

# **Final Focused Feasibility Study Report**

## **Upper Trenton Channel Detroit River Area of Concern**

Wayne County, Michigan

September 2013

United States Environmental Protection Agency



## **Executive Summary**

This *Final Focused Feasibility Study Report, Upper Trenton Channel, Detroit River Area of Concern* report (FFS) presents the remedial objectives (ROs), technology screening, and alternatives development and evaluation completed for a specific reach of the Upper Trenton Channel Area in the Detroit River Area of Concern (AOC) in Wayne County, Michigan (Figure 1). The objective of the FFS is to develop a focused list of remedial alternatives for the Upper Trenton Channel such that the United States Environmental Protection Agency (USEPA) Great Lakes National Program Office (GLNPO), in consultation with the non-federal partners, can select a remedial action to eliminate, reduce, or control risks to human health and the environment and move forward with removing beneficial use impairments (BUIs) in the Detroit River AOC and ultimately delisting the AOC.

This document was prepared jointly by USEPA, CH2M HILL on behalf of the USEPA in accordance with work assignment (WA) No. 121-RICO-3525, under Contract No. EP-S5-06-01, and by ARCADIS on behalf of the current non-federal partners, BASF Corporation and Arkema Inc.

The FFS was prepared to present key information collected to support the FFS, as well as the development and evaluation of remedial alternatives. In summary, the FFS includes the following:

- Results of site investigation activities completed to support the FFS – these were used with previous information in development of remedial alternatives.
- A description of actions taken to address sources of contaminants to the study area, and information concerning ongoing regional sources.
- Identification and screening of remedial technologies.
- Statement of remedial objectives (ROs) and cleanup goals (CUGs).
- Description of remedial alternatives for specific remediation areas of the site.
- Estimates of the sediment mass inventory and surface-weighted average concentration (SWAC) reduction for polychlorinated biphenyls (PCBs), mercury, and total polynuclear aromatic hydrocarbons (TPAH) in each remediation area.
- Cost estimates for each alternative.
- Comparative analysis of the alternatives.
- Identification of a preferred alternative.

Sediment ROs were developed to protect human health and the environment, based on the nature and extent of the contamination, to protect resources that are currently and potentially threatened and to contribute to removing beneficial use impairments and eventual delisting of the AOC.

The Detroit River and Trenton Channel have experienced extensive urban and industrial impacts over the past century or more as the receiving water of one of the greatest manufacturing centers of the United States. Many diverse point sources and diffuse industrial and municipal non-point sources throughout the watershed contributed to environmental degradation. For purposes of the FFS, the extent of contaminant of concern (COC) contamination defined the boundary and areas for which sediment remedial alternatives were developed and evaluated. An Environmental Visualization System (EVS) model was used to estimate hot-spot area sediment removal volumes using isosurface concentrations for key indicator parameters, including PCBs, mercury, and TPAH. The distribution of

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other parameters specific to certain sub-areas of the site (e.g., pH and chlorinated naphthalenes) was also considered in the development of the proposed remediation boundaries for the various alternatives. For TPAH, an action level of 165 milligrams per kilogram (mg/kg) was proposed by GLNPO and incorporated in the FFS. Other criteria such as shoreline offsets, utility line offsets, overdredge allowances, and side slope allowances were also developed in consultation with GLNPO and the non-federal partners.

Consistent with the ROs, representative remedial technologies and process options were identified and screened. Remedial technologies and process options that remained following screening were assembled into four alternatives. Based on available staging/processing areas, observations from similar projects, professional judgments, and the remaining remedial technologies and process options available after completion of the screening, the following four alternatives were assembled and then evaluated:

- Alternative 1: No Action
- Alternative 2: Limited Sediment Removal by Mechanical Dredging and Cover
- Alternative 3: Combination of Sediment Removal by Mechanical Dredging, Cover, and Capping
- Alternative 4: Combination of Expanded Sediment Removal by Mechanical Dredging, Cover, and Capping

Mechanical dredging was considered the most feasible dredging technology due to the known presence of debris along the project shorelines and experience with other removal actions previously conducted within the project area. The general layout of the alternatives is depicted in Figure 2b. Alternatives are described in Section 7 and evaluated in Section 8. Alternative 4 has been selected as the preferred alternative based on the comparative analysis of alternatives, and will be further refined in the remedial design phase. Alternative 4 was selected from among the alternatives evaluated in consideration of the evaluation criteria and in particular based on:

- Its effectiveness over Alternatives 1, 2, and 3 in achieving the site-specific ROs and overall protection of human health and the environment. Alternatives 1, 2, and 3 would leave areas of the site unremediated, with less contamination being removed and higher overall surface contaminant concentrations remaining as compared to Alternative 4.
- Alternative 4's higher degree of exposure reduction as indicated by the lowest post-removal SWAC of PCBs, mercury, and TPAH of the three alternatives.
- The degree of contaminant mass removal under Alternative 4 of not only the indicator parameters, but of all contaminants present in the sediment which affords the greatest reduction of the potential for contaminant redistribution to downstream areas in the future.
- The relative cost efficiency of the additional (incrementally greater) area and volume removed under Alternative 4 as compared to the other alternatives – which realizes significant economies of scale compared to the potential for future cleanup requirements should sediment remaining within the project area become redistributed.
- The degree of long-term regulatory acceptability of Alternative 4 based on the fact that the remaining sediment will contain less residual contamination and will therefore have a lower potential to become redistributed and reduce the environmental benefits gained by remediation.

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- The greater contribution to removal of BUIs for the Detroit River AOC as compared to the other alternatives due to the larger area of contamination that is addressed and the larger reduction of the surface sediment exposure concentrations.

The completed project will satisfy regulatory requirements and ensure that the specified remediation goals are achieved, short- and long-term risks to human health and the environment are addressed, and progress is made toward removal of BUIs in the Detroit River AOC.