

2011 MN State Envirothon Oral Presentation Scenario Salt and Freshwater Estuaries

An estuary is a partially enclosed body of water (such as bays, lagoons, sounds or sloughs) where two different bodies of water meet and mix.

Small estuaries dot Lake Superior in what some have called a “string of pearls” along its southern coastline. The Minnesota North Shore is too rocky to create estuaries, but the sandy flat coasts of northern Wisconsin are perfect for sustaining such ecosystems. Estuaries, sometimes called *sloughs*, are where two types of waters meet – most of the time, it’s where salt and fresh water meet, resulting in a brackish mixture. But estuaries can also be found where water from one of our five freshwater Great Lakes meets water from a riverine system, which are chemically distinct. When these two types of water meet, mixing occurs. Mixing in oceanic estuaries is tidally driven, whereas mixing in freshwater estuaries is storm-driven. During storms, water in a Great Lakes basin sloshes in the basin like soup in a bowl (this is called a *seiche*). The dynamic mixing and water level changes within a freshwater estuary create habitat shared by species that use both the river and lake.

The St. Louis River Estuary is located in the lower St. Louis River, along the border of Minnesota and Wisconsin and within the twin ports of Duluth, MN and Superior, WI. The St. Louis River forms a sort of crescent shape and its headwaters are located on the eastern side of St. Louis County. It flows east to west through St. Louis County, dips down into Carlton County, runs through Jay Cooke State Park, forms the border between Wisconsin and Minnesota and then slows and spreads into a large estuary before emptying into Lake Superior. It is 179 miles long and is the largest US tributary to Lake Superior.

The lower St. Louis River and its estuary were heavily polluted during most of the last century by sewage, toxic chemicals, and industrial by-products, but its ecological health has improved dramatically since the establishment of the Western Lake Superior Sanitary District in 1978. Today, the mighty St. Louis provides myriad benefits to humans and animals in the Duluth Superior area including energy, recreation and habitat benefits.

The federal government has a program called the National Estuarine Research Reserve (NERR) Program which protects almost 30 estuaries of incredible natural and social importance across the country. From their website: *The National Estuarine Research Reserve System is a network of 28 areas representing different biogeographic regions of the United States that are protected for long-term research, water-quality monitoring, education and coastal stewardship. Established by the Coastal Zone Management Act of 1972, as amended, the reserve system is a partnership program between the National Oceanic and Atmospheric Administration and the coastal states. NOAA provides funding, national guidance and technical assistance. Each reserve is managed on a daily basis by a lead state agency or university, with input from local partners.* In 2010, only the second freshwater NERR in the system, the Lake Superior NERR, was designated as an NERR and added to the system. Based in Superior along the mouth of the St. Louis River and coordinated by the University of Wisconsin, the Lake Superior NERR will bring federal money and attention to the St. Louis River and the area. Many people and agencies worked for almost 3 years to identify the best freshwater estuary candidate for a NERR designation. In the end, the St. Louis River was deemed the best choice and in 2010, it was officially designated as the 28th National Estuarine Research Reserve.

Your mission, should you accept it:

It's 2013, and in a dramatic turn of events, the President has stepped down from the presidency because the national debt grew so big that he couldn't even pay himself. The new president, working pro bono, wants to cut the NERR program down to only 1 in the entire country to save money. Your firm: ABC Company (pick a new name for your company), has been requested by Congress to come to Washington and convince them why the Lake Superior NERR should be the **one** NERR site that they MUST keep. In order to prepare for your congressional appearance, you should **consider the following**:

1. Explain what an estuary is, the benefits/services they provide to the surrounding ecosystem, what the NERR program is and how it came to be.
2. Why is the Lake Superior NERR more deserving of being preserved than the other NERRs in the system? What is unique about it?
3. How will keeping the Lake Superior NERR benefit the Twin Ports, the State of Minnesota, the Great Lakes ecosystem, and the Nation as a whole? (environmentally and economically)
4. What existing community, university, agency, and non-government resources exist in the Duluth Superior area to help support the NERR and potentially decrease the amount of federal support needed (making it a good "deal" for the federal government)?
5. What efforts have already been made to restore the St. Louis that demonstrate how committed the local community is to maintaining this important ecosystem?
6. Are there other national preservation programs that you could recommend cutting before cutting the NERR program? (e.g. national scientific and natural areas, national parks, historical sites)? Provide good reasons why preserving the NERR program might be more beneficial to the nation than these other programs (think hard about this! Those National Park Rangers will be listening!)

Resources:

- National NERR Program: <http://www.nerrs.noaa.gov>
- University of Wisconsin: <http://freshwaterestuary.uwex.edu/>
- Life in an Estuary. Walker, Sally. 2003
- St. Louis River Alliance: <http://www.stlouisriver.org>
- St. Louis River Remedial Action Plan, 1992
- Estuaries.gov: <http://www.estuaries.gov>
- Western Lake Superior Sanitary District: http://www.wlssd.com/about_history.php
- State of Wisconsin: <http://www.doa.state.wi.us/subcategory.asp?linksubcatid=1136&locid=9>
- EPA: <http://www.epa.gov/greatlakes/aoc/stlouis.html>

Maps:

National Estuarine Research Reserve System (NERRS) Reserves

