
TABLE OF CONTENTS FOR MODEL CALIBRATION: MODELING STUDY OF PCB CONTAMINATION IN THE HOUSATONIC RIVER

Volume 1—Summary Document

Executive Summary

1. Introduction
2. Watershed Modeling
3. Hydrodynamic Modeling
4. Sediment Transport Modeling
5. PCB Fate and Transport Modeling
6. Bioaccumulation Modeling
7. Summary and Conclusions

Attachment 1 Approach to Review of Historical Data Sets

Attachment 2 Summary of Data Collection Activities

Attachment 3 Summary of Analytical Methods

Attachment 4 Summary of Analytical Variability

Volume 2—Appendix A Watershed Model Calibration

A.1 Introduction

A.2 Database Development for Watershed Modeling

A.3 Segmentation and Characterization of the Housatonic River Watershed Above Great Barrington

A.4 Hydrology Calibration Results

A.5 Solids and Water Temperature Calibration Results

A.6 Sensitivity and Uncertainty Analysis

A.7 Summary

A.8 References

Appendix A Figures

Attachment A.1 Meteorological Database Development

Attachment A.2 Review of GE Meteorological Data

Attachment A.3 Housatonic River Watershed Model Parameters

Attachment A.4 Hydrology Calibration Results for Flow and Snow Depth

Attachment A.5 Solids and Water Temperature Calibration Results

Volume 3—Appendix B Hydrodynamic and Sediment/PCB Fate and Transport Model Calibration

B.1 Introduction

B.1 Figures

B.2 Hydrodynamic Modeling

B.2 Figures

B.3 Sediment Transport Modeling

B.3 Figures

B.4 PCB Fate and Transport Modeling

B.4 Figures

B.5 Summary

B.5 Figures

Attachment B.1 Stage-Discharge Rating Curves

Attachment B.2 Representation of Vegetation and Macrophytes

Attachment B.3 TSS and PCB Flux Analysis

Attachment B.4 Grain-Related Shear Stress

Attachment B.5 Analysis of Sediment Erosion Data

Attachment B.6 Spatial Plots of Model Results with Data

Attachment B.7 Sensitivity Analysis Results

Attachment B.8 Approach to Spatial Weighting of tPCB Concentrations in Floodplain Soil

Attachment B.9 PCB Partitioning

Volume 4—Bioaccumulation Model Calibration

C.1 Introduction

C.2 Application to the Housatonic River

C.3 Model Calibration

C.4 Sensitivity and Uncertainty Analyses

C.5 Summary

C.6 References

Appendix C Figures

Attachment C.1 Detailed Model Description

Attachment C.2 Selection of PCB Congeners and Derivation of Octanol:Water Partition Coefficients

Attachment C.3 Extrapolation from tPCBs to Congeners

Attachment C.4 Food Energy Parameters

Attachment C.5 Invertebrate Growth Rates

Attachment C.6 Fish Growth Rates

Attachment C.7 Invertebrate Respiration Rates

Attachment C.8 Fish Respiration Rates

Attachment C.9 Food and Contaminant Assimilation Efficiencies

Attachment C.10 Invertebrate Elimination Rates

Attachment C.11 Invertebrate Feeding Preferences

Attachment C.12 Fish Feeding Preferences

Attachment C.13 Fish Feeding Preferences Literature Review Summary

Attachment C.14 Abiotic Exposure Concentration Data

Attachment C.15 Plots of Simulated Versus Measured PCB Concentrations – Simulations Using Field Exposure Data

Attachment C.16 Plots of Simulated Versus Measured PCB Concentrations – Simulations Using Linked Model

Attachment C.17 Model Sensitivity and Uncertainty Assessment

Attachment C.18 Analysis of PCB Congener Composition

Attachment C.19 Biologically Relevant Sediment Depth