



**MINNESOTA POLLUTION
CONTROL AGENCY**

**New Data
New Standards
New Impairments
New Limits**

= More Trades

Matt Lindon

Dec. 6rd, 2017

What I will cover

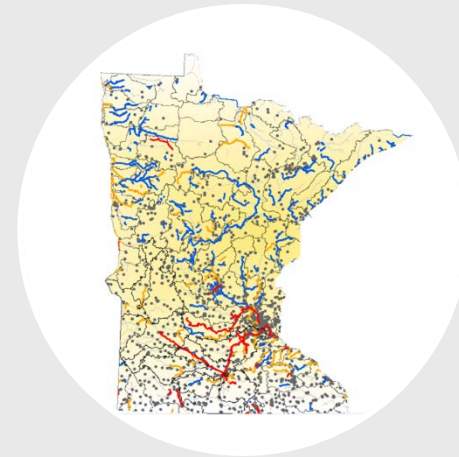


**Minnesota WQ Nutrient
Standards**

**Statutory Authority for
Trading**



20 Years of History



**New
Challenges**

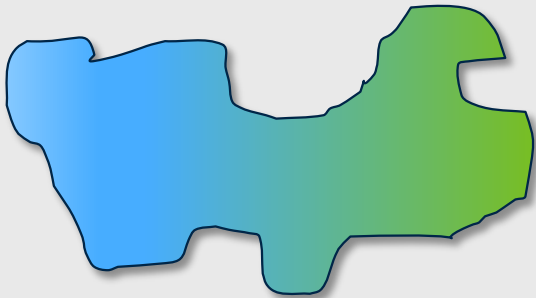


**Minnesota River
Basin Example**

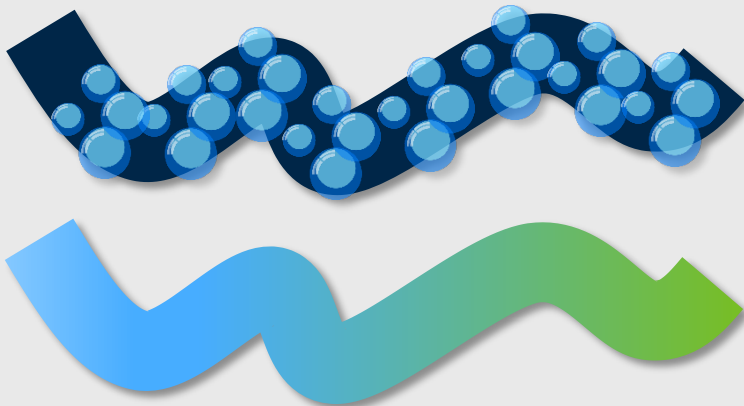


State Discharge Restrictions (SDRs)


Lakes



Rivers



- 1970s
 - 1.0 mg/L if....
 - Technology-based approach
- 2008
 - Prevent nuisance algae
 - 12 month rolling total mass limits
- 2004
 - Ensure sufficient dissolved oxygen (DO)
 - May – Sept. 5 month seasonal mass limit
- 2015
 - Prevent Nuisance Algae
 - June – Sept. 4 month monthly avg mass limit

A photograph of the Minnesota State Capitol building, featuring a large dome and classical columns. A blue circular overlay is positioned on the right side of the image, containing white text. The building is made of light-colored stone and has a prominent dome with a golden finial. The sky is a clear, deep blue.

Minn. Stat.
115.03(10)
Pollutant
loading offset

A photograph of the Minnesota State Capitol building, a grand neoclassical structure with a large dome and ornate facade. The building is made of light-colored stone and features numerous columns and arches. A large, semi-transparent blue circle is overlaid on the right side of the image. Inside this circle, the words "No Rules" are written in a clean, white, sans-serif font. The sky is a clear, deep blue. A small flag is visible on the right edge of the building.

No Rules

The image shows the front facade of the Minnesota State Capitol building, featuring a large dome and classical columns. A semi-transparent blue circle is overlaid on the right side of the image, containing white text. The text reads "No Rules", "Only Statute", a plus sign "+", and "Guidelines".

No Rules
Only Statute
+
Guidelines


The image shows the front facade of the Minnesota State Capitol building, featuring a large central dome topped with a golden orb, a series of golden statues on a balcony, and a portico with columns and arches. A large blue circle is overlaid on the right side of the image, containing the text "Tested in the Courts" in white. A small flag is visible on the far right edge.

Tested in the Courts

An aerial photograph showing the confluence of the St. Croix and Mississippi rivers. The St. Croix River flows from the top left towards the center, where it meets the Mississippi River, which flows from the top right towards the bottom right. The Mississippi River is wider and has a more uniform brownish color, while the St. Croix River is narrower and shows more variation in color, possibly due to sediment or vegetation. A large blue circular overlay is positioned on the left side of the image, containing the title text in white. In the bottom right corner, there is a yellow text label. The background shows a mix of green trees, a road with a bridge, and some industrial or residential structures along the riverbanks.

History of Water Quality Trading in Minnesota

Confluence of St. Croix and Mississippi



First
trading
permit
issued

1997

3

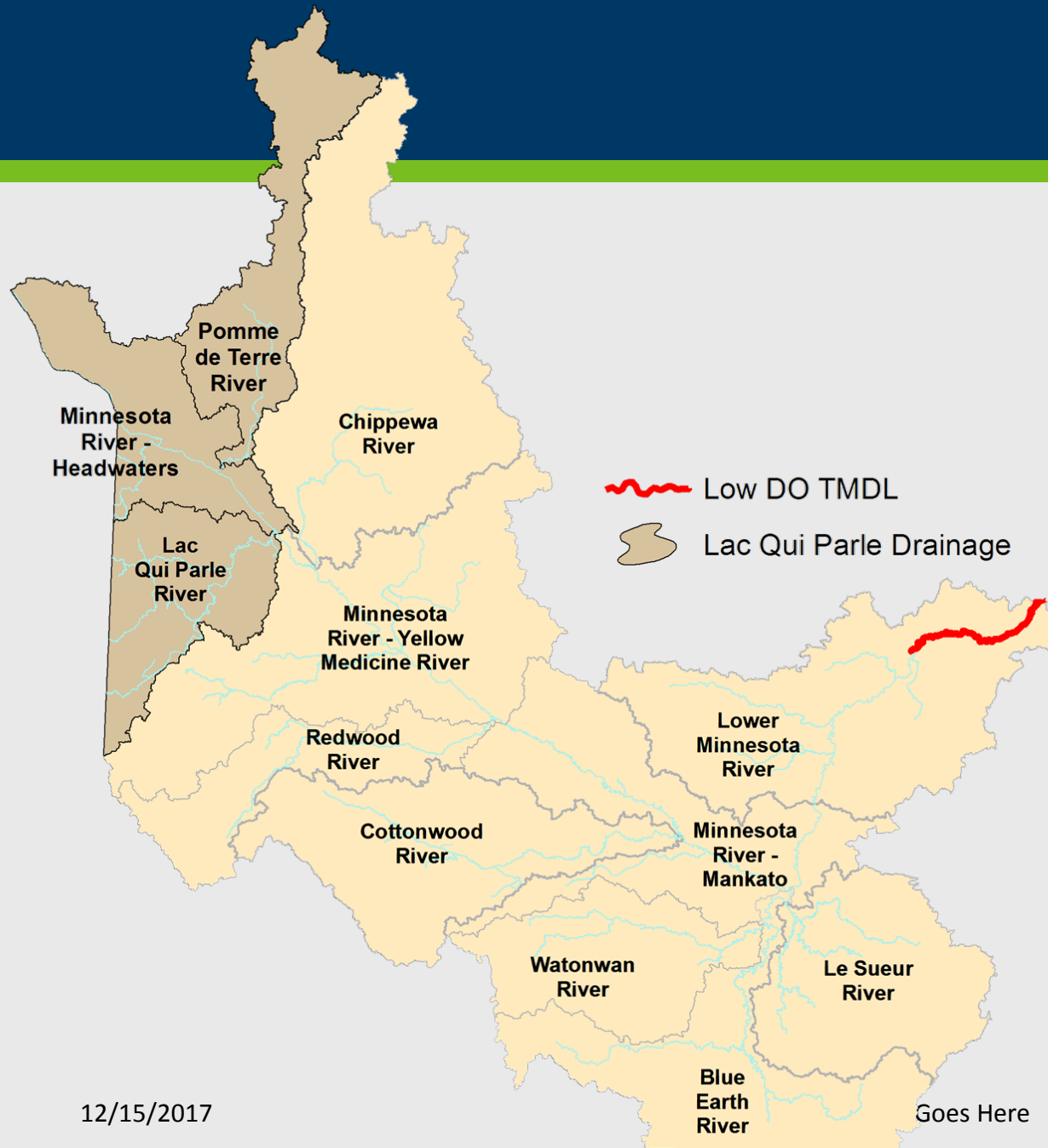
Point
source to
non-point
source
trades

A scenic view of the Minnesota River, with lush green trees lining the banks and a clear blue sky with scattered clouds. The river's surface is calm, reflecting the surrounding greenery. A large white circle on the left side of the image contains text about phosphorus trading. On the right side, large white text indicates the number of trades since 2008.

Trades
under MN
River Basin
phosphorus
permit

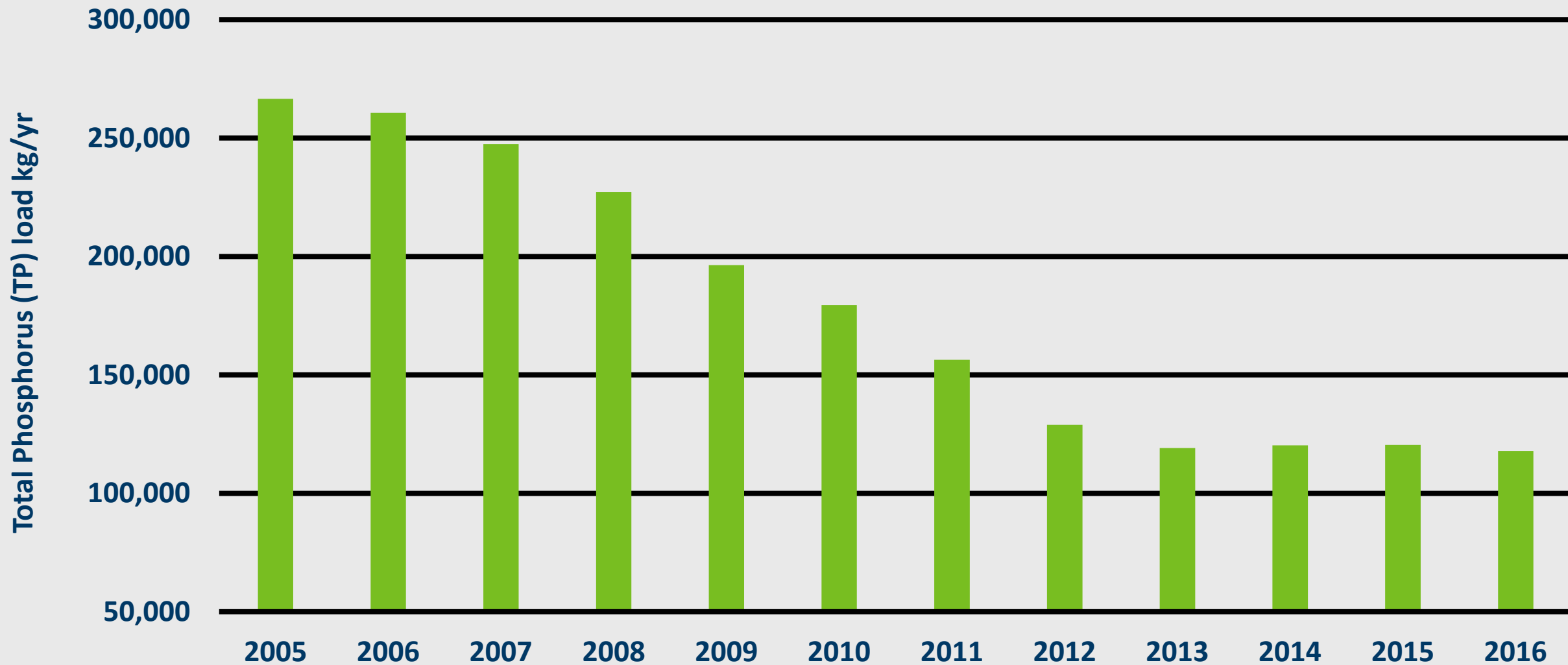
125
since
2008

Low Dissolved Oxygen



- Completed phase 1 of General Phosphorus permit (35% ↓)
- Actual discharge *way* below limits
- HSPF computer model used to simulate point and nonpoint source reductions

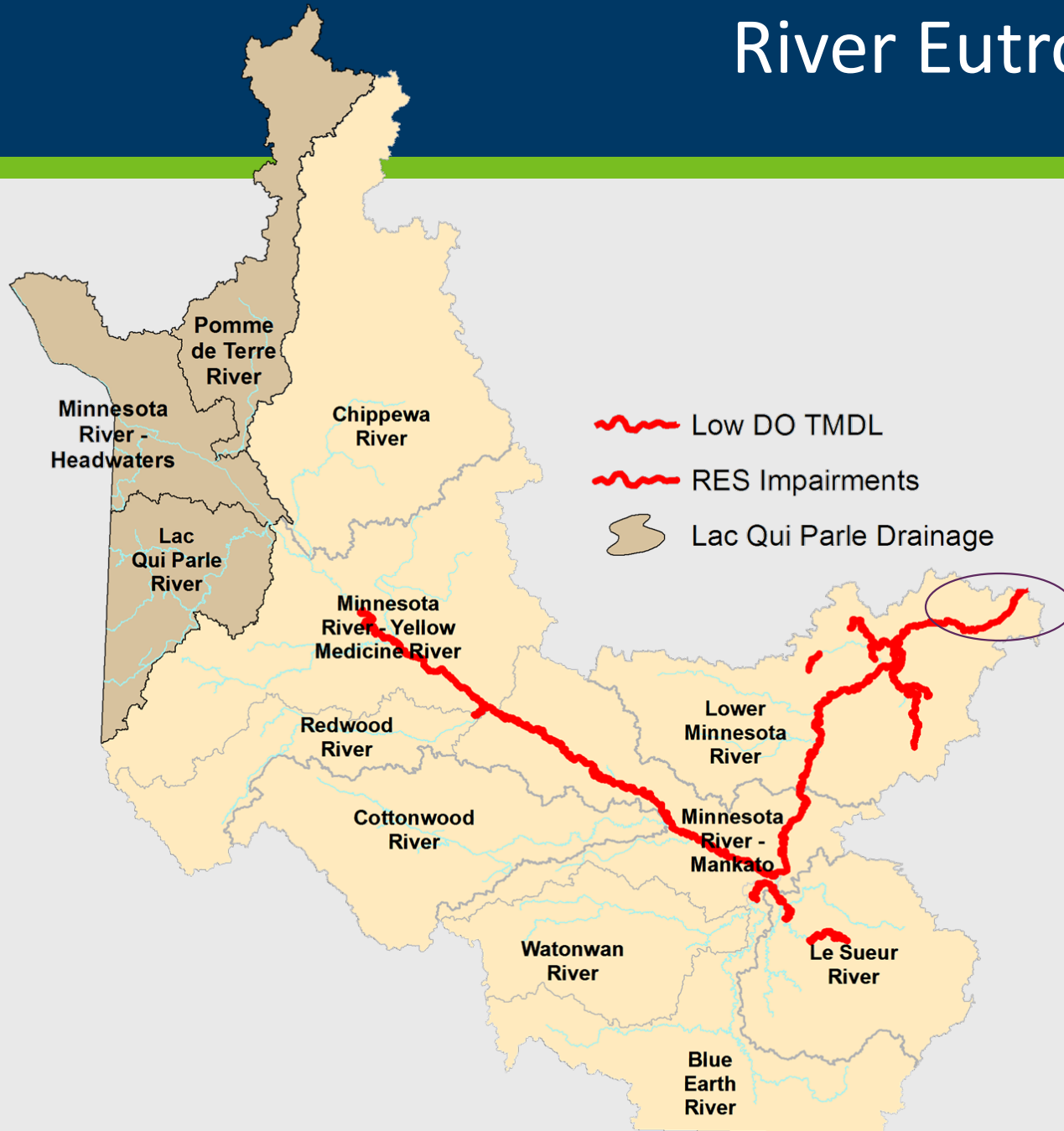
Wastewater Phosphorus load in the Minnesota River Basin



New Challenges



River Eutrophication Standards (RES)

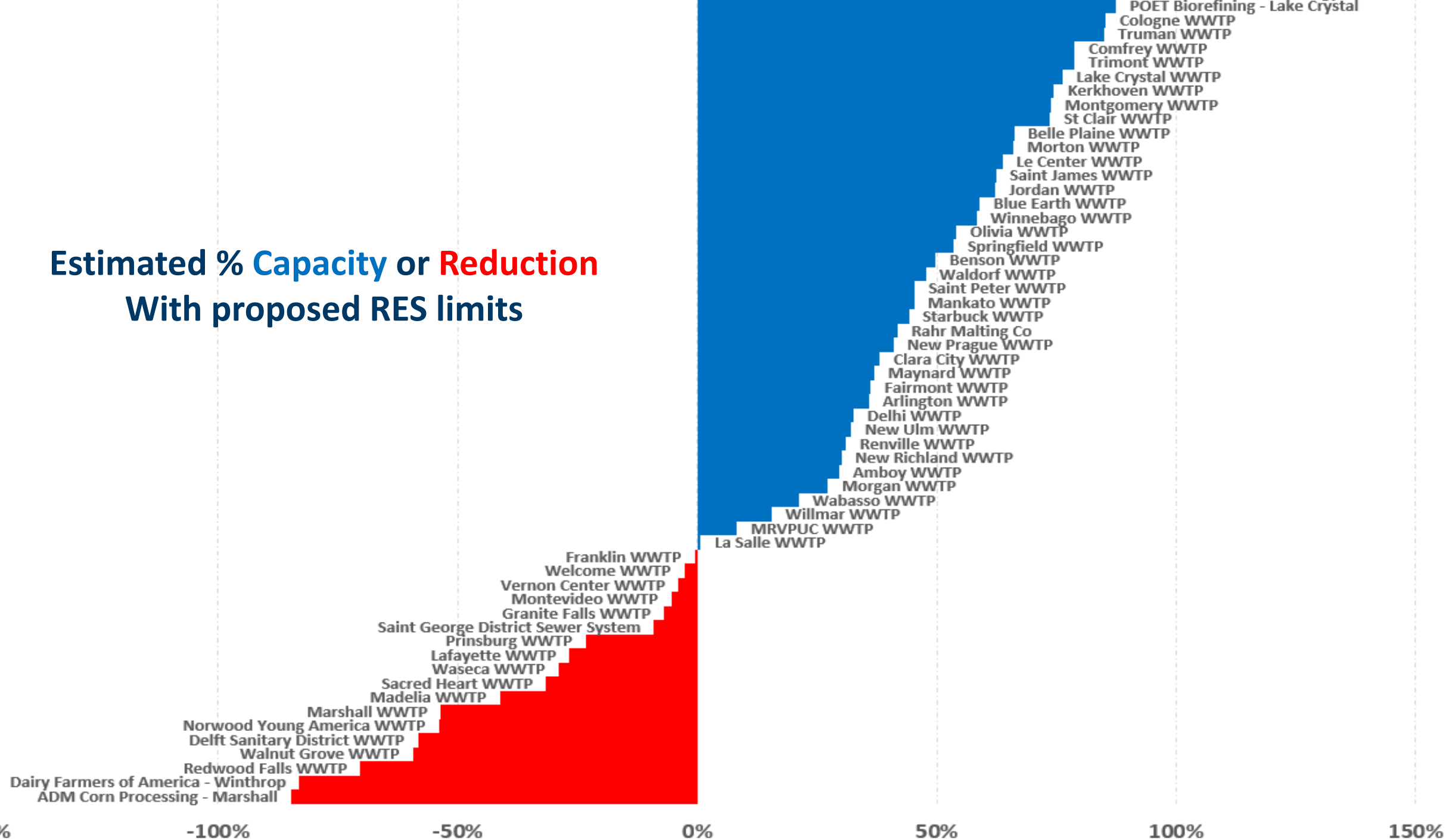


- Phase I General Permit limits – not protective
- Phase II General Permit (51% ↓) – close but also not protective
- Used HSFP model to simulate point and nonpoint source reductions

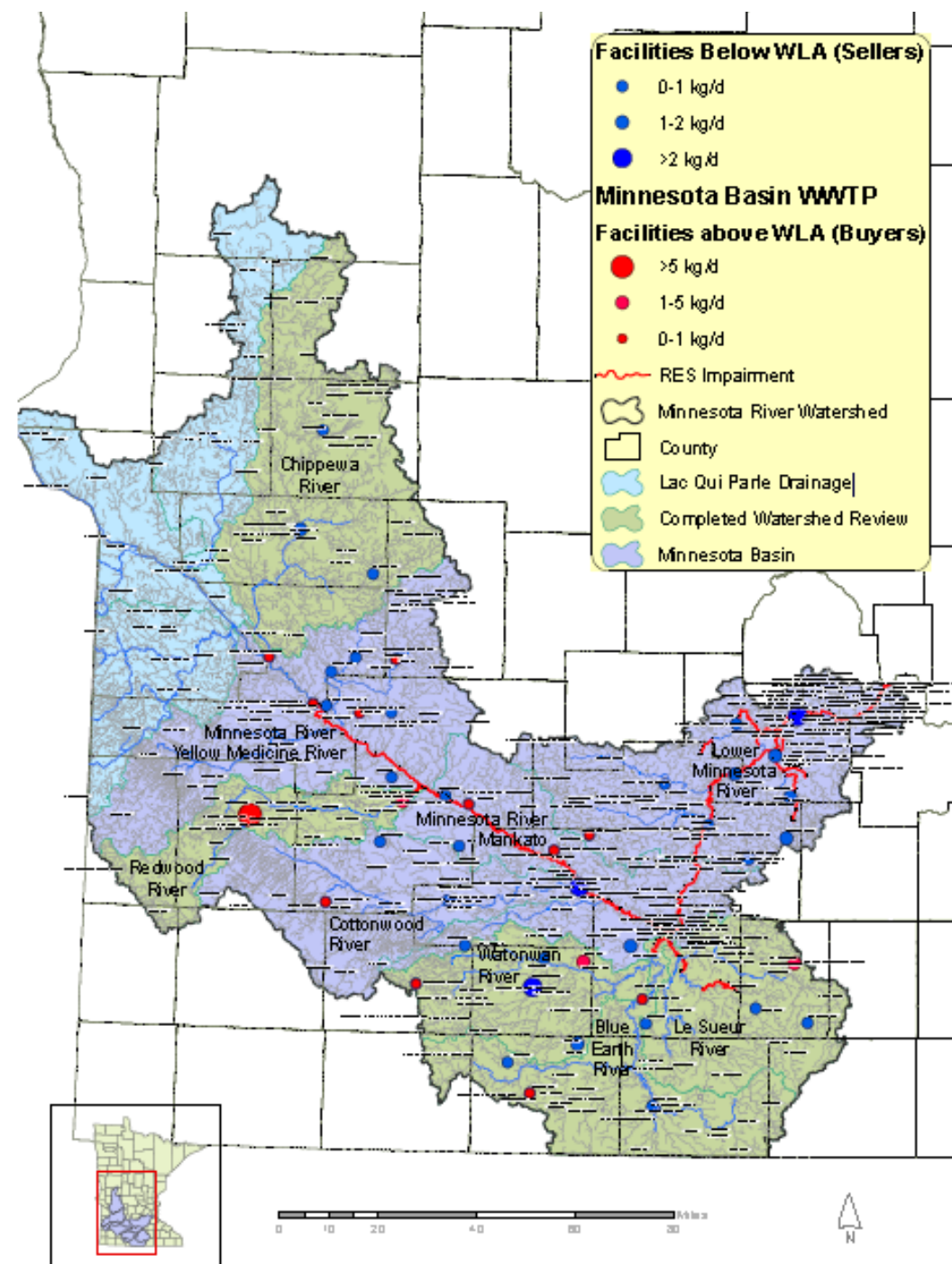
Minnesota River Basin Approach for River Eutrophication

- Model existed per Low DO TMDL
 - Looked at all summer flows for multiple years
- Scenarios were created to assess non-point management impact of TSS/TP
 - Allowed Non-point reductions to be taken into account
- Look at the impact of many facilities (~200) on the Minnesota River Mainstem
- The outcome --- we needed to go beyond the previous basin permit

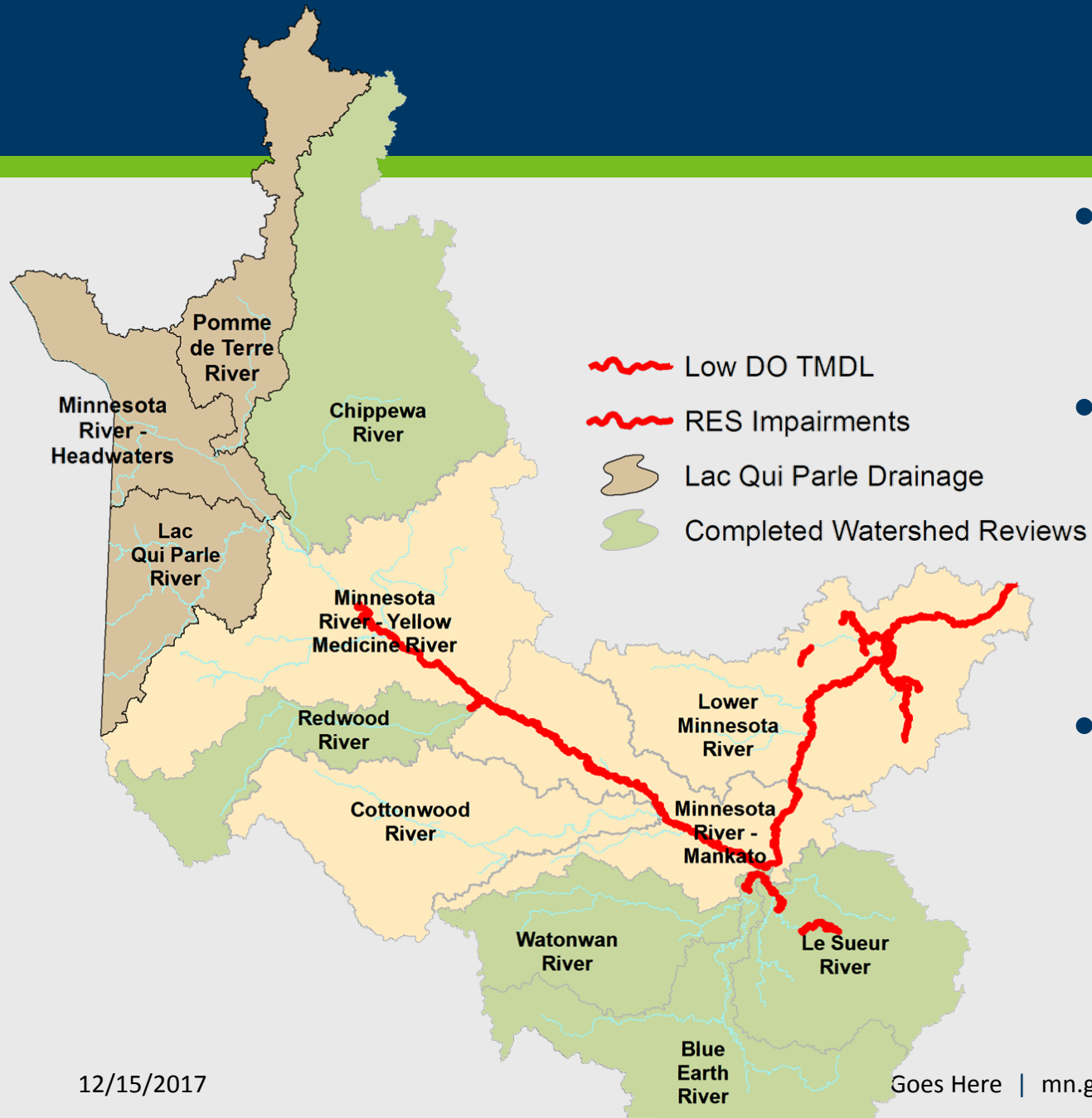
Estimated % Capacity or Reduction With proposed RES limits



What Does this look
like at a Basin Scale
?

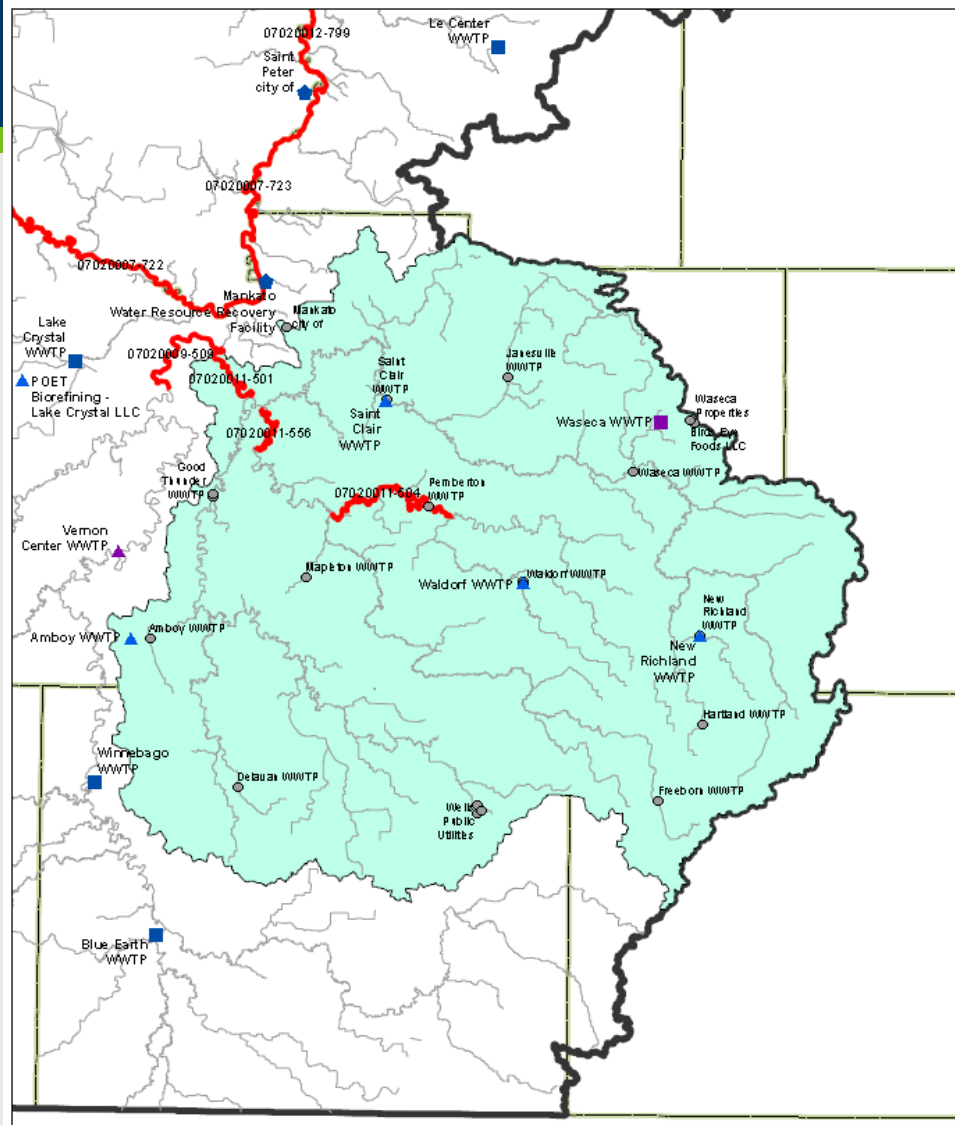


Watershed Approach



- Major watershed within basin also have algae/impairments
- Simple dilution equations used to evaluate protection for major watersheds. (Greater Blue Earth, Redwood, Chippewa)
- Limits for Minnesota River RES, good enough to protect local reaches, generally

RES Trading Details/Examples

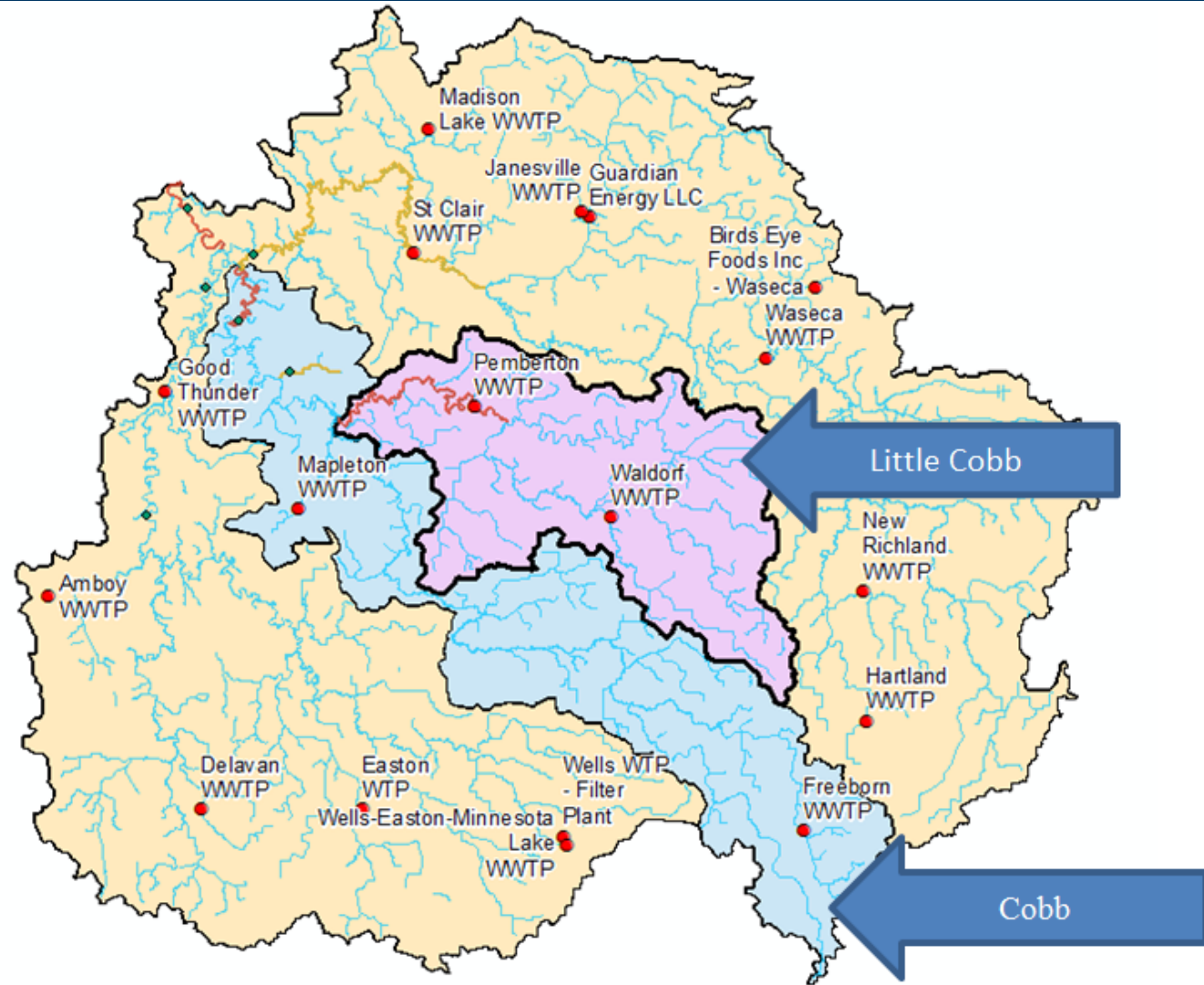


Facilities Above WLA **Facilities Below WLA**

- ▲ Above WLA: 0-1 kg/d
- ▲ Below WLA: 0-1 kg/d
- ▲ Above WLA: 1-5 kg/d
- ▲ Below WLA: 1-2 kg/d
- ▲ Above WLA: >5 kg/d
- ▲ Below WLA: >2 kg/d
- NPDES discharge station

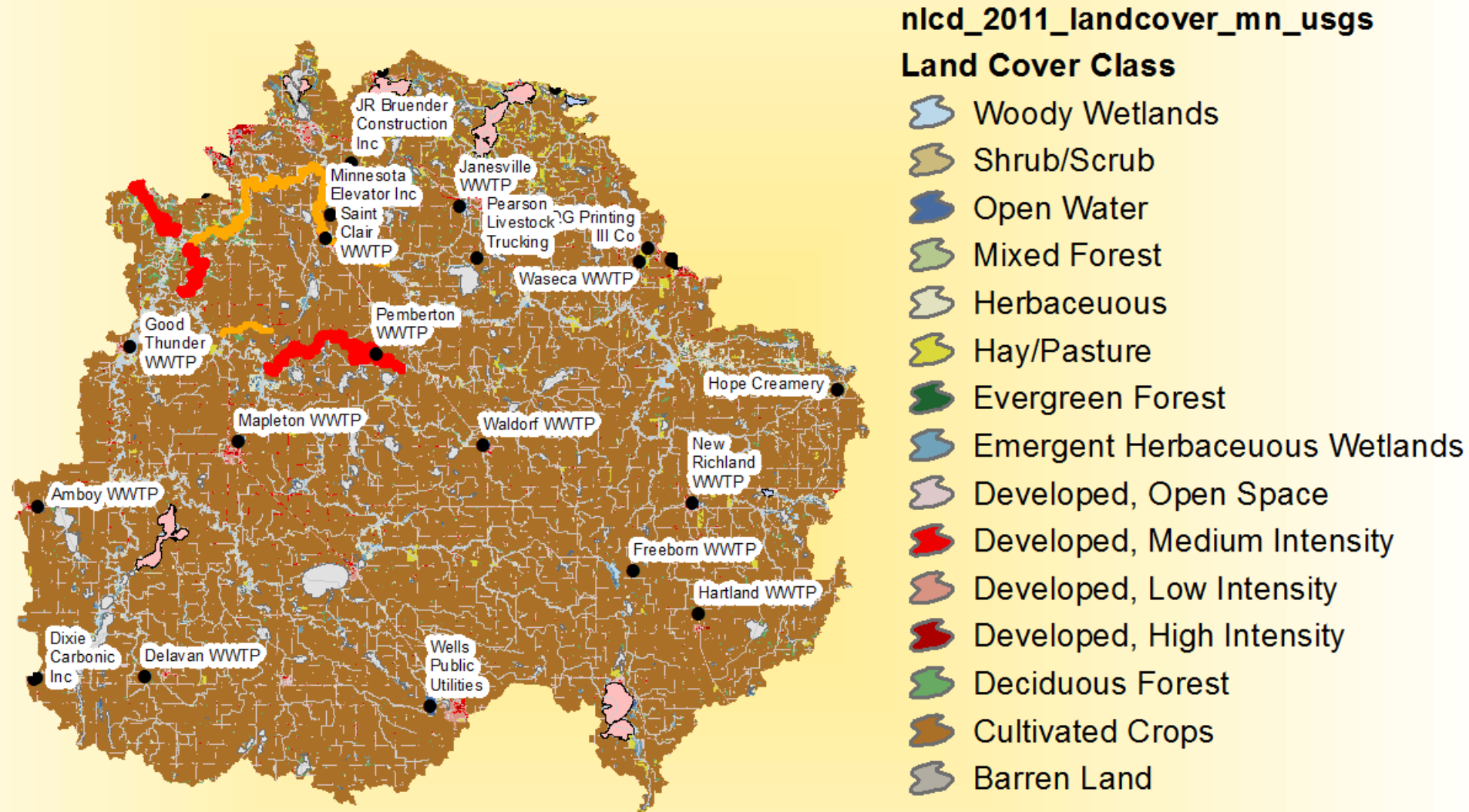
— RES Impairment — Assessed stream — Area upstream of AUI

Drainage area for AUI T07020011_501



Tagline Goes Here | mn.gov/websites/uri

Trading With Non-point



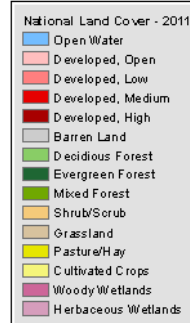
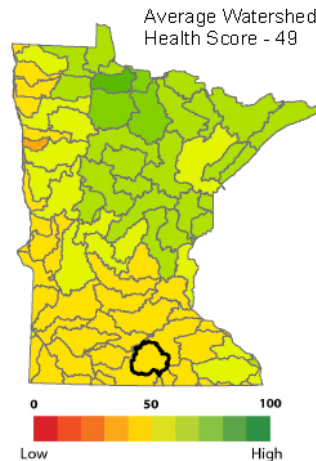
Getting at Non-point



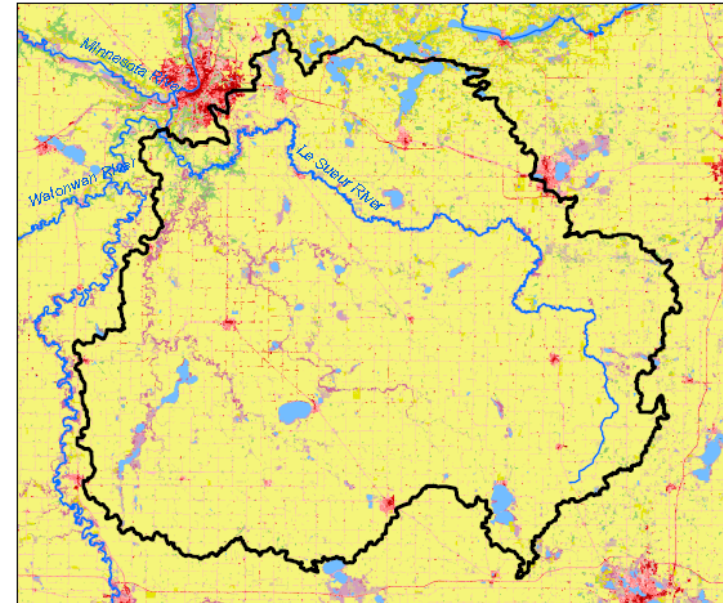
Le Sueur Watershed

Watershed Health Report - Major Watershed

Le Sueur River



These health scores are calculated at the Major Watershed (HUC8) scale. Health score names followed by (*) are also calculated at the DNR Catchment scale (subdivided HUC12). Those results are reported on the following pages.



Hydrology

Component Health Score
(index average) 60

Index Scores

Perennial Cover*	9
Impervious Cover*	71
Water Withdrawal*	99
Flow Variability	65
Hydrologic Storage	35
Sub-Scores	
Altered Streams*	53
Surface Storage	18



Geomorphology

Component Health Score
(index average) 74

Index Scores

Soil Erosion Potential*	76
Groundwater Susceptibility	55
Climate Vulnerability	92



Biology

Component Health Score
(index average) 38

Index Scores

Terrestrial Habitat Quality*	1
Stream Species Quality*	76
Species Richness	56
At-Risk Species Richness	18



Connectivity

Component Health Score
(index average) 19

Index Scores

Terrestrial Habitat Connectivity	2
Aquatic Connectivity*	45
Riparian Connectivity*	44



Water Quality

Component Health Score
(index average) 52

Index Scores

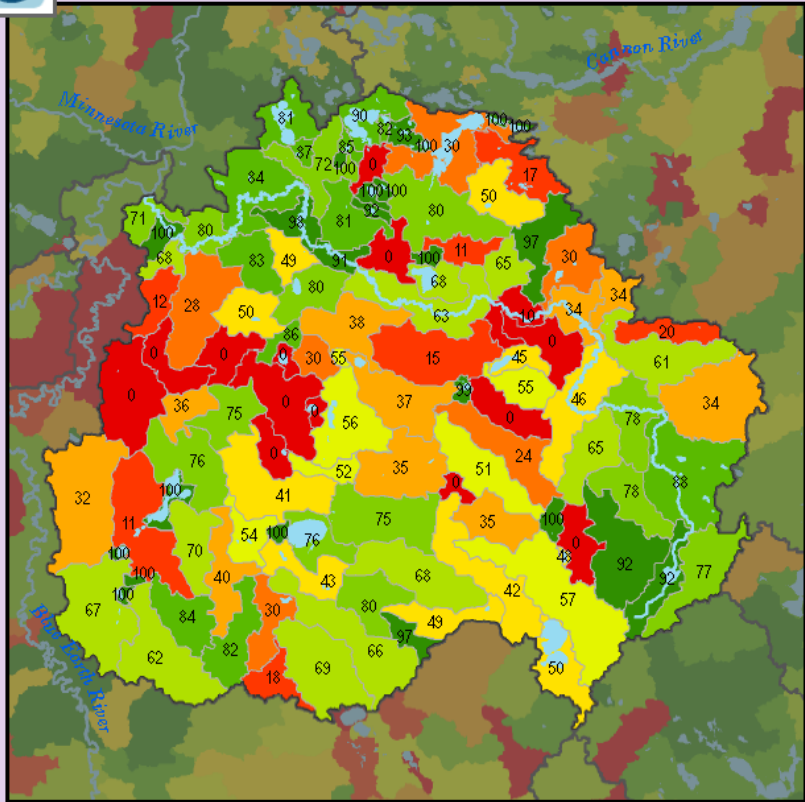
Non-Point Pollution Sources	31
Sub-Score	
Phosphorus Risk*	5
Localized Pollution Sources*	81
Assessments	39

Optional Tagline Goes Here | mn.gov/websiteurl

Non-Point Trading

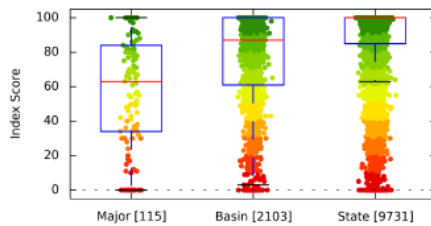


Localized Pollution Sources - Animal Units

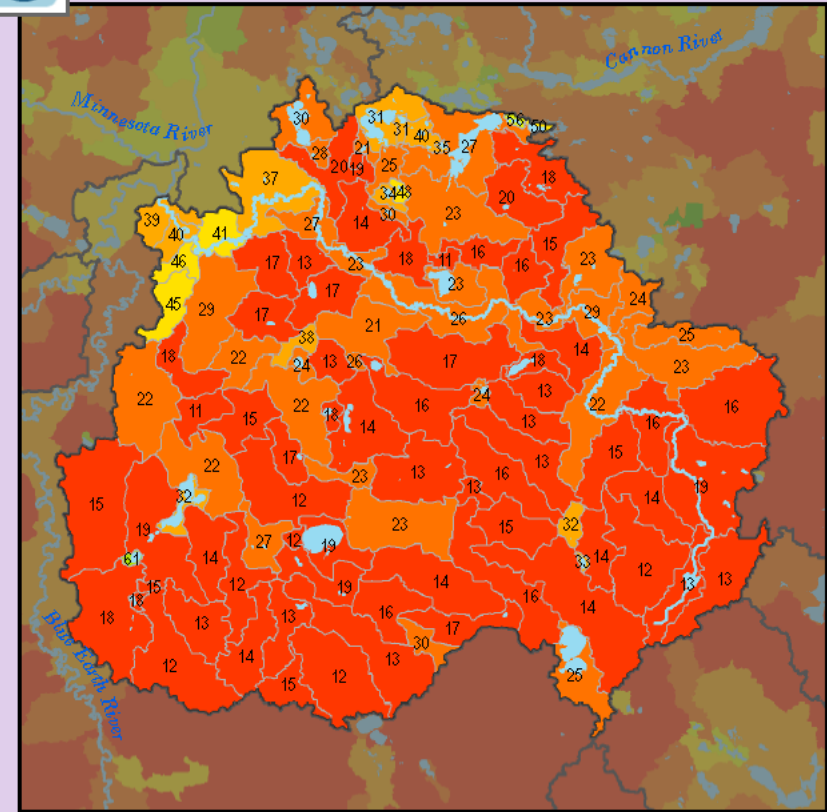


Health Score Distributions:

Le Sueur River
 Min: 0
 Max: 100
 Median: 63.0
 Mean: 57.29
 Standard Dev: 32.55

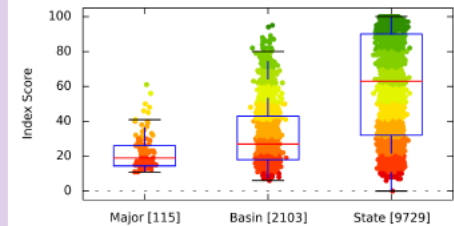


Non-Point Source - Phosphorus Risk



Health Score Distributions:

Le Sueur River
 Min: 11
 Max: 61
 Median: 19.0
 Mean: 22.03
 Standard Dev: 10.06



- Minnesota has numeric Lake and River Eutrophication Standards
- Standards are being implemented in to permit limits
- Trading is supported in statute and as a means to meet nutrient limits
- The new standard and impairments make trading more complicated but more need there before