

**APPENDIX 8. Summary of Threats Identified for Each Conservation Target in the Lower St. Louis River**

This table shows the threats identified for each conservation target. Identified threats are included, regardless of the level of impact they may have.

<b>Conservation Target</b>	<b>Stress</b>	<b>Source(s) of Stress</b>
<b>Estuarine Aquatic Habitat Targets</b>		
Large riverine reach	Habitat degradation (sediment Competition from undesirable exotic plant	Dam operations Residential development (purple loosestrife planted in gardens) Other unidentified sources
	Altered hydrology Degraded water quality	Dam operations Urban development (nutrients, sediments, pesticides, road Historical and current forest management practices (sediments/hydrological alterations) Other point and non-point sources
Upper estuarine (undredged) river channel	Altered hydrology Increased sedimentation	Dam operations Historical and current forest management practices Urban development
	Habitat loss and degradation Exposure to sediment-associated contaminants  Degraded water quality	Commercial shipping (dredging) Commercial and industrial development Urban development (commercial and municipal wastewater) Urban development (nutrients, sediments, pesticides, road Resuspension of contaminated sediments Historical and current forest management practices (sediments/hydrological alterations) Other point and non-point sources
Lower estuarine (dredged) river channel	Habitat degradation Increased sedimentation	Commercial shipping (dredging) Historical and current forest management practices Urban development
	Exposure to sediment-associated contaminants  Degraded water quality	Commercial and industrial development Urban development (commercial and municipal wastewater) Urban development (nutrients, sediments, pesticides, road Resuspension of contaminated sediments Historical and current forest management practices (sediments/hydrological alterations) Other point and non-point sources

<b>Conservation Target</b>	<b>Stress</b>	<b>Source(s) of Stress</b>
Upper estuary flats	Habitat loss or degradation (loss of vegetation)	Commercial shipping (floating and other vegetation lost in historical dredging, early harbor development) Other potential, unconfirmed sources
	Competition from undesirable exotic plant species	Residential development (purple loosestrife originating from gardens) Other unidentified sources
	Increased sedimentation	Historical and current forest management practices Urban development
	Degraded water quality	Urban development (nutrients, sediments, pesticides, road Resuspension of contaminated sediments Historical and current forest management practices (sediments/hydrological alterations) Other point and non-point sources
	Altered hydrology	Dam operations
	Exposure to sediment-associated contaminants	Commercial and industrial development Urban development (commercial and municipal wastewater)
Sheltered bays	Increased sedimentation	Urban development (erosion associated with stormwater management) Historical and current forest management practices
	Habitat loss	Commercial and industrial development (historical filling to create land) Commercial shipping (historical filling to dispose of dredge materials; potential for more filling)
	Competition from undesirable exotic plant species	Residential development (purple loosestrife originating from gardens) Other unidentified sources
	Degraded water quality	Urban development (nutrients, sediments, pesticides, road Resuspension of contaminated sediments Historical and current forest management practices (sediments/hydrological alterations) Other point and non-point sources
	Exposure to sediment-associated contaminants	Commercial and industrial development Urban development (commercial and municipal wastewater)

<b>Conservation Target</b>	<b>Stress</b>	<b>Source(s) of Stress</b>
Clay-influenced river mouths	Increased sedimentation	Urban development (erosion associated with stormwater management) Historical and current forest management practices
	Competition from undesirable exotic plant species	Residential development (purple loosestrife originating from gardens) Highway plantings, other unidentified sources
	Altered hydrology	Historical and current forest management practices (higher runoff associated with altered forest structure, composition)
	Degraded water quality	Urban development (nutrients, sediments, pesticides, road) Historical and current forest management practices (sediments/hydrological alterations) Other point and non-point sources
	Exposure to sediment-associated contaminants	Commercial and industrial development Urban development (commercial and municipal wastewater)
Industrially-influenced bays	Increased sedimentation	Urban development (erosion associated with stormwater management) Historical and current forest management practices
	Exposure to sediment-associated contaminants	Commercial and industrial development Urban development (commercial and municipal wastewater)
	Degraded water quality	Urban development (nutrients, sediments, pesticides, road) Resuspension of contaminated sediments Historical and current forest management practices (sediments/hydrological alterations) Other point and non-point sources
Lower estuary (industrial) flats	Habitat loss	Commercial shipping (floating and other vegetation lost in historical dredging, early harbor development) Commercial and industrial development (historical filling to create land)
	Habitat degradation	Commercial and industrial development (historical and on-going dumping of waste such as slag, wood fill, wood slabs)
	Increased sedimentation	Urban development (erosion associated with stormwater management) Historical and current forest management practices
	Exposure to sediment-associated contaminants	Commercial and industrial development Urban development (commercial and municipal wastewater)

<b>Conservation Target</b>	<b>Stress</b>	<b>Source(s) of Stress</b>
	Degraded water quality	Urban development (nutrients, sediments, pesticides, road Resuspension of contaminated sediments Historical and current forest management practices (sediments/hydrological alterations) Other point and non-point sources
Industrial slips	Habitat disturbance Exposure to sediment-associated contaminants  Degraded water quality  Increased sedimentation	Commercial shipping Commercial and industrial development Urban development (commercial and municipal wastewater) Urban development (nutrients, sediments, pesticides, road Resuspension of contaminated sediments Historical and current forest management practices (sediments/hydrological alterations) Other point and non-point sources Urban development (erosion associated with stormwater management) Historical and current forest management practices
Clay-influenced bay	Competition from undesirable exotic plant  Increased sedimentation  Exposure to sediment-associated contaminants  Degraded water quality	Urban development (purple loosestrife originating from Highway plantings, other unidentified sources Urban development (erosion associated with stormwater management) Historical and current forest management practices Commercial and industrial development Urban development (commercial and municipal wastewater) Urban development (nutrients, sediments, pesticides, road Resuspension of contaminated sediments Historical and current forest management practices (sediments/hydrological alterations) Other point and non-point sources
Clay-influenced tributaries	Altered hydrology  Degraded water quality	Urban development Historical and current forest management practices Agricultural runoff Urban development (nutrients, sediments, pesticides, road Historical and current forest management practices (sediments/hydrological alterations) Other point and non-point sources

<b>Conservation Target</b>	<b>Stress</b>	<b>Source(s) of Stress</b>
Bedrock-influenced tributaries	Altered hydrology  Degraded water quality	Urban development Historical and current forest management practices Urban development (nutrients, sediments, pesticides, road Historical and current forest management practices (sediments/hydrological alterations) Other point and non-point sources
<b>Estuarine Plant Community Targets</b>		
Great Lakes Coastal Wetland Complex	Habitat loss  Competition from undesirable exotic plant species  Increased sedimentation  Exposure to sediment-associated contaminants  Degraded water quality  Altered hydrology	Industrial and commercial development (historical dredging, filling to create land, etc.) Commercial shipping (potential future filling of habitat) Residential development (purple loosestrife originating from gardens) Highway plantings, other unidentified sources Urban development (erosion associated with stormwater management) Historical and current forest management practices Commercial and industrial development Urban development (commercial and municipal wastewater) Urban development (nutrients, sediments, pesticides, road Resuspension of contaminated sediments Historical and current forest management practices (sediments/hydrological alterations) Other point and non-point sources Dam operations
<b>Baymouth Bar Community Targets</b>		
Beaches	Habitat loss	Residential and commercial development (permanent structures cause beach erosion)
Beachgrass dunes	Habitat degradation Competition from undesirable exotic plant	Recreational activities Residential development
Dune shrublands	Habitat degradation Habitat loss Competition from undesirable exotic plant	Recreational activities; fire suppression? Residential development Residential development
Interdunal wetlands	Habitat loss Competition from undesirable exotic plant	Residential development Residential development
Dune pine forests	Habitat loss	Residential and commercial development (historical and future)

<b>Conservation Target</b>	<b>Stress</b>	<b>Source(s) of Stress</b>
	Altered recruitment/succession Altered fire regime Competition from undesirable exotic plant	Fire suppression; white pine blister rust Fire suppression Residential development
<b>Upland Forest Community Targets</b>		
White pine-red pine forests	Altered species composition and structure  Altered growth stage distributions  Altered recruitment/succession Altered fire regime Habitat loss	Historical logging activities Intense slash fires that destroyed organic soil layer in some Altered water table due to historical logging activities Current incompatible forestry practices Excessive deer browse Fire suppression Urban development
Northern hardwoods forest / Northern conifer-hardwoods forest	Altered species composition and structure  Altered growth stage distributions  Altered recruitment/succession Habitat loss	Historical logging activities Intense slash fires that destroyed organic soil layer in some Altered water table due to historical logging activities Current incompatible forestry practices Excessive deer browse Urban development
Spruce-fir boreal forest	Altered species composition and structure  Altered growth stage distributions  Altered recruitment/succession Altered fire regime Habitat loss	Historical logging activities Intense slash fires that destroyed organic soil layer in some Altered water table due to historical logging activities Current incompatible forestry practices Excessive deer browse Fire suppression Urban development
<b>Other Inland Plant Community Targets</b>		
Eroding clay bluffs	Habitat degradation  Altered hydrology	Historical and current forest management practices Urban development (associated stormwater management) Historical and current forest management practices Urban development
Clay seeps	Habitat degradation  Altered hydrology	Historical and current forest management practices Urban development (associated stormwater management) Historical and current forest management practices Urban development
Conifer swamps	Habitat loss or degradation	Urban development

<b>Conservation Target</b>	<b>Stress</b>	<b>Source(s) of Stress</b>
	Altered fire regime Altered hydrology	Fire suppression Urban development and associated roads Historical and current forest management practices
Hardwood swamps	Competition from undesirable exotic plant  Habitat loss or degradation Altered hydrology  Increased sedimentation	Residential development Highway plantings Urban development Urban development, roads Historical and current forest management practices Urban development Historical and current forest management practices
Shrub swamps	Habitat loss Altered hydrology  Competition from undesirable exotic plant  Altered nutrient regime Increased sedimentation  Altered fire regime/ successional pathways?	Urban, other development Urban development Historical and current forest management practices Residential development Highway plantings Urban development (associated stormwater management) Urban development Historical and current forest management practices Fire suppression
Inland marshes	Habitat loss Altered hydrology Competition from undesirable exotic plant  Increased sedimentation  Altered nutrient regime	Urban, other development Urban development Residential development Highway plantings Urban development Historical and current forest management practices Urban development (associated stormwater management)
Wet meadows	Habitat loss Altered hydrology Competition from undesirable exotic plant  Increased sedimentation  Altered nutrient regime Habitat disturbance	Urban, other development Urban development Residential development Highway plantings Urban development Historical and current forest management practices Urban development (associated stormwater management) Recreational activities (off-road vehicles)

<b>Conservation Target</b>	<b>Stress</b>	<b>Source(s) of Stress</b>
Fens	Habitat loss Altered hydrology Competition from undesirable exotic plant  Increased sedimentation  Altered nutrient regime Habitat disturbance	Urban, other development Urban development Residential development Highway plantings Urban development Historical and current forest management practices Urban development (associated stormwater management) Recreational activities (off-road vehicles)
Cliffs and rock outcrops	Habitat disturbance or degradation	Recreational activities
<b>Species Targets</b>		
Native fish assemblage	Competition from undesirable exotic animal  Exposure to sediment-associated contaminants  Habitat loss  Degraded water quality  Increased sedimentation	Commercial shipping (releases from ballast water) Recreational boating Anglers, bait-shops Other accidental introductions Commercial and industrial development Urban development (commercial and municipal wastewater) Commercial and industrial development (historical and future) Commercial shipping (potential filling of habitat) Increased sedimentation Urban development (nutrients, sediments, pesticides, road Resuspension of contaminated sediments Historical and current forest management practices (sediments/hydrological alterations) Other point and non-point sources Urban development Historical and current forest management practices
Lake sturgeon	Population reduction Competition from undesirable exotic animal  Exposure to sediment-associated contaminants  Habitat loss  Degraded water quality	Historical overfishing Commercial shipping (releases from ballast water) Recreational boating Other accidental introductions Commercial and industrial development Urban development (commercial and municipal wastewater) Commercial and industrial development (dams in estuary and across species' range eliminated spawning habitat) Urban development (nutrients, sediments, pesticides, road Resuspension of contaminated sediments Historical and current forest management practices (sediments/hydrological alterations)

<b>Conservation Target</b>	<b>Stress</b>	<b>Source(s) of Stress</b>
	Increased sedimentation	Other point and non-point sources Urban development Historical and current forest management practices
Native mussel assemblage	Competition from undesirable exotic animal	Commercial shipping (releases from ballast water) Recreational boating
	Habitat loss	Commercial shipping (historical dredging eliminated many areas of firm substrate)
	Exposure to sediment-associated contaminants	Commercial and industrial development Urban development (commercial and municipal wastewater)
	Degraded water quality	Urban development (nutrients, sediments, pesticides, road Resuspension of contaminated sediments Historical and current forest management practices (sediments/hydrological alterations) Other point and non-point sources
	Increased sedimentation	Urban development Historical and current forest management practices
Migratory and breeding bird aggregations	Habitat loss	Commercial, industrial, and residential development (historical and future) Historical logging activities
	Habitat degradation	Current incompatible forestry practices Non-native and invasive species Fire suppression Increased sedimentation
	Exposure to sediment-associated contaminants	Commercial and industrial development Urban development (commercial and municipal wastewater)
	Degraded water quality	Urban development (nutrients, sediments, pesticides, road Resuspension of contaminated sediments Historical and current forest management practices (sediments/hydrological alterations) Other point and non-point sources
	Increased sedimentation	Urban development Historical and current forest management practices

<b>Conservation Target</b>	<b>Stress</b>	<b>Source(s) of Stress</b>
Piping plover	Habitat loss  Direct disturbance of nesting birds Competition Exposure to sediment-associated contaminants  Degraded water quality	Urban development Vegetation succession Recreational activities Ring-billed gulls Commercial and industrial development Urban development (commercial and municipal wastewater) Urban development (nutrients, sediments, pesticides, road Resuspension of contaminated sediments Historical and current forest management practices (sediments/hydrological alterations) Other point and non-point sources
Common tern	Habitat loss  Direct disturbance of nesting birds Competition Exposure to sediment-associated contaminants  Degraded water quality	Urban development Vegetation succession Recreational activities Ring-billed gulls Commercial and industrial development Urban development (commercial and municipal wastewater) Urban development (nutrients, sediments, pesticides, road Resuspension of contaminated sediments Historical and current forest management practices (sediments/hydrological alterations) Other point and non-point sources
Wild rice	Competition from undesirable exotic plant  Habitat loss  Exposure to sediment-associated contaminants  Degraded water quality  Increased sedimentation	Residential development Highway plantings Industrial and commercial development (historical dredging, filling to create land, etc.) Commercial shipping (potential future filling of habitat) Commercial and industrial development Urban development (commercial and municipal wastewater) Urban development (nutrients, sediments, pesticides, road Resuspension of contaminated sediments Historical and current forest management practices (sediments/hydrological alterations) Other point and non-point sources Urban development Historical and current forest management practices