodible Bank	1.7	No Remediation Required	-	-
East	RB-E-099-48	23.5	Very High	Non-Erodible Bank	1.9	No Remediation Required	-	-
East	RB-E-099-74	23.5	Very High	Non-Erodible Bank	2.1	No Remediation Required	-	-
East	RB-E-099-90	0.0	Very High	Non-Erodible Bank	1.2	No Remediation Required	-	-
East	RB-E-100-11	0.0	Very High	Non-Erodible Bank	1.7	No Remediation Required	-	-
East	RB-E-100-37	0.0	Very High	Non-Erodible Bank	0.7	No Remediation Required	-	-
East	RB-E-100-60	24.8	Low	Non-Erodible Bank	2.0	No Remediation Required	-	-
East	RB-E-100-80	24.8	Low	Non-Erodible Bank	1.6	No Remediation Required	-	-
East	RB-E-101-05	24.8	Low	Non-Erodible Bank	1.7	No Remediation Required	-	-
East	RB-E-101-25	26.0	Moderate	Non-Erodible Bank	0.1	No Remediation Required	-	-
East	RB-E-101-46	26.0	Moderate	Non-Erodible Bank	0.1	No Remediation Required	-	-
East	RB-E-101-67	26.0	Moderate	Non-Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-101-87	26.0	Moderate	Non-Erodible Bank	0.2	No Remediation Required	-	-
East	RB-E-102-11	26.0	Moderate	Non-Erodible Bank	27.6	No Remediation Required	-	-
East	RB-E-102-35	26.0	Moderate	Non-Erodible Bank	11.5	No Remediation Required	-	-
East	RB-E-102-64	26.0	Low	Non-Erodible Bank	10.4	No Remediation Required	-	-
East	RB-E-102-84	26.0	Low	Non-Erodible Bank	15.7	No Remediation Required	-	-
East	RB-E-103-51	26.0	Low	Non-Erodible Bank	11.9	No Remediation Required	-	-
East	RB-E-103-72	26.0	Low	Non-Erodible Bank	15.0	No Remediation Required	-	-
East	RB-E-103-93	26.0	Low	Non-Erodible Bank	6.6	No Remediation Required	-	-
East	RB-E-104-17	15.3	Low	Non-Erodible Bank	16.6	No Remediation Required	-	-
East	RB-E-104-42	15.3	Low	Non-Erodible Bank	13.6	No Remediation Required	-	-
East	RB-E-104-74	15.3	Low	Non-Erodible Bank	30.7	No Remediation Required	-	-
East	RB-E-104-86	15.3	Low	Non-Erodible Bank	8.1	No Remediation Required	-	-
East	RB-E-105-17	15.3	Extreme	Non-Erodible Bank	6.0	Supplemental Remediation Area	25.9	156
East	RB-E-105-40	15.3	Extreme	Non-Erodible Bank	4.5	Supplemental Remediation Area	24.9	112
East	RB-E-105-60	15.3	Extreme	Non-Erodible Bank	8.5	Supplemental Remediation Area	25.6	216
East	RB-E-105-67	15.3	Extreme	Non-Erodible Bank	5.4	Supplemental Remediation Area	26.4	142
East	RB-E-105-81	15.3	Extreme	Non-Erodible Bank	1.4	No Remediation Required	-	-
East	RB-E-106-13	41.2	Extreme	Erodible Bank	0.1	No Remediation Required	-	-

Table D-1
Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
East	RB-E-106-36	41.2	Extreme	Erodible Bank	0.4	No Remediation Required	-	-
East	RB-E-106-56	41.2	Extreme	Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-106-78	41.2	Extreme	Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-107-16	41.2	Extreme	Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-107-40	41.2	Extreme	Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-107-61	41.2	Extreme	Erodible Bank	3.4	No Remediation Required	-	-
East	RB-E-107-85	25.9	Extreme	Non-Erodible Bank	1.2	No Remediation Required	-	-
East	RB-E-108-08	25.9	Extreme	Non-Erodible Bank	2.4	No Remediation Required	-	-
East	RB-E-108-25	25.9	Extreme	Non-Erodible Bank	0.4	No Remediation Required	-	-
East	RB-E-108-47	25.9	Extreme	Non-Erodible Bank	8.4	No Remediation Required	-	-
East	RB-E-108-63	27.3	Extreme	Erodible Bank	2.2	No Remediation Required	-	-
East	RB-E-108-74	27.3	Extreme	Erodible Bank	3.0	No Remediation Required	-	-
East	RB-E-108-94	27.3	Extreme	Erodible Bank	2.9	No Remediation Required	-	-
East	RB-E-109-17	27.3	Extreme	Erodible Bank	11.2	Remediation Required	32.3	360
East	RB-E-109-41	27.3	Extreme	Erodible Bank	9.4	Remediation Required	25.0	236
East	RB-E-109-63	27.3	Extreme	Erodible Bank	14.4	Remediation Required	24.5	352
East	RB-E-109-82	27.3	Low	Non-Erodible Bank	7.4	Supplemental Remediation Area	25.1	186
East	RB-E-110-06	27.3	Low	Non-Erodible Bank	7.4	Supplemental Remediation Area	25.1	185
East	RB-E-110-33	23.0	Low	Non-Erodible Bank	9.6	No Remediation Required	-	-
East	RB-E-110-72	23.0	Low	Non-Erodible Bank	6.7	No Remediation Required	-	-
East	RB-E-111-08	23.0	Low	Non-Erodible Bank	7.4	No Remediation Required	-	-
East	RB-E-111-31	24.3	Low	Non-Erodible Bank	3.9	No Remediation Required	-	-
East	RB-E-111-39	24.3	Low	Non-Erodible Bank	7.2	No Remediation Required	-	-
East	RB-E-111-63	24.3	Low	Non-Erodible Bank	4.8	No Remediation Required	-	-
East	RB-E-111-81	24.3	Low	Non-Erodible Bank	6.1	No Remediation Required	-	-
East	RB-E-112-01	30.1	Low	Non-Erodible Bank	0.9	No Remediation Required	-	-
East	RB-E-112-17	30.1	Low	Non-Erodible Bank	15.7	No Remediation Required	-	-
East	RB-E-112-41	30.1	Low	Non-Erodible Bank	14.6	No Remediation Required	-	-
East	RB-E-112-62	30.1	Low	Non-Erodible Bank	8.0	No Remediation Required	-	-
East	RB-E-112-82	30.1	Low	Non-Erodible Bank	7.0	No Remediation Required	-	-
East	RB-E-113-04	30.1	Low	Non-Erodible Bank	24.5	No Remediation Required	-	-
East	RB-E-113-38	28.9	Low	Non-Erodible Bank	37.0	No Remediation Required	-	-
East	RB-E-113-67	28.9	Low	Non-Erodible Bank	6.3	No Remediation Required	-	-
East	RB-E-113-90	28.9	Low	Non-Erodible Bank	15.3	No Remediation Required	-	-
East	RB-E-114-09	28.9	Low	Non-Erodible Bank	16.5	No Remediation Required	-	-
East	RB-E-114-32	28.9	Low	Non-Erodible Bank	11.1	No Remediation Required	-	-
East	RB-E-114-59	28.9	Low	Non-Erodible Bank	10.0	No Remediation Required	-	-
East	RB-E-114-83	28.9	Low	Non-Erodible Bank	4.0	No Remediation Required	-	-
East	RB-E-115-22	28.9	Low	Non-Erodible Bank	3.8	No Remediation Required	-	-
East	RB-E-115-80	28.9	Low	Non-Erodible Bank	39.5	No Remediation Required	-	-
East	RB-E-116-03	28.9	Low	Non-Erodible Bank	3.2	No Remediation Required	-	-
East	RB-E-116-27	35.4	Low	Non-Erodible Bank	5.0	No Remediation Required	-	-
East	RB-E-116-50	35.4	Low	Non-Erodible Bank	5.3	No Remediation Required	-	-
East	RB-E-116-72	35.4	Low	Non-Erodible Bank	3.7	No Remediation Required	-	-
East	RB-E-116-98	35.4	Low	Non-Erodible Bank	7.3	No Remediation Required	-	-
East	RB-E-117-19	35.4	Low	Non-Erodible Bank	22.5	No Remediation Required	-	-
East	RB-E-117-40	35.4	Low	Non-Erodible Bank	3.9	No Remediation Required	-	-
East	RB-E-117-64	35.4	Low	Non-Erodible Bank	11.2	No Remediation Required	-	-
East	RB-E-117-83	35.4	Low	Non-Erodible Bank	6.0	No Remediation Required	-	-
East	RB-E-118-05	35.4	Low	Non-Erodible Bank	16.2	No Remediation Required	-	-
East	RB-E-118-31	35.4	Low	Non-Erodible Bank	6.6	No Remediation Required	-	-
East	RB-E-118-65	35.4	Low	Non-Erodible Bank	16.9	No Remediation Required	-	-
East	RB-E-118-90	35.4	Low	Non-Erodible Bank	4.7	No Remediation Required	-	-
East	RB-E-119-44	35.4	Low	Non-Erodible Bank	6.8	No Remediation Required	-	-
East	RB-E-119-80	35.4	Low	Non-Erodible Bank	0.6	No Remediation Required	-	-
East	RB-E-120-10	35.4	Low	Non-Erodible Bank	5.0	No Remediation Required	-	-
East	RB-E-120-37	35.4	Low	Non-Erodible Bank	7.6	No Remediation Required	-	-
East	RB-E-120-66	35.4	Low	Non-Erodible Bank	6.5	No Remediation Required	-	-
East	RB-E-120-84	34.1	Low	Non-Erodible Bank	2.8	No Remediation Required	-	-
East	RB-E-121-02	34.1	Low	Non-Erodible Bank	5.8	Supplemental Remediation Area	24.6	142
East	RB-E-121-13	34.1	Low	Non-Erodible Bank	5.4	Supplemental Remediation Area	26.1	140
East	RB-E-121-30	34.1	Low	Non-Erodible Bank	4.7	Supplemental Remediation Area	23.8	113
East	RB-E-121-50	34.1	Low	Non-Erodible Bank	6.5	Supplemental Remediation Area	25.9	168
East	RB-E-121-72	32.4	High	Erodible Bank	25.6	Remediation Required	33.1	849
East	RB-E-121-99	32.4	High	Erodible Bank	48.5	Remediation Required	17.1	830
East	RB-E-122-08	32.4	High	Erodible Bank	26.6	Remediation Required	20.4	543
East	RB-E-122-27	32.4	High	Erodible Bank	7.0	Remediation Required	25.3	176
East	RB-E-122-43	32.4	High	Erodible Bank	2.4	Supplemental Remediation Area	23.9	59
East	RB-E-122-63	27.8	High	Erodible Bank	6.1	Remediation Required	25.8	157
East	RB-E-122-83	27.8	High	Erodible Bank	12.0	Remediation Required	25.0	299
East	RB-E-123-08	27.8	High	Erodible Bank	9.4	Remediation Required	25.0	234
East	RB-E-123-28	27.8	High	Erodible Bank	7.5	Remediation Required	25.3	190
East	RB-E-123-48	27.8	High	Erodible Bank	5.2	Remediation Required	24.7	130
East	RB-E-123-77	27.8	High	Erodible Bank	10.2	Remediation Required	25.1	255
East	RB-E-124-13	22.1	Low	Non-Erodible Bank	4.5	No Remediation Required	-	-
East	RB-E-124-62	22.1	Low	Non-Erodible Bank	8.1	No Remediation Required	-	-
East	RB-E-124-97	22.1	Low	Non-Erodible Bank	3.4	No Remediation Required	-	-
East	RB-E-125-21	22.1	Low	Non-Erodible Bank	5.1	No Remediation Required	-	-
East	RB-E-125-45	22.1	Low	Non-Erodible Bank	4.9	No Remediation Required	-	-
East	RB-E-125-67	22.1	Low	Non-Erodible Bank	6.6	No Remediation Required	-	-
East	RB-E-125-91	22.1	Low	Non-Erodible Bank	5.8	No Remediation Required	-	-
East	RB-E-126-15	22.1	Low	Non-Erodible Bank	0.2	No Remediation Required	-	-
East	RB-E-126-39	22.1	Low	Non-Erodible Bank	17.4	No Remediation Required	-	-
East	RB-E-126-54	37.7	Low	Non-Erodible Bank	6.3	Supplemental Remediation Area	38.2	239
East	RB-E-126-71	37.7	Low	Non-Erodible Bank	0.0	Supplemental Remediation Area	12.5	0

Table D-1
Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
East	RB-E-126-89	37.7	Low	Non-Erodible Bank	0.4	Supplemental Remediation Area	25.1	10
East	RB-E-127-16	37.7	Low	Non-Erodible Bank	4.4	Supplemental Remediation Area	24.9	109
East	RB-E-127-68	37.7	Low	Non-Erodible Bank	7.4	Supplemental Remediation Area	24.7	184
East	RB-E-128-11	37.7	Low	Non-Erodible Bank	3.9	No Remediation Required	-	-
East	RB-E-128-40	22.5	Low	Non-Erodible Bank	5.8	No Remediation Required	-	-
East	RB-E-128-63	22.5	Low	Non-Erodible Bank	4.4	No Remediation Required	-	-
East	RB-E-128-92	22.5	Low	Non-Erodible Bank	4.1	No Remediation Required	-	-
East	RB-E-129-15	22.5	Low	Non-Erodible Bank	5.6	No Remediation Required	-	-
East	RB-E-129-38	30.4	Low	Non-Erodible Bank	7.2	No Remediation Required	-	-
East	RB-E-129-62	30.4	Low	Non-Erodible Bank	12.9	No Remediation Required	-	-
East	RB-E-129-82	30.4	Low	Non-Erodible Bank	7.4	No Remediation Required	-	-
East	RB-E-130-08	21.2	Low	Non-Erodible Bank	5.8	No Remediation Required	-	-
East	RB-E-130-33	21.2	Low	Non-Erodible Bank	5.0	No Remediation Required	-	-
East	RB-E-130-55	21.2	Low	Non-Erodible Bank	6.6	No Remediation Required	-	-
East	RB-E-130-79	28.9	Low	Non-Erodible Bank	7.4	No Remediation Required	-	-
East	RB-E-131-02	28.9	Low	Non-Erodible Bank	14.6	No Remediation Required	-	-
East	RB-E-131-28	28.9	Low	Non-Erodible Bank	3.7	No Remediation Required	-	-
East	RB-E-131-51	28.9	Low	Non-Erodible Bank	6.9	No Remediation Required	-	-
East	RB-E-131-77	28.9	Low	Non-Erodible Bank	6.0	No Remediation Required	-	-
East	RB-E-131-98	28.9	Low	Non-Erodible Bank	13.5	No Remediation Required	-	-
East	RB-E-132-19	28.9	Low	Non-Erodible Bank	0.6	No Remediation Required	-	-
East	RB-E-132-44	28.9	Low	Non-Erodible Bank	5.2	No Remediation Required	-	-
East	RB-E-132-65	28.9	Low	Non-Erodible Bank	9.8	No Remediation Required	-	-
East	RB-E-132-90	28.9	Low	Non-Erodible Bank	5.8	No Remediation Required	-	-
East	RB-E-133-17	28.9	Low	Non-Erodible Bank	5.3	No Remediation Required	-	-
East	RB-E-133-38	28.9	Low	Non-Erodible Bank	5.8	No Remediation Required	-	-
East	RB-E-133-61	28.9	Low	Non-Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-133-82	27.2	Moderate	Erodible Bank	15.6	Remediation Required	25.0	389
East	RB-E-134-02	27.2	Moderate	Erodible Bank	0.1	Supplemental Remediation Area	25.0	3
East	RB-E-134-26	27.2	Moderate	Erodible Bank	4.8	Supplemental Remediation Area	25.1	120
East	RB-E-134-43	27.2	Moderate	Erodible Bank	6.3	Remediation Required	24.7	155
East	RB-E-134-67	27.2	Moderate	Erodible Bank	18.3	Remediation Required	24.7	451
East	RB-E-134-91	27.2	Moderate	Erodible Bank	22.4	Remediation Required	25.3	568
East	RB-E-135-15	27.2	Moderate	Erodible Bank	1.8	Supplemental Remediation Area	25.1	44
East	RB-E-135-36	27.2	Moderate	Erodible Bank	4.8	Supplemental Remediation Area	25.3	122
East	RB-E-135-57	27.2	Moderate	Erodible Bank	11.6	Remediation Required	24.7	286
East	RB-E-135-76	27.2	Moderate	Erodible Bank	0.1	Supplemental Remediation Area	25.1	2
East	RB-E-135-92	27.2	Moderate	Erodible Bank	11.9	Remediation Required	24.8	295
East	RB-E-136-11	27.2	Moderate	Erodible Bank	7.7	Remediation Required	25.3	196
East	RB-E-136-38	27.2	Moderate	Erodible Bank	12.0	Remediation Required	25.2	303
East	RB-E-136-80	27.2	Moderate	Erodible Bank	16.2	Remediation Required	24.9	404
East	RB-E-137-19	27.2	Moderate	Erodible Bank	9.9	Remediation Required	24.9	247
East	RB-E-137-94	36.8	Low	Non-Erodible Bank	6.4	No Remediation Required	-	-
East	RB-E-138-26	36.8	Low	Non-Erodible Bank	5.5	No Remediation Required	-	-
East	RB-E-138-63	36.8	Low	Non-Erodible Bank	12.0	No Remediation Required	-	-
East	RB-E-138-86	36.8	Low	Non-Erodible Bank	9.4	No Remediation Required	-	-
East	RB-E-139-13	36.8	Low	Non-Erodible Bank	4.8	No Remediation Required	-	-
East	RB-E-139-34	36.8	Low	Non-Erodible Bank	8.2	No Remediation Required	-	-
East	RB-E-139-57	24.6	Low	Non-Erodible Bank	5.1	No Remediation Required	-	-
East	RB-E-139-84	24.6	Low	Non-Erodible Bank	6.3	No Remediation Required	-	-
East	RB-E-140-11	24.6	Low	Non-Erodible Bank	17.4	No Remediation Required	-	-
East	RB-E-140-28	24.6	Low	Non-Erodible Bank	7.7	No Remediation Required	-	-
East	RB-E-140-51	24.6	Low	Non-Erodible Bank	8.4	No Remediation Required	-	-
East	RB-E-140-62	24.6	Low	Non-Erodible Bank	7.7	No Remediation Required	-	-
East	RB-E-140-86	24.6	Low	Non-Erodible Bank	7.7	No Remediation Required	-	-
East	RB-E-141-07	24.6	Low	Non-Erodible Bank	3.2	No Remediation Required	-	-
East	RB-E-141-100	24.2	Moderate	Non-Erodible Bank	15.2	No Remediation Required	-	-
East	RB-E-141-24	24.6	Low	Non-Erodible Bank	11.5	No Remediation Required	-	-
East	RB-E-141-44	24.6	Low	Non-Erodible Bank	0.1	No Remediation Required	-	-
East	RB-E-141-65	24.6	Low	Non-Erodible Bank	9.4	No Remediation Required	-	-
East	RB-E-141-84	24.6	Low	Non-Erodible Bank	10.3	No Remediation Required	-	-
East	RB-E-142-19	24.2	Moderate	Non-Erodible Bank	15.7	No Remediation Required	-	-
East	RB-E-142-35	24.2	Moderate	Non-Erodible Bank	15.3	No Remediation Required	-	-
East	RB-E-142-93	29.5	Low	Non-Erodible Bank	19.8	No Remediation Required	-	-
East	RB-E-143-65	29.5	Low	Non-Erodible Bank	3.4	No Remediation Required	-	-
East	RB-E-144-21	29.5	Low	Non-Erodible Bank	9.9	No Remediation Required	-	-
East	RB-E-144-53	35.8	Low	Non-Erodible Bank	0.1	No Remediation Required	-	-
East	RB-E-144-76	35.8	Low	Non-Erodible Bank	25.3	No Remediation Required	-	-
East	RB-E-144-99	35.8	Low	Non-Erodible Bank	29.3	No Remediation Required	-	-
East	RB-E-145-100	19.8	Low	Non-Erodible Bank	11.5	No Remediation Required	-	-
East	RB-E-145-20	35.8	Low	Non-Erodible Bank	35.2	No Remediation Required	-	-
East	RB-E-145-48	35.8	Low	Non-Erodible Bank	13.6	No Remediation Required	-	-
East	RB-E-145-73	35.8	Low	Non-Erodible Bank	7.1	No Remediation Required	-	-
East	RB-E-146-28	19.8	Extreme	Non-Erodible Bank	12.4	No Remediation Required	-	-
East	RB-E-146-29	19.8	Extreme	Non-Erodible Bank	4.7	No Remediation Required	-	-
East	RB-E-146-63	19.8	Extreme	Non-Erodible Bank	11.0	No Remediation Required	-	-
East	RB-E-146-85	19.8	Extreme	Non-Erodible Bank	5.1	No Remediation Required	-	-
East	RB-E-147-04	19.8	Extreme	Non-Erodible Bank	13.9	No Remediation Required	-	-
East	RB-E-147-17	19.8	Extreme	Non-Erodible Bank	7.6	No Remediation Required	-	-
East	RB-E-147-34	19.8	Extreme	Non-Erodible Bank	9.5	No Remediation Required	-	-
East	RB-E-147-56	19.8	Extreme	Non-Erodible Bank	10.2	No Remediation Required	-	-
East	RB-E-147-70	19.8	Extreme	Non-Erodible Bank	6.6	No Remediation Required	-	-
East	RB-E-147-84	19.8	Extreme	Non-Erodible Bank	12.1	Supplemental Remediation Area	26.1	315
East	RB-E-148-01	52.3	Moderate	Erodible Bank	13.9	Remediation Required	25.0	347
East	RB-E-148-18	52.3	Moderate	Erodible Bank	10.2	Remediation Required	24.8	252

Table D-1
Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
East	RB-E-148-39	52.3	Moderate	Erodible Bank	17.9	Remediation Required	25.3	452
East	RB-E-148-59	52.3	Moderate	Erodible Bank	10.0	Remediation Required	25.2	252
East	RB-E-148-77	52.3	Moderate	Erodible Bank	13.1	Remediation Required	24.3	319
East	RB-E-148-97	52.3	Moderate	Erodible Bank	11.3	Remediation Required	25.4	286
East	RB-E-149-64	52.3	Moderate	Erodible Bank	7.4	Remediation Required	25.2	187
East	RB-E-149-94	20.8	Low	Non-Erodible Bank	6.2	No Remediation Required	-	-
East	RB-E-150-24	20.8	Low	Non-Erodible Bank	11.1	No Remediation Required	-	-
East	RB-E-150-50	20.8	Low	Non-Erodible Bank	5.4	No Remediation Required	-	-
East	RB-E-150-76	20.8	Low	Non-Erodible Bank	10.9	No Remediation Required	-	-
East	RB-E-151-53	27.5	Low	Non-Erodible Bank	8.6	No Remediation Required	-	-
East	RB-E-151-73	27.5	Low	Non-Erodible Bank	10.1	No Remediation Required	-	-
East	RB-E-151-97	27.5	Low	Non-Erodible Bank	12.6	No Remediation Required	-	-
East	RB-E-152-21	27.5	Low	Non-Erodible Bank	4.9	No Remediation Required	-	-
East	RB-E-152-39	28.7	Low	Non-Erodible Bank	7.7	No Remediation Required	-	-
East	RB-E-152-65	28.7	Low	Non-Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-152-86	28.7	Low	Non-Erodible Bank	6.8	No Remediation Required	-	-
East	RB-E-153-11	28.7	Low	Non-Erodible Bank	10.9	No Remediation Required	-	-
East	RB-E-153-36	28.7	Low	Non-Erodible Bank	0.1	No Remediation Required	-	-
East	RB-E-153-60	28.7	Low	Non-Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-153-85	28.7	Low	Non-Erodible Bank	6.0	No Remediation Required	-	-
East	RB-E-154-09	28.7	Low	Non-Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-154-36	28.7	Low	Non-Erodible Bank	10.1	Supplemental Remediation Area	25.1	255
East	RB-E-154-62	28.7	Low	Non-Erodible Bank	7.6	Supplemental Remediation Area	24.8	189
East	RB-E-154-87	28.7	Low	Non-Erodible Bank	7.4	Supplemental Remediation Area	24.6	182
East	RB-E-155-07	28.7	Low	Non-Erodible Bank	7.7	Supplemental Remediation Area	25.4	196
East	RB-E-155-30	21.6	Low	Non-Erodible Bank	4.9	Supplemental Remediation Area	36.8	181
East	RB-E-155-70	21.6	Low	Non-Erodible Bank	6.8	Supplemental Remediation Area	37.9	258
East	RB-E-155-90	21.6	Low	Non-Erodible Bank	22.7	Supplemental Remediation Area	24.7	561
East	RB-E-156-14	21.6	Low	Non-Erodible Bank	24.9	Supplemental Remediation Area	25.0	623
East	RB-E-156-37	21.6	Low	Non-Erodible Bank	11.7	Supplemental Remediation Area	24.7	288
East	RB-E-156-61	21.6	Low	Non-Erodible Bank	0.1	Supplemental Remediation Area	25.2	2
East	RB-E-156-84	21.6	Low	Non-Erodible Bank	7.6	Supplemental Remediation Area	24.1	183
East	RB-E-156-99	21.6	Low	Non-Erodible Bank	0.0	Supplemental Remediation Area	27.4	1
East	RB-E-157-20	26.0	Very High	Non-Erodible Bank	7.6	Supplemental Remediation Area	23.3	177
East	RB-E-157-42	26.0	Very High	Non-Erodible Bank	0.3	Supplemental Remediation Area	25.1	7
East	RB-E-157-64	26.0	Very High	Non-Erodible Bank	7.0	Supplemental Remediation Area	25.1	175
East	RB-E-157-79	26.0	Very High	Non-Erodible Bank	0.1	Supplemental Remediation Area	25.0	2
East	RB-E-157-95	26.0	Very High	Non-Erodible Bank	0.8	Supplemental Remediation Area	25.0	20
East	RB-E-158-12	26.0	Very High	Non-Erodible Bank	1.0	Supplemental Remediation Area	25.2	25
East	RB-E-158-29	23.6	Very High	Non-Erodible Bank	1.3	Supplemental Remediation Area	25.2	32
East	RB-E-158-48	23.6	Very High	Non-Erodible Bank	0.0	Supplemental Remediation Area	25.4	1
East	RB-E-158-69	23.6	Very High	Non-Erodible Bank	0.2	Supplemental Remediation Area	25.0	4
East	RB-E-158-87	23.6	Very High	Non-Erodible Bank	0.3	Supplemental Remediation Area	25.1	6
East	RB-E-159-07	23.6	Very High	Non-Erodible Bank	4.7	Supplemental Remediation Area	25.3	118
East	RB-E-159-33	23.6	Low	Non-Erodible Bank	3.2	No Remediation Required	-	-
East	RB-E-159-55	23.6	Low	Non-Erodible Bank	4.5	No Remediation Required	-	-
East	RB-E-159-84	23.6	Low	Non-Erodible Bank	6.3	No Remediation Required	-	-
East	RB-E-160-12	23.6	Low	Non-Erodible Bank	6.9	No Remediation Required	-	-
East	RB-E-160-37	25.0	Low	Non-Erodible Bank	5.0	No Remediation Required	-	-
East	RB-E-160-60	25.0	Low	Non-Erodible Bank	3.1	No Remediation Required	-	-
East	RB-E-160-81	25.0	Low	Non-Erodible Bank	2.4	No Remediation Required	-	-
East	RB-E-161-04	25.0	Low	Non-Erodible Bank	8.0	No Remediation Required	-	-
East	RB-E-161-25	25.0	Low	Non-Erodible Bank	1.9	No Remediation Required	-	-
East	RB-E-161-41	25.0	Low	Non-Erodible Bank	2.8	No Remediation Required	-	-
East	RB-E-161-62	18.9	Low	Non-Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-161-87	18.9	Low	Non-Erodible Bank	0.1	No Remediation Required	-	-
East	RB-E-162-12	18.9	Low	Non-Erodible Bank	0.5	No Remediation Required	-	-
East	RB-E-162-36	18.9	Low	Non-Erodible Bank	1.0	No Remediation Required	-	-
East	RB-E-162-64	18.9	Low	Non-Erodible Bank	0.6	No Remediation Required	-	-
East	RB-E-162-84	27.1	Low	Non-Erodible Bank	1.8	No Remediation Required	-	-
East	RB-E-163-09	27.1	Low	Non-Erodible Bank	0.8	No Remediation Required	-	-
East	RB-E-163-33	27.1	Low	Non-Erodible Bank	7.9	No Remediation Required	-	-
East	RB-E-163-60	27.1	Low	Non-Erodible Bank	4.9	No Remediation Required	-	-
East	RB-E-163-95	27.1	Low	Non-Erodible Bank	7.7	No Remediation Required	-	-
East	RB-E-164-15	27.1	Low	Non-Erodible Bank	6.7	No Remediation Required	-	-
East	RB-E-164-39	27.1	Low	Non-Erodible Bank	3.8	No Remediation Required	-	-
East	RB-E-164-58	27.1	Low	Non-Erodible Bank	0.2	No Remediation Required	-	-
East	RB-E-164-84	27.1	Low	Non-Erodible Bank	7.7	No Remediation Required	-	-
East	RB-E-165-11	27.1	Low	Non-Erodible Bank	0.9	No Remediation Required	-	-
East	RB-E-165-32	27.1	Low	Non-Erodible Bank	16.9	No Remediation Required	-	-
East	RB-E-165-55	27.1	Low	Non-Erodible Bank	0.2	No Remediation Required	-	-
East	RB-E-165-83	27.1	Low	Non-Erodible Bank	4.7	No Remediation Required	-	-
East	RB-E-166-07	27.1	Low	Non-Erodible Bank	5.7	No Remediation Required	-	-
East	RB-E-166-30	27.1	Low	Non-Erodible Bank	7.2	No Remediation Required	-	-
East	RB-E-166-56	27.1	Low	Non-Erodible Bank	5.3	No Remediation Required	-	-
East	RB-E-166-83	27.1	Low	Non-Erodible Bank	20.9	No Remediation Required	-	-
East	RB-E-167-04	21.4	Low	Non-Erodible Bank	4.2	No Remediation Required	-	-
East	RB-E-167-29	21.4	Low	Non-Erodible Bank	21.1	No Remediation Required	-	-
East	RB-E-167-56	21.4	Low	Non-Erodible Bank	3.2	No Remediation Required	-	-
East	RB-E-167-99	21.4	Low	Non-Erodible Bank	8.5	No Remediation Required	-	-
East	RB-E-168-26	21.4	Low	Non-Erodible Bank	2.5	No Remediation Required	-	-
East	RB-E-168-46	21.4	Low	Non-Erodible Bank	14.1	No Remediation Required	-	-
East	RB-E-168-70	21.4	Low	Non-Erodible Bank	2.9	No Remediation Required	-	-
East	RB-E-168-95	21.4	Low	Non-Erodible Bank	17.7	No Remediation Required	-	-
East	RB-E-169-26	21.4	Low	Non-Erodible Bank	4.2	No Remediation Required	-	-

Table D-1
Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
East	RB-E-169-48	21.4	Low	Non-Erodible Bank	15.8	No Remediation Required	-	-
East	RB-E-169-57	21.4	Low	Non-Erodible Bank	5.3	No Remediation Required	-	-
East	RB-E-169-80	21.4	Low	Non-Erodible Bank	12.4	No Remediation Required	-	-
East	RB-E-170-01	21.4	Low	Non-Erodible Bank	4.3	No Remediation Required	-	-
East	RB-E-170-26	21.4	Low	Non-Erodible Bank	13.5	No Remediation Required	-	-
East	RB-E-170-49	21.4	Low	Non-Erodible Bank	2.6	No Remediation Required	-	-
East	RB-E-170-71	21.4	Low	Non-Erodible Bank	9.9	No Remediation Required	-	-
East	RB-E-170-96	21.4	Low	Non-Erodible Bank	3.4	No Remediation Required	-	-
East	RB-E-171-14	21.4	Low	Non-Erodible Bank	71.5	Supplemental Remediation Area	22.7	1,621
East	RB-E-171-43	21.4	Low	Non-Erodible Bank	25.6	Supplemental Remediation Area	26.5	680
East	RB-E-171-67	21.4	Low	Non-Erodible Bank	13.1	Supplemental Remediation Area	25.7	337
East	RB-E-171-88	21.4	Low	Non-Erodible Bank	17.1	Supplemental Remediation Area	25.1	429
East	RB-E-172-11	21.4	Low	Non-Erodible Bank	15.0	Supplemental Remediation Area	24.5	368
East	RB-E-172-33	25.4	Extreme	Non-Erodible Bank	5.6	Supplemental Remediation Area	25.2	141
East	RB-E-172-57	25.4	Extreme	Non-Erodible Bank	7.1	Supplemental Remediation Area	25.0	179
East	RB-E-172-71	25.4	Extreme	Non-Erodible Bank	6.1	Supplemental Remediation Area	25.0	152
East	RB-E-172-89	25.4	Extreme	Non-Erodible Bank	17.1	Supplemental Remediation Area	25.2	430
East	RB-E-173-09	25.4	Extreme	Non-Erodible Bank	9.9	Supplemental Remediation Area	25.2	250
East	RB-E-173-20	22.8	Extreme	Non-Erodible Bank	5.7	Supplemental Remediation Area	24.6	141
East	RB-E-173-31	22.8	Extreme	Non-Erodible Bank	4.5	Supplemental Remediation Area	25.2	113
East	RB-E-173-49	22.8	Extreme	Non-Erodible Bank	4.2	Supplemental Remediation Area	25.3	105
East	RB-E-173-75	22.8	Extreme	Non-Erodible Bank	4.0	Supplemental Remediation Area	24.6	98
East	RB-E-174-00	22.8	Extreme	Non-Erodible Bank	2.0	No Remediation Required	-	-
East	RB-E-174-30	22.8	Low	Non-Erodible Bank	2.0	No Remediation Required	-	-
East	RB-E-174-54	22.8	Low	Non-Erodible Bank	18.1	No Remediation Required	-	-
East	RB-E-175-12	22.8	Low	Non-Erodible Bank	2.4	No Remediation Required	-	-
East	RB-E-175-32	29.4	Low	Non-Erodible Bank	2.5	No Remediation Required	-	-
East	RB-E-175-59	29.4	Low	Non-Erodible Bank	4.2	No Remediation Required	-	-
East	RB-E-175-83	29.4	Low	Non-Erodible Bank	2.0	No Remediation Required	-	-
East	RB-E-176-10	29.4	Low	Non-Erodible Bank	7.1	No Remediation Required	-	-
East	RB-E-176-36	29.4	Low	Non-Erodible Bank	10.5	No Remediation Required	-	-
East	RB-E-176-59	29.4	Low	Non-Erodible Bank	12.9	No Remediation Required	-	-
East	RB-E-176-86	29.4	Low	Non-Erodible Bank	2.7	No Remediation Required	-	-
East	RB-E-177-07	26.7	Low	Non-Erodible Bank	13.8	No Remediation Required	-	-
East	RB-E-177-31	26.7	Low	Non-Erodible Bank	21.4	No Remediation Required	-	-
East	RB-E-177-61	26.7	Low	Non-Erodible Bank	48.9	No Remediation Required	-	-
East	RB-E-177-93	26.7	Low	Non-Erodible Bank	0.2	No Remediation Required	-	-
East	RB-E-178-18	26.7	Low	Non-Erodible Bank	12.6	No Remediation Required	-	-
East	RB-E-178-40	26.7	Low	Non-Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-178-65	26.7	Low	Non-Erodible Bank	8.7	No Remediation Required	-	-
East	RB-E-178-91	26.7	Low	Non-Erodible Bank	1.3	No Remediation Required	-	-
East	RB-E-179-16	26.7	Low	Non-Erodible Bank	9.4	No Remediation Required	-	-
East	RB-E-179-40	26.7	Low	Non-Erodible Bank	3.5	No Remediation Required	-	-
East	RB-E-179-65	26.7	Low	Non-Erodible Bank	8.7	No Remediation Required	-	-
East	RB-E-179-88	26.7	Low	Non-Erodible Bank	4.6	No Remediation Required	-	-
East	RB-E-180-14	26.7	Low	Non-Erodible Bank	14.8	No Remediation Required	-	-
East	RB-E-180-33	26.7	Low	Non-Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-180-58	26.7	Low	Non-Erodible Bank	12.4	No Remediation Required	-	-
East	RB-E-180-84	26.7	Low	Non-Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-181-35	26.7	Low	Non-Erodible Bank	5.5	No Remediation Required	-	-
East	RB-E-181-60	21.9	Very High	Non-Erodible Bank	14.6	Supplemental Remediation Area	24.7	361
East	RB-E-181-82	21.9	Very High	Non-Erodible Bank	69.3	Supplemental Remediation Area	25.0	1,729
East	RB-E-182-02	21.9	Very High	Non-Erodible Bank	13.8	Supplemental Remediation Area	25.1	345
East	RB-E-182-22	21.9	Very High	Non-Erodible Bank	8.4	Supplemental Remediation Area	25.0	210
East	RB-E-182-36	21.9	Very High	Non-Erodible Bank	10.8	Supplemental Remediation Area	24.9	268
East	RB-E-182-53	31.2	Very High	Erodible Bank	1.3	Supplemental Remediation Area	24.9	32
East	RB-E-182-71	31.2	Very High	Erodible Bank	4.2	Supplemental Remediation Area	24.9	105
East	RB-E-182-92	31.2	Low	Non-Erodible Bank	47.6	Supplemental Remediation Area	25.2	1,201
East	RB-E-183-16	31.2	Low	Non-Erodible Bank	2.6	No Remediation Required	-	-
East	RB-E-183-39	31.2	Low	Non-Erodible Bank	1.7	No Remediation Required	-	-
East	RB-E-183-56	31.2	Low	Non-Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-183-75	31.2	Low	Non-Erodible Bank	0.8	No Remediation Required	-	-
East	RB-E-183-98	31.2	Low	Non-Erodible Bank	6.5	No Remediation Required	-	-
East	RB-E-184-23	31.2	Low	Non-Erodible Bank	8.5	No Remediation Required	-	-
East	RB-E-184-53	31.3	Low	Non-Erodible Bank	33.2	No Remediation Required	-	-
East	RB-E-184-82	31.3	Low	Non-Erodible Bank	8.0	No Remediation Required	-	-
East	RB-E-185-09	31.3	Low	Non-Erodible Bank	9.2	No Remediation Required	-	-
East	RB-E-185-43	31.3	Low	Non-Erodible Bank	6.1	No Remediation Required	-	-
East	RB-E-185-69	35.4	Low	Non-Erodible Bank	12.6	No Remediation Required	-	-
East	RB-E-185-94	35.4	Low	Non-Erodible Bank	7.3	No Remediation Required	-	-
East	RB-E-186-22	35.4	Low	Non-Erodible Bank	9.8	No Remediation Required	-	-
East	RB-E-186-50	35.4	Low	Non-Erodible Bank	8.5	No Remediation Required	-	-
East	RB-E-186-83	35.4	Low	Non-Erodible Bank	21.6	No Remediation Required	-	-
East	RB-E-187-45	35.4	Low	Non-Erodible Bank	7.4	No Remediation Required	-	-
East	RB-E-187-92	35.4	Low	Non-Erodible Bank	12.8	No Remediation Required	-	-
East	RB-E-188-21	35.4	Low	Non-Erodible Bank	9.6	No Remediation Required	-	-
East	RB-E-188-48	35.4	Low	Non-Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-188-74	35.4	Low	Non-Erodible Bank	11.2	No Remediation Required	-	-
East	RB-E-188-92	20.6	Low	Non-Erodible Bank	0.1	No Remediation Required	-	-
East	RB-E-189-14	20.6	Low	Non-Erodible Bank	20.7	No Remediation Required	-	-
East	RB-E-189-33	20.6	Low	Non-Erodible Bank	0.2	No Remediation Required	-	-
East	RB-E-189-55	20.6	Low	Non-Erodible Bank	7.5	No Remediation Required	-	-
East	RB-E-189-81	20.6	Low	Non-Erodible Bank	13.4	No Remediation Required	-	-
East	RB-E-190-00	20.6	Moderate	Non-Erodible Bank	4.9	No Remediation Required	-	-
East	RB-E-190-22	20.6	Moderate	Non-Erodible Bank	8.7	No Remediation Required	-	-

Table D-1
Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
East	RB-E-190-41	20.6	Moderate	Non-Erodible Bank	9.4	No Remediation Required	-	-
East	RB-E-190-64	20.6	Moderate	Non-Erodible Bank	0.1	No Remediation Required	-	-
East	RB-E-190-76	20.6	Moderate	Non-Erodible Bank	5.9	No Remediation Required	-	-
East	RB-E-190-98	20.6	Moderate	Non-Erodible Bank	3.1	No Remediation Required	-	-
East	RB-E-191-20	20.6	Moderate	Non-Erodible Bank	1.2	No Remediation Required	-	-
East	RB-E-191-39	32.8	Low	Non-Erodible Bank	10.9	No Remediation Required	-	-
East	RB-E-191-60	32.8	Low	Non-Erodible Bank	4.1	No Remediation Required	-	-
East	RB-E-191-82	32.8	Low	Non-Erodible Bank	13.0	No Remediation Required	-	-
East	RB-E-192-07	32.8	Low	Non-Erodible Bank	13.3	No Remediation Required	-	-
East	RB-E-192-30	32.8	Low	Non-Erodible Bank	9.8	No Remediation Required	-	-
East	RB-E-192-53	32.8	Low	Non-Erodible Bank	1.1	No Remediation Required	-	-
East	RB-E-192-76	32.8	Low	Non-Erodible Bank	5.9	No Remediation Required	-	-
East	RB-E-193-09	32.8	Low	Non-Erodible Bank	9.0	No Remediation Required	-	-
East	RB-E-193-32	27.1	Low	Non-Erodible Bank	11.9	No Remediation Required	-	-
East	RB-E-193-59	27.1	Low	Non-Erodible Bank	10.5	No Remediation Required	-	-
East	RB-E-193-82	27.1	Low	Non-Erodible Bank	12.3	No Remediation Required	-	-
East	RB-E-194-10	22.5	Low	Non-Erodible Bank	10.7	No Remediation Required	-	-
East	RB-E-194-35	22.5	Low	Non-Erodible Bank	10.5	No Remediation Required	-	-
East	RB-E-194-61	22.5	Low	Non-Erodible Bank	7.0	No Remediation Required	-	-
East	RB-E-194-90	22.5	Low	Non-Erodible Bank	12.2	No Remediation Required	-	-
East	RB-E-195-15	22.5	Low	Non-Erodible Bank	15.4	No Remediation Required	-	-
East	RB-E-195-40	22.5	Low	Non-Erodible Bank	20.0	No Remediation Required	-	-
East	RB-E-195-64	22.5	Low	Non-Erodible Bank	9.3	No Remediation Required	-	-
East	RB-E-195-90	22.5	Low	Non-Erodible Bank	8.9	No Remediation Required	-	-
East	RB-E-196-20	22.5	Low	Non-Erodible Bank	8.7	No Remediation Required	-	-
East	RB-E-196-44	22.5	Low	Non-Erodible Bank	10.2	No Remediation Required	-	-
East	RB-E-196-68	29.4	Moderate	Erodible Bank	11.3	Remediation Required	25.1	284
East	RB-E-196-92	29.4	Moderate	Erodible Bank	57.8	Remediation Required	25.0	1,447
East	RB-E-197-11	29.4	Moderate	Erodible Bank	41.1	Remediation Required	24.9	1,024
East	RB-E-197-35	29.4	Moderate	Erodible Bank	17.5	Remediation Required	24.9	436
East	RB-E-197-56	29.4	Moderate	Erodible Bank	4.5	Supplemental Remediation Area	25.1	114
East	RB-E-197-80	29.4	Moderate	Erodible Bank	7.5	Remediation Required	25.4	191
East	RB-E-197-97	29.4	Moderate	Erodible Bank	4.7	Supplemental Remediation Area	24.4	114
East	RB-E-198-21	29.4	Moderate	Erodible Bank	22.0	Remediation Required	24.9	549
East	RB-E-198-44	29.4	Moderate	Erodible Bank	5.9	Remediation Required	25.3	149
East	RB-E-198-65	29.4	Moderate	Erodible Bank	14.7	Remediation Required	25.2	371
East	RB-E-198-89	29.4	Moderate	Erodible Bank	25.4	Remediation Required	24.6	626
East	RB-E-199-12	29.4	Moderate	Erodible Bank	30.1	Remediation Required	25.0	753
East	RB-E-199-31	29.4	Moderate	Erodible Bank	12.4	Remediation Required	25.2	312
East	RB-E-199-52	29.4	Moderate	Erodible Bank	10.7	Remediation Required	28.1	299
East	RB-E-199-85	29.4	Moderate	Erodible Bank	22.4	Remediation Required	5.9	133
East	RB-E-199-85	20.5	Low	Non-Erodible Bank	22.4	No Remediation Required	-	-
East	RB-E-200-03	20.5	Low	Non-Erodible Bank	8.9	No Remediation Required	-	-
East	RB-E-200-33	20.5	Low	Non-Erodible Bank	10.2	No Remediation Required	-	-
East	RB-E-200-59	20.5	Low	Non-Erodible Bank	16.4	No Remediation Required	-	-
East	RB-E-200-89	20.5	Low	Non-Erodible Bank	12.1	No Remediation Required	-	-
East	RB-E-201-15	20.5	Low	Non-Erodible Bank	9.2	No Remediation Required	-	-
East	RB-E-201-41	20.5	Low	Non-Erodible Bank	8.8	No Remediation Required	-	-
East	RB-E-201-70	20.5	Low	Non-Erodible Bank	32.5	No Remediation Required	-	-
East	RB-E-201-93	16.4	Low	Non-Erodible Bank	9.8	No Remediation Required	-	-
East	RB-E-202-20	16.4	Low	Non-Erodible Bank	9.3	No Remediation Required	-	-
East	RB-E-202-38	16.4	Low	Non-Erodible Bank	15.2	No Remediation Required	-	-
East	RB-E-202-61	16.4	Low	Non-Erodible Bank	9.5	No Remediation Required	-	-
East	RB-E-202-83	29.3	Low	Non-Erodible Bank	13.4	No Remediation Required	-	-
East	RB-E-203-00	29.3	Low	Non-Erodible Bank	9.4	No Remediation Required	-	-
East	RB-E-203-23	29.3	Low	Non-Erodible Bank	3.6	No Remediation Required	-	-
East	RB-E-203-40	29.3	Low	Non-Erodible Bank	6.8	No Remediation Required	-	-
East	RB-E-203-62	29.3	Low	Non-Erodible Bank	14.1	No Remediation Required	-	-
East	RB-E-203-78	29.3	Low	Non-Erodible Bank	0.7	No Remediation Required	-	-
East	RB-E-204-01	29.3	Low	Non-Erodible Bank	0.1	No Remediation Required	-	-
East	RB-E-204-26	29.3	Low	Non-Erodible Bank	0.1	No Remediation Required	-	-
East	RB-E-204-44	29.3	Low	Non-Erodible Bank	0.0	No Remediation Required	-	-
East	RB-E-204-63	29.3	Low	Non-Erodible Bank	0.1	No Remediation Required	-	-
East	RB-E-204-89	29.3	Low	Non-Erodible Bank	1.9	No Remediation Required	-	-
East	RB-E-205-07	29.3	Low	Non-Erodible Bank	0.2	No Remediation Required	-	-
East	RB-E-205-28	29.3	Low	Non-Erodible Bank	1.3	No Remediation Required	-	-
East	RB-E-205-48	29.3	Low	Non-Erodible Bank	3.5	No Remediation Required	-	-
East	RB-E-205-67	29.3	Low	Non-Erodible Bank	15.0	Supplemental Remediation Area	24.4	367
East	RB-E-205-90	33.3	Extreme	Erodible Bank	5.9	Remediation Required	25.1	147
East	RB-E-206-07	33.3	Extreme	Erodible Bank	0.2	Supplemental Remediation Area	25.5	6
East	RB-E-206-28	33.3	Extreme	Erodible Bank	9.2	Remediation Required	25.4	233
East	RB-E-206-47	33.3	Extreme	Erodible Bank	1.1	Supplemental Remediation Area	24.6	27
East	RB-E-206-65	33.3	Extreme	Erodible Bank	10.3	Remediation Required	24.4	250
East	RB-E-206-79	33.3	Extreme	Erodible Bank	0.4	Supplemental Remediation Area	25.6	9
East	RB-E-206-91	33.3	Extreme	Erodible Bank	8.4	Remediation Required	25.4	214
East	RB-E-207-08	33.3	Extreme	Erodible Bank	0.1	Supplemental Remediation Area	25.4	1
East	RB-E-207-24	33.3	Extreme	Erodible Bank	2.4	Supplemental Remediation Area	24.1	58
East	RB-E-207-45	33.3	Extreme	Erodible Bank	0.1	Supplemental Remediation Area	25.1	3
East	RB-E-207-66	33.3	Extreme	Erodible Bank	14.6	Remediation Required	25.1	365
East	RB-E-207-94	28.3	Low	Non-Erodible Bank	6.6	Supplemental Remediation Area	24.9	165
East	RB-E-208-16	28.3	Low	Non-Erodible Bank	7.3	No Remediation Required	-	-
East	RB-E-208-41	28.3	Low	Non-Erodible Bank	15.3	No Remediation Required	-	-
East	RB-E-208-67	28.3	Low	Non-Erodible Bank	14.4	No Remediation Required	-	-
East	RB-E-208-94	28.3	Low	Non-Erodible Bank	5.3	No Remediation Required	-	-
East	RB-E-209-19	28.3	Low	Non-Erodible Bank	2.8	No Remediation Required	-	-

Table D-1
Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
East	RB-E-209-42	28.3	Low	Non-Erodible Bank	6.9	No Remediation Required	-	-
East	RB-E-209-69	28.3	Low	Non-Erodible Bank	0.2	No Remediation Required	-	-
East	RB-E-209-94	28.3	Low	Non-Erodible Bank	5.5	No Remediation Required	-	-
East	RB-E-210-19	28.3	Low	Non-Erodible Bank	9.3	No Remediation Required	-	-
East	RB-E-210-43	28.3	Low	Non-Erodible Bank	4.5	No Remediation Required	-	-
East	RB-E-210-71	14.4	Low	Non-Erodible Bank	12.9	No Remediation Required	-	-
East	RB-E-210-97	14.4	Low	Non-Erodible Bank	4.2	No Remediation Required	-	-
East	RB-E-211-26	14.4	Low	Non-Erodible Bank	16.6	No Remediation Required	-	-
East	RB-E-211-46	14.4	Low	Non-Erodible Bank	4.1	No Remediation Required	-	-
East	RB-E-211-77	14.4	Low	Non-Erodible Bank	8.7	No Remediation Required	-	-
East	RB-E-212-01	14.4	Low	Non-Erodible Bank	7.3	No Remediation Required	-	-
East	RB-E-212-25	14.4	Low	Non-Erodible Bank	13.8	No Remediation Required	-	-
East	RB-E-212-53	14.4	Low	Non-Erodible Bank	2.8	No Remediation Required	-	-
East	RB-E-212-75	14.4	Low	Non-Erodible Bank	15.3	No Remediation Required	-	-
East	RB-E-212-99	14.4	Low	Non-Erodible Bank	9.3	No Remediation Required	-	-
East	RB-E-213-25	14.4	Low	Non-Erodible Bank	15.0	No Remediation Required	-	-
East	RB-E-213-50	14.4	Low	Non-Erodible Bank	12.4	No Remediation Required	-	-
East	RB-E-213-75	14.4	Low	Non-Erodible Bank	18.4	No Remediation Required	-	-
East	RB-E-214-02	14.4	Low	Non-Erodible Bank	13.1	No Remediation Required	-	-
East	RB-E-214-25	14.4	Low	Non-Erodible Bank	23.4	No Remediation Required	-	-
East	RB-E-214-48	25.1	Low	Non-Erodible Bank	13.3	No Remediation Required	-	-
East	RB-E-214-71	25.1	Low	Non-Erodible Bank	14.4	No Remediation Required	-	-
East	RB-E-214-98	25.1	Low	Non-Erodible Bank	9.6	No Remediation Required	-	-
East	RB-E-215-22	25.1	Low	Non-Erodible Bank	4.4	No Remediation Required	-	-
East	RB-E-215-47	25.1	Low	Non-Erodible Bank	5.8	No Remediation Required	-	-
East	RB-E-215-78	25.1	Low	Non-Erodible Bank	12.0	No Remediation Required	-	-
East	RB-E-216-02	25.1	Low	Non-Erodible Bank	12.5	No Remediation Required	-	-
East	RB-E-216-40	25.1	Low	Non-Erodible Bank	78.8	No Remediation Required	-	-
East	RB-E-216-78	25.1	Low	Non-Erodible Bank	7.8	No Remediation Required	-	-
East	RB-E-217-03	25.1	Low	Non-Erodible Bank	27.7	No Remediation Required	-	-
East	RB-E-217-36	25.1	Low	Non-Erodible Bank	14.6	No Remediation Required	-	-
East	RB-E-217-72	25.1	Low	Non-Erodible Bank	26.4	No Remediation Required	-	-
East	RB-E-217-98	25.1	Low	Non-Erodible Bank	12.0	No Remediation Required	-	-
East	RB-E-218-29	25.1	Low	Non-Erodible Bank	13.2	No Remediation Required	-	-
East	RB-E-218-57	25.1	Low	Non-Erodible Bank	16.4	No Remediation Required	-	-
East	RB-E-218-96	25.1	Low	Non-Erodible Bank	13.9	No Remediation Required	-	-
East	RB-E-219-29	25.3	Low	Non-Erodible Bank	11.1	No Remediation Required	-	-
East	RB-E-219-51	25.3	Low	Non-Erodible Bank	9.9	No Remediation Required	-	-
East	RB-E-219-83	25.3	Low	Non-Erodible Bank	7.4	No Remediation Required	-	-
East	RB-E-220-04	25.3	Low	Non-Erodible Bank	9.3	No Remediation Required	-	-
East	RB-E-220-29	25.3	Low	Non-Erodible Bank	10.0	No Remediation Required	-	-
East	RB-E-220-55	25.3	Low	Non-Erodible Bank	1.8	No Remediation Required	-	-
East	RB-E-220-77	25.3	Low	Non-Erodible Bank	12.2	No Remediation Required	-	-
East	RB-E-221-05	25.3	Low	Non-Erodible Bank	11.6	No Remediation Required	-	-
East	RB-E-221-31	25.3	Low	Non-Erodible Bank	13.4	No Remediation Required	-	-
East	RB-E-221-56	25.3	Low	Non-Erodible Bank	40.4	No Remediation Required	-	-
East	RB-E-221-80	24.0	Low	Non-Erodible Bank	9.2	No Remediation Required	-	-
East	RB-E-222-11	24.0	Low	Non-Erodible Bank	49.9	No Remediation Required	-	-
East	RB-E-222-46	24.0	Low	Non-Erodible Bank	12.5	No Remediation Required	-	-
East	RB-E-222-81	22.9	Low	Non-Erodible Bank	8.8	No Remediation Required	-	-
East	RB-E-223-22	22.9	Low	Non-Erodible Bank	11.7	No Remediation Required	-	-
East	RB-E-223-67	22.9	Low	Non-Erodible Bank	9.5	No Remediation Required	-	-
East	RB-E-224-14	22.2	Low	Non-Erodible Bank	10.3	No Remediation Required	-	-
East	RB-E-224-55	22.2	Low	Non-Erodible Bank	11.6	No Remediation Required	-	-
East	RB-E-224-77	22.2	Low	Non-Erodible Bank	13.3	No Remediation Required	-	-
East	RB-E-225-04	22.2	Low	Non-Erodible Bank	19.1	No Remediation Required	-	-
East	RB-E-225-25	22.2	Low	Non-Erodible Bank	3.6	No Remediation Required	-	-
East	RB-E-225-49	22.2	Low	Non-Erodible Bank	13.3	No Remediation Required	-	-
East	RB-E-225-68	22.2	Low	Non-Erodible Bank	7.9	No Remediation Required	-	-
East	RB-E-225-90	22.2	Low	Non-Erodible Bank	13.1	No Remediation Required	-	-
East	RB-E-226-14	22.2	Low	Non-Erodible Bank	12.2	No Remediation Required	-	-
East	RB-E-226-31	22.2	Low	Non-Erodible Bank	10.9	No Remediation Required	-	-
East	RB-E-226-56	22.2	Low	Non-Erodible Bank	6.1	No Remediation Required	-	-
East	RB-E-226-84	17.3	Low	Non-Erodible Bank	14.2	No Remediation Required	-	-
East	RB-E-227-13	17.3	Moderate	Non-Erodible Bank	17.0	No Remediation Required	-	-
East	RB-E-227-34	17.3	Moderate	Non-Erodible Bank	10.5	No Remediation Required	-	-
East	RB-E-227-53	17.3	Moderate	Non-Erodible Bank	13.2	No Remediation Required	-	-
East	RB-E-227-75	17.3	Moderate	Non-Erodible Bank	16.9	No Remediation Required	-	-
East	RB-E-227-91	17.3	Moderate	Non-Erodible Bank	14.5	No Remediation Required	-	-
East	RB-E-228-09	17.3	Moderate	Non-Erodible Bank	15.7	No Remediation Required	-	-
East	RB-E-228-33	17.3	Moderate	Non-Erodible Bank	22.9	No Remediation Required	-	-
East	RB-E-228-53	30.1	Moderate	Erodible Bank	7.6	Remediation Required	25.3	192
East	RB-E-228-65	30.1	Moderate	Erodible Bank	4.1	Supplemental Remediation Area	25.0	101
East	RB-E-228-87	30.1	Moderate	Erodible Bank	6.8	Remediation Required	24.7	167
East	RB-E-229-04	30.1	Moderate	Erodible Bank	10.7	Remediation Required	24.7	265
East	RB-E-229-22	30.1	Moderate	Erodible Bank	12.4	Remediation Required	25.3	312
East	RB-E-229-43	30.1	Moderate	Erodible Bank	0.2	No Remediation Required	-	-
East	RB-E-229-64	19.8	Moderate	Non-Erodible Bank	1.9	No Remediation Required	-	-
East	RB-E-229-89	19.8	Moderate	Non-Erodible Bank	3.9	No Remediation Required	-	-
East	RB-E-230-12	19.8	Moderate	Non-Erodible Bank	1.9	No Remediation Required	-	-
East	RB-E-230-38	19.8	Moderate	Non-Erodible Bank	1.2	No Remediation Required	-	-
East	RB-E-230-58	19.8	Moderate	Non-Erodible Bank	0.1	No Remediation Required	-	-
East	RB-E-230-85	19.8	Moderate	Non-Erodible Bank	2.3	No Remediation Required	-	-
East	RB-E-231-08	19.8	Moderate	Non-Erodible Bank	0.1	No Remediation Required	-	-
East	RB-E-231-27	19.8	Moderate	Non-Erodible Bank	0.1	No Remediation Required	-	-

Table D-1
Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
East	RB-E-231-52	19.8	Low	Non-Erodible Bank	0.1	No Remediation Required	-	-
East	RB-E-231-70	19.8	Low	Non-Erodible Bank	0.1	No Remediation Required	-	-
East	RB-E-231-92	19.8	Low	Non-Erodible Bank	3.4	No Remediation Required	-	-
East	RB-E-232-14	19.8	Low	Non-Erodible Bank	10.4	No Remediation Required	-	-
East	RB-E-232-36	40.5	Low	Non-Erodible Bank	5.1	No Remediation Required	-	-
East	RB-E-232-60	40.5	Low	Non-Erodible Bank	9.1	No Remediation Required	-	-
East	RB-E-232-85	40.5	Low	Non-Erodible Bank	3.6	No Remediation Required	-	-
East	RB-E-233-09	40.5	Low	Non-Erodible Bank	1.3	No Remediation Required	-	-
East	RB-E-233-33	40.5	Low	Non-Erodible Bank	8.6	No Remediation Required	-	-
East	RB-E-233-54	40.5	Low	Non-Erodible Bank	13.1	No Remediation Required	-	-
East	RB-E-233-81	40.5	Low	Non-Erodible Bank	11.3	No Remediation Required	-	-
East	RB-E-234-03	40.5	Low	Non-Erodible Bank	6.8	No Remediation Required	-	-
East	RB-E-234-23	40.5	Low	Non-Erodible Bank	3.9	No Remediation Required	-	-
East	RB-E-234-44	40.5	Low	Non-Erodible Bank	6.0	No Remediation Required	-	-
East	RB-E-234-65	40.5	Low	Non-Erodible Bank	14.0	No Remediation Required	-	-
East	RB-E-234-85	40.5	Low	Non-Erodible Bank	12.4	No Remediation Required	-	-
East	RB-E-235-05	40.5	Low	Non-Erodible Bank	6.1	No Remediation Required	-	-
East	RB-E-235-94	40.5	Low	Non-Erodible Bank	7.3	No Remediation Required	-	-
East	RB-E-236-76	25.2	Low	Non-Erodible Bank	10.1	No Remediation Required	-	-
East	RB-E-237-05	25.2	Low	Non-Erodible Bank	9.3	No Remediation Required	-	-
East	RB-E-237-28	25.2	Low	Non-Erodible Bank	11.4	No Remediation Required	-	-
East	RB-E-237-65	25.2	Low	Non-Erodible Bank	10.9	No Remediation Required	-	-
East	RB-E-237-88	28.2	Low	Non-Erodible Bank	24.4	Supplemental Remediation Area	23.9	584
East	RB-E-238-02	28.2	Very High	Erodible Bank	16.5	Remediation Required	26.7	439
East	RB-E-238-18	28.2	Very High	Erodible Bank	4.7	Supplemental Remediation Area	24.4	115
East	RB-E-238-27	28.2	Very High	Erodible Bank	7.7	Remediation Required	25.3	194
East	RB-E-238-36	28.2	Very High	Erodible Bank	7.4	Remediation Required	25.0	184
East	RB-E-238-53	28.2	Very High	Erodible Bank	6.1	Remediation Required	24.8	151
East	RB-E-238-71	28.2	Very High	Erodible Bank	7.4	Remediation Required	25.0	185
East	RB-E-238-87	28.2	Very High	Erodible Bank	8.7	Remediation Required	24.8	216
East	RB-E-239-06	28.2	Very High	Erodible Bank	5.8	Remediation Required	25.4	146
East	RB-E-239-26	28.2	Very High	Erodible Bank	0.0	Supplemental Remediation Area	25.0	1
East	RB-E-239-41	28.2	Very High	Erodible Bank	12.1	Remediation Required	24.6	299
East	RB-E-239-63	28.2	Very High	Erodible Bank	10.7	Remediation Required	25.0	267
East	RB-E-239-85	28.2	Very High	Erodible Bank	9.0	Remediation Required	25.3	228
East	RB-E-240-06	28.2	Very High	Erodible Bank	11.8	Remediation Required	25.1	295
East	RB-E-240-33	39.4	Very High	Erodible Bank	14.2	Remediation Required	25.6	364
East	RB-E-240-53	39.4	Very High	Erodible Bank	9.1	Remediation Required	24.3	220
East	RB-E-240-71	39.4	Very High	Erodible Bank	5.9	Remediation Required	24.4	144
East	RB-E-240-90	39.4	Very High	Erodible Bank	0.1	Supplemental Remediation Area	25.2	3
East	RB-E-241-06	39.4	Very High	Erodible Bank	5.1	Remediation Required	24.6	125
East	RB-E-241-24	39.4	Very High	Erodible Bank	5.8	Remediation Required	23.5	136
East	RB-E-241-42	39.4	Very High	Erodible Bank	8.4	Remediation Required	23.6	198
East	RB-E-241-66	39.4	Very High	Erodible Bank	3.5	No Remediation Required	-	-
East	RB-E-241-88	39.4	Low	Non-Erodible Bank	6.2	No Remediation Required	-	-
East	RB-E-242-11	39.4	Low	Non-Erodible Bank	7.6	No Remediation Required	-	-
East	RB-E-242-37	39.4	Low	Non-Erodible Bank	7.8	No Remediation Required	-	-
East	RB-E-242-61	31.3	Low	Non-Erodible Bank	5.1	No Remediation Required	-	-
East	RB-E-242-81	31.3	Low	Non-Erodible Bank	13.2	No Remediation Required	-	-
East	RB-E-243-05	31.3	Low	Non-Erodible Bank	5.8	No Remediation Required	-	-
East	RB-E-243-26	31.3	Low	Non-Erodible Bank	5.2	No Remediation Required	-	-
East	RB-E-243-45	31.3	Low	Non-Erodible Bank	6.1	No Remediation Required	-	-
East	RB-E-243-65	31.3	Low	Non-Erodible Bank	20.4	No Remediation Required	-	-
East	RB-E-243-78	31.3	Low	Non-Erodible Bank	23.8	No Remediation Required	-	-
East	RB-E-243-96	31.3	Low	Non-Erodible Bank	11.4	No Remediation Required	-	-
East	RB-E-244-42	31.3	Low	Non-Erodible Bank	12.6	No Remediation Required	-	-
East	RB-E-244-85	31.3	Low	Non-Erodible Bank	9.6	No Remediation Required	-	-
West	RB-W-000-09	26.3	Low	Non-Erodible Bank	10.2	No Remediation Required	-	-
West	RB-W-000-30	26.3	Low	Non-Erodible Bank	16.1	No Remediation Required	-	-
West	RB-W-000-50	26.3	Low	Non-Erodible Bank	102.7	No Remediation Required	-	-
West	RB-W-000-68	26.3	Low	Non-Erodible Bank	8.7	No Remediation Required	-	-
West	RB-W-001-06	26.3	Low	Non-Erodible Bank	23.9	No Remediation Required	-	-
West	RB-W-001-33	26.3	Low	Non-Erodible Bank	2.3	No Remediation Required	-	-
West	RB-W-001-55	17.0	Low	Non-Erodible Bank	2.7	No Remediation Required	-	-
West	RB-W-001-74	17.0	Low	Non-Erodible Bank	1.0	No Remediation Required	-	-
West	RB-W-002-10	17.0	Low	Non-Erodible Bank	0.6	No Remediation Required	-	-
West	RB-W-002-36	16.0	Low	Non-Erodible Bank	1.4	No Remediation Required	-	-
West	RB-W-002-60	16.0	Low	Non-Erodible Bank	1.3	No Remediation Required	-	-
West	RB-W-002-86	16.0	Low	Non-Erodible Bank	2.7	No Remediation Required	-	-
West	RB-W-003-01	16.0	Low	Non-Erodible Bank	3.4	No Remediation Required	-	-
West	RB-W-003-22	16.0	Extreme	Non-Erodible Bank	6.4	Supplemental Remediation Area	25.1	162
West	RB-W-003-27	16.0	Extreme	Non-Erodible Bank	7.8	Supplemental Remediation Area	23.7	185
West	RB-W-003-46	16.0	Extreme	Non-Erodible Bank	8.4	Supplemental Remediation Area	25.0	209
West	RB-W-003-56	35.5	Extreme	Erodible Bank	1.3	Supplemental Remediation Area	25.1	34
West	RB-W-003-77	35.5	Extreme	Erodible Bank	0.5	Supplemental Remediation Area	24.5	12
West	RB-W-003-88	35.5	Extreme	Erodible Bank	1.1	Supplemental Remediation Area	25.5	28
West	RB-W-004-06	35.5	Extreme	Erodible Bank	0.2	Supplemental Remediation Area	25.6	4
West	RB-W-004-17	35.5	Extreme	Erodible Bank	0.2	Supplemental Remediation Area	25.1	5
West	RB-W-004-33	35.5	Extreme	Erodible Bank	21.5	Remediation Required	26.9	578
West	RB-W-004-43	35.5	Extreme	Erodible Bank	24.4	Remediation Required	22.4	546
West	RB-W-004-63	35.5	Extreme	Erodible Bank	31.2	Remediation Required	25.5	795
West	RB-W-004-83	35.5	Extreme	Erodible Bank	30.5	Remediation Required	24.5	749
West	RB-W-005-05	35.5	Extreme	Erodible Bank	0.3	Supplemental Remediation Area	25.2	6
West	RB-W-005-100	22.9	Low	Non-Erodible Bank	28.5	No Remediation Required	-	-
West	RB-W-005-32	35.5	Extreme	Erodible Bank	16.2	Remediation Required	24.8	401

Table D-1
Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
West	RB-W-005-58	35.5	Extreme	Erodible Bank	9.1	Remediation Required	25.3	229
West	RB-W-005-76	22.9	Low	Non-Erodible Bank	7.4	No Remediation Required	-	-
West	RB-W-006-14	22.9	Low	Non-Erodible Bank	6.1	No Remediation Required	-	-
West	RB-W-006-35	22.9	Low	Non-Erodible Bank	27.8	No Remediation Required	-	-
West	RB-W-006-58	37.7	Low	Non-Erodible Bank	45.8	No Remediation Required	-	-
West	RB-W-006-81	37.7	Low	Non-Erodible Bank	2.2	No Remediation Required	-	-
West	RB-W-007-07	37.7	Low	Non-Erodible Bank	16.6	No Remediation Required	-	-
West	RB-W-007-30	37.7	Low	Non-Erodible Bank	1.3	No Remediation Required	-	-
West	RB-W-008-13	27.3	Low	Non-Erodible Bank	6.3	No Remediation Required	-	-
West	RB-W-008-32	25.2	Low	Non-Erodible Bank	7.4	No Remediation Required	-	-
West	RB-W-008-61	25.2	Low	Non-Erodible Bank	6.0	No Remediation Required	-	-
West	RB-W-008-83	25.2	Low	Non-Erodible Bank	9.4	No Remediation Required	-	-
West	RB-W-009-18	25.2	Low	Non-Erodible Bank	2.9	No Remediation Required	-	-
West	RB-W-009-54	21.6	Low	Non-Erodible Bank	5.6	No Remediation Required	-	-
West	RB-W-009-81	21.6	Low	Non-Erodible Bank	5.0	No Remediation Required	-	-
West	RB-W-010-09	21.6	Low	Non-Erodible Bank	3.9	No Remediation Required	-	-
West	RB-W-010-38	21.6	Low	Non-Erodible Bank	5.3	No Remediation Required	-	-
West	RB-W-010-86	21.6	Low	Non-Erodible Bank	4.6	No Remediation Required	-	-
West	RB-W-011-08	21.6	Low	Non-Erodible Bank	4.4	No Remediation Required	-	-
West	RB-W-011-40	21.6	Low	Non-Erodible Bank	4.9	No Remediation Required	-	-
West	RB-W-011-62	21.6	Low	Non-Erodible Bank	4.4	No Remediation Required	-	-
West	RB-W-011-77	21.6	Low	Non-Erodible Bank	4.1	No Remediation Required	-	-
West	RB-W-011-98	21.6	Low	Non-Erodible Bank	5.1	No Remediation Required	-	-
West	RB-W-012-13	15.2	Extreme	Non-Erodible Bank	3.1	No Remediation Required	-	-
West	RB-W-012-53	15.2	Extreme	Non-Erodible Bank	8.7	No Remediation Required	-	-
West	RB-W-012-59	15.2	Extreme	Non-Erodible Bank	12.0	No Remediation Required	-	-
West	RB-W-012-69	15.2	Extreme	Non-Erodible Bank	48.2	No Remediation Required	-	-
West	RB-W-012-89	15.2	Extreme	Non-Erodible Bank	0.4	No Remediation Required	-	-
West	RB-W-013-13	31.2	Extreme	Erodible Bank	0.9	No Remediation Required	-	-
West	RB-W-013-30	31.2	Extreme	Erodible Bank	0.0	No Remediation Required	-	-
West	RB-W-013-40	31.2	Extreme	Erodible Bank	0.0	No Remediation Required	-	-
West	RB-W-013-58	31.2	Extreme	Erodible Bank	0.2	No Remediation Required	-	-
West	RB-W-013-79	31.2	Extreme	Erodible Bank	0.9	No Remediation Required	-	-
West	RB-W-013-89	31.2	Extreme	Erodible Bank	1.1	No Remediation Required	-	-
West	RB-W-014-07	31.2	Extreme	Erodible Bank	0.1	No Remediation Required	-	-
West	RB-W-014-32	31.2	Extreme	Erodible Bank	0.0	No Remediation Required	-	-
West	RB-W-014-48	21.5	Low	Non-Erodible Bank	0.1	No Remediation Required	-	-
West	RB-W-014-69	21.5	Low	Non-Erodible Bank	0.1	No Remediation Required	-	-
West	RB-W-015-31	21.5	Low	Non-Erodible Bank	2.1	No Remediation Required	-	-
West	RB-W-015-59	21.5	Low	Non-Erodible Bank	1.8	No Remediation Required	-	-
West	RB-W-016-06	15.4	Low	Non-Erodible Bank	1.9	No Remediation Required	-	-
West	RB-W-016-23	15.4	Low	Non-Erodible Bank	4.7	No Remediation Required	-	-
West	RB-W-016-48	15.4	Low	Non-Erodible Bank	5.4	No Remediation Required	-	-
West	RB-W-016-76	15.4	Low	Non-Erodible Bank	3.6	No Remediation Required	-	-
West	RB-W-017-08	15.4	Low	Non-Erodible Bank	2.5	No Remediation Required	-	-
West	RB-W-017-32	15.4	Low	Non-Erodible Bank	3.7	No Remediation Required	-	-
West	RB-W-017-59	15.4	Low	Non-Erodible Bank	2.7	No Remediation Required	-	-
West	RB-W-017-81	15.4	Low	Non-Erodible Bank	2.4	No Remediation Required	-	-
West	RB-W-018-09	22.5	Low	Non-Erodible Bank	5.0	No Remediation Required	-	-
West	RB-W-018-26	22.5	Low	Non-Erodible Bank	2.7	No Remediation Required	-	-
West	RB-W-018-59	22.5	Low	Non-Erodible Bank	3.2	No Remediation Required	-	-
West	RB-W-018-82	22.5	Low	Non-Erodible Bank	2.6	No Remediation Required	-	-
West	RB-W-019-09	22.5	Low	Non-Erodible Bank	6.0	No Remediation Required	-	-
West	RB-W-019-31	22.5	Low	Non-Erodible Bank	1.4	No Remediation Required	-	-
West	RB-W-019-57	19.3	Low	Non-Erodible Bank	2.5	No Remediation Required	-	-
West	RB-W-019-83	19.3	Low	Non-Erodible Bank	0.9	No Remediation Required	-	-
West	RB-W-020-11	19.3	Low	Non-Erodible Bank	1.4	No Remediation Required	-	-
West	RB-W-020-34	19.3	Low	Non-Erodible Bank	1.7	No Remediation Required	-	-
West	RB-W-020-59	19.3	Low	Non-Erodible Bank	1.7	No Remediation Required	-	-
West	RB-W-020-83	19.3	Low	Non-Erodible Bank	1.3	No Remediation Required	-	-
West	RB-W-021-05	19.3	Low	Non-Erodible Bank	2.6	No Remediation Required	-	-
West	RB-W-021-33	19.3	Low	Non-Erodible Bank	2.0	No Remediation Required	-	-
West	RB-W-021-56	19.3	Low	Non-Erodible Bank	4.2	No Remediation Required	-	-
West	RB-W-021-81	19.3	Low	Non-Erodible Bank	0.8	No Remediation Required	-	-
West	RB-W-022-06	19.3	Low	Non-Erodible Bank	2.6	No Remediation Required	-	-
West	RB-W-022-25	31.3	Low	Non-Erodible Bank	1.5	No Remediation Required	-	-
West	RB-W-022-49	31.3	Low	Non-Erodible Bank	1.6	No Remediation Required	-	-
West	RB-W-022-74	31.3	Low	Non-Erodible Bank	1.1	No Remediation Required	-	-
West	RB-W-022-96	31.3	Low	Non-Erodible Bank	1.9	No Remediation Required	-	-
West	RB-W-023-18	31.3	Low	Non-Erodible Bank	3.3	No Remediation Required	-	-
West	RB-W-023-41	31.3	Low	Non-Erodible Bank	1.1	No Remediation Required	-	-
West	RB-W-023-68	31.3	Low	Non-Erodible Bank	3.3	No Remediation Required	-	-
West	RB-W-023-89	31.3	Low	Non-Erodible Bank	13.1	Supplemental Remediation Area	25.3	331
West	RB-W-024-13	31.3	Very High	Erodible Bank	5.3	Remediation Required	25.2	132
West	RB-W-024-59	31.3	Very High	Erodible Bank	0.3	Supplemental Remediation Area	52.2	18
West	RB-W-024-75	31.3	Very High	Erodible Bank	6.1	Remediation Required	25.1	152
West	RB-W-024-97	31.3	Very High	Erodible Bank	6.9	Remediation Required	25.1	173
West	RB-W-025-16	31.3	Very High	Erodible Bank	2.0	Supplemental Remediation Area	25.6	52
West	RB-W-025-30	33.9	Very High	Erodible Bank	5.1	Remediation Required	24.4	123
West	RB-W-025-46	33.9	Very High	Erodible Bank	0.2	No Remediation Required	-	-
West	RB-W-025-67	33.9	Very High	Erodible Bank	0.0	No Remediation Required	-	-
West	RB-W-025-84	33.9	Very High	Erodible Bank	0.0	No Remediation Required	-	-
West	RB-W-026-07	33.9	Very High	Erodible Bank	0.4	No Remediation Required	-	-
West	RB-W-026-29	33.9	Very High	Erodible Bank	0.6	No Remediation Required	-	-
West	RB-W-026-53	21.6	Moderate	Non-Erodible Bank	1.9	No Remediation Required	-	-

Table D-1
Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
West	RB-W-026-81	21.6	Moderate	Non-Erodible Bank	1.0	No Remediation Required	-	-
West	RB-W-027-10	21.6	Moderate	Non-Erodible Bank	3.1	No Remediation Required	-	-
West	RB-W-027-31	21.6	Moderate	Non-Erodible Bank	0.8	No Remediation Required	-	-
West	RB-W-027-53	31.1	Moderate	Erodible Bank	24.4	Remediation Required	25.5	622
West	RB-W-027-78	31.1	Moderate	Erodible Bank	0.3	No Remediation Required	-	-
West	RB-W-027-99	31.1	Moderate	Erodible Bank	0.8	No Remediation Required	-	-
West	RB-W-028-24	31.1	Moderate	Erodible Bank	4.8	No Remediation Required	-	-
West	RB-W-028-51	31.1	Moderate	Erodible Bank	0.8	No Remediation Required	-	-
West	RB-W-028-77	31.1	Moderate	Erodible Bank	3.9	No Remediation Required	-	-
West	RB-W-029-05	16.9	Low	Non-Erodible Bank	1.9	No Remediation Required	-	-
West	RB-W-029-35	16.9	Low	Non-Erodible Bank	5.1	No Remediation Required	-	-
West	RB-W-029-65	16.9	Low	Non-Erodible Bank	1.3	No Remediation Required	-	-
West	RB-W-029-89	16.9	Low	Non-Erodible Bank	2.3	No Remediation Required	-	-
West	RB-W-030-18	16.9	Low	Non-Erodible Bank	0.8	No Remediation Required	-	-
West	RB-W-030-54	16.9	Low	Non-Erodible Bank	2.7	No Remediation Required	-	-
West	RB-W-030-74	16.9	Low	Non-Erodible Bank	0.8	No Remediation Required	-	-
West	RB-W-030-96	16.9	Low	Non-Erodible Bank	1.5	No Remediation Required	-	-
West	RB-W-031-26	16.9	Low	Non-Erodible Bank	2.5	No Remediation Required	-	-
West	RB-W-031-49	20.7	Low	Non-Erodible Bank	3.3	No Remediation Required	-	-
West	RB-W-031-77	20.7	Low	Non-Erodible Bank	1.1	No Remediation Required	-	-
West	RB-W-032-06	20.7	Low	Non-Erodible Bank	2.0	No Remediation Required	-	-
West	RB-W-032-32	20.7	Low	Non-Erodible Bank	0.8	No Remediation Required	-	-
West	RB-W-032-60	20.7	Low	Non-Erodible Bank	2.4	No Remediation Required	-	-
West	RB-W-032-84	17.0	Low	Non-Erodible Bank	1.1	No Remediation Required	-	-
West	RB-W-033-08	17.0	Low	Non-Erodible Bank	3.5	No Remediation Required	-	-
West	RB-W-033-39	17.0	Low	Non-Erodible Bank	1.9	No Remediation Required	-	-
West	RB-W-033-64	17.0	Low	Non-Erodible Bank	1.5	No Remediation Required	-	-
West	RB-W-033-90	17.0	Low	Non-Erodible Bank	1.1	No Remediation Required	-	-
West	RB-W-034-14	17.0	Low	Non-Erodible Bank	1.3	No Remediation Required	-	-
West	RB-W-034-42	17.0	Low	Non-Erodible Bank	4.3	No Remediation Required	-	-
West	RB-W-034-65	17.0	Low	Non-Erodible Bank	1.8	No Remediation Required	-	-
West	RB-W-034-90	17.0	Low	Non-Erodible Bank	5.4	No Remediation Required	-	-
West	RB-W-035-24	17.0	Low	Non-Erodible Bank	3.8	No Remediation Required	-	-
West	RB-W-035-44	19.8	Low	Non-Erodible Bank	2.2	No Remediation Required	-	-
West	RB-W-035-67	19.8	Low	Non-Erodible Bank	1.3	No Remediation Required	-	-
West	RB-W-035-90	19.8	Low	Non-Erodible Bank	3.5	No Remediation Required	-	-
West	RB-W-036-09	29.7	Low	Non-Erodible Bank	0.4	No Remediation Required	-	-
West	RB-W-036-31	29.7	Low	Non-Erodible Bank	3.5	No Remediation Required	-	-
West	RB-W-036-50	29.7	Low	Non-Erodible Bank	0.0	No Remediation Required	-	-
West	RB-W-036-72	29.7	Low	Non-Erodible Bank	0.0	No Remediation Required	-	-
West	RB-W-036-89	29.7	Low	Non-Erodible Bank	0.0	No Remediation Required	-	-
West	RB-W-037-12	29.7	Low	Non-Erodible Bank	0.0	No Remediation Required	-	-
West	RB-W-037-29	29.7	Low	Non-Erodible Bank	0.3	No Remediation Required	-	-
West	RB-W-037-54	29.7	Low	Non-Erodible Bank	0.8	No Remediation Required	-	-
West	RB-W-037-77	29.7	Low	Non-Erodible Bank	2.0	No Remediation Required	-	-
West	RB-W-037-94	29.7	Low	Non-Erodible Bank	0.8	No Remediation Required	-	-
West	RB-W-038-14	29.7	Low	Non-Erodible Bank	3.1	No Remediation Required	-	-
West	RB-W-038-35	29.7	Moderate	Erodible Bank	2.4	No Remediation Required	-	-
West	RB-W-038-62	29.7	Moderate	Erodible Bank	5.7	Remediation Required	25.1	144
West	RB-W-038-91	29.7	Moderate	Erodible Bank	2.7	No Remediation Required	-	-
West	RB-W-039-27	29.7	Moderate	Erodible Bank	4.7	No Remediation Required	-	-
West	RB-W-039-64	29.7	Moderate	Erodible Bank	10.7	Remediation Required	25.4	271
West	RB-W-039-92	19.2	Low	Non-Erodible Bank	2.7	No Remediation Required	-	-
West	RB-W-040-24	19.2	Low	Non-Erodible Bank	11.2	No Remediation Required	-	-
West	RB-W-040-50	19.2	Low	Non-Erodible Bank	1.3	No Remediation Required	-	-
West	RB-W-040-71	19.2	Low	Non-Erodible Bank	3.0	No Remediation Required	-	-
West	RB-W-040-90	21.5	Moderate	Non-Erodible Bank	0.8	No Remediation Required	-	-
West	RB-W-041-13	21.5	Moderate	Non-Erodible Bank	0.8	No Remediation Required	-	-
West	RB-W-041-33	21.5	Moderate	Non-Erodible Bank	15.2	No Remediation Required	-	-
West	RB-W-041-63	21.5	Moderate	Non-Erodible Bank	2.4	No Remediation Required	-	-
West	RB-W-041-84	21.5	Moderate	Non-Erodible Bank	5.3	No Remediation Required	-	-
West	RB-W-042-16	21.5	Moderate	Non-Erodible Bank	0.9	No Remediation Required	-	-
West	RB-W-042-40	21.5	Moderate	Non-Erodible Bank	8.0	No Remediation Required	-	-
West	RB-W-042-68	21.5	Moderate	Non-Erodible Bank	3.5	No Remediation Required	-	-
West	RB-W-042-90	21.5	Moderate	Non-Erodible Bank	1.6	No Remediation Required	-	-
West	RB-W-043-18	21.5	Moderate	Non-Erodible Bank	1.3	No Remediation Required	-	-
West	RB-W-043-39	21.5	Moderate	Non-Erodible Bank	3.9	No Remediation Required	-	-
West	RB-W-043-58	30.9	Moderate	Erodible Bank	0.7	No Remediation Required	-	-
West	RB-W-043-77	30.9	Low	Non-Erodible Bank	2.3	No Remediation Required	-	-
West	RB-W-043-98	30.9	Low	Non-Erodible Bank	0.3	No Remediation Required	-	-
West	RB-W-044-21	30.9	Low	Non-Erodible Bank	0.1	No Remediation Required	-	-
West	RB-W-044-43	30.9	Low	Non-Erodible Bank	0.3	No Remediation Required	-	-
West	RB-W-044-64	30.9	Low	Non-Erodible Bank	0.4	No Remediation Required	-	-
West	RB-W-044-89	30.9	Low	Non-Erodible Bank	4.2	No Remediation Required	-	-
West	RB-W-045-16	30.9	Low	Non-Erodible Bank	1.3	No Remediation Required	-	-
West	RB-W-045-38	30.9	Low	Non-Erodible Bank	1.5	No Remediation Required	-	-
West	RB-W-045-64	30.9	Low	Non-Erodible Bank	2.3	No Remediation Required	-	-
West	RB-W-045-91	30.9	Low	Non-Erodible Bank	2.5	No Remediation Required	-	-
West	RB-W-046-12	30.9	Low	Non-Erodible Bank	6.0	No Remediation Required	-	-
West	RB-W-046-38	30.9	Low	Non-Erodible Bank	7.4	No Remediation Required	-	-
West	RB-W-046-68	30.9	Low	Non-Erodible Bank	3.3	No Remediation Required	-	-
West	RB-W-046-92	30.9	Low	Non-Erodible Bank	6.4	No Remediation Required	-	-
West	RB-W-047-15	30.9	Low	Non-Erodible Bank	5.9	No Remediation Required	-	-
West	RB-W-047-39	30.9	Low	Non-Erodible Bank	3.5	No Remediation Required	-	-
West	RB-W-047-62	30.9	Low	Non-Erodible Bank	2.0	No Remediation Required	-	-

Table D-1
Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
West	RB-W-047-87	29.9	Low	Non-Erodible Bank	0.8	No Remediation Required	-	-
West	RB-W-048-12	29.9	Low	Non-Erodible Bank	7.2	No Remediation Required	-	-
West	RB-W-048-83	29.9	Low	Non-Erodible Bank	0.5	No Remediation Required	-	-
West	RB-W-049-07	29.9	Very High	Erodible Bank	13.4	Remediation Required	24.9	333
West	RB-W-049-31	29.9	Very High	Erodible Bank	1.8	Supplemental Remediation Area	25.2	46
West	RB-W-049-53	29.9	Very High	Erodible Bank	6.3	Remediation Required	25.1	158
West	RB-W-049-76	29.9	Very High	Erodible Bank	0.8	Supplemental Remediation Area	24.6	21
West	RB-W-049-99	29.9	Very High	Erodible Bank	7.3	Remediation Required	25.3	185
West	RB-W-050-17	29.9	Low	Non-Erodible Bank	0.1	No Remediation Required	-	-
West	RB-W-050-40	29.9	Low	Non-Erodible Bank	0.7	No Remediation Required	-	-
West	RB-W-050-62	29.9	Low	Non-Erodible Bank	0.3	No Remediation Required	-	-
West	RB-W-050-89	28.7	Low	Non-Erodible Bank	0.1	No Remediation Required	-	-
West	RB-W-051-14	28.7	Low	Non-Erodible Bank	1.6	No Remediation Required	-	-
West	RB-W-051-44	28.7	Low	Non-Erodible Bank	1.6	No Remediation Required	-	-
West	RB-W-051-64	28.7	Low	Non-Erodible Bank	3.3	No Remediation Required	-	-
West	RB-W-051-92	28.7	Low	Non-Erodible Bank	34.2	Supplemental Remediation Area	25.1	856
West	RB-W-052-18	28.7	Low	Non-Erodible Bank	9.6	Supplemental Remediation Area	24.8	237
West	RB-W-052-37	28.7	Low	Non-Erodible Bank	2.7	No Remediation Required	-	-
West	RB-W-052-68	28.7	Low	Non-Erodible Bank	4.3	No Remediation Required	-	-
West	RB-W-053-05	15.5	Low	Non-Erodible Bank	0.9	No Remediation Required	-	-
West	RB-W-053-45	15.5	Low	Non-Erodible Bank	1.4	Supplemental Remediation Area	24.4	33
West	RB-W-053-81	15.5	Low	Non-Erodible Bank	2.0	Supplemental Remediation Area	24.5	49
West	RB-W-054-25	15.5	Low	Non-Erodible Bank	2.7	Supplemental Remediation Area	25.1	67
West	RB-W-054-55	15.5	Low	Non-Erodible Bank	5.4	Supplemental Remediation Area	25.4	137
West	RB-W-054-82	15.5	Low	Non-Erodible Bank	5.2	Supplemental Remediation Area	25.6	134
West	RB-W-055-09	15.5	Low	Non-Erodible Bank	4.1	Supplemental Remediation Area	24.4	100
West	RB-W-055-37	15.5	Low	Non-Erodible Bank	3.6	Supplemental Remediation Area	25.0	89
West	RB-W-055-65	15.5	Low	Non-Erodible Bank	3.4	No Remediation Required	-	-
West	RB-W-055-87	17.5	Low	Non-Erodible Bank	5.6	No Remediation Required	-	-
West	RB-W-056-07	17.5	Low	Non-Erodible Bank	3.5	No Remediation Required	-	-
West	RB-W-056-29	17.5	Low	Non-Erodible Bank	3.3	No Remediation Required	-	-
West	RB-W-056-60	17.5	Low	Non-Erodible Bank	7.1	No Remediation Required	-	-
West	RB-W-056-88	17.5	Low	Non-Erodible Bank	3.3	No Remediation Required	-	-
West	RB-W-057-11	17.5	Low	Non-Erodible Bank	4.2	No Remediation Required	-	-
West	RB-W-057-34	17.5	Low	Non-Erodible Bank	2.4	No Remediation Required	-	-
West	RB-W-057-95	17.5	Low	Non-Erodible Bank	2.5	No Remediation Required	-	-
West	RB-W-058-20	25.3	Low	Non-Erodible Bank	169.4	No Remediation Required	-	-
West	RB-W-058-43	25.3	Low	Non-Erodible Bank	0.7	No Remediation Required	-	-
West	RB-W-058-66	25.3	Low	Non-Erodible Bank	3.0	No Remediation Required	-	-
West	RB-W-058-94	25.3	Low	Non-Erodible Bank	0.5	No Remediation Required	-	-
West	RB-W-059-19	25.3	Low	Non-Erodible Bank	4.6	No Remediation Required	-	-
West	RB-W-059-47	25.3	Low	Non-Erodible Bank	1.1	No Remediation Required	-	-
West	RB-W-059-71	25.3	Low	Non-Erodible Bank	1.6	No Remediation Required	-	-
West	RB-W-059-93	25.3	Low	Non-Erodible Bank	7.3	No Remediation Required	-	-
West	RB-W-060-18	25.3	Low	Non-Erodible Bank	0.8	No Remediation Required	-	-
West	RB-W-060-44	25.3	Low	Non-Erodible Bank	4.3	No Remediation Required	-	-
West	RB-W-060-71	25.3	Low	Non-Erodible Bank	4.2	No Remediation Required	-	-
West	RB-W-060-98	25.3	Low	Non-Erodible Bank	5.6	No Remediation Required	-	-
West	RB-W-061-24	25.3	Low	Non-Erodible Bank	0.5	No Remediation Required	-	-
West	RB-W-061-50	25.3	Low	Non-Erodible Bank	5.6	No Remediation Required	-	-
West	RB-W-061-76	25.3	Low	Non-Erodible Bank	9.5	No Remediation Required	-	-
West	RB-W-062-01	25.3	Low	Non-Erodible Bank	1.5	No Remediation Required	-	-
West	RB-W-062-28	25.3	Low	Non-Erodible Bank	4.6	No Remediation Required	-	-
West	RB-W-062-57	25.3	Low	Non-Erodible Bank	6.5	No Remediation Required	-	-
West	RB-W-062-84	25.3	Low	Non-Erodible Bank	7.5	No Remediation Required	-	-
West	RB-W-063-07	25.3	Low	Non-Erodible Bank	4.1	No Remediation Required	-	-
West	RB-W-063-32	25.3	Low	Non-Erodible Bank	3.5	No Remediation Required	-	-
West	RB-W-063-62	25.3	Low	Non-Erodible Bank	4.5	No Remediation Required	-	-
West	RB-W-063-88	30.0	Low	Non-Erodible Bank	3.7	No Remediation Required	-	-
West	RB-W-064-09	30.0	Low	Non-Erodible Bank	7.2	No Remediation Required	-	-
West	RB-W-064-32	30.0	Very High	Erodible Bank	12.8	Remediation Required	24.9	319
West	RB-W-064-56	30.0	Very High	Erodible Bank	0.6	No Remediation Required	-	-
West	RB-W-064-76	30.0	Very High	Erodible Bank	3.9	No Remediation Required	-	-
West	RB-W-065-01	30.0	Very High	Erodible Bank	0.0	No Remediation Required	-	-
West	RB-W-065-19	30.0	Very High	Erodible Bank	3.8	No Remediation Required	-	-
West	RB-W-065-47	18.5	Very High	Non-Erodible Bank	18.7	No Remediation Required	-	-
West	RB-W-065-73	18.5	Low	Non-Erodible Bank	0.7	No Remediation Required	-	-
West	RB-W-066-02	18.5	Low	Non-Erodible Bank	0.3	No Remediation Required	-	-
West	RB-W-066-40	18.5	Low	Non-Erodible Bank	0.9	No Remediation Required	-	-
West	RB-W-066-80	18.5	Low	Non-Erodible Bank	4.5	No Remediation Required	-	-
West	RB-W-066-99	22.1	Low	Non-Erodible Bank	5.5	No Remediation Required	-	-
West	RB-W-067-25	22.1	Low	Non-Erodible Bank	9.0	No Remediation Required	-	-
West	RB-W-067-48	22.1	Low	Non-Erodible Bank	4.5	No Remediation Required	-	-
West	RB-W-067-73	22.1	Low	Non-Erodible Bank	5.0	No Remediation Required	-	-
West	RB-W-067-92	22.1	Low	Non-Erodible Bank	10.5	No Remediation Required	-	-
West	RB-W-068-16	22.1	Low	Non-Erodible Bank	9.2	No Remediation Required	-	-
West	RB-W-068-40	26.1	Low	Non-Erodible Bank	8.0	No Remediation Required	-	-
West	RB-W-068-63	26.1	Low	Non-Erodible Bank	13.4	No Remediation Required	-	-
West	RB-W-068-86	26.1	Low	Non-Erodible Bank	0.5	No Remediation Required	-	-
West	RB-W-069-15	26.1	Low	Non-Erodible Bank	9.3	No Remediation Required	-	-
West	RB-W-069-37	26.1	Low	Non-Erodible Bank	28.3	No Remediation Required	-	-
West	RB-W-069-63	26.1	Low	Non-Erodible Bank	7.3	No Remediation Required	-	-
West	RB-W-069-87	26.1	Low	Non-Erodible Bank	0.6	No Remediation Required	-	-
West	RB-W-070-13	26.1	Low	Non-Erodible Bank	11.4	No Remediation Required	-	-
West	RB-W-070-34	26.1	Low	Non-Erodible Bank	5.8	No Remediation Required	-	-

Table D-1
Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
West	RB-W-070-61	26.1	Low	Non-Erodible Bank	0.4	No Remediation Required	-	-
West	RB-W-070-84	26.1	Low	Non-Erodible Bank	1.6	No Remediation Required	-	-
West	RB-W-071-08	26.1	Low	Non-Erodible Bank	6.2	No Remediation Required	-	-
West	RB-W-071-30	26.1	Low	Non-Erodible Bank	7.4	No Remediation Required	-	-
West	RB-W-071-57	26.1	Low	Non-Erodible Bank	2.7	No Remediation Required	-	-
West	RB-W-071-82	26.1	Low	Non-Erodible Bank	3.1	No Remediation Required	-	-
West	RB-W-072-11	26.1	Low	Non-Erodible Bank	3.6	No Remediation Required	-	-
West	RB-W-072-34	26.1	Low	Non-Erodible Bank	0.6	No Remediation Required	-	-
West	RB-W-072-56	26.1	Low	Non-Erodible Bank	3.9	No Remediation Required	-	-
West	RB-W-072-80	26.1	Low	Non-Erodible Bank	0.6	No Remediation Required	-	-
West	RB-W-073-08	26.1	Low	Non-Erodible Bank	5.2	No Remediation Required	-	-
West	RB-W-073-32	26.1	Low	Non-Erodible Bank	0.6	No Remediation Required	-	-
West	RB-W-073-57	26.1	Low	Non-Erodible Bank	11.4	No Remediation Required	-	-
West	RB-W-073-80	26.1	Low	Non-Erodible Bank	7.3	No Remediation Required	-	-
West	RB-W-074-04	26.1	Low	Non-Erodible Bank	3.9	No Remediation Required	-	-
West	RB-W-074-30	26.1	Low	Non-Erodible Bank	0.8	No Remediation Required	-	-
West	RB-W-074-58	26.1	Low	Non-Erodible Bank	6.0	No Remediation Required	-	-
West	RB-W-074-82	26.1	Low	Non-Erodible Bank	4.9	No Remediation Required	-	-
West	RB-W-075-07	26.1	Low	Non-Erodible Bank	6.2	No Remediation Required	-	-
West	RB-W-075-31	26.1	Low	Non-Erodible Bank	8.9	No Remediation Required	-	-
West	RB-W-075-62	17.5	Low	Non-Erodible Bank	3.7	No Remediation Required	-	-
West	RB-W-075-84	17.5	Low	Non-Erodible Bank	3.2	No Remediation Required	-	-
West	RB-W-076-18	17.5	Low	Non-Erodible Bank	3.0	No Remediation Required	-	-
West	RB-W-076-46	17.5	Low	Non-Erodible Bank	4.5	No Remediation Required	-	-
West	RB-W-076-70	17.5	Low	Non-Erodible Bank	4.9	No Remediation Required	-	-
West	RB-W-076-91	24.0	Low	Non-Erodible Bank	4.6	No Remediation Required	-	-
West	RB-W-077-13	24.0	Low	Non-Erodible Bank	8.1	No Remediation Required	-	-
West	RB-W-077-35	24.0	Low	Non-Erodible Bank	10.2	No Remediation Required	-	-
West	RB-W-077-63	24.0	Low	Non-Erodible Bank	0.8	No Remediation Required	-	-
West	RB-W-077-86	24.0	Low	Non-Erodible Bank	1.6	No Remediation Required	-	-
West	RB-W-078-11	24.0	Very High	Non-Erodible Bank	0.9	No Remediation Required	-	-
West	RB-W-078-34	24.0	Very High	Non-Erodible Bank	1.3	Supplemental Remediation Area	25.0	33
West	RB-W-078-57	24.0	Very High	Non-Erodible Bank	1.7	Supplemental Remediation Area	28.1	48
West	RB-W-078-80	24.0	Very High	Non-Erodible Bank	37.6	Supplemental Remediation Area	24.8	933
West	RB-W-079-03	24.0	High	Non-Erodible Bank	0.9	Supplemental Remediation Area	22.0	21
West	RB-W-079-22	24.0	High	Non-Erodible Bank	1.1	Supplemental Remediation Area	24.9	27
West	RB-W-079-41	24.0	High	Non-Erodible Bank	7.8	Supplemental Remediation Area	25.0	196
West	RB-W-079-58	24.0	High	Non-Erodible Bank	9.7	Supplemental Remediation Area	25.6	247
West	RB-W-079-75	24.0	High	Non-Erodible Bank	8.0	Supplemental Remediation Area	24.6	198
West	RB-W-079-99	28.9	High	Erodible Bank	6.3	Remediation Required	24.9	157
West	RB-W-080-18	28.9	High	Erodible Bank	7.0	Remediation Required	25.3	176
West	RB-W-080-47	28.9	High	Erodible Bank	15.1	Remediation Required	25.0	376
West	RB-W-080-70	28.9	Very High	Erodible Bank	0.0	Supplemental Remediation Area	25.0	1
West	RB-W-080-96	28.9	Very High	Erodible Bank	0.1	Supplemental Remediation Area	25.0	2
West	RB-W-081-14	28.9	Very High	Erodible Bank	0.2	Supplemental Remediation Area	24.8	6
West	RB-W-081-31	34.7	Very High	Erodible Bank	16.6	Remediation Required	25.3	420
West	RB-W-081-52	34.7	Very High	Erodible Bank	1.6	Supplemental Remediation Area	25.0	41
West	RB-W-081-71	34.7	Very High	Erodible Bank	5.0	Supplemental Remediation Area	24.9	124
West	RB-W-081-93	34.7	Very High	Erodible Bank	5.3	Remediation Required	24.7	130
West	RB-W-082-11	34.7	Very High	Erodible Bank	0.0	Supplemental Remediation Area	25.2	1
West	RB-W-082-34	34.7	Very High	Erodible Bank	6.6	Remediation Required	25.4	167
West	RB-W-082-50	34.7	Very High	Erodible Bank	5.9	Remediation Required	24.8	146
West	RB-W-082-73	34.7	Very High	Erodible Bank	0.9	No Remediation Required	-	-
West	RB-W-082-95	23.1	Very High	Non-Erodible Bank	4.6	No Remediation Required	-	-
West	RB-W-083-14	23.1	Very High	Non-Erodible Bank	21.0	No Remediation Required	-	-
West	RB-W-083-40	23.1	Very High	Non-Erodible Bank	4.8	No Remediation Required	-	-
West	RB-W-083-69	23.1	Very High	Non-Erodible Bank	3.8	No Remediation Required	-	-
West	RB-W-083-93	23.1	Very High	Non-Erodible Bank	6.5	No Remediation Required	-	-
West	RB-W-084-21	20.3	Low	Non-Erodible Bank	6.8	No Remediation Required	-	-
West	RB-W-084-49	20.3	Low	Non-Erodible Bank	6.8	No Remediation Required	-	-
West	RB-W-084-91	20.3	Low	Non-Erodible Bank	2.0	No Remediation Required	-	-
West	RB-W-085-33	20.3	Low	Non-Erodible Bank	1.9	No Remediation Required	-	-
West	RB-W-085-66	20.3	Low	Non-Erodible Bank	9.2	No Remediation Required	-	-
West	RB-W-086-29	20.3	Low	Non-Erodible Bank	1.3	No Remediation Required	-	-
West	RB-W-086-64	20.3	Low	Non-Erodible Bank	2.2	No Remediation Required	-	-
West	RB-W-086-88	20.3	Low	Non-Erodible Bank	1.3	No Remediation Required	-	-
West	RB-W-087-12	24.4	Low	Non-Erodible Bank	6.1	No Remediation Required	-	-
West	RB-W-087-46	24.4	Low	Non-Erodible Bank	2.9	No Remediation Required	-	-
West	RB-W-087-75	24.4	Low	Non-Erodible Bank	3.4	No Remediation Required	-	-
West	RB-W-088-02	24.4	Low	Non-Erodible Bank	2.0	No Remediation Required	-	-
West	RB-W-088-100	18.1	Very High	Non-Erodible Bank	2.0	No Remediation Required	-	-
West	RB-W-088-24	24.4	Low	Non-Erodible Bank	4.3	No Remediation Required	-	-
West	RB-W-088-52	24.4	Low	Non-Erodible Bank	2.1	No Remediation Required	-	-
West	RB-W-088-77	24.4	Low	Non-Erodible Bank	4.5	No Remediation Required	-	-
West	RB-W-089-24	18.1	Very High	Non-Erodible Bank	4.1	No Remediation Required	-	-
West	RB-W-089-41	18.1	Very High	Non-Erodible Bank	4.1	No Remediation Required	-	-
West	RB-W-089-67	18.1	Very High	Non-Erodible Bank	4.9	No Remediation Required	-	-
West	RB-W-089-90	18.1	Very High	Non-Erodible Bank	6.6	Supplemental Remediation Area	25.2	165
West	RB-W-090-08	18.1	Very High	Non-Erodible Bank	14.5	Supplemental Remediation Area	24.8	360
West	RB-W-090-25	37.8	Very High	Erodible Bank	9.0	Remediation Required	25.1	227
West	RB-W-090-41	37.8	Very High	Erodible Bank	22.8	Remediation Required	25.0	569
West	RB-W-090-61	37.8	Very High	Erodible Bank	5.6	Remediation Required	24.9	140
West	RB-W-090-79	37.8	Very High	Erodible Bank	1.3	Supplemental Remediation Area	25.1	33
West	RB-W-091-03	37.8	Very High	Erodible Bank	6.7	Remediation Required	24.8	165
West	RB-W-091-21	37.8	Very High	Erodible Bank	4.6	No Remediation Required	-	-

Table D-1
Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
West	RB-W-091-44	37.8	Very High	Erodible Bank	3.7	No Remediation Required	-	-
West	RB-W-091-68	37.8	Very High	Erodible Bank	4.8	No Remediation Required	-	-
West	RB-W-091-94	18.9	Extreme	Non-Erodible Bank	56.0	Supplemental Remediation Area	23.9	1,341
West	RB-W-092-35	18.9	Extreme	Non-Erodible Bank	12.2	Supplemental Remediation Area	25.9	317
West	RB-W-092-61	18.9	Extreme	Non-Erodible Bank	53.1	Supplemental Remediation Area	25.5	1,351
West	RB-W-092-84	18.9	Extreme	Non-Erodible Bank	23.3	Supplemental Remediation Area	24.3	565
West	RB-W-093-08	31.4	Extreme	Erodible Bank	6.3	Remediation Required	25.5	162
West	RB-W-093-40	31.4	Extreme	Erodible Bank	5.2	Remediation Required	24.8	130
West	RB-W-093-68	31.4	Extreme	Erodible Bank	4.4	Supplemental Remediation Area	25.0	110
West	RB-W-093-94	31.4	Extreme	Erodible Bank	8.1	Remediation Required	25.0	203
West	RB-W-094-18	18.7	Low	Non-Erodible Bank	4.3	No Remediation Required	-	-
West	RB-W-094-50	18.7	Low	Non-Erodible Bank	4.9	No Remediation Required	-	-
West	RB-W-094-78	18.7	Low	Non-Erodible Bank	6.8	No Remediation Required	-	-
West	RB-W-095-04	18.7	Low	Non-Erodible Bank	6.6	No Remediation Required	-	-
West	RB-W-095-38	18.7	Low	Non-Erodible Bank	7.0	No Remediation Required	-	-
West	RB-W-095-66	18.7	Low	Non-Erodible Bank	5.2	No Remediation Required	-	-
West	RB-W-095-94	18.7	Low	Non-Erodible Bank	3.2	No Remediation Required	-	-
West	RB-W-096-100	18.7	Extreme	Non-Erodible Bank	5.4	Supplemental Remediation Area	24.7	133
West	RB-W-096-18	18.7	Low	Non-Erodible Bank	1.5	No Remediation Required	-	-
West	RB-W-096-42	18.7	Low	Non-Erodible Bank	5.6	No Remediation Required	-	-
West	RB-W-096-62	18.7	Extreme	Non-Erodible Bank	3.4	No Remediation Required	-	-
West	RB-W-096-83	18.7	Extreme	Non-Erodible Bank	4.4	No Remediation Required	-	-
West	RB-W-097-100	36.7	Extreme	Erodible Bank	27.8	Remediation Required	25.1	699
West	RB-W-097-19	36.7	Extreme	Erodible Bank	10.1	Remediation Required	24.2	246
West	RB-W-097-35	36.7	Extreme	Erodible Bank	35.7	Remediation Required	25.9	924
West	RB-W-097-51	36.7	Extreme	Erodible Bank	11.2	Remediation Required	26.1	293
West	RB-W-097-68	36.7	Extreme	Erodible Bank	26.2	Remediation Required	23.6	618
West	RB-W-097-82	36.7	Extreme	Erodible Bank	4.1	Supplemental Remediation Area	25.3	103
West	RB-W-098-17	36.7	Extreme	Erodible Bank	1.6	Supplemental Remediation Area	24.8	39
West	RB-W-098-33	36.7	Extreme	Erodible Bank	6.4	Remediation Required	24.9	161
West	RB-W-098-54	36.7	Extreme	Erodible Bank	9.5	Remediation Required	25.6	245
West	RB-W-098-89	36.7	Extreme	Erodible Bank	115.9	Remediation Required	24.6	2,848
West	RB-W-099-65	26.0	Very High	Non-Erodible Bank	1.5	Supplemental Remediation Area	24.4	36
West	RB-W-099-95	26.0	Very High	Non-Erodible Bank	11.3	Supplemental Remediation Area	25.5	288
West	RB-W-100-23	26.0	Low	Non-Erodible Bank	6.1	No Remediation Required	-	-
West	RB-W-100-45	26.0	Low	Non-Erodible Bank	2.2	No Remediation Required	-	-
West	RB-W-100-70	19.0	Low	Non-Erodible Bank	1.3	No Remediation Required	-	-
West	RB-W-100-99	19.0	Low	Non-Erodible Bank	7.6	No Remediation Required	-	-
West	RB-W-101-29	19.0	Low	Non-Erodible Bank	1.5	No Remediation Required	-	-
West	RB-W-101-61	19.0	Low	Non-Erodible Bank	8.5	No Remediation Required	-	-
West	RB-W-101-91	19.0	Low	Non-Erodible Bank	1.3	No Remediation Required	-	-
West	RB-W-102-19	19.0	Low	Non-Erodible Bank	6.1	No Remediation Required	-	-
West	RB-W-102-40	19.0	Low	Non-Erodible Bank	5.9	No Remediation Required	-	-
West	RB-W-102-61	19.0	Low	Non-Erodible Bank	4.6	No Remediation Required	-	-
West	RB-W-102-81	19.0	Low	Non-Erodible Bank	19.2	No Remediation Required	-	-
West	RB-W-102-99	35.2	Low	Non-Erodible Bank	90.3	Supplemental Remediation Area	24.7	2,226
West	RB-W-103-12	35.2	Very High	Erodible Bank	6.0	Remediation Required	25.6	153
West	RB-W-103-21	35.2	Very High	Erodible Bank	9.8	Remediation Required	24.9	244
West	RB-W-103-37	35.2	Very High	Erodible Bank	0.0	Supplemental Remediation Area	26.3	1
West	RB-W-103-60	19.7	Very High	Non-Erodible Bank	3.8	Supplemental Remediation Area	23.5	89
West	RB-W-103-84	19.7	Very High	Non-Erodible Bank	5.4	Supplemental Remediation Area	24.8	133
West	RB-W-104-10	19.9	Low	Non-Erodible Bank	8.9	No Remediation Required	-	-
West	RB-W-104-34	19.9	Low	Non-Erodible Bank	4.8	No Remediation Required	-	-
West	RB-W-104-54	19.9	Low	Non-Erodible Bank	9.6	No Remediation Required	-	-
West	RB-W-104-76	32.8	Low	Non-Erodible Bank	5.0	Supplemental Remediation Area	25.5	128
West	RB-W-104-99	32.8	Low	Non-Erodible Bank	3.6	Supplemental Remediation Area	25.2	91
West	RB-W-105-24	32.8	Low	Non-Erodible Bank	6.2	Supplemental Remediation Area	24.9	153
West	RB-W-105-86	32.8	Low	Non-Erodible Bank	7.6	Supplemental Remediation Area	25.3	192
West	RB-W-106-26	32.8	Low	Non-Erodible Bank	8.8	Supplemental Remediation Area	24.6	215
West	RB-W-106-60	21.1	Low	Non-Erodible Bank	6.8	No Remediation Required	-	-
West	RB-W-107-22	21.1	Low	Non-Erodible Bank	6.8	No Remediation Required	-	-
West	RB-W-107-50	21.1	Low	Non-Erodible Bank	5.3	No Remediation Required	-	-
West	RB-W-107-75	19.2	Low	Non-Erodible Bank	4.5	No Remediation Required	-	-
West	RB-W-108-01	19.2	Low	Non-Erodible Bank	7.0	No Remediation Required	-	-
West	RB-W-108-38	19.2	Low	Non-Erodible Bank	8.2	No Remediation Required	-	-
West	RB-W-108-89	19.2	Low	Non-Erodible Bank	8.6	No Remediation Required	-	-
West	RB-W-109-09	19.2	Low	Non-Erodible Bank	8.3	No Remediation Required	-	-
West	RB-W-109-34	23.7	Low	Non-Erodible Bank	5.5	No Remediation Required	-	-
West	RB-W-109-61	23.7	Low	Non-Erodible Bank	13.1	No Remediation Required	-	-
West	RB-W-109-91	23.7	Very High	Non-Erodible Bank	8.7	Supplemental Remediation Area	26.7	231
West	RB-W-110-10	35.2	Very High	Erodible Bank	20.4	Remediation Required	24.0	489
West	RB-W-110-30	35.2	Very High	Erodible Bank	21.5	Remediation Required	25.0	538
West	RB-W-110-46	35.2	High	Erodible Bank	35.1	Remediation Required	25.2	886
West	RB-W-110-66	35.2	High	Erodible Bank	11.6	Remediation Required	25.1	292
West	RB-W-110-88	35.2	High	Erodible Bank	13.2	Remediation Required	25.0	329
West	RB-W-111-05	35.2	High	Erodible Bank	9.6	Remediation Required	25.1	240
West	RB-W-111-28	35.2	High	Erodible Bank	6.2	Remediation Required	25.1	155
West	RB-W-111-52	35.2	High	Erodible Bank	9.2	Remediation Required	25.4	233
West	RB-W-111-80	35.2	High	Erodible Bank	3.7	Supplemental Remediation Area	24.3	90
West	RB-W-112-10	28.0	High	Erodible Bank	3.8	Supplemental Remediation Area	24.8	94
West	RB-W-112-39	28.0	High	Erodible Bank	15.5	Remediation Required	25.1	389
West	RB-W-112-68	28.0	High	Erodible Bank	12.8	Remediation Required	25.2	324
West	RB-W-112-98	28.0	High	Erodible Bank	14.5	Remediation Required	25.2	365
West	RB-W-113-17	34.0	High	Erodible Bank	9.0	Remediation Required	24.6	222
West	RB-W-113-35	34.0	High	Erodible Bank	7.7	Remediation Required	25.2	193

Table D-1

Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
West	RB-W-113-58	34.0	High	Erodible Bank	5.6	Remediation Required	24.9	139
West	RB-W-113-80	34.0	High	Erodible Bank	8.2	Remediation Required	25.2	207
West	RB-W-114-06	34.0	High	Erodible Bank	27.9	Remediation Required	25.3	706
West	RB-W-114-33	34.0	High	Erodible Bank	53.8	Remediation Required	24.7	1,328
West	RB-W-114-55	34.0	High	Erodible Bank	8.8	Remediation Required	25.1	219
West	RB-W-114-79	34.4	Low	Non-Erodible Bank	5.2	Supplemental Remediation Area	25.0	130
West	RB-W-114-94	34.4	Low	Non-Erodible Bank	4.4	Supplemental Remediation Area	24.5	107
West	RB-W-115-14	34.4	Low	Non-Erodible Bank	5.1	Supplemental Remediation Area	26.5	134
West	RB-W-115-33	34.4	Low	Non-Erodible Bank	6.5	Supplemental Remediation Area	24.0	156
West	RB-W-115-42	34.4	Low	Non-Erodible Bank	7.7	Supplemental Remediation Area	25.0	192
West	RB-W-115-57	34.4	Low	Non-Erodible Bank	9.8	Supplemental Remediation Area	25.0	244
West	RB-W-115-72	34.4	Low	Non-Erodible Bank	17.2	Supplemental Remediation Area	25.4	438
West	RB-W-115-94	12.3	Low	Non-Erodible Bank	4.0	No Remediation Required	-	-
West	RB-W-116-21	12.3	Low	Non-Erodible Bank	5.2	No Remediation Required	-	-
West	RB-W-116-47	12.3	Low	Non-Erodible Bank	17.4	No Remediation Required	-	-
West	RB-W-116-73	12.3	Low	Non-Erodible Bank	5.1	No Remediation Required	-	-
West	RB-W-116-95	12.3	Low	Non-Erodible Bank	4.1	No Remediation Required	-	-
West	RB-W-117-21	12.8	Low	Non-Erodible Bank	4.5	No Remediation Required	-	-
West	RB-W-117-48	12.8	Low	Non-Erodible Bank	2.1	No Remediation Required	-	-
West	RB-W-117-78	12.8	Low	Non-Erodible Bank	7.5	No Remediation Required	-	-
West	RB-W-118-06	19.0	Low	Non-Erodible Bank	5.4	No Remediation Required	-	-
West	RB-W-118-30	19.0	Low	Non-Erodible Bank	3.9	No Remediation Required	-	-
West	RB-W-118-46	19.0	Low	Non-Erodible Bank	5.2	No Remediation Required	-	-
West	RB-W-118-69	19.0	Low	Non-Erodible Bank	2.7	No Remediation Required	-	-
West	RB-W-118-94	19.0	Low	Non-Erodible Bank	19.2	No Remediation Required	-	-
West	RB-W-119-08	19.0	Low	Non-Erodible Bank	8.7	No Remediation Required	-	-
West	RB-W-119-20	19.0	Low	Non-Erodible Bank	4.7	No Remediation Required	-	-
West	RB-W-119-38	19.0	Low	Non-Erodible Bank	4.2	No Remediation Required	-	-
West	RB-W-119-59	19.0	Low	Non-Erodible Bank	2.7	No Remediation Required	-	-
West	RB-W-119-81	10.5	Moderate	Non-Erodible Bank	12.5	No Remediation Required	-	-
West	RB-W-120-01	10.5	Moderate	Non-Erodible Bank	17.4	No Remediation Required	-	-
West	RB-W-120-46	10.5	Moderate	Non-Erodible Bank	9.7	No Remediation Required	-	-
West	RB-W-120-68	34.9	Moderate	Erodible Bank	3.8	No Remediation Required	-	-
West	RB-W-121-03	34.9	Moderate	Erodible Bank	20.8	Remediation Required	24.9	519
West	RB-W-121-43	34.9	Low	Non-Erodible Bank	10.6	No Remediation Required	-	-
West	RB-W-121-69	34.9	Low	Non-Erodible Bank	9.7	No Remediation Required	-	-
West	RB-W-121-97	34.9	Low	Non-Erodible Bank	6.2	No Remediation Required	-	-
West	RB-W-122-42	16.1	Low	Non-Erodible Bank	6.6	No Remediation Required	-	-
West	RB-W-122-73	16.1	Low	Non-Erodible Bank	8.7	No Remediation Required	-	-
West	RB-W-122-98	16.1	Low	Non-Erodible Bank	6.0	No Remediation Required	-	-
West	RB-W-123-27	16.1	Low	Non-Erodible Bank	7.8	No Remediation Required	-	-
West	RB-W-123-57	16.1	Low	Non-Erodible Bank	5.9	No Remediation Required	-	-
West	RB-W-123-78	16.1	Low	Non-Erodible Bank	7.0	No Remediation Required	-	-
West	RB-W-123-92	16.1	Low	Non-Erodible Bank	8.7	No Remediation Required	-	-
West	RB-W-124-14	38.0	Low	Non-Erodible Bank	0.0	No Remediation Required	-	-
West	RB-W-124-25	38.0	Low	Non-Erodible Bank	13.6	Supplemental Remediation Area	25.1	343
West	RB-W-124-42	38.0	Low	Non-Erodible Bank	0.7	Supplemental Remediation Area	25.1	17
West	RB-W-124-65	38.0	Low	Non-Erodible Bank	5.5	Supplemental Remediation Area	24.9	137
West	RB-W-124-83	38.0	Low	Non-Erodible Bank	9.5	Supplemental Remediation Area	24.9	236
West	RB-W-125-04	38.0	Low	Non-Erodible Bank	5.6	Supplemental Remediation Area	24.4	136
West	RB-W-125-21	38.0	Low	Non-Erodible Bank	8.8	Supplemental Remediation Area	26.3	230
West	RB-W-125-46	38.0	Low	Non-Erodible Bank	4.8	Supplemental Remediation Area	24.4	118
West	RB-W-125-71	38.0	Low	Non-Erodible Bank	6.6	Supplemental Remediation Area	25.2	167
West	RB-W-125-96	19.2	Low	Non-Erodible Bank	7.5	No Remediation Required	-	-
West	RB-W-126-19	19.2	Low	Non-Erodible Bank	4.9	No Remediation Required	-	-
West	RB-W-126-53	19.2	Low	Non-Erodible Bank	6.9	No Remediation Required	-	-
West	RB-W-126-79	19.2	Low	Non-Erodible Bank	4.0	No Remediation Required	-	-
West	RB-W-127-12	27.2	Low	Non-Erodible Bank	22.2	Supplemental Remediation Area	39.2	871
West	RB-W-127-30	27.2	Low	Non-Erodible Bank	3.7	Supplemental Remediation Area	25.1	94
West	RB-W-127-46	27.2	Low	Non-Erodible Bank	8.3	Supplemental Remediation Area	23.0	191
West	RB-W-127-59	27.2	Low	Non-Erodible Bank	6.6	Supplemental Remediation Area	41.4	272
West	RB-W-127-93	27.2	Low	Non-Erodible Bank	5.5	Supplemental Remediation Area	37.5	206
West	RB-W-128-09	29.5	Low	Non-Erodible Bank	9.3	Supplemental Remediation Area	25.1	232
West	RB-W-128-32	29.5	Low	Non-Erodible Bank	20.3	Supplemental Remediation Area	24.9	505
West	RB-W-128-57	29.5	Low	Non-Erodible Bank	10.1	Supplemental Remediation Area	39.3	395
West	RB-W-129-06	29.5	Low	Non-Erodible Bank	11.3	No Remediation Required	-	-
West	RB-W-129-29	29.5	Low	Non-Erodible Bank	4.8	No Remediation Required	-	-
West	RB-W-129-53	32.8	Low	Non-Erodible Bank	10.0	No Remediation Required	-	-
West	RB-W-129-77	32.8	Low	Non-Erodible Bank	0.0	No Remediation Required	-	-
West	RB-W-130-01	32.8	Low	Non-Erodible Bank	0.4	No Remediation Required	-	-
West	RB-W-130-24	32.8	Low	Non-Erodible Bank	8.7	No Remediation Required	-	-
West	RB-W-130-48	32.8	Low	Non-Erodible Bank	3.3	No Remediation Required	-	-
West	RB-W-130-76	32.8	Low	Non-Erodible Bank	1.7	No Remediation Required	-	-
West	RB-W-131-01	32.8	Low	Non-Erodible Bank	6.4	Supplemental Remediation Area	24.8	158
West	RB-W-131-25	32.8	Low	Non-Erodible Bank	3.3	Supplemental Remediation Area	25.0	83
West	RB-W-131-52	32.8	Low	Non-Erodible Bank	27.8	Supplemental Remediation Area	25.0	694
West	RB-W-131-76	32.8	Low	Non-Erodible Bank	40.7	Supplemental Remediation Area	25.0	1,016
West	RB-W-132-03	32.8	Low	Non-Erodible Bank	62.1	Supplemental Remediation Area	25.1	1,557
West	RB-W-132-31	32.8	Low	Non-Erodible Bank	7.1	Supplemental Remediation Area	25.1	179
West	RB-W-132-51	19.2	Low	Non-Erodible Bank	7.8	No Remediation Required	-	-
West	RB-W-132-76	19.2	Low	Non-Erodible Bank	7.1	No Remediation Required	-	-
West	RB-W-133-03	19.2	Low	Non-Erodible Bank	9.4	No Remediation Required	-	-
West	RB-W-133-32	19.2	Low	Non-Erodible Bank	3.5	No Remediation Required	-	-
West	RB-W-133-59	19.2	Low	Non-Erodible Bank	3.6	No Remediation Required	-	-
West	RB-W-133-87	19.2	Low	Non-Erodible Bank	5.2	No Remediation Required	-	-

Table D-1
Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
West	RB-W-134-15	19.2	Low	Non-Erodible Bank	6.1	No Remediation Required	-	-
West	RB-W-134-48	19.2	Low	Non-Erodible Bank	6.5	No Remediation Required	-	-
West	RB-W-134-73	19.2	Low	Non-Erodible Bank	5.6	No Remediation Required	-	-
West	RB-W-134-99	19.2	Low	Non-Erodible Bank	12.5	No Remediation Required	-	-
West	RB-W-135-28	19.2	Low	Non-Erodible Bank	3.8	No Remediation Required	-	-
West	RB-W-135-57	13.5	Low	Non-Erodible Bank	8.0	No Remediation Required	-	-
West	RB-W-135-96	13.5	Low	Non-Erodible Bank	4.3	No Remediation Required	-	-
West	RB-W-136-27	13.5	Low	Non-Erodible Bank	6.6	No Remediation Required	-	-
West	RB-W-136-57	13.5	Low	Non-Erodible Bank	5.8	Supplemental Remediation Area	38.5	222
West	RB-W-136-74	13.5	Extreme	Non-Erodible Bank	6.8	Supplemental Remediation Area	23.6	161
West	RB-W-136-89	13.5	Extreme	Non-Erodible Bank	4.9	Supplemental Remediation Area	25.7	125
West	RB-W-137-05	13.5	Extreme	Non-Erodible Bank	6.1	Supplemental Remediation Area	27.8	170
West	RB-W-137-13	13.5	Extreme	Non-Erodible Bank	7.3	Supplemental Remediation Area	19.7	143
West	RB-W-137-27	13.5	Extreme	Non-Erodible Bank	7.0	Supplemental Remediation Area	28.0	196
West	RB-W-137-39	13.5	Extreme	Non-Erodible Bank	10.6	Supplemental Remediation Area	25.0	265
West	RB-W-137-50	13.5	Extreme	Non-Erodible Bank	5.1	Supplemental Remediation Area	24.3	124
West	RB-W-137-67	29.4	Extreme	Erodible Bank	20.9	Remediation Required	25.3	528
West	RB-W-137-80	29.4	Extreme	Erodible Bank	5.2	Remediation Required	24.1	124
West	RB-W-137-96	29.4	Extreme	Erodible Bank	5.3	Remediation Required	25.5	136
West	RB-W-138-15	29.4	Extreme	Erodible Bank	6.2	Remediation Required	24.7	154
West	RB-W-138-37	29.4	Extreme	Erodible Bank	7.4	Remediation Required	24.3	180
West	RB-W-138-54	29.4	Extreme	Erodible Bank	4.6	Supplemental Remediation Area	25.9	118
West	RB-W-138-80	29.4	Extreme	Erodible Bank	0.1	Supplemental Remediation Area	24.7	3
West	RB-W-139-00	29.4	Extreme	Erodible Bank	8.7	Remediation Required	24.0	209
West	RB-W-139-23	29.4	Moderate	Erodible Bank	3.2	Supplemental Remediation Area	24.8	80
West	RB-W-139-49	29.4	Moderate	Erodible Bank	19.1	Remediation Required	25.9	494
West	RB-W-139-74	30.4	Low	Non-Erodible Bank	1.1	Supplemental Remediation Area	26.1	28
West	RB-W-139-96	30.4	Low	Non-Erodible Bank	9.2	Supplemental Remediation Area	24.3	222
West	RB-W-140-19	30.4	Low	Non-Erodible Bank	0.3	Supplemental Remediation Area	24.9	8
West	RB-W-140-50	30.4	Low	Non-Erodible Bank	4.6	Supplemental Remediation Area	25.7	119
West	RB-W-140-86	30.4	Low	Non-Erodible Bank	11.2	No Remediation Required	-	-
West	RB-W-141-100	21.0	Low	Non-Erodible Bank	6.4	No Remediation Required	-	-
West	RB-W-141-27	30.4	Low	Non-Erodible Bank	8.8	No Remediation Required	-	-
West	RB-W-141-59	30.4	Low	Non-Erodible Bank	9.1	No Remediation Required	-	-
West	RB-W-142-38	21.0	Low	Non-Erodible Bank	12.2	No Remediation Required	-	-
West	RB-W-142-47	21.0	Low	Non-Erodible Bank	8.3	No Remediation Required	-	-
West	RB-W-142-62	21.0	Low	Non-Erodible Bank	5.2	No Remediation Required	-	-
West	RB-W-142-74	21.0	Low	Non-Erodible Bank	4.8	No Remediation Required	-	-
West	RB-W-142-93	21.0	Low	Non-Erodible Bank	4.7	No Remediation Required	-	-
West	RB-W-143-05	21.0	Low	Non-Erodible Bank	14.1	No Remediation Required	-	-
West	RB-W-143-20	27.1	Extreme	Erodible Bank	27.8	Remediation Required	25.0	696
West	RB-W-143-27	27.1	Extreme	Erodible Bank	9.0	Remediation Required	24.7	221
West	RB-W-143-45	27.1	Extreme	Erodible Bank	4.7	Supplemental Remediation Area	22.3	105
West	RB-W-143-58	27.1	Extreme	Erodible Bank	7.3	Remediation Required	29.7	216
West	RB-W-143-70	27.1	Extreme	Erodible Bank	10.6	Remediation Required	23.5	248
West	RB-W-143-84	27.1	Extreme	Erodible Bank	2.5	Supplemental Remediation Area	24.9	61
West	RB-W-144-01	27.1	Extreme	Erodible Bank	8.2	Remediation Required	25.3	208
West	RB-W-144-15	27.1	Extreme	Erodible Bank	5.4	Remediation Required	23.2	126
West	RB-W-144-33	27.1	Extreme	Erodible Bank	9.4	Remediation Required	26.5	249
West	RB-W-144-46	27.1	Extreme	Erodible Bank	4.2	No Remediation Required	-	-
West	RB-W-144-68	18.9	Low	Non-Erodible Bank	2.4	No Remediation Required	-	-
West	RB-W-144-91	18.9	Low	Non-Erodible Bank	8.3	No Remediation Required	-	-
West	RB-W-145-21	18.9	Low	Non-Erodible Bank	10.2	No Remediation Required	-	-
West	RB-W-145-42	18.9	Low	Non-Erodible Bank	14.3	No Remediation Required	-	-
West	RB-W-145-64	37.2	High	Erodible Bank	9.8	Remediation Required	25.3	248
West	RB-W-145-86	37.2	High	Erodible Bank	6.1	Remediation Required	25.0	153
West	RB-W-146-11	37.2	High	Erodible Bank	7.8	Remediation Required	25.1	197
West	RB-W-146-35	37.2	High	Erodible Bank	7.0	Remediation Required	24.7	174
West	RB-W-146-51	37.2	High	Erodible Bank	14.0	Remediation Required	25.0	350
West	RB-W-146-74	37.2	High	Erodible Bank	5.2	Remediation Required	24.9	129
West	RB-W-147-05	37.2	High	Erodible Bank	11.2	Remediation Required	25.0	279
West	RB-W-147-47	37.2	High	Erodible Bank	8.6	Remediation Required	25.4	219
West	RB-W-147-98	37.2	High	Erodible Bank	6.1	Remediation Required	29.5	179
West	RB-W-148-35	21.2	Extreme	Non-Erodible Bank	5.4	No Remediation Required	-	-
West	RB-W-148-69	21.2	Extreme	Non-Erodible Bank	3.0	No Remediation Required	-	-
West	RB-W-148-95	21.2	Extreme	Non-Erodible Bank	6.3	No Remediation Required	-	-
West	RB-W-149-02	21.2	Extreme	Non-Erodible Bank	5.6	No Remediation Required	-	-
West	RB-W-149-42	21.2	Extreme	Non-Erodible Bank	8.5	No Remediation Required	-	-
West	RB-W-149-44	21.2	Extreme	Non-Erodible Bank	5.0	No Remediation Required	-	-
West	RB-W-149-44	21.2	Extreme	Non-Erodible Bank	5.0	No Remediation Required	-	-
West	RB-W-149-44	21.2	Extreme	Non-Erodible Bank	5.0	No Remediation Required	-	-
West	RB-W-149-59	21.2	Extreme	Non-Erodible Bank	2.7	No Remediation Required	-	-
West	RB-W-149-59	21.2	Extreme	Non-Erodible Bank	2.7	No Remediation Required	-	-
West	RB-W-149-75	21.2	Extreme	Non-Erodible Bank	1.0	No Remediation Required	-	-
West	RB-W-149-98	18.9	Extreme	Non-Erodible Bank	0.4	No Remediation Required	-	-
West	RB-W-150-18	18.9	Extreme	Non-Erodible Bank	1.7	No Remediation Required	-	-
West	RB-W-150-41	18.9	Extreme	Non-Erodible Bank	1.8	No Remediation Required	-	-
West	RB-W-150-64	18.9	Extreme	Non-Erodible Bank	3.4	No Remediation Required	-	-
West	RB-W-150-85	32.8	Low	Non-Erodible Bank	6.5	No Remediation Required	-	-
West	RB-W-151-08	32.8	Low	Non-Erodible Bank	6.7	No Remediation Required	-	-
West	RB-W-151-32	32.8	Low	Non-Erodible Bank	8.5	No Remediation Required	-	-
West	RB-W-151-61	32.8	Low	Non-Erodible Bank	2.9	No Remediation Required	-	-
West	RB-W-151-87	32.8	Low	Non-Erodible Bank	6.4	No Remediation Required	-	-
West	RB-W-152-12	22.0	Low	Non-Erodible Bank	3.4	No Remediation Required	-	-
West	RB-W-152-42	22.0	Low	Non-Erodible Bank	4.8	No Remediation Required	-	-

Table D-1
Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
West	RB-W-152-63	22.0	Low	Non-Erodible Bank	1.8	No Remediation Required	-	-
West	RB-W-152-92	22.0	Low	Non-Erodible Bank	4.9	No Remediation Required	-	-
West	RB-W-153-16	22.0	Low	Non-Erodible Bank	2.5	No Remediation Required	-	-
West	RB-W-153-42	22.0	Low	Non-Erodible Bank	33.7	No Remediation Required	-	-
West	RB-W-153-65	22.0	Low	Non-Erodible Bank	3.4	No Remediation Required	-	-
West	RB-W-153-90	22.0	Low	Non-Erodible Bank	0.6	No Remediation Required	-	-
West	RB-W-154-16	21.6	Low	Non-Erodible Bank	4.8	No Remediation Required	-	-
West	RB-W-154-37	21.6	Low	Non-Erodible Bank	21.9	No Remediation Required	-	-
West	RB-W-154-61	21.6	Low	Non-Erodible Bank	2.3	No Remediation Required	-	-
West	RB-W-154-86	21.6	Low	Non-Erodible Bank	5.6	No Remediation Required	-	-
West	RB-W-155-10	22.7	Low	Non-Erodible Bank	1.3	No Remediation Required	-	-
West	RB-W-155-38	22.7	Low	Non-Erodible Bank	1.4	No Remediation Required	-	-
West	RB-W-155-63	22.7	Low	Non-Erodible Bank	7.1	No Remediation Required	-	-
West	RB-W-155-93	22.7	Low	Non-Erodible Bank	4.4	No Remediation Required	-	-
West	RB-W-156-18	22.7	Low	Non-Erodible Bank	0.4	No Remediation Required	-	-
West	RB-W-156-46	22.7	Low	Non-Erodible Bank	2.8	No Remediation Required	-	-
West	RB-W-156-74	22.7	Low	Non-Erodible Bank	0.7	No Remediation Required	-	-
West	RB-W-157-08	18.2	Low	Non-Erodible Bank	3.4	No Remediation Required	-	-
West	RB-W-157-34	18.2	Low	Non-Erodible Bank	4.2	No Remediation Required	-	-
West	RB-W-157-84	18.2	Low	Non-Erodible Bank	3.3	No Remediation Required	-	-
West	RB-W-158-32	18.2	Low	Non-Erodible Bank	6.1	No Remediation Required	-	-
West	RB-W-158-67	30.8	Low	Non-Erodible Bank	6.6	No Remediation Required	-	-
West	RB-W-158-99	30.8	Low	Non-Erodible Bank	8.8	No Remediation Required	-	-
West	RB-W-159-24	30.8	Low	Non-Erodible Bank	6.2	No Remediation Required	-	-
West	RB-W-159-49	30.8	Low	Non-Erodible Bank	5.1	No Remediation Required	-	-
West	RB-W-159-72	30.8	Low	Non-Erodible Bank	2.5	No Remediation Required	-	-
West	RB-W-159-90	30.8	Low	Non-Erodible Bank	6.9	No Remediation Required	-	-
West	RB-W-160-10	30.8	Low	Non-Erodible Bank	4.0	No Remediation Required	-	-
West	RB-W-160-32	30.8	Low	Non-Erodible Bank	1.9	No Remediation Required	-	-
West	RB-W-160-60	30.8	Low	Non-Erodible Bank	2.2	No Remediation Required	-	-
West	RB-W-160-85	30.8	Low	Non-Erodible Bank	8.2	No Remediation Required	-	-
West	RB-W-161-11	30.8	Low	Non-Erodible Bank	11.5	No Remediation Required	-	-
West	RB-W-161-46	30.8	Low	Non-Erodible Bank	30.3	No Remediation Required	-	-
West	RB-W-161-74	30.8	Low	Non-Erodible Bank	21.1	No Remediation Required	-	-
West	RB-W-161-96	30.8	Low	Non-Erodible Bank	3.4	No Remediation Required	-	-
West	RB-W-162-22	30.8	Low	Non-Erodible Bank	11.8	No Remediation Required	-	-
West	RB-W-162-44	30.8	Low	Non-Erodible Bank	0.9	No Remediation Required	-	-
West	RB-W-162-69	30.8	Low	Non-Erodible Bank	11.8	No Remediation Required	-	-
West	RB-W-162-97	26.1	Low	Non-Erodible Bank	4.3	No Remediation Required	-	-
West	RB-W-163-21	26.1	Low	Non-Erodible Bank	4.4	No Remediation Required	-	-
West	RB-W-163-45	26.1	Low	Non-Erodible Bank	11.5	No Remediation Required	-	-
West	RB-W-163-65	26.1	Low	Non-Erodible Bank	10.6	No Remediation Required	-	-
West	RB-W-163-83	26.1	Low	Non-Erodible Bank	2.4	No Remediation Required	-	-
West	RB-W-164-12	26.1	Low	Non-Erodible Bank	4.5	No Remediation Required	-	-
West	RB-W-164-41	26.1	Low	Non-Erodible Bank	4.1	No Remediation Required	-	-
West	RB-W-164-69	26.1	Low	Non-Erodible Bank	9.8	No Remediation Required	-	-
West	RB-W-164-93	26.1	Low	Non-Erodible Bank	7.1	No Remediation Required	-	-
West	RB-W-165-18	26.1	Low	Non-Erodible Bank	3.7	No Remediation Required	-	-
West	RB-W-165-40	26.1	Low	Non-Erodible Bank	7.8	No Remediation Required	-	-
West	RB-W-165-65	25.5	Low	Non-Erodible Bank	9.0	No Remediation Required	-	-
West	RB-W-165-90	25.5	Low	Non-Erodible Bank	6.6	No Remediation Required	-	-
West	RB-W-166-18	25.5	Low	Non-Erodible Bank	8.1	No Remediation Required	-	-
West	RB-W-166-42	25.5	Low	Non-Erodible Bank	7.7	No Remediation Required	-	-
West	RB-W-166-65	25.5	Low	Non-Erodible Bank	8.5	No Remediation Required	-	-
West	RB-W-166-90	25.5	Low	Non-Erodible Bank	8.2	No Remediation Required	-	-
West	RB-W-167-18	25.5	Low	Non-Erodible Bank	7.1	No Remediation Required	-	-
West	RB-W-167-40	25.5	Low	Non-Erodible Bank	4.6	No Remediation Required	-	-
West	RB-W-167-65	28.4	Low	Non-Erodible Bank	7.1	No Remediation Required	-	-
West	RB-W-167-84	28.4	Low	Non-Erodible Bank	3.3	No Remediation Required	-	-
West	RB-W-167-99	28.4	Low	Non-Erodible Bank	16.4	No Remediation Required	-	-
West	RB-W-168-20	28.4	Low	Non-Erodible Bank	2.5	No Remediation Required	-	-
West	RB-W-168-49	28.4	Low	Non-Erodible Bank	15.8	No Remediation Required	-	-
West	RB-W-168-75	28.4	Low	Non-Erodible Bank	5.0	No Remediation Required	-	-
West	RB-W-168-98	28.4	Low	Non-Erodible Bank	1.8	No Remediation Required	-	-
West	RB-W-169-20	28.4	Low	Non-Erodible Bank	3.1	No Remediation Required	-	-
West	RB-W-169-37	20.2	Low	Non-Erodible Bank	10.1	No Remediation Required	-	-
West	RB-W-169-64	20.2	Low	Non-Erodible Bank	9.3	No Remediation Required	-	-
West	RB-W-169-93	20.2	Low	Non-Erodible Bank	7.0	No Remediation Required	-	-
West	RB-W-170-18	20.2	Low	Non-Erodible Bank	7.2	No Remediation Required	-	-
West	RB-W-170-45	20.2	Low	Non-Erodible Bank	7.7	No Remediation Required	-	-
West	RB-W-170-73	20.2	Low	Non-Erodible Bank	7.0	No Remediation Required	-	-
West	RB-W-170-97	20.2	Low	Non-Erodible Bank	10.0	No Remediation Required	-	-
West	RB-W-171-26	20.2	Low	Non-Erodible Bank	6.9	No Remediation Required	-	-
West	RB-W-171-47	20.2	Low	Non-Erodible Bank	9.7	No Remediation Required	-	-
West	RB-W-171-71	20.2	Low	Non-Erodible Bank	8.7	No Remediation Required	-	-
West	RB-W-171-99	20.2	Low	Non-Erodible Bank	5.3	No Remediation Required	-	-
West	RB-W-172-26	20.2	Low	Non-Erodible Bank	3.9	No Remediation Required	-	-
West	RB-W-172-53	20.2	Low	Non-Erodible Bank	11.3	No Remediation Required	-	-
West	RB-W-173-01	20.2	Low	Non-Erodible Bank	6.2	No Remediation Required	-	-
West	RB-W-173-57	20.2	Low	Non-Erodible Bank	13.6	No Remediation Required	-	-
West	RB-W-173-79	29.1	Low	Non-Erodible Bank	10.8	No Remediation Required	-	-
West	RB-W-174-04	29.1	Low	Non-Erodible Bank	14.7	No Remediation Required	-	-
West	RB-W-174-25	29.1	Low	Non-Erodible Bank	16.8	No Remediation Required	-	-
West	RB-W-174-51	29.1	Low	Non-Erodible Bank	8.1	No Remediation Required	-	-
West	RB-W-174-73	29.1	Low	Non-Erodible Bank	13.6	No Remediation Required	-	-

Table D-1
Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
West	RB-W-174-95	29.1	Low	Non-Erodible Bank	11.3	No Remediation Required	-	-
West	RB-W-175-18	29.1	Low	Non-Erodible Bank	14.2	No Remediation Required	-	-
West	RB-W-175-45	29.1	Low	Non-Erodible Bank	6.8	No Remediation Required	-	-
West	RB-W-175-71	29.1	Low	Non-Erodible Bank	7.7	No Remediation Required	-	-
West	RB-W-175-94	24.5	Low	Non-Erodible Bank	1.0	No Remediation Required	-	-
West	RB-W-176-18	24.5	Low	Non-Erodible Bank	5.1	No Remediation Required	-	-
West	RB-W-176-42	24.5	Low	Non-Erodible Bank	17.1	No Remediation Required	-	-
West	RB-W-176-69	24.5	Low	Non-Erodible Bank	21.5	No Remediation Required	-	-
West	RB-W-176-91	24.5	Low	Non-Erodible Bank	16.5	No Remediation Required	-	-
West	RB-W-177-20	24.5	Low	Non-Erodible Bank	12.7	No Remediation Required	-	-
West	RB-W-177-43	24.5	Low	Non-Erodible Bank	8.9	No Remediation Required	-	-
West	RB-W-177-64	22.1	Low	Non-Erodible Bank	6.8	No Remediation Required	-	-
West	RB-W-177-82	22.1	Low	Non-Erodible Bank	8.5	No Remediation Required	-	-
West	RB-W-178-05	22.1	Low	Non-Erodible Bank	2.3	No Remediation Required	-	-
West	RB-W-178-31	22.1	Low	Non-Erodible Bank	11.0	No Remediation Required	-	-
West	RB-W-178-59	22.1	Low	Non-Erodible Bank	1.9	No Remediation Required	-	-
West	RB-W-178-82	22.1	Low	Non-Erodible Bank	2.9	No Remediation Required	-	-
West	RB-W-179-07	22.1	Low	Non-Erodible Bank	3.3	No Remediation Required	-	-
West	RB-W-179-32	22.1	Low	Non-Erodible Bank	11.5	No Remediation Required	-	-
West	RB-W-179-57	22.8	Low	Non-Erodible Bank	3.2	No Remediation Required	-	-
West	RB-W-179-82	22.8	Low	Non-Erodible Bank	2.9	No Remediation Required	-	-
West	RB-W-180-08	33.1	Low	Non-Erodible Bank	12.6	No Remediation Required	-	-
West	RB-W-180-38	33.1	Low	Non-Erodible Bank	6.6	No Remediation Required	-	-
West	RB-W-180-63	33.1	Low	Non-Erodible Bank	32.0	No Remediation Required	-	-
West	RB-W-180-85	33.1	Low	Non-Erodible Bank	7.3	No Remediation Required	-	-
West	RB-W-181-11	28.7	Low	Non-Erodible Bank	27.4	No Remediation Required	-	-
West	RB-W-181-30	28.7	Low	Non-Erodible Bank	16.7	No Remediation Required	-	-
West	RB-W-181-54	31.7	Low	Non-Erodible Bank	1.0	No Remediation Required	-	-
West	RB-W-181-81	31.7	Low	Non-Erodible Bank	12.1	No Remediation Required	-	-
West	RB-W-182-10	31.7	Low	Non-Erodible Bank	3.9	No Remediation Required	-	-
West	RB-W-182-56	31.7	Low	Non-Erodible Bank	7.5	No Remediation Required	-	-
West	RB-W-182-88	31.7	Low	Non-Erodible Bank	2.0	No Remediation Required	-	-
West	RB-W-183-12	31.7	Low	Non-Erodible Bank	12.6	No Remediation Required	-	-
West	RB-W-183-48	22.3	Low	Non-Erodible Bank	5.3	No Remediation Required	-	-
West	RB-W-183-78	22.3	Low	Non-Erodible Bank	0.9	No Remediation Required	-	-
West	RB-W-184-04	22.3	Low	Non-Erodible Bank	1.2	No Remediation Required	-	-
West	RB-W-184-28	22.3	Low	Non-Erodible Bank	20.3	No Remediation Required	-	-
West	RB-W-184-45	22.3	Low	Non-Erodible Bank	5.7	No Remediation Required	-	-
West	RB-W-184-60	27.6	Low	Non-Erodible Bank	15.5	No Remediation Required	-	-
West	RB-W-184-81	27.6	Low	Non-Erodible Bank	6.5	No Remediation Required	-	-
West	RB-W-185-04	27.6	Low	Non-Erodible Bank	14.1	No Remediation Required	-	-
West	RB-W-185-22	27.6	Low	Non-Erodible Bank	7.4	No Remediation Required	-	-
West	RB-W-185-45	27.6	Low	Non-Erodible Bank	7.9	No Remediation Required	-	-
West	RB-W-185-70	27.6	Low	Non-Erodible Bank	12.0	No Remediation Required	-	-
West	RB-W-185-95	27.6	Low	Non-Erodible Bank	10.5	Supplemental Remediation Area	25.3	266
West	RB-W-186-15	27.6	Extreme	Erodible Bank	13.1	Remediation Required	25.8	338
West	RB-W-186-36	27.6	Extreme	Erodible Bank	10.5	Remediation Required	22.9	241
West	RB-W-186-58	27.6	Extreme	Erodible Bank	9.0	Remediation Required	26.1	236
West	RB-W-186-74	27.6	Extreme	Erodible Bank	12.8	Remediation Required	25.1	322
West	RB-W-186-90	27.6	Extreme	Erodible Bank	8.7	Remediation Required	24.9	217
West	RB-W-187-14	27.6	Extreme	Erodible Bank	15.6	Remediation Required	24.6	383
West	RB-W-187-25	27.6	Extreme	Erodible Bank	0.1	Supplemental Remediation Area	25.6	4
West	RB-W-187-40	27.6	Extreme	Erodible Bank	1.7	Supplemental Remediation Area	24.9	42
West	RB-W-187-57	41.1	Extreme	Erodible Bank	2.2	Supplemental Remediation Area	24.8	54
West	RB-W-187-75	41.1	Extreme	Erodible Bank	15.2	Remediation Required	25.2	383
West	RB-W-187-88	41.1	Extreme	Erodible Bank	1.1	Supplemental Remediation Area	25.0	28
West	RB-W-188-08	41.1	Extreme	Erodible Bank	2.1	Supplemental Remediation Area	24.8	51
West	RB-W-188-32	41.1	Extreme	Erodible Bank	0.1	Supplemental Remediation Area	25.4	2
West	RB-W-188-55	41.1	Extreme	Erodible Bank	0.7	Supplemental Remediation Area	24.8	16
West	RB-W-188-81	41.1	Extreme	Erodible Bank	0.3	Supplemental Remediation Area	24.7	7
West	RB-W-189-08	41.1	Low	Non-Erodible Bank	9.2	Supplemental Remediation Area	26.0	238
West	RB-W-189-35	22.6	Low	Non-Erodible Bank	7.7	No Remediation Required	-	-
West	RB-W-189-57	22.6	Low	Non-Erodible Bank	11.2	No Remediation Required	-	-
West	RB-W-189-79	22.6	Low	Non-Erodible Bank	7.1	No Remediation Required	-	-
West	RB-W-190-16	22.6	Low	Non-Erodible Bank	0.1	No Remediation Required	-	-
West	RB-W-190-45	22.6	Low	Non-Erodible Bank	9.3	No Remediation Required	-	-
West	RB-W-190-68	22.6	Low	Non-Erodible Bank	4.9	No Remediation Required	-	-
West	RB-W-190-94	22.6	Low	Non-Erodible Bank	9.8	No Remediation Required	-	-
West	RB-W-191-21	22.6	Low	Non-Erodible Bank	14.1	No Remediation Required	-	-
West	RB-W-191-54	22.6	Low	Non-Erodible Bank	6.5	No Remediation Required	-	-
West	RB-W-191-83	22.6	Low	Non-Erodible Bank	10.0	No Remediation Required	-	-
West	RB-W-192-07	11.4	Low	Non-Erodible Bank	8.1	No Remediation Required	-	-
West	RB-W-192-33	11.4	Low	Non-Erodible Bank	14.8	No Remediation Required	-	-
West	RB-W-192-61	11.4	Low	Non-Erodible Bank	4.7	No Remediation Required	-	-
West	RB-W-192-83	11.4	Low	Non-Erodible Bank	9.2	No Remediation Required	-	-
West	RB-W-193-03	11.4	Low	Non-Erodible Bank	9.3	No Remediation Required	-	-
West	RB-W-193-24	11.4	Low	Non-Erodible Bank	9.1	No Remediation Required	-	-
West	RB-W-193-47	29.4	Moderate	Erodible Bank	2.7	No Remediation Required	-	-
West	RB-W-193-71	29.4	Moderate	Erodible Bank	18.9	Remediation Required	25.3	480
West	RB-W-193-96	29.4	Moderate	Erodible Bank	4.7	No Remediation Required	-	-
West	RB-W-194-18	29.4	Moderate	Erodible Bank	0.1	No Remediation Required	-	-
West	RB-W-194-40	29.4	Moderate	Erodible Bank	3.5	No Remediation Required	-	-
West	RB-W-194-66	29.4	Moderate	Erodible Bank	0.2	No Remediation Required	-	-
West	RB-W-194-87	29.4	Moderate	Erodible Bank	2.1	No Remediation Required	-	-
West	RB-W-195-11	29.4	Moderate	Erodible Bank	1.5	No Remediation Required	-	-

Table D-1
Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
West	RB-W-195-33	29.4	Moderate	Erodible Bank	0.6	No Remediation Required	-	-
West	RB-W-195-61	29.4	Moderate	Erodible Bank	32.9	Remediation Required	25.2	828
West	RB-W-195-85	29.4	Moderate	Erodible Bank	2.9	No Remediation Required	-	-
West	RB-W-196-06	27.7	Moderate	Erodible Bank	1.8	No Remediation Required	-	-
West	RB-W-196-30	27.7	Moderate	Erodible Bank	1.9	No Remediation Required	-	-
West	RB-W-196-55	27.7	Moderate	Erodible Bank	5.0	No Remediation Required	-	-
West	RB-W-196-82	27.7	Moderate	Erodible Bank	6.6	Remediation Required	24.6	162
West	RB-W-197-12	27.7	Moderate	Erodible Bank	9.9	Remediation Required	25.3	250
West	RB-W-197-36	14.8	Low	Non-Erodible Bank	10.4	No Remediation Required	-	-
West	RB-W-197-63	14.8	Low	Non-Erodible Bank	8.7	No Remediation Required	-	-
West	RB-W-197-96	14.8	Low	Non-Erodible Bank	10.3	No Remediation Required	-	-
West	RB-W-198-22	14.8	Low	Non-Erodible Bank	5.6	No Remediation Required	-	-
West	RB-W-198-47	14.8	Low	Non-Erodible Bank	35.5	No Remediation Required	-	-
West	RB-W-198-76	14.8	Low	Non-Erodible Bank	6.7	No Remediation Required	-	-
West	RB-W-199-04	14.8	Low	Non-Erodible Bank	9.7	No Remediation Required	-	-
West	RB-W-199-33	14.8	Low	Non-Erodible Bank	10.8	No Remediation Required	-	-
West	RB-W-199-59	14.8	Low	Non-Erodible Bank	11.1	No Remediation Required	-	-
West	RB-W-199-81	14.8	Low	Non-Erodible Bank	17.0	No Remediation Required	-	-
West	RB-W-200-08	14.8	Low	Non-Erodible Bank	14.4	No Remediation Required	-	-
West	RB-W-200-28	31.6	Low	Non-Erodible Bank	8.2	No Remediation Required	-	-
West	RB-W-200-51	31.6	Low	Non-Erodible Bank	7.4	No Remediation Required	-	-
West	RB-W-200-74	31.6	Low	Non-Erodible Bank	3.8	No Remediation Required	-	-
West	RB-W-200-94	31.6	Low	Non-Erodible Bank	14.3	No Remediation Required	-	-
West	RB-W-201-17	31.6	Low	Non-Erodible Bank	10.7	No Remediation Required	-	-
West	RB-W-201-41	31.6	Low	Non-Erodible Bank	10.8	No Remediation Required	-	-
West	RB-W-201-62	31.6	Low	Non-Erodible Bank	5.5	No Remediation Required	-	-
West	RB-W-201-89	31.6	Low	Non-Erodible Bank	10.6	No Remediation Required	-	-
West	RB-W-202-11	31.6	Low	Non-Erodible Bank	10.2	No Remediation Required	-	-
West	RB-W-202-40	31.6	Low	Non-Erodible Bank	17.7	No Remediation Required	-	-
West	RB-W-202-65	31.6	Low	Non-Erodible Bank	8.0	No Remediation Required	-	-
West	RB-W-202-98	29.6	Low	Non-Erodible Bank	5.2	No Remediation Required	-	-
West	RB-W-203-32	29.6	Low	Non-Erodible Bank	6.1	No Remediation Required	-	-
West	RB-W-203-60	29.6	Low	Non-Erodible Bank	9.6	No Remediation Required	-	-
West	RB-W-203-97	24.3	Low	Non-Erodible Bank	6.4	No Remediation Required	-	-
West	RB-W-204-22	24.3	Low	Non-Erodible Bank	12.7	No Remediation Required	-	-
West	RB-W-204-58	24.3	Low	Non-Erodible Bank	14.8	No Remediation Required	-	-
West	RB-W-204-81	24.3	Low	Non-Erodible Bank	5.9	No Remediation Required	-	-
West	RB-W-205-15	21.5	Low	Non-Erodible Bank	8.8	No Remediation Required	-	-
West	RB-W-205-45	21.5	Low	Non-Erodible Bank	3.9	No Remediation Required	-	-
West	RB-W-205-77	21.5	Low	Non-Erodible Bank	12.0	No Remediation Required	-	-
West	RB-W-206-09	21.5	Low	Non-Erodible Bank	8.2	No Remediation Required	-	-
West	RB-W-206-43	21.5	Low	Non-Erodible Bank	3.7	No Remediation Required	-	-
West	RB-W-207-07	20.0	Low	Non-Erodible Bank	4.3	No Remediation Required	-	-
West	RB-W-207-42	20.0	Low	Non-Erodible Bank	9.8	No Remediation Required	-	-
West	RB-W-207-72	20.0	Low	Non-Erodible Bank	3.2	No Remediation Required	-	-
West	RB-W-207-93	26.0	Low	Non-Erodible Bank	6.2	No Remediation Required	-	-
West	RB-W-208-20	26.0	Low	Non-Erodible Bank	6.2	No Remediation Required	-	-
West	RB-W-208-45	26.0	Low	Non-Erodible Bank	7.2	No Remediation Required	-	-
West	RB-W-208-69	26.0	Low	Non-Erodible Bank	8.6	No Remediation Required	-	-
West	RB-W-208-91	26.0	Low	Non-Erodible Bank	7.6	No Remediation Required	-	-
West	RB-W-209-16	26.0	Low	Non-Erodible Bank	5.8	No Remediation Required	-	-
West	RB-W-209-42	19.5	Low	Non-Erodible Bank	9.2	No Remediation Required	-	-
West	RB-W-209-64	19.5	Low	Non-Erodible Bank	6.2	No Remediation Required	-	-
West	RB-W-209-87	19.5	Low	Non-Erodible Bank	7.2	No Remediation Required	-	-
West	RB-W-210-08	19.5	Low	Non-Erodible Bank	5.5	No Remediation Required	-	-
West	RB-W-210-29	19.5	Low	Non-Erodible Bank	11.3	No Remediation Required	-	-
West	RB-W-210-56	23.2	Low	Non-Erodible Bank	13.3	No Remediation Required	-	-
West	RB-W-210-76	23.2	Low	Non-Erodible Bank	10.1	No Remediation Required	-	-
West	RB-W-210-98	23.2	Low	Non-Erodible Bank	10.8	No Remediation Required	-	-
West	RB-W-211-19	23.2	Low	Non-Erodible Bank	10.4	No Remediation Required	-	-
West	RB-W-211-48	23.2	Low	Non-Erodible Bank	9.2	No Remediation Required	-	-
West	RB-W-211-64	23.2	Low	Non-Erodible Bank	0.2	No Remediation Required	-	-
West	RB-W-211-88	23.2	Low	Non-Erodible Bank	17.7	No Remediation Required	-	-
West	RB-W-212-12	23.2	Low	Non-Erodible Bank	7.7	No Remediation Required	-	-
West	RB-W-212-37	23.2	Low	Non-Erodible Bank	7.7	No Remediation Required	-	-
West	RB-W-212-57	23.2	Low	Non-Erodible Bank	32.4	No Remediation Required	-	-
West	RB-W-212-85	23.2	Low	Non-Erodible Bank	11.1	No Remediation Required	-	-
West	RB-W-213-09	23.2	Low	Non-Erodible Bank	16.2	No Remediation Required	-	-
West	RB-W-213-33	23.2	Low	Non-Erodible Bank	8.9	No Remediation Required	-	-
West	RB-W-213-59	23.2	Low	Non-Erodible Bank	15.1	No Remediation Required	-	-
West	RB-W-213-84	23.2	Low	Non-Erodible Bank	9.2	No Remediation Required	-	-
West	RB-W-214-07	23.2	Low	Non-Erodible Bank	10.0	No Remediation Required	-	-
West	RB-W-214-33	23.2	Low	Non-Erodible Bank	12.0	No Remediation Required	-	-
West	RB-W-214-60	23.2	Low	Non-Erodible Bank	8.8	No Remediation Required	-	-
West	RB-W-214-83	23.2	Low	Non-Erodible Bank	10.1	No Remediation Required	-	-
West	RB-W-215-11	23.2	Low	Non-Erodible Bank	6.9	No Remediation Required	-	-
West	RB-W-215-32	23.2	Low	Non-Erodible Bank	5.9	No Remediation Required	-	-
West	RB-W-215-57	23.2	Low	Non-Erodible Bank	7.3	No Remediation Required	-	-
West	RB-W-215-76	23.2	Low	Non-Erodible Bank	8.7	No Remediation Required	-	-
West	RB-W-216-01	23.2	Low	Non-Erodible Bank	5.3	No Remediation Required	-	-
West	RB-W-216-18	34.1	Moderate	Erodible Bank	26.1	Remediation Required	25.9	674
West	RB-W-216-38	34.1	Moderate	Erodible Bank	10.0	Remediation Required	24.8	248
West	RB-W-216-57	34.1	Moderate	Erodible Bank	11.9	Remediation Required	24.7	295
West	RB-W-216-77	34.1	Moderate	Erodible Bank	2.5	Supplemental Remediation Area	25.1	64
West	RB-W-217-02	34.1	Moderate	Erodible Bank	3.2	Supplemental Remediation Area	24.6	79

Table D-1
Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
West	RB-W-217-21	34.1	Moderate	Erodible Bank	5.7	Remediation Required	25.1	144
West	RB-W-217-41	34.1	Moderate	Erodible Bank	12.7	Remediation Required	24.9	315
West	RB-W-217-62	34.1	Moderate	Erodible Bank	12.6	Remediation Required	25.2	316
West	RB-W-217-86	34.1	Moderate	Erodible Bank	8.6	Remediation Required	25.0	216
West	RB-W-218-09	34.1	Moderate	Erodible Bank	7.6	Remediation Required	25.0	190
West	RB-W-218-26	34.1	Moderate	Erodible Bank	5.9	Remediation Required	24.6	146
West	RB-W-218-48	34.1	Moderate	Erodible Bank	4.0	Supplemental Remediation Area	25.4	103
West	RB-W-218-70	34.1	Moderate	Erodible Bank	16.3	Remediation Required	25.1	409
West	RB-W-218-81	34.1	Moderate	Erodible Bank	0.2	No Remediation Required	-	-
West	RB-W-219-01	34.1	Moderate	Erodible Bank	0.6	No Remediation Required	-	-
West	RB-W-219-22	34.1	Moderate	Erodible Bank	0.8	No Remediation Required	-	-
West	RB-W-219-40	34.1	Moderate	Erodible Bank	6.2	Remediation Required	24.7	152
West	RB-W-219-64	34.1	Low	Non-Erodible Bank	10.1	No Remediation Required	-	-
West	RB-W-219-86	24.0	Low	Non-Erodible Bank	14.2	No Remediation Required	-	-
West	RB-W-220-14	24.0	Low	Non-Erodible Bank	2.2	No Remediation Required	-	-
West	RB-W-220-37	24.0	Low	Non-Erodible Bank	8.7	No Remediation Required	-	-
West	RB-W-220-65	24.0	Low	Non-Erodible Bank	14.8	No Remediation Required	-	-
West	RB-W-220-86	24.0	Low	Non-Erodible Bank	8.0	No Remediation Required	-	-
West	RB-W-221-10	24.0	Low	Non-Erodible Bank	12.3	No Remediation Required	-	-
West	RB-W-221-35	24.0	Low	Non-Erodible Bank	9.4	No Remediation Required	-	-
West	RB-W-221-59	24.0	Low	Non-Erodible Bank	6.0	No Remediation Required	-	-
West	RB-W-221-83	17.9	Low	Non-Erodible Bank	8.7	No Remediation Required	-	-
West	RB-W-222-04	17.9	Low	Non-Erodible Bank	8.8	No Remediation Required	-	-
West	RB-W-222-100	41.8	High	Erodible Bank	5.0	Remediation Required	25.0	125
West	RB-W-222-24	17.9	Low	Non-Erodible Bank	9.1	No Remediation Required	-	-
West	RB-W-222-44	17.9	Low	Non-Erodible Bank	10.8	No Remediation Required	-	-
West	RB-W-222-65	17.9	Low	Non-Erodible Bank	9.5	No Remediation Required	-	-
West	RB-W-222-83	17.9	Low	Non-Erodible Bank	12.5	No Remediation Required	-	-
West	RB-W-223-19	41.8	High	Erodible Bank	4.1	Supplemental Remediation Area	25.3	104
West	RB-W-223-34	41.8	High	Erodible Bank	5.0	Supplemental Remediation Area	25.2	125
West	RB-W-223-57	41.8	High	Erodible Bank	0.1	Supplemental Remediation Area	24.4	2
West	RB-W-223-76	41.8	High	Erodible Bank	28.6	Remediation Required	25.5	729
West	RB-W-223-90	41.8	High	Erodible Bank	0.0	Supplemental Remediation Area	24.8	1
West	RB-W-224-07	41.8	High	Erodible Bank	10.4	Remediation Required	24.8	258
West	RB-W-224-26	41.8	High	Erodible Bank	4.7	Supplemental Remediation Area	25.3	120
West	RB-W-224-46	41.8	High	Erodible Bank	3.2	Supplemental Remediation Area	24.6	79
West	RB-W-224-66	41.8	High	Erodible Bank	10.5	Remediation Required	24.9	262
West	RB-W-224-92	41.8	High	Erodible Bank	2.3	Supplemental Remediation Area	25.4	58
West	RB-W-225-18	41.8	High	Erodible Bank	9.3	Remediation Required	24.9	232
West	RB-W-225-44	41.8	High	Erodible Bank	236.1	Remediation Required	25.1	5,925
West	RB-W-225-76	27.1	Low	Non-Erodible Bank	0.4	No Remediation Required	-	-
West	RB-W-226-03	27.1	Low	Non-Erodible Bank	7.3	No Remediation Required	-	-
West	RB-W-226-36	27.1	Low	Non-Erodible Bank	171.3	No Remediation Required	-	-
West	RB-W-226-60	27.1	Low	Non-Erodible Bank	7.0	No Remediation Required	-	-
West	RB-W-226-81	27.1	Low	Non-Erodible Bank	11.0	No Remediation Required	-	-
West	RB-W-227-02	27.1	Low	Non-Erodible Bank	5.3	No Remediation Required	-	-
West	RB-W-227-28	27.1	Low	Non-Erodible Bank	22.8	No Remediation Required	-	-
West	RB-W-227-62	27.1	Low	Non-Erodible Bank	11.5	No Remediation Required	-	-
West	RB-W-227-96	18.0	Low	Non-Erodible Bank	9.8	No Remediation Required	-	-
West	RB-W-228-26	18.0	Low	Non-Erodible Bank	15.4	No Remediation Required	-	-
West	RB-W-228-69	18.0	Low	Non-Erodible Bank	9.0	No Remediation Required	-	-
West	RB-W-229-04	18.0	Low	Non-Erodible Bank	9.7	No Remediation Required	-	-
West	RB-W-229-38	18.0	Low	Non-Erodible Bank	9.6	No Remediation Required	-	-
West	RB-W-229-66	18.0	Low	Non-Erodible Bank	8.1	No Remediation Required	-	-
West	RB-W-229-91	18.0	Low	Non-Erodible Bank	14.4	No Remediation Required	-	-
West	RB-W-230-17	21.7	Low	Non-Erodible Bank	74.5	No Remediation Required	-	-
West	RB-W-230-41	21.7	Low	Non-Erodible Bank	5.4	No Remediation Required	-	-
West	RB-W-230-69	21.7	Low	Non-Erodible Bank	45.9	No Remediation Required	-	-
West	RB-W-230-94	21.7	Low	Non-Erodible Bank	3.1	No Remediation Required	-	-
West	RB-W-231-26	10.9	Low	Non-Erodible Bank	18.4	No Remediation Required	-	-
West	RB-W-231-50	10.9	Low	Non-Erodible Bank	6.2	No Remediation Required	-	-
West	RB-W-231-84	10.9	Low	Non-Erodible Bank	16.6	No Remediation Required	-	-
West	RB-W-232-12	10.9	Low	Non-Erodible Bank	11.2	No Remediation Required	-	-
West	RB-W-232-41	10.9	Low	Non-Erodible Bank	15.6	No Remediation Required	-	-
West	RB-W-232-66	10.9	Low	Non-Erodible Bank	7.9	No Remediation Required	-	-
West	RB-W-232-90	10.9	Low	Non-Erodible Bank	16.5	No Remediation Required	-	-
West	RB-W-233-16	10.9	Low	Non-Erodible Bank	9.7	No Remediation Required	-	-
West	RB-W-233-45	10.9	Low	Non-Erodible Bank	4.5	No Remediation Required	-	-
West	RB-W-233-68	10.9	Low	Non-Erodible Bank	7.2	No Remediation Required	-	-
West	RB-W-233-96	10.9	Low	Non-Erodible Bank	13.1	No Remediation Required	-	-
West	RB-W-234-25	10.9	Low	Non-Erodible Bank	11.9	No Remediation Required	-	-
West	RB-W-234-33	10.9	Low	Non-Erodible Bank	11.6	No Remediation Required	-	-
West	RB-W-235-10	Not rated	Not rated	Not rated	24.8	No Remediation Required	-	-
West	RB-W-235-18	10.9	Low	Non-Erodible Bank	8.2	No Remediation Required	-	-
West	RB-W-235-29	33.9	Low	Non-Erodible Bank	12.0	Supplemental Remediation Area	25.4	304
West	RB-W-235-37	33.9	Extreme	Erodible Bank	10.2	Remediation Required	26.1	267
West	RB-W-235-50	33.9	Extreme	Erodible Bank	1.9	Supplemental Remediation Area	24.7	46
West	RB-W-235-63	33.9	Extreme	Erodible Bank	5.1	Remediation Required	25.5	129
West	RB-W-235-79	33.9	Extreme	Erodible Bank	2.4	Supplemental Remediation Area	24.5	60
West	RB-W-236-04	33.9	Extreme	Erodible Bank	1.5	Supplemental Remediation Area	25.2	37
West	RB-W-236-22	33.9	Extreme	Erodible Bank	4.0	Supplemental Remediation Area	25.0	100
West	RB-W-236-35	33.9	Extreme	Erodible Bank	4.5	Supplemental Remediation Area	24.8	112
West	RB-W-236-47	33.9	Extreme	Erodible Bank	0.3	Supplemental Remediation Area	24.9	8
West	RB-W-236-58	33.9	Extreme	Erodible Bank	9.1	Remediation Required	25.6	232
West	RB-W-236-73	33.9	Extreme	Erodible Bank	6.1	Remediation Required	24.6	149

Table D-1

Summary of Reach 5A Riverbank Soil PCB Results, Erodibility Ratings, and Conceptual Remedial Approach

Bank	Location ID	BEHI Rating[1]	NBS Rating[1]	Erodibility[1,2]	Total PCB (mg/kg)	Remedial Classification	Remedial Bank Length (feet)	Total PCB × Length
West	RB-W-236-95	33.9	Extreme	Erodible Bank	9.0	Remediation Required	23.7	212
West	RB-W-237-13	33.9	Low	Non-Erodible Bank	0.9	No Remediation Required	-	-
West	RB-W-237-37	33.9	Low	Non-Erodible Bank	2.7	No Remediation Required	-	-
West	RB-W-237-57	33.9	Low	Non-Erodible Bank	2.1	No Remediation Required	-	-
West	RB-W-237-69	33.9	Low	Non-Erodible Bank	3.5	No Remediation Required	-	-
West	RB-W-238-44	33.9	Low	Non-Erodible Bank	5.7	No Remediation Required	-	-
West	RB-W-238-86	33.9	Low	Non-Erodible Bank	6.4	No Remediation Required	-	-
West	RB-W-239-16	19.5	Low	Non-Erodible Bank	8.7	No Remediation Required	-	-
West	RB-W-239-54	19.5	Low	Non-Erodible Bank	11.0	No Remediation Required	-	-
West	RB-W-239-81	31.6	Low	Non-Erodible Bank	9.6	No Remediation Required	-	-
West	RB-W-240-09	31.6	Low	Non-Erodible Bank	15.2	No Remediation Required	-	-
West	RB-W-240-32	31.6	Low	Non-Erodible Bank	7.1	No Remediation Required	-	-
West	RB-W-240-61	31.6	Low	Non-Erodible Bank	8.7	No Remediation Required	-	-
West	RB-W-241-06	14.5	Low	Non-Erodible Bank	4.9	No Remediation Required	-	-
West	RB-W-241-36	14.5	Low	Non-Erodible Bank	5.1	No Remediation Required	-	-
West	RB-W-241-66	14.5	Low	Non-Erodible Bank	19.3	No Remediation Required	-	-
West	RB-W-241-88	31.1	Low	Non-Erodible Bank	17.6	No Remediation Required	-	-
West	RB-W-242-14	31.1	Low	Non-Erodible Bank	21.2	No Remediation Required	-	-
West	RB-W-242-37	31.1	Low	Non-Erodible Bank	52.3	No Remediation Required	-	-
West	RB-W-242-63	31.1	Low	Non-Erodible Bank	16.0	No Remediation Required	-	-
West	RB-W-242-91	31.1	Low	Non-Erodible Bank	24.5	No Remediation Required	-	-
West	RB-W-243-20	31.1	Low	Non-Erodible Bank	9.9	No Remediation Required	-	-
West	RB-W-243-51	31.1	Low	Non-Erodible Bank	7.4	No Remediation Required	-	-
West	RB-W-243-90	Not rated	Not rated	Not rated	39.1	Supplemental Remediation Area	25.1	982
West	RB-W-244-04	Not rated	Not rated	Not rated	56.7	Supplemental Remediation Area	25.4	1,443
West	RB-W-244-18	Not rated	Not rated	Not rated	9.7	Supplemental Remediation Area	25.2	245
West	RB-W-244-24	Not rated	Not rated	Not rated	93.2	Supplemental Remediation Area	20.6	1,924
West	RB-W-244-90	Not rated	Not rated	Not rated	24.8	Supplemental Remediation Area	12.6	313
						Total	**12,352**	**137,415**
						Length-Weighted Average Total PCB	**11.1**	

Notes:

1. The 2022 riverbank field assessments were conducted throughout Reach 5A except for the portion of the western riverbank downstream of BW5A-6 (approximately Station 244+00). Additional assessments are ongoing to determine the erodibility rating for the portion of the western riverbank between Stations 244+00 and 245+00 (i.e., the downstream limit of Reach 5A).

2. Riverbanks are considered erodible if the BEHI rating is 27 or greater and the NBS rating is Moderate or greater.

-: not applicable

BEHI: Bank Erosion Hazard Index

mg/kg: milligram per kilogram

NBS: Near Bank Stress

PCB: polychlorinated biphenyl

Appendix E
PCB Evaluations for Floodplain Soil – Residential

Appendix E
PCB Evaluations for Floodplain Soil – Residential

Introduction

As described in the General Electric Company's (GE's) *Pre-Design Investigation Summary Report for Reach 5A Floodplain Residential Properties* (Residential Floodplain PDI Summary Report; Anchor QEA 2021), there are a total of 27 residential floodplain properties in Reach 5A that were evaluated to determine which properties would require soil remediation to achieve the Residential Performance Standards provided in Table 3 of the Revised Final Resource Conservation and Recovery Act Corrective Action Permit (Revised Final Permit) for the Housatonic Rest of River (ROR) (EPA 2020). These include 22 current residential properties identified in the Revised Final Permit and five additional residential parcels that were not included in the list of parcels in the Revised Final Permit and were not addressed previously as part of the Actual/Potential Lawn (A/P Lawn) properties, but for which the Environmental Protection Agency (EPA) directed GE (or GE agreed) to conduct additional limited sampling to confirm that polychlorinated biphenyl (PCB) concentrations in soil are less than the Residential Performance Standards.

The Residential Performance Standards are an average PCB concentration of two milligrams per kilogram (mg/kg) in the top foot of soil and in the 1- to X-foot depth increment (where X equals the depth to which PCBs are detected at concentrations of 2 mg/kg or greater, up to a maximum depth of 15 feet), with no discrete PCB concentration in the top foot of soil exceeding 10 mg/kg (the not-to-exceed [NTE] level) for parcels exceeding 0.25 acre in size.

A preliminary evaluation of these 27 residential parcels was conducted previously and summarized in GE's Residential Floodplain PDI Summary Report (approved by EPA on February 14, 2022). In that report, GE showed the following:

- There were seven properties at which PCBs were not detected at concentrations greater than 2 mg/kg and, therefore, do not require any further evaluation. These seven properties are Parcels J4-8-9, J4-8-10, J4-3-10, J4-3-11, J3-1-8, J3-1-9, and J3-1-10.[1]
- There were eight properties that had concentrations greater than 2 mg/kg, but for which evaluations demonstrated that the Residential Performance Standards were already achieved, and, therefore, no remediation was required. Those eight properties are Parcels I6-1-42, J4-8-110, J4-8-2, J4-3-7, J4-3-8, J4-3-9, J3-1-14, and K2-1-2.[1]

[1] EPA issued letters from GE to these property owners, dated July 13, 2022, notifying each of them that the Residential Performance Standards are satisfied under existing conditions and that thus no removal actions are required on their properties.

- There were 12 properties where the Residential Performance Standards were likely not met under existing conditions and at which soil removal activities to address PCBs are, therefore, needed. These 12 properties are Parcels I6-3-13, J6-2-3, J3-1-11, J3-1-12, J3-1-13, J3-2-2, J3-2-3, J3-2-4, J3-2-5, J3-2-6, K3-1-2, and K2-1-10.

This appendix provides detailed evaluations of existing PCB concentrations on the 12 properties where the Residential Performance Standards are not currently met and of the extent of remediation required to achieve those standards. In addition, this appendix includes an updated evaluation for one additional residential property (Parcel J6-3-1) that was evaluated previously in the separate Removal Action associated with the A/P Lawn Properties and where remediation was proposed but deferred by the property owner (see Anchor QEA 2019; EPA 2019).

This appendix provides a detailed description of the evaluations that were performed for each of the 13 parcels listed above. Specifically, for each parcel subject to evaluation, this appendix provides the following:

- A description of property, including identification of the "X" value (in feet below ground surface [bgs]) identified for each property to represent the subsurface depth to be used during future remedial design evaluations;
- An evaluation of existing PCB concentrations and discussion of the need for and extent of remediation to achieve the Residential Performance Standards; and
- An evaluation of post-remediation PCB concentrations.

Attachments A and B provide Thiessen polygon maps and evaluation tables (respectively) that were used to support these evaluations. The maps provided in Attachment A also show the specific polygons requiring remediation (i.e., soil removal and backfill) to meet the Residential Performance Standards. Summaries of the relevant data for each property are provided in Attachment C.

PCB Evaluation Procedures

The procedures used to evaluate the residential floodplain soil PCB concentrations are described as follows. The first step in the evaluation process was to assess PCB concentrations in soil under existing conditions. First, for properties greater than 0.25 acre in size (which includes all 13 properties subject to evaluation), the discrete PCB concentrations in the top foot of soil in unpaved portions of each property were compared to the applicable NTE level of 10 mg/kg. Second, spatial average PCB concentrations were calculated for each depth interval (0- to 1-foot and 1- to X-feet [if a subsurface X-depth was identified on the property]) at each property. Specifically, this involved the following steps:

1. For each property, a detailed site plan was first developed to define property/evaluation area boundaries, soil sampling locations within and adjacent to the evaluation area, locations of buildings and other permanent structures, and other significant site features.

2. Thiessen polygons were developed for each property. Generation of Thiessen polygons involves the use of computer software to draw perpendicular bisector lines between adjacent sample locations to create two-dimensional, sample-specific polygon areas. Certain boundary conditions impact the generation of Thiessen polygons, such as the boundaries of the area subject to averaging, presence of paved and unpaved areas, building footprints, and property lines. As appropriate, the computer-generated Thiessen polygons were modified to reflect actual site conditions, locations of property lines, or other specific site considerations. Once the Thiessen polygon mapping was complete, all of the soil areas and depths potentially subject to response actions were adequately characterized for use in subsequent evaluations. After generation of the Thiessen polygons, polygon identification numbers were assigned to each polygon, and the surface area of each polygon was calculated.
3. Spreadsheets were then prepared to combine information obtained from the Thiessen polygon mapping (i.e., polygon ID and area for each polygon) with the analytical results of soil sampling to provide a three-dimensional characterization of the soils associated with each polygon. The volume of soil associated with each polygon was based on the surface area of the polygon multiplied by the corresponding depth of soil for which samples were collected. Using the information described above, a spatial average PCB concentration was derived by multiplying the volume of each polygon by the corresponding PCB concentration, summing the results of this calculation for each polygon involved in the evaluation, and then dividing that sum by the cumulative soil volume associated with all the polygons. This procedure yields a spatial average PCB concentration that incorporates volume- and area-weighting considerations.

The resulting spatial average PCB concentrations for the 0- to 1-foot increment and the 1- to X-foot depth increment (where subject to evaluation) on each property were then compared to the applicable PCB Performance Standard of 2 mg/kg to determine the scope of soil remediation to address PCBs.

For areas where there were exceedances of the applicable NTE level (10 mg/kg) in the top foot of unpaved soil and/or where the spatial average PCB concentrations exceeded 2 mg/kg, a remediation proposal was developed. This evaluation (summarized in Attachment B) consisted of sequentially "remediating" polygons until the Residential Performance Standards were achieved in the relevant depth intervals. This assumed that the excavated soils would be replaced with backfill and/or topsoil material that contains PCBs at an assumed concentration of 0.021 mg/kg (i.e., the average concentration of PCBs in sampled backfill sources, as indicated in Table 2 of GE's Proposed Backfill Data Set for CD Sites, dated March 11, 2003). The PCB evaluation results are summarized in the following subsections for each property.

Detailed Evaluation of Each Property

Evaluations for Parcel I6-3-13

As shown on Figures 1-1 through 1-7 (Attachment A), Parcel I6-3-13 is approximately 1.75 acres and is bordered by non-residential floodplain to the east and west, the Housatonic River to the south, and another residential property to the north. Near the midsection of the property, swamp land resides from the former channel of the Housatonic River. Because this area exceeds 0.25 acre in size, the NTE criterion of 10 mg/kg for the top foot of soil in unpaved areas applies. In accordance with the 2021 EPA-approved Residential Floodplain PDI Summary Report, the soils at this residential property were evaluated to a depth of six feet. PCB analytical results used in the evaluation of Parcel I6-3-13 are summarized in Attachment C in Tables 1a through 1d.

As described in the *Final Completion Report for Removal Action for Housatonic River Floodplain – Current Residential Properties Downstream of the Confluence* (Downstream Residential Removal Action Completion Report; Anchor QEA 2019), the northern portion of this parcel was evaluated and remediated during the A/P Lawn Remedial Action. The ROR evaluation summarized herein was performed across the entire parcel.

PCB Evaluation – Existing Conditions

The first step in the evaluation process for Parcel I6-3-13 involved the identification of all soil sample locations in the top foot of unpaved portions with PCB concentrations greater than 10 mg/kg (i.e., the NTE level). This step resulted in the identification of 19 such soil sample locations (i.e., I6-3-13_AH/AI-3, I6-3-13_AI-7, I6-3-13_AJ/AK-4, I6-3-13_AK-2, FL000910, I6-3-13_AI-5, I6-3-13_AE-6, I6-3-13_AD-6, I6-3-13_AE-7, I6-3-13_AG-8, FL000911, FL0001466, I6-3-13_AG-6, I6-3-13_N-8, I6-3-13_N-9, I6-3-13_AF-9, I6-3-13_N-10, FL000909, and FL001831). As a result, soil removal is necessary to address the PCB concentrations at these locations.

The next step in the PCB evaluation process for Parcel I6-3-13 involved calculating average PCB concentrations for the relevant depth increments. As indicated above, an X value of six feet was used for this evaluation area. The table below presents the existing average PCB concentrations calculated for this area, with references to the corresponding figures and tables in Attachments A and B, and the applicable Performance Standard.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Existing Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	1-1, 1-2	E-1B-1	11.71	2
1–X	1-3 through 1-7	E-1B-2	15.85	2

The existing average PCB concentration in the 0- to 1-foot and the 1- to X-foot depth increments exceeds the applicable Performance Standard. As a result, remediation is required to achieve that standard.

Proposed Remediation

Based on the evaluations presented above, GE is proposing to conduct soil removal/replacement activities at Parcel I6-3-13 as shown on Figures 1-1 through 1-7 in Attachment A. This remediation will involve excavation of approximately 3,080 cubic yards (cy) of soil from depths ranging from one to six feet below existing grade.

PCB Evaluation – Post-Remediation Conditions

The proposed remediation will result in the removal of surface soil with exceedances of the NTE level and in achievement of the Performance Standards for the relevant depth increments, as summarized in the following table.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Post-Remediation Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	1-1, 1-2	E-1B-3	1.15	2
1–X	1-3 through 1-7	E-1B-4	1.96	2

Evaluations for Parcel J6-2-3

As shown in Attachment A on Figures 2-1 through 2-4, Parcel J6-2-3 is approximately 1.1 acres and is bordered by residential properties to the north and west, the riverbank of the Housatonic River to the southwest, and Holmes Road to the east. Because this area exceeds 0.25 acre in size, the NTE criterion of 10 mg/kg for the top foot of soil in unpaved areas applies. Note that the 2021 EPA-approved Residential Floodplain PDI Summary Report indicated an X-depth for this parcel of two feet; however, upon further review of the dataset used to evaluate this parcel, the X-depth has been extended to three feet. The extension was driven by a PCB detection of 5.3 mg/kg at sample location J6-2-2_J/K-23/34 within the 2- to 3-foot depth interval. PCB analytical results used in the evaluation of Parcel J6-2-3 are summarized in Attachment C in Tables 10a through 10c.

As described in the 2019 Downstream Residential Removal Action Completion Report, the western portion of this parcel, adjacent to the Housatonic River, was evaluated and remediated during the A/P Lawn Remedial Action. The ROR evaluation summarized herein was performed across the entire residential parcel.

PCB Evaluation – Existing Conditions

The first step in the evaluation process for Parcel J6-2-3 involved the identification of all soil sample locations in the top foot of unpaved portions with PCB concentrations greater than 10 mg/kg. This

step resulted in the identification of seven such soil sample locations (i.e., J6-2-3_L/M-5, J6-2-3_L-4, J6-2-3_L/M-6, BS000100, J6-2-3_M/N-7, J6-2-2_J/K-23/24, and J6-2-3_K/L-3). As a result, soil removal is necessary to address the PCB concentrations at those locations.

The next step in the PCB evaluation process for Parcel J6-2-3 involved calculating average PCB concentrations for the relevant depth increments. As indicated above, an X value of three feet was used for this evaluation area. The following table presents the existing average PCB concentrations calculated for this area, with references to the corresponding figures and tables in Attachments A and B and the applicable Performance Standard.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Existing Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	2-1, 2-2	E-1B-5	0.72	2
1–X	2-3, 2-4	E-1B-6	1.31	2

As shown in the preceding table, the existing average PCB concentrations in the 0- to 1-foot and the 1- to X-foot depth increments do not exceed the applicable Performance Standard. As a result, remediation is only required to achieve the NTE Performance Standard.

Proposed Remediation

Based on the evaluations presented above, GE is proposing to conduct soil removal/replacement activities at Parcel J6-2-3 as shown in Attachment A on Figures 2-1 and 2-2. This remediation will involve excavation of approximately 54 cy of soil from the top foot of this residential property.

PCB Evaluation – Post-Remediation Conditions

The proposed remediation will result in the removal of surface soil with exceedances of the NTE level. The following table summarizes the post-remediation average PCB concentration for the 0- to 1-foot depth interval.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Post-Remediation Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	2-1, 2-2	E-1B-7	0.21	2

Evaluations for Parcel J6-3-1

As shown in Attachment A on Figures 3-1 through 3-11, Parcel J6-3-1 is approximately four acres and is generally bordered by Pomeroy Avenue and Holmes Road to the west and south, non-residential floodplain to the east, and the Housatonic River to the north. Because this area exceeds 0.25 acre in size, the NTE criterion of 10 mg/kg for the top foot of soil in unpaved areas applies. In accordance with the *Revised Removal Design/Removal Action Work Plan for Floodplain Residential Properties Downstream of the Confluence* (Anchor QEA 2016), the soils at this residential property

were evaluated to a depth of 10 feet. PCB analytical results used in the evaluation of Parcel J6-3-1 are summarized in Attachment C in Tables 11a through 11d. Sample data remained the same from the 2016 evaluations, except for one additional location that was sampled in 2022 as part of the non-residential floodplain PDI (i.e., location EA08-E-2 with samples collected from 0- to 0.5- and 0.5- to 1-foot, as summarized in Appendix B in Table E-1B-8).

PCB Evaluation – Existing Conditions

The first step in the evaluation process for Parcel J6-3-1 involved the identification of all soil sample locations in the top foot of unpaved portions with PCB concentrations greater than 10 mg/kg. This step resulted in the identification of eight such soil sample locations (i.e., J6-3-1-SB-13, J6-3-1-SB-14, F0489607, F0489606, BS000147, J6-3-1-SB-15, J6-3-1_B-9, and FL001281). As a result, soil removal is necessary to address the PCB concentrations at those locations.

The next step in the PCB evaluation process for Parcel J6-3-1 involved calculating average PCB concentrations for the relevant depth increments. As indicated above, an X value of 10 feet was used for this evaluation area. The following table presents the existing average PCB concentrations calculated for this area, with references to the corresponding figures and tables in Attachments A and B and the applicable Performance Standard.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Existing Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	3-1, 3-2	E-1B-8	1.81	2
1–X	3-3 through 3-11	E-1B-9	2.54	2

As shown in the preceding table, the existing average PCB concentration in the 1- to X-foot depth increments exceeds the PCB Performance Standards. As a result, remediation is required to achieve that standard.

Proposed Remediation

Based on the evaluations presented above, GE is proposing to conduct soil removal/replacement activities at Parcel J6-3-1. This remediation will involve excavation of approximately 550 cy of soil from depths ranging from one to six feet below existing grade, as shown in Attachment A on Figures 3-1 through 3-7.

PCB Evaluation – Post-Remediation Conditions

The proposed remediation will result in the removal of surface soil with exceedances of the NTE level and in achievement of the Performance Standard for the relevant depth increments, as shown in the following table.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Post-Remediation Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	3-1, 3-2	E-1B-10	0.82	2
1–X	3-3 through 3-7	E-1B-11	1.98	2

Evaluations for Parcel J3-1-13

As shown in Attachment A on Figures 4-1 through 4-2, Parcel J3-1-13 is approximately 1.75 acres and is bordered by residential properties to the north, south and west, and non-residential floodplain to the east. The property also overlaps with backwater BW5A-3 to the east.[2] Because this area exceeds 0.25 acre in size, the NTE criterion of 10 mg/kg for the top foot of soil in unpaved areas applies. In accordance with the 2021 EPA-approved residential PDI, the soils at this residential property were evaluated to a depth of one foot. PCB analytical results used in the evaluation of Parcel J3-1-13 are summarized in Attachment C, Tables 4a and 4b.

PCB Evaluation – Existing Conditions

The first step in the evaluation process for Parcel J3-1-13 involved the identification of all soil sample locations in the top foot of unpaved portions with PCB concentrations greater than 10 mg/kg. This step resulted in the identification of one such soil sample location (FL001686). As a result, soil removal is necessary to address the PCB concentrations at this location.

The next step in the PCB evaluation process for Parcel J3-1-13 involved calculating average PCB concentrations for the relevant depth increments. The following table presents the existing average PCB concentration calculated for this area, with a reference to the corresponding figures and table in Attachments A and B and the applicable PCB Performance Standard.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Existing Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	4-1, 4-2	E-1B-12	0.4	2

As shown in the preceding table, the existing average PCB concentration in the 0- to 1-foot depth does not exceed the applicable Performance Standard. As a result, remediation is not required to achieve the NTE Performance Standard.

[2] The residential removal area shown on Figures 4-1 and 4-2 (Attachment A) shows the remediation needed to achieve the Residential Performance Standards on this property. However, this removal area has subsequently been reduced due to overlap with backwater BW5A-3 that is already being remediated to achieve an average PCB concentration of 1 mg/kg (i.e., a value lower than the Residential Performance Standard). See Section 4.4.1 of the *Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A* (Conceptual RD/RA Work Plan).

Proposed Remediation

Based on the evaluations presented above, GE is proposing to conduct soil removal/replacement activities at Parcel J3-1-13, as shown on Figures 4-1 and 4-2. This remediation will involve excavation of approximately 16 cy of soil within the top foot.

PCB Evaluation – Post-Remediation Conditions

The proposed remediation will result in the removal of surface soil exceeding the NTE level. The following table summarizes the post-remediation average PCB concentration for the 0- to 1- foot depth interval.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Post-Remediation Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	4-1, 4-2	E-1B-13	0.17	2

Evaluations for Parcel J3-1-12

As shown in Attachment A on Figures 4-1 through 4-2, Parcel J3-1-12 is approximately 0.65 acre and is bordered by residential property to the north and south, Palomino Drive to the west, and non-residential floodplain to the east. The property also overlaps with backwater BW5A-3 to the east.[3] Because this area exceeds 0.25 acre in size, the NTE criterion of 10 mg/kg for the top foot of soil in unpaved areas applies. In accordance with the 2021 Residential Floodplain PDI Summary Report, the soils at this residential property were evaluated to a depth of 1 foot. PCB analytical results used in the evaluation of Parcel J3-1-12 are summarized in Attachment C in Tables 3a and 3b.

PCB Evaluation – Existing Conditions

The first step in the evaluation process for Parcel J3-1-12 involved the identification of all soil sample locations in the top foot of unpaved portions with PCB concentrations greater than 10 mg/kg. This step resulted in the identification of three such soil sample locations (BS000090, FL001684, and BS000089). As a result, soil removal is necessary to address the PCB concentrations at those locations.

The next step in the PCB evaluation process for Parcel J3-1-12 involved calculating average PCB concentrations for the relevant depth increments. The following table presents the existing average PCB concentration calculated for this area, with a reference to the corresponding figures and table in Attachments A and B and the applicable PCB Performance Standard.

[3] As stated above, the removal area shown on Figures 4-1 through 4-2 (Attachment A) does not reflect the backwater overlap.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Existing Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0 – 1	4-1, 4-2	E-1B-14	1.12	2

As shown in the preceding table, the existing average PCB concentration in the 0- to 1-foot depth does not exceed the PCB Performance Standards. As a result, remediation is only required to achieve the NTE Performance Standard.

Proposed Remediation

Based on the evaluations presented above, GE is proposing to conduct soil removal/replacement activities at Parcel J3-1-12 as shown in Attachment A on Figures 4-1 and 4-2. This remediation will involve excavation of approximately 51 cy of soil to one foot below existing grade. Given that this parcel overlaps with the backwater area, approximately six cy of removal will be attributed to residential remediation, and the remaining 45 cy will be attributed to the backwater removal because the backwater area remediation will also include placement of an engineered cap.

PCB Evaluation – Post-Remediation Conditions

The proposed remediation will result in the removal of surface soil with exceedances of the NTE level. The following table summarizes the post-remediation average PCB concentration for the 0- to 1-foot depth interval.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Post-Remediation Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	4-1, 4-2	E-1B-15	0.24	2

Evaluations for Parcel J3-1-11

As shown in Attachment A on Figures 4-1 through 4-2, Parcel J3-1-11 is approximately 0.75 acre and is bordered by residential properties to the north and south, Palomino Drive to the west, and non-residential floodplain to the east. Because this area exceeds 0.25 acre in size, the NTE criterion of 10 mg/kg for the top foot of soil in unpaved areas applies. In accordance with the 2021 Residential Floodplain PDI Summary Report, the soils at this residential property were evaluated to a depth of one foot. PCB analytical results used in the evaluation of Parcel J3-1-11 are summarized in Attachment C in Tables 2a and 2b.

PCB Evaluation – Existing Conditions

The first step in the evaluation process for Parcel J3-1-11 involved the identification of all soil sample locations in the top foot of unpaved portions with PCB concentrations greater than 10 mg/kg. This step resulted in the identification of two such soil sample locations (FL001682 and BS000089). As a result, soil removal is necessary to address the PCB concentrations at those locations.

The next step in the PCB evaluation process for Parcel J3-1-11 involved calculating average PCB concentrations for the relevant depth increments. The following table presents the existing average PCB concentration calculated for this area, with a reference to the corresponding figures and table in Attachments A and B and the applicable PCB Performance Standard.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Existing Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	4-1, 4-2	E-1B-16	0.99	2

As shown in the preceding table, the existing average PCB concentration in the 0- to 1-foot depth does not exceed the PCB Performance Standards. As a result, remediation is only required to achieve the NTE Performance Standard.

Proposed Remediation

Based on the evaluations presented above, GE is proposing to conduct soil removal/replacement activities at Parcel J3-1-11, as shown in Attachment A on Figures 4-1 and 4-2. This remediation will involve excavation of approximately 13 cy of soil to one foot below existing grade.

PCB Evaluation – Post-Remediation Conditions

The proposed remediation will result in the removal of surface soil with exceedances of the NTE level. The following table summarizes the post-remediation average PCB concentration for the 0- to 1-foot depth interval.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Post-Remediation Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	4-1, 4-2	E-1B-17	0.77	2

Evaluations for Parcel J3-2-2

As shown in Attachment A on Figures 5-1 to 5-3, Parcel J3-2-2 is approximately 0.70 acre and is bordered by Joseph Drive to the north, residential properties to the east, the Housatonic River to the south, and non-residential floodplain to the west. Because this area exceeds 0.25 acre in size, the NTE criterion of 10 mg/kg for the top foot of soil in unpaved areas applies. In accordance with the 2021 Residential Floodplain PDI Summary Report, the soils at this residential property were evaluated to a depth of two feet. PCB analytical results used in the evaluation of Parcel J3-2-2 are summarized in Attachment C in Tables 5a through 5d.

PCB Evaluation – Existing Conditions

The first step in the evaluation process for Parcel J3-2-2 involved the identification of all soil sample locations in the top foot of unpaved portions with PCB concentrations greater than 10 mg/kg. This step resulted in the identification of seven such soil sample locations (i.e., J3-2-2_J/K-2/3, FL001323,

FL001849, FL000914, J3-2-2-SB-1, FL001324, and BS000059). As a result, soil removal is necessary to address the PCB concentrations at those locations.

The next step in the PCB evaluation process for Parcel J3-2-2 involved calculating average PCB concentrations for the relevant depth increments. As indicated above, an X value of two feet was used for this evaluation area. The following table presents the existing average PCB concentrations calculated for this area, with a reference to the corresponding figures and tables in Attachments A and B and the applicable PCB Performance Standard.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Existing Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	5-1 to 5-2	E-1B-18	5.71	2
1–X	5-3	E-1B-19	2.52	2

As shown in the preceding table, the existing average PCB concentrations in the 0- to 1-foot and the 1- to X-foot depth increments exceed the PCB Performance Standards. As a result, remediation is required to achieve that standard.

Proposed Remediation

Based on the evaluations presented above, GE is proposing to conduct soil removal/replacement activities at Parcel J3-2-2, as shown in Attachment A on Figures 5-1 through 5-3. This remediation will involve excavation of approximately 240 cy of soil from depths ranging from one to two feet below existing grade.

PCB Evaluation – Post-Remediation Conditions

The proposed remediation will result in the removal of surface soil with exceedances of the NTE level and in achievement of the applicable Performance Standard for the relevant depth increments, as shown in the following table.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Post-Remediation Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	5-1, 5-2	E-1B-20	0.32	2
1–X	5-3	E-1B-21	0.52	2

Evaluations for Parcel J3-2-3

As shown in Attachment A on Figures 5-1 through 5-4, Parcel J3-2-3 is approximately 0.80 acre and is bordered by Joseph Drive to the north, residential properties to the east and west, and the Housatonic River to the south. Because this area exceeds 0.25 acre in size, the NTE criterion of 10 mg/kg for the top foot of soil in unpaved areas applies. In accordance with the 2021 Residential Floodplain PDI Summary Report, the soils at this residential property were evaluated to a depth of

three feet. PCB analytical results used in the evaluation of Parcel J3-2-3 are summarized in Attachment C in Tables 6a through 6c.

PCB Evaluation – Existing Conditions

The first step in the evaluation process for Parcel J3-2-3 involved the identification of all soil sample locations in the top foot of unpaved portions with PCB concentrations greater than 10 mg/kg. This step resulted in the identification of 14 such soil sample locations (J3-2-2_J/K-2/3, FL000914, FL001323, BS000059, BS000058, J3-2-3-SB-3, J3-2-3_H/I-3/4, FL000700, J3-2-2-SB-1, J3-2-3-SB-1, J3-2-3-SB-4, FL001324, J3-2-3-SS-3, and FL000699). As a result, soil removal is necessary to address the PCB concentrations at those locations.

The next step in the PCB evaluation process for Parcel J3-2-3 involved calculating average PCB concentrations for the relevant depth increments. As indicated above, an X value of three feet was used for this evaluation area. The following table presents the existing average PCB concentrations calculated for this area, with a reference to the corresponding figures and tables in Attachments A and B and the applicable PCB Performance Standard.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Existing Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	5-1, 5-2	E-1B-22	2.86	2
1–X	5-3, 5-4	E-1B-23	0.56	2

As shown in the preceding table, the existing average PCB concentrations in the 0- to 1- increment exceed the PCB Performance Standards. As a result, remediation is required to achieve that standard.

Proposed Remediation

Based on the evaluations presented above, GE is proposing to conduct soil removal/replacement activities at Parcel J3-2-3, as shown in Attachment A on Figures 5-1 and 5-2. This remediation will involve excavation of approximately 240 cy of soil to one foot below existing grade.

PCB Evaluation – Post-Remediation Conditions

The proposed remediation will result in the removal of surface soil with exceedances of the NTE level and in achievement of the PCB Performance Standard for the relevant depth increments, as shown in the following table.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Post-Remediation Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	5-1, 5-2	E-1B-24	0.44	2

Evaluations for Parcel J3-2-4

As shown in Attachment A on Figures 5-1 through 5-4, Parcel J3-2-4 is approximately 0.5 acre and is bordered by Joseph Drive to the north, residential properties to the east and west, and the Housatonic River to the south. Because this area exceeds 0.25 acre in size, the NTE criterion of 10 mg/kg for the top foot of soil in unpaved areas applies. In accordance with the 2021 Residential Floodplain PDI Summary Report, the soils at this residential property were evaluated to a depth of three feet. PCB analytical results used in the evaluation of Parcel J3-2-4 are summarized in Attachment C Tables 7a through 7c.

PCB Evaluation – Existing Conditions

The first step in the evaluation process for Parcel J3-2-4 involved the identification of all soil sample locations in the top foot of unpaved portions with PCB concentrations greater than 10 mg/kg. This step resulted in the identification of eight such soil sample locations (BS000060, J3-2-4_F-5/6, J3-2-4_F/G-5/6, BS000057, FL000701, J3-2-4_E/F-6/7, J3-2-3-SB-4, and FL000699). As a result, soil removal is necessary to address the PCB concentrations at those locations.

The next step in the PCB evaluation process for Parcel J3-2-4 involved calculating average PCB concentrations for the relevant depth increments. As indicated above, an X value of three feet was used for this evaluation area. The following table presents the existing average PCB concentrations calculated for this area, with a reference to the corresponding figures and tables in Attachments A and B and the applicable PCB Performance Standard.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Existing Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	5-1, 5-2	E-1B-25	1.29	2
1–X	5-3, 5-4	E-1B-26	1.38	2

As shown in the preceding table, the existing average PCB concentrations in the 0- to 1-foot and the 1- to X-foot depth increments do not exceed the PCB Performance Standards. As a result, remediation is only required to achieve the NTE Performance Standard.

Proposed Remediation

Based on the evaluations presented above, GE is proposing to conduct soil removal/replacement activities at Parcel J3-2-4, as shown in Attachment A on Figures 5-1 and 5-2. This remediation will involve excavation of approximately 67 cy of soil to one foot below existing grade.

PCB Evaluation – Post-Remediation Conditions

The proposed remediation will result in the removal of surface soil with exceedances of the NTE level and in achievement of the PCB Performance Standard for the relevant depth increments, as shown in the following table.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Post-Remediation Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	5-1, 5-2	E-1B-27	0.12	2

Evaluations for Parcel J3-2-5

As shown in Attachment A on Figures 5-1 and 5-2, Parcel J3-2-5 is approximately 0.40 acre and is bordered by Joseph Drive to the north, residential properties to the east and west, and the Housatonic River to the south. Because this area exceeds 0.25 acre in size, the NTE criterion of 10 mg/kg for the top foot of soil in unpaved areas applies. In accordance with the 2021 Residential Floodplain PDI Summary Report, the soils at this residential property were evaluated to a depth of one foot. PCB analytical results used in the evaluation of Parcel J3-2-5 are summarized in Attachment C in Tables 8a and 8b.

PCB Evaluation – Existing Conditions

The first step in the evaluation process for Parcel J3-2-5 involved the identification of all soil sample locations in the top foot of unpaved portions with PCB concentrations greater than 10 mg/kg. This step resulted in the identification of three such soil sample locations (i.e., BS000060, FL000702, and BS000061). As a result, soil removal activities are necessary to address PCB concentrations observed at those locations.

The next step in the PCB evaluation process for Parcel J3-2-5 involved calculating average PCB concentrations for the relevant depth increments. The following table presents the existing average PCB concentration calculated for this area, with a reference to the corresponding figures and table in Attachments A and B and the applicable PCB Performance Standard.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Existing Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	5-1, 5-2	E-1B-28	1.1	2

As shown in the preceding table, the existing average PCB concentration in the 0- to 1-foot depth does not exceed the PCB Performance Standards. As a result, remediation is only required to achieve the NTE Performance Standard.

Proposed Remediation

Based on the evaluations presented above, GE is proposing to conduct soil removal/replacement activities at Parcel J3-2-5, as shown in Attachment A on Figures 5-1 and 5-2. This remediation will involve excavation of approximately 32 cy of soil to one foot below existing grade.

PCB Evaluation – Post-Remediation Conditions

The proposed remediation will result in the removal of surface soil with exceedances of the NTE level. The following table summarizes the post-remediation average PCB concentration for the 0- to 1-foot depth interval.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Post-Remediation Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	5-1, 5-2	E-1B-29	0.13	2

Evaluations for Parcel J3-2-6

As shown in Attachment A on Figures 5-1 through 5-2, Parcel J3-2-6 is approximately 0.5 acre and is bordered by Joseph Drive to the north, residential property to the west, a residential property and other non-residential floodplain area to the east, and the Housatonic River to the south. Because this area exceeds 0.25 acre in size, the NTE criterion of 10 mg/kg for the top foot of soil in unpaved areas applies. In accordance with the 2021 Residential Floodplain PDI Summary Report, the soils at this residential property were evaluated to a depth of one foot. PCB analytical results used in the evaluation of Parcel J3-2-6 are summarized in Attachment C in Tables 9a and 9b.

PCB Evaluation – Existing Conditions

The first step in the evaluation process for Parcel J3-2-6 involved the identification of all soil sample locations in the top foot of unpaved portions with PCB concentrations greater than 10 mg/kg. This step resulted in the identification of one such soil sample location (i.e., BS000062). As a result, soil removal is necessary to address the PCB concentrations at this location.

The next step in the PCB evaluation process for Parcel J3-2-6 involved calculating average PCB concentrations for the relevant depth increments. The following table presents the existing average PCB concentration calculated for this area, with a reference to the corresponding figures and table in Attachments A and B and the applicable PCB Performance Standard.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Existing Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	5-1, 5-2	E-1B-30	0.20	2

As shown in the preceding table, the existing average PCB concentration in the 0- to 1-foot depth does not exceed the PCB Performance Standards. As a result, remediation is only required to achieve the NTE Performance Standard.

Proposed Remediation

Based on the evaluations presented above, GE is proposing to conduct soil removal/replacement activities at Parcel J3-2-6, as shown in Attachment A on Figures 5-1 and 5-2. This remediation will involve excavation of approximately 0.12 cy of soil to one foot below existing grade.

PCB Evaluation – Post-Remediation Conditions

The proposed remediation will result in the removal of the surface soil with exceedances of the NTE level. The following table summarizes the post-remediation average PCB concentration for the 0- to 1-foot depth interval.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Post-Remediation Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	5-1, 5-2	E-1B-31	0.19	2

Evaluations for Parcel K3-1-2

As shown in Attachment A on Figures 6-1 through 6-3, Parcel K3-1-2 is approximately 0.7 acre and is bordered by non-residential floodplain and a residential property to the north, East New Lenox Road to the east, non-residential floodplain to the south, and the Housatonic River to the west. Because this area exceeds 0.25 acre in size, the NTE criterion of 10 mg/kg for the top foot of soil in unpaved areas applies. In accordance with the 2021 Residential Floodplain PDI Summary Report, the soils at this residential property were evaluated to a depth of two feet. PCB analytical results used in the evaluation of Parcel K3-1-2 are summarized in Attachment C in Tables 13a and 13b.

PCB Evaluation – Existing Conditions

The first step in the evaluation process for Parcel K3-1-2 involved the identification of all soil sample locations in the top foot of unpaved portions with PCB concentrations greater than 10 mg/kg. This step resulted in the identification of five such soil sample locations (i.e., FL001301, K3-1-2_D/E-4, BS000065, FL001300, and K3-1-2_C-3). As a result, soil removal is necessary to address the PCB concentrations at those locations.

The next step in the PCB evaluation process for Parcel K3-1-2 involved calculating average PCB concentrations for the relevant depth increments. As indicated above, an X value of two feet was used for this evaluation area. The following table presents the existing average PCB concentrations calculated for this area, with a reference to the corresponding figures and tables in Attachments A and B and the applicable PCB Performance Standard.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Existing Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	6-1, 6-2	E-1B-32	2.06	2
1–X	6-3	E-1B-33	0.94	2

As shown in the preceding table, the existing average PCB concentration in the 0- to 1-foot increment exceeds the PCB Performance Standards. As a result, remediation is required to achieve that standard.

Proposed Remediation

Based on the evaluations presented above, GE is proposing to conduct soil removal/replacement activities at Parcel K3-1-2, as shown in Attachment A on Figures 6-1 and 6-2. This remediation will involve excavation of approximately 63 cy of soil to one foot below existing grade.

PCB Evaluation – Post-Remediation Conditions

The proposed remediation will result in the removal of surface soil with exceedances of the NTE level and in achievement of the PCB Performance Standard for the relevant depth increments, as shown in the following table.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Post-Remediation Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	6-1, 6-2	E-1B-34	0.73	2

Evaluations for Parcel K2-1-10

As shown in Attachment A on Figures 7-1 through 7-5, Parcel K2-1-10 is approximately 1.6 acres and is bordered by non-residential floodplain to the north, New Lenox Road to the east, a residential property and non-residential floodplain to the south, and the Housatonic River to the west. Because this area exceeds 0.25 acre in size, the NTE criterion of 10 mg/kg for the top foot of soil in unpaved areas applies. In accordance with the 2021 Residential Floodplain PDI Summary Report, the soils at this residential property were evaluated to a depth of four feet. PCB analytical results used in the evaluation of Parcel K2-1-10 are summarized in Attachment C in Tables 12a and 12b.

PCB Evaluation – Existing Conditions

The first step in the evaluation process for Parcel K2-1-10 involved the identification of all soil sample locations in the top foot of unpaved portions with PCB concentrations greater than 10 mg/kg. This step resulted in the identification of six such soil sample locations (i.e., K2-1-10_E-2, K2-1-10_D-2/3, FL0001569, FL001859, K2-1-10_C-2/3, and K2-1-10_B-2/3). As a result, soil removal is necessary to address the PCB concentrations at those locations.

The next step in the PCB evaluation process for Parcel K2-1-10 involved calculating average PCB concentrations for the relevant depth increments. As indicated above, an X value of four feet was used for this evaluation area. The following table presents the existing average PCB concentrations calculated for this area, with a reference to the corresponding figures and tables in Attachments A and B and the applicable PCB Performance Standard.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Existing Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	7-1, 7-2	E-1B-35	2.13	2
1–X	7-3 through 7-5	E-1B-36	1.15	2

As shown in the preceding table, the existing average PCB concentration in the 0- to 1-foot depth increment exceeds the PCB Performance Standards. As a result, remediation is required to achieve that standard.

Proposed Remediation

Based on the evaluations presented above, GE is proposing to conduct soil removal/replacement activities at Parcel K2-1-10, as shown in Attachment A on Figures 7-1 and 7-2. This remediation will involve excavation of approximately 140 cy of soil to one foot below existing grade.

PCB Evaluation – Post-Remediation Conditions

The proposed remediation will result in the removal of surface soil with exceedances of the NTE level and in achievement of the PCB Performance Standard for the relevant depth increments, as shown in the following table.

Depth Increment (feet bgs)	Attachment A Figure References	Attachment B Table Reference	Post-Remediation Average PCB Concentration (mg/kg)	Performance Standard (mg/kg)
0–1	7-1, 7-2	E-1B-37	0.22	2

Floodplain Disposal Evaluations

As described in Sections II.B.5 and II.B.6 of the Revised Final Permit, the ROR Remedial Action will use a hybrid disposal approach that includes a combination of disposal at an Upland Disposal Facility (UDF) and off-site disposal. Attachment E to the Revised Final Permit describes the criteria and methods for determining whether material excavated during the ROR Remedial Action may be disposed of in the UDF. In accordance with that document, floodplain soil to be disposed of in the UDF must have a volume-weighted average PCB concentration of less than 50 mg/kg for each EA. If the volume-weighted average PCB concentration in the soil to be removed from a given EA equals or exceeds 50 mg/kg, the soils with the highest PCB concentrations in the EA will be segregated for off-site disposal until the average concentration of the remainder of the soil to be removed in the EA decreases to less than 50 mg/kg for subsequent disposal at the UDF. Because the residential

properties generally overlap with non-residential EAs,[4] the entire volume within the boundary of an individual EA (both non-residential and residential soil) was combined to determine the disposal requirements. The disposal evaluation for each EA (including the associated residential parcels) is presented in Appendix F to the Conceptual RD/RA Work Plan (*PCB Evaluations for Floodplain Soil – Non-Residential Exposure Areas*).

References

Anchor QEA (Anchor QEA, LLC), 2016. *Revised Removal Design/Removal Action Work Plan for Floodplain Residential Properties Downstream of the Confluence*. Prepared for General Electric Company, Pittsfield, Massachusetts. September 2016.

Anchor QEA, 2019. *Final Completion Report for Removal Action for Housatonic River Floodplain – Current Residential Properties Downstream of the Confluence*. GE-Pittsfield/Housatonic River Site. Prepared for General Electric Company. February 2019.

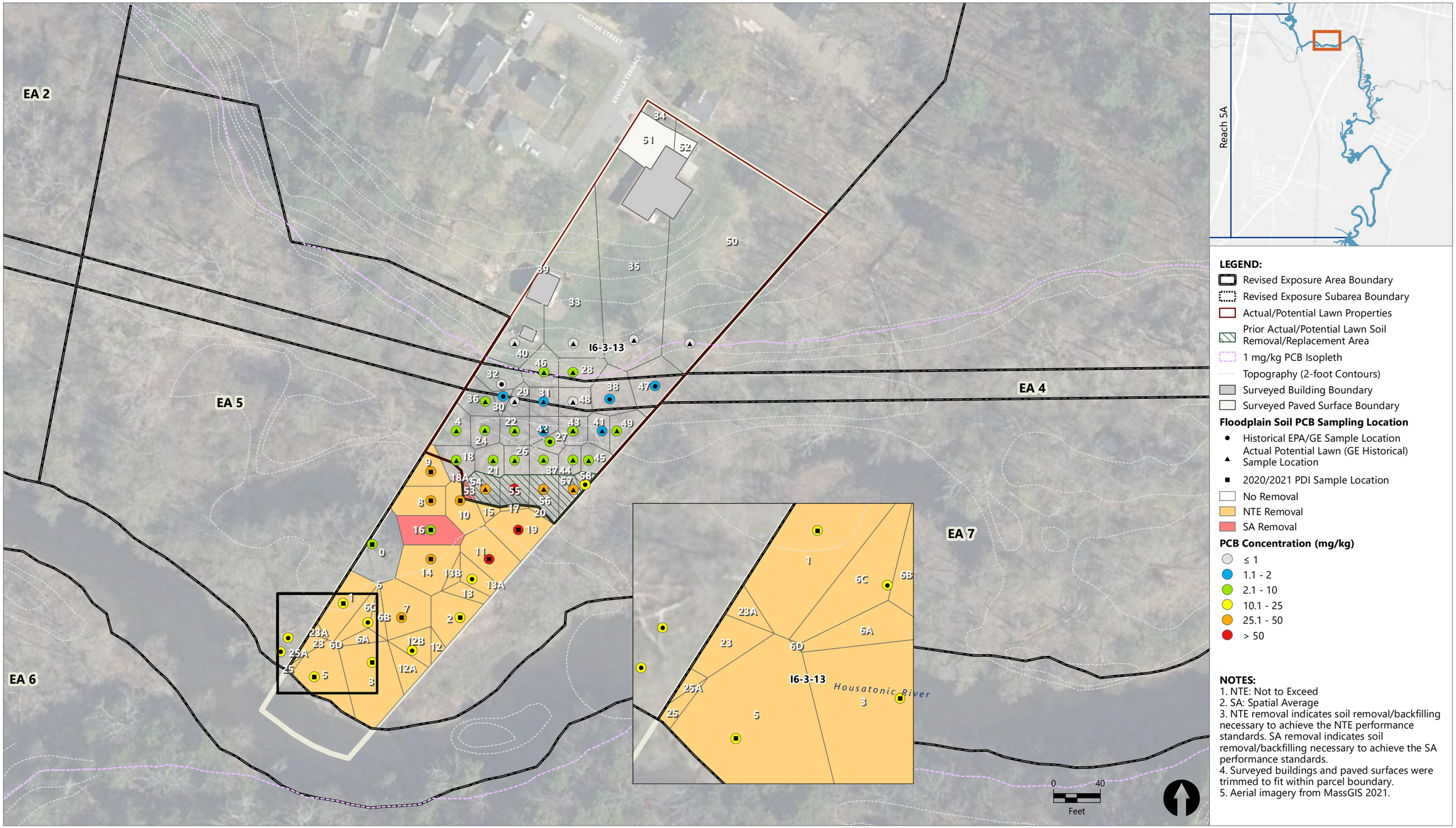
Anchor QEA, 2021. *Pre-Design Investigation Summary Report for Reach 5A Floodplain Residential Properties*. Prepared for General Electric Company, Pittsfield, Massachusetts. December 2021.

EPA (Environmental Protection Agency), 2019. Letter to: Kevin Mooney, General Electric Company. Regarding: EPA Approval of, and Certificate of Completion for, General Electric's submittal titled Final Completion Report for Removal Action for Housatonic River Floodplain--Current Residential Properties Downstream of the Confluence, GE-Pittsfield/Housatonic River Site, dated February 2019. GE-Pittsfield/Housatonic River Site. March 12, 2019.

EPA, 2020. *Revised Final Permit Modification to the 2016 Reissued RCRA Permit and Selection of CERCLA Remedial Action and Operation & Maintenance for Rest of River*. December 2020.

[4] Residential Parcel J6-3-1, which was evaluated previously under the A/P Lawn program, but for which remediation was deferred and incorporated into the Reach 5A remedial action program, is the only residential parcel that does not overlap with an EA; therefore, the disposal evaluation for Parcel J6-3-1 was conducted individually as described in Appendix F to the Conceptual RD/RA Work Plan.

Attachment A

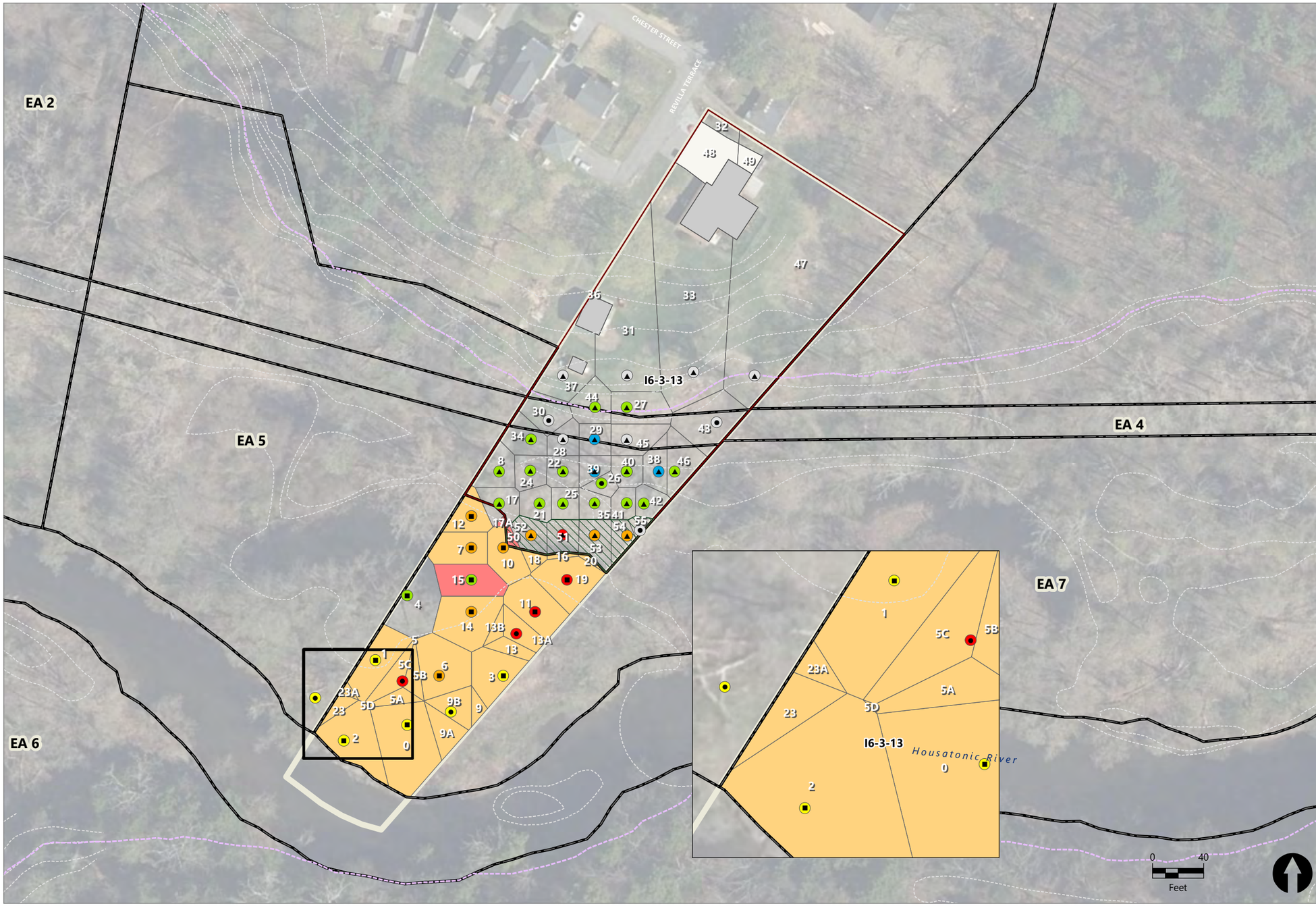


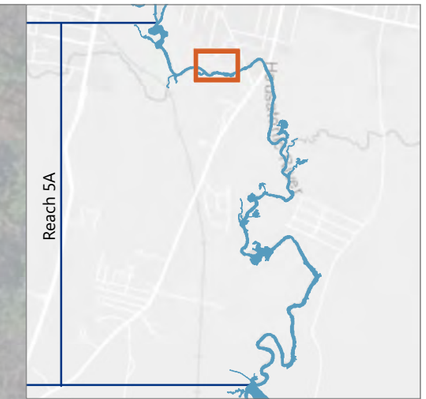
Publish Date: 2023/08/23, 6:15 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_5A-2_00to06in.mxd

ANCHOR QEA

Figure 1-1
Summary of Residential PCB Evaluations for Reach 5A: 0- to 0.5-foot Depth Interval

Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A





LEGEND:

- Revised Exposure Area Boundary
- Revised Exposure Subarea Boundary
- Actual/Potential Lawn Properties
- Prior Actual/Potential Lawn Soil Removal/Replacement Area
- 1 mg/kg PCB Isopleth
- Topography (2-foot Contours)
- Surveyed Building Boundary
- Surveyed Paved Surface Boundary

Floodplain Soil PCB Sampling Location

- Historical EPA/GE Sample Location
- Actual Potential Lawn (GE Historical) Sample Location
- 2020/2021 PDI Sample Location
- No Removal
- NTE Removal
- SA Removal

PCB Concentration (mg/kg)

- ≤ 1
- 1.1 - 2
- 2.1 - 10
- 10.1 - 25
- 25.1 - 50
- > 50

NOTES:

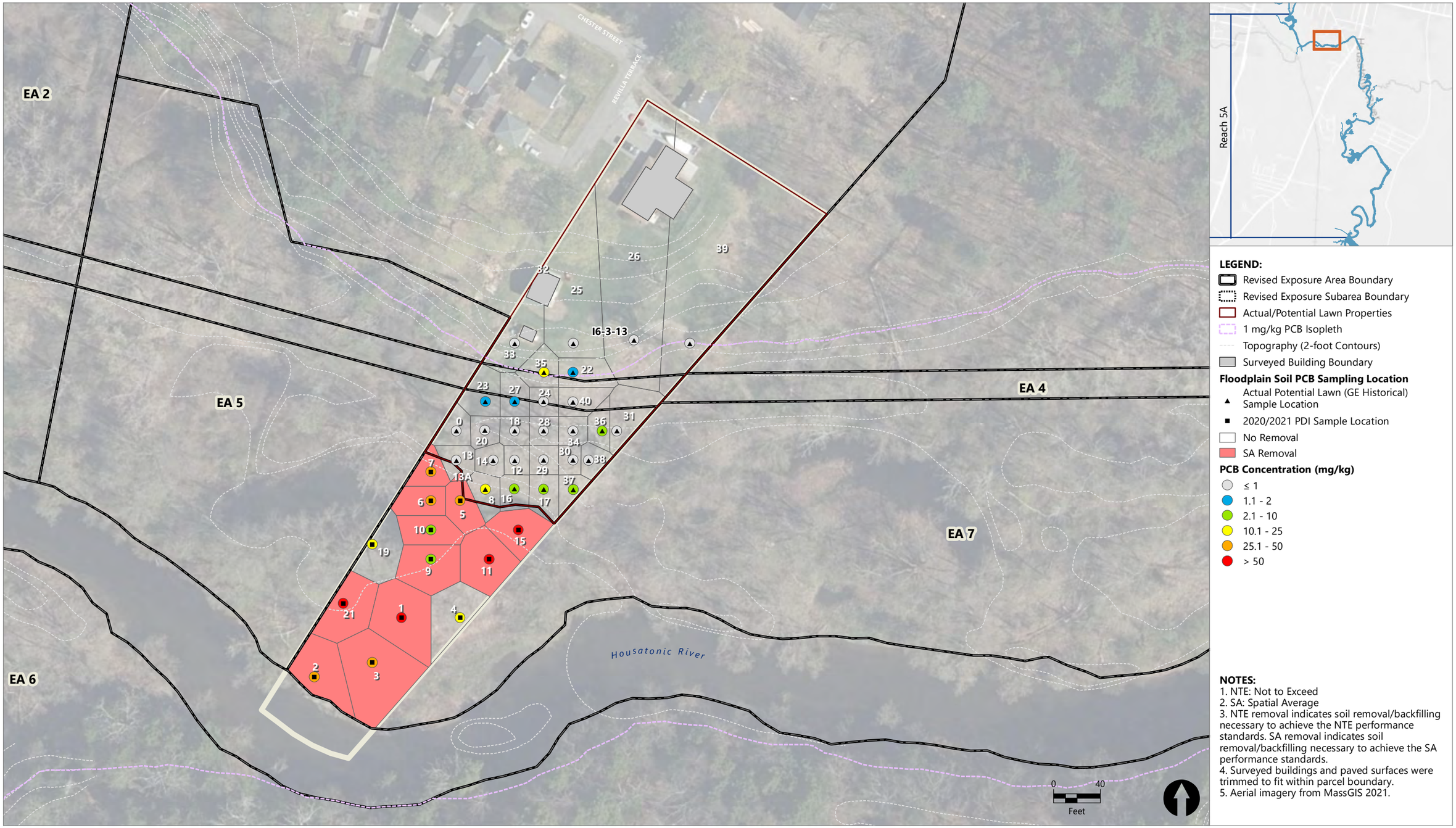
1. NTE: Not to Exceed
2. SA: Spatial Average
3. NTE removal indicates soil removal/backfilling necessary to achieve the NTE performance standards. SA removal indicates soil removal/backfilling necessary to achieve the SA performance standards.
4. Surveyed buildings and paved surfaces were trimmed to fit within parcel boundary.
5. Aerial imagery from MassGIS 2021.

Publish Date: 2023/08/23, 6:16 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_5A-2_06to12in.mxd

ANCHOR QEA

Figure 1-2
Summary of Residential PCB Evaluations for Reach 5A: 0.5- to 1-foot Depth Interval

Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A

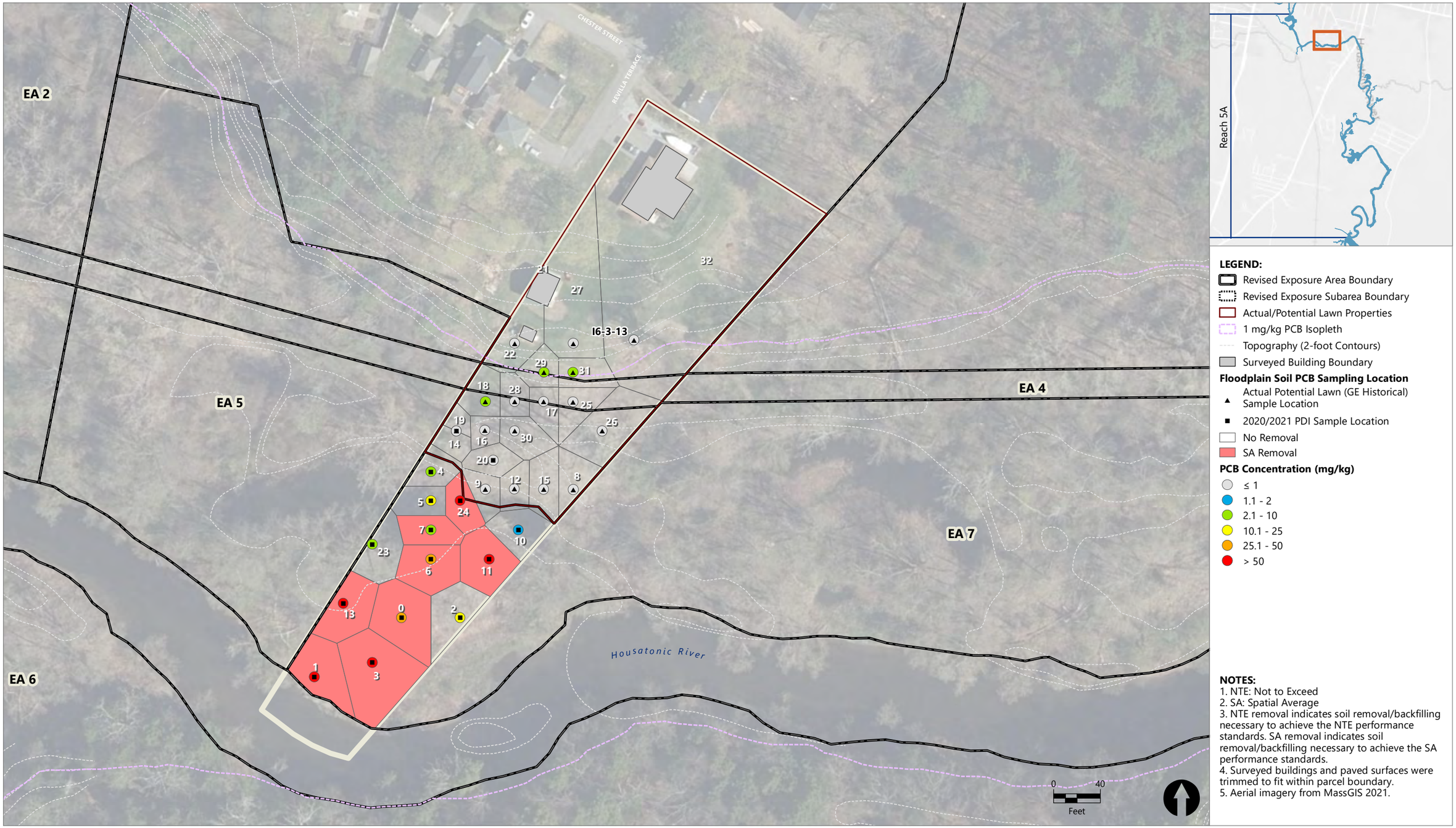


NOTES:
1. NTE: Not to Exceed
2. SA: Spatial Average
3. NTE removal indicates soil removal/backfilling necessary to achieve the NTE performance standards. SA removal indicates soil removal/backfilling necessary to achieve the SA performance standards.
4. Surveyed buildings and paved surfaces were trimmed to fit within parcel boundary.
5. Aerial imagery from MassGIS 2021.

Publish Date: 2023/08/23, 6:53 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_12to24in.mxd

ANCHOR QEA

Figure 1-3
Summary of Residential PCB Evaluations for Reach 5A: 1- to 2-foot Depth Interval
Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A

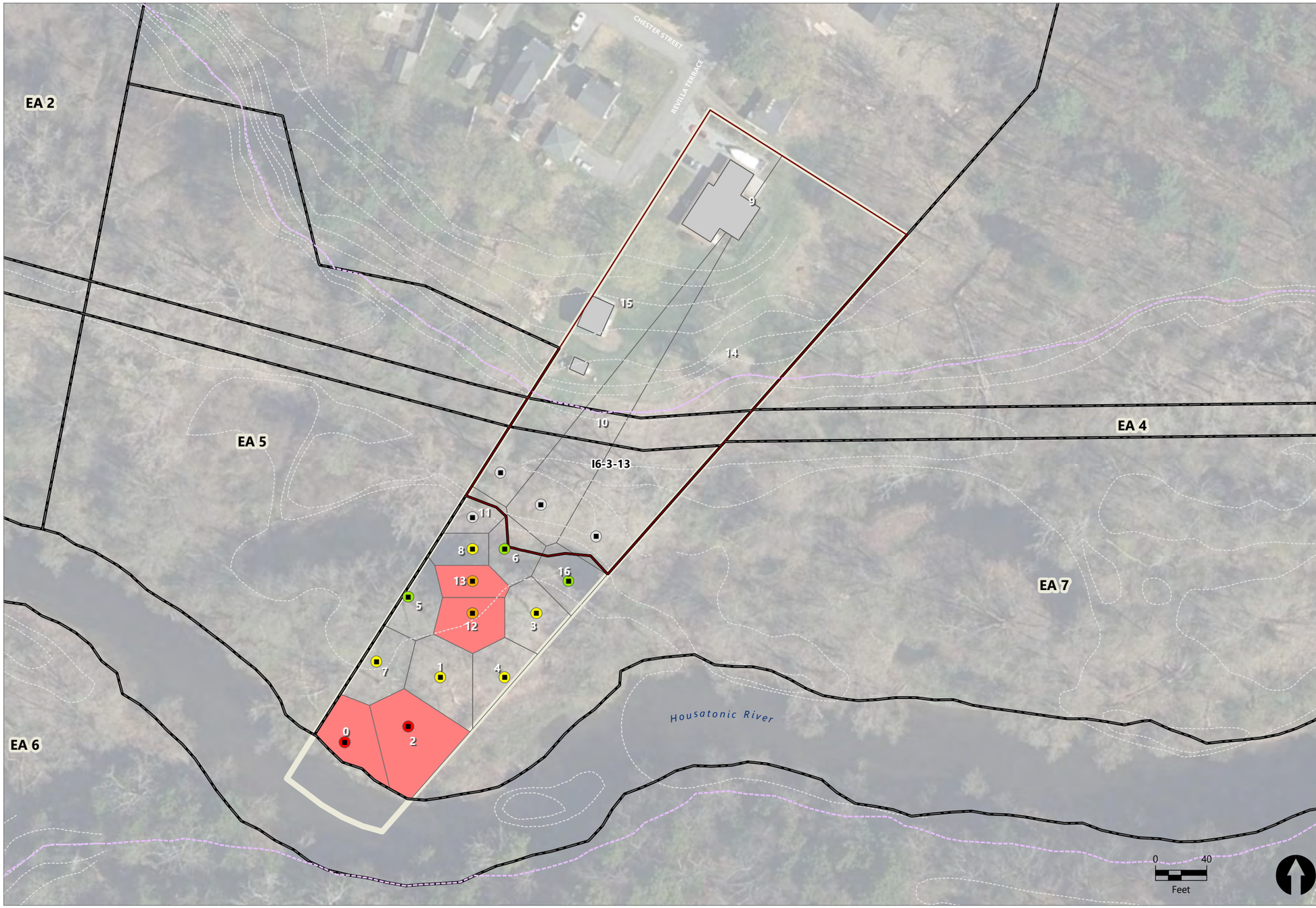


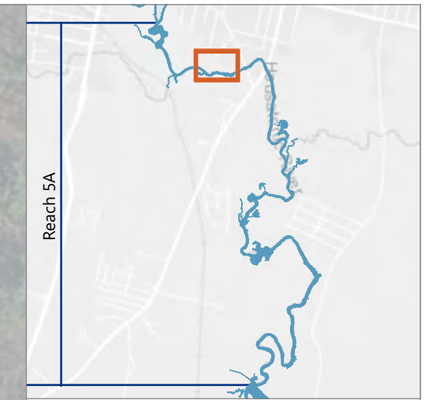
NOTES:
1. NTE: Not to Exceed
2. SA: Spatial Average
3. NTE removal indicates soil removal/backfilling necessary to achieve the NTE performance standards. SA removal indicates soil removal/backfilling necessary to achieve the SA performance standards.
4. Surveyed buildings and paved surfaces were trimmed to fit within parcel boundary.
5. Aerial imagery from MassGIS 2021.

Publish Date: 2023/08/23, 6:45 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_24to36in.mxd

ANCHOR QEA

Figure 1-4
Summary of Residential PCB Evaluations for Reach 5A: 2- to 3-foot Depth Interval
Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A





LEGEND:

- Revised Exposure Area Boundary
- Revised Exposure Subarea Boundary
- Actual/Potential Lawn Properties
- 1 mg/kg PCB Isopleth
- Topography (2-foot Contours)
- Surveyed Building Boundary

Floodplain Soil PCB Sampling Location

- 2020/2021 PDI Sample Location
- No Removal
- SA Removal

PCB Concentration (mg/kg)

- ≤ 1
- 1.1 - 2
- 2.1 - 10
- 10.1 - 25
- 25.1 - 50
- > 50

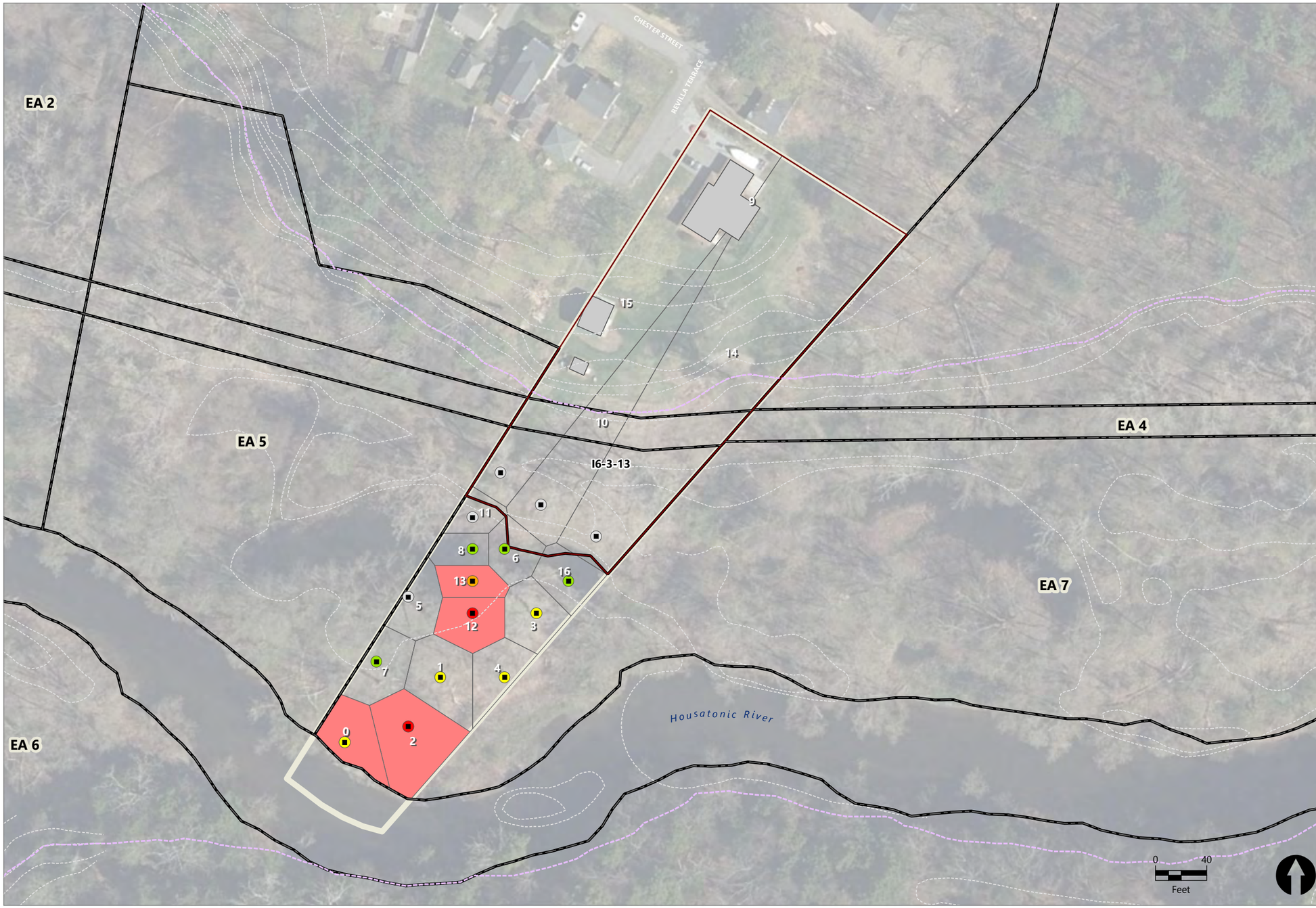
NOTES:

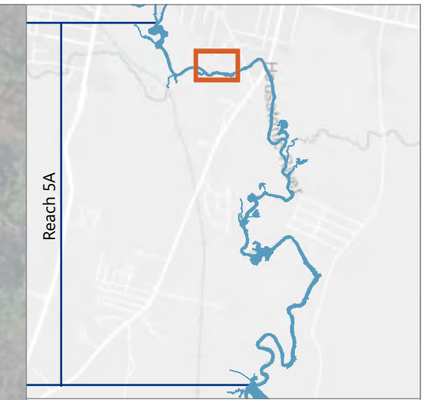
1. NTE: Not to Exceed
2. SA: Spatial Average
3. NTE removal indicates soil removal/backfilling necessary to achieve the NTE performance standards. SA removal indicates soil removal/backfilling necessary to achieve the SA performance standards.
4. Surveyed buildings and paved surfaces were trimmed to fit within parcel boundary.
5. Aerial imagery from MassGIS 2021.

Publish Date: 2023/08/23, 6:44 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_36to48in.mxd

ANCHOR QEA

Figure 1-5
Summary of Residential PCB Evaluations for Reach 5A: 3- to 4-foot Depth Interval





LEGEND:

- Revised Exposure Area Boundary
- Revised Exposure Subarea Boundary
- Actual/Potential Lawn Properties
- 1 mg/kg PCB Isopleth
- Topography (2-foot Contours)
- Surveyed Building Boundary

Floodplain Soil PCB Sampling Location

- 2020/2021 PDI Sample Location
- No Removal
- SA Removal

PCB Concentration (mg/kg)

- ≤ 1
- 1.1 - 2
- 2.1 - 10
- 10.1 - 25
- 25.1 - 50
- > 50

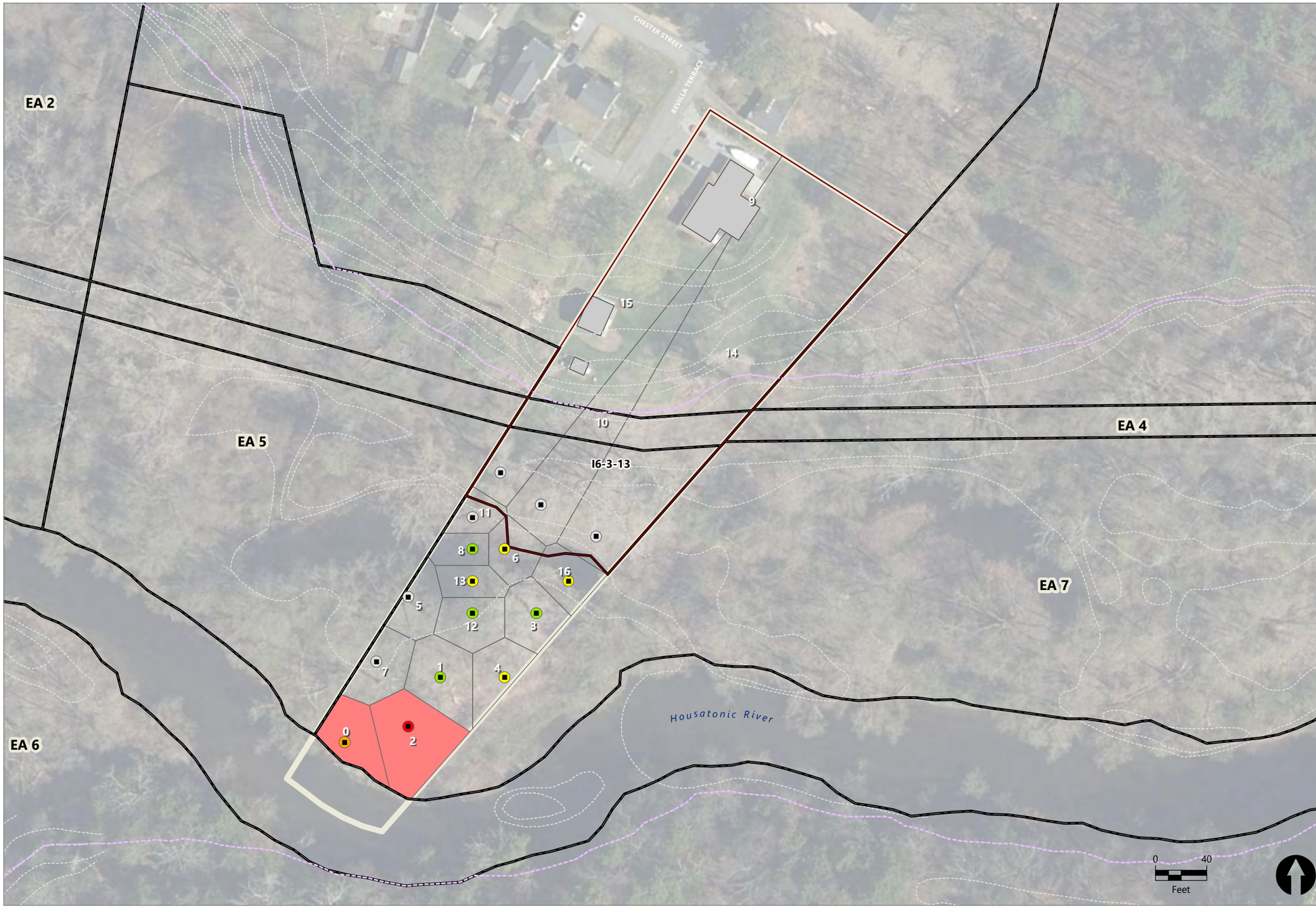
NOTES:

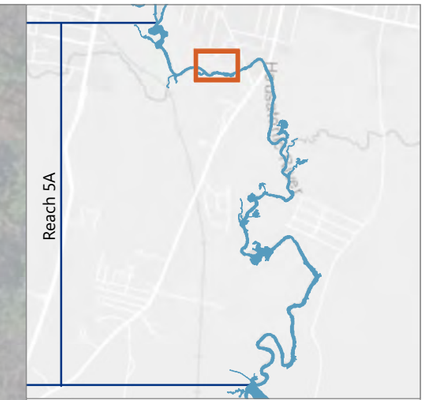
1. NTE: Not to Exceed
2. SA: Spatial Average
3. NTE removal indicates soil removal/backfilling necessary to achieve the NTE performance standards. SA removal indicates soil removal/backfilling necessary to achieve the SA performance standards.
4. Surveyed buildings and paved surfaces were trimmed to fit within parcel boundary.
5. Aerial imagery from MassGIS 2021.

Publish Date: 2023/08/23, 6:45 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_48to60in.mxd

ANCHOR QEA

Figure 1-6
Summary of Residential PCB Evaluations for Reach 5A: 4- to 5-foot Depth Interval





LEGEND:

- Revised Exposure Area Boundary
- Revised Exposure Subarea Boundary
- Actual/Potential Lawn Properties
- 1 mg/kg PCB Isopleth
- Topography (2-foot Contours)
- Surveyed Building Boundary

Floodplain Soil PCB Sampling Location

- 2020/2021 PDI Sample Location
- No Removal
- SA Removal

PCB Concentration (mg/kg)

- ≤ 1
- 1.1 - 2
- 2.1 - 10
- 10.1 - 25
- 25.1 - 50
- > 50

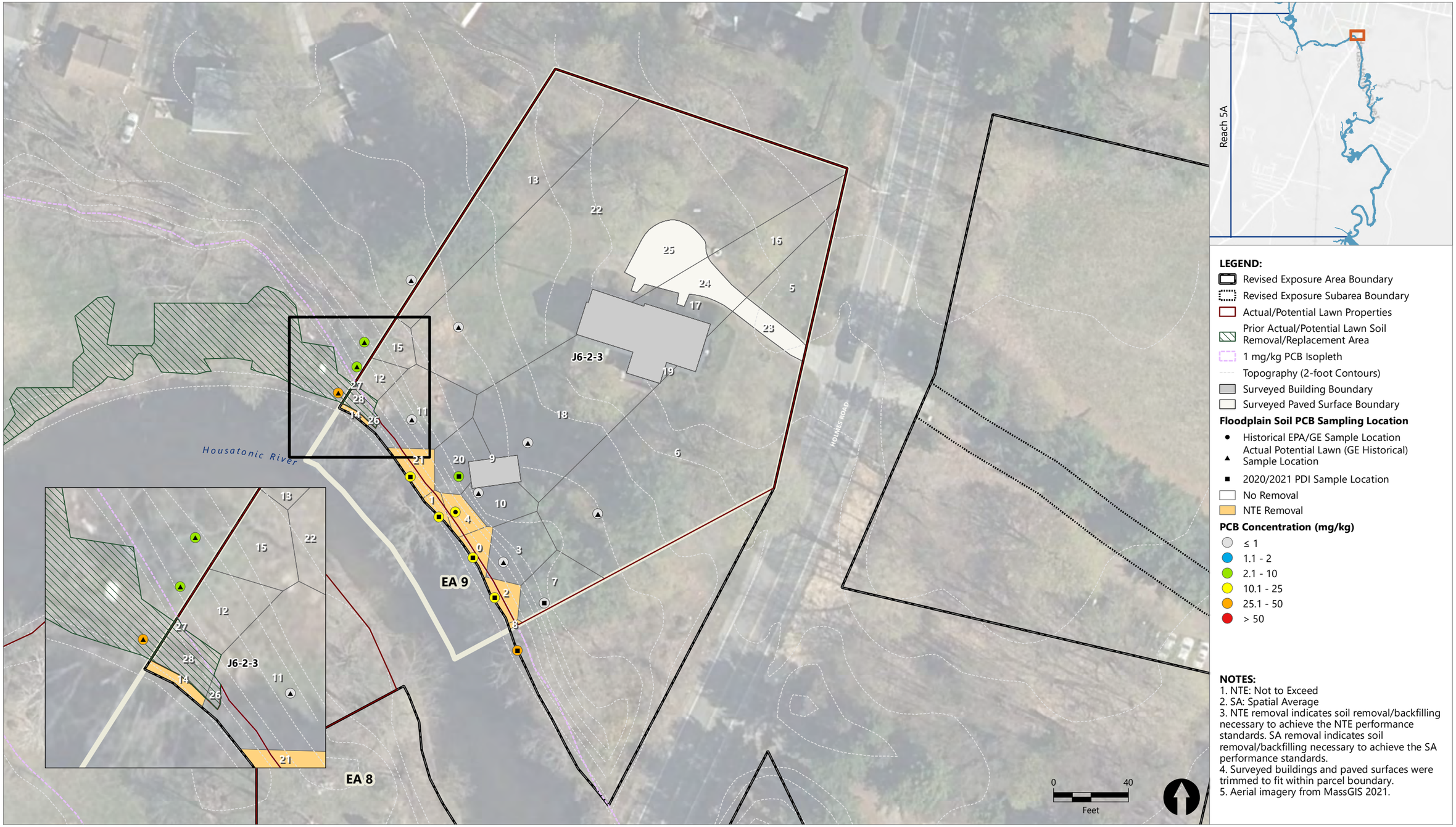
NOTES:

1. NTE: Not to Exceed
2. SA: Spatial Average
3. NTE removal indicates soil removal/backfilling necessary to achieve the NTE performance standards. SA removal indicates soil removal/backfilling necessary to achieve the SA performance standards.
4. Surveyed buildings and paved surfaces were trimmed to fit within parcel boundary.
5. Aerial imagery from MassGIS 2021.

Publish Date: 2023/08/23, 6:45 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_60to72in.mxd

ANCHOR QEA

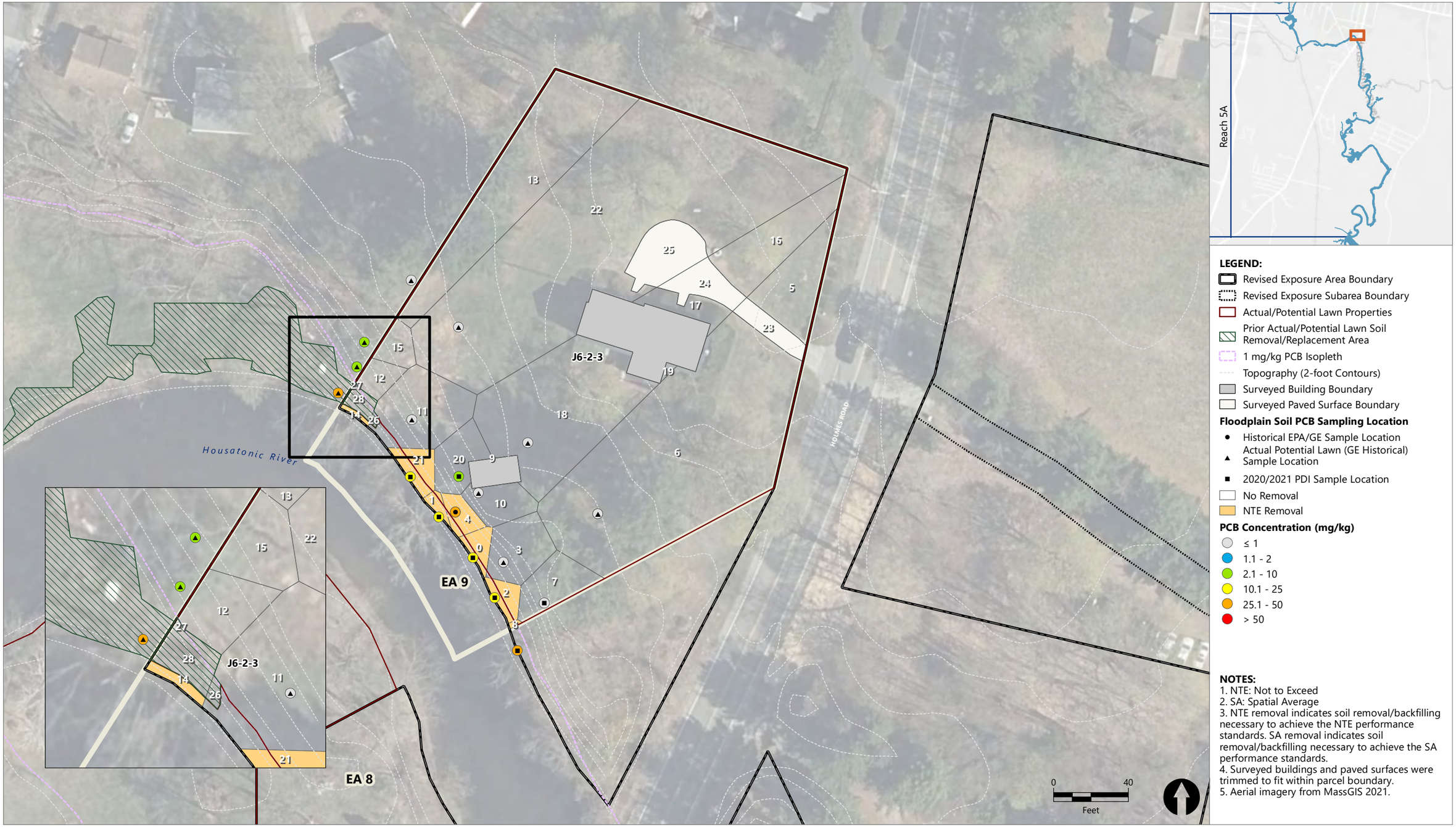
Figure 1-7
Summary of Residential PCB Evaluations for Reach 5A: 5- to 6-foot Depth Interval



Publish Date: 2023/08/23, 6:57 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_5A-3_00to06in.mxd

ANCHOR QEA

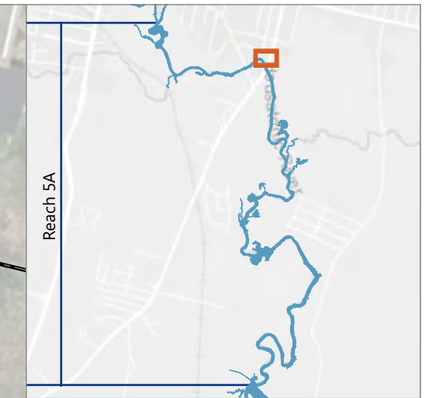
Figure 2-1
Summary of Residential PCB Evaluations for Reach 5A: 0- to 0.5-foot Depth Interval



Publish Date: 2023/08/23, 6:16 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_5A-3_06to12in.mxd

ANCHOR QEA

Figure 2-2
Summary of Residential PCB Evaluations for Reach 5A: 0.5- to 1-foot Depth Interval
Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A



LEGEND:

- Revised Exposure Area Boundary
- Revised Exposure Subarea Boundary
- Actual/Potential Lawn Properties
- 1 mg/kg PCB Isopleth
- Topography (2-foot Contours)
- Surveyed Building Boundary

Floodplain Soil PCB Sampling Location

- Actual Potential Lawn (GE Historical) Sample Location
- 2020/2021 PDI Sample Location
- No Removal

PCB Concentration (mg/kg)

- ≤ 1
- 1.1 - 2
- 2.1 - 10
- 10.1 - 25
- 25.1 - 50
- > 50

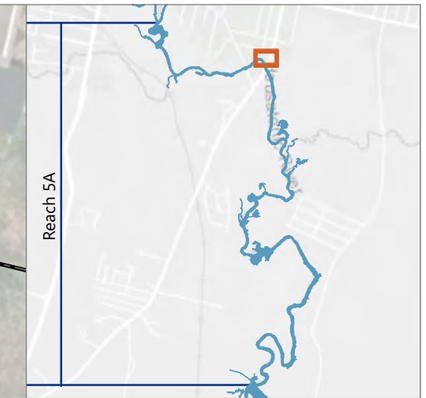
NOTES:

1. NTE: Not to Exceed
2. SA: Spatial Average
3. NTE removal indicates soil removal/backfilling necessary to achieve the NTE performance standards. SA removal indicates soil removal/backfilling necessary to achieve the SA performance standards.
4. Surveyed buildings and paved surfaces were trimmed to fit within parcel boundary.
5. Aerial imagery from MassGIS 2021.

Publish Date: 2023/08/23, 6:44 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_12to24in.mxd

ANCHOR QEA

Figure 2-3
Summary of Residential PCB Evaluations for Reach 5A: 1- to 2-foot Depth Interval



LEGEND:

- Revised Exposure Area Boundary
- Revised Exposure Subarea Boundary
- Actual/Potential Lawn Properties
- 1 mg/kg PCB Isopleth
- Topography (2-foot Contours)
- Surveyed Building Boundary

Floodplain Soil PCB Sampling Location

- Actual Potential Lawn (GE Historical) Sample Location
- 2020/2021 PDI Sample Location
- No Removal

PCB Concentration (mg/kg)

- ≤ 1
- 1.1 - 2
- 2.1 - 10
- 10.1 - 25
- 25.1 - 50
- > 50

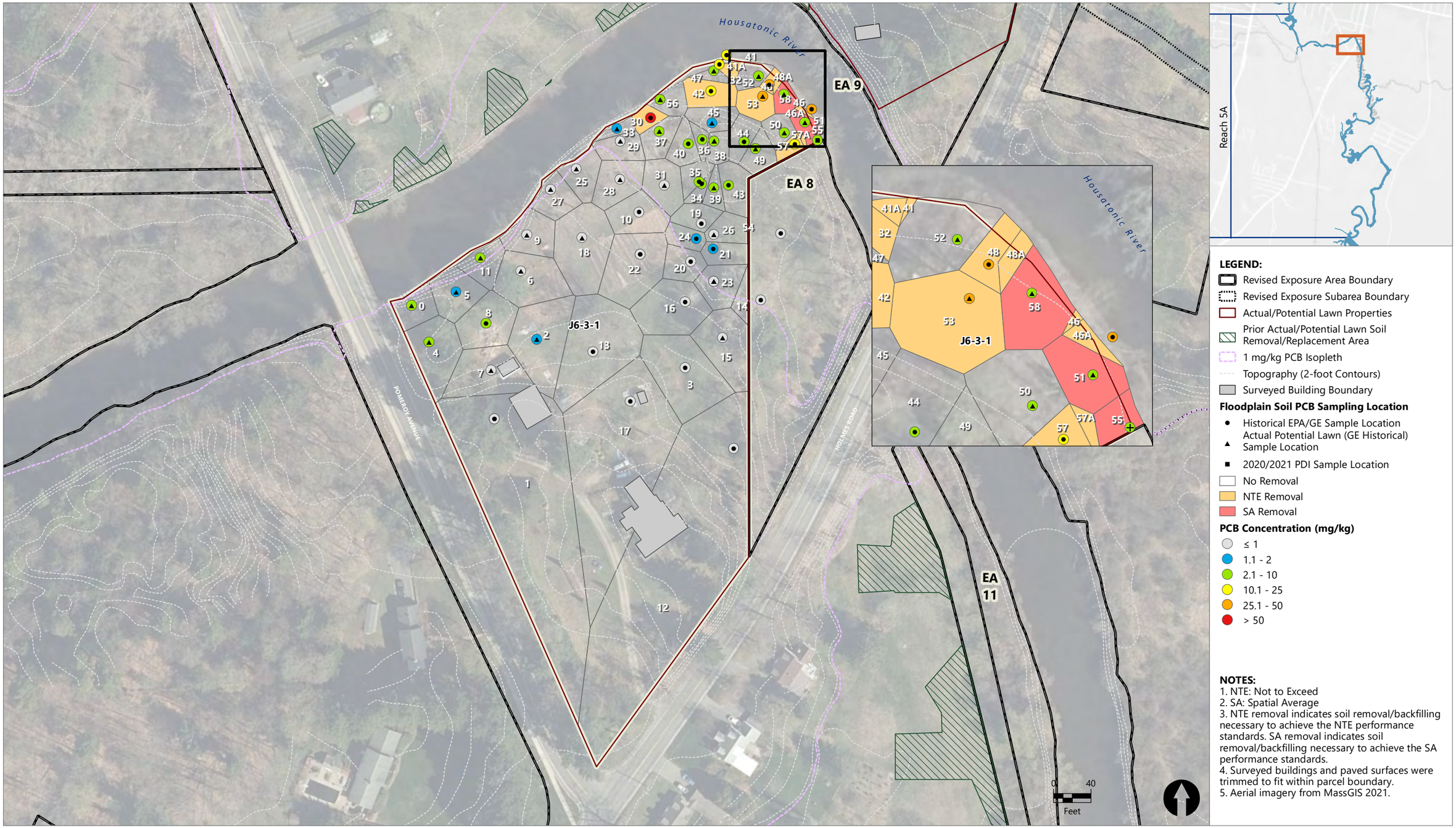
NOTES:

1. NTE: Not to Exceed
2. SA: Spatial Average
3. NTE removal indicates soil removal/backfilling necessary to achieve the NTE performance standards. SA removal indicates soil removal/backfilling necessary to achieve the SA performance standards.
4. Surveyed buildings and paved surfaces were trimmed to fit within parcel boundary.
5. Aerial imagery from MassGIS 2021.

Publish Date: 2023/08/23, 6:45 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_24to36in.mxd

ANCHOR QEA

Figure 2-4
Summary of Residential PCB Evaluations for Reach 5A: 2- to 3-foot Depth Interval

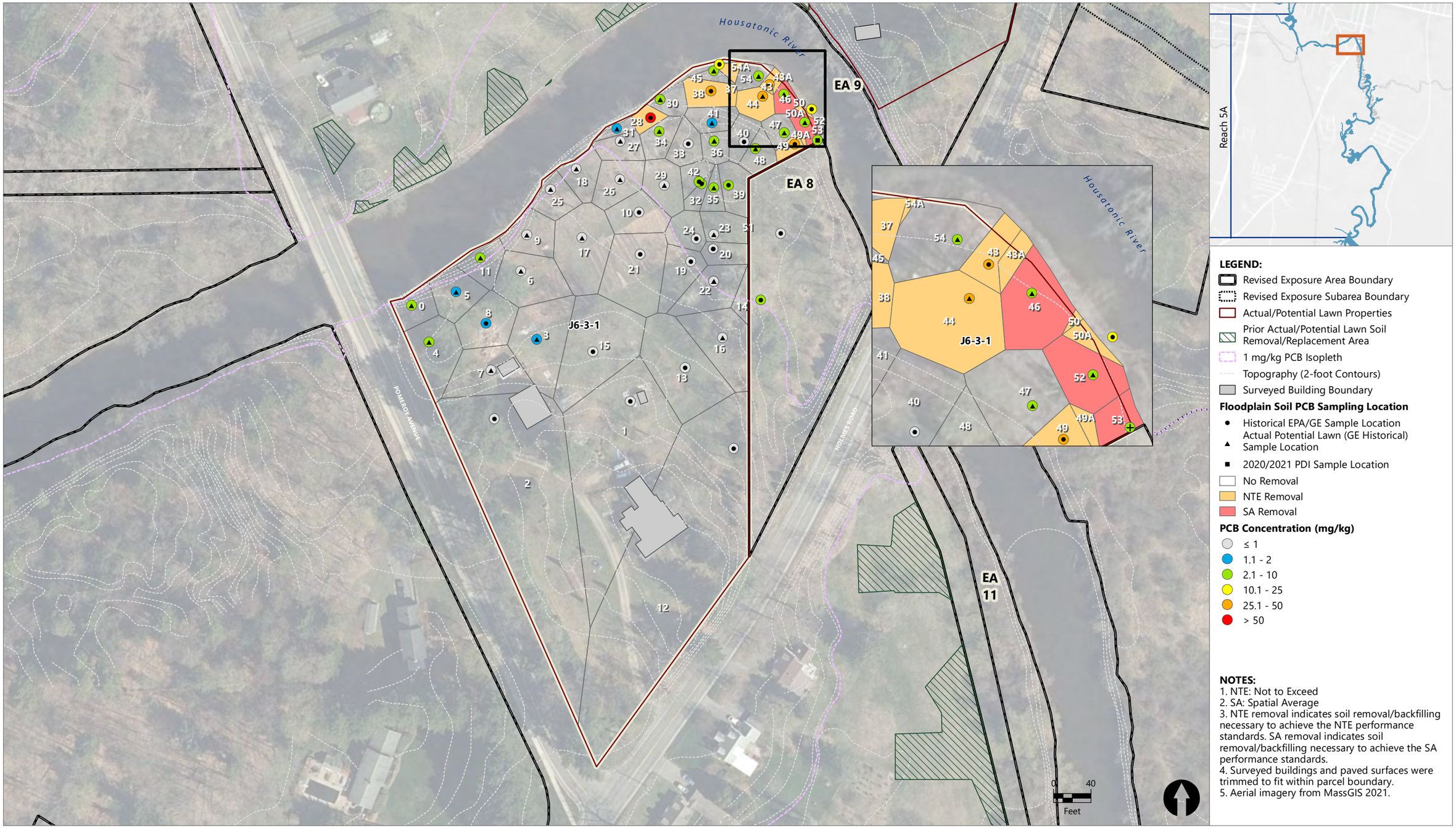


Publish Date: 2023/08/23, 6:19 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_5A-DEF_00to06in.mxd

ANCHOR QEA

Figure 3-1
Summary of Residential PCB Evaluations for Reach 5A: 0- to 0.5-foot Depth Interval

Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A

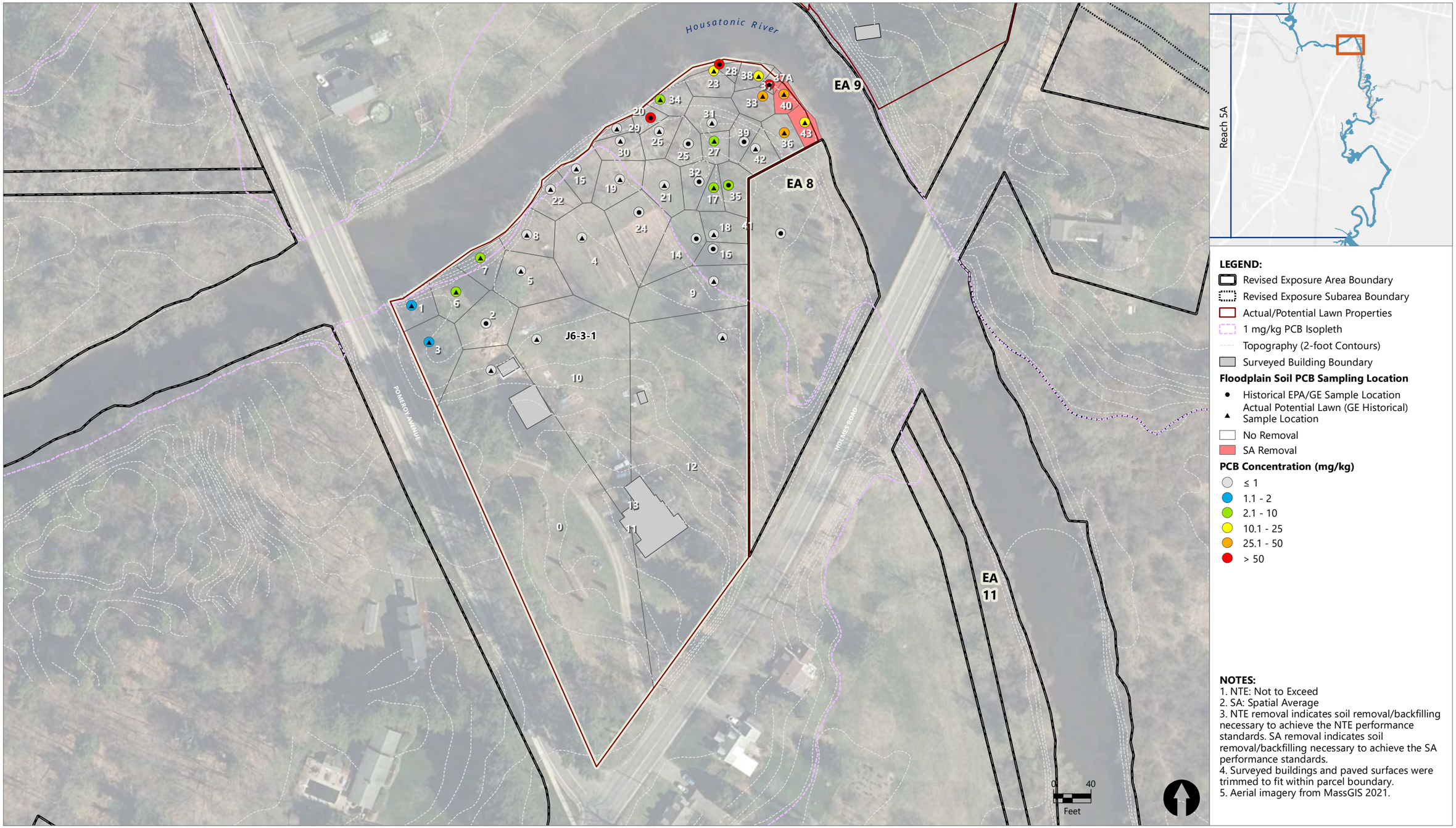


Publish Date: 2023/08/23, 6:20 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_5A-DEF_06to12in.mxd

ANCHOR QEA

Figure 3-2
Summary of Residential PCB Evaluations for Reach 5A: 0.5- to 1-foot Depth Interval

Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A

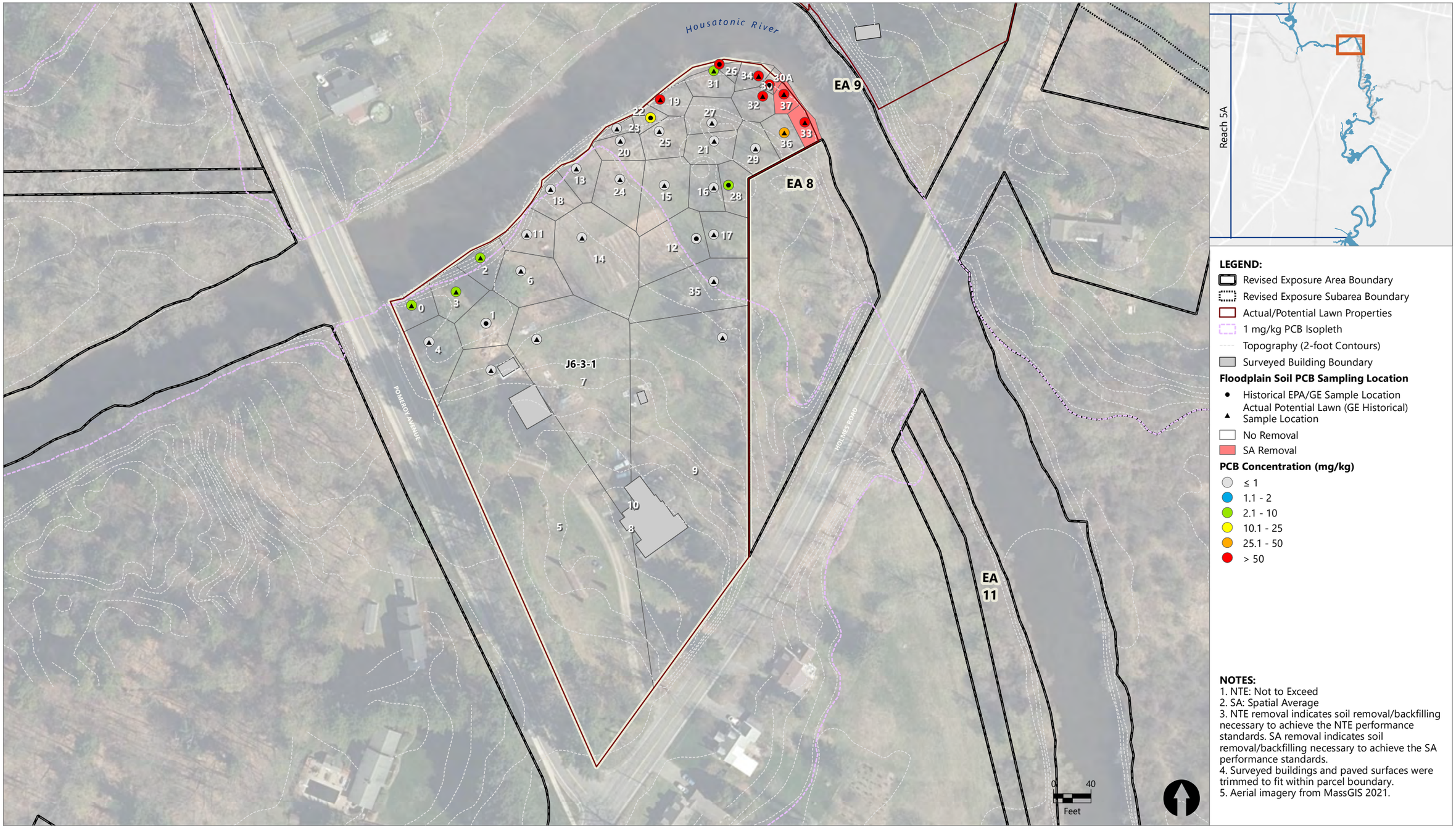


Publish Date: 2023/08/23, 6:59 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_12to24in.mxd

ANCHOR QEA

Figure 3-3
Summary of Residential PCB Evaluations for Reach 5A: 1- to 2-foot Depth Interval

Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A

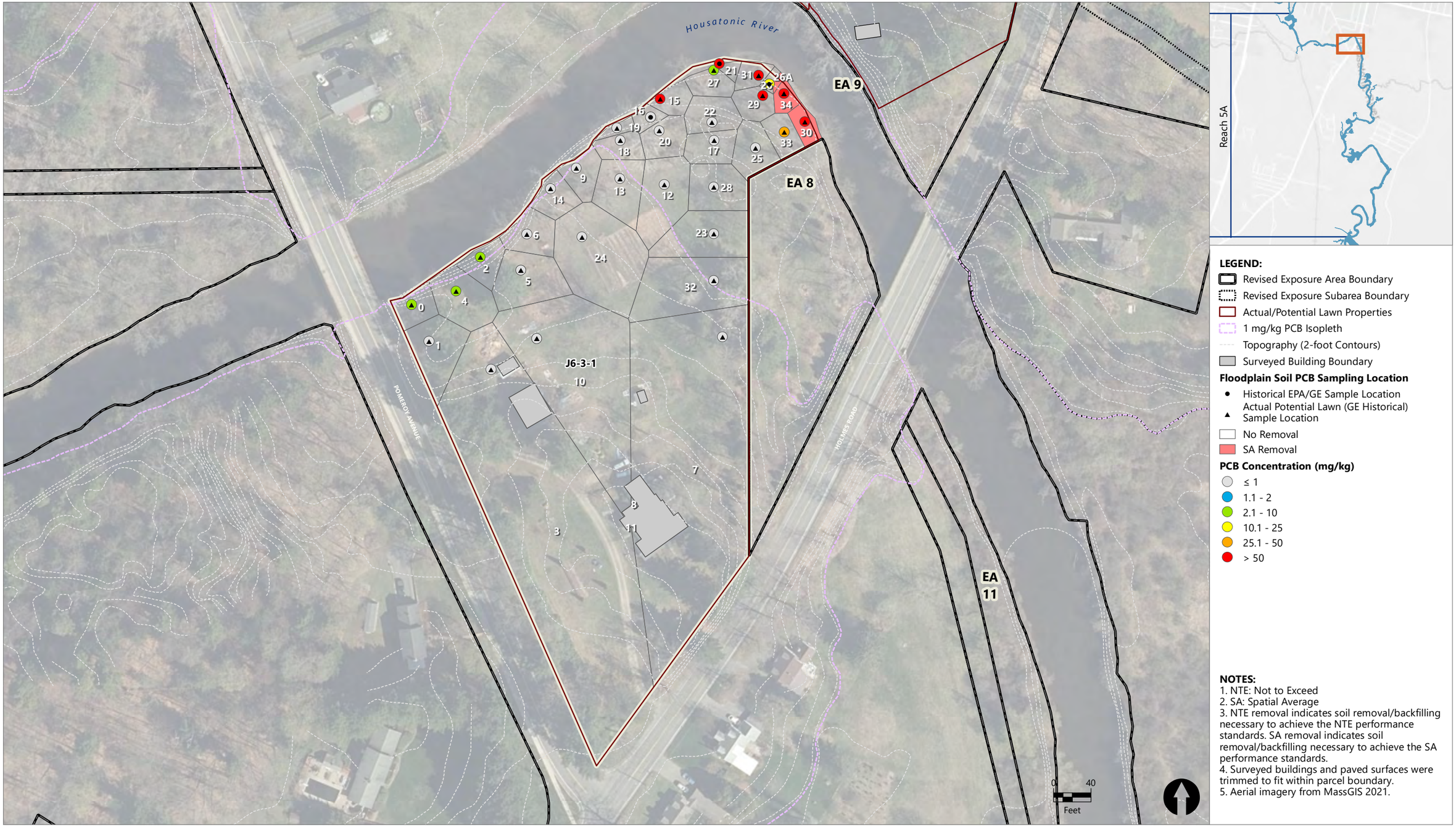


Publish Date: 2023/08/23, 6:45 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_24to36in.mxd

ANCHOR QEA

Figure 3-4
Summary of Residential PCB Evaluations for Reach 5A: 2- to 3-foot Depth Interval

Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A

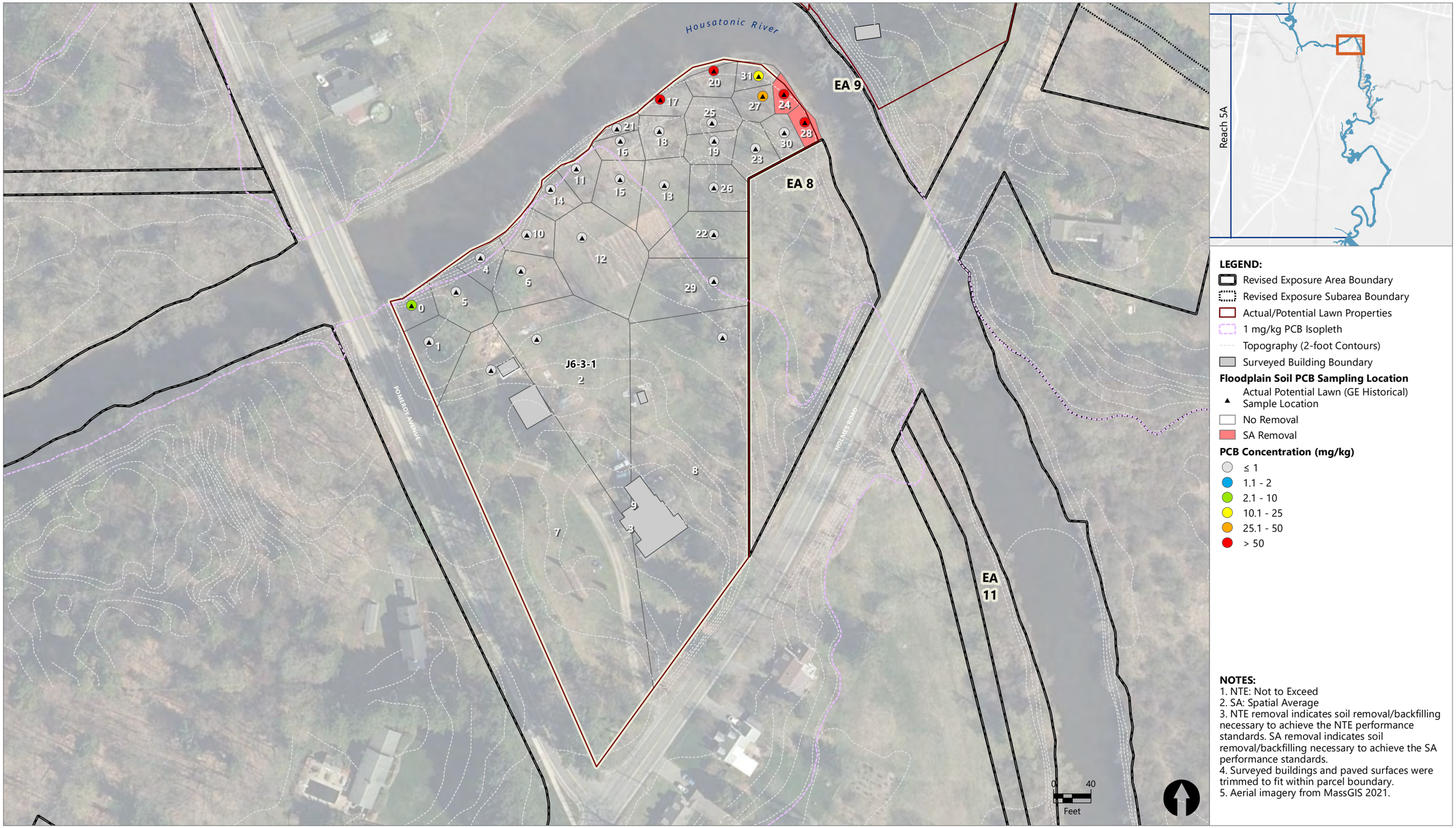


Publish Date: 2023/08/23, 6:44 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_36to48in.mxd

ANCHOR QEA

Figure 3-5
Summary of Residential PCB Evaluations for Reach 5A: 3- to 4-foot Depth Interval

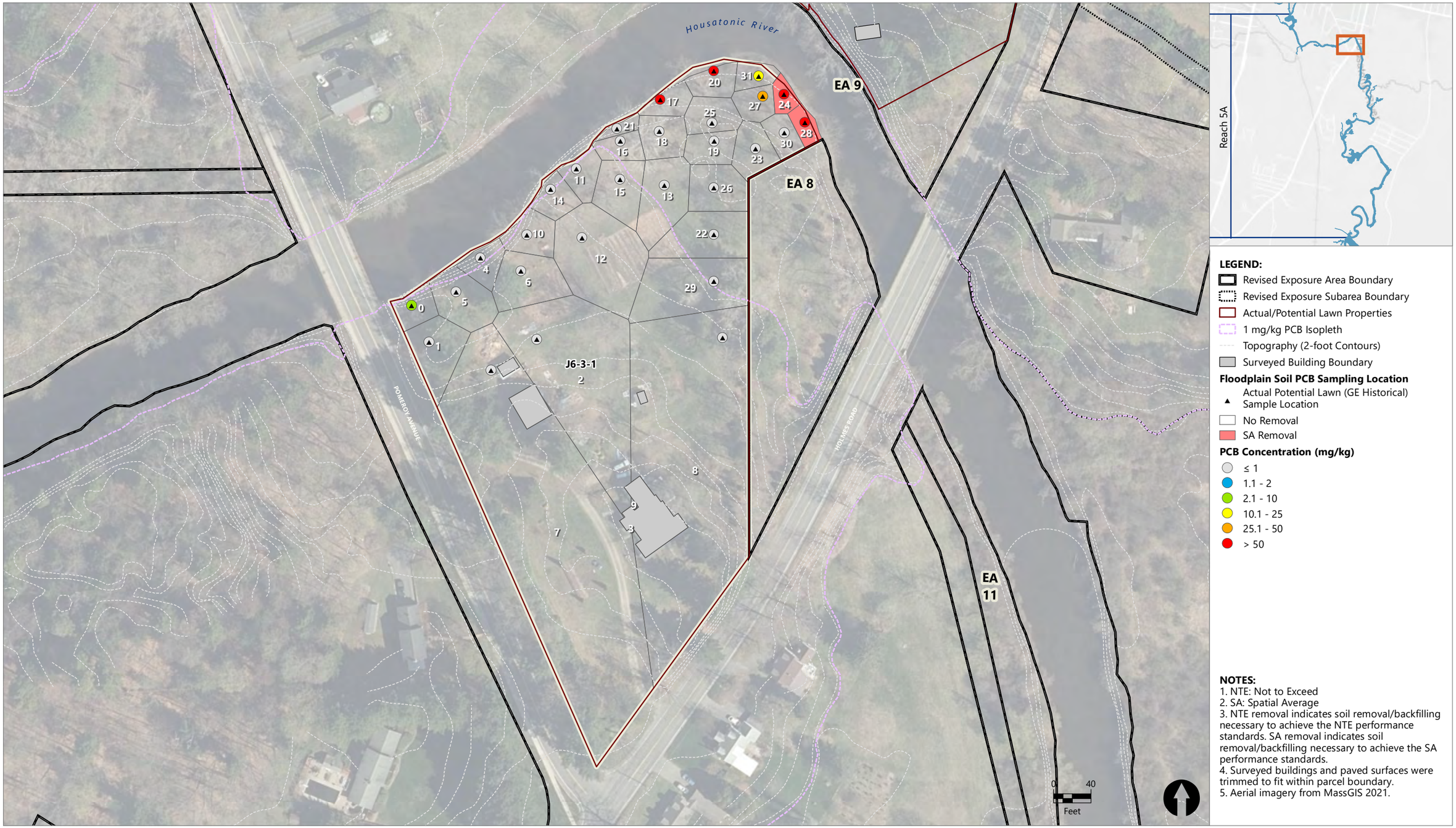
Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A



Publish Date: 2023/08/23, 6:45 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_48to60in.mxd

ANCHOR QEA

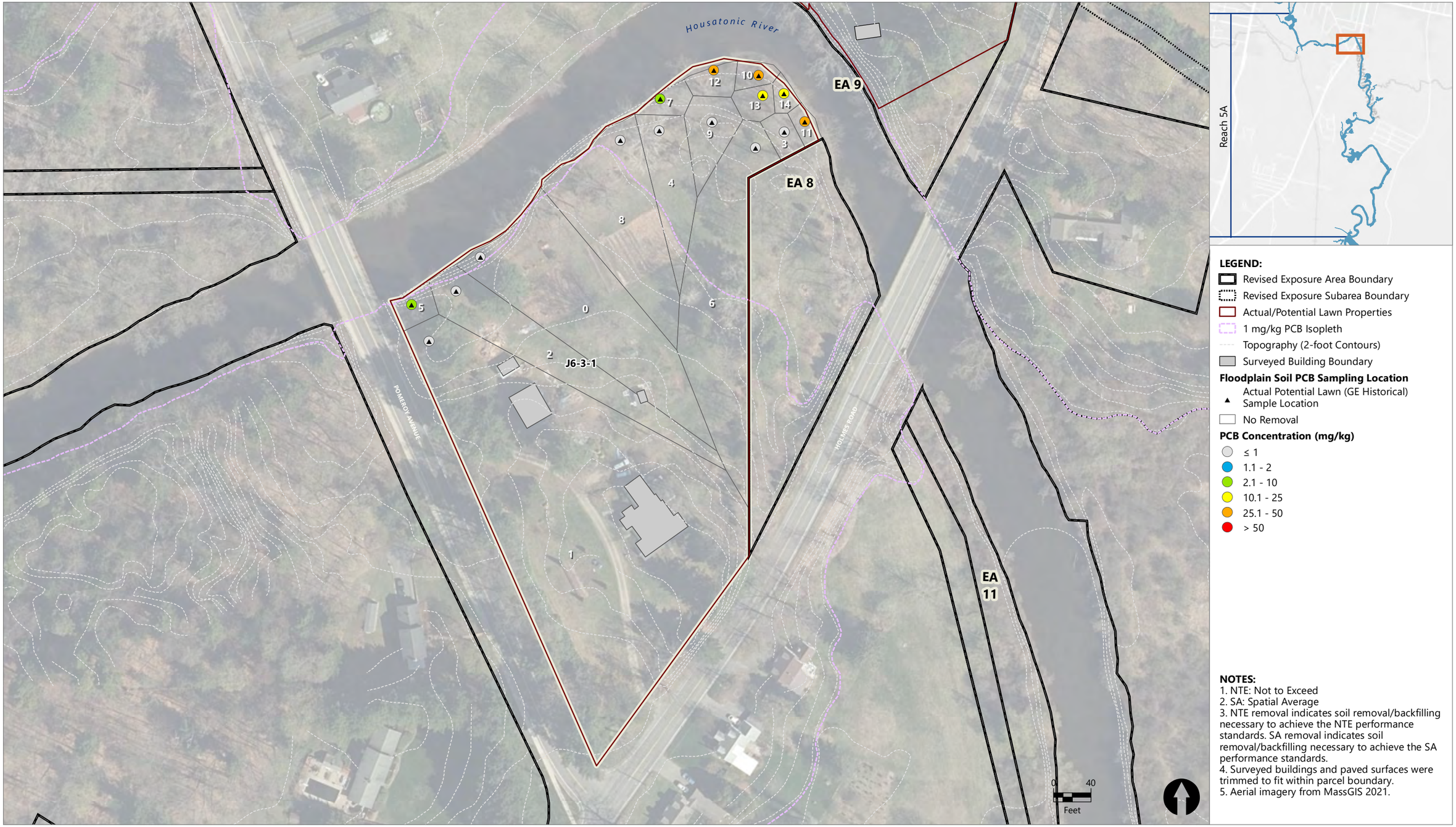
Figure 3-6
Summary of Residential PCB Evaluations for Reach 5A: 4- to 5-foot Depth Interval
Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A



Publish Date: 2023/08/23, 6:45 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_60to72in.mxd

ANCHOR QEA

Figure 3-7
Summary of Residential PCB Evaluations for Reach 5A: 5- to 6-foot Depth Interval
Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A

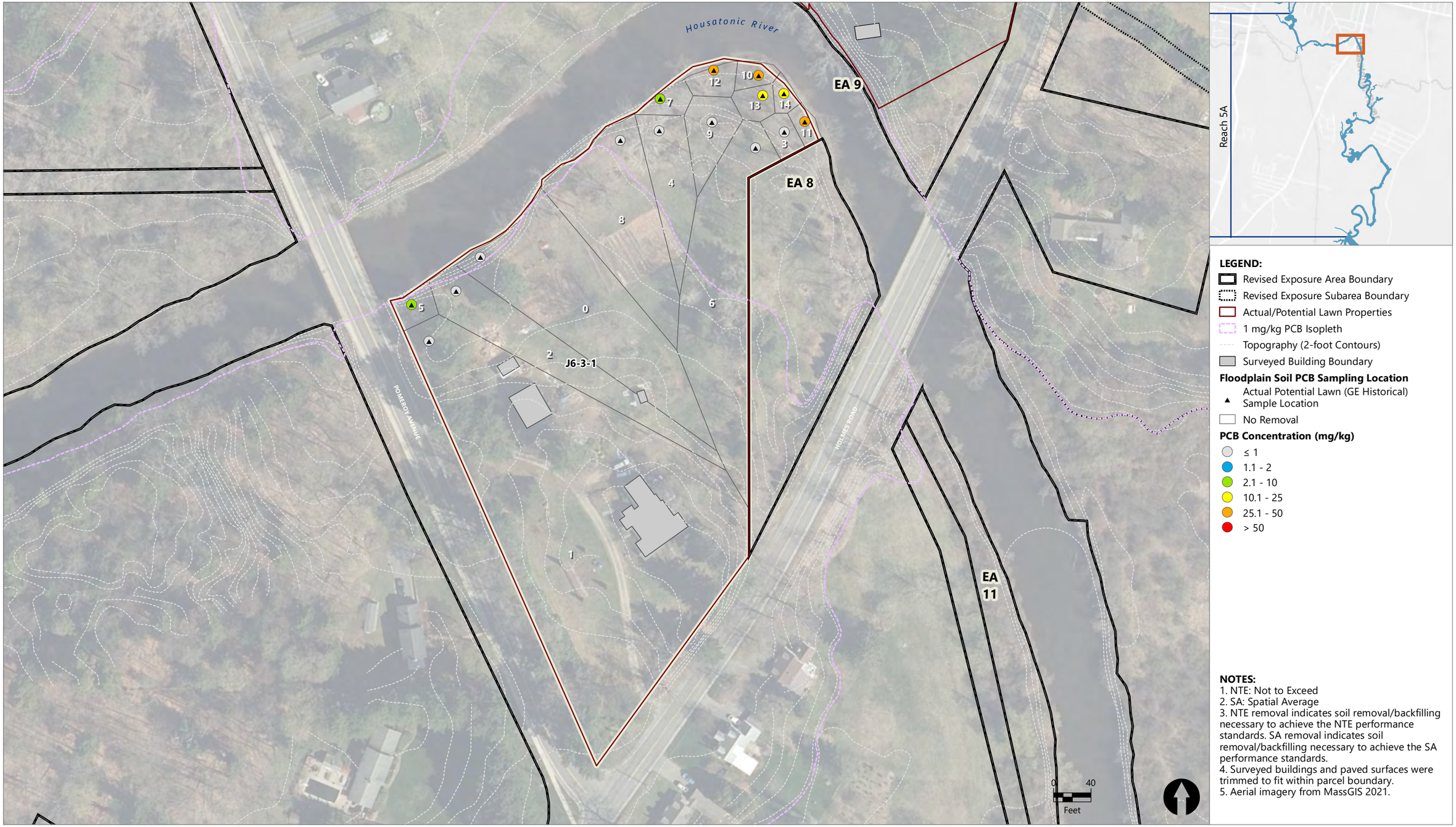


NOTES:
1. NTE: Not to Exceed
2. SA: Spatial Average
3. NTE removal indicates soil removal/backfilling necessary to achieve the NTE performance standards. SA removal indicates soil removal/backfilling necessary to achieve the SA performance standards.
4. Surveyed buildings and paved surfaces were trimmed to fit within parcel boundary.
5. Aerial imagery from MassGIS 2021.

Publish Date: 2023/08/23, 6:48 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_72to84in.mxd

ANCHOR QEA

Figure 3-8
Summary of Residential PCB Evaluations for Reach 5A: 6- to 7-foot Depth Interval
Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A

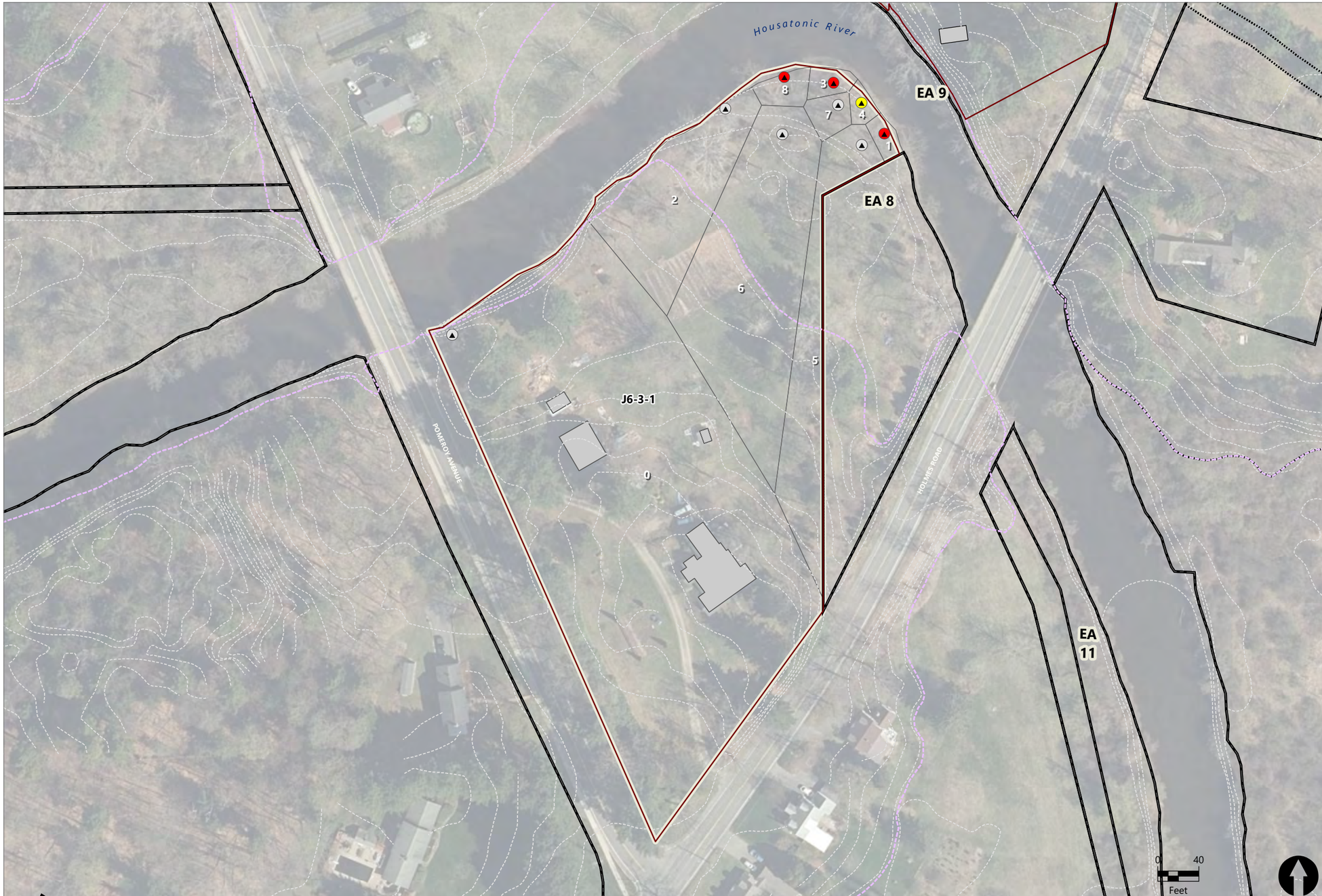


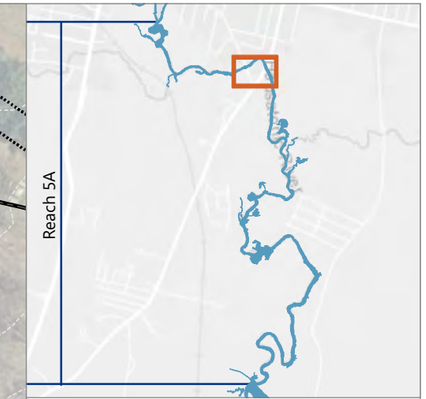
NOTES:
1. NTE: Not to Exceed
2. SA: Spatial Average
3. NTE removal indicates soil removal/backfilling necessary to achieve the NTE performance standards. SA removal indicates soil removal/backfilling necessary to achieve the SA performance standards.
4. Surveyed buildings and paved surfaces were trimmed to fit within parcel boundary.
5. Aerial imagery from MassGIS 2021.

Publish Date: 2023/08/23, 6:48 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_84to96in.mxd

ANCHOR QEA

Figure 3-9
Summary of Residential PCB Evaluations for Reach 5A: 7- to 8-foot Depth Interval
Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A





LEGEND:

- Revised Exposure Area Boundary
- Revised Exposure Subarea Boundary
- Actual/Potential Lawn Properties
- 1 mg/kg PCB Isopleth
- Topography (2-foot Contours)
- Surveyed Building Boundary

Floodplain Soil PCB Sampling Location

- Actual Potential Lawn (GE Historical) Sample Location
- No Removal

PCB Concentration (mg/kg)

- ≤ 1
- 1.1 - 2
- 2.1 - 10
- 10.1 - 25
- 25.1 - 50
- > 50

NOTES:

1. NTE: Not to Exceed
2. SA: Spatial Average
3. NTE removal indicates soil removal/backfilling necessary to achieve the NTE performance standards. SA removal indicates soil removal/backfilling necessary to achieve the SA performance standards.
4. Surveyed buildings and paved surfaces were trimmed to fit within parcel boundary.
5. Aerial imagery from MassGIS 2021.

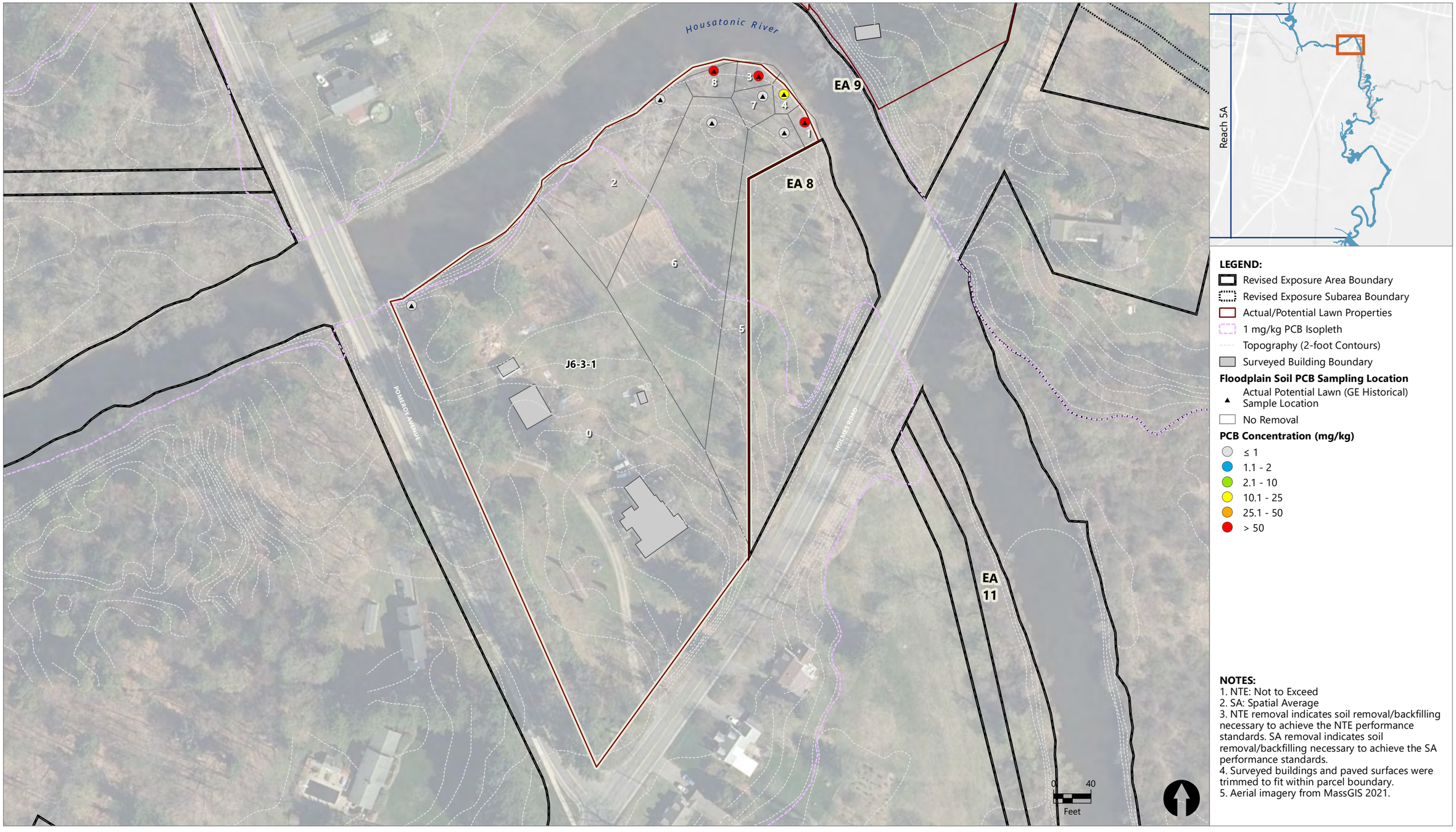
Publish Date: 2023/08/23, 6:48 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_96to108in.mxd

ANCHOR QEA

Figure 3-10

Summary of Residential PCB Evaluations for Reach 5A: 8- to 9-foot Depth Interval

Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A

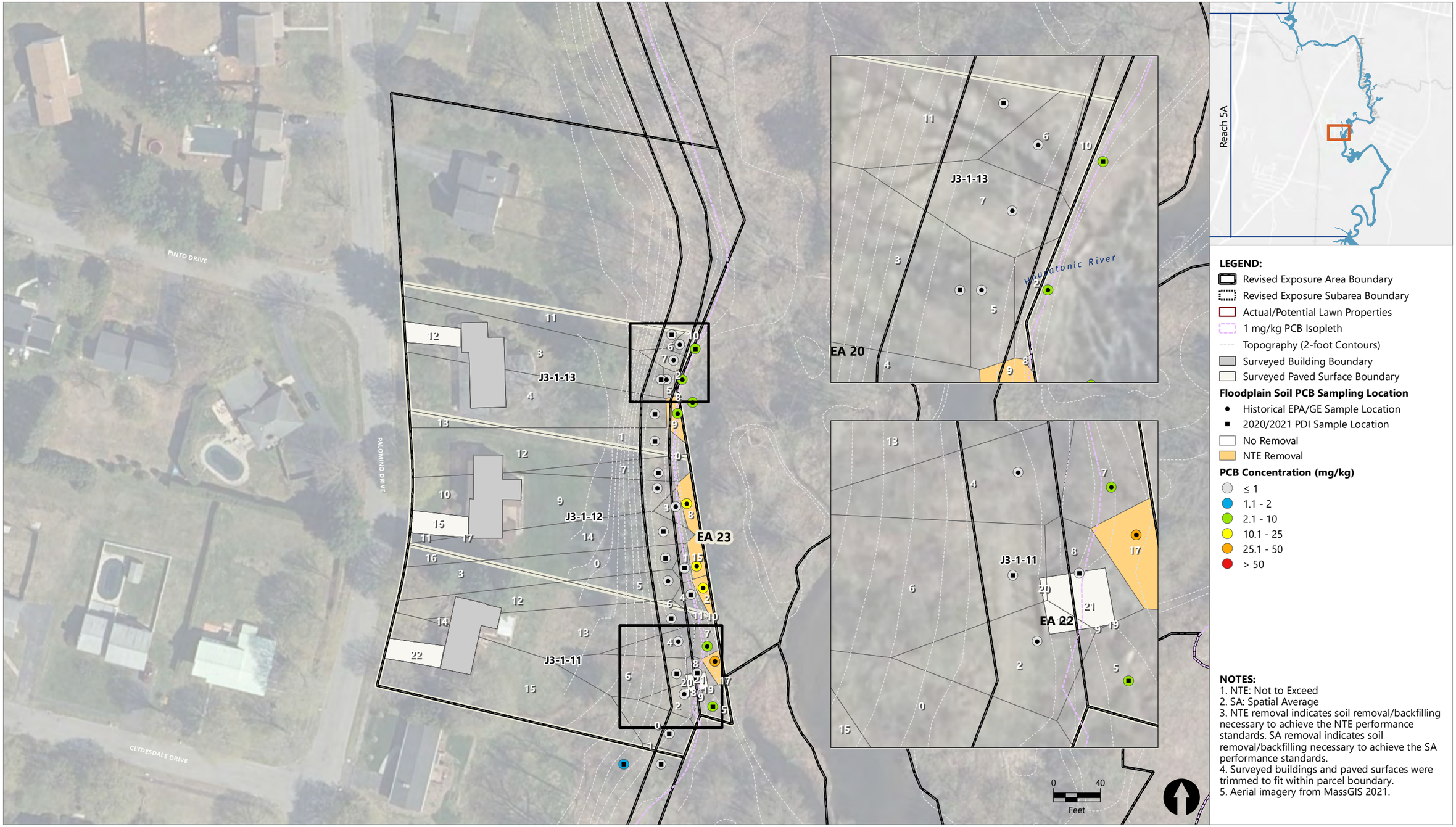


NOTES:
1. NTE: Not to Exceed
2. SA: Spatial Average
3. NTE removal indicates soil removal/backfilling necessary to achieve the NTE performance standards. SA removal indicates soil removal/backfilling necessary to achieve the SA performance standards.
4. Surveyed buildings and paved surfaces were trimmed to fit within parcel boundary.
5. Aerial imagery from MassGIS 2021.

Publish Date: 2023/08/23, 6:48 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_108to120in.mxd

ANCHOR QEA

Figure 3-11
Summary of Residential PCB Evaluations for Reach 5A: 9- to 10-foot Depth Interval
Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A



Publish Date: 2023/08/24, 9:20 AM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_5A-7_00to06in.mxd

ANCHOR QEA

Figure 4-1
Summary of Residential PCB Evaluations for Reach 5A: 0- to 0.5-foot Depth Interval

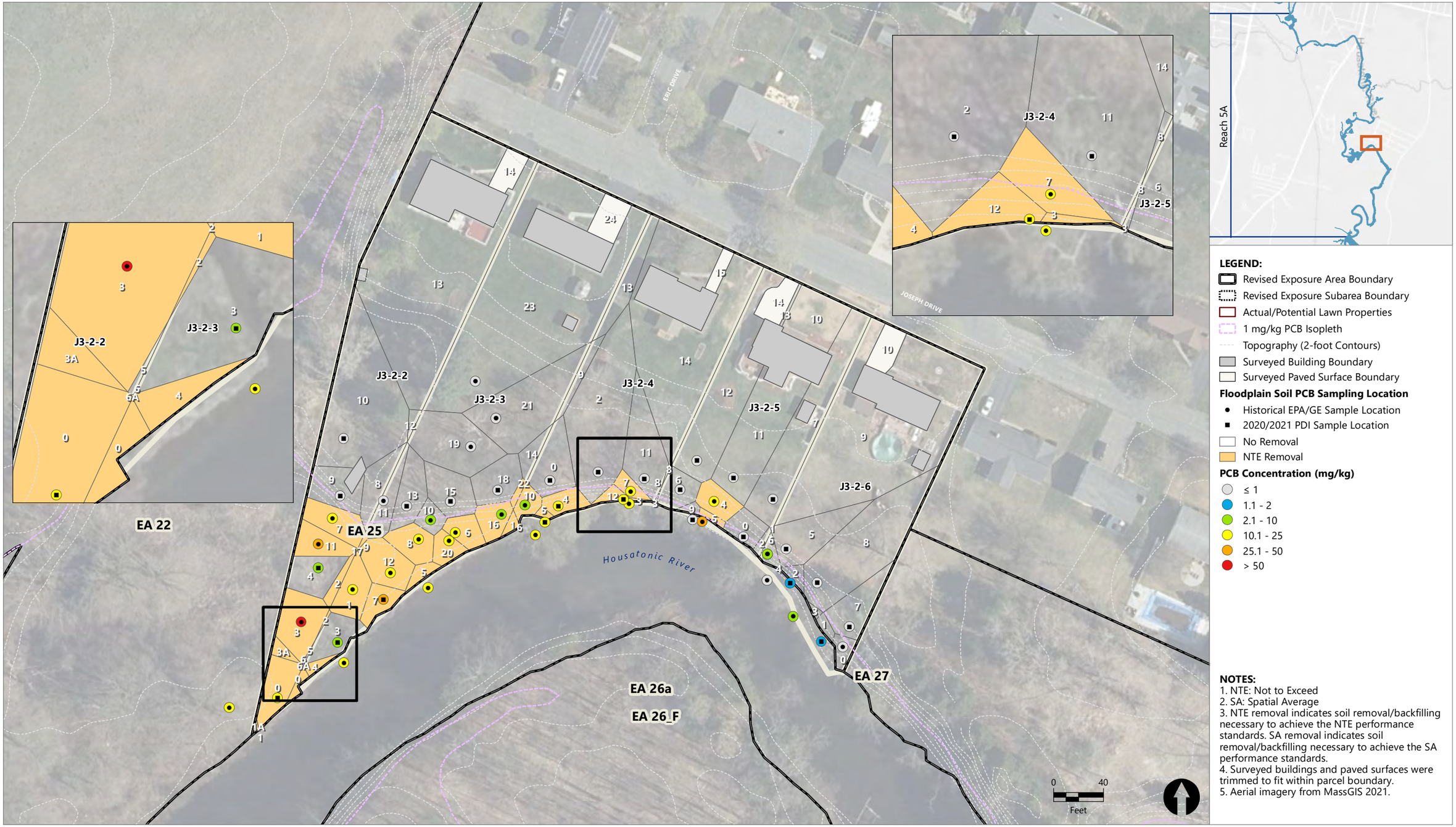
Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A

Publish Date: 2023/08/24, 9:26 AM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_5A-7_06to12in.mxd

ANCHOR QEA

Figure 4-2
Summary of Residential PCB Evaluations for Reach 5A: 0.5- to 1-foot Depth Interval

Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A

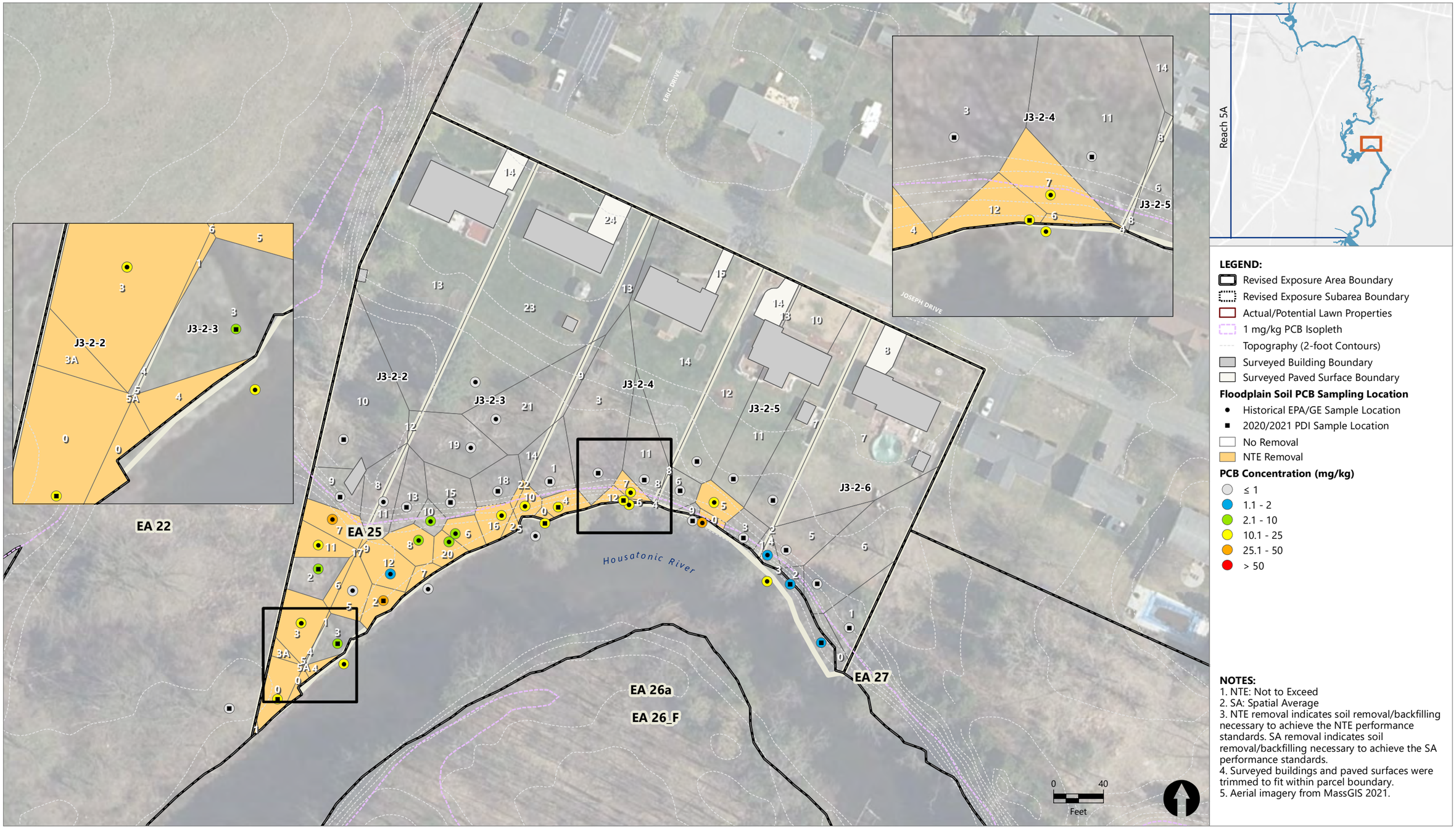


Publish Date: 2023/08/24, 10:29 AM | User: nwagner
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_5A-8_00to06in.mxd

ANCHOR QEA

Figure 5-1
Summary of Residential PCB Evaluations for Reach 5A: 0- to 0.5-foot Depth Interval

Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A



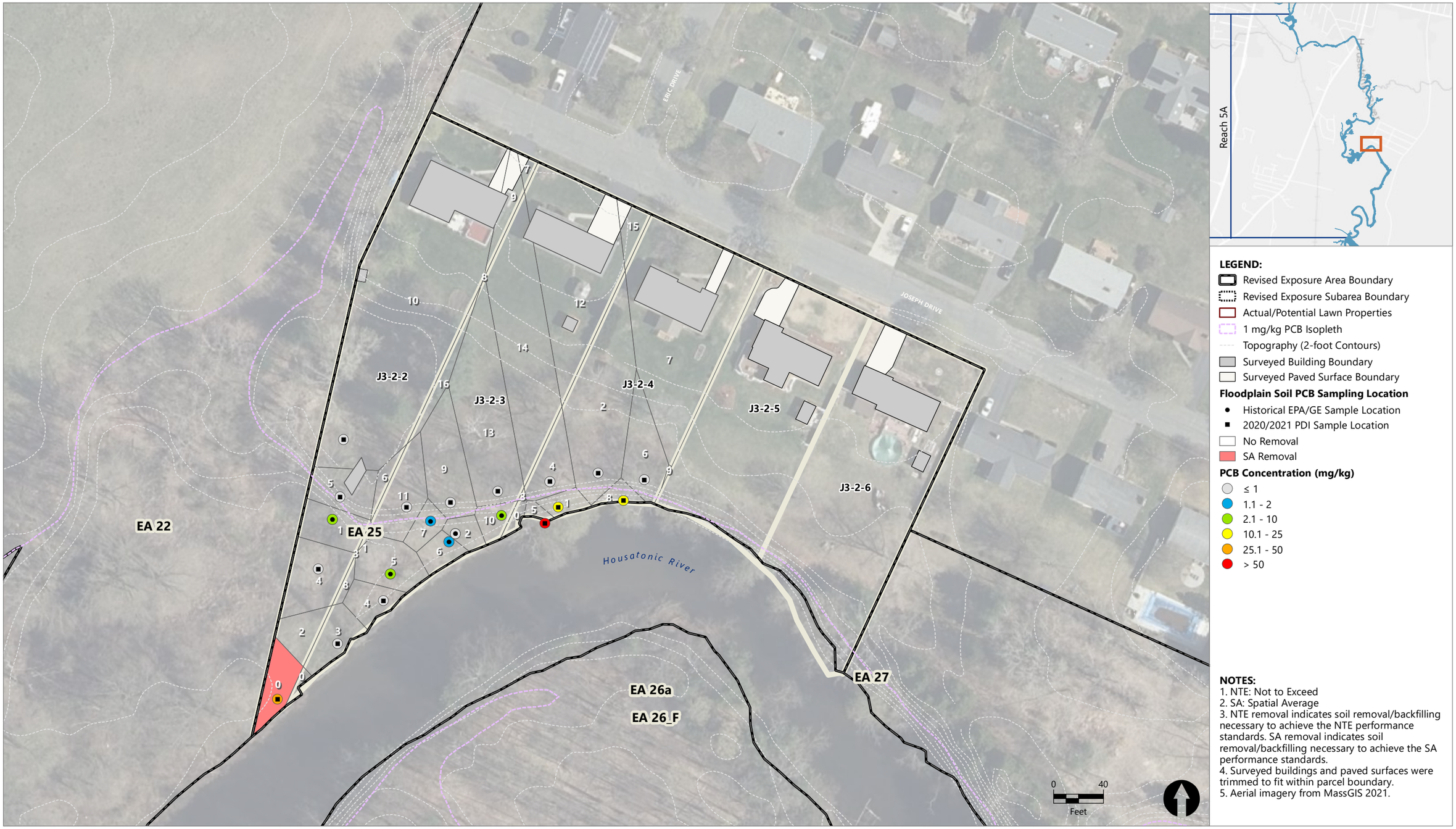
Publish Date: 2023/08/24, 10:29 AM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_5A-8_06to12in.mxd

ANCHOR QEA

Figure 5-2

Summary of Residential PCB Evaluations for Reach 5A: 0.5- to 1-foot Depth Interval

Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A

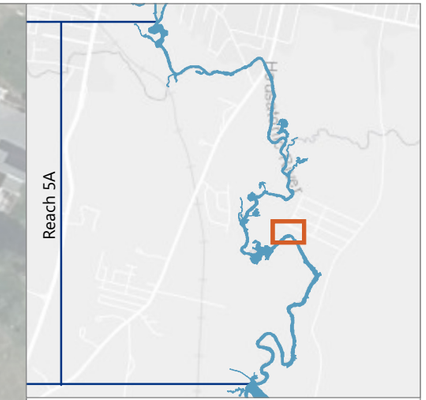


NOTES:
1. NTE: Not to Exceed
2. SA: Spatial Average
3. NTE removal indicates soil removal/backfilling necessary to achieve the NTE performance standards. SA removal indicates soil removal/backfilling necessary to achieve the SA performance standards.
4. Surveyed buildings and paved surfaces were trimmed to fit within parcel boundary.
5. Aerial imagery from MassGIS 2021.

Publish Date: 2023/08/24, 11:35 AM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_5A-8_12to24in.mxd

ANCHOR QEA

Figure 5-3
Summary of Residential PCB Evaluations for Reach 5A: 1- to 2-foot Depth Interval
Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A



LEGEND:

- Revised Exposure Area Boundary
- Revised Exposure Subarea Boundary
- Actual/Potential Lawn Properties
- 1 mg/kg PCB Isopleth
- Topography (2-foot Contours)
- Surveyed Building Boundary
- Surveyed Paved Surface Boundary

Floodplain Soil PCB Sampling Location

- Historical EPA/GE Sample Location
- 2020/2021 PDI Sample Location
- No Removal

PCB Concentration (mg/kg)

- ≤ 1
- 1.1 - 2
- 2.1 - 10
- 10.1 - 25
- 25.1 - 50
- > 50

NOTES:

1. NTE: Not to Exceed
2. SA: Spatial Average
3. NTE removal indicates soil removal/backfilling necessary to achieve the NTE performance standards. SA removal indicates soil removal/backfilling necessary to achieve the SA performance standards.
4. Surveyed buildings and paved surfaces were trimmed to fit within parcel boundary.
5. Aerial imagery from MassGIS 2021.

Publish Date: 2023/08/24, 11:36 AM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_5A-8_24to36in.mxd

ANCHOR QEA

Figure 5-4

Summary of Residential PCB Evaluations for Reach 5A: 2- to 3-foot Depth Interval

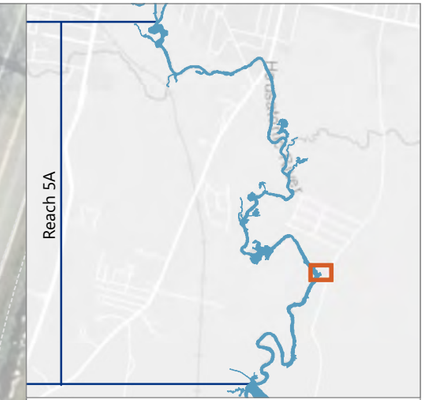
Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A

NOTES:
1. NTE: Not to Exceed
2. SA: Spatial Average
3. NTE removal indicates soil removal/backfilling necessary to achieve the NTE performance standards. SA removal indicates soil removal/backfilling necessary to achieve the SA performance standards.
4. Surveyed buildings and paved surfaces were trimmed to fit within parcel boundary.
5. Aerial imagery from MassGIS 2021.

Publish Date: 2023/08/23, 6:47 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_00to06in.mxd

ANCHOR QEA

Figure 6-1
Summary of Residential PCB Evaluations for Reach 5A: 0- to 0.5-foot Depth Interval



LEGEND:

- Revised Exposure Area Boundary
- Revised Exposure Subarea Boundary
- 1 mg/kg PCB Isopleth
- Topography (2-foot Contours)
- Surveyed Building Boundary
- Surveyed Paved Surface Boundary

Floodplain Soil PCB Sampling Location

- Historical EPA/GE Sample Location
- 2020/2021 PDI Sample Location
- No Removal
- NTE Removal

PCB Concentration (mg/kg)

- ≤ 1
- 1.1 - 2
- 2.1 - 10
- 10.1 - 25
- 25.1 - 50
- > 50

NOTES:

1. NTE: Not to Exceed
2. SA: Spatial Average
3. NTE removal indicates soil removal/backfilling necessary to achieve the NTE performance standards. SA removal indicates soil removal/backfilling necessary to achieve the SA performance standards.
4. Surveyed buildings and paved surfaces were trimmed to fit within parcel boundary.
5. Aerial imagery from MassGIS 2021.

Publish Date: 2023/08/23, 6:44 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_06to12in.mxd

ANCHOR QEA

Figure 6-2
Summary of Residential PCB Evaluations for Reach 5A: 0.5- to 1-foot Depth Interval

NOTES:
1. NTE: Not to Exceed
2. SA: Spatial Average
3. NTE removal indicates soil removal/backfilling necessary to achieve the NTE performance standards. SA removal indicates soil removal/backfilling necessary to achieve the SA performance standards.
4. Surveyed buildings and paved surfaces were trimmed to fit within parcel boundary.
5. Aerial imagery from MassGIS 2021.

Publish Date: 2023/08/23, 6:59 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_12to24in.mxd

ANCHOR QEA

Figure 6-3
Summary of Residential PCB Evaluations for Reach 5A: 1- to 2-foot Depth Interval

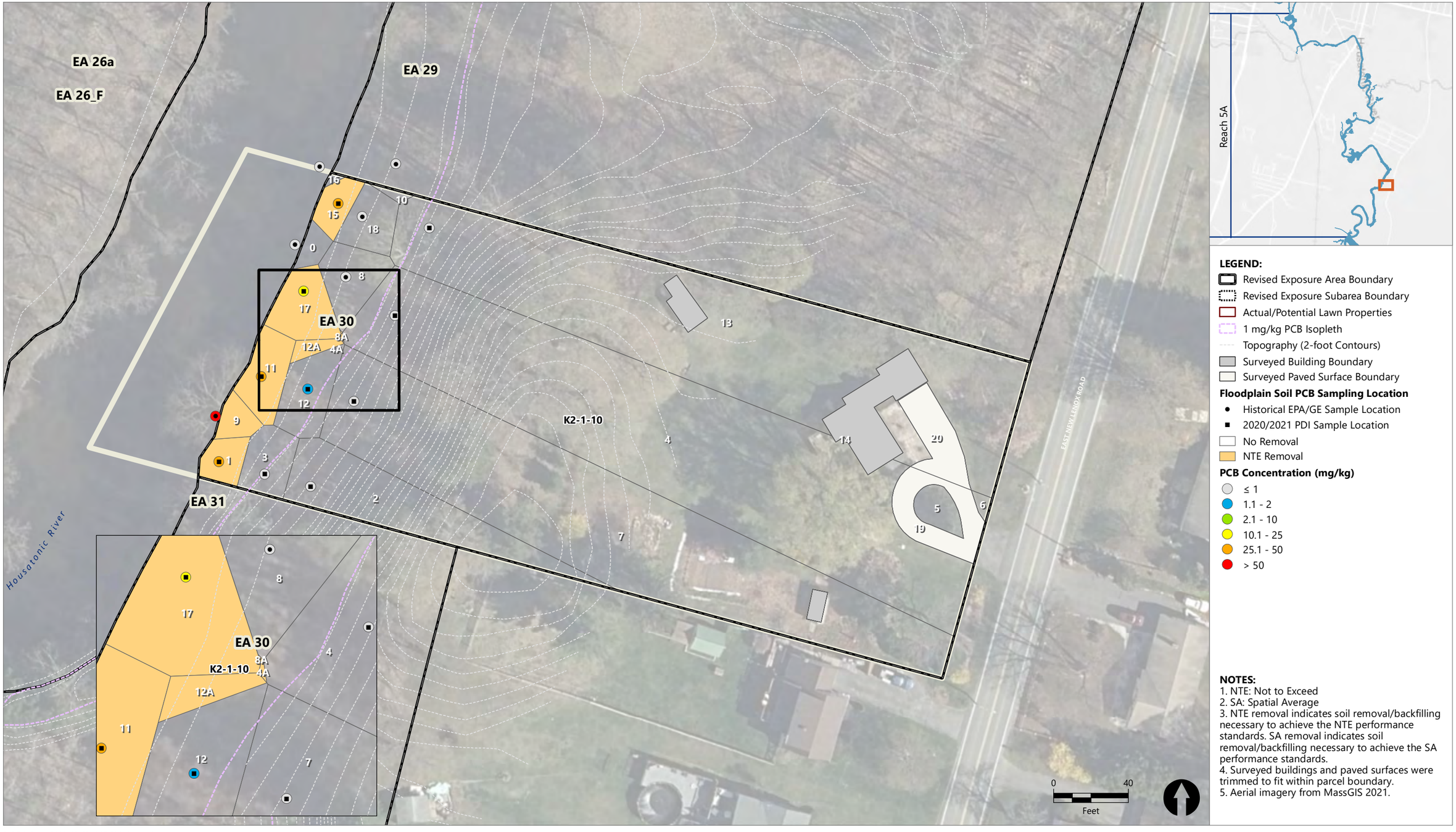
NOTES:
1. NTE: Not to Exceed
2. SA: Spatial Average
3. NTE removal indicates soil removal/backfilling necessary to achieve the NTE performance standards. SA removal indicates soil removal/backfilling necessary to achieve the SA performance standards.
4. Surveyed buildings and paved surfaces were trimmed to fit within parcel boundary.
5. Aerial imagery from MassGIS 2021.

Publish Date: 2023/08/23, 6:47 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_00to06in.mxd

ANCHOR QEA

Figure 7-1
Summary of Residential PCB Evaluations for Reach 5A: 0- to 0.5-foot Depth Interval

Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A

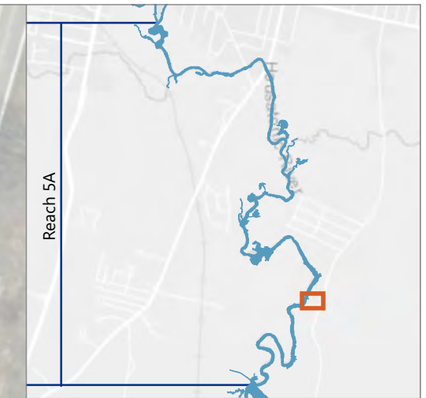


NOTES:
1. NTE: Not to Exceed
2. SA: Spatial Average
3. NTE removal indicates soil removal/backfilling necessary to achieve the NTE performance standards. SA removal indicates soil removal/backfilling necessary to achieve the SA performance standards.
4. Surveyed buildings and paved surfaces were trimmed to fit within parcel boundary.
5. Aerial imagery from MassGIS 2021.

Publish Date: 2023/08/23, 6:37 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_5A-10_06to12in.mxd

ANCHOR QEA

Figure 7-2
Summary of Residential PCB Evaluations for Reach 5A: 0.5- to 1-foot Depth Interval



LEGEND:

- Revised Exposure Area Boundary
- Revised Exposure Subarea Boundary
- 1 mg/kg PCB Isopleth
- Topography (2-foot Contours)
- Surveyed Building Boundary

Floodplain Soil PCB Sampling Location

- 2020/2021 PDI Sample Location
- No Removal

PCB Concentration (mg/kg)

- ≤ 1
- 1.1 - 2
- 2.1 - 10
- 10.1 - 25
- 25.1 - 50
- > 50

NOTES:

1. NTE: Not to Exceed
2. SA: Spatial Average
3. NTE removal indicates soil removal/backfilling necessary to achieve the NTE performance standards. SA removal indicates soil removal/backfilling necessary to achieve the SA performance standards.
4. Surveyed buildings and paved surfaces were trimmed to fit within parcel boundary.
5. Aerial imagery from MassGIS 2021.

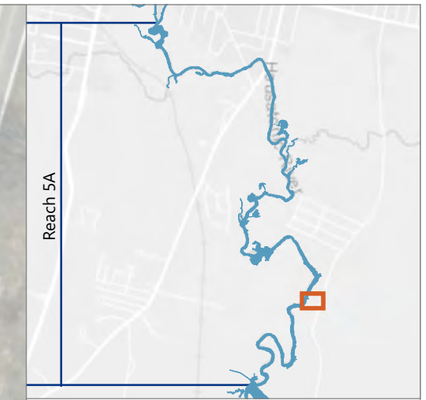
Publish Date: 2023/08/23, 6:59 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_12to24in.mxd

ANCHOR QEA

Figure 7-3

Summary of Residential PCB Evaluations for Reach 5A: 1- to 2-foot Depth Interval

Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A



LEGEND:

- Revised Exposure Area Boundary
- Revised Exposure Subarea Boundary
- 1 mg/kg PCB Isopleth
- Topography (2-foot Contours)
- Surveyed Building Boundary

Floodplain Soil PCB Sampling Location

- 2020/2021 PDI Sample Location
- No Removal

PCB Concentration (mg/kg)

- ≤ 1
- 1.1 - 2
- 2.1 - 10
- 10.1 - 25
- 25.1 - 50
- > 50

NOTES:

1. NTE: Not to Exceed
2. SA: Spatial Average
3. NTE removal indicates soil removal/backfilling necessary to achieve the NTE performance standards. SA removal indicates soil removal/backfilling necessary to achieve the SA performance standards.
4. Surveyed buildings and paved surfaces were trimmed to fit within parcel boundary.
5. Aerial imagery from MassGIS 2021.

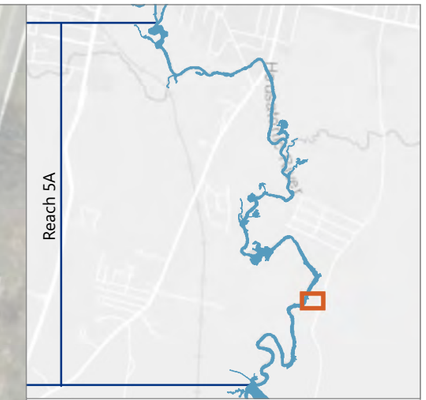
Publish Date: 2023/08/23, 6:45 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_24to36in.mxd

ANCHOR QEA

Figure 7-4

Summary of Residential PCB Evaluations for Reach 5A: 2- to 3-foot Depth Interval

Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A



LEGEND:

- Revised Exposure Area Boundary
- Revised Exposure Subarea Boundary
- 1 mg/kg PCB Isopleth
- Topography (2-foot Contours)
- Surveyed Building Boundary

Floodplain Soil PCB Sampling Location

- 2020/2021 PDI Sample Location
- No Removal

PCB Concentration (mg/kg)

- ≤ 1
- 1.1 - 2
- 2.1 - 10
- 10.1 - 25
- 25.1 - 50
- > 50

NOTES:

1. NTE: Not to Exceed
2. SA: Spatial Average
3. NTE removal indicates soil removal/backfilling necessary to achieve the NTE performance standards. SA removal indicates soil removal/backfilling necessary to achieve the SA performance standards.
4. Surveyed buildings and paved surfaces were trimmed to fit within parcel boundary.
5. Aerial imagery from MassGIS 2021.

Publish Date: 2023/08/23, 6:45 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\ResidentialParcelEval\RemediationOnly\AQ_R5A_ResFPRemoval_36to48in.mxd

ANCHOR QEA

Figure 7-5

Summary of Residential PCB Evaluations for Reach 5A: 3- to 4-foot Depth Interval

Appendix E: Evaluation of Residential Floodplain Properties
Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A

Attachment B

Table E-1B-1

Parcel I6-3-13
Existing Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_AF/AG-4	0	1,635	30.3	9.8	9.8	296.72
I6-3-13_AH/AI-3	1	1,401	25.9	16.0	16.0	415.16
I6-3-13_AI-7	2	1,249	23.1	21.0	21.0	485.64
I6-3-13_AJ/AK-4	3	2,821	52.2	15.0	15.0	783.59
I6-3-13_L-7	4	816	15.1	6.5	6.5	98.18
I6-3-13_AK-2	5	1,837	34.0	16.0/10.0	13.0	442.00
FL000910	6	0.1	0.003	17.0	17.0	0.04
FL000910	6A	314	5.808	17.0	17.0	98.74
FL000910	6B	377	6.979	17.0	17.0	118.64
FL000910	6C	564	10.441	17.0	17.0	177.50
FL000910	6D	4	0.07	17.0	17.0	1.20
I6-3-13_AI-5	7	1,690	31.30	32.0/25.0 [28.0]	28.3	885.79
I6-3-13_AE-6	8	1,069	19.80	43.0	43.0	851.24
I6-3-13_AD-6	9	816	15.12	42.0	42.0	634.88
I6-3-13_AE-7	10	956	17.71	27.0	27.0	478.21
I6-3-13_AG-8	11	1,398	25.89	140.0	140.0	3,624.60
FL000911	12	202	3.74	11.7	11.7	43.71
FL000911	12A	656	12.14	11.7	11.7	142.05
FL000911	12B	666	12.34	11.7	11.7	144.35
FL001466	13	361	6.69	23.5	23.5	157.22
FL001466	13A	600	11.11	23.5	23.5	261.15
FL001466	13B	207	3.82	23.5	23.5	89.89
I6-3-13_AG-6	14	1,735	32.13	29.0	29.0	931.68
I6-3-13_N-8	15	197	3.65	50.0	50.0	182.63
I6-3-13_AF-6	16	1,236	22.88	10.0	10.0	228.81
I6-3-13_N-9	17	90	1.66	61.0	61.0	101.21
I6-3-13_M-7	18	738	13.66	6.8	6.8	92.88
I6-3-13_M-7	18A	57	1.05	6.8	6.8	7.14
I6-3-13_AF-9	19	1,483	27.46	61.0	61.0	1,675.25
I6-3-13_N-10	20	83	1.54	41.0 [34.0]	37.5	57.80
I6-3-13_M-8	21	619	11.47	6.2	6.2	71.10
I6-3-13_L-9	22	626	11.60	2.9 [2.7]	2.8	32.47
FL000909	23	219	4.06	10.4	10.4	42.18
FL000909	23A	85	1.57	10.4	10.4	16.33
I6-3-13_L-8	24	642	11.88	5.0	5.0	59.42
FL001831	25	60	1.11	19.0	19.0	21.00
FL001831	25A	39	0.7	19.0	19.0	13.88

Table E-1B-1

Parcel I6-3-13
Existing Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_M-9	26	539	10.0	4.7	4.7	46.87
FL000815	27	321	5.9	6.53	6.53	38.81
I6-3-13_J-11	28	895	16.6	5.2	5.2	86.23
I6-3-13_K-9	29	487	9.0	0.23	0.23	2.07
I6-3-13B	30	217	4.0	1.8	1.8	7.24
I6-3-13_K-10	31	626	11.6	1.08	1.08	12.53
FL001254	32	836	15.5	0.428	0.428	6.63
I6-3-13_I-11	33	5,306	98.3	0.93	0.93	91.38
I6-3-13_I-13	34	329	6.1	0.27	0.27	1.64
I6-3-13_I-13	35	8,601	159.3	0.27	0.27	43.01
I6-3-13_K-8	36	785	14.5	2.8	2.8	40.68
I6-3-13_M-10	37	529	9.8	6.3	6.3	61.74
I6-3-13A	38	1,270	23.5	1.4	1.4	32.93
I6-3-13_I-9	39	10	0.2	0.92	0.92	0.17
I6-3-13_I-9	40	1,692	31.3	0.92	0.92	28.83
I6-3-13_L-12	41	534	9.9	1.9	1.9	18.78
I6-3-13_L-10	42	464	8.6	2.0	2.0	17.19
I6-3-13_L-11	43	572	10.6	4.5 [4.1]	4.3	45.57
I6-3-13_M-11	44	447	8.3	6.0	6.0	49.72
I6-3-13_M-11/12	45	521	9.7	5.0/4.5	4.75	45.84
I6-3-13_J-10	46	906	16.8	3.1	3.1	51.99
FL001255	47	1,460	27.0	1.01	1.01	27.31
I6-3-13_K-11	48	700	13.0	0.22	0.22	2.85
I6-3-13_L-12/13	49	707	13.1	3.2	3.2	41.88
I6-3-13_I-15	50	15,222	281.9	0.54	0.54	152.22
I6-3-13_I-13	51	1,369	25.4	0.27	0.27	6.85
I6-3-13_I-15	52	272	5.0	0.54	0.54	2.72
I6-3-13_AE-7	53	107	2.0	0.021	0.021	0.04
I6-3-13_N-8	54	641	11.9	0.021	0.021	0.25
I6-3-13_N-9	55	655	12.1	0.021	0.021	0.25
I6-3-13_N-10	56	830	15.4	0.021	0.021	0.32
I6-3-13_N-11	57	463	8.6	0.021	0.021	0.18
FL001465	58	180	3.3	0.021	0.021	0.07
Total	--	**76,043**	**1,408**	--	--	**14,729**
				Volume-Weighted Average (mg/kg)		**10.46**

Table E-1B-1

Parcel I6-3-13
Existing Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_AJ/AK-4	0	2,821	52.2	15.0	15.0	783.59
I6-3-13_AH/AI-3	1	1,401	25.9	16.0	16.0	415.16
I6-3-13_AK-2	2	1,897	35.1	16.0/10.0	13.0	456.30
I6-3-13_AI-7	3	1,249	23.1	21.0	21.0	485.64
I6-3-13_AF/AG-4	4	1,635	30.3	9.8	9.8	296.72
FL000910	5	0.1	0.003	119.0	119.0	0.31
FL000910	5A	314	5.808	119.0	119.0	691.17
FL000910	5B	377	6.979	119.0	119.0	830.51
FL000910	5C	564	10.441	119.0	119.0	1,242.51
FL000910	5D	4	0.07	119.0	119.0	8.42
I6-3-13_AI-5	6	1,690	31.30	32.0/25.0 [28.0]	28.3	885.79
I6-3-13_AE-6	7	1,069	19.80	43.0	43.0	851.24
I6-3-13_L-7	8	816	15.10	6.5	6.5	98.18
FL000911	9	202	3.74	11.9	11.9	44.46
FL000911	9A	656	12.14	11.9	11.9	144.48
FL000911	9B	666	12.34	11.9	11.9	146.82
I6-3-13_AE-7	10	956	17.71	27.0	27.0	478.21
I6-3-13_AG-8	11	1,398	25.89	140.0	140.0	3,624.60
I6-3-13_AD-6	12	816	15.12	42.0	42.0	634.88
FL001466	13	361	6.69	74.4	74.4	497.75
FL001466	13A	600	11.11	74.4	74.4	826.79
FL001466	13B	207	3.82	74.4	74.4	284.58
I6-3-13_AG-6	14	1,735	32.13	29.0	29.0	931.68
I6-3-13_AF-6	15	1,236	22.88	10.0	10.0	228.81
I6-3-13_N-9	16	90	1.66	61.0	61.0	101.21
I6-3-13_M-7	17	738	13.66	6.8	6.8	92.88
I6-3-13_M-7	17A	57	1.05	6.8	6.8	7.14
I6-3-13_N-8	18	197	3.65	50.0	50.0	182.63
I6-3-13_AF-9	19	1,483	27.46	61.0	61.0	1,675.25
I6-3-13_N-10	20	83	1.54	41.0 [34.0]	37.5	57.80
I6-3-13_M-8	21	619	11.47	6.2	6.2	71.10
I6-3-13_L-9	22	626	11.60	2.9 [2.7]	2.8	32.48
FL000909	23	258	4.79	20.0	20.0	95.73
FL000909	23A	85	1.57	20.0	20.0	31.40
I6-3-13_L-8	24	642	11.89	5.0	5.0	59.43
I6-3-13_M-9	25	539	9.97	4.7	4.7	46.87
FL000815	26	321	5.94	4.89	4.89	29.06

Table E-1B-1

Parcel I6-3-13
Existing Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_J-11	27	1,125	20.83	5.2	5.2	108.29
I6-3-13_K-9	28	584	10.81	0.23	0.23	2.49
I6-3-13_K-10	29	626	11.60	1.08	1.08	12.53
FL001254	30	902	16.70	ND (1.002)	0.5010	8.37
I6-3-13_I-11	31	5,306	98.26	0.93	0.93	91.38
I6-3-13_I-13	32	329	6.08	0.27	0.27	1.64
I6-3-13_I-13	33	8,673	160.62	0.27	0.27	43.37
I6-3-13_K-8	34	839	15.54	2.8	2.8	43.50
I6-3-13_M-10	35	529	9.80	6.3	6.3	61.74
I6-3-13_I-9	36	10	0.2	0.92	0.92	0.17
I6-3-13_I-9	37	1,692	31.3	0.92	0.92	28.83
I6-3-13_L-12	38	671	12.4	1.9	1.9	23.60
I6-3-13_L-10	39	464	8.6	2.0	2.0	17.19
I6-3-13_L-11	40	572	10.6	4.5 [4.1]	4.3	45.57
I6-3-13_M-11	41	447	8.3	6.0	6.0	49.72
I6-3-13_M-11/12	42	521	9.7	5.0/4.5	4.75	45.84
FL001255	43	1,767	32.7	ND (1.004)	0.5020	16.43
I6-3-13_J-10	44	906	16.8	3.1	3.1	51.99
I6-3-13_K-11	45	930	17.2	0.22	0.22	3.79
I6-3-13_L-12/13	46	1,001	18.5	3.2	3.2	59.32
I6-3-13_I-15	47	15,222	281.9	0.54	0.54	152.22
I6-3-13_I-13	48	1,369	25.4	0.27	0.27	6.85
I6-3-13_I-15	49	272	5.0	0.54	0.54	2.72
I6-3-13_AE-7	50	107	2.0	0.021	0.021	0.04
I6-3-13_N-9	51	655	12.1	0.021	0.021	0.25
I6-3-13_N-8	52	641	11.9	0.021	0.021	0.25
I6-3-13_N-10	53	830	15.4	0.021	0.021	0.32
I6-3-13_N-11	54	463	8.6	0.021	0.021	0.18
FL001465	55	180	3.3	0.021	0.021	0.07
Total	--	**76,043**	**1,408**	--	--	**18,250**
				Volume-Weighted Average (mg/kg)		**12.96**

Table E-1B-1

Parcel I6-3-13
Existing Conditions

I6-3-13 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	76,043	2,816	32,979	11.71

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-2

Parcel I6-3-13
Existing Conditions

1- to 2-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_L-7	0	816	30.2	0.57	0.57	17.22
I6-3-13_AI-5	1	2,733	101.2	235.0	235.0	23,791.06
I6-3-13_AK-2	2	2,159	80.0	37.0	37.0	2,958.50
I6-3-13_AJ/AK-4	3	3,790	140.4	49.0/40.0	44.5	6,247.80
I6-3-13_AI-7	4	1,812	67.1	16.0	16.0	1,073.66
I6-3-13_AE-7	5	1,063	39.4	40.0	40.0	1,575.43
I6-3-13_AE-6	6	1,069	39.6	35.0	35.0	1,385.74
I6-3-13_AD-6	7	816	30.2	50.0	50.0	1,511.62
I6-3-13_N-8	8	838	31.0	15.5	15.5	481.24
I6-3-13_AG-6	9	1,941	71.9	7.2	7.2	517.71
I6-3-13_AF-6	10	1,236	45.8	10.0	10.0	457.62
I6-3-13_AG-8	11	1,998	74.0	260.0	260.0	19,241.46
I6-3-13_M-9	12	539	19.9	0.26	0.26	5.19
I6-3-13_M-7	13	738	27.3	0.57	0.57	15.57
I6-3-13_M-7	13A	57	2.1	0.57	0.57	1.20
I6-3-13_M-8	14	619	22.9	0.19	0.19	4.36
I6-3-13_AF-9	15	1,483	54.9	65.0	65.0	3,570.20
I6-3-13_N-9	16	745	27.6	6.4	6.4	176.56
I6-3-13_N-10	17	914	33.8	7.9	7.9	267.34
I6-3-13_L-9	18	626	23.2	ND (0.031)	0.016	0.36
I6-3-13_AF/AG-4	19	1,635	60.6	17.0	17.0	1,029.51
I6-3-13_L-8	20	642	23.8	0.1	0.1	2.38
I6-3-13_AH/AI-3	21	2,050	75.9	80.0	80.0	6,073.41
I6-3-13_J-11	22	1,145	42.4	1.4	1.4	59.38
I6-3-13_K-8	23	1,200	44.5	1.68	1.68	74.68
I6-3-13_K-10	24	626	23.2	0.45	0.45	10.44
I6-3-13_I-11	25	5,306	196.5	0.44	0.44	86.47
I6-3-13_I-13	26	11,066	409.8	ND (0.026)	0.013	5.33
I6-3-13_K-9	27	861	31.9	1.07	1.07	34.11
I6-3-13_L-10	28	624	23.1	0.34	0.34	7.85
I6-3-13_M-10	29	625	23.1	0.39	0.39	9.03
I6-3-13_M-11	30	479	17.8	0.5	0.5	8.88
I6-3-13_L-12/13	31	1,625	60.2	0.63	0.63	37.91
I6-3-13_I-9	32	10	0.4	ND (0.027)	0.014	0.01
I6-3-13_I-9	33	1,923	71.2	ND (0.027)	0.014	0.96
I6-3-13_L-11	34	614	22.7	0.17	0.17	3.86
I6-3-13_J-10	35	938	34.8	10.7	10.7	371.90

Table E-1B-2

Parcel I6-3-13
Existing Conditions

1- to 2-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_L-12	36	671	24.8	2.4	2.4	59.63
I6-3-13_N-11	37	577	21.4	4.8	4.8	102.63
I6-3-13_M-11/12	38	580	21.5	0.036	0.036	0.77
I6-3-13_I-15	39	15,922	589.7	0.97	0.97	572.02
I6-3-13_K-11	40	931	34.5	0.18	0.18	6.21
Total	--	**76,043**	**2,816**	--	--	**71,857**
				Volume-Weighted Average (mg/kg)		**25.52**

2- to 3-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_AI-5	0	2,733	101.2	27.0	27.0	2,733.44
I6-3-13_AK-2	1	2,159	80.0	64.0	64.0	5,117.41
I6-3-13_AI-7	2	1,812	67.1	16.0	16.0	1,073.66
I6-3-13_AJ/AK-4	3	3,790	140.4	78.0	78.0	10,949.36
I6-3-13_AD-6	4	1,105	40.9	4.4	4.4	180.07
I6-3-13_AE-6	5	1,069	39.6	18.0	18.0	712.66
I6-3-13_AG-6	6	1,941	71.9	29.0	29.0	2,085.21
I6-3-13_AF-6	7	1,236	45.8	7.9	7.9	361.52
I6-3-13_N-11	8	1,180	43.7	ND (0.026)	0.013	0.57
I6-3-13_N-8	9	897	33.2	0.131	0.131	4.35
I6-3-13_AF-9	10	1,483	54.9	1.1	1.1	60.42
I6-3-13_AG-8	11	1,998	74.0	58.0	58.0	4,292.33
I6-3-13_N-9	12	910	33.7	ND (0.027)	0.014	0.46
I6-3-13_AH/AI-3	13	2,050	75.9	100.0	100.0	7,591.76
I6-3-13_AC-7	14	647	23.9	ND (0.011)	0.011	0.26
I6-3-13_N-10	15	1,386	51.4	ND (0.027)	0.014	0.69
I6-3-13_L-8	16	649	24.0	ND (0.03)	0.02	0.36
I6-3-13_K-10	17	936	34.7	ND (0.029)	0.015	0.50
I6-3-13_K-8	18	1,200	44.5	5.2	5.2	231.16
I6-3-13_L-7	19	410	15.2	0.196	0.196	2.98
I6-3-13_AD-8	20	971	36.0	0.062	0.062	2.23
I6-3-13_I-9	21	10	0.4	ND (0.029)	0.015	0.01
I6-3-13_I-9	22	1,923	71.2	ND (0.029)	0.015	1.03
I6-3-13_AF/AG-4	23	1,635	60.6	5.5	5.5	333.08

Table E-1B-2

Parcel I6-3-13
Existing Conditions

2- to 3-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_AE-7	24	1,120	41.5	57.0	57.0	2,364.69
I6-3-13_K-11	25	1,252	46.4	0.49	0.49	22.73
I6-3-13_L-12	26	2,873	106.4	ND (0.028)	0.014	1.49
I6-3-13_I-11	27	5,306	196.5	ND (0.029)	0.015	2.85
I6-3-13_K-9	28	861	31.9	0.6	0.6	19.12
I6-3-13_J-10	29	938	34.8	2.3	2.3	79.94
I6-3-13_L-9	30	1,259	46.6	ND (0.031)	0.016	0.72
I6-3-13_J-11	31	1,150	42.6	3.0	3.0	127.78
I6-3-13_I-13	32	27,151	1005.6	0.33	0.33	331.85
Total	**--**	**76,043**	**2,816**	**--**	**--**	**38,687**
				Volume-Weighted Average (mg/kg)		**13.74**

3- to 4-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_AK-2	0	2,159	80.0	87.0	87.0	6,956.48
I6-3-13_AI-5	1	2,733	101.2	18.0	18.0	1,822.30
I6-3-13_AJ/AK-4	2	3,790	140.4	100.0	100.0	14,037.65
I6-3-13_AG-8	3	1,998	74.0	16.0	16.0	1,184.09
I6-3-13_AI-7	4	1,812	67.1	17.0	17.0	1,140.76
I6-3-13_AF/AG-4	5	1,635	60.6	5.4	5.4	327.02
I6-3-13_AE-7	6	1,609	59.6	6.4	6.4	381.41
I6-3-13_AH/AI-3	7	2,050	75.9	13.0	13.0	986.93
I6-3-13_AE-6	8	1,069	39.6	13.0	13.0	514.70
I6-3-13_AD-8	9	1	0.05	ND (0.011)	0.011	0.00
I6-3-13_AD-8	10	7,561	280.05	ND (0.011)	0.011	3.08
I6-3-13_AD-6	11	1,106	40.95	0.32	0.32	13.10
I6-3-13_AG-6	12	1,941	71.90	33.0	33.0	2,372.82
I6-3-13_AF-6	13	1,236	45.76	46.0	46.0	2,105.06
I6-3-13_AE-10	14	28,550	1057.41	ND (0.012)	0.012	12.69
I6-3-13_AC-7	15	15,016	556.16	ND (0.01)	0.01	5.56
I6-3-13_AF-9	16	1,775	65.75	5.05	5.05	332.06
Total	**--**	**76,043**	**2,816**	**--**	**--**	**32,196**
				Volume-Weighted Average (mg/kg)		**11.43**

Table E-1B-2

Parcel I6-3-13
Existing Conditions

4- to 5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_AK-2	0	2,159	79.96	21.0	21.0	1,679.15
I6-3-13_AI-5	1	2,733	101.24	16.0	16.0	1,619.82
I6-3-13_AJ/AK-4	2	3,790	140.38	250.0	250.0	35,094.12
I6-3-13_AG-8	3	1,998	74.01	12.0	12.0	888.07
I6-3-13_AI-7	4	1,812	67.10	12.0	12.0	805.24
I6-3-13_AF/AG-4	5	1,635	60.56	1.0	1.0	60.56
I6-3-13_AE-7	6	1,609	59.59	6.5	6.5	387.37
I6-3-13_AH/AI-3	7	2,050	75.92	9.9	9.9	751.58
I6-3-13_AE-6	8	1,069	39.59	5.5	5.5	217.76
I6-3-13_AD-8	9	1	0.05	ND (0.011)	0.011	0.00
I6-3-13_AD-8	10	7,561	280.05	ND (0.011)	0.011	3.08
I6-3-13_AD-6	11	1,106	40.95	ND (0.013)	0.013	0.53
I6-3-13_AG-6	12	1,941	71.90	63.0	63.0	4,529.94
I6-3-13_AF-6	13	1,236	45.76	30.0	30.0	1,372.86
I6-3-13_AE-10	14	28,550	1057.41	ND (0.011)	0.011	11.63
I6-3-13_AC-7	15	15,016	556.16	ND (0.01)	0.01	5.56
I6-3-13_AF-9	16	1,775	65.75	9.3	9.3	611.51
Total	**--**	**76,043**	**2,816**	**--**	**--**	**48,039**
				Volume-Weighted Average (mg/kg)		**17.06**

5- to 6-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_AK-2	0	2,159	79.96	44.0	44.0	3,518.22
I6-3-13_AI-5	1	2,733	101.24	8.0	8.0	809.91
I6-3-13_AJ/AK-4	2	3,790	140.38	160.0	160.0	22,460.24
I6-3-13_AG-8	3	1,998	74.01	4.8	4.8	355.23
I6-3-13_AI-7	4	1,812	67.10	24.0	24.0	1,610.49
I6-3-13_AF/AG-4	5	1,635	60.56	0.0155	0.0155	0.94
I6-3-13_AE-7	6	1,609	59.59	20.0	20.0	1,191.90
I6-3-13_AH/AI-3	7	2,050	75.92	0.071	0.071	5.39
I6-3-13_AE-6	8	1,069	39.59	6.3	6.3	249.43
I6-3-13_AD-8	9	1	0.05	ND (0.011)	0.011	0.00
I6-3-13_AD-8	10	7,561	280.05	ND (0.011)	0.011	3.08
I6-3-13_AD-6	11	1,106	40.95	ND (0.013)	0.013	0.53

Table E-1B-2

Parcel I6-3-13
Existing Conditions

5- to 6-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_AG-6	12	1,941	71.90	7.6	7.6	546.47
I6-3-13_AF-6	13	1,236	45.76	12.0	12.0	549.15
I6-3-13_AE-10	14	28,550	1057.41	ND (0.011)	0.011	11.63
I6-3-13_AC-7	15	15,016	556.16	ND (0.01)	0.01	5.56
I6-3-13_AF-9	16	1,775	65.75	16.0	16.0	1,052.06
Total	--	**76,043**	**2,816**	--	--	**32,370**
				Volume-Weighted Average (mg/kg)		**11.49**

Table E-1B-2

Parcel I6-3-13
Existing Conditions

I6-3-13 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
1- to 6-Foot Depth Increment	76,043	14,082	223,149	15.85

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-3

Parcel I6-3-13
Post-Remediation Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_AF/AG-4	0	1,635	30.28	9.8	9.8	296.72
I6-3-13_AH/AI-3	1	1,401	25.95	16.0	***0.021***	0.54
I6-3-13_AI-7	2	1,249	23.13	21.0	***0.021***	0.49
I6-3-13_AJ/AK-4	3	2,821	52.24	15.0	***0.021***	1.10
I6-3-13_L-7	4	816	15.10	6.5	6.5	98.18
I6-3-13_AK-2	5	1,837	34.02	16.0/10.0	***0.021***	0.71
FL000910	6	0.1	0.003	17.0	***0.021***	0.00
FL000910	6A	314	5.808	17.0	***0.021***	0.12
FL000910	6B	377	6.979	17.0	***0.021***	0.15
FL000910	6C	564	10.441	17.0	***0.021***	0.22
FL000910	6D	4	0.07	17.0	***0.021***	0.00
I6-3-13_AI-5	7	1,690	31.30	32.0/25.0 [28.0]	***0.021***	0.66
I6-3-13_AE-6	8	1,069	19.80	43.0	***0.021***	0.42
I6-3-13_AD-6	9	816	15.12	42.0	***0.021***	0.32
I6-3-13_AE-7	10	956	17.71	27.0	***0.021***	0.37
I6-3-13_AG-8	11	1,398	25.89	140.0	***0.021***	0.54
FL000911	12	202	3.74	11.7	***0.021***	0.08
FL000911	12A	656	12.14	11.7	***0.021***	0.25
FL000911	12B	666	12.34	11.7	***0.021***	0.26
FL001466	13	361	6.69	23.5	***0.021***	0.14
FL001466	13A	600	11.11	23.5	***0.021***	0.23
FL001466	13B	207	3.82	23.5	***0.021***	0.08
I6-3-13_AG-6	14	1,735	32.13	29.0	***0.021***	0.67
I6-3-13_N-8	15	197	3.65	50.0	***0.021***	0.08
I6-3-13_AF-6	16	1,236	22.88	10.0	***0.021***	0.48
I6-3-13_N-9	17	90	1.66	61.0	***0.021***	0.03
I6-3-13_M-7	18	738	13.66	6.8	6.8	92.88
I6-3-13_M-7	18A	57	1.05	6.8	***0.021***	0.02
I6-3-13_AF-9	19	1,483	27.46	61.0	***0.021***	0.58
I6-3-13_N-10	20	83	1.54	41.0 [34.0]	***0.021***	0.03
I6-3-13_M-8	21	619	11.47	6.2	6.2	71.10
I6-3-13_L-9	22	626	11.60	2.9 [2.7]	2.8	32.47
FL000909	23	219	4.06	10.4	***0.021***	0.09
FL000909	23A	85	1.57	10.4	***0.021***	0.03
I6-3-13_L-8	24	642	11.88	5.0	5.0	59.42
FL001831	25	60	1.11	19.0	***0.021***	0.02
FL001831	25A	39	0.7	19.0	***0.021***	0.02

Table E-1B-3

Parcel I6-3-13
Post-Remediation Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_M-9	26	539	10.0	4.7	4.7	46.87
FL000815	27	321	5.9	6.53	6.53	38.81
I6-3-13_J-11	28	895	16.6	5.2	5.2	86.23
I6-3-13_K-9	29	487	9.0	0.23	0.23	2.07
I6-3-13B	30	217	4.0	1.8	1.8	7.24
I6-3-13_K-10	31	626	11.6	1.08	1.08	12.53
FL001254	32	836	15.5	0.428	0.428	6.63
I6-3-13_I-11	33	5,306	98.3	0.93	0.93	91.38
I6-3-13_I-13	34	329	6.1	0.27	0.27	1.64
I6-3-13_I-13	35	8,601	159.3	0.27	0.27	43.01
I6-3-13_K-8	36	785	14.5	2.8	2.8	40.68
I6-3-13_M-10	37	529	9.8	6.3	6.3	61.74
I6-3-13A	38	1,270	23.5	1.4	1.4	32.93
I6-3-13_I-9	39	10	0.2	0.92	0.92	0.17
I6-3-13_I-9	40	1,692	31.3	0.92	0.92	28.83
I6-3-13_L-12	41	534	9.9	1.9	1.9	18.78
I6-3-13_L-10	42	464	8.6	2.0	2.0	17.19
I6-3-13_L-11	43	572	10.6	4.5 [4.1]	4.3	45.57
I6-3-13_M-11	44	447	8.3	6.0	6.0	49.72
I6-3-13_M-11/12	45	521	9.7	5.0/4.5	4.75	45.84
I6-3-13_J-10	46	906	16.8	3.1	3.1	51.99
FL001255	47	1,460	27.0	1.01	1.01	27.31
I6-3-13_K-11	48	700	13.0	0.22	0.22	2.85
I6-3-13_L-12/13	49	707	13.1	3.2	3.2	41.88
I6-3-13_I-15	50	15,222	281.9	0.54	0.54	152.22
I6-3-13_I-13	51	1,369	25.4	0.27	0.27	6.85
I6-3-13_I-15	52	272	5.0	0.54	0.54	2.72
I6-3-13_AE-7	53	107	2.0	0.021	***0.021***	0.04
I6-3-13_N-8	54	641	11.9	0.021	0.021	0.25
I6-3-13_N-9	55	655	12.1	0.021	0.021	0.25
I6-3-13_N-10	56	830	15.4	0.021	0.021	0.32
I6-3-13_N-11	57	463	8.6	0.021	0.021	0.18
FL001465	58	180	3.3	0.021	0.021	0.07
Total	--	**76,043**	**1,408**	--	--	**1,624**
				Volume-Weighted Average (mg/kg)		**1.15**

Table E-1B-3

Parcel I6-3-13
Post-Remediation Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_AJ/AK-4	0	2,821	52.2	15.0	***0.021***	1.10
I6-3-13_AH/AI-3	1	1,401	25.9	16.0	***0.021***	0.54
I6-3-13_AK-2	2	1,897	35.1	16.0/10.0	***0.021***	0.74
I6-3-13_AI-7	3	1,249	23.1	21.0	***0.021***	0.49
I6-3-13_AF/AG-4	4	1,635	30.3	9.8	9.8	296.72
FL000910	5	0.1	0.003	119.0	***0.021***	0.00
FL000910	5A	314	5.808	119.0	***0.021***	0.12
FL000910	5B	377	6.979	119.0	***0.021***	0.15
FL000910	5C	564	10.441	119.0	***0.021***	0.22
FL000910	5D	4	0.07	119.0	***0.021***	0.00
I6-3-13_AI-5	6	1,690	31.30	32.0/25.0 [28.0]	***0.021***	0.66
I6-3-13_AE-6	7	1,069	19.80	43.0	***0.021***	0.42
I6-3-13_L-7	8	816	15.10	6.5	6.5	98.18
FL000911	9	202	3.74	11.9	***0.021***	0.08
FL000911	9A	656	12.14	11.9	***0.021***	0.25
FL000911	9B	666	12.34	11.9	***0.021***	0.26
I6-3-13_AE-7	10	956	17.71	27.0	***0.021***	0.37
I6-3-13_AG-8	11	1,398	25.89	140.0	***0.021***	0.54
I6-3-13_AD-6	12	816	15.12	42.0	***0.021***	0.32
FL001466	13	361	6.69	74.4	***0.021***	0.14
FL001466	13A	600	11.11	74.4	***0.021***	0.23
FL001466	13B	207	3.82	74.4	***0.021***	0.08
I6-3-13_AG-6	14	1,735	32.13	29.0	***0.021***	0.67
I6-3-13_AF-6	15	1,236	22.88	10.0	***0.021***	0.48
I6-3-13_N-9	16	90	1.66	61.0	***0.021***	0.03
I6-3-13_M-7	17	738	13.66	6.8	6.8	92.88
I6-3-13_M-7	17A	57	1.05	6.8	***0.021***	0.02
I6-3-13_N-8	18	197	3.65	50.0	***0.021***	0.08
I6-3-13_AF-9	19	1,483	27.46	61.0	***0.021***	0.58
I6-3-13_N-10	20	83	1.54	41.0 [34.0]	***0.021***	0.03
I6-3-13_M-8	21	619	11.47	6.2	6.2	71.10
I6-3-13_L-9	22	626	11.60	2.9 [2.7]	2.8	32.48
FL000909	23	258	4.79	20.0	***0.021***	0.10
FL000909	23A	85	1.57	20.0	***0.021***	0.03
I6-3-13_L-8	24	642	11.89	5.0	5.0	59.43
I6-3-13_M-9	25	539	9.97	4.7	4.7	46.87
FL000815	26	321	5.94	4.89	4.89	29.06

Table E-1B-3

Parcel I6-3-13
Post-Remediation Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_J-11	27	1,125	20.83	5.2	5.2	108.29
I6-3-13_K-9	28	584	10.81	0.23	0.23	2.49
I6-3-13_K-10	29	626	11.60	1.08	1.08	12.53
FL001254	30	902	16.70	ND (1.002)	0.5010	8.37
I6-3-13_I-11	31	5,306	98.26	0.93	0.93	91.38
I6-3-13_I-13	32	329	6.08	0.27	0.27	1.64
I6-3-13_I-13	33	8,673	160.62	0.27	0.27	43.37
I6-3-13_K-8	34	839	15.54	2.8	2.8	43.50
I6-3-13_M-10	35	529	9.80	6.3	6.3	61.74
I6-3-13_I-9	36	10	0.2	0.92	0.92	0.17
I6-3-13_I-9	37	1,692	31.3	0.92	0.92	28.83
I6-3-13_L-12	38	671	12.4	1.9	1.9	23.60
I6-3-13_L-10	39	464	8.6	2.0	2.0	17.19
I6-3-13_L-11	40	572	10.6	4.5 [4.1]	4.3	45.57
I6-3-13_M-11	41	447	8.3	6.0	6.0	49.72
I6-3-13_M-11/12	42	521	9.7	5.0/4.5	4.75	45.84
FL001255	43	1,767	32.7	ND (1.004)	0.5020	16.43
I6-3-13_J-10	44	906	16.8	3.1	3.1	51.99
I6-3-13_K-11	45	930	17.2	0.22	0.22	3.79
I6-3-13_L-12/13	46	1,001	18.5	3.2	3.2	59.32
I6-3-13_I-15	47	15,222	281.9	0.54	0.54	152.22
I6-3-13_I-13	48	1,369	25.4	0.27	0.27	6.85
I6-3-13_I-15	49	272	5.0	0.54	0.54	2.72
I6-3-13_AE-7	50	107	2.0	0.021	***0.021***	0.04
I6-3-13_N-9	51	655	12.1	0.021	0.021	0.25
I6-3-13_N-8	52	641	11.9	0.021	0.021	0.25
I6-3-13_N-10	53	830	15.4	0.021	0.021	0.32
I6-3-13_N-11	54	463	8.6	0.021	0.021	0.18
FL001465	55	180	3.3	0.021	0.021	0.07
Total	--	**76,043**	**1,408**	--	--	**1,614**
				Volume-Weighted Average (mg/kg)		**1.15**

Table E-1B-3

Parcel I6-3-13
Post-Remediation Conditions

I6-3-13 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	76,043	2,816	3,238	1.15

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.
5. Shaded concentrations in bold italics font represent the placement of clean backfill material following the performance of the proposed remediation. The backfill concentration corresponds to the average PCB concentration as presented in Proposed Backfill Data Set for CD Sites.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-4

Parcel I6-3-13
Post-Remediation Conditions

1- to 2-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_L-7	0	816	30.2	0.57	0.57	17.22
I6-3-13_AI-5	1	2,733	101.2	235.0	***0.021***	2.13
I6-3-13_AK-2	2	2,159	80.0	37.0	***0.021***	1.68
I6-3-13_AJ/AK-4	3	3,790	140.4	49.0/40.0	***0.021***	2.95
I6-3-13_AI-7	4	1,812	67.1	16.0	16.0	1,073.66
I6-3-13_AE-7	5	1,063	39.4	40.0	***0.021***	0.83
I6-3-13_AE-6	6	1,069	39.6	35.0	***0.021***	0.83
I6-3-13_AD-6	7	816	30.2	50.0	***0.021***	0.63
I6-3-13_N-8	8	838	31.0	15.5	15.5	481.24
I6-3-13_AG-6	9	1,941	71.9	7.2	***0.021***	1.51
I6-3-13_AF-6	10	1,236	45.8	10.0	***0.021***	0.96
I6-3-13_AG-8	11	1,998	74.0	260.0	***0.021***	1.55
I6-3-13_M-9	12	539	19.9	0.26	0.26	5.19
I6-3-13_M-7	13	738	27.3	0.57	0.57	15.57
I6-3-13_M-7	13A	57	2.1	0.57	***0.021***	0.04
I6-3-13_M-8	14	619	22.9	0.19	0.19	4.36
I6-3-13_AF-9	15	1,483	54.9	65.0	***0.021***	1.15
I6-3-13_N-9	16	745	27.6	6.4	6.4	176.56
I6-3-13_N-10	17	914	33.8	7.9	7.9	267.34
I6-3-13_L-9	18	626	23.2	ND (0.031)	0.016	0.36
I6-3-13_AF/AG-4	19	1,635	60.6	17.0	17.0	1,029.51
I6-3-13_L-8	20	642	23.8	0.1	0.1	2.38
I6-3-13_AH/AI-3	21	2,050	75.9	80.0	***0.021***	1.59
I6-3-13_J-11	22	1,145	42.4	1.4	1.4	59.38
I6-3-13_K-8	23	1,200	44.5	1.68	1.68	74.68
I6-3-13_K-10	24	626	23.2	0.45	0.45	10.44
I6-3-13_I-11	25	5,306	196.5	0.44	0.44	86.47
I6-3-13_I-13	26	11,066	409.8	ND (0.026)	0.013	5.33
I6-3-13_K-9	27	861	31.9	1.07	1.07	34.11
I6-3-13_L-10	28	624	23.1	0.34	0.34	7.85
I6-3-13_M-10	29	625	23.1	0.39	0.39	9.03
I6-3-13_M-11	30	479	17.8	0.5	0.5	8.88
I6-3-13_L-12/13	31	1,625	60.2	0.63	0.63	37.91
I6-3-13_I-9	32	10	0.4	ND (0.027)	0.014	0.01
I6-3-13_I-9	33	1,923	71.2	ND (0.027)	0.014	0.96
I6-3-13_L-11	34	614	22.7	0.17	0.17	3.86
I6-3-13_J-10	35	938	34.8	10.7	10.7	371.90

Table E-1B-4

Parcel I6-3-13
Post-Remediation Conditions

1- to 2-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_L-12	36	671	24.8	2.4	2.4	59.63
I6-3-13_N-11	37	577	21.4	4.8	4.8	102.63
I6-3-13_M-11/12	38	580	21.5	0.036	0.036	0.77
I6-3-13_I-15	39	15,922	589.7	0.97	0.97	572.02
I6-3-13_K-11	40	931	34.5	0.18	0.18	6.21
Total	--	**76,043**	**2,816**	--	--	**4,541**
				Volume-Weighted Average (mg/kg)		**1.61**

2- to 3-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_AI-5	0	2,733	101.2	27.0	***0.021***	2.13
I6-3-13_AK-2	1	2,159	80.0	64.0	***0.021***	1.68
I6-3-13_AI-7	2	1,812	67.1	16.0	16.0	1,073.66
I6-3-13_AJ/AK-4	3	3,790	140.4	78.0	***0.021***	2.95
I6-3-13_AD-6	4	1,105	40.9	4.4	4.4	180.07
I6-3-13_AE-6	5	1,069	39.6	18.0	18.0	712.66
I6-3-13_AG-6	6	1,941	71.9	29.0	***0.021***	1.51
I6-3-13_AF-6	7	1,236	45.8	7.9	***0.021***	0.96
I6-3-13_N-11	8	1,180	43.7	ND (0.026)	0.013	0.57
I6-3-13_N-8	9	897	33.2	0.131	0.131	4.35
I6-3-13_AF-9	10	1,483	54.9	1.1	1.1	60.42
I6-3-13_AG-8	11	1,998	74.0	58.0	***0.021***	1.55
I6-3-13_N-9	12	910	33.7	ND (0.027)	0.014	0.46
I6-3-13_AH/AI-3	13	2,050	75.9	100.0	***0.021***	1.59
I6-3-13_AC-7	14	647	23.9	ND (0.011)	0.011	0.26
I6-3-13_N-10	15	1,386	51.4	ND (0.027)	0.014	0.69
I6-3-13_L-8	16	649	24.0	ND (0.03)	0.02	0.36
I6-3-13_K-10	17	936	34.7	ND (0.029)	0.015	0.50
I6-3-13_K-8	18	1,200	44.5	5.2	5.2	231.16
I6-3-13_L-7	19	410	15.2	0.196	0.196	2.98
I6-3-13_AD-8	20	971	36.0	0.062	0.062	2.23
I6-3-13_I-9	21	10	0.4	ND (0.029)	0.015	0.01
I6-3-13_I-9	22	1,923	71.2	ND (0.029)	0.015	1.03
I6-3-13_AF/AG-4	23	1,635	60.6	5.5	5.5	333.08

Table E-1B-4

Parcel I6-3-13
Post-Remediation Conditions

2- to 3-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_AE-7	24	1,120	41.5	57.0	***0.021***	0.87
I6-3-13_K-11	25	1,252	46.4	0.49	0.49	22.73
I6-3-13_L-12	26	2,873	106.4	ND (0.028)	0.014	1.49
I6-3-13_I-11	27	5,306	196.5	ND (0.029)	0.015	2.85
I6-3-13_K-9	28	861	31.9	0.6	0.6	19.12
I6-3-13_J-10	29	938	34.8	2.3	2.3	79.94
I6-3-13_L-9	30	1,259	46.6	ND (0.031)	0.016	0.72
I6-3-13_J-11	31	1,150	42.6	3.0	3.0	127.78
I6-3-13_I-13	32	27,151	1005.6	0.33	0.33	331.85
Total	**--**	**76,043**	**2,816**	**--**	**--**	**3,204**
				Volume-Weighted Average (mg/kg)		**1.14**

3- to 4-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_AK-2	0	2,159	80.0	87.0	***0.021***	1.68
I6-3-13_AI-5	1	2,733	101.2	18.0	18.0	1,822.30
I6-3-13_AJ/AK-4	2	3,790	140.4	100.0	***0.021***	2.95
I6-3-13_AG-8	3	1,998	74.0	16.0	16.0	1,184.09
I6-3-13_AI-7	4	1,812	67.1	17.0	17.0	1,140.76
I6-3-13_AF/AG-4	5	1,635	60.6	5.4	5.4	327.02
I6-3-13_AE-7	6	1,609	59.6	6.4	6.4	381.41
I6-3-13_AH/AI-3	7	2,050	75.9	13.0	13.0	986.93
I6-3-13_AE-6	8	1,069	39.6	13.0	13.0	514.70
I6-3-13_AD-8	9	1	0.05	ND (0.011)	0.011	0.00
I6-3-13_AD-8	10	7,561	280.05	ND (0.011)	0.011	3.08
I6-3-13_AD-6	11	1,106	40.95	0.32	0.32	13.10
I6-3-13_AG-6	12	1,941	71.90	33.0	***0.021***	1.51
I6-3-13_AF-6	13	1,236	45.76	46.0	***0.021***	0.96
I6-3-13_AE-10	14	28,550	1057.41	ND (0.012)	0.012	12.69
I6-3-13_AC-7	15	15,016	556.16	ND (0.01)	0.01	5.56
I6-3-13_AF-9	16	1,775	65.75	5.05	5.05	332.06
Total	**--**	**76,043**	**2,816**	**--**	**--**	**6,731**
				Volume-Weighted Average (mg/kg)		**2.39**

Table E-1B-4

Parcel I6-3-13
Post-Remediation Conditions

4- to 5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_AK-2	0	2,159	79.96	21.0	***0.021***	1.68
I6-3-13_AI-5	1	2,733	101.24	16.0	16.0	1,619.82
I6-3-13_AJ/AK-4	2	3,790	140.38	250.0	***0.021***	2.95
I6-3-13_AG-8	3	1,998	74.01	12.0	12.0	888.07
I6-3-13_AI-7	4	1,812	67.10	12.0	12.0	805.24
I6-3-13_AF/AG-4	5	1,635	60.56	1.0	1.0	60.56
I6-3-13_AE-7	6	1,609	59.59	6.5	6.5	387.37
I6-3-13_AH/AI-3	7	2,050	75.92	9.9	9.9	751.58
I6-3-13_AE-6	8	1,069	39.59	5.5	5.5	217.76
I6-3-13_AD-8	9	1	0.05	ND (0.011)	0.011	0.00
I6-3-13_AD-8	10	7,561	280.05	ND (0.011)	0.011	3.08
I6-3-13_AD-6	11	1,106	40.95	ND (0.013)	0.013	0.53
I6-3-13_AG-6	12	1,941	71.90	63.0	***0.021***	1.51
I6-3-13_AF-6	13	1,236	45.76	30.0	30.0	1,372.86
I6-3-13_AE-10	14	28,550	1057.41	ND (0.011)	0.011	11.63
I6-3-13_AC-7	15	15,016	556.16	ND (0.01)	0.01	5.56
I6-3-13_AF-9	16	1,775	65.75	9.3	9.3	611.51
Total	**--**	**76,043**	**2,816**	**--**	**--**	**6,742**
				Volume-Weighted Average (mg/kg)		**2.39**

5- to 6-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_AK-2	0	2,159	79.96	44.0	***0.021***	1.68
I6-3-13_AI-5	1	2,733	101.24	8.0	8.0	809.91
I6-3-13_AJ/AK-4	2	3,790	140.38	160.0	***0.021***	2.95
I6-3-13_AG-8	3	1,998	74.01	4.8	4.8	355.23
I6-3-13_AI-7	4	1,812	67.10	24.0	24.0	1,610.49
I6-3-13_AF/AG-4	5	1,635	60.56	0.0155	0.0155	0.94
I6-3-13_AE-7	6	1,609	59.59	20.0	20.0	1,191.90
I6-3-13_AH/AI-3	7	2,050	75.92	0.071	0.071	5.39
I6-3-13_AE-6	8	1,069	39.59	6.3	6.3	249.43
I6-3-13_AD-8	9	1	0.05	ND (0.011)	0.011	0.00
I6-3-13_AD-8	10	7,561	280.05	ND (0.011)	0.011	3.08
I6-3-13_AD-6	11	1,106	40.95	ND (0.013)	0.013	0.53

Table E-1B-4

Parcel I6-3-13
Post-Remediation Conditions

5- to 6-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
I6-3-13_AG-6	12	1,941	71.90	7.6	7.6	546.47
I6-3-13_AF-6	13	1,236	45.76	12.0	12.0	549.15
I6-3-13_AE-10	14	28,550	1057.41	ND (0.011)	0.011	11.63
I6-3-13_AC-7	15	15,016	556.16	ND (0.01)	0.01	5.56
I6-3-13_AF-9	16	1,775	65.75	16.0	16.0	1,052.06
Total	--	**76,043**	**2,816**	--	--	**6,396**
				Volume-Weighted Average (mg/kg)		**2.27**

Table E-1B-4

Parcel I6-3-13
Post-Remediation Conditions

I6-3-13 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
1- to 6-Foot Depth Increment	76,043	14,082	27,614	1.96

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.
5. Shaded concentrations in bold italics font represent the placement of clean backfill material following the performance of the proposed remediation. The backfill concentration corresponds to the average PCB concentration as presented in Proposed Backfill Data Set for CD Sites.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-5

Parcel J6-2-3
Existing Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-2-3_L/M-5	0	257	4.75	11.0	11.0	52.27
J6-2-3_L-4	1	120	2.23	12.5	12.5	27.85
J6-2-3_L/M-6	2	281	5.20	13.0	13.0	67.65
J6-2-3_N-27	3	989	18.32	0.35	0.35	6.41
BS000100	4	316	5.85	16.7	16.7	97.64
J6-2-3_M-29	5	1,400	25.92	0.074 [0.074]	0.074	1.92
J6-2-3_M-29	6	10,376	192.14	0.074 [0.074]	0.074	14.22
J6-2-3_L/M-7	7	857	15.87	0.064	0.064	1.02
J6-2-3_M/N-7	8	20	0.4	40.0	40.0	14.54
J6-2-3_L/M-26/27	9	0.5	0.010	ND (0.3)	0.2	0.00
J6-2-3_L/M-26/27	10	646	11.972	ND (0.3)	0.2	1.80
J6-2-3_K-25	11	1,744	32.290	0.235	0.235	7.59
J6-2-2_J-24	12	347	6.429	6.3	6.3	40.50
J6-2-10_H-25	13	4,506	83.448	0.089	0.089	7.43
J6-2-2_J/K-23/24	14	51	0.9	29.0/27.0	28.0	26.41
J6-2-2_I/J-24	15	386	7.1	3.9	3.9	27.86
J6-2-3_K/L-27/28	16	1,628	30.1	ND (0.27)	0.14	4.07
J6-2-3_K/L-27/28	17	504	9.3	ND (0.27)	0.14	1.26
J6-2-3_K/L-27/28	18	4,686	86.8	ND (0.27)	0.14	11.71
J6-2-3_K/L-27/28	19	35	0.6	ND (0.27)	0.14	0.09
J6-2-3_K-4	20	741	13.7	2.4	2.4	32.93
J6-2-3_K/L-3	21	411	7.6	14.0/10.0	12.0	91.20
J6-2-3_I-26	22	14,034	259.9	0.063	0.063	16.37
J6-2-3_M-29	23	433	8.0	0.074 [0.074]	0.074	0.59
J6-2-3_K/L-27/28	24	613	11.4	ND (0.27)	0.14	1.53
J6-2-3_I-26	25	1,035	19.2	0.063	0.063	1.21
J6-2-3_K-25	26	22	0.4	0.021	0.021	0.01
J6-2-2_J-24	27	2	0.04	0.021	0.021	0.00
J6-2-2_J/K-23/24	28	187	3.46	0.021	0.021	0.07
Total	--	**46,627**	**863**	--	--	**557**
				Volume-Weighted Average (mg/kg)		**0.65**

Table E-1B-5

Parcel J6-2-3
Existing Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-2-3_L/M-5	0	257	4.75	11.0	11.0	52.27
J6-2-3_L-4	1	120	2.23	12.5	12.5	27.85
J6-2-3_L/M-6	2	281	5.20	13.0	13.0	67.65
J6-2-3_N-27	3	989	18.32	0.35	0.35	6.41
BS000100	4	316	5.85	38.9 [37.5]	38.2	223.35
J6-2-3_M-29	5	1,400	25.92	0.074 [0.074]	0.074	1.92
J6-2-3_M-29	6	10,376	192.14	0.074 [0.074]	0.074	14.22
J6-2-3_L/M-7	7	857	15.87	0.064	0.064	1.02
J6-2-3_M/N-7	8	20	0.4	40.0	40.0	14.54
J6-2-3_L/M-26/27	9	0.5	0.010	ND (0.3)	0.2	0.00
J6-2-3_L/M-26/27	10	646	11.972	ND (0.3)	0.2	1.80
J6-2-3_K-25	11	1,744	32.290	0.235	0.235	7.59
J6-2-2_J-24	12	347	6.429	6.3	6.3	40.50
J6-2-10_H-25	13	4,506	83.448	0.089	0.089	7.43
J6-2-2_J/K-23/24	14	51	0.9	29.0/27.0	28.0	26.41
J6-2-2_I/J-24	15	386	7.1	3.9	3.9	27.86
J6-2-3_K/L-27/28	16	1,628	30.1	ND (0.27)	0.14	4.07
J6-2-3_K/L-27/28	17	504	9.3	ND (0.27)	0.14	1.26
J6-2-3_K/L-27/28	18	4,686	86.8	ND (0.27)	0.14	11.71
J6-2-3_K/L-27/28	19	35	0.6	ND (0.27)	0.14	0.09
J6-2-3_K-4	20	741	13.7	2.4	2.4	32.93
J6-2-3_K/L-3	21	411	7.6	14.0/10.0	12.0	91.20
J6-2-3_I-26	22	14,034	259.9	0.063	0.063	16.37
J6-2-3_M-29	23	433	8.0	0.074 [0.074]	0.074	0.59
J6-2-3_K/L-27/28	24	613	11.4	ND (0.27)	0.14	1.53
J6-2-3_I-26	25	1,035	19.2	0.063	0.063	1.21
J6-2-3_K-25	26	22	0.4	0.021	0.021	0.01
J6-2-2_J-24	27	2	0.04	0.021	0.021	0.00
J6-2-2_J/K-23/24	28	187	3.46	0.021	0.021	0.07
Total	--	**46,627**	**863**	--	--	**682**
				Volume-Weighted Average (mg/kg)		**0.79**

Table E-1B-5

Parcel J6-2-3
Existing Conditions

J6-2-3 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	46,627	1,727	1,239	0.72

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-6

Parcel J6-2-3
Existing Conditions

1- to 2-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-2-3_L/M-7	0	7,420	274.81	ND (0.0086)	0.0086	2.36
J6-2-3_L/M-5	1	453	16.78	80.0	80.0	1,342.03
J6-2-3_L/M-6	2	296	10.96	73.0	73.0	800.33
J6-2-2_I/J-24	3	12,930	478.88	0.036	0.036	17.24
J6-2-2_J/K-23/24	4	238	8.80	16.0	16.0	140.87
J6-2-2_J-24	5	350	12.95	10.4	10.4	134.64
J6-2-3_K-4	6	14,956	553.91	1.3	1.3	720.08
J6-2-3_J/K-2/3	7	7,083	262.35	ND (0.0079)	0.0079	2.07
J6-2-3_L-5/6	8	2,902	107.49	2.6	2.6	279.47
Total	**--**	**46,627**	**1,727**	**--**	**--**	**3,439**
				Volume-Weighted Average (mg/kg)		**1.99**

2- to 3-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-2-3_L/M-7	0	9,714	359.78	0.017	0.017	6.12
J6-2-3_K-4	1	16,313	604.18	1.7	1.7	1,027.10
J6-2-2_J-24	2	7,610	281.86	0.0245	0.0245	6.91
J6-2-2_J/K-23/24	3	238	8.80	5.3	5.3	46.66
J6-2-3_J/K-2/3	4	12,752	472.31	ND (0.0081)	0.0081	3.83
Total	**--**	**46,627**	**1,727**	**--**	**--**	**1,091**
				Volume-Weighted Average (mg/kg)		**0.63**

Table E-1B-6

Parcel J6-2-3
Existing Conditions

J6-2-3 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
1- to 3-Foot Depth Increment	46,627	3,454	4,530	1.31

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-7

Parcel J6-2-3
Post-Remediation Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-2-3_L/M-5	0	257	4.75	11.0	***0.021***	0.10
J6-2-3_L-4	1	120	2.23	12.5	***0.021***	0.05
J6-2-3_L/M-6	2	281	5.20	13.0	***0.021***	0.11
J6-2-3_N-27	3	989	18.32	0.35	0.35	6.41
BS000100	4	316	5.85	16.7	***0.021***	0.12
J6-2-3_M-29	5	1,400	25.92	0.074 [0.074]	0.074	1.92
J6-2-3_M-29	6	10,376	192.14	0.074 [0.074]	0.074	14.22
J6-2-3_L/M-7	7	857	15.87	0.064	0.064	1.02
J6-2-3_M/N-7	8	20	0.4	40.0	***0.021***	0.01
J6-2-3_L/M-26/27	9	0.5	0.010	ND (0.3)	0.2	0.00
J6-2-3_L/M-26/27	10	646	11.972	ND (0.3)	0.2	1.80
J6-2-3_K-25	11	1,744	32.290	0.235	0.235	7.59
J6-2-2_J-24	12	347	6.429	6.3	6.3	40.50
J6-2-10_H-25	13	4,506	83.448	0.089	0.089	7.43
J6-2-2_J/K-23/24	14	51	0.9	29.0/27.0	***0.021***	0.02
J6-2-2_I/J-24	15	386	7.1	3.9	3.9	27.86
J6-2-3_K/L-27/28	16	1,628	30.1	ND (0.27)	0.14	4.07
J6-2-3_K/L-27/28	17	504	9.3	ND (0.27)	0.14	1.26
J6-2-3_K/L-27/28	18	4,686	86.8	ND (0.27)	0.14	11.71
J6-2-3_K/L-27/28	19	35	0.6	ND (0.27)	0.14	0.09
J6-2-3_K-4	20	741	13.7	2.4	2.4	32.93
J6-2-3_K/L-3	21	411	7.6	14.0/10.0	***0.021***	0.16
J6-2-3_I-26	22	14,034	259.9	0.063	0.063	16.37
J6-2-3_M-29	23	433	8.0	0.074 [0.074]	0.074	0.59
J6-2-3_K/L-27/28	24	613	11.4	ND (0.27)	0.14	1.53
J6-2-3_I-26	25	1,035	19.2	0.063	0.063	1.21
J6-2-3_K-25	26	22	0.4	0.021	0.021	0.01
J6-2-2_J-24	27	2	0.04	0.021	0.021	0.00
J6-2-2_J/K-23/24	28	187	3.46	0.021	0.021	0.07
Total	**--**	**46,627**	**863**	**--**	**--**	**179**
				Volume-Weighted Average (mg/kg)		**0.21**

Table E-1B-7

Parcel J6-2-3
Post-Remediation Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-2-3_L/M-5	0	257	4.75	11.0	***0.021***	0.10
J6-2-3_L-4	1	120	2.23	12.5	***0.021***	0.05
J6-2-3_L/M-6	2	281	5.20	13.0	***0.021***	0.11
J6-2-3_N-27	3	989	18.32	0.35	0.35	6.41
BS000100	4	316	5.85	38.9 [37.5]	***0.021***	0.12
J6-2-3_M-29	5	1,400	25.92	0.074 [0.074]	0.074	1.92
J6-2-3_M-29	6	10,376	192.14	0.074 [0.074]	0.074	14.22
J6-2-3_L/M-7	7	857	15.87	0.064	0.064	1.02
J6-2-3_M/N-7	8	20	0.4	40.0	***0.021***	0.01
J6-2-3_L/M-26/27	9	0.5	0.010	ND (0.3)	0.2	0.00
J6-2-3_L/M-26/27	10	646	11.972	ND (0.3)	0.2	1.80
J6-2-3_K-25	11	1,744	32.290	0.235	0.235	7.59
J6-2-2_J-24	12	347	6.429	6.3	6.3	40.50
J6-2-10_H-25	13	4,506	83.448	0.089	0.089	7.43
J6-2-2_J/K-23/24	14	51	0.9	29.0/27.0	***0.021***	0.02
J6-2-2_I/J-24	15	386	7.1	3.9	3.9	27.86
J6-2-3_K/L-27/28	16	1,628	30.1	ND (0.27)	0.14	4.07
J6-2-3_K/L-27/28	17	504	9.3	ND (0.27)	0.14	1.26
J6-2-3_K/L-27/28	18	4,686	86.8	ND (0.27)	0.14	11.71
J6-2-3_K/L-27/28	19	35	0.6	ND (0.27)	0.14	0.09
J6-2-3_K-4	20	741	13.7	2.4	2.4	32.93
J6-2-3_K/L-3	21	411	7.6	14.0/10.0	***0.021***	0.16
J6-2-3_I-26	22	14,034	259.9	0.063	0.063	16.37
J6-2-3_M-29	23	433	8.0	0.074 [0.074]	0.074	0.59
J6-2-3_K/L-27/28	24	613	11.4	ND (0.27)	0.14	1.53
J6-2-3_I-26	25	1,035	19.2	0.063	0.063	1.21
J6-2-3_K-25	26	22	0.4	0.021	0.021	0.01
J6-2-2_J-24	27	2	0.04	0.021	0.021	0.00
J6-2-2_J/K-23/24	28	187	3.46	0.021	0.021	0.07
Total	**--**	**46,627**	**863**	**--**	**--**	**179**
				Volume-Weighted Average (mg/kg)		**0.21**

Table E-1B-7

Parcel J6-2-3
Post-Remediation Conditions

J6-2-3 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	46,627	1,727	358	0.21

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.
5. Shaded concentrations in bold italics font represent the placement of clean backfill material following the performance of the proposed remediation. The backfill concentration corresponds to the average PCB concentration as presented in Proposed Backfill Data Set for CD Sites.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-8

Parcel J6-3-1
Existing Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_F/G-1/2	0	1,526	28.3	4.1	4.1	115.88
J6-3-1-SS-8	1	26,390	488.7	ND (0.256) [ND (0.272)]	0.132	64.51
J6-3-1_G/H-4/5	2	4,829	89.4	1.24	1.24	110.88
J6-3-1-SS-6	3	5,607	103.8	ND (0.306)	0.153	15.89
J6-3-1_G-2	4	3,331	61.7	3.5	3.5	215.89
J6-3-1_F-2/3	5	2,277	42.2	1.23	1.23	51.87
J6-3-1_F-4	6	3,551	65.8	0.27	0.27	17.76
J6-3-1_H-3	7	3,532	65.4	0.032	0.032	2.09
J6-3-1-SS-9	8	2,877	53.3	4.51	4.51	240.31
J6-3-1_E-4	9	2,090	38.7	0.063	0.063	2.44
J6-3-1-SB-3	10	2,251	41.7	ND (0.27)	0.14	5.63
J6-3-1_E/F-3	11	1,538	28.5	2.2	2.2	62.65
J6-3-1-SS-5	12	33,418	618.9	ND (0.27)	0.14	83.55
J6-3-1-SS-7	13	7,289	135.0	0.941	0.941	127.01
FL001282	14	659	12.2	ND (1.002)	0.5010	6.11
J6-3-1_G-8	15	3,596	66.6	0.186	0.186	12.39
F0489601	16	3,802	70.4	0.485	0.485	34.15
J6-3-1-SS-4	17	17,839	330.3	ND (0.266)	0.133	43.94
J6-3-1_E-5	18	4,772	88.4	0.16	0.16	14.14
F0489603	19	1,139	21.1	0.502	0.502	10.59
F0489602	20	1,405	26.0	0.504	0.504	13.11
J6-3-1-SB-4	21	1,152	21.3	1.28	1.28	27.30
J6-3-1-SS-1	22	4,328	80.1	0.45 [0.449]	0.45	36.02
J6-3-1_F-8	23	1,883	34.9	0.78 [0.79]	0.79	27.38
J6-3-1-SS-2	24	917	17.0	1.46	1.46	24.80
J6-3-1_C/D-5	25	1,625	30.1	0.17	0.17	5.11
J6-3-1_E-8	26	1,208	22.4	0.24	0.24	5.37
J6-3-1_D-4/5	27	1,596	29.6	0.14	0.14	4.14
J6-3-1_D-6	28	2,172	40.2	0.17	0.17	6.84
J6-3-1_C-6	29	1,335	24.7	0.99	0.99	24.48
J6-3-1-SB-13	30	667	12.4	70.0	70.0	865.01
J6-3-1_D-7	31	1,994	36.9	0.61/0.62	0.615	22.71
J6-3-1-SB-14	32	252	4.7	18.2	18.2	85.02
J6-3-1_B/C-6	33	454	8.4	1.44	1.44	12.12
F0489604	34	410	7.6	5.42	5.42	41.18
J6-3-1-SB-9	35	830	15.4	2.85	2.85	43.83
F0489605	36	458	8.5	9.89	9.89	83.93

Table E-1B-8

Parcel J6-3-1
Existing Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_C-7	37	1,304	24.1	7.4	7.4	178.71
J6-3-1_C-8	38	785	14.5	8.7 [5.9]	7.3	106.08
J6-3-1_D-8	39	659	12.2	8.0	8.0	97.70
J6-3-1-SB-1	40	1,155	21.4	5.96	5.96	127.45
F0489607	41	20	0.4	16.7	16.7	6.16
F0489607	41A	81	1.5	16.7	16.7	25.15
F0489606	42	1,527	28.3	10.9	10.9	308.33
J6-3-1-SS-3	43	1,563	28.9	8.1	8.1	234.49
J6-3-1-SB-2	44	1,149	21.3	3.57	3.57	75.93
J6-3-1_B/C-8	45	1,211	22.4	1.6	1.6	35.90
BS000147	46	21	0.4	30.7	30.7	12.19
BS000147	46A	108	2.0	30.7	30.7	61.31
J6-3-1_A/B-8	47	408	7.6	3.6	3.6	27.23
J6-3-1-SB-15	48	272	5.0	38.2	38.2	192.23
J6-3-1-SB-15	48A	128	2.4	38.2	38.2	90.21
J6-3-1_C-9	49	1,186	22.0	5.0/2.5	3.75	82.38
J6-3-1_C-9/10	50	917	17.0	6.4	6.4	108.74
J6-3-1_B/C-10	51	523	9.7	4.5	4.5	43.61
J6-3-1_A/B-9	52	854	15.8	9.3	9.3	147.13
J6-3-1_B-9	53	1,196	22.1	38.0	38.0	841.45
J6-3-1-SB-5	54	41	0.8	0.127	0.127	0.10
EA08-E-2	55	219	4.0	8.96	8.96	36.27
J6-3-1_B-7	56	961	17.8	2.7 [3.5]	3.1	55.18
FL001281	57	499	9.2	16.6	16.6	153.53
FL001281	57A	73	1.4	16.6	16.6	22.52
J6-3-1_B-9/10	58	675	12.5	5.0	5.0	62.54
Total	**--**	**172,538**	**3,195**	**--**	**--**	**5,699**
				Volume-Weighted Average (mg/kg)		**1.78**

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_F/G-1/2	0	1,526	28.3	4.1	4.1	115.88
J6-3-1-SS-4	1	17,839	330.3	ND (0.252)	0.126	41.62
J6-3-1-SS-8	2	26,390	488.7	ND (0.24)	0.12	58.64

Table E-1B-8

Parcel J6-3-1
Existing Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_G/H-4/5	3	4,829	89.4	1.24	1.24	110.88
J6-3-1_G-2	4	3,331	61.7	3.5	3.5	215.89
J6-3-1_F-2/3	5	2,277	42.2	1.23	1.23	51.87
J6-3-1_F-4	6	3,551	65.8	0.27	0.27	17.76
J6-3-1_H-3	7	3,532	65.4	0.032	0.032	2.09
J6-3-1-SS-9	8	2,877	53.3	1.15	1.15	61.28
J6-3-1_E-4	9	2,090	38.7	0.063	0.063	2.44
J6-3-1-SB-3	10	2,254	41.7	ND (0.248)	0.124	5.18
J6-3-1_E/F-3	11	1,538	28.5	2.2	2.2	62.65
J6-3-1-SS-5	12	33,418	618.9	ND (0.272)	0.136	84.16
J6-3-1-SS-6	13	6,457	119.6	ND (0.27)	0.14	16.14
FL001282	14	659	12.2	2.03	2.03	24.76
J6-3-1-SS-7	15	7,470	138.3	ND (0.254)	0.127	17.57
J6-3-1_G-8	16	4,051	75.0	0.186	0.186	13.95
J6-3-1_E-5	17	4,772	88.4	0.16	0.16	14.14
J6-3-1_C/D-5	18	1,625	30.1	0.17	0.17	5.11
F0489602	19	2,181	40.4	0.85	0.85	34.33
J6-3-1-SB-4	20	1,152	21.3	ND (0.236) [ND (0.244)]	0.120	2.56
J6-3-1-SS-1	21	4,989	92.4	0.15	0.15	13.86
J6-3-1_F-8	22	2,762	51.1	0.78 [0.79]	0.79	40.15
J6-3-1_E-8	23	1,510	28.0	0.24	0.24	6.71
J6-3-1-SS-2	24	1,443	26.7	0.254	0.254	6.79
J6-3-1_D-4/5	25	1,596	29.6	0.14	0.14	4.14
J6-3-1_D-6	26	2,172	40.2	0.17	0.17	6.84
J6-3-1_C-6	27	1,335	24.7	0.99	0.99	24.48
J6-3-1-SB-13	28	667	12.4	90.5	90.5	1,118.33
J6-3-1_D-7	29	2,057	38.1	0.61/0.62	0.615	23.42
J6-3-1_B-7	30	961	17.8	2.7 [3.5]	3.1	55.18
J6-3-1_B/C-6	31	454	8.4	1.44	1.44	12.12
F0489604	32	549	10.2	8.75	8.75	88.96
J6-3-1-SB-1	33	1,358	25.1	0.136	0.136	3.42
J6-3-1_C-7	34	1,304	24.1	7.4	7.4	178.71
J6-3-1_D-8	35	765	14.2	8.0	8.0	113.37
J6-3-1_C-8	36	963	17.8	8.7 [5.9]	7.3	130.18
J6-3-1-SB-14	37	334	6.2	13.2	13.2	81.54
F0489606	38	1,527	28.3	26.8	26.8	758.09
J6-3-1-SS-3	39	1,563	28.9	7.25	7.25	209.89

Table E-1B-8

Parcel J6-3-1
Existing Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1-SB-2	40	1,149	21.3	0.181	0.181	3.85
J6-3-1_B/C-8	41	1,287	23.8	1.6	1.6	38.13
J6-3-1-SB-9	42	832	15.4	2.68 [2.78]	2.73	42.06
J6-3-1-SB-15	43	272	5.0	35.5	35.5	178.64
J6-3-1-SB-15	43A	128	2.4	35.5	35.5	83.83
J6-3-1_B-9	44	1,196	22.1	38.0	38.0	841.45
J6-3-1_A/B-8	45	408	7.6	3.6	3.6	27.23
J6-3-1_B-9/10	46	675	12.5	5.0	5.0	62.54
J6-3-1_C-9/10	47	917	17.0	6.4	6.4	108.74
J6-3-1_C-9	48	1,186	22.0	5.0/2.5	3.75	82.38
FL001281	49	499	9.2	30.9	30.9	285.79
FL001281	49A	73	1.4	30.9	30.9	41.91
BS000147	50	21	0.4	16.6	16.6	6.59
BS000147	50A	108	2.0	16.6	16.6	33.15
J6-3-1-SB-5	51	41	0.8	ND (0.228)	0.114	0.09
J6-3-1_B/C-10	52	523	9.7	4.5	4.5	43.61
EA08-E-2	53	219	4.0	6.58	6.58	26.64
J6-3-1_A/B-9	54	854	15.8	9.3	9.3	147.13
J6-3-1_A/B-9	54A	20	0.4	9.3	9.3	3.43
Total	--	**172,538**	**3,195**	--	--	**5,892**
				Volume-Weighted Average (mg/kg)		**1.84**

Table E-1B-8

Parcel J6-3-1
Existing Conditions

J6-3-1 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	172,538	6,390	11,591	1.81

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-9

Parcel J6-3-1
Existing Conditions

1- to 2-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_H-3	0	46,717	1730.3	0.056	0.056	96.89
J6-3-1_F/G-1/2	1	1,526	56.5	1.56	1.56	88.18
J6-3-1-SB-12	2	2,877	106.6	0.3125	0.3125	33.30
J6-3-1_G-2	3	3,350	124.1	1.47	1.47	182.41
J6-3-1_E-5	4	7,177	265.8	0.031	0.031	8.24
J6-3-1_F-4	5	3,551	131.5	0.089	0.089	11.71
J6-3-1_F-2/3	6	2,277	84.3	3.9	3.9	328.92
J6-3-1_E/F-3	7	1,538	57.0	2.8	2.8	159.48
J6-3-1_E-4	8	2,090	77.4	ND (0.026)	0.013	1.01
J6-3-1_F-8	9	5,611	207.8	0.29	0.29	60.26
J6-3-1_G/H-4/5	10	18,075	669.4	0.069	0.069	46.19
J6-3-1_G/H-4/5	11	0.5	0.02	0.069	0.069	0.00
J6-3-1_G-8	12	38,481	1425.20	ND (0.024)	0.012	17.10
J6-3-1_G-8	13	52	1.92	ND (0.024)	0.012	0.02
J6-3-1-SB-10	14	2,975	110.18	ND (0.24)	0.12	12.89
J6-3-1_C/D-5	15	1,625	60.18	0.15	0.15	9.03
J6-3-1-SB-4	16	1,278	47.32	ND (0.242)	0.119	5.61
J6-3-1_D-8	17	861	31.88	3.3	3.3	105.22
J6-3-1_E-8	18	1,510	55.93	0.055	0.055	3.08
J6-3-1_D-6	19	2,172	80.44	ND (0.028)	0.014	1.13
J6-3-1-SB-13	20	667	24.71	76.45	76.45	1,889.43
J6-3-1_D-7	21	2,060	76.29	0.24	0.24	18.31
J6-3-1_D-4/5	22	1,596	59.10	ND (0.031)	0.016	0.92
J6-3-1_A/B-8	23	1,255	46.48	21.0	21.0	975.99
J6-3-1-SB-3	24	3,822	141.57	ND (0.252)	0.126	17.77
J6-3-1-SB-1	25	1,358	50.29	0.1975	0.1975	9.93
J6-3-1_C-7	26	1,304	48.30	0.85	0.85	41.05
J6-3-1_C-8	27	963	35.66	5.7	5.7	203.29
J6-3-1-SB-14	28	334	12.35	107.2	107.2	1,323.82
J6-3-1_B/C-6	29	454	16.83	0.44	0.44	7.40
J6-3-1_C-6	30	1,335	49.46	ND (0.027)	0.014	0.67
J6-3-1_B/C-8	31	1,776	65.78	0.2	0.2	13.16
J6-3-1-SB-9	32	1,272	47.11	0.475	0.475	22.37
J6-3-1_B-9	33	1,251	46.34	47.0	47.0	2,177.91
J6-3-1_B-7	34	1,086	40.24	6.0	6.0	241.43
J6-3-1-SB-11	35	1,563	57.90	4.003	4.004	231.80
J6-3-1_C-9/10	36	1,386	51.34	44.0	44.0	2,259.11

Table E-1B-9

Parcel J6-3-1
Existing Conditions

1- to 2-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1-SB-15	37	272	10.06	115.8	115.8	1,164.94
J6-3-1-SB-15	37A	128	4.72	115.8	115.8	546.66
J6-3-1_A/B-9	38	885	32.79	13.3	13.3	436.16
J6-3-1-SB-2	39	1,149	42.54	ND (0.228)	0.119	5.04
J6-3-1_B-9/10	40	697	25.81	46.0	46.0	1,187.22
J6-3-1-SB-5	41	41	1.52	ND (0.236)	0.124	0.19
J6-3-1_C-9	42	1,217	45.07	0.26	0.26	11.72
J6-3-1_B/C-10	43	923	34.18	22.0	22.0	752.07
Total	**--**	**172,538**	**6,390**	**--**	**--**	**14,709**
				Volume-Weighted Average (mg/kg)		**2.30**

2- to 3-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_F/G-1/2	0	1,526	56.53	5.3	5.3	299.59
J6-3-1-SB-12	1	2,877	106.57	ND (0.288) [0.197]	0.171	18.17
J6-3-1_E/F-3	2	1,538	56.96	6.8	6.8	387.32
J6-3-1_F-2/3	3	2,277	84.34	3.2	3.2	269.88
J6-3-1_G-2	4	3,350	124.09	0.037	0.037	4.59
J6-3-1_H-3	5	46,717	1730.26	ND (0.024)	0.012	20.76
J6-3-1_F-4	6	3,551	131.53	ND (0.025) [ND (0.024)]	0.012	1.61
J6-3-1_G/H-4/5	7	18,075	669.44	ND (0.025) [ND (0.024)]	0.012	8.20
J6-3-1_G/H-4/5	8	0.5	0.02	ND (0.025) [ND (0.024)]	0.012	0.00
J6-3-1_G-8	9	38,481	1425.20	ND (0.023)	0.012	16.39
J6-3-1_G-8	10	52	1.92	ND (0.023)	0.012	0.02
J6-3-1_E-4	11	2,090	77.42	ND (0.024)	0.012	0.93
J6-3-1-SB-10	12	4,123	152.69	ND (0.242)	0.119	18.09
J6-3-1_C/D-5	13	1,625	60.18	ND (0.026)	0.013	0.78
J6-3-1_E-5	14	8,269	306.25	ND (0.025)	0.013	3.83
J6-3-1_D-7	15	3,515	130.17	0.026	0.026	3.38
J6-3-1_D-8	16	1,705	63.14	0.53	0.53	33.46
J6-3-1_E-8	17	2,261	83.73	0.088	0.088	7.37
J6-3-1_D-4/5	18	1,596	59.10	ND (0.026)	0.013	0.77
J6-3-1_B-7	19	1,087	40.26	88.0	88.0	3,542.63
J6-3-1_C-6	20	1,335	49.46	ND (0.026)	0.013	0.64

Table E-1B-9

Parcel J6-3-1
Existing Conditions

2- to 3-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_C-8	21	1,755	64.98	0.026	0.026	1.69
J6-3-1-SB-13	22	667	24.71	11.1	11.1	274.21
J6-3-1_B/C-6	23	454	16.83	ND (0.024)	0.012	0.20
J6-3-1_D-6	24	3,008	111.42	ND (0.026)	0.013	1.45
J6-3-1_C-7	25	1,823	67.53	ND (0.027)	0.014	0.91
J6-3-1-SB-14	26	334	12.35	74.3	74.3	917.97
J6-3-1_B/C-8	27	2,051	75.95	ND (0.026)	0.013	0.99
J6-3-1-SB-11	28	1,577	58.42	5.7	5.7	333.00
J6-3-1_C-9	29	1,962	72.65	0.05	0.05	3.63
J6-3-1-SB-15	30	272	10.06	92.65	92.65	932.46
J6-3-1-SB-15	30A	128	4.72	92.65	92.65	437.57
J6-3-1_A/B-8	31	1,255	46.48	8.7	8.7	404.34
J6-3-1_B-9	32	1,325	49.08	120.0	120.0	5,889.37
J6-3-1_B/C-10	33	923	34.18	69.0	69.0	2,358.75
J6-3-1_A/B-9	34	885	32.79	75.0 [71.0]	73.0	2,393.97
J6-3-1_F-8	35	5,984	221.61	0.64	0.64	141.83
J6-3-1_C-9/10	36	1,388	51.42	26.0	26.0	1,337.01
J6-3-1_B-9/10	37	697	25.81	83.0 [109.0]	96.0	2,477.67
Total	**--**	**172,538**	**6,390**	**--**	**--**	**22,545**
				Volume-Weighted Average (mg/kg)		**3.53**

3- to 4-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_F/G-1/2	0	1,526	56.53	5.3	5.3	299.59
J6-3-1_G-2	1	3,550	131.49	0.037	0.037	4.87
J6-3-1_E/F-3	2	1,541	57.06	6.8	6.8	388.01
J6-3-1_H-3	3	47,486	1758.75	ND (0.024)	0.012	21.10
J6-3-1_F-2/3	4	3,331	123.36	3.2	3.2	394.74
J6-3-1_F-4	5	3,840	142.22	ND (0.025) [ND (0.024)]	0.012	1.74
J6-3-1_E-4	6	2,090	77.42	ND (0.024)	0.012	0.93
J6-3-1_G-8	7	38,481	1425.20	ND (0.023)	0.012	16.39
J6-3-1_G-8	8	52	1.92	ND (0.023)	0.012	0.02
J6-3-1_C/D-5	9	1,625	60.18	ND (0.026)	0.013	0.78
J6-3-1_G/H-4/5	10	18,638	690.31	ND (0.025) [ND (0.024)]	0.012	8.46

Table E-1B-9

Parcel J6-3-1
Existing Conditions

3- to 4-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_G/H-4/5	11	0.5	0.02	ND (0.025) [ND (0.024)]	0.012	0.00
J6-3-1_D-7	12	4,155	153.88	0.026	0.026	4.00
J6-3-1_D-6	13	3,008	111.42	ND (0.026)	0.013	1.45
J6-3-1_D-4/5	14	1,596	59.10	ND (0.026)	0.013	0.77
J6-3-1_B-7	15	1,087	40.26	88.0	88.0	3,542.63
J6-3-1-SB-13	16	667	24.71	0.794	0.794	19.62
J6-3-1_C-8	17	1,792	66.37	0.026	0.026	1.73
J6-3-1_C-6	18	1,335	49.46	ND (0.026)	0.013	0.64
J6-3-1_B/C-6	19	454	16.83	ND (0.024)	0.012	0.20
J6-3-1_C-7	20	1,823	67.53	ND (0.027)	0.014	0.91
J6-3-1-SB-14	21	334	12.35	47.05	47.05	581.30
J6-3-1_B/C-8	22	2,051	75.95	ND (0.026)	0.013	0.99
J6-3-1_E-8	23	4,459	165.16	0.088	0.088	14.53
J6-3-1_E-5	24	8,578	317.72	ND (0.025)	0.013	3.97
J6-3-1_C-9	25	2,142	79.35	0.05	0.05	3.97
J6-3-1-SB-15	26	272	10.06	20.0	20.0	201.29
J6-3-1-SB-15	26A	128	4.72	20.0	20.0	94.46
J6-3-1_A/B-8	27	1,255	46.48	8.7	8.7	404.34
J6-3-1_D-8	28	2,997	110.98	0.53	0.53	58.82
J6-3-1_B-9	29	1,325	49.08	120.0	120.0	5,889.37
J6-3-1_B/C-10	30	923	34.18	69.0	69.0	2,358.75
J6-3-1_A/B-9	31	885	32.79	75.0 [71.0]	73.0	2,393.97
J6-3-1_F-8	32	7,025	260.20	0.64	0.64	166.53
J6-3-1_C-9/10	33	1,388	51.42	26.0	26.0	1,337.01
J6-3-1_B-9/10	34	697	25.81	83.0 [109.0]	96.0	2,477.67
Total	**--**	**172,538**	**6,390**	**--**	**--**	**20,696**
				Volume-Weighted Average (mg/kg)		**3.24**

4- to 5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_F/G-1/2	0	1,526	56.53	7.2	7.2	406.99
J6-3-1_G-2	1	3,550	131.49	ND (0.027)	0.014	1.78
J6-3-1_G/H-4/5	2	18,638	690.31	ND (0.023)	0.012	7.94
J6-3-1_G/H-4/5	3	0.5	0.02	ND (0.023)	0.012	0.00

Table E-1B-9

Parcel J6-3-1
Existing Conditions

4- to 5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_E/F-3	4	1,541	57.06	0.27	0.27	15.41
J6-3-1_F-2/3	5	3,331	123.36	0.28	0.28	34.54
J6-3-1_F-4	6	3,840	142.22	ND (0.13)	0.065	9.24
J6-3-1_H-3	7	47,486	1758.75	0.033	0.033	58.04
J6-3-1_G-8	8	38,481	1425.20	ND (0.024)	0.012	17.10
J6-3-1_G-8	9	52	1.92	ND (0.024)	0.012	0.02
J6-3-1_E-4	10	2,090	77.42	ND (0.024)	0.012	0.93
J6-3-1_C/D-5	11	1,625	60.18	ND (0.026)	0.013	0.78
J6-3-1_E-5	12	8,578	317.72	ND (0.025)	0.013	3.97
J6-3-1_D-7	13	4,155	153.88	ND (0.024)	0.012	1.85
J6-3-1_D-4/5	14	1,596	59.10	ND (0.025)	0.013	0.74
J6-3-1_D-6	15	3,008	111.42	ND (0.026)	0.013	1.45
J6-3-1_C-6	16	1,342	49.71	ND (0.026)	0.013	0.65
J6-3-1_B-7	17	1,309	48.47	96.0	96.0	4,652.95
J6-3-1_C-7	18	2,165	80.20	ND (0.024)	0.012	0.96
J6-3-1_C-8	19	1,792	66.37	ND (0.025)	0.013	0.83
J6-3-1_A/B-8	20	1,539	56.99	150.0	150.0	8,548.08
J6-3-1_B/C-6	21	551	20.41	ND (0.024)	0.012	0.24
J6-3-1_E-8	22	4,459	165.16	0.52	0.52	85.88
J6-3-1_C-9	23	2,142	79.35	ND (0.024)	0.012	0.95
J6-3-1_B-9/10	24	824	30.53	150.0	150.0	4,579.77
J6-3-1_B/C-8	25	2,051	75.95	0.026	0.026	1.97
J6-3-1_D-8	26	2,997	110.98	0.59	0.59	65.48
J6-3-1_B-9	27	1,409	52.19	43.0	43.0	2,244.17
J6-3-1_B/C-10	28	923	34.18	150.0	150.0	5,127.72
J6-3-1_F-8	29	7,025	260.20	ND (0.026)	0.013	3.38
J6-3-1_C-9/10	30	1,388	51.42	ND (0.034)	0.017	0.87
J6-3-1_A/B-9	31	1,123	41.59	25.0	25.0	1,039.75
Total	--	**172,538**	**6,390**	--	--	**26,914**
				Volume-Weighted Average (mg/kg)		**4.21**

5- to 6-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_F/G-1/2	0	1,526	56.53	7.2	7.2	406.99

Table E-1B-9

Parcel J6-3-1
Existing Conditions

5- to 6-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_G-2	1	3,550	131.49	ND (0.027)	0.014	1.78
J6-3-1_G/H-4/5	2	18,638	690.31	ND (0.023)	0.012	7.94
J6-3-1_G/H-4/5	3	0.5	0.02	ND (0.023)	0.012	0.00
J6-3-1_E/F-3	4	1,541	57.06	0.27	0.27	15.41
J6-3-1_F-2/3	5	3,331	123.36	0.28	0.28	34.54
J6-3-1_F-4	6	3,840	142.22	ND (0.13)	0.065	9.24
J6-3-1_H-3	7	47,486	1758.75	0.033	0.033	58.04
J6-3-1_G-8	8	38,481	1425.20	ND (0.024)	0.012	17.10
J6-3-1_G-8	9	52	1.92	ND (0.024)	0.012	0.02
J6-3-1_E-4	10	2,090	77.42	ND (0.024)	0.012	0.93
J6-3-1_C/D-5	11	1,625	60.18	ND (0.026)	0.013	0.78
J6-3-1_E-5	12	8,578	317.72	ND (0.025)	0.013	3.97
J6-3-1_D-7	13	4,155	153.88	ND (0.024)	0.012	1.85
J6-3-1_D-4/5	14	1,596	59.10	ND (0.025)	0.013	0.74
J6-3-1_D-6	15	3,008	111.42	ND (0.026)	0.013	1.45
J6-3-1_C-6	16	1,342	49.71	ND (0.026)	0.013	0.65
J6-3-1_B-7	17	1,309	48.47	96.0	96.0	4,652.95
J6-3-1_C-7	18	2,165	80.20	ND (0.024)	0.012	0.96
J6-3-1_C-8	19	1,792	66.37	ND (0.025)	0.013	0.83
J6-3-1_A/B-8	20	1,539	56.99	150.0	150.0	8,548.08
J6-3-1_B/C-6	21	551	20.41	ND (0.024)	0.012	0.24
J6-3-1_E-8	22	4,459	165.16	0.52	0.52	85.88
J6-3-1_C-9	23	2,142	79.35	ND (0.024)	0.012	0.95
J6-3-1_B-9/10	24	824	30.53	150.0	150.0	4,579.77
J6-3-1_B/C-8	25	2,051	75.95	0.026	0.026	1.97
J6-3-1_D-8	26	2,997	110.98	0.59	0.59	65.48
J6-3-1_B-9	27	1,409	52.19	43.0	43.0	2,244.17
J6-3-1_B/C-10	28	923	34.18	150.0	150.0	5,127.72
J6-3-1_F-8	29	7,025	260.20	ND (0.026)	0.013	3.38
J6-3-1_C-9/10	30	1,388	51.42	ND (0.034)	0.017	0.87
J6-3-1_A/B-9	31	1,123	41.59	25.0	25.0	1,039.75
Total	--	**172,538**	**6,390**	--	--	**26,914**
				Volume-Weighted Average (mg/kg)		**4.21**

Table E-1B-9

Parcel J6-3-1
Existing Conditions

6- to 7-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_E/F-3	0	24,013	889.37	ND (0.023)	0.012	10.23
J6-3-1_G-2	1	77,146	2857.25	ND (0.028)	0.014	40.00
J6-3-1_F-2/3	2	12,031	445.58	ND (0.028)	0.014	6.24
J6-3-1_C-9/10	3	1,388	51.42	ND (0.027)	0.014	0.69
J6-3-1_C-7	4	6,683	247.52	ND (0.025)	0.013	3.09
J6-3-1_F/G-1/2	5	1,526	56.53	7.1	7.1	401.34
J6-3-1_C-9	6	22,142	820.09	0.044	0.044	36.08
J6-3-1_B-7	7	1,318	48.82	5.2 [1.1]	3.2	153.77
J6-3-1_C-6	8	16,564	613.47	0.065	0.065	39.88
J6-3-1_B/C-8	9	3,908	144.75	ND (0.028)	0.014	2.03
J6-3-1_A/B-9	10	1,123	41.59	42.0	42.0	1,746.78
J6-3-1_B/C-10	11	923	34.18	29.0	29.0	991.36
J6-3-1_A/B-8	12	1,539	56.99	26.0	26.0	1,481.67
J6-3-1_B-9	13	1,409	52.19	11.0	11.0	574.09
J6-3-1_B-9/10	14	824	30.53	24.8	24.8	757.19
Total	**--**	**172,538**	**6,390**	**--**	**--**	**6,244**
				Volume-Weighted Average (mg/kg)		**0.98**

7- to 8-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_E/F-3	0	24,013	889.37	ND (0.023)	0.012	10.23
J6-3-1_G-2	1	77,146	2857.25	ND (0.028)	0.014	40.00
J6-3-1_F-2/3	2	12,031	445.58	ND (0.028)	0.014	6.24
J6-3-1_C-9/10	3	1,388	51.42	ND (0.027)	0.014	0.69
J6-3-1_C-7	4	6,683	247.52	ND (0.025)	0.013	3.09
J6-3-1_F/G-1/2	5	1,526	56.53	7.1	7.1	401.34
J6-3-1_C-9	6	22,142	820.09	0.044	0.044	36.08
J6-3-1_B-7	7	1,318	48.82	5.2 [1.1]	3.2	153.77
J6-3-1_C-6	8	16,564	613.47	0.065	0.065	39.88
J6-3-1_B/C-8	9	3,908	144.75	ND (0.028)	0.014	2.03
J6-3-1_A/B-9	10	1,123	41.59	42.0	42.0	1,746.78
J6-3-1_B/C-10	11	923	34.18	29.0	29.0	991.36
J6-3-1_A/B-8	12	1,539	56.99	26.0	26.0	1,481.67
J6-3-1_B-9	13	1,409	52.19	11.0	11.0	574.09

Table E-1B-9

Parcel J6-3-1
Existing Conditions

7- to 8-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_B-9/10	14	824	30.53	24.8	24.8	757.19
Total	--	**172,538**	**6,390**	--	--	**6,244**
				Volume-Weighted Average (mg/kg)		**0.98**

8- to 9-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_F/G-1/2	0	107,416	3978.35	0.7	0.7	2,784.85
J6-3-1_B/C-10	1	923	34.18	68.0	68.0	2,324.57
J6-3-1_B-7	2	15,627	578.77	ND (0.035)	0.018	10.13
J6-3-1_A/B-9	3	1,123	41.59	56.0	56.0	2,329.04
J6-3-1_B-9/10	4	824	30.53	16.0	16.0	488.51
J6-3-1_C-9/10	5	13,239	490.34	ND (0.025)	0.013	6.13
J6-3-1_B/C-8	6	30,354	1124.21	ND (0.024)	0.012	13.49
J6-3-1_B-9	7	1,493	55.31	0.3	0.3	16.59
J6-3-1_A/B-8	8	1,539	56.99	53.0	53.0	3,020.32
Total	--	**172,538**	**6,390**	--	--	**10,994**
				Volume-Weighted Average (mg/kg)		**1.72**

9- to 10-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_F/G-1/2	0	107,416	3978.35	0.7	0.7	2,784.85
J6-3-1_B/C-10	1	923	34.18	68.0	68.0	2,324.57
J6-3-1_B-7	2	15,627	578.77	ND (0.035)	0.018	10.13
J6-3-1_A/B-9	3	1,123	41.59	56.0	56.0	2,329.04
J6-3-1_B-9/10	4	824	30.53	16.0	16.0	488.51
J6-3-1_C-9/10	5	13,239	490.34	ND (0.025)	0.013	6.13
J6-3-1_B/C-8	6	30,354	1124.21	ND (0.024)	0.012	13.49
J6-3-1_B-9	7	1,493	55.31	0.3	0.3	16.59
J6-3-1_A/B-8	8	1,539	56.99	53.0	53.0	3,020.32

Table E-1B-9

Parcel J6-3-1
Existing Conditions

9- to 10-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
Total	--	**172,538**	**6,390**	--	--	**10,994**
				Volume-Weighted Average (mg/kg)		**1.72**

J6-3-1 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
1- to 10-Foot Depth Increment	172,538	57,513	146,255	2.54

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-10

Parcel J6-3-1
Post-Remediation Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_F/G-1/2	0	1,526	28.26	4.1	4.1	115.88
J6-3-1-SS-8	1	26,390	488.70	ND (0.256) [ND (0.272)]	0.132	64.51
J6-3-1_G/H-4/5	2	4,829	89.42	1.24	1.24	110.88
J6-3-1-SS-6	3	5,607	103.84	ND (0.306)	0.153	15.89
J6-3-1_G-2	4	3,331	61.68	3.5	3.5	215.89
J6-3-1_F-2/3	5	2,277	42.17	1.23	1.23	51.87
J6-3-1_F-4	6	3,551	65.76	0.27	0.27	17.76
J6-3-1_H-3	7	3,532	65.41	0.032	0.032	2.09
J6-3-1-SS-9	8	2,877	53.28	4.51	4.51	240.31
J6-3-1_E-4	9	2,090	38.71	0.063	0.063	2.44
J6-3-1-SB-3	10	2,251	41.68	ND (0.27)	0.14	5.63
J6-3-1_E/F-3	11	1,538	28.48	2.2	2.2	62.65
J6-3-1-SS-5	12	33,418	618.86	ND (0.27)	0.14	83.55
J6-3-1-SS-7	13	7,289	134.98	0.941	0.941	127.01
FL001282	14	659	12.20	ND (1.002)	0.5010	6.11
J6-3-1_G-8	15	3,596	66.59	0.186	0.186	12.39
F0489601	16	3,802	70.41	0.485	0.485	34.15
J6-3-1-SS-4	17	17,839	330.34	ND (0.266)	0.133	43.94
J6-3-1_E-5	18	4,772	88.37	0.16	0.16	14.14
F0489603	19	1,139	21.09	0.502	0.502	10.59
F0489602	20	1,405	26.02	0.504	0.504	13.11
J6-3-1-SB-4	21	1,152	21.33	1.28	1.28	27.30
J6-3-1-SS-1	22	4,328	80.14	0.45 [0.449]	0.45	36.02
J6-3-1_F-8	23	1,883	34.87	0.78 [0.79]	0.79	27.38
J6-3-1-SS-2	24	917	16.99	1.46	1.46	24.80
J6-3-1_C/D-5	25	1,625	30.09	0.17	0.17	5.11
J6-3-1_E-8	26	1,208	22.36	0.24	0.24	5.37
J6-3-1_D-4/5	27	1,596	29.55	0.14	0.14	4.14
J6-3-1_D-6	28	2,172	40.22	0.17	0.17	6.84
J6-3-1_C-6	29	1,335	24.73	0.99	0.99	24.48
J6-3-1-SB-13	30	667	12.36	70.0	***0.021***	0.26
J6-3-1_D-7	31	1,994	36.93	0.61/0.62	0.615	22.71
J6-3-1-SB-14	32	252	4.67	18.2	***0.021***	0.10
J6-3-1_B/C-6	33	454	8.41	1.44	1.44	12.12
F0489604	34	410	7.60	5.42	5.42	41.18
J6-3-1-SB-9	35	830	15.38	2.85	2.85	43.83
F0489605	36	458	8.49	9.89	9.89	83.93

Table E-1B-10

Parcel J6-3-1
Post-Remediation Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_C-7	37	1,304	24.15	7.4	7.4	178.71
J6-3-1_C-8	38	785	14.53	8.7 [5.9]	7.3	106.08
J6-3-1_D-8	39	659	12.21	8.0	8.0	97.70
J6-3-1-SB-1	40	1,155	21.38	5.96	5.96	127.45
F0489607	41	20	0.4	16.7	***0.021***	0.01
F0489607	41A	81	1.5	16.7	***0.021***	0.03
F0489606	42	1,527	28.3	10.9	***0.021***	0.59
J6-3-1-SS-3	43	1,563	28.9	8.1	8.1	234.49
J6-3-1-SB-2	44	1,149	21.3	3.57	3.57	75.93
J6-3-1_B/C-8	45	1,211	22.4	1.6	1.6	35.90
BS000147	46	21	0.4	30.7	***0.021***	0.01
BS000147	46A	108	2.0	30.7	***0.021***	0.04
J6-3-1_A/B-8	47	408	7.6	3.6	3.6	27.23
J6-3-1-SB-15	48	272	5.0	38.2	***0.021***	0.11
J6-3-1-SB-15	48A	128	2.4	38.2	***0.021***	0.05
J6-3-1_C-9	49	1,186	22.0	5.0/2.5	3.75	82.38
J6-3-1_C-9/10	50	917	17.0	6.4	6.4	108.74
J6-3-1_B/C-10	51	523	9.7	4.5	***0.021***	0.20
J6-3-1_A/B-9	52	854	15.8	9.3	9.3	147.13
J6-3-1_B-9	53	1,196	22.1	38.0	***0.021***	0.47
J6-3-1-SB-5	54	41	0.8	0.127	0.127	0.10
EA08-E-2	55	219	4.0	8.96	***0.021***	0.09
J6-3-1_B-7	56	961	17.8	2.7 [3.5]	3.1	55.18
FL001281	57	499	9.2	16.6	***0.021***	0.19
FL001281	57A	73	1.4	16.6	***0.021***	0.03
J6-3-1_B-9/10	58	675	12.5	5.0	***0.021***	0.26
Total	**--**	**172,538**	**3,195**	**--**	**--**	**2,895**
				Volume-Weighted Average (mg/kg)		**0.91**

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_F/G-1/2	0	1,526	28.3	4.1	4.1	115.88
J6-3-1-SS-4	1	17,839	330.3	ND (0.252)	0.126	41.62
J6-3-1-SS-8	2	26,390	488.7	ND (0.24)	0.12	58.64

Table E-1B-10

Parcel J6-3-1
Post-Remediation Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_G/H-4/5	3	4,829	89.4	1.24	1.24	110.88
J6-3-1_G-2	4	3,331	61.7	3.5	3.5	215.89
J6-3-1_F-2/3	5	2,277	42.2	1.23	1.23	51.87
J6-3-1_F-4	6	3,551	65.8	0.27	0.27	17.76
J6-3-1_H-3	7	3,532	65.4	0.032	0.032	2.09
J6-3-1-SS-9	8	2,877	53.3	1.15	1.15	61.28
J6-3-1_E-4	9	2,090	38.7	0.063	0.063	2.44
J6-3-1-SB-3	10	2,254	41.7	ND (0.248)	0.124	5.18
J6-3-1_E/F-3	11	1,538	28.5	2.2	2.2	62.65
J6-3-1-SS-5	12	33,418	618.9	ND (0.272)	0.136	84.16
J6-3-1-SS-6	13	6,457	119.6	ND (0.27)	0.14	16.14
FL001282	14	659	12.2	2.03	2.03	24.76
J6-3-1-SS-7	15	7,470	138.3	ND (0.254)	0.127	17.57
J6-3-1_G-8	16	4,051	75.0	0.186	0.186	13.95
J6-3-1_E-5	17	4,772	88.4	0.16	0.16	14.14
J6-3-1_C/D-5	18	1,625	30.1	0.17	0.17	5.11
F0489602	19	2,181	40.4	0.85	0.85	34.33
J6-3-1-SB-4	20	1,152	21.3	ND (0.236) [ND (0.244)]	0.120	2.56
J6-3-1-SS-1	21	4,989	92.4	0.15	0.15	13.86
J6-3-1_F-8	22	2,762	51.1	0.78 [0.79]	0.79	40.15
J6-3-1_E-8	23	1,510	28.0	0.24	0.24	6.71
J6-3-1-SS-2	24	1,443	26.7	0.254	0.254	6.79
J6-3-1_D-4/5	25	1,596	29.6	0.14	0.14	4.14
J6-3-1_D-6	26	2,172	40.2	0.17	0.17	6.84
J6-3-1_C-6	27	1,335	24.7	0.99	0.99	24.48
J6-3-1-SB-13	28	667	12.4	90.5	***0.021***	0.26
J6-3-1_D-7	29	2,057	38.1	0.61/0.62	0.615	23.42
J6-3-1_B-7	30	961	17.8	2.7 [3.5]	3.1	55.18
J6-3-1_B/C-6	31	454	8.4	1.44	1.44	12.12
F0489604	32	549	10.2	8.75	8.75	88.96
J6-3-1-SB-1	33	1,358	25.1	0.136	0.136	3.42
J6-3-1_C-7	34	1,304	24.1	7.4	7.4	178.71
J6-3-1_D-8	35	765	14.2	8.0	8.0	113.37
J6-3-1_C-8	36	963	17.8	8.7 [5.9]	7.3	130.18
J6-3-1-SB-14	37	334	6.2	13.2	***0.021***	0.13
F0489606	38	1,527	28.3	26.8	***0.021***	0.59
J6-3-1-SS-3	39	1,563	28.9	7.25	7.25	209.89

Table E-1B-10

Parcel J6-3-1
Post-Remediation Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1-SB-2	40	1,149	21.3	0.181	0.181	3.85
J6-3-1_B/C-8	41	1,287	23.8	1.6	1.6	38.13
J6-3-1-SB-9	42	832	15.4	2.68 [2.78]	2.73	42.06
J6-3-1-SB-15	43	272	5.0	35.5	***0.021***	0.11
J6-3-1-SB-15	43A	128	2.4	35.5	***0.021***	0.05
J6-3-1_B-9	44	1,196	22.1	38.0	***0.021***	0.47
J6-3-1_A/B-8	45	408	7.6	3.6	3.6	27.23
J6-3-1_B-9/10	46	675	12.5	5.0	***0.021***	0.26
J6-3-1_C-9/10	47	917	17.0	6.4	6.4	108.74
J6-3-1_C-9	48	1,186	22.0	5.0/2.5	3.75	82.38
FL001281	49	499	9.2	30.9	***0.021***	0.19
FL001281	49A	73	1.4	30.9	***0.021***	0.03
BS000147	50	21	0.4	16.6	***0.021***	0.01
BS000147	50A	108	2.0	16.6	***0.021***	0.04
J6-3-1-SB-5	51	41	0.8	ND (0.228)	0.114	0.09
J6-3-1_B/C-10	52	523	9.7	4.5	***0.021***	0.20
EA08-E-2	53	219	4.0	6.58	***0.021***	0.09
J6-3-1_A/B-9	54	854	15.8	9.3	9.3	147.13
J6-3-1_A/B-9	54A	20	0.4	9.3	***0.021***	0.01
Total	--	**172,538**	**3,195**	--	--	**2,329**
				Volume-Weighted Average (mg/kg)		**0.73**

Table E-1B-10

Parcel J6-3-1
Post-Remediation Conditions

J6-3-1 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	172,538	6,390	5,225	0.82

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.
5. Shaded concentrations in bold italics font represent the placement of clean backfill material following the performance of the proposed remediation. The backfill concentration corresponds to the average PCB concentration as presented in Proposed Backfill Data Set for CD Sites.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-11

Parcel J6-3-1
Post-Remediation Conditions

1- to 2-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_H-3	0	46,717	1730.3	0.056	0.056	96.89
J6-3-1_F/G-1/2	1	1,526	56.5	1.56	1.56	88.18
J6-3-1-SB-12	2	2,877	106.6	0.3125	0.3125	33.30
J6-3-1_G-2	3	3,350	124.1	1.47	1.47	182.41
J6-3-1_E-5	4	7,177	265.8	0.031	0.031	8.24
J6-3-1_F-4	5	3,551	131.5	0.089	0.089	11.71
J6-3-1_F-2/3	6	2,277	84.3	3.9	3.9	328.92
J6-3-1_E/F-3	7	1,538	57.0	2.8	2.8	159.48
J6-3-1_E-4	8	2,090	77.4	ND (0.026)	0.013	1.01
J6-3-1_F-8	9	5,611	207.8	0.29	0.29	60.26
J6-3-1_G/H-4/5	10	18,075	669.4	0.069	0.069	46.19
J6-3-1_G/H-4/5	11	0.5	0.02	0.069	0.069	0.00
J6-3-1_G-8	12	38,481	1425.20	ND (0.024)	0.012	17.10
J6-3-1_G-8	13	52	1.92	ND (0.024)	0.012	0.02
J6-3-1-SB-10	14	2,975	110.18	ND (0.24)	0.12	12.89
J6-3-1_C/D-5	15	1,625	60.18	0.15	0.15	9.03
J6-3-1-SB-4	16	1,278	47.32	ND (0.242)	0.119	5.61
J6-3-1_D-8	17	861	31.88	3.3	3.3	105.22
J6-3-1_E-8	18	1,510	55.93	0.055	0.055	3.08
J6-3-1_D-6	19	2,172	80.44	ND (0.028)	0.014	1.13
J6-3-1-SB-13	20	667	24.71	76.45	76.45	1,889.43
J6-3-1_D-7	21	2,060	76.29	0.24	0.24	18.31
J6-3-1_D-4/5	22	1,596	59.10	ND (0.031)	0.016	0.92
J6-3-1_A/B-8	23	1,255	46.48	21.0	21.0	975.99
J6-3-1-SB-3	24	3,822	141.57	ND (0.252)	0.126	17.77
J6-3-1-SB-1	25	1,358	50.29	0.1975	0.1975	9.93
J6-3-1_C-7	26	1,304	48.30	0.85	0.85	41.05
J6-3-1_C-8	27	963	35.66	5.7	5.7	203.29
J6-3-1-SB-14	28	334	12.35	107.2	107.2	1,323.82
J6-3-1_B/C-6	29	454	16.83	0.44	0.44	7.40
J6-3-1_C-6	30	1,335	49.46	ND (0.027)	0.014	0.67
J6-3-1_B/C-8	31	1,776	65.78	0.2	0.2	13.16
J6-3-1-SB-9	32	1,272	47.11	0.475	0.475	22.37
J6-3-1_B-9	33	1,251	46.34	47.0	47.0	2,177.91
J6-3-1_B-7	34	1,086	40.24	6.0	6.0	241.43
J6-3-1-SB-11	35	1,563	57.90	4.003	4.004	231.80
J6-3-1_C-9/10	36	1,386	51.34	44.0	44.0	2,259.11

Table E-1B-11

Parcel J6-3-1
Post-Remediation Conditions

1- to 2-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1-SB-15	37	272	10.06	115.8	115.8	1,164.94
J6-3-1-SB-15	37A	128	4.72	115.8	***0.021***	0.10
J6-3-1_A/B-9	38	885	32.79	13.3	13.3	436.16
J6-3-1-SB-2	39	1,149	42.54	ND (0.228)	0.119	5.04
J6-3-1_B-9/10	40	697	25.81	46.0	***0.021***	0.54
J6-3-1-SB-5	41	41	1.52	ND (0.236)	0.124	0.19
J6-3-1_C-9	42	1,217	45.07	0.26	0.26	11.72
J6-3-1_B/C-10	43	923	34.18	22.0	***0.021***	0.72
Total	**--**	**172,538**	**6,390**	**--**	**--**	**12,224**
				Volume-Weighted Average (mg/kg)		**1.91**

2- to 3-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_F/G-1/2	0	1,526	56.53	5.3	5.3	299.59
J6-3-1-SB-12	1	2,877	106.57	ND (0.288) [0.197]	0.171	18.17
J6-3-1_E/F-3	2	1,538	56.96	6.8	6.8	387.32
J6-3-1_F-2/3	3	2,277	84.34	3.2	3.2	269.88
J6-3-1_G-2	4	3,350	124.09	0.037	0.037	4.59
J6-3-1_H-3	5	46,717	1730.26	ND (0.024)	0.012	20.76
J6-3-1_F-4	6	3,551	131.53	ND (0.025) [ND (0.024)]	0.012	1.61
J6-3-1_G/H-4/5	7	18,075	669.44	ND (0.025) [ND (0.024)]	0.012	8.20
J6-3-1_G/H-4/5	8	0.5	0.02	ND (0.025) [ND (0.024)]	0.012	0.00
J6-3-1_G-8	9	38,481	1425.20	ND (0.023)	0.012	16.39
J6-3-1_G-8	10	52	1.92	ND (0.023)	0.012	0.02
J6-3-1_E-4	11	2,090	77.42	ND (0.024)	0.012	0.93
J6-3-1-SB-10	12	4,123	152.69	ND (0.242)	0.119	18.09
J6-3-1_C/D-5	13	1,625	60.18	ND (0.026)	0.013	0.78
J6-3-1_E-5	14	8,269	306.25	ND (0.025)	0.013	3.83
J6-3-1_D-7	15	3,515	130.17	0.026	0.026	3.38
J6-3-1_D-8	16	1,705	63.14	0.53	0.53	33.46
J6-3-1_E-8	17	2,261	83.73	0.088	0.088	7.37
J6-3-1_D-4/5	18	1,596	59.10	ND (0.026)	0.013	0.77
J6-3-1_B-7	19	1,087	40.26	88.0	88.0	3,542.63
J6-3-1_C-6	20	1,335	49.46	ND (0.026)	0.013	0.64

Table E-1B-11

Parcel J6-3-1
Post-Remediation Conditions

2- to 3-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_C-8	21	1,755	64.98	0.026	0.026	1.69
J6-3-1-SB-13	22	667	24.71	11.1	11.1	274.21
J6-3-1_B/C-6	23	454	16.83	ND (0.024)	0.012	0.20
J6-3-1_D-6	24	3,008	111.42	ND (0.026)	0.013	1.45
J6-3-1_C-7	25	1,823	67.53	ND (0.027)	0.014	0.91
J6-3-1-SB-14	26	334	12.35	74.3	74.3	917.97
J6-3-1_B/C-8	27	2,051	75.95	ND (0.026)	0.013	0.99
J6-3-1-SB-11	28	1,577	58.42	5.7	5.7	333.00
J6-3-1_C-9	29	1,962	72.65	0.05	0.05	3.63
J6-3-1-SB-15	30	272	10.06	92.65	92.65	932.46
J6-3-1-SB-15	30A	128	4.72	92.65	***0.021***	0.10
J6-3-1_A/B-8	31	1,255	46.48	8.7	8.7	404.34
J6-3-1_B-9	32	1,325	49.08	120.0	120.0	5,889.37
J6-3-1_B/C-10	33	923	34.18	69.0	***0.021***	0.72
J6-3-1_A/B-9	34	885	32.79	75.0 [71.0]	73.0	2,393.97
J6-3-1_F-8	35	5,984	221.61	0.64	0.64	141.83
J6-3-1_C-9/10	36	1,388	51.42	26.0	26.0	1,337.01
J6-3-1_B-9/10	37	697	25.81	83.0 [109.0]	***0.021***	0.54
Total	**--**	**172,538**	**6,390**	**--**	**--**	**17,273**
				Volume-Weighted Average (mg/kg)		**2.70**

3- to 4-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_F/G-1/2	0	1,526	56.53	5.3	5.3	299.59
J6-3-1_G-2	1	3,550	131.49	0.037	0.037	4.87
J6-3-1_E/F-3	2	1,541	57.06	6.8	6.8	388.01
J6-3-1_H-3	3	47,486	1758.75	ND (0.024)	0.012	21.10
J6-3-1_F-2/3	4	3,331	123.36	3.2	3.2	394.74
J6-3-1_F-4	5	3,840	142.22	ND (0.025) [ND (0.024)]	0.012	1.74
J6-3-1_E-4	6	2,090	77.42	ND (0.024)	0.012	0.93
J6-3-1_G-8	7	38,481	1425.20	ND (0.023)	0.012	16.39
J6-3-1_G-8	8	52	1.92	ND (0.023)	0.012	0.02
J6-3-1_C/D-5	9	1,625	60.18	ND (0.026)	0.013	0.78
J6-3-1_G/H-4/5	10	18,638	690.31	ND (0.025) [ND (0.024)]	0.012	8.46

Table E-1B-11

Parcel J6-3-1
Post-Remediation Conditions

3- to 4-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_G/H-4/5	11	0.5	0.02	ND (0.025) [ND (0.024)]	0.012	0.00
J6-3-1_D-7	12	4,155	153.88	0.026	0.026	4.00
J6-3-1_D-6	13	3,008	111.42	ND (0.026)	0.013	1.45
J6-3-1_D-4/5	14	1,596	59.10	ND (0.026)	0.013	0.77
J6-3-1_B-7	15	1,087	40.26	88.0	88.0	3,542.63
J6-3-1-SB-13	16	667	24.71	0.794	0.794	19.62
J6-3-1_C-8	17	1,792	66.37	0.026	0.026	1.73
J6-3-1_C-6	18	1,335	49.46	ND (0.026)	0.013	0.64
J6-3-1_B/C-6	19	454	16.83	ND (0.024)	0.012	0.20
J6-3-1_C-7	20	1,823	67.53	ND (0.027)	0.014	0.91
J6-3-1-SB-14	21	334	12.35	47.05	47.05	581.30
J6-3-1_B/C-8	22	2,051	75.95	ND (0.026)	0.013	0.99
J6-3-1_E-8	23	4,459	165.16	0.088	0.088	14.53
J6-3-1_E-5	24	8,578	317.72	ND (0.025)	0.013	3.97
J6-3-1_C-9	25	2,142	79.35	0.05	0.05	3.97
J6-3-1-SB-15	26	272	10.06	20.0	20.0	201.29
J6-3-1-SB-15	26A	128	4.72	20.0	***0.021***	0.10
J6-3-1_A/B-8	27	1,255	46.48	8.7	8.7	404.34
J6-3-1_D-8	28	2,997	110.98	0.53	0.53	58.82
J6-3-1_B-9	29	1,325	49.08	120.0	120.0	5,889.37
J6-3-1_B/C-10	30	923	34.18	69.0	***0.021***	0.72
J6-3-1_A/B-9	31	885	32.79	75.0 [71.0]	73.0	2,393.97
J6-3-1_F-8	32	7,025	260.20	0.64	0.64	166.53
J6-3-1_C-9/10	33	1,388	51.42	26.0	26.0	1,337.01
J6-3-1_B-9/10	34	697	25.81	83.0 [109.0]	***0.021***	0.54
Total	**--**	**172,538**	**6,390**	**--**	**--**	**15,766**
				Volume-Weighted Average (mg/kg)		**2.47**

4- to 5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_F/G-1/2	0	1,526	56.53	7.2	7.2	406.99
J6-3-1_G-2	1	3,550	131.49	ND (0.027)	0.014	1.78
J6-3-1_G/H-4/5	2	18,638	690.31	ND (0.023)	0.012	7.94
J6-3-1_G/H-4/5	3	0.5	0.02	ND (0.023)	0.012	0.00

Table E-1B-11

Parcel J6-3-1
Post-Remediation Conditions

4- to 5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_E/F-3	4	1,541	57.06	0.27	0.27	15.41
J6-3-1_F-2/3	5	3,331	123.36	0.28	0.28	34.54
J6-3-1_F-4	6	3,840	142.22	ND (0.13)	0.065	9.24
J6-3-1_H-3	7	47,486	1758.75	0.033	0.033	58.04
J6-3-1_G-8	8	38,481	1425.20	ND (0.024)	0.012	17.10
J6-3-1_G-8	9	52	1.92	ND (0.024)	0.012	0.02
J6-3-1_E-4	10	2,090	77.42	ND (0.024)	0.012	0.93
J6-3-1_C/D-5	11	1,625	60.18	ND (0.026)	0.013	0.78
J6-3-1_E-5	12	8,578	317.72	ND (0.025)	0.013	3.97
J6-3-1_D-7	13	4,155	153.88	ND (0.024)	0.012	1.85
J6-3-1_D-4/5	14	1,596	59.10	ND (0.025)	0.013	0.74
J6-3-1_D-6	15	3,008	111.42	ND (0.026)	0.013	1.45
J6-3-1_C-6	16	1,342	49.71	ND (0.026)	0.013	0.65
J6-3-1_B-7	17	1,309	48.47	96.0	96.0	4,652.95
J6-3-1_C-7	18	2,165	80.20	ND (0.024)	0.012	0.96
J6-3-1_C-8	19	1,792	66.37	ND (0.025)	0.013	0.83
J6-3-1_A/B-8	20	1,539	56.99	150.0	150.0	8,548.08
J6-3-1_B/C-6	21	551	20.41	ND (0.024)	0.012	0.24
J6-3-1_E-8	22	4,459	165.16	0.52	0.52	85.88
J6-3-1_C-9	23	2,142	79.35	ND (0.024)	0.012	0.95
J6-3-1_B-9/10	24	824	30.53	150.0	***0.021***	0.64
J6-3-1_B/C-8	25	2,051	75.95	0.026	0.026	1.97
J6-3-1_D-8	26	2,997	110.98	0.59	0.59	65.48
J6-3-1_B-9	27	1,409	52.19	43.0	43.0	2,244.17
J6-3-1_B/C-10	28	923	34.18	150.0	***0.021***	0.72
J6-3-1_F-8	29	7,025	260.20	ND (0.026)	0.013	3.38
J6-3-1_C-9/10	30	1,388	51.42	ND (0.034)	0.017	0.87
J6-3-1_A/B-9	31	1,123	41.59	25.0	25.0	1,039.75
Total	**--**	**172,538**	**6,390**	**--**	**--**	**17,208**
				Volume-Weighted Average (mg/kg)		**2.69**

5- to 6-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_F/G-1/2	0	1,526	56.53	7.2	7.2	406.99

Table E-1B-11

Parcel J6-3-1
Post-Remediation Conditions

5- to 6-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_G-2	1	3,550	131.49	ND (0.027)	0.014	1.78
J6-3-1_G/H-4/5	2	18,638	690.31	ND (0.023)	0.012	7.94
J6-3-1_G/H-4/5	3	0.5	0.02	ND (0.023)	0.012	0.00
J6-3-1_E/F-3	4	1,541	57.06	0.27	0.27	15.41
J6-3-1_F-2/3	5	3,331	123.36	0.28	0.28	34.54
J6-3-1_F-4	6	3,840	142.22	ND (0.13)	0.065	9.24
J6-3-1_H-3	7	47,486	1758.75	0.033	0.033	58.04
J6-3-1_G-8	8	38,481	1425.20	ND (0.024)	0.012	17.10
J6-3-1_G-8	9	52	1.92	ND (0.024)	0.012	0.02
J6-3-1_E-4	10	2,090	77.42	ND (0.024)	0.012	0.93
J6-3-1_C/D-5	11	1,625	60.18	ND (0.026)	0.013	0.78
J6-3-1_E-5	12	8,578	317.72	ND (0.025)	0.013	3.97
J6-3-1_D-7	13	4,155	153.88	ND (0.024)	0.012	1.85
J6-3-1_D-4/5	14	1,596	59.10	ND (0.025)	0.013	0.74
J6-3-1_D-6	15	3,008	111.42	ND (0.026)	0.013	1.45
J6-3-1_C-6	16	1,342	49.71	ND (0.026)	0.013	0.65
J6-3-1_B-7	17	1,309	48.47	96.0	96.0	4,652.95
J6-3-1_C-7	18	2,165	80.20	ND (0.024)	0.012	0.96
J6-3-1_C-8	19	1,792	66.37	ND (0.025)	0.013	0.83
J6-3-1_A/B-8	20	1,539	56.99	150.0	150.0	8,548.08
J6-3-1_B/C-6	21	551	20.41	ND (0.024)	0.012	0.24
J6-3-1_E-8	22	4,459	165.16	0.52	0.52	85.88
J6-3-1_C-9	23	2,142	79.35	ND (0.024)	0.012	0.95
J6-3-1_B-9/10	24	824	30.53	150.0	***0.021***	0.64
J6-3-1_B/C-8	25	2,051	75.95	0.026	0.026	1.97
J6-3-1_D-8	26	2,997	110.98	0.59	0.59	65.48
J6-3-1_B-9	27	1,409	52.19	43.0	43.0	2,244.17
J6-3-1_B/C-10	28	923	34.18	150.0	***0.021***	0.72
J6-3-1_F-8	29	7,025	260.20	ND (0.026)	0.013	3.38
J6-3-1_C-9/10	30	1,388	51.42	ND (0.034)	0.017	0.87
J6-3-1_A/B-9	31	1,123	41.59	25.0	25.0	1,039.75
Total	--	**172,538**	**6,390**	--	--	**17,208**
				Volume-Weighted Average (mg/kg)		**2.69**

Table E-1B-11

Parcel J6-3-1
Post-Remediation Conditions

6- to 7-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_E/F-3	0	24,013	889.37	ND (0.023)	0.012	10.23
J6-3-1_G-2	1	77,146	2857.25	ND (0.028)	0.014	40.00
J6-3-1_F-2/3	2	12,031	445.58	ND (0.028)	0.014	6.24
J6-3-1_C-9/10	3	1,388	51.42	ND (0.027)	0.014	0.69
J6-3-1_C-7	4	6,683	247.52	ND (0.025)	0.013	3.09
J6-3-1_F/G-1/2	5	1,526	56.53	7.1	7.1	401.34
J6-3-1_C-9	6	22,142	820.09	0.044	0.044	36.08
J6-3-1_B-7	7	1,318	48.82	5.2 [1.1]	3.2	153.77
J6-3-1_C-6	8	16,564	613.47	0.065	0.065	39.88
J6-3-1_B/C-8	9	3,908	144.75	ND (0.028)	0.014	2.03
J6-3-1_A/B-9	10	1,123	41.59	42.0	42.0	1,746.78
J6-3-1_B/C-10	11	923	34.18	29.0	29.0	991.36
J6-3-1_A/B-8	12	1,539	56.99	26.0	26.0	1,481.67
J6-3-1_B-9	13	1,409	52.19	11.0	11.0	574.09
J6-3-1_B-9/10	14	824	30.53	24.8	24.8	757.19
Total	**--**	**172,538**	**6,390**	**--**	**--**	**6,244**
				Volume-Weighted Average (mg/kg)		**0.98**

7- to 8-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_E/F-3	0	24,013	889.37	ND (0.023)	0.012	10.23
J6-3-1_G-2	1	77,146	2857.25	ND (0.028)	0.014	40.00
J6-3-1_F-2/3	2	12,031	445.58	ND (0.028)	0.014	6.24
J6-3-1_C-9/10	3	1,388	51.42	ND (0.027)	0.014	0.69
J6-3-1_C-7	4	6,683	247.52	ND (0.025)	0.013	3.09
J6-3-1_F/G-1/2	5	1,526	56.53	7.1	7.1	401.34
J6-3-1_C-9	6	22,142	820.09	0.044	0.044	36.08
J6-3-1_B-7	7	1,318	48.82	5.2 [1.1]	3.2	153.77
J6-3-1_C-6	8	16,564	613.47	0.065	0.065	39.88
J6-3-1_B/C-8	9	3,908	144.75	ND (0.028)	0.014	2.03
J6-3-1_A/B-9	10	1,123	41.59	42.0	42.0	1,746.78
J6-3-1_B/C-10	11	923	34.18	29.0	29.0	991.36
J6-3-1_A/B-8	12	1,539	56.99	26.0	26.0	1,481.67
J6-3-1_B-9	13	1,409	52.19	11.0	11.0	574.09

Table E-1B-11

Parcel J6-3-1
Post-Remediation Conditions

7- to 8-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_B-9/10	14	824	30.53	24.8	24.8	757.19
Total	--	**172,538**	**6,390**	--	--	**6,244**
				Volume-Weighted Average (mg/kg)		**0.98**

8- to 9-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_F/G-1/2	0	107,416	3978.35	0.7	0.7	2,784.85
J6-3-1_B/C-10	1	923	34.18	68.0	68.0	2,324.57
J6-3-1_B-7	2	15,627	578.77	ND (0.035)	0.018	10.13
J6-3-1_A/B-9	3	1,123	41.59	56.0	56.0	2,329.04
J6-3-1_B-9/10	4	824	30.53	16.0	16.0	488.51
J6-3-1_C-9/10	5	13,239	490.34	ND (0.025)	0.013	6.13
J6-3-1_B/C-8	6	30,354	1124.21	ND (0.024)	0.012	13.49
J6-3-1_B-9	7	1,493	55.31	0.3	0.3	16.59
J6-3-1_A/B-8	8	1,539	56.99	53.0	53.0	3,020.32
Total	--	**172,538**	**6,390**	--	--	**10,994**
				Volume-Weighted Average (mg/kg)		**1.72**

9- to 10-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J6-3-1_F/G-1/2	0	107,416	3978.35	0.7	0.7	2,784.85
J6-3-1_B/C-10	1	923	34.18	68.0	68.0	2,324.57
J6-3-1_B-7	2	15,627	578.77	ND (0.035)	0.018	10.13
J6-3-1_A/B-9	3	1,123	41.59	56.0	56.0	2,329.04
J6-3-1_B-9/10	4	824	30.53	16.0	16.0	488.51
J6-3-1_C-9/10	5	13,239	490.34	ND (0.025)	0.013	6.13
J6-3-1_B/C-8	6	30,354	1124.21	ND (0.024)	0.012	13.49
J6-3-1_B-9	7	1,493	55.31	0.3	0.3	16.59
J6-3-1_A/B-8	8	1,539	56.99	53.0	53.0	3,020.32

Table E-1B-11

Parcel J6-3-1
Post-Remediation Conditions

9- to 10-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
Total	**--**	**172,538**	**6,390**	**--**	**--**	**10,994**
				Volume-Weighted Average (mg/kg)		**1.72**

J6-3-1 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
1- to 10-Foot Depth Increment	172,538	57,513	114,156	1.98

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.
5. Shaded concentrations in bold italics font represent the placement of clean backfill material following the performance of the proposed remediation. The backfill concentration corresponds to the average PCB concentration as presented in Proposed Backfill Data Set for CD Sites.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-12

Parcel J3-1-13
Existing Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-1-12_H-7/8	0	25	0.5	ND (0.093)	0.093	0.04
J3-1-13_G/H-7/8	1	1,833	33.9	ND (0.09)	0.09	3.05
FL001687	2	104	1.9	2.53	2.53	4.89
J3-1-13_F/G-7/8	3	7,197	133.3	ND (0.12)	0.12	15.33
J3-1-13_G-7/8	4	8,242	152.6	ND (0.1)	0.1	15.26
FL000760	5	216	4.0	ND (1.004)	0.5020	2.00
FL000761	6	227	4.2	ND (1.002)	0.5010	2.11
FL000595	7	474	8.8	ND (0.036)	0.018	0.16
BS000091	8	4	0.07	6.07	6.07	0.43
FL001686	9	430	7.96	8.6	8.6	68.50
J3-1-13_F-8	10	105	1.95	3.0/2.0	2.5	4.88
J3-1-13_F-7/8	11	3,946	73.07	0.29	0.29	21.19
J3-1-13_F/G-7/8	12	807	14.94	ND (0.12)	0.12	1.72
Total	**--**	**23,611**	**437**	**--**	**--**	**140**
				Volume-Weighted Average (mg/kg)		**0.32**

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
FL001686	0	430	7.96	16.8	16.8	133.81
FL001687	1	104	1.93	3.42	3.42	6.61
J3-1-13_G/H-7/8	2	1,833	33.94	ND (0.09)	0.09	3.05
J3-1-13_F/G-7/8	3	7,197	133.29	ND (0.12)	0.12	15.33
J3-1-13_G-7/8	4	8,242	152.64	ND (0.1)	0.1	15.26
FL000760	5	216	3.99	ND (1.002)	0.5010	2.00
FL000761	6	227	4.21	ND (1.002)	0.5010	2.11
J3-1-12_H-7/8	7	25	0.5	ND (0.093)	0.093	0.04
BS000091	8	4	0.07	8.3	8.3	0.58
FL000595	9	474	8.78	0.098	0.098	0.86
J3-1-13_F-7/8	10	3,946	73.07	0.29	0.29	21.19
J3-1-13_F-8	11	105	1.95	3.0/2.0	2.5	4.88
J3-1-13_F/G-7/8	12	807	14.94	ND (0.12)	0.12	1.72
Total	**--**	**23,611**	**437**	**--**	**--**	**207**
				Volume-Weighted Average (mg/kg)		**0.47**

Table E-1B-12

Parcel J3-1-13
Existing Conditions

J3-1-13 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	23,611	874	347	0.40

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-13

Parcel J3-1-13
Post-Remediation Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-1-12_H-7/8	0	25	0.5	ND (0.093)	0.093	0.04
J3-1-13_G/H-7/8	1	1,833	33.9	ND (0.09)	0.09	3.05
FL001687	2	104	1.9	2.53	2.53	4.89
J3-1-13_F/G-7/8	3	7,197	133.3	ND (0.12)	0.12	15.33
J3-1-13_G-7/8	4	8,242	152.6	ND (0.1)	0.1	15.26
FL000760	5	216	4.0	ND (1.004)	0.5020	2.00
FL000761	6	227	4.2	ND (1.002)	0.5010	2.11
FL000595	7	474	8.8	ND (0.036)	0.018	0.16
BS000091	8	4	0.07	6.07	6.07	0.43
FL001686	9	430	7.96	8.6	***0.021***	0.17
J3-1-13_F-8	10	105	1.95	3.0/2.0	2.5	4.88
J3-1-13_F-7/8	11	3,946	73.07	0.29	0.29	21.19
J3-1-13_F/G-7/8	12	807	14.94	ND (0.12)	0.12	1.72
Total	**--**	**23,611**	**437**	**--**	**--**	**71**
				Volume-Weighted Average (mg/kg)		**0.16**

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
FL001686	0	430	7.96	16.8	***0.021***	0.17
FL001687	1	104	1.93	3.42	3.42	6.61
J3-1-13_G/H-7/8	2	1,833	33.94	ND (0.09)	0.09	3.05
J3-1-13_F/G-7/8	3	7,197	133.29	ND (0.12)	0.12	15.33
J3-1-13_G-7/8	4	8,242	152.64	ND (0.1)	0.1	15.26
FL000760	5	216	3.99	ND (1.002)	0.5010	2.00
FL000761	6	227	4.21	ND (1.002)	0.5010	2.11
J3-1-12_H-7/8	7	25	0.5	ND (0.093)	0.093	0.04
BS000091	8	4	0.07	8.3	8.3	0.58
FL000595	9	474	8.78	0.098	0.098	0.86
J3-1-13_F-7/8	10	3,946	73.07	0.29	0.29	21.19
J3-1-13_F-8	11	105	1.95	3.0/2.0	2.5	4.88
J3-1-13_F/G-7/8	12	807	14.94	ND (0.12)	0.12	1.72
Total	**--**	**23,611**	**437**	**--**	**--**	**74**
				Volume-Weighted Average (mg/kg)		**0.17**

Table E-1B-13

Parcel J3-1-13
Post-Remediation Conditions

J3-1-13 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	23,611	874	145	0.17

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.
5. Shaded concentrations in bold italics font represent the placement of clean backfill material following the performance of the proposed remediation. The backfill concentration corresponds to the average PCB concentration as presented in Proposed Backfill Data Set for CD Sites.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-14

Parcel J3-1-12
Existing Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-1-12_I/J-7/8	0	3,044	56.4	ND (0.12)	0.12	6.76
J3-1-12_I/J-8	1	327	6.1	ND (0.11)	0.11	0.67
BS000089	2	318	5.9	10.6	10.6	62.37
FL001685	3	445	8.2	0.122	0.122	1.01
J3-1-12_J-8	4	469	8.7	0.235	0.235	2.04
FL000758	5	1,497	27.7	ND (1.004)	0.5020	13.91
J3-1-11_J/K-7/8	6	73	1.4	0.13	0.13	0.18
J3-1-12_H-7/8	7	1,817	33.6	ND (0.093)	0.093	3.13
BS000090	8	591	10.9	15.2	15.2	166.39
FL000759	9	4,988	92.4	ND (1.002)	0.5010	46.27
FL000759	10	1,664	30.8	ND (1.002)	0.5010	15.44
FL000759	11	198	3.7	ND (1.002)	0.5010	1.84
J3-1-13_G/H-7/8	12	5,669	105.0	ND (0.09)	0.09	9.45
J3-1-13_G-7/8	13	620	11.5	ND (0.1)	0.1	1.15
J3-1-12_I-7/8	14	5,159	95.5	0.14	0.14	13.38
FL001684	15	466	8.6	19.6	19.6	169.25
FL000759	16	927	17.2	ND (1.002)	0.5010	8.60
J3-1-12_I-7/8	17	6	0.1	0.14	0.14	0.01
Total	**--**	**28,278**	**524**	**--**	**--**	**522**
				Volume-Weighted Average (mg/kg)		**1.00**

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-1-12_I/J-8	0	327	6.1	ND (0.11)	0.11	0.67
J3-1-12_I/J-7/8	1	3,044	56.4	ND (0.12)	0.12	6.76
J3-1-11_J/K-7/8	2	73	1.4	0.13	0.13	0.18
BS000089	3	318	5.9	21.9	21.9	128.86
J3-1-12_J-8	4	469	8.7	0.235	0.235	2.04
FL000758	5	1,497	27.7	ND (1.004)	0.5020	13.91
FL000759	6	4,988	92.4	ND (1.002)	0.5010	46.27
FL000759	7	1,664	30.8	ND (1.002)	0.5010	15.44
FL000759	8	198	3.7	ND (1.002)	0.5010	1.84
J3-1-13_G/H-7/8	9	5,669	105.0	ND (0.09)	0.09	9.45
J3-1-13_G-7/8	10	620	11.5	ND (0.1)	0.1	1.15

Table E-1B-14

Parcel J3-1-12
Existing Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
FL001684	11	466	8.6	26.0	26.0	224.52
J3-1-12_I-7/8	12	5,159	95.5	0.14	0.14	13.38
J3-1-12_H-7/8	13	1,817	33.6	ND (0.093)	0.093	3.13
BS000090	14	591	10.9	16.3	16.3	178.43
FL001685	15	445	8.2	0.034	0.034	0.28
FL000759	16	927	17.2	ND (1.002)	0.5010	8.60
J3-1-12_I-7/8	17	6	0.1	0.14	0.14	0.01
Total	--	**28,278**	**524**	--	--	**655**
				Volume-Weighted Average (mg/kg)		**1.25**

Table E-1B-14

Parcel J3-1-12
Existing Conditions

J3-1-12 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	28,278	1,047	1,177	1.12

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-15

Parcel J3-1-12
Post-Remediation Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-1-12_I/J-7/8	0	3,044	56.4	ND (0.12)	0.12	6.76
J3-1-12_I/J-8	1	327	6.1	ND (0.11)	0.11	0.67
BS000089	2	318	5.9	10.6	***0.021***	0.12
FL001685	3	445	8.2	0.122	0.122	1.01
J3-1-12_J-8	4	469	8.7	0.235	0.235	2.04
FL000758	5	1,497	27.7	ND (1.004)	0.5020	13.91
J3-1-11_J/K-7/8	6	73	1.4	0.13	0.13	0.18
J3-1-12_H-7/8	7	1,817	33.6	ND (0.093)	0.093	3.13
BS000090	8	591	10.9	15.2	***0.021***	0.23
FL000759	9	4,988	92.4	ND (1.002)	0.5010	46.27
FL000759	10	1,664	30.8	ND (1.002)	0.5010	15.44
FL000759	11	198	3.7	ND (1.002)	0.5010	1.84
J3-1-13_G/H-7/8	12	5,669	105.0	ND (0.09)	0.09	9.45
J3-1-13_G-7/8	13	620	11.5	ND (0.1)	0.1	1.15
J3-1-12_I-7/8	14	5,159	95.5	0.14	0.14	13.38
FL001684	15	466	8.6	19.6	***0.021***	0.18
FL000759	16	927	17.2	ND (1.002)	0.5010	8.60
J3-1-12_I-7/8	17	6	0.1	0.14	0.14	0.01
Total	**--**	**28,278**	**524**	**--**	**--**	**124**
				Volume-Weighted Average (mg/kg)		**0.24**

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-1-12_I/J-8	0	327	6.1	ND (0.11)	0.11	0.67
J3-1-12_I/J-7/8	1	3,044	56.4	ND (0.12)	0.12	6.76
J3-1-11_J/K-7/8	2	73	1.4	0.13	0.13	0.18
BS000089	3	318	5.9	21.9	***0.021***	0.12
J3-1-12_J-8	4	469	8.7	0.235	0.235	2.04
FL000758	5	1,497	27.7	ND (1.004)	0.5020	13.91
FL000759	6	4,988	92.4	ND (1.002)	0.5010	46.27
FL000759	7	1,664	30.8	ND (1.002)	0.5010	15.44
FL000759	8	198	3.7	ND (1.002)	0.5010	1.84
J3-1-13_G/H-7/8	9	5,669	105.0	ND (0.09)	0.09	9.45
J3-1-13_G-7/8	10	620	11.5	ND (0.1)	0.1	1.15

Table E-1B-15

Parcel J3-1-12
Post-Remediation Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
FL001684	11	466	8.6	26.0	***0.021***	0.18
J3-1-12_I-7/8	12	5,159	95.5	0.14	0.14	13.38
J3-1-12_H-7/8	13	1,817	33.6	ND (0.093)	0.093	3.13
BS000090	14	591	10.9	16.3	***0.021***	0.23
FL001685	15	445	8.2	0.034	0.034	0.28
FL000759	16	927	17.2	ND (1.002)	0.5010	8.60
J3-1-12_I-7/8	17	6	0.1	0.14	0.14	0.01
Total	**--**	**28,278**	**524**	**--**	**--**	**124**
				Volume-Weighted Average (mg/kg)		**0.24**

Table E-1B-15

Parcel J3-1-12
Post-Remediation Conditions

J3-1-12 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	28,278	1,047	248	0.24

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.
5. Shaded concentrations in bold italics font represent the placement of clean backfill material following the performance of the proposed remediation. The backfill concentration corresponds to the average PCB concentration as presented in Proposed Backfill Data Set for CD Sites.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-16

Parcel J3-1-11
Existing Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-1-11_L/M-7/8	0	1,877	34.76	0.545	0.545	18.94
J3-1-10_M-7/8	1	121	2.24	0.18	0.18	0.40
FL000756	2	838	15.51	ND (1.002)	0.5010	7.77
J3-1-12_I/J-7/8	3	2,808	52.01	ND (0.12)	0.12	6.24
FL000757	4	1,173	21.73	0.422	0.422	9.17
J3-1-11_L-8/9	5	766	14.18	3.1	3.1	43.95
J3-1-11_K/L-7/8	6	3,049	56.47	0.39	0.39	22.02
FL001683	7	640	11.85	4.6	4.6	54.53
J3-1-11_K/L-8	8	284	5.26	0.45	0.45	2.37
J3-1-11_K/L-8	9	2	0.04	0.45	0.45	0.02
BS000089	10	5	0.10	10.6	10.6	1.02
J3-1-12_J-8	11	96	1.78	0.235	0.235	0.42
FL000758	12	3,193	59.13	ND (1.004)	0.5020	29.68
J3-1-11_J/K-7/8	13	5,858	108.48	0.13	0.13	14.10
J3-1-11_J/K-7/8	14	101	1.88	0.13	0.13	0.24
J3-1-10_M-6/7	15	10,000	185.19	1.3	1.3	240.75
J3-1-12_I-7/8	16	614	11.37	0.14	0.14	1.59
FL001682	17	336	6.22	31.0 [33.0]	32.0	199.03
FL000756	18	57	1.05	ND (1.002)	0.5010	0.53
J3-1-11_L-8/9	19	0.5	0.009	3.1	3.1	0.03
J3-1-11_K/L-7/8	20	9	0.2	0.39	0.39	0.07
J3-1-11_K/L-8	21	206	3.8	0.45	0.45	1.71
J3-1-10_M-6/7	22	898	16.6	1.3	1.3	21.62
Total	--	**32,932**	**610**	--	--	**676**
				Volume-Weighted Average (mg/kg)		**1.11**

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-1-11_L/M-7/8	0	1,877	34.8	0.545	0.545	18.94
J3-1-10_M-7/8	1	121	2.2	0.18	0.18	0.40
FL000756	2	838	15.5	ND (1.004)	0.5020	7.79
J3-1-11_K/L-8	3	284	5.3	0.45	0.45	2.37
J3-1-11_K/L-8	4	2	0.04	0.45	0.45	0.02
J3-1-11_K/L-7/8	5	3,049	56.47	0.39	0.39	22.02

Table E-1B-16

Parcel J3-1-11
Existing Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-1-12_I/J-7/8	6	2,808	52.01	ND (0.12)	0.12	6.24
J3-1-11_L-8/9	7	766	14.18	3.1	3.1	43.95
J3-1-11_J/K-7/8	8	5,858	108.48	0.13	0.13	14.10
J3-1-11_J/K-7/8	9	101	1.88	0.13	0.13	0.24
BS000089	10	5	0.10	21.9	21.9	2.10
J3-1-12_J-8	11	96	1.78	0.235	0.235	0.42
FL000757	12	1,173	21.73	ND (1.0)	0.50	10.86
FL001683	13	640	11.85	3.71	3.71	43.98
FL000758	14	3,193	59.13	ND (1.004)	0.5020	29.68
J3-1-10_M-6/7	15	10,000	185.19	1.3	1.3	240.75
J3-1-12_I-7/8	16	614	11.37	0.14	0.14	1.59
FL001682	17	336	6.22	9.5	9.5	59.09
FL000756	18	57	1.05	ND (1.004)	0.5020	0.53
J3-1-11_K/L-8	19	206	3.81	0.45	0.45	1.71
J3-1-11_K/L-7/8	20	9	0.2	0.39	0.39	0.07
J3-1-11_L-8/9	21	0.5	0.009	3.1	3.1	0.03
J3-1-10_M-6/7	22	898	16.632	1.3	1.3	21.62
Total	**--**	**32,932**	**610**	**--**	**--**	**529**
				Volume-Weighted Average (mg/kg)		**0.87**

Table E-1B-16

Parcel J3-1-11
Existing Conditions

J3-1-11 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	32,932	1,220	1,205	0.99

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-17

Parcel J3-1-11
Post-Remediation Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-1-11_L/M-7/8	0	1,877	34.755	0.545	0.545	18.94
J3-1-10_M-7/8	1	121	2.242	0.18	0.18	0.40
FL000756	2	838	15.514	ND (1.002)	0.5010	7.77
J3-1-12_I/J-7/8	3	2,808	52.006	ND (0.12)	0.12	6.24
FL000757	4	1,173	21.729	0.422	0.422	9.17
J3-1-11_L-8/9	5	766	14.177	3.1	3.1	43.95
J3-1-11_K/L-7/8	6	3,049	56.471	0.39	0.39	22.02
FL001683	7	640	11.855	4.6	4.6	54.53
J3-1-11_K/L-8	8	284	5.257	0.45	0.45	2.37
J3-1-11_K/L-8	9	2	0.04	0.45	0.45	0.02
BS000089	10	5	0.10	10.6	***0.021***	0.00
J3-1-12_J-8	11	96	1.78	0.235	0.235	0.42
FL000758	12	3,193	59.13	ND (1.004)	0.5020	29.68
J3-1-11_J/K-7/8	13	5,858	108.48	0.13	0.13	14.10
J3-1-11_J/K-7/8	14	101	1.88	0.13	0.13	0.24
J3-1-10_M-6/7	15	10,000	185.19	1.3	1.3	240.75
J3-1-12_I-7/8	16	614	11.37	0.14	0.14	1.59
FL001682	17	336	6.22	31.0 [33.0]	***0.021***	0.13
FL000756	18	57	1.05	ND (1.002)	0.5010	0.53
J3-1-11_L-8/9	19	0.5	0.009	3.1	3.1	0.03
J3-1-11_K/L-7/8	20	9	0.2	0.39	0.39	0.07
J3-1-11_K/L-8	21	206	3.8	0.45	0.45	1.71
J3-1-10_M-6/7	22	898	16.6	1.3	1.3	21.62
Total	**--**	**32,932**	**610**	**--**	**--**	**476**
				Volume-Weighted Average (mg/kg)		**0.78**

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-1-11_L/M-7/8	0	1,877	34.8	0.545	0.545	18.94
J3-1-10_M-7/8	1	121	2.2	0.18	0.18	0.40
FL000756	2	838	15.5	ND (1.004)	0.5020	7.79
J3-1-11_K/L-8	3	284	5.3	0.45	0.45	2.37
J3-1-11_K/L-8	4	2	0.04	0.45	0.45	0.02
J3-1-11_K/L-7/8	5	3,049	56.47	0.39	0.39	22.02

Table E-1B-17

Parcel J3-1-11
Post-Remediation Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-1-12_I/J-7/8	6	2,808	52.01	ND (0.12)	0.12	6.24
J3-1-11_L-8/9	7	766	14.18	3.1	3.1	43.95
J3-1-11_J/K-7/8	8	5,858	108.48	0.13	0.13	14.10
J3-1-11_J/K-7/8	9	101	1.88	0.13	0.13	0.24
BS000089	10	5	0.10	21.9	***0.021***	0.00
J3-1-12_J-8	11	96	1.78	0.235	0.235	0.42
FL000757	12	1,173	21.73	ND (1.0)	0.50	10.86
FL001683	13	640	11.85	3.71	3.71	43.98
FL000758	14	3,193	59.13	ND (1.004)	0.5020	29.68
J3-1-10_M-6/7	15	10,000	185.19	1.3	1.3	240.75
J3-1-12_I-7/8	16	614	11.37	0.14	0.14	1.59
FL001682	17	336	6.22	9.5	***0.021***	0.13
FL000756	18	57	1.05	ND (1.004)	0.5020	0.53
J3-1-11_K/L-8	19	206	3.81	0.45	0.45	1.71
J3-1-11_K/L-7/8	20	9	0.2	0.39	0.39	0.07
J3-1-11_L-8/9	21	0.5	0.009	3.1	3.1	0.03
J3-1-10_M-6/7	22	898	16.632	1.3	1.3	21.62
Total	**--**	**32,932**	**610**	**--**	**--**	**467**
				Volume-Weighted Average (mg/kg)		**0.77**

Table E-1B-17

Parcel J3-1-11
Post-Remediation Conditions

J3-1-11 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	32,932	1,220	944	0.77

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.
5. Shaded concentrations in bold italics font represent the placement of clean backfill material following the performance of the proposed remediation. The backfill concentration corresponds to the average PCB concentration as presented in Proposed Backfill Data Set for CD Sites.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-18

Parcel J3-2-2
Existing Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-2_J/K-2/3	0	1,113	20.605	13.0	13.0	267.86
FL001849	1	21	0.4	19.0	19.0	7.50
FL001849	1A	0.5	0.008	19.0	19.0	0.16
FL000914	2	261	4.835	18.1	18.1	87.52
FL001323	3	1,568	29.041	93.7	93.7	2,721.16
FL001323	3A	195	3.615	93.7	93.7	338.71
J3-2-2_H/I-2/3	4	1,173	21.722	5.6	5.6	121.65
J3-2-3_I/J-3/4	5	20	0.4	8.5	8.5	3.19
BS000059	6	0.4	0.007	12.2	12.2	0.09
BS000059	6A	0.10	0.002	12.2	12.2	0.02
J3-2-2-SB-1	7	1,091	20.205	20.8	20.8	420.26
J3-2-3-SS-2	8	969	17.945	ND (0.244)	0.122	2.19
J3-2-2_G/H-2/3	9	1,174	21.735	0.17	0.17	3.69
J3-2-2_F/G-2	10	6,207	114.938	ND (0.12)	0.12	13.79
FL001324	11	893	16.532	40.4	40.4	667.89
J3-2-3-SS-4	12	137	2.539	ND (0.344)	0.172	0.44
J3-2-3-SS-1	13	15,001	277.801	ND (0.256)	0.128	35.56
J3-2-3-SS-1	14	638	11.813	ND (0.256)	0.128	1.51
Total	**--**	**30,462**	**564**	**--**	**--**	**4,693**
				Volume-Weighted Average (mg/kg)		**8.32**

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-2_J/K-2/3	0	1,113	20.613	13.0	13.0	267.97
EA22-R-12	1	21	0.4	0.977	0.977	0.39
J3-2-2_H/I-2/3	2	1,173	21.7	5.6	5.6	121.65
FL001323	3	1,568	29.0	8.72 [14.0]	11.4	329.91
FL001323	3A	195	3.6	8.72 [14.0]	11.4	41.06
J3-2-3_I/J-3/4	4	20	0.4	8.5	8.5	3.19
BS000059	5	0.4	0.007	17.7	17.7	0.12
BS000059	5A	0.10	0.002	17.7	17.7	0.03
FL000914	6	261	4.835	0.517	0.517	2.50
J3-2-2-SB-1	7	1,091	20.205	31.4	31.4	634.43
J3-2-3-SS-2	8	969	17.945	ND (0.226)	0.113	2.03

Table E-1B-18

Parcel J3-2-2
Existing Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-2_G/H-2/3	9	1,174	21.735	0.17	0.17	3.69
J3-2-2_F/G-2	10	6,207	114.938	ND (0.12)	0.12	13.79
FL001324	11	893	16.532	18.0	18.0	297.58
J3-2-3-SS-4	12	137	2.539	ND (0.292)	0.146	0.37
J3-2-3-SS-1	13	15,001	277.801	ND (0.244)	0.122	33.89
J3-2-3-SS-1	14	638	11.813	ND (0.244)	0.122	1.44
Total	**--**	**30,462**	**564**	**--**	**--**	**1,754**
				Volume-Weighted Average (mg/kg)		**3.11**

Table E-1B-18

Parcel J3-2-2
Existing Conditions

J3-2-2 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	30,462	1,128	6,447	5.71

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-19

Parcel J3-2-2
Existing Conditions

1- to 2-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-2_J/K-2/3	0	1,330	49.249	46.0	46.0	2,265.45
J3-2-2-SB-1	1	1,551	57.437	2.324	2.324	133.48
J3-2-3_I/J-3/4	2	1,100	40.756	0.16	0.16	6.52
J3-2-3-SB-1	3	0.5	0.02	ND (0.308)	2.32	0.04
J3-2-2_H/I-2/3	4	2,407	89.16	0.9/6.6	3.75	334.35
J3-2-2_G/H-2/3	5	1,549	57.39	ND (0.083)	0.083	4.76
J3-2-3_G-3/4	6	409	15.16	ND (0.12)	0.12	1.82
J3-2-4_E/F-6	7	241	8.94	ND (0.12)	0.12	1.07
J3-2-3_F-4/5	8	2	0.08	ND (0.1)	0.1	0.01
J3-2-4_E/F-5/6	9	950	35.17	ND (0.13)	0.13	4.57
J3-2-2_F/G-2	10	20,922	774.87	ND (0.12)	0.12	92.98
Total	--	**30,462**	**1,128**	--	--	**2,845**
				Volume-Weighted Average (mg/kg)		**2.52**

Table E-1B-19

Parcel J3-2-2
Existing Conditions

J3-2-2 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
1- to 2-Foot Depth Increment	30,462	1,128	2,845	2.52

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-20

Parcel J3-2-2
Post-Remediation Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-2_J/K-2/3	0	1,113	20.60	13.0	***0.021***	0.43
FL001849	1	21	0.4	19.0	***0.021***	0.01
FL001849	1A	0.5	0.008	19.0	***0.021***	0.00
FL000914	2	261	4.835	18.1	***0.021***	0.10
FL001323	3	1,568	29.041	93.7	***0.021***	0.61
FL001323	3A	195	3.615	93.7	***0.021***	0.08
J3-2-2_H/I-2/3	4	1,173	21.722	5.6	5.6	121.65
J3-2-3_I/J-3/4	5	20	0.4	8.5	8.5	3.19
BS000059	6	0.4	0.007	12.2	***0.021***	0.00
BS000059	6A	0.10	0.002	12.2	***0.021***	0.00
J3-2-2-SB-1	7	1,091	20.205	20.8	***0.021***	0.42
J3-2-3-SS-2	8	969	17.945	ND (0.244)	0.122	2.19
J3-2-2_G/H-2/3	9	1,174	21.735	0.17	0.17	3.69
J3-2-2_F/G-2	10	6,207	114.938	ND (0.12)	0.12	13.79
FL001324	11	893	16.532	40.4	***0.021***	0.35
J3-2-3-SS-4	12	137	2.539	ND (0.344)	0.172	0.44
J3-2-3-SS-1	13	15,001	277.801	ND (0.256)	0.128	35.56
J3-2-3-SS-1	14	638	11.813	ND (0.256)	0.128	1.51
Total	**--**	**30,462**	**564**	**--**	**--**	**184**
				Volume-Weighted Average (mg/kg)		**0.33**

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-2_J/K-2/3	0	1,113	20.613	13.0	***0.021***	0.43
EA22-R-12	1	21	0.4	0.977	***0.021***	0.01
J3-2-2_H/I-2/3	2	1,173	21.7	5.6	5.6	121.65
FL001323	3	1,568	29.0	8.72 [14.0]	***0.021***	0.61
FL001323	3A	195	3.6	8.72 [14.0]	***0.021***	0.08
J3-2-3_I/J-3/4	4	20	0.4	8.5	8.5	3.19
BS000059	5	0.4	0.007	17.7	***0.021***	0.00
BS000059	5A	0.10	0.002	17.7	***0.021***	0.00
FL000914	6	261	4.835	0.517	***0.021***	0.10
J3-2-2-SB-1	7	1,091	20.205	31.4	***0.021***	0.42
J3-2-3-SS-2	8	969	17.945	ND (0.226)	0.113	2.03

Table E-1B-20

Parcel J3-2-2
Post-Remediation Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-2_G/H-2/3	9	1,174	21.735	0.17	0.17	3.69
J3-2-2_F/G-2	10	6,207	114.938	ND (0.12)	0.12	13.79
FL001324	11	893	16.532	18.0	***0.021***	0.35
J3-2-3-SS-4	12	137	2.539	ND (0.292)	0.146	0.37
J3-2-3-SS-1	13	15,001	277.801	ND (0.244)	0.122	33.89
J3-2-3-SS-1	14	638	11.813	ND (0.244)	0.122	1.44
Total	**--**	**30,462**	**564**	**--**	**--**	**182**
				Volume-Weighted Average (mg/kg)		**0.32**

Table E-1B-20

Parcel J3-2-2
Post-Remediation Conditions

J3-2-2 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	30,462	1,128	366	0.32

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.
5. Shaded concentrations in bold italics font represent the placement of clean backfill material following the performance of the proposed remediation. The backfill concentration corresponds to the average PCB concentration as presented in Proposed Backfill Data Set for CD Sites.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-21

Parcel J3-2-2
Post-Remediation Conditions

1- to 2-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-2_J/K-2/3	0	1,330	49.249	46.0	***0.021***	1.03
J3-2-2-SB-1	1	1,551	57.437	2.324	2.324	133.48
J3-2-3_I/J-3/4	2	1,100	40.756	0.16	0.16	6.52
J3-2-3-SB-1	3	0.5	0.02	ND (0.308)	2.32	0.04
J3-2-2_H/I-2/3	4	2,407	89.16	0.9/6.6	3.75	334.35
J3-2-2_G/H-2/3	5	1,549	57.39	ND (0.083)	0.083	4.76
J3-2-3_G-3/4	6	409	15.16	ND (0.12)	0.12	1.82
J3-2-4_E/F-6	7	241	8.94	ND (0.12)	0.12	1.07
J3-2-3_F-4/5	8	2	0.08	ND (0.1)	0.1	0.01
J3-2-4_E/F-5/6	9	950	35.17	ND (0.13)	0.13	4.57
J3-2-2_F/G-2	10	20,922	774.87	ND (0.12)	0.12	92.98
Total	**--**	**30,462**	**1,128**	**--**	**--**	**581**
				Volume-Weighted Average (mg/kg)		**0.52**

Table E-1B-21

Parcel J3-2-2
Post-Remediation Conditions

J3-2-2 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
1- to 2-Foot Depth Increment	30,462	1,128	581	0.52

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.
5. Shaded concentrations in bold italics font represent the placement of clean backfill material following the performance of the proposed remediation. The backfill concentration corresponds to the average PCB concentration as presented in Proposed Backfill Data Set for CD Sites.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-22

Parcel J3-2-3
Existing Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-2_J/K-2/3	0	169	3.1	13.0	13.0	40.58
FL000914	1	1,017	18.8	18.1	18.1	341.02
FL001323	2	28	0.5	93.7	93.7	48.13
J3-2-3_I/J-3/4	3	1,004	18.6	8.5	8.5	158.02
BS000059	4	185	3.4	12.2	12.2	41.73
BS000058	5	282	5.2	20.6	20.6	107.59
J3-2-3-SB-3	6	642	11.9	19.0	19.0	225.87
J3-2-3_H/I-3/4	7	641	11.9	29.0	29.0	344.29
FL000700	8	883	16.3	18.7	18.7	305.69
J3-2-2-SB-1	9	34	0.6	20.8	20.8	13.27
J3-2-3-SB-2	10	444	8.2	9.26	9.26	76.11
J3-2-3-SS-2	11	803	14.9	ND (0.244)	0.122	1.81
J3-2-3-SB-1	12	1,239	22.9	20.6	20.6	472.75
J3-2-3_G-3/4	13	1,185	21.9	ND (0.12)	0.12	2.63
J3-2-4_E/F-5/6	14	427	7.9	ND (0.14)	0.14	1.11
J3-2-3_F/G-4	15	1,289	23.9	ND (0.12)	0.12	2.86
J3-2-3-SB-4	16	683	12.6	9.23	9.23	116.76
FL001324	17	1.0	0.02	40.4	40.4	0.74
J3-2-3_F-4/5	18	1,192	22.07	ND (0.12)	0.12	2.65
J3-2-3-SS-4	19	2,651	49.09	ND (0.344)	0.172	8.44
J3-2-3-SS-3	20	510	9.45	19.0	19.0	179.52
J3-2-3-SS-5	21	3,710	68.70	0.23 [ND (0.312)]	0.19	13.26
FL000699	22	113	2.10	6.1	6.1	12.80
J3-2-3-SS-1	23	15,062	278.93	ND (0.256)	0.128	35.70
J3-2-3-SS-1	24	815	15.10	ND (0.256)	0.128	1.93
Total	**--**	**35,008**	**648**	**--**	**--**	**2,555**
				Volume-Weighted Average (mg/kg)		**3.94**

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-2_J/K-2/3	0	169	3.12	13.0	13.0	40.58
FL001323	1	28	0.5	8.72 [14.0]	11.4	5.83
J3-2-3_H/I-3/4	2	641	11.9	29.0	29.0	344.29
J3-2-3_I/J-3/4	3	1,004	18.6	8.5	8.5	158.02

Table E-1B-22

Parcel J3-2-3
Existing Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
BS000059	4	185	3.4	17.7	17.7	60.54
FL000914	5	1,017	18.8	0.517	0.517	9.74
J3-2-3-SB-3	6	642	11.9	8.4	8.4	99.86
BS000058	7	282	5.2	ND (1.192)	0.5960	3.11
FL000700	8	883	16.3	3.34	3.34	54.60
J3-2-2-SB-1	9	34	0.6	31.4	31.4	20.04
J3-2-3-SB-2	10	444	8.2	5.02	5.02	41.26
J3-2-3-SS-2	11	803	14.9	ND (0.226)	0.113	1.68
J3-2-3-SB-1	12	1,239	22.9	1.6	1.6	36.72
J3-2-3_G-3/4	13	1,185	21.9	ND (0.12)	0.12	2.63
J3-2-4_E/F-5/6	14	427	7.9	ND (0.14)	0.14	1.11
J3-2-3_F/G-4	15	1,289	23.9	ND (0.12)	0.12	2.86
J3-2-3-SB-4	16	683	12.6	10.8	10.8	136.62
FL001324	17	1.0	0.02	18.0	18.0	0.33
J3-2-3_F-4/5	18	1,192	22.07	ND (0.12)	0.12	2.65
J3-2-3-SS-4	19	2,651	49.09	ND (0.292)	0.146	7.17
J3-2-3-SS-3	20	510	9.45	5.84	5.84	55.18
J3-2-3-SS-5	21	3,710	68.70	ND (0.34)	0.17	11.68
FL000699	22	113	2.10	11.3	11.3	23.71
J3-2-3-SS-1	23	15,062	278.93	ND (0.244)	0.122	34.03
J3-2-3-SS-1	24	815	15.10	ND (0.244)	0.122	1.84
Total	--	**35,008**	**648**	--	--	**1,156**
				Volume-Weighted Average (mg/kg)		**1.78**

Table E-1B-22

Parcel J3-2-3
Existing Conditions

J3-2-3 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	35,008	1,297	3,711	2.86

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-23

Parcel J3-2-3
Existing Conditions

1- to 2-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-2_J/K-2/3	0	185	6.85	46.0	46.0	315.02
J3-2-2-SB-1	1	80	2.97	2.324	2.324	6.89
J3-2-3-SB-3	2	642	23.78	0.1845	0.1723	4.10
J3-2-3_I/J-3/4	3	1,357	50.27	0.16	0.16	8.04
J3-2-3_H/I-3/4	4	1,085	40.19	0.52	0.52	20.90
J3-2-3-SB-1	5	1,908	70.67	ND (0.308)	2.32	163.74
J3-2-3-SB-5	6	779	28.84	0.908	0.908	26.19
J3-2-3-SB-2	7	734	27.19	1.123	1.123	30.54
J3-2-2_H/I-2/3	8	232	8.59	0.9	0.9	7.73
J3-2-3_F/G-4	9	2,890	107.03	ND (0.12)	0.12	12.84
J3-2-3-SB-4	10	707	26.20	2.94	2.94	77.02
J3-2-3_G-3/4	11	2,204	81.64	ND (0.12)	0.12	9.80
J3-2-4_E/F-6	12	7,268	269.19	ND (0.12)	0.12	32.30
J3-2-3_F-4/5	13	6,130	227.02	ND (0.1)	0.1	22.70
J3-2-4_E/F-5/6	14	7,260	268.88	ND (0.13)	0.13	34.95
J3-2-5_D/E-7/8	15	762	28.23	ND (0.1)	0.1	2.82
J3-2-2_F/G-2	16	784	29.05	ND (0.12)	0.12	3.49
Total	**--**	**35,008**	**1,297**	**--**	**--**	**779**
				Volume-Weighted Average (mg/kg)		**0.60**

2- to 3-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-2_J/K-2/3	0	607	22.48	ND (0.15)	0.15	3.37
J3-2-3-SB-3	1	642	23.78	0.142	0.142	3.38
J3-2-3-SB-1	2	2,087	77.28	0.4215	0.4215	32.57
J3-2-2-SB-1	3	219	8.10	ND (0.38)	0.17	1.35
J3-2-3_H/I-3/4	4	2,181	80.79	0.35	0.35	28.28
J3-2-3-SB-2	5	2,056	76.14	0.7315	0.7315	55.69
J3-2-3-SB-4	6	2,694	99.79	6.24	3.60	358.83
J3-2-3-SB-5	7	779	28.84	ND (0.272)	0.136	3.92
J3-2-4_E/F-6/7	8	4,744	175.72	0.51	0.51	89.62
J3-2-3_F/G-4	9	10,586	392.06	ND (0.11)	0.11	43.13
J3-2-4_F-5/6	10	8,413	311.61	ND (0.14)	0.14	43.63

Table E-1B-23

Parcel J3-2-3
Existing Conditions

2- to 3-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
Total	**--**	**35,008**	**1,297**	**--**	**--**	**664**
				Volume-Weighted Average (mg/kg)		**0.51**

J3-2-3 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
1- to 3-Foot Depth Increment	35,008	2,593	1,443	0.56

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-24

Parcel J3-2-3
Post-Remediation Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-2_J/K-2/3	0	169	3.12	13.0	***0.021***	0.07
FL000914	1	1,017	18.84	18.1	***0.021***	0.40
FL001323	2	28	0.5	93.7	***0.021***	0.01
J3-2-3_I/J-3/4	3	1,004	18.6	8.5	8.5	158.02
BS000059	4	185	3.4	12.2	***0.021***	0.07
BS000058	5	282	5.2	20.6	***0.021***	0.11
J3-2-3-SB-3	6	642	11.9	19.0	***0.021***	0.25
J3-2-3_H/I-3/4	7	641	11.9	29.0	***0.021***	0.25
FL000700	8	883	16.3	18.7	***0.021***	0.34
J3-2-2-SB-1	9	34	0.6	20.8	***0.021***	0.01
J3-2-3-SB-2	10	444	8.2	9.26	9.26	76.11
J3-2-3-SS-2	11	803	14.9	ND (0.244)	0.122	1.81
J3-2-3-SB-1	12	1,239	22.9	20.6	***0.021***	0.48
J3-2-3_G-3/4	13	1,185	21.9	ND (0.12)	0.12	2.63
J3-2-4_E/F-5/6	14	427	7.9	ND (0.14)	0.14	1.11
J3-2-3_F/G-4	15	1,289	23.9	ND (0.12)	0.12	2.86
J3-2-3-SB-4	16	683	12.6	9.23	***0.021***	0.27
FL001324	17	1.0	0.02	40.4	***0.021***	0.00
J3-2-3_F-4/5	18	1,192	22.07	ND (0.12)	0.12	2.65
J3-2-3-SS-4	19	2,651	49.09	ND (0.344)	0.172	8.44
J3-2-3-SS-3	20	510	9.45	19.0	***0.021***	0.20
J3-2-3-SS-5	21	3,710	68.70	0.23 [ND (0.312)]	0.19	13.26
FL000699	22	113	2.10	6.1	***0.021***	0.04
J3-2-3-SS-1	23	15,062	278.93	ND (0.256)	0.128	35.70
J3-2-3-SS-1	24	815	15.10	ND (0.256)	0.128	1.93
Total	**--**	**35,008**	**648**	**--**	**--**	**307**
				Volume-Weighted Average (mg/kg)		**0.47**

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-2_J/K-2/3	0	169	3.12	13.0	***0.021***	0.07
FL001323	1	28	0.5	8.72 [14.0]	***0.021***	0.01
J3-2-3_H/I-3/4	2	641	11.9	29.0	***0.021***	0.25
J3-2-3_I/J-3/4	3	1,004	18.6	8.5	8.5	158.02

Table E-1B-24

Parcel J3-2-3
Post-Remediation Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
BS000059	4	185	3.4	17.7	***0.021***	0.07
FL000914	5	1,017	18.8	0.517	***0.021***	0.40
J3-2-3-SB-3	6	642	11.9	8.4	***0.021***	0.25
BS000058	7	282	5.2	ND (1.192)	***0.021***	0.11
FL000700	8	883	16.3	3.34	***0.021***	0.34
J3-2-2-SB-1	9	34	0.6	31.4	***0.021***	0.01
J3-2-3-SB-2	10	444	8.2	5.02	5.02	41.26
J3-2-3-SS-2	11	803	14.9	ND (0.226)	0.113	1.68
J3-2-3-SB-1	12	1,239	22.9	1.6	***0.021***	0.48
J3-2-3_G-3/4	13	1,185	21.9	ND (0.12)	0.12	2.63
J3-2-4_E/F-5/6	14	427	7.9	ND (0.14)	0.14	1.11
J3-2-3_F/G-4	15	1,289	23.9	ND (0.12)	0.12	2.86
J3-2-3-SB-4	16	683	12.6	10.8	***0.021***	0.27
FL001324	17	1.0	0.02	18.0	***0.021***	0.00
J3-2-3_F-4/5	18	1,192	22.07	ND (0.12)	0.12	2.65
J3-2-3-SS-4	19	2,651	49.09	ND (0.292)	0.146	7.17
J3-2-3-SS-3	20	510	9.45	5.84	***0.021***	0.20
J3-2-3-SS-5	21	3,710	68.70	ND (0.34)	0.17	11.68
FL000699	22	113	2.10	11.3	***0.021***	0.04
J3-2-3-SS-1	23	15,062	278.93	ND (0.244)	0.122	34.03
J3-2-3-SS-1	24	815	15.10	ND (0.244)	0.122	1.84
Total	**--**	**35,008**	**648**	**--**	**--**	**267**
				Volume-Weighted Average (mg/kg)		**0.41**

Table E-1B-24

Parcel J3-2-3
Post-Remediation Conditions

J3-2-3 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	35,008	1,297	574	0.44

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.
5. Shaded concentrations in bold italics font represent the placement of clean backfill material following the performance of the proposed remediation. The backfill concentration corresponds to the average PCB concentration as presented in Proposed Backfill Data Set for CD Sites.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-25

Parcel J3-2-4
Existing Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-4_E/F-5/6	0	1,463	27.1	ND (0.14)	0.14	3.79
J3-2-3-SB-4	1	133	2.5	9.23	9.23	22.70
J3-2-4_E/F-6	2	5,512	102.1	ND (0.15)	0.15	15.31
BS000060	3	38	0.7	17.7	17.7	12.56
J3-2-4_F-5/6	4	577	10.7	15.0	15.0	160.17
J3-2-4_F/G-5/6	5	87	1.6	14.0	14.0	22.66
BS000057	6	7	0.1	16.2	16.2	2.00
FL000701	7	319	5.9	22.8	22.8	134.57
J3-2-5_E-7/8	8	25	0.5	ND (0.14)	0.14	0.07
J3-2-3-SS-5	9	419	7.8	0.23 [ND (0.312)]	0.19	1.50
FL000699	10	411	7.6	6.1	6.1	46.43
J3-2-4_E-6/7	11	2,055	38.1	ND (0.16)	0.16	6.09
J3-2-4_E/F-6/7	12	230	4.3	16.0	16.0	68.14
J3-2-3-SS-1	13	1,145	21.2	ND (0.256)	0.128	2.71
J3-2-5_D/E-7/8	14	9,400	174.1	ND (0.11)	0.11	19.15
J3-2-5_D/E-7/8	15	340	6.3	ND (0.11)	0.11	0.69
Total	--	**22,161**	**410**	--	--	**519**
				Volume-Weighted Average (mg/kg)		**1.26**

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-4_F/G-5/6	0	87	1.6	14.0	14.0	22.66
J3-2-4_E/F-5/6	1	1,463	27.1	ND (0.14)	0.14	3.79
J3-2-3-SB-4	2	133	2.5	10.8	10.8	26.56
J3-2-4_E/F-6	3	5,512	102.1	ND (0.15)	0.15	15.31
J3-2-4_F-5/6	4	577	10.7	15.0	15.0	160.17
BS000057	5	7	0.1	ND (1.014)	0.5070	0.06
BS000060	6	38	0.7	18.7	18.7	13.27
FL000701	7	319	5.9	19.2	19.2	113.32
J3-2-5_E-7/8	8	25	0.5	ND (0.14)	0.14	0.07
J3-2-3-SS-5	9	419	7.8	ND (0.34)	0.17	1.32
FL000699	10	411	7.6	11.3	11.3	86.00
J3-2-4_E-6/7	11	2,055	38.1	ND (0.16)	0.16	6.09
J3-2-4_E/F-6/7	12	230	4.3	16.0	16.0	68.14

Table E-1B-25

Parcel J3-2-4
Existing Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-3-SS-1	13	1,145	21.2	ND (0.244)	0.122	2.59
J3-2-5_D/E-7/8	14	9,400	174.1	ND (0.11)	0.11	19.15
J3-2-5_D/E-7/8	15	340	6.3	ND (0.11)	0.11	0.69
Total	**--**	**22,161**	**410**	**--**	**--**	**539**
				Volume-Weighted Average (mg/kg)		**1.31**

Table E-1B-25

Parcel J3-2-4
Existing Conditions

J3-2-4 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	22,161	821	1,058	1.29

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-26

Parcel J3-2-4
Existing Conditions

1- to 2-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-3-SB-4	0	261	9.7	2.94	2.94	28.38
J3-2-4_F-5/6	1	598	22.1	15.0	15.0	332.19
J3-2-4_E/F-6	2	6,444	238.7	ND (0.12)	0.12	28.64
J3-2-3_F-4/5	3	34	1.3	ND (0.1)	0.1	0.13
J3-2-4_E/F-5/6	4	1,603	59.4	ND (0.13)	0.13	7.72
J3-2-4_F/G-5/6	5	214	7.9	60.0	60.0	474.59
J3-2-4_E-6/7	6	2,196	81.3	ND (0.12)	0.12	9.76
J3-2-5_D/E-7/8	7	10,358	383.6	ND (0.1)	0.1	38.36
J3-2-4_E/F-6/7	8	428	15.9	24.0	24.0	380.68
J3-2-5_E-7/8	9	25	0.9	ND (0.11)	0.11	0.10
Total	**--**	**22,161**	**821**	**--**	**--**	**1,301**
				Volume-Weighted Average (mg/kg)		**1.58**

2- to 3-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-3-SB-4	0	312	11.5	6.24	3.60	41.49
J3-2-4_E/F-6/7	1	18,296	677.6	0.51	0.51	345.60
J3-2-4_F/G-5/6	2	225	8.3	67.0	67.0	557.95
J3-2-4_F-5/6	3	3,328	123.3	ND (0.14)	0.14	17.26
Total	**--**	**22,161**	**821**	**--**	**--**	**962**
				Volume-Weighted Average (mg/kg)		**1.17**

Table E-1B-26

Parcel J3-2-4
Existing Conditions

J3-2-4 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
1- to 3-Foot Depth Increment	22,161	1,642	2,263	1.38

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-27

Parcel J3-2-4
Post-Remediation Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-4_E/F-5/6	0	1,463	27.1	ND (0.14)	0.14	3.79
J3-2-3-SB-4	1	133	2.5	9.23	***0.021***	0.05
J3-2-4_E/F-6	2	5,512	102.1	ND (0.15)	0.15	15.31
BS000060	3	38	0.7	17.7	***0.021***	0.01
J3-2-4_F-5/6	4	577	10.7	15.0	***0.021***	0.22
J3-2-4_F/G-5/6	5	87	1.6	14.0	***0.021***	0.03
BS000057	6	7	0.1	16.2	***0.021***	0.00
FL000701	7	319	5.9	22.8	***0.021***	0.12
J3-2-5_E-7/8	8	25	0.5	ND (0.14)	0.14	0.07
J3-2-3-SS-5	9	419	7.8	0.23 [ND (0.312)]	0.19	1.50
FL000699	10	411	7.6	6.1	***0.021***	0.16
J3-2-4_E-6/7	11	2,055	38.1	ND (0.16)	0.16	6.09
J3-2-4_E/F-6/7	12	230	4.3	16.0	***0.021***	0.09
J3-2-3-SS-1	13	1,145	21.2	ND (0.256)	0.128	2.71
J3-2-5_D/E-7/8	14	9,400	174.1	ND (0.11)	0.11	19.15
J3-2-5_D/E-7/8	15	340	6.3	ND (0.11)	0.11	0.69
Total	**--**	**22,161**	**410**	**--**	**--**	**50**
				Volume-Weighted Average (mg/kg)		**0.12**

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-4_F/G-5/6	0	87	1.6	14.0	***0.021***	0.03
J3-2-4_E/F-5/6	1	1,463	27.1	ND (0.14)	0.14	3.79
J3-2-3-SB-4	2	133	2.5	10.8	***0.021***	0.05
J3-2-4_E/F-6	3	5,512	102.1	ND (0.15)	0.15	15.31
J3-2-4_F-5/6	4	577	10.7	15.0	***0.021***	0.22
BS000057	5	7	0.1	ND (1.014)	***0.021***	0.00
BS000060	6	38	0.7	18.7	***0.021***	0.01
FL000701	7	319	5.9	19.2	***0.021***	0.12
J3-2-5_E-7/8	8	25	0.5	ND (0.14)	0.14	0.07
J3-2-3-SS-5	9	419	7.8	ND (0.34)	0.17	1.32
FL000699	10	411	7.6	11.3	***0.021***	0.16
J3-2-4_E-6/7	11	2,055	38.1	ND (0.16)	0.16	6.09
J3-2-4_E/F-6/7	12	230	4.3	16.0	***0.021***	0.09

Table E-1B-27

Parcel J3-2-4
Post-Remediation Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-3-SS-1	13	1,145	21.2	ND (0.244)	0.122	2.59
J3-2-5_D/E-7/8	14	9,400	174.1	ND (0.11)	0.11	19.15
J3-2-5_D/E-7/8	15	340	6.3	ND (0.11)	0.11	0.69
Total	**--**	**22,161**	**410**	**--**	**--**	**50**
				Volume-Weighted Average (mg/kg)		**0.12**

Table E-1B-27

Parcel J3-2-4
Post-Remediation Conditions

J3-2-4 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	22,161	821	100	0.12

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.
5. Shaded concentrations in bold italics font represent the placement of clean backfill material following the performance of the proposed remediation. The backfill concentration corresponds to the average PCB concentration as presented in Proposed Backfill Data Set for CD Sites.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-28

Parcel J3-2-5
Existing Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-5_E/F-8/9	0	678	12.6	ND (0.14)	0.14	1.76
J3-2-6_E-9/10	1	6	0.1	ND (0.14)	0.14	0.02
FL000703	2	126	2.3	2.83 [2.78]	2.81	6.57
BS000060	3	0.9	0.02	17.7	17.7	0.31
FL000702	4	720	13.33	14.2	14.2	189.32
BS000061	5	137	2.54	33.0	33.0	83.79
J3-2-5_E-7/8	6	801	14.83	ND (0.14)	0.14	2.08
J3-2-5_D/E-8/9	7	3,932	72.82	ND (0.12)	0.13	9.10
J3-2-4_E-6/7	8	13	0.2	ND (0.16)	0.16	0.04
J3-2-5_E/F-7/8	9	119	2.2	0.8	0.8	1.76
J3-2-5_D/E-8	10	1,802	33.4	ND (0.12)	0.12	4.00
J3-2-5_D/E-8	11	3,781	70.0	ND (0.12)	0.12	8.40
J3-2-5_D/E-7/8	12	4,588	85.0	ND (0.11)	0.11	9.35
J3-2-5_D/E-7/8	13	86	1.6	ND (0.11)	0.11	0.18
J3-2-5_D/E-7/8	14	726	13.4	ND (0.11)	0.11	1.48
Total	**--**	**17,517**	**324**	**--**	**--**	**318**
				Volume-Weighted Average (mg/kg)		**0.98**

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
BS000061	0	137	2.5	37.0	37.0	93.95
FL000703	1	126	2.3	1.44	1.44	3.37
J3-2-6_E-9/10	2	6	0.1	ND (0.14)	0.14	0.02
J3-2-5_E/F-8/9	3	678	12.6	ND (0.14)	0.14	1.76
BS000060	4	0.9	0.02	18.7	18.7	0.33
FL000702	5	720	13.33	19.6	19.6	261.31
J3-2-5_E-7/8	6	801	14.83	ND (0.14)	0.14	2.08
J3-2-5_D/E-8/9	7	3,932	72.82	ND (0.12)	0.13	9.10
J3-2-4_E-6/7	8	13	0.2	ND (0.16)	0.16	0.04
J3-2-5_E/F-7/8	9	119	2.2	0.8	0.8	1.76
J3-2-5_D/E-8	10	1,802	33.4	ND (0.12)	0.12	4.00
J3-2-5_D/E-8	11	3,781	70.0	ND (0.12)	0.12	8.40
J3-2-5_D/E-7/8	12	4,588	85.0	ND (0.11)	0.11	9.35
J3-2-5_D/E-7/8	13	86	1.6	ND (0.11)	0.11	0.18

Table E-1B-28

Parcel J3-2-5
Existing Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-5_D/E-7/8	14	726	13.4	ND (0.11)	0.11	1.48
Total	**--**	**17,517**	**324**	**--**	**--**	**397**
				Volume-Weighted Average (mg/kg)		**1.22**

J3-2-5 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	17,517	649	715	1.10

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-29

Parcel J3-2-5
Post-Remediation Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-5_E/F-8/9	0	678	12.6	ND (0.14)	0.14	1.76
J3-2-6_E-9/10	1	6	0.1	ND (0.14)	0.14	0.02
FL000703	2	126	2.3	2.83 [2.78]	2.81	6.57
BS000060	3	0.9	0.02	17.7	***0.021***	0.00
FL000702	4	720	13.33	14.2	***0.021***	0.28
BS000061	5	137	2.54	33.0	***0.021***	0.05
J3-2-5_E-7/8	6	801	14.83	ND (0.14)	0.14	2.08
J3-2-5_D/E-8/9	7	3,932	72.82	ND (0.12)	0.13	9.10
J3-2-4_E-6/7	8	13	0.2	ND (0.16)	0.16	0.04
J3-2-5_E/F-7/8	9	119	2.2	0.8	0.8	1.76
J3-2-5_D/E-8	10	1,802	33.4	ND (0.12)	0.12	4.00
J3-2-5_D/E-8	11	3,781	70.0	ND (0.12)	0.12	8.40
J3-2-5_D/E-7/8	12	4,588	85.0	ND (0.11)	0.11	9.35
J3-2-5_D/E-7/8	13	86	1.6	ND (0.11)	0.11	0.18
J3-2-5_D/E-7/8	14	726	13.4	ND (0.11)	0.11	1.48
Total	**--**	**17,517**	**324**	**--**	**--**	**45**
				Volume-Weighted Average (mg/kg)		**0.14**

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
BS000061	0	137	2.5	37.0	***0.021***	0.05
FL000703	1	126	2.3	1.44	1.44	3.37
J3-2-6_E-9/10	2	6	0.1	ND (0.14)	0.14	0.02
J3-2-5_E/F-8/9	3	678	12.6	ND (0.14)	0.14	1.76
BS000060	4	0.9	0.02	18.7	***0.021***	0.00
FL000702	5	720	13.33	19.6	***0.021***	0.28
J3-2-5_E-7/8	6	801	14.83	ND (0.14)	0.14	2.08
J3-2-5_D/E-8/9	7	3,932	72.82	ND (0.12)	0.13	9.10
J3-2-4_E-6/7	8	13	0.2	ND (0.16)	0.16	0.04
J3-2-5_E/F-7/8	9	119	2.2	0.8	0.8	1.76
J3-2-5_D/E-8	10	1,802	33.4	ND (0.12)	0.12	4.00
J3-2-5_D/E-8	11	3,781	70.0	ND (0.12)	0.12	8.40
J3-2-5_D/E-7/8	12	4,588	85.0	ND (0.11)	0.11	9.35
J3-2-5_D/E-7/8	13	86	1.6	ND (0.11)	0.11	0.18

Table E-1B-29

Parcel J3-2-5
Post-Remediation Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-5_D/E-7/8	14	726	13.4	ND (0.11)	0.11	1.48
Total	**--**	**17,517**	**324**	**--**	**--**	**42**
				Volume-Weighted Average (mg/kg)		**0.13**

J3-2-5 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	17,517	649	87	0.13

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.
5. Shaded concentrations in bold italics font represent the placement of clean backfill material following the performance of the proposed remediation. The backfill concentration corresponds to the average PCB concentration as presented in Proposed Backfill Data Set for CD Sites.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-30

Parcel J3-2-6
Existing Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
FL001852	0	373	6.90	0.75	0.75	5.18
J3-2-6_F/G-10/11	1	177	3.27	1.7	1.7	5.56
J3-2-6_E/F-9/10	2	242	4.49	1.8/1.3	1.55	7.00
FL001851	3	72	1.34	7.1	7.1	9.52
BS000062	4	3	0.06	0.46	0.46	0.03
J3-2-6_E-9/10	5	1,861	34.46	ND (0.14)	0.14	4.83
FL000703	6	257	4.76	2.83 [2.78]	2.81	13.35
J3-2-6_E/F-10/11	7	1,390	25.73	ND (0.087)	0.087	2.24
J3-2-6_E/F-10	8	4,962	91.88	ND (0.092)	0.092	8.45
J3-2-5_D/E-8/9	9	11,464	212.30	ND (0.12)	0.13	26.54
J3-2-5_D/E-8/9	10	722	13.37	ND (0.12)	0.13	1.67
Total	**--**	**21,523**	**399**	**--**	**--**	**84**
				Volume-Weighted Average (mg/kg)		**0.21**

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-6_F/G-10/11	0	413	7.65	1.7	1.7	13.01
J3-2-6_E/F-10/11	1	1,553	28.76	ND (0.087)	0.087	2.50
J3-2-6_E/F-9/10	2	242	4.49	1.8/1.3	1.55	7.00
BS000062	3	3	0.06	10.6	10.6	0.63
FL000703	4	257	4.76	1.44	1.44	6.85
J3-2-6_E-9/10	5	1,861	34.46	ND (0.14)	0.14	4.83
J3-2-6_E/F-10	6	5,007	92.72	ND (0.092)	0.092	8.53
J3-2-5_D/E-8/9	7	11,464	212.30	ND (0.12)	0.13	26.54
J3-2-5_D/E-8/9	8	722	13.37	ND (0.12)	0.13	1.67
Total	**--**	**21,523**	**399**	**--**	**--**	**72**
				Volume-Weighted Average (mg/kg)		**0.18**

Table E-1B-30

Parcel J3-2-6
Existing Conditions

J3-2-6 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	21,523	797	156	0.20

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-31

Parcel J3-2-6
Post-Remediation Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
FL001852	0	373	6.90	0.75	0.75	5.18
J3-2-6_F/G-10/11	1	177	3.27	1.7	1.7	5.56
J3-2-6_E/F-9/10	2	242	4.49	1.8/1.3	1.55	7.00
FL001851	3	72	1.34	7.1	7.1	9.52
BS000062	4	3	0.06	0.46	***0.021***	0.00
J3-2-6_E-9/10	5	1,861	34.46	ND (0.14)	0.14	4.83
FL000703	6	257	4.76	2.83 [2.78]	2.81	13.35
J3-2-6_E/F-10/11	7	1,390	25.73	ND (0.087)	0.087	2.24
J3-2-6_E/F-10	8	4,962	91.88	ND (0.092)	0.092	8.45
J3-2-5_D/E-8/9	9	11,464	212.30	ND (0.12)	0.13	26.54
J3-2-5_D/E-8/9	10	722	13.37	ND (0.12)	0.13	1.67
Total	**--**	**21,523**	**399**	**--**	**--**	**84**
				Volume-Weighted Average (mg/kg)		**0.21**

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
J3-2-6_F/G-10/11	0	413	7.65	1.7	1.7	13.01
J3-2-6_E/F-10/11	1	1,553	28.76	ND (0.087)	0.087	2.50
J3-2-6_E/F-9/10	2	242	4.49	1.8/1.3	1.55	7.00
BS000062	3	3	0.06	10.6	***0.021***	0.00
FL000703	4	257	4.76	1.44	1.44	6.85
J3-2-6_E-9/10	5	1,861	34.46	ND (0.14)	0.14	4.83
J3-2-6_E/F-10	6	5,007	92.72	ND (0.092)	0.092	8.53
J3-2-5_D/E-8/9	7	11,464	212.30	ND (0.12)	0.13	26.54
J3-2-5_D/E-8/9	8	722	13.37	ND (0.12)	0.13	1.67
Total	**--**	**21,523**	**399**	**--**	**--**	**71**
				Volume-Weighted Average (mg/kg)		**0.18**

Table E-1B-31

Parcel J3-2-6
Post-Remediation Conditions

J3-2-6 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	21,523	797	155	0.19

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.
5. Shaded concentrations in bold italics font represent the placement of clean backfill material following the performance of the proposed remediation. The backfill concentration corresponds to the average PCB concentration as presented in Proposed Backfill Data Set for CD Sites.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-32

Parcel K3-1-2
Existing Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
FL001301	0	445	8.2	40.6	40.6	334.42
K3-1-2_D/E-4	1	255	4.7	63.0	63.0	297.65
K3-1-2_E-6/7	2	17,367	321.6	ND (0.13)	0.13	41.81
K3-1-2_C/D-5/6	3	4,078	75.5	0.18	0.18	13.59
BS000065	4	5	0.10	10.3	10.3	1.00
K3-1-2_E-5/6	5	906	16.77	7.5	7.5	125.81
K3-1-2_B-4	6	594	11.01	0.18	0.18	1.98
FL000706	7	619	11.47	6.09	6.09	69.83
K3-1-2_B-2	8	602	11.14	8.3	8.3	92.47
K3-1-2_C-3	9	693	12.84	14.0	14.0	179.73
K3-1-2_D-4/5	10	628	11.63	6.2	6.2	72.09
K3-1-2_C-4/5	11	856	15.86	1.7	1.7	26.96
FL001300	12	307	5.68	30.1	30.1	171.09
K3-1-2_B-5/6	13	2,994	55.45	ND (0.14)	0.14	7.76
K3-1-2_E-6/7	14	671	12.43	ND (0.13)	0.13	1.62
Total	**--**	**31,021**	**574**	**--**	**--**	**1,438**
				Volume-Weighted Average (mg/kg)		**2.50**

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
FL001301	0	445	8.24	1.34	1.34	11.04
K3-1-2_D/E-4	1	255	4.72	63.0	63.0	297.65
K3-1-2_E-6/7	2	17,367	321.61	ND (0.13)	0.13	41.81
K3-1-2_C/D-5/6	3	4,078	75.52	0.18	0.18	13.59
BS000065	4	5	0.10	24.1	24.1	2.33
K3-1-2_E-5/6	5	906	16.77	7.5	7.5	125.81
K3-1-2_B-2	6	585	10.84	8.3	8.3	89.99
FL001300	7	307	5.68	9.62	9.62	54.68
FL000706	8	603	11.17	ND (1.002)	0.5010	5.60
K3-1-2_B-4	9	594	11.01	0.18	0.18	1.98
K3-1-2_C-3	10	693	12.84	14.0	14.0	179.73
K3-1-2_D-4/5	11	628	11.63	6.2	6.2	72.09
K3-1-2_C-4/5	12	856	15.86	1.7	1.7	26.96
FL000705	13	32	0.6	ND (1.002)	0.5010	0.30

Table E-1B-32

Parcel K3-1-2
Existing Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
K3-1-2_B-5/6	14	2,994	55.5	ND (0.14)	0.14	7.76
K3-1-2_E-6/7	15	671	12.4	ND (0.13)	0.13	1.62
Total	**--**	**31,021**	**574**	**--**	**--**	**933**
				Volume-Weighted Average (mg/kg)		**1.62**

K3-1-2 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	31,021	1,149	2,371	2.06

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-33

Parcel K3-1-2
Existing Conditions

1- to 2-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
K3-1-2_D/E-4	0	540	20.0	23.0	23.0	459.73
K3-1-2_E-5/6	1	943	34.9	8.4	8.4	293.26
K3-1-2_E-6/7	2	22,086	818.0	ND (0.1)	0.1	81.80
K3-1-2_B-4	3	1,532	56.8	ND (0.12)	0.12	6.81
K3-1-2_C-3	4	851	31.5	3.1	3.1	97.73
K3-1-2_C-4/5	5	2,560	94.8	0.63	0.63	59.74
K3-1-2_D-4/5	6	1,545	57.2	ND (0.11)	0.11	6.30
K3-1-2_B-2	7	964	35.7	3.1/0.79	1.95	69.62
Total	--	**31,021**	**1,149**	--	--	**1,075**
				Volume-Weighted Average (mg/kg)		**0.94**

Table E-1B-33

Parcel K3-1-2
Existing Conditions

K3-1-2 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
1- to 2-Foot Depth Increment	31,021	1,149	1,075	0.94

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-34

Parcel K3-1-2
Post-Remediation Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
FL001301	0	445	8.2	40.6	***0.021***	0.17
K3-1-2_D/E-4	1	255	4.7	63.0	***0.021***	0.10
K3-1-2_E-6/7	2	17,367	321.6	ND (0.13)	0.13	41.81
K3-1-2_C/D-5/6	3	4,078	75.5	0.18	0.18	13.59
BS000065	4	5	0.10	10.3	***0.021***	0.00
K3-1-2_E-5/6	5	906	16.77	7.5	7.5	125.81
K3-1-2_B-4	6	594	11.01	0.18	0.18	1.98
FL000706	7	619	11.47	6.09	6.09	69.83
K3-1-2_B-2	8	602	11.14	8.3	8.3	92.47
K3-1-2_C-3	9	693	12.84	14.0	***0.021***	0.27
K3-1-2_D-4/5	10	628	11.63	6.2	6.2	72.09
K3-1-2_C-4/5	11	856	15.86	1.7	1.7	26.96
FL001300	12	307	5.68	30.1	***0.021***	0.12
K3-1-2_B-5/6	13	2,994	55.45	ND (0.14)	0.14	7.76
K3-1-2_E-6/7	14	671	12.43	ND (0.13)	0.13	1.62
Total	**--**	**31,021**	**574**	**--**	**--**	**455**
				Volume-Weighted Average (mg/kg)		**0.79**

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
FL001301	0	445	8.24	1.34	***0.021***	0.17
K3-1-2_D/E-4	1	255	4.72	63.0	***0.021***	0.10
K3-1-2_E-6/7	2	17,367	321.61	ND (0.13)	0.13	41.81
K3-1-2_C/D-5/6	3	4,078	75.52	0.18	0.18	13.59
BS000065	4	5	0.10	24.1	***0.021***	0.00
K3-1-2_E-5/6	5	906	16.77	7.5	7.5	125.81
K3-1-2_B-2	6	585	10.84	8.3	8.3	89.99
FL001300	7	307	5.68	9.62	***0.021***	0.12
FL000706	8	603	11.17	ND (1.002)	0.5010	5.60
K3-1-2_B-4	9	594	11.01	0.18	0.18	1.98
K3-1-2_C-3	10	693	12.84	14.0	***0.021***	0.27
K3-1-2_D-4/5	11	628	11.63	6.2	6.2	72.09
K3-1-2_C-4/5	12	856	15.86	1.7	1.7	26.96
FL000705	13	32	0.6	ND (1.002)	0.5010	0.30

Table E-1B-34

Parcel K3-1-2
Post-Remediation Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
K3-1-2_B-5/6	14	2,994	55.5	ND (0.14)	0.14	7.76
K3-1-2_E-6/7	15	671	12.4	ND (0.13)	0.13	1.62
Total	**--**	**31,021**	**574**	**--**	**--**	**388**
				Volume-Weighted Average (mg/kg)		**0.68**

K3-1-2 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	31,021	1,149	843	0.73

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.
5. Shaded concentrations in bold italics font represent the placement of clean backfill material following the performance of the proposed remediation. The backfill concentration corresponds to the average PCB concentration as presented in Proposed Backfill Data Set for CD Sites.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-35

Parcel K2-1-10
Existing Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
BS000102	0	288	5.3	2.33	2.33	12.45
K2-1-10_E-2	1	533	9.9	28.0	28.0	276.54
K2-1-10_E-3/4	2	3,652	67.6	ND (0.14)	0.14	9.47
K2-1-10_D-2/3	3	764	14.1	27.0	27.0	381.84
K2-1-10_D-3/4	4	16,497	305.5	ND (0.14)	0.14	42.77
K2-1-10_E-2/3	5	889	16.5	ND (0.13)	0.13	2.14
K2-1-10_D-3	6	1,148	21.3	1.6	1.6	34.03
FL000917	7	1,074	19.9	4.25	4.25	84.50
FL001569	8	404	7.5	55.8	55.8	417.33
FL000915	9	86	1.6	4.2	4.2	6.70
FL001859	10	200	3.7	35.0	35.0	129.61
FL001859	10A	243	4.5	35.0	35.0	157.22
FL001859	10B	454	8.4	35.0	35.0	294.06
K2-1-10_B-3/4	11	17,058	315.9	ND (0.094)	0.094	29.69
K2-1-10_B-3/4	12	4	0.07	ND (0.094)	0.094	0.01
FL000916	13	836	15.48	5.65	5.65	87.48
K2-1-10_C-2/3	14	652	12.07	24.0	24.0	289.60
K2-1-10_C-3/4	15	20,238	374.78	ND (0.13)	0.12	44.97
K2-1-10_C-3/4	16	475	8.79	ND (0.13)	0.12	1.06
K2-1-10_C-3/4	17	95	1.75	ND (0.13)	0.12	0.21
BS000101	18	39	0.7	1.65	1.65	1.19
K2-1-10_B-2/3	19	520	9.6	46.0	46.0	442.99
K2-1-10_B-3/4	20	1,016	18.8	ND (0.094)	0.094	1.77
K2-1-10_C-3/4	21	1,206	22.3	ND (0.13)	0.12	2.68
Total	**--**	**68,371**	**1,266**	**--**	**--**	**2,750**
				Volume-Weighted Average (mg/kg)		**2.17**

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
BS000102	0	288	5.3	0.416	0.416	2.22
K2-1-10_E-2	1	533	9.9	28.0	28.0	276.54
K2-1-10_E-3/4	2	3,652	67.6	ND (0.14)	0.14	9.47
K2-1-10_E-2/3	3	889	16.5	ND (0.13)	0.13	2.14
K2-1-10_C-3/4	4	20,238	374.8	ND (0.13)	0.12	44.97

Table E-1B-35

Parcel K2-1-10
Existing Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
K2-1-10_C-3/4	4A	6	0.1	ND (0.13)	0.12	0.01
K2-1-10_C-3/4	5	475	8.8	ND (0.13)	0.12	1.06
K2-1-10_C-3/4	6	95	1.8	ND (0.13)	0.12	0.21
K2-1-10_D-3/4	7	16,497	305.5	ND (0.14)	0.14	42.77
FL000917	8	1,074	19.9	0.227	0.227	4.51
FL000917	8A	1	0.02	0.227	0.227	0.00
FL001569	9	404	7.48	99.5	99.5	744.16
FL000915	10	86	1.60	ND (1.008)	0.5040	0.80
K2-1-10_D-2/3	11	1,006	18.63	27.0	27.0	503.12
K2-1-10_D-3	12	1,148	21.27	1.6	1.6	34.03
K2-1-10_D-3	12A	193	3.57	1.6	1.6	5.71
K2-1-10_B-3/4	13	17,058	315.89	ND (0.094)	0.094	29.69
K2-1-10_B-3/4	14	4	0.07	ND (0.094)	0.094	0.01
K2-1-10_B-2/3	15	520	9.63	46.0	46.0	442.99
BS000101	16	39	0.7	0.758	0.758	0.55
K2-1-10_C-2/3	17	1,105	20.5	24.0	24.0	491.24
FL000916	18	836	15.5	0.376	0.376	5.82
K2-1-10_C-3/4	19	1,206	22.3	ND (0.13)	0.12	2.68
K2-1-10_B-3/4	20	1,016	18.8	ND (0.094)	0.094	1.77
Total	--	**68,371**	**1,266**	--	--	**2,646**
				Volume-Weighted Average (mg/kg)		**2.09**

Table E-1B-35

Parcel K2-1-10
Existing Conditions

K2-1-10 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	68,371	2,532	5,397	2.13

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-36

Parcel K2-1-10
Existing Conditions

1- to 2-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
K2-1-10_E-2	0	744	27.5	51.0	51.0	1,404.69
K2-1-10_E-2/3	1	3,644	135.0	ND (0.11)	0.11	14.85
K2-1-10_C-2/3	2	1,776	65.8	7.2/23.0	15.1	993.58
K2-1-10_D-3	3	4,646	172.1	ND (0.11)	0.11	18.93
K2-1-10_C-3/4	4	36,516	1352.4	ND (0.12)	0.12	162.29
K2-1-10_D-2/3	5	1,184	43.9	34.5	34.5	1,513.07
K2-1-10_B-2/3	6	1,473	54.5	0.36	0.36	19.64
K2-1-10_B-3/4	7	18,385	680.9	ND (0.09)	0.09	61.28
K2-1-10_B-3/4	8	4	0.1	ND (0.09)	0.09	0.01
Total	**--**	**68,371**	**2,532**	**--**	**--**	**4,188**
				Volume-Weighted Average (mg/kg)		**1.65**

2- to 3-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
K2-1-10_E-2/3	0	26,285	973.5	ND (0.09)	0.09	87.62
K2-1-10_E-2	1	744	27.5	140.0	140.0	3,856.01
K2-1-10_C-2/3	2	37,987	1406.9	ND (0.11)	0.11	154.76
K2-1-10_D-2/3	3	3,355	124.3	0.18	0.18	22.37
Total	**--**	**68,371**	**2,532**	**--**	**--**	**4,121**
				Volume-Weighted Average (mg/kg)		**1.63**

3- to 4-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
K2-1-10_E-2/3	0	3,737	138.4	ND (0.0092)	0.0092	1.27
K2-1-10_E-2	1	744	27.5	15.0	15.0	413.14
K2-1-10_D-3	2	61,639	2282.9	0.012	0.012	27.40
K2-1-10_D-2/3	3	2,251	83.4	0.17	0.17	14.18
Total	**--**	**68,371**	**2,532**	**--**	**--**	**456**
				Volume-Weighted Average (mg/kg)		**0.18**

Table E-1B-36

Parcel K2-1-10
Existing Conditions

K2-1-10 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
1- to 4-Foot Depth Increment	68,371	7,597	8,765	1.15

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Table E-1B-37

Parcel K2-1-10
Post-Remediation Conditions

0- to 0.5-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
BS000102	0	288	5.3	2.33	2.33	12.45
K2-1-10_E-2	1	533	9.9	28.0	***0.021***	0.21
K2-1-10_E-3/4	2	3,652	67.6	ND (0.14)	0.14	9.47
K2-1-10_D-2/3	3	764	14.1	27.0	***0.021***	0.30
K2-1-10_D-3/4	4	16,497	305.5	ND (0.14)	0.14	42.77
K2-1-10_E-2/3	5	889	16.5	ND (0.13)	0.13	2.14
K2-1-10_D-3	6	1,148	21.3	1.6	1.6	34.03
FL000917	7	1,074	19.9	4.25	4.25	84.50
FL001569	8	404	7.5	55.8	***0.021***	0.16
FL000915	9	86	1.6	4.2	4.2	6.70
FL001859	10	200	3.7	35.0	***0.021***	0.08
FL001859	10A	243	4.5	35.0	***0.021***	0.09
FL001859	10B	454	8.4	35.0	***0.021***	0.18
K2-1-10_B-3/4	11	17,058	315.9	ND (0.094)	0.094	29.69
K2-1-10_B-3/4	12	4	0.07	ND (0.094)	0.094	0.01
FL000916	13	836	15.48	5.65	5.65	87.48
K2-1-10_C-2/3	14	652	12.07	24.0	***0.021***	0.25
K2-1-10_C-3/4	15	20,238	374.78	ND (0.13)	0.12	44.97
K2-1-10_C-3/4	16	475	8.79	ND (0.13)	0.12	1.06
K2-1-10_C-3/4	17	95	1.75	ND (0.13)	0.12	0.21
BS000101	18	39	0.7	1.65	1.65	1.19
K2-1-10_B-2/3	19	520	9.6	46.0	***0.021***	0.20
K2-1-10_B-3/4	20	1,016	18.8	ND (0.094)	0.094	1.77
K2-1-10_C-3/4	21	1,206	22.3	ND (0.13)	0.12	2.68
Total	**--**	**68,371**	**1,266**	**--**	**--**	**363**
				Volume-Weighted Average (mg/kg)		**0.29**

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
BS000102	0	288	5.3	0.416	0.416	2.22
K2-1-10_E-2	1	533	9.9	28.0	***0.021***	0.21
K2-1-10_E-3/4	2	3,652	67.6	ND (0.14)	0.14	9.47
K2-1-10_E-2/3	3	889	16.5	ND (0.13)	0.13	2.14
K2-1-10_C-3/4	4	20,238	374.8	ND (0.13)	0.12	44.97

Table E-1B-37

Parcel K2-1-10
Post-Remediation Conditions

0.5- to 1-Foot Depth Increment

Location ID	Polygon ID	Polygon Area (sq ft)	Volume (cy)	PCB (mg/kg)	Average PCB (mg/kg)	Average PCB x Volume (mg/kg cy)
K2-1-10_C-3/4	4A	6	0.1	ND (0.13)	***0.021***	0.00
K2-1-10_C-3/4	5	475	8.8	ND (0.13)	0.12	1.06
K2-1-10_C-3/4	6	95	1.8	ND (0.13)	0.12	0.21
K2-1-10_D-3/4	7	16,497	305.5	ND (0.14)	0.14	42.77
FL000917	8	1,074	19.9	0.227	0.227	4.51
FL000917	8A	1	0.02	0.227	***0.021***	0.00
FL001569	9	404	7.48	99.5	***0.021***	0.16
FL000915	10	86	1.60	ND (1.008)	0.5040	0.80
K2-1-10_D-2/3	11	1,006	18.63	27.0	***0.021***	0.39
K2-1-10_D-3	12	1,148	21.27	1.6	1.6	34.03
K2-1-10_D-3	12A	193	3.57	1.6	***0.021***	0.07
K2-1-10_B-3/4	13	17,058	315.89	ND (0.094)	0.094	29.69
K2-1-10_B-3/4	14	4	0.07	ND (0.094)	0.094	0.01
K2-1-10_B-2/3	15	520	9.63	46.0	***0.021***	0.20
BS000101	16	39	0.7	0.758	0.758	0.55
K2-1-10_C-2/3	17	1,105	20.5	24.0	***0.021***	0.43
FL000916	18	836	15.5	0.376	0.376	5.82
K2-1-10_C-3/4	19	1,206	22.3	ND (0.13)	0.12	2.68
K2-1-10_B-3/4	20	1,016	18.8	ND (0.094)	0.094	1.77
Total	**--**	**68,371**	**1,266**	**--**	**--**	**184**
				Volume-Weighted Average (mg/kg)		**0.15**

Table E-1B-37

Parcel K2-1-10
Post-Remediation Conditions

K2-1-10 Summary

Sample Depth (ft bgs)	Total Area (sq ft)	Total Volume (cy)	Total Average PCB x Volume (mg/kg cy)	Volume-Weighted Average PCB (mg/kg)
0- to 1-Foot Depth Increment	68,371	2,532	547	0.22

Notes:
1. Non-detect PCB concentrations were included as one-half the detection limit in calculations.
2. For instances where a duplicate sample was collected, the concentration is shown in brackets. The duplicate was averaged with the parent sample and included in the calculations (resulting value shown in Average PCB column).
3. For instances where an EPA split sample was collected, the concentration is shown following a "/" (i.e., GE analytical result/EPA Split analytical result). The EPA split was averaged with the GE sample and included in the calculations (resulting value shown in Average PCB column.
4. All calculations and rounding are performed by the computer software; therefore, certain quantities are displayed as rounded numbers for clarity.
5. Shaded concentrations in bold italics font represent the placement of clean backfill material following the performance of the proposed remediation. The backfill concentration corresponds to the average PCB concentration as presented in Proposed Backfill Data Set for CD Sites.

cy - cubic yards
ft bgs - feet below ground surface
mg/kg - milligrams per kilogram
ND - non-detect
PCB - polychlorinated biphenyl
sq ft - square feet

Attachment C

Table 1a
Summary of Historical Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
I6-3-13	I6-3-13_M-8	0.0 - 1.0	6.2
I6-3-13	I6-3-13_M-8	1.0 - 2.0	0.19
I6-3-13	I6-3-13_M-7	0.0 - 1.0	6.8
I6-3-13	I6-3-13_M-7	1.0 - 2.0	0.57
I6-3-13	I6-3-13_M-9	0.0 - 1.0	4.7
I6-3-13	I6-3-13_M-9	1.0 - 2.0	0.26
I6-3-13	I6-3-13_M-11/12	0.0 - 1.0	5.0
I6-3-13	I6-3-13_M-11/12	1.0 - 2.0	0.036 J
I6-3-13	I6-3-13_M-10	0.0 - 1.0	6.3
I6-3-13	I6-3-13_M-10	1.0 - 2.0	0.39
I6-3-13	I6-3-13_M-11	0.0 - 1.0	6.0
I6-3-13	I6-3-13_M-11	1.0 - 2.0	0.5
I6-3-13	I6-3-13_L-11	0.0 - 1.0	4.5 [4.1]
I6-3-13	I6-3-13_L-11	1.0 - 2.0	0.17
I6-3-13	I6-3-13_L-9	0.0 - 1.0	2.9 [2.7]
I6-3-13	I6-3-13_L-9	1.0 - 2.0	0.0155 U
I6-3-13	I6-3-13_L-9	2.0 - 3.0	0.0155 U
I6-3-13	I6-3-13_L-10	0.0 - 1.0	2.0
I6-3-13	I6-3-13_L-10	1.0 - 2.0	0.34
I6-3-13	I6-3-13_L-12	0.0 - 1.0	1.9
I6-3-13	I6-3-13_L-12	1.0 - 2.0	2.4
I6-3-13	I6-3-13_L-12	2.0 - 3.0	0.014 U
I6-3-13	I6-3-13_L-12/13	0.0 - 1.0	3.2
I6-3-13	I6-3-13_L-12/13	1.0 - 2.0	0.63
I6-3-13	I6-3-13_L-7	0.0 - 1.0	6.5
I6-3-13	I6-3-13_L-7	1.0 - 2.0	0.57
I6-3-13	I6-3-13_L-7	2.0 - 3.0	0.196
I6-3-13	I6-3-13_L-8	0.0 - 1.0	5.0
I6-3-13	I6-3-13_L-8	1.0 - 2.0	0.1
I6-3-13	I6-3-13_L-8	2.0 - 3.0	0.015 U
I6-3-13	I6-3-13_K-11	0.0 - 1.0	0.22
I6-3-13	I6-3-13_K-11	1.0 - 2.0	0.18
I6-3-13	I6-3-13_K-11	2.0 - 2.5	0.49
I6-3-13	I6-3-13_K-8	0.0 - 1.0	2.8
I6-3-13	I6-3-13_K-8	1.0 - 2.0	1.68
I6-3-13	I6-3-13_K-8	2.0 - 3.0	5.2
I6-3-13	I6-3-13_K-9	0.0 - 1.0	0.23
I6-3-13	I6-3-13_K-9	1.0 - 2.0	1.07
I6-3-13	I6-3-13_K-9	2.0 - 3.0	0.6
I6-3-13	I6-3-13_K-10	0.0 - 1.0	1.08
I6-3-13	I6-3-13_K-10	1.0 - 2.0	0.45
I6-3-13	I6-3-13_K-10	2.0 - 2.7	0.0145 U
I6-3-13	I6-3-13_J-11	0.0 - 1.0	5.2

Table 1a
Summary of Historical Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
I6-3-13	I6-3-13_J-11	1.0 - 2.0	1.4
I6-3-13	I6-3-13_J-11	2.0 - 3.0	3.0
I6-3-13	I6-3-13_J-10	0.0 - 1.0	3.1
I6-3-13	I6-3-13_J-10	1.0 - 2.0	10.7
I6-3-13	I6-3-13_J-10	2.0 - 3.0	2.3
I6-3-13	I6-3-13_I-15	0.0 - 1.0	0.54
I6-3-13	I6-3-13_I-15	1.0 - 2.0	0.97
I6-3-13	I6-3-13_I-9	0.0 - 1.0	0.92
I6-3-13	I6-3-13_I-9	1.0 - 2.0	0.0135 U
I6-3-13	I6-3-13_I-9	2.0 - 3.0	0.0145 U
I6-3-13	I6-3-13_I-11	0.0 - 1.0	0.93
I6-3-13	I6-3-13_I-11	1.0 - 2.0	0.44
I6-3-13	I6-3-13_I-11	2.0 - 3.0	0.0145 U
I6-3-13	I6-3-13_I-13	0.0 - 1.0	0.27
I6-3-13	I6-3-13_I-13	1.0 - 2.0	0.013 U
I6-3-13	I6-3-13_I-13	2.0 - 3.0	0.33
I6-3-13	FL001831	0.0 - 0.5	19.0 J
I6-3-13	FL000911	0.0 - 0.5	11.7
I6-3-13	FL000911	0.5 - 1.0	11.9
I6-3-13	FL000909	0.0 - 0.5	10.4
I6-3-13	FL000909	0.5 - 1.0	20.0
I6-3-13	FL000910	0.0 - 0.5	17.0
I6-3-13	FL000910	0.5 - 1.0	119.0
I6-3-13	FL001466	0.0 - 0.5	23.5
I6-3-13	FL001466	0.5 - 1.0	74.4
I6-3-13	FL000815	0.0 - 0.5	6.53
I6-3-13	FL000815	0.5 - 1.0	4.89
I6-3-13	FL001255	0.0 - 0.5	1.01
I6-3-13	FL001255	0.5 - 1.0	0.502 U
I6-3-13	FL001254	0.0 - 0.5	0.428 J
I6-3-13	FL001254	0.5 - 1.0	0.501 U
I6-3-13	I6-3-13A	0.0 - 0.5	1.4
I6-3-13	I6-3-13B	0.0 - 0.5	1.8
I6-3-13	I6-3-13_N-11	1.0 - 2.0	4.8
I6-3-13	I6-3-13_N-11	2.0 - 3.0	0.013 U
I6-3-13	I6-3-13_N-8	1.0 - 2.0	15.5
I6-3-13	I6-3-13_N-8	2.0 - 3.0	0.131 J
I6-3-13	I6-3-13_N-10	1.0 - 2.0	7.9
I6-3-13	I6-3-13_N-10	2.0 - 3.0	0.0135 U
I6-3-13	I6-3-13_N-9	1.0 - 2.0	6.4
I6-3-13	I6-3-13_N-9	2.0 - 3.0	0.0135 U
I6-3-13	I6-3-13_N-11	0.0 - 1.0	29.0
I6-3-13	I6-3-13_N-8	0.0 - 1.0	50.0

Table 1a
Summary of Historical Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
I6-3-13	I6-3-13_N-10	0.0 - 1.0	41.0 [34.0]
I6-3-13	I6-3-13_N-9	0.0 - 1.0	61.0
	FL001465	0.0 - 0.5	10.3
	FL001465	0.5 - 1.0	0.021

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 1b
Summary of Pre-Design Investigation Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
I6-3-13	I6-3-13_AD-6	0.0 - 1.0	42.0 J
I6-3-13	I6-3-13_AD-6	1.0 - 2.0	50.0 J
I6-3-13	I6-3-13_AD-6	2.0 - 3.0	4.4 J
I6-3-13	I6-3-13_AE-6	0.0 - 1.0	43.0 J
I6-3-13	I6-3-13_AE-6	1.0 - 2.0	35.0 J
I6-3-13	I6-3-13_AE-6	2.0 - 3.0	18.0
I6-3-13	I6-3-13_AE-7	0.0 - 1.0	27.0 J
I6-3-13	I6-3-13_AE-7	1.0 - 2.0	40.0 J
I6-3-13	I6-3-13_AE-7	2.0 - 3.0	57.0 J
I6-3-13	I6-3-13_AF-6	0.0 - 1.0	10.0
I6-3-13	I6-3-13_AF-6	1.0 - 2.0	10.0
I6-3-13	I6-3-13_AF-6	2.0 - 3.0	7.9
I6-3-13	I6-3-13_AF-9	0.0 - 1.0	61.0
I6-3-13	I6-3-13_AF-9	1.0 - 2.0	65.0
I6-3-13	I6-3-13_AF-9	2.0 - 3.0	1.1
I6-3-13	I6-3-13_AF/AG-4	0.0 - 1.0	9.8
I6-3-13	I6-3-13_AF/AG-4	1.0 - 2.0	17.0
I6-3-13	I6-3-13_AF/AG-4	2.0 - 3.0	5.5 J
I6-3-13	I6-3-13_AG-6	0.0 - 1.0	29.0
I6-3-13	I6-3-13_AG-6	1.0 - 2.0	7.2
I6-3-13	I6-3-13_AG-6	2.0 - 3.0	29.0 J
I6-3-13	I6-3-13_AG-8	0.0 - 1.0	140.0 J
I6-3-13	I6-3-13_AG-8	1.0 - 2.0	260.0 J
I6-3-13	I6-3-13_AG-8	2.0 - 3.0	58.0 J
I6-3-13	I6-3-13_AH/AI-3	0.0 - 1.0	16.0 J
I6-3-13	I6-3-13_AH/AI-3	1.0 - 2.0	80.0 J
I6-3-13	I6-3-13_AH/AI-3	2.0 - 3.0	100.0 J
I6-3-13	I6-3-13_AI-5	0.0 - 1.0	32.0 J
I6-3-13	I6-3-13_AI-5	1.0 - 2.0	235.0 J
I6-3-13	I6-3-13_AI-5	2.0 - 3.0	27.0 J
I6-3-13	I6-3-13_AI-7	0.0 - 1.0	21.0 J
I6-3-13	I6-3-13_AI-7	1.0 - 2.0	16.0 J
I6-3-13	I6-3-13_AI-7	2.0 - 3.0	16.0 J
I6-3-13	I6-3-13_AJ/AK-4	0.0 - 1.0	15.0
I6-3-13	I6-3-13_AJ/AK-4	1.0 - 2.0	49.0
I6-3-13	I6-3-13_AJ/AK-4	2.0 - 3.0	78.0
I6-3-13	I6-3-13_AK-2	0.0 - 1.0	16.0 J
I6-3-13	I6-3-13_AK-2	1.0 - 2.0	37.0 J
I6-3-13	I6-3-13_AK-2	2.0 - 3.0	64.0 J
I6-3-13	I6-3-13_AC-7	2.0 - 3.0	0.011 U
I6-3-13	I6-3-13_AC-7	3.0 - 4.0	0.01 U
I6-3-13	I6-3-13_AC-7	4.0 - 5.0	0.01 U
I6-3-13	I6-3-13_AC-7	5.0 - 6.0	0.01 U

Table 1b
Summary of Pre-Design Investigation Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
I6-3-13	I6-3-13_AD-6	3.0 - 4.0	0.32
I6-3-13	I6-3-13_AD-6	4.0 - 5.0	0.013 U
I6-3-13	I6-3-13_AD-6	5.0 - 6.0	0.013 U
I6-3-13	I6-3-13_AD-8	2.0 - 3.0	0.062
I6-3-13	I6-3-13_AD-8	3.0 - 4.0	0.011 U
I6-3-13	I6-3-13_AD-8	4.0 - 5.0	0.011 U
I6-3-13	I6-3-13_AD-8	5.0 - 6.0	0.011 U
I6-3-13	I6-3-13_AE-6	3.0 - 4.0	13.0
I6-3-13	I6-3-13_AE-6	4.0 - 5.0	5.5
I6-3-13	I6-3-13_AE-6	5.0 - 6.0	6.3
I6-3-13	I6-3-13_AE-7	3.0 - 4.0	6.4
I6-3-13	I6-3-13_AE-7	4.0 - 5.0	6.5
I6-3-13	I6-3-13_AE-7	5.0 - 6.0	20.0
I6-3-13	I6-3-13_AF-6	3.0 - 4.0	46.0
I6-3-13	I6-3-13_AF-6	4.0 - 5.0	30.0
I6-3-13	I6-3-13_AF-6	5.0 - 6.0	12.0
I6-3-13	I6-3-13_AF-9	3.0 - 4.0	5.05
I6-3-13	I6-3-13_AF-9	4.0 - 5.0	9.3
I6-3-13	I6-3-13_AF-9	5.0 - 6.0	16.0
I6-3-13	I6-3-13_AF/AG-4	3.0 - 4.0	5.4
I6-3-13	I6-3-13_AF/AG-4	4.0 - 5.0	1.0
I6-3-13	I6-3-13_AF/AG-4	5.0 - 6.0	0.0155 J
I6-3-13	I6-3-13_AG-6	3.0 - 4.0	33.0
I6-3-13	I6-3-13_AG-6	4.0 - 5.0	63.0
I6-3-13	I6-3-13_AG-6	5.0 - 6.0	7.6
I6-3-13	I6-3-13_AG-8	3.0 - 4.0	16.0
I6-3-13	I6-3-13_AG-8	4.0 - 5.0	12.0
I6-3-13	I6-3-13_AG-8	5.0 - 5.9	4.8
I6-3-13	I6-3-13_AH/AI-3	3.0 - 4.0	13.0
I6-3-13	I6-3-13_AH/AI-3	4.0 - 5.0	9.9
I6-3-13	I6-3-13_AH/AI-3	5.0 - 5.85	0.071
I6-3-13	I6-3-13_AI-5	3.0 - 4.0	18.0
I6-3-13	I6-3-13_AI-5	4.0 - 5.0	16.0
I6-3-13	I6-3-13_AI-5	5.0 - 6.0	8.0
I6-3-13	I6-3-13_AI-7	3.0 - 4.0	17.0
I6-3-13	I6-3-13_AI-7	4.0 - 5.0	12.0
I6-3-13	I6-3-13_AI-7	5.0 - 5.9	24.0
I6-3-13	I6-3-13_AJ/AK-4	3.0 - 4.0	100.0
I6-3-13	I6-3-13_AJ/AK-4	4.0 - 5.0	250.0
I6-3-13	I6-3-13_AJ/AK-4	5.0 - 5.7	160.0
I6-3-13	I6-3-13_AK-2	3.0 - 4.0	87.0
I6-3-13	I6-3-13_AK-2	4.0 - 5.0	21.0
I6-3-13	I6-3-13_AK-2	5.0 - 5.8	44.0

Table 1b
Summary of Pre-Design Investigation Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
I6-3-13	I6-3-13_AE-10	3.0 - 4.0	0.012 U
I6-3-13	I6-3-13_AE-10	4.0 - 5.0	0.011 U
I6-3-13	I6-3-13_AE-10	5.0 - 6.0	0.011 U

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 1c
Summary of EPA Split Sample Data Used in PCB Evaluations

Parcel ID	EPA Location ID	Parent Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
I6-3-13	H3-FL002042	I6-3-13_M-11/12	0.0 - 1.0	4.5 J
I6-3-13	H3A-FL002091-0-0S28	I6-3-13_AI-5	0.0 - 1.0	25.0 [28.0]
I6-3-13	H3A-FL002092-0-0S28	I6-3-13_AK	0.0 - 1.0	10.0
I6-3-13	H3A-FL002097-0-0S30	I6-3-13_AJ/AK	1.0 - 2.0	40.0

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 2a
Summary of Historical Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J3-1-11	FL000756	0.0 - 0.5	0.501 U
J3-1-11	FL000756	0.5 - 1.0	0.502 U
J3-1-11	FL001682	0.0 - 0.5	31.0
J3-1-11	FL001682	0.0 - 0.5	33.0
J3-1-11	FL001682	0.5 - 1.0	9.5
J3-1-11	FL001683	0.0 - 0.5	4.6
J3-1-11	FL001683	0.5 - 1.0	3.71
J3-1-11	FL000757	0.0 - 0.5	0.422 J
J3-1-11	FL000757	0.5 - 1.0	0.5 U
J3-1-11	BS000089	0.0 - 0.5	10.6
J3-1-11	BS000089	0.5 - 1.0	21.9
J3-1-11	FL000758	0.0 - 0.5	0.502 U
J3-1-11	FL000758	0.5 - 1.0	0.502 U

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 2b
Summary of Pre-Design Investigation Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J3-1-11	J3-1-10_M-6/7	0.0 - 1.0	1.3
J3-1-11	J3-1-10_M-6/7	1.0 - 2.0	0.18 J
J3-1-11	J3-1-10_M-6/7	2.0 - 3.0	0.11 U
J3-1-11	J3-1-10_M-7/8	0.0 - 1.0	0.18 J
J3-1-11	J3-1-10_M-7/8	1.0 - 2.0	0.086 U
J3-1-11	J3-1-10_M-7/8	2.0 - 3.0	0.099 U
J3-1-11	J3-1-11_J/K-7/8	0.0 - 1.0	0.13 J
J3-1-11	J3-1-11_J/K-7/8	1.0 - 2.0	0.12 U
J3-1-11	J3-1-11_J/K-7/8	2.0 - 3.0	0.12 U
J3-1-11	J3-1-11_K/L-7/8	0.0 - 1.0	0.39 J
J3-1-11	J3-1-11_K/L-7/8	1.0 - 2.0	0.22 J
J3-1-11	J3-1-11_K/L-7/8	2.0 - 3.0	0.56 J
J3-1-11	J3-1-11_K/L-8	0.0 - 1.0	0.45 J
J3-1-11	J3-1-11_K/L-8	1.0 - 2.0	0.54 J
J3-1-11	J3-1-11_K/L-8	2.0 - 3.0	0.13 U
J3-1-11	J3-1-11_L-8/9	0.0 - 1.0	3.1 J
J3-1-11	J3-1-11_L-8/9	1.0 - 2.0	0.15 J
J3-1-11	J3-1-11_L/M-7/8	0.0 - 1.0	0.545 J
J3-1-11	J3-1-11_L/M-7/8	1.0 - 2.0	0.11 U
J3-1-11	J3-1-11_L/M-7/8	2.0 - 3.0	0.092 U
J3-1-11	J3-1-12_I-7/8	0.0 - 1.0	0.14 J
J3-1-11	J3-1-12_I-7/8	1.0 - 2.0	0.13 U
J3-1-11	J3-1-12_I-7/8	2.0 - 3.0	0.088 U
J3-1-11	J3-1-12_I/J-7/8	0.0 - 1.0	0.12 U
J3-1-11	J3-1-12_I/J-7/8	1.0 - 2.0	0.46 J
J3-1-11	J3-1-12_I/J-7/8	2.0 - 3.0	0.1 U
J3-1-11	J3-1-12_J-8	0.0 - 1.0	0.235 J
J3-1-11	J3-1-12_J-8	1.0 - 2.0	0.098 U
J3-1-11	J3-1-12_J-8	2.0 - 3.0	0.088 U

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 3a
Summary of Historical Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J3-1-12	BS000089	0.0 - 0.5	10.6
J3-1-12	BS000089	0.5 - 1.0	21.9
J3-1-12	FL000758	0.0 - 0.5	0.502 U
J3-1-12	FL000758	0.5 - 1.0	0.502 U
J3-1-12	FL001684	0.0 - 0.5	19.6
J3-1-12	FL001684	0.5 - 1.0	26.0
J3-1-12	FL001685	0.0 - 0.5	0.122 J
J3-1-12	FL001685	0.5 - 1.0	0.034
J3-1-12	BS000090	0.0 - 0.5	15.2
J3-1-12	BS000090	0.5 - 1.0	16.3 J
J3-1-12	FL000759	0.0 - 0.5	0.501 U
J3-1-12	FL000759	0.5 - 1.0	0.501 U

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 3b
Summary of Pre-Design Investigation Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J3-1-12	J3-1-11_J/K-7/8	0.0 - 1.0	0.13 J
J3-1-12	J3-1-11_J/K-7/8	1.0 - 2.0	0.12 U
J3-1-12	J3-1-11_J/K-7/8	2.0 - 3.0	0.12 U
J3-1-12	J3-1-12_H-7/8	0.0 - 1.0	0.093 U
J3-1-12	J3-1-12_H-7/8	1.0 - 2.0	0.17 J
J3-1-12	J3-1-12_H-7/8	2.0 - 3.0	0.095 J
J3-1-12	J3-1-12_I-7/8	0.0 - 1.0	0.14 J
J3-1-12	J3-1-12_I-7/8	1.0 - 2.0	0.13 U
J3-1-12	J3-1-12_I-7/8	2.0 - 3.0	0.088 U
J3-1-12	J3-1-12_I/J-7/8	0.0 - 1.0	0.12 U
J3-1-12	J3-1-12_I/J-7/8	1.0 - 2.0	0.46 J
J3-1-12	J3-1-12_I/J-7/8	2.0 - 3.0	0.1 U
J3-1-12	J3-1-12_I/J-8	0.0 - 1.0	0.11 U
J3-1-12	J3-1-12_I/J-8	1.0 - 2.0	0.11 U
J3-1-12	J3-1-12_I/J-8	2.0 - 3.0	0.1 U
J3-1-12	J3-1-12_J-8	0.0 - 1.0	0.235 J
J3-1-12	J3-1-12_J-8	1.0 - 2.0	0.098 U
J3-1-12	J3-1-12_J-8	2.0 - 3.0	0.088 U
J3-1-12	J3-1-13_G-7/8	0.0 - 1.0	0.1 U
J3-1-12	J3-1-13_G-7/8	1.0 - 2.0	0.13 U
J3-1-12	J3-1-13_G-7/8	2.0 - 3.0	0.12 U
J3-1-12	J3-1-13_G/H-7/8	0.0 - 1.0	0.09 U
J3-1-12	J3-1-13_G/H-7/8	1.0 - 2.0	0.11 U
J3-1-12	J3-1-13_G/H-7/8	2.0 - 3.0	0.13 U

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 4a
Summary of Historical Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J3-1-13	FL001686	0.0 - 0.5	8.6
J3-1-13	FL001686	0.5 - 1.0	16.8 J
J3-1-13	BS000091	0.0 - 0.5	6.07
J3-1-13	BS000091	0.5 - 1.0	8.3
J3-1-13	FL000760	0.0 - 0.5	0.502 U
J3-1-13	FL000760	0.5 - 1.0	0.501 U
J3-1-13	FL001687	0.0 - 0.5	2.53
J3-1-13	FL001687	0.5 - 1.0	3.42
J3-1-13	FL000595	0.0 - 0.5	0.018 U
J3-1-13	FL000595	0.5 - 1.0	0.098
J3-1-13	FL000761	0.0 - 0.5	0.501 U
J3-1-13	FL000761	0.5 - 1.0	0.501 U

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 4b
Summary of Pre-Design Investigation Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J3-1-13	J3-1-12_H-7/8	0.0 - 1.0	0.093 U
J3-1-13	J3-1-12_H-7/8	1.0 - 2.0	0.17 J
J3-1-13	J3-1-12_H-7/8	2.0 - 3.0	0.095 J
J3-1-13	J3-1-13_F-7/8	0.0 - 1.0	0.29 J
J3-1-13	J3-1-13_F-7/8	1.0 - 2.0	0.12 U
J3-1-13	J3-1-13_F-7/8	2.0 - 3.0	0.11 U
J3-1-13	J3-1-13_F-8	0.0 - 1.0	3.0
J3-1-13	J3-1-13_F-8	1.0 - 2.0	0.49 J
J3-1-13	J3-1-13_F-8	2.0 - 3.0	0.11 U
J3-1-13	J3-1-13_F/G-7/8	0.0 - 1.0	0.115 U
J3-1-13	J3-1-13_F/G-7/8	1.0 - 2.0	0.1 U
J3-1-13	J3-1-13_F/G-7/8	2.0 - 3.0	0.12 U
J3-1-13	J3-1-13_G-7/8	0.0 - 1.0	0.1 U
J3-1-13	J3-1-13_G-7/8	1.0 - 2.0	0.13 U
J3-1-13	J3-1-13_G-7/8	2.0 - 3.0	0.12 U
J3-1-13	J3-1-13_G/H-7/8	0.0 - 1.0	0.09 U
J3-1-13	J3-1-13_G/H-7/8	1.0 - 2.0	0.11 U
J3-1-13	J3-1-13_G/H-7/8	2.0 - 3.0	0.13 U

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 4c
Summary of EPA Split Sample Data Used in PCB Evaluations

Parcel ID	EPA Location ID	Parent Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J3-1-13	H3A-FL002107-0-0C28	J3-1-13_F-8	0.0 - 1.0	2.0

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 5a
Summary of Historical Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J3-2-2	FL001849	0.0 - 0.5	19.0
J3-2-2	BS000059	0.0 - 0.5	12.2 J
J3-2-2	BS000059	0.5 - 1.0	17.7
J3-2-2	FL001323	0.0 - 0.5	93.7
J3-2-2	FL001323	0.5 - 1.0	8.72
J3-2-2	FL001323	0.5 - 1.0	14.0
J3-2-2	FL000914	0.0 - 0.5	18.1
J3-2-2	FL000914	0.5 - 1.0	0.517
J3-2-2	FL001324	0.0 - 0.5	40.4
J3-2-2	FL001324	0.5 - 1.0	18.0
J3-2-2	J3-2-3-SB-1	1.0 - 1.5	0.154 U
J3-2-2	J3-2-3-SB-1	1.5 - 2.0	4.48
J3-2-2	J3-2-2-SB-1	0.0 - 0.5	20.8
J3-2-2	J3-2-2-SB-1	0.5 - 1.0	31.4
J3-2-2	J3-2-2-SB-1	1.0 - 1.5	4.41
J3-2-2	J3-2-2-SB-1	1.5 - 2.0	0.238 U
J3-2-2	J3-2-3-SS-2	0.0 - 0.5	0.122 U
J3-2-2	J3-2-3-SS-2	0.5 - 1.0	0.113 U
J3-2-2	J3-2-3-SS-4	0.0 - 0.5	0.172 U
J3-2-2	J3-2-3-SS-4	0.5 - 1.0	0.146 U
J3-2-2	J3-2-3-SS-1	0.0 - 0.5	0.128 U
J3-2-2	J3-2-3-SS-1	0.5 - 1.0	0.122 U

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 5b
Summary of Pre-Design Investigation Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J3-2-2	J3-2-2_F/G-2	0.0 - 1.0	0.12 U
J3-2-2	J3-2-2_F/G-2	1.0 - 2.0	0.12 U
J3-2-2	J3-2-2_G/H-2/3	0.0 - 1.0	0.17 J
J3-2-2	J3-2-2_G/H-2/3	1.0 - 2.0	0.083 U
J3-2-2	J3-2-2_H/I-2/3	0.0 - 1.0	5.6 J
J3-2-2	J3-2-2_H/I-2/3	1.0 - 2.0	0.9 J
J3-2-2	J3-2-2_J/K-2/3	0.0 - 1.0	13.0 J
J3-2-2	J3-2-2_J/K-2/3	1.0 - 2.0	46.0 J
J3-2-2	J3-2-3_F-4/5	1.0 - 2.0	0.1 U
J3-2-2	J3-2-3_G-3/4	1.0 - 2.0	0.12 U
J3-2-2	J3-2-3_I/J-3/4	0.0 - 1.0	8.5
J3-2-2	J3-2-3_I/J-3/4	1.0 - 2.0	0.16 UJ
J3-2-2	J3-2-4_E/F-5/6	1.0 - 2.0	0.13 U
J3-2-2	J3-2-4_E/F-6	1.0 - 2.0	0.12 U
J3-2-2	EA22-R-12	0.5 - 1.0	0.977

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 5c
Summary of EPA Split Sample Data Used in PCB Evaluations

Parcel ID	EPA Location ID	Parent Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J3-2-2	H3A-FL002101-0-0C08	J3-2-2_H/I-2/3	1.0 - 2.0	6.6

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 6a
Summary of Historical Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J3-2-3	BS000059	0.0 - 0.5	12.2 J
J3-2-3	BS000059	0.5 - 1.0	17.7
J3-2-3	FL001323	0.0 - 0.5	93.7
J3-2-3	FL001323	0.5 - 1.0	8.72
J3-2-3	FL001323	0.5 - 1.0	14.0
J3-2-3	FL000914	0.0 - 0.5	18.1
J3-2-3	FL000914	0.5 - 1.0	0.517
J3-2-3	BS000058	0.0 - 0.5	20.6
J3-2-3	BS000058	0.5 - 1.0	0.596 U
J3-2-3	FL001324	0.0 - 0.5	40.4
J3-2-3	FL001324	0.5 - 1.0	18.0
J3-2-3	FL000700	0.0 - 0.5	18.7
J3-2-3	FL000700	0.5 - 1.0	3.34
J3-2-3	FL000699	0.0 - 0.5	6.1
J3-2-3	FL000699	0.5 - 1.0	11.3
J3-2-3	J3-2-3-SB-1	0.0 - 0.5	20.6
J3-2-3	J3-2-3-SB-1	0.5 - 1.0	1.6
J3-2-3	J3-2-3-SB-1	1.0 - 1.5	0.154 U
J3-2-3	J3-2-3-SB-1	1.5 - 2.0	4.48
J3-2-3	J3-2-3-SB-1	2.0 - 2.5	0.48
J3-2-3	J3-2-3-SB-1	2.5 - 3.0	0.363 J
J3-2-3	J3-2-3-SS-3	0.0 - 0.5	19.0
J3-2-3	J3-2-3-SS-3	0.5 - 1.0	5.84
J3-2-3	J3-2-3-SB-5	1.0 - 1.5	1.39
J3-2-3	J3-2-3-SB-5	1.5 - 2.0	0.426
J3-2-3	J3-2-3-SB-5	2.0 - 2.5	0.136 U
J3-2-3	J3-2-3-SB-3	0.0 - 0.5	19.0
J3-2-3	J3-2-3-SB-3	0.5 - 1.0	8.4
J3-2-3	J3-2-3-SB-3	1.0 - 1.5	0.22
J3-2-3	J3-2-3-SB-3	1.5 - 2.0	0.149 U [0.16]
J3-2-3	J3-2-3-SB-3	2.0 - 2.5	0.144
J3-2-3	J3-2-3-SB-3	2.5 - 3.0	0.14 U
J3-2-3	J3-2-3-SB-2	0.0 - 0.5	9.26
J3-2-3	J3-2-3-SB-2	0.5 - 1.0	5.02
J3-2-3	J3-2-3-SB-2	1.0 - 1.5	0.416
J3-2-3	J3-2-3-SB-2	1.5 - 2.0	1.83
J3-2-3	J3-2-3-SB-2	2.0 - 2.5	0.829
J3-2-3	J3-2-3-SB-2	2.5 - 3.0	0.634
J3-2-3	J3-2-2-SB-1	0.0 - 0.5	20.8
J3-2-3	J3-2-2-SB-1	0.5 - 1.0	31.4
J3-2-3	J3-2-2-SB-1	1.0 - 1.5	4.41
J3-2-3	J3-2-2-SB-1	1.5 - 2.0	0.238 U
J3-2-3	J3-2-2-SB-1	2.0 - 2.5	0.19 U

Table 6a
Summary of Historical Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J3-2-3	J3-2-2-SB-1	2.5 - 3.0	0.144 U
J3-2-3	J3-2-3-SB-4	0.0 - 0.5	9.23
J3-2-3	J3-2-3-SB-4	0.5 - 1.0	10.8
J3-2-3	J3-2-3-SB-4	1.0 - 1.5	4.03
J3-2-3	J3-2-3-SB-4	1.5 - 2.0	1.85
J3-2-3	J3-2-3-SB-4	2.0 - 2.5	11.4
J3-2-3	J3-2-3-SB-4	2.5 - 3.0	1.08 [0.952]
J3-2-3	J3-2-3-SS-2	0.0 - 0.5	0.122 U
J3-2-3	J3-2-3-SS-2	0.5 - 1.0	0.113 U
J3-2-3	J3-2-3-SS-4	0.0 - 0.5	0.172 U
J3-2-3	J3-2-3-SS-4	0.5 - 1.0	0.146 U
J3-2-3	J3-2-3-SS-5	0.0 - 0.5	0.23 [0.156]
J3-2-3	J3-2-3-SS-5	0.5 - 1.0	0.17 U
J3-2-3	J3-2-3-SS-1	0.0 - 0.5	0.128 U
J3-2-3	J3-2-3-SS-1	0.5 - 1.0	0.122 U

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 6b
Summary of Pre-Design Investigation Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J3-2-3	J3-2-2_F/G-2	1.0 - 2.0	0.12 U
J3-2-3	J3-2-2_H/I-2/3	1.0 - 2.0	0.9 J
J3-2-3	J3-2-2_J/K-2/3	0.0 - 1.0	13.0 J
J3-2-3	J3-2-2_J/K-2/3	1.0 - 2.0	46.0 J
J3-2-3	J3-2-2_J/K-2/3	2.0 - 3.0	0.15 U
J3-2-3	J3-2-3_F-4/5	0.0 - 1.0	0.12 U
J3-2-3	J3-2-3_F-4/5	1.0 - 2.0	0.1 U
J3-2-3	J3-2-3_F/G-4	0.0 - 1.0	0.12 U
J3-2-3	J3-2-3_F/G-4	1.0 - 2.0	0.12 U
J3-2-3	J3-2-3_F/G-4	2.0 - 3.0	0.11 U
J3-2-3	J3-2-3_G-3/4	0.0 - 1.0	0.12 U
J3-2-3	J3-2-3_G-3/4	1.0 - 2.0	0.12 U
J3-2-3	J3-2-3_H/I-3/4	0.0 - 1.0	29.0
J3-2-3	J3-2-3_H/I-3/4	1.0 - 2.0	0.52
J3-2-3	J3-2-3_H/I-3/4	2.0 - 3.0	0.35
J3-2-3	J3-2-3_I/J-3/4	0.0 - 1.0	8.5
J3-2-3	J3-2-3_I/J-3/4	1.0 - 2.0	0.16 UJ
J3-2-3	J3-2-4_E/F-5/6	0.0 - 1.0	0.14 U
J3-2-3	J3-2-4_E/F-5/6	1.0 - 2.0	0.13 U
J3-2-3	J3-2-4_E/F-6	1.0 - 2.0	0.12 U
J3-2-3	J3-2-4_E/F-6/7	2.0 - 3.0	0.51 J
J3-2-3	J3-2-4_F-5/6	2.0 - 3.0	0.14 U
J3-2-3	J3-2-5_D/E-7/8	1.0 - 2.0	0.1 U

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 7a
Summary of Historical Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J3-2-4	BS000057	0.0 - 0.5	16.2
J3-2-4	BS000057	0.5 - 1.0	0.507 U
J3-2-4	FL000699	0.0 - 0.5	6.1
J3-2-4	FL000699	0.5 - 1.0	11.3
J3-2-4	BS000060	0.0 - 0.5	17.7
J3-2-4	BS000060	0.5 - 1.0	18.7
J3-2-4	FL000701	0.0 - 0.5	22.8
J3-2-4	FL000701	0.5 - 1.0	19.2
J3-2-4	J3-2-3-SB-4	0.0 - 0.5	9.23
J3-2-4	J3-2-3-SB-4	0.5 - 1.0	10.8
J3-2-4	J3-2-3-SB-4	1.0 - 1.5	4.03
J3-2-4	J3-2-3-SB-4	1.5 - 2.0	1.85
J3-2-4	J3-2-3-SB-4	2.0 - 2.5	11.4
J3-2-4	J3-2-3-SB-4	2.5 - 3.0	1.08 [0.952]
J3-2-4	J3-2-3-SS-5	0.0 - 0.5	0.23 [0.156]
J3-2-4	J3-2-3-SS-5	0.5 - 1.0	0.17 U
J3-2-4	J3-2-3-SS-1	0.0 - 0.5	0.128 U
J3-2-4	J3-2-3-SS-1	0.5 - 1.0	0.122 U

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 7b
Summary of Pre-Design Investigation Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J3-2-4	J3-2-3_F-4/5	1.0 - 2.0	0.1 U
J3-2-4	J3-2-4_E-6/7	0.0 - 1.0	0.16 U
J3-2-4	J3-2-4_E-6/7	1.0 - 2.0	0.12 U
J3-2-4	J3-2-4_E/F-5/6	0.0 - 1.0	0.14 U
J3-2-4	J3-2-4_E/F-5/6	1.0 - 2.0	0.13 U
J3-2-4	J3-2-4_E/F-6	0.0 - 1.0	0.15 U
J3-2-4	J3-2-4_E/F-6	1.0 - 2.0	0.12 U
J3-2-4	J3-2-4_E/F-6/7	0.0 - 1.0	16.0
J3-2-4	J3-2-4_E/F-6/7	1.0 - 2.0	24.0
J3-2-4	J3-2-4_E/F-6/7	2.0 - 3.0	0.51 J
J3-2-4	J3-2-4_F-5/6	0.0 - 1.0	15.0 J
J3-2-4	J3-2-4_F-5/6	1.0 - 2.0	15.0
J3-2-4	J3-2-4_F-5/6	2.0 - 3.0	0.14 U
J3-2-4	J3-2-4_F/G-5/6	0.0 - 1.0	14.0
J3-2-4	J3-2-4_F/G-5/6	1.0 - 2.0	60.0
J3-2-4	J3-2-4_F/G-5/6	2.0 - 3.0	67.0 J
J3-2-4	J3-2-5_D/E-7/8	0.0 - 1.0	0.11 U
J3-2-4	J3-2-5_D/E-7/8	1.0 - 2.0	0.1 U
J3-2-4	J3-2-5_E-7/8	0.0 - 1.0	0.14 U
J3-2-4	J3-2-5_E-7/8	1.0 - 2.0	0.11 U

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 8a
Summary of Historical Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J3-2-5	FL000703	0.0 - 0.5	2.83
J3-2-5	FL000703	0.0 - 0.5	2.78
J3-2-5	FL000703	0.5 - 1.0	1.44
J3-2-5	BS000061	0.0 - 0.5	33.0
J3-2-5	BS000061	0.5 - 1.0	37.0
J3-2-5	BS000060	0.0 - 0.5	17.7
J3-2-5	BS000060	0.5 - 1.0	18.7
J3-2-5	FL000702	0.0 - 0.5	14.2
J3-2-5	FL000702	0.5 - 1.0	19.6

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 8b
Summary of Pre-Design Investigation Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J3-2-5	J3-2-4_E-6/7	0.0 - 1.0	0.16 U
J3-2-5	J3-2-4_E-6/7	1.0 - 2.0	0.12 U
J3-2-5	J3-2-5_D/E-7/8	0.0 - 1.0	0.11 U
J3-2-5	J3-2-5_D/E-7/8	1.0 - 2.0	0.1 U
J3-2-5	J3-2-5_D/E-8	0.0 - 1.0	0.12 U
J3-2-5	J3-2-5_D/E-8	1.0 - 2.0	0.12 U
J3-2-5	J3-2-5_D/E-8/9	0.0 - 1.0	0.125 U
J3-2-5	J3-2-5_D/E-8/9	1.0 - 2.0	0.12 U
J3-2-5	J3-2-5_E-7/8	0.0 - 1.0	0.14 U
J3-2-5	J3-2-5_E-7/8	1.0 - 2.0	0.11 U
J3-2-5	J3-2-5_E/F-7/8	0.0 - 1.0	0.8
J3-2-5	J3-2-5_E/F-7/8	1.0 - 2.0	0.12 U
J3-2-5	J3-2-5_E/F-8/9	0.0 - 1.0	0.14 U
J3-2-5	J3-2-5_E/F-8/9	1.0 - 2.0	0.11 U
J3-2-5	J3-2-6_E-9/10	0.0 - 1.0	0.14 U
J3-2-5	J3-2-6_E-9/10	1.0 - 2.0	0.1 U

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 9a
Summary of Historical Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J3-2-6	FL001852	0.0 - 0.5	0.75
J3-2-6	FL001851	0.0 - 0.5	7.1
J3-2-6	BS000062	0.0 - 0.5	0.46 J
J3-2-6	BS000062	0.5 - 1.0	10.6
J3-2-6	FL000703	0.0 - 0.5	2.83
J3-2-6	FL000703	0.0 - 0.5	2.78
J3-2-6	FL000703	0.5 - 1.0	1.44

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 9b
Summary of Pre-Design Investigation Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J3-2-6	J3-2-5_D/E-8/9	0.0 - 1.0	0.125 U
J3-2-6	J3-2-5_D/E-8/9	1.0 - 2.0	0.12 U
J3-2-6	J3-2-5_E/F-8/9	1.0 - 2.0	0.11 U
J3-2-6	J3-2-6_E-9/10	0.0 - 1.0	0.14 U
J3-2-6	J3-2-6_E-9/10	1.0 - 2.0	0.1 U
J3-2-6	J3-2-6_E/F-10	0.0 - 1.0	0.092 U
J3-2-6	J3-2-6_E/F-10	1.0 - 2.0	0.11 U
J3-2-6	J3-2-6_E/F-10/11	0.0 - 1.0	0.087 U
J3-2-6	J3-2-6_E/F-10/11	1.0 - 2.0	0.093 U
J3-2-6	J3-2-6_E/F-9/10	0.0 - 1.0	1.8 J
J3-2-6	J3-2-6_E/F-9/10	1.0 - 2.0	0.16 J
J3-2-6	J3-2-6_F/G-10/11	0.0 - 1.0	1.7 J
J3-2-6	J3-2-6_F/G-10/11	1.0 - 2.0	0.09 U

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 9c
Summary of EPA Split Sample Data Used in PCB Evaluations

Parcel ID	EPA Location ID	Parent Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J3-2-6	H3A-FL002100-0-0C07	J3-2-6_E/F-9/10	0.0 - 1.0	1.3

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 10a
Summary of Historical Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J6-2-3	J6-2-3_N-27	0.0 - 1.0	0.35 J
J6-2-3	J6-2-3_M-29	0.0 - 1.0	0.074 [0.074]
J6-2-3	J6-2-3_L/M-26/27	0.0 - 1.0	0.15 U
J6-2-3	J6-2-3_K/L-27/28	0.0 - 1.0	0.135 U
J6-2-3	J6-2-3_K-25	0.0 - 1.0	0.235
J6-2-3	J6-2-2_J/K-23/24	0.0 - 1.0	29.0 J
J6-2-3	J6-2-2_J/K-23/24	1.0 - 2.0	16.0
J6-2-3	J6-2-2_J/K-23/24	2.0 - 3.0	5.3
J6-2-3	J6-2-2_J-24	0.0 - 1.0	6.3
J6-2-3	J6-2-2_J-24	1.0 - 2.0	10.4
J6-2-3	J6-2-2_J-24	2.0 - 3.0	0.0245
J6-2-3	J6-2-2_I/J-24	0.0 - 1.0	3.9
J6-2-3	J6-2-2_I/J-24	1.0 - 2.0	0.036 J
J6-2-3	J6-2-3_I-26	0.0 - 1.0	0.063
J6-2-3	J6-2-10_H-25	0.0 - 1.0	0.089
J6-2-3	BS000100	0.0 - 0.5	16.7
J6-2-3	BS000100	0.5 - 1.0	38.9 J
J6-2-3	BS000100	0.5 - 1.0	37.5

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 10b
Summary of Pre-Design Investigation Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J6-2-3	J6-2-3_K/L-3	0.0 - 1.0	14.0
J6-2-3	J6-2-3_L-4	0.0 - 1.0	12.5 J
J6-2-3	J6-2-3_L/M-5	0.0 - 1.0	11.0 J
J6-2-3	J6-2-3_L/M-5	1.0 - 2.0	80.0 J
J6-2-3	J6-2-3_L/M-6	0.0 - 1.0	13.0 J
J6-2-3	J6-2-3_L/M-6	1.0 - 2.0	73.0 J
J6-2-3	J6-2-3_M/N-7	0.0 - 1.0	40.0 J
J6-2-3	J6-2-3_J/K-2/3	1.0 - 2.0	0.0079 U
J6-2-3	J6-2-3_J/K-2/3	2.0 - 3.0	0.0081 U
J6-2-3	J6-2-3_K-4	0.0 - 1.0	2.4
J6-2-3	J6-2-3_K-4	1.0 - 2.0	1.3
J6-2-3	J6-2-3_K-4	2.0 - 3.0	1.7
J6-2-3	J6-2-3_L-5/6	1.0 - 2.0	2.6
J6-2-3	J6-2-3_L/M-7	0.0 - 1.0	0.064
J6-2-3	J6-2-3_L/M-7	1.0 - 2.0	0.0086 U
J6-2-3	J6-2-3_L/M-7	2.0 - 3.0	0.017 J

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 10c
Summary of EPA Split Sample Data Used in PCB Evaluations

Parcel ID	EPA Location ID	Parent Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J6-2-3	H3-FL002088	J6-2-2_J/K-23/24	0.0 - 1.0	27.0
J6-2-3	H3A-FL002094-0-0S29	J6-2-3_K/L-3	0.0 - 1.0	10.0

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 11a
Summary of Historical Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J6-3-1	J6-3-1_H-3	0.0 - 1.0	0.032 J
J6-3-1	J6-3-1_H-3	1.0 - 2.0	0.056 J
J6-3-1	J6-3-1_H-3	2.0 - 4.0	0.012 U
J6-3-1	J6-3-1_H-3	4.0 - 6.0	0.033 J
J6-3-1	J6-3-1_G-2	0.0 - 1.0	3.5
J6-3-1	J6-3-1_G-2	1.0 - 2.0	1.47
J6-3-1	J6-3-1_G-2	2.0 - 4.0	0.037 J
J6-3-1	J6-3-1_G-2	4.0 - 6.0	0.0135 U
J6-3-1	J6-3-1_G-2	6.0 - 8.0	0.014 U
J6-3-1	J6-3-1_G/H-4/5	0.0 - 1.0	1.24
J6-3-1	J6-3-1_G/H-4/5	1.0 - 2.0	0.069
J6-3-1	J6-3-1_G/H-4/5	2.0 - 4.0	0.0125 U [0.012]
J6-3-1	J6-3-1_G/H-4/5	4.0 - 6.0	0.0115 U
J6-3-1	J6-3-1_G-8	0.0 - 1.0	0.186
J6-3-1	J6-3-1_G-8	1.0 - 2.0	0.012 U
J6-3-1	J6-3-1_G-8	2.0 - 4.0	0.0115 U
J6-3-1	J6-3-1_G-8	4.0 - 6.0	0.012 U
J6-3-1	J6-3-1_F/G-1/2	0.0 - 1.0	4.1
J6-3-1	J6-3-1_F/G-1/2	1.0 - 2.0	1.56
J6-3-1	J6-3-1_F/G-1/2	2.0 - 4.0	5.3
J6-3-1	J6-3-1_F/G-1/2	4.0 - 6.0	7.2
J6-3-1	J6-3-1_F/G-1/2	6.0 - 8.0	7.1
J6-3-1	J6-3-1_F/G-1/2	8.0 - 10.0	0.7
J6-3-1	J6-3-1_F-2/3	0.0 - 1.0	1.23
J6-3-1	J6-3-1_F-2/3	1.0 - 2.0	3.9
J6-3-1	J6-3-1_F-2/3	2.0 - 4.0	3.2
J6-3-1	J6-3-1_F-2/3	4.0 - 6.0	0.28
J6-3-1	J6-3-1_F-2/3	6.0 - 8.0	0.014 U
J6-3-1	J6-3-1_F-8	0.0 - 1.0	0.78 [0.79]
J6-3-1	J6-3-1_F-8	1.0 - 2.0	0.29
J6-3-1	J6-3-1_F-8	2.0 - 4.0	0.64
J6-3-1	J6-3-1_F-8	4.0 - 6.0	0.013 U
J6-3-1	J6-3-1_F-4	0.0 - 1.0	0.27
J6-3-1	J6-3-1_F-4	1.0 - 2.0	0.089 J
J6-3-1	J6-3-1_F-4	2.0 - 4.0	0.0125 U [0.012]
J6-3-1	J6-3-1_F-4	4.0 - 6.0	0.065 U
J6-3-1	J6-3-1_E/F-3	0.0 - 1.0	2.2
J6-3-1	J6-3-1_E/F-3	1.0 - 2.0	2.8
J6-3-1	J6-3-1_E/F-3	2.0 - 4.0	6.8
J6-3-1	J6-3-1_E/F-3	4.0 - 6.0	0.27
J6-3-1	J6-3-1_E/F-3	6.0 - 8.0	0.0115 U
J6-3-1	J6-3-1_E-5	0.0 - 1.0	0.16
J6-3-1	J6-3-1_E-5	1.0 - 2.0	0.031 J

Table 11a
Summary of Historical Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J6-3-1	J6-3-1_E-5	2.0 - 4.0	0.0125 U
J6-3-1	J6-3-1_E-5	4.0 - 6.0	0.0125 U
J6-3-1	J6-3-1_E-4	0.0 - 1.0	0.063 J
J6-3-1	J6-3-1_E-4	1.0 - 2.0	0.013 U
J6-3-1	J6-3-1_E-4	2.0 - 4.0	0.012 U
J6-3-1	J6-3-1_E-4	4.0 - 6.0	0.012 U
J6-3-1	J6-3-1_E-8	0.0 - 1.0	0.24
J6-3-1	J6-3-1_E-8	1.0 - 2.0	0.055
J6-3-1	J6-3-1_E-8	2.0 - 4.0	0.088
J6-3-1	J6-3-1_E-8	4.0 - 6.0	0.52
J6-3-1	J6-3-1_D-4/5	0.0 - 1.0	0.14
J6-3-1	J6-3-1_D-4/5	1.0 - 2.0	0.0155 U
J6-3-1	J6-3-1_D-4/5	2.0 - 4.0	0.013 U
J6-3-1	J6-3-1_D-4/5	4.0 - 6.0	0.0125 U
J6-3-1	J6-3-1_D-8	0.0 - 1.0	8.0
J6-3-1	J6-3-1_D-8	1.0 - 2.0	3.3
J6-3-1	J6-3-1_D-8	2.0 - 4.0	0.53
J6-3-1	J6-3-1_D-8	4.0 - 6.0	0.59
J6-3-1	J6-3-1_D-7	0.0 - 1.0	0.61
J6-3-1	J6-3-1_D-7	1.0 - 2.0	0.24
J6-3-1	J6-3-1_D-7	2.0 - 4.0	0.026 J
J6-3-1	J6-3-1_D-7	4.0 - 6.0	0.012 U
J6-3-1	J6-3-1_D-6	0.0 - 1.0	0.17
J6-3-1	J6-3-1_D-6	1.0 - 2.0	0.014 U
J6-3-1	J6-3-1_D-6	2.0 - 4.0	0.013 U
J6-3-1	J6-3-1_D-6	4.0 - 6.0	0.013 U
J6-3-1	J6-3-1_C/D-5	0.0 - 1.0	0.17
J6-3-1	J6-3-1_C/D-5	1.0 - 2.0	0.15
J6-3-1	J6-3-1_C/D-5	2.0 - 4.0	0.013 U
J6-3-1	J6-3-1_C/D-5	4.0 - 6.0	0.013 U
J6-3-1	J6-3-1_C-9	0.0 - 1.0	5.0 J
J6-3-1	J6-3-1_C-9	1.0 - 2.0	0.26
J6-3-1	J6-3-1_C-9	2.0 - 4.0	0.05 J
J6-3-1	J6-3-1_C-9	4.0 - 6.0	0.012 U
J6-3-1	J6-3-1_C-9	6.0 - 8.0	0.044 J
J6-3-1	J6-3-1_C-6	0.0 - 1.0	0.99
J6-3-1	J6-3-1_C-6	1.0 - 2.0	0.0135 U
J6-3-1	J6-3-1_C-6	2.0 - 4.0	0.013 U
J6-3-1	J6-3-1_C-6	4.0 - 6.0	0.013 U
J6-3-1	J6-3-1_C-6	6.0 - 8.0	0.065
J6-3-1	J6-3-1_C-8	0.0 - 1.0	8.7 J [5.9]
J6-3-1	J6-3-1_C-8	1.0 - 2.0	5.7 J
J6-3-1	J6-3-1_C-8	2.0 - 4.0	0.026 J

Table 11a
Summary of Historical Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J6-3-1	J6-3-1_C-8	4.0 - 6.0	0.0125 U
J6-3-1	J6-3-1_C-9/10	0.0 - 1.0	6.4
J6-3-1	J6-3-1_C-9/10	1.0 - 2.0	44.0
J6-3-1	J6-3-1_C-9/10	2.0 - 4.0	26.0
J6-3-1	J6-3-1_C-9/10	4.0 - 6.0	0.017 U
J6-3-1	J6-3-1_C-9/10	6.0 - 8.0	0.0135 U
J6-3-1	J6-3-1_C-9/10	8.0 - 10.0	0.0125 U
J6-3-1	J6-3-1_C-7	0.0 - 1.0	7.4
J6-3-1	J6-3-1_C-7	1.0 - 2.0	0.85
J6-3-1	J6-3-1_C-7	2.0 - 4.0	0.0135 U
J6-3-1	J6-3-1_C-7	4.0 - 6.0	0.012 U
J6-3-1	J6-3-1_C-7	6.0 - 8.0	0.0125 U
J6-3-1	J6-3-1_B/C-6	0.0 - 1.0	1.44
J6-3-1	J6-3-1_B/C-6	1.0 - 2.0	0.44
J6-3-1	J6-3-1_B/C-6	2.0 - 4.0	0.012 U
J6-3-1	J6-3-1_B/C-6	4.0 - 6.0	0.012 U
J6-3-1	J6-3-1_B/C-8	0.0 - 1.0	1.6
J6-3-1	J6-3-1_B/C-8	1.0 - 2.0	0.2
J6-3-1	J6-3-1_B/C-8	2.0 - 4.0	0.013 U
J6-3-1	J6-3-1_B/C-8	4.0 - 6.0	0.026 J
J6-3-1	J6-3-1_B/C-8	6.0 - 8.0	0.014 U
J6-3-1	J6-3-1_B/C-8	8.0 - 10.0	0.012 U
J6-3-1	J6-3-1_B/C-10	0.0 - 1.0	4.5
J6-3-1	J6-3-1_B/C-10	1.0 - 2.0	22.0
J6-3-1	J6-3-1_B/C-10	2.0 - 4.0	69.0
J6-3-1	J6-3-1_B/C-10	4.0 - 6.0	150.0
J6-3-1	J6-3-1_B/C-10	6.0 - 8.0	29.0
J6-3-1	J6-3-1_B/C-10	8.0 - 10.0	68.0
J6-3-1	J6-3-1_B-7	0.0 - 1.0	2.7 [3.5]
J6-3-1	J6-3-1_B-7	1.0 - 2.0	6.0 J
J6-3-1	J6-3-1_B-7	2.0 - 4.0	88.0
J6-3-1	J6-3-1_B-7	4.0 - 6.0	96.0
J6-3-1	J6-3-1_B-7	6.0 - 8.0	5.2 J [1.1]
J6-3-1	J6-3-1_B-7	8.0 - 10.0	0.0175 U
J6-3-1	J6-3-1_B-9	0.0 - 1.0	38.0
J6-3-1	J6-3-1_B-9	1.0 - 2.0	47.0
J6-3-1	J6-3-1_B-9	2.0 - 4.0	120.0
J6-3-1	J6-3-1_B-9	4.0 - 6.0	43.0
J6-3-1	J6-3-1_B-9	6.0 - 8.0	11.0
J6-3-1	J6-3-1_B-9	8.0 - 10.0	0.3
J6-3-1	J6-3-1_B-9/10	0.0 - 1.0	5.0
J6-3-1	J6-3-1_B-9/10	1.0 - 2.0	46.0
J6-3-1	J6-3-1_B-9/10	2.0 - 4.0	83.0 [109.0]

Table 11a
Summary of Historical Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J6-3-1	J6-3-1_B-9/10	4.0 - 6.0	150.0 J
J6-3-1	J6-3-1_B-9/10	6.0 - 8.0	24.8
J6-3-1	J6-3-1_B-9/10	8.0 - 10.0	16.0
J6-3-1	J6-3-1_A/B-9	0.0 - 1.0	9.3
J6-3-1	J6-3-1_A/B-9	1.0 - 2.0	13.3
J6-3-1	J6-3-1_A/B-9	2.0 - 4.0	75.0 [71.0]
J6-3-1	J6-3-1_A/B-9	4.0 - 6.0	25.0 J
J6-3-1	J6-3-1_A/B-9	6.0 - 8.0	42.0
J6-3-1	J6-3-1_A/B-9	8.0 - 10.0	56.0
J6-3-1	J6-3-1_A/B-8	0.0 - 1.0	3.6
J6-3-1	J6-3-1_A/B-8	1.0 - 2.0	21.0
J6-3-1	J6-3-1_A/B-8	2.0 - 4.0	8.7
J6-3-1	J6-3-1_A/B-8	4.0 - 6.0	150.0
J6-3-1	J6-3-1_A/B-8	6.0 - 8.0	26.0
J6-3-1	J6-3-1_A/B-8	8.0 - 10.0	53.0
J6-3-1	F0489601	0.0 - 0.5	0.485 J
J6-3-1	FL001282	0.0 - 0.5	0.501 U
J6-3-1	FL001282	0.5 - 1.0	2.03
J6-3-1	F0489602	0.0 - 0.5	0.504 UJ
J6-3-1	F0489602	0.5 - 1.0	0.85 J
J6-3-1	F0489603	0.0 - 0.5	0.502 UJ
J6-3-1	F0489604	0.0 - 0.5	5.42 J
J6-3-1	F0489604	0.5 - 1.0	8.75 J
J6-3-1	FL001281	0.0 - 0.5	16.6
J6-3-1	FL001281	0.5 - 1.0	30.9
J6-3-1	F0489605	0.0 - 0.5	9.89 J
J6-3-1	BS000147	0.0 - 0.5	30.7
J6-3-1	BS000147	0.5 - 1.0	16.6
J6-3-1	F0489606	0.0 - 0.5	10.9 J
J6-3-1	F0489606	0.5 - 1.0	26.8 J
J6-3-1	F0489607	0.0 - 0.5	16.7 J
J6-3-1	J6-3-1-SS-5	0.0 - 0.5	0.135 U
J6-3-1	J6-3-1-SS-5	0.5 - 1.0	0.136 U
J6-3-1	J6-3-1-SS-8	0.0 - 0.5	0.128 U [0.136]
J6-3-1	J6-3-1-SS-8	0.5 - 1.0	0.12 U
J6-3-1	J6-3-1-SS-4	0.0 - 0.5	0.133 U
J6-3-1	J6-3-1-SS-4	0.5 - 1.0	0.126 U
J6-3-1	J6-3-1-SS-6	0.0 - 0.5	0.153 U
J6-3-1	J6-3-1-SS-6	0.5 - 1.0	0.135 U
J6-3-1	J6-3-1-SS-7	0.0 - 0.5	0.941
J6-3-1	J6-3-1-SS-7	0.5 - 1.0	0.127 U
J6-3-1	J6-3-1-SS-9	0.0 - 0.5	4.51
J6-3-1	J6-3-1-SS-9	0.5 - 1.0	1.15

Table 11a
Summary of Historical Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J6-3-1	J6-3-1-SB-12	1.0 - 1.5	0.5
J6-3-1	J6-3-1-SB-12	1.5 - 2.0	0.125 U
J6-3-1	J6-3-1-SB-12	2.0 - 2.5	0.144 U [0.197]
J6-3-1	J6-3-1-SS-1	0.0 - 0.5	0.45 [0.449]
J6-3-1	J6-3-1-SS-1	0.5 - 1.0	0.15
J6-3-1	J6-3-1-SB-4	0.0 - 0.5	1.28
J6-3-1	J6-3-1-SB-4	0.5 - 1.0	0.118 U [0.122]
J6-3-1	J6-3-1-SB-4	1.0 - 1.5	0.121 U
J6-3-1	J6-3-1-SB-4	1.5 - 2.0	0.116 U
J6-3-1	J6-3-1-SS-2	0.0 - 0.5	1.46
J6-3-1	J6-3-1-SS-2	0.5 - 1.0	0.254
J6-3-1	J6-3-1-SB-10	1.0 - 1.5	0.12 U
J6-3-1	J6-3-1-SB-10	1.5 - 2.0	0.114 U
J6-3-1	J6-3-1-SB-10	2.0 - 2.5	0.121 U
J6-3-1	J6-3-1-SB-10	2.5 - 3.0	0.115 U [0.119]
J6-3-1	J6-3-1-SB-5	0.0 - 0.5	0.127
J6-3-1	J6-3-1-SB-5	0.5 - 1.0	0.114 U
J6-3-1	J6-3-1-SB-5	1.0 - 1.5	0.118 U
J6-3-1	J6-3-1-SB-5	1.5 - 2.0	0.129 U
J6-3-1	J6-3-1-SB-3	0.0 - 0.5	0.135 U
J6-3-1	J6-3-1-SB-3	0.5 - 1.0	0.124 U
J6-3-1	J6-3-1-SB-3	1.0 - 1.5	0.126 U
J6-3-1	J6-3-1-SB-3	1.5 - 2.0	0.125 U
J6-3-1	J6-3-1-SS-3	0.0 - 0.5	8.1
J6-3-1	J6-3-1-SS-3	0.5 - 1.0	7.25
J6-3-1	J6-3-1-SB-11	1.0 - 1.5	7.11
J6-3-1	J6-3-1-SB-11	1.5 - 2.0	0.897
J6-3-1	J6-3-1-SB-11	2.0 - 2.5	1.86
J6-3-1	J6-3-1-SB-11	2.5 - 3.0	9.54
J6-3-1	J6-3-1-SB-9	0.0 - 0.5	2.85
J6-3-1	J6-3-1-SB-9	0.5 - 1.0	2.68
J6-3-1	J6-3-1-SB-9	0.5 - 1.0	2.78
J6-3-1	J6-3-1-SB-9	1.0 - 1.5	0.808
J6-3-1	J6-3-1-SB-9	1.5 - 2.0	0.142
J6-3-1	J6-3-1-SB-1	0.0 - 0.5	5.96
J6-3-1	J6-3-1-SB-1	0.5 - 1.0	0.136
J6-3-1	J6-3-1-SB-1	1.0 - 1.5	0.281
J6-3-1	J6-3-1-SB-1	1.5 - 2.0	0.114 U
J6-3-1	J6-3-1-SB-2	0.0 - 0.5	3.57
J6-3-1	J6-3-1-SB-2	0.5 - 1.0	0.181
J6-3-1	J6-3-1-SB-2	1.0 - 1.5	0.114 U
J6-3-1	J6-3-1-SB-2	1.5 - 2.0	0.123 U
J6-3-1	J6-3-1-SB-13	0.0 - 0.5	70.0

Table 11a
Summary of Historical Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J6-3-1	J6-3-1-SB-13	0.5 - 1.0	90.5
J6-3-1	J6-3-1-SB-13	1.0 - 1.5	129.0
J6-3-1	J6-3-1-SB-13	1.5 - 2.0	23.9
J6-3-1	J6-3-1-SB-13	2.0 - 2.5	20.1
J6-3-1	J6-3-1-SB-13	2.5 - 3.0	2.09
J6-3-1	J6-3-1-SB-13	3.0 - 3.5	0.822
J6-3-1	J6-3-1-SB-13	3.5 - 4.0	0.766
J6-3-1	J6-3-1-SB-15	0.0 - 0.5	38.2
J6-3-1	J6-3-1-SB-15	0.5 - 1.0	35.5
J6-3-1	J6-3-1-SB-15	1.0 - 1.5	88.5
J6-3-1	J6-3-1-SB-15	1.5 - 2.0	143.0
J6-3-1	J6-3-1-SB-15	2.0 - 2.5	157.0
J6-3-1	J6-3-1-SB-15	2.5 - 3.0	28.3
J6-3-1	J6-3-1-SB-15	3.0 - 3.5	16.1
J6-3-1	J6-3-1-SB-15	3.5 - 4.0	23.9
J6-3-1	J6-3-1-SB-14	0.0 - 0.5	18.2
J6-3-1	J6-3-1-SB-14	0.5 - 1.0	13.2
J6-3-1	J6-3-1-SB-14	1.0 - 1.5	15.3
J6-3-1	J6-3-1-SB-14	1.5 - 2.0	199.0
J6-3-1	J6-3-1-SB-14	2.0 - 2.5	50.5
J6-3-1	J6-3-1-SB-14	2.5 - 3.0	98.1
J6-3-1	J6-3-1-SB-14	3.0 - 3.5	68.8
J6-3-1	J6-3-1-SB-14	3.5 - 4.0	25.3

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 11b
Summary of Pre-Design Investigation Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J6-3-1	EA08-E-2	0.0 - 0.5	8.96
J6-3-1	EA08-E-2	0.5 - 1.0	6.58

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 11c
Summary of EPA Split Sample Data Used in PCB Evaluations

Parcel ID	EPA Location ID	Parent Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
J6-3-1	H3-FL002087	J6-3-1_D-7	0.0 - 1.0	0.62
J6-3-1	H3-FL002086	J6-3-1_C-9	0.0 - 1.0	2.5

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 12a
Summary of Historical Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
K2-1-10	FL001569	0.0 - 0.5	55.8
K2-1-10	FL001569	0.5 - 1.0	99.5
K2-1-10	FL001859	0.0 - 0.5	35.0
K2-1-10	FL000917	0.0 - 0.5	4.25
K2-1-10	FL000917	0.5 - 1.0	0.227 J
K2-1-10	BS000102	0.0 - 0.5	2.33
K2-1-10	BS000102	0.5 - 1.0	0.416 J
K2-1-10	FL000916	0.0 - 0.5	5.65 J
K2-1-10	FL000916	0.5 - 1.0	0.376 J
K2-1-10	BS000101	0.0 - 0.5	1.65
K2-1-10	BS000101	0.5 - 1.0	0.758
K2-1-10	FL000915	0.0 - 0.5	4.2
K2-1-10	FL000915	0.5 - 1.0	0.504 U

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 12b
Summary of Pre-Design Investigation Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
K2-1-10	K2-1-10_B-2/3	0.0 - 1.0	46.0 J
K2-1-10	K2-1-10_B-2/3	1.0 - 2.0	0.36 J
K2-1-10	K2-1-10_B-3/4	0.0 - 1.0	0.094 U
K2-1-10	K2-1-10_B-3/4	1.0 - 2.0	0.09 U
K2-1-10	K2-1-10_C-2/3	0.0 - 1.0	24.0 J
K2-1-10	K2-1-10_C-2/3	1.0 - 2.0	7.2 J
K2-1-10	K2-1-10_C-2/3	2.0 - 3.0	0.11 U
K2-1-10	K2-1-10_C-3/4	0.0 - 1.0	0.12 U
K2-1-10	K2-1-10_C-3/4	1.0 - 2.0	0.12 U
K2-1-10	K2-1-10_D-2/3	0.0 - 1.0	27.0 J
K2-1-10	K2-1-10_D-2/3	1.0 - 2.0	34.5 J
K2-1-10	K2-1-10_D-2/3	2.0 - 3.0	0.18 J
K2-1-10	K2-1-10_D-3	0.0 - 1.0	1.6 J
K2-1-10	K2-1-10_D-3	1.0 - 2.0	0.11 U
K2-1-10	K2-1-10_D-3/4	0.0 - 1.0	0.14 U
K2-1-10	K2-1-10_E-2	0.0 - 1.0	28.0 J
K2-1-10	K2-1-10_E-2	1.0 - 2.0	51.0 J
K2-1-10	K2-1-10_E-2	2.0 - 3.0	140.0 J
K2-1-10	K2-1-10_E-2/3	0.0 - 1.0	0.13 U
K2-1-10	K2-1-10_E-2/3	1.0 - 2.0	0.11 U
K2-1-10	K2-1-10_E-2/3	2.0 - 3.0	0.09 U
K2-1-10	K2-1-10_E-3/4	0.0 - 1.0	0.14 U
K2-1-10	K2-1-10_D-2/3	3.0 - 4.0	0.17 J
K2-1-10	K2-1-10_D-3	3.0 - 4.0	0.012 J
K2-1-10	K2-1-10_E-2	3.0 - 4.0	15.0
K2-1-10	K2-1-10_E-2/3	3.0 - 4.0	0.0092 U

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 12c
Summary of EPA Split Sample Data Used in PCB Evaluations

Parcel ID	EPA Location ID	Parent Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
K2-1-10	H3A-FL002103-0-0C15	K2-1-10_C-2/3	1.0 - 2.0	23.0

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 13a
Summary of Historical Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
K3-1-2	FL001301	0.0 - 0.5	40.6
K3-1-2	FL001301	0.5 - 1.0	1.34
K3-1-2	BS000065	0.0 - 0.5	10.3
K3-1-2	BS000065	0.5 - 1.0	24.1
K3-1-2	FL000706	0.0 - 0.5	6.09
K3-1-2	FL000706	0.5 - 1.0	0.501 U
K3-1-2	FL001300	0.0 - 0.5	30.1
K3-1-2	FL001300	0.5 - 1.0	9.62
K3-1-2	FL000705	0.5 - 1.0	0.501 U

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 13b
Summary of Pre-Design Investigation Data Used in PCB Evaluations

Parcel ID	Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
K3-1-2	K3-1-2_B-2	0.0 - 1.0	8.3 J
K3-1-2	K3-1-2_B-2	1.0 - 2.0	3.1 J
K3-1-2	K3-1-2_B-2	2.0 - 3.0	0.55 J
K3-1-2	K3-1-2_B-4	0.0 - 1.0	0.18 J
K3-1-2	K3-1-2_B-4	1.0 - 2.0	0.12 U
K3-1-2	K3-1-2_B-5/6	0.0 - 1.0	0.14 U
K3-1-2	K3-1-2_C-3	0.0 - 1.0	14.0 J
K3-1-2	K3-1-2_C-3	1.0 - 2.0	3.1 J
K3-1-2	K3-1-2_C-3	2.0 - 3.0	0.24 J
K3-1-2	K3-1-2_C-4/5	0.0 - 1.0	1.7 J
K3-1-2	K3-1-2_C-4/5	1.0 - 2.0	0.63 J
K3-1-2	K3-1-2_C/D-5/6	0.0 - 1.0	0.18 J
K3-1-2	K3-1-2_D-4/5	0.0 - 1.0	6.2 J
K3-1-2	K3-1-2_D-4/5	1.0 - 2.0	0.11 U
K3-1-2	K3-1-2_D/E-4	0.0 - 1.0	63.0 J
K3-1-2	K3-1-2_D/E-4	1.0 - 2.0	23.0 J
K3-1-2	K3-1-2_D/E-4	2.0 - 3.0	0.14 U
K3-1-2	K3-1-2_E-5/6	0.0 - 1.0	7.5 J
K3-1-2	K3-1-2_E-5/6	1.0 - 2.0	8.4 J
K3-1-2	K3-1-2_E-5/6	2.0 - 3.0	0.14 U

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Table 13c
Summary of EPA Split Sample Data Used in PCB Evaluations

Parcel ID	EPA Location ID	Parent Location ID	Depth Increment (ft bgs)	Total PCB (mg/kg)
K3-1-2	H3A-FL002102-0-0C12	K3-1-2_B-2	1.0 - 2.0	0.79

Notes:
Only PCB sample locations that create a polygon or polygons within the Residential Floodplain are included.
Duplicate sample results are shown in brackets with parent sample results.
ft bgs: feet below ground surface
J: estimated value is less than quantification limit
mg/kg: milligrams per kilogram (equivalent to parts per million)
ND: not detected, number in parentheses is associated quantitation limit
PCB: polychlorinated biphenyl

Appendix F
PCB Evaluations for Floodplain Soil – Non-Residential

Appendix F
PCB Evaluations for Floodplain Soil – Non-Residential Exposure Areas

1 Introduction

As described in the main text of the *Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A* (Conceptual RD/RA Work Plan), the U.S. Environmental Protection Agency's (EPA's) *Human Health Risk Assessment* (HHRA; EPA 2005) divided the Rest of River (ROR) floodplain into 90 Exposure Areas (EAs) for the assessment of direct human contact with floodplain soils. Of those 90 EAs, 38 are located within Reach 5A, as shown on Figure F-1.

Several properties that comprise six of those EAs (EAs 3, 9, 23, 25, 28, and 30) within the Reach 5A floodplain are subject to the Residential Performance Standards for polychlorinated biphenyls (PCBs), as described in Section II.B.3.a.(1)(d) of the Final Revised Resource Conservation and Recovery Act Corrective Action Permit (Revised Final Permit) for the Housatonic ROR (EPA 2020). The remaining 32 EAs within the Reach 5A floodplain are subject to the non-residential Performance Standards described in Section II.B.3.a of the Revised Final Permit. Those EAs are referred to herein as "non-residential EAs," although some of them include portions of residential properties that are subject to non-residential Performance Standards. In addition, several of those non-residential EAs contain overlying direct contact subareas, which are typically characterized by a different and/or more frequent exposure scenario. Further, in the *Housatonic River – Rest of River, Revised Corrective Measures Study Report* (RCMS Report; Arcadis et al. 2010), GE identified "heavily used subareas" within EAs that were identified as "frequently used" in the *Housatonic River – Rest of River, Corrective Measures Study Proposal* (Arcadis BBL and QEA 2007). These heavily used subareas are referred to as "Frequently Used Subareas" in the Revised Final Permit and in this appendix.

As described in the Conceptual RD/RA Work Plan, the Reach 5A floodplain contains 59 confirmed vernal pools. Under the Revised Final Permit (Section II.B.3.b), vernal pools are subject to a separate numerical Performance Standard of a spatially weighted average PCB concentration of 3.3 milligrams per kilogram (mg/kg), and are being addressed separately from the rest of the floodplain.

GE's *Second Revised Pre-Design Investigation Work Plan for Reach 5A Non-Residential Floodplain Exposure Areas* (PDI Work Plan for Non-Residential Floodplain EAs; Anchor QEA 2021), which was approved by EPA on December 13, 2021, described the floodplain soil sampling proposed to be conducted as part of the Reach 5A Pre-Design Investigation (PDI). Following receipt of analytical results for the non-residential floodplain soil sampling conducted in accordance with that PDI work plan, GE determined that additional pre-design sampling was necessary for a subset of EAs. An

addendum to the PDI Work Plan for Non-Residential Floodplain EAs (Anchor QEA and Arcadis 2023a) was submitted on January 19, 2023, and conditionally approved on February 27, 2023. GE conducted the additional soil sampling pursuant to that addendum in April 2023. GE's *Pre-Design Investigation Summary Report for Reach 5A Non-Residential Floodplain Exposure Areas* (PDI Summary Report for Non-Residential Floodplain EAs; Anchor QEA and Arcadis 2023b), which is being submitted concurrently with the Conceptual RD/RA Work Plan, summarizes all data collected at the Reach 5A non-residential floodplain EAs under the PDI.

This appendix documents the evaluations conducted for the 32 non-residential floodplain EAs in Reach 5A. It includes the evaluation of existing PCB concentrations in the EAs and the evaluation of proposed removal areas and volumes to achieve the applicable Performance Standards. The evaluation follows the approach outlined in Appendix A (Methods for Calculation of Floodplain Removal Areas and Volume) to GE's 2021 Non-Residential Floodplain PDI Work Plan, with several updates documented in the above-referenced PDI Summary Report for Non-Residential Floodplain EAs. This appendix repeats some of the discussion and tables in the PDI Summary Report for Non-Residential Floodplain EAs and in the main text of the Conceptual RD/RA Work Plan so that this appendix can be reviewed as a stand-alone document.

This appendix is organized as follows:

- Section 2 describes the methods used to evaluate the existing PCB concentrations for non-residential EAs, including the generation of PCB coverages and the calculation of Exposure Point Concentrations (EPCs).
- Section 3 describes the methods used to evaluate the removal areas and volumes for non-residential EAs having EPCs that exceed the applicable Performance Standard.
- Section 4 describes the methods used to determine the segregation of the excavated floodplain soils that will be subject to disposal at the Upland Disposal Facility (UDF) from those subject to disposal at an off-site disposal facility.
- Section 5 documents the detailed evaluations for each of the 19 EAs/subareas and one Frequently Used Subarea to achieve the applicable Performance Standards, and it summarizes the evaluation of disposal locations for the excavated floodplain soils.

2 Evaluation of PCB Concentrations

Calculation of the EPCs for the non-residential EAs requires a continuous coverage of PCB concentrations in the floodplain that require incorporation of several spatially varying features within the floodplain as described in detail in Appendix A to GE's Non-Residential Floodplain PDI Work Plan (i.e., EA and subarea boundaries, Frequently Used Subarea boundaries, "super habitat" polygons, accessibility weighting factor mapping, vernal pool boundaries, and Core Area 1 habitat boundaries).

A description of the approach to interpolate PCB data spatially and vertically is provided in the following subsections, followed by a summary of the methods used to compute the EPC for each EA and subarea.

Floodplain Soil PCB Data

The soil PCB data collected as part of the Reach 5A PDI for the non-residential floodplain EAs were combined with other relevant historical data to provide a detailed representation of the spatial distribution of PCB concentrations in the floodplain. The following datasets were used in the PCB evaluations:

- Floodplain soil PCB data collected historically by GE between 1988 and 1998;
- Floodplain soil PCB data collected by EPA during the Supplemental Investigation (1998 to 2002);
- Soil PCB data collected by GE in 2005 to further characterize the extent of PCBs in certain portions of the floodplain;
- Soil PCB data collected by GE between 2013 and 2015 in the PDI for Actual/Potential (A/P) Lawns properties;
- Soil PCB samples collected by GE during PDIs conducted on Reach 5A residential properties in 2020/2021 (given that many of the residential properties overlap with non-residential EAs); and
- Soil PCB samples collected by GE during the Reach 5A PDI conducted in 2022 and 2023.

Data treatment for all historical and PDI data was performed as described in Appendix A to GE's Non-Residential Floodplain PDI Work Plan and was generally consistent with the data treatment used for floodplain soil evaluations in the 2010 RCMS Report.

Interpolation of PCB Concentrations

In accordance with Appendix A to GE's Non-Residential Floodplain PDI Work Plan, a spatial interpolation method using Thiessen polygons was used to generate a continuous coverage of PCB concentrations over the portions of the floodplain that include the non-residential EAs (referred to hereafter as "the subject floodplain"). For Reach 5A, the floodplain is bounded by the 1 mg/kg PCB isopleth.[1]

Consistent with the method used by EPA in the HHRA, generation of Thiessen polygons in the subject floodplain for Reach 5A considers topographic and hydrologic information in the interpolation process. Because PCBs are typically transported onto the floodplain during overbank

[1] In 2023, GE made slight adjustments to the 1 mg/kg PCB isopleth (delineated over 25 years ago) in Reach 5A. Those adjustments related to: (1) areas in EAs 6, 33, and 34 where the 2023 PDI data detected PCBs greater than 1 mg/kg outside the previously defined isopleth; and (2) several locations where the existing isopleth was located within the river channel delineated based on 2022 topography survey data.

flow conditions, the PCB distribution in floodplain soils is linked to the topographic and hydrologic features that also influence the distribution of wetland habitats. Six "super habitats"—i.e., grouped habitats having similar characteristics, developed from the Woodlot habitat survey (Woodlot 2002)—were introduced by EPA in the HHRA to guide the spatial interpolation of PCBs in the subject floodplain. Those six super habitats are as follows: (1) hardwood forest/agricultural field; (2) transitional floodplain forest; (3) shrub swamp; (4) emergent marsh/wet meadow; (5) lake/pond; and (6) stream. As documented in GE's *Final Morphology and Accessibility Survey Report* (AECOM and Anchor QEA 2020), portions of the Reach 5A floodplain had significant changes in super habitat boundaries after the 2002 Woodlot habitat survey resulting from hydrologic changes; therefore, GE updated the super habitat mapping using a combination of high-resolution aerial imagery of the Reach 5A floodplain collected using an unmanned aerial system (i.e., drone survey) in 2018 and field surveys. Further adjustments were made in 2023 as part of the conceptual design phase in some isolated areas where habitat information was missing, mostly areas near the edges of the 1 mg/kg PCB isopleth boundary. For these adjustments, habitat information was reviewed, and the appropriate super habitat polygons were specified in those isolated areas. The updated super habitats within the 32 non-residential floodplain EAs are shown in the upper-left panel on Figures F-2a through F-2x.

Thiessen polygons were generated separately for the 0- to 0.5-foot and 0.5- to 1-foot depth intervals for each individual super habitat, except for the lake/pond and stream super habitats, which are excluded from the calculation of floodplain EPCs. These polygons were generated using only the data from within that super habitat boundary, including the 2022 and 2023 PDI data in Reach 5A,[2] as well as the historical floodplain soil data and the prior Reach 5A PDI data collected at the residential properties. For the 2022 and 2023 Reach 5A PDI data, the EPA split sample results were averaged with the GE sample results from the same locations. The Thiessen polygons generated for each super habitat were merged to form a single PCB polygon coverage for the subject floodplain for the 0- to 0.5-foot and 0.5- to 1-foot layers. PCB polygons from these two layers were then converted to 3×3-meter grid cells over the entire floodplain area, and each grid cell was vertically averaged to calculate a 0- to 1-foot average PCB concentration. The interpolated PCB concentrations in 0- to 0.5-foot and 0.5- to 1-foot layers, as well as the resulting 0- to 1-foot average PCB concentrations for each EA, are shown on Figures F-2a through F-2x (see the upper-right, lower-left, and lower-right panels, respectively). On these figures, the polygons are categorized by color based on defined ranges of PCB concentrations.

A similar method was used to interpolate PCB data to the depth of three feet in the Frequently Used Subareas. The 0- to 1-foot average PCB concentrations, discussed in the preceding paragraph, were

[2] The PDI data set includes all PCB data collected in 2022, but only the relevant PCB data from 2023 that are within the limits of the updated 1 mg/kg PCB isopleth.

averaged with interpolated PCB concentrations from the 1- to 2-foot and 2- to 3-foot depth intervals to form 0- to 3-foot average PCB concentrations. Figures F-3a through F-3j show the 0- to 3-foot average PCB concentrations for the Frequently Used Subareas.

Calculation of Exposure Point Concentrations

Using the interpolated PCB data set, average soil PCB concentrations were computed for each EA as the 95% Upper Confidence Limit (UCL) on the spatially weighted mean of the data for that EA or subarea. Consistent with the method developed by EPA in the HHRA and used by GE in the RCMS Report, the 95% UCL was calculated using the Modified Halls Bootstrap Method (described in EPA's HHRA, Volume I, Attachment 4). Once the 95% UCL was calculated for a given EA, it was compared to the maximum data value within that area, and the lower of those two values was used as the EPC (i.e., the EPC is not allowed to exceed the maximum interpolated value within a given area).

The method developed by EPA for the 95% UCL calculations also includes application of accessibility weighting factors (hereafter referred to as "use factors") in Reaches 5 and 6. Specifically, the subject floodplain was mapped into four accessibility categories (i.e., walkable, wadable, difficult, and boatable) in the HHRA, corresponding to use factors of 1.0, 0.2, 0.2, and 0.0 for each of these areas, respectively. The areas corresponding to these accessibility categories were also updated consistent with the revised 2018 super habitat mapping in Reach 5A. The boundary of boatable areas was also updated to be consistent with backwaters and other waterbodies (where the evaluation is conducted separately). Consistent with the methodology applied by EPA in the HHRA (described in Section 4.4.1.1.1 of the HHRA; EPA 2005), these use factors were applied as multipliers on the interpolated PCB concentrations "to account for the variation in accessibility and overall attractiveness of these habitats to children and adults engaged in recreational or residential and other activities." For example, areas considered walkable (with a use factor of 1.0) would be accessed more frequently than areas considered difficult to access or wadable (with a use factor of 0.2). Areas that are considered boatable, including backwaters and other waterbodies, have a use factor of 0.0 and are, therefore, excluded from the EPC calculations. The updated accessibility for the 32 non-residential floodplain EAs are shown in the upper-left on Figures F-2a through F-2x.

Note that one modification to the EPC calculation has been made for the remedial design. The EPC calculation used the number of PCB sample locations within a given EA (or subarea) to define the "degrees of freedom" for that EA, as was directed by EPA during the RCMS. Because the boatable areas were excluded from the evaluation, it was determined that PCB samples within the boatable areas should be excluded from the location counts. This modification had insignificant impact to the resulting EPCs, given the large number of floodplain samples and limited boatable areas within non-residential floodplain EAs.

GE's PDI Summary Report for Non-Residential Floodplain EAs provides an updated evaluation of current EPCs at each of the 32 non-residential EAs. These updated EPCs form the primary basis, along with other relevant factors (discussed below), for determining the need for and extent of soil remediation at these EAs to achieve the applicable Performance Standards.

Table F-1 summarizes the updated floodplain soil EPCs (0- to 1-foot) calculated for each of the 32 non-residential EAs (and subareas) in Reach 5A, and Table F-2 provides 0- to 3-foot EPCs for each of the three Frequently Used Subareas in Reach 5A. These tables also show the following: (1) the exposure scenario and receptors assigned to each EA and subarea in EPA's HHRA; (2) whether each EA intersects with Core Area 1 habitat;[3] and (3) the corresponding Primary and, where relevant, Secondary Performance Standards that apply to each exposure scenario under Tables 1 and 2 of the Revised Final Permit. In accordance with the Revised Final Permit, the Secondary Performance Standards are relevant only in EAs that contain Core Area 1 habitat. EPCs that exceed the applicable Primary Performance Standard are highlighted in gray in Tables F-1 and F-2. As provided in the Revised Final Permit, EAs where the EPC exceeds the Primary Performance Standard will require some amount of remediation to achieve the Performance Standards.

3 Methods for Evaluation of Removal Areas and Volumes

As summarized in Table F-1, 19 of the 32 EAs/subareas have EPCs exceeding the applicable non-residential Performance Standards. They are EAs 2, 4, 5, 7, 8, 10 (including Subareas 10a and 10b), 11, 16, 18, 19, 20, 22 (including Subarea 22a), 24, Subarea 31a, 33, and 34. In addition, as summarized in Table F-2, one of the three Frequently Used Subareas (i.e., EA 4/61) has an EPC that exceeds the applicable Performance Standards. Methods used to delineate remediation areas for each of these 19 EAs/subareas and one Frequently Used Subarea are described below.

Base Remediation Assessment

For each EA/subarea that requires remediation, the approximate areal extent and volume of soil removal were calculated using an iterative process as described in Appendix A to GE's Non-Residential Floodplain PDI Work Plan. For each EA/subarea with an existing EPC greater than the applicable Primary Performance Standard, the 3×3 meter grid cells with the highest PCB concentrations were "flagged" for removal and assigned a replacement soil concentration of 0.021 mg/kg to represent a clean backfill material.[4] The EPC was then recalculated (incorporating the

[3] As defined in the Revised Final Permit, Core Area 1 habitat consists of areas identified by the Massachusetts Division of Fisheries and Wildlife (MassDFW) as areas with "the highest quality habitat for species that are most likely to be adversely impacted by PCB remediation activities," most of which species are plants because they are not mobile (Attachment B to Revised Final Permit).

[4] A PCB concentration of 0.021 mg/kg was used for the backfill in the Reach 5A floodplain evaluations, because that was the average concentration of PCBs in previously sampled backfill sources, as indicated in Table 2 of GE's Proposed Backfill Data Set for CD Sites, dated March 11, 2003.

area flagged for remediation) and compared again with the Primary Performance Standard. This sequential removal/backfill and recalculation of the EPC was repeated until the amount of remediation was sufficient to reduce the post-remediation EPC to a level that is at or below the applicable Primary Performance Standard for that area.

Further evaluation was conducted for EAs that contain Core Area 1 habitat. The remediation area within the Core Area 1 habitat, if any, was "unflagged" for removal to minimize impacts to this sensitive habitat. The EPC was then recalculated (incorporating the unflagged area) and compared against the applicable Secondary Performance Standard to determine whether additional remediation was needed. If the resulting EPC was less than or equal to the applicable Secondary Performance Standard, delineation was deemed complete for that area. If the EPC was greater than the Secondary Performance Standard, grid cells inside Core Area 1 habitat were "flagged" for removal starting with the highest PCB concentrations. An iterative process of sequential removal/backfill and recalculation of the EPC was performed by "flagging" areas within the Core Area 1 habitat until the post-remediation EPC is at or below the Secondary Performance Standard for that EA.

Generally, the remedial evaluations were first performed for subareas (that overlap with larger EAs) prior to evaluating the larger EAs. Any removal required to meet the applicable Performance Standard in a subarea was accounted for during subsequent evaluations to determine whether additional removal was required to achieve the applicable Performance Standard for the larger EA. Specifically, remedial evaluations were conducted in the following order: (1) Frequently Used Subarea 4/61 (which addressed the upper three feet of floodplain soil in that subarea); (2) Subareas 10a, 10b, and 31a; (3) EA 4, which intersects EAs 2, 5, and 7; and (4) the remaining EAs.

To facilitate the remedial evaluations, a geographic information system (GIS)-based application was developed that employs a raster data model, in which relevant floodplain features (e.g., EA boundaries, super habitats, and use factors) and soil PCB data are translated to 3×3-meter grid cells over the floodplain. This application implements the evaluation process described above in Python code and calculates an optimized combination of removal areas and volumes for each EA and subarea that minimizes the removal footprint required to achieve the applicable Performance Standard.

Adjustments to Base Remediation Areas

Once the base remedial evaluations described above were completed using the GIS application, it was determined that, in some cases, adjustments to those removal footprints were needed to account for the following:

- **Habitat and constructability considerations:** Adjustments were made to eliminate small or isolated grid cells identified for remediation in the base assessment such that the remediation

areas could be "optimized" by creating more contiguous removal footprints where practicable. These adjustments were also made to minimize disturbance of surrounding habitats that would be required to access small/isolated remediation areas. Where these adjustments reduced the remediation footprint in one portion of an EA, the remediation footprint was increased in another portion of that EA as needed to maintain achievement of the Performance Standard for the EA.

- **Overlap with other remediation areas:** The removal areas delineated in the base assessment were adjusted (as necessary) in cases where they overlapped with remediation areas delineated to achieve other required Performance Standards. For example, residential floodplain properties and vernal pools subject to excavation (as part of the vernal pool pilot study) overlap with some of the non-residential floodplain EAs; these areas were evaluated separately and prior to the non-residential floodplain evaluation. Therefore, in cases where residential or vernal pool remediation occurred in a non-residential EA, the 3×3-meter grid cells associated with those remediation areas were designated as "remediated" (by setting the PCB concentration in these areas to 0.021 mg/kg) prior to conducting the non-residential EA assessment.

After any adjustments to the non-residential floodplain remediation areas, the post-remediation EPCs were recomputed to verify achievement of the applicable Performance Standard. A summary of the evaluation results for each EA/subarea is presented in Section 5; that section includes a description and maps showing any adjustments that were made to the non-residential floodplain remediation areas.

4 Methods for Disposal Evaluation

As described in Sections II.B.5 and II.B.6 of the Revised Final Permit, the ROR Remedial Action will use a hybrid disposal approach that includes a combination of disposal at a UDF and off-site disposal. Attachment E to the Revised Final Permit describes the criteria and methods for determining whether material excavated during the ROR Remedial Action may be disposed of in the UDF. In accordance with Attachment E to the Revised Final Permit, floodplain soil to be disposed of in the UDF must have a volume-weighted average PCB concentration of less than 50 mg/kg for each EA. If the volume-weighted average PCB concentration in the soil to be removed from a given EA equals or exceeds 50 mg/kg, the soils with the highest PCB concentrations in the EA will be segregated for off-site disposal until the average concentration of the remainder of the soil to be removed in the EA decreases to less than 50 mg/kg for subsequent disposal at the UDF. Since removal to achieve Residential Performance Standards (described separately in Appendix E to the Conceptual RD/RA Work Plan) overlaps in most cases with the required removal at the non-residential EAs, the entire volume within

the boundary of an individual EA (non-residential and residential) was combined for the disposal assessment.[5]

This section summarizes the approach for determining the segregation of the excavated floodplain soils that will be subject to disposal at the UDF from those that will require disposal at an off-site disposal facility. For each EA where remediation is required, a volume-weighted average PCB concentration of the soils to be removed was calculated using the PCB concentrations within the removal footprints and the associated removal areas and depths. For floodplain soil removals at the non-residential EAs, the interpolated PCB concentrations for each 3×3-meter grid cell were used for the evaluation. For the removals at residential properties, the PCB Thiessen polygons generated as part of the residential remedial evaluations (described in Appendix E) were used for the evaluation.

If the volume-weighted average PCB concentration for a given EA was below 50 mg/kg, the entire quantity of floodplain soils to be removed from that EA was designated for disposal at the UDF. For EAs with a volume-weighted average PCB concentration of 50 mg/kg or greater, the soils with the highest PCB concentrations in the EA were designated for off-site disposal until the average concentration of the remainder of the soil to be removed in the EA decreased to less than 50 mg/kg; the remaining soils were then designated for disposal at the UDF. The resulting disposal volumes for each EA are discussed in Section 5.

5 Remedial Evaluation Results by Exposure Area

This section summarizes the remedial evaluation results for the 19 identified EAs/subareas and one Frequently Used Subarea requiring remediation. To streamline the evaluation results, the evaluations of subareas within EAs (including the Frequently Used Subarea) are included with the description provided for each of the main EAs (e.g., Subareas 10a and 10b are summarized together with EA 10).

As described in Section 3, a GIS application was used to perform a base remediation assessment (hereafter referred to as the "unadjusted" removal footprint). Those base remedial footprints were then reviewed and adjusted (if necessary) based on habitat and constructability considerations and potential overlap with other remediation areas. The adjusted remedial footprints are referred to herein as the proposed removal footprint. The proposed removal volume (with adjustments as needed) was further evaluated to designate soils that would be segregated for disposal in the UDF or off-site disposal, as described in Section 4.

[5] As described in the Conceptual RD/RA Work Plan, one additional residential property that was evaluated previously under the A/P Lawn program (Parcel J6-3-1), where remediation was proposed but deferred by the property owner (see Anchor QEA 2019; EPA 2019), was incorporated into the Reach 5A remediation program. Because this deferred residential property (Parcel J6-3-1) does not overlap with an EA, the disposal volume for that residential property was evaluated individually.

The removal footprints, both proposed and unadjusted, are shown on Figures F-4a through F-4q. These figures also show the distribution of super habitats and habitat accessibility side-by-side with the 0- to 1-foot PCB concentrations used for the evaluation (and the interpolated 0- to 3-foot PCB concentrations for Frequently Used Subareas 4/61). A summary of proposed removal areas and volumes associated with each EA and subarea is presented in Table F-3. Table F-4 presents a summary of the estimated disposal volumes for each EA/subarea and identifies the volumes subject to disposal in the UDF and those subject to off-site disposal.

Exposure Area 2

EA 2 occupies approximately 31 acres and is classified as a high-use general recreation area for adults and older children; it is shown on Figure F-4a. The Primary Performance Standard for EA 2 is 14 mg/kg. There is no Core Area 1 habitat within this EA, so the Secondary Performance Standard is not relevant. The existing (pre-remediation) EPC in EA 2 is 18 mg/kg, which exceeds the Primary Performance Standard, and therefore this EA requires remediation. There are two subareas within EA 2 (Subareas 2a and 2b), neither of which requires remediation.[6] This EA also contains two maintained utility easements (EAs 4 and 61) and a Frequently Used Subarea 4/61. As shown in Tables F-1 and F-2, based on the calculated existing EPCs, EA 4 and Frequently Used Subarea 4/61 both require remediation. The remedial evaluations for EA 4 and Frequently Used Subarea 4/61 were performed separately (see below) and prior to the evaluation of EA 2. There are eight vernal pools within this EA; two of those vernal pools will be subject to soil excavation as part of the vernal pool pilot study (5A-VP-4 and 5A-VP-7). Most of EA 2 is considered walkable.

The proposed remedial action for EA 2 includes removal/backfill of approximately 1,270 cubic yards (cy) of floodplain soils to a depth of one foot below ground surface (bgs), as shown on Figure F-4a. The total removal area is approximately 0.79 acre. PCB concentrations within the target removal areas range from 76 to 176 mg/kg. These remedial quantities for EA 2 do not include the remediation that will occur in EA 4 and Frequently Used Subarea 4/61, which are also shown on Figure F-4a (those quantities are presented in the next section).

The proposed remediation area for EA 2 included an adjustment that was made to account for the proposed excavation in pilot study vernal pools 5A-VP-4 and 5A-VP-7 (which were evaluated separately). Specifically, the additional removal in these two vernal pool areas resulted in a small reduction in the base EA 2 removal areas located immediately west of the Frequently Used Subarea (see Figure F-4a).

[6] As shown in Table F-1, Subarea 2a constitutes a low-use general recreation area for older children, where the existing EPC is 74 mg/kg, below the applicable Primary Performance Standard of 80 mg/kg. Subarea 2b constitutes a high-use general recreation area for older children, where the existing EPC is 9.4 mg/kg, below the applicable Primary Performance Standard of 27 mg/kg.

The proposed remediation, in conjunction with the proposed soil removal that will occur in overlapping areas EA 4, Frequently Used Subarea 4/61, and vernal pools 5A-VP-4 and 5A-VP-7, will reduce the post-remediation EPC in EA 2 to 13.9 mg/kg (see Table F-3), which achieves the Primary Performance Standard of 14 mg/kg for this EA.

As shown in Table F-4, the volume-weighted average PCB concentration of soil to be removed from EA 2 is 103 mg/kg. All of the soil to be removed from this EA has PCB concentrations exceeding 50 mg/kg; therefore, the entire volume will be segregated for off-site disposal.

Exposure Area 4 and Frequently Used Subarea 4/61

EA 4 is a 3.3-acre maintained utility easement that intersects portions of EAs 2, 5, and 7; it is shown on Figure F-4b. Frequently Used Subarea 4/61 is an approximate 0.21-acre portion of EA 4, as shown on Figure F-4c. The entire EA (including the Frequently Used Subarea) is considered walkable. None of the area is considered Core Area 1 habitat, and there are no vernal pools in this EA.

EA 4 and Frequently Used Subarea 4/61 are classified as high-use general recreation areas for adults and older children. The Primary Performance Standard is 14 mg/kg in both areas. (Since there is no Core Area 1 habitat, the Secondary Performance Standard is not relevant.) The Performance Standard applies to the top one foot in EA 4 and the top three feet in Frequently Used Subarea 4/61. Both areas have pre-remediation EPCs (20 mg/kg) that exceed the Performance Standard and, therefore, require remediation.

The proposed remedial action includes removal/backfill of approximately 720 cy of floodplain soils (Figure F-4b), including 400 cy to a depth of three feet bgs in Frequently Used Subarea 4/61 (Figure F-4c) and 320 cy to a depth of one foot bgs within EA 4 outside Frequently Used Subarea 4/61.

For Frequently Used Subarea 4/61, the proposed removal area covers approximately 0.08 acre, with 0- to 3-foot PCB concentrations ranging from 15 to 28 mg/kg (Figure F-4c). No adjustment was made to the base remedial footprint. The proposed remedial action for Frequently Used Subarea 4/61 will reduce the post-remediation EPC to 13.6 mg/kg and thus achieve the Primary Performance Standard for this area.

For EA 4, the removal area covers approximately 0.20 acre. PCB concentrations within the target remedial area range from 29 to 76 mg/kg (Figure F-4b). Most of the soil removal footprint is located along the north-south portion of this EA, with one small area of removal located in the east-west portion of this EA. The proposed removal area includes one adjustment that was made to eliminate a small removal area (i.e., three grid cells) located along the eastern side of the north-south corridor that was delineated in the base assessment. As a result of this adjustment, the removal areas to the west and north were slightly expanded. The proposed remedial action in EA 4, in conjunction with

the remediation in Frequently Used Subarea 4/61, will reduce the post-remediation EPC in EA 4 to 13.9 mg/kg (see Table F-3), which achieves the Primary Performance Standard for this EA.

As shown in Table F-4, the volume-weighted average PCB concentration for EA 4 (including Frequently Used Subarea 4/61) is approximately 40 mg/kg, and therefore all soils removed from EA 4 and Frequently Used Subarea 4/61 will be subject to disposal in the UDF.

Exposure Area 5

EA 5 is an approximate 2.5-acre area that is classified as a high-use general recreation area for adults and older children; it is shown on Figure F-4d. Most of this EA is considered walkable, except for a portion of one vernal pool (5A-VP-13), which will not be subject to excavation as part of the vernal pool pilot study. None of this EA is considered Core Area 1 habitat, and it contains no Frequently Used Subareas.

The Primary Performance Standard for this EA is 14 mg/kg. (Since there is no Core Area 1 habitat, the Secondary Performance Standard is not relevant.) The pre-remediation EPC in EA 5 is 59 mg/kg, which exceeds the Primary Performance Standard, and therefore this EA requires remediation.

The proposed remedial action includes removal/backfill of approximately 160 cy of floodplain soils to a depth of one foot bgs, as shown on Figure F-4d. The total removal area is approximately 0.10 acre in two discrete polygons near the river where PCB concentrations are the highest in this EA (i.e., greater than 120 mg/kg). No adjustment was made to the base remedial footprint. The remedial action will reduce the EPC to 13.3 mg/kg in EA 5 (see Table F-3), which achieves the Primary Performance Standard for this EA.

As summarized in Table F-4, the volume-weighted average PCB concentration for EA 5 is 127 mg/kg. Because PCB concentrations in the EA 5 remedial footprint all exceed 50 mg/kg, all the excavated floodplain soils from EA 5 will be segregated for off-site disposal.

Exposure Area 7

EA 7 is an approximate 6-acre area that is classified as a high-use general recreation area for adults and older children; it is shown on Figure F-4e.[7] The southwestern portion of this EA overlaps with residential Parcel I6-3-13, which is being addressed separately as part of the residential floodplain properties evaluation (see Appendix E). Most of this EA is considered walkable, with a few areas considered difficult to access. There are seven vernal pools (or portions thereof) with this EA; one of those vernal pools will include soil excavation as part of the vernal pool pilot study (5A-VP-16). None of this EA is considered Core Area 1 habitat, and it contains no Frequently Used Subareas.

[7] It should be noted that the northwestern corner of this EA boundary (within residential Parcel I6-3-13) has been modified to exclude the portion of this parcel that was addressed previously under the A/P Lawn program.

The Primary Performance Standard for this EA is 14 mg/kg. (Since there is no Core Area 1 habitat, the Secondary Performance Standard is not relevant.) The pre-remediation EPC in EA 7 is 20 mg/kg, which exceeds the Primary Performance Standard; therefore, this EA requires remediation.

The proposed remedial action includes removal/backfill of approximately 120 cy of floodplain soils to the depth of one foot bgs, as shown on Figure F-4e. The total removal area is approximately 0.07 acre from the southwestern portion of this EA adjacent to residential Parcel I6-3-13, where PCB concentrations range between 104 and 140 mg/kg. The proposed removal extent for EA 7 included an adjustment (i.e., reduction) to account for the additional removal that will occur in this EA due to the overlap with residential Parcel I6-3-13 and pilot study vernal pool 5A-VP-16 (see Figure F-4e).

The proposed remedial action in EA 7, in conjunction with the proposed soil removal in residential Parcel I6-3-13 and vernal pool 5A-VP-16, will reduce the post-remediation EPC in EA 7 to 13.9 mg/kg (see Table F-3), which achieves the Primary Performance Standard for this EA.

A total of 3,200 cy of removal is estimated to occur within the boundary of EA 7, including 3,080 cy of removal from residential Parcel I6-3-13 (see Appendix E), and 120 cy of additional floodplain soil removal from the non-residential portion of this EA. As shown in Table F-4, the volume-weighted average PCB concentration of soil to be removed is 75 mg/kg; as a result, approximately 490 cy of soils with the highest PCB concentrations will be segregated for off-site disposal. The remaining 2,710 cy (averaging less than 50 mg/kg) will be subject to disposal in the UDF.

Exposure Area 8

EA 8 is a 0.6-acre area classified as in the recreational canoeist scenario for adults and older children; it is shown on Figure F-4f. All of EA 8 is considered walkable, and there are no vernal pools within this EA. None of this EA is considered Core Area 1 habitat, and it contains no Frequently Used Subareas.

The Primary Performance Standard for this EA is 12 mg/kg. (Since there is no Core Area 1 habitat, the Secondary Performance Standard is not relevant.) The pre-remediation EPC in EA 8 is 31 mg/kg, which exceeds the Primary Performance Standard, and therefore this EA requires remediation.

The proposed remedial action includes removal/backfill of approximately 190 cy of floodplain soils to the depth of one foot bgs, as shown on Figure F-4f. The total removal area is approximately 0.12 acre adjacent to the river. No adjustment was made to the base remedial footprint. The remedial action will reduce the EPC to 11.9 mg/kg (see Table F-3), which achieves the Primary Performance Standard for this EA.

PCB concentrations in the area to be removed range from 16 to 75 mg/kg. As shown in Table F-4, the volume-weighted average PCB concentration of soils to be removed from EA 8 is approximately 27 mg/kg, and therefore all excavated material from EA 8 can be disposed of in the UDF.

Exposure Areas 10, 10a, and 10b

EA 10 is an approximate 59-acre area classified as a high-use general recreation exposure area for adults and young children; it is shown on Figure F-4g. It contains two subareas (Subareas 10a and 10b) that occupy approximately 0.5- and 9.1-acre portions of EA 10, respectively. More than half of EA 10 is considered difficult to access or boatable. It contains two relatively small vernal pools, which will not be subject to excavation in the vernal pool pilot study. Approximately 7.5 acres of the southwestern corner of EA 10 are considered Core Area 1 habitat. There are no Frequently Used Subareas within the EA or subareas.

The Primary and Secondary Performance Standards for EA 10 are 4.6 and 6.9 mg/kg, respectively. For EAs 10a and 10b, both the Primary and Secondary Performance Standards are 4.6 mg/kg. The pre-remediation EPCs for EAs 10, 10a, and 10b are 13 mg/kg, 27 mg/kg, and 6.9 mg/kg, respectively. All three areas exceed their respective Primary Performance Standards; therefore, remediation is required in each of these three areas.

As described in Section 3, the remedial evaluations were performed first for the two subareas (EA 10a followed by EA 10b), and then the larger EA 10. Overall, the proposed remedial action includes removal/backfill of approximately 1,590 cy of floodplain soils to the depth of one foot bgs, including 270 cy in Subarea 10a, 740 cy in Subarea 10b, and 580 cy in the remainder of EA 10.

The removal in Subarea 10a is approximately 0.17 acre of the northern portion of the walking trail located south of West Pond (Figure F-4g). PCB concentrations in this removal area range between 8 and 37 mg/kg. No adjustment was made to the remedial footprint. The remedial action will reduce the EPC in this subarea to 3.2 mg/kg (see Table F-3), which achieves the Primary Performance Standard.

The removal in Subarea 10b is approximately 0.46 acre in the northwest portion of this EA (Figure F-4g). PCB concentrations in this removal area range from 18 to 32 mg/kg. The proposed removal included one small adjustment to eliminate a single discrete 3×3-meter grid cell on the eastern side of EA 10b. As a result of this adjustment, the removal area in the northwestern corner of EA 10b was expanded slightly. The remedial action in EAs 10a and 10b combined will reduce the EPC in EA 10b to 4.59 mg/kg (see Table F-3), which achieves the Primary Performance Standard for this area.

For the remainder of EA 10, the proposed remediation occurs over 0.36 acre in two discrete areas in the southern portion of this EA (Figure F-4g). The footprint was computed by the GIS application

without any adjustment. The highest PCB concentrations in EA 10 are observed within the Core Area 1 habitat area (nearly 120 mg/kg); therefore, remediation in Core Area 1 habitat is required. The combined remedial actions in EAs 10, 10a, and 10b will reduce the EPC in EA 10 to 6.6 mg/kg, which achieves the Secondary Performance Standard for EA 10 (the applicable Performance Standard due to the presence of Core Area 1 habitat).

As shown in Table F-4, the volume-weighted average PCB concentration of the 1,590 cy of soil to be removed from EA 10 is approximately 57 mg/kg; as a result, approximately 360 cy of soils with the highest PCB concentrations will be segregated for off-site disposal. The remaining 1,230 cy (averaging less than 50 mg/kg) will be subject to disposal in the UDF.

Exposure Area 11

EA 11 is a 1.9-acre area classified as a high-use general recreation area for adults; it is shown on Figure F-4h. All of EA 11 is considered walkable, with no vernal pools or Core Area 1 habitat in this area.

The Primary Performance Standard for this EA is 14 mg/kg. (Since there is no Core Area 1 habitat, the Secondary Performance Standard is not relevant.) The pre-remediation EPC in EA 11 is 15 mg/kg, which exceeds the Primary Performance Standard, and therefore this EA requires remediation.

The proposed remedial action includes removal/backfill of approximately 60 cy of floodplain soils to a depth of one foot bgs, as shown on Figure F-4h) The removal area is approximately 0.04 acre at the southern end of the EA, where the PCB concentration is approximately 40 mg/kg. No adjustment was made to the base remediation area. The remedial action will reduce the EPC to 13.9 mg/kg (see Table F-3), which achieves the Primary Performance Standard for this EA.

As shown in Table F-4, the volume-weighted average PCB concentration of soil to be removed from EA 11 is 40 mg/kg, and therefore all soils from this EA can be disposed of in the UDF.

Exposure Area 16

EA 16 is a 2.5-acre area that is classified as a high-use general recreation area for adults; it is shown on Figure F-4i.[8] The majority of this EA is considered walkable. There is one vernal pool in this EA (5A-VP-27), which will not be subject to excavation in the vernal pool pilot study. There is no Core Area 1 habitat or Frequently Used Subarea within this EA.

[8] The EA boundary has been modified to eliminate the area west of EA 12 that has been addressed previously under the A/P Lawn program.

The Primary Performance Standard for this EA is 14 mg/kg. (Since there is no Core Area 1 habitat, the Secondary Performance Standard is not relevant.) The pre-remediation EPC in EA 16 is 34 mg/kg, which exceeds the Primary Performance Standard, and therefore this EA requires remediation.

The proposed remedial action includes removal/backfill of approximately 660 cy of floodplain soils to a depth of one foot bgs, and the removal area covers approximately 0.41 acre, as shown on Figure F-4i. No adjustment was made to the base remediation area. PCB concentrations in the soils to be removed range between 25 and 46 mg/kg. The remedial action will reduce the EPC in EA 16 to 11.5 mg/kg (see Table F-3), which achieves the Primary Performance Standard for this EA.

As shown in Table F-4, the volume-weighted average PCB concentration of soil to be removed from EA 16 is 40 mg/kg, and therefore all soils from this EA can be disposed of in the UDF.

Exposure Area 18

EA 18 is a 17-acre area classified as a medium-use general recreation area for adults; it is shown on Figure F-4j. Most of this EA is considered difficult to access or boatable. EA 18 contains 4.3 acres of Core Area 1 habitat, but it does not contain any vernal pools or Frequently Used Subareas.

The Primary and Secondary Performance Standards for this EA are 21 and 58 mg/kg, respectively. The pre-remediation EPC in EA 18 is 32 mg/kg, which exceeds the Primary Performance Standard, and therefore this EA requires remediation.

The proposed remedial action includes removal/backfill of approximately 60 cy of floodplain soils to a depth of one foot bgs, as shown on Figure F-4j. The removal area is approximately 0.04 acre located adjacent to the river at the southwestern corner of this EA outside the Core Area 1 habitat. No adjustment was made to the base remediation area. The remedial action will reduce the EPC in EA 18 to 19.9 mg/kg (see Table F-3), which achieves the Primary Performance Standard for this EA.

As shown in Table F-4, the volume-weighted average PCB concentration of soil to be removed from EA 18 is nearly 250 mg/kg (Table F-4). All of these soils contain PCB concentrations exceeding 50 mg/kg so they will be segregated for off-site disposal.

Exposure Area 19

EA 19 is an approximate 35-acre area that was classified as a high-use general recreation area for adults; it is shown on Figure F-4k. Nearly half of this EA is considered difficult to access, and it includes six vernal pools, none of which will be subject to excavation in the vernal pool pilot study. Nearly 70% of EA 19 is considered Core Area 1 habitat.

The corresponding Primary and Secondary Performance Standards for this EA are 14 and 38 mg/kg, respectively. The pre-remediation EPC in EA 19 is 22 mg/kg, which exceeds the Primary Performance Standard, and therefore this EA requires remediation.

The proposed remedial action includes removal/backfill of approximately 20 cy of floodplain soils to a depth of one foot bgs, as shown on Figure F-4k. The removal area comprises approximately 0.01 acre at the southwestern quadrant of the EA adjacent to the Core Area 1 habitat. The remediation there will remove PCB concentrations averaging 473 mg/kg, which is interpolated from the closest PCB sample (approximately 80 feet away) southeast of the remediation area and within the Core Area 1 habitat.[9] The post-remediation EPC after the above-mentioned removal—22.4 mg/kg (see Table F-3), less than 1% reduction from the pre-remediation EPC—was compared to the Secondary Performance Standard. Since that EPC is less than the Secondary Performance Standard of 38 mg/kg, no additional remediation is needed in this EA.

As shown in Table F-4, the volume-weighted average PCB concentration of soil to be removed from EA 19 is 473 mg/kg. Since all of these soils contain PCB concentrations exceeding 50 mg/kg, they will be segregated for off-site disposal.

Exposure Area 20

EA 20 is an 8.9-acre area that is classified as a high-use general recreation area for adults; it is shown on Figure F-4l. Nearly half of this EA is considered difficult to access. Approximately 2.5 acres of the northern portion of EA 20 are considered Core Area 1 habitat. There are no vernal pools and no Frequently Used Subareas in this EA.

The Primary and Secondary Performance Standards for this EA are 14 and 38 mg/kg, respectively. The pre-remediation EPC in EA 20 is 27 mg/kg, which exceeds the Primary Performance Standard, and therefore this EA requires remediation.

The proposed remedial action includes removal/backfill of approximately 1,360 cy of floodplain soils to a depth of one foot bgs, as shown on Figure F-4l. The remediation area covers approximately 0.84 acre from five discrete areas located south of the Core Area 1 habitat. No adjustment was made to the base remediation area. PCB concentrations in areas to be removed range from 56 to 127 mg/kg. Similar to EA 19, the highest PCB concentrations in EA 20 (up to nearly 140 mg/kg) are located within the Core Area 1 habitat. The post-remediation EPC after the above-mentioned removal—22.1 mg/kg (see Table F-3), a 20% reduction from the pre-remediation EPC—was

[9] As described in the *Supplemental Data Collection Work Plan* (Appendix I to the Conceptual RD/RA Work Plan), supplemental soil sampling will be conducted from within the preliminary remediation area delineated in EA 19 to better define the PCB concentration and refine the remedial footprint.

compared to the Secondary Performance Standard. Since that EPC is less than the Secondary Performance Standard of 38 mg/kg, no additional remediation is needed in this EA.

As shown in Table F-4, the volume-weighted average PCB concentration of soil to be removed from EA 20 is 65 mg/kg. All of these soils contain PCB concentrations exceeding 50 mg/kg so they will be segregated for off-site disposal.

Exposure Areas 22 and 22a

EA 22 is a 19-acre area classified as a high-use general recreation area for adults and older children; it is shown on Figure F-4m. Subarea 22a is a 1.8-acre area identified by EPA as dirt biking/ATVing area for older children in the northern portion of EA 22. Nearly a third of EA 22 and majority of Subarea 22a are considered difficult to access. There are three small vernal pools in EA 22, none of which is located within Subarea 22a and none of which will be subject to excavation in the vernal pool pilot study. No portion of EA 22 or Subarea 22a is considered Core Area 1 habitat.

The Primary Performance Standard for EA 22 is 14 mg/kg, and the Primary Performance Standard for Subarea 22a is likewise 14 mg/kg. (Since there is no Core Area 1 habitat, the Secondary Performance Standards are not relevant.) Pre-remediation EPCs for EA 22 and Subarea 22a are 16 and 29 mg/kg, respectively. Both of these EPCs exceed their corresponding Primary Performance Standards, and therefore remediation is required.

As described in Section 3, the remedial evaluation was performed first for Subarea 22a. The proposed remedial action includes removal/backfill of approximately 740 cy of floodplain soils to a depth of one foot bgs, including 110 cy (0.07 acre) in Subarea 22a and 630 cy (0.39 acre) in the remainder of EA 22, as shown on Figure F-4m. No adjustment was made to the base remediation area. The remediation will reduce EPCs to 13.9 and 13.8 mg/kg in EA 22 and Subarea 22a, respectively (see Table F-3), which achieve the Primary Performance Standard in both areas.

As shown in Table F-4, the volume-weighted average PCB concentration of soil to be removed from EA 22 is 73 mg/kg (Table F-4). All of these soils contain PCB concentrations exceeding 50 mg/kg so they will be segregated for off-site disposal.

Exposure Area 24

EA 24 is a 10-acre area that is classified as a high-use general recreation area for adults; it is shown on Figure F-4n. Nearly half of this EA is considered difficult to access. There are six vernal pools in this EA, two of which will be subject to soil excavation as part of the vernal pool pilot study (5A-VP-52 and 5A-VP-57). None of EA 24 is considered Core Area 1 habitat.

The Primary Performance Standard for this EA is 14 mg/kg. (Since there is no Core Area 1 habitat, the Secondary Performance Standard is not relevant.) The pre-remediation EPC in EA 24 is 18 mg/kg, which exceeds the Primary Performance Standard, and therefore this EA requires remediation.

The proposed remedial action includes removal/backfill of approximately 750 cy of floodplain soils to a depth of 1 foot bgs, as shown on Figure F-4n. The removal area is approximately 0.47 acre, with PCB concentrations in the removal area ranging from 46 to 74 mg/kg.

The proposed removal extent for EA 24 included an adjustment (i.e., reduction) in the non-residential removal area to account for the additional excavation in the pilot study vernal pools 5A-VP-52 and 5A-VP-57. In addition, the base removal footprint included an adjustment to eliminate a small, isolated removal area (i.e., seven grid cells) immediately adjacent to 5A-VP-55. To account for this adjustment, the removal footprint was expanded in the northern portion of the EA.

The proposed remediation, in conjunction with the proposed soil removal in pilot study vernal pools 5A-VP-52 and 5A-VP-57, will reduce the EPC in EA 24 to 13.9 mg/kg (see Table F-3), which achieves the Primary Performance Standard for this EA.

As shown in Table F-4, the volume-weighted average PCB concentration of the 750 cy of soil to be removed from this EA is approximately 55 mg/kg; and, as a result, approximately 350 cy of soils with the highest PCB concentrations will be segregated for off-site disposal. The remaining 400 cy (averaging less than 50 mg/kg) will be subject to disposal in the UDF.

Subarea 31a

Subarea 31a is a 0.6-acre subarea within EA 31 that is classified as a high-use general recreation area for adults and older children; it is shown on Figure F-4o. Most of this subarea is walkable, with a portion of the area considered to be difficult to access. The southeastern corner of Subarea 31a contains a portion of a large vernal pool (5A-VP-77), which is not subject to excavation in the vernal pool pilot study. This subarea contains no Core Area 1 habitat or Frequently Used Subareas.

The Primary Performance Standard for this subarea is 14 mg/kg. (Since there is no Core Area 1 habitat, the Secondary Performance Standard is not relevant.) The pre-remediation EPC in Subarea 31a is 53 mg/kg, which exceeds the Primary Performance Standard, and therefore this subarea requires remediation.

The proposed remedial action includes removal/backfill of approximately 150 cy of floodplain soils to a depth of one foot bgs, as shown on Figure F-4o. The removal area is approximately 0.09 acre adjacent to the river, where PCB concentrations range between 31 and 53 mg/kg. No adjustment was made to the base remediation area. The remedial action will reduce the post-remediation EPC to 13.2 mg/kg (see Table F-3), which achieves the Primary Performance Standard for this subarea.

As shown in Table F-4, the volume-weighted average PCB concentration of soils to be removed from Subarea EA 31a is approximately 44 mg/kg, and therefore all soil from this area will be subject to disposal in the UDF.

Exposure Area 33

EA 33 is a 30-acre area classified as a high-use general recreation area for adults; it is shown on Figure F-4p. Most of this EA is considered walkable, but there are some areas considered difficult to access, including three vernal pools, none of which will be subject to excavation in the vernal pool pilot study. There is no Core Area 1 habitat or Frequently Used Subarea in this EA.

The Primary Performance Standard for this EA is 14 mg/kg. (Since there is no Core Area 1 habitat, the Secondary Performance Standard is not relevant.) The pre-remediation EPC in EA 33 is 15 mg/kg, which exceeds the Primary Performance Standard, and therefore this EA requires remediation.

The proposed remedial action includes removal and backfilling of approximately 280 cy of floodplain soils to a depth of one foot bgs, as shown on Figure F-4p. The removal area is approximately 0.16 acre in a portion of the EA located south of vernal pool 5A-VP-80, where PCB concentrations average 144 mg/kg. The remedial action will reduce the post-remediation EPC to 13.9 mg/kg (see Table F-3), which achieves the Primary Performance Standard for this EA.

As shown in Table F-4, the volume-weighted average PCB concentration of soil to be removed from EA 33 is 144 mg/kg. All of these soils contain PCB concentrations exceeding 50 mg/kg so they will be segregated for off-site disposal.

Exposure Area 34

EA 34 is a 7.3-acre area that is classified as a medium-use general recreation area for adults; it is shown on Figure F-4q. Most of this EA is considered walkable, but it does contain some difficult-to-access area, including one small vernal pool, which is not subject to excavation in the vernal pool pilot study. There is no Core Area 1 habitat or Frequently Used Subarea in this EA.

The Primary Performance Standard for this EA is 21 mg/kg. (Since there is no Core Area 1 habitat, the Secondary Performance Standard is not relevant.) The pre-remediation EPC in EA 34 is 22 mg/kg, which exceeds the Primary Performance Standard, and therefore this EA requires remediation.

The proposed remedial action includes removal/backfill of approximately 100 cy of floodplain soils to a depth of one foot bgs, as shown on Figure F-4q. The removal area is approximately 0.06 acre from two discrete areas adjacent to the river with PCB concentrations ranging from 65 to 121 mg/kg. No adjustment was made to the base remediation area. The remedial action will reduce the post-remediation EPC in EA 34 to 20.9 mg/kg (see Table F-3), which achieves the Primary Performance Standard for this EA.

As shown in Table F-4, the volume-weighted average PCB concentration of soil to be removed from EA 34 is 87 mg/kg. All of these soils contain PCB concentrations exceeding 50 mg/kg so they will be segregated for off-site disposal.

Other EAs Containing Residential Properties (EAs 9, 23, 25, 28 and 30)

As described in Section 4.1 and Appendix E of the Conceptual RD/RA Work Plan, excavation of floodplain soils is required for 13 residential properties to achieve the Residential Performance Standards. Twelve of those residential properties overlap six non-residential EAs (EAs 7, 9, 23, 25, 28, and 30). The evaluation of EA 7 was discussed above and included an assessment of the total volume of removal/disposal from that EA along with the overlapping residential Parcel I6-3-13. Summaries of the disposal evaluations for the other five non-residential EAs that contain residential properties are provided below. In addition, the following summaries include a disposal evaluation for the one residential property (Parcel J6-3-1) that requires remediation (as determined under the prior AP/Law program) but does not overlap with a non-residential EA.

- **EA 9:** This EA contains one residential property (Parcel J6-2-3) that requires remediation. The proposed remediation includes removal/backfill of approximately 54 cy of floodplain soils. As shown in Table F-4, the calculated volume-weighted average PCB concentration of soils to be removed from this area is 16 mg/kg, and therefore all soil from this area will be subject to disposal in the UDF.
- **EA 23:** This EA contains three residential properties that require remediation (Parcels J3-1-11, J3-1-12, and J3-1-13). The proposed remediation includes removal/backfill of a total of approximately 35 cy of floodplain soil. As shown in Table F-4, the calculated volume-weighted average PCB concentration of soils to be removed from this area is 18 mg/kg, and therefore all soil from this area will be subject to disposal in the UDF.
- **EA 25:** This EA contains five residential properties that require remediation (Parcels J3-2-2, J3-2-3, J3-2-4, J3-2-5, and J3-2-6). The proposed remediation includes removal/backfill of a total of approximately 580 cy of floodplain soil. As shown in Table F-4, the calculated volume-weighted average PCB concentration of soils to be removed from this area is 23 mg/kg and therefore all soil from this area will be subject to disposal in the UDF.
- **EA 28:** This EA contains one residential property (Parcel K3-1-2) that requires remediation. The proposed remediation includes removal/backfill of approximately 63 cy of floodplain soil. As shown in Table F-4, the calculated volume-weighted average PCB concentration of soils to be removed from this area is 24 mg/kg, and therefore all soil from this area will be subject to disposal in the UDF.
- **EA 30:** This EA contains one residential property (Parcel K2-1-10) that requires remediation. The proposed remediation includes removal/backfill of approximately 140 cy of floodplain soils. As

shown in Table F-4, the calculated volume-weighted average PCB concentration of soils to be removed from this area is 35 mg/kg, and therefore all soil from this area will be subject to disposal in the UDF.

- **Residential Parcel J6-3-1:** This residential property was previously evaluated under the A/P Lawn program and determined to require remediation, but that remediation was deferred to the time of the Reach 5A remediation. Because this property does not overlap with a non-residential EA, the disposal evaluation was performed for this residential property individually. The proposed remediation includes removal/backfill of approximately 550 cy of floodplain soil. As shown in Table F-4, the volume-weighted average PCB concentration of the 550 cy of soil to be removed from property is approximately 69 mg/kg. Since this value exceeds 50 mg/kg, approximately 130 cy of soils with the highest PCB concentrations will be segregated for off-site disposal. The remaining 420 cy (averaging less than 50 mg/kg) will be subject to disposal in the UDF.

6 References

AECOM and Anchor QEA, 2020. *Final Morphology and Accessibility Survey Report*. Prepared for General Electric Company, Pittsfield, Massachusetts. July 16, 2020.

Anchor QEA (Anchor QEA, LLC), 2019. *Final Completion Report for Removal Action for Housatonic River Floodplain – Current Residential Properties Downstream of the Confluence*. GE-Pittsfield/Housatonic River Site. Prepared for General Electric Company. February 2019.

Anchor QEA, 2021. *Second Revised Pre-Design Investigation Work Plan for Reach 5A Non-Residential Floodplain Exposure Areas*. Prepared for General Electric Company, Pittsfield, Massachusetts. November 2021.

Anchor QEA and Arcadis, 2023a. *Addendum to Second Revised Pre-Design Investigation Work Plan for Reach 5A Non-Residential Floodplain Exposure Areas*. Prepared for General Electric Company, Pittsfield, Massachusetts. January 19, 2023.

Anchor QEA and Arcadis, 2023b. *Pre-Design Investigation Summary Report for Reach 5A Non-Residential Floodplain Exposure Areas*. Prepared for General Electric Company, Pittsfield, Massachusetts. September 2023.

Arcadis, Anchor QEA, and AECOM, 2010. *Housatonic River – Rest of River, Revised Corrective Measures Study Report*. Prepared for General Electric Company, Pittsfield, Massachusetts. October 2010.

Arcadis BBL and QEA, 2007. *Housatonic River – Rest of River, Corrective Measures Study Proposal*. Prepared for General Electric Company, Pittsfield, Massachusetts. February 2007.

EPA (U.S. Environmental Protection Agency), 2005. *Human Health Risk Assessment, GE/Housatonic River Site, Rest of River*. Prepared by Weston Solutions, West Chester, Pennsylvania. February 2005.

EPA, 2019. Letter to: Kevin Mooney, General Electric Company. Regarding: EPA Approval of, and Certificate of Completion for, General Electric's submittal titled Final Completion Report for Removal Action for Housatonic River Floodplain--Current Residential Properties Downstream of the Confluence, GE-Pittsfield/Housatonic River Site, dated February, 2019. GE-Pittsfield/Housatonic River Site. March 12, 2019.

EPA, 2020. *Revised Final Permit Modification to the 2016 Reissued RCRA Permit and Selection of CERCLA Remedial Action and Operation & Maintenance for Rest of River*. December 2020.

Woodlot (Woodlot Alternatives, Inc.), 2002. *Ecological Characterization of the Housatonic River*. Prepared for U.S. Environmental Protection Agency Region 1, Boston, Massachusetts. September 2002.

Tables

Table F-1
Calculated 0- to 1-Foot EPCs for Reach 5A Non-Residential Exposure Areas and Subareas

EA ID	EA Size (acres)[1]	Includes Core Area 1 Habitat	Exposure Scenario/Receptor	Performance Standards		0- to 1-foot EPC (mg/kg)[2]
				Primary (RME 10-5/ HI = 1)	Secondary (RME 10-4/ HI = 1)	
1	14		Medium-use general recreation, adult/older child	21	N/R	16
2	31		High-use general recreation, adult/older child	14	N/R	18
2a	2.2		Low-use general recreation, older child	80	N/R	74
2b	2.0		High-use general recreation, older child	27	N/R	9.4
3	0.35		High-use general recreation, adult	N/A		
4	3.3		High-use general recreation, adult/older child	14	N/R	20
5	2.4		High-use general recreation, adult/older child	14	N/R	59
6	3.3		Low-use general recreation, adult	43	N/R	25
7	6.1		High-use general recreation, adult/older child	14	N/R	20
8	0.54		Recreational canoeist	12	N/R	31
9	0.03		Low-use general recreation, older child	N/A		
10	60	Yes	High-use general recreation, young child (high use)	4.6	6.9	13
10a	0.5	Yes	High-use general recreation, young child (high use)	4.6	4.6	27
10b	9.1		High-use general recreation, young child (high use)	4.6	N/R	6.8
11	1.9		High-use general recreation, adult	14	N/R	15
12	3.8	Yes	High-use general recreation, adult/older child	14	27	3.6
13	6.1		High-use general recreation, adult	14	N/R	8.1
14	3.8		High-use general recreation, adult	14	N/R	0.85
15	0.88		High-use general recreation, adult	14	N/R	1.7
16	2.7		High-use general recreation, adult	14	N/R	34
17	8.1	Yes	High-use general recreation, adult	14	38	13
18	17	Yes	Medium-use general recreation, adult	21	58	32
19	35	Yes	High-use general recreation, adult	14	38	22
20	8.9	Yes	High-use general recreation, adult	14	38	27
21	2.9		High-use general recreation, adult/older child	14	N/R	3.3
22	19		High-use general recreation, adult/older child	14	N/R	16
22a	1.8		Dirt biking/ATVing	14	N/R	29
23	0.14		Medium-use general recreation, older child	N/A		
24	10		High-use general recreation, adult	14	N/R	18
25	0.41		High-use general recreation, older child	N/A		
26a	47	Yes	High-use general recreation, adult/older child	14	27	3.1
26b	7.6		Agricultural use (based on direct contact by farmer)	12	N/R	0.79
26_F	55	Yes	High-use general recreation, adult/older child	14	27	2.7
27	6.5		High-use general recreation, adult/older child	14	N/R	4.0
27a	0.42		Dirt biking/ATVing	14	N/R	9.2
28	0.16		High-use general recreation, adult/older child	N/A		
28a	0.05		Dirt biking/ATVing	N/A		
29	0.35		Low-use general recreation, adult/older child	43	N/R	16
30	0.19		High-use general recreation, adult/older child	N/A		

Table F-1
Calculated 0- to 1-Foot EPCs for Reach 5A Non-Residential Exposure Areas and Subareas

EA ID	EA Size (acres)[1]	Includes Core Area 1 Habitat	Exposure Scenario/Receptor	Performance Standards		0- to 1-foot EPC (mg/kg)[2]
				Primary (RME 10-5/ HI = 1)	Secondary (RME 10-4/ HI = 1)	
31	5.0		High-use general recreation, adult/older child	14	N/R	11
31a	0.63		High-use general recreation, adult/older child	14	N/R	53
32	7.0		High-use general recreation, adult	14	N/R	11
33	30		High-use general recreation, adult	14	N/R	15
34	7.3		Medium-use general recreation, adult	21	N/R	22
61	3.3		Utility worker	169	N/R	35
62	1.5	Yes	Utility worker	169	242	93
63	0.66	Yes	Utility worker	169	242	61
64	0.63		Utility worker	169	N/R	53

Notes:

1. Represents the area within the 1 mg/kg PCB isopleth.
2. EPCs that exceed the applicable Primary Performance Standard are highlighted in gray.

EA: Exposure Area
EPC: Exposure Point Concentrations
HI: Hazard Index
mg/kg: milligram per kilogram
N/A: The non-residential Performance Standards and EPC calculations are not applicable to this EA because the EA contains residential properties subject to the Residential Performance Standards.
N/R: Not relevant; the Secondary Performance Standards are relevant only in Exposure Areas that contain Core Area 1 habitat.
PCB: polychlorinated biphenyl
RME: Reasonable Maximum Exposure

Table F-2
Calculated 0- to 3-Foot EPCs for Frequently Used Subareas

EA ID	Frequently Used Subarea Size (acres)[1]	Includes Core Area 1 Habitat	Exposure Scenario/Receptor	Performance Standards		0- to 3-foot EPC (mg/kg)[2]
				Primary (RME 10^{-5}/ HI = 1)	Secondary (RME 10^{-4}/ HI = 1)	
4/61	0.21		General Recreation, Adult/older child (high use)	14	N/R	20
12	1.8	Yes	General Recreation, Adult/older child (high use)	14	27	1.5
26a	0.28		General Recreation, Adult/older child (high use)	14	N/R	0.09

Notes:

1. Represents the area of the Frequently Used Subarea within the EA boundary.
2. EPCs that exceed the applicable Primary Performance Standard are highlighted in gray.

EA: Exposure Area
EPC: Exposure Point Concentrations
HI: Hazard Index
mg/kg: milligram per kilogram
N/R: Not relevant; the Secondary Performance Standards are relevant only in Exposure Areas that contain Core Area 1 habitat.
RME: Reasonable Maximum Exposure

Table F-3
Removal Areas and Volume Estimates for Non-Residential Floodplain EAs and Subareas Requiring Remediation and Post-Remediation EPCs

EA ID	Depth Interval (feet)	Includes Core Area 1 Habitat	Performance Standards		Pre-Remediation EPC (mg/kg)	Post-Remediation EPC (mg/kg)[1]	Removal Area (acre)	Removal Volume (cy)	Adjustment to Base Footprint[2]
			Primary (RME 10^{-5}/ HI = 1)	Secondary (RME 10^{-4}/ HI = 1)					
2	0-1		14	N/R	18	13.9	0.79	1,270	Yes
4	0-1		14	N/R	20	13.9	0.20	320	Yes
4/61	0-3		14	N/R	20	13.6	0.08	400	
5	0-1		14	N/R	59	13.3	0.10	160	
7	0-1		14	N/R	20	13.9	0.07	120	Yes
8	0-1		12	N/R	31	11.9	0.12	190	
10	0-1	Yes	4.6	6.9	13	6.6	0.36	580	
10a	0-1	Yes	4.6	4.6	27	3.2	0.17	270	
10b	0-1		4.6	N/R	6.8	4.59	0.46	740	Yes
11	0-1		14	N/R	15	13.9	0.04	60	
16	0-1		14	N/R	34	11.5	0.41	660	
18	0-1	Yes	21	58	32	19.9	0.04	60	
19	0-1	Yes	14	38	22	22.4	0.01	20	
20	0-1	Yes	14	38	27	22.1	0.84	1,360	
22	0-1		14	N/R	16	13.9	0.39	630	
22a	0-1		14	N/R	29	13.8	0.07	110	
24	0-1		14	N/R	18	13.9	0.47	750	Yes
31a	0-1		14	N/R	53	13.2	0.09	150	
33	0-1		14	N/R	15	13.9	0.17	280	
34	0-1		21	N/R	22	20.9	0.06	100	
Total							**4.94**	**8,230**	

Notes:

1. The post-remediation EPCs are truncated and generally shown to one decimal place to demonstrate achievement of the applicable Performance Standards.
2. Indicates EAs/subareas where an adjustment was made to the base remediation footprint delineated using the methodology described in Section 3 based on habitat and constructability considerations or potential overlap with other remediation areas.

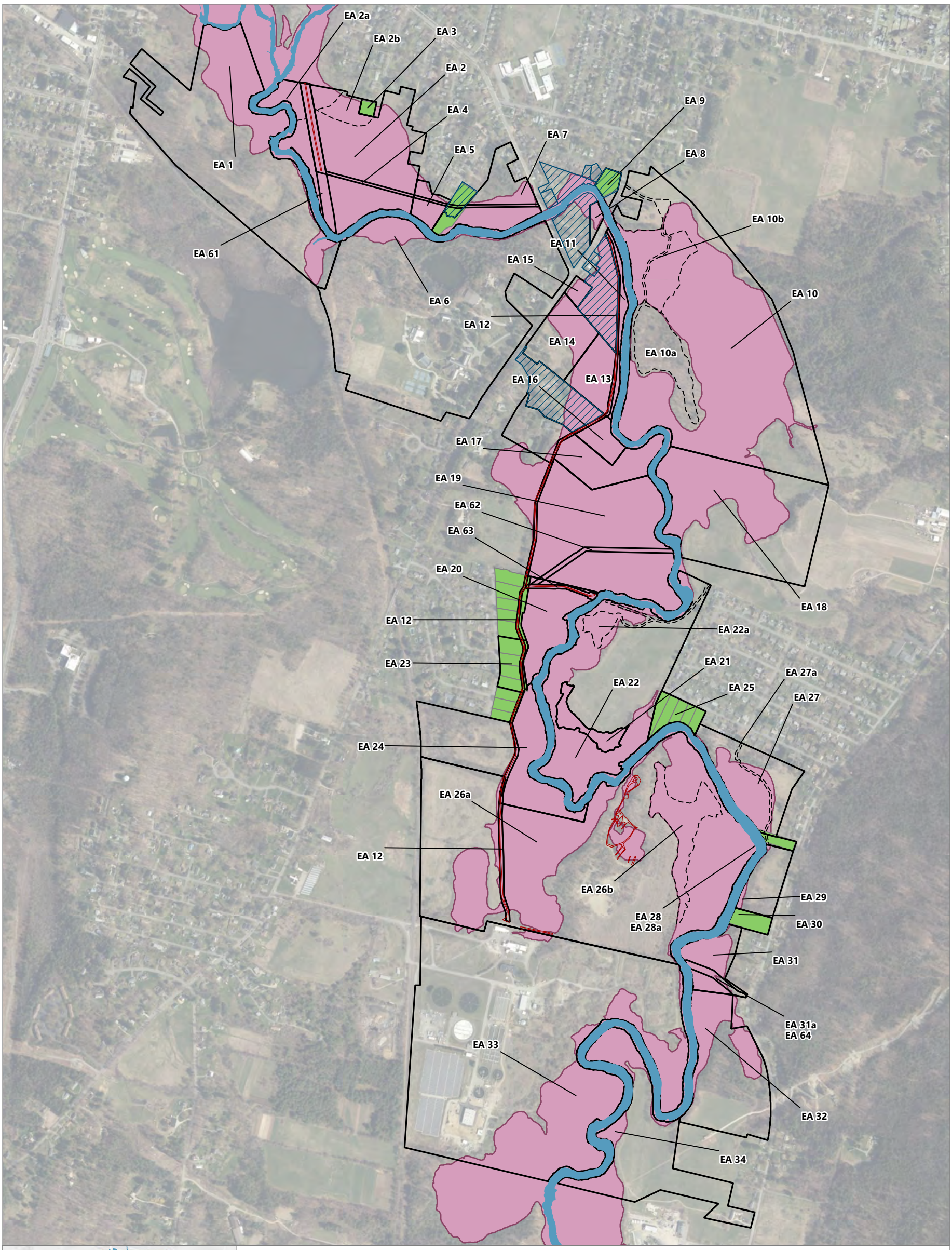
cy: cubic yard
EA: Exposure Area
EPC: Exposure Point Concentrations
HI: Hazard Index
mg/kg: milligram per kilogram
N/R: Not relevant; the Secondary Performance Standards are relevant only in Exposure Areas that contain Core Area 1 habitat.
RME: Reasonable Maximum Exposure

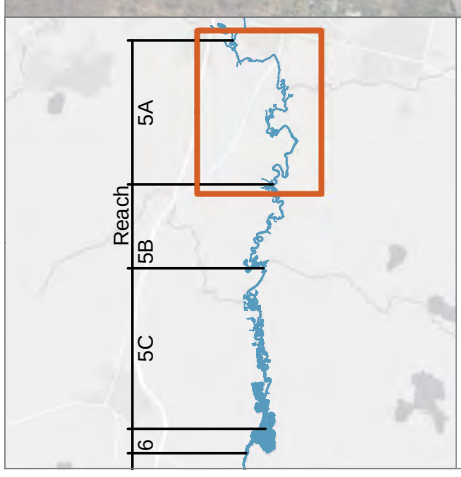
Table F-4
Floodplain Soil—Estimated Disposal Volumes Summary

EA	Residential Parcel(s) ID	Volume-Weighted Average PCB Concentration (mg/kg)	UDF Disposal		Off-Site Disposal		Total Volume (cy)
			Volume-Weighted Average PCB Concentration (mg/kg)	Volume (cy)	Volume-Weighted Average PCB Concentration (mg/kg)	Volume (cy)	
2	—	103	—	—	103	1,270	1,270
4	—	40	40	720	—	—	720
5	—	127	—	—	127	160	160
7	I6-3-13	75	49	2,710	216	490	3,200
8	—	27	27	190	—	—	190
9	J6-2-3	16	16	54	—	—	54
10	—	57	32	1,230	139	360	1,590
11	—	40	40	60	—	—	60
16	—	40	40	660	—	—	660
18	—	247	—	—	247	60	60
19	—	473	—	—	473	18	18
20	—	65	—	—	65	1,360	1,360
22	—	73	—	—	73	740	740
23	J3-1-11, J3-1-12, J3-1-13	18	18	35	—	—	35
24	—	55	49	400	60	350	750
25	J3-2-2, J3-2-3, J3-2-4, J3-2-5, J3-2-6	23	23	580	—	—	580
28	K3-1-2	24	24	63	—	—	63
30	K2-1-10	35	35	140	—	—	140
31a	—	44	44	150	—	—	150
33	—	144	—	—	144	280	280
34	—	87	—	—	87	100	100
—	J6-3-1	69	45	420	150	130	550
			Volume Totals	**7,410**	—	**5,320**	**12,730**

Notes:
cy: cubic yard
EA: Exposure Area
mg/kg: milligram per kilogram
PCB: polychlorinated biphenyl
UDF: Upland Disposal Facility

Figures





LEGEND:

- Exposure Area Boundary
- Exposure Subarea Boundary
- Frequently Used Subarea
- Actual/Potential Lawn Properties
- Reach 5A Floodplain Residential Properties
- Reach 5A Floodplain Non-Residential Exposure Areas (up to 1 mg/kg PCB Isopleth)
- Channel (AECOM and Anchor QEA 2020)

NOTE:
1. Aerial imagery from MassGIS 2021.

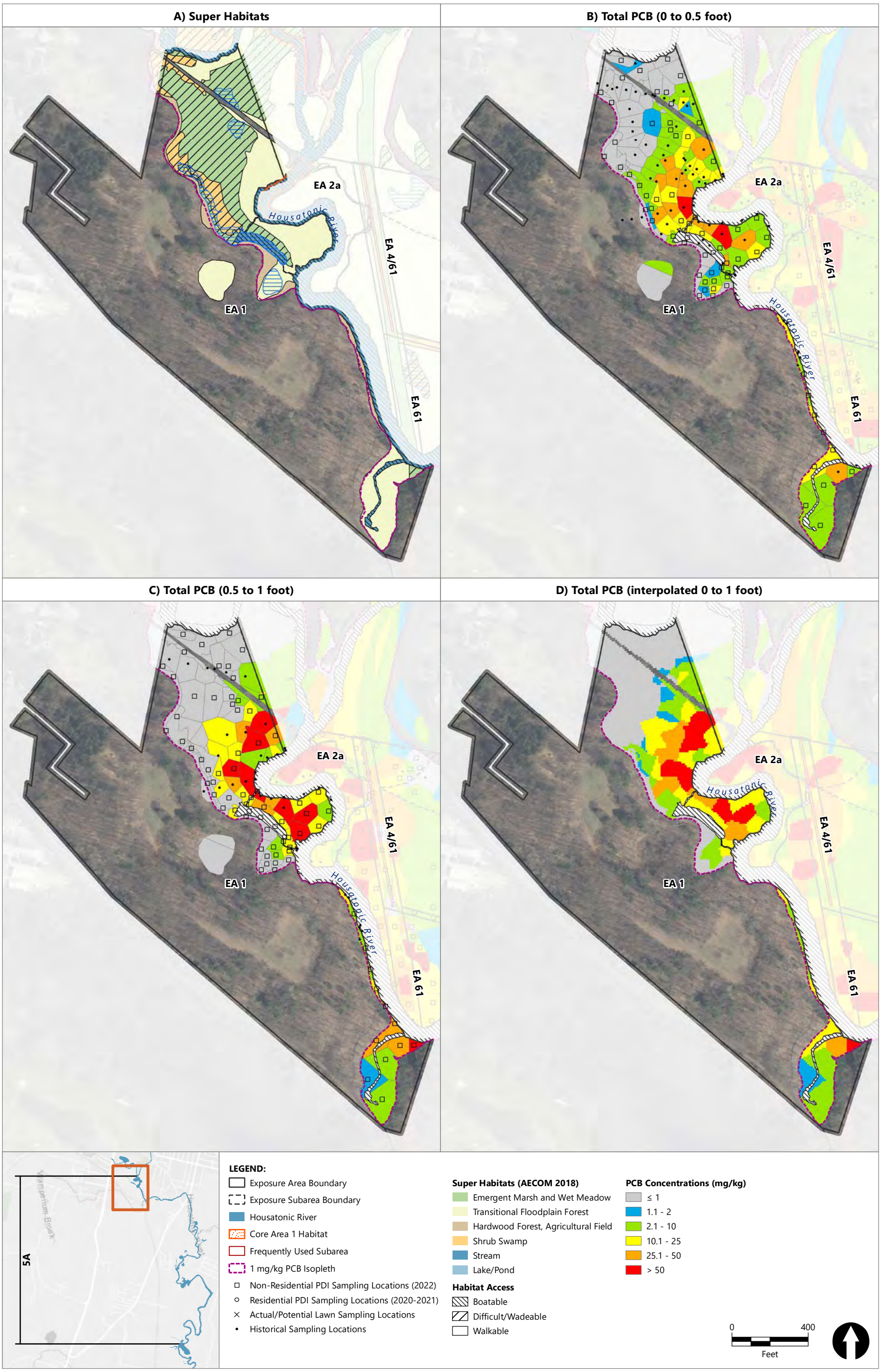
0 1,000
Feet

Publish Date: 2023/07/26, 8:33 AM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5AFloodplain\NonResidential\AQ_DSR_Fig1_2_ExposureAreas_20230726.mxd

ANCHOR QEA

Figure F-1
Exposure Areas, Subareas, and Frequently Used Subareas in Reach 5A

Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River - Rest of River

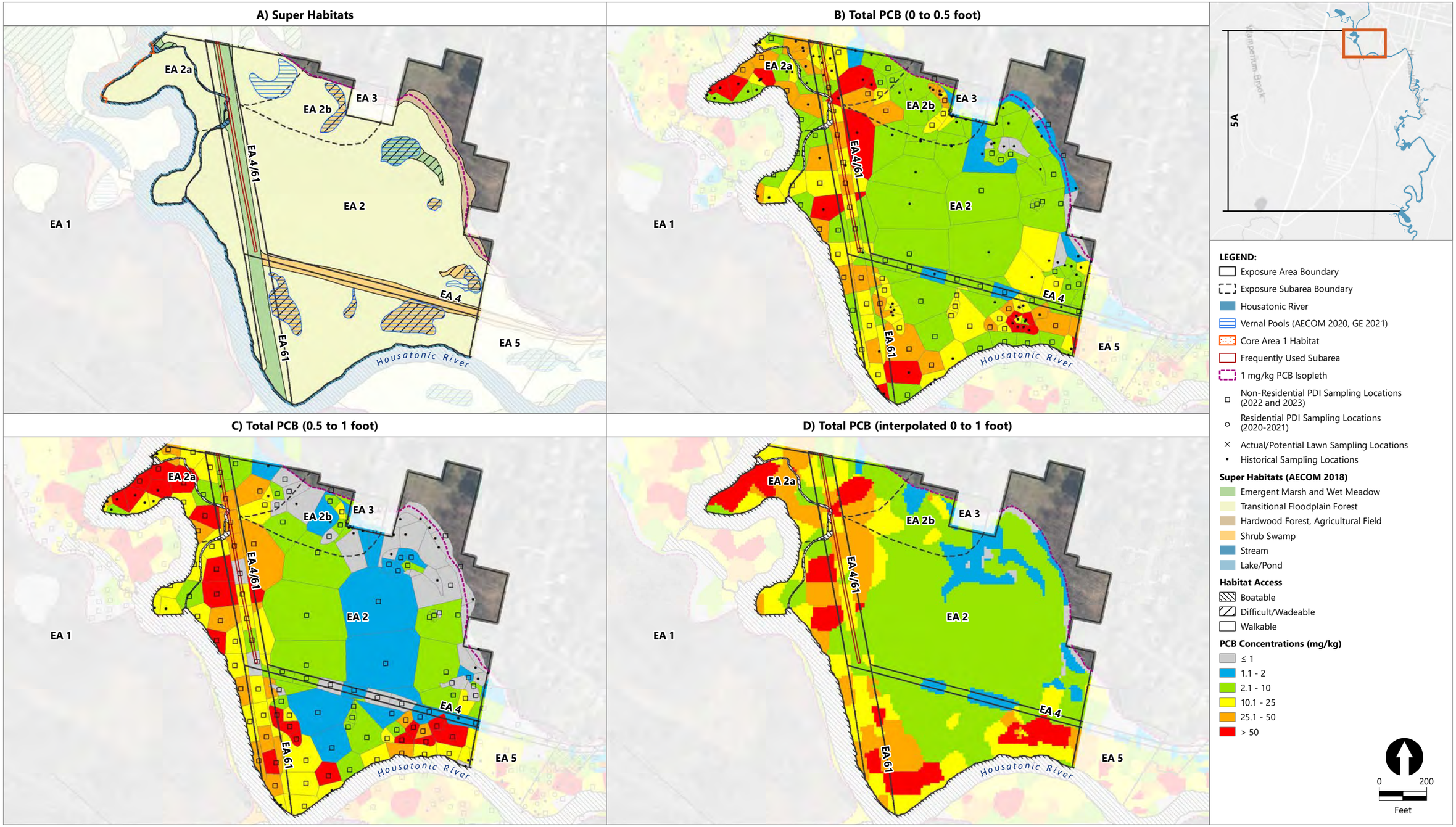


Publish Date: 2023/09/22, 10:49 AM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_portrait.mxd

ANCHOR QEA

Figure F-2a
Exposure Area 1

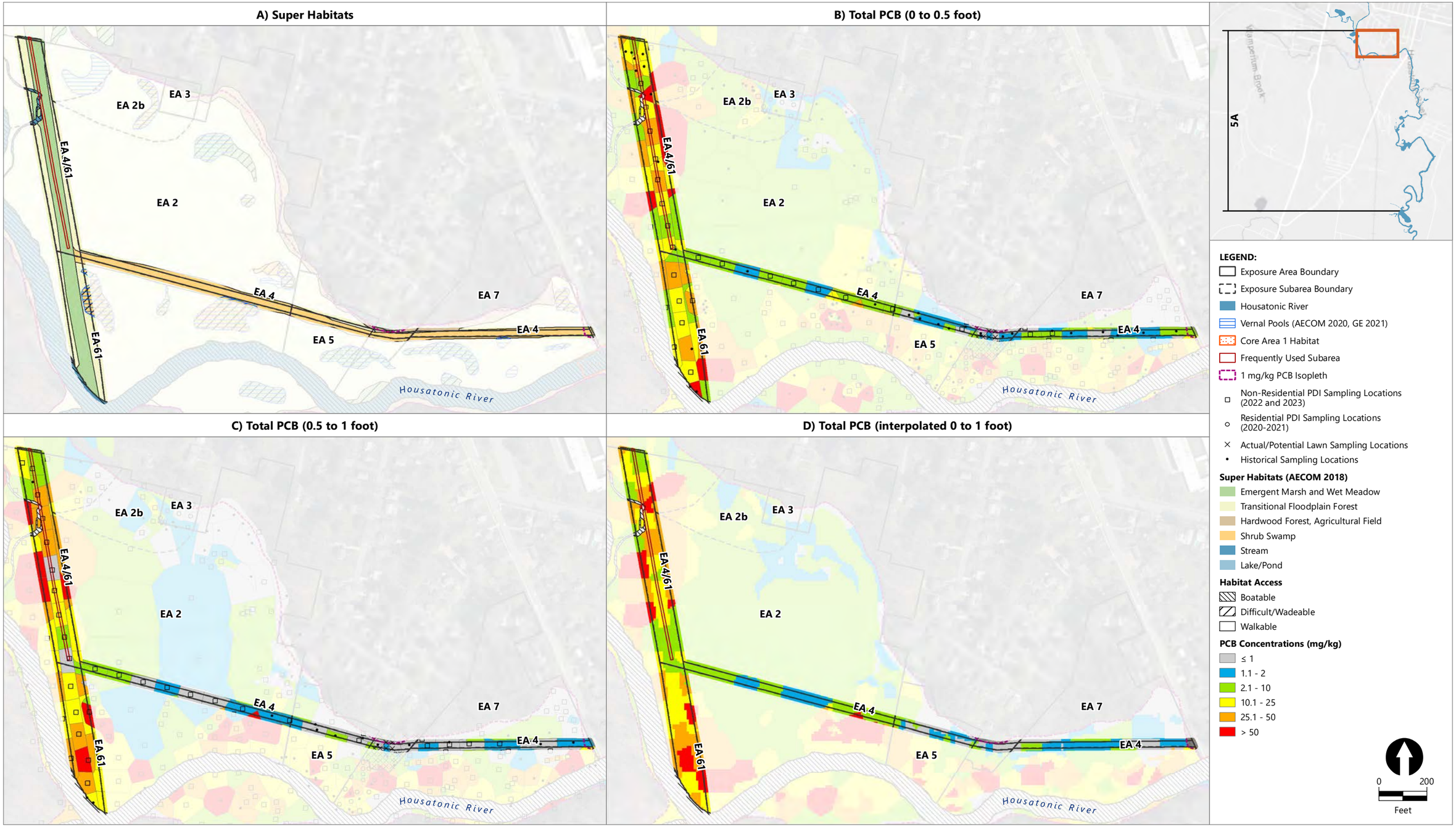
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/22, 10:50 AM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_landscape.mxd

ANCHOR QEA

Figure F-2b
Exposure Area 2
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/22, 10:50 AM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_landscape.mxd

ANCHOR QEA

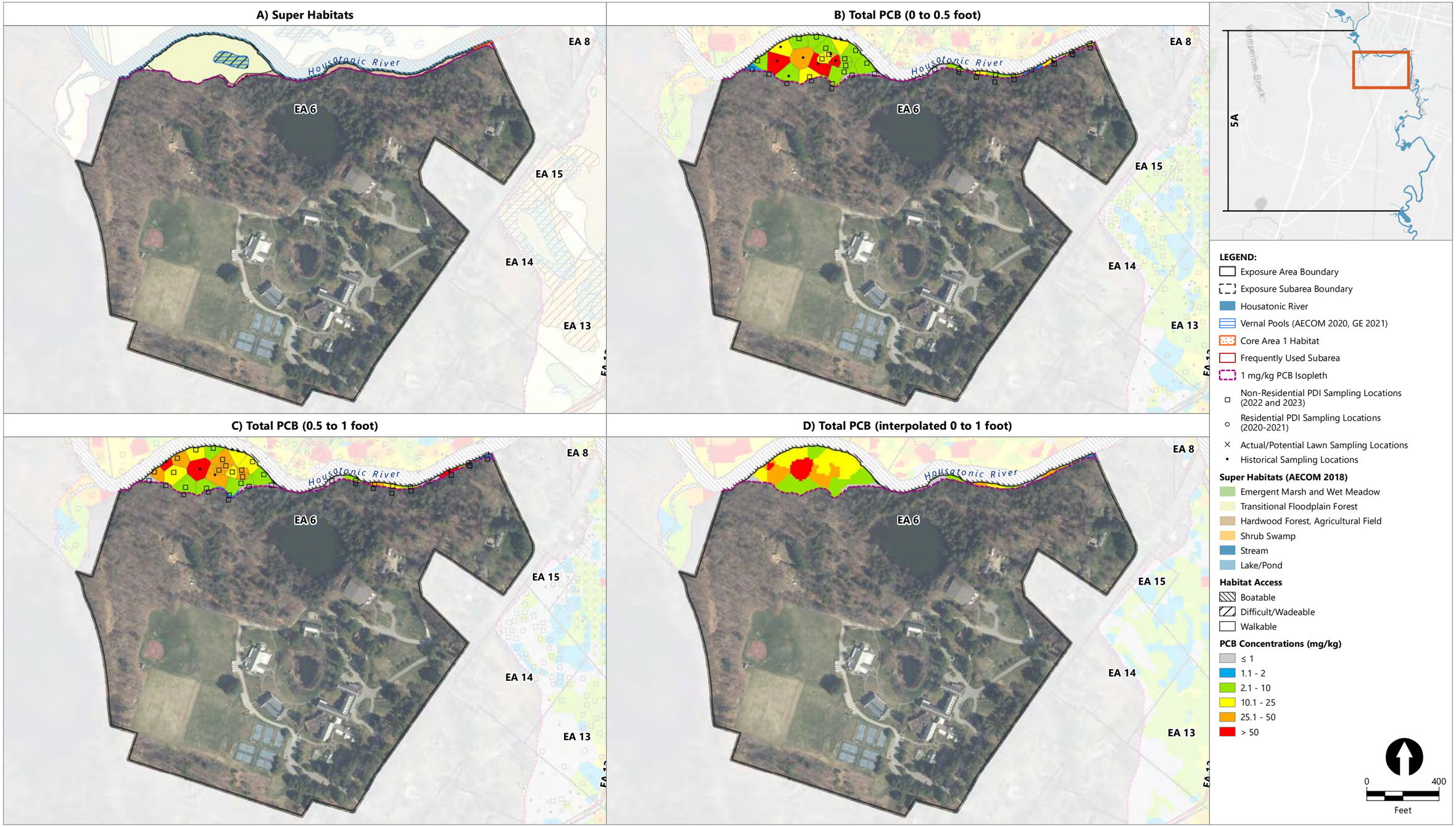
Figure F-2c
Exposure Area 4 and 61
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River

Publish Date: 2023/09/22, 10:49 AM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_portrait.mxd

ANCHOR QEA

Figure F-2d
Exposure Area 5

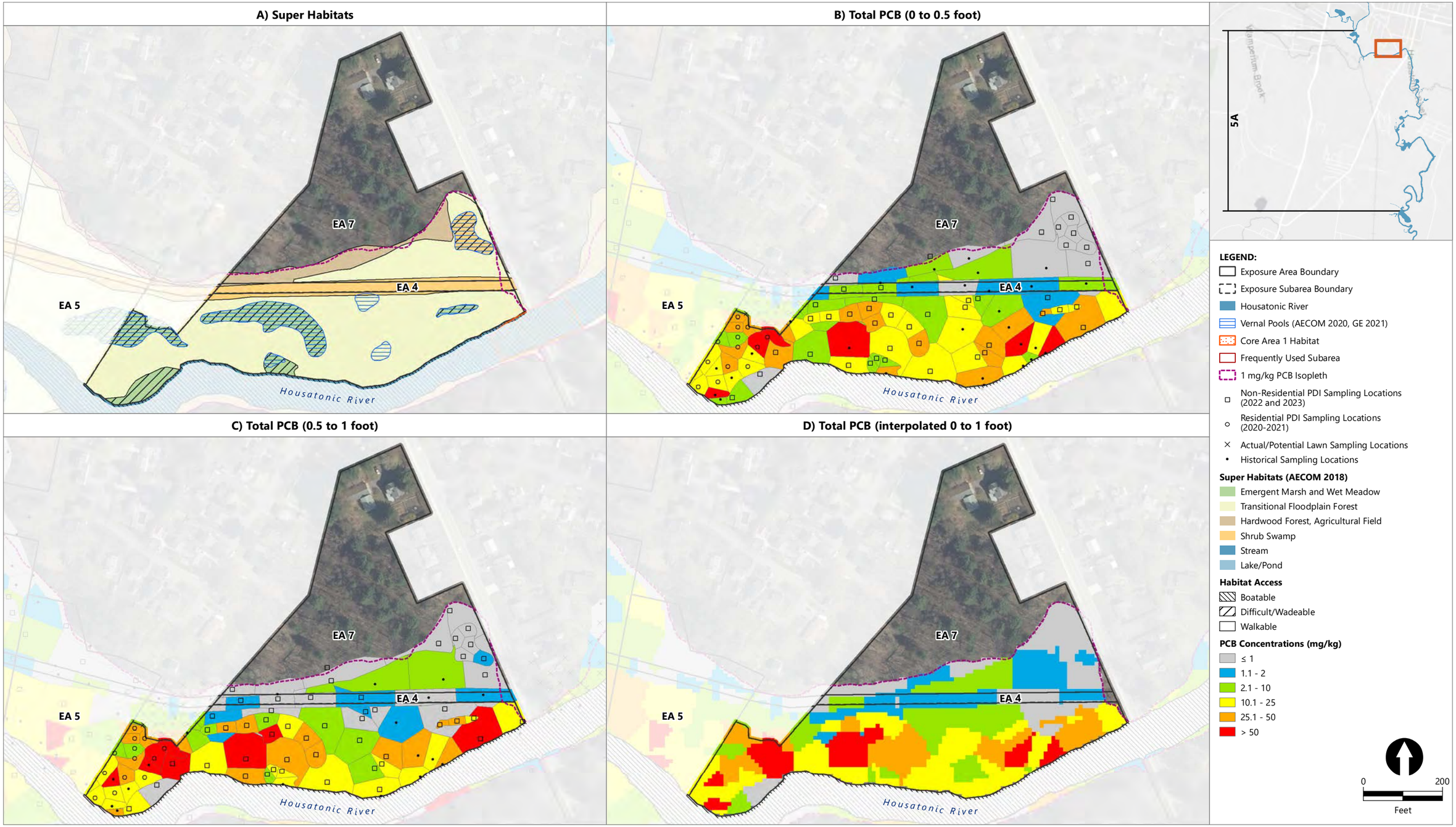
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/22, 10:50 AM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_landscape.mxd

ANCHOR QEA

Figure F-2e
Exposure Area 6
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/22, 10:50 AM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_landscape.mxd

ANCHOR QEA

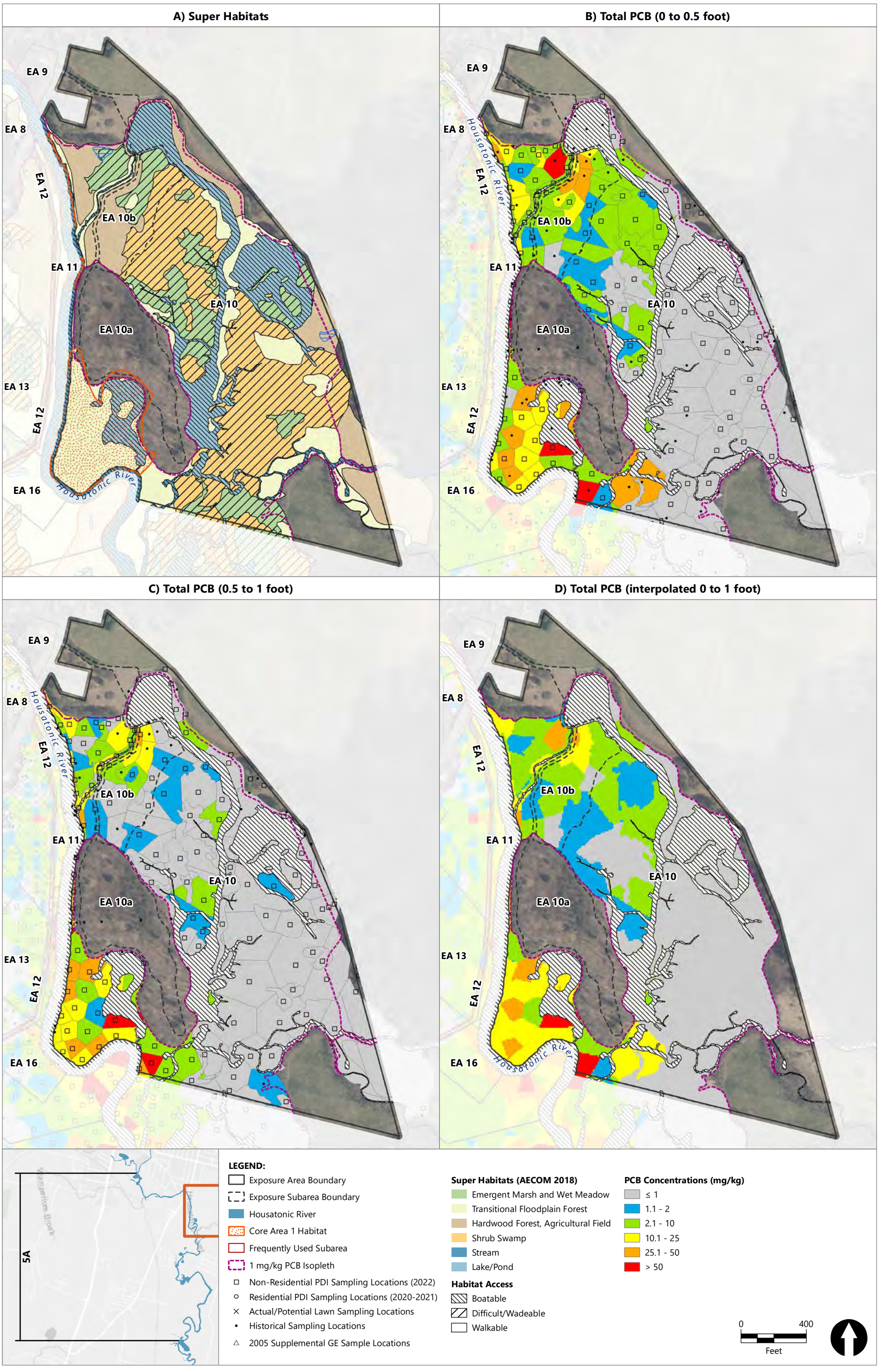
Figure F-2f
Exposure Area 7
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River

Publish Date: 2023/09/22, 10:50 AM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_portrait.mxd

ANCHOR QEA

Figure F-2g
Exposure Area 8

Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River

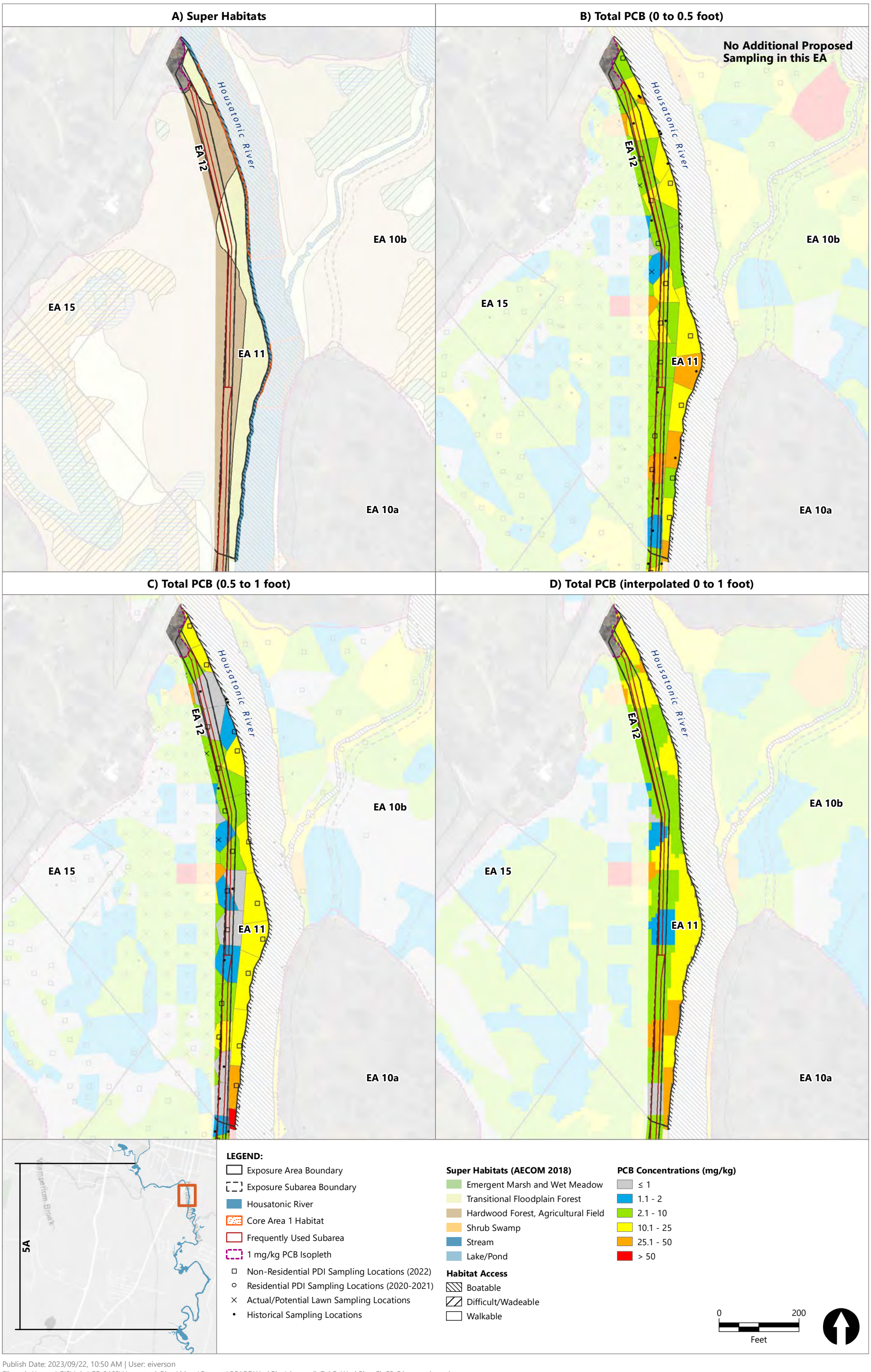


Publish Date: 2023/09/22, 10:50 AM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_portrait.mxd

ANCHOR QEA

Figure F-2h
Exposure Area 10

Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River

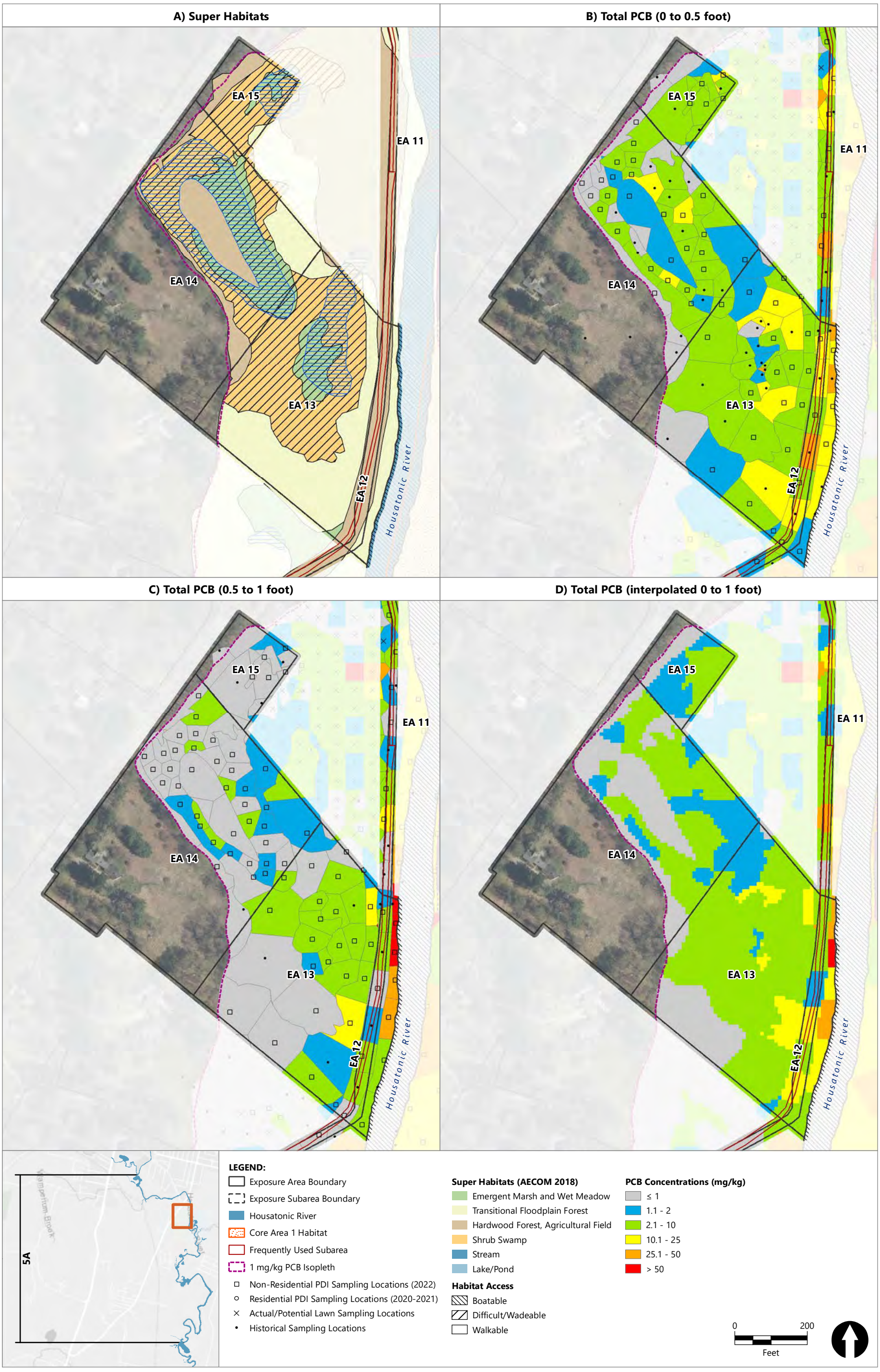


Publish Date: 2023/09/22, 10:50 AM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_portrait.mxd

ANCHOR QEA

Figure F-2i
Exposure Area 11 and 12 (partial)

Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/22, 10:51 AM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_portrait.mxd

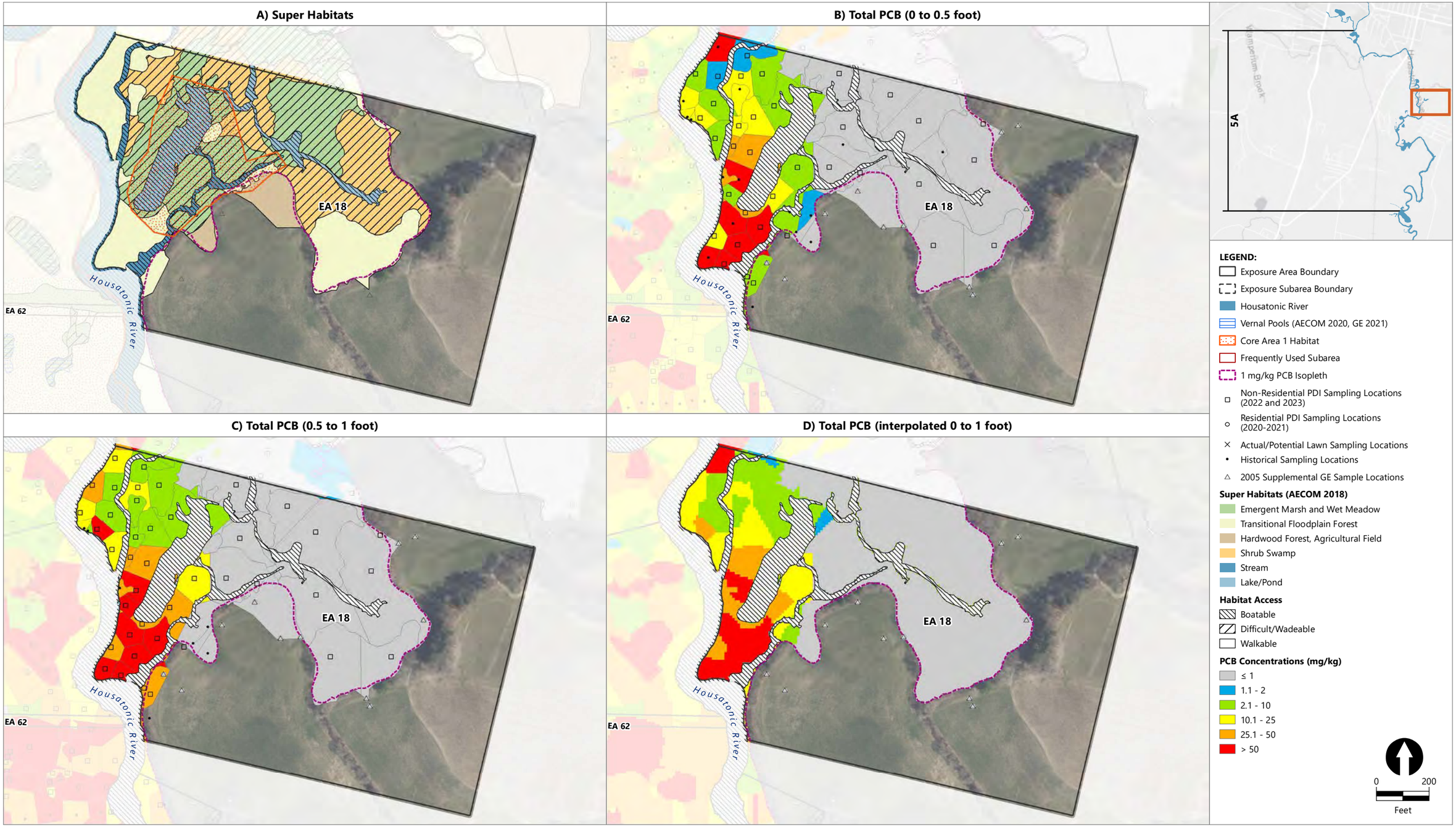
ANCHOR QEA

Figure F-2j
Exposure Areas 13, 14, 15, and 12 (partial)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River

Publish Date: 2023/09/22, 10:51 AM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_landscape.mxd

ANCHOR QEA

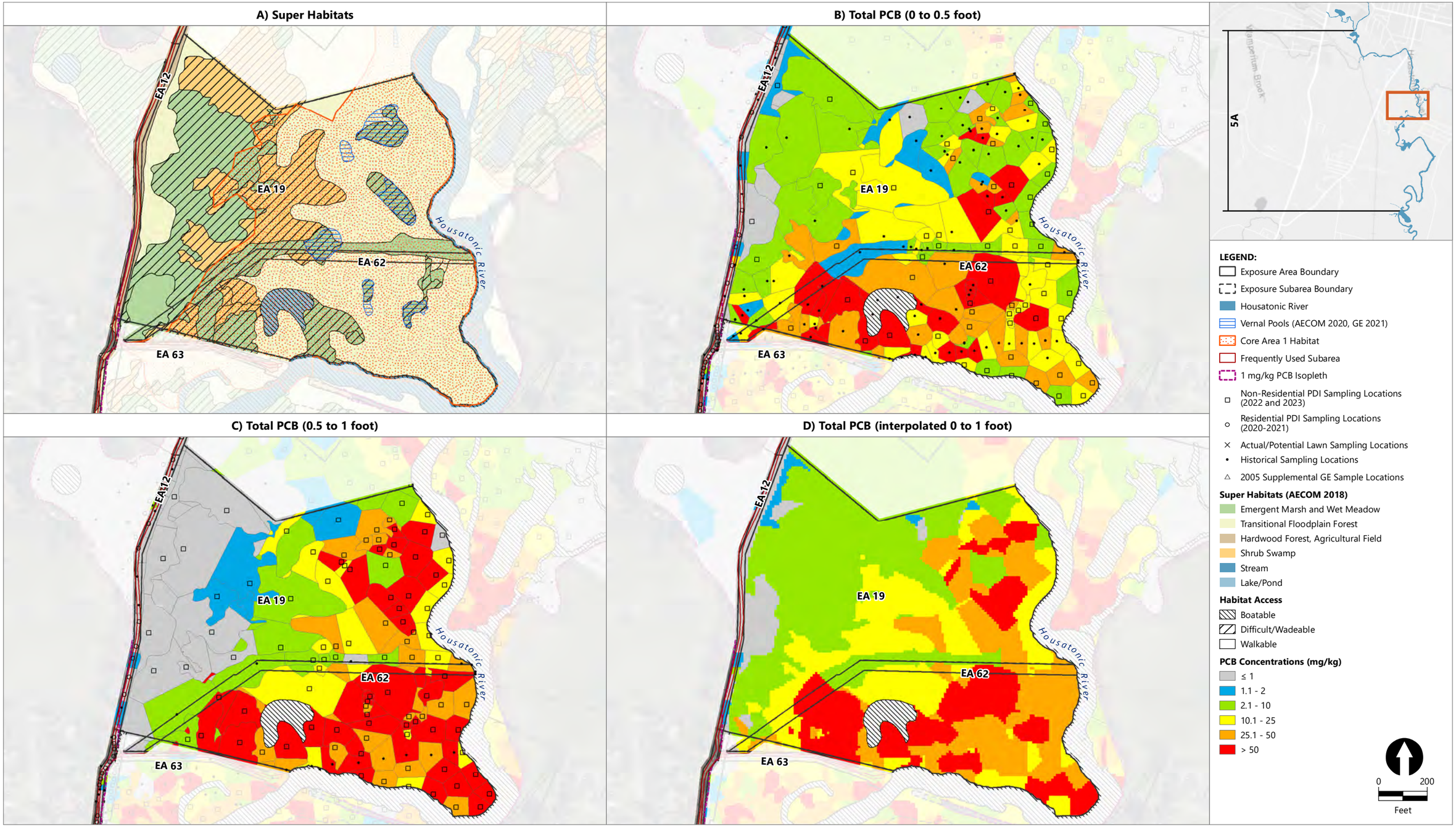
Figure F-2k
Exposure Area 16, 17, and 12 (partial)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/22, 10:51 AM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_landscape.mxd

ANCHOR QEA

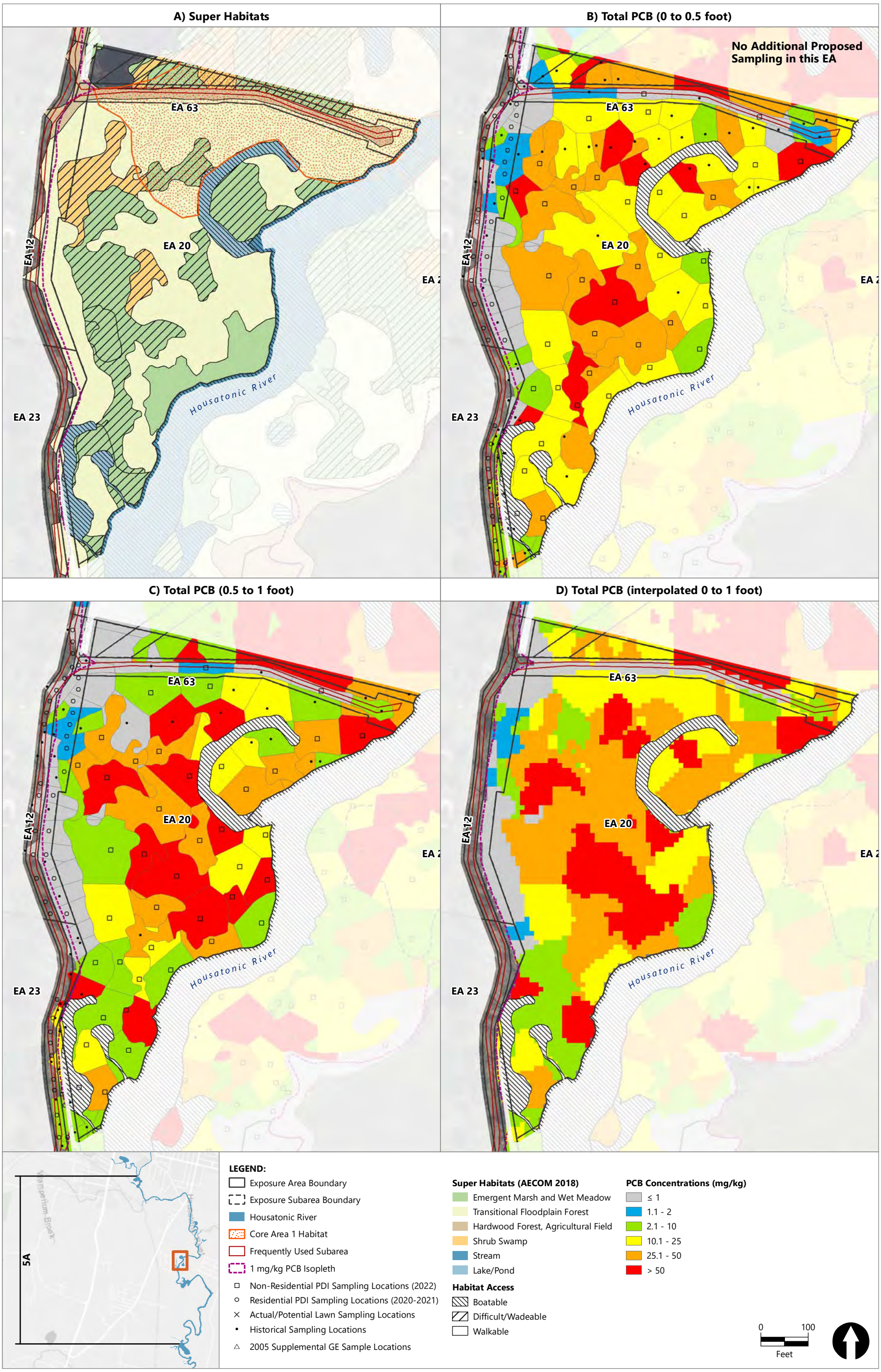
Figure F-2I
Exposure Area 18
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/26, 12:40 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_landscape.mxd

ANCHOR QEA

Figure F-2m
Exposure Areas 19, 62, and 12 (partial)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River

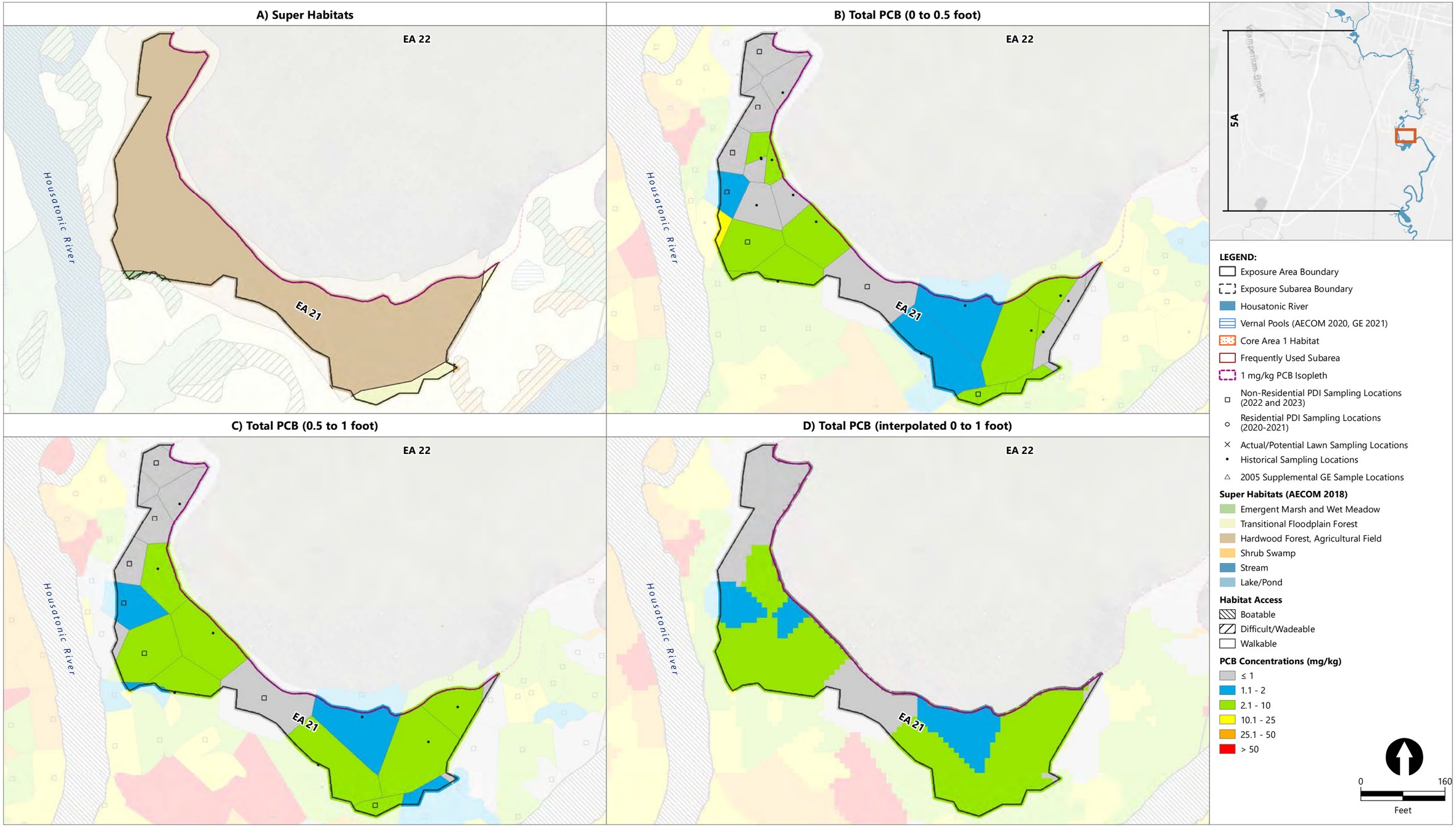


Publish Date: 2023/09/22, 10:51 AM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_portrait.mxd

ANCHOR QEA

Figure F-2n
Exposure Area 20, 63, and 12 (partial)

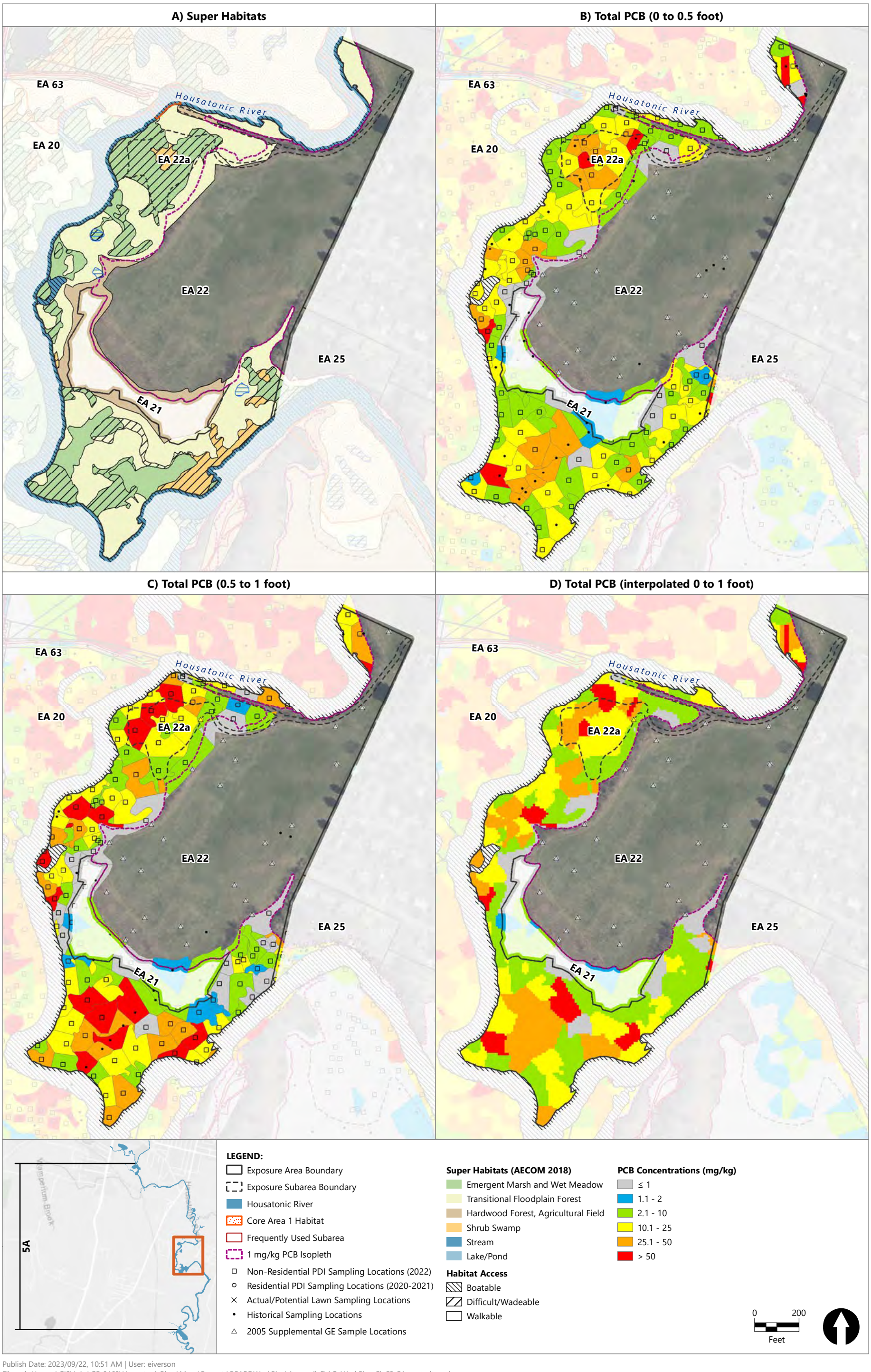
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/22, 10:52 AM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_landscape.mxd

ANCHOR QEA

Figure F-2o
Exposure Area 21
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River

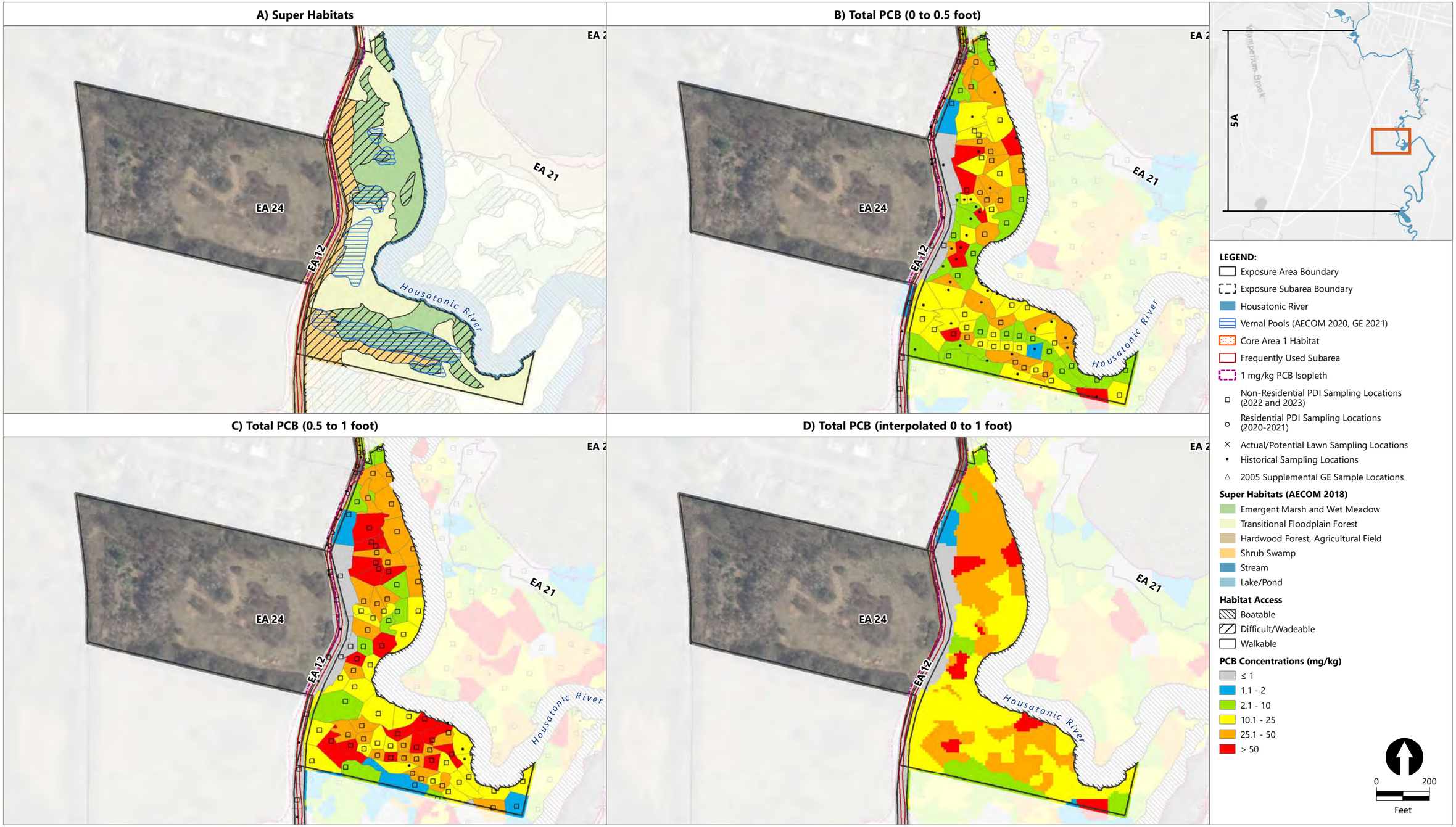


Publish Date: 2023/09/22, 10:51 AM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_portrait.mxd

ANCHOR QEA

Figure F-2p
Exposure Area 22

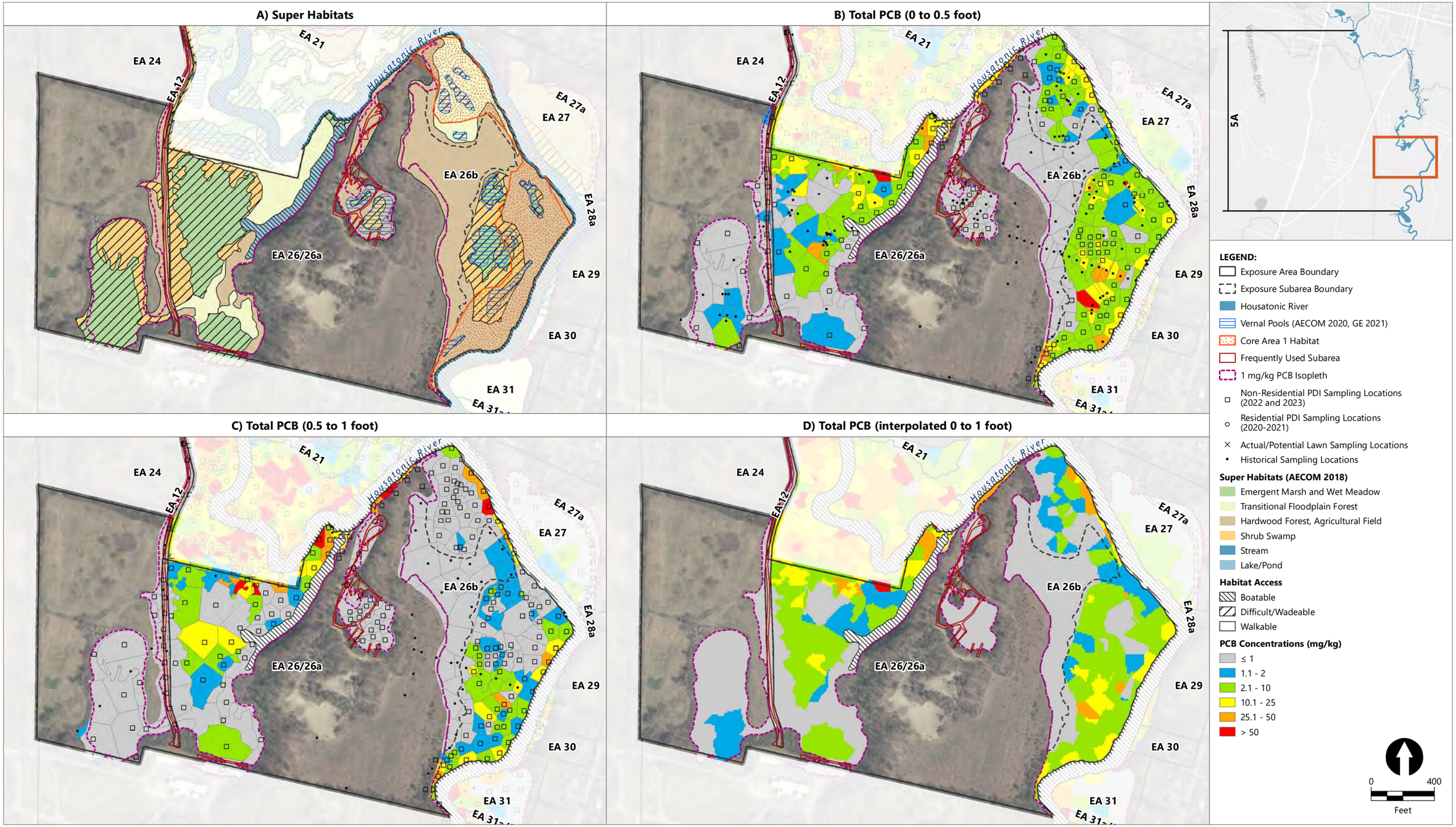
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/22, 10:52 AM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_landscape.mxd

ANCHOR QEA

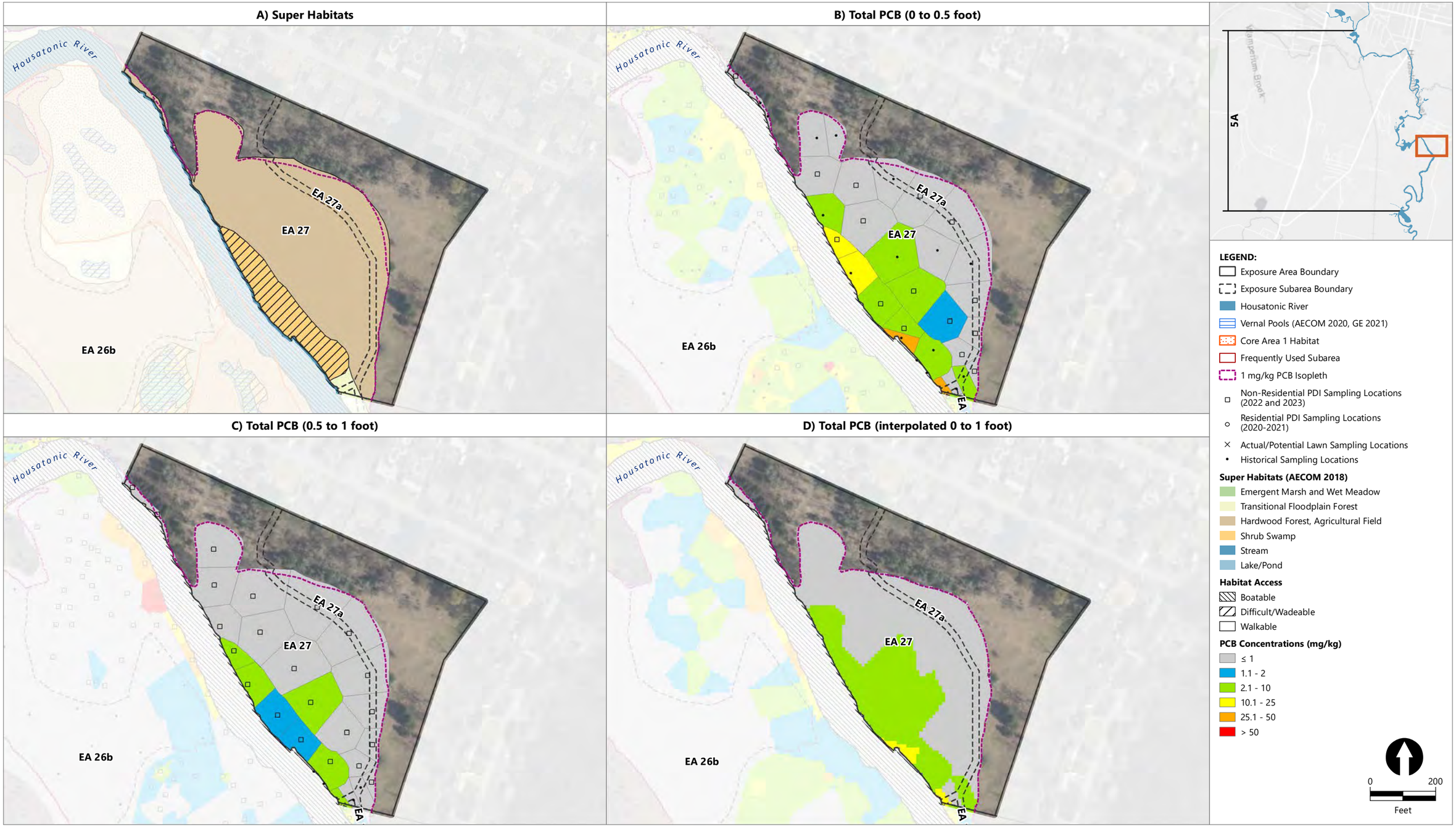
Figure F-2q
Exposure Areas 24 and 12 (partial)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/22, 10:52 AM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_landscape.mxd

ANCHOR QEA

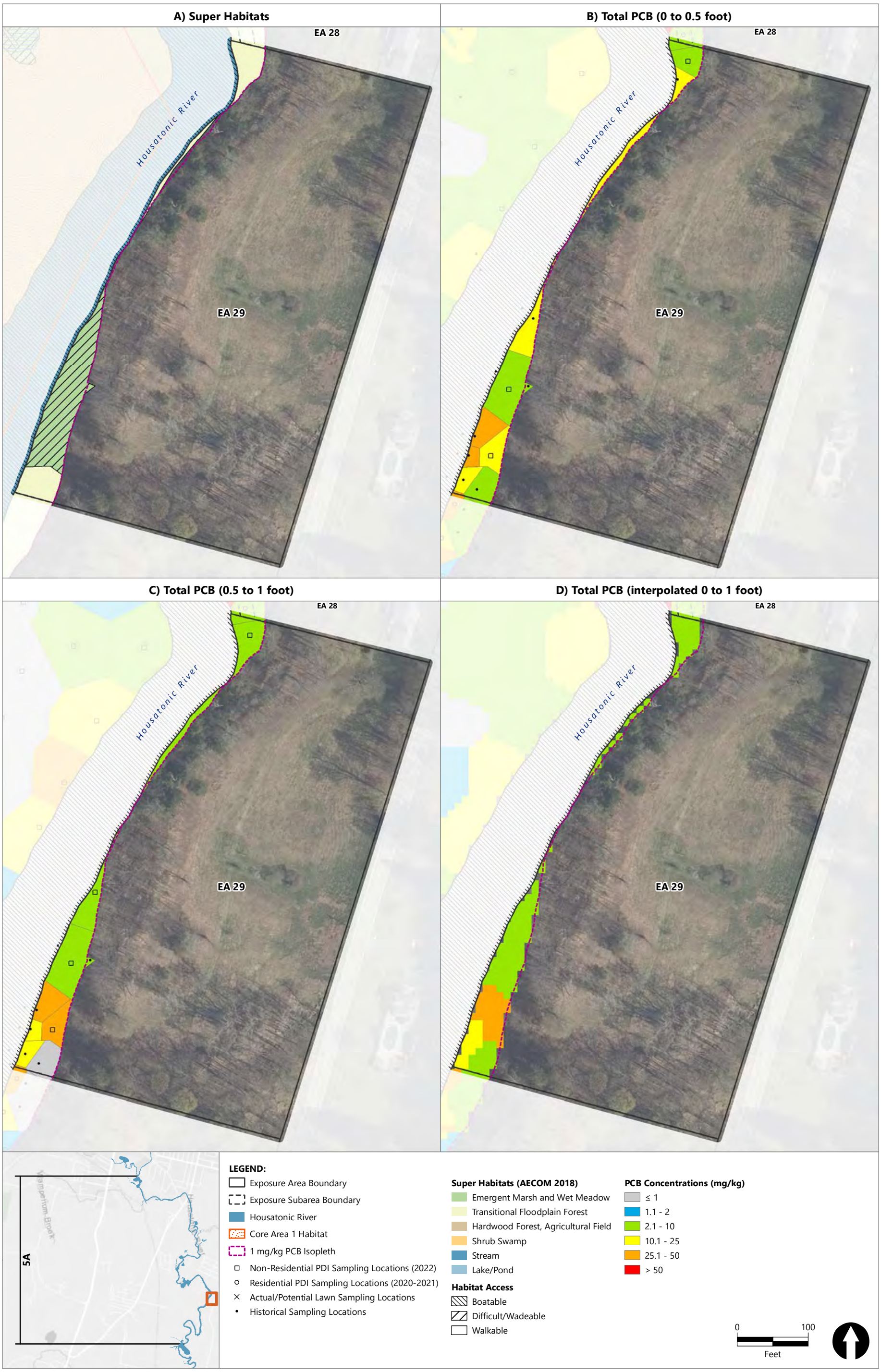
Figure F-2r
Exposure Areas 26 and 12 (partial)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/22, 10:52 AM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_landscape.mxd

ANCHOR QEA

Figure F-2s
Exposure Area 27
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River

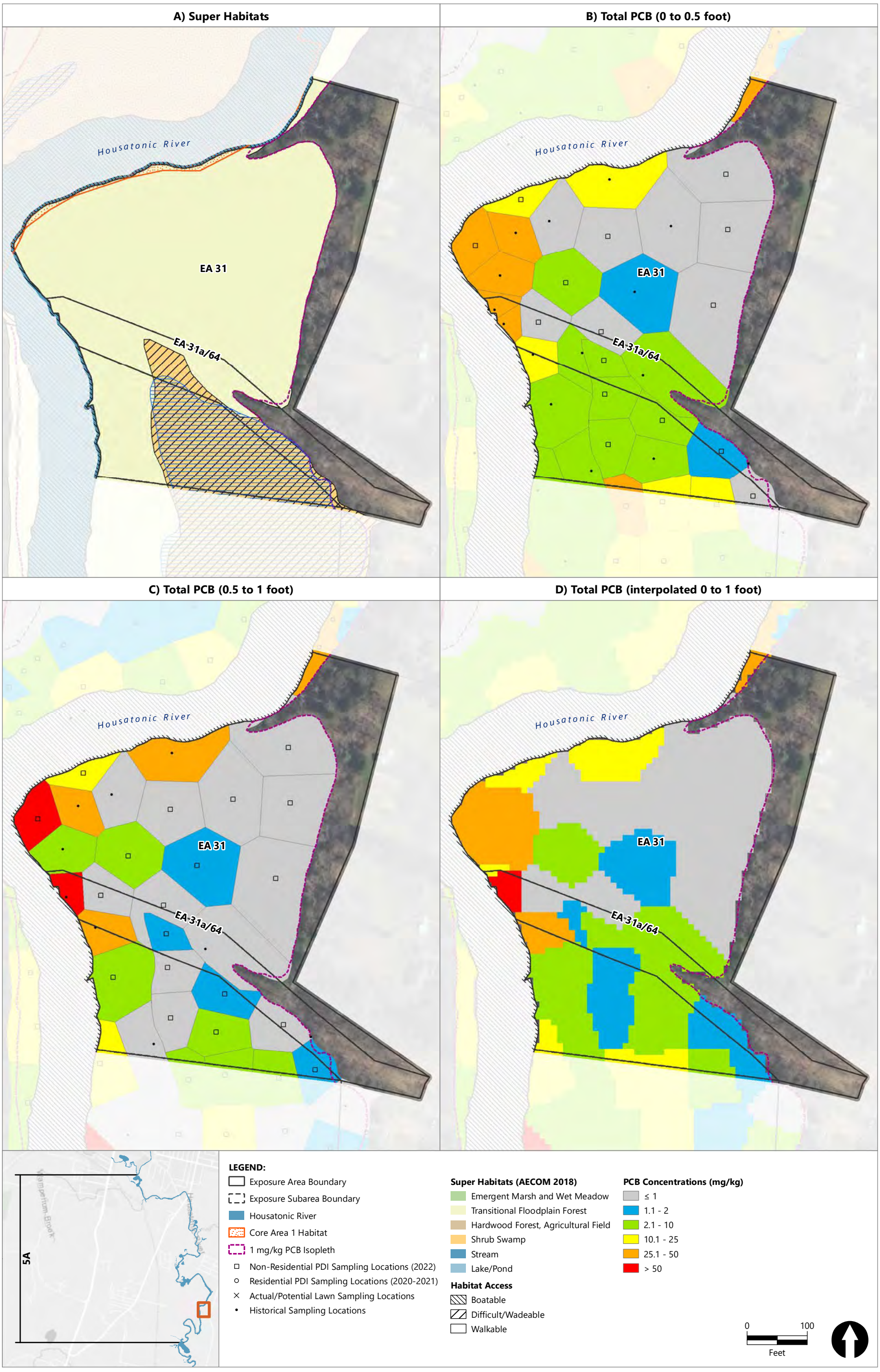


Publish Date: 2023/09/22, 10:51 AM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_portrait.mxd

ANCHOR QEA

Figure F-2t
Exposure Area 29

Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River

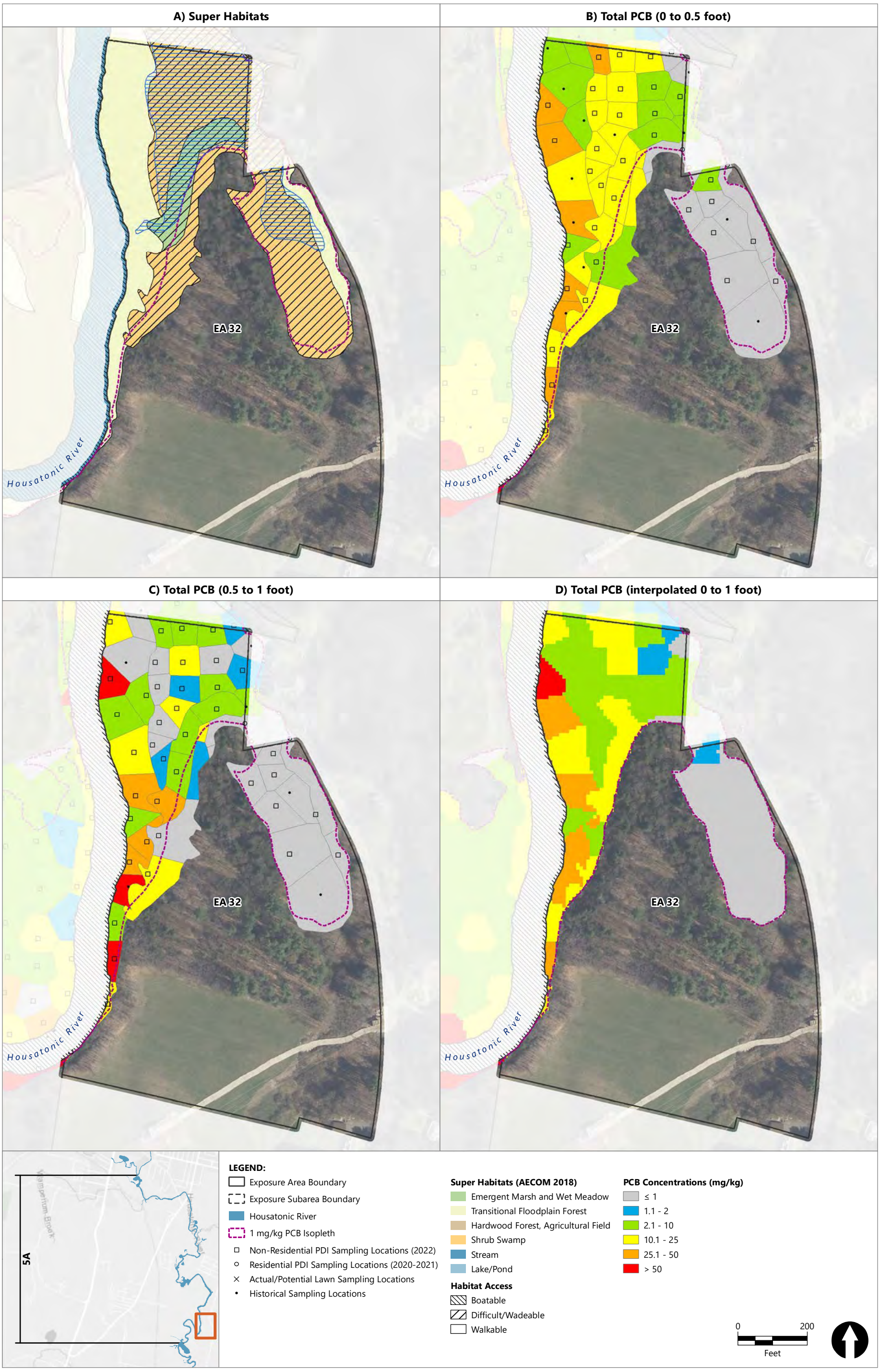


Publish Date: 2023/09/22, 10:52 AM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_portrait.mxd

ANCHOR QEA

Figure F-2u
Exposure Areas 31 and 64

Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River

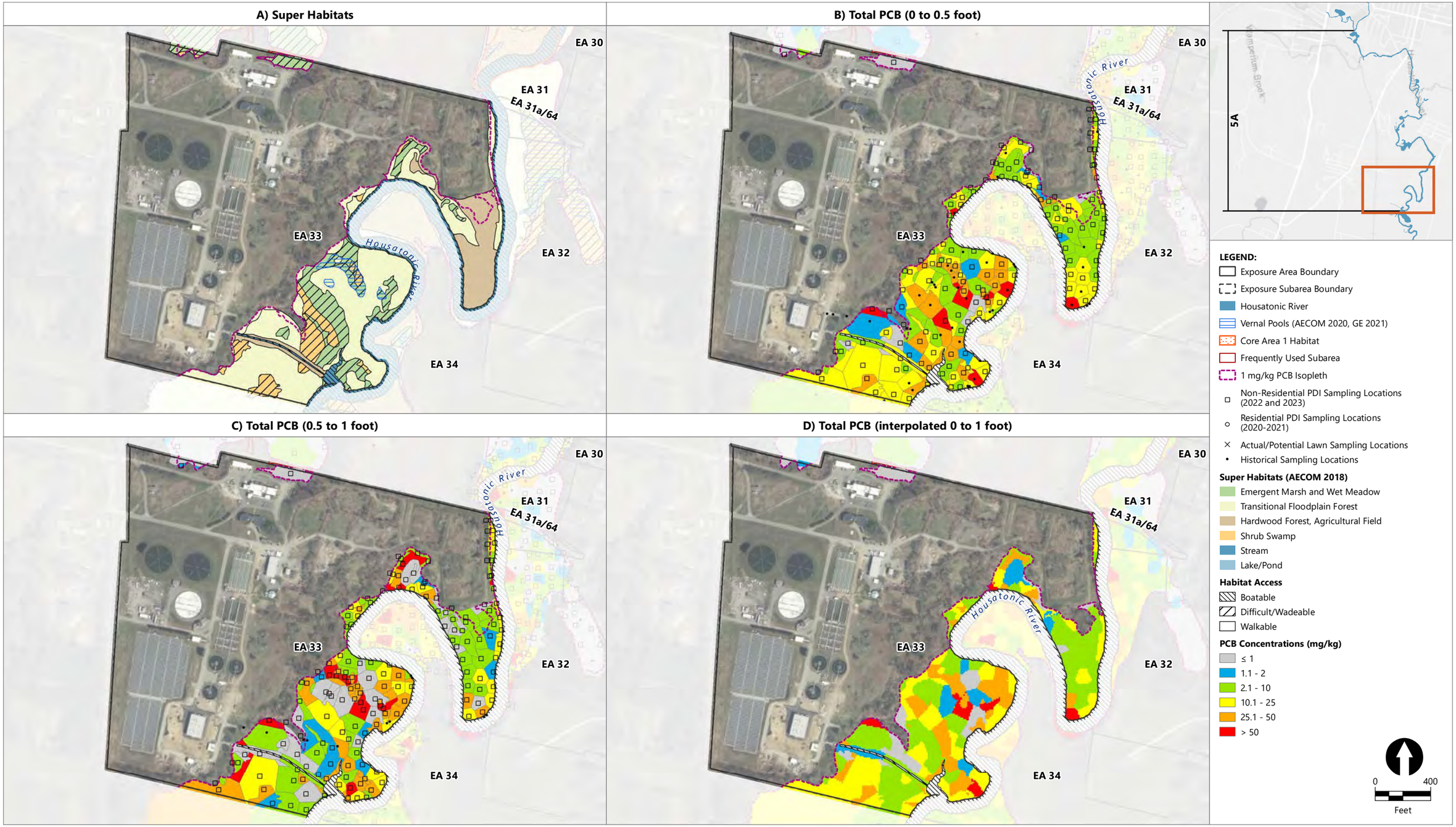


Publish Date: 2023/09/22, 10:52 AM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_portrait.mxd

ANCHOR QEA

Figure F-2v
Exposure Area 32

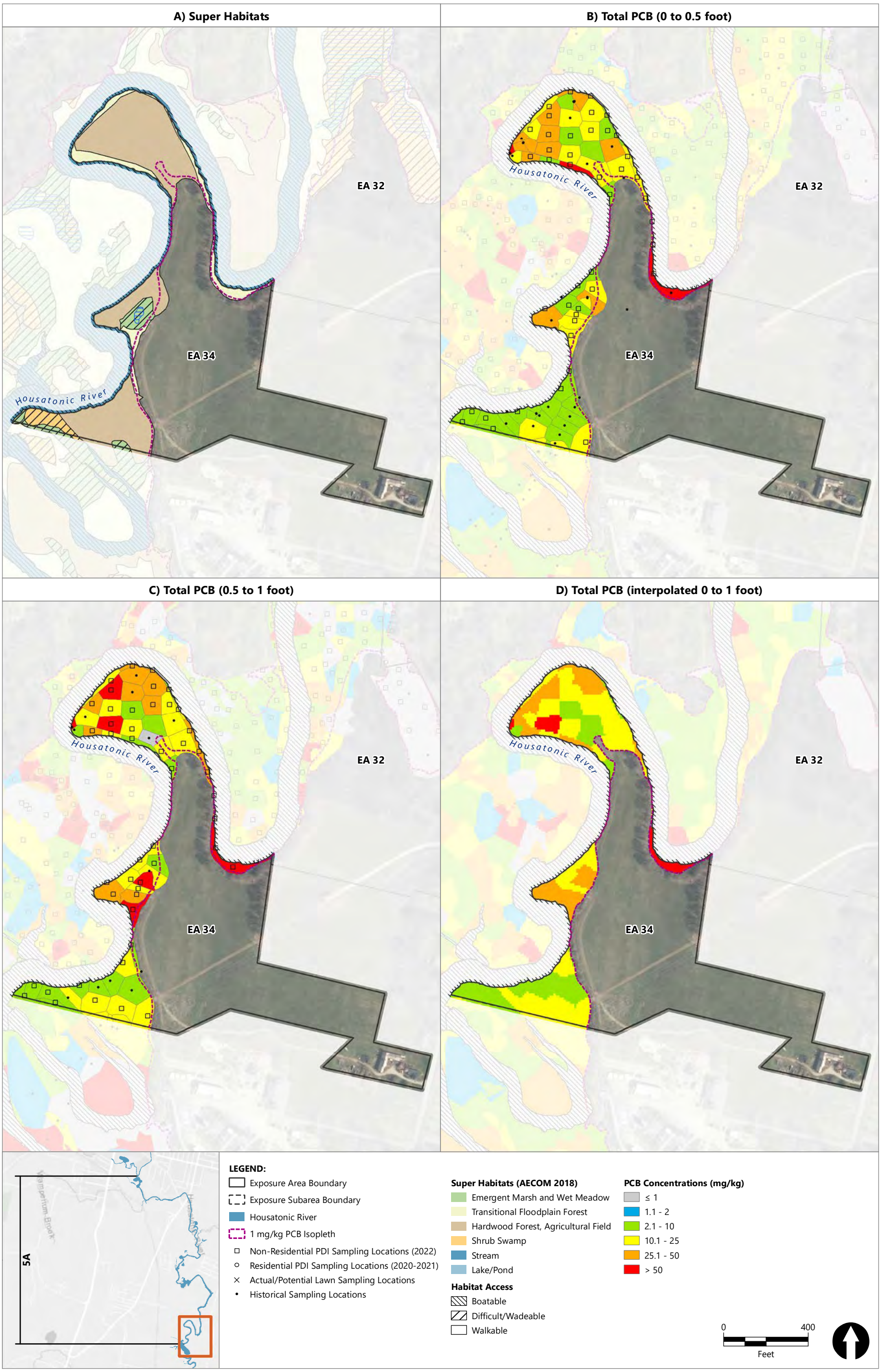
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/22, 10:53 AM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_landscape.mxd

ANCHOR QEA

Figure F-2w
Exposure Area 33
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/22, 10:52 AM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF2_EA_portrait.mxd

ANCHOR QEA

Figure F-2x
Exposure Area 34

Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River

Total PCB (0 to 1 foot)[1]	Total PCB (1 to 2 feet)	Total PCB (2 to 3 feet)	Total PCB (0 to 3 feet)

LEGEND:

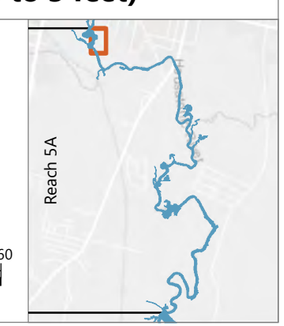
- Exposure Area Boundary
- Exposure Subarea Boundary
- 1 mg/kg PCB Isopleth
- Frequently Used Subarea
- Vernal Pools (AECOM 2020)
- Non-Residential PDI Sampling Locations (2022)
- Residential PDI Sampling Locations (2020-2021)
- Actual/Potential Lawn Sampling Locations
- Historical Sampling Locations

PCB Concentrations (mg/kg)

- ≤ 1
- 1.1 - 2
- 2.1 - 10
- 10.1 - 25
- 25.1 - 50
- > 50

NOTES:
1. PCB concentrations represent the average concentration in the top 0 to 1 foot of soil based on 0- to 0.5-foot and 0.5- to 1-foot layers.
2. Aerial imagery from MassGIS 2021.

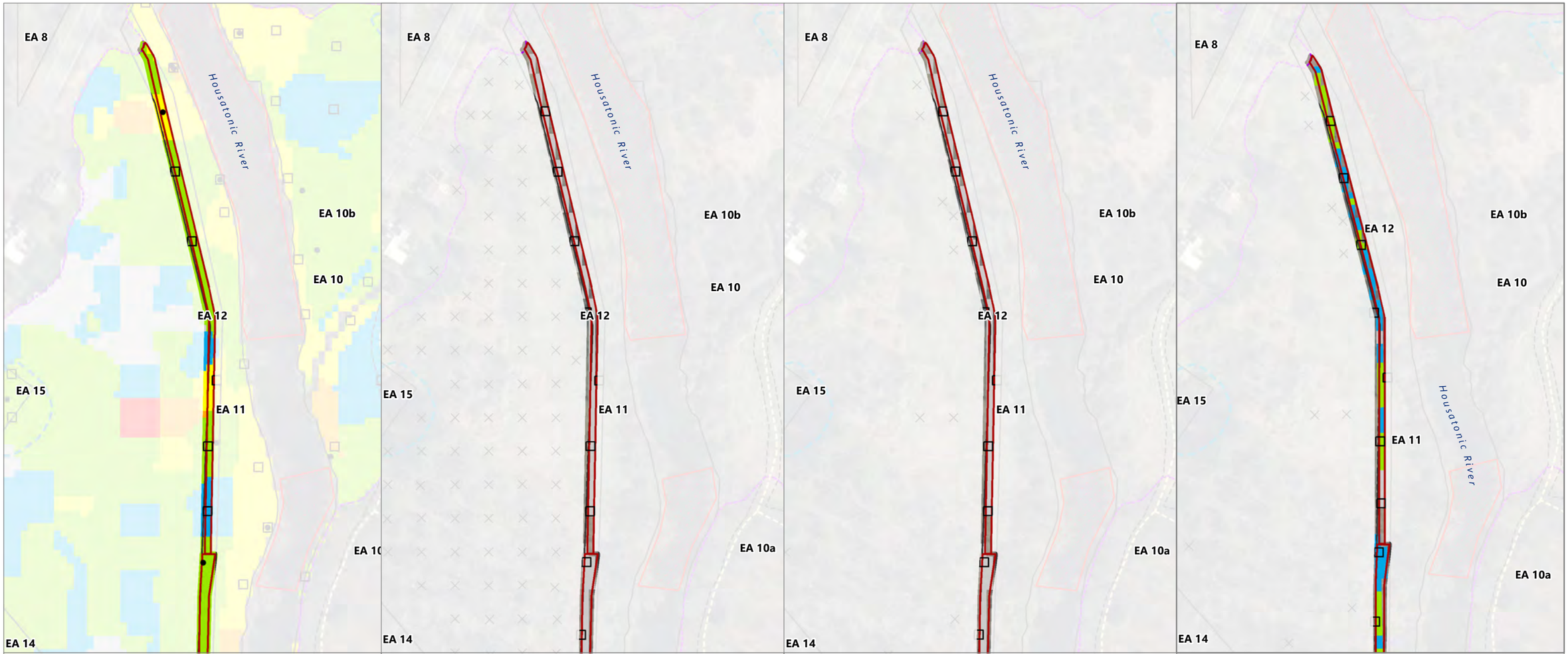
0 160
Feet



Publish Date: 2023/09/19, 11:14 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF3_FUSA.mxd

ANCHOR QEA

Figure F-3a
Frequently Used Subarea (Exposure Area 4/61)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



LEGEND:

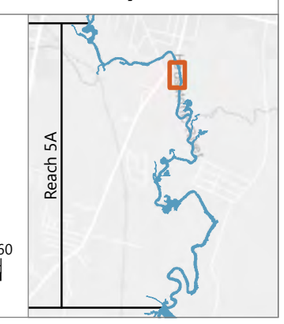
- Exposure Area Boundary
- Exposure Subarea Boundary
- 1 mg/kg PCB Isopleth
- Frequently Used Subarea
- Vernal Pools (AECOM 2020)
- Core Area 1 Habitat
- Walking Trails
- Non-Residential PDI Sampling Locations (2022)
- Residential PDI Sampling Locations (2020-2021)
- Actual/Potential Lawn Sampling Locations
- Historical Sampling Locations

PCB Concentrations (mg/kg)

- ≤ 1
- 1.1 - 2
- 2.1 - 10
- 10.1 - 25
- 25.1 - 50
- > 50

NOTES:
1. PCB concentrations represent the average concentration in the top 0 to 1 foot of soil based on 0- to 0.5-foot and 0.5- to 1-foot layers.
2. Aerial imagery from MassGIS 2021.

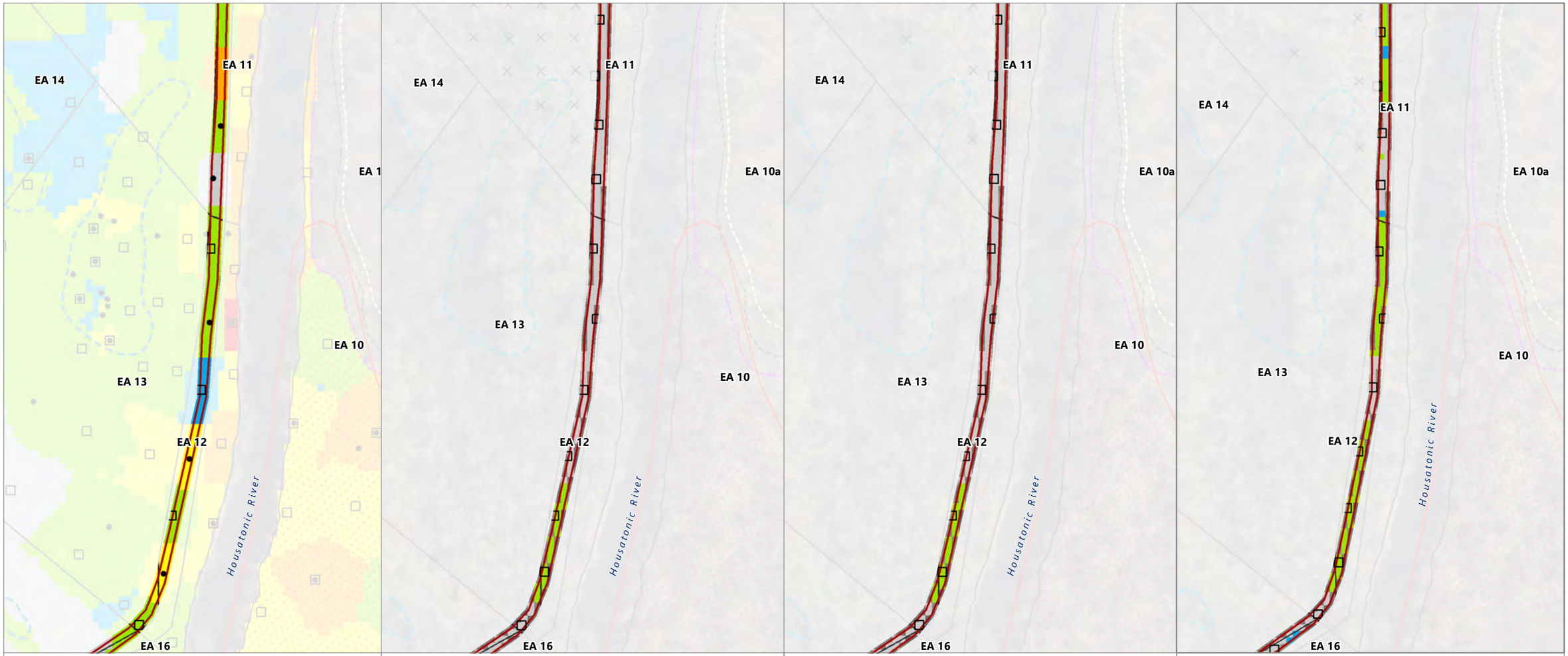
0 160
Feet



Publish Date: 2023/09/19, 11:15 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF3_FUSA.mxd

ANCHOR QEA

Figure F-3b
Frequently Used Subarea (Exposure Area 12)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Total PCB (0 to 1 foot)[1] | **Total PCB (1 to 2 feet)** | **Total PCB (2 to 3 feet)** | **Total PCB (0 to 3 feet)**

LEGEND:

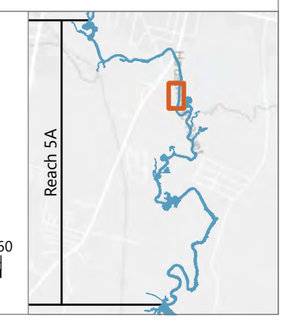
- Exposure Area Boundary
- Exposure Subarea Boundary
- 1 mg/kg PCB Isopleth
- Frequently Used Subarea
- Vernal Pools (AECOM 2020)
- Core Area 1 Habitat
- Walking Trails
- Non-Residential PDI Sampling Locations (2022)
- Residential PDI Sampling Locations (2020-2021)
- Actual/Potential Lawn Sampling Locations
- Historical Sampling Locations

PCB Concentrations (mg/kg)

- ≤ 1
- 1.1 - 2
- 2.1 - 10
- 10.1 - 25
- 25.1 - 50
- > 50

NOTES:
1. PCB concentrations represent the average concentration in the top 0 to 1 foot of soil based on 0- to 0.5-foot and 0.5- to 1-foot layers.
2. Aerial imagery from MassGIS 2021.

0 160
Feet



Publish Date: 2023/09/19, 11:15 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF3_FUSA.mxd

ANCHOR QEA

Figure F-3c
Frequently Used Subarea (Exposure Area 12)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River

Total PCB (0 to 1 foot)[1]	Total PCB (1 to 2 feet)	Total PCB (2 to 3 feet)	Total PCB (0 to 3 feet)

LEGEND:

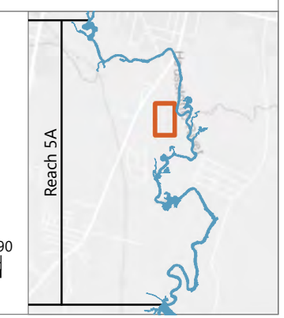
- Exposure Area Boundary
- Exposure Subarea Boundary
- 1 mg/kg PCB Isopleth
- Frequently Used Subarea
- Vernal Pools (AECOM 2020)
- Core Area 1 Habitat
- Non-Residential PDI Sampling Locations (2022)
- Residential PDI Sampling Locations (2020-2021)
- Actual/Potential Lawn Sampling Locations
- Historical Sampling Locations

PCB Concentrations (mg/kg)

- ≤ 1
- 1.1 - 2
- 2.1 - 10
- 10.1 - 25
- 25.1 - 50
- > 50

NOTES:
1. PCB concentrations represent the average concentration in the top 0 to 1 foot of soil based on 0- to 0.5-foot and 0.5- to 1-foot layers.
2. Aerial imagery from MassGIS 2021.

0 190
Feet



Publish Date: 2023/09/19, 11:15 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF3_FUSA.mxd

ANCHOR QEA

Figure F-3d
Frequently Used Subarea (Exposure Area 12)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River

Total PCB (0 to 1 foot)[1] | **Total PCB (1 to 2 feet)** | **Total PCB (2 to 3 feet)** | **Total PCB (0 to 3 feet)**

LEGEND:

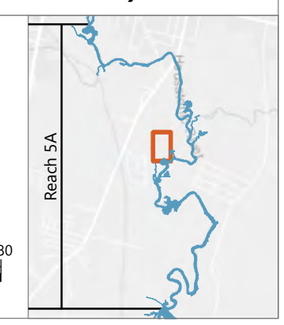
- Exposure Area Boundary
- Exposure Subarea Boundary
- 1 mg/kg PCB Isopleth
- Frequently Used Subarea
- Vernal Pools (AECOM 2020)
- Core Area 1 Habitat
- Non-Residential PDI Sampling Locations (2022)
- Residential PDI Sampling Locations (2020-2021)
- Actual/Potential Lawn Sampling Locations
- Historical Sampling Locations

PCB Concentrations (mg/kg)

- ≤ 1
- 1.1 - 2
- 2.1 - 10
- 10.1 - 25
- 25.1 - 50
- > 50

NOTES:
1. PCB concentrations represent the average concentration in the top 0 to 1 foot of soil based on 0- to 0.5-foot and 0.5- to 1-foot layers.
2. Aerial imagery from MassGIS 2021.

0 180
Feet



Publish Date: 2023/09/19, 11:15 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF3_FUSA.mxd

ANCHOR QEA

Figure F-3e
Frequently Used Subarea (Exposure Area 12)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River

Total PCB (0 to 1 foot)[1]	Total PCB (1 to 2 feet)	Total PCB (2 to 3 feet)	Total PCB (0 to 3 feet)

LEGEND:

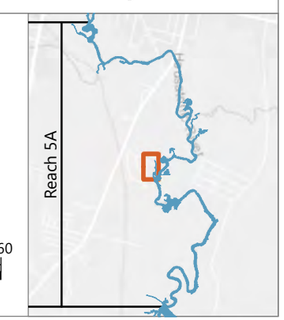
- Exposure Area Boundary
- Exposure Subarea Boundary
- 1 mg/kg PCB Isopleth
- Frequently Used Subarea
- Vernal Pools (AECOM 2020)
- Core Area 1 Habitat
- Non-Residential PDI Sampling Locations (2022)
- Residential PDI Sampling Locations (2020-2021)
- Actual/Potential Lawn Sampling Locations
- Historical Sampling Locations

PCB Concentrations (mg/kg)

- ≤ 1
- 1.1 - 2
- 2.1 - 10
- 10.1 - 25
- 25.1 - 50
- > 50

NOTES:
1. PCB concentrations represent the average concentration in the top 0 to 1 foot of soil based on 0- to 0.5-foot and 0.5- to 1-foot layers.
2. Aerial imagery from MassGIS 2021.

0 160
Feet



Publish Date: 2023/09/19, 11:15 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF3_FUSA.mxd

ANCHOR QEA

Figure F-3f
Frequently Used Subarea (Exposure Area 12)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River

Total PCB (0 to 1 foot)[1] | **Total PCB (1 to 2 feet)** | **Total PCB (2 to 3 feet)** | **Total PCB (0 to 3 feet)**

LEGEND:

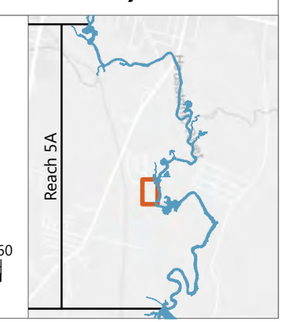
- Exposure Area Boundary
- Exposure Subarea Boundary
- 1 mg/kg PCB Isopleth
- Frequently Used Subarea
- Vernal Pools (AECOM 2020)
- Non-Residential PDI Sampling Locations (2022)
- Residential PDI Sampling Locations (2020-2021)
- Actual/Potential Lawn Sampling Locations
- Historical Sampling Locations

PCB Concentrations (mg/kg)

- ≤ 1
- 1.1 - 2
- 2.1 - 10
- 10.1 - 25
- 25.1 - 50
- > 50

NOTES:
1. PCB concentrations represent the average concentration in the top 0 to 1 foot of soil based on 0- to 0.5-foot and 0.5- to 1-foot layers.
2. Aerial imagery from MassGIS 2021.

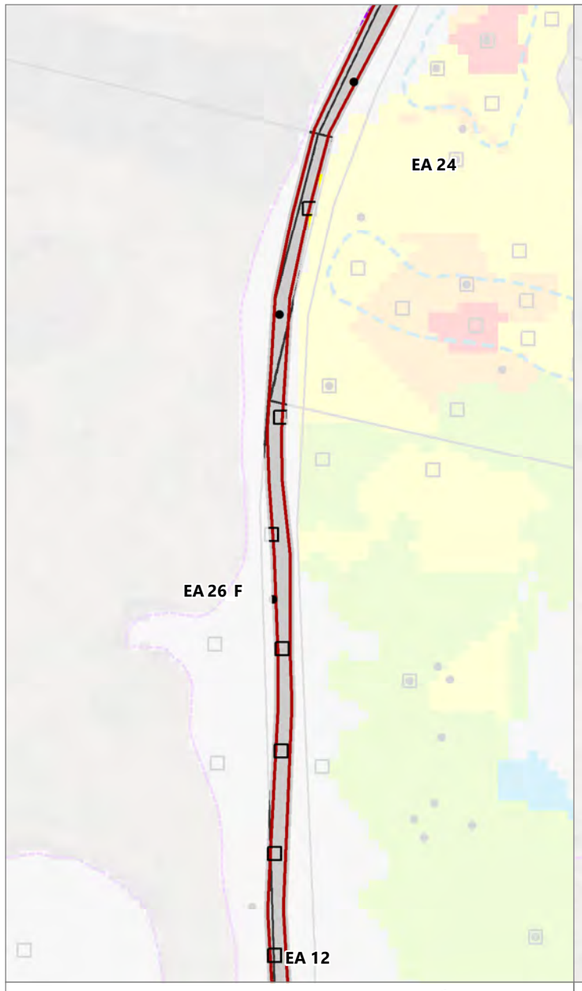
0 160
Feet



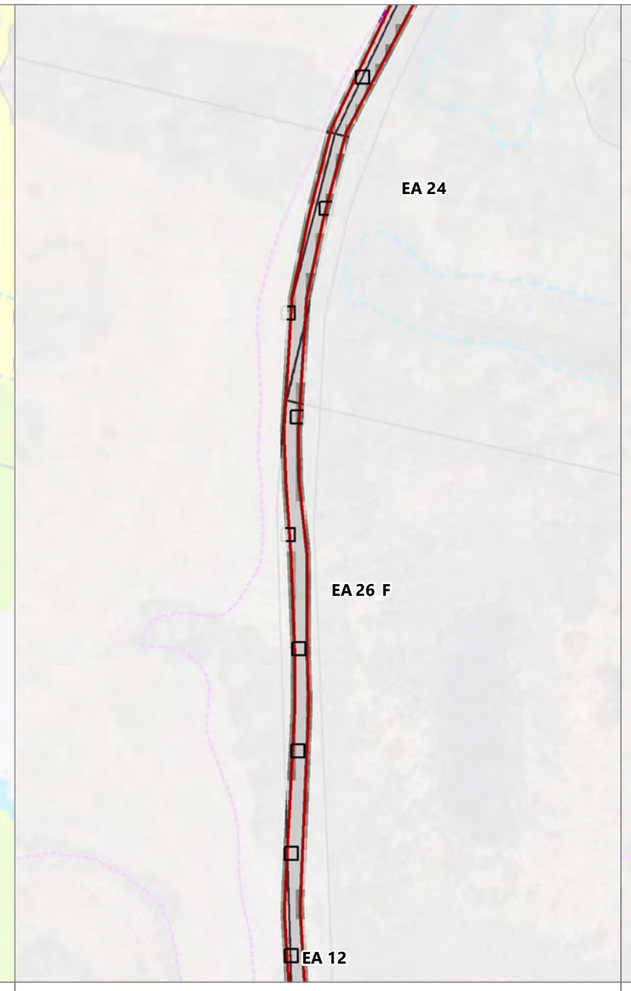
Publish Date: 2023/09/19, 11:15 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF3_FUSA.mxd

ANCHOR QEA

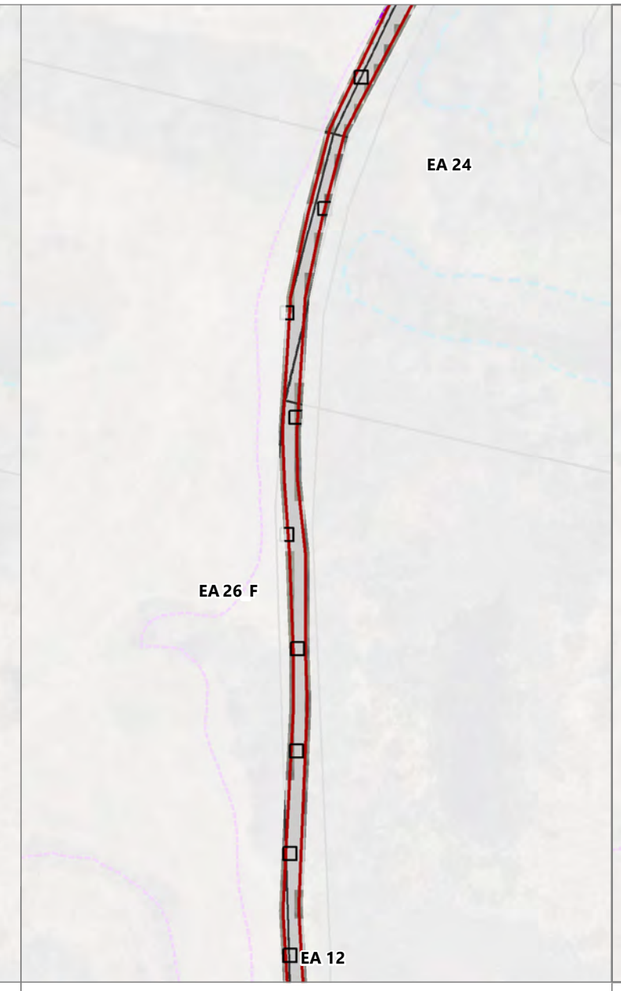
Figure F-3g
Frequently Used Subarea (Exposure Area 12)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



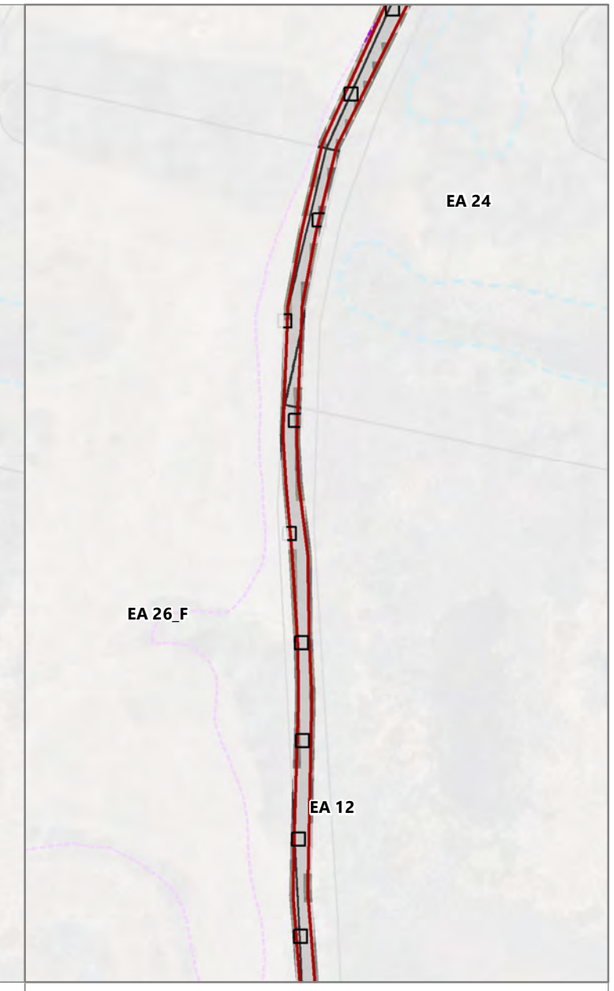
Total PCB (0 to 1 foot)[1]



Total PCB (1 to 2 feet)



Total PCB (2 to 3 feet)



Total PCB (0 to 3 feet)

LEGEND:

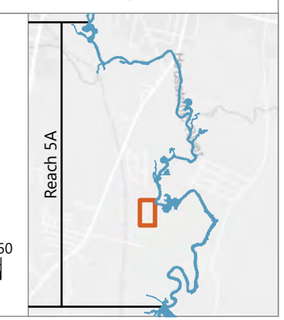
- Exposure Area Boundary
- Exposure Subarea Boundary
- 1 mg/kg PCB Isopleth
- Frequently Used Subarea
- Vernal Pools (AECOM 2020)
- Non-Residential PDI Sampling Locations (2022)
- Residential PDI Sampling Locations (2020-2021)
- Actual/Potential Lawn Sampling Locations
- Historical Sampling Locations

PCB Concentrations (mg/kg)

- ≤ 1
- 1.1 - 2
- 2.1 - 10
- 10.1 - 25
- 25.1 - 50
- > 50

NOTES:
1. PCB concentrations represent the average concentration in the top 0 to 1 foot of soil based on 0- to 0.5-foot and 0.5- to 1-foot layers.
2. Aerial imagery from MassGIS 2021.

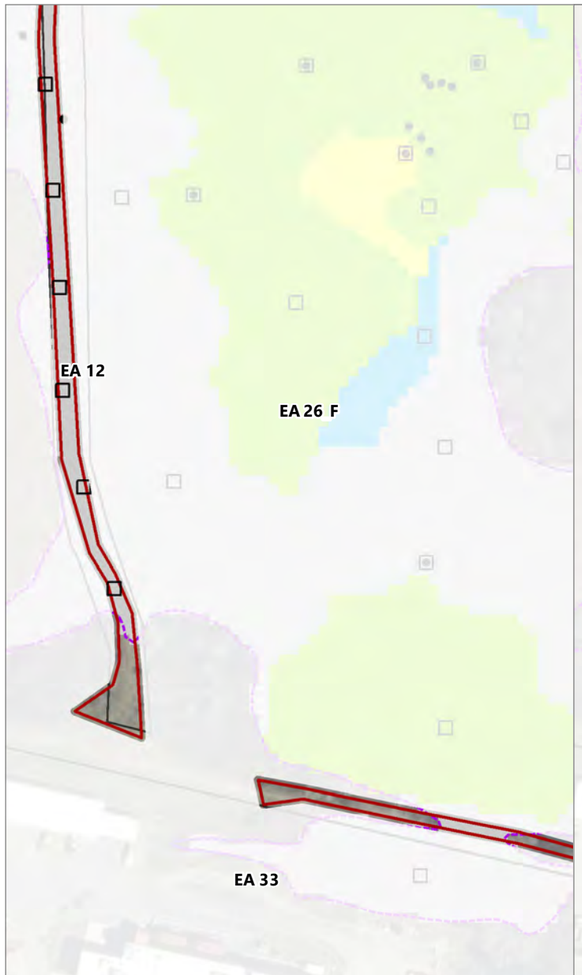
0 160
Feet



Publish Date: 2023/09/19, 11:16 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF3_FUSA.mxd

ANCHOR QEA

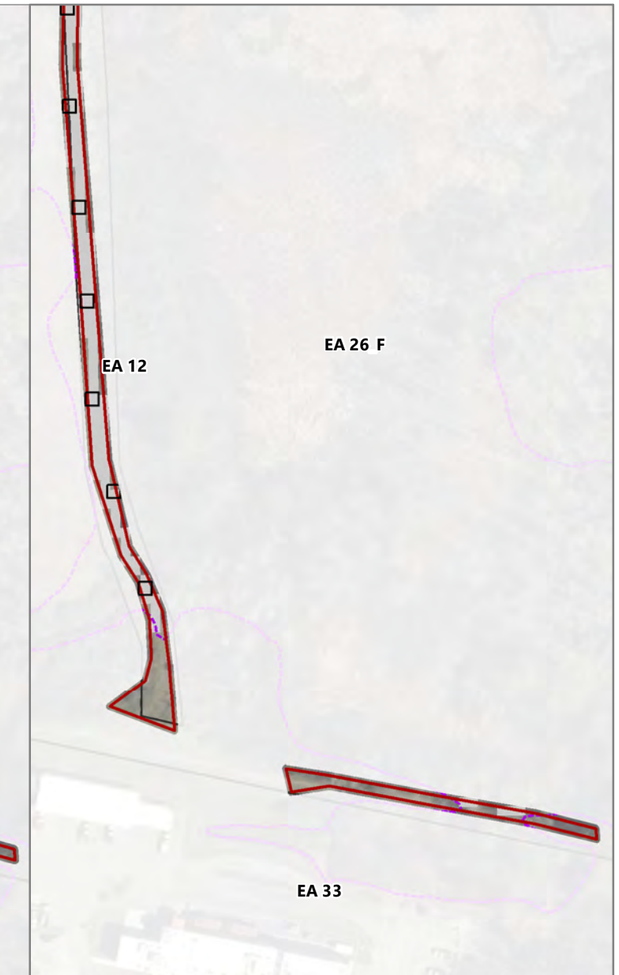
Figure F-3h
Frequently Used Subarea (Exposure Area 12)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Total PCB (0 to 1 foot)[1]

Total PCB (1 to 2 feet)

Total PCB (2 to 3 feet)



Total PCB (0 to 3 feet)

LEGEND:

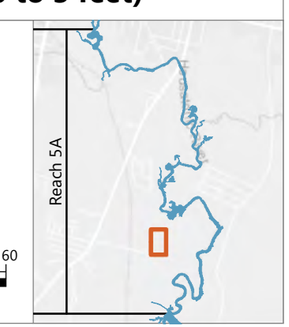
- Exposure Area Boundary
- Exposure Subarea Boundary
- 1 mg/kg PCB Isopleth
- Frequently Used Subarea
- Vernal Pools (AECOM 2020)
- Non-Residential PDI Sampling Locations (2022)
- Residential PDI Sampling Locations (2020-2021)
- Actual/Potential Lawn Sampling Locations
- Historical Sampling Locations

PCB Concentrations (mg/kg)

- ≤ 1
- 1.1 - 2
- 2.1 - 10
- 10.1 - 25
- 25.1 - 50
- > 50

NOTES:
1. PCB concentrations represent the average concentration in the top 0 to 1 foot of soil based on 0- to 0.5-foot and 0.5- to 1-foot layers.
2. Aerial imagery from MassGIS 2021.

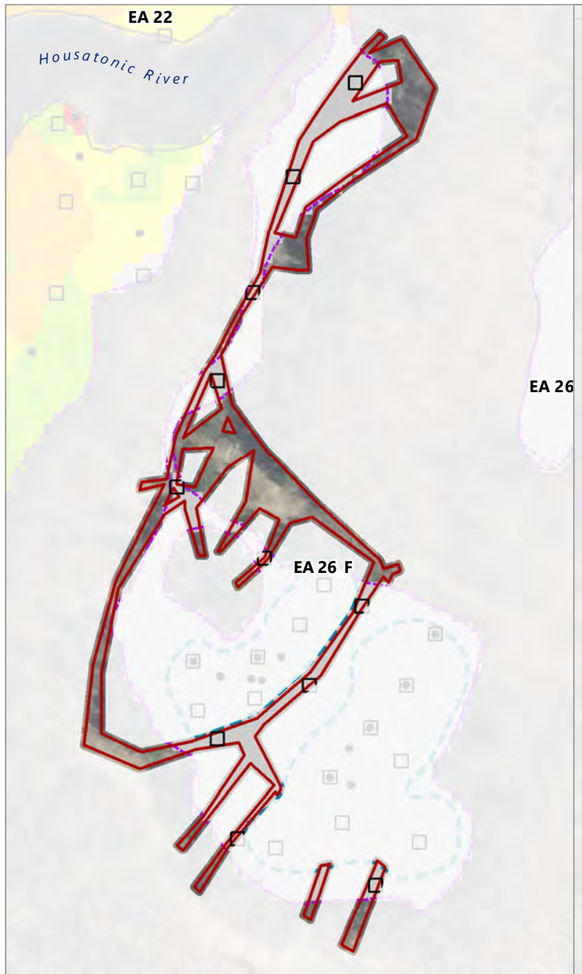
0 160
Feet



Publish Date: 2023/09/19, 11:16 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF3_FUSA.mxd

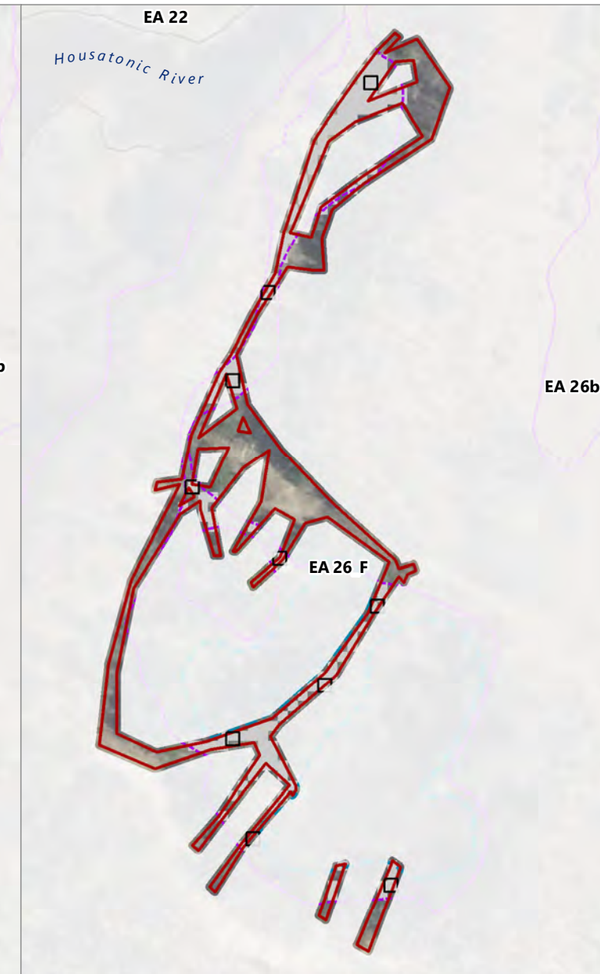
ANCHOR QEA

Figure F-3i
Frequently Used Subarea (Exposure Area 12)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Total PCB (0 to 1 foot)[1]

Total PCB (1 to 2 feet)



Total PCB (2 to 3 feet)

Total PCB (0 to 3 feet)

LEGEND:

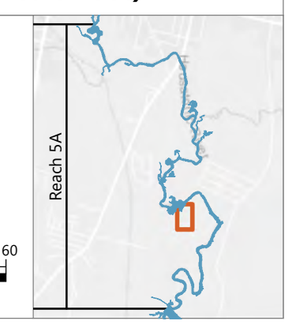
- Exposure Area Boundary
- Exposure Subarea Boundary
- 1 mg/kg PCB Isopleth
- Frequently Used Subarea
- Vernal Pools (AECOM 2020)
- Non-Residential PDI Sampling Locations (2022)
- Residential PDI Sampling Locations (2020-2021)
- Actual/Potential Lawn Sampling Locations
- Historical Sampling Locations

PCB Concentrations (mg/kg)

- ≤ 1
- 1.1 - 2
- 2.1 - 10
- 10.1 - 25
- 25.1 - 50
- > 50

NOTES:
1. PCB concentrations represent the average concentration in the top 0 to 1 foot of soil based on 0- to 0.5-foot and 0.5- to 1-foot layers.
2. Aerial imagery from MassGIS 2021.

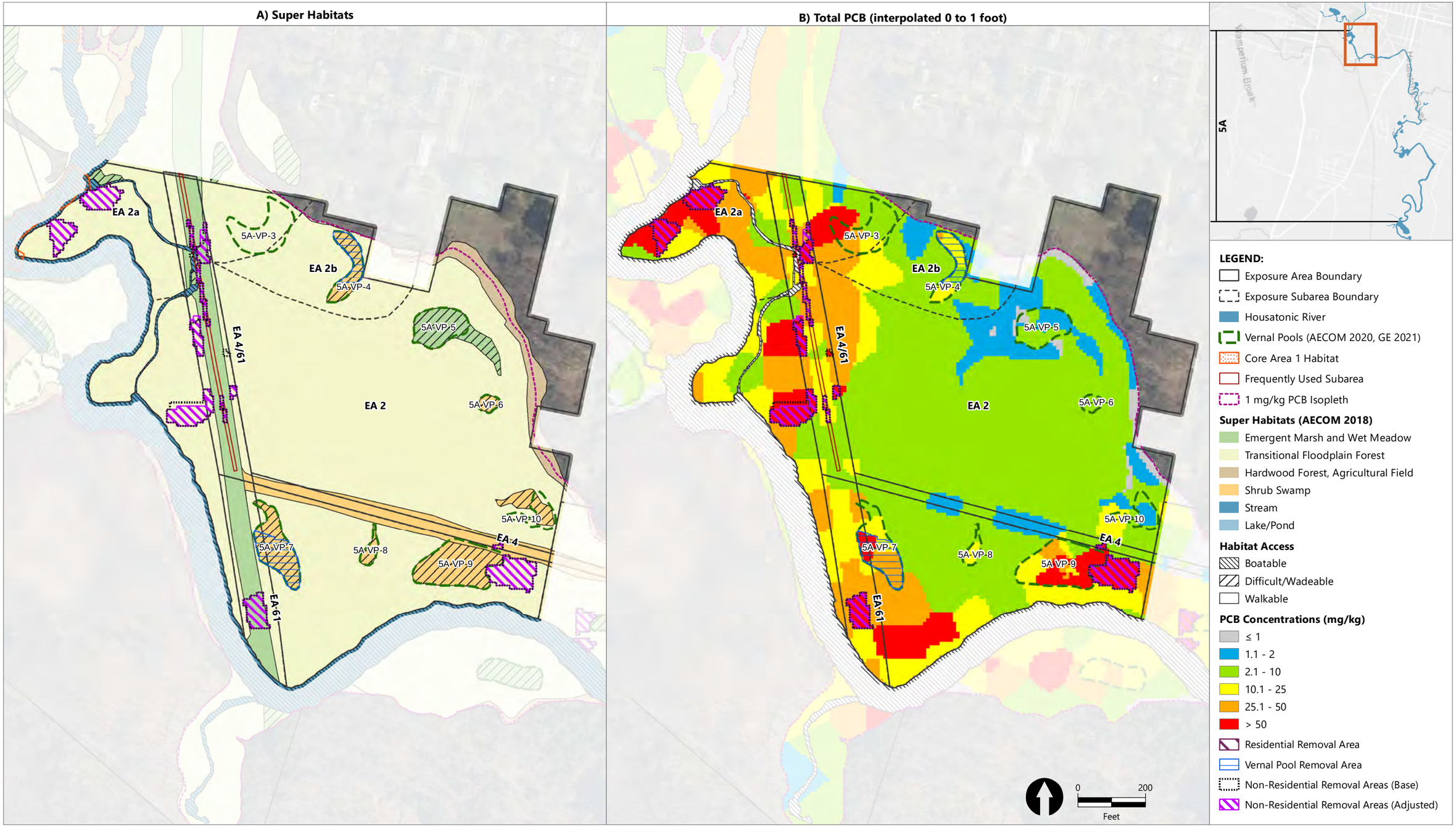
0 160
Feet



Publish Date: 2023/09/19, 11:16 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_WorkPlan_FigF3_FUSA.mxd

ANCHOR QEA

Figure F-3j
Frequently Used Subarea (Exposure Area 26a)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/25, 4:08 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_RDRA_FigF4_FPNonRes.mxd

ANCHOR QEA

Figure F-4a
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 2)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River

Publish Date: 2023/09/25, 4:09 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_RDRA_FigF4_FPNonRes.mxd

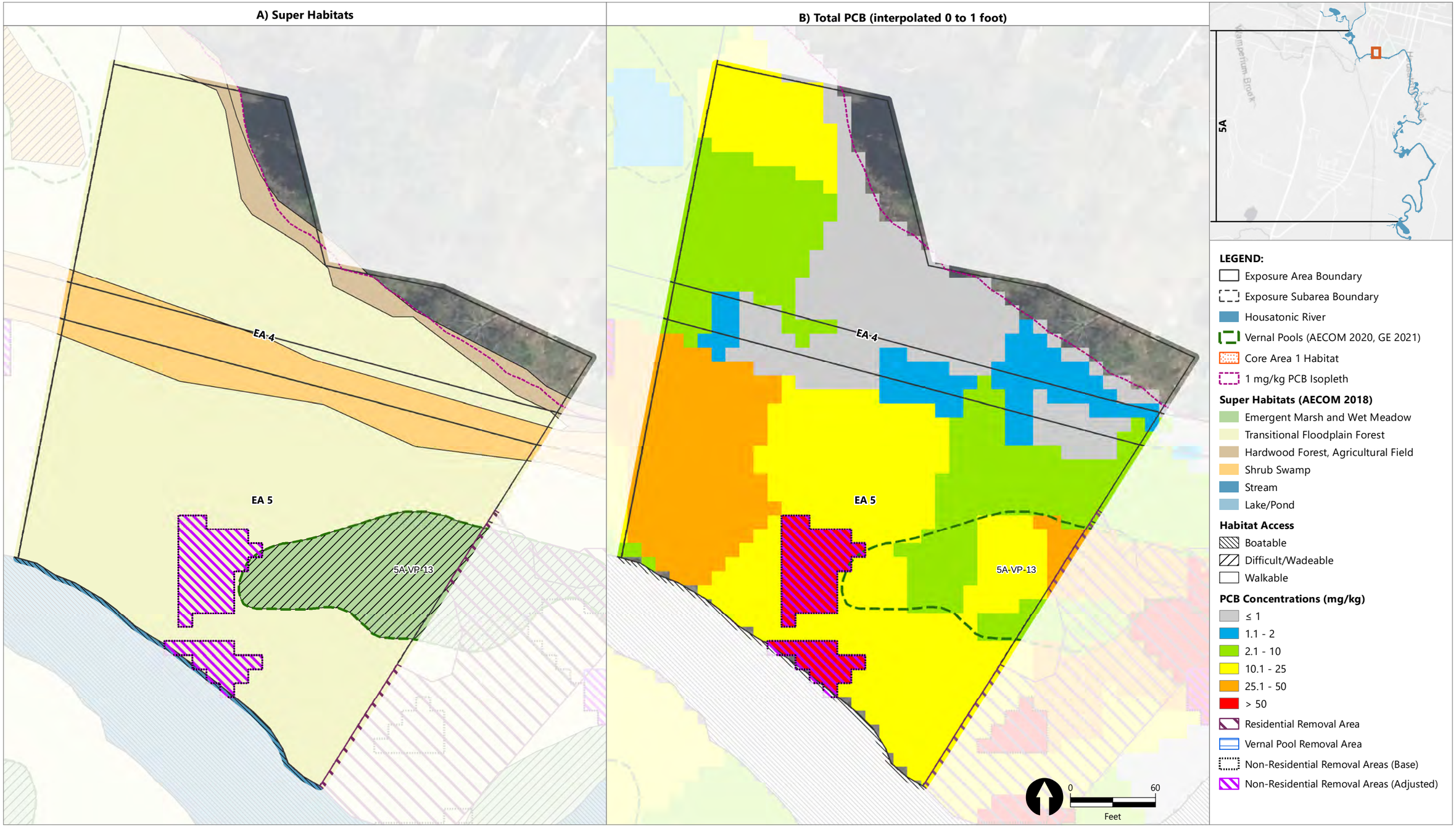
ANCHOR QEA

Figure F-4b
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 4)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River

Publish Date: 2023/09/25, 4:13 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_RDRA_FigF4c_FPNonRes_wFUSA.mxd

ANCHOR QEA

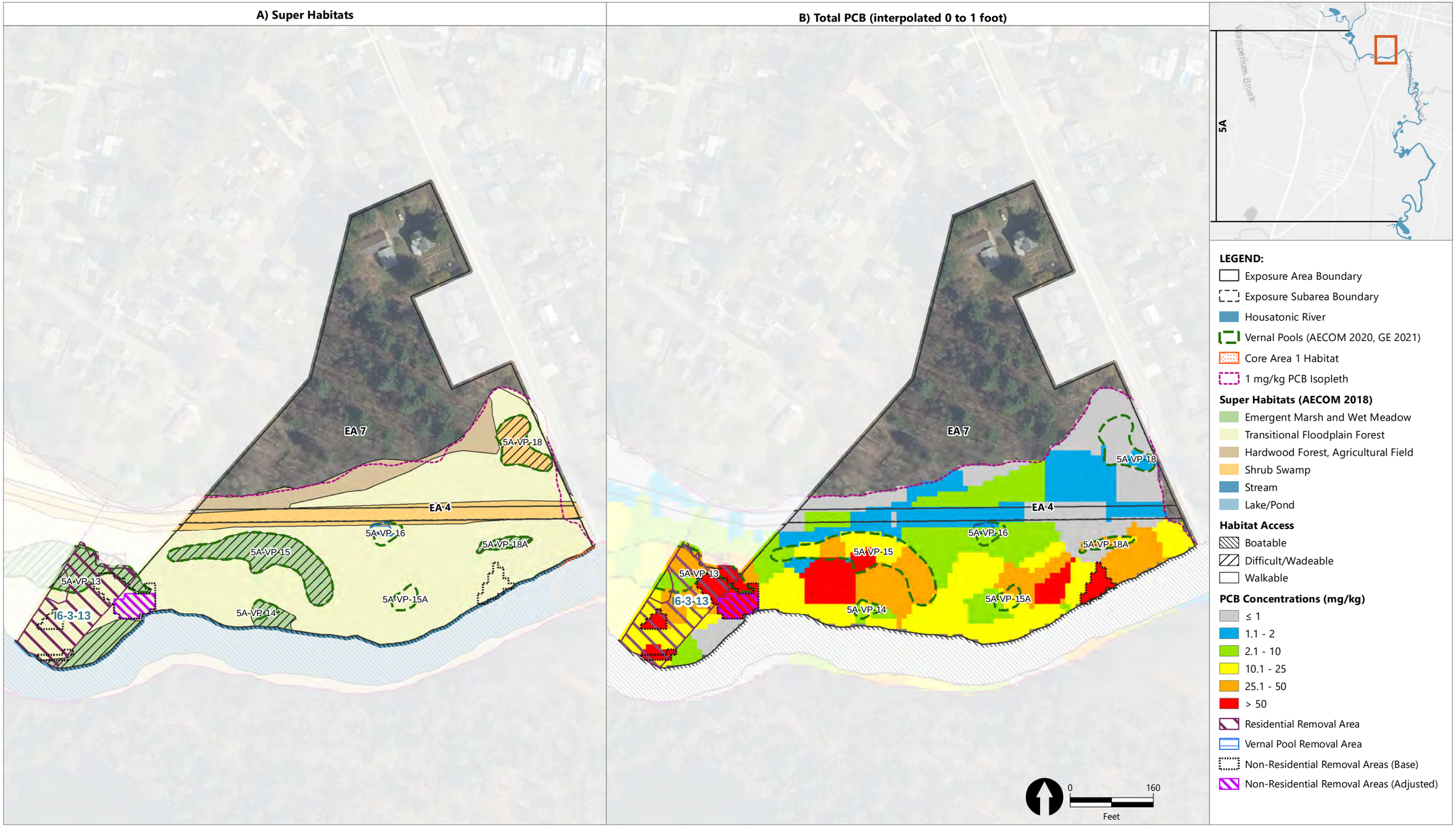
Figure F-4c
Non-Residential Floodplain Preliminary Remediation Areas in Frequently Used Subarea 4/61
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/25, 4:09 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_RDRA_FigF4_FPNonRes.mxd

ANCHOR QEA

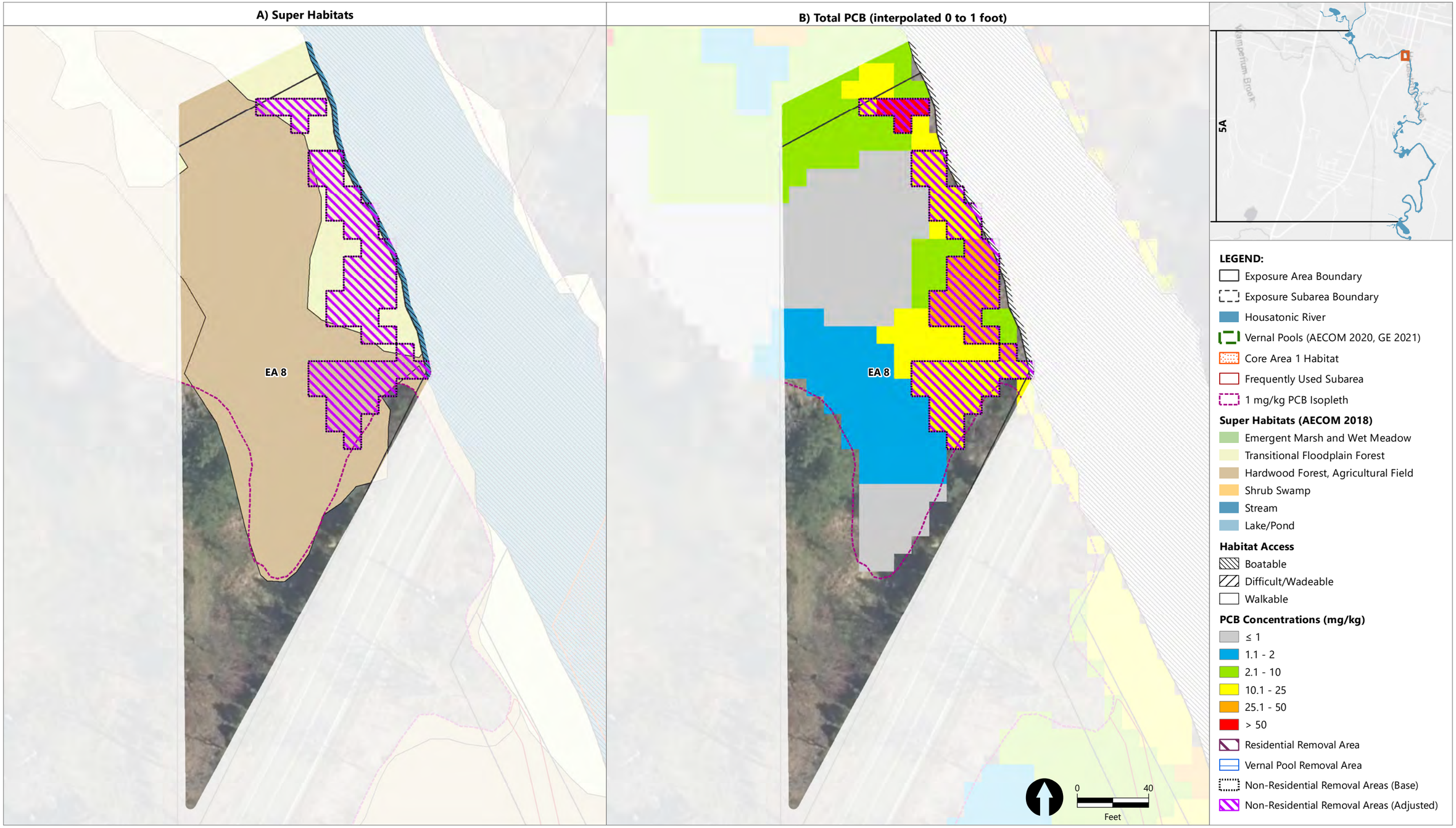
Figure F-4d
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 5)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/25, 4:09 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_RDRA_FigF4_FPNonRes.mxd

ANCHOR QEA

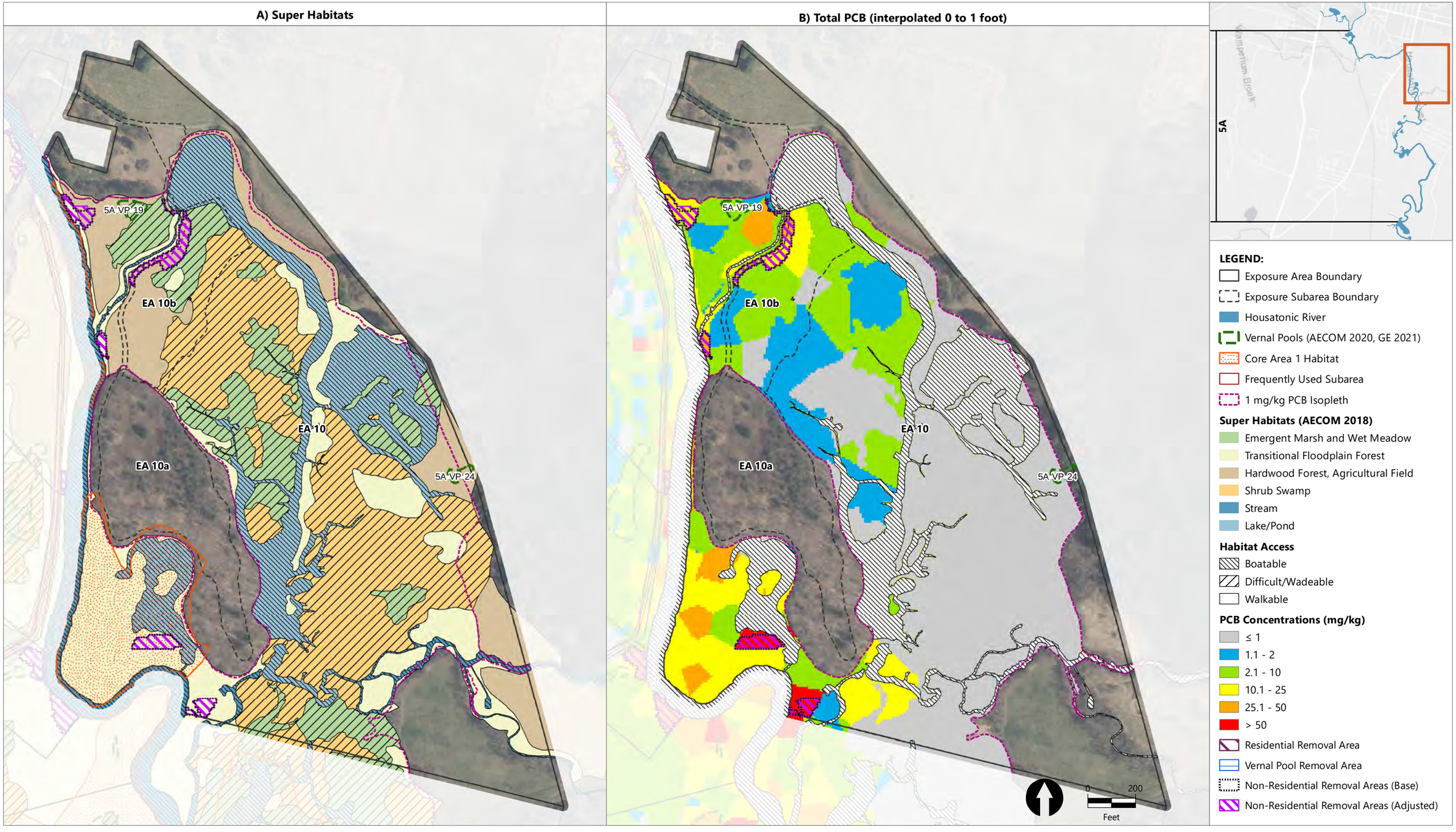
Figure F-4e
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 7)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/25, 4:10 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_RDRA_FigF4_FPNonRes.mxd

ANCHOR QEA

Figure F-4f
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 8)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River

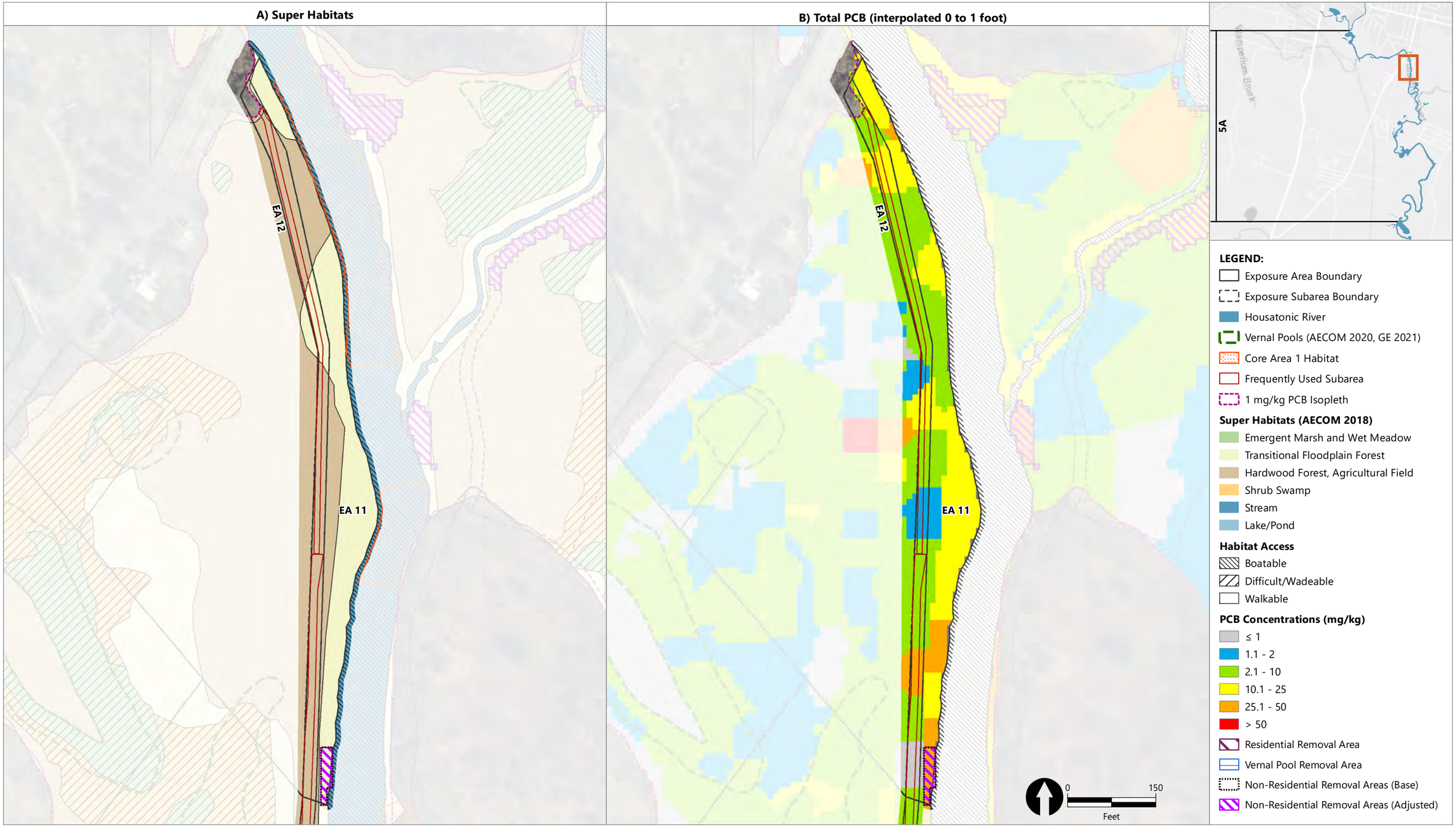


Publish Date: 2023/09/25, 4:10 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_RDRA_FigF4_FPNonRes.mxd

ANCHOR QEA

Figure F-4g
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 10)

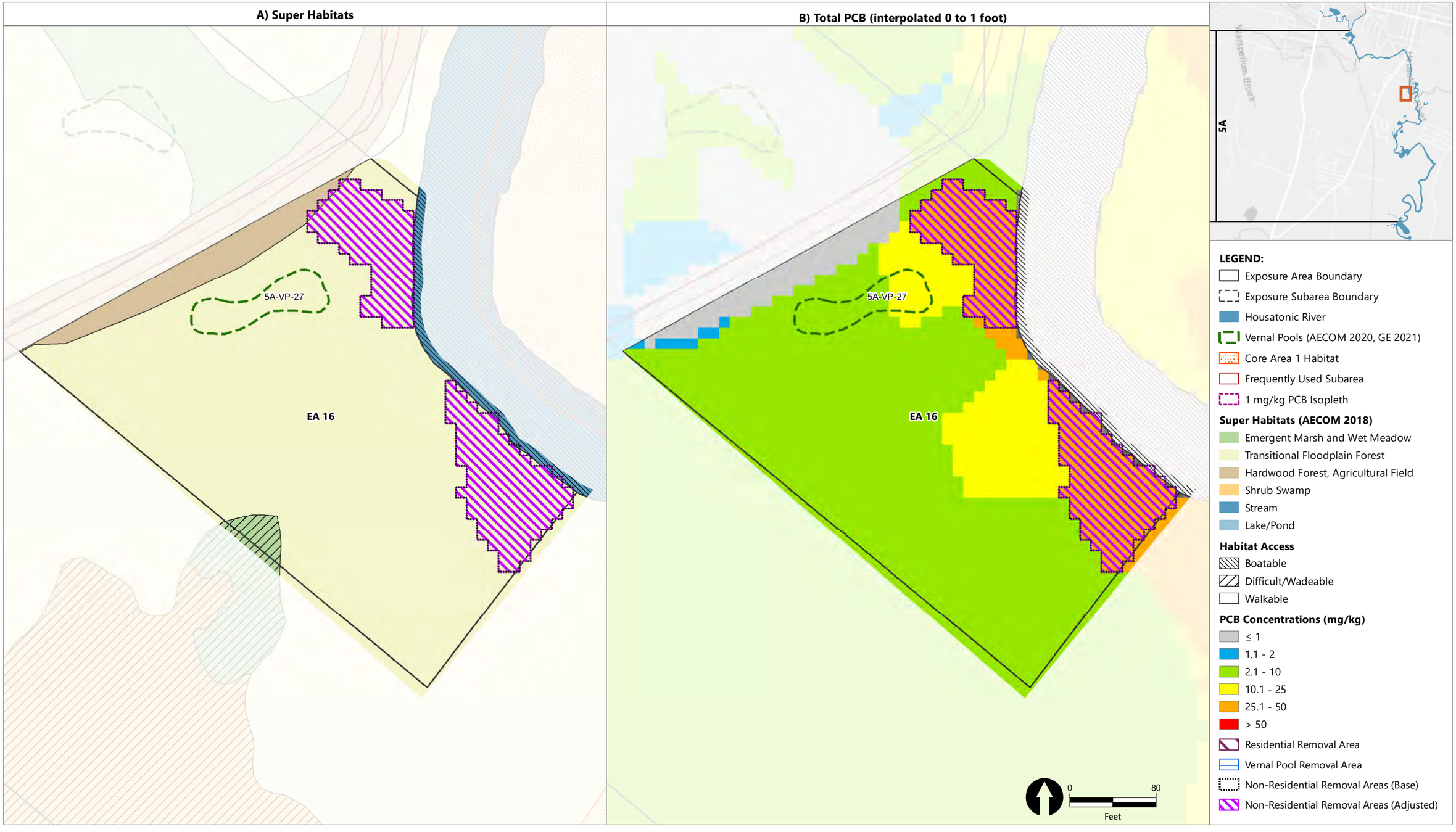
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/25, 4:10 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_RDRA_FigF4_FPNonRes.mxd

ANCHOR QEA

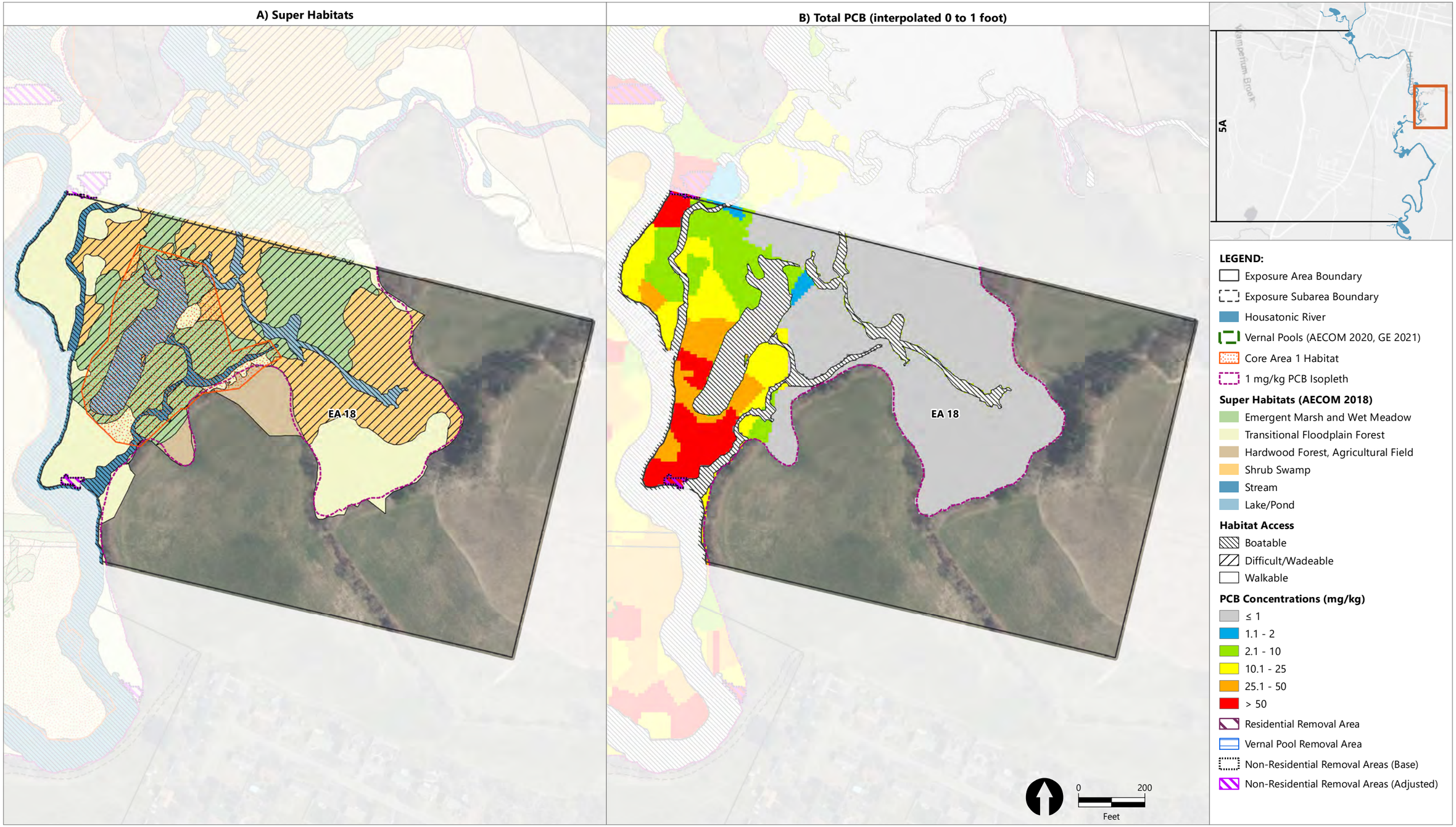
Figure F-4h
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 11)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/25, 4:10 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_RDRA_FigF4_FPNonRes.mxd

ANCHOR QEA

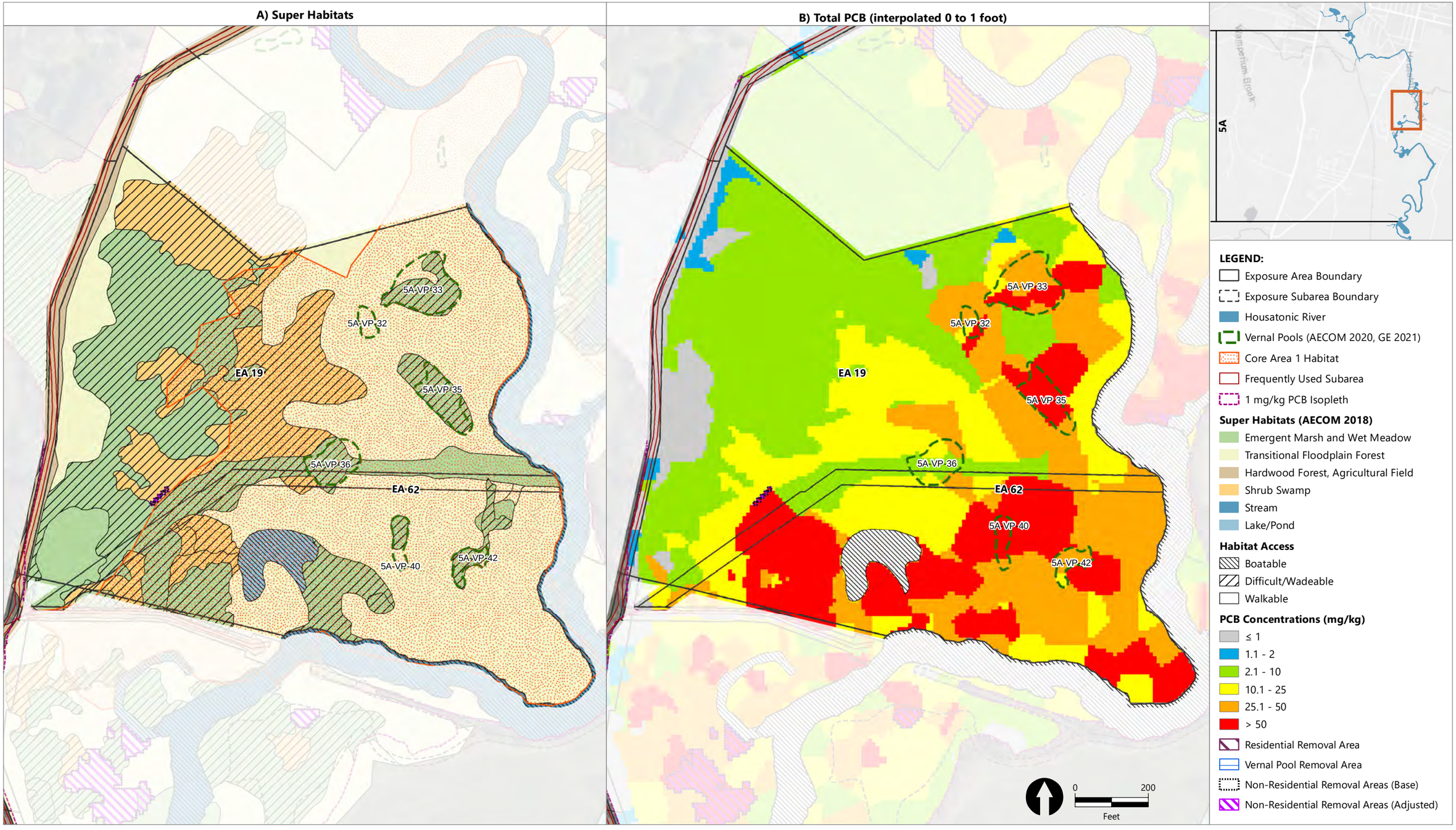
Figure F-4i
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 16)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/25, 4:11 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_RDRA_FigF4_FPNonRes.mxd

ANCHOR QEA

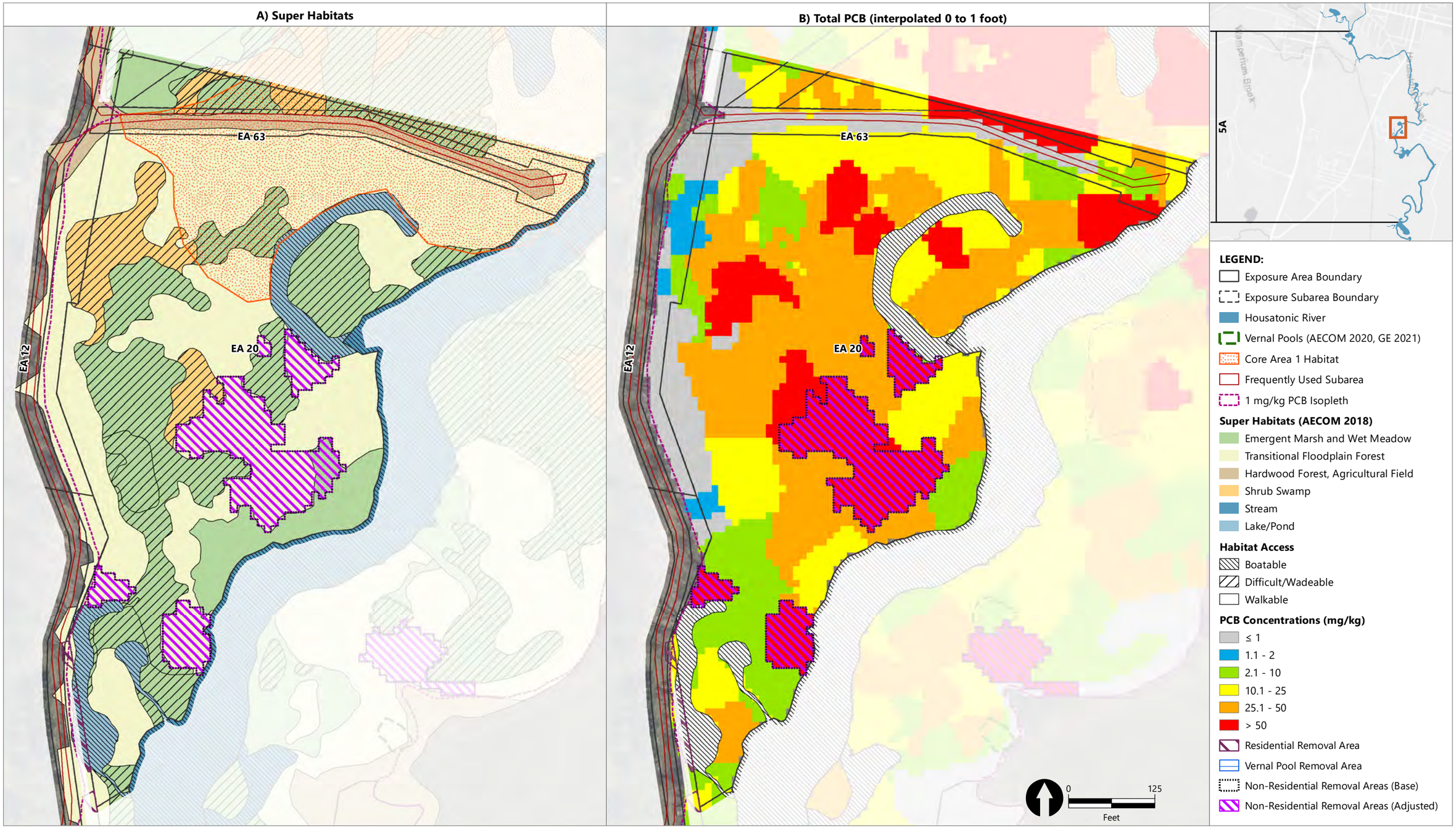
Figure F-4j
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 18)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/25, 4:11 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_RDRA_FigF4_FPNonRes.mxd

ANCHOR QEA

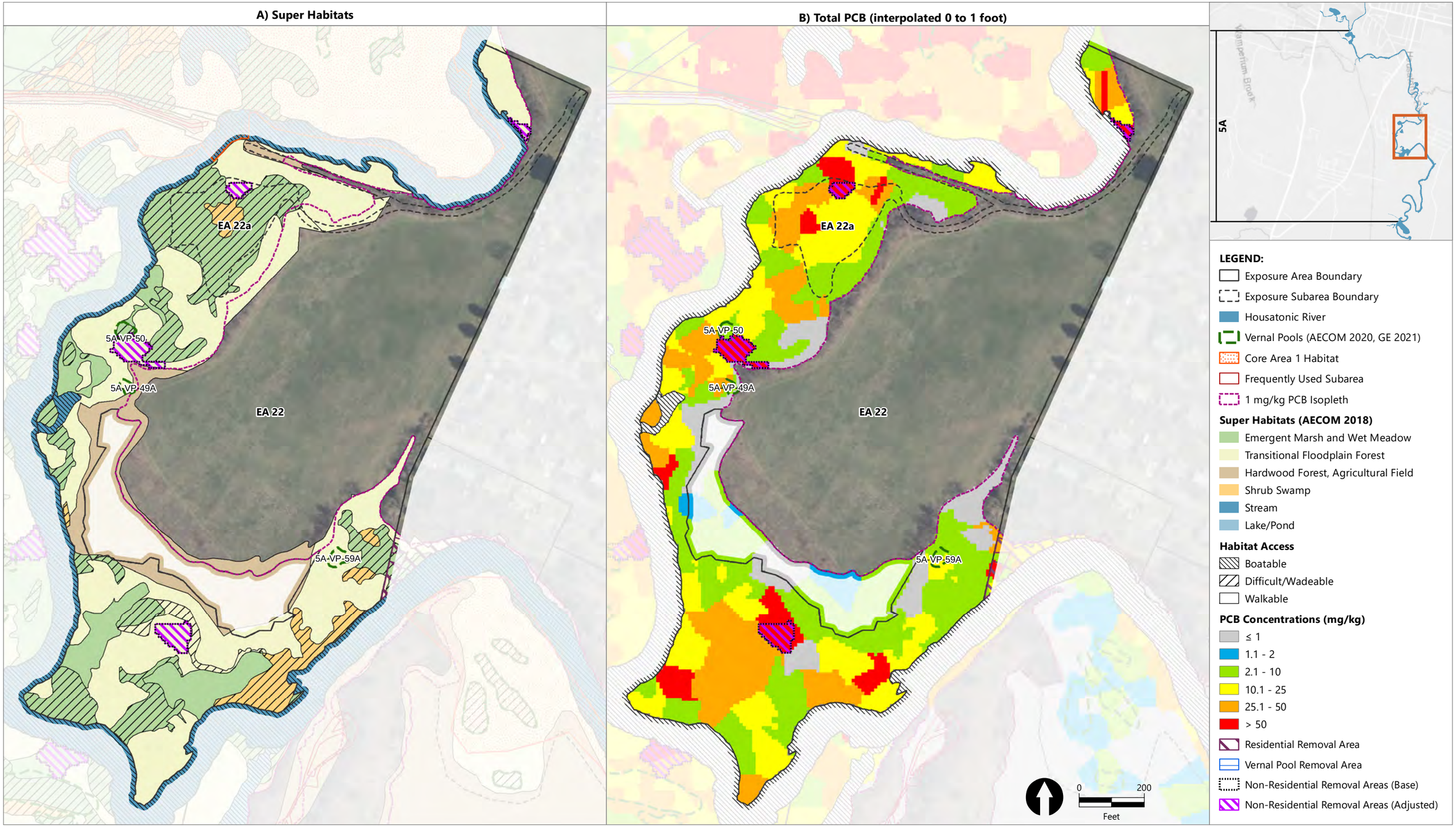
Figure F-4k
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Areas 19)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/25, 4:11 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_RDRA_FigF4_FPNonRes.mxd

ANCHOR QEA

Figure F-4l
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 20)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/25, 4:12 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_RDRA_FigF4_FPNonRes.mxd

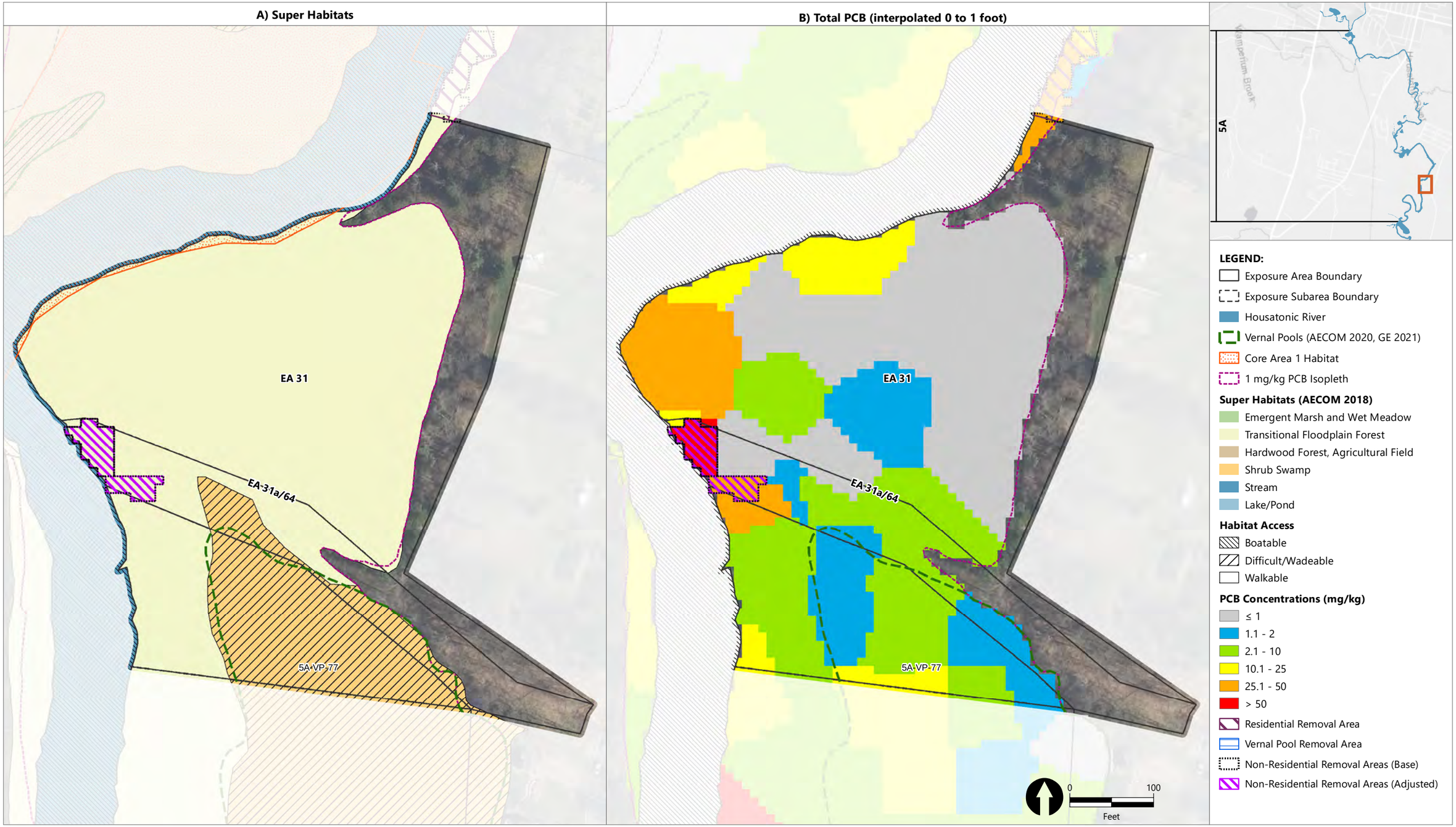
ANCHOR QEA

Figure F-4m
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 22)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River

Publish Date: 2023/09/25, 4:12 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_RDRA_FigF4_FPNonRes.mxd

ANCHOR QEA

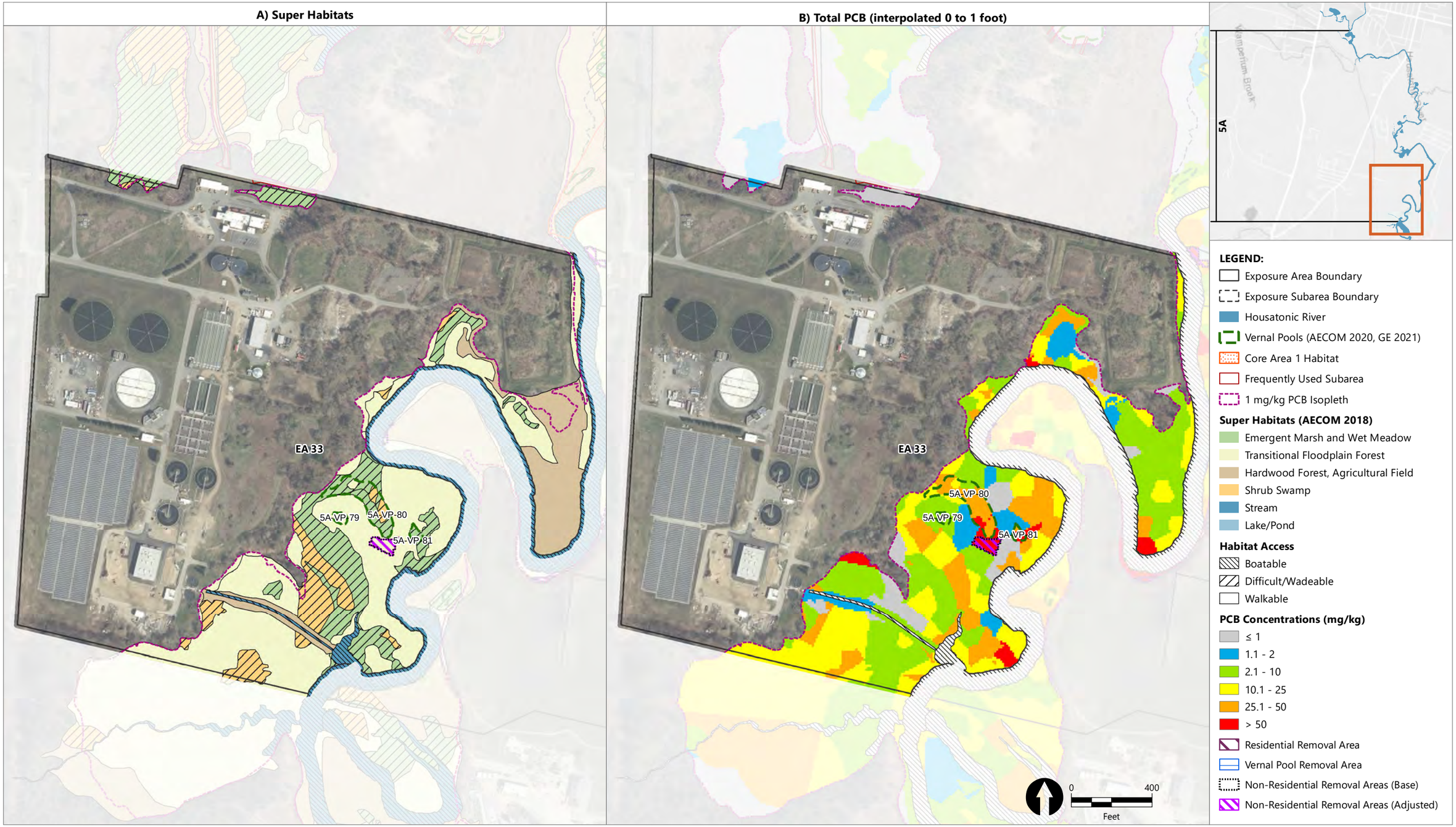
Figure F-4n
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Areas 24)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/25, 4:12 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_RDRA_FigF4_FPNonRes.mxd

ANCHOR QEA

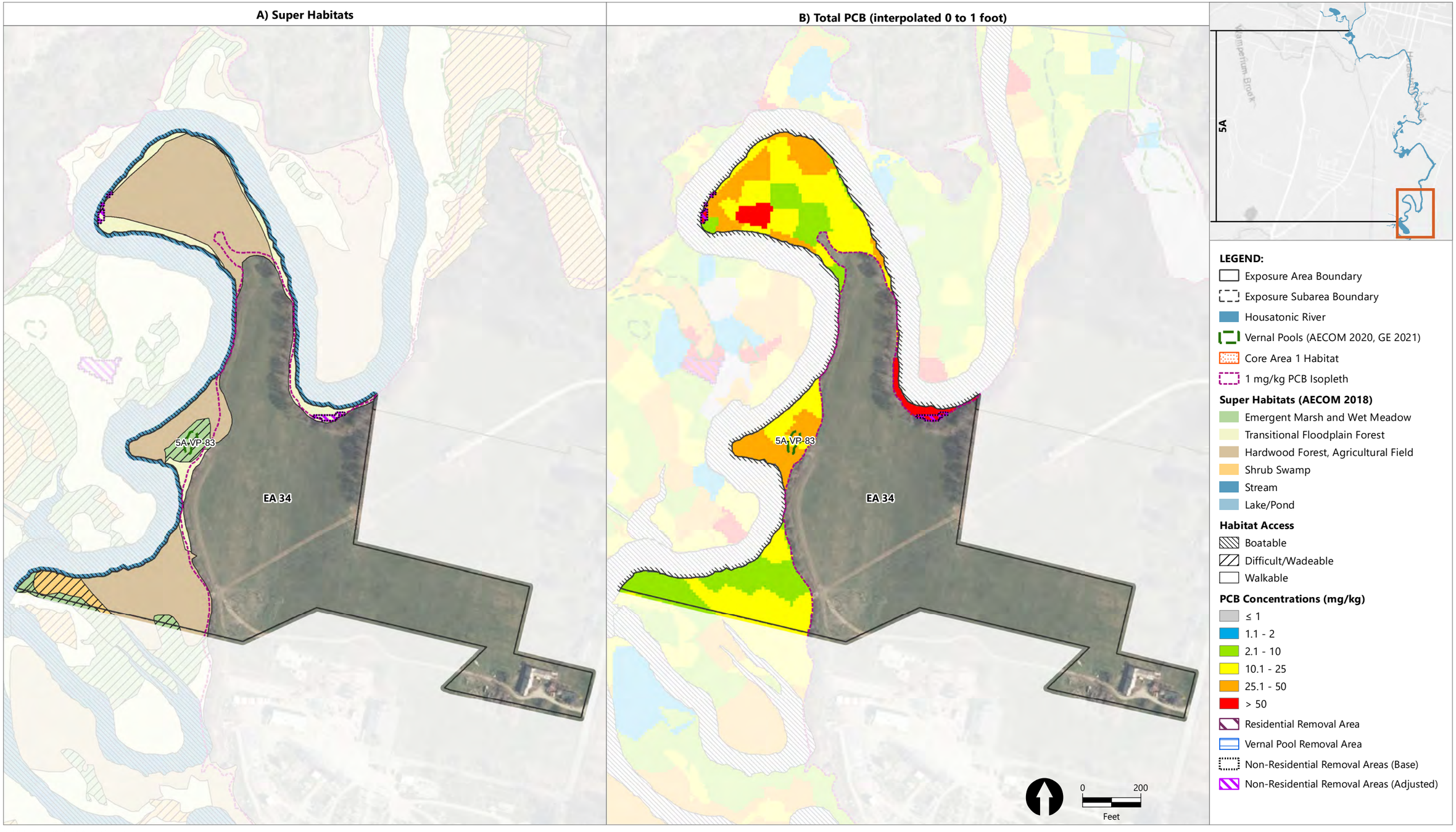
Figure F-4o
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Areas 31)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/25, 4:12 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_RDRA_FigF4_FPNonRes.mxd

ANCHOR QEA

Figure F-4p
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 33)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River



Publish Date: 2023/09/25, 4:13 PM | User: mmathew
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixF\AQ_RDRA_FigF4_FPNonRes.mxd

ANCHOR QEA

Figure F-4q
Non-Residential Floodplain Preliminary Remediation Areas (Exposure Area 34)
Appendix F - PCB Evaluations for Floodplain Soil Non-Residential
Housatonic River – Rest of River

Appendix G
Hydrologic/Hydraulic Analysis and Modeling of Reaches 5 and 6

September 2023
Housatonic River – Rest of River

Hydrologic/Hydraulic Analysis and Modeling of Reaches 5 and 6

Prepared for General Electric Company
Pittsfield, Massachusetts

September 2023
Housatonic River – Rest of River

Hydrologic/Hydraulic Analysis and Modeling of Reaches 5 and 6

Prepared for
General Electric Company
1 Plastics Avenue
Pittsfield, Massachusetts 01201

Prepared by
Anchor QEA, LLC
290 Elwood Davis Road
Liverpool, New York 13088

Project Number: 210469-12.02

TABLE OF CONTENTS

1 Introduction 1

1.1 Background 1

1.2 Hydrologic/Hydraulic Analysis and Modeling Objectives and Scope 1

2 Hydrologic Analysis 3

2.1 Data Sources 3

2.2 Methods of Analysis 4

2.3 Results 5

3 Hydraulic Model 7

3.1 Data Sources and Model Development 7

3.1.1 Data Sources 7

3.1.2 Model Development 8

3.2 Model Calibration 9

3.2.1 Calibration Datasets 9

3.2.2 Calibration Results 10

3.2.3 FEMA FIS Base Flood Profile Comparison 11

3.3 Discussion 11

4 References 13

TABLES

Table 2-1 Drainage Area and Flow Increment Ratio Relative to the USGS Coltsville Gage for the East Branch of the Housatonic River 4

Table 2-2 River Discharge (Flow) Values for Selected Annual Percent Chance Flows 5

Table 2-3 Estimated Flow Values for Specified Recurrence Intervals in Housatonic River Reaches 5 and 6 6

Table 3-1 Manning's Roughness Coefficients 9

Table 3-2 Dates of ADCP Survey Events and Corresponding Flows at Nearby USGS Gages 10

FIGURES

Figure 1-1 Water Surface Elevation and Velocity Survey Locations

Figure 2-1 Flow Input Locations in HEC-RAS Model

Figure 3-1 Terrain Data and River Path from HEC-RAS Model of Housatonic River Reaches 5 and 6
Figure 3-2 Locations of Model Transects, Bridges, and Woods Pond Dam in HEC-RAS Model
Figure 3-3 Differences Between Modeled and Measured WSE Values at High, Moderate, and Low Flow
Figure 3-4 Modeled WSE Profile and Measured WSE Values at High Flow
Figure 3-5 Modeled WSE Profile and Measured WSE Values at Moderate Flow
Figure 3-6 Modeled WSE Profile and Measured WSE Values at Low Flow
Figure 3-7 Comparison of WSE Profiles from FEMA FIS Report and Model Outputs
Figure 3-8 Terrain Data and River Path from HEC-RAS Model Near Downstream End of Reach 5A with Cross Section Locations

ABBREVIATIONS

1% AC	1% annual chance
ADCP	acoustic Doppler current profiler
CD	Consent Decree
cfs	cubic feet per second
Conceptual RD/RA Work Plan	*Conceptual Remedial Design/Remediation Action Work Plan for Reach 5A*
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
Final Revised SOW	Final Revised Rest of River Statement of Work
FIS	Flood Insurance Study
GE	General Electric Company
H&H	hydrologic and hydraulic
HEC-RAS	Hydrologic Engineering Center – River Analysis System
HEC-SSP	Hydrologic Engineering Center's Statistical Software Package
LCLU	Land Cover and Land Use
LiDAR	Light Detection and Ranging
NA	not applicable
PCB	polychlorinated biphenyl
PDI	pre-design investigation
SOW	Statement of Work
Revised Final Permit	Revised Final Resource Conservation and Recovery Act Permit Modification
ROR	Rest of River
RS	River Station
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
WSE	water surface elevation

1 Introduction

1.1 Background

On December 16, 2020, pursuant to the 2000 Consent Decree (CD) for the GE Pittsfield/Housatonic River Site (EPA and GE 2000), the U.S. Environmental Protection Agency (EPA) issued to the General Electric Company (GE) a Revised Final Resource Conservation and Recovery Act Permit Modification (Revised Final Permit) for the Housatonic Rest of River (ROR; EPA 2020). The ROR is defined as that portion of the Housatonic River and its backwaters and floodplain (excluding Actual/Potential Lawns as defined in the CD) located downstream of the confluence of the East and West Branches of the Housatonic River (Confluence). The Revised Final Permit set forth a Remedial Action selected by EPA to address polychlorinated biphenyls (PCBs) in the ROR.

The Revised Final Permit required GE to develop and submit a Statement of Work (SOW) specifying the deliverables and activities that GE will conduct to design and implement the ROR Remedial Action. In accordance with that requirement, after receipt of EPA's comments on an earlier version, GE submitted a *Final Revised Rest of River Statement of Work* on September 14, 2021 (Final Revised SOW; Anchor QEA et al. 2021), and EPA approved it on September 16, 2021.

Section 4.3.3.1 of the Final Revised SOW stated that the Conceptual Remedial Design/Remediation Action Work Plan for each remediation area would include the results of an in-river hydraulic analysis conducted in support of design. This report provides documentation of hydrologic and hydraulic (H&H) analysis and modeling performed within Reaches 5 and 6 of the ROR (i.e., the Confluence to Woods Pond Dam). This report is being submitted as an appendix to the *Conceptual Remedial Design/Remediation Action Work Plan for Reach 5A* (Conceptual RD/RA Work Plan) in support of the remedial design for Reach 5A.

The Federal Emergency Management Agency (FEMA) studied the Housatonic River previously and issued Flood Insurance Study (FIS) reports in 1987 for Pittsfield and in 1982 for Lenox (located along the Housatonic River) covering Reaches 5 and 6. Those studies were based on hydrologic analyses that are approximately 36 years old, and they do not provide sufficient detail for the purposes of the remedial design of Reach 5A. As a result, it was determined to be necessary to perform an H&H analysis of the relevant reaches to provide updated information and more detailed hydraulic outputs than those currently available publicly. This report summarizes the work and findings of these updated hydraulic analyses.

1.2 Hydrologic/Hydraulic Analysis and Modeling Objectives and Scope

Reach 5A is the most upstream reach in the ROR, as shown on Figure 1-1. The Conceptual RD/RA Work Plan provides an overall summary of the project setting and overview of the ROR Remedial Action as well as specific details associated with the remediation to be conducted in Reach 5A. In

summary, the Reach 5A remediation includes removal and capping of sediments in the riverbed and backwater areas, removal/stabilization of riverbank soils, and removal of floodplain soils (including those at residential properties, non-residential floodplain areas, and vernal pools) where necessary to meet certain Performance Standards. Hydraulic analysis and modeling are needed to support several elements of the remedial design for Reach 5A, including the following:

- Delineation of the elevation of the sediment/riverbank interface
- Design of the erosion protection layer for engineered caps
- Evaluation of potential changes in flood storage capacity that may result from remediation
- Support for bank restoration, stabilization, and natural channel design
- Water depth mapping
- Estimation of water surface elevation profiles for various flow conditions

To meet these objectives, a hydrologic analysis of the watershed for Reaches 5 and 6 was first performed to evaluate the statistical characteristics of flows within the ROR. These stream flows were then used to support development of the hydraulic model of the river that will be used to evaluate the objectives above. This document describes the hydrologic analysis and development and calibration of the hydraulic model. While the current remedial design work is being performed for Reach 5A, the first hydraulic control point downstream of Reach 5A is Woods Pond Dam; therefore, the hydrologic analysis and hydraulic modeling included all of Reaches 5 and 6. The hydraulic model used for this project was the U.S. Army Corps of Engineers (USACE) Hydrologic Engineering Center – River Analysis System (HEC-RAS) version 6.3.1 modeling software (USACE 2022).

2 Hydrologic Analysis

The first step in an H&H analysis is a hydrologic assessment. This process is used to determine the recurrence intervals of various flow events. A common goal of this analysis is to specify the 1% annual chance (1% AC) discharge (flow), commonly referred to as the 100-year event or base flood. This event has a 1% chance of occurring in any given year and is the standard regulatory event used by FEMA. This is also commonly used as a design flow for sediment cap designs (Palermo et al. 1998; EPA 2005). Water surface elevations (WSEs) predicted by the 1% AC flow are referred to as the base flood elevation and are used to define the regulatory floodplain. The hydrologic analysis also provides information on smaller events that may be of interest to stream evaluations. The site hydrology was reviewed as part of the H&H analysis.

2.1 Data Sources

Data were gathered from various sources for the purpose of assessing hydrology. The data sources included the following:

1. **U.S. Geological Survey (USGS) gage stations:** USGS maintains two flow monitoring stations (gages) along the Housatonic River that are close to the study area (Figure 1-1). The first gage is located along the East Branch of the Housatonic River in Coltsville, Massachusetts (Station 01197000—East Branch Housatonic River at Coltsville, Massachusetts; USGS 2023a); this gage is located approximately 5.5 miles upstream of the Confluence. The dataset for the USGS Coltsville gage includes the daily stream flows from 1936 to present. Analyses for the purpose of model development used station records through March 2023. A second gage was installed by USGS in September 2022 (in coordination with GE) along the Housatonic River in the vicinity of Woods Pond Dam (Station 01197145—Housatonic River at Lenoxdale, Massachusetts; USGS 2023b). The short period of record at this location precludes use for frequency curve evaluations. The Coltsville and Lenoxdale USGS gage locations are shown on Figure 1-1.

2. **Flow monitoring stations:** Flow monitoring was performed in the East and West Branches of the Housatonic River near the Confluence as part of GE's interim baseline surface water monitoring program, as described in GE's report on that program (Anchor QEA and Arcadis 2023). Specifically, staff gages were installed at the South Street Bridge in the West Branch and at the Pomeroy Avenue Bridge in the East Branch (Figure 1-1). Between March and November 2022, field personnel recorded the WSE indicated by the staff gages coincident with monthly surface water sampling being performed at these locations.

3. **Final Basis of Design, 1.5-Mile Reach Removal Action: Phase 1 (Weston 2002):** This report, prepared for EPA, provides a hydrologic analysis and flow estimates for a range of return periods within Reaches 5 and 6 of the Housatonic River. In this report, flow increment ratios (also referred to as drainage area ratios) were developed to relate measured flow at the USGS

Coltsville gage to other downstream locations within Reaches 5 and 6; these ratios were subsequently adjusted to account for differences in land use and soil conditions in the subwatersheds, as shown in Table 2-1. The adjusted flow increment ratios were used to develop updated hydrology estimates at various points throughout Reaches 5 and 6 based on a more contemporary USGS flow record.

4. **FEMA FIS reports:** This analysis used the two FIS reports available for Reaches 5 and 6 of Housatonic River: Pittsfield (FEMA 1987) and Lenox (FEMA 1982).

5. **Detailed topography data:** The web application Model My Watershed (Stroud Water Research Center 2023) was used to delineate rough extents of the drainage areas to locations of interest along the study reaches. The generated areas were validated and modified as needed based on detailed topographic data from the Mass.gov GIS portal (MassGIS 2021; Quantum Spatial 2016) to delineate watersheds for the study area.

Table 2-1
Drainage Area and Flow Increment Ratio Relative to the USGS Coltsville Gage for the East Branch of the Housatonic River

Contributing Drainage Areas	Drainage Area (square miles)	Flow Increment Ratio[1]	Adjusted Flow Increment Ratio (Weston 2002)[2]
USGS Coltsville gage	57.60	1.00	NA
West Branch Confluence	130.16	2.26	1.81
Wampenum Brook	132.98	2.31	1.81
Sackett/Sykes Brook	143.84	2.50	2.02
Mill/Roaring Brook	156.17	2.71	2.23
Yokun Brook	163.02	2.83	2.36
Woods Pond Headwaters	169.42	2.94	2.48

Notes:
1. Flow increment ratios based on drainage area.
2. Values are adjusted for stations downstream of the West Branch Confluence by accounting for differing land use and soil conditions within the subwatersheds and their impacts on runoff and streamflow rather than scaling by watershed area only.

2.2 Methods of Analysis

The hydrologic analysis was based on the data sources cited in Section 2.1. First, flow ratios between the East and West Branches were calculated using flows measured during GE's interim baseline surface water monitoring program (Anchor QEA and Arcadis 2023). These comparisons were used as an empirical baseline to support estimation of relative flow volumes in each branch. Those measurements were also used to develop a relationship between flows measured at the Confluence and flows recorded at the USGS Coltsville gage.

The long-term time series of flow data at the USGS Coltsville gage was used to compute flow frequency curves from 1936 to 2022 using USACE Hydrologic Engineering Center's Statistical Software Package (HEC-SSP) (Bartles et al. 2022; England et al. 2019).

Flow increases from tributary input along the river were estimated using the approach described in Weston (2002). Flow increment ratios and drainage areas were determined for six inflow locations along the Housatonic River between the Confluence and Woods Pond Headwaters. First, the drainage areas were determined by using the Model My Watershed tool. The flow increment ratios were estimated by comparing drainage areas to the drainage area of the USGS Coltsville gage.

To validate the empirical relationship between the East and West Branches (previously described in Anchor QEA and Arcadis 2023), the drainage areas of the river at the South Street Bridge and Pomeroy Avenue Bridge were compared based on Table 2-1. The drainage area of the river at the South Street Bridge is 59.38 square miles, and the drainage area at the Pomeroy Avenue Bridge is 70.62 square miles. The flow increment factor (ratio of drainage area) is 0.84, consistent with the ratio in flows observed in the empirical flow measurements made at these two locations during the interim baseline program, which showed a flow ratio of 0.843 between the East and West Branches.

2.3 Results

Frequency curves were constructed based on data from the USGS Coltsville gage from 1936 to 2022 using HEC-SSP (Bartles et al. 2022; England et al. 2019). Using these curves, the recurrence intervals of various flow events were determined for the USGS Coltsville gage (approximately 5.5 miles upstream of the Confluence) with 57.6 square miles drainage area. Results are presented in Table 2-2.

Table 2-2
River Discharge (Flow) Values for Selected Annual Percent Chance Flows

Annual % Chance	Return Period (Years)	USGS Coltsville Gage (cfs)
0.2	500	10,934
0.5	200	8,721
1	100	7,277
2	50	6,003
5	25	4,547
10	10	3,591
20	5	2,734
50	2	1,688
99	1	575

Table 2-3 summarizes the estimated flows within the main channel of the Housatonic River at each flow input location for various recurrence intervals (see Figure 2-1 for locations). To calculate these values, the flow increment ratios presented in Table 2-1 were multiplied by the flow values in Table 2-2.

Table 2-3
Estimated Flow Values for Specified Recurrence Intervals in Housatonic River Reaches 5 and 6

Annual % Chance	Return Period (Years)	Flow in Housatonic River (cfs) at Various Flow Input Locations						
		USGS Coltsville Gage	West Branch Confluence	Wampenum Brook	Sackett/ Sykes Brook	Mill/ Roaring Brook	Yokun Brook	Woods Pond Headwaters
0.2%	500	10,934	20,119	20,665	22,743	25,039	26,351	27,554
0.5%	200	8,721	16,047	16,482	18,140	19,971	21,018	21,977
1%	100	7,277	13,390	13,754	15,136	16,664	17,538	18,338
2%	50	6,003	11,046	11,346	12,486	13,747	14,467	15,128
5%	25	4,547	8,366	8,594	9,458	10,413	10,958	11,458
10%	10	3,591	6,607	6,787	7,469	8,223	8,654	9,049
20%	5	2,734	5,031	5,167	5,687	6,261	6,589	6,890
50%	2	1,688	3,106	3,190	3,511	3,866	4,068	4,254
99%	1	575	1,058	1,087	1,196	1,317	1,386	1,449
N/A	N/A	150	276	283	312	344	362	378

3 Hydraulic Model

Using the hydrologic analyses described above, a one-dimensional (1D) hydraulic model was developed in HEC-RAS version 6.3.1 to evaluate flow conditions in Reaches 5 and 6. Field measurements of flow and water surface elevation during three flow conditions were used as calibration data. Hydrologic inputs were used to simulate hydraulics and output WSEs, flow depths, and inundation boundaries of specified recurrence interval flows.

3.1 Data Sources and Model Development

3.1.1 Data Sources

3.1.1.1 Hydrology

The results of the hydrologic analysis (Section 2) were used to define flow change locations in the hydraulic model along Reaches 5 and 6. Table 2-3 shows the flows specified in the model for each design flow event.

3.1.1.2 Topography, Bathymetry, and Bridge Surveys

During the pre-design investigation (PDI) of Reach 5A, Spicer Group, Inc., conducted topographic Light Detection and Ranging (LiDAR) surveys of the riverbanks and floodplain, bathymetric surveys of the Housatonic River channel, and collected survey data for bridge crossings, as described in the *Pre-Design Investigation Summary Report for Reach 5A Sediment and Riverbanks* (Anchor QEA and AECOM 2023) being submitted concurrently with the Conceptual RD/RA Work Plan. These data were used in conjunction with 2015 LiDAR data (Quantum Spatial 2016) for the study area to create a raster file of the model terrain, which is shown on Figure 3-1.

3.1.1.3 Roughness Data

The Massachusetts 2016 Land Cover and Land Use (LCLU) geodatabase (MassGIS 2019) was used to define surface roughness coefficients within the model domain, including in-river and floodplain areas.

Manning's roughness coefficient (often referred to as Manning's *n*) was used to define roughness parameters in the hydraulic model. USACE guidance (USACE 2023) was used to define Manning's roughness coefficient values based on the land cover.

In-stream roughness values assumed a meandering channel with sandy to gravelly bed as an initial estimate. This value was adjusted during calibration to account for the fact that all empirical flow data available for calibration were obtained during periods when flows were contained within the channel, with no data available for overbank flow conditions during floods. That adjustment is described in Section 3.1.2.4.

3.1.2 Model Development

3.1.2.1 Model Geometry

The model's computational domain extends from the Confluence to a location approximately 1,100 feet downstream of Woods Pond Dam. This area is represented by a total of 97 cross-sectional transects that were assigned along the river to sufficiently capture both the in-river and overbank (floodplain) geometry. These transects are shown on Figure 3-2. Typical spacing between transects was between 400 and 800 feet. The topographic/bathymetric data described in Section 3.1.1.2 were used to generate cross-sectional elevations at each of the 97 transects.

3.1.2.2 Lateral Structures

Within the computational domain of the hydraulic model, there are four locations containing bridge crossings. These bridge crossings are located at Pomeroy Avenue (River Station [RS] 53969), Holmes Road (RS 53098), New Lenox Road (RS 28527), and Woods Pond (RS 2911); all were included in the model (Figure 3-2). The Pomeroy Avenue, Holmes Road, and New Lenox Road crossings are roadways open to motor vehicle traffic, and the crossing at Woods Pond is a footbridge and is limited to pedestrians. Geometries of these structures were measured as part of the survey conducted during the PDI (see Section 3.1.1.2).

The Woods Pond Dam was also included in the model, approximately 1,100 feet upstream of the model's downstream boundary (Figure 3-2).

3.1.2.3 Boundary Conditions

The HEC-RAS model requires specification of boundary conditions to establish the starting WSEs at the upstream and downstream ends of the model domain. The model evaluated flows for the 1-, 2-, 5-, 10-, 25-, 50-, 100-, 200-, and 500-year[1] return periods (as determined by the hydrologic analysis; see Section 2) in addition to bankfull and 70% bankfull events (AECOM 2023). A flow rate of 150 cubic feet per second (cfs) was also evaluated; the WSE profile of this flow rate was used to evaluate the toe of bank definition. Downstream boundary conditions for these events used a normal depth slope of 0.0035 feet per feet.

3.1.2.4 Roughness Characteristics

Table 3-1 shows the land uses defined within the Massachusetts LCLU database and the Manning's roughness coefficient assigned to each land use type. Cross-sections were assigned roughness coefficients by intersecting them with the LCLU classifications using RAS Mapper. RAS Mapper subdivides each cross-section into smaller segments as needed based on unique land use types at

[1] The 200-year flow event was simulated as a sensitivity analysis to evaluate potential long-term changes in rainfall and runoff patterns associated with climate change. This is not intended as a design flow event, but it can be used to inform design sensitivity to extreme flows beyond the 100-year event.

that location. Roughness parameters were simplified to ensure the number of different roughness segments was fewer than 20 (a limit imposed by the modeling software).

For calibration, since all measured flows were confined to the channel, adjustments to Manning's roughness coefficient were made for in-stream portions of the cross-sections (identified as Open Water in Table 3-1). Roughness values were increased so measured WSEs matched model outputs. Overbank roughness coefficients were left at default values.

Table 3-1
Manning's Roughness Coefficients

LCLU Class	Manning's Roughness Coefficient
No Data	1
Developed – High Intensity	0.16
Developed – Open Space	0.04
Cultivated Crops	0.035
Pasture-Hay	0.033
Grassland-Herbaceous	0.033
Deciduous Forest	0.15
Evergreen Forest	0.12
Scrub-Shrub	0.12
Palustrine Forested Wetland	0.10
Palustrine Scrub-Shrub Wetland	0.12
Palustrine Emergent Wetland	0.073
Barren Land	0.027
Open Water	0.029
Palustrine Aquatic Bed	0.05

3.2 Model Calibration

After model terrain and roughness parameters were developed, the model was calibrated to field measurements. The following subsection describes the datasets that were used for calibration and model inputs/parameters that were adjusted to achieve calibration.

3.2.1 Calibration Datasets

The model was primarily calibrated to the measured velocities/flows and WSEs collected during the Reach 5A PDI and reported in the *Pre-Design Investigation Summary Report for Reach 5A Sediment and Riverbanks* (Anchor QEA and AECOM 2023). Specifically, current velocities were measured at six cross-sections throughout Reach 5 using an acoustic Doppler current profiler (ADCP). These six cross-sections consisted of three locations in Reach 5A (Holmes Road Bridge, adjacent to Joseph

Drive, and near the Pittsfield Wastewater Treatment Plant, designated as Sites 1, 2, and 3, respectively), one location in Reach 5B (New Lenox Road Bridge, Site 4), and two locations in Reach 5C (south of Roaring Brook and Woods Pond Headwaters near Woodland Road, Sites 5 and 6, respectively); see Figure 1-1. Three rounds of WSE and current velocity measurements were collected under different flow conditions—low, moderate, and high flow. Table 3-2 summarizes the survey dates corresponding to each of the target flow ranges and the average daily flow observed during each event at the USGS Coltsville and Lenoxdale gages.

Table 3-2
Dates of ADCP Survey Events and Corresponding Flows at Nearby USGS Gages

Event	Target Flow Range at Coltsville Gage (cfs)	Survey Start Date	Survey End Date	Observed Daily Average Flow (cfs)[1]	
				Coltsville Gage (01197000)	Lenoxdale Gage (01197145)
Low	<100	10/25/2022	10/27/2022	63	232
Moderate	100–300	4/11/2023	4/12/2023	169	504
High	>300	5/1/2023	5/2/2023	420	759

Note:
1. Values represent average flows over the survey dates. USGS flow data are provisional and pending final review and approval by USGS.

Mean discharge (flow) values and flow profiles were then developed from the ADCP data using the Velocity Mapping Toolbox developed by USGS (Parsons et al. 2013). These flows were used as the basis for adjustment of the model parameters. Measured WSEs were used to evaluate model accuracy.

As previously noted, all calibration datasets were collected during periods when flow was confined to the river channel (i.e., no calibration data are available during periods when the river is overbank); thus, calibration adjustments were made, primarily to the in-stream roughness parameters.

3.2.2 Calibration Results

Figure 3-3 shows the difference between measured and model-predicted WSEs at each of the six monitoring locations during each event. Differences between modeled and measured WSEs were less than 0.30 foot, showing good agreement between model outputs and measured data.

Figures 3-4 through 3-6 show comparisons of model-predicted and measured WSEs profiles for the low, moderate, and high flow events, respectively. All three events show good agreement between the model and observed data.

3.2.3 FEMA FIS Base Flood Profile Comparison

As stated above, all of the measured flows available for model calibration were collected during periods when flow was confined to the river channel; there were no data available for evaluation of model performance during overbank flow conditions. Therefore, to validate model predictions during flood conditions, flows reported in the effective FEMA FIS report (FEMA 1987) were used to create a circa-1987 1% AC simulation. This is not the same as a current 1% AC flood since it is based on circa 1987 data, and recent analysis indicates that the 1% AC flood now has a greater magnitude. Specifically, the estimated flow at the Confluence for a 1% AC flood increased from 12,386 cfs in 1987 to 13,390 cfs in 2023.[2] This simulation is not intended as a baseline for the 1% AC event; it is only intended to compare the effective FEMA model to the 1D HEC-RAS model described in this report. A simulation of 2023 1% AC flows has been performed in support of sediment cap design efforts.

This simulation was run to evaluate overbank roughness modeling and verify that the model was performing similarly to the effective FEMA model. The reported FEMA WSE profile is compared to the HEC-RAS model outputs on Figure 3-7. The results show good agreement between the model and the FEMA FIS, particularly in the more downstream portion of the model domain where Woods Pond Dam controls water levels.

3.3 Discussion

Based on comparisons between the measured and model-predicted WSEs (and comparison of the model-predicted WSEs to the FEMA FIS), it has been determined that the HEC-RAS model is sufficiently calibrated to be used as a tool to support the conceptual design for Reach 5A. Specifically, the model is capable of reasonably predicting WSEs, water depths, average flow velocities, and inundation extents under various flow events, which are inputs for the erosion protection layer for the engineered cap and are used to evaluate anticipated seasonal river conditions during remedy implementation.

Final design evaluations will determine the channel and bank reconstruction design requirements after sediment and riverbank soil removal and capping. Under those post-remediation conditions, the cross-sectional geometry within the river channel will differ from current conditions. In addition to changes in elevations and grades, there may be changes to the Manning's roughness coefficient. These factors could affect hydraulic conditions within the river. Therefore, additional hydraulic modeling will be performed during final design to incorporate post-construction design conditions, verify the predicted model output used for the cap erosion protection design, and verify that post-

[2] The 1987 flow value is from the FEMA FIS report (FEMA 1987). The 2023 flow value is based on HEC-SSP analysis of the USGS Coltsville gage and flow increment values discussed in Section 2.2.

construction conditions do not result in a loss of flood storage capacity and there is no increase in WSEs where the engineered caps are installed.

As noted in Section 3, the model described herein is a 1D model. A 1D model provides valuable information related to WSEs and stream velocities that are being used to support conceptual design. However, a 1D model can be sensitive to the placement and distance between cross-sections. For example, it was determined during calibration that channel velocities computed by the model between RS 44899 and RS 42690 were sensitive to the placement of these cross-sections due to the complex geometry in this area (see Figure 3-8).[3] Because of the complex geometry of the stream channel and floodplain throughout Reaches 5 and 6, the 1D model will be expanded to a two-dimensional (2D) model to support the final design of the Reach 5A remediation. A 2D model will more effectively evaluate flow patterns and velocities at locations with complex stream and floodplain geometry.

[3] A sensitivity analysis was completed during calibration to determine the most appropriate locations for cross-sections in this area.

4 References

AECOM, 2023. Memorandum to: K. Mooney, General Electric Company. Memorandum from: R. Johnson (AECOM). Regarding: Housatonic Reach 5A – Bankfull Determination. January 13, 2023.

Anchor QEA and AECOM, 2023. *Pre-Design Investigation Summary Report for Reach 5A Sediment and Riverbanks*. Prepared for the General Electric Company. September 2023.

Anchor QEA, AECOM, and Arcadis, 2021. *Final Revised Rest of River Statement of Work*. Prepared for the General Electric Company. September 2021.

Anchor QEA and Arcadis, 2023. *Interim Baseline Surface Water Monitoring Report*. Prepared for the General Electric Company. March 2023.

Bartles, M., B. Faber, M. Fleming, G. Karlovits, and J. Slaughter, 2022. *HEC-SSP Statistical Software Package User's Manual*. Version 2.2. Prepared on behalf of U.S. Army Corps of Engineers. January 2022.

England, J.F., Jr., T.A. Cohn, B.A., Faber, J.R. Stedinger, W.O. Thomas, Jr., A.G. Veilleux, J.E. Kiang, and R.R. Mason, Jr., 2019. "Guidelines for Determining Flood Flow Frequency — Bulletin 17C." May 2019): *U.S. Geological Survey Techniques and Methods* Version 1.1, Book 4, Chapter B5:148.

EPA (U.S. Environmental Protection Agency), 2005. *Contaminated Sediment Remediation Guidance for Hazardous Waste Sites*. EPA-540-R-05-012. December 2005.

EPA, 2020. *Revised Final Permit Modification to the 2016 Reissued RCRA Permit and Selection of CERCLA Remedial Action and Operation & Maintenance for Rest of River*. December 2020.

EPA and GE (General Electric Company), 2000. Consent Decree in *United States of America, State of Connecticut, and Commonwealth of Massachusetts v. General Electric Company*. Civil Action Nos. 99-30225, 99-30226, 99-30227-MAP, entered by the United States District Court for the District of Massachusetts. October 27, 2000.

FEMA (Federal Emergency Management Agency), 1982. *Flood Insurance Study: Town of Lenox, Massachusetts*. FEMA Flood Map Service Center. Product ID 250029V000. January 1982. Available at: https://msc.fema.gov/portal/advanceSearch.

FEMA, 1987. *Flood Insurance Study: City of Pittsfield, Massachusetts*. FEMA Flood Map Service Center. Product ID 250037V000. January 1987. Available at: https://msc.fema.gov/portal/advanceSearch.

MassGIS, 2019. MassGIS Data: 2016 Land Cover/Land Use. Bureau of Geographic Information. Available at: https://www.mass.gov/info-details/massgis-data-2016-land-coverland-use.

MassGIS, 2021. *MassGIS Data: Lidar Terrain Data*. Bureau of Geographic Information. Available at: https://www.mass.gov/info-details/massgis-data-lidar-terrain-data.

Palermo, M., S. Maynord, R. Miller, and D. Reible, 1998. *Guidance for In-Situ Subaqueous Capping of Contaminated Sediments*. Great Lakes National Program Office, Assessment and Remediation of Contaminated Sediments Program. EPA 905-B96-004. September 1998.

Parsons, D.R., P.R. Jackson, J.A. Czuba, K.A. Oberg, D.S. Mueller, B. Rhoads, J.L. Best, K.K. Johnson, F. Engel, and J. Riley, 2013. "Velocity Mapping Toolbox (VMT): A Processing and Visualization Suite for Moving-Vessel ADCP Measurements." *Earth Surface Processes and Landforms* 38(11):1244–1260.

Quantum Spatial (Quantum Spatial, Inc.), 2016. *Maine and Massachusetts 2015 QL1 and QL2 LiDAR Project Report*. Prepared for U.S. Geological Survey. March 18, 2016.

Stroud Water Research Center, 2023. *Model My Watershed*. Watershed-modeling web application. Available at: https://modelmywatershed.org/.

USACE (U.S. Army Corps of Engineers), 2022. Hydrologic Engineering Center – River Analysis System (HEC-RAS) version 6.3.1 modeling software. Available at: https://www.hec.usace.army.mil/software/hec-ras/download.aspx.

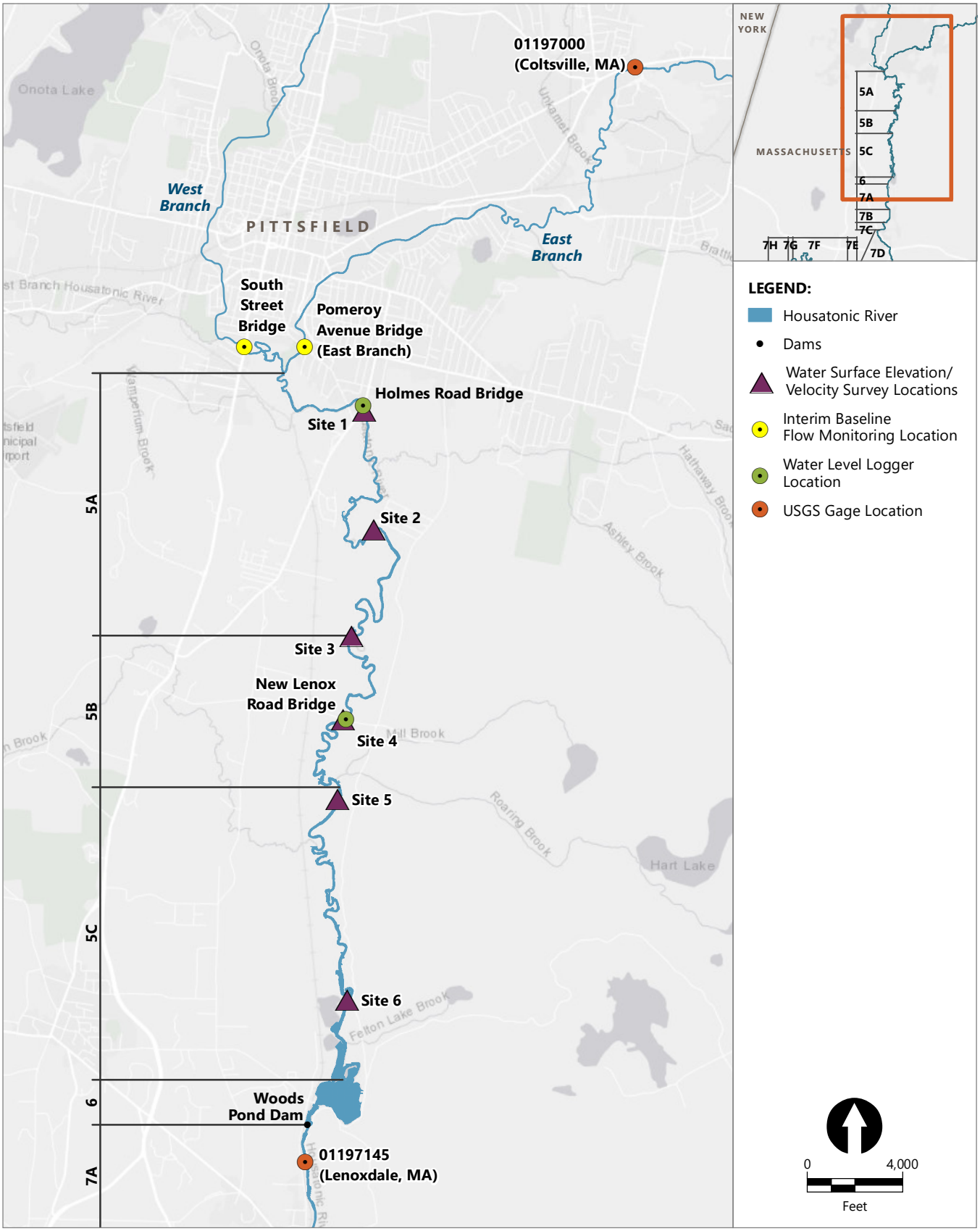
USACE, 2023. "Land Classification Layers." *HEC-RAS Mapper User's Manual*. Available at: https://www.hec.usace.army.mil/confluence/rasdocs/rmum/latest/land-classification-layers.

USGS (U.S. Geological Survey), 2023a. Station 01197000 – East Branch Housatonic River at Coltsville, Massachusetts. Last modified March 23, 2023; accessed March 23, 2023. Available at: https://waterdata.usgs.gov/nwis/uv?site_no=01197000&legacy=1.

USGS, 2023b. Station 01197145 – Housatonic River at Lenoxdale, Massachusetts. Last modified March 23, 2023; accessed March 23, 2023. Available at: https://waterdata.usgs.gov/nwis/uv?site_no=01197145&legacy=1.

Weston, R.F., 2002. *Final Basis of Design Document, 1.5-Mile Reach Removal Action: Phase 1*. Prepared for the United States Army Corps of Engineers. May 2002.

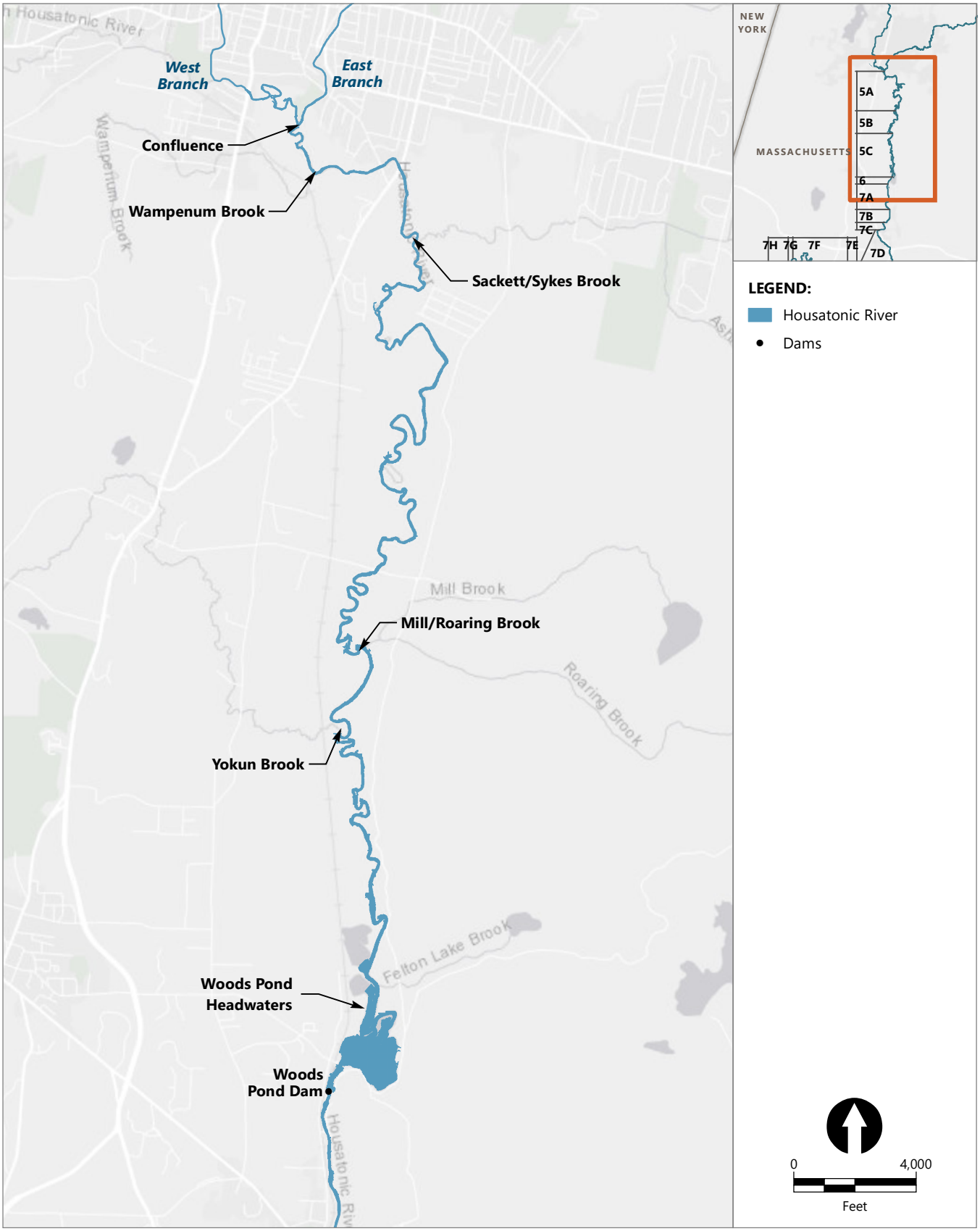
Figures



Publish Date: 2023/09/22, 9:07 AM | User: nwagner
Filepath: Q:\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixG\AQ_HHM_Fig1-1_WSE.mxd

ANCHOR QEA

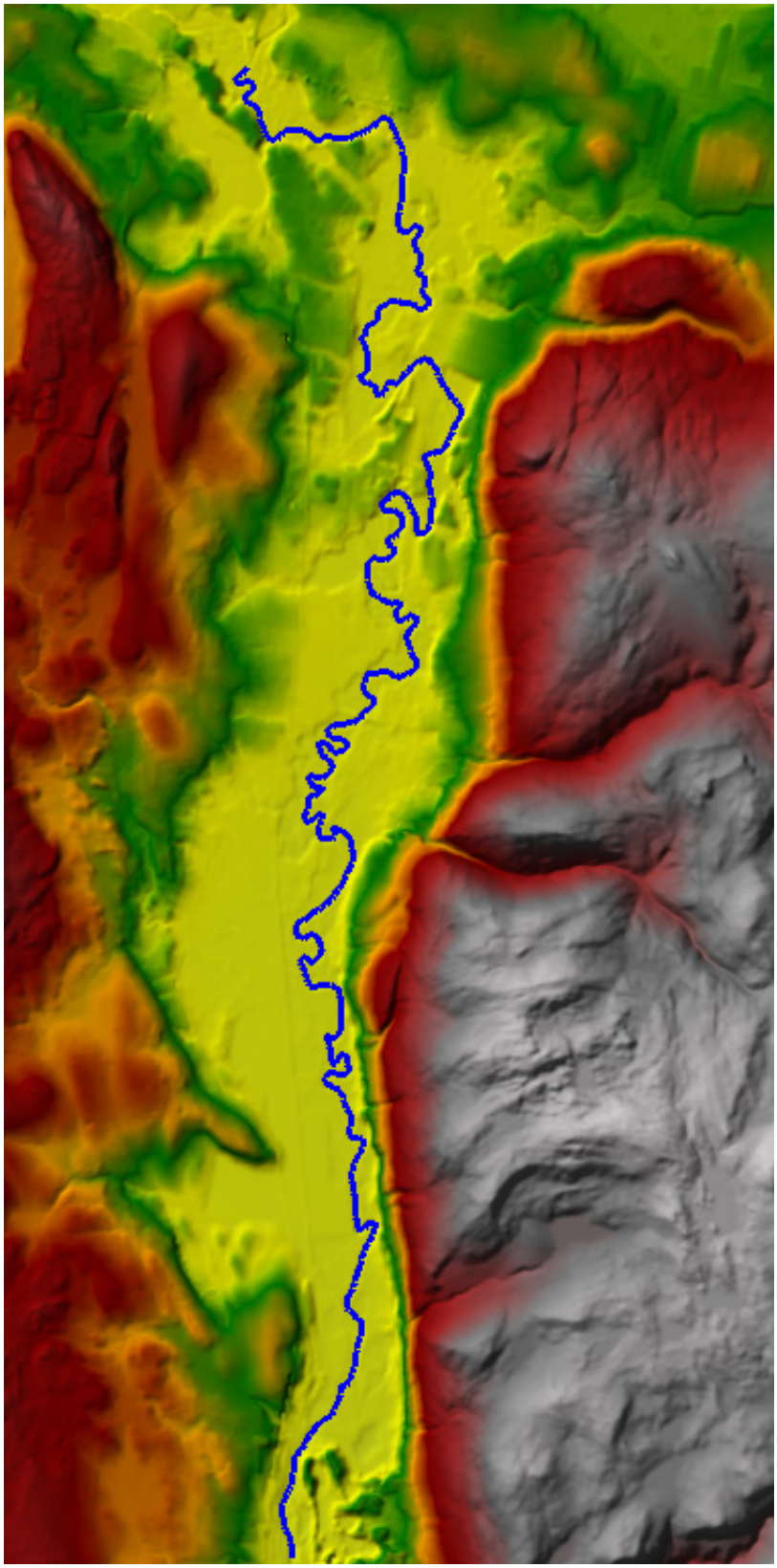
Figure 1-1
Water Surface Elevation and Velocity Survey Locations
Hydrologic/Hydraulic Analysis and Modeling of Reaches 5 and 6
Housatonic River – Rest of River



Publish Date: 2023/09/22, 9:07 AM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixG\AQ_HHM_Fig2-1_FlowChange.mxd

ANCHOR QEA

Figure 2-1
Flow Input Locations in HEC-RAS Model
Hydrologic/Hydraulic Analysis and Modeling of Reaches 5 and 6
Housatonic River – Rest of River



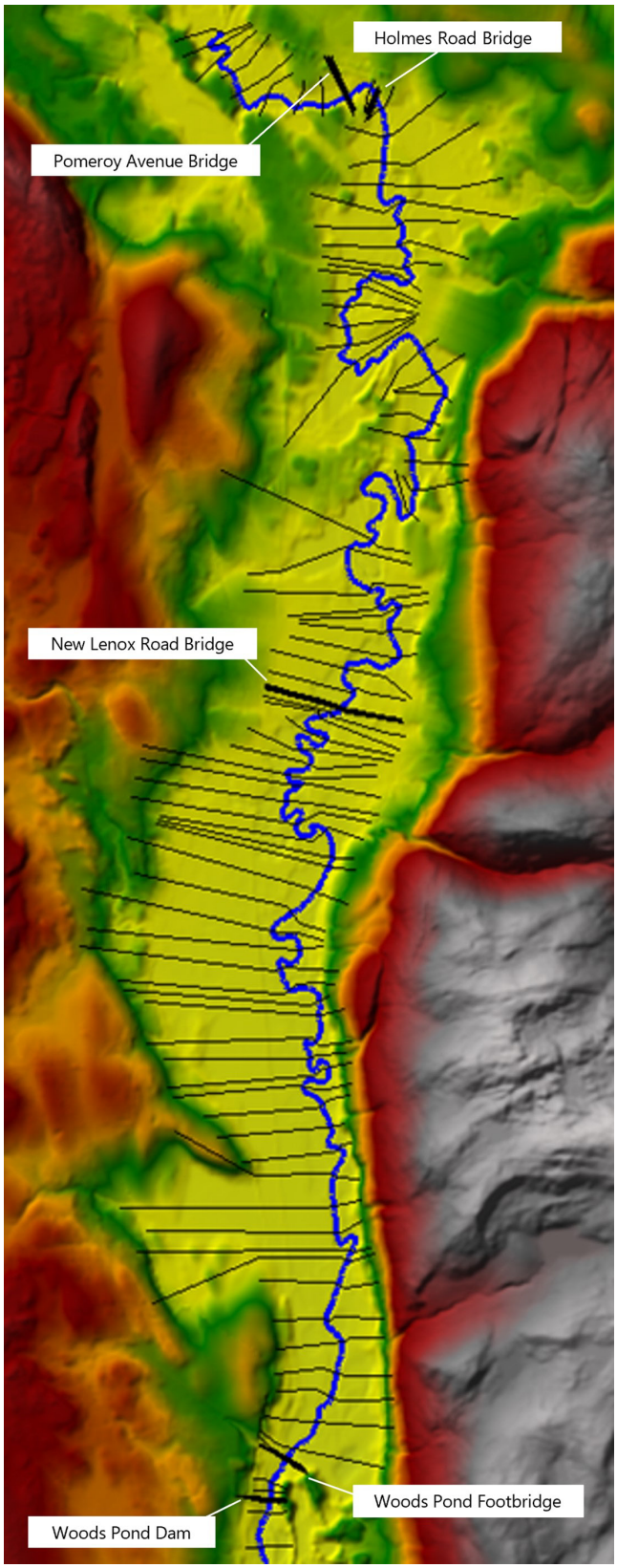
Filepath: https://anchorqea-my.sharepoint.com/personal/cguest_anchorqea_com/Documents/Housatonic/Reach_5A/Design/R5A_Conceptual_RDRA_WP/Appendices/Appendix_G-H&H_Analysis_Rpt/Figures/Figure 3-1_Terrain Data and River Path.docx

ANCHOR QEA

Figure 3-1

Terrain Data and River Path from HEC-RAS Model of Housatonic River Reaches 5 and 6

Hydrologic/Hydraulic Analysis and Modeling of Reaches 5 and 6
Housatonic River – Rest of River

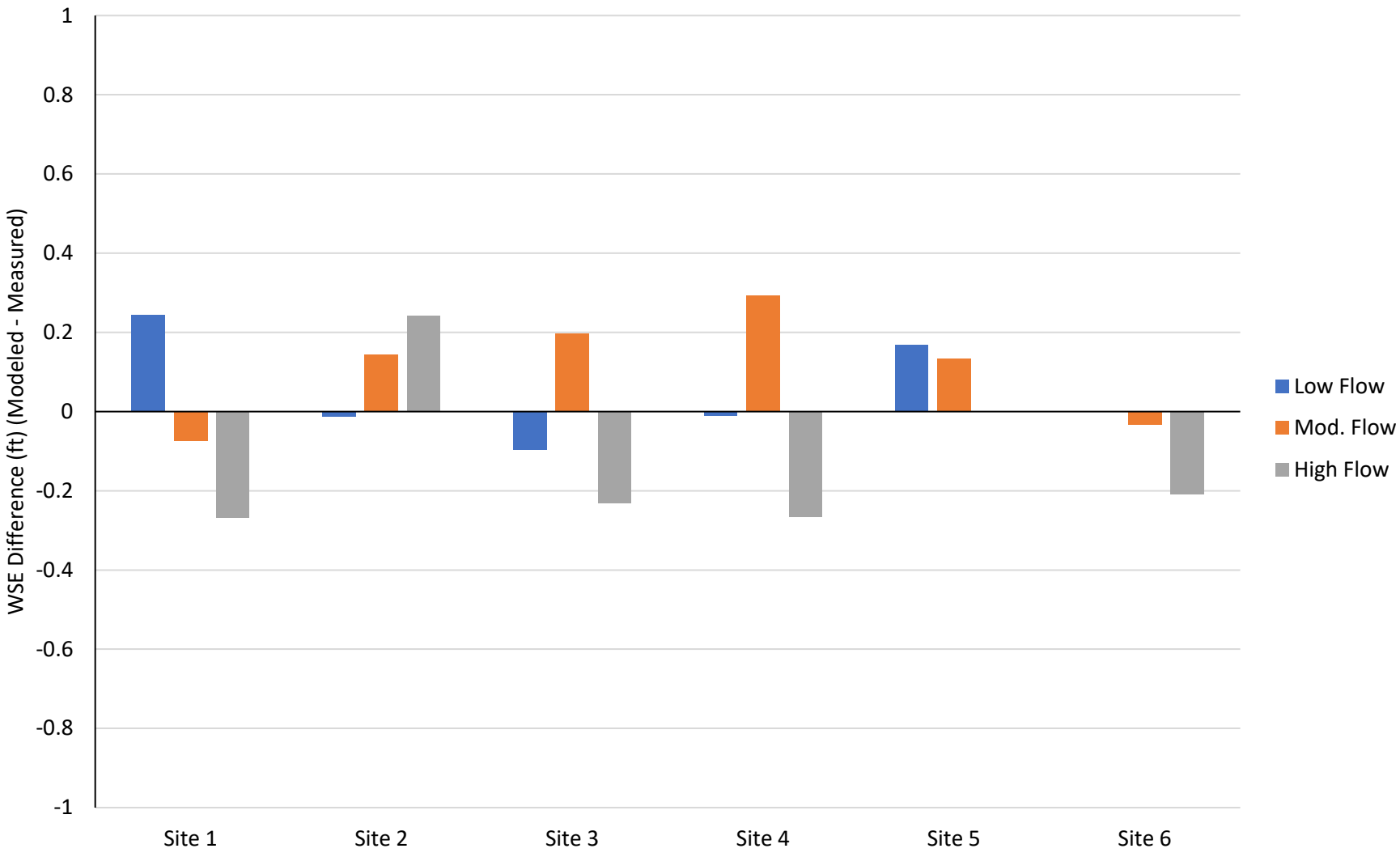


Filepath: https://anchorqea-my.sharepoint.com/personal/cguest_anchorqea_com/Documents/Housatonic/Reach_5A/Design/R5A_Conceptual_RDRA_WP/Appendices/Appendix_G-H&H_Analysis_Rpt/Figures/Figure 3-2_Locations of Bridges.docx

ANCHOR QEA

Figure 3-2
Locations of Model Transects, Bridges, and Woods Pond Dam in HEC-RAS Model

Hydrologic/Hydraulic Analysis and Modeling of Reaches 5 and 6
Housatonic River – Rest of River



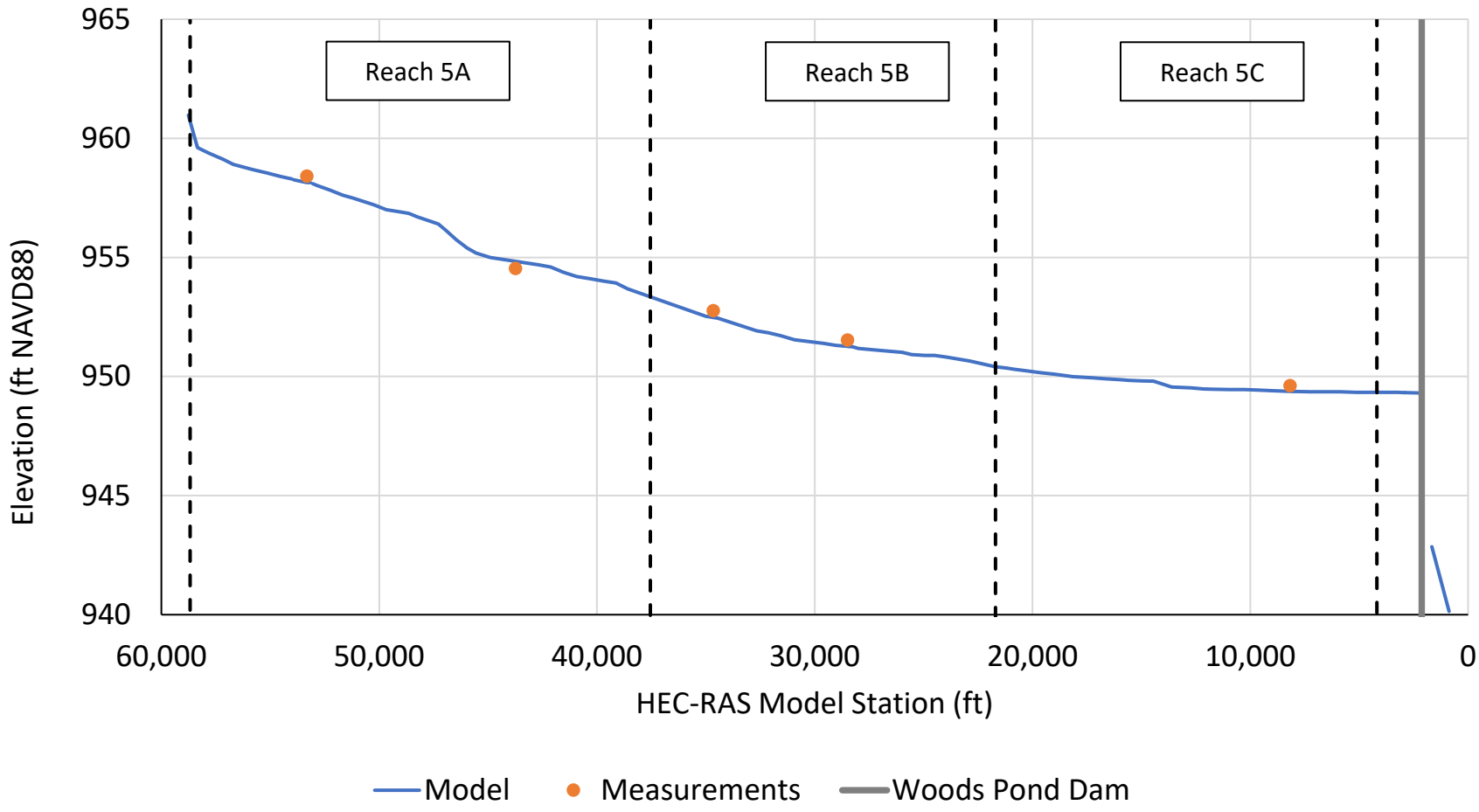
Filepath: https://anchorqea-my.sharepoint.com/personal/cguest_anchorqea_com/Documents/Housatonic/Reach_5A/Design/R5A_Conceptual_RDRA_WP/Appendices/Appendix_G-H&H_Analysis_Rpt/Figures/Figure 3-3_Differences Between Modeled and Measured.docx

ANCHOR QEA

Figure 3-3

Differences Between Modeled and Measured WSE Values at High, Moderate, and Low Flow

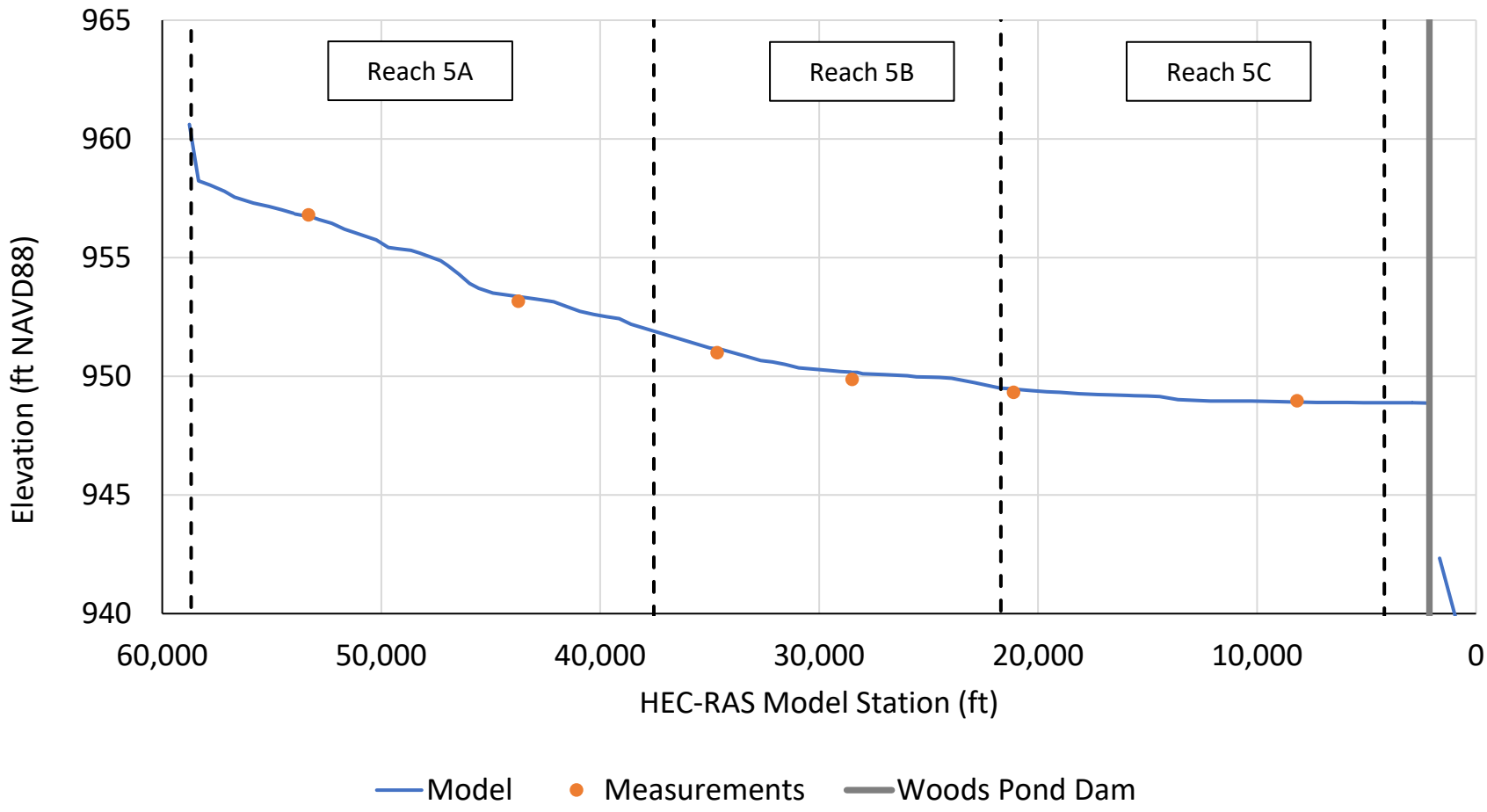
Hydrologic/Hydraulic Analysis and Modeling of Reaches 5 and 6
Housatonic River – Rest of River



Filepath: https://anchorqea-my.sharepoint.com/personal/cguest_anchorqea_com/Documents/Housatonic/Reach_5A/Design/R5A_Conceptual_RDRA_WP/Appendices/Appendix_G-H&H_Analysis_Rpt/Figures/Figure 3-4_ Modeled WSE Profile High Flow.docx

ANCHOR QEA

Figure 3-4
Modeled WSE Profile and Measured WSE Values at High Flow
Hydrologic/Hydraulic Analysis and Modeling of Reaches 5 and 6
Housatonic River – Rest of River



Filepath: https://anchorqea-my.sharepoint.com/personal/cguest_anchorqea_com/Documents/Housatonic/Reach_5A/Design/R5A_Conceptual_RDRA_WP/Appendices/Appendix_G-H&H_Analysis_Rpt/Figures/Figure 3-5_ Modeled WSE Profile Moderate Flow.docx

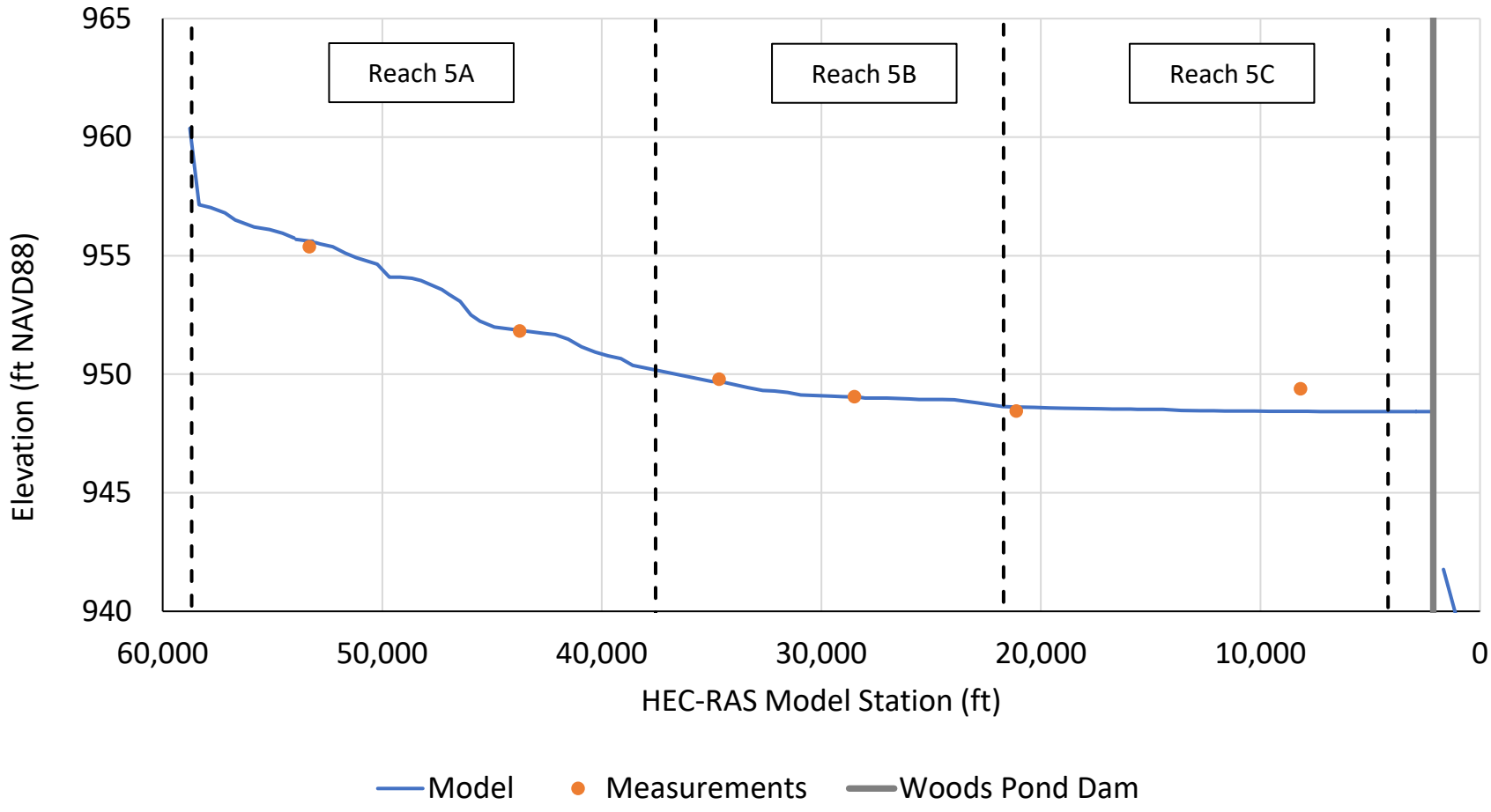
ANCHOR QEA

Figure 3-5

Modeled WSE Profile and Measured WSE Values at Moderate Flow

Hydrologic/Hydraulic Analysis and Modeling of Reaches 5 and 6

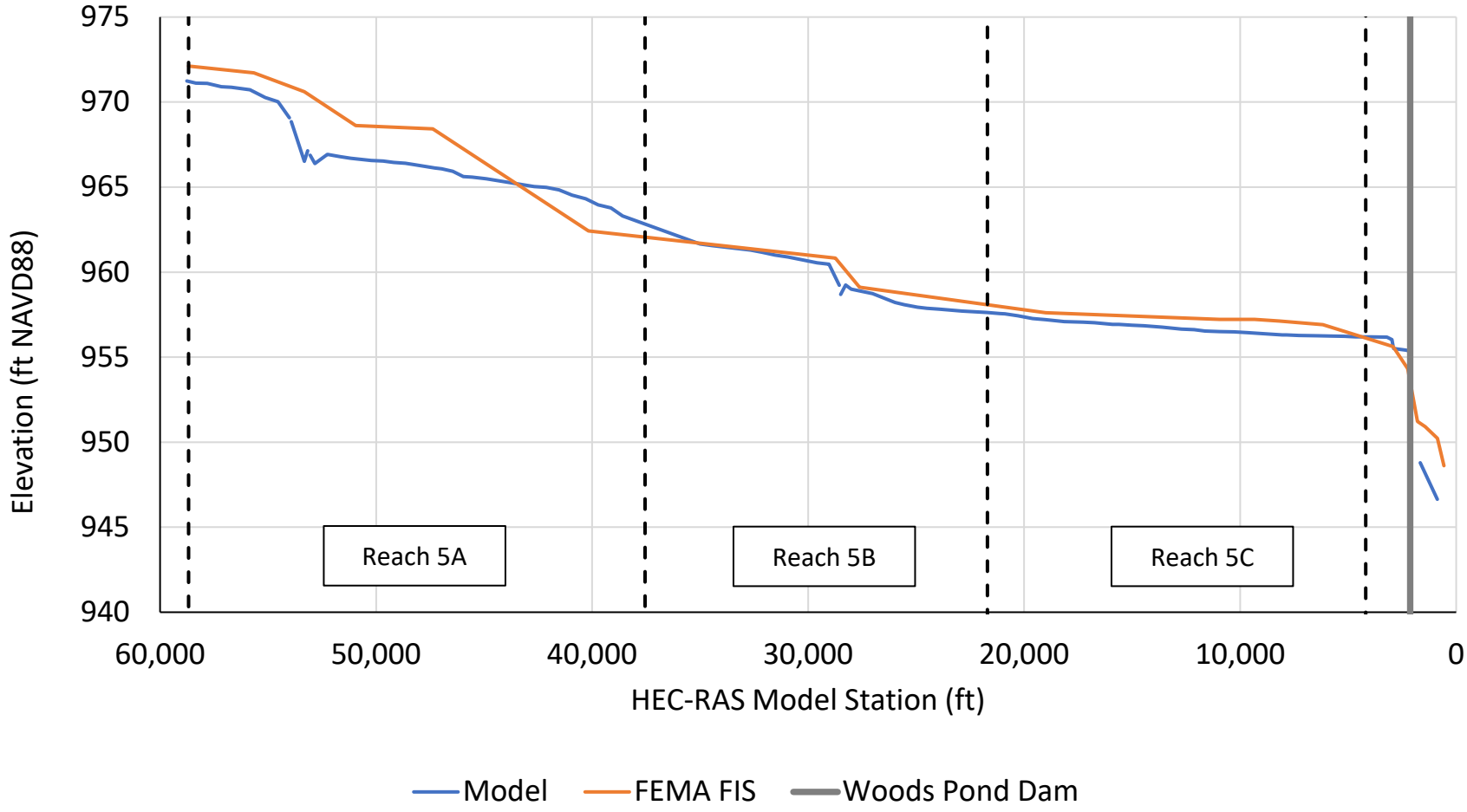
Housatonic River – Rest of River



Filepath: https://anchorqea-my.sharepoint.com/personal/cguest_anchorqea_com/Documents/Housatonic/Reach_5A/Design/R5A_Conceptual_RDRA_WP/Appendices/Appendix_G-H&H_Analysis_Rpt/Figures/Figure 3-6_ Modeled WSE Profile Low Flow.docx

ANCHOR QEA

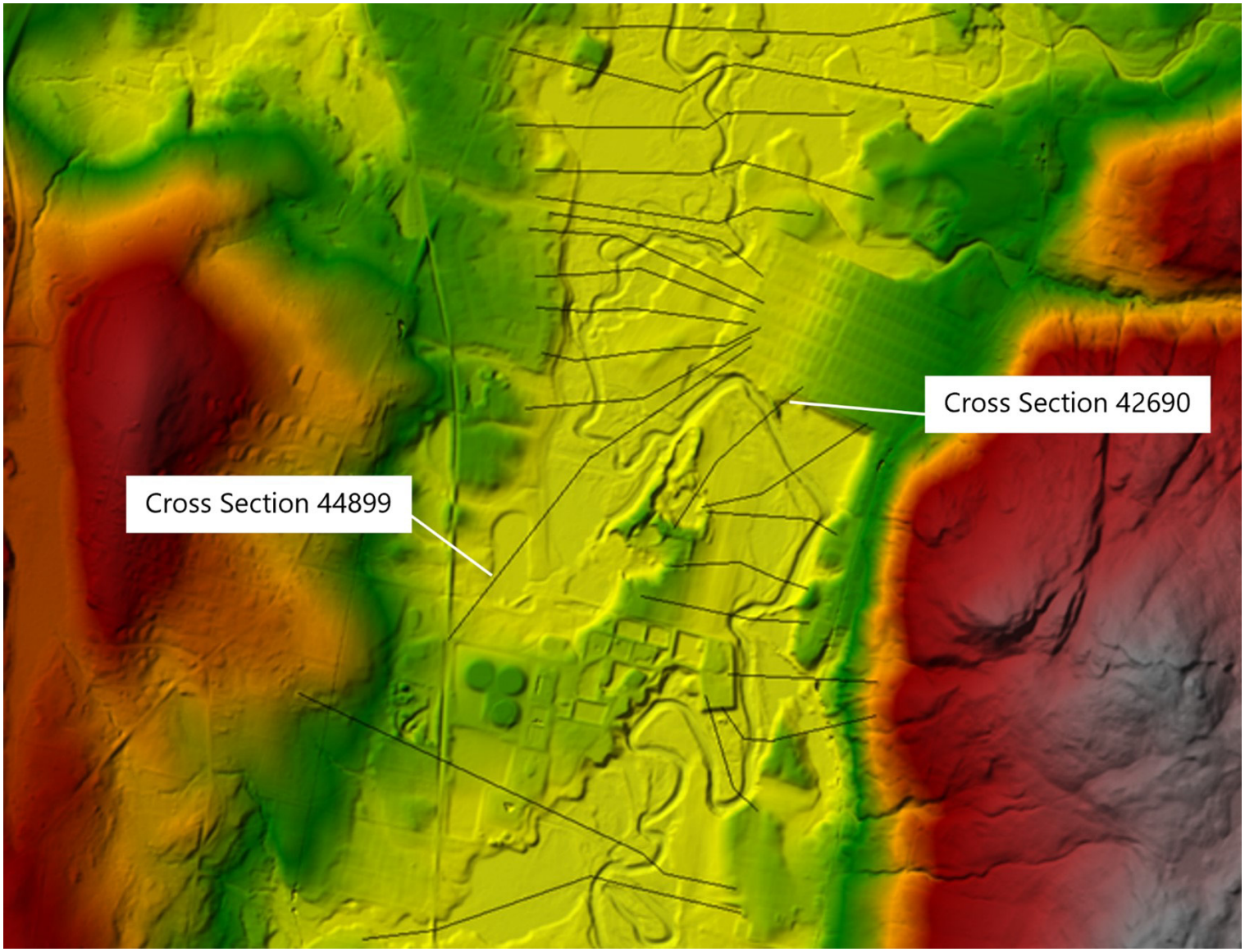
Figure 3-6
Modeled WSE Profile and Measured WSE Values at Low Flow
Hydrologic/Hydraulic Analysis and Modeling of Reaches 5 and 6
Housatonic River – Rest of River



Filepath: https://anchorqea-my.sharepoint.com/personal/cguest_anchorqea_com/Documents/Housatonic/Reach_5A/Design/R5A_Conceptual_RDRA_WP/Appendices/Appendix_G-H&H_Analysis_Rpt/Figures/Figure 3-7_Comparison of WSE Profiles.docx

ANCHOR QEA

Figure 3-7
Comparison of WSE Profiles from FEMA FIS Report and Model Outputs
Hydrologic/Hydraulic Analysis and Modeling of Reaches 5 and 6
Housatonic River – Rest of River



Filepath: https://anchorqea-my.sharepoint.com/personal/cguest_anchorqea_com/Documents/Housatonic/Reach_5A/Design/R5A_Conceptual_RDRA_WP/Appendices/Appendix_G-H&H_Analysis_Rpt/Figures/Figure 3-8_Terrain Data Cross Sections.docx

ANCHOR QEA

Figure 3-8

Terrain Data and River Path from HEC-RAS Model Near Downstream End of Reach 5A with Cross Section Locations

Hydrologic/Hydraulic Analysis and Modeling of Reaches 5 and 6
Housatonic River – Rest of River

Appendix H
Treatability Study Work Plan for Reach 5A

September 2023
Housatonic River – Rest of River

Treatability Study Work Plan for Reach 5A

Prepared for General Electric Company
Pittsfield, Massachusetts

September 2023
Housatonic River – Rest of River

Treatability Study Work Plan for Reach 5A

Prepared for
General Electric Company
1 Plastics Avenue
Pittsfield, Massachusetts 01201

Prepared by
Anchor QEA, LLC
290 Elwood Davis Road
Liverpool, New York 13088

Project Number: 230469-02.01

TABLE OF CONTENTS

1 Introduction 1

1.1 Background 1

1.2 Reach 5A Remedial Action Overview 1

1.3 Treatability Study Work Plan Objectives and Scope 1

1.4 Existing Data to Support Treatability Studies 2

1.5 Plan Organization 2

2 Data Quality Objectives 3

3 Field Sampling Plan 5

4 Treatability Testing 8

4.1 General 8

4.2 Gravity Drainage Study 8

4.3 Sediment Stabilization Amendment Testing 8

4.4 Shake/Vibration Testing 10

4.5 Backwater Sediment Amendment Jar Testing 10

4.6 Chemical Isolation Layer Amendment Testing 11

5 Data Evaluation, Schedule, and Reporting 15

5.1 Data Evaluation 15

5.2 Schedule and Reporting 15

6 References 16

TABLES

Table 3-1 Bulk Sediment Sample Summary

Table 4-1 Experimental Design for BW5A-1 Bench-Scale Jar Tests

Table 4-2 Experimental Design for Reach 5A Amendment Kinetic Tests

FIGURE

Figure 3-1 Treatability Study Sampling Locations

ATTACHMENTS

Attachment A Standard Operating Procedure: Gravity Drainage Test
Attachment B Standard Operating Procedure: Stabilization Amendment Test
Attachment C Standard Operating Procedure: Shake/Vibration Test

ABBREVIATIONS

AC	activated carbon
ASTM	ASTM International
Conceptual RD/RA Work Plan	*Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A*
DOC	dissolved organic carbon
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
Final Revised SOW	*Final Revised Rest of River Statement of Work*
FSP/QAPP	Field Sampling Plan/Quality Assurance Project Plan
GAC	granular activated carbon
GE	General Electric Company
mg/kg	milligrams per kilogram
PAC	powdered activated carbon
PCB	polychlorinated biphenyl
PDI	pre-design investigation
POC	particulate organic carbon
RD/RA	Remedial Design/Remedial Action
Revised Final Permit	Revised Final Resource Conservation and Recovery Act Permit Modification
ROR	Rest of River
SOP	standard operating procedure
SPME	solid-phase microextraction
TOC	total organic carbon
TSS	total suspended solids
UDF	Upland Disposal Facility

1 Introduction

1.1 Background

In accordance with the Revised Final Resource Conservation and Recovery Act Corrective Action Permit (Revised Final Permit) issued by the U.S. Environmental Protection Agency (EPA) to the General Electric Company (GE) for the Housatonic Rest of River (ROR) (EPA 2020) and GE's *Final Revised Rest of River Statement of Work* (Final Revised SOW; Anchor QEA et al. 2021) under the Revised Final Permit, GE has prepared a *Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A* (Conceptual RD/RA Work Plan). Section 4.3.3.1 of the Final Revised SOW stated that the Conceptual Remedial Design/Remedial Action (RD/RA) Work Plan for a given remediation area may include a Treatability Study Work Plan to describe any necessary treatability testing to support the final design. GE has determined that treatability studies will be necessary to support the remedial design for Reach 5A. This *Treatability Study Work Plan for Reach 5A* describes the proposed treatability studies and is provided as an appendix to the Conceptual RD/RA Work Plan.

1.2 Reach 5A Remedial Action Overview

Remediation in Reach 5A will include removal and capping of sediments in the riverbed and remediation of associated backwaters, riverbank soils, and floodplain soils (including those at residential properties, non-residential floodplain areas, and vernal pools) to the extent required by the applicable Performance Standards in the Revised Final Permit. Soil and sediment excavated from the remediation areas will be subject to disposal at an on-site Upland Disposal Facility (UDF) or at an off-site disposal facility in accordance with the requirements specified in Attachment E to the Revised Final Permit.

The Conceptual RD/RA Work Plan provides a description of the conceptual approach for performing the sediment remediation, soil remediation, and material handling activities for Reach 5A. As described the Conceptual RD/RA Work Plan, treatability testing (the subject of this work plan), supplemental data collection, additional baseline habitat assessment activities, additional cultural resources investigations, and additional design evaluations are necessary and will be conducted as part of the final design process. Once these activities are complete, GE will submit a Final RD/RA Work Plan that includes a detailed description of the design and implementation of the remedial activities for Reach 5A.

1.3 Treatability Study Work Plan Objectives and Scope

This work plan describes the treatability studies that are proposed to provide information to support ongoing remedial design evaluations, supplement data gathered during the pre-design investigation (PDI) for Reach 5A, and provide data to be used by a remediation contractor during construction. Specifically, the treatability studies described in this work plan have been selected and designed to

provide data that will support the design and evaluation of sediment removal, sediment transport and dewatering, and water treatment requirements associated with sediment removal, as well as evaluation of possible sediment amendments (e.g., activated carbon) for the backwater area BW5A-1 and evaluation of possible amendments for the chemical isolation layer of the engineered caps.

As described in the Conceptual RD/RA Work Plan, the current conceptual approach for implementing the in-river sediment removal and capping work would involve the installation of temporary diversion/containment cells to split the river in half near the center of the channel, thereby diverting river flow around the work area, and allowing work within the cell to be performed under dewatered (i.e., dry) conditions. GE will also consider alternate methods for implementing the in-river sediment removal and capping work, as described in Section 5.4.1 of the Conceptual RD/RA Work Plan (e.g., working directly within the river under low flow conditions or constructing temporary dams and bypassing the river flow around the work area). If alternate methods are identified as the primary means for the in-river work during final design or during an adaptive management process, additional treatability testing may be proposed (e.g., dredging-elutriate testing or column-settling testing may be conducted if the in-river sediment removal operations are conducted without any hydraulic controls). Also, additional treatability testing may be proposed after a remediation contractor is selected to refine the contractor's proposed implementation methods.

1.4 Existing Data to Support Treatability Studies

Sediment data generated during prior investigations and as part of the PDI provide information on conditions within Reach 5A. Those prior investigations have included collection of polychlorinated biphenyl (PCB) analytical data and limited geotechnical data (e.g., moisture content, grain size, Atterberg limits, density, and specific gravity). The treatability study testing will build on the data collected previously to support the remedial design for Reach 5A. Sediment PDI data are summarized in the *Pre-Design Investigation Summary Report for Reach 5A Sediment and Riverbanks* (Anchor QEA and AECOM 2023a), which is being submitted concurrently with the Conceptual RD/RA Work Plan.

1.5 Plan Organization

The remainder of this work plan is organized into the following sections:

- Section 2 presents the data quality objectives (DQOs) for the proposed treatability studies.
- Section 3 describes the field sampling plan to collect sediment samples to support the proposed treatability testing.
- Section 4 describes the proposed treatability testing.
- Section 5 describes the treatability study data evaluation, reporting, and schedule.
- Section 6 lists the references cited in this document.

2 Data Quality Objectives

As described in Section 1.3, the overall objective of the treatability studies is to provide information needed to support ongoing remedial design evaluations, supplement data gathered during the Reach 5A PDI, and provide data to be used by a remediation contractor during construction.

Sediment to be excavated from the river and backwater areas is expected to require some processing or conditioning prior to transport to allow it to be loaded into trucks to meet requirements for transportation and disposal (e.g., pass paint filter testing) and to strengthen the sediment to the requirements of the UDF or selected off-site disposal facility. The treatability testing will be conducted to provide data that can be used by the remediation contractor(s) to support its determination of the means and methods for sediment processing and dewatering. Excess water removed from the sediment during dewatering (called supernatant) will likely require treatment prior to discharge. The bench-scale treatability testing will provide data on the potential concentrations within the supernatant for review as part of the final design to evaluate potential water treatment and discharge requirements.

In accordance with the Revised Final Permit, portions of backwater area BW5A-1 located within Core Area 1 habitat that have discrete total PCB concentrations between 1 and 50 milligrams per kilogram (mg/kg) in surficial sediment will receive placement of an amendment (activated carbon [AC] and/or other comparable amendment) to reduce PCB bioavailability. To support the design for this application, treatability testing data will be used to determine the appropriate carbon-based amendment (e.g., AC) to reduce PCB bioavailability in backwater sediment by sorbing PCBs.

As described in the Conceptual RD/RA Work Plan, modeling evaluations indicate that the chemical isolation layer for the engineered caps in Reach 5A will consist of sand with a carbon-based sorptive amendment that is sufficient to meet the applicable Performance Standard for that layer (i.e., to reduce the flux of PCB concentrations through that layer by 99%) and that the amendment dose may vary in different portions of Reach 5A. The treatability testing data will be used to determine the appropriate carbon-based amendment (e.g., AC) to be used as a PCB sorptive amendment in the chemical isolation layer of engineered caps.

To achieve these overall objectives, the specific DQOs for the Reach 5A treatability studies are as follows:

DQO 1. Evaluate the effectiveness of potential dewatering methods for sediment to be removed from Reach 5A.

DQO 2. Evaluate potential PCB and sediment concentrations within water to be generated during sediment dewatering activities associated with Reach 5A.

DQO 3. Evaluate the effectiveness of various amendment types and doses in reducing bioavailable porewater PCB concentrations in backwater sediments in BW5A-1.

DQO 4. Evaluate carbon-based amendment types and doses to be used for the chemical isolation layer of the engineered caps in Reach 5A.

3 Field Sampling Plan

This section describes the field sampling activities that will be performed to collect representative samples from various locations throughout Reach 5A to be used for the treatability testing described in Section 4. The field sampling activities will be conducted in accordance with this work plan and GE's 2023 Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP; Arcadis 2023).

To support the treatability testing, sediment samples will be collected to provide representative spatial coverage across the reach and to represent a range of sediment types and PCB concentrations. In addition, surface water and pore water samples will be collected.

Bulk sediment samples will be collected from six areas of the river. These areas were selected in an attempt to provide different sediment types (i.e., both fine and coarse material) and a range of PCB concentrations (based on the PDI sediment data) and to be spatially distributed throughout Reach 5A. These areas consist of three main channel sediment sampling locations, two backwater areas (BW5A-1 and BW5A-5), and one of the Other Waterbodies described in the Conceptual RD/RA Work Plan (West Pond). Surface water samples will also be collected at some of the sample locations for use in blending with sediments for the testing. Table 3-1 summarizes the proposed sediment samples to be collected for the treatability testing, and Figure 3-1 shows the approximate sample locations.

Table 3-1
Bulk Sediment Sample Summary

Treatability Sample ID	PDI Sample Location[1]	Grain Size Summary	Estimated PCB Concentration	Sediment Sample Volume	Surface Water Sample Volume
TS-S1	SE-017-96-C	Fine to coarse sand	16 mg/kg	20 gallons	10 gallons
TS-S2	SE-134-45-W	Fine to coarse sand	86 mg/kg	20 gallons	10 gallons
TS-S3	SE-217-93-E	Fine to coarse sand	157 mg/kg	20 gallons	10 gallons
TS-BW1	SE-BW5A-1-E-F-9-10	Silt with sand	43 mg/kg	5 gallons	N/A
TS-BW5	SE-BW5A-5-C-D-9-10	Silt with sand	5 mg/kg	20 gallons	10 gallons
TS-WP	SE-WP-F-G-3-4	Silt with sand	6 mg/kg	20 gallons	10 gallons

Note:
The sediment samples will be collected in the vicinity of the reference PDI sampling location to a depth of one foot below the sediment surface.

The sediment samples to be collected from the main river channel (i.e., TS-S1, TS-S2, and TS-S3), from backwater area BW5A-5 (i.e., TS-BW5), and from West Pond (i.e., TS-WP) will be used for the sediment dewatering treatability testing (Sections 4.2 through 4.4). Backwater area BW5A-5 (i.e., TS-BW5) was selected for treatability testing because it has the largest estimated sediment removal volume of the backwater areas. Likewise, West Pond (i.e., TS-WP) was selected for treatability testing because it has the largest estimated sediment removal of the Other Waterbodies.

The bulk sediment sample to be collected from backwater area BW5A-1 (i.e., TS-BW1) will be used for the backwater amendment treatability testing, as described in Section 4.5.

At each of the sample locations, bulk sediment samples will be collected, composited, and containerized in sealable five-gallon buckets. Sediment collection may be achieved through manual core collection or grab sampling in accordance with the methodology outlined in Appendix C2 of the 2023 FSP/QAPP (Standard Operating Procedure for Sediment Probing, Coring, and Sample Collection). In addition, 20 gallons of surface water will be collected at sample locations TS-S1, TS-S2, TS-S3, TS-BW5, and TS-WP using grab sampling methods to facilitate generation of sediment/water mixes needed during the testing. The total sample quantities listed in Table 3-1 are approximate and may be subject to revision. Final quantities needed for the testing will be determined based on consultation with the selected laboratories.

Subsamples of sediment from each bulk sample will initially be submitted for the following analyses:

- PCBs as Aroclors using EPA Method 8082;
- Moisture Content (by ASTM International [ASTM] D2216);
- Particle Size (by ASTM D6913/D7928);
- Atterberg (Liquid and Plastic) Limits (by ASTM D4318);
- Dry Density (by ASTM D2937);
- Organic Content (by ASTM D2974);
- Unconfined Compressive Strength (by ASTM D2166); and
- Presence of Free Liquids (by the Paint Filter Test, EPA Method 9095B).

Following these initial analyses, the sediment samples will be used for treatability testing, as described in Section 4.

For the chemical isolation layer treatability testing (Section 4.5), sediment porewater will also be collected from two locations within Reach 5A (Figure 3-1). These locations will be selected to represent a range of porewater PCB concentrations expected within the capping areas of Reach 5A (i.e., one relatively high-concentration area and one relatively low-concentration area, based on sediment and porewater results from the PDI). Porewater samples will be collected by advancing a piezometer into the sediment to a depth of three feet, lowering tubing connected to a peristaltic pump down the piezometer, and pumping the porewater using a low-flow sampling methodology (EPA 1996). During sampling, water quality parameters (i.e., specific conductance, pH, temperature, and turbidity) of the porewater and of the near-bottom surface water will be routinely measured to ensure that surface water is not being inadvertently drawn into the piezometer. At each location, approximately 20 liters (i.e., approximately five gallons) of porewater will be collected. Upon sample

collection, subsamples of each water sample will be submitted for analyses for PCB congeners (by EPA Method 1668C) as well as total suspended solids (TSS) (by Standard Method 2540D), dissolved organic carbon (DOC) (by Standard Method 5310), and particulate organic carbon (POC) (by EPA Method 440) to characterize the general water quality. Following these initial analyses, the porewater samples will be used for treatability testing described in Section 4.6.

4 Treatability Testing

4.1 General

This section describes the proposed treatability testing to be performed to support the Reach 5A design. The following subsections describe the proposed testing methods and types of analyses.

Example Standard Operating Procedures (SOPs) that describe the general test methods are provided as an attachment to this document. Certain testing methods may be modified from the example SOPs presented herein, depending on the final treatability subcontractor selected to perform the testing, because contractors retained to perform the treatability testing may have their own SOPs. If the final SOPs differ substantially from those attached to this plan, the final SOPs will be provided to EPA prior to the testing.

4.2 Gravity Drainage Study

A drainage study will be performed to evaluate the ability of dredged sediment to passively dewater via gravity drainage (DQO 1). The purpose of this study will be to estimate the water content before and after gravity drainage to evaluate whether the dredged material will need additional treatment to meet transportation and disposal facility requirements. The drainage study will be performed on homogenized samples from the bulk sediment sampling locations listed in Table 3-1.

The drainage study will involve placing sediment samples within a screen and allowing the sample to drain by gravity for a period of time. Samples will be collected at multiple time intervals throughout the drainage study for moisture content and paint filter testing.

Water that drains from the samples during the drainage study will be collected, measured, and tested for TSS, PCBs, metals, and oil and grease to characterize the supernatant (DQO 2).

The drainage study will be conducted in general accordance with the example SOP provided in Attachment A (or an SOP from the testing contractor, as noted above).

4.3 Sediment Stabilization Amendment Testing

Stabilization of samples will be investigated using a variety of commercially available amendments at various dosages with the goal of determining effective amendments/doses needed to meet transportation and disposal facility requirements for paint filter testing and structural strength (DQO 1). The stabilization testing will be performed regardless of the results of the drainage study.

The stabilization amendment testing will be conducted in general accordance with the example SOP provided in Attachment B (or an SOP from the testing contractor, as noted above). Four amendments will be evaluated at a minimum of three mix ratios per amendment. Mix ratios will be evaluated

through paint filter testing and visual observations of physical characteristics at cure periods of 12, 24, 48, and 72 hours. Mix ratios will also be monitored for weight change.

The following stabilization amendments will be evaluated in the testing:

- Type I Portland cement;
- Cement kiln dust;
- Calciment; and
- Lime.

The treatability testing will be performed using these commercially available amendments at multiple mix ratios. Initially, mix ratios of 2.5%, 5%, and 7.5% by weight will be used for each amendment type. If adequate testing results are not obtained using the initial ratios, additional mix ratios may be evaluated. The goal of the testing is to determine effective and efficient combinations of amendment, mix ratio, and cure time to allow the end-product to pass the paint filter test and achieve strength requirements that may be identified by the disposal facility. Vendor-provided specification sheets for each amendment will be included in the Treatability Studies Summary Report described in Section 5.2.

For the initial screening phase, mix ratios will be evaluated through paint filter testing, percent solids analysis, moisture content, weight change, and visual observations at the previously specified cure periods. A pocket penetrometer will also be used to evaluate the strength of the amended sediment. A second round of solidification testing may be employed using a smaller range of amendment blend to determine the optimum dose and cure time for stabilization, as appropriate.

After optimal amendments, mix ratios, and cure times are established through testing, geotechnical testing will be performed on treated sediment. The geotechnical laboratory will prepare a single sample using the selected amendment and optimum dosage based on the results of the treatability testing. Following the proper cure time, the following geotechnical tests will be performed to determine the strength and physical properties of the amended sediment:[1]

- Moisture Content (by ASTM D2216);
- Grain Size Distribution (by ASTM D6913/D7928);
- Liquid Limit, Plastic Limit, and Plasticity Index (Atterberg Limits) (by ASTM D4318);
- Hydraulic Conductivity (by ASTM D5856, D2434, or D5084);
- Standard Procter (by ASTM D698);

[1] Test methods used will be appropriate for the material tested (i.e., cohesive soils versus non-cohesive soils).

- Unconfined Compressive Strength (by ASTM D2166);
- Undrained Shear Strength (by ASTM D2573, D4648, and D2850); and
- Triaxial Undrained Shear Strength (by ASTM 4746).

4.4 Shake/Vibration Testing

Shake/vibration testing will also be performed on the sediment samples to evaluate whether free liquids could be liberated from the excavated and processed materials as a result of handling and transportation (DQO 1). The purpose of this testing is to simulate motion similar to that which might be imparted during transport of untreated (if possible) or stabilized sediments to a disposal destination. The transport-simulated samples will then be examined and tested for free water.

The test will use sediment samples that have not received any stabilization treatment and stabilized sediment samples that have cured for a period of time. The samples will be placed into large tubes and set upright in laboratory shaker equipment. The shaker will operate for a selected period of time to simulate the expected transit period. Upon completion of the test, any stratification or liquid accumulation on the surface or the bottom will be noted, and the samples will undergo a paint filter test. The shake/vibration test will be conducted in general accordance with the example SOP provided in Attachment C (or an SOP from the testing contractor, as noted above).

4.5 Backwater Sediment Amendment Jar Testing

The objective of the backwater amendment jar testing is to evaluate the effectiveness of various carbon-based amendments such as AC (both powdered activated carbon [PAC] and granular activated carbon [GAC]) and biochar in reducing bioavailable concentrations of total PCBs in sediment porewater in Backwater Area BW5A-1 (DQO 3). The sediment sample required for the amendment jar tests will be collected from an area of BW5A-1 located in Core Area 1 habitat and is expected to have total PCB concentrations between 1 and 50 mg/kg (based on PDI sediment data in this backwater) since such areas are required to be remediated by a sediment amendment under the Revised Final Permit. An aliquot will be collected from the homogenate of the Backwater Area BW5A-1 sediment sample and will be submitted for analysis of PCB Aroclors, PCB congeners, and total organic carbon (TOC). Following the same methods described in Section 3.3.1 of GE's *Vernal Pool Pilot Study Work Plan* (Anchor QEA and AECOM 2023b), eight unique test batches will be prepared for the BW5A-1 sediment sample. Water may be added to improve transfer kinetics and allow for a comparison of near-equilibrium conditions for all amendments. The experimental design of the bench-scale jar testing is presented in Table 4-1.

Table 4-1
Experimental Design for BW5A-1 Bench-Scale Jar Tests

Sample Type	Test Batch (Amendment to Backwater Sediment)	Soil Mass (grams dry weight)	Amendment Mass (grams dry weight)	Number of Replicates
BW5A-1 Sediment	Unamended (control)	300	—	2
	1% (dry weight) PAC	300	3	2
	2% (dry weight) PAC	300	6	2
	5% (dry weight) PAC	300	15	2
	2% (dry weight) GAC	300	6	2
	5% (dry weight) GAC	300	15	2
	5% activated biochar	300	15	2
	10% activated biochar	300	30	2

Notes:
High-performance liquid chromatography-grade water will be added to target 70% moisture to make a slurry for efficient mixing.
—: not applicable

The backwater sediment amendment jar testing will be conducted in general accordance with the SOP provided in Appendix B to the Vernal Pool Pilot Study Work Plan. During the testing, each test jar will be continuously mixed for 30 days to allow the sediment and amendment to equilibrate. Following that initial 30-day period, solid-phase microextraction (SPME) passive samplers will be deployed in each jar for another 30 days (while continuing to mix) to measure the remaining bioavailable PCB concentrations following contact with amendment. Additional mixing is needed after the initial 30-day period because once the SPME fiber is placed into the sediment and amendment mixture, it begins to deplete the PCBs locally around the passive sampler creating a boundary layer, which can drastically reduce the kinetics of PCB transfer into and out of the passive sampler (Jalalizadeh and Ghosh 2016). The continuous mixing accelerates the mass-transfer kinetics and achieves near-equilibrium conditions over much shorter timescales than would be achievable in the field (Jalalizadeh and Ghosh 2016).

The reduction in bioavailable PCBs will be determined by comparison of measured porewater PCB concentrations in each amended jar test with that of the unamended control. This information will be used to develop a design recommendation for the amendment type and dose to be applied in the Core Area 1 portion of BW5A-1 with total PCB concentrations between 1 and 50 mg/kg.

4.6 Chemical Isolation Layer Amendment Testing

As described in the Conceptual RD/RA Work Plan, amendment type(s) and dosage(s) recommended for the chemical isolation layer of the Reach 5A sediment caps will be refined following evaluation of carbon-based sorptive amendments through treatability testing of site porewater. The current recommendations of amendment type and dose were based on modeling that used literature-based sorption parameters and linear partitioning relationships to assess amendment effectiveness.

However, site-specific sorption parameters and partitioning relationships can be developed through treatability testing of site porewater to optimize cap amendment selection and dosages. These site-specific treatability tests are expected to address the following uncertainties or data gaps:

- Equilibrium performance of PAC and GAC is often assumed to be equivalent; however, recent research (e.g., Shen et al. 2023; Ajemigbitse et al. 2023) suggests that a difference in equilibrium performance between PAC and GAC may exist.
- Understanding the kinetics of PAC and GAC sorption can be important for cap environments in cases where the thickness of the amended layer is relatively small and/or the groundwater seepage rate is relatively high (Shen et al. 2023; Ajemigbitse et al. 2023). Currently, the literature contains limited data on the kinetics of PCB sorption onto GAC, as standard methods typically use PAC (or pulverize the subject GAC) in kinetic testing.
- Site-specific conditions, such as competitive sorption with other hydrophobic organic compounds and the presence of dissolved organic matter, can reduce the predicted effectiveness of PAC and GAC. These effects should be understood in order to recommend an appropriate amendment and dose.

Site-specific treatability testing of potential cap amendment materials will be performed to evaluate the kinetic and equilibrium sorption characteristics, among other evaluations, so as to support the refinement of the amendment type(s) and dosage(s) recommended for the chemical isolation layer (DQO 4). Both equilibrium and kinetic testing will utilize porewater collected from Reach 5A sediments to represent porewater that would be present below the chemical isolation layer of a cap. Details on the porewater collection methodology are provided in Section 3. The collected porewater samples will be analyzed for PCB congeners to quantify PCB homolog and total PCB concentrations, as well as TSS, DOC, and POC to characterize the general water quality. As described in Section 3, the samples will be collected from two areas expected to provide porewater with relatively high and relatively low PCB concentrations, respectively (based on measured sediment and porewater concentrations from the PDI). However, if the high-concentration porewater sample does not provide a total PCB concentration that is significantly higher than the corresponding low-concentration sample, the high-concentration sample may be spiked with a PCB mixture of known concentration to provide a wider range of test concentrations during amendment testing.

Equilibrium testing will evaluate the sorptive capacity of AC-based cap amendments (both PAC and GAC) in sequestering dissolved-phase PCBs transported by porewater within the chemical isolation layer of the cap. As described in Section 5.3.3 of the Conceptual RD/RA Work Plan, preliminary modeling simulated TOC as the sorptive amendment and used the assumption that AC is 10 times more sorptive than TOC. This is a conservative assumption from literature, which suggests AC is 10 to 100 times more sorptive than TOC for PCBs (Arp et al. 2009; Hale et al. 2010; McDonough et al. 2008). The results from the equilibrium testing will provide site-specific information on sorption

coefficients that can be input in the cap design model, instead of assuming sorption to TOC, to allow for a refinement of amendment dosages for the final design. During equilibrium testing, a jar of site porewater will be continuously mixed with an amendment for 60 days to allow the porewater and amendment to equilibrate. Following the 60-day mixing period, the water will be separated from the amendment and submitted for PCB congener analysis. The continuous mixing accelerates the mass-transfer kinetics and is expected to achieve near-equilibrium conditions. The reduction in freely dissolved PCBs, which is equal to the amount of PCBs sorbed to the amendment, will be determined by comparison of measured porewater PCB concentrations in each amended jar test with that of the unamended control.

Kinetic testing will be performed as an accompaniment to the equilibrium testing to evaluate the kinetics of PCB sorption from porewater onto the tested sorptive amendment. Based on the results of the equilibrium testing, one or more amendment type and dose combinations will be selected for evaluation by kinetic testing. The kinetic test will be performed by contacting porewater from Reach 5A sediments with the amendment and measuring PCB concentrations in the water for a maximum of 26 weeks or until equilibrium has been achieved. Prior to initiating the kinetic test, porewater from each porewater sample will be filled into 250-milliliter bottles. Bottles identified as the control batch will remain untreated, and the rest of the bottles will be treated with the amendment to be tested. As described for equilibrium testing, the water will be separated from the amendment and submitted for PCB congener analysis. The experimental design for kinetic testing is presented in Table 4-2. These data will be used to predict a site-specific PCB uptake rate for the amendment, which can be used to further refine the chemical isolation model simulations used to establish amendment dosages for the final design.

Table 4-2
Experimental Design for Reach 5A Amendment Kinetic Tests

Sample Type	Amendment Type	Kinetic Batch	Amendment Contact Time
Porewater Sample 1 (high concentration)	None	Control (unamended)	—
	PAC	PAC 1	3 days
		PAC 2	5 days
		PAC 3	1 week
		PAC 4	2 weeks
		PAC 5	3 weeks
		PAC 6	4 weeks
		PAC 7	6 weeks
		PAC 8	8 weeks
		PAC 9	12 weeks
		PAC 10	18 weeks
		PAC 11	24 weeks

Sample Type	Amendment Type	Kinetic Batch	Amendment Contact Time
	GAC	GAC 1	1 week
		GAC 2	2 weeks
		GAC 3	3 weeks
		GAC 4	4 weeks
		GAC 5	6 weeks
		GAC 6	8 weeks
		GAC 7	12 weeks
		GAC 8	18 weeks
		GAC 9	26 weeks
Porewater Sample 2 (low concentration)	None	Control (unamended)	—
	PAC	PAC 1	3 days
		PAC 2	5 days
		PAC 3	1 week
		PAC 4	2 weeks
		PAC 5	3 weeks
		PAC 6	4 weeks
		PAC 7	6 weeks
		PAC 8	8 weeks
		PAC 9	12 weeks
		PAC 10	18 weeks
		PAC 11	24 weeks
	GAC	GAC 1	1 week
		GAC 2	2 weeks
		GAC 3	3 weeks
		GAC 4	4 weeks
		GAC 5	6 weeks
		GAC 6	8 weeks
		GAC 7	12 weeks
		GAC 8	18 weeks
		GAC 9	26 weeks

An SOP for the chemical isolation layer amendment testing will be developed and submitted to EPA as an addendum to this work plan prior to implementation of that testing.

5 Data Evaluation, Schedule, and Reporting

5.1 Data Evaluation

The treatability testing data will be evaluated and incorporated into the remedial design, as appropriate. Analytical chemistry data will undergo data validation in accordance with the 2023 FSP/QAPP. The data and information generated during the treatability testing will be reviewed, evaluated, and interpreted considering the DQOs identified in Section 2. The treatability testing results will be used to evaluate and refine the relevant components of remediation—namely, sediment dewatering/processing, water treatment, amendment application to Backwater BW5A-1, and the isolation layer modeling for the engineered cap. In addition, the data will be used to support the preparation of the design specifications to be provided with the Final RD/RA Work Plan for Reach 5A.

5.2 Schedule and Reporting

After EPA approval of this *Treatability Study Work Plan for Reach 5A*, GE will initiate the treatability testing activities. The actual start date and durations for the work (particularly the in-river sample collection) will be dependent on weather and river flow conditions. In general, it is anticipated that the treatability testing associated with the sediment dewatering evaluations can be completed within three to five months after sample collection. The treatability testing associated with the amendment testing described in Sections 4.5 and 4.6 will require a longer duration to complete (e.g., approximately six months after sample collection).

Because the amendment testing associated with backwater area BW5A-1 will follow the same methodology as the bench-scale testing associated with the vernal pool pilot study, GE requests EPA approval to proceed with the backwater amendment testing concurrently with the vernal pool pilot study bench-scale testing (for which field sampling is anticipated to commence in fall 2023). GE anticipates that field sampling activities to obtain samples for the remaining tests will be initiated during the spring of 2024 after the necessary EPA approvals and subject to weather constraints.

Upon test completion and associated laboratory analysis, the results of the treatability testing will be summarized in a Treatability Studies Summary Report, which will be submitted prior to the Final RD/RA Work Plan for Reach 5A.

6 References

Ajemigbitse, M.A., J. Collins, and J. Hull., 2023. "New Long Term Adsorption Data Addresses Treatability and Modelling Performance Assumptions for GAC Based Sediment Remedies. *Eleventh International Conference on the Remediation and Management of Contaminated Sediments, Austin, Texas, January 9, 2023.*

Anchor QEA (Anchor QEA, LLC) and AECOM, 2023a. *Pre-Design Investigation Summary Report for Reach 5A Sediment and Riverbanks*. Housatonic River – Rest of River. Prepared for General Electric Company, Pittsfield, Massachusetts. September 2023.

Anchor QEA and AECOM, 2023b. *Vernal Pool Pilot Study Work Plan* Housatonic River – Rest of River. Prepared for General Electric Company, Pittsfield, Massachusetts. June 2023.

Anchor QEA, AECOM, and Arcadis, 2021. *Final Revised Rest of River Statement of Work*. Housatonic River – Rest of River. Prepared for General Electric Company, Pittsfield, Massachusetts. September 2021.

Arcadis, 2023. *Field Sampling Plan/Quality Assurance Project Plan*. Prepared for General Electric Company, Pittsfield, Massachusetts. Revised July 2023.

Arp, H.P.H., G.D. Breedveld, and G. Cornelissen, 2009. "Estimating the In Situ Sediment-Porewater Distribution of PAHs and Chlorinated Aromatic Hydrocarbons in Anthropogenic Impacted Sediments." *Environmental Science & Technology* 43:5576–5585.

EPA (U.S. Environmental Protection Agency), 1996. *Low-Flow (Minimal Drawdown) Ground-water Sampling Procedures*. Office of Research and Development and Office of Solid Waste and Emergency Response. EPA/540/S-95/504. April 1996

EPA, 2020. *Revised Final Permit Modification to the 2016 Reissued RCRA Permit and Selection of CERCLA Remedial Action and Operation & Maintenance for Rest of River*. December 2020.

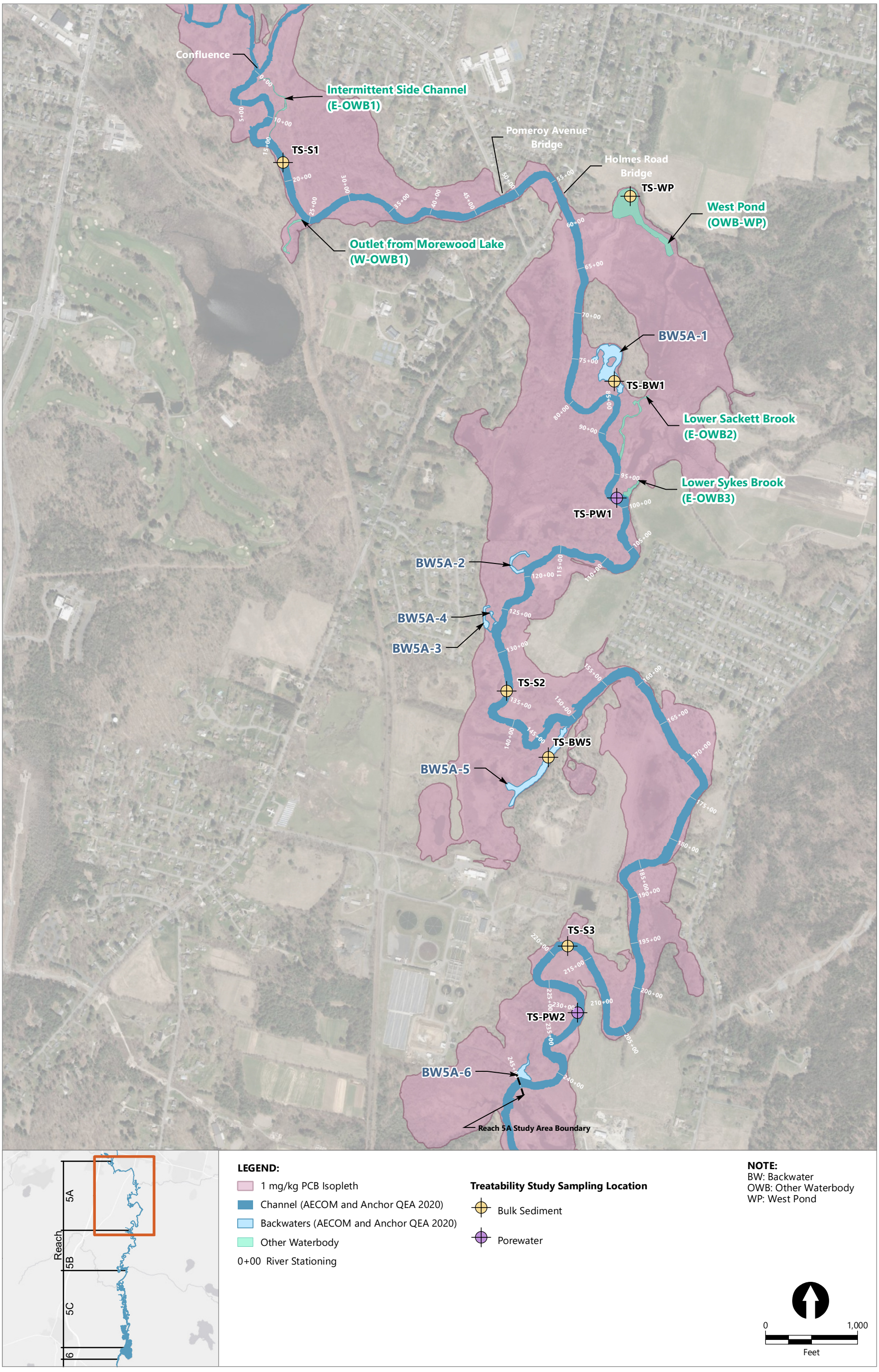
Hale, S.E., S. Kwon, U. Ghosh, and D. Werner, 2010. "Polychlorinated Biphenyl Sorption to Activated Carbon and the Attenuation Caused By Sediment." *Global NEST Journal* 12(3):318–326.

Jalalizadeh, M., and U. Ghosh, 2016. "In Situ Passive Sampling of Sediment Porewater Enhanced by Periodic Vibration." *Environmental Science and Technology* 50:8741–8749.

McDonough, K.M., J.L Fairey, and G. Lowr, 2008. "Adsorption of Polychlorinated Biphenyls to Activated Carbon: Equilibrium Isotherms and a Preliminary Assessment of the Effect of Dissolved Organic Matter and Biofilm Loadings." *Water Research* 42:575–584.

Shen, X., T. Hussain, M. Mitchek, J. Wong, and D. Reible, 2023. "Evaluating the Sorption Kinetics of Polychlorinated Biphenyls in Powdered and Granular Activated Carbon." *Water Research* 236:119978.

Figure



Publish Date: 2023/09/26, 3:20 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixH\AQ_RDRA_AppH_Fig3-1_TreatabilitySampling.mxd

ANCHOR QEA

Figure 3-1
Treatability Study Sampling Locations
Treatability Study Work Plan for Reach 5A
Housatonic River – Rest of River

Attachment A
Standard Operating Procedure: Gravity Drainage Test

Standard Operating Procedure: Gravity Drainage Test

Scope and Application

This standard operating procedure (SOP) describes procedures for conducting a bench-scale Drainage Study as part of the treatability study program. The purpose of this study is to estimate the water content of a composite sample after gravity draining for a period of time.

Equipment List

The following materials, as required, will be available during this procedure:

- Personal protective equipment (PPE)
- Analytical balance
- No. 200 standard sieve
- Conical paint filters (60 × 60 mesh or 60 × 48 standard mesh)
- Sampling spoon
- Laboratory stands
- Funnels
- Graduated cylinders
- Graduated beaker
- Digital camera
- Laboratory notebook

Drainage Study Procedure

In this test, samples representative of sediment proposed for removal are placed atop a screen and allowed to gravity drain for 72 hours. For each bulk sediment sample, the procedures are as follows:

1. Don appropriate PPE.
2. Homogenize the bulk sediment sample (ensure that water content is representative of anticipated site conditions).
3. Collect pre-test subsamples for determination of total solids and for testing in accordance with the Paint Filter Liquids Test (SW846 Test Method 9095B).
4. Collect 1 liter of sediment from each sample.
5. Place the sediment material in a conical configuration in the center of a No. 200 standard sieve.
6. Set up the apparatus to collect any water that drains from the sample during the testing in a graduated beaker.
7. Place each screen and sample in a non-drafty location or place a non-airtight cover over the sieve.
8. Photograph the testing apparatus.

9. After drainage durations of 6, 24, 48, and 72 hours, remove a 25-gram sample from the center of the cone and determine the total solids content. Measure the amount of water that drains from the sample at each time interval. Conduct paint filter testing on the sample at each time interval. Homogenize the remaining material between each test duration and repeat for the 72-hour duration.
10. For each sample, plot the solids concentration vs. time.
11. After test completion, conduct further testing on the sediment samples in accordance with the Shake/Vibration Test procedures (see separate SOP), as applicable.
12. Collect the water that drains from the sample for laboratory analytical testing for total suspended solids, polychlorinated biphenyls, metals, and oil and grease.

Reference

EPA (U.S. Environmental Protection Agency), 2004. *SW-846 Method 9095B – Paint Filter Liquids Test*. Revised November 2004.

Attachment B
Standard Operating Procedure: Stabilization/Solidification Amendment Test

Standard Operating Procedure: Stabilization/Solidification Amendment Test

Scope and Application

This standard operating procedure (SOP) describes procedures for conducting bench-scale Stabilization/Solidification (S/S) Amendment Tests. These tests will determine the effectiveness of different amendment types and doses to meet transportation and disposal facility requirements for excavated sediment.

Equipment List

The following materials, as required, will be available during this procedure:

- Personal protective equipment (PPE)
- Stainless steel mixing bowl
- Soil mixing apparatus
- Sample containers
- Analytical balance
- Digital camera
- Paint Filter testing equipment described in the Paint Filter Liquids Test method (SW846 Test Method 9095B)
- Laboratory notebook

Test Procedure for Stabilization/Solidification

The S/S test method described below will be conducted in a laboratory bench-scale setup using sediment collected from target removal locations. Samples used in the test will be approximately 1 kilogram in weight. The tests will be conducted under three different S/S amendment percentages for each amendment type. The following stabilization amendments will be tested, unless stated otherwise in the project work plans: Type I Portland cement; cement kiln dust, Calciment, and lime. The treatability testing will be performed using these commercially available amendments at mix ratios of 2.5%, 5%, and 7.5% by weight. If adequate testing results are not obtained using the initial ratios, additional mix ratios will be evaluated.

Upon receipt of the bulk sediment samples, the S/S bench-scale testing will be conducted using the following laboratory procedure:

1. Don appropriate PPE.
2. Homogenize the bulk sediment sample (ensure that water content is representative of anticipated site conditions).

3. Determine the initial percent moisture, percent solids, and weight for each sample and record the data in a notebook along with a description of the sample material based on visual observations.
4. Divide each composite sample into subsamples.
5. Photograph the samples.
6. Label each of the subsamples with the sediment sample location nomenclature and the following to indicate the amendment type and dose:
    a. Three subsamples subject to the addition of Portland cement (PC) are to be labeled with the suffixes "-PC (2.5%)", "-PC (5%)", and "-PC (7.5%)".
    b. Three subsamples subject to the addition of Cement Kiln Dust (CKD) are to be labeled with the suffixes "-CKD (2.5%)", "-CKD (5%)", and "-CKD (7.5%)".
    c. Three subsamples subject to the addition of Calciment (Calc) are to be labeled with the suffixes "-Calc (2.5%)", "-Calc (5%)", and "-Calc (7.5%)".
    d. Three subsamples subject to the addition of lime (CaO) are to be labeled with the suffixes "-CaO (2.5%)", "-CaO (5%)", and "-CaO (7.5%)".
7. Add the stabilization amendment (by weight relative to the total subsample weight) listed in Step 6 to correspond to the sample labels. Thoroughly mix the stabilization amendment into the sample. For example, add 5% PC by weight to the sample with the suffix "-PC (5%)". Weigh each sample before and after amendment application. Document the results in the project notebook along with the date, time, and laboratory air temperature. Photograph the samples.
8. Let the samples cure for a period of 12 hours, weigh each sample and then analyze each of the subsamples for percent solids (Standard Method 2540G), moisture content (ASTM D2216), paint-filter test (EPA Method 9095B), and strength using a pocket penetrometer. Weigh the sample again after this testing. Document the results in the project notebook along with the date, time, and laboratory air temperature. Photograph the samples after each cure period.
9. Repeat the procedure listed in Step 8 after letting the samples cure for 24, 48 and 72 hours.
10. Document the optimal amendment type, mix ratio, and cure time based on the testing for potential testing for strength and physical properties at a geotechnical laboratory as described in the project work plan.
11. After test completion, conduct further testing on amended sediment samples in accordance with the Shake/Vibration Test procedures (see separate SOP), as applicable.

Reference

EPA (U.S. Environmental Protection Agency), 2004. *SW-846 Method 9095B – Paint Filter Liquids Test*. Revised November 2004.

Attachment C
Standard Operating Procedure: Shake/Vibration Test

Standard Operating Procedure: Shake/Vibration Test

Scope and Application

This standard operating procedure (SOP) describes procedures for the shake/vibration test for untreated and stabilized/solidified sediments. The purpose of this study is to simulate motion similar to that which might be imparted during transport of untreated (if possible) or stabilized/solidified sediments to a disposal destination. The transport-simulated samples will then be examined and tested for free water.

Equipment List

The following materials, as required, will be available during this procedure:

- Personal protective equipment (PPE)
- Lexan tubing (3-inch inside diameter by 24 inches)
- Laboratory shaker with variable control
- Digital camera
- Paint Filter testing equipment described in the Paint Filter Liquids Test method (SW846 Test Method 9095B)
- Laboratory notebook

Procedure for Shake/Vibration Testing

1. Don appropriate PPE.
2. Select the following sediment samples for shake/vibration testing:
    a. One control sediment sample from each field sample location using bulk sediment that has not been subject to gravity drainage testing or amendment testing. Homogenize the bulk sediment sample before control sample collection (ensure that water content is representative of anticipated site conditions).
    b. One sediment sample from each field sample location that was subject to gravity drainage testing (see separate SOP).
    c. One sediment sample from each field sample location that was subject to stabilization/ solidification testing after curing for at least 72 hours (see separate SOP). Samples for shake/vibration testing will be selected from the optimal amendment type and dose for each sample location.
3. Prepare 24-inch sections of Lexan tubing by sealing one end. Place approximately 1 kilogram of each sample into the Lexan tubing by filling to a depth of approximately 10 inches. Tap lightly, then mark and record the sediment depth in each tube. Seal the upper end of the tube to prevent desiccation.

4. Bundle the tubes and place them upright in the shaker. Secure the bundle to the shaker. Photograph the samples.
5. Set the shaker to a rotation speed of 60 revolutions per minute. Continue slow shaking for a duration of five days.
6. After the simulated transit period, remove the tubes from the shaker. Allow the tubes to stand undisturbed for 2 to 4 hours. After that time, observe and photograph the sediment surface of each tube. Mark and measure the sediment surface in each tube. Note and measure any stratification or liquid accumulation on the surface or the bottom. Submit samples for Paint Filter testing (EPA Method 9095B).

Reference

EPA (U.S. Environmental Protection Agency), 2004. *SW-846 Method 9095B – Paint Filter Liquids Test*. Revised November 2004.

Appendix I
Supplemental Data Collection Work Plan for Reach 5A

September 2023
Housatonic River – Rest of River

Supplemental Data Collection Work Plan for Reach 5A

Prepared for General Electric Company
Pittsfield, Massachusetts

September 2023
Housatonic River – Rest of River

Supplemental Data Collection Work Plan for Reach 5A

Prepared for
General Electric Company
1 Plastics Avenue
Pittsfield, Massachusetts 01201

Prepared by
Anchor QEA, LLC
290 Elwood Davis Road
Liverpool, New York 13088

In Conjunction with:
AECOM
500 Enterprise Drive
Rocky Hill, Connecticut 06067

Project Number: 230469-02.01

TABLE OF CONTENTS

1 Introduction 1

1.1 Background 1

1.2 Reach 5A Remedial Action Overview 1

1.3 Summary of Completed PDI and Related Activities 2

1.4 Ongoing Pre-Design Investigation and Baseline Restoration Assessment Activities 3

1.5 Supplemental Data Collection Work Plan Objectives and Scope 3

1.6 Plan Organization 5

2 Data Quality Objectives 6

3 Supplemental PCB Characterization 8

3.1 Supplemental Sediment PCB Characterization 8

3.1.1 Main Channel Sediments 8

3.1.2 Non-Residential Floodplain Soil Sampling 9

4 Natural Channel Design Surveys 10

5 Supplemental Baseline Restoration Assessment Surveys 11

5.1 Supplemental Riverbank Habitat Surveys 11

5.2 Supplemental Backwater Habitat Surveys 12

5.3 Habitat Surveys in Other Waterbodies 12

5.4 Supplemental Floodplain Habitat Surveys 13

6 Geotechnical and Groundwater Investigations 15

6.1 General 15

6.2 PDI Geotechnical Investigation Summary 15

6.3 Supplemental Geotechnical Investigation Program Overview 16

6.4 Supplemental Geotechnical Investigations 17

6.4.1 In-River Geophysical Surveys 17

6.4.2 Geotechnical Borings 18

6.4.3 Piezometer Installation and Recording of Hydraulic Head 21

6.4.4 Staging Area and Access Road Geotechnical Investigations 22

6.4.5 Supplemental Geotechnical Investigation Summary 23

7 Supplemental Field Surveys 24

7.1 Riverbank Delineation Survey 24

7.2 Topographic Survey of Proposed Remediation Areas, Staging Areas, and Access Roads 24

7.3 Survey of Utilities and Structures 25
7.4 Bridge Clearances and Weight Limits Along Haul Routes 25

8 Outreach to Utility, Structure, and Discharge Owners 27

9 Schedule and Reporting 28

10 References 29

TABLE

Table 6-1 Summary of Supplemental Geotechnical Investigations 23

FIGURES

Figures 3-1a–c In-River Supplemental Sediment Sampling Locations in Reach 5A
Figure 3-2a–c Proposed Supplemental Sampling Locations for Non-Residential Floodplain
Figures 6-1a–d In-River and Upland/Riverbank Geotechnical Investigation Locations
Figures 6-2a–d Temporary Access Road and Staging Area Geotechnical Investigation Locations

ATTACHMENTS

Attachment A Standard Operating Procedure: Dynamic Cone Penetrometer Testing
Attachment B Standard Operating Procedure: Single-Well, Constant-Rate Pump Test

ABBREVIATIONS

ASTM	ASTM International
BRA	Baseline Restoration Assessment
CMR	Code of Massachusetts Regulations
Conceptual RD/RA Work Plan	*Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A*
DCP	dynamic cone penetrometer
DGPS	differential global positioning system
DQO	data quality objective
EA	Exposure Area
EPA	U.S. Environmental Protection Agency
Final Revised SOW	Final Revised Rest of River Statement of Work
FSP/QAPP	Field Sampling Plan/Quality Assurance Project Plan
GE	General Electric Company
GNSS	Global Navigation Satellite System
GPR	ground penetrating radar
GPS	global positioning system
ISCP	Invasive Species Control Plan
kg	kilogram
K_v	hydraulic conductivity
LiDAR	Light Detection and Ranging
mg	milligram
MassDOT	Massachusetts Department of Transportation
MNHESP	Massachusetts Natural Heritage and Endangered Species Program
NAD83	North American Horizontal Datum of 1983
NAVD88	North American Vertical Datum of 1988
NPDES	National Pollutant Discharge Elimination System
NRTK	network real-time kinematic
PCB	polychlorinated biphenyl
PDI	pre-design investigation
PDI Summary Report for Non-Residential Floodplain EAs	*Pre-Design Investigation Summary Report for Reach 5A Non-Residential Floodplain Exposure Areas*
PDI Summary Report for Sediment and Riverbanks	*Pre-Design Investigation Summary Report for Reach 5A Sediment and Riverbanks*
RCRA	Resource Conservation and Recovery Act
RD/RA	Remedial Design/Remedial Action

Reach 5A BRA Report	*Housatonic River Reach 5A Baseline Restoration Assessment Report*
Revised Final Permit	Revised Final Resource Conservation and Recovery Act Permit Modification
Revised Reach 5A BRA Work Plan	*Revised Reach 5A Baseline Restoration Assessment Work Plan*
Revised Sediment/Bank PDI Work Plan	*Revised Pre-Design Investigation Work Plan for Reach 5A Sediment and Riverbanks*
ROR	Rest of River
SDC Work Plan	Supplemental Data Collection Work Plan
SI	Supplemental Investigation
SIC	seepage-induced consolidation
SOP	standard operating procedure
SPT	standard penetration testing
UDF	Upland Disposal Facility
WWTP	Wastewater Treatment Plant

1 Introduction

1.1 Background

In accordance with the Revised Final Resource Conservation and Recovery Act Corrective Action Permit (Revised Final Permit) issued by the U.S. Environmental Protection Agency (EPA) to the General Electric Company (GE) for the Housatonic Rest of River (ROR) (EPA 2020) and GE's *Final Revised Rest of River Statement of Work* (Final Revised SOW; Anchor QEA et al. 2021) under the Revised Final Permit, GE has prepared a *Conceptual Remedial Design/Remedial Action Work Plan for Reach 5A* (Conceptual RD/RA Work Plan).

Section 4.2.3.1 of the Final Revised SOW stated that if the findings or results of the pre-design investigation (PDI) activities indicate that additional sampling is necessary to further supplement the available data, or if additional data needs are identified during development of the Conceptual Remedial Design/Remedial Action (RD/RA) Work Plan for a given remediation area, a supplemental data collection work plan will be submitted to EPA for review and approval prior to implementing such supplemental investigations. GE has determined that supplemental data collection is necessary to support the remedial design for Reach 5A. This Supplemental Data Collection Work Plan (SDC Work Plan) presents GE's proposal for those supplemental investigations and is provided as an appendix to the Conceptual RD/RA Work Plan for Reach 5A.

1.2 Reach 5A Remedial Action Overview

Remediation in Reach 5A will include removal and capping of sediments in the riverbed and remediation of associated backwaters, riverbank soils, and floodplain soils (including those at residential properties, non-residential floodplain areas, and vernal pools) to the extent required by the applicable Performance Standards in the Revised Final Permit. Soil and sediment excavated from the remediation areas will be subject to disposal at an on-site Upland Disposal Facility (UDF) or at an off-site disposal facility in accordance with the requirements specified in Attachment E to the Revised Final Permit.

The Conceptual RD/RA Work Plan provides a description of the conceptual approach for performing the sediment remediation, soil remediation, and material handling activities for Reach 5A. As described in the Conceptual RD/RA Work Plan, supplemental data collection (i.e., the subject of this work plan), treatability testing, additional habitat assessment activities, cultural resources investigations, and additional design evaluations are necessary and will be conducted as part of the final design process. Once these activities are complete, GE will submit a Final RD/RA Work Plan that includes a detailed description of the design and implementation of the remedial activities for Reach 5A.

1.3 Summary of Completed PDI and Related Activities

In accordance with the Revised Final Permit, GE was required to prepare PDI work plans for the collection of pre-design data to be used to support the remedial activities in the ROR. In Reach 5A, the PDI was conducted in three parts, which addressed, respectively, floodplain residential properties, floodplain non-residential Exposure Areas (EAs), and sediments and riverbanks. Following EPA approval of those work plans, GE carried out the required PDI activities, and has prepared PDI summary reports on them, specifically as follows:

- The PDI activities conducted and data collected at the floodplain residential properties were described and presented in GE's *Pre-Design Investigation Summary Report for Reach 5A Floodplain Residential Properties* (Anchor QEA 2021), submitted on December 22, 2021, and conditionally approved by EPA on February 14, 2022.
- The PDI activities and data collected at the Reach 5A non-residential floodplain EAs were described and presented in GE's *Pre-Design Investigation Summary Report for Reach 5A Non-Residential Floodplain Exposure Areas* (PDI Summary Report for Non-Residential Floodplain EAs; Anchor QEA and Arcadis 2023), being submitted concurrently with the Reach 5A Conceptual RD/RA Work Plan.
- The PDI activities and results for the Reach 5A sediments and riverbanks, including topographic and bathymetric surveys, sediment probing, a bank erodibility assessment, shoreline structures and utilities surveys, riverbank and sediment polychlorinated biphenyl (PCB) characterization sampling, porewater PCB sampling, groundwater seepage testing, and geotechnical characterization, are described and presented in GE's *Pre-Design Investigation Summary Report for Reach 5A Sediment and Riverbanks* (PDI Summary Report for Sediment and Riverbanks; Anchor QEA and AECOM 2023), being submitted concurrently with the Conceptual RD/RA Work Plan.

In addition to these PDI activities, in accordance with a separate work plan approved by EPA, GE has conducted a baseline restoration assessment (BRA) of Reach 5A. The results of that assessment were presented in a *Housatonic River Reach 5A Baseline Restoration Assessment Report* (Reach 5A BRA Report; AECOM 2023a), submitted on August 25, 2023, which provides a description and assessment of the pre-remediation conditions and functions of the river bottom, riverbank, backwater, floodplain, and vernal pool habitats in Reach 5A, as well as the identified habitats of federally or state-listed rare species in those areas.

Further, in accordance with the Revised Final Permit and Final Revised SOW, GE has conducted an initial assessment of archaeological and historic resources in the overall ROR, including Reach 5A, and the potential for those areas to contain such resources. The results of that assessment were provided in the *Revised Supplemental Phase IA Cultural Resources Assessment Report for the Housatonic Rest of River* (AECOM 2023b), which was submitted to and approved by EPA in March 2023.

1.4 Ongoing Pre-Design Investigation and Baseline Restoration Assessment Activities

Some of the Reach 5A sediment PDI activities that were previously proposed and approved have not yet been completed. Those PDI activities include the ongoing measurement of hydraulic head at piezometers installed in Reach 5A and continuation of a riverbank erosion study by resurveying toe pins installed in study banks one year after installation (in November 2023) to evaluate annual erosion rates and develop bank erosion curves. Those PDI activities were proposed in GE's *Revised Pre-Design Investigation Work Plan for Reach 5A Sediment and Riverbanks* (Revised Sediment/Bank PDI Work Plan; Anchor QEA and AECOM 2022) and are described in the PDI Summary Report for Sediment and Riverbanks. They will continue to be conducted during the supplemental data collection period.[1] GE has also not completed the evaluation of the potential effects of Reach 5A remediation on downstream water withdrawals and uses (as described in the *Revised Water Withdrawal and Uses Plan* [Anchor QEA 2023a]), which will be completed during the same period.

In addition, as described in the Reach 5A BRA Report, some of the previously proposed and approved BRA activities have not yet been conducted. Those activities include the following: (1) the fish community survey described in Section 3.1.1.3 of GE's *Revised Reach 5A Baseline Restoration Assessment Work Plan* (Revised Reach 5A BRA Work Plan; AECOM 2022), which will be conducted along with the first round of fish tissue sampling in the baseline monitoring program (Anchor QEA 2023b); and (2) the collection of soil samples for pH and organic content analysis from the vernal pools that are subject to remediation and have not already been sampled for those parameters, as described in Section 7.2.2 of the Reach 5A BRA Report. GE will complete these BRA activities in conjunction with the supplemental BRA activities discussed in Section 5 of this SDC Work Plan.

Finally, the proposed additional cultural resource survey activities in Reach 5A are described in the separate *Phase IB Cultural Resources Survey Work Plan for Reach 5A*, being submitted concurrently with the Conceptual RD/RA Work Plan.

1.5 Supplemental Data Collection Work Plan Objectives and Scope

The primary objective of this SDC Work Plan is to describe proposed supplemental data collection activities necessary to supplement the existing data and provide additional information to support

[1] In addition to these activities, another proposal contained in the Revised Sediment/Bank PDI Work Plan that was not completed consisted of Phases 2 through 4 of a geotechnical investigation program. As described in Section 6.2 of this SDC Work Plan, those activities were not and will not be conducted and will be replaced by a supplemental geotechnical investigation program described in Sections 6.3 and 6.4 of this work plan.

the final design for Reach 5A. As described in the remainder of this work plan, the scope of the supplemental data collection will generally include the following additional activities:

- Additional sediment sampling to refine the volumes of sediment in the main channel requiring off-site disposal in accordance with the Performance Standards;
- Additional floodplain soil sampling to further delineate the extent of the 1 milligram per kilogram (mg/kg) isopleth at two non-residential floodplain EAs and improve PCB characterization at one EA where Core Area 1 habitat is to be avoided in accordance with the Performance Standards;
- A river habitat survey and a geomorphological survey of the river channel to support final design evaluations associated with channel and riverbank reconstruction, using principles of Natural Channel Design;
- Supplemental BRA surveys to take into account the extent of remediation and the locations of access roads and staging areas, as identified in the Conceptual RD/RA Work Plan, including surveys to assess the specific habitat conditions within those areas relative to the habitat requirements of the state-listed rare species;
- Geotechnical investigations to provide information and data on the geological conditions beneath the river, at riverbank remediation areas, and in areas where temporary staging areas and access roads are proposed;
- A groundwater investigation (in conjunction with the geotechnical investigation) to characterize local hydrogeologic conditions and groundwater flow patterns to support groundwater modeling efforts to estimate in-river containment cell dewatering rates (if implemented);
- Field surveys to finalize delineation of the top-of-bank line (i.e., riverbank-floodplain interface) and bottom-of-bank line (i.e., sediment-riverbank interface) that will be used to define the limits of the in-river sediment remediation polygon, the riverbank remediation limits, and the edge of floodplain remediation;
- Field surveys to gather detailed topographic data at the remediation areas, at proposed staging area properties, along temporary access road pathways, and where utilities have been identified; and
- Outreach to utility owners, owners of shoreline structures, and one permitted water discharger (i.e., the City of Pittsfield Wastewater Treatment Plant [WWTP] discharge) within Reach 5A to gather supplemental information to support final design evaluations and determine any required setbacks from sensitive structures or utilities.

1.6 Plan Organization

The remainder of this SDC Work Plan is organized into the following sections:

- Section 2 presents the data quality objectives (DQOs) for the supplemental data collection activities.
- Sections 3 through 8 describe the supplemental data collection activities organized by topic.
- Section 9 describes the schedule and reporting for the supplemental data collection activities.
- Section 10 lists the references cited in this document.

2 Data Quality Objectives

Specific DQOs for the Reach 5A supplemental data collection program are as follows:

DQO 1. Refine the delineation of sediment remediation areas in the main channel of Reach 5A containing length-weighted average total PCB concentrations greater than 100 mg/kg (to further support disposal evaluations).

DQO 2. Refine PCB characterization in the remediation footprint for non-residential EA 19 and the 1 mg/kg PCB isopleth boundary at specific locations for EAs 22 and 33.

DQO 3. Conduct additional geomorphological surveys to support consideration of the principles of Natural Channel Design, using design methods described in Chapter 11 ("Rosgen Geomorphic Channel Design") of the Stream Restoration Design (National Engineering Handbook 654; USDA 2008) and in the *Natural Channel Design Review Checklist* (Harman and Starr 2011) to meet the requirements of Sections II.B.2.a.(1)(e) and II.B.2.a.(2)(a) of the Revised Final Permit.

DQO 4. Conduct supplemental BRA surveys to provide further information on baseline habitat conditions in the specific areas that will be subject to remediation and in the locations of associated access road and staging areas, for consideration in the final design and Restoration Plan for Reach 5A.

DQO 5. Establish subsurface geotechnical conditions to support design of in-river diversion/containment cells, construction of temporary staging areas and access roads, and slope and cap stability assessments.

DQO 6. Obtain data to elucidate local hydrogeologic conditions and groundwater flow patterns to support estimates of in-river diversion/containment cell dewatering rates.

DQO 7. Gather detailed topographical and bathymetric data for the remediation areas (including floodplain properties, vernal pools, backwater areas, and other waterbodies), at proposed staging areas, and along proposed temporary access roads.

DQO 8. Finalize the top-of-bank line and bottom-of-bank line to delineate the sediment-riverbank interface and riverbank-floodplain interface that will be used to define the limits of the in-river sediment remediation polygon, the riverbank remediation limits, and the edge of floodplain remediation.

DQO 9. Map existing sewer, water, natural gas, and utility river crossings; overhead clearances; and bridge crossings within Reach 5A.

DQO 10. Gather supplemental information from utility owners, owners of shoreline structures, and permitted water dischargers within Reach 5A to facilitate an evaluation of the potential

impacts that remediation, restoration, and support activities may have on these facilities and determine any required setbacks from sensitive structures or utilities.

3 Supplemental PCB Characterization

This section describes proposed field sampling and analysis activities to refine interpolated PCB concentrations in the following: (1) main channel sediment areas with depth-weighted average PCB concentrations greater than 100 mg/kg (DQO 1); and (2) floodplain EAs where PCBs were detected during the Reach 5A PDI above 1 mg/kg outside the existing 1 mg/kg isopleth and where additional PCB characterization is needed to support the remedial design (DQO 2).

3.1 Supplemental Sediment PCB Characterization

3.1.1 Main Channel Sediments

Supplemental sediment sampling will be conducted to refine the delineation of depth-weighted average PCB concentrations exceeding 100 mg/kg at four main channel locations.[2] As described in Appendix B to the Conceptual RD/RA Work Plan, Thiessen polygons were generated to evaluate the depth-weighted average PCB concentration at each main channel sediment sample location. Based on the PDI data, there are four core locations that have depth-weighted average PCB concentrations that exceed 100 mg/kg: SE-030-61-W, SE-080-85-E, SE-217-93-E, and SE-230-73-C. The areal extent of these four locations was defined using the associated Thiessen polygons; those areas collectively total approximately 0.7 acre.

Supplemental sampling will be conducted approximately 50 feet upstream and downstream of these four core locations at the locations shown on Figures 3-1a, 3-1b, and 3-1c (i.e., eight target sample locations) to refine the delineation of sediment remediation areas containing length-weighted average PCB concentrations greater than 100 mg/kg. At each target location, sediment cores will be collected to a total depth of three feet (or to the depth of sediment if less than three feet) and will be processed in six-inch intervals (up to six samples per core) for a total of up to 48 samples. Sediment sample collection and processing will be performed following the methodology specified in Appendix C2 of GE's 2023 Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP; Arcadis 2023)—the Standard Operating Procedure (SOP) for Sediment Probing, Coring and Sample Collection. The sampling crew will locate the sediment sampling locations using a differential global positioning system (DGPS) capable of sub-foot accuracy. Small adjustments to some of the target sampling locations may be necessary based on conditions encountered in the field. If significant adjustments to target sampling locations are needed, they will be discussed with and approved by

[2] In accordance with Attachment E of the Revised Final Permit, off-site disposal is required for any sediment that is represented by a three-dimensional polygon associated with a single vertical core having an average PCB concentration greater than or equal to 100 mg/kg. This criterion is evaluated as the depth-weighted average PCB concentration for each location and is calculated using the depth intervals that correspond to the targeted depth of removal associated with each core location.

the EPA field representative. Coordinates of the actual sampling locations will be recorded using a DGPS. Each sediment sample will be analyzed for PCBs as Aroclors using EPA Method 8082.

3.1.2 Non-Residential Floodplain Soil Sampling

Supplemental floodplain soil sampling will be conducted to further delineate the extent of the 1 mg/kg isopleth at specific locations for EAs 22 and 33 and improve PCB characterization at EA 19 where Core Area 1 habitat is to be avoided in accordance with the Performance Standards in the Revised Final Permit.

As described in the PDI Summary Report for Non-Residential Floodplain EAs (Anchor QEA and Arcadis 2023), additional information on PCB concentrations are needed to refine the location of the 1 mg/kg PCB isopleth in EAs 22 and 33. Samples along the 1 mg/kg PCB isopleth in the northern end of EA 22 and at several locations in EA 33 exhibit PCB concentrations ranging from non-detect to greater than 50 mg/kg (Figures 3-2a and 3-2b). Supplemental soil samples will be collected from two locations in EA 22 (Figure 3-2a) and 16 locations in EA 33 (Figure 3-2b) and analyzed for PCBs. The proposed sample locations are approximately 30 to 50 feet from either the current 1 mg/kg PCB isopleth or the prior sample locations that show PCB concentrations greater than 1 mg/kg in either the 0- to 0.5-foot or 0.5- to 1-foot depth interval.

As summarized in Appendix F to the Conceptual RD/RA Work Plan, the preliminary remediation area in EA 19 is an approximately 0.01-acre narrow strip of shrub swamp habitat immediately adjacent to the Core Area 1 habitat (Figure 3-2c). The proposed remediation area currently shows the 0- to 1-foot PCB concentration as 473 mg/kg, which is interpolated from the closest PCB sample (approximately 80 feet away) southeast of the remediation area. This high PCB sample was obtained from an area of the same habitat type as the preliminary remediation area (i.e., shrub swamp); however, that area is separated from the remediation area by a different habitat type. To better define the PCB concentration and refine the remedial footprint within EA 19, one supplemental soil sample will be collected from within the preliminary remediation area delineated in EA 19 (Figure 3-2c).

The soil samples will be collected in 0.5-foot intervals to a depth of one foot below ground surface in accordance with the protocols established in Appendix D1 of the 2023 FSP/QAPP (SOP for Soil Coring and Sample Collection). Samples will be analyzed for PCB as Aroclors using EPA Method 8082 with analytical detection and reporting limits presented in the 2023 FSP/QAPP.

4 Natural Channel Design Surveys

In accordance with the Revised Final Permit, reconstruction of the river channel and riverbanks will consider the principles of Natural Channel Design. Geomorphic information and data will be needed along the Reach 5A river channel to support Natural Channel Design evaluations as part of the final design for Reach 5A (DQO 3).[3] During the supplemental data collection program, a Rosgen Level I-III assessment of river geomorphology (Rosgen 2006) will be performed for the river channel to document existing conditions and to develop design criteria for bank stabilization designs as well as channel (sediment) restoration. This assessment will include the following:

- Delineation of the Reach 5A river channel into segments of identified Rosgen stream-type and valley-type field conditions (anticipated to be approximately three to five segments in Reach 5A);
- Identification of bankfull features throughout the Reach 5A channel;
- Collection of and/or review of existing survey data for representative cross-sections in each river segment to be used in identifying existing bankfull dimensions;
- Collection of available reference reach data for use during the design for generating the proper dimension, pattern, and profile;
- Collection of survey data on other geomorphic features, including point bar slopes, pool dimensions, and riffle lengths/slopes (anticipated to include two to three features per segment when possible, assuming the presence of stable representative features); and
- Collection of Wolman pebble count and bar sample information from selected locations to properly assess the Rosgen stream type and perform sediment competence.

[3] A detailed discussion of how the principles of Natural Channel Design will be applied in the design of the remediation and restoration of the river channel and riverbanks will be provided in the Final RD/RA Work Plan for Reach 5A.

5 Supplemental Baseline Restoration Assessment Surveys

The Revised Reach 5A Work Plan provided and the Reach 5A BRA Report reiterated that, following the submission of the latter report, supplemental BRA activities would be conducted to take into account the footprint of the remediation, as well as associated access roads and staging areas, as identified in the Conceptual RD/RA Work Plan. Thus, the supplemental data collection activities will include additional BRA surveys to provide further information on baseline habitat conditions in such areas for future consideration in the final remedial design (including specifying best management practices for avoiding and minimizing habitat impacts) and in developing the Restoration Plan for Reach 5A (DQO 4). These additional surveys will be focused on areas that are anticipated to be affected by remedial activities as determined in the Conceptual RD/RA Work Plan, including those areas affected by access roads and staging areas. Further, as described below, additional surveys will be conducted of concentrated areas of invasive plant species within or adjacent to remediation areas to assess the need for potential control efforts of such areas.

The supplemental BRA surveys will be conducted for the specific areas of the riverbanks, backwaters, and floodplain that will be affected by remediation and support activities, as well as the affected Other Waterbodies in Reach 5A, as defined in the Conceptual RD/RA Work Plan (and described below), which were only briefly discussed in the Reach 5A BRA Report. Additional in-river habitat surveys will not be conducted because the prior BRA surveys covered the entire riverine habitat area within Reach 5A, which is all subject to remediation.

5.1 Supplemental Riverbank Habitat Surveys

For the specific Reach 5A riverbank areas where remedial activities and associated stabilization and access will occur (as shown in the Conceptual RD/RA Work Plan), the following supplemental BRA surveys will be conducted:

- Detailed physical surveys (i.e., elevations, widths, and heights) of riverbank soil excavation and/or stabilization cuts and topographic breaks affecting overbank flooding into the adjacent floodplain;
- A survey of trees on the riverbanks within the anticipated work limits for remediation or stabilization and where access is anticipated, including a global positioning system (GPS) survey of their location (sub-meter accuracy), size measurements (i.e., diameter at breast height), and species identification;
- Plant species composition and relative abundance by species;
- Identification of specific habitat features, including burrows/dens/caves, standing dead timber, tree cavities, large woody debris, sandy banks supporting nesting (e.g., for belted kingfishers, bank swallows, and turtles), wood turtle hibernacula, and bat roosting trees;

- Rare species reconnaissance surveys to further assess the potential for the habitat requirements of the 13 state-listed species with Species Habitat (as mapped by the Massachusetts Natural Heritage and Endangered Species Program [MNHESP)]) encompassing the Reach 5A riverbanks to occur within the affected riverbank areas; and
- Identification of concentrated areas of invasive plant species within or adjacent to riverbank work areas, to be considered as part of an overall Invasive Species Control Plan (ISCP).

5.2 Supplemental Backwater Habitat Surveys

The Reach 5A BRA Report included a fairly detailed description of the habitat in the six backwaters in Reach 5A. As provided in the Conceptual RD/RA Work Plan, four of those backwaters will be 100% affected by remediation activities (including sediment removal and capping or application of an amendment), and the other two will be 60 to 70% affected. In any case, to provide more baseline habitat information on the backwater areas that will be affected by remediation activities, including access roads, the following supplemental BRA surveys will be conducted in those affected backwater areas (as shown in the Conceptual RD/RA Work Plan) to the extent that such information is not already presented in the Reach 5A BRA Report:

- A survey of trees within the anticipated work limits for remediation and where access is anticipated, including GPS survey of their location (sub-meter accuracy), size measurements (i.e., diameter at breast height), and species identification;
- Detailed topographic survey of the physical parameters of the hydraulic connection of each backwater with the river;
- Plant species composition and relative abundance by species;
- Identification of specific habitat features, including standing dead timber, large woody debris, deep pools, wood turtle hibernacula, and bat roosting trees;
- Rare species reconnaissance surveys to further assess the potential for the habitat requirements of the 11 state-listed species with MNHESP-mapped Species Habitat encompassing the Reach 5A backwaters to occur within the affected backwater areas; and
- Identification of concentrated areas of invasive plant species within or adjacent to the specific backwater work areas, to be considered as part of an overall ISCP.

5.3 Habitat Surveys in Other Waterbodies

As discussed in the Conceptual RD/RA Work Plan, Reach 5A contains five other hydrographic features that do not constitute backwaters. Those features, designated Other Waterbodies, are the outlet from Morewood Lake (Wampenum Brook), portions of Sackett Brook and Sykes Brook flowing from east to west into the Housatonic River on and just south of the Massachusetts Audubon property, West Pond, and the Intermittent Side Channel located east of the Confluence of the East

and West Branches of the river. Those Other Waterbodies were discussed only briefly in the Reach 5A BRA Report. As discussed in the Conceptual RD/RA Work Plan, portions of three of those Other Waterbodies will require remediation—the lower portion of Sykes Brook, West Pond, and the Intermittent Side Channel.

In this situation, the following supplemental BRA surveys will be conducted in the portions of the three Other Waterbodies that will be affected by the remediation, including access roads, as shown in the Conceptual RD/RA Work Plan:

- Documentation of the physical habitat characteristics of each such area using the procedures established in the Revised Reach 5A Work Plan for the applicable habitat type(s). For Sykes Brooks and the Intermittent Side Channel, this will involve the habitat surveys described for riverine and riverbank habitats. For West Pond, the assessment will utilize the habitat survey protocol established for backwaters in the Revised Reach 5A BRA Work Plan.
- In addition, each area of these three Other Waterbodies that will be affected by remediation, including access roads, will be evaluated for rare species habitat. This will be initiated by determining which MNHESP Species Habitat maps overlay each Other Waterbody area to be affected by remediation. For the species that have MNHESP-mapped Species Habitat encompassing such an area, field reconnaissance surveys will be conducted to assess the potential for the habitat requirements of each such species to occur within the affected area, including any direct observations of each species.

5.4 Supplemental Floodplain Habitat Surveys

For the specific Reach 5A floodplain wetland and upland areas where remedial activities will occur and the associated access roads and staging areas identified in the Conceptual RD/RA Work Plan, the following supplemental BRA surveys will be conducted:[4]

- A survey of trees within the anticipated limits of the floodplain remediation areas and access roads and staging areas, including a GPS survey of their location (sub-meter accuracy), size measurements (i.e., diameter at breast height), and species identification;
- A GPS survey of the location of surface hydrologic features (e.g., conveyance swales) within work areas and characterization of the physical parameters (depth and width) of each feature;
- Plant species composition and relative abundance by species;
- Identification of specific habitat features, including wolf trees, standing dead timber, cavities, large woody debris, and bat roosting trees;

[4] Vernal pools are excluded from these supplemental BRA surveys because all vernal pools in Reach 5A have been fully surveyed by the investigations that have been conducted from 2018 to 2023, as described in the Reach 5A BRA Report.

- Rare species reconnaissance surveys to assess the potential for the habitat requirements of the 21 state-listed species with MNHESP-mapped Species Habitat encompassing the Reach 5A floodplains to occur within the affected floodplain work areas; and
- Identification of concentrated areas of invasive plant species within or adjacent to the affected floodplain areas, to be considered as part of an overall ISCP.

6 Geotechnical and Groundwater Investigations

6.1 General

As described in the Conceptual RD/RA Work Plan, the Reach 5A main channel will be remediated by removal of sediment and placement of an engineered cap over the entire riverbed (approximately 41 acres). In addition, portions of the riverbanks along Reach 5A (approximately 12,300 linear feet) will be remediated where they are determined to be erodible and have PCB concentrations exceeding 5 mg/kg or where supplemental remediation is proposed due to other factors (e.g., erodibility, constructability, and adjacent floodplain PCB concentrations). The final design will include slope stability evaluations for the in-river and riverbank removals and an evaluation of geotechnical stability for placement of the engineered cap in the river. One method being considered for implementing the in-river sediment removal and capping is the installation of temporary diversion/containment cells to split the river in half near the center of the channel with perpendicular end walls, thereby diverting river flow around the work area and allowing work within the cell to be performed under dewatered (i.e., dry) conditions. The methods for constructing the temporary diversion/containment cells have not been determined but could include the use of steel sheet piles or comparable methods. This approach requires in-river geotechnical investigations to characterize subsurface conditions, including the depths and locations of underlying till or bedrock to evaluate the feasibility of this method and support design of the containment cells. Finally, additional groundwater data are needed to support the assessment of containment cell dewatering rates.

This section describes the supplemental geotechnical and groundwater investigation program developed to support the Reach 5A remediation and address DQO 5 and DQO 6. It summarizes the data previously collected during the PDI and describes the proposed approach for gathering geotechnical and hydrogeologic data to support the remedial design for Reach 5A. The geotechnical investigations will be conducted to provide information and data on the geological conditions beneath the river, at riverbank remediation areas, and in areas where temporary staging areas and access roads are proposed. The groundwater investigation will be conducted in conjunction with the geotechnical investigation to characterize local hydrogeologic conditions and groundwater flow patterns to support groundwater modeling efforts.

6.2 PDI Geotechnical Investigation Summary

As described in Section 3.3.5 of the Revised Sediment/Bank PDI Work Plan, a phased investigation program was proposed to characterize geotechnical conditions within the river and for the adjacent riverbanks. Phase 1 of the geotechnical investigation program was completed in 2022 and 2023 as part of the Reach 5A PDI and focused on a preliminary geotechnical characterization of surficial and near-surface soils on the riverbanks and the sediments in the main channel and backwater areas. Specifically, Phase 1 included field sampling and visual classification, in-situ vane shear testing, laboratory testing of sediment and soil index properties, and laboratory seepage-induced

consolidation (SIC) testing. In addition, groundwater seepage investigations were conducted, including installation of paired piezometers at 10 locations within the river to measure hydraulic head, hydraulic conductivity testing of sediment cores collected at the piezometer locations, and measurements from seepage meters installed at 10 locations near the piezometers. Results of the Phase 1 geotechnical investigations are summarized in the PDI Summary Report for Sediment and Riverbanks.

Phases 2 through 4 of the proposed geotechnical investigation program described in the Revised Sediment/Bank PDI Work Plan were not and will not be conducted because of river access issues identified during the Reach 5A PDI and because conceptual design evaluations indicated that alternate geotechnical data are required to evaluate the conceptual in-river sediment remediation methods described in Section 6.1. Instead, the supplemental geotechnical investigation program described below supersedes PDI geotechnical Phases 2 through 4 that were described in the Revised Sediment/Bank PDI Work Plan.

6.3 Supplemental Geotechnical Investigation Program Overview

The supplemental geotechnical investigation program will include the following:

- A geophysical survey of the Reach 5A river channel to provide continuous depth estimates of the sediment-till (or locally sediment-bedrock) contact;
- Geotechnical soil borings throughout the Reach 5A river channel to calibrate the results of the geophysical surveys;
- Geotechnical soil borings near riverbank remediation areas throughout Reach 5A to gather subsurface geotechnical data and to collect soil samples for geotechnical testing to support slope stability evaluations;
- Geotechnical soil borings within the river and at adjacent upland areas to gather subsurface geotechnical data and to collect soil samples for geotechnical and vertical hydraulic conductivity testing (to support design of temporary in-river diversion/containment cells);
- Installation of piezometers in the river, beneath the river, and at adjacent upland locations to measure river water surface elevations and hydraulic groundwater head to calculate vertical and horizontal hydraulic conductivities; and
- Dynamic cone penetrometer (DCP) testing and geotechnical soil borings at currently undeveloped locations where temporary staging areas or access roads are proposed.

The in-river geophysical surveys and geotechnical soil borings needed to calibrate the geophysical surveys, as well as the geotechnical investigations at the riverbank remediation areas and temporary staging areas and access roads, will be conducted throughout Reach 5A. However, due to the difficulties in accessing the river with a drill rig and because the sediment remediation

implementation methods are currently uncertain, GE proposes to use a phased and adaptive management approach to conduct the geotechnical investigations supporting the evaluation and design of the temporary in-river diversion/containment cells. That is, the in-river geotechnical soil borings and piezometer installation/monitoring supporting the design of the in-river containment cells will focus primarily on the upstream portion of Reach 5A—i.e., between River Stations 0+00 and 80+00.[5] However, limited in-river geotechnical investigations will also be conducted in the downstream portion of Reach 5A (i.e., between River Stations 80+00 and 245+00). Additional geotechnical investigations in that downstream portion may be conducted in subsequent mobilizations if the design and/or construction of the containment cells is determined to be an effective method to implement the remediation. Any such additional geotechnical investigations for the downstream portion of Reach 5A will be described in an addendum to this work plan. In this manner, design and construction operations will advance in an adaptive management approach.

The results of the PDI Phase 1 geotechnical investigation program indicate that main channel sediments are predominantly coarse-grained. Accordingly, the advancement of in-river cone penetration testing to characterize soft fine-grained sediments is not currently anticipated as part of the supplemental geotechnical investigation program. In the event that geophysical surveys or geotechnical borings implemented during the investigation program identify the presence of soft fine-grained sediments locally, future investigation efforts may be proposed as an addendum to this work plan to investigate those soft fine-grained sediments.

6.4 Supplemental Geotechnical Investigations

The following subsections describe the specific investigations planned for Reach 5A.

6.4.1 In-River Geophysical Surveys

A geophysical survey program will be conducted along the main channel centerline for the entirety of Reach 5A (i.e., between River Stations 0+00 and 245+00) to provide continuous depth estimates of the sediment-till (or locally sediment-bedrock) interface, allowing the development of a full-length subsurface profile that does not simply rely on linear interpolation between broadly spaced subsurface investigations. In addition, geophysical surveys will be conducted at approximately 25 transect locations to develop cross-channel subsurface profiles—specifically, every approximately 500 feet between River Stations 0+00 and 80+00, and more broadly spaced downstream of River Station 80+00. The geophysical survey data will be calibrated with subsurface lithologies observed during main channel and riverbank investigations (e.g., borings) described in the following

[5] River stations are shown on Figures 6-1a through 6-1d and 6-2a through 6-2d. Each river station is approximately 100 feet apart along the centerline of the main river channel and has been assigned a number. For each river station, the value to the left of the plus symbol in the number is in hundreds of feet from the first station, and the value to the right of the plus symbol is in feet. In Reach 5A, the first (i.e., farthest upstream) station is identified as 0+00, and the next station is identified as 1+00, which is 100 feet downstream along the channel centerline. The last station in Reach 5A is 245+00.

subsections to develop consistent subsurface profiles. The results of the geophysical survey program will be used to inform future in-river and riverbank geotechnical sampling locations, as well as to support slope stability analyses and the design of potential temporary diversion/containment cells.

The geophysical surveys will include the simultaneous use of two independent systems—a ground penetrating radar (GPR) survey and a sub-bottom profile survey. Each method evaluates reflectance and contrast of subsurface materials using a particular signal type; GPR surveys use electromagnetic signals and sub-bottom profile surveys use acoustic signals. The survey equipment will be carried aboard a shallow-drafting, self-propelled vessel. A hydrographer and a geologist will be part of the field crew operating the equipment and reviewing the field data. Geophysical survey coordination and elevation data will be collected by a Trimble Global Navigation Satellite System (GNSS) operating in network real-time kinematic (NRTK) positioning mode, employing network correctors from a Massachusetts Department of Transportation (MassDOT) corrector source. Field data will be logged using HYPACK software.

Because the success of sub-bottom profiling in shallow rivers can be variable based on-site conditions, various sub-bottom profilers will be tested after surveyor mobilization to the site to evaluate their effectiveness. If this test indicates that the survey is effective, the reach-wide sub-bottom profile survey will proceed. If the test indicates that site conditions preclude this survey method, the sub-bottom profile survey may be omitted.

6.4.2 Geotechnical Borings

The following geotechnical borings are planned as part of the supplemental data collection program:

- Nineteen geotechnical borings will be advanced within the river channel, and 19 additional geotechnical borings will be advanced at adjacent upland/riverbank areas (including near riverbank remediation areas) between River Stations 0+00 and 80+00. The data from these geotechnical borings will be used to calibrate the results of the geophysical surveys, provide an understanding of the subsurface stratigraphy, support slope stability and cap stability evaluations, and support evaluation and design of temporary in-river diversion/containment cells in the upstream-most segment of the river. Because these borings are intended to support evaluation of potential diversion/containment cells, these borings are more densely spaced than the downstream geotechnical borings.
- Six geotechnical borings will be advanced in the downstream segment of the river channel between River Stations 80+00 and 245+00 to calibrate the results of the geophysical surveys, provide an understanding of the subsurface stratigraphy, support slope stability and cap stability evaluations, and collect samples for vertical hydraulic conductivity testing.
- Ten geotechnical borings will be advanced near riverbank remediation areas between River Stations 80+00 and 245+00 to provide a general understanding of the subsurface

stratigraphy and support riverbank slope stability evaluations as part of the soil removal and restoration designs.

- Nine geotechnical borings will be advanced at selected staging area and access road locations to provide a general understanding of the subsurface stratigraphy and support design evaluations.

Figures 6-1a through 6-1d show the proposed locations for in-river and riverbank geotechnical borings, and Figures 6-2a through 6-2d show the proposed locations for the access road and staging area geotechnical borings. The actual boring locations may be adjusted based on field conditions and accessibility considerations. As shown on these figures, nine of the in-river borings will be advanced near the locations where in-river piezometers were installed as part of the Reach 5A PDI to provide subsurface soil sampling near those locations and to allow for additional hydraulic conductivity testing as described in the following paragraphs. Coordinates of the actual geotechnical boring locations will be recorded using a DGPS.

The geotechnical boring work at each location will follow the same procedures and will be completed in general accordance with the relevant ASTM International (ASTM) methods for drilling, soil sampling, visual classification (using the Unified Soil Classification System), and geotechnical laboratory testing. In summary, geotechnical borings will be advanced using the appropriate drilling method for each area being investigated. Standard penetration testing (SPT) will be performed in each boring starting at the mudline or ground surface and continuing at five-foot intervals until the termination of the boring. SPTs will be performed using split-spoon samplers to collect disturbed soil samples for index testing. Blow counts will be recorded for each six-inch interval of the advance. Additionally, layers of fine-grained soils may be targeted for relatively undisturbed sample collection via Shelby tube or piston (Osterberg) samplers that are advanced using direct-push methods. Each boring will be advanced until refusal is encountered or as directed by the field geologist based on material conditions encountered to a maximum depth of 15 feet into till or 50 feet below ground surface, whichever is shallower. Subsurface soil samples collected from the borings will be submitted for laboratory testing as described below. The geotechnical borings will be completed in accordance with the protocols established in Appendix Q of the 2023 FSP/QAPP (SOP for Geotechnical Drilling and Standard Penetration Testing).

Representative samples collected from each material type encountered during completion of the geotechnical borings will be selected for laboratory index testing for classification purposes. At least one set of index tests per soil type encountered will be performed for each boring. The index tests and their corresponding ASTM test number designations are as follows:

- Moisture content (ASTM D2216/D2974A);
- Specific gravity (ASTM D854);

- Bulk density (ASTM D7263);
- Particle size analysis (ASTM D6913);
- Atterberg limits for fine-grained soils (ASTM D4318); and
- Organic content (ASTM D2974).

Samples will be selected for strength, seepage, and compressibility characteristics from among the relatively undisturbed samples collected using Shelby tubes. Samples will be selected for testing that are deemed representative for assessing seepage and stability of potential containment cells, as well as riverbank slope stability evaluations. Tests requiring relatively undisturbed samples are as follows:

- Unconsolidated, undrained triaxial shear strength (ASTM D2850);
- Consolidated, undrained triaxial shear strength (ASTM D4767);
- Consolidated, drained direct shear strength (ASTM D3080);
- One-dimensional consolidation (ASTM D2435); and
- Permeability (ASTM D2434).

Vertical hydraulic conductivity (K_v) will be measured empirically at each of the in-river boring locations using relatively undisturbed sediment or soil cores. The sample depths where K_v testing will be performed will be determined by the field geologist in consultation with a senior geotechnical engineer or geologist. In general, multiple K_v tests may be performed for a single boring if material types zones are encountered throughout the boring. For each in-river geotechnical boring, attempts will be made to conduct at least one K_v test from the sediment surface to a depth of approximately six feet at each boring location.[6] To measure K_v in the field, cores will be collected using either Shelby tubes, piston samplers, or rigid-wall, plastic core liners. During K_v testing, a small quantity of porewater will be allowed to freely drain from the core by gravity through a perforated bottom cap. The rate of porewater flow will be recorded and later used to calculate the K_v of each tested core sample. More information on this test and the calculation of vertical K_v is included in Appendix K of the 2023 FSP/QAPP (SOP for Vertical Hydraulic Gradient and Hydraulic Conductivity Data Collection in Sediment).

[6] As noted in the PDI Summary Report for Sediment and Riverbanks, sediment cores collected during the Reach 5A PDI for vertical hydraulic conductivity analysis generally had poor recovery and may not be completely representative of the full sediment column down to the depth of the deep piezometers (six feet); however, it was determined that they provide reasonable initial estimates of K_v in Reach 5A. The K_v testing described in this section will include attempts to collect additional six-foot sediment cores in the vicinity of those piezometers (subject to obtaining access).

6.4.3 Piezometer Installation and Recording of Hydraulic Head

Piezometers will be installed at locations within the river, beneath the river, and at adjacent upland locations between River Stations 0+00 and 80+00 to measure river water surface elevations and hydraulic groundwater head in order to calculate vertical and horizontal hydraulic conductivities. Data from these piezometers will be used to support dewatering rate estimates for in-river diversion/containment cells in the upstream river segment.

The in-river piezometers will be installed in the same manner used for the piezometers installed as part of the Reach 5A PDI. Three pairs of piezometers will be installed within the river channel between River Stations 0+00 and 80+00. Each in-river piezometer pair will include one deep piezometer and one shallow piezometer. The deep piezometers will be installed into the sediment to a depth of approximately ten feet, and the risers will be cut off just above the sediment surface. The shallow piezometers will serve as surface water gages, and the screens will extend slightly above the mudline. Each piezometer will be equipped with a sealed pressure transducer.

In addition, piezometers will be installed at seven upland locations between River Stations 0+00 and 80+00 in relatively near proximately to the in-river piezometers. The upland piezometers will be installed at greater depths, relative to the ground surface, than the deep in-river piezometers. At some upland locations, two piezometers may be installed to allow for comparison of groundwater elevations within different soil strata. The piezometer screen depths will be determined by the field geologist in consultation with a senior geotechnical engineer or geologist. Each upland piezometer will be equipped with a pressure transducer.

Figures 6-1a through 6-1d show the proposed locations for all in-river and upland piezometers. The actual piezometer locations may be adjusted based on field conditions and accessibility considerations. Coordinates of the actual piezometer locations will be recorded using a DGPS.

The pressure transducers will have an internal data logger that monitors and records pressure, which is expressed as an equivalent water level above the transducer sensor, at approximate five-minute intervals. A water-tight cap will be placed on each piezometer after transducer deployment to protect the transducers. The water-tight cap on the deep in-river piezometers will hydraulically isolate it from the river, allowing the pressure transducer to record the head within the formation adjacent to the piezometer screen. The pressure transducer in the shallow in-river piezometers will be directly connected to the river to measure the head of the river (i.e., water surface elevation). The pressure transducers will be programmed and serviced at regular intervals to gather data and ensure proper function. Piezometers will collect data through the deployment period, with the goal of collecting between four and 12 months of data. The piezometer installations and hydraulic measurements will be made in general accordance with the above-mentioned Appendix K of the 2023 FSP/QAPP (SOP for Vertical Hydraulic Gradient and Hydraulic Conductivity Data Collection in Sediment).

In addition to the piezometer testing, groundwater pump tests will be performed to estimate seepage and potential dewatering rates during construction. The details of the pump tests are presented in the SOP contained in Attachment B hereto. In summary, pump testing will be performed at consecutive, set, step-down pumping rates, with each step to last a maximum of approximately six hours. The duration of each step and the pumping rates will be adjusted based on the observed drawdowns, with transition to subsequent rates initiated once the minimal drawdown increase in the previous step has been achieved (e.g., approximately 0.1 foot per hour over a period of one or more hours). Pumping will transition continuously from one step to the next without recovery. Water level changes during pumping will be logged using pressure transducers in the pumping well, which will collect data frequently during early stages of each step and gradually decline in frequency over time (e.g., four measurements per second at the start of each step down to one measurement per minute during the final stage of each step).

6.4.4 Staging Area and Access Road Geotechnical Investigations

Where staging areas and access roads will be constructed, DCP tests will be performed to provide geotechnical data by measuring the soil's resistance to penetration of the cone. Additionally, a limited number of geotechnical borings will be advanced at staging area and access road locations to develop a general understanding of the subsurface stratigraphy. As shown on Figures 6-2a through 6-2d, six DCP test and seven geotechnical boring locations have been identified where staging areas are proposed, and 46 DCP test and two geotechnical boring locations have been identified along proposed access road locations throughout Reach 5A. The actual DCP test and geotechnical boring locations may be adjusted based on field conditions and accessibility considerations, and additional DCP tests may be conducted based on local field observations. Coordinates of the actual DCP test and geotechnical boring locations will be recorded using a DGPS.

The geotechnical borings will be completed as described in Section 6.4.2. The DCP tests will be conducted using a hand-operated, multi-flight steel probe with a sacrificial steel conical tip and a 35-pound hammer weight. The steel probe and conical tip will be advanced by manually raising the hammer 15 inches and dropping it in free fall to strike the top of the probe, transferring energy through the lower flights to the cone tip. Advancement of the probe will be recorded in 10-centimeter increments until a practical refusal criterion is met (i.e., greater than 50 blows per 10 centimeters) or maximum depth of the available steel flights is reached (i.e., typically less than 15 feet). Blows to drive each 10-centimeter increment will be recorded through the termination of the test; blow counts will be correlated to SPT-N[7] values to estimate geotechnical parameters. A SOP for DCP testing is provided in Attachment A.

[7] SPT-N values are a measurement of soil strength recorded during standard penetration testing. During an SPT test, a split-spoon sampler is penetrated 18 inches to 24 inches into the soil over six-inch intervals. The N-value is the sum of the number of blows to penetrate the second and third six-inch intervals of the SPT.

In the event that the DCP tests identify the presence of soft unstable conditions in such areas, future investigation efforts may be proposed as an addendum to this work plan to investigate those soils.

6.4.5 Supplemental Geotechnical Investigation Summary

A summary of the phased supplemental geotechnical investigation approach is presented in Table 6-1.

Table 6-1
Summary of Supplemental Geotechnical Investigations

River Stations	Supplemental Investigation Activity
0+00 to 245+00	In-river geophysical surveys
	In-river geotechnical calibration borings
	Geotechnical borings in riverbank remediation areas
	DCP testing and geotechnical borings at temporary staging areas and access roads
0+00 to 80+00[1]	In-river and adjacent upland geotechnical borings (to support design of temporary in-river diversion/containment cells)
	Installation of piezometers and measurement of river water surface elevations and hydraulic groundwater head (to support design of temporary in-river diversion/containment cells)

Note:

1. If needed, additional in-river geotechnical investigations for the downstream portion of Reach 5A (i.e., between River Stations 80+00 and 245+00) will be proposed in an addendum to this work plan.

7 Supplemental Field Surveys

This section describes the additional field surveys necessary to support the final design for Reach 5A (DQOs 7, 8, and 9). The supplemental field surveys will include the following:

- Surveys to support delineation of the top and bottom (i.e., toe) of riverbanks;
- Topographic surveys of the proposed remediation areas, staging areas, and access roads;
- Survey of utilities and infrastructure that may impact implementation of the Reach 5A remediation; and
- Survey and documentation of bridge clearances and weight limits (as needed) along anticipated haul roads.

All survey coordinates will be gathered and recorded using the following horizontal and vertical datums, respectively: Massachusetts State Plane, Mainland Zone; North American Datum of 1983 (NAD83), U.S. feet; and North American Vertical Datum of 1988 (NAVD88), U.S. feet.

7.1 Riverbank Delineation Survey

As described in the Conceptual RD/RA Work Plan, a critical element of the remedial design is to define the extent of riverbanks (i.e., toe and top-of-bank) so that the bank areas can be differentiated from the adjoining river channel sediment and adjacent floodplain.

An additional field survey will be performed to stake the current top-of-bank line at adjacent riverbank and floodplain remediation areas or where the slope stability of the river sediment dredge cut may be a concern. In addition, a field survey will be conducted to stake out the toe-of-bank boundary after the geomorphologic survey described in Section 4 is performed. This could result in adjustments to the toe-of-bank boundary based on location-specific field conditions (e.g., point bars within the transitional zone between the river and the banks may be characteristic of a riverbank in some areas). If possible, the field survey to stake the toe-of-bank boundary will be scheduled during low-flow conditions (i.e., flows less than 100 cubic feet per second at the U.S. Geological Survey Coltsville gage). Then, after a joint field review by GE and EPA representatives, an additional field survey will be performed to record updated coordinates where adjustments (if any) are made to the top-of-bank boundary or the toe-of-bank boundary based on that review.

7.2 Topographic Survey of Proposed Remediation Areas, Staging Areas, and Access Roads

Topographic surveys of the proposed remediation areas, staging areas, and access roads will be conducted to document property boundaries, existing elevations, grades, and site features in support of the final design. These topographic surveys will be conducted by a Professional Land Surveyor licensed in the Commonwealth of Massachusetts. The locations of the proposed remediation areas,

staging areas, and access roads are shown on figures included in the Conceptual RD/RA Work Plan. The surveys will be conducted to gather detailed topographic data for the residential floodplain, non-residential floodplain, riverbank, backwater, and Other Waterbodies remediation areas. In addition, topographic surveys will be conducted at proposed staging area properties and access road pathways. The topographic surveys will also document the locations of notable site features (e.g., above-ground utilities and support structures, curbs, existing trails or pathways, and streams).

7.3 Survey of Utilities and Structures

In addition to the topographic surveys described in Section 7.2, surveys will be conducted to document the locations and elevations of other known above-ground utilities and structures that may impact or be impacted by the implementation of the Reach 5A remedial action (primarily along the river channel). As summarized in the Conceptual RD/RA Work Plan and the PDI Summary Report for Sediment and Riverbanks, the above-ground utilities and structures identified along the Reach 5A river channel include the following:

1. Bridges, including the Pomeroy Avenue Bridge and the Holmes Road Bridge;
2. Overhead utility crossings, including overhead power lines and overhead sewer and natural gas piping within the substructures of the bridge crossings;
3. Storm water outfalls, including associated headwalls and in-river riprap scour protection;
4. A discharge channel for the City of Pittsfield publicly owned treatment works; and
5. Concrete and stone remnants associated with a former bridge crossing.

Light Detection and Ranging (LiDAR) surveys conducted as part of the Reach 5A PDI provide sufficient detail for the Pomeroy Avenue Bridge and the Holmes Road Bridge, so those structures will not be re-surveyed. Several of the other above-listed shoreline structures are located at elevations below the bottom-of-bank elevation. As a result, sediment removal and engineered cap placement could be required immediately adjacent to those features. Therefore, a survey will be conducted to document the coordinates and elevations for these observed shoreline structures. In addition, clearances to overhead utility power lines (e.g., near River Station 24+00) will be surveyed during the supplemental data collection program and the air temperature at the time of the survey will be documented.

7.4 Bridge Clearances and Weight Limits Along Haul Routes

During the supplemental data collection program, a field survey will be conducted to document bridge clearances along roads anticipated to be used for hauling remediation soils or imported fill, and weight limits of such roads and bridges will be documented. The locations of the anticipated haul routes will be identified in the forthcoming Off-Site and On-Site Transportation and Disposal Plan, which is scheduled to be submitted to EPA by October 31, 2023. The survey will initially include

a desktop evaluation and a visual survey of the posted signage. If the results of these efforts are not conclusive, a field survey may also be performed to measure bridge clearances.

8 Outreach to Utility, Structure, and Discharge Owners

As part of the supplemental data collection program, GE will conduct outreach to utility owners, MassDOT, and the City of Pittsfield to obtain additional details regarding utilities, bridges, and the publicly owned treatment works discharge that have the potential to impact the Reach 5A remedial construction (DQO 10).

These outreach efforts will include the following:

- GE will contact Kinder Morgan to discuss the underground natural gas pipeline that crosses beneath the river and along EA 62 to discuss remediation extents, understand utility depths and any offset requirements, determine whether there are any restrictions on construction of access roads along the utility easement/corridor, discuss remediation extents and potential impacts, and determine any required setbacks.
- GE will contact MassDOT to request record drawings for the Pomeroy Avenue Bridge and the Holmes Road Bridge (including potential geotechnical data), discuss the remediation extents and potential impacts, and determine whether any setbacks are needed.
- GE will contact the City of Pittsfield to discuss the WWTP discharge at backwater area BW5A-6 and underground sewer pipelines that cross beneath the river and along utility easements within the Reach 5A floodplain.[8] The goal of these discussions will be to obtain additional details regarding the treatment plant discharge that is not in its National Pollutant Discharge Elimination System (NPDES) permit, understand utility depths and any offset requirements, determine whether there are any restrictions on construction of access roads along the utility easement/corridor, discuss remediation extents and potential impacts, and determine any required setbacks.

[8] Although not a supplemental investigation activity, GE may also initiate discussion with the City to discuss the potential use of City property to support the remedial activities.

9 Schedule and Reporting

After EPA approval of this SDC Work Plan, GE will initiate the supplemental data collection activities. Because the locations, extents, and depths of remediation areas determine (in part) where supplemental data collection activities will be performed, EPA approval of the conceptual remediation areas proposed in the Conceptual RD/RA Work Plan is also necessary to proceed with those activities.

GE anticipates that the supplemental data collection activities described in this work plan will be initiated during the spring of 2024 after the necessary EPA approvals and subject to weather constraints. It is further anticipated that the supplemental BRA activities described in Section 5, along with the previously approved but not completed BRA activities described in Section 1.4, can be completed in the 2024 season (except that the previously approved fish community survey will be conducted in either 2023 or 2024 concurrently with the first round of baseline fish tissue sampling). Of the other supplemental data collection activities described herein, the geotechnical investigation activities described in Section 6 are anticipated to require the longest duration to complete. The actual start date and durations for the work (particularly the in-river investigations) will be dependent on weather and river flow conditions.

As provided in the Reach 5A BRA Report, the results of the supplemental BRA activities described in Section 5, as well as the previously approved but not completed BRA activities described in Section 1.4, will be reported in an addendum to the Reach 5A BRA Report, to be submitted 60 days after completion of those activities. The results of the other supplemental data collection activities, as well as the ongoing non-BRA data collection activities specified in Section 1.4, will be summarized in a Supplemental Data Collection Report, which will be submitted to EPA 60 days after the final data are received and after any necessary validation of data, whichever is later.

10 References

AECOM, 2022. *Revised Reach 5A Baseline Restoration Assessment Work Plan*. Housatonic River – Rest of River. Prepared for General Electric Company, Pittsfield, Massachusetts. July 2022.

AECOM, 2023a. *Housatonic River Reach 5A Baseline Restoration Assessment Report*. Prepared for General Electric Company, Pittsfield, Massachusetts. August 2023.

AECOM, 2023b. *Revised Supplemental Phase IA Cultural Resource Assessment Report for the Housatonic Rest of River*. Prepared for the General Electric Company, Pittsfield, Massachusetts. March 2023.

Anchor QEA, 2021. *Pre-Design Investigation Summary Report for Reach 5A Floodplain Residential Properties*. Prepared for General Electric Company, Pittsfield, Massachusetts. December 2021.

Anchor QEA, 2023a. *Revised Water Withdrawal and Uses Plan*. Prepared for General Electric Company, Pittsfield, Massachusetts. April 2023

Anchor QEA, 2023b. *Second Revised Baseline Monitoring Plan*. Prepared for General Electric Company, Pittsfield, Massachusetts. January 2023.

Anchor QEA and AECOM, 2022. *Revised Pre-Design Investigation Work Plan for Reach 5A Sediment and Riverbanks*. Housatonic River – Rest of River. Prepared for General Electric Company, Pittsfield, Massachusetts. May 2, 2022.

Anchor QEA and AECOM, 2023. *Pre-Design Investigation Summary Report for Reach 5A Sediment and Riverbanks*. Housatonic River – Rest of River. Prepared for General Electric Company, Pittsfield, Massachusetts. September 2023.

Anchor QEA, AECOM, and Arcadis, 2021. *Final Revised Rest of River Statement of Work*. Housatonic River – Rest of River. Prepared for General Electric Company, Pittsfield, Massachusetts. September 2021.

Anchor QEA and Arcadis, 2023. *Pre-Design Investigation Summary Report for Reach 5A Non-Residential Floodplain Exposure Areas*. Prepared for General Electric Company, Pittsfield, Massachusetts. September 2023.

Arcadis, 2023. *Field Sampling Plan/Quality Assurance Project Plan*. Prepared for General Electric Company, Pittsfield, Massachusetts. Revised July 2023.

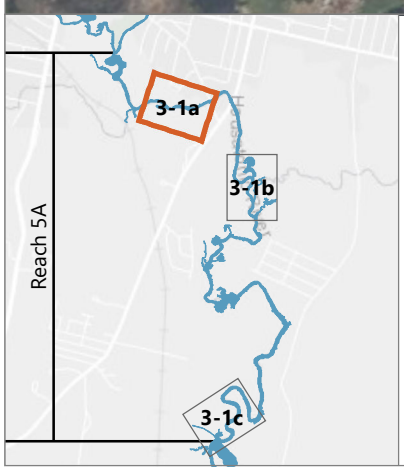
EPA, 2020. *Revised Final Permit Modification to the 2016 Reissued RCRA Permit and Selection of CERCLA Remedial Action and Operation & Maintenance for Rest of River*. December 2020.

Harman, W., and R. Starr, 2011. *Natural Channel Design Review Checklist*. U.S. Fish and Wildlife Service, Chesapeake Bay Field Office, Annapolis, Maryland, and US Environmental Protection Agency, Office of Wetlands, Oceans, and Watersheds, Wetlands Division. Washington, D.C. EPA 843-B-12-005.

Rosgen, D., 2006. *Watershed Assessment of River Stability and Sediment Supply*. Fort Collins, Colorado: Wildland Hydrology, Inc.

USDA (U.S. Department of Agriculture), 2008. "Rosgen Geomorphic Channel Design." *Part 654 National Engineering Handbook: Stream Restoration Design*. Natural Resources Conservation Service. May 2008.

Figures



LEGEND:

- River Channel
- Backwaters
- Bathymetric Transects (100-foot Spacing)
- Target Supplemental Sediment Sampling Location
- Sediment Sample Location

Reach 5A In River Sediment

Total PCBs (mg/kg)

- ≤ 1
- 1.1 - 10
- 10.1 - 25
- > 100

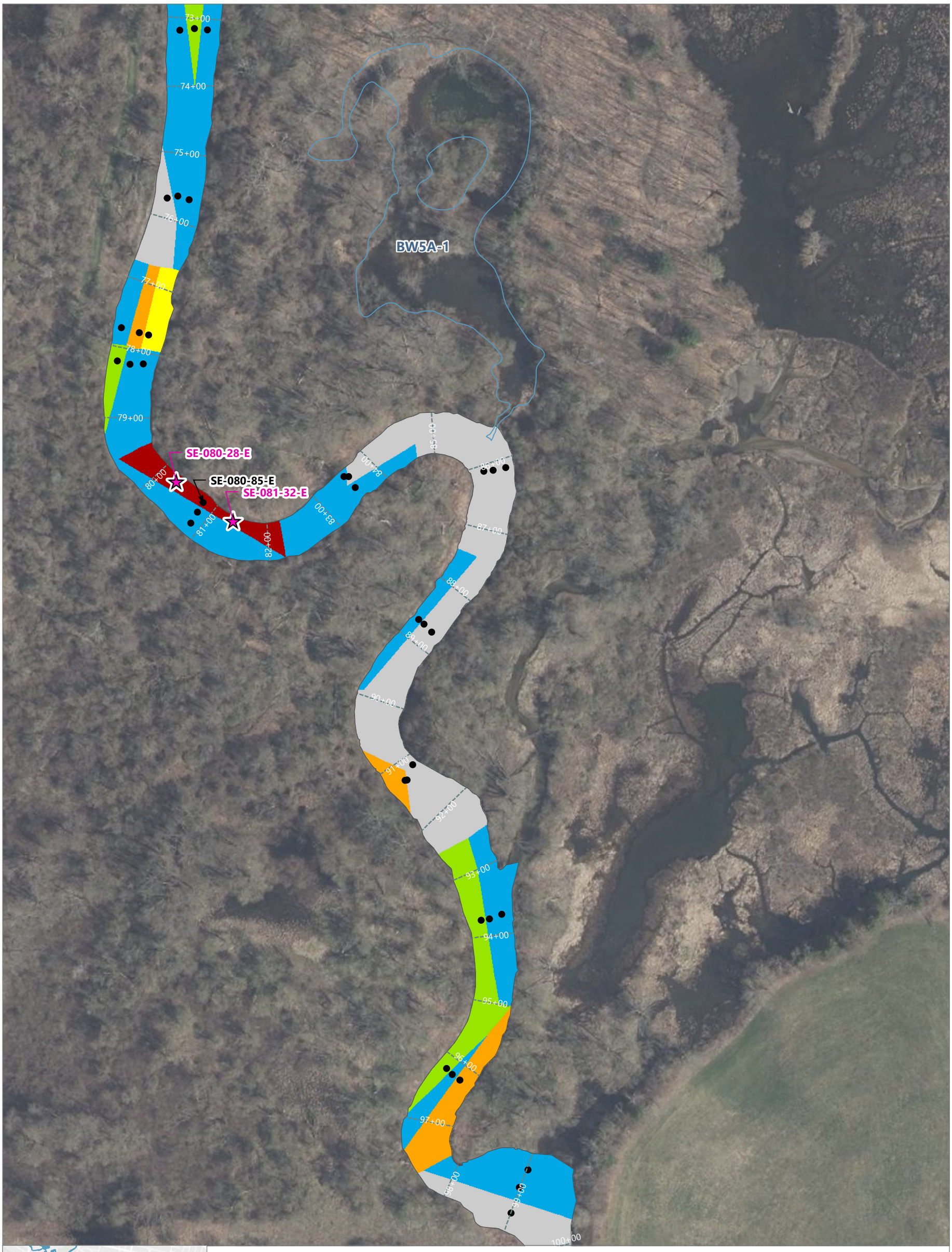
NOTES:
1. Depth-weighted average PCB concentrations were calculated two ways: 1) assuming the minimum corresponding design cap thickness; and 2) including additional intervals at depth to account for uncertainty with over-dredging or cap over-placement. The PCB values shown represent the higher of the two calculated PCB average concentrations.
2. The four core locations that have depth-weighted average PCB concentrations that exceed 100 mg/kg are labeled with the corresponding location ID (black). Supplemental sampling locations are labeled with the location ID (pink).
3. Aerial imagery from MassGIS 2021.

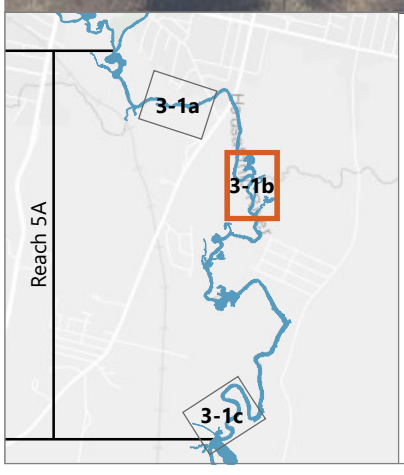
0 160
Feet

Publish Date: 2023/09/27, 4:26 PM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixI\AQ_RDRA_Appl_Fig3-1_River_PCB_TPs.mxd

ANCHOR QEA

Figure 3-1a
In-River Supplemental Sediment Sampling Locations in Reach 5A
Supplemental Data Collection Work Plan for Reach 5A
Housatonic River – Rest of River





LEGEND:

- River Channel
- Backwaters
- Bathymetric Transects (100-foot Spacing)
- Target Supplemental Sediment Sampling Location
- Sediment Sample Location

Reach 5A In River Sediment

Total PCBs (mg/kg)

- ≤ 1
- 1.1 - 10
- 10.1 - 25
- 25.1 - 50
- 50.1 - 100
- > 100

NOTES:
1. Depth-weighted average PCB concentrations were calculated two ways: 1) assuming the minimum corresponding design cap thickness; and 2) including additional intervals at depth to account for uncertainty with over-dredging or cap over-placement. The PCB values shown represent the higher of the two calculated PCB average concentrations.
2. The four core locations that have depth-weighted average PCB concentrations that exceed 100 mg/kg are labeled with the corresponding location ID (black). Supplemental sampling locations are labeled with the location ID (pink).
3. Aerial imagery from MassGIS 2021.

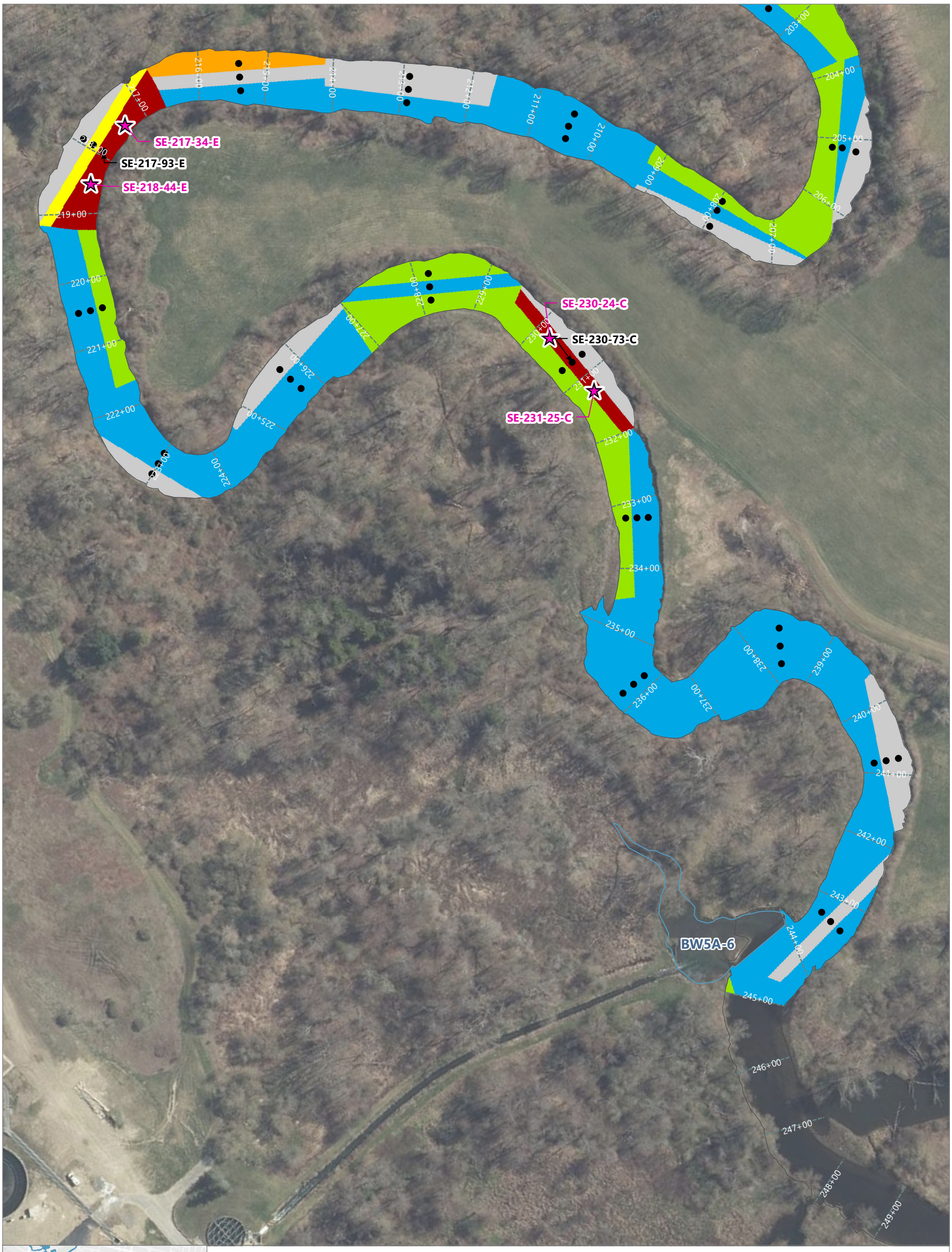
0 160
Feet

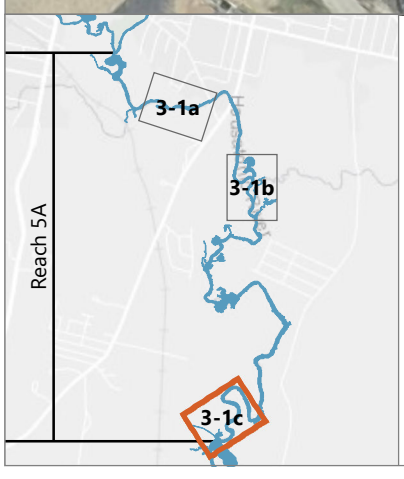
Publish Date: 2023/09/27, 4:26 PM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixI\AQ_RDRA_Appl_Fig3-1_River_PCB_TPs.mxd

ANCHOR QEA

Figure 3-1b
In-River Supplemental Sediment Sampling Locations in Reach 5A

Supplemental Data Collection Work Plan for Reach 5A
Housatonic River – Rest of River





LEGEND:

- River Channel
- Backwaters
- Bathymetric Transects (100-foot Spacing)
- Target Supplemental Sediment Sampling Location
- Sediment Sample Location

Reach 5A In River Sediment

Total PCBs (mg/kg)

- ≤ 1
- 1.1 - 10
- 10.1 - 25
- 25.1 - 50
- 50.1 - 100
- > 100

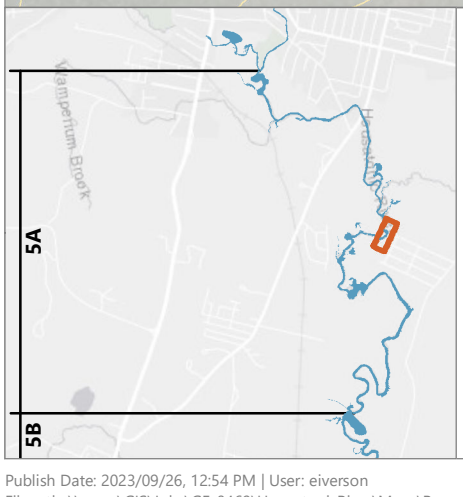
NOTES:
1. Depth-weighted average PCB concentrations were calculated two ways: 1) assuming the minimum corresponding design cap thickness; and 2) including additional intervals at depth to account for uncertainty with over-dredging or cap over-placement. The PCB values shown represent the higher of the two calculated PCB average concentrations.
2. The four core locations that have depth-weighted average PCB concentrations that exceed 100 mg/kg are labeled with the corresponding location ID (black). Supplemental sampling locations are labeled with the location ID (pink).
3. Aerial imagery from MassGIS 2021.

0 160
Feet

Publish Date: 2023/09/27, 4:26 PM | User: aconstant
Filepath: \\Orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixI\AQ_RDRA_Appl_Fig3-1_River_PCB_TPs.mxd

ANCHOR QEA

Figure 3-1c
In-River Supplemental Sediment Sampling Locations in Reach 5A
Supplemental Data Collection Work Plan for Reach 5A
Housatonic River – Rest of River



LEGEND:

- 2ft Contour
- Exposure Area Boundary
- Exposure Subarea Boundary
- Core Area 1 Habitat
- Frequently Used Subarea
- 1 mg/kg PCB Isopleth
- Housatonic River
- Supplemental Target Location

PCB Concentration (mg/kg)

- ≤ 1
- 1 – 2
- 2 – 10
- 10 – 25
- 25 – 50
- >50

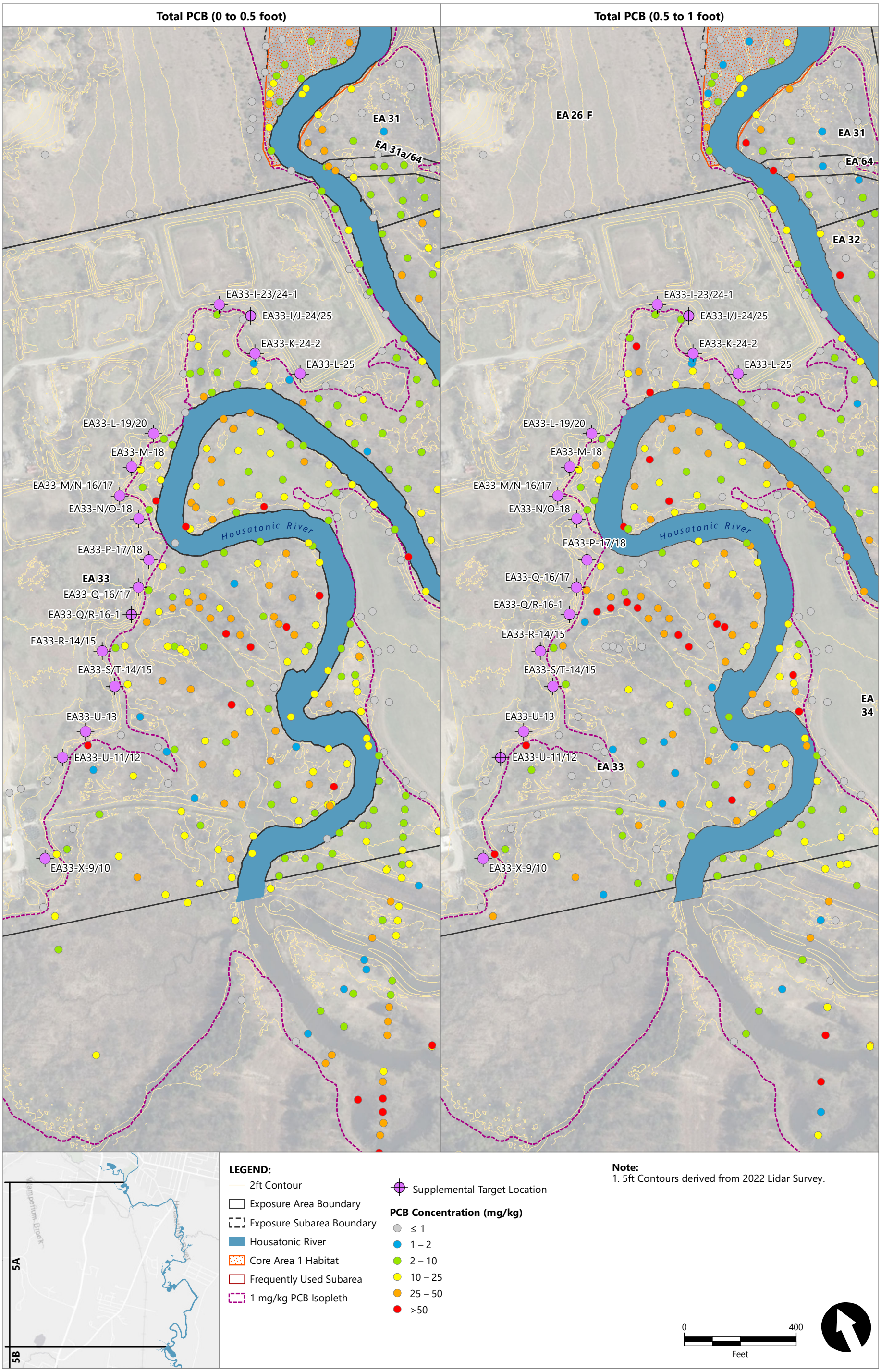
Note:
1. 2ft Contours derived from 2022 Lidar Survey.
2. A portion of Core Area 1 habitat boundary in EA 19 was adjusted to be aligned with the top of bank.

0 100
Feet

Publish Date: 2023/09/26, 12:54 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixJ\AQ_RDRA_AppJ_Fig3-2a_EA22.mxd

ANCHOR QEA

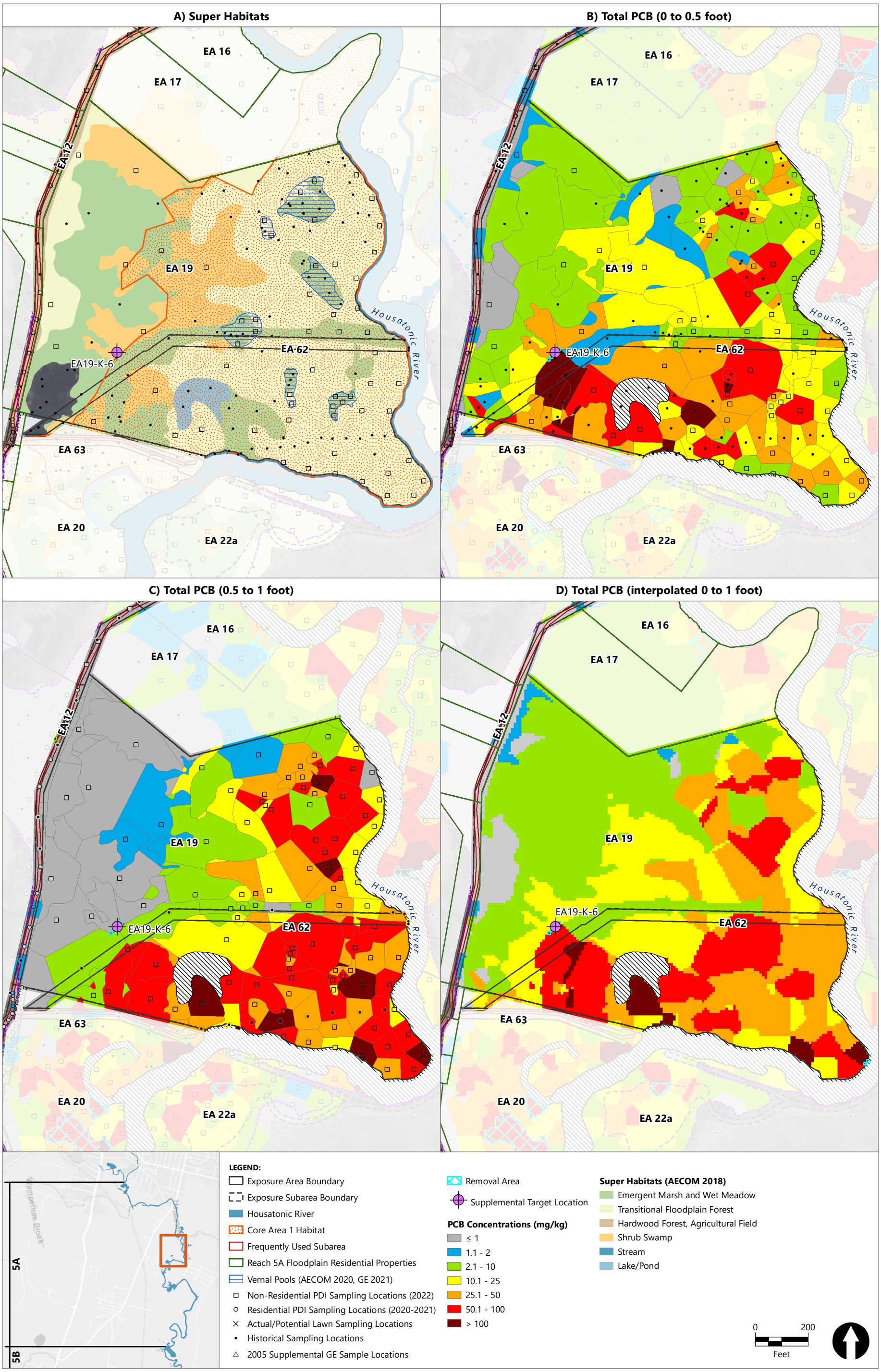
Figure 3-2a
Proposed Supplement Sampling Location for Non-residential Floodplain - Exposure Area 22
Supplemental Data Collection Work Plan for Reach 5A
Housatonic River – Rest of River



Publish Date: 2023/09/26, 12:43 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixJ\AQ_RDRA_AppJ_Fig3-2b_EA33.mxd

ANCHOR QEA

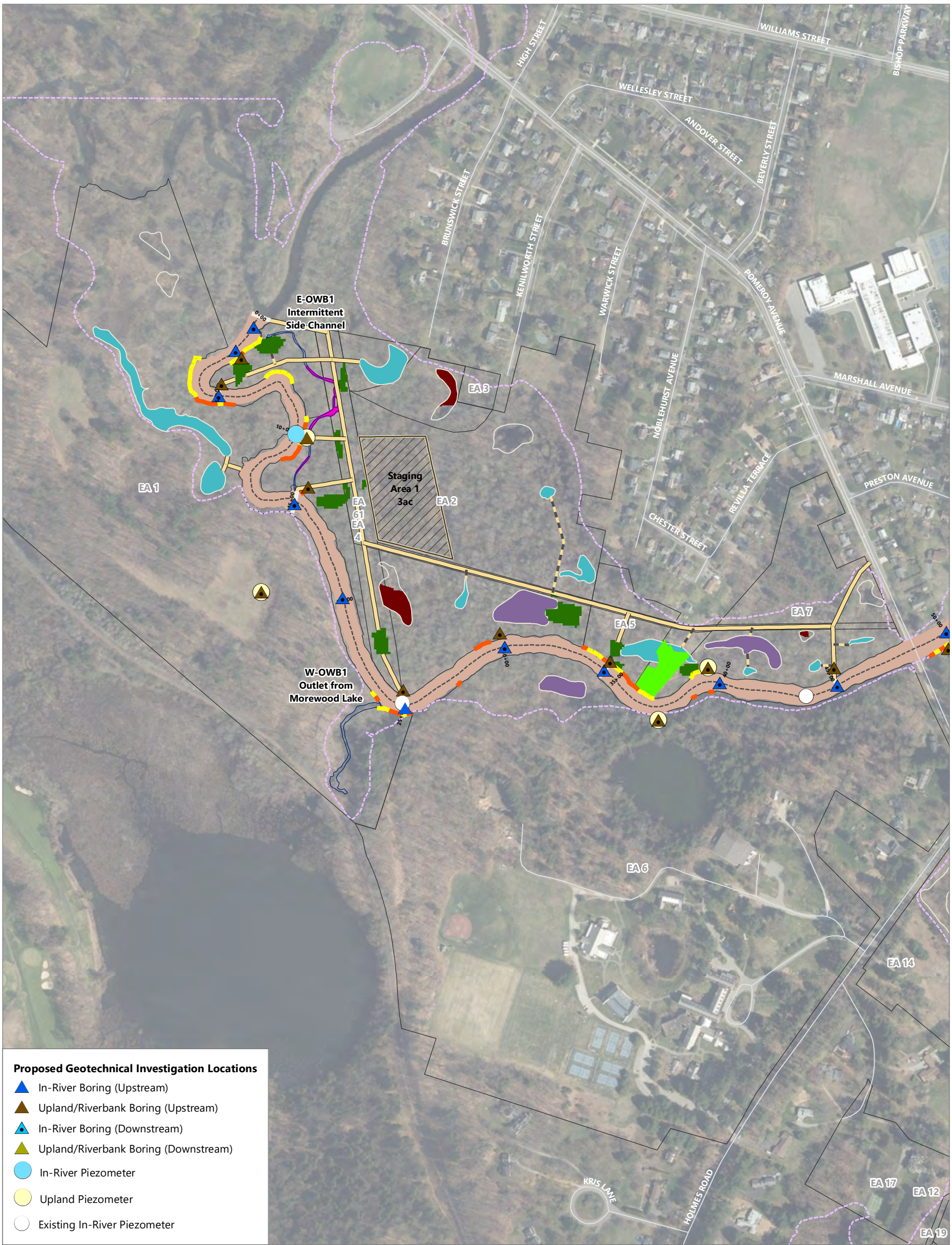
Figure 3-2b
Proposed Supplement Sampling Location for Non-residential Floodplain - Exposure Area 33
Supplemental Data Collection Work Plan for Reach 5A
Housatonic River – Rest of River

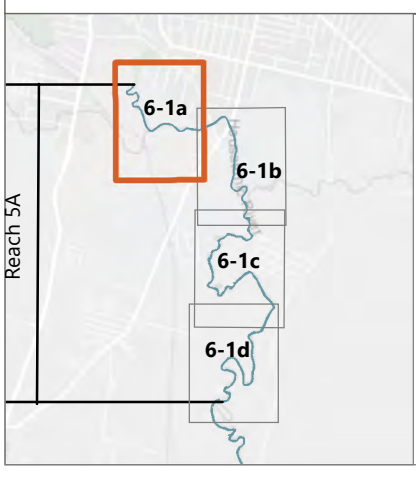


Publish Date: 2023/09/26, 12:44 PM | User: eiverson
Filepath: \\orcas\GIS\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixJ\AQ_RDRA_AppJ_Fig3-2c_EA19.mxd

ANCHOR QEA

Figure 3-2c
Proposed Supplement Sampling Location for Non-residential Floodplain - Exposure Area 19
Supplemental Data Collection Work Plan for Reach 5A
Housatonic River – Rest of River





LEGEND:

0+00 River Stationing
Roads
River Centerline
1 mg/kg PCB Isopleth
Exposure Areas
Canoe Meadows Trails
River Access Point
Primary Upland Access Road
Secondary Upland Access Road
Staging Area

Vernal Pools
Pilot Pool (Amendment)
Pilot Pool (Excavation)
Non-Pilot Pool (Remediation Needed;TBD)
No Remediation Needed

Backwaters/Other Waterbodies
Amendment
Sediment Removal/Cap
Sediment Removal/Backfill
No Remediation Needed

In-River Sediment Remediation Area

Floodplain Remediation
Residential Soil Removal
Non-Residential Soil Removal (0-1ft)
Non-Residential Soil Removal (0-3ft)

Riverbank Remediation
Remediation Required
Supplemental Remediation Areas

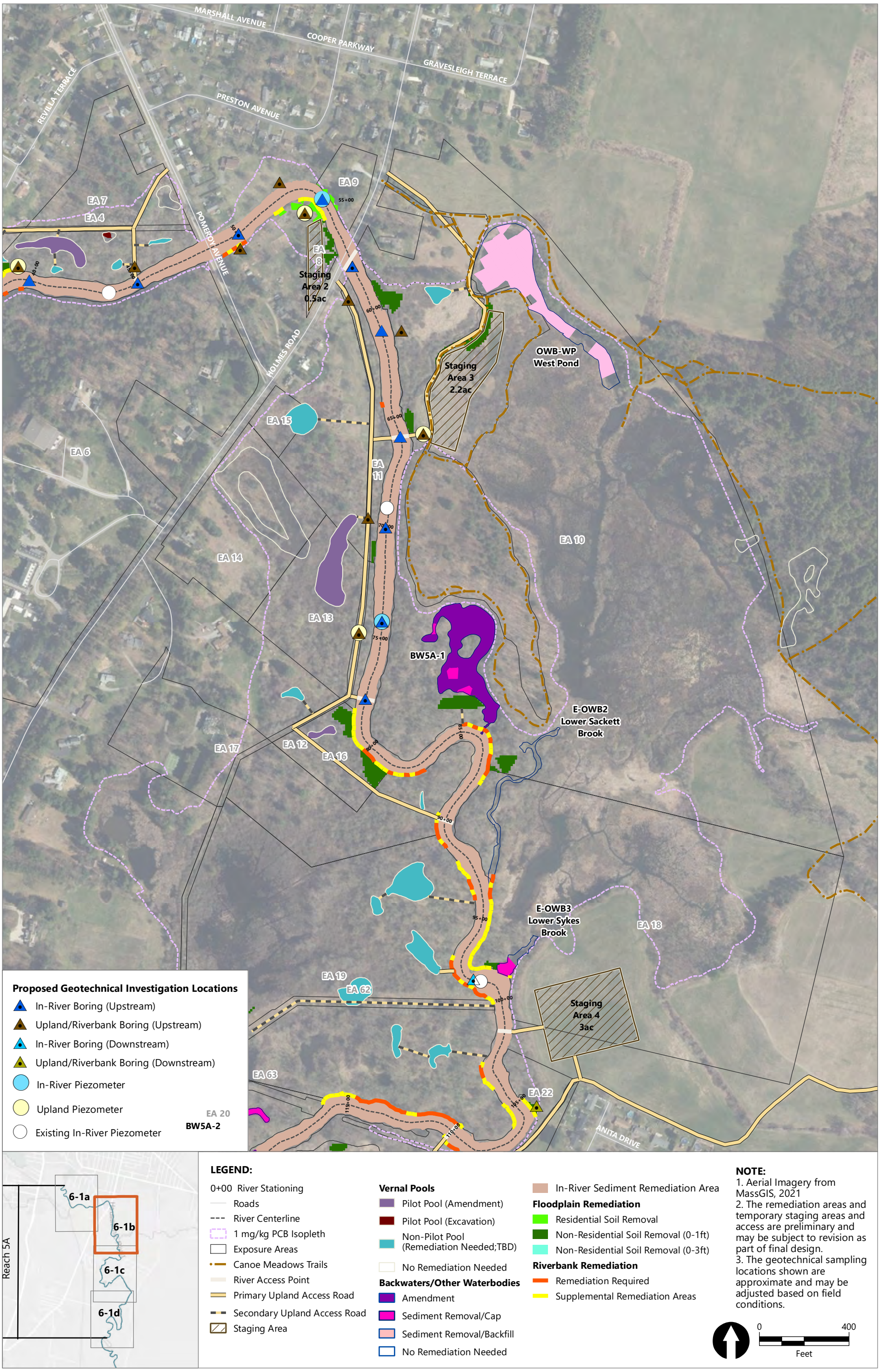
NOTE:
1. Aerial Imagery from MassGIS, 2021
2. The remediation areas and temporary staging areas and access are preliminary and may be subject to revision as part of final design.
3. The geotechnical sampling locations shown are approximate and may be adjusted based on field conditions.

0 400
Feet

Publish Date: 2023/09/27, 12:38 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixI\AQ_RDRA_AppI_Fig6-1_GeotechInRiverRiverbank.mxd

ANCHOR QEA

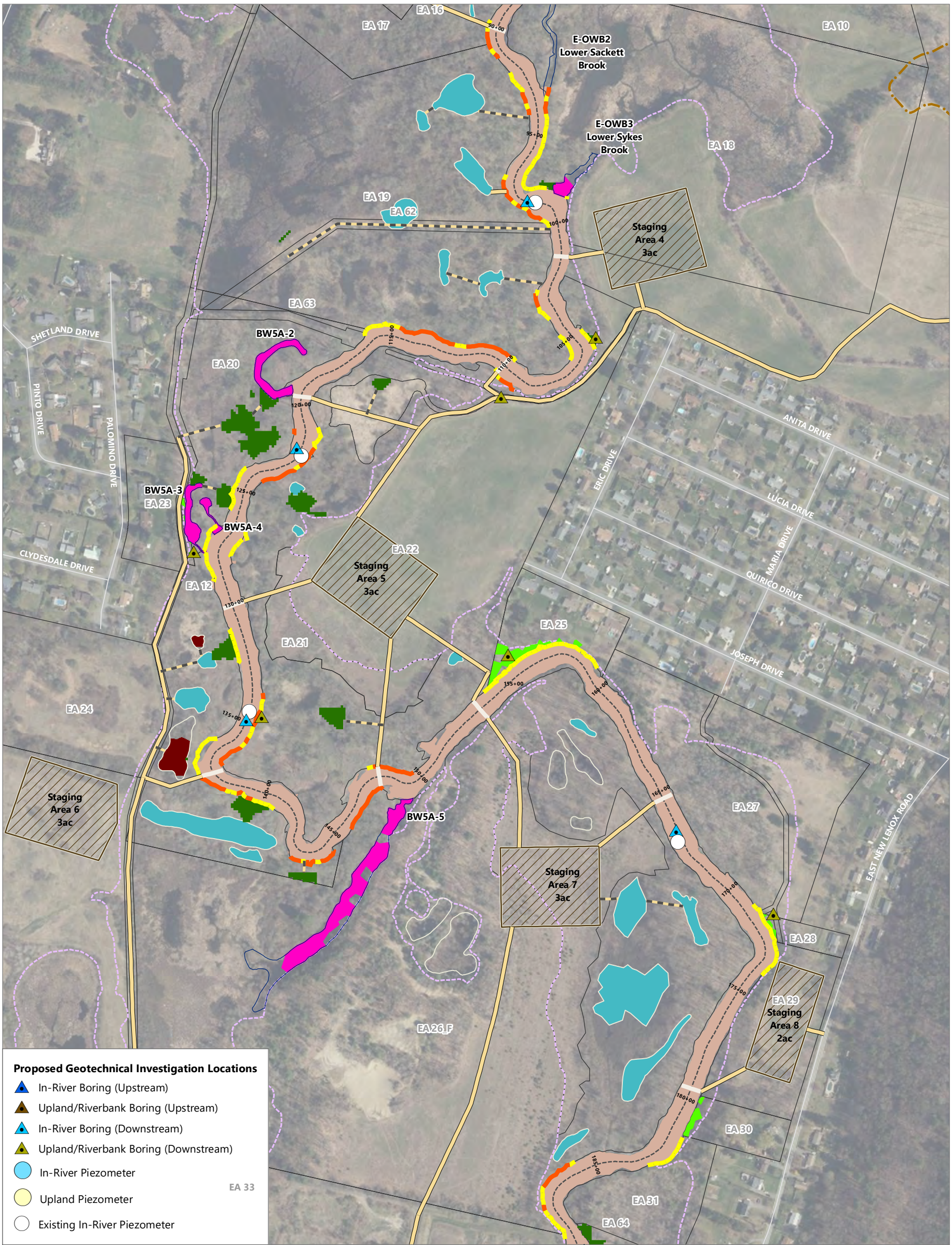
Figure 6-1a
In-River and Upland/Riverbank Geotechnical Investigation Locations
Supplemental Data Collection Work Plan for Reach 5A
Housatonic River – Rest of River

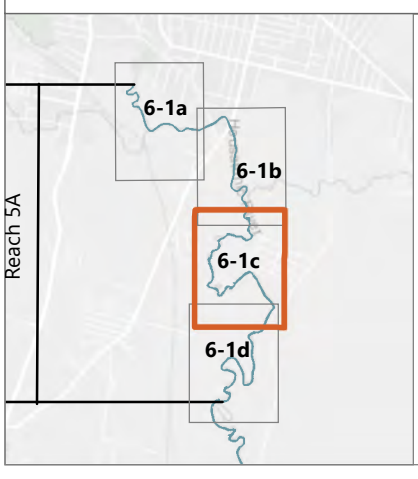


Publish Date: 2023/09/27, 12:38 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixI\AQ_RDRA_Appl_Fig6-1_GeotechInRiverRiverbank.mxd

ANCHOR QEA

Figure 6-1b
In-River and Upland/Riverbank Geotechnical Investigation Locations
Supplemental Data Collection Work Plan for Reach 5A
Housatonic River – Rest of River





LEGEND:

0+00 River Stationing
Roads
River Centerline
1 mg/kg PCB Isopleth
Exposure Areas
Canoe Meadows Trails
River Access Point
Primary Upland Access Road
Secondary Upland Access Road
Staging Area

Vernal Pools
Pilot Pool (Amendment)
Pilot Pool (Excavation)
Non-Pilot Pool (Remediation Needed;TBD)
No Remediation Needed

Backwaters/Other Waterbodies
Amendment
Sediment Removal/Cap
Sediment Removal/Backfill
No Remediation Needed

In-River Sediment Remediation Area

Floodplain Remediation
Residential Soil Removal
Non-Residential Soil Removal (0-1ft)
Non-Residential Soil Removal (0-3ft)

Riverbank Remediation
Remediation Required
Supplemental Remediation Areas

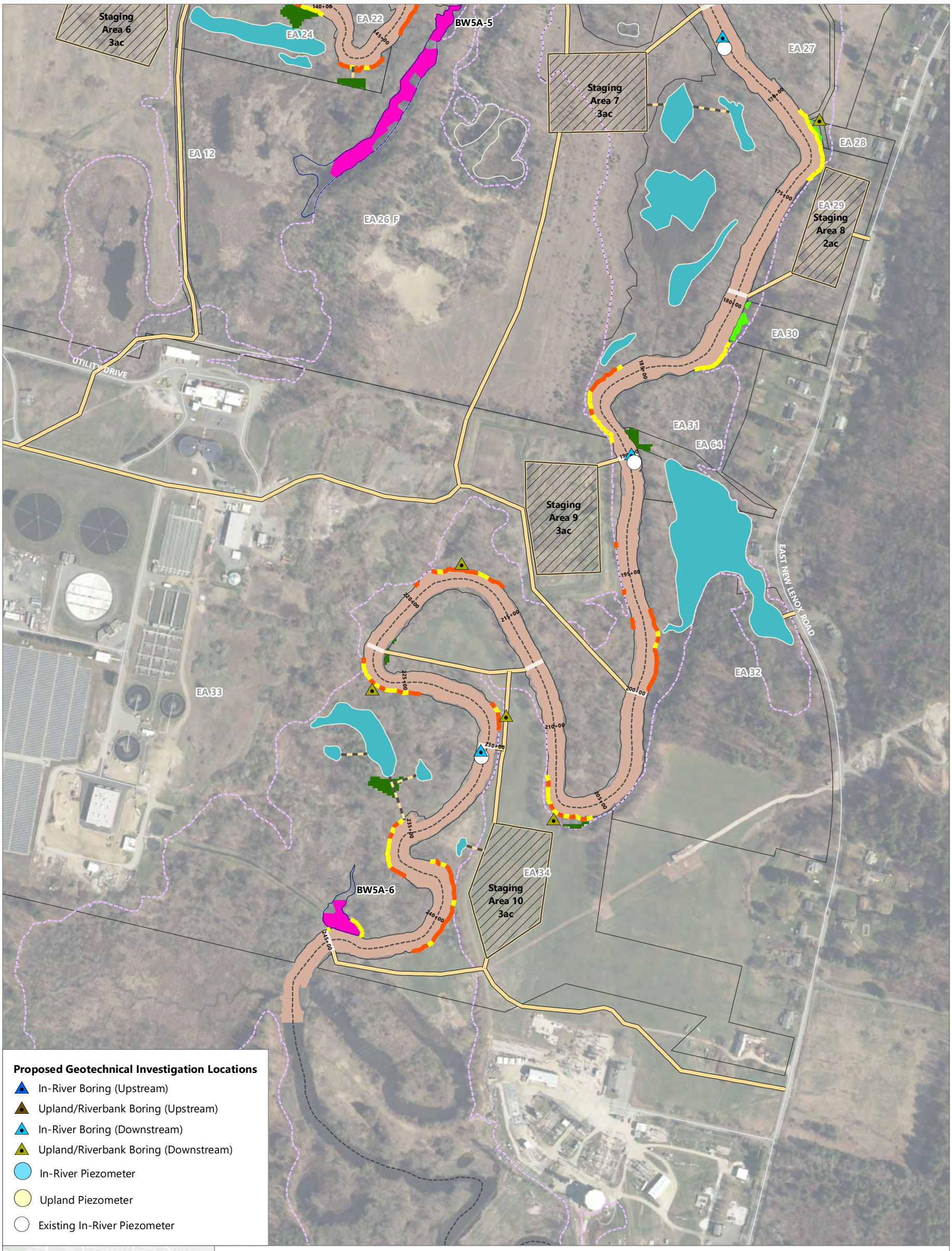
NOTE:
1. Aerial Imagery from MassGIS, 2021
2. The remediation areas and temporary staging areas and access are preliminary and may be subject to revision as part of final design.
3. The geotechnical sampling locations shown are approximate and may be adjusted based on field conditions.

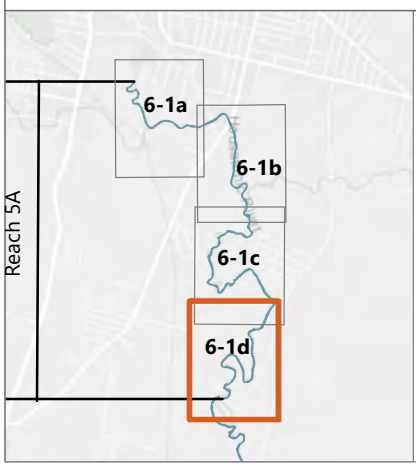
0 400
Feet

Publish Date: 2023/09/27, 12:38 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixI\AQ_RDRA_AppI_Fig6-1_GeotechInRiverRiverbank.mxd

ANCHOR QEA

Figure 6-1c
In-River and Upland/Riverbank Geotechnical Investigation Locations
Supplemental Data Collection Work Plan for Reach 5A
Housatonic River – Rest of River





LEGEND:

0+00 River Stationing
Roads
River Centerline
1 mg/kg PCB Isopleth
Exposure Areas
Canoe Meadows Trails
River Access Point
Primary Upland Access Road
Secondary Upland Access Road
Staging Area

Vernal Pools
Pilot Pool (Amendment)
Pilot Pool (Excavation)
Non-Pilot Pool (Remediation Needed;TBD)
No Remediation Needed

Backwaters/Other Waterbodies
Amendment
Sediment Removal/Cap
Sediment Removal/Backfill
No Remediation Needed

In-River Sediment Remediation Area

Floodplain Remediation
Residential Soil Removal
Non-Residential Soil Removal (0-1ft)
Non-Residential Soil Removal (0-3ft)

Riverbank Remediation
Remediation Required
Supplemental Remediation Areas

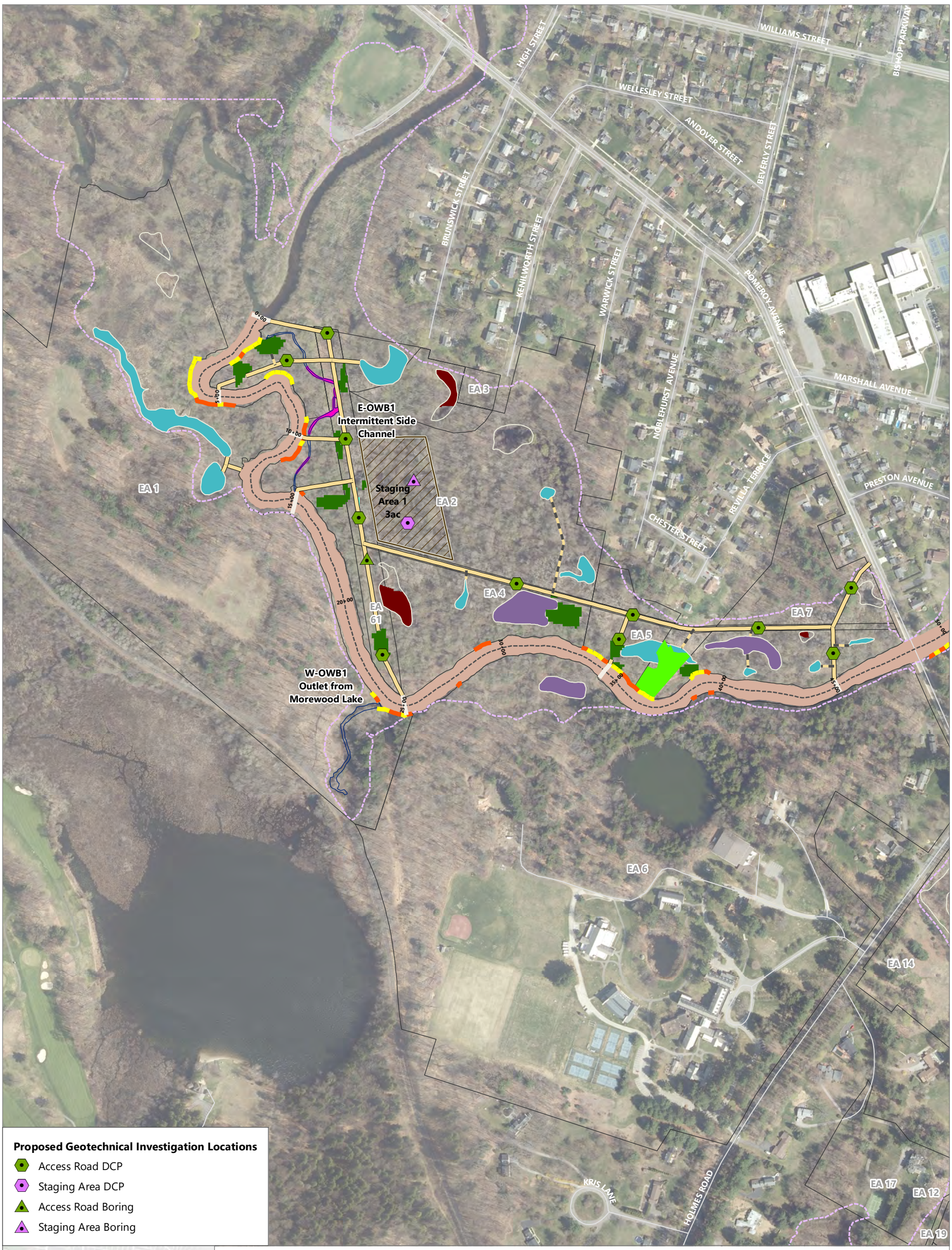
NOTE:
1. Aerial Imagery from MassGIS, 2021
2. The remediation areas and temporary staging areas and access are preliminary and may be subject to revision as part of final design.
3. The geotechnical sampling locations shown are approximate and may be adjusted based on field conditions.

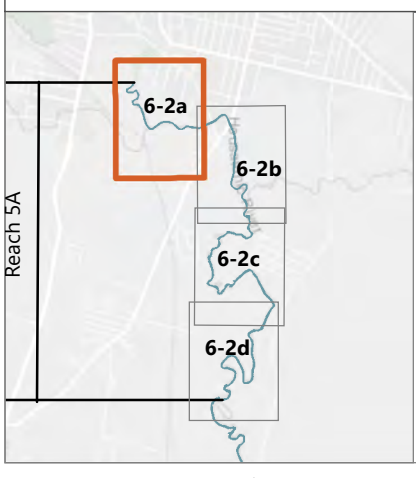
0 400
Feet

Publish Date: 2023/09/27, 12:39 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixI\AQ_RDRA_AppI_Fig6-1_GeotechInRiverRiverbank.mxd

ANCHOR QEA

Figure 6-1d
In-River and Upland/Riverbank Geotechnical Investigation Locations
Supplemental Data Collection Work Plan for Reach 5A
Housatonic River – Rest of River





LEGEND:

0+00 River Stationing
Roads
River Centerline
1 mg/kg PCB Isopleth
Exposure Areas
Canoe Meadows Trails
River Access Point
Primary Upland Access Road
Secondary Upland Access Road
Staging Area

Vernal Pools
Pilot Pool (Amendment)
Pilot Pool (Excavation)
Non-Pilot Pool (Remediation Needed;TBD)
No Remediation Needed

Backwaters/Other Waterbodies
Amendment
Sediment Removal/Cap
Sediment Removal/Backfill
No Remediation Needed

In-River Sediment Remediation Area

Floodplain Remediation
Residential Soil Removal
Non-Residential Soil Removal (0-1ft)
Non-Residential Soil Removal (0-3ft)

Riverbank Remediation
Remediation Required
Supplemental Remediation Areas

0 400
Feet

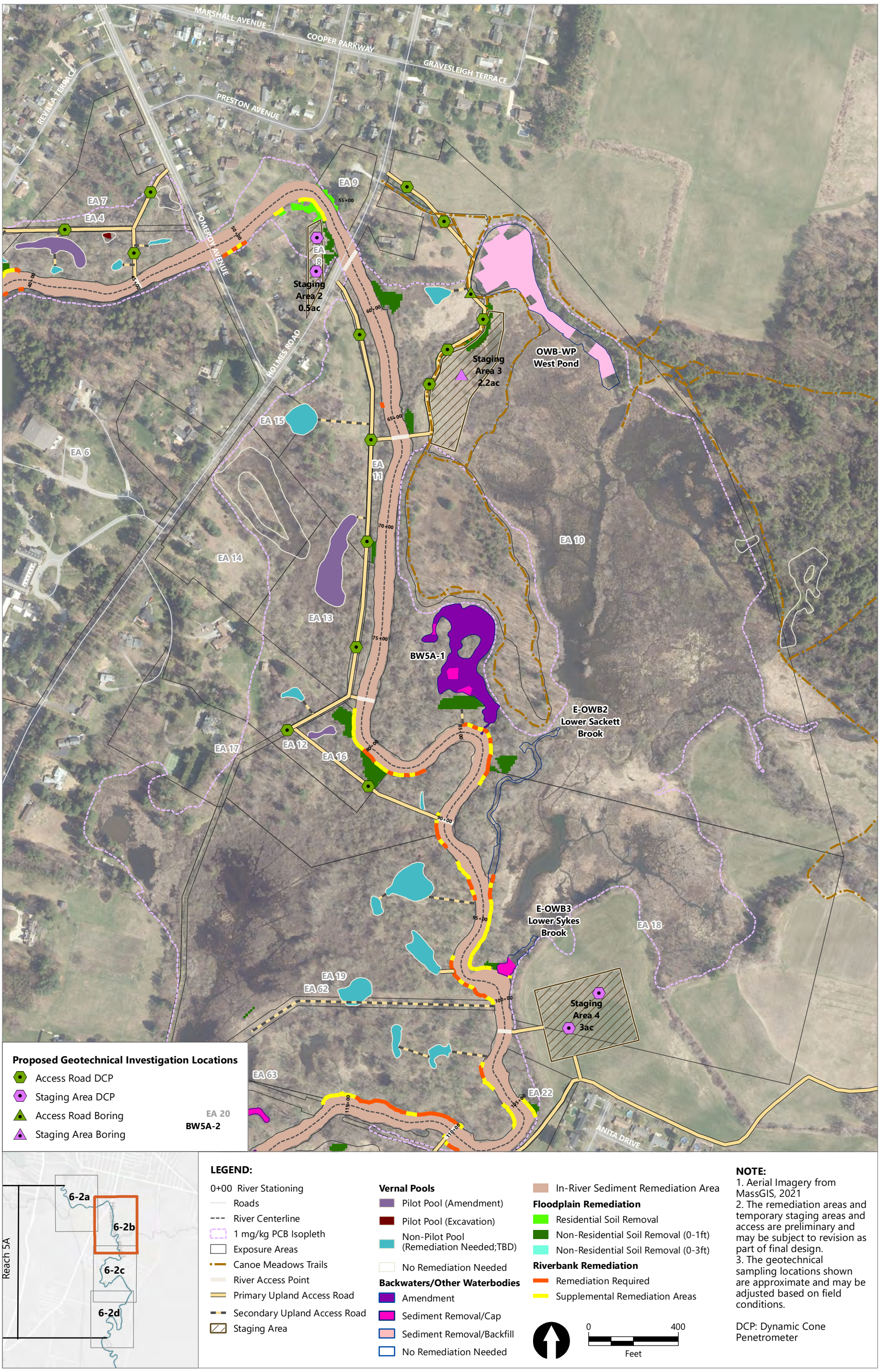
NOTE:
1. Aerial Imagery from MassGIS, 2021
2. The remediation areas and temporary staging areas and access are preliminary and may be subject to revision as part of final design.
3. The geotechnical sampling locations shown are approximate and may be adjusted based on field conditions.

DCP: Dynamic Cone Penetrometer

Publish Date: 2023/09/27, 1:38 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixI\AQ_RDRA_AppI_Fig6-2_GeotechAccess.mxd

ANCHOR QEA

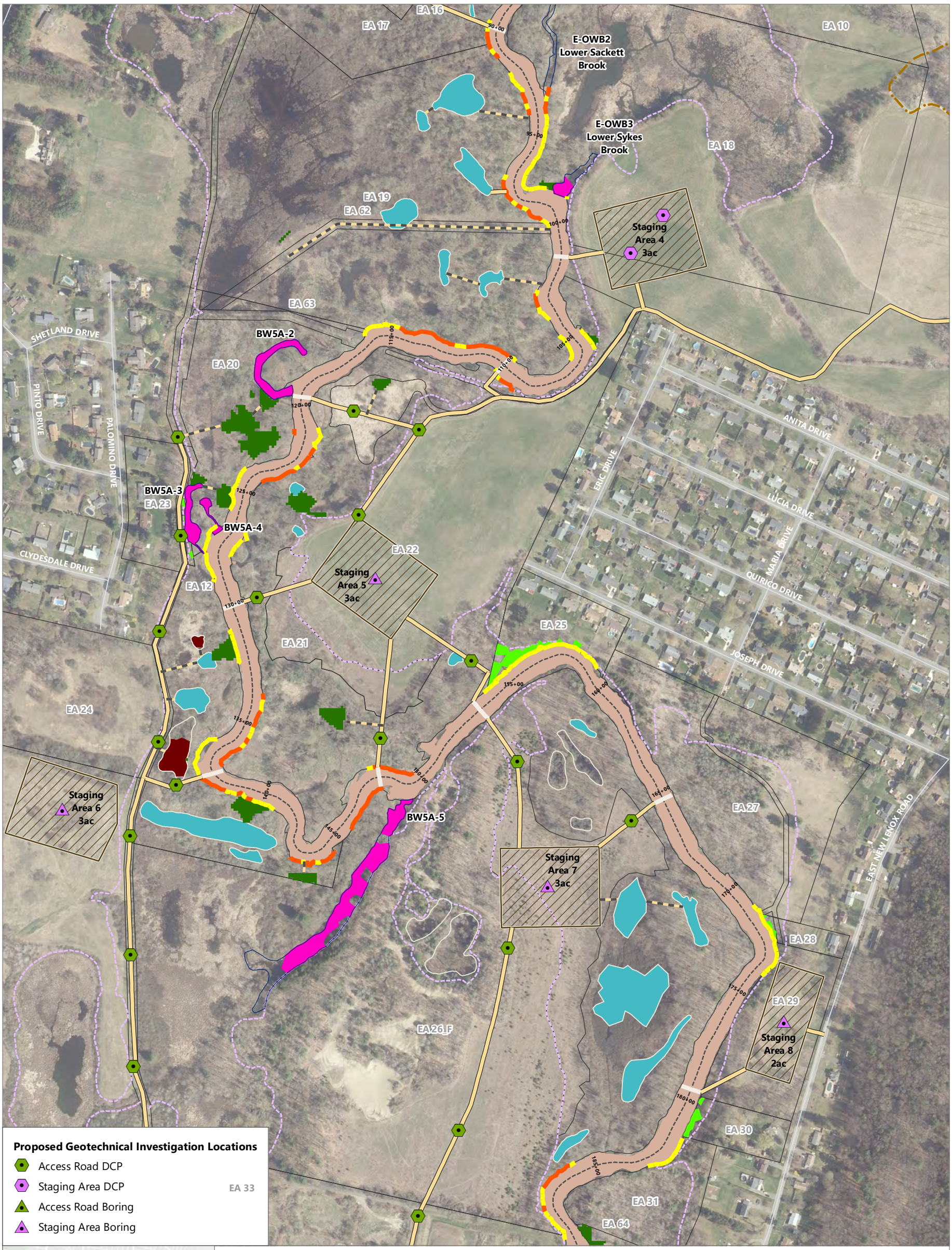
Figure 6-2a
Temporary Access Road and Staging Area Geotechnical Investigation Locations
Supplemental Data Collection Work Plan for Reach 5A
Housatonic River – Rest of River



Publish Date: 2023/09/27, 1:38 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixI\AQ_RDRA_AppI_Fig6-2_GeotechAccess.mxd

ANCHOR QEA

Figure 6-2b
Temporary Access Road and Staging Area Geotechnical Investigation Locations
Supplemental Data Collection Work Plan for Reach 5A
Housatonic River – Rest of River



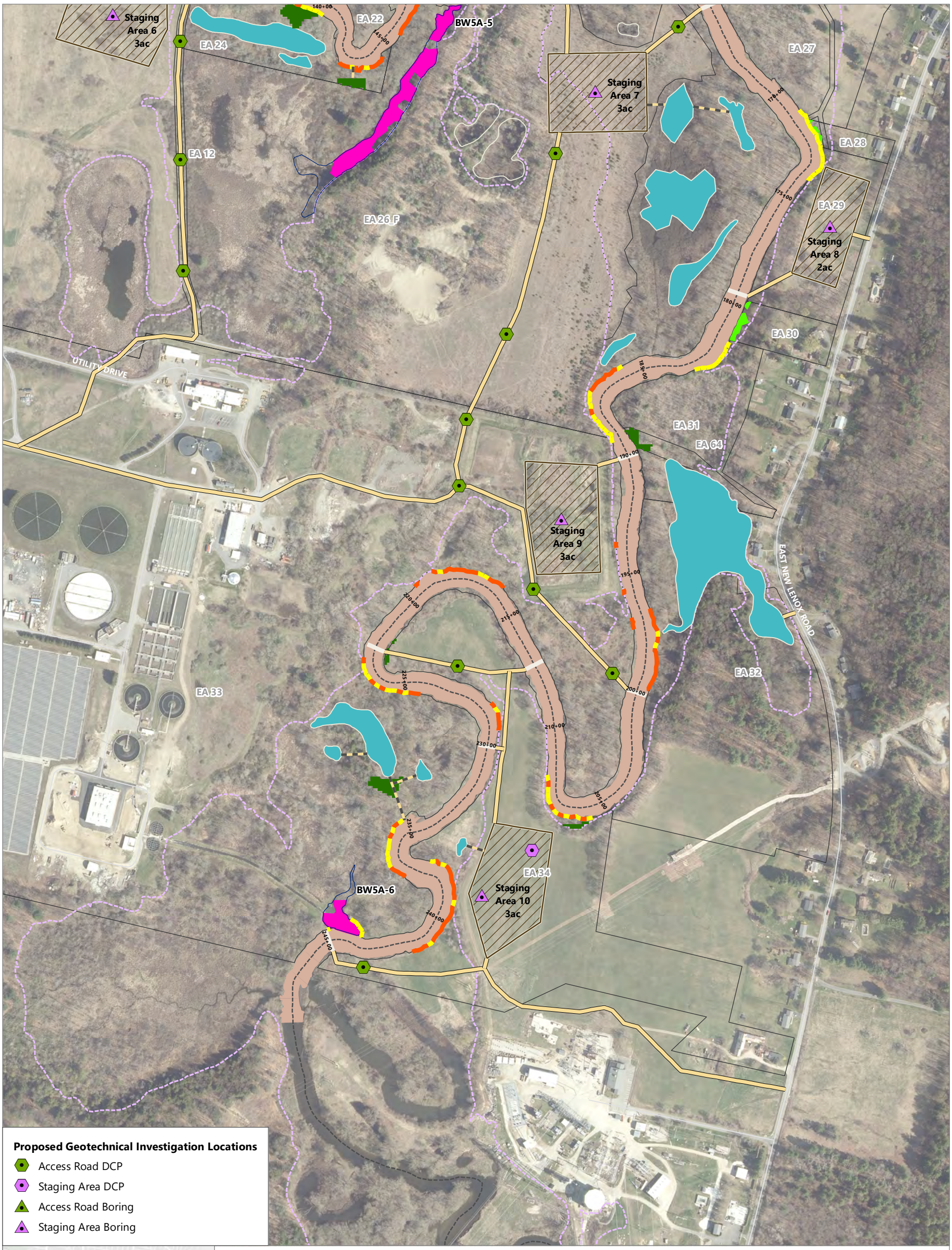
Publish Date: 2023/09/27, 1:38 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixI\AQ_RDRA_AppI_Fig6-2_GeotechAccess.mxd

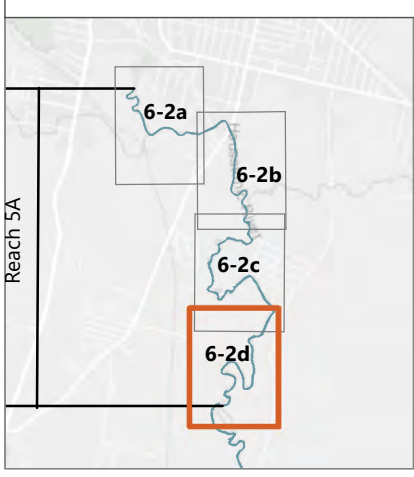
ANCHOR QEA

Figure 6-2c

Temporary Access Road and Staging Area Geotechnical Investigation Locations

Supplemental Data Collection Work Plan for Reach 5A
Housatonic River – Rest of River





LEGEND:

0+00 River Stationing
Roads
River Centerline
1 mg/kg PCB Isopleth
Exposure Areas
Canoe Meadows Trails
River Access Point
Primary Upland Access Road
Secondary Upland Access Road
Staging Area

Vernal Pools
Pilot Pool (Amendment)
Pilot Pool (Excavation)
Non-Pilot Pool (Remediation Needed;TBD)
No Remediation Needed

Backwaters/Other Waterbodies
Amendment
Sediment Removal/Cap
Sediment Removal/Backfill
No Remediation Needed

In-River Sediment Remediation Area

Floodplain Remediation
Residential Soil Removal
Non-Residential Soil Removal (0-1ft)
Non-Residential Soil Removal (0-3ft)

Riverbank Remediation
Remediation Required
Supplemental Remediation Areas

0 400
Feet

NOTE:
1. Aerial Imagery from MassGIS, 2021
2. The remediation areas and temporary staging areas and access are preliminary and may be subject to revision as part of final design.
3. The geotechnical sampling locations shown are approximate and may be adjusted based on field conditions.

DCP: Dynamic Cone Penetrometer

Publish Date: 2023/09/27, 1:39 PM | User: nwagner
Filepath: \\orcas\gis\Jobs\GE_0469\HousatonicRiver\Maps\Reports\R5ARDWorkPlan\AppendixI\AQ_RDRA_AppI_Fig6-2_GeotechAccess.mxd

ANCHOR QEA

Figure 6-2d
Temporary Access Road and Staging Area Geotechnical Investigation Locations
Supplemental Data Collection Work Plan for Reach 5A
Housatonic River – Rest of River

Attachment A
Standard Operating Procedure:
Dynamic Cone Penetrometer Testing

Standard Operating Procedure – Dynamic Cone Penetrometer Testing

Purpose

The purpose of this Standard Operating Procedure (SOP) is to establish uniform procedures for the use of a dynamic cone penetrometer (DCP) for the evaluation of subsurface conditions.

This SOP describes the equipment, field procedures, materials, and documentation procedures necessary to perform the DCP testing. The details within this SOP should be used in conjunction with the associated project planning documents, such as the applicable investigation work plan(s), the Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP; Arcadis 2023a), and other applicable project-specific SOPs. Substantive deviations from the procedures detailed in this SOP will be recorded in a DCP Field Log or Field Deviation Form and will be reported to the field lead or project manager.

Health and Safety Considerations

Health and safety issues are addressed in the Housatonic River – Rest of River Health and Safety Plan (HASP; Arcadis 2023b), as it may be updated. The HASP will be followed during all activities conducted by field personnel.

Massachusetts Dig Safe, Inc. (i.e., 811), will be contacted to coordinate utility identification and mark-outs at the proposed DCP testing locations. The Dig Safe (i.e., 811) utility mark-outs include a 30-day expiration date, beyond which the mark-outs are not valid unless markings are preserved. If there are known or suspected utilities in the subsurface that are not identified in the Dig Safe mark-out, a private utility locate may be performed in the event that field locations cannot be altered.

Personnel Qualifications

Field staff executing these procedures will have read, be familiar with, and comply with the requirements of this SOP, the applicable investigation work plan(s), and other associated project planning documents, such as the FSP/QAPP, HASP, and other applicable project-specific SOPs. Field staff will work under the direct supervision of qualified professionals who are experienced in performing the tasks described in this SOP.

Field Records

The field records associated with the activities described in this SOP are critical project documents that will be used in data interpretation. Field logs may be included in the subsequent reports presenting the results of the field program.

Field team members will keep a daily record of significant events, observations, and measurements in the field logs. The required field logs and records are included in Exhibits A-1 and A-2 and are described as follows:

- DCP Field Log
- SOP Deviation Log

Equipment and Supplies

The following is a list of equipment that may be necessary to carry out the procedures described in this SOP. Additional equipment may be required, depending on field conditions.

- Approved project-specific planning documents, including work plan, field logbook/field logs, HASP, FSP/QAPP, and applicable SOPs
- Personal protective equipment (PPE) and clothing as defined in the HASP
- Measuring tape
- Digital camera
- Equipment cleaning materials
- DCP apparatus
  - Ten-square-centimeter field points (sacrificial)
  - One-meter drive rods with marks at 10-centimeter intervals and thread connections
  - Driver hammer attachment with 35-pound weight (hammer) with minimum 15 inches of throw
  - Driving head (threaded connection)
  - Mechanical drive rod extractor
  - Base plate for drive rod extractor
  - Equipment carrying case
  - Real-time kinematic (RTK) global positioning system (GPS) equipment

Dynamic Cone Penetrometer Procedures

A. Preparation

1. Prior to mobilization, review the accessibility of all testing locations to determine whether special measures or equipment are needed to access the testing locations.
2. Clear utilities before sampling commences by notifying Massachusetts Dig Safe Inc. (i.e., 811) and a private utility locator, if needed.
3. Don the appropriate PPE, as indicated in the HASP.
4. Locate sampling location(s) in accordance with project documents and document pertinent information in the appropriate field logbook.
5. Locate the DCP test location in accordance with project planning documents.

6. Expose the soil surface by clearing an approximately 1-square-foot area at the sampling site of any surficial vegetation, debris, and detritus that may otherwise create an obstruction.

B. Performing the Exploration

1. Ensure the driving head is threaded onto a 1-meter drive rod.
2. Fix the field point to the driving head.
3. Place the drive rod and field point unit on the ground, with the field point resting on the desired location of the exploration.
4. Connect the driver attachment with the 35-pound hammer.
5. Seat the field point by raising and dropping the driver until the field point is fully embedded in the subsurface.
6. Begin raising and dropping the driver and count the number of blows required for 10 centimeters of advancement. Record the blows for each 10-centimeter drive interval. Manual adjustments may be needed to maintain verticality of the drive rods. Record any obstructions or zones of difficult driving or apparent changes in substrate that occur within the 10-centimeter interval, if applicable, on the DCP Field Log (Exhibit A-1).
7. Connect additional drive rods as needed until refusal or the desired drive depth is achieved. A refusal condition is assumed to be 50 blows per 10 centimeters or fewer. Leave approximately 0.5 meter of stickup of the last rod for extraction.
8. After refusal or the desired depth is reached, place the base plate near the rod, fix the extractor, and begin retrieving the rods. The drive hammer may need to be removed to allow for extraction of drive rods. Care must be applied when extracting the rod so as to not drop loose rods back down the hole.
9. Clean the DCP testing apparatus in accordance with the project-specific SOP for Equipment Cleaning (Appendix EE in of the FSP/QAPP [Arcadis 2023a])

Data Processing

1. Input the data obtained for each exploration, as record in the DCP Field Log, into the data processing spreadsheet (in office). The spreadsheet correlates an equivalent SPT N-value for each drive interval.
2. Report the depth, field-recorded blow count, and equivalent SPT N-value.

Quality Assurance/Quality Control

Entries in the field logs or deviation forms will be reviewed by the field team staff to verify that the recorded information is accurate. It is the responsibility of the field team leader to periodically check to verify that the procedures are in conformance with those stated in this SOP.

References

Arcadis, 2023a. *Field Sampling Plan/Quality Assurance Project Plan*. Prepared for the General Electric Company, Pittsfield, Massachusetts. Revised July 2023.

Arcadis, 2023b. *Site Health and Safety Plan, GE-Pittsfield/Housatonic River Site*. Prepared for the General Electric Company, Pittsfield, Massachusetts. Revised July 2023.

List of Exhibits

Exhibit A-1 DCP Field Log

Exhibit A-2 SOP Deviation Form

Exhibit A-1
DCP Field Log

ANCHOR QEA

Dynamic Cone Penetrometer

Exploration Log

*Project Number:*_____
*Project Name:*_____
*Project Location:*_____

Location ID:	_____	Surface Elevation:	_____
Performed By:	_____	Groundwater Depth:	_____
Vert. Datum:	_____	Hammer Weight:	_____
Horiz. Datum:	_____	Cone Area:	_____
Easting:	_____	Start Date	_____
Northing:	_____	End Date	_____

Depth meters	Depth feet	Blows per 10 cm	Notes
0.1			
0.2			
0.3	1 ft		
0.4			
0.5			
0.6	2 ft		
0.7			
0.8			
0.9	3 ft		
- 1 m			
1.1			
1.2	4 ft		
1.3			
1.4			
1.5	5 ft		
1.6			
1.7			
1.8	6 ft		
1.9			
- 2 m			
2.1	7 ft		
2.2			
2.3			
2.4	8 ft		
2.5			
2.6			
2.7	9 ft		
2.8			
2.9			
- 3 m	10 ft		
3.1			
3.2			
3.3			
3.4	11 ft		
3.5			
3.6			
3.7	12 ft		
3.8			
3.9			
- 4 m	13 ft		

Anchor QEA, LLC
290 Elwood Davis Road
Liverpool, New York 13088

Exhibit A-2
SOP Deviation Log

ANCHOR QEA

Field Deviation Form

Form No. _

Deviation subject:

-

Project name:

-

Standard procedure for field activity:

-

Reason for deviation:

-

Description of deviation:

-

Special equipment, materials, or personnel required:

-

Initiator's name:	Date:
Project Manager:	Date:

Attachment B
Standard Operating Procedure:
Single-Well, Constant-Rate Pump Test

Standard Operating Procedure – Single-Well, Constant-Rate Pump Test

Purpose

The purpose of this Standard Operating Procedure (SOP) is to establish uniform procedures for the purpose of conducting single-well, constant-rate pumping tests. This SOP is applicable to the performance of single-well, constant-rate pump testing. This test is a field method used to estimate the transmissivity of a saturated geologic medium surrounding the screened or open interval of a well. A single-well test involves pumping groundwater from a well/piezometer and measuring the pumping rate and magnitude of drawdown inside the tested well/piezometer during pumping. Collection of water-level data at any other non-pumped wells/piezometers during the single-well test is recommended and will be completed if other wells or piezometers are installed within the vicinity of the test well/piezometer.

This SOP describes the equipment, field procedures, materials, and documentation procedures necessary to perform the pump test activities. The details within this SOP should be used in conjunction with the associated project planning documents, such as the applicable investigation work plan(s), the Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP; Arcadis 2023a), and other applicable project-specific SOPs. Substantive deviations from the procedures detailed in this SOP will be recorded in a Daily Log or Field Deviation Form and will be reported to the field lead or project manager.

Health and Safety Considerations

Health and safety issues are addressed in the Housatonic River – Rest of River Health and Safety Plan (HASP; Arcadis 2023b), as it may be updated. The HASP will be followed during all activities conducted by field personnel.

Personnel Qualifications

Field staff executing these procedures will have read, be familiar with, and comply with the requirements of this SOP, the applicable investigation work plan(s), and other associated project planning documents, such as the FSP/QAPP, HASP, and other applicable project-specific SOPs. Field staff will work under the direct supervision of qualified professionals who are experienced in performing the tasks described in this SOP.

Field Records

The field records associated with the activities described in this SOP are critical project documents that will be used in data interpretation. Field logs may be included in the subsequent reports presenting the results of the field program.

Field team members will keep a daily record of significant events, observations, and measurements in the field logs. The required field forms are included in Exhibit B-1 and are described as follows:

- Pre-Test Setup Form
- Pump Test Log Form

Equipment and Supplies

The following is a list of equipment that may be necessary to carry out the procedures described in this SOP. Additional equipment may be required, depending on field conditions.

- Approved project-specific planning documents, including work plan, field logbook/field logs, HASP, FSP/QAPP, and applicable SOPs
- Personal protective equipment (PPE) and clothing as defined in the HASP
- Digital camera
- Equipment cleaning materials
- Electronic depth-to-water (DTW) indicator
- Interface probe
- Buckets or other containers with graduated volume markings
- Pressure transducers with associated cables (vented downhole and connector cables), cable-hanging device, and data collection device (e.g., In-Situ, Inc., Level Troll 500 pressure transducer or similar)
- Stopwatch
- Desiccant chamber for vented cable
- Pumps
  - Submersible pump (Grundfos or similar) with a check-valve
  - Peristaltic pump (p-pump)
- Sufficient pump tubing to reach bottom of well/piezometer
- Masterflex PharMed tubing or similar
- Pump controller (if using submersible pump)
- Generator or stable power supply
- Extension cord
- Spring clamps (at least four)

- Pre-test Setup Form (see Exhibit B-1)
- Pump Test Log (see Exhibit B-1)

Cautions

Wells and piezometers have different water-yielding characteristics as a function of their screen lengths, depth below water table, and geologic materials in which they are installed. During the first minute of pumping, the water level should be continuously monitored and the pumping rate adjusted to avoid pumping the well/piezometer dry.

Water pumping during field tests will be contained and not allowed to discharge to the ground. Procedures for management and disposition of water pumped during tests will be site specific.

Pump Test Procedures

Single-well pumping tests consist of a pre-test and a pump test. The objectives of the pre-test are to determine the type of pump and to estimate the sustainable pumping rate. In addition, transducers will be installed to collect water-level data under ambient condition prior to the pumping test.

The pumping test consists of a pumping period and a recovery period. During the pumping period, the test well/piezometer will be pumped at the pumping rate determined during pre-test. During the recovery period, the pump will be shut off, and the recovery of water level will be monitored.

Pre-Test Setup

A pre-test evaluation of each well/piezometer will be conducted at least 12 hours prior to the pumping test to estimate the sustainable pumping rate capable at each well/piezometer and determine the type of pump required for each pumping test. In addition, pressure transducers will be installed, and data collection will be started during the pre-test evaluation. This will allow evaluation of ambient conditions for at least 12 hours prior to the pumping test.

Single-Well Test Procedures

Following the 12-hour minimum ambient conditions period, a pumping test of at least 20 minutes but not more than 240 minutes duration will be conducted at the pumping rate determined during the pre-test evaluation. After the pump has been shut off, water-level data will continue to be measured using the transducer during water-level recovery.

After the water level has been allowed to recover (as detailed in the following sections), data collection will be stopped, and the data will be downloaded from the transducer onto a data logging device (e.g., an In Situ Data collection device). The transducer, cable, and pump equipment will then be removed from the well and decontaminated or disposed of.

Following are the detailed steps and protocols for conducting the pre-test setup followed by the single-well test procedures.

Pre-Test Setup and Pump Selection Procedures

1. Remove the well cap and allow water level to equilibrate to atmospheric pressure, if necessary.
2. Using the interface probe, measure the depth to the bottom of the well to the nearest 0.01 foot from a specified reference point (generally the top of casing), and record on Pre-Test Setup Form (in Exhibit B-1).
3. Measure the DTW with an electronic water-level indicator to the nearest 0.01 foot from a specified reference point and record it on Pre-Test Setup Form.
4. If the DTW from top of casing is less than 15 feet, install polyethylene tubing to the bottom of the well and use a p-pump for the test.
5. If the DTW from top of casing is more than 15 feet, install submersible pump to the bottom of the well.
6. Install the pressure transducer near the bottom of the well above the pump so that the transducer and cable are hanging and not resting on the bottom of well or on the top of the pump.
7. Allow water level to return to the static water level.
8. Connect the data collection device and open synced monitoring app (e.g., Win-Situ Mobile or similar).
9. Synchronize the time on transducer to the data collection device.
10. Set up a test on the selected data collection device. Example procedures consistent with use of a RuggedReader device are provided in Exhibit B-2.
11. Verify the accurate transducer DTW reading on data collection device by taking a manual DTW measurement. Reset the transducer reference calibration if the difference is more than 0.05 foot.
12. Start the test on the data collection device.
13. Operate the pump at varying pumping rates to determine a maximum sustainable steady state pumping rate, if possible. To avoid pumping the well “dry” during the test, the drawdown after 1 minute of pumping should be less than or equal to 20% of the available drawdown. Measure the pumping rate in a container with graduated volume markings and stopwatch.
14. Calculate the estimated specific capacity of well by dividing the pumping rate by the feet of drawdown.

15. If using a p-pump and calculated specific capacity indicates that the well can sustain 0.50 gallons per minute (gpm) or greater with the available drawdown, replace the p-pump with submersible pump.
16. Record the sustainable pumping rate, estimated specific capacity, and pump settings on the Pre-Test Setup Form (in Exhibit B-1).
17. When the pre-test pump selection is complete, disconnect the data collection device. Apply the desiccant chamber to the end of downhole cable and secure in well monument.
18. If using a p-pump and water level is not expected to draw down past 20 feet below top of casing during the subsequent single-well test, leave the polyethylene tubing and transducer in well.
19. If using a submersible pump, remove and decontaminate pump after the pre-test is completed. Leave the transducer in the well.
20. Collect and record an additional manual DTW measurement.
21. Close and secure the well monument.
22. If necessary, allow at least 12 hours for the well to recover to approximate static conditions before conducting a subsequent single-well pumping test.

Single-Well Test Procedures

1. Unlock and open the well monument.
2. Measure and record on the Pump Test Log (in Exhibit B-1) the DTW with an electronic water level indicator in the well to the nearest 0.01 foot from the specified reference point.
3. Connect the data collection device to the transducer cable. Check the data collection device DTW reading against the manual DTW reading. Reset the transducer reference calibration if the difference is more than 0.05 foot.
4. If using submersible a pump, install the pump to the depth determined during pre-test setup. Allow the water level to return to static water level.
5. If using a p-pump, connect tubing to the pump.
6. Suspend the electronic water-level probe in the well just above the static water level.
7. Place the end of the pump discharge line into one of the two calibrated containers.
8. Simultaneously start the stopwatch and pump at the pre-determined pumping rate and pump settings. Record the start time on the Pump Test Form (in Exhibit B-1). The transducer will still be recording from the previous day.

9. Using the electronic water-level probe, immediately begin monitoring the water level in the well. Alternately, real-time transducer data can be monitored on a portable electronic device. If the water level inside the test well declines rapidly, quickly reduce the pumping rate to a slower, constant rate. To avoid pumping the well "dry" during the test, the drawdown after 1 minute of pumping should be less than or equal to 20% of the available drawdown. All pumping-rate adjustments should be completed within 1 or 2 minutes of the start of pumping, after which no further adjustments should be made other than minor adjustments that may be necessary to maintain a steady pumping rate.

10. Record the water level in the well and volume removed at least once every 2 minutes during the first 20 minutes of pumping. For pumping periods longer than 20 minutes, the manual water-level and pumping-rate data collection frequency can be increased to every 5 to 10 minutes. Continue to pump for at least 20 minutes past the time after which casing storage no longer contributes to the yield of the well. The time necessary to achieve this is calculated by the following equation:

$$T_c = 0.6 * \frac{{d_c}^2 - {d_p}^2}{Q/s}$$

Where:
T_c = time, in minutes, when casing storage effect becomes negligible
d_c = inside diameter of well casing, in inches
d_p = outside diameter of pump column pipe, in inches
Q/s = specific capacity of the well in gpm/foot of drawdown at time T_c.

11. Immediately before termination of pumping, record the final water-level measurement plus the time of the measurement.

12. Leave the transducer recording to measure and record water-level recovery data after stopping the pump. Water-level recovery data will be evaluated during data analysis. To collect recovery data, measure and record water-level data according to the same schedule used during pumping. Allow the water level to return to within 90% of pre-test static water level, or an equal recovery period length as the preceding pumping period length, whichever is longer.

13. Calculate and record the total volume of groundwater removed from the well during the test and the total duration of the test. Divide the total volume (in gallons) by the total pumping duration (in minutes) to calculate and record the average test pumping rate (in gpm).

14. Stop the test on the data collection device.

15. Download test data from the transducer onto the data collection device according to example procedures in Exhibit B-2. If an alternative data collection device is used, equipment-specific

procedures will be developed and reviewed prior to field mobilization and utilization of such device.

16. Remove the pump (or tubing) and transducer from well and decontaminate the pump equipment and transducer.
17. Replace the well cap and secure the well monument.

Data Processing

The data from the data collection device should be downloaded to a PC or other network storage device after each test is completed. This is to ensure that test data are backed up if the data collection device fails.

Quality Assurance/Quality Control

Entries in the field forms or field books will be reviewed by the field team staff to verify that the recorded information is accurate. It is the responsibility of the field team leader to periodically check to verify that the pump test procedures are in conformance with those stated in this SOP.

References

Arcadis, 2023a. *Field Sampling Plan/Quality Assurance Project Plan*. Prepared for the General Electric Company, Pittsfield, Massachusetts. Revised July 2023.

Arcadis, 2023b. *Site Health and Safety Plan, GE-Pittsfield/Housatonic River Site*. Prepared for the General Electric Company, Pittsfield, Massachusetts. Revised July 2023.

List of Exhibits

Exhibit B-1 Blank Field Forms

Exhibit B-2 Example Operating Instructions (RuggedReader Data Collection Device)

Exhibit B-1
Blank Field Forms

Single Well Pump Test
Pre-test Setup Form

Well ID:	**Depth to Water (feet TOC):**
Date:	**Depth to Bottom (feet TOC):**
Time Pre-Test Started:	**Height of water column (feet):**
Time Pre-Test Ended:	**Available Drawdown (feet):**
Depth to top of sand pack (ft bgs):	**Depth to top of DNAPL (feet TOC):**
Depth to top of screen (ft bgs):	**Pump inlet depth (Feet TOC):**

Elapsed time (Minutes)	Type of Pump Used	Depth to Water (feet)	Pumping Rate (GPM)	Drawdown (feet)	Estimated Specific Capacity (GPM/foot drawdown)	Pump Settings (Hz frequency or knob setting)

Single Well Pump Test
Pump Test Log

Well ID:	**Initial Depth to Water (ft TOC):**
Date:	**Depth to Bottom (ft TOC):**
Test ID:	**Available Drawdown (feet):**
Time test started:	**Depth to top of DNAPL (ft TOC):**
Pump Type:	**Depth to pump inlet (ft TOC):**
Estimated Specific Capacity from Pre-Test:	tc = time after which casing storage is negligible
Pump rate determined from Pre-Test:	d_c = inside diameter of well casing, inches
Pump controller or knob setting:	d_p = outside diameter of pump pipe, inches
Depth to top of sand pack (ft bgs):	Q/s = estimated specific capacity of well in gpm/ft
Depth to top of screen (ft bgs):	**Page _____ of _____**

$t_c = (0.6(d_c^2 - d_p^2))/(Q/s) =$

Elapsed time (Minutes)	Depth to Water (feet)	Drawdown (feet)	Cumulative Volume Removed (gallons)	Pumping Rate (GPM)

Exhibit B-2
Example Operating Instructions
(RuggedReader Data Collection Device)

RUGGEDREADER OPERATION INSTRUCTIONS

Section 1: Starting a New Test on the RuggedReader

1. Physically connect the transducer to the RuggedReader using the cable connector.
2. Electronically connect to transducer by selecting the Connect button in the bottom left corner of Win-Situ Mobile.
3. If a test is running, download and stop it if you want to resynchronize the time.
4. Resynchronize the time between the Pocket-PC and the transducer according to the steps above.
5. From the Win-Situ Mobile readout screen, select More from the lower right corner.
6. Select the Logs tab from the upper middle of Win-Situ Mobile.
7. Select More from the lower right corner of Win-Situ Mobile.
8. Select the New button from the top middle left of Win-Situ Mobile. This will initiate the development of a new test.
9. Enter basic info screen:
    a. Site should match the well ID.
    b. Enter Log file name as follows: SITENAME pump test mmddyy (of test setup; for example: MW-11-32 pump test 102413).
    c. Select Right Arrow in the bottom right corner of the Win-Situ Mobile screen.
10. Select parameter(s):
    a. Select Pres, Temp, and Level (DTW).
    b. Select Right Arrow in the bottom right corner of the Win-Situ Mobile screen.
11. Order and units:
    a. Do not make any changes to the order or units. The order and units should be as follows, if used:
        i. Temp = °C
        ii. Pres = PSI
        iii. Level (DTW or SE) = feet
    b. Select Right Arrow in the bottom right corner of Win-Situ Mobile screen.
12. Select log type:
    a. Select Fast Linear.
    b. Select Right Arrow in the bottom right corner of the Win-Situ Mobile screen.
13. Measure and store values every:
    a. Select 1-second collection intervals.
    b. Select Right Arrow in the bottom right corner of the Win-Situ Mobile screen.

14. Set start/stop time:
    a. Select scheduled start.
    b. Select box showing the mm/dd/yy hh:mm.
        i. Test should be set to start on the next hour. For fast Linear ensure that the test will start on an even minute.
        ii. Select Check Mark in the lower right corner of Win-Situ Mobile.
    c. Select No Stop Time.
    d. Select Right Arrow in the bottom right corner of the Win-Situ Mobile screen.
15. Select log wrap mode:
    a. Select Wrap Log When Full.
    b. Select Right Arrow in the bottom right corner of the Win-Situ Mobile screen.
16. Select level mode:
    a. Select Level – Depth to Water.
    b. Select Right Arrow in the bottom right corner of the Win-Situ Mobile screen.
17. Select specific gravity:
    a. Fresh Water should be selected from the drop-down menu.
    b. Specific gravity should be set to 0.999.
    c. Select Right Arrow in the bottom right corner of the Win-Situ Mobile screen.
18. Select reference:
    a. Set new reference should be selected from drop-down menu.
    b. Take a DTW measurement.
        i. Enter the DTW in the box below the drop-down menu.
    c. Select the Right Arrow in the bottom right corner of the Win-Situ Mobile screen.
19. Summary:
    a. Review test summary to ensure that test parameters have been set up appropriately.
    b. Select the Check Mark in the bottom right corner of Win-Situ Mobile screen.
20. On the log page, the test you set up should be highlighted. The presence of a clock icon on the test means that it is pending; the presence of a person running means the test is underway.
21. Record that a new test was started with a "Y" in the New Test column of the Transducer Data Form.

Section 2: Downloading an Existing Test on the RuggedReader

1. Select More in the lower right corner of Win-Situ Mobile.

2. Select the Logs tab from the upper middle of Win-Situ Mobile.
3. Highlight the log that you want to download from the list.
4. Select Download from the lower middle of Win-Situ Mobile.
5. Select All to download all data from the given test.
6. Select the Check Mark in the lower right corner of Win-Situ Mobile.
7. The download process should start. Wait for it to complete.
8. When the screen reads "Download complete," select the Check Mark in the lower right corner of Win-Situ Mobile.
9. You will be prompted to view data now. Select No.
10. Disconnect RuggedReader from transducer.