ST. LOUIS RIVER WATERSHED ONE WATERSHED ONE PLAN

MEMORANDUM OF AGREEMENT

This MEMORANDUM OF AGREEMENT (MOA) is made and entered into by and between the following PARTIES:

The Minnesota Counties of St. Louis and Carlton, by and through their respective County Boards of Commissioners, and the following Soil and Water Conservation Districts: South St. Louis Soil and Water Conservation District, North St. Louis Soil and Water Conservation District, and Carlton Soil and Water Conservation District, by and through their respective Soil and Water Conservation District Boards of Supervisors, and the Fond du Lac Band of Lake Superior Chippewa, collectively referred to as the "Parties";

WHEREAS, the Counties of this Agreement are political subdivisions of the State of Minnesota, with authority to carry out environmental programs and land use controls, pursuant to Minnesota Statutes Chapter 375 and as otherwise provided by law; and

WHEREAS, the Soil and Water Conservation Districts (SWCDs) of this Agreement are political subdivisions of the State of Minnesota, with statutory authority to carry out erosion control and other soil and water conservation programs, pursuant to Minnesota Statutes Chapter 103C and as otherwise provided by law; and

WHEREAS, the Fond du Lac Band of Lake Superior Chippewa is a federally-recognized Indian tribe with both inherent authority and delegated federal authority to carry out environmental programs and land use controls, and with statutory authority, pursuant to Minnesota Statutes Section 471.59, to enter into joint powers agreements with other state governmental units; and

WHEREAS, the Parties to this Agreement have a common interest and statutory authority to prepare, adopt, and assure implementation of a comprehensive watershed management plan in the St. Louis River Watershed (Attachment A - map) to conserve soil and water resources through the implementation of practices, programs, and regulatory controls that effectively control or prevent erosion, sedimentation, siltation and related pollution in order to preserve natural resources, ensure continued soil productivity, protect water quality, reduce damages caused by floods, preserve wildlife, protect the tax base, and protect public lands and waters; and

WHEREAS, with matters that relate to coordination of water management authorities pursuant to Minnesota Statutes Chapters 103B, 103C, and 103D with public drainage systems pursuant to Minnesota Chapter 103E, this Agreement does not change the rights or obligations of the public drainage system authorities; and

WHEREAS, the Parties have formed this Agreement for the specific goal of developing a plan pursuant to Minnesota Statutes 103B.801, Comprehensive Watershed Management Planning, also known as *One Watershed, One Plan (1W1P)* in the St. Louis River Watershed.

NOW, THEREFORE, the Parties hereto agree as follows:

1. **Purpose:** The parties to this Agreement recognize the importance of partnerships to plan and implement protection and restoration efforts for the St. Louis River Watershed (See Attachment A-map). The purpose of this Agreement is to collectively develop and adopt, as local government units, a coordinated watershed management plan ("the Plan") for implementation consistent with the Board of Water and Soil Resources (BWSR) Operating Procedures for One Watershed, One Plan.
2. **Term:** This Agreement is effective upon signature of the Parties and will remain in effect until adoption of the Plan by all Parties or the end date of the Minnesota Board of Water and Soil Resources 1W1P Planning Grant Agreement, whichever is later, unless cancelled according to the provisions of this Agreement or earlier terminated by law.
3. **Adding Additional Parties:** A qualifying party desiring to become a member of this Agreement shall indicate its intent by adoption of a board resolution. The additional party agrees to abide by the terms and conditions of the Agreement, including but not limited to the bylaws, policies, and procedures adopted by the Policy Committee.
4. **Withdrawal of Party:** A party desiring to leave the membership of this Agreement shall indicate its intent in writing to the Policy Committee in the form of an official resolution by that party. Notice must be made at least 30 days in advance of leaving the Agreement.
5. **General Provisions:**
    a. **Compliance with Law/Standards:** The Parties agree to abide by all federal, state and local laws, statutes, ordinances, rules and regulations now in effect or hereafter adopted pertaining to this Agreement or to the facilities, programs and staff for which the Agreement is responsible.
    b. **Indemnification:** Each party to this Agreement shall be liable for the acts of its officers, employees or agents and the results thereof to the extent authorized or limited by law and shall not be responsible for the acts of any other party, its officers, employees, or agents. The provisions of the Municipal Tort Clam Act, Minnesota Statutes Chapter 466 and other applicable laws govern liability of the Parties. To the full extent permitted by law, actions by the Parties, their respective officers, employees and agents pursuant to this Agreement are intended to be and shall be construed as a "cooperative activity." For the purpose of liability, as set forth in Minnesota Statutes 471.59, subd. 1a (a), it is the intent that the Parties are considered a single governmental unit and the total liability for the participating governmental units and the committee, if established, shall not exceed the limits on governmental liability for a single governmental unit and that this Agreement does not create any liability or exposure of one party for the acts or omissions of any other party.
    c. **Record Retention and Data Practices:** The Parties agree that records created pursuant to the terms of this Agreement will be retained in a manner that meets their respective entity's records retention schedules consistent with Minnesota Statutes 138.17. The Parties further agree that records prepared or maintained in furtherance of this Agreement shall be subject to the Minnesota Government Data Practices Act. At the time this Agreement expires, all records will be turned over to the South St. Louis Soil and Water Conservation District for continued retention. Each Party may also request and receive, at no cost, copies of all the records.

d. **Timeliness:** The Parties agree to perform obligations under this Agreement in a timely manner and keep each other informed about any delays that may occur.
e. **Extension:** The Parties may extend the termination date of this Agreement upon agreement by all Parties.
f. **Amendment of Memorandum of Agreement:** This MOA may be amended by approval of the Policy Committee with final approval by each of the above listed County Boards of Commissioners and SWCD Boards of Supervisors.

6. **Administration:**
   a. **Establishment of Policy Committee for Approval of the Plan:** The Parties agree to designate one representative and one alternate, who must be an elected or appointed member of the governing board, to a Policy Committee for the development of the watershed-based Plan.
      i. The Policy Committee will meet bi-monthly or as needed to decide on the content of the plan, serve as a liaison to their respective boards, and act on behalf of their Board. Each Party, through its representative, shall have one (1) vote.
      ii. A Party's alternate will serve on the Policy Committee as needed in the absence of the designated representative.
      iii. The Policy Committee will establish bylaws to describe the functions and operations of the committee and any other committees created in furtherance of this Agreement.
   b. **Establishment of Advisory Committee for Development of the Plan:**
      i. Each Party may appoint no more than two technical representatives to an Advisory Committee for development of the Plan.
      ii. The appointed technical representatives of the Advisory Committee, in consultation with each other, may recommend additional stakeholders to serve on the Advisory Committee. These stakeholders need to be approved by the Policy Committee.
      iii. The Advisory Committee will meet monthly or as needed to assist and provide technical support and make recommendations to the Policy Committee on the development and content of the Plan.
      iv. No member of the Advisory Committee may be a current board member of any of the Parties.
   c. **Submittal of the Plan**: The Advisory Committee will recommend the Plan to the Policy Committee. The Policy Committee will be responsible for initiating a formal review process for the watershed-based plan conforming to Minnesota Statutes Chapters 103B and 103D, including public hearings. The Policy Committee will recommend the approved Plan to the Parties of the Agreement. Upon completion of local review and comment, and approval of the Plan for submittal by each party, the Policy Committee will submit the watershed-based plan jointly to the BWSR for review and approval.
   d. **Adoption of Plan**: The Parties agree to adopt the plan within 120 days of receiving notice of state approval, and provide notice of plan adoption pursuant to Minnesota Statutes Chapters 103B and 103D.

7. **Fiscal Agent:** South St. Louis Soil and Water Conservation District will act as the fiscal agent for the purposes of this Agreement and agrees to:
    a. Accept all responsibility associated with the implementation of the Minnesota Board of Water and Soil Resources grant agreement for developing a watershed-based plan, if awarded.
    b. Perform financial transactions as part of the grant agreement and contract implementation.
    c. Annually provide a full and complete audit report.
    d. Provide the Policy Committee with the records necessary to describe the financial condition of the BWSR grant agreement.
    e. Retain fiscal records consistent with its records retention schedule and Minnesota Statutes 138.17.
8. **Grant Administration:** South St. Louis Soil and Water Conservation District will act as the grant administrator for the purposes of this Agreement and agrees to provide the following services:
    a. Accept all day-to-day responsibilities associated with the implementation of the Board of Water and Soil Resources grant agreement for developing a watershed-based plan, including being the primary Board of Water and Soil Resources contact for the *One Watershed, One Plan* Grant Agreement and being responsible for BWSR reporting requirements associated with the grant agreement.
    b. Provide the Policy Committee with the records necessary to describe the planning conditions of the Board of Water and Soil Resources grant agreement.
    c. Enter into consulting or services contracts with third parties as necessary to achieve the goals of this Agreement, as approved by the Policy Committee.
9. **Secretary:** South St. Louis Soil and Water Conservation District will act as the secretary for the purposes of this Agreement and agrees to provide the following services:
    a. Coordinate or delegate the coordination and facilitation of Policy Committee meetings, including establishing date, location, time and any necessary accommodations.
    b. Coordinate or delegate the coordination and facilitation of Advisory Committee meetings including establishing date, location, time and any necessary accommodations.
    c. Development of bid specifications and management of contracts for any consulting firms selected by the Policy Committee.
    d. Assistance with data compilation, meeting facilitation, and plan writing.
10. **Multiple Counterparts:** The Parties may sign multiple counterparts of this Agreement. Each signed counterpart shall be deemed an original, but all of them together represent the same Agreement.
11. **Authorized Representatives:** The following persons will be the primary contacts for all matters concerning this Agreement:

St. Louis County Matthew Johnson Planning Director Government Services Center 320 West 2nd Street, Suite 301 218-725-5008	Carlton County Karola Dalen Resource and Recycling Coordinator Carlton County Zoning/Environmental Services P.O. Box 220, Room 103 Carlton MN 55718 218-384-9178
South St. Louis SWCD Kate Kubiak Conservation Specialist 215 N 1st Avenue East Room 301 Duluth MN 55802 218-723-4946	North St. Louis SWCD Anita Provinzino District Administrator 503 3rd Street North, Suite A Virginia MN 55792 218-288-6144
Carlton SWCD Melanie Bomier Water Quality Specialist 808 3rd Street Carlton MN 55718 218-384-3891	Fond du Lac Band of Lake Superior Chippewa Kari Jacobson Hedin Watershed Specialist, Office of Water Protection 1720 Big Lake Road Cloquet, MN 55720 218-878-7109

The rest of this page left intentionally blank. Signature pages follow.

IN TESTIMONY WHEREOF the parties have duly executed this agreement by their duly authorized officers.

ST. LOUIS COUNTY

APPROVED:

BY: _____

St. Louis County Board Chair Date

Printed Name: _____

BY: _____

St. Louis County Auditor Date

Printed Name: _____

APPROVED AS TO FORM (use if necessary)

BY: _____

County Attorney Date

Printed Name: _____

IN TESTIMONY WHEREOF the parties have duly executed this agreement by their duly authorized officers.

CARLTON COUNTY

APPROVED:

BY: _____

Carlton County Board Chair Date

Printed Name: _____

BY: _____

Carlton County Auditor Date

Printed Name: _____

APPROVED AS TO FORM (use if necessary)

BY: _____

County Attorney Date

IN TESTIMONY WHEREOF the parties have duly executed this agreement by their duly authorized officers.

SOUTH ST. LOUIS SOIL & WATER CONSERVATION DISTRICT

APPROVED:

BY: _____

South St. Louis SWCD Board Chair Date

Printed Name: _____

BY: _____

South St. Louis SWCD Manager Date

Printed Name: _____

IN TESTIMONY WHEREOF the parties have duly executed this agreement by their duly authorized officers.

NORTH ST. LOUIS SOIL AND WATER CONSERVATION DISTRICT

APPROVED:

BY: _____

Margaret Pearson, North St. Louis SWCD Board Chair Date

BY: _____

Anita Provinzino, North St. Louis SWCD Administrator Date

IN TESTIMONY WHEREOF the parties have duly executed this agreement by their duly authorized officers.

CARLTON COUNTY SOIL & WATER CONSERVATION DISTRICT

APPROVED:

BY: _____

Carlton County SWCD Board Chair Date

Printed Name: _____

BY: _____

Carlton County SWCD Manager Date

Printed Name: _____

IN TESTIMONY WHEREOF the parties have duly executed this agreement by their duly authorized officers.

FOND DU LAC BAND OF LAKE SUPERIOR CHIPPEWA

APPROVED:

BY: _____

Kevin R Dupuis, Sr. Chairman Date

Printed Name: _____

BY: _____

Ferdinand Martineau, Jr. Secretary/Treasurer Date

Printed Name: _____

ATTACHEMENT A

ST. LOUIS RIVER ONE WATERSHED, ONE PLAN

PLANNING AREA

St. Louis River 1W1P Document Summary

8/1/2022

Plan/Report	Reference
AIS Risk Assessment Tool for St. Louis County	NRRI (Natural Resources Research Institute). 2020. AIS Risk Assessment Tool for St. Louis County. https://gis.nrri.umn.edu/ais/
Amity Creek Stressor Identification	Jennings, G. and M. Geenen. 2017. Amity Creek Stressor Identification. Prepared for: South St. Louis Soil and Water Conservation District.
Amity Creek Synoptic Surveys	Lakesuperiorstreams.org. 2019. Amity Creek Synoptic Surveys. http://www.lakesuperiorstreams.org/weber/assessment_projects.html#synoptic.
Aquatic Invasive Species Prevention Plan, St. Louis County.	Minnesota Sea Grant. 2015. Aquatic Invasive Species Prevention Plan, St. Louis County. Prepared for: St. Louis County Board of Commissioners. https://www.stlouiscountymn.gov/Portals/0/Library/Dept/Planning%20%26%20Development/Community-Development/Aquatic-Invasive-Species/SLC-AIS-Prevention-Plan-Final.pdf
Assessing Impacts of Climate Change on Vulnerability of Brook Trout in Lake Superior's Tributary Streams of Minnesota.	Johnson, L., W. Herb, and M. Cai. 2013. Assessing Impacts of Climate Change on Vulnerability of Brook Trout in Lake Superior's Tributary Streams of Minnesota. University of Minnesota Duluth. Prepared for: MN Department of Natural Resources. https://conservancy.umn.edu/handle/11299/187328
Bacterial Source Tracking at Impaired Beaches in the St. Louis River Area of Concerns.	Prihoda, K., H. Saillard, and M. Steiger. 2017. Bacterial Source Tracking at Impaired Beaches in the St. Louis River Area of Concerns. Wisconsin Department of Natural Resources. https://minds.wisconsin.edu/handle/1793/79226
Barr Evaluation of Potential Stream Mitigation Segments, Minntac Mine Extension	Zika, J., Moe, T. 2012. Barr Engineering Technical Memorandum: Evaluation of Potential Stream Mitigation Segments, Minntac Mine Extension.
Carlton County Comprehensive Local Water Management Plan 2010-2020 (Amended 2014)	Carlton County Zoning & Environmental Services. 2010. Carlton County Comprehensive Local Water Management Plan 2010-2020 (Amended 2014). https://img1.wsimg.com/blobby/go/70582b3c-4357-4557-949b-a936c14d0dfc/downloads/1c99v5ehu_164913.pdf
Carlton County Culvert Inventory	Carlton County Highway Department. n.d. Carlton County Culvert Inventory. https://gis.co.carlton.mn.us/arcgis/rest/services/HighwayDepartment/CulvertInventory/FeatureServer/0
Carlton County Watershed Dashboard	Carlton County Soil and Water Conservation District. 2020. Watershed Dashboard. https://carltonswcd.org/watershed-dashboard:
CDC Social Vulnerability Index (SVI)	CDC (Center for Disease Control and Prevention) and ATSDR (Agency for Toxic Substances and Disease Registry). 2020. CDC Social Vulnerability Index.
City of Carlton Stormwater Planning	Carlton County Soil and Water Conservation District. 2019. City of Carlton Stormwater Planning. Prepared for: Minnesota Lake Superior Coastal Program.
City of Cloquet, Minnesota Comprehensive Plan	City of Cloquet. 2007. City of Cloquet, Minnesota Comprehensive Plan. Cloquet, MN.

City of Hibbing Comprehensive Plan: 2018	Lamplighter Strategies, LLC. 2018. Comprehensive Plan. Prepared for the City of Hibbing, MN.
Climate Change Vulnerability Assessment and Adaptation Plan	Stults. M., Petersen, S., Bell, J., Baule, W., Nasser, E., Gibbons, E., Fougerat, M., 2016. Climate Change Vulnerability Assessment and Adaptation Plan: 1854 Ceded Territory Including the Bois Forte, Fond du Lac, and Grand Portage Reservations. https://www.1854treatyauthority.org/images/ClimateAdaptationPlan_Final-July_2016-optimized(1).pdf
Cloquet River Watershed Assessment of Restoration Opportunities	SSL SWCD (South St. Louis Soil and Water Conservation District). 2020. Cloquet River Watershed Assessment of Restoration Opportunities. Prepared for: Minnesota Pollution Control Agency.
Cloquet River Watershed Monitoring and Assessment Report	MPCA (Minnesota Pollution Control Agency). 2018. Cloquet River Watershed Monitoring and Assessment Report. https://www.pca.state.mn.us/sites/default/files/wq-ws3-04010202b.pdf
Cloquet River Watershed Restoration and Protection Strategy (WRAPS)	Tetra Tech. 2020a. Cloquet River Watershed Restoration and Protection Strategy. Prepared for: Minnesota Pollution Control Agency. https://www.pca.state.mn.us/sites/default/files/wq-ws4-72a.pdf
Cloquet River Watershed Stressor Identification Report	MPCA (Minnesota Pollution Control Agency. 2019. Cloquet River Watershed Stressor Identification Report. https://www.pca.state.mn.us/sites/default/files/wq-ws5-04010202a.pdf
Coastal Atlas for the North Shore of Lake Superior: LiDAR-based Bluff Assessment for Land-use Planning	NRRI (Natural Resources Research Institute) Coastal GIS. 2015. Coastal Atlas for the North Shore of Lake Superior: LiDAR-based Bluff Assessment for Land-use Planning. http://nrri.d.umn.edu/coastalgis/newweb/html/bluffs.htm.
Comparison of results from a hydrologic transport model (HSPF) with distributions of sulfate and mercury in a mine-impacted watershed in northeastern Minnesota	Berndt, M., Rutelonis, W., Regan, C. 2016. Journal of Environmental Management 181:74-79. https://www.sciencedirect.com/science/article/pii/S030147971630322X
Connectivity Analysis on St. Louis River Watershed Impaired Streams	SSL SWCD (South St. Louis Soil and Water Conservation District). 2016. Connectivity Analysis on St. Louis River Watershed Impaired Streams
Duluth Flood of June 2012: Stream Visual Assessments	Gran, K. and M. Wick. 2016. Duluth Flood of June 2012: Stream Visual Assessments. University of Minnesota, Duluth, Department of Geological Sciences. http://www.lakesuperiorstreams.org/stormwater/flood/ppts/Impacts%20of%20The%20Flood.pdf
Duluth Metropolitan Area Streams Snowmelt Runoff Study	MPCA (Minnesota Pollution Control Agency). 2000. Duluth Metropolitan Area Streams Snowmelt Runoff Study. https://www.pca.state.mn.us/sites/default/files/duluth-snowmeltstudy.pdf
Duluth Streams Bacterial Source Identification Study	Burns & McDonnell. 2020. Duluth Streams Bacterial Source Identification Study Final Report. Prepared for City of Duluth, Public Works. https://duluthmn.gov/media/WebSubscriptions/196/20200820-196-12063.pdf
Duluth Urban Area Growth Impact Study	Duluth-Superior Metropolitan Interstate Council. 2004. Duluth Urbanized Area Growth Impact Study. https://dsmic.org/wp-content/uploads/2017/01/DuluthUrbanAreaGrowthImpactStudy-2004.pdf

Duluth Urban Area Streams Total Maximum Daily Load	Tetra Tech. 2020b. Duluth Urban Area Streams TMDL Report. Prepared for the Minnesota Pollution Control Agency. https://www.pca.state.mn.us/sites/default/files/wq-iw10-11e.pdf
Duluth Urban Area Watershed Restoration and Protection Strategy (WRAPS)	Tetra Tech. 2018b. Duluth Urban Area Watershed Restoration and Protection. Prepared for the Minnesota Pollution Control Agency. https://www.pca.state.mn.us/sites/default/files/wq-ws4-42a.pdf
Duluth Urban WRAPS HSPF Model Report - Revised	Tetra Tech. 2019. Revised Duluth Urban WRAPS HSPF Model. Prepared for the Minnesota Pollution Control Agency, St. Paul, MN.
Economic Assessment of Green Infrastructure Strategies for Climate Change Adaptation: Pilot Studies in the Great Lakes Region	Eastern Research Group. 2014. Economic Assessment of Green Infrastructure Strategies for Climate Change Adaptation: Pilot Studies in the Great Lakes Region. Prepared for U.S. Department of Interior, NOAA (National Oceanic and Atmospheric Administration) Coastal Services Center. https://coast.noaa.gov/data/digitalcoast/pdf/climate-change-adaptation-pilot.pdf
Ecosystem Analysis of the Sand Lake/Seven Beavers Project Area in the Upper St. Louis River Watershed, Minnesota.	Fedora, M. 2015. Ecosystem Analysis of the Sand Lake/Seven Beavers Project Area in the Upper St. Louis River Watershed, Minnesota. Prepared for the USDA (United States Department of Agriculture) U.S. Forest Service and the Nature Conservancy.
Expanding the Narrative of Tribal Health: The Effects of Wild Rice Water Quality Rule Changes on Tribal Health	Fond du Lac Band of Lake Superior Chippewa Resource Management Division. n.d. Expanding the Narrative of Tribal Health: The Effects of Wild Rice Water Quality Rule Changes on Tribal Health. http://www.fdlrez.com/rm/downloads/WQSHIA.pdf
Fisheries Management Plan for the Minnesota Waters of Lake Superior	MN DNR (Minnesota Department of Natural Resources). 2017. Fisheries Management Plan for the Minnesota Waters of Lake Superior, Third Edition. https://files.dnr.state.mn.us/publications/fisheries/special_reports/181.pdf
FishVis, A regional decision support tool for identifying vulnerabilities of riverine habitat and fishes to climate change in the Great Lakes Region	Stewart, J.S., S.A. Covert, et al. 2016. FishVis, A regional decision support tool for identifying vulnerabilities of riverine habitat and fishes to climate change in the Great Lakes Region. Prepared for: the USDA (United States Department of Interior) U.S. Geological Survey. https://pubs.usgs.gov/sir/2016/5124/sir20165124.pdf
Fond du Lac Band of Lake Superior Chippewa Management Plan for Aquatic and Terrestrial Invasive Species	Fond du Lac Band of Lake Superior Chippewa. 2019b. Management Plan for Aquatic and Terrestrial Invasive Species. https://www.fdlrez.com/RM/downloads/InvSpeciesManagementPlanDRAFT.pdf
Fond du Lac Integrated Resource Management Plan 2018	Fond du Lac Band of Lake Superior Chippewa, Resource Management Division. 2018. Integrated Resource Management Plan.
Forest Riparian Buffer Planning	Carlton County Soil and Water Conservation District. 2018. Forest Riparian Buffer Planning. Prepared for: Minnesota Lake Superior Coastal Program.
Geomorphic Characteristics and Classification of Duluth-Area Streams, Minnesota	Fitzpatrick, F., Peppler, M., Dephilip, M., Lee, K. 2006. Geomorphic Characteristics and Classification of Duluth-Area Streams, Minnesota. In cooperation with the City of Duluth, Minnesota. Prepared for: the USDA (United States Department of Interior) U.S. Geological Survey. https://pubs.usgs.gov/sir/2006/5029/pdf/SIR_2006-5029.pdf

Geomorphic Responses of Duluth-Area Streams to the June 2012 Flood, Minnesota	Fitzpatrick, F., Ellison, C., Czuba, C., Young, B., McCool, M., Groten, J. 2016. Geomorphic Responses of Duluth-Area Streams to the June 2012 Flood, Minnesota. Prepared for: the USDA (United States Department of Interior) U.S. Geological Survey. https://pubs.usgs.gov/sir/2016/5104/sir20165104.pdf
Great Lakes Restoration Initiative Action Plan III	Great Lakes Restoration Initiative. 2019. Great Lakes Restoration Initiative Action Plan III. Fiscal Year 2020-Fiscal Year 2024. https://www.epa.gov/sites/default/files/2019-10/documents/glri-action-plan-3-201910-30pp.pdf
Handbook for Reclaiming Sand and Gravel Pits in Minnesota	MN DNR (Minnesota Department of Natural Resources). 1992. Updated 2003. A Handbook for Reclaiming Sand and Gravel Pits in Minnesota. https://files.dnr.state.mn.us/lands_minerals/handbook_reclaimingsandgravelpits.pdf
High-resolution assessment and visualization of environmental stressors in the Lake Superior basin	Host, G., Brown, T., et al. 2011. High-resolution assessment and visualization of environmental stressors in the Lake Superior basin. Aquatic Ecosystem Health and Management Society 14:376-385. https://www.tandfonline.com/doi/abs/10.1080/14634988.2011.625340?journalCode=uaem20
Hydraulic Impacts of Quarries and Gravel Pits	Green, J.A., Pavlish, J.A., Merritt, R.G., and Leete, J.L. 2005. Hydraulic Impacts of Quarries and Gravel Pits. https://www.researchgate.net/profile/Jeffrey-Green-7/publication/349379109_Hydraulic_Impacts_of_Quarries_and_Gravel_Pits/links/602d590d4585158939b05b73/Hydraulic-Impacts-of-Quarries-and-Gravel-Pits.pdf
Identifying Erosional Hotspots in Duluth-Area Streams after the 2012 Flood Using High-Resolution Aerial LiDAR Data	Manopkawee, P. 2015. Identifying Erosional Hotspots in Duluth-Area Streams after the 2012 Flood Using High-Resolution Aerial LiDAR Data. Master's Thesis. University of Minnesota, Duluth. https://conservancy.umn.edu/handle/11299/174810
Identifying Erosional Hotspots in Streams along the North Shore of Lake Superior, Minnesota using High-Resolution Elevation and Soils Data.	Wick, M. 2013. Identifying Erosional Hotspots in Streams along the North Shore of Lake Superior, Minnesota using High-Resolution Elevation and Soils Data. Master's Thesis. University of Minnesota, Duluth. https://conservancy.umn.edu/handle/11299/162413
Implementation Plan for the St. Louis River Estuary Habitat Focus Area	NOAA (National Oceanic and Atmospheric Administration). 2016. Implementation Plan for the St. Louis River Estuary Habitat Focus Area. https://www.habitatblueprint.noaa.gov/wp-content/uploads/2016/04/FINAL-Implementation-Plan-for-the-St-Louis-River-Estuary-HFA_ImpPlan.pdf
Implementing Great Lakes Coastal Wetland Monitoring	Uzarski, D., Brady, V., Cooper, M. 2016. Implementing Great Lakes Costal Wetland Monitoring. Prepared for: U.S. Department of Interior, EPA (United States Environmental Protection Agency), GLNPO. https://greatlakeswetlands.org/docs/Reports/GLIC-Semi_Annual-Mar-2021-Final.pdf
Itasca County Local Water Management Plan	Itasca County Soil and Water Conservation District and Itasca County Water Plan Implementation Committee. 2019. Itasca County Local Water Management Plan. https://www.itascaswcd.org/images/Water_Resources/Final_Jan29_2019_effective_h2o_plan_amendment.pdf
Lake County Local Water Plan Management Update	Seidel, W., Thiemann, J. 2012. Lake County Local Water Management Plan Update. Amendment to Lake County Local Water Management Plan (2005).

Lake Superior – South Watershed Monitoring and Assessment Report	MPCA (Minnesota Pollution Control Agency). 2014b. Lake Superior – South Watershed Monitoring and Assessment Report. https://www.pca.state.mn.us/sites/default/files/wq-ws3-04010102b.pdf
Lake Superior Basin Plan: Examining the Relative Health of the Watersheds	MPCA (Minnesota Pollution Control Agency). 2004. Lake Superior Basin Plan: Examining the Relative Health of the Watersheds. https://www.pca.state.mn.us/sites/default/files/wq-b2-01.pdf
Lake Superior Climate Change Impacts and Adaptation	Huff, A. and Thomas, A. 2014. Lake Superior Climate Change Impacts and Adaptation. Prepared for: the Lake Superior Lakewide Action and Management Plan –Superior Work Group. http://www.epa.gov/glnpo/lakesuperior/index.html.
Lake Superior Lakewide Action and Management Plan: 2008	Lake Superior Partnership. 2008. Lake Superior Lakewide Action and Management Plan: 2008. https://www.epa.gov/sites/default/files/2015-11/documents/lake-superior-lamp-2008-382pp.pdf
Lake Superior Lakewide Action and Management Plan: 2016	Lake Superior Partnership. 2016. Lake Superior Lakewide Action and Management Plan 2015-2019. https://www.epa.gov/sites/default/files/2016-10/documents/lake_superior_lamp_2015-2019.pdf
Lake Superior Manoomin Cultural and Ecosystem Characterization Study	Great Lakes Wild Rice Initiative. 2020. Lake Superior Manoomin Cultural and Ecosystem Characterization Study, Final Report. Prepared for: U.S. Department of Interior, NOAA (National Oceanic and Atmospheric Administration) Office for Coastal Management.
Lake Superior South Watershed Total Maximum Daily Load Report	Tetra Tech. 2018c. Lake Superior South Watershed Total Maximum Daily Load Report. Prepared for: the Minnesota Pollution Control Agency. https://www.pca.state.mn.us/sites/default/files/wq-iw10-10e.pdf
Lake Superior-South Watershed Stressor Identification Report	MPCA (Minnesota Pollution Control Agency). 2017a. Lake Superior – South Watershed Stressor Identification Report. https://www.pca.state.mn.us/sites/default/files/wq-ws5-04010102a.pdf
Lower St. Louis River Habitat Plan	St. Louis River Citizens Action Committee. 2002. Lower St. Louis River Habitat Plan. https://www.lakesuperiorstreams.org/archives/StLouisRhabitatplan.pdf
Miller Creek Water Temperature Total Maximum Daily Load	MPCA (Minnesota Pollution Control Agency). 2017b. Miller Creek Water Temperature Total Maximum Daily Load. https://www.pca.state.mn.us/sites/default/files/wq-iw10-07e.pdf
Minnesota Statewide Altered Watercourse Project	MPCA (Minnesota Pollution Control Agency). 2014a. Altered Watercourses Project. http://www.mngeo.state.mn.us/ProjectServices/awat/
Minnesota Statewide Conservation and Preservation Plan	Swackhamer, D., Colman, J., Shardlow, J. 2008. Minnesota Statewide Conservation and Preservation Plan. https://www.lccmr.mn.gov/documents/scpp/final_plan/scpp_final_report.pdf
Minnesota Statewide Mercury Total Maximum Daily Load	MPCA (Minnesota Pollution Control Agency). 2007. Minnesota Statewide Mercury Total Maximum Daily Load. https://www.pca.state.mn.us/sites/default/files/wq-iw4-01b.pdf
Minnesota Well Index (MWI)	MDH (Minnesota Department of Health). n.d. Minnesota Well Index. https://www.health.state.mn.us/communities/environment/water/mwi/index.html

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Summary of Responses from the Kickoff Survey

St. Louis River One Watershed, One Plan

Prepared by

FRESHWATER

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INTRODUCTION

Lake Superior, the Estuary, the slow-moving St. Louis headwaters and the whitewater rapids, forests, wetlands, lakes, and rivers—these spaces define so much of what people value about living and working in this region. Right now, several communities in the area that drain to Lake Superior through the St. Louis River and a few urban streams in Duluth are working together to identify challenges and opportunities to protect these resources—now and into the future. It is incredibly important to local staff and public officials working on this plan that it is informed, from the beginning, by the insights of the people closest to the landscape who depend on these natural resources.

As such, public engagement was one of the first steps taken to begin the process for developing the St. Louis River One Watershed, One Plan (1W1P). Given that this effort began during the coronavirus pandemic, engagement was entirely virtual, using a widely distributed survey (a copy of which can be found as an appendix to this report). In addition to demographic information, the survey asked questions meant to assess public opinion about the following landscape and water-related features:

- Lakes
- Forests
- Streams and Rivers
- Wetlands
- Urban Stormwater Management
- Drinking Water and Groundwater
- Wastewater Treatment (septics, municipal, etc.)
- Wildlife
- Swimming Beaches
- Wild Rice
- Fish and Fishing
- Farming
- Lake Superior
- St. Louis River Estuary
- Cultural and/or Family Ties to the Land
- Industry (forest products, mining, etc.)

In addition, the survey also asked the following open-ended questions:

- In a sentence or two, what do you think could be done to protect or improve water quality?
- Considering the current rate of land use change in the watershed, what do you think the St. Louis River Watershed will look like in 50 years?
- What would you like the watershed to look like in 50 years?
- What barriers would keep you and/or others from achieving your 50-year vision?

This report provides a high-level summary of the outcomes of the survey. Comments included in the analysis for this report were written by participants themselves, were maintained verbatim throughout the analysis, and will be referenced over the course of the planning process at key times. Several stakeholder comments are included in blue text boxes throughout the report as well. While most of the questions were open ended, the categorization of those comments was done using categories which initially emerged from the review of agency comment letters and existing plans and documents to help with the integration of survey results with those other plan inputs. This report is largely organized using those categories, though how those categories are incorporated in the final plan will evolve as the process progresses.

Contents:

OVERVIEW OF SURVEY AND PARTICIPANTS

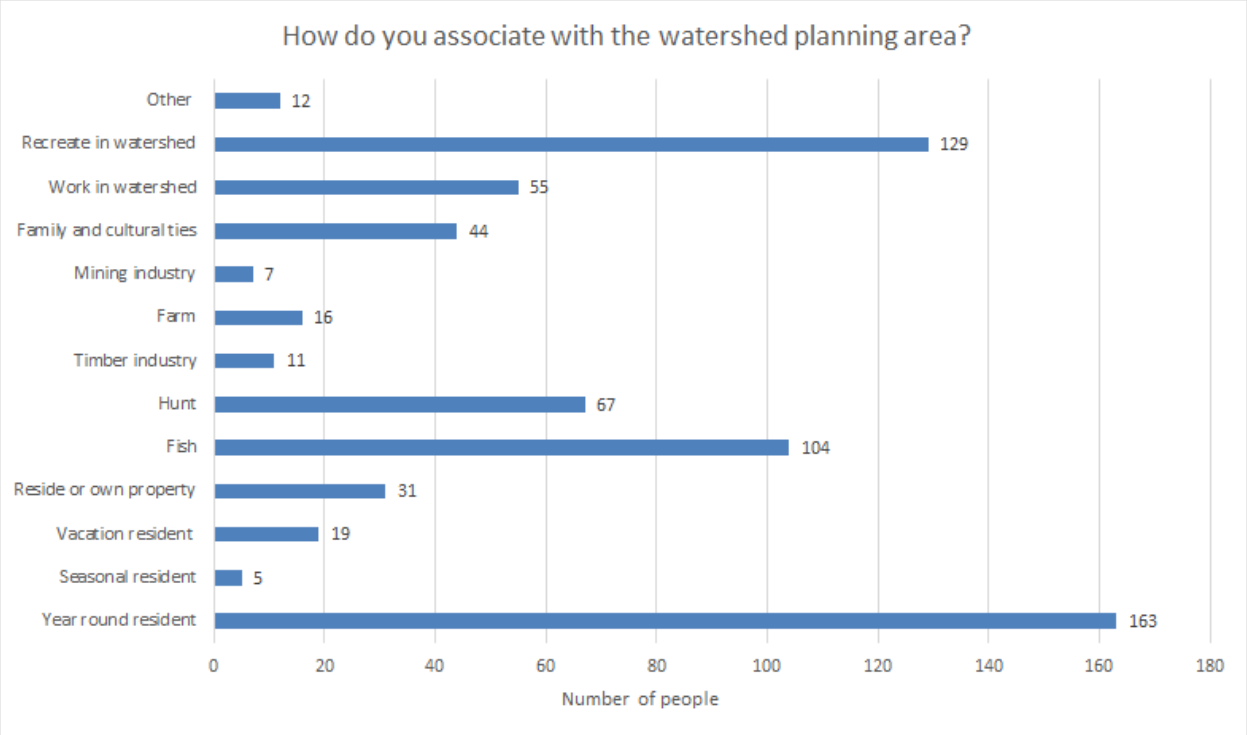
The input summarized in this report was collected through an online survey designed by the Steering Committee that was open from November 12 – December 10, 2020. Outreach to notify people of the opportunity to provide input was led by the Steering and Advisory Committees. The survey link was directly emailed to a distribution list of local organizations and individuals who would be likely to fill out the survey if asked, have an interest in the watershed that may be impacted by the 1W1P effort, or who may be impacted by current environmental conditions. People contacted were then asked to share the link with others in their networks. The survey was also promoted through social media, press releases, and a link on the project website.

By the time the survey closed, 223 people had responded online. One more person submitted a paper version of the survey as well, which was incorporated into the analysis. This large number of responses is a testament to the amount of personal outreach that was done by Steering and Advisory Committee members, but also to the passion and commitment of people in the watershed to the region's waters and environmental features. This is further emphasized when one considers the length of the survey. Several respondents noted the length and amount of time spent filling the survey out in their final responses. (A printable version of the survey is included as an appendix to this report.)

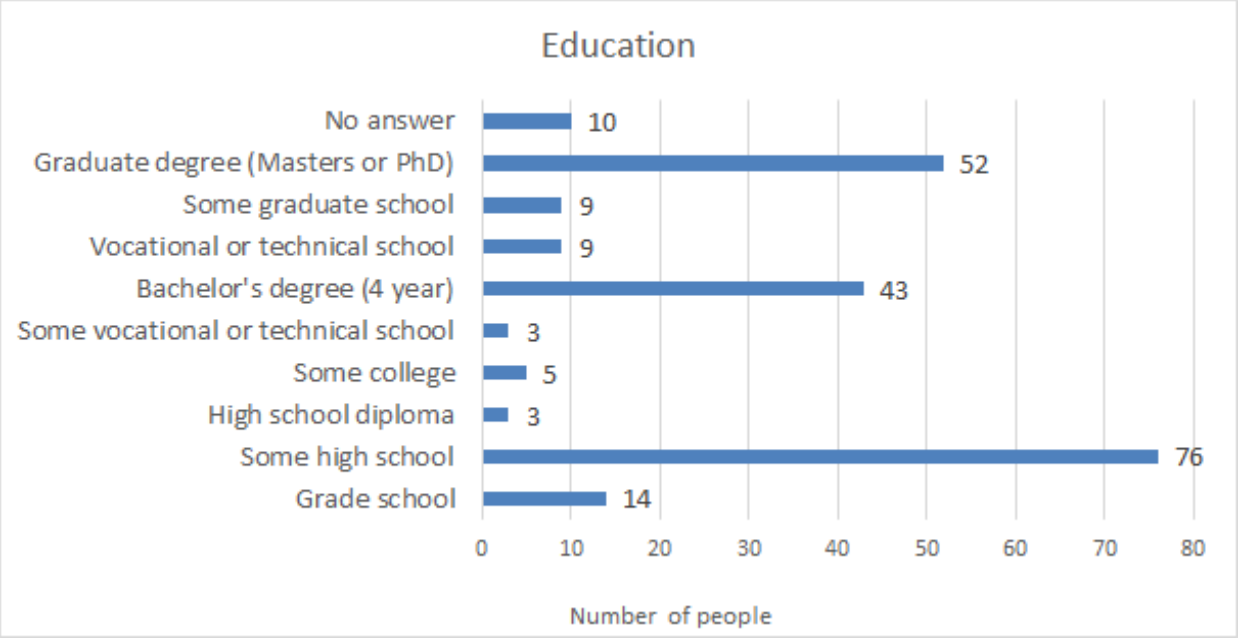
This section provides an overview of *who* responded to the survey. What their responses contained is summarized in the remainder of this report.

The majority of survey respondents (123 respondents) identified as associating most strongly with the St. Louis River watershed, with the second greatest number of respondents associating with the Cloquet River watershed (56 respondents). The Duluth Urban Area and Fond du Lac Reservation were also identified by respondents (37 and 8 respectively).

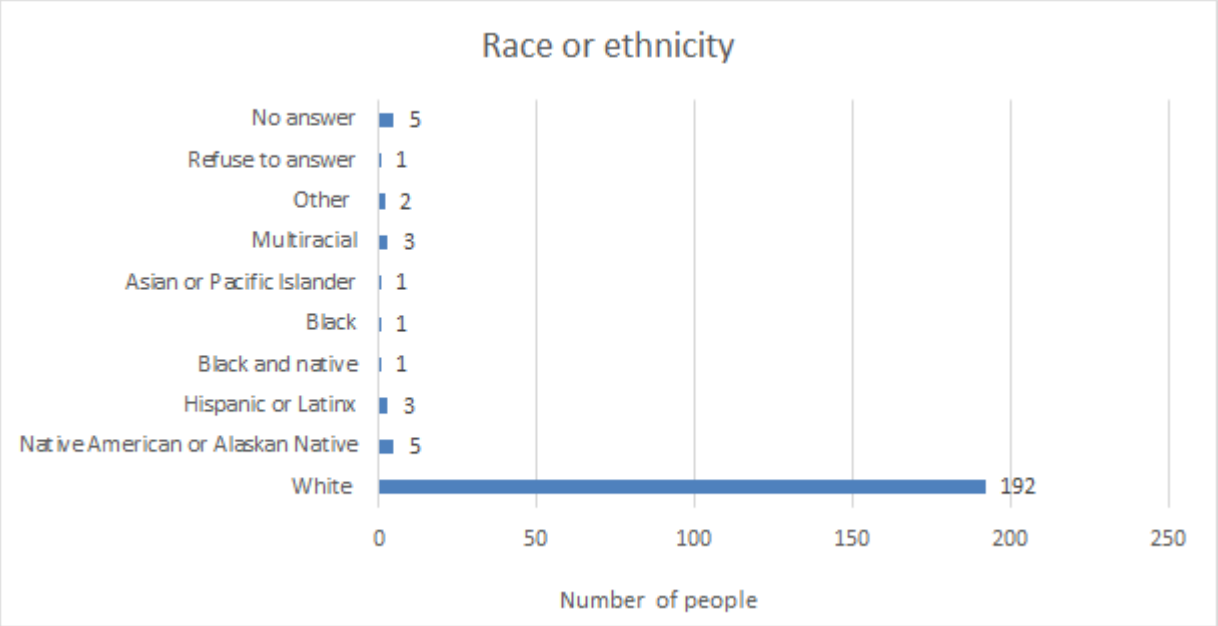
How people associated with the region—the kinds of activities or experiences that connect them to the area—was wide ranging. It is important to note that respondents could choose as many or as few options as they would like. As provided in the chart below, the majority of respondents identified as being year-round residents and recreating in the watershed. Of the total respondents, 55 identified as working in the watershed, and of those only 7 worked in mining, 16 in farming, and 11 in the timber industry.

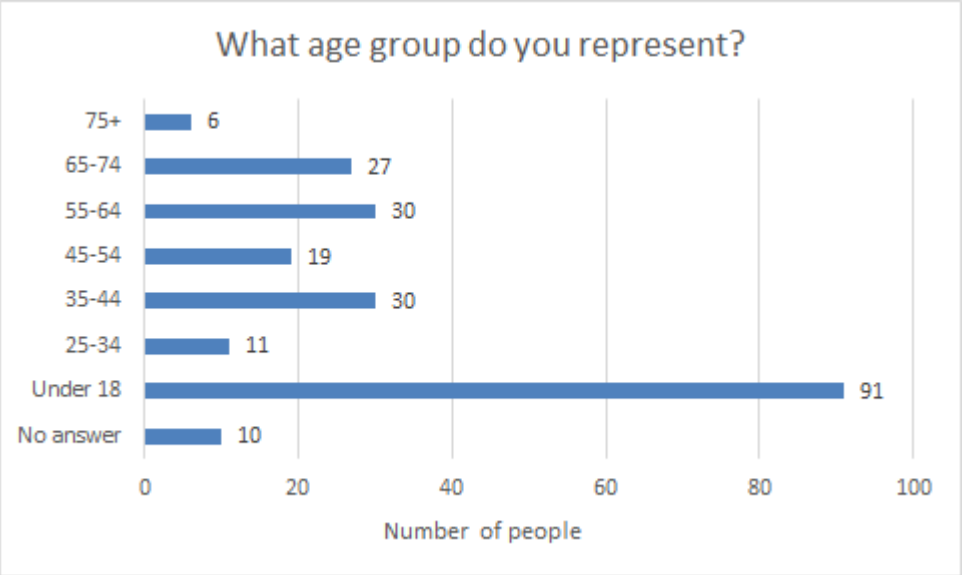


Aside from a large number of high school students who took the survey, the majority of remaining respondents were also college educated, with 95 participants having completed at least a four-year bachelor's degree.



Finally, the survey asked two additional demographics questions: one regarding race and ethnicity, and the other age. As summarized in the two charts below, the majority of respondents (89.72%) identified as white, and aside from the high number of people under 18 who responded, the other age groups were rather evenly distributed.





SURFACE WATER QUALITY

Without contest, the most frequently cited value by survey takers was the watershed's abundance of "clean water" resources. People recognize that the planning area would not be the region that it is without iconic freshwater bodies like Lake Superior and the St. Louis Estuary being sources of continual vitality and inspiration, as well as drinking water sources for thousands of residents. With the acknowledgement of the value of these water bodies comes a profound desire to keep these and other lakes and rivers clean and healthy, now and far into the future.

> "Clean up the rivers and prevent more pollution from entering our rivers and streams. It's easier to keep something pristine than try to clean it up later. This is the last area of the state, the arrowhead area where we still have pristine water."

Protect surface water bodies from pollutant inputs from a variety of sources.

Concerns:

While many survey respondents expressed that what they value most about the St. Louis planning area is its clean water, many are deeply concerned about the continued degradation of surface water quality from a variety of sources. Increasing pollutant loads being dumped into surface water bodies was a top concern expressed in survey comments. Contaminants of concern which were identified by commenters are found in the table to the right. The contaminants which were cited most often as hurting the health of lakes, streams and rivers were mercury, sulfide/sulfate and chloride.

Pollutants Mentioned from Stakeholder Input:

- Mercury
- Sulfide/sulfate
- Chloride (road salt)
- Heavy metals
- Fertilizers
- Pesticides
- Pharmaceuticals
- Litter
- PFAS (Polyfluoroalkyl substances)
- *E. coli* bacteria
- Nitrates
- Fecal contamination
- Oil/gasoline
- Sediment inputs

Overall, people believe that surface water quality in the planning area is most threatened due to various contaminants being carried by runoff[1]. There are a few key sources of runoff pollution that people are most concerned about. One of the main sources identified is runoff associated with mining operations, with more specific concerns about the impacts of copper-nickel mining in the St. Louis county area resulting in mercury and sulfide pollution, and taconite mining which may contribute heavy metal contaminants to freshwater. Other comments referenced concern for runoff coming from agricultural lands and residential lawns which may deposit fertilizers and pesticides into water bodies. The other main source of runoff contamination referenced as a concern is runoff originating in urban areas, from roads and construction sites.

In addition to the negative effects of pollutants carried by runoff, people call attention to surface water contamination originating from aging septic systems, failing wastewater treatment facilities, and inadequate storm water management. Many people believe there are a lot of non-compliant or leaky septic systems in the planning area, which may negatively impact both surface water and

[1] **Runoff** is water on land which doesn't soak into the ground, but rather runs into storm water drains, ditches, or directly into surface water bodies. Often, as water flows over surfaces it picks up contaminants or debris in its path, depositing these into surface water bodies.

groundwater resources if not brought into compliance. Finally, some people noted concerns about the potential for sewage overflows and stormwater and sanitary sewer issues resulting from more intense precipitation, in part due to the reality of climate change.

Suggested strategies from respondents to address these concerns:

In order to address the concerns, survey takers identified the need to reduce the amount of pollutants entering surface water bodies. Some of the strategies recommended by survey takers are outlined below:

- Reduce mining activity in the watershed
- Continually monitor water quality for changes in pollutant levels
- Reduce use of de-icing salt – use sand or less harmful alternatives instead
- Provide public education about effects of runoff on freshwater resources
- Plant native buffers along shorelines to catch pollutants before they reach lakes, rivers and streams
- Update aging septic systems, wastewater treatment infrastructure, and stormwater infrastructure
    - Require septic systems to be inspected every 15 to 20 years instead of just at the point of sale
- Install rain gardens and/or install filter systems within or near storm drains to catch pollutants and litter before they enter water bodies
- Provide state or local guidance on or regulation preventing the conversion of sulfate into sulfide
- Ensure there are strong and well-enforced regulations to limit pollutants from leaching into surface water
- Understanding that actions like reducing the effects of runoff on freshwater resources, maintaining septic systems, and planting native buffers may be beyond the budget or expertise of some homeowners, respondents suggested the following:
    - Provide cost share or other incentives to remove barriers for individual participation in solutions
    - Provide technical assistance where additional expertise would be needed
    - Create "watershed coaches" who can help non-governmental actors carry out the implementation actions identified through the 1W1P effort

Restore impaired surface water bodies.

Concerns:

While many healthy water bodies are in need of protection, others are already impaired and must be restored to their former health. People cite some tributaries as being impaired and in need of restoration, while many others mention the St. Louis Estuary as being impaired by legacy contaminants[2] and in need of clean-up. One of the prime legacy contaminants of concern in the St. Louis Estuary is mercury. Additionally, people are concerned about polluted wetlands throughout the planning area and the loss of their function as natural filters that can improve water quality for downstream water bodies.

Suggested strategies from respondents to address these concerns:

Restoring impaired surface water bodies is a key goal for survey takers, who recommended the strategies below to help address concerns:

[2] **Legacy contaminants** are contaminants which were deposited in water bodies by industries in the past that still exist in sediments within the water, even though the industry or emitting facility may no longer be operating in the area.

- Host frequent clean-up initiatives
- Treat or cover polluted sediments
- Provide proper funding and oversight of clean-up areas in the lower St. Louis River
- Complete a robust St. Louis River mercury TMDL with authentic civic engagement
- Conduct wetland restorations

ALTERED HYDROLOGY

A steady, seasonally appropriate flow of water within streams and rivers, as well as natural runoff rates that support healthy resources, is a good indicator of a healthy watershed. When water flow fluctuates too rapidly, this can have harmful consequences for aquatic ecosystems and for the landscape. This section focuses on issues that were brought up in the survey about water quantity and altered hydrology[3].

Protect and maintain natural water storage features (such as wetlands, peatlands, and floodplains) to aid in flood control.

Concerns:

A primary concern noted by survey participants was the increasing rate of wetland and peatland loss throughout the planning area. Many people recognize the value of wetlands and peatlands as natural ecosystems which are able to store and infiltrate water, among other benefits such as providing habitat and water filtration. Wetlands naturally help to alleviate impacts of flooding on the landscape. Participants acknowledge that the effects of climate change will lead to more extreme weather and changes in rainfall patterns in the St. Louis planning area, and wetlands are a key resource to protect in order to manage future flooding.

Suggested strategies from respondents to address these concerns:

The following are protection and restoration strategies which were suggested by survey takers to address wetland and peatland loss:

- Reverse the drainage of wetlands and peatlands
- Prioritize protecting headwater wetlands which help minimize flashy flows to streams and rivers
- Encourage wetland credits via preservation
- Conduct stream projects which reconnect entrenched streams to wetland floodplains
- Map and manage wetland connectivity
- Plug ditched wetland systems
- Protect wetlands with easements

"Historically there has been very little attention to wetland restoration. This is something that has potential to reduce flooding, improve wildlife habitat, and improve water quality in this region."

[3] **Altered hydrology** refers to any significant changes in the magnitude, duration, timing, frequency, or rate-of-change of natural stream flows.

Improve stormwater management and upgrade stormwater infrastructure throughout the planning area.

"I'm concerned about higher water levels as global climate change continues to raise seasonal temperatures. The opportunity for flood attenuation on the landscape and urbanized areas to get their surface water areas under control to slow water movement across the landscape is a key element."

Concerns:

People are concerned that the current capacity of stormwater infrastructure is not well-equipped to handle large volumes of water. They note that there is currently too much impervious surface[4] area in the planning area, which is leading to less infiltration of water into the ground and more overwhelmed storm drains. There is worry that stormwater infrastructure needs to be upgraded, and that aging infrastructure can no longer keep up with the increased volume of water flowing over the landscape.

Suggested strategies from respondents to address these concerns:

Commenters generally want to see climate change concerns incorporated into planning more widely, and this includes updating existing stormwater systems to be able to withstand impacts of greater volumes of water. More specific strategies contributed by those surveyed regarding the built environment and how it impacts water flow are:

- Retrofit the existing built environment to provide more robust stormwater management – consider increasing use of green infrastructure
- Implement stormwater management BMPs
- Limit impervious surfaces in urban development

Many respondents recognized the challenges associated with stormwater management, especially due to climate change, and they proposed the following to increase social capacity and enable effective participation across sectors and jurisdictions:

- Increase support for stormwater management professionals, including:
    - Connecting them to the state climatologist department to reduce the risk of heavier runoff loads of soil and pollutants as precipitation increases due to climate change
    - Connecting different local government staff working on stormwater retention together to "pool resources, financial and otherwise, to implement the most effective projects rather than taking a piecemeal approach"
    - Creating a space for stormwater management professionals from different cities to learn from each other within the SLR planning area
- Assist small municipalities with stormwater planning and installation
- Increase funding for "collaborative demonstration projects" to explore new best management practices in stormwater management

[4] **Impervious surfaces** are surfaces like roads, buildings, parking lots, and other surfaces that water cannot easily penetrate

Maintain a healthy water flow within rivers and streams.

Concerns:

The impacts of human modification to stream and river flow is concerning to some. This includes built mechanisms such as dams, in-channel barriers[5], and deliberate channel re-routings of rivers and streams throughout the planning area. They note that these barriers and modifications may hinder healthy water flow within these water bodies and should be addressed. Additionally, natural sources of water flow modification were cited by some as a concern. This includes beaver dams blocking water passage and becoming a nuisance in some parts of rivers and streams and fallen trees which can create a barrier to healthy water flow.

Suggested strategies from respondents to address these concerns:

- Maintain stream gages
- Clear river or stream blockages (garbage, trees, etc.) to maintain healthy water flow
- Improve in-bank stream stabilization

[5] **In-channel barriers** are structures such as flow diversions, culverts, and road crossings that can block water flow and fish passage

GROUNDWATER

In this planning area, residents' drinking water comes from both surface water and groundwater. As one survey respondent puts it, "By area, groundwater wells serve the largest part of the area, while surface waters serve the most number of people." Respondents did not include comments regarding groundwater beyond its use for drinking water, so this section only includes a summary of comments regarding groundwater as a drinking water source.

Many survey respondents spoke of the importance of having clean drinking water that is safe for them and their livestock to consume. Because our everyday tasks of drinking, bathing, and cooking depend on constant and reliable access to clean water, some respondents have framed drinking water as an equity issue, referring to it as a "human necessity" and expressing that "nobody should be denied it." With an eye to protecting both municipal and private well sources of groundwater and maintaining this resource for today's residents and future generations, respondents have identified concerns about both groundwater's quantity and quality.

Increase public awareness of and support for taking action to protect drinking and groundwater.

Concerns:

Since water touches everything, people's everyday actions and activities can also negatively impact the quantity and quality of groundwater. Survey respondents noted that residents in this planning area may not know where their drinking water comes from, not to mention that there are things they can do to protect its quality and quantity. This is especially a concern for residents relying on private wells. Multiple survey respondents talked about how people do not know if the water in their wells is safe to drink, or what the issues are that could be tied to any contamination. Survey respondents also are concerned that residents with private wells do not know how their own actions can make their drinking water unsafe.

Respondents identified two types of barriers that make action to protect private wells so difficult: 1) barriers to understanding, and 2) economic barriers.

Besides needing more education and outreach on the importance of testing private wells, respondents noted the wide variability of groundwater quality even within a neighborhood. They noted a need for residents to take initiative to test their own private wells and that they cannot rely on their neighbors or the city to alert them if their drinking water has been contaminated.

The costs of preventing contamination of wells often fall solely on private well owners because, as one respondent noted, many private well owners have no options to connect to a city water main. Practices like sealing wells, that help prevent surface water runoff from contaminating groundwater, [1] can be too expensive for residents.

Suggested strategies from respondents to address these concerns:

Survey respondents would like to see more public education that can increase every resident's awareness of 1) where their drinking water comes from and 2) what their responsibilities and opportunities are to protect that source's water quality and quantity.

These strategies include:

- Provide "easy to understand" educational materials for the general public, particularly private well owners
- Support implementation of best management practices in wellhead protection areas and drinking water supply management areas[6]
- Provide resources to help private well owners better monitor and address issues
    - Support private well owners through cost-sharing or "increasing availability of funds" for well sealing
- Test private wells
    - Encourage more periodic and mandatory testing of private wells, especially in rural areas
    - Standardize testing of private wells to ensure public safety
    - Provide outreach on testing results

Protect groundwater from pollutant inputs from a variety of sources.

Concerns:

Many survey respondents identified pollutants that have or could contaminate groundwater. One respondent talked about how the unique geology of the planning area "increases the linkage to groundwater and potential contamination."

As the box to the right shows, many of the pollutants respondents identified also appear in the Surface Water Quality section due to the potential for contaminated surface water to mix with groundwater and vice versa. Some of these pollutants, like sulfide and methylmercury, are not drinking water contaminants, per se. However, if they have a ubiquitous presence in drinking water, they can be worrisome for other reasons related to public health or health of the watershed.

Respondents identified major sources of pollutants as: construction runoff, the paper and mining industries, forestry runoff, farm runoff, residential runoff, traffic and roads runoff, recreational litter and pollutants, waste management systems, and disposal of hazardous or toxic items down the drain. Future concerns were also identified, such as introduction of new extractive industries like copper-nickel mining or confined feedlot operations, where many livestock are raised in tight spaces.

Construction and other industrial activities can disturb surface and groundwater, and without proper precautions, they can contribute to runoff that eventually contaminates groundwater. One comment talked about potential for PFOS to be

Pollutants mentioned by stakeholders:

- Sulfide (perceived)

- Methylmercury (perceived)

- Pathogens (e.g. viruses and bacteria)

- Fecal contamination

- Nitrate (fertilizers)

- PFOS (perfluorooctanesulfonic acid) and other contaminants of emerging concerns

- Runoff pollutants (e.g. pesticides, heavy metals, fertilizers, pathogens, and sediments)

-Chloride

-Litter

-Arsenic

[6] Both Wellhead Protection Area and Drinking Water Supply Management Areas are the areas that surround public water supply wells, and contamination of these lands can affect drinking water. Source: *Source Water Protection Web Map Viewer*. (2019, August 14). Minnesota Department of Health. https://www.health.state.mn.us/communities/environment/water/swp/mapviewer.html

found in wells near the airport. For farming and forestry, survey respondents urged better practices to prevent contamination of groundwater. Other potential sources of pollutants noted in the comments include waste management systems, traffic and road runoff, and residential runoff.

Respondents also brought up concerns related to arsenic, which can be naturally found in soil or rocks and dissolve into groundwater. Survey respondents speaking to arsenic either shared a situation when arsenic was found in their drinking water or expressed concern that "tribal, municipal drinking water" might not be "meeting allowable standards for arsenic and other minerals." In the latter case, the survey respondent wrote about how they know people who "are afraid to drink the water from the tap."

"…Just a month ago we had to buy water because arsenic was in our water."

Although survey respondents were concerned about contamination of both aquifers and private wells, the number of concerns expressed about private wells far outnumbered those that mentioned aquifers. Specifically, many respondents are worried about private wells being contaminated by non-compliant septic systems.

Suggested strategies from respondents to address these concerns:

There were many proposed strategies including:

- Protect drinking water (from groundwater sources) by protecting recharge areas
- Decrease contaminants from residential, industrial, farming, and other sources by increasing awareness and encouraging best management practices
- Monitor potential leakage areas like tailings ponds for mines
- Reduce over-application of chlorides on public roads
- Increase understanding of groundwater and surface water interactions in order to better protect against contamination of both
- Enforce existing regulations to protect groundwater and pre-emptively think through policies for future developments like confined feedlot operations and new mining ventures
- Complete the Groundwater Atlas for Saint Louis County to help make more informed decisions on how to protect groundwater

"It's highly dependent on the area where you live. Ours (our family) is different from our neighbors. A few hundred feet can make an enormous difference."

Prevent groundwater from being used too quickly to replenish its supply.

Concerns:

There is some public concern about whether people are overusing groundwater and the existence of human activities that disrupt how quickly groundwater can recharge and replenish itself in this planning area, which some fear could lead to future shortages. A couple of respondents expressed concern about how resilient groundwater sources are to dry spells and future weather events such as droughts. Underlying these worries is the value that there should be enough drinking water for everyone.

A group of these comments focused on wanting to make sure the natural water cycle[7] continues so that there is a constant replenishment from snow and rainfall of groundwater that becomes "a steady supply of fresh drinking water." A couple of respondents were concerned about the amount of impervious surface in the planning area and whether this blocks infiltration of water, thereby reducing the amount of water recharging aquifers in more built-up areas. One respondent was also concerned about how altered hydrology could prevent water from soaking into the land.

Finally, there is a group of comments expressing the perception that people are being "wasteful with our drinking water" and using too much. One survey respondent is concerned with how future farm practices, such as confined feedlot operations, could lower the quantity of groundwater.

Suggested strategies from respondents to address these concerns:

Respondents proposed the following strategies:

- Find alternative sources of water outside of groundwater stored in aquifers
- Increase public education to help everyone be more mindful of the quantity of water they use either at home or through their occupation

[7] A simplified version of water cycle is evaporation, condensation, precipitation, soaking into the ground or through plants, accumulating as groundwater, and then being used by humans and animals (thus beginning the whole cycle again). Source: *Water cycle*. (2019, February). National Oceanic and Atmospheric Administration: US Department of Commerce. https://www.noaa.gov/education/resource-collections/freshwater/water-cycle#:~:text=The%20water%20cycle%20on%20Earth&text=The%20water%20cycle%20shows%20the,form%20of%20rain%20and%20snow

HABITAT

Respondents frequently mentioned the SLR planning area's abundant forests, wetlands, and aquatic habitats.[8] Rarer habitats—like coldwater streams—add to this region's distinctive character. A point of pride is the number of high-quality habitats (habitats that can sustain diverse animal and plant populations).

Healthy ecosystems not only benefit wildlife but also perform functions that are fundamental to people's health and wellbeing. These benefits are called ecosystem services.[9] Respondents identified the following ecosystem services: 1) tangible resources like minerals, timber, and food; 2) cultural benefits like carrying out sacred rituals or recreation in nature; 3) functions performed by habitats and wildlife that are important for human wellbeing, such as filtering water, infiltrating water where it falls; and 4) storing carbon dioxide.

> "I hope in 50 years that the watershed will still have an abundance of wild land, pristine wetlands, old growth forests, and will still have our wonderful wildlife, such as moose, lynx, fishers and hopefully elk."

Many respondents also acknowledge how common understandings of taking care of the environment and water should include stewardship definitions from different cultures, most notably from Ojibwe and Fond du Lac tribal members. Specifically, respondents valued Ojibwe tribal members' perspectives on wildlife "as companions with whom we share this place" and their ways of living with and caring for the land they grew up on. These include healthy, sustainable harvests and enjoyment of wildlife and natural habitats. As one survey respondent points out, the sharing of Ojibwe wisdom adds to this region's cross-cultural community, and the knowledge of how to carry out stewardship that fit this local context. Meaningfully including the wisdom and perspectives of Ojibwe tribal members, and supporting their culture's continued survival, can strengthen the shared objectives of all residents living in this planning area to take better care of the natural environment and water.

Respondents value restoring degraded habitats,[10] including ongoing efforts in the estuary, as well as protecting existing high quality habitats. Many identified the following habitats as needing more protection: wetlands (including coastal, riparian, and forested wetlands), wild rice lakes, old-growth forests, water's edge habitats, streams and small tributaries (including coldwater streams), and habitats (including urban ones) that support much wildlife.

By grouping similar comments, three broad goals more specific to the SLR planning area emerge.

Limit impact from human activity on habitats.

Concerns:

Climate change and human activities occurring within the SLR planning area rose to top as key concerns. Respondents noted higher temperatures, shorter winters, more extreme weather events, and changing rain and snowfall patterns associated with climate change. They also noted that climate change is hard on larger species

[8] By aquatic habitats, we mean lakes, streams, rivers, ponds, and other bodies of water.

[9] Source: *Ecosystem Services.* (n.d.). National Wildlife Federation. https://www.nwf.org/Educational-Resources/Wildlife-Guide/Understanding-Conservation/Ecosystem-Services

[10] Degraded habitats meaning those that can no longer support wildlife because of invasive species, pollution, and disruption of ecosystem processes. Source: *Habitat Loss*. (n.d.). National Wildlife Federation. https://www.nwf.org/Educational-Resources/Wildlife-Guide/Threats-to-Wildlife/Habitat-Loss

such as moose, and that pests and disease tend to thrive in warmer temperatures. Extreme weather events lead to unpredictable rises in water levels that can flush out shallow-rooted wild rice and other sensitive species. As a respondent pointed out, wild rice is a "key food source for waterfowl" and "provides important habitat for fish and wildlife." Another respondent talked about how fish are "a key part of the food web." Respondents expressed concerns about losing species that provided habitat and food for other wildlife and thus were important to maintaining wider "healthy food webs and ecosystems."

Locally, respondents identified that all habitats are facing similar threats from development, poor management, loss of connectivity, recreation that harms habitats or wildlife, and water pollution. Some examples include:

- Wild lands being developed for human use
- Extensive logging on government-owned and private lands
- Significantly altering landscapes in ways that reduce habitat potential
- Poorly managing habitats (including common mistakes), like forests, that increase the risk of spreading fires, invasive species, diseases, and pests to surrounding habitats beyond what is seen in historical variation
- Breaking up larger tracts of land into smaller parcels with multiple different owners
- Decreased connectivity through fragmentation of existing habitat
- High- and low-impact recreation activities leading to increased pollution and noise, damage to habitat, and spread of invasive species

Furthermore, many of the pollutants covered in the Surface Water Quality section were also mentioned by survey respondents as impacting habitats and wildlife. In particular, many respondents were concerned about industry activities contributing to the conversion of sulfate to sulfide and mercury to methylmercury that is occurring in wetland soils. Several respondents identified how high sulfide levels can be detrimental to wild rice.

Suggested strategies from respondents to address these concerns:

Many of the survey respondents expressed opinions on the impact of human activities on wildlife and habitats, and consequently, a great number of suggested strategies were received in this area. Below is a summary of the strategies that respondents proposed:

- Reclaim and restore lands degraded for forestry or iron mining activities
- Develop long term, science-based management plans for forests, wetlands, and streams, including a focus on climate and disease/pest resilience
- Ensure sufficient baseflow for fish habitats
- Remove barriers to fish passage like road crossings and dams
- Use studies, such as Watershed Restoration and Protection Strategy (WRAPS) and reports identifying stressors on the environment, to limit development and protect sensitive habitats
- Encourage wetland credits[11] and wetland mitigation efforts, especially in the headwaters area
- Incentivize people living at water's edge to carry out best management practices like converting lawns back to the original vegetation (financial incentives could address the fact that this might be costly for some individual residents)

[11]A way to offset unavoidable harms after pursuing best options to minimize impacts from private and public projects by restoring and enhancing other areas to minimize net loss of habitats' function. Source: *Wetland and Conservation Credits 101*. (n.d.). Westervelt Ecological Services. https://wesmitigation.com/resources/wetland-and-conservation-credits-101/

- Increase coordination and outreach for landowners who own less than 40 acres (more wide scale collaboration between small acreage landowners on shared issues like invasive species and other conservation goals could mitigate some of the negative consequences of parcelization)
- Forests:
    - Encourage or require more sustainable practices within the timber industry
    - Prevent cutting down of trees near wetlands or streams and rivers
    - Increase support and financial resources to help individuals adopt best management practices
        - Encourage forest landowners to grow trees that can reach a great age to sequester more carbon dioxide
        - Increase enrollment in long-term forest stewardship plans and the Sustainable Forest Incentives Act (SFIA) program that provide guidance and tax breaks
        - Support the development of markets and demand for locally and sustainably grown products that, in turn, will make it easier for forest landowners to transition to more climate resilient crops and practices
    - Include the following areas in forest stewardship plans:
        - Require cultivating a wide variety of species, including those that are less vulnerable to disease and invasive species and old-growth trees
        - Monitor and manage for tree diseases and invasive species
        - Clear out dead or crowded vegetation on the forest floor, and create gaps free from combustible material to reduce fires spreading
        - Carry out proper controlled burns
    - Attain a goal of 75 percent forest cover by doing things such as increasing the number of large forested, contiguous, and well-managed tracts
- Recreation:
    - Increase education for owners of all-terrain vehicles and motorized boats to reduce how much these vehicles contribute air and noise pollution or spread invasive species
    - Post signs around critical habitats or nesting areas for loons and other wildlife
    - Decrease the usage of lead in bullets and fishing equipment
    - Incentivize people in natural areas to not litter and have volunteers routinely clean up trash that wildlife might eat
- Pollutants:
    - Treat and cover polluted sediments
    - Research and monitor sources of pollution, as they impact wild rice and fish populations

Protect habitats and the ecosystem services they provide.

Concerns

In the SLR planning area, respondents have noticed a decline in ecosystem services, namely that uncultivated food found in the wild is becoming scarcer or unhealthy for human consumption, access to natural habitats with cultural or spiritual significance is declining, and important habitats are losing their functionality. Respondents felt strongly that having fish free from dangerous levels of mercury and large enough fish populations to support the nutritional needs of local residents align with human rights and equity. Eating fish was described as “a right not a privilege,” considering how fishing provides an inexpensive and nutritional food source for low-income residents without traveling far. This also applies to animals that can be hunted or plants that can be foraged locally.

Multiple respondents expressed concern that the wildlife (e.g., fish, moose, deer, and wild rice) they eat had declining populations due to climate change and pollution.

Wild rice is another nutritional and allergen-free food that respondents value. Wild rice's critical importance here is amplified by its cultural and spiritual value in many Ojibwe practices and significant life events, like weddings. Harvesting wild rice in nature allows Fond du Lac tribal members to connect to traditional lifeways, pass on intergenerational wisdom, and build strong relationships with nature and each other. Respondents talked about how Indigenous Americans use medicines from wetlands and consider birch bark trees as sacred, even though these trees are being overtaken by poplars. One respondent added that there are many spiritual sites in this planning area for Indigenous Americans. Respondents reminded us that treaty rights guarantee Ojibwe tribal members' ability to continue these practices and assign responsibility to the American government and tribal authorities to maintain large enough wildlife populations to sustain such practices. Non-tribal members also value passing traditions they learned from their parents, like fishing, to their children. Respondents are concerned about the increasing privatization of lands that threaten everyone's access to these habitats.

Respondents identified habitat loss, which includes degradation, destruction, and fragmentation of habitats, as contributing to declining functionality of habitats. Respondents were concerned about people removing vegetation from the water's edge, as this disrupts healthy roots and soils filtering out pollutants. A respondent identified Emerald Ash Borer as a future threat to black ash in wetlands that help store carbon, reduce methylmercury, and reduce flood risks. Respondents also talked about how excessive logging removes plant roots that hold sediments in place during heavy storms and reduces tree cover that help coldwater streams stay cold. Many respondents named wild rice as an indicator species, and decreased populations of indicator species mean there are less early warning signals to us when we contaminate water or pollute the environment.

Suggested strategies from respondents to address these concerns:

Respondents proposed the following:

- Keep natural areas accessible to everyone and "wild" through land use planning and zoning
- Provide recreational opportunities for people with low incomes (such as through fishing pier access)
- Maintain and monitor healthy populations of fish in aquatic habitats and fisheries
    - Continue projects, like cleaning up the pollution in the St. Louis River, which have made a difference in increasing fish populations
    - Treat fish stocking as a high priority
    - Warn residents of the dangers of methylmercury from fish consumption
    - Keep development around fish habitats limited, as "undeveloped habitat" is important to maintaining healthy fish populations
- Plant more native berry and fruit trees while increasing public awareness of which "plants that are native to this region can be used for human food"
- Monitor and manage healthy populations of moose and deer to meet treaty obligations made to Fond du Lac and other tribal members
- Monitor and restore historic wild rice stands as much as possible to meet treaty obligations
    - Continue working and consulting with Fond du Lac tribal members on "regulations, proper rice techniques [like seeding], and quotas to maintain this natural resource"
- Protect habitats from threats that decrease their functionality including pollutants, invasive species, soil erosion and dying off of plants and ecosystems that help filter and absorb excess water and remove carbon dioxide from the atmosphere

Maintain healthy, biodiverse ecosystems (including rare and sensitive ones).

Concerns

Many respondents talked about the rich biodiversity, or variety of animal and plant species, in this area (e.g., its "45 native species of warm fish"). Some see decreasing biodiversity in the forests and aquatic habitats. In their words, poor management of lands and climate change are causing some species to "be lost" as "others move in to fill underutilized niches." Respondents identified the following threats that opportunistic wildlife, which include both invasive and non-invasive species, pose:

- Existing and future invasive species (such as emerald ash borer, larch beetles, or spruce budworms) threatening other species' survival
- Non-invasive species damaging habitats, such as overly-abundant emergent plants clogging up streams
- Exponential growth of deer leading to overgrazing of young trees and shrubs
- Geese overfeeding on wild rice

There is also concern that deer can contract diseases like chronic wasting disease from elsewhere and bring it home to infect rarer species, like moose.

"As global warming continues our forest will change to more deciduous. The wildlife and fisheries makeup will change. At my lake place, you hardly ever caught pan fish and now they are readily available. There were not any turkeys, now you can occasionally spot one."

Respondents also appreciate the rare and unique wildlife that live here, like sharp-tailed grouses, sturgeons, timber wolves, and brook trout. Several respondents talked about how many of these species have unstable or declining populations due to being unable to survive warmer temperatures or shift out of shrinking habitats. Trout was an especially popular species that respondents referred to, and multiple respondents expressed concern that increasing temperatures and precipitation were making coldwater habitats less hospitable to trout. Finally, one respondent brought up migratory wildlife such as the "warblers and other neotropical migrants" that rely on "unique patches" of ever-shrinking wetlands in this planning area.

Suggested strategies from respondents to address these concerns:

- Protect existing biodiverse habitats, such as forests, forested wetlands, and coldwater streams
- "Maintain [tree] cover over [fish] spawning streams" to keep these streams cold enough for fish like trout to survive
- Residents identified tributaries feeding into Lake Superior and the St Louis River Estuary as places of importance to protect and restore due to the critical habitat they provide for fish, waterfowl, wild rice, and other wildlife
- "Support climate adaptation research on forest biodiversity" and the invasive species that benefit from warmer temperatures to understand which desirable species are more resilient to both types of habitat change
- Increase initiatives to address the spread of invasive species in our forests and lakes
- Continue to look into methods for managing non-invasive wildlife populations that are either growing out of control or hurting sensitive species

    - Find ways for geese to not deplete wild rice in the fall
    - "Pursue easements to allow riparian areas to be flooded and help reduce conflicts with important wetland maintenance species like beaver"
    - Control the population growth of deer, through actions such as changing current hunting regulations
- Help increase and maintain healthy populations of sensitive or rare species
    - Improve the long-term survival of species— such as timber wolves, moose, and sharp-tailed grouse—that continue to be rare [12]
    - Investigate ways to reintroduce elk in the future
    - Continue improving fisheries that are restoring rare fish species, such as sturgeons, redhorses, trout, and whitefish

[12] There were mixed responses on whether to legalize wolf hunting, but multiple respondents agreed that strictly enforcing hunting regulations were important in ensuring that populations of sensitive species would adequately protected.

LAND USE

Survey respondents recognize that the watershed is becoming more developed and urbanized as years go by. However, a lot of the areas where urbanization is taking place are those same areas that make this area such an appealing place to live, work and play. While survey takers understand that development may be inevitable, they hope that development can be done with mindfulness of impact on the surrounding environment going forward. Multiple respondents share the insight that perhaps sustainable and productive future developments and land uses could continue if protecting water quality and existing natural habitats are prioritized in land use planning.

Increase usage of the most sustainable urban and residential development practices.

Concerns:

As more people settle in this northern area of the state, more pressure is being put on the area's natural resources. Survey takers specifically noted that more people are beginning to build homes along river and lakefronts in the watershed, the development of which may lead to more pollutants entering these water bodies and contribute to subsequent degradation. More commercial corridors being developed within the watershed also leads to greater landscape being covered by impervious surfaces in the form of roads, parking lots, and buildings. Additionally, some draw attention to the trend towards urban sprawl in the region, manifesting itself in increasingly diffuse development. Respondents note that this practice of sprawling development is harmful to natural resources, as it takes up land area that should be preserved.

Suggested strategies from respondents to address these concerns:

In order to protect natural resources in the watershed, survey respondents challenge commercial and residential developers to conduct their practices in the most sustainable way to lessen impacts on the natural environment. Recommended strategies include:

> "Ensure that future development considers water protection [to be] as vital as things like fire protection and structural integrity."

- Increase public urban green space
- Work with planning and zoning to limit development too close to the lakeshore and forests
- Incorporate green infrastructure into future developments
- Avoid "heavy development on steep slopes in clay soil areas"
- Create "buffer zones" in natural areas
- Incorporate climate change predictions and adaptation into all planning and construction in the watershed
- Reduce subdivision development
- Protect land from fragmentation
- Create zoning restrictions specific to the geology or collected data of an area as it applies to improving surface water quality and/or quantity
- Zone upper reaches of watershed more strictly
- Create "environmentally-attuned zoning changes/or restrictions" for biodiverse habitats like wetlands and forests
- Combine smarter planning for future development with conservation tools (e.g. Aquatic Management Areas or Scientific Natural Areas)

Ensure that industries throughout the watershed are engaging in sustainable land use practices.

Concerns:

Survey takers shared that they are wary about how certain industries, like mining and industrial facilities, affect the surrounding land that they occupy. When it comes to mining in particular, people are concerned about the degradation of natural resources as a result of mining practices. Examples provided by survey respondents include the loss of wetlands from proposed developments like the PolyMet mine, or the effect of chemicals coming from such facilities which seep into the landscape and into the water.

Suggested strategies from respondents to address these concerns:

Many commented that they don't believe mining has a place in this watershed if it continues to negatively affect natural resources with its presence. However, people also recognized that mining and other industries drive a lot of the economic activity in the region. In order to contend with the difficult tension between these two points, commenters want to see any current and future mining and industrial development to prioritize engaging in the most sustainable practices which don't lead to any negative consequences for the natural resources. Strategies provided by commenters are:

- More oversight and pressure on mining and industry to adopt up-to-date technology and practices
- Improve collaboration between industry and resource managers
- Support for new businesses to invest in green technology so this type of industry can replace mining jobs with green energy jobs
- Ensure adherence to strict environmental regulations
- Deny permits to projects that have a risk of contamination
- Change the PolyMet mine project so it does not destroy wetlands or require an ecologically functional mitigation project

> "I am concerned about overdevelopment and reduction in forests/wetlands. Do a better job of protecting the highest value forests and wetlands but more forgiving for development on the least value."

Make local sustainable farming a more viable practice throughout the watershed.

While survey takers recognized that farming isn't currently a widespread practice throughout the watershed, they'd like to see more support for local agriculture growth in the region so long as the industry engages in sustainable management practices. The hope would be that more local farming in the region may provide a more reliable local food source and potentially provide more jobs for people. This also aligns with a desire communicated by some commenters to see the watershed increase its overall land use diversity.

Suggested strategies from respondents to address these concerns:

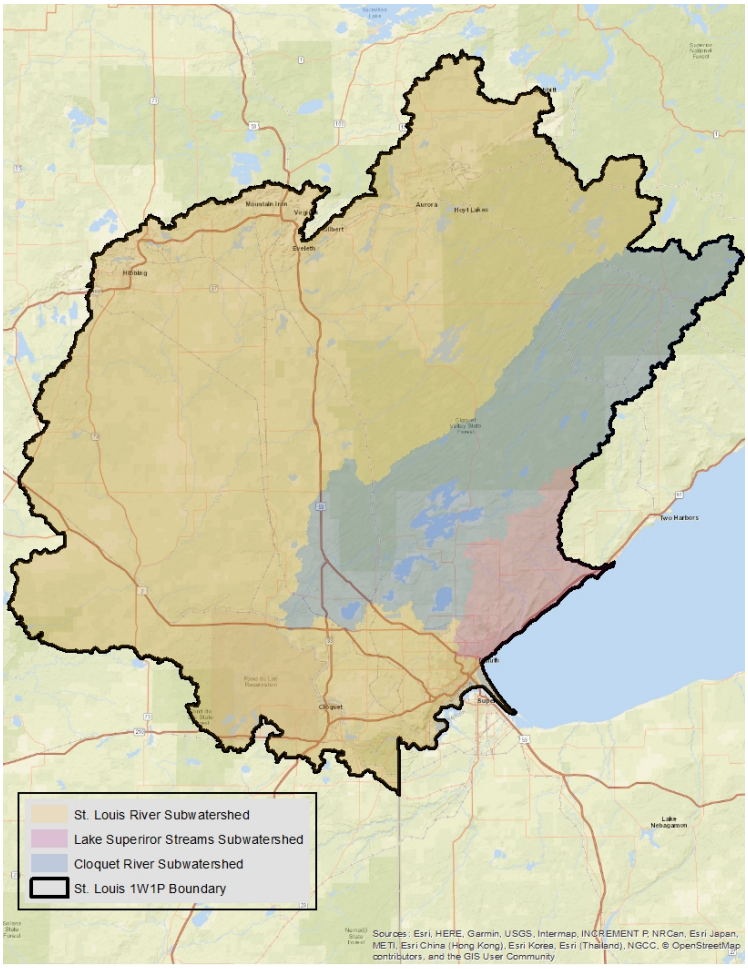
- Invest in regenerative agriculture and permaculture in the watershed
- Create incentives for organic farm practices
- Support locally grown food production
- Provide grants to help farmers in the region
- Restrict agricultural chemicals and pesticides

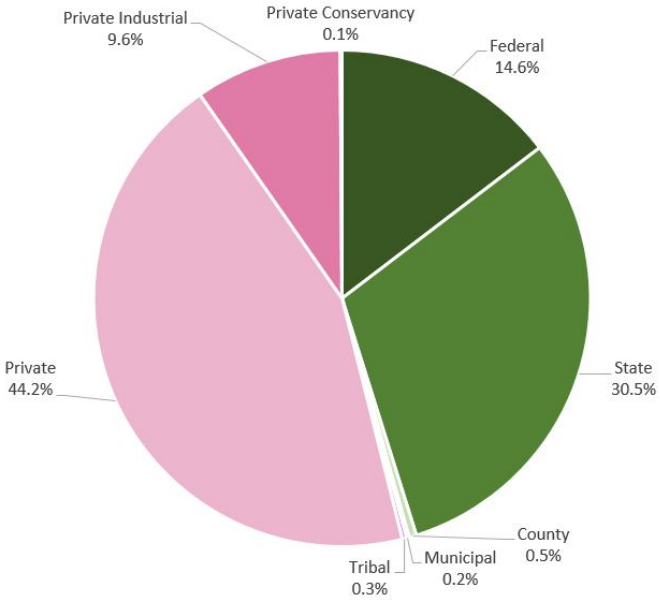
- Provide educational and technical assistance as farms change hands in the watershed
- Research silvopasture techniques and guidance

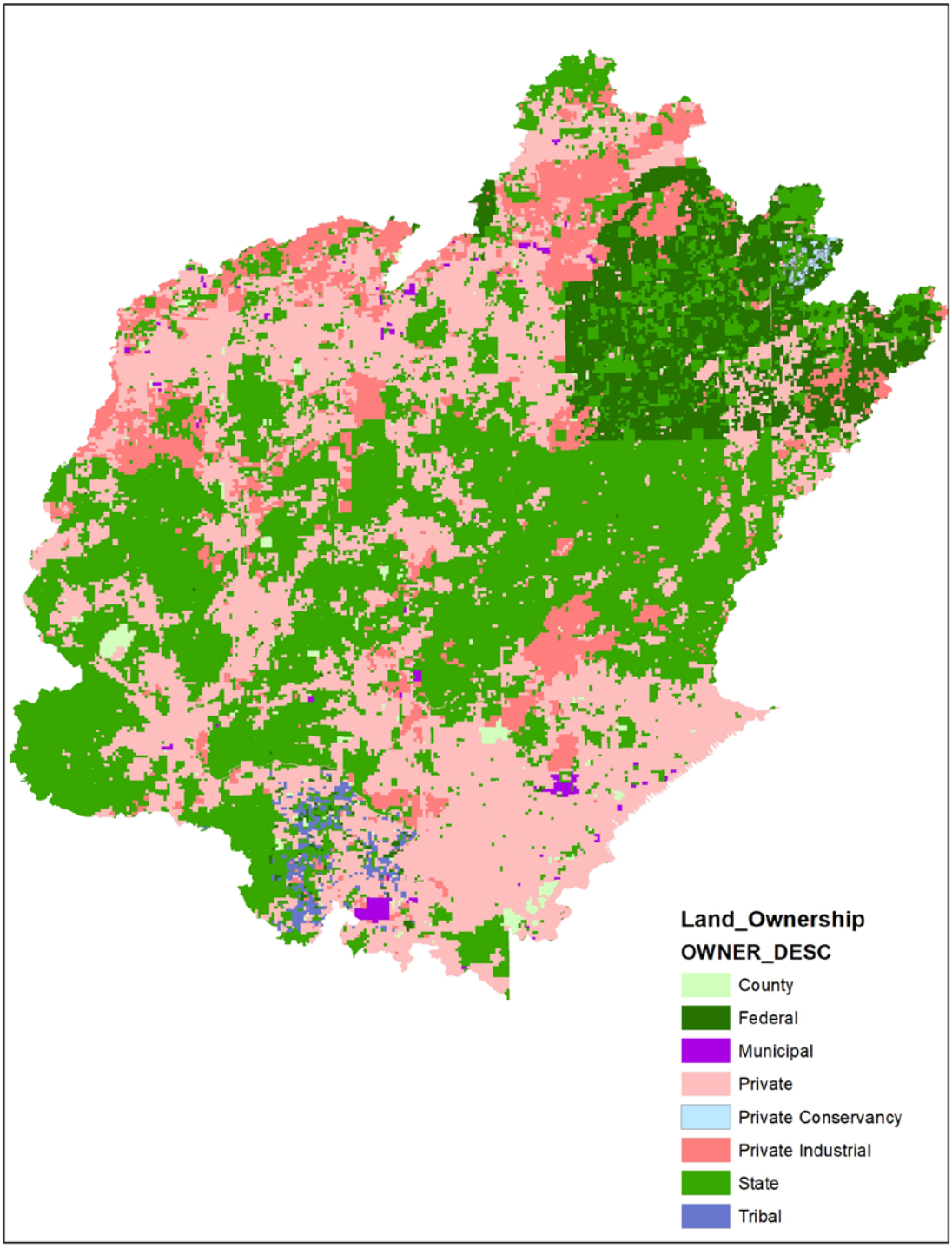
Appendix D. Second Priority Issue Statements

Issue Category	Issue Statement
SURFACE WATER QUALITY	Drinking water obtained from surface water sources is threatened by excess sediment, nutrients, and stormwater pollutants which can impact ecosystem and human health.
	Mercury and sulfate contamination pose a risk to critical species, cultural needs, the environment, and public health. Activities (e.g., channelization, wetland degradation) contribute to conditions that increase mercury methylation rates and conversion of sulfate to sulfide.
DRINKING WATER PROTECTION	Failing septic systems can contaminate groundwater and localized drinking water and may lead to imminent threats to public health.
	Loss of groundwater recharge can impact vulnerable cold-water habitats and drinking water supplies.
	Protection and restoration of groundwater and surface water interactions requires a detailed understanding of the local and regional hydrologic system.
	Protection and restoration of groundwater and surface water interactions requires a detailed understanding of the local and regional hydrologic system.
LAND USE	Metallic mining has resulted in historic impacts and can affect existing and future water quality and quantity as well as aquatic life.
ALTERED HYDROLOGY	Floodplain disconnection and habitat degradation are commonly associated with altered hydrology.
	Changes in water chemistry, including changes in dissolved oxygen, temperature, sulfate reduction to sulfide, and mercury methylation and bioaccumulation are the result of drainage activities and impoundments.
	Damage to existing ecosystems from invasive species negatively alters the function of natural hydrologic systems in the watershed.
	Much of the watershed contains aging infrastructure that is not consistent with current standards and impedes hydrologic conditions.
HABITAT	Wild rice populations have diminished due to fluctuating water levels, land use changes that erode shorelines and disturb stands, and degraded water quality. Climate change also threatens wild rice as it is sensitive to both flooding and drought, and warmer temperatures may make wild rice more susceptible to disease.
	Healthy and functioning ecosystems rely on best practices for conservation and sustainability being implemented on public and private lands.

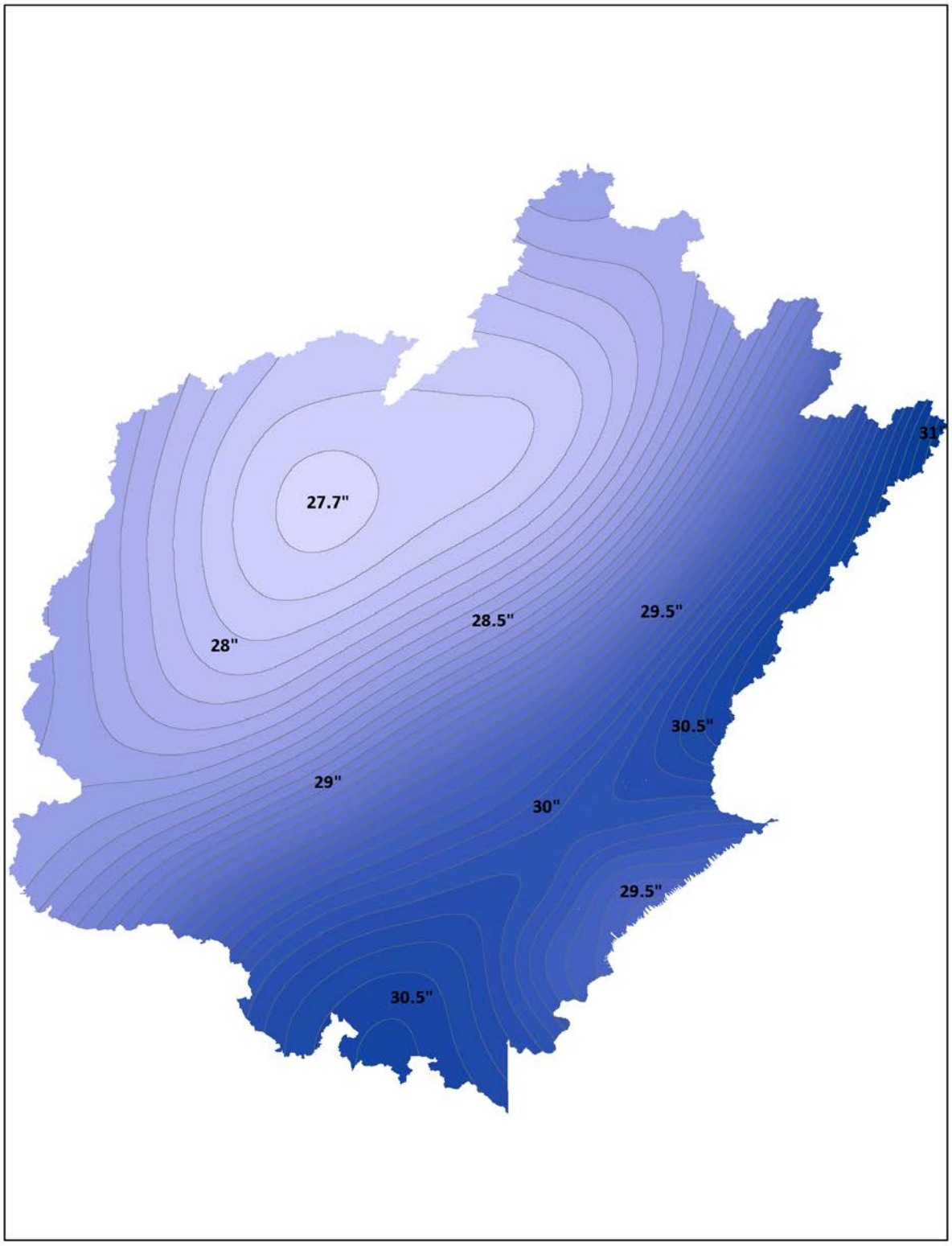
St. Louis River Planning Area Land and Water Maps



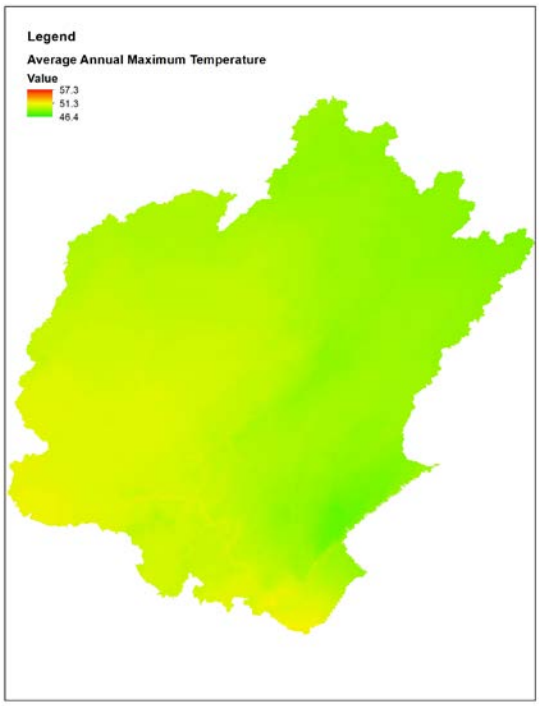




Generalized Land Ownership (MN DNR GAP Stewardship Data 2008)



Average Annual Precipitation (MN DNR Climatology Office)


Legend
Average Annual Maximum Temperature
Value
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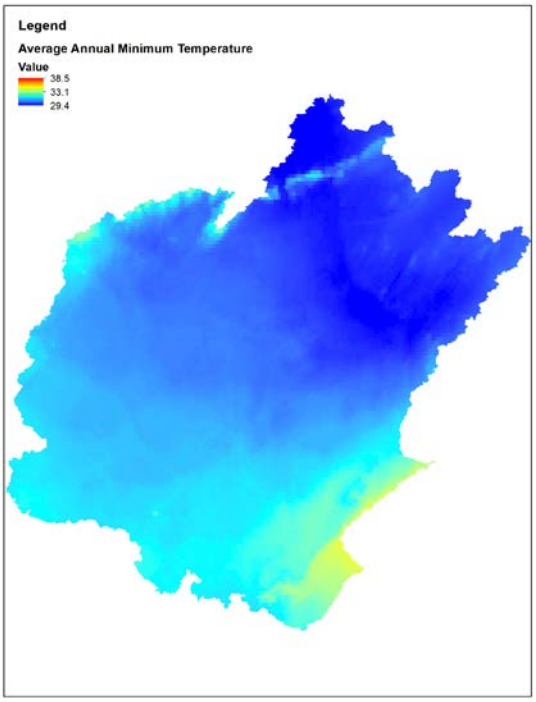
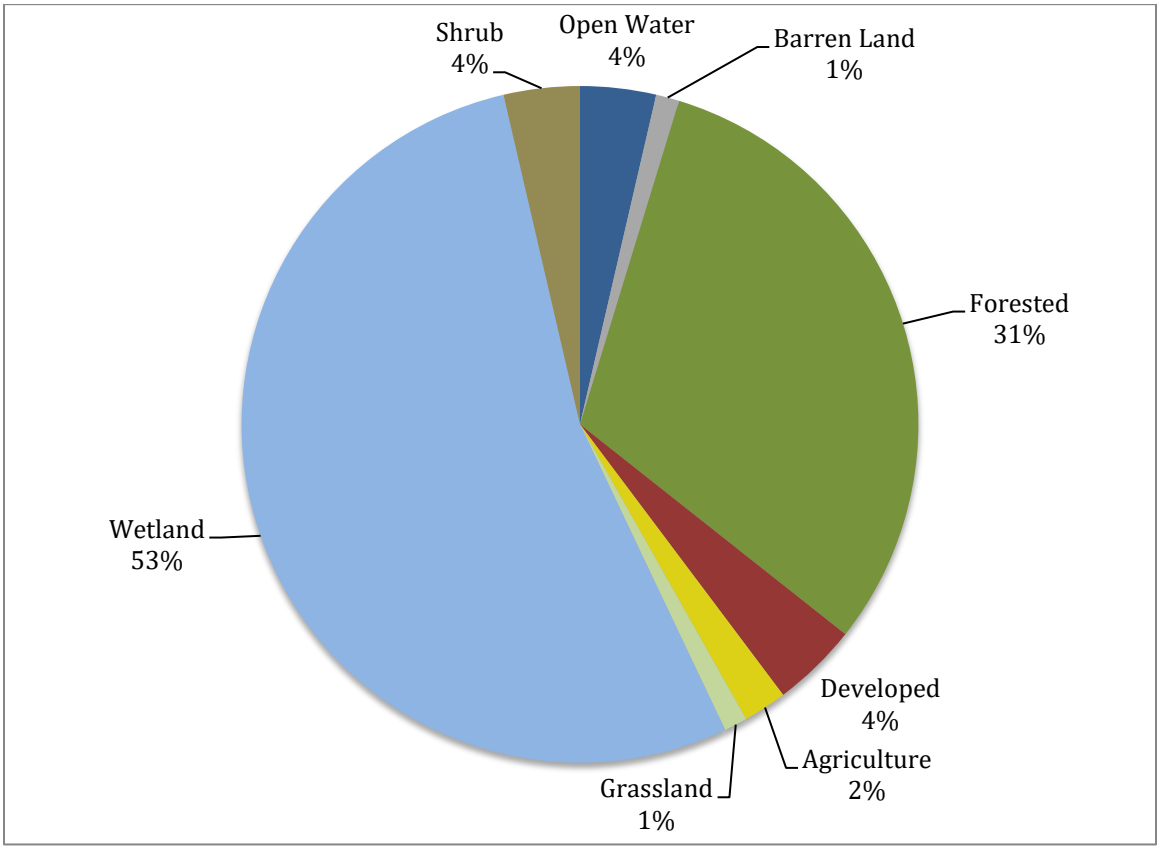
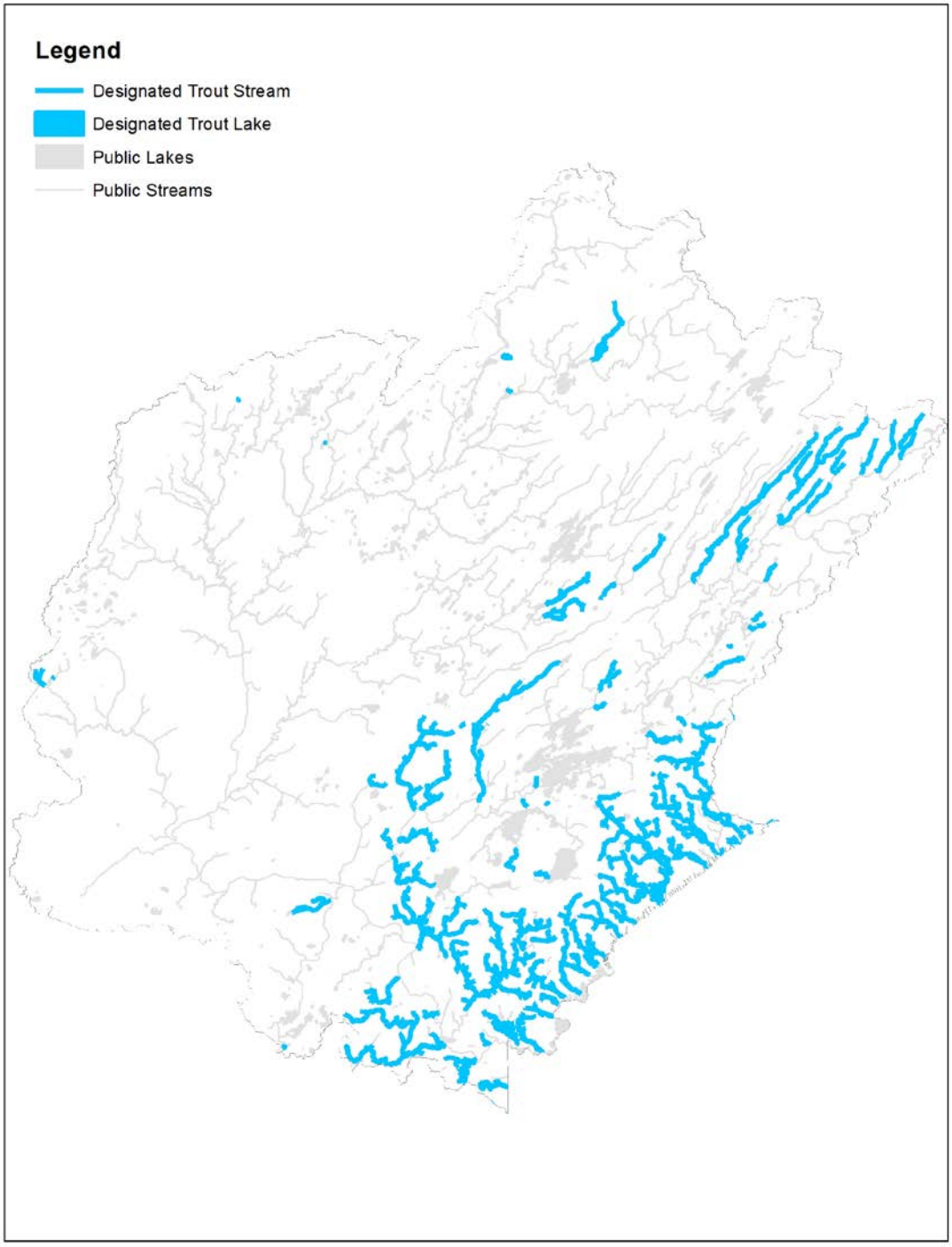
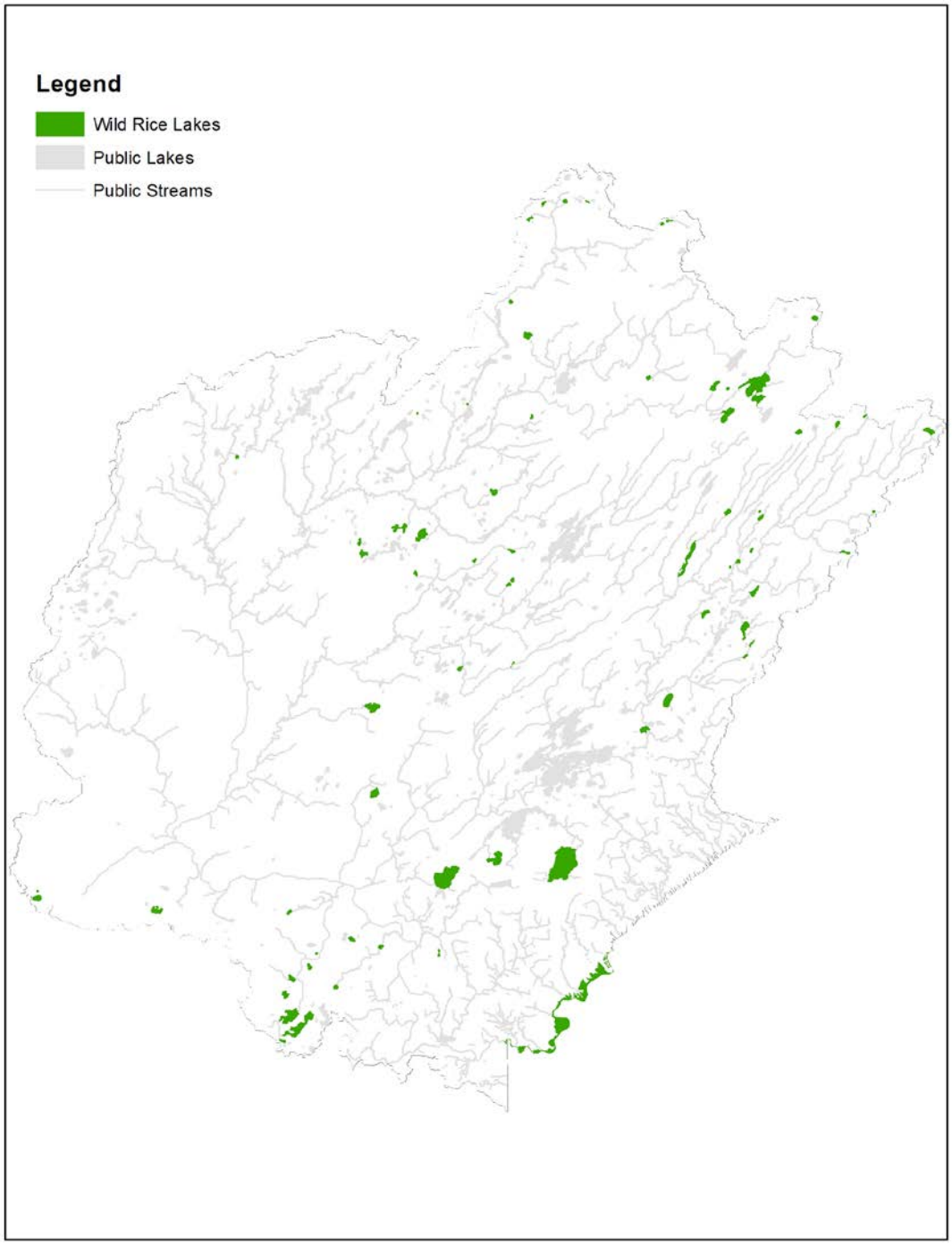
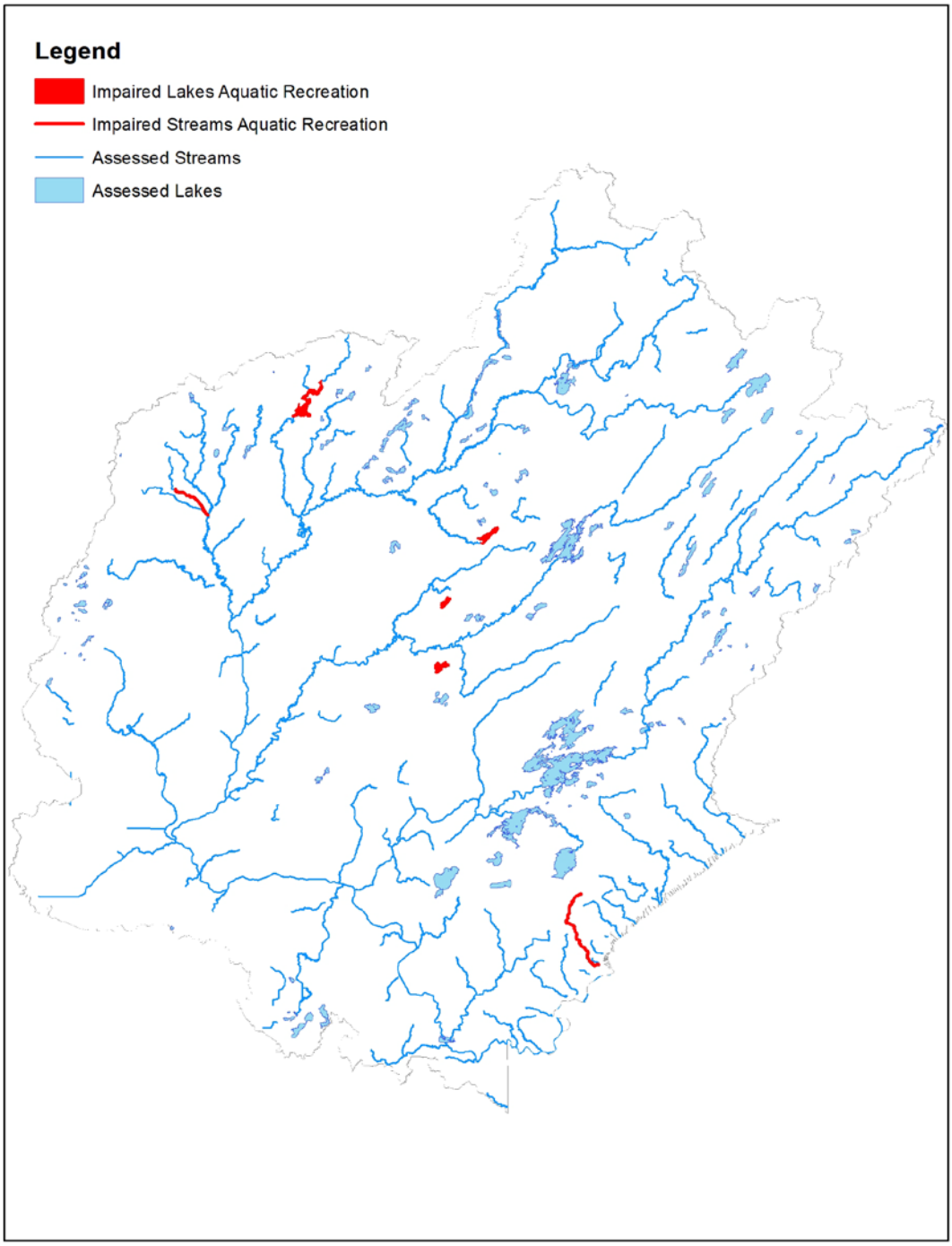
51.3
46.4

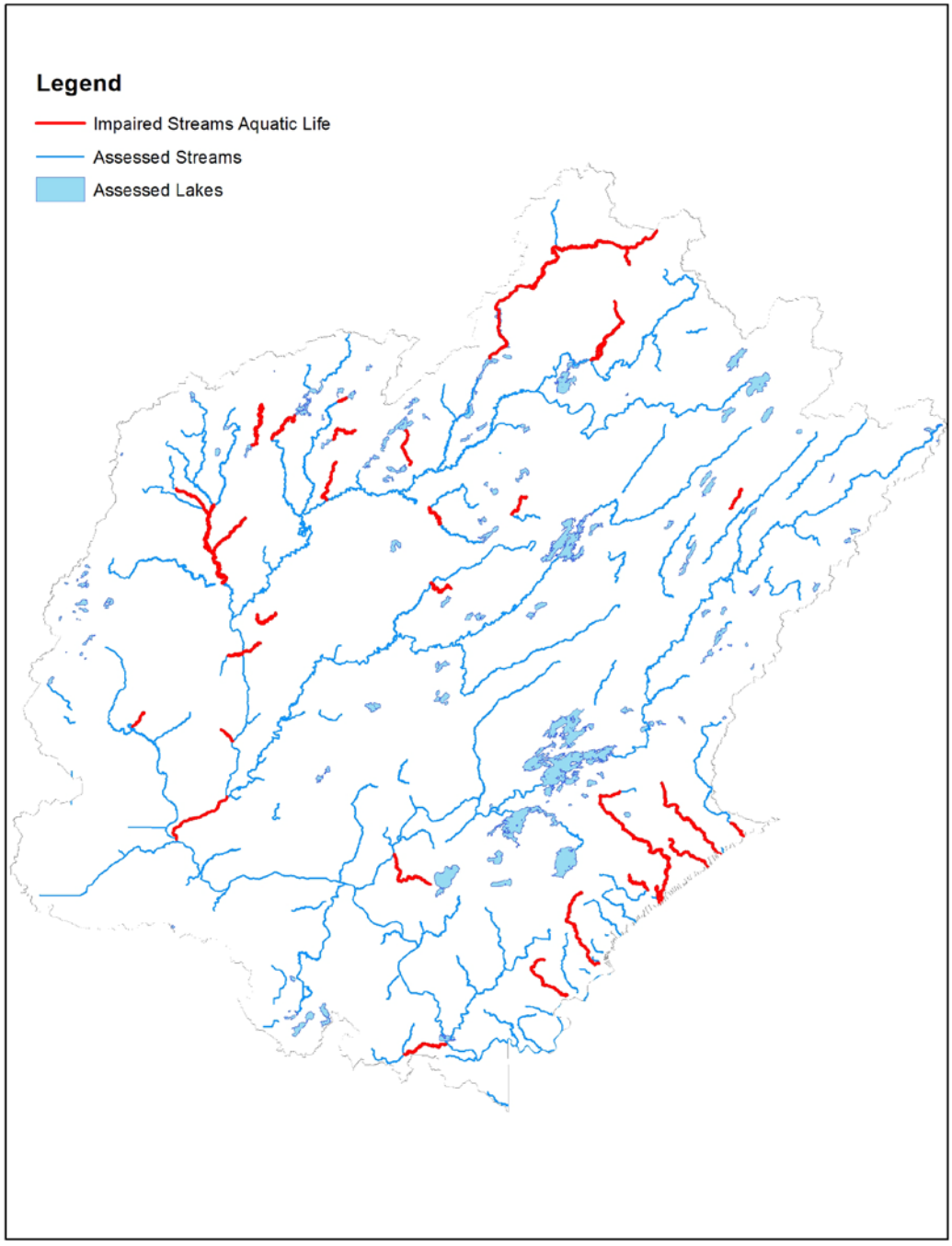

Legend
Average Annual Minimum Temperature
Value
38.5
33.1
29.4

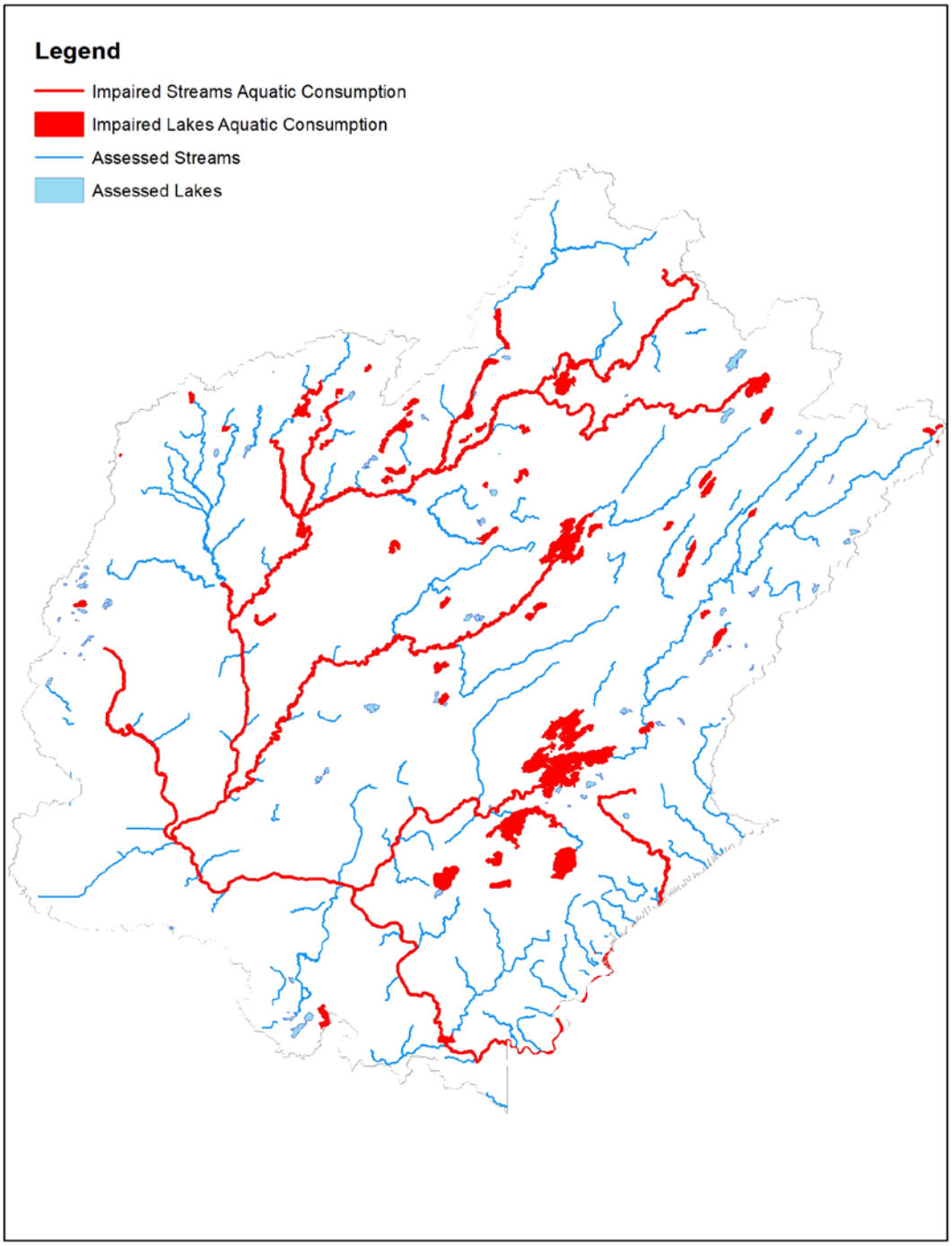

Shrub
4%
Open Water
4%
Barren Land
1%
Forested
31%
Wetland
53%
Developed
4%
Agriculture
2%
Grassland
1%


Legend
Designated Trout Stream
Designated Trout Lake
Public Lakes
Public Streams

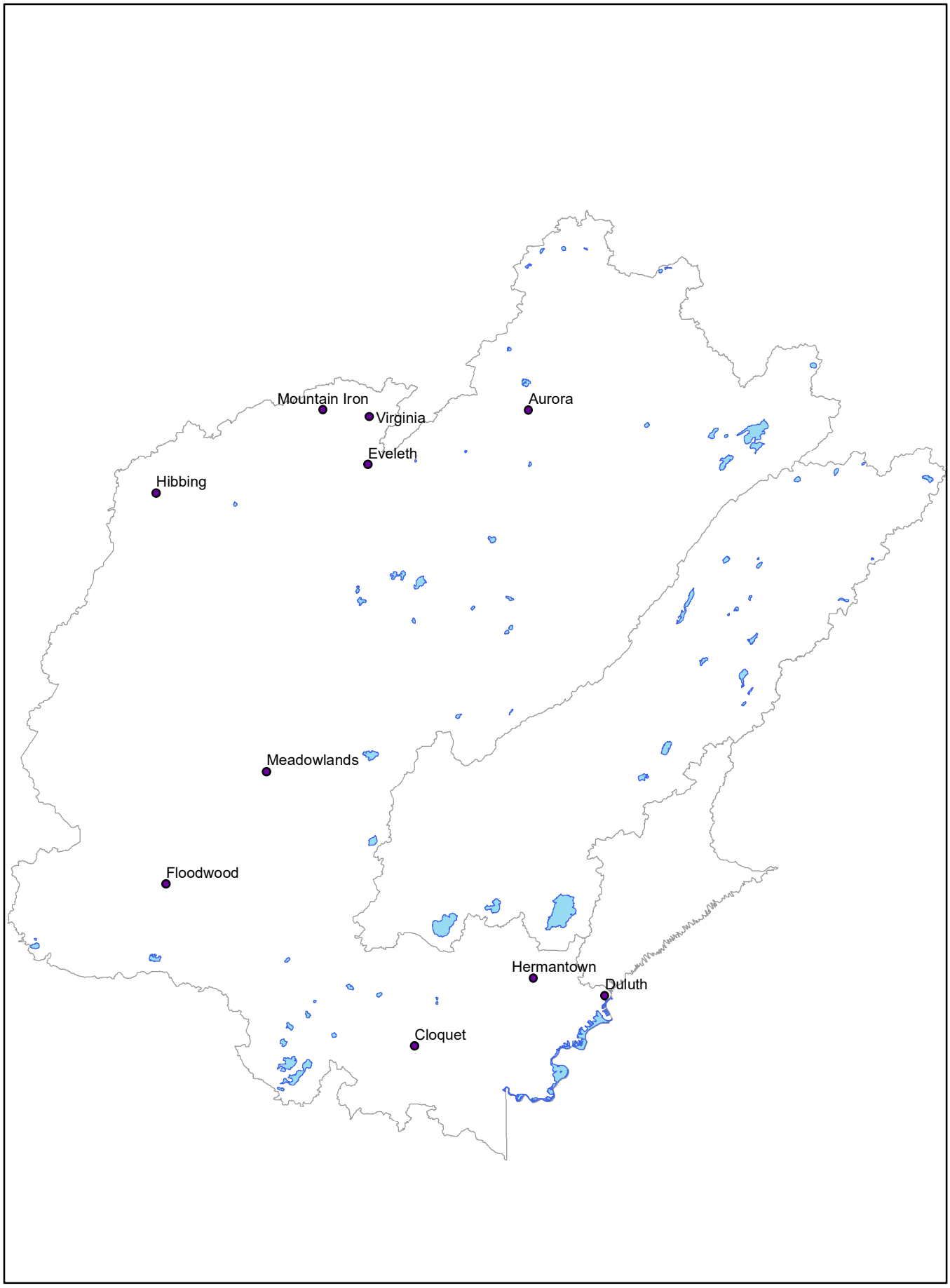

Legend
Wild Rice Lakes
Public Lakes
Public Streams


Legend
Impaired Lakes Aquatic Recreation
Impaired Streams Aquatic Recreation
Assessed Streams
Assessed Lakes

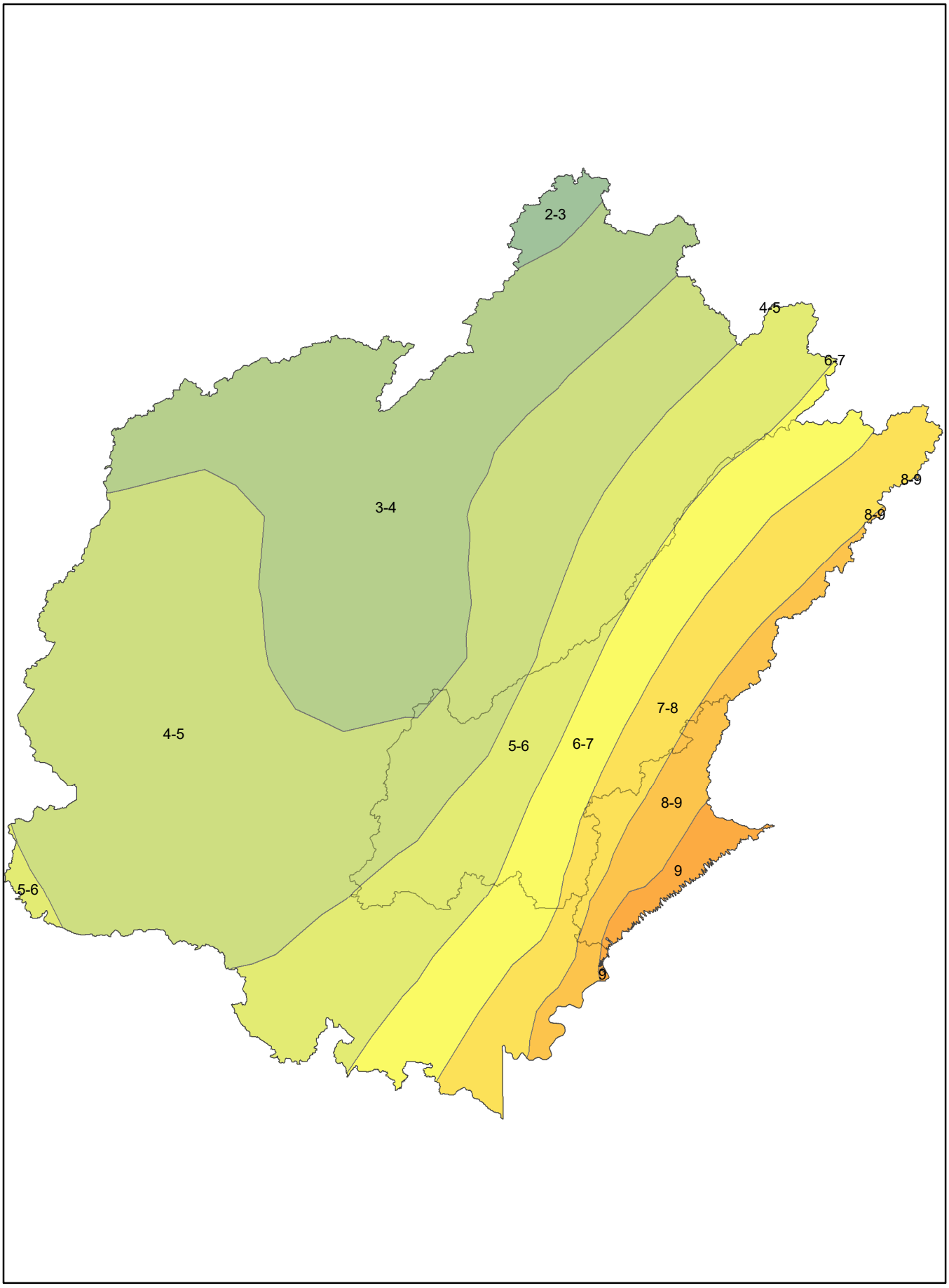

Legend
Impaired Streams Aquatic Life
Assessed Streams
Assessed Lakes


Legend
Impaired Streams Aquatic Consumption
Impaired Lakes Aquatic Consumption
Assessed Streams
Assessed Lakes

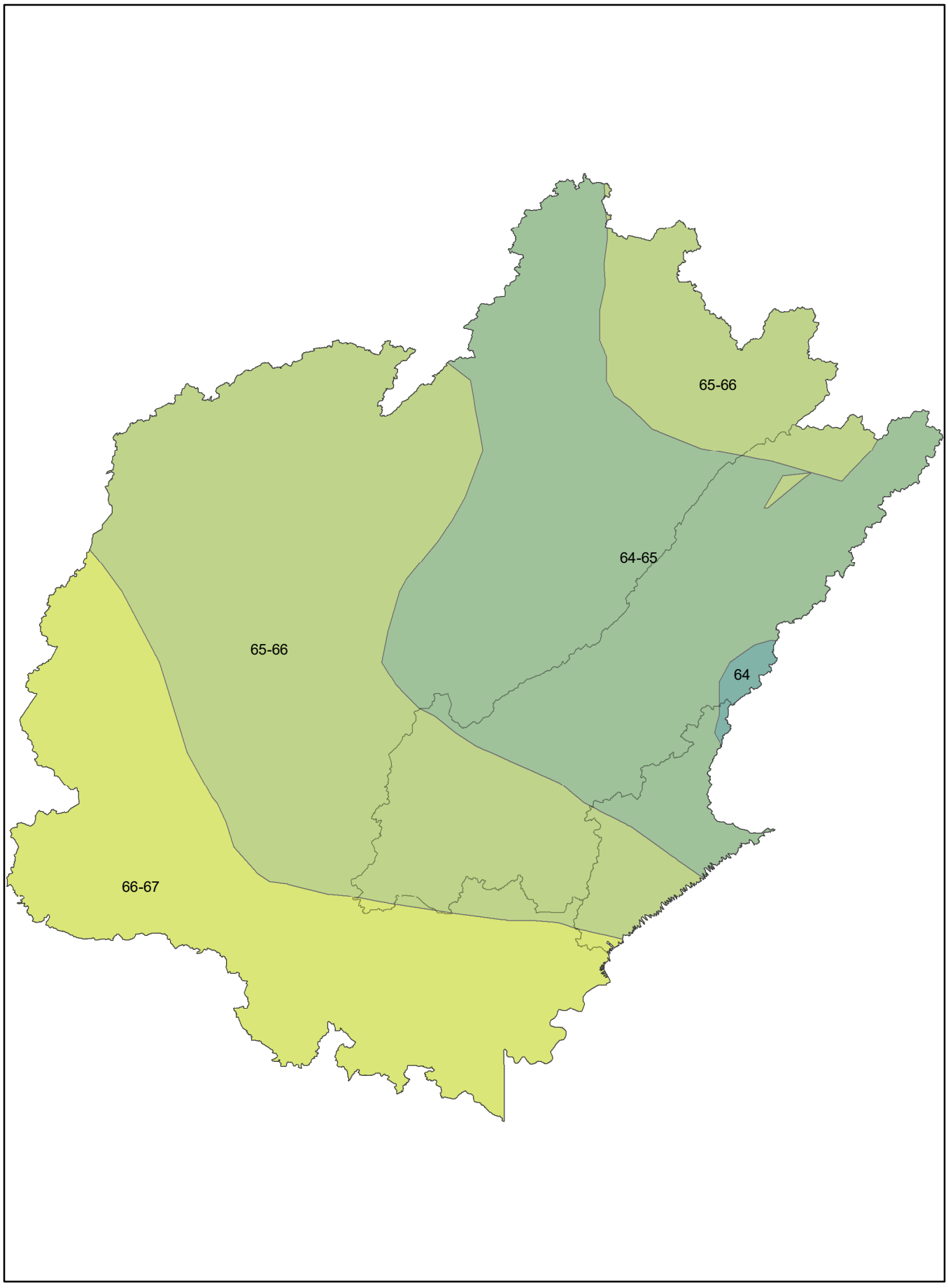
Wild Rice Lakes



January Normal Temperature (F)



July Normal Temperature (F)



Appendix F. Glossary

1W1P: One Watershed One Plan is a program administered by the Board of Water and Soil Resources to develop a comprehensive watershed management plan.

AIS: Aquatic Invasive Species are plants, animals and diseases that do not naturally occur in our waters and may cause harm to the environment, the economy, human health or natural resources.

AOC: The St. Louis River Area of Concern (AOC) is one of 43 AOCs across the Great Lakes under the Great Lakes Water Quality Agreement in 1987. AOCs represent the most severely impacted areas around the Great Lakes Basin and are required to develop remedial action plans (RAP) to address their specific beneficial use impairments.

AUID: Assessment Unit Identifiers is a number assigned to a stream segment or lake for identification purposes.

BMP: Best Management Practices are methods that have been determined to be the most effective and practical means of preventing or reducing non-point source pollution to help achieve water quality goals. BMPS include both measures to prevent pollution and measures to mitigate pollution.

BWSR: Board of Water and Soil Resources is a state agency of Minnesota that acts as the administrative agency for 90 soil and water conservation districts, 46 watershed districts, 23 metropolitan watershed management organizations, and 80 county water managers. The board sets a policy agenda designed to enhance conservation delivery through local government partners. Board members, including the board chair, are appointed by the governor to staggered four-year terms.

CRP: Conservation Reserve Program is a land conservation program administered by the Farm Service Agency (FSA). In exchange for a yearly rental payment, farmers enrolled in the program agree to remove environmentally sensitive land from agricultural production and plant species that will improve environmental health and quality.

DUA: Duluth Urban Area is the planning area of this plan that includes the Duluth Urban and Lake Superior South Streams.

DUWAC: Duluth Urban Watershed Advisory Committee is a group of stakeholders that meet regularly to discuss and plan activities within the subwatersheds in the Duluth area. The group was formed during the Watershed Restoration and Protection Strategy (WRAPS) process.

DWSMA: Drinking Water Supply Management Area is the area that is most important to the drinking water source.

EAB: Emerald Ash Borer is a terrestrial invasive species that kills ash trees.

EQIP: The Environmental Quality Incentives Program provides financial and technical assistance to agricultural producers and non-industrial forest managers to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface

water, increased soil health and reduced soil erosion and sedimentation, improved or created wildlife habitat, and mitigation against drought and increasing weather volatility.

Extension: University of Minnesota Extension partners with counties and tribal communities to deliver research and outreach of agriculture, food and natural resources, community vitality, family development and youth development.

FDL: Fond du Lac Reservation. Nagaajiwanaang, "Where the Water Stops," is the name of the homelands of the Fond du Lac Band at the time of the 1854 Treaty. The present-day Fond du lac Reservation that was established under the 1854 La Pointe Treaty. Nagaajiwanaang (Fond du Lac Band) is one of the six Bands of the Minnesota Chippewa Tribe. There are three districts that make up the Fond du Lac Reservation: Bapashkominitigong (Cloquet), Gwaaba'iganing (Sawyer), and Ashkibwaakaaning (Brookston). Today, our Band includes over 4,200 members.

FDL OWP: Fond du Lac Office of Water Protection includes the staff and programs responsible for protecting the aquatic resources of the Reservation: surface waters (lakes and streams), wetlands, and ground water.

FSA: Farm Service Agency is a branch of the United States Department of Agriculture and serves all farmers, ranchers, and agricultural partners through the delivery agricultural programs for all Americans.

HSPF (Hydrological Simulation Program – FORTRAN): A model for simulation of watershed hydrology and water quality for pollutants. This model was run for the Nemadji River Watershed during the 2017 Watershed Restoration and Protection Strategy (WRAPS).

IBI: Index of Biological Integrity is a way of measuring the biological community (fish and aquatic macroinvertebrates) in the water body. The index is a scale of 0 to 100 with 0 being the lowest quality and 100 being the highest quality.

Impairment: Waterbodies are listed as impaired if they do not meet the state water quality standard for designated uses including aquatic life, aquatic recreation, and aquatic consumption.

LAMP: Lake Superior Lakewide Action and Management Plans are plans of action to assess, restore, protect and monitor the ecosystem health of each Great Lake and its connecting river system. It coordinates the work of all the government and non-government partners working to improve the lake's ecosystem. A public consultation process ensures that the LAMP is addressing the public's concerns.

LGU: Local Government Units include county, city, SWCD or townships. A LGU is a subdivision of a larger political unit.

MDA: Minnesota Department of Agriculture

MDH: Minnesota Department of Health

MNDNR: Minnesota Department of Natural Resources

MPCA: Minnesota Pollution Control Agency

MOA: Memorandum of Agreement is a document written between parties to cooperatively work together on an agreed upon project or meet an agreed upon objective.

MS4: An MS4 is a conveyance or system of conveyances that is: owned by a state, city, town, village, or other public entity that discharges to waters of the U.S.; designed or used to collect or convey stormwater (e.g., storm drains, pipes, ditches); not a combined sewer; and not part of a sewage treatment plant, or publicly owned treatment works (POTW).

NFS: National Forest Service is an agency of the U.S. Department of Agriculture that administers the nation's 154 national forests and 20 national grasslands.

NLS: North St. Louis planning area is the northern part of the St. Louis HUC 8 Watershed.

NRCS: The Natural Resource Conservation Service is a part of the United States Department of Agriculture that focuses on providing farmers and ranchers with financial and technical assistance to voluntarily put conservation on the ground.

Phosphorus Sensitivity: The lake's sensitivity to phosphorus as determined by the DNR. Sensitivity means that added phosphorus would affect the clarity in these lakes the most (Radomski 2018).

Protected: Protected land uses include public lands, public waters, wetlands on private lands, easements, other conservation lands, Sustainable Forest Incentive Act (SFIA).

RAQ: Riparian, Adjacency, and Quality tool is a mapping tool used to prioritize forested parcels for protection.

RIM: Reinvest in Minnesota is a easement program that permanently protects, restores and manages critical natural resources in Minnesota.

RSPT: Regional Stormwater Protection Team is a collaboration between local Municipal Separate Storm Sewer Systems (MS4s), partnering agencies and organizations. Only certain MS4s are subject to stormwater regulation under the Clean Water Act based on population density, amount of impervious surface, and the waterbodies that receive the municipality's stormwater. RSPT is made up of voting (MS4) and non-voting (non-MS4) communities. Their mission is to protect and enhance the region's shared water resources through stormwater pollution prevention by providing coordinated educational programs and technical assistance.

SFIA: Sustainable Forest Incentives Act provides direct incentive payments to property owners to encourage sustainable use of forest lands.

SLRPA: St. Louis River Planning Area is the coverage of this plan and includes two Hydrologic Unit Code (HUC) 8 Major Watersheds: The Cloquet River and St. Louis River as well as the southwestern portion of the Lake Superior South HUC 8 watershed.

SLS: St. Louis South planning area includes the southern portion of the St. Louis HUC 8 watershed.

SSTS: Sub surface treatment systems are private septic systems that use soils to treat sewage.

SWCD: Soil and Water Conservation Districts were formed in 1937 with the purpose of conserving soil, water, and related natural resources on private land.

TMDL (Total Maximum Daily Load): the amount of a particular pollutant that a body of water can handle without violating state water quality standards.

USEPA VELMA: The United States Environmental Protection Agency Visualizing Ecosystem Land Management Assessment Model is a tool designed to model effective decisions for a wide array of environmental issues. It is a spatially explicit ecohydrological watershed model that planners can use to visualize the effects of their decisions.

Watershed: A land area that channels rainfall and snowmelt to creeks, streams, and rivers, and eventually to outflow points such as reservoirs, bays, and the ocean.

WLSSD: Western Lake Superior Sanitary District provides wastewater and solid waste services and oversight for a 530 square mile region around Duluth, Minnesota that includes the cities of Duluth, Cloquet, Hermantown, Proctor, Rice Lake, Carlton, Scanlon, Thomson and Wrenshall, and eight surrounding townships.

WRAPS (Watershed Restoration and Protection Strategy): A watershed approach to restoring and protecting Minnesota's rivers, lakes, and wetlands implemented by the Minnesota Pollution Control Agency on a 10-year cycle. https://www.pca.state.mn.us/water/watershed-approach-restoring-and-protecting-water-quality