Overview of the Feasibility Study Process

Newtown Creek Superfund Site

Queens and Brooklyn, New York City

October 21, 2020

Superfund Process

Overview

- Thus far, focus has been on the Remedial Investigation portion of the Superfund process
  - Majority of data collection complete
  - Human Health and Ecological Risk Assessments approved in June 2017 and September 2018
  - Third draft Remedial Investigation report submitted in June 2020
- Now we are moving into the Feasibility Study portion of the process
  - What does that mean?
  - What is involved?

General Feasibility Study Process

- Review the Remedial Investigation report and risk assessments to summarize and refine the Conceptual Site Model, including:
  - Media and areas of a Site that pose an unacceptable risk and/or exceed appropriate standards
  - Contaminants of Concern at the Site
- Determine Remedial Objectives and Preliminary Remediation Goals
- Identify Applicable or Relevant and Appropriate Requirements
- Develop remedial alternatives that will achieve the Remedial Action Objectives and Preliminary Remediation Goals for the Site, and that will attain applicable or relevant and appropriate requirements
- Conduct a formal evaluation and comparison of remedial alternatives
  - This forms the basis for EPA to propose its preferred remedial alternative for public review and comment

Review of Remedial Investigation and Risk Assessments

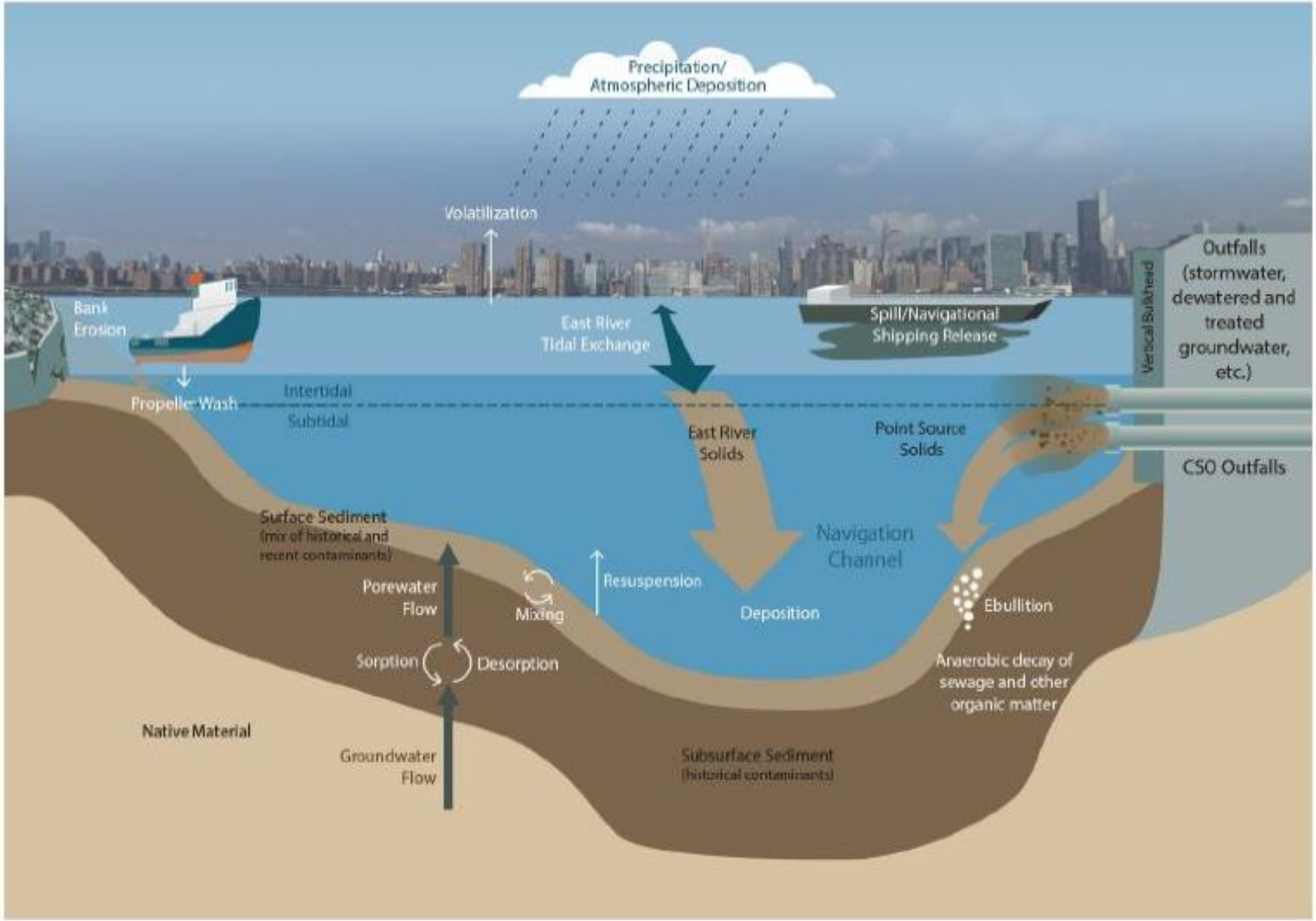
Primary Goals of the Remedial Investigation

- Report and evaluate data collected during the Remedial Investigation
- Define the nature and extent of contamination in site media
- Use findings to develop human health and ecological risk assessments
- Develop and refine the Conceptual Site Model
- Identify data gaps
- Provide a basis for development of the Feasibility Study

Status of Remedial Investigation and Risk Assessment Process for Operable Unit 1

- Majority of sampling complete
  - Some data evaluation reports are still under review and will be included in the Feasibility Study report
  - Limited additional field work is anticipated at this time
- Baseline Human Health Risk report finalized in June 2017
- Baseline Ecological Risk Assessment report finalized in September 2018
- Third draft of Remedial Investigation report received in June 2020
  - Expect to provide comments on this draft in 2020
  - Includes first two major components of the modeling framework, remaining components are being developed as part of the Feasibility Study

General Conceptual Site Model



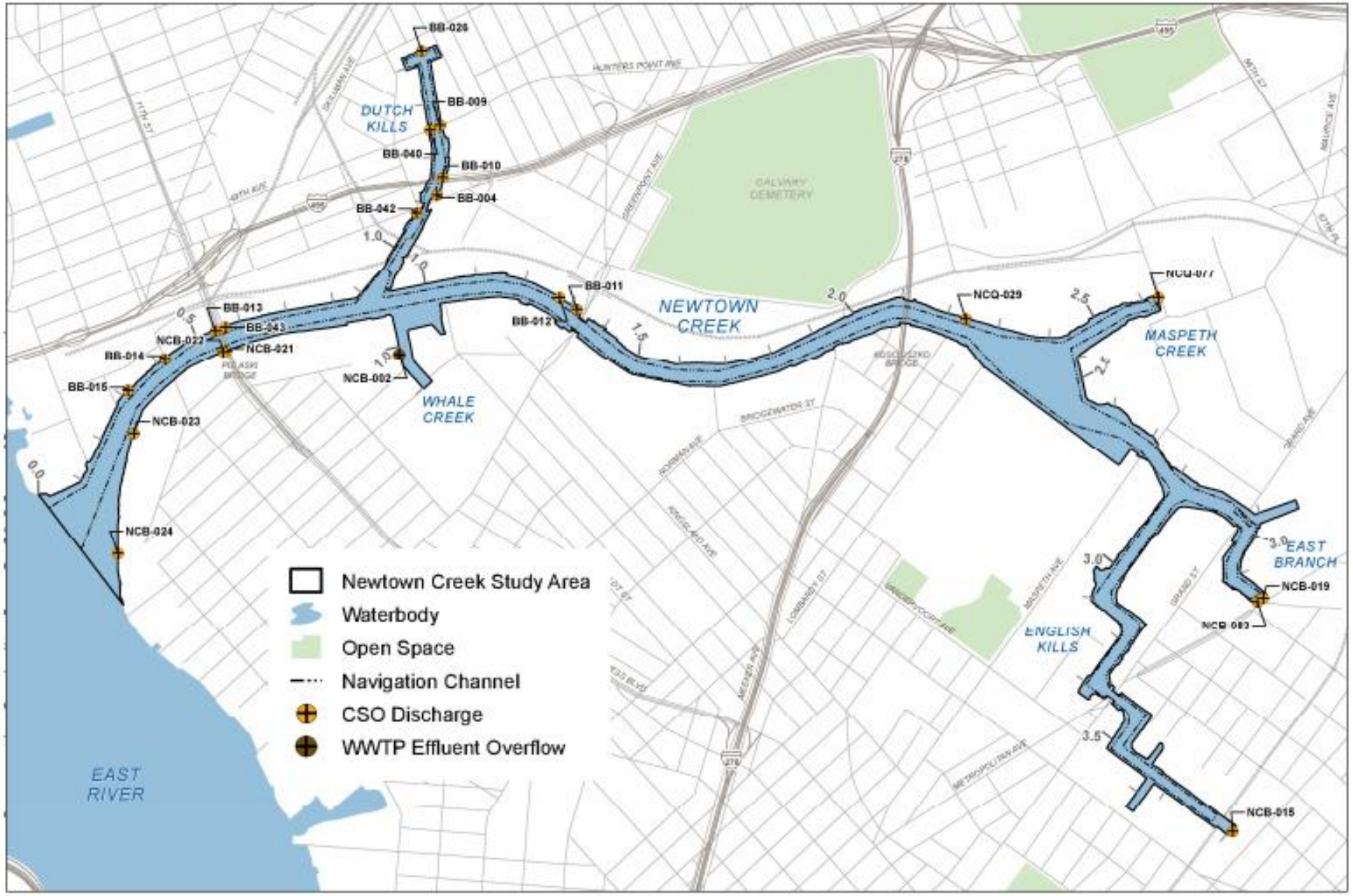
Conclusions of Operable Unit 1 Risk Assessments

- Human Health
  - Unacceptable risks to human health resulting from consumption of fish and crab
  - Primary risk drivers are PCBs and dioxins/furans
- Ecological
  - Turning Basin, English Kills, Maspeth Creek, East Branch, Dutch Kills are primary areas of elevated risk
  - Elevated risk associated primarily with PAHs, PCBs, and copper, with additional contributions of lead and dioxins/furans
  - Risks are elevated for benthic macroinvertebrates, bivalves, blue crab, fish, and birds
- Sediment is the primary media of concern

Contaminants of Concern

- The Contaminants of Concern for sediment at the Site are expected to be:
  - Polychlorinated biphenyls
  - Hydrocarbons
  - Copper
  - Lead
  - Dioxins/Furans

Newtown Creek Study Area



Remedial Action Objectives

- Remedial Action Objectives (RAOs) provide a general description of what the remedial action is intended to accomplish.
- Some examples from other Region 2 sediment sites…
  - "Reduce cancer risks and noncancer health hazards for people eating fish and crab by reducing the concentrations of COCs in the sediments…."
  - "Reduce the risks to ecological receptors by reducing the concentrations of COCs in the sediments…."
  - "Reduce the migration of COC-contaminated sediments…."
- RAOs for Operable Unit 1 of the Site are currently under development.

Preliminary Remediation Goals

- The Record of Decision will eventually select Cleanup Goals for each contaminant of concern at a site, after receiving public input.
- The cleanup goal for each contaminant of concern could be either risk-based or modified by other factors, such as background concentrations and relevant regulations or guidelines.
- During the Feasibility Study phase of the process, preliminary remediation goals (PRGs) are developed for each contaminant of concern.
  - For complex sites such as Newtown Creek, multiple PRGs are often developed for each contaminant
  - The PRGs are evaluated in consideration of the RAOs for the site
- PRGs for Operable Unit 1 of the Site are currently under development.

Identify Applicable or Relevant and Appropriate Requirements

- Commonly referred to as ARARs
- Any alternative considered by EPA must comply with all federal and state environmental standards, requirements, criteria or limitations, unless they are waived under certain specific conditions.
- Three categories of ARARs
  - Chemical-Specific
  - Location-Specific
  - Action-Specific
- Preliminary identification of ARARs for Operable Unit 1 of the Site is underway and will continue to be refined as the Feasibility Study develops.

Development of Remedial Alternatives

Step 1: Identification and Screening of Remedial Technologies and Process Options

- Goal is to “develop an appropriate range of waste management options that will be analyzed more fully in the detailed phase of the Feasibility Study.”
- Identify potential ways of meeting the RAOs and achieving the PRGs
- Begin evaluating wide range of potential options, initially screening for technical implementability and subsequently for effectiveness, implementability, and relative cost
- Screen out those options that would not work for the Site

Development of Remedial Alternatives

Step 2: Remedial Alternatives Assembly and Screening

- From technologies retained in Step 1, assemble alternatives to meet a set of RAOs for each media of concern
- Must include a “No Action” alternative in accordance with NCP to provide a baseline for comparison
- Evaluate alternatives against the short- and long-term aspects of effectiveness, implementability, and relative cost
- Treatability Studies and Modeling can assist in the alternative development process

Development of Remedial Alternatives

Step 3: Detailed Analysis of Remedial Alternatives

- Build on previous evaluations conducted during Step 2
- Further define the alternatives retained at the end of Step 2 with more detail
- Incorporate any treatability study data
- Evaluate each alternative individually through the first seven of the “Nine Criteria” (will explain further shortly….)
- Compare alternatives to each other through the first seven of the Nine Criteria to assess relative performance

The Nine NCP Evaluation Criteria

Threshold Criteria

- Overall Protection of Human Health and the Environment
- Compliance with Applicable or Relevant and Appropriate Standards

Balancing Criteria

- Long-Term Effectiveness and Permanence
- Reduction of Toxicity, Mobility and Volume through Treatment
- Short-Term Effectiveness
- Implementability
- Cost

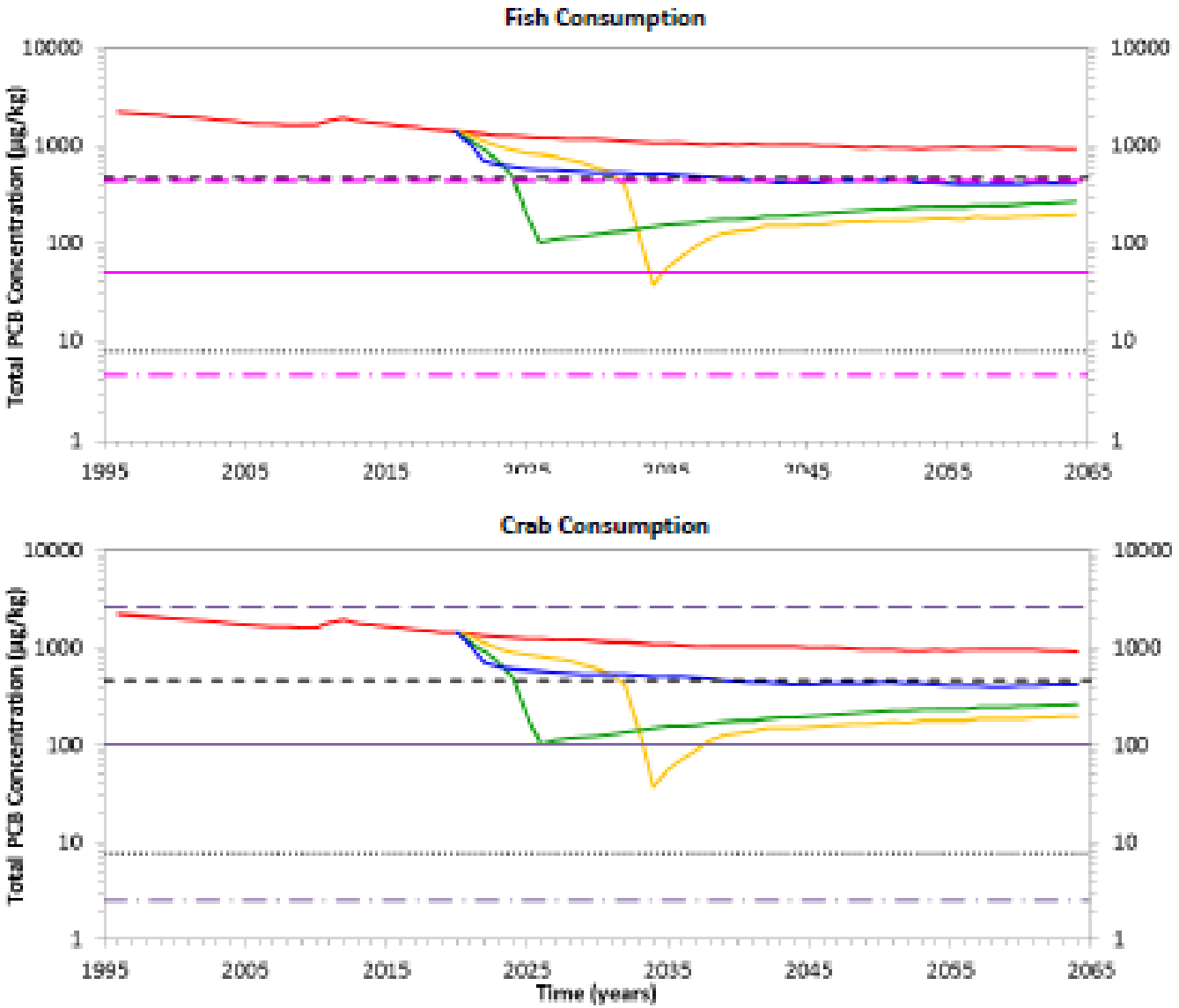
Modifying Criteria

- Community Acceptance
- State Acceptance
  - These are evaluated after the public comment period closes

Next Steps for Operable Unit 1 Feasibility Study

- Complete the Modeling Framework
  - Contaminant Fate and Transport
  - Bioaccumulation
- Incorporate remaining/upcoming data into documentation
- Refine Conceptual Site Model
- Develop the Remedial Action Objectives and the Preliminary Remediation Goals
- Begin process to develop and screen remedial alternatives

Pulling it all together… an example from the Lower Passaic River



Average Total PCB Concentrations in Surface Sediment in Lower 8.3 Miles vs. PRGs (Log Scale)

Lower 8.3 Miles of the Lower Passaic River

Figure 20

2016

Questions?