Attachment A. Knowlton Creek Stream Restoration - Background on St. Louis River Area of Concern (SLRAOC) Designation

The Knowlton Creek Stream Restoration project is a component of the St. Louis River Area of Concern (SLRAOC) Remedial Action Plan (RAP). The RAP is the comprehensive plan for delisting the SLRAOC prepared with the support and cooperation of the partners and stakeholders listed in the table below:

Minnesota Pollution Control Agency	Harbor Technical Advisory Committee	West Wisconsin Land Trust
Wisconsin Department of Natural Resources	Port Authority	University of Wisconsin-Superior (UWS)
Minnesota Department of Natural Resources	Duluth-Superior Metropolitan Interstate Council	University of Wisconsin-Superior Extension
Fond du Lac Band of Lake Superior Chippewa	City of Duluth, MN	Wisconsin Sea Grant
St. Louis River Alliance	City of Superior, WI	Audubon Minnesota
U.S. Army Corps of Engineers Detroit District (USACE)	Western Lake Superior Sanitary District	Marine Tech
U.S. EPA Mid-Continent Ecology Division (U.S. EPA MED)	Minnesota Land Trust	Barr Engineering
U.S. Fish and Wildlife Service	Minnesota Department of Health	LimnoTech
National Oceanic and Atmospheric Administration	Douglas County Health Department	Short, Elliot, Hendrickson
University of Minnesota Natural Resources Research Institute (NRRI)	U.S. Department of Agriculture	AMI Consultants
Lake Superior National Estuarine Research Reserve	Wisconsin Sea Grant	
University of Minnesota–Duluth (UMD)	Douglas County, WI	

The RAP details the actions necessary to remove each of the beneficial use impairments (BUIs) identified for the SLRAOC. The SLRAOC partners and stakeholders worked together in a concerted effort to complete the RAP (2013) aimed at removing BUIs and delisting the AOC by 2025.

The SLRAOC is located on the western arm of Lake Superior and including the twin port cities of Duluth, Minnesota, and Superior, Wisconsin, was listed as one of 43 Great Lakes AOCs in 1987. Historical actions such as improper municipal and industrial waste disposal and unchecked landuse practices, including dredging and filling of aquatic habitat and damaging logging practices, contributed to the complex set of issues facing the SLRAOC at the time it was listed. The Stage I Remedial Action Plan (RAP; MPCA and WDNR, 1992) determined that nine of 14 possible BUIs existed in the AOC including:

- BUI 1: Fish Consumption Advisories
- BUI 2: Degraded Fish and Wildlife Populations
- BUI 3: Fish Tumors and Other Deformities
- BUI 4: Degradation of Benthos
- BUI 5: Restrictions on Dredging
- BUI 6: Excessive Loading of Sediment and Nutrients
- BUI 7: Beach Closings and Body Contact Restrictions
- BUI 8: Degradation of Aesthetics
- BUI 9: Loss of Fish and Wildlife Habitat

In addition to its long list of BUIs, the SLRAOC is spatially large and geographically complex, spanning the Minnesota and Wisconsin state line and including tribal interests. The SLRAOC boundary includes the lower 39 miles of the St. Louis River, from upstream of Cloquet, Minnesota, to its mouth at the Duluth/Superior Harbor and Lake Superior, and the Nemadji River watershed (Figure 1). However, most of the actions included in the RAP focus on the St. Louis River below Fond du Lac Dam, Crawford Creek, and the Nemadji River watershed, as they represent those portions of the SLRAOC most impacted by historical actions.

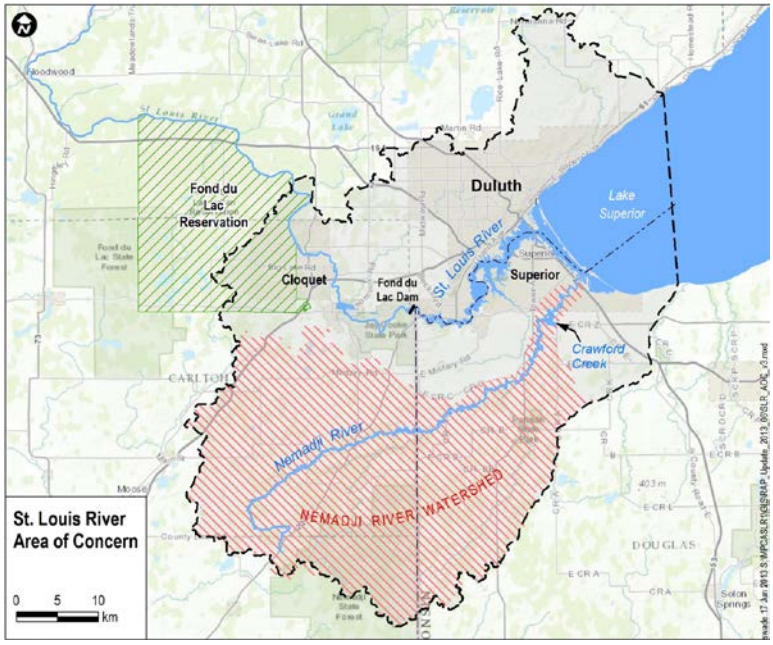

Figure 1: St. Louis River AOC Boundary

Since the Stage I RAP was written in 1992, significant work has been done to restore the AOC with well over $420M invested since 1978 on infrastructure upgrades, remediation, and habitat restoration and protection in the AOC. Improved municipal wastewater treatment and significant progress on control of wet weather overflows have contributed to water quality improvement and returning fish and wildlife populations. Some contaminated sites have been remediated and/or restored, including Hog Island/Newton Creek in Wisconsin and the St. Louis River Interlake/Duluth Tar Superfund site in Minnesota. In addition, numerous habitat protection and restoration projects have been completed across the SLRAOC.

The St. Louis River AOC Stage I RAP (SLRCAC, 1992) was developed as a collaborative effort between the MPCA and the WDNR. At that time, these agencies supported an extensive public participation process that resulted in the development of the Stage 1 RAP and the Stage 2 RAP Progress Report (MPCA and WDNR, 1995). Many efforts in association with the RAP have taken place since this time including the Lower St. Louis River Habitat Plan (2002) which was used extensively to identify the critical habitat restoration projects necessary to remove BUIs.

The primary focus of the majority of “on the ground” management actions represented in the RAP is remediation of contaminated sediments and habitat restoration. Sediment contamination in the SLRAOC contributes directly or indirectly to eight of the nine BUIs (BUI 6: Excess Loading of Sediment and Nutrients is the exception); cleanup of contaminated sediments is an obvious focus of SLRAOC restoration efforts, not only from an ecological standpoint but also from the standpoint of stakeholder concern. On the habitat front, recent estimates confirm that approximately 3,400 acres of aquatic habitat has been lost over time in the St. Louis River (Hollenhorst et al., 2013). A goal for SLRAOC delisting is restoration of 50% of this lost habitat (1,700 acres).

Sites identified for remediation of contaminated sediments in the SLRAOC RAP are shown in Figure 2. Planned habitat restoration projects are shown in Figure 3, and include both aquatic habitat restoration sites and additional projects in important hydrologically connected habitats.

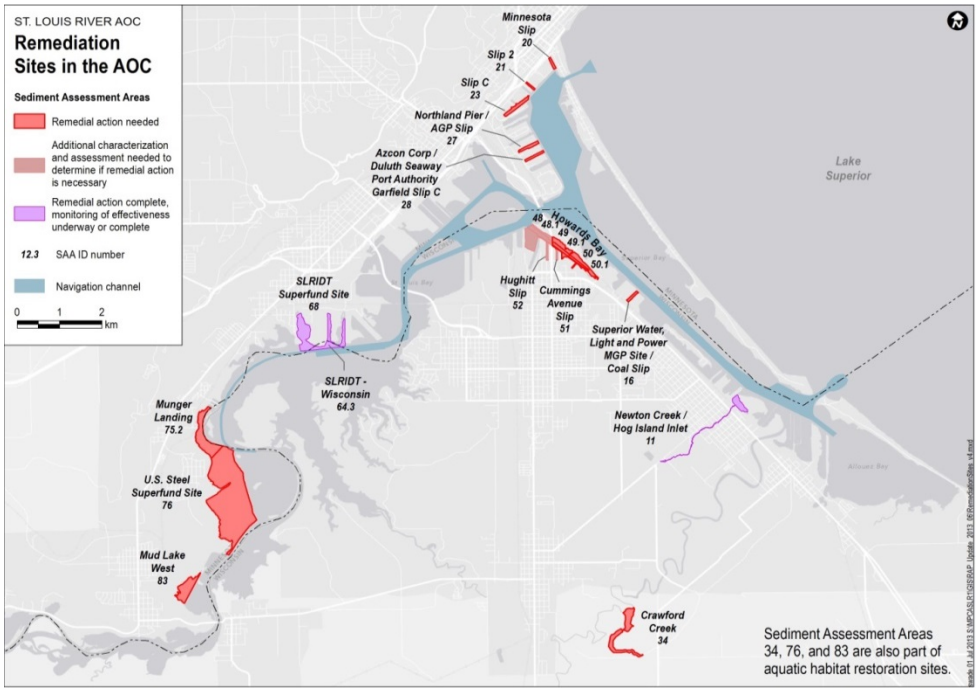

Figure 2: Remediation Sites in the SLRAOC

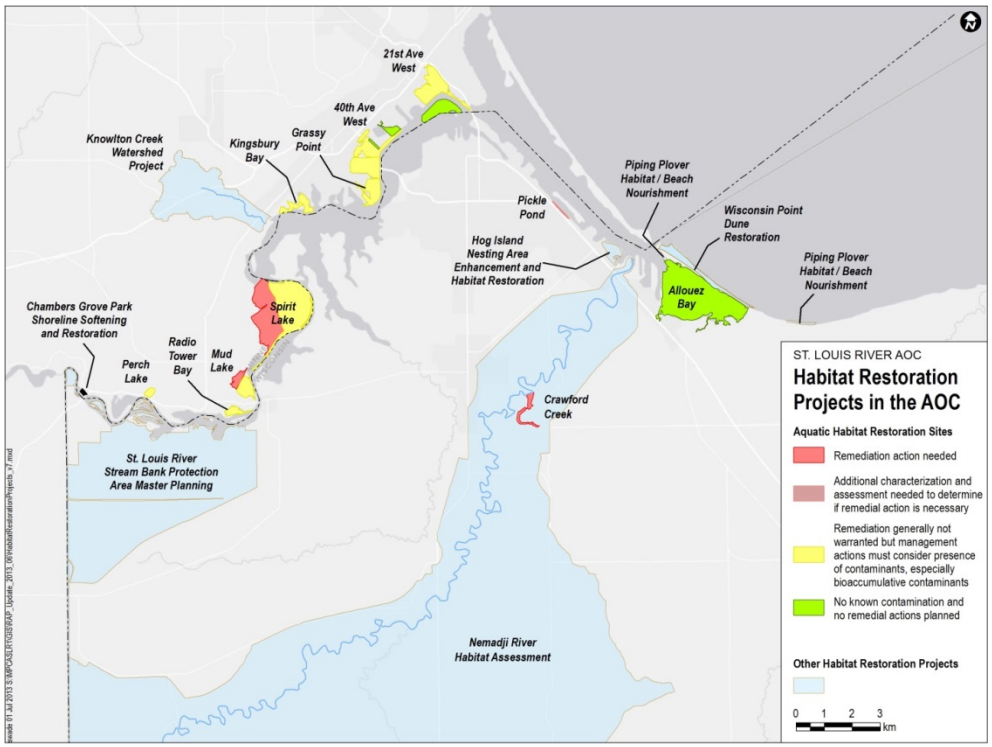

Figure 3: Habitat Restoration Projects Planned in the SLRAOC

The RAP has a total of 60 action items to be completed in an effort to remove BUIs related to the SLRAOC legacy issues. Most of these actions are underway in one form or another and each action has a timeframe for completion in keeping with the goal to delist the SLRAOC by 2025. Of the action items, Knowlton Creek Stream Restoration is one of 20 action items listed under BUI 9: Loss of Fish

and wildlife habitat. This project will reduce runoff and sediment transport within the watershed and restore habitat conditions for a cold water fishery. Although it supports removal of BUI 9, it is also beneficial to the targets related to BUI 6: Excessive Loading of Sediment and Nutrients. All the SLRAOC actions have been identified to remediate environmental impacts related to legacy related pollutants and habitat impacts and provide for a more restored estuary in relation to the health and sustainability of the aquatic habitat.