

Collaborative Multi-Agency Characterization of Two Reservoirs Targeted for GLLA Sediment Remediation in the St. Louis River Area of Concern (AOC) in Duluth, Minnesota

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Background/Objectives. A multi-agency, collaborative effort was completed in the fall of 2016 and summer of 2017 to provide a baseline assessment of pre-remedial conditions. Multiple state and federal agencies (U.S. Army Corps of Engineers (USACE), U.S. EPA ORD, U.S. EPA GLNPO, USGS and Minnesota Pollution Control Agency(MPCA)) collected water, sediment, swallow, fish and biota tissue in two geographically challenging locations that have been targeted for sediment remediation with the Great Lakes Legacy Act (GLLA). Scanlon (approximately 40 acres) and Thomson (approximately 375 acres) Reservoirs are located in the north-western limits of the St. Louis River AOC near Duluth, Minnesota. These reservoir impoundments, surrounded by dense woods, consist of dams that frequently exhibit extreme water level changes within minutes. Sediments within the backwater areas of these impoundments exhibit elevated levels of dioxin/furans that are up to 10x state sediment quality targets.

Approach/Activities. Variety of field sampling efforts and techniques were used to develop a robust baseline that will assist in remedial design decisions. Efforts included fish tissue sampling, active and passive sampling for macrobenthic organisms, swallows, spiders, sediment chemistry for surficial and deep sediment cores, and PEDs. This range of metrics provided multiple lines of evidence and will assist in design and ultimately the effectiveness of the remediation. Assessment consisted of multiple on the ground teams and an extensive collaborative and coordinated field effort to collect information at Scanlon and Thomson Reservoir and a nearby reference reservoir (Boulder).

Results/Lessons Learned. There were several benefits to utilizing the collaborative multi-agency approach for this characterization: it allowed maximum use of man power for successful completion, benefits were seen to multiple project partners, and it allowed for quick adaptation to field and lab requirements. During sampling, passive sampling for Ephemeroptera was unsuccessful and collaborative and adaptive changes were made in the field to accommodate. Ultimately, compositing macrobenthic tissue data was required, however, compiled tissue in combination with other lines of evidence will provide a strong baseline comparison post construction and in support of the development of remedial goals, inform remedial design and long-term monitoring strategies.