

MN GIS/LIS Consortium Annual Conference and Workshops, Rochester, MN, October 1-3, 2014

Mapping the redistribution of ecosystem services associated with changing water levels in the Saint Louis river area of concern

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We mapped the distribution of multiple ecosystem services in the Saint Louis River Area of Concern (SLR AOC) under current and reported extreme lake levels. Services were mapped using measured or modeled natural features (i.e., bathymetry, vegetation, fetch, habitat, contaminated sediments, and land cover) and amenities (i.e., public property, fishing piers, trails, and parks). Logic models were developed for each service defining the characteristics needed for the service to exist. Service maps were generated for current and recorded high and low lake levels. Multiple service maps were stacked to tally cumulative changes in services for each lake level. Map stacks can be queried by decision makers to assess mitigation, remediation, and restoration scenarios. Preliminary results indicate that amenities, such as recreational facilities and constructed shallow water features, should be designed to support ecosystem services across long-term changes in lake level.