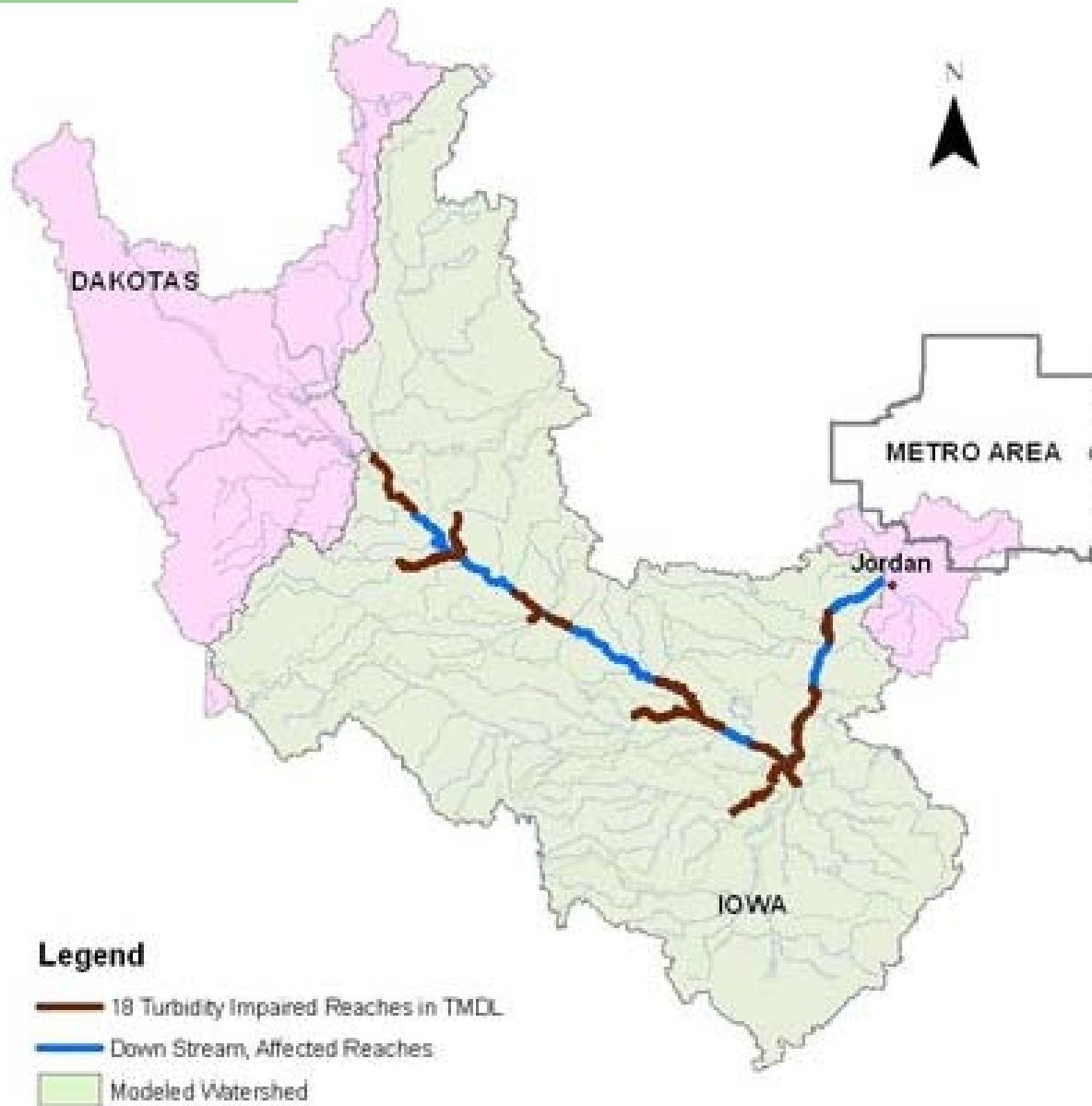


# Cottonwood River

Total Maximum Daily Load Study:  
Turbidity

Open House meeting  
Wednesday 19<sup>th</sup>, 2009  
Lamberton Minnesota



**Legend**

- 18 Turbidity Impaired Reaches in TMDL
- Down Stream, Affected Reaches
- Modeled Watershed

0 12.5 25 50 75 100 Miles

# The Minnesota River Turbidity TMDL

- The MN river TMDL uses the HSPF model.
- This model works to estimate the impact from hydrologic changes, and the effectiveness of potential changes.
- The TMDL is still in draft form
  - Public meeting at New Ulm at the 27th of August.

# Cottonwood TMDL

- The data collected by the RCRCA is used to calculate the loading in the rivers.
  - Using the specific flow and sample data we can calculate the best data.

## With the sample and watershed data established, what is next?

- Review flow data
  - Determine the TSS “surrogate” value.
- Establish flow and loading curves
- Calculate loads from each impaired area

# Turbidity and TSS

- Turbidity is the measurement of light scattered in a water column.
  - Water quality standard is 25 NTU
- Total Suspended Solids (TSS) is the measurement of mass in the water column in Mg/L.
  - Water quality standard varies by area due to the different soil types and other materials.

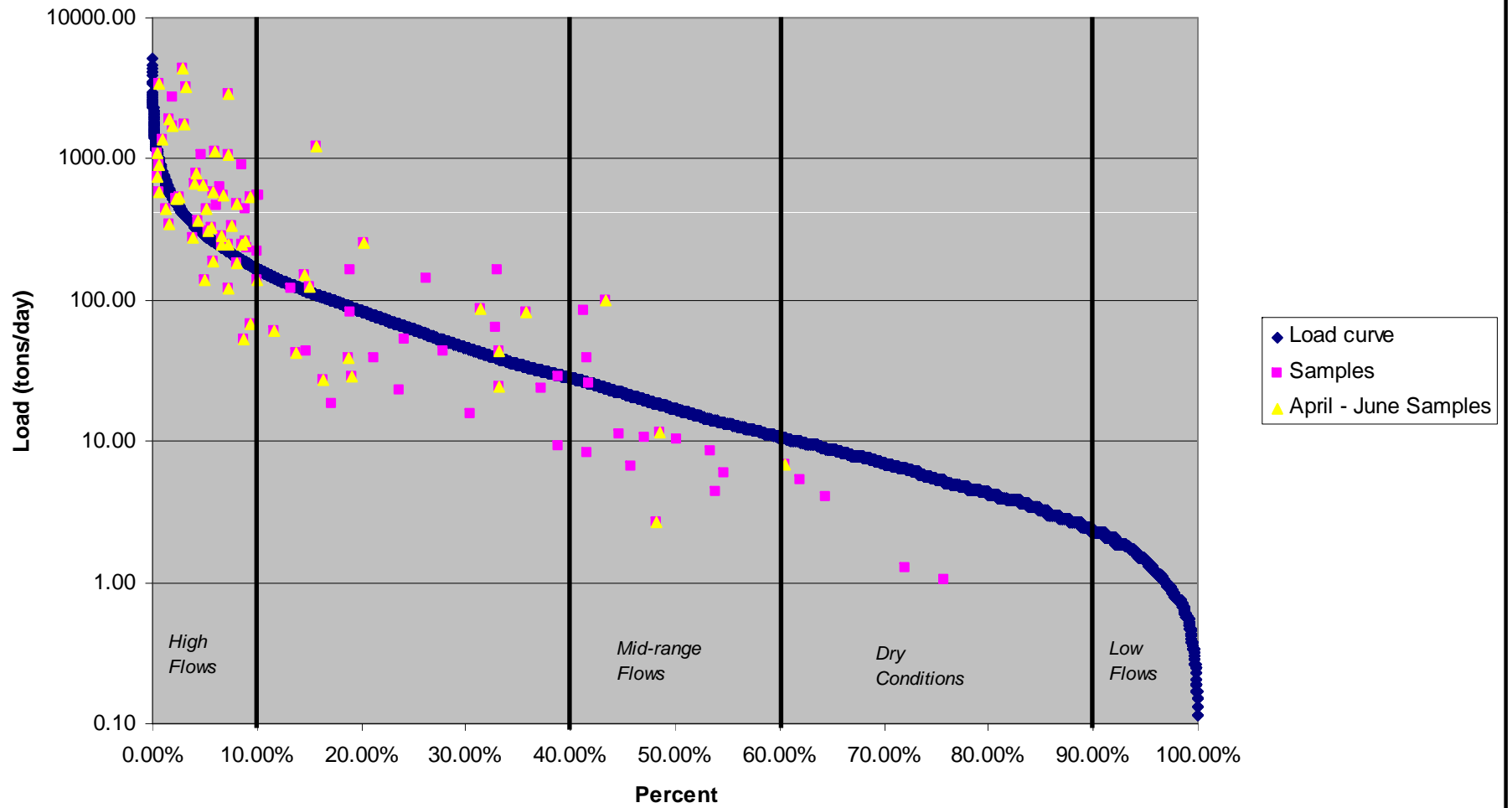
# Calculating the surrogate value

- All areas across the Minnesota river basin were calculated using existing paired sample data.
  - **25 NTU = 70 Mg/L**

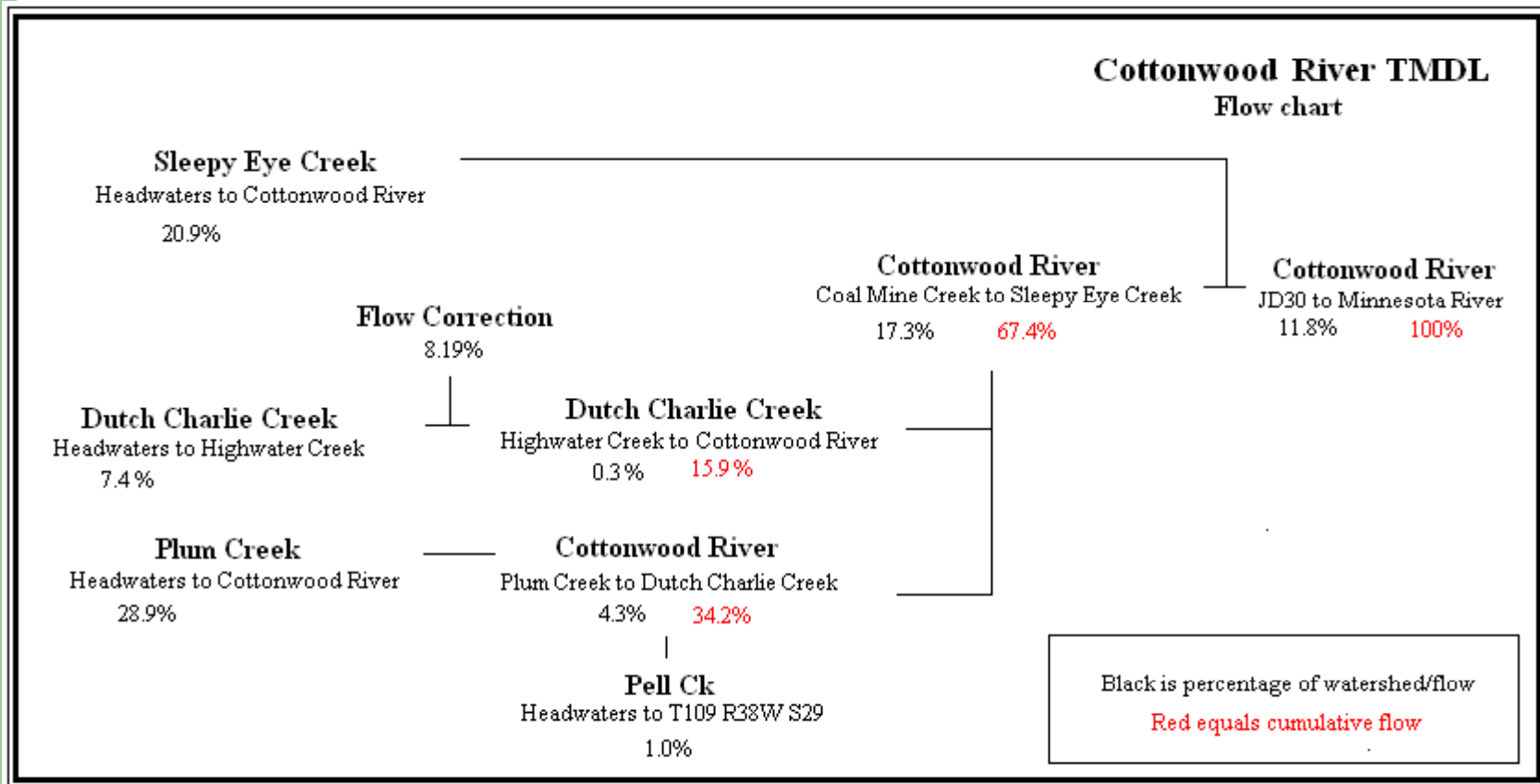
## Calculating the flows and loads:

- Once you have the surrogate value and the flow data, you can begin to calculate the load data.
- Since the load data is dependant on flow, the levels are best shown in a chart, known as a load duration curve.

# Cottonwood River Load Duration Curve

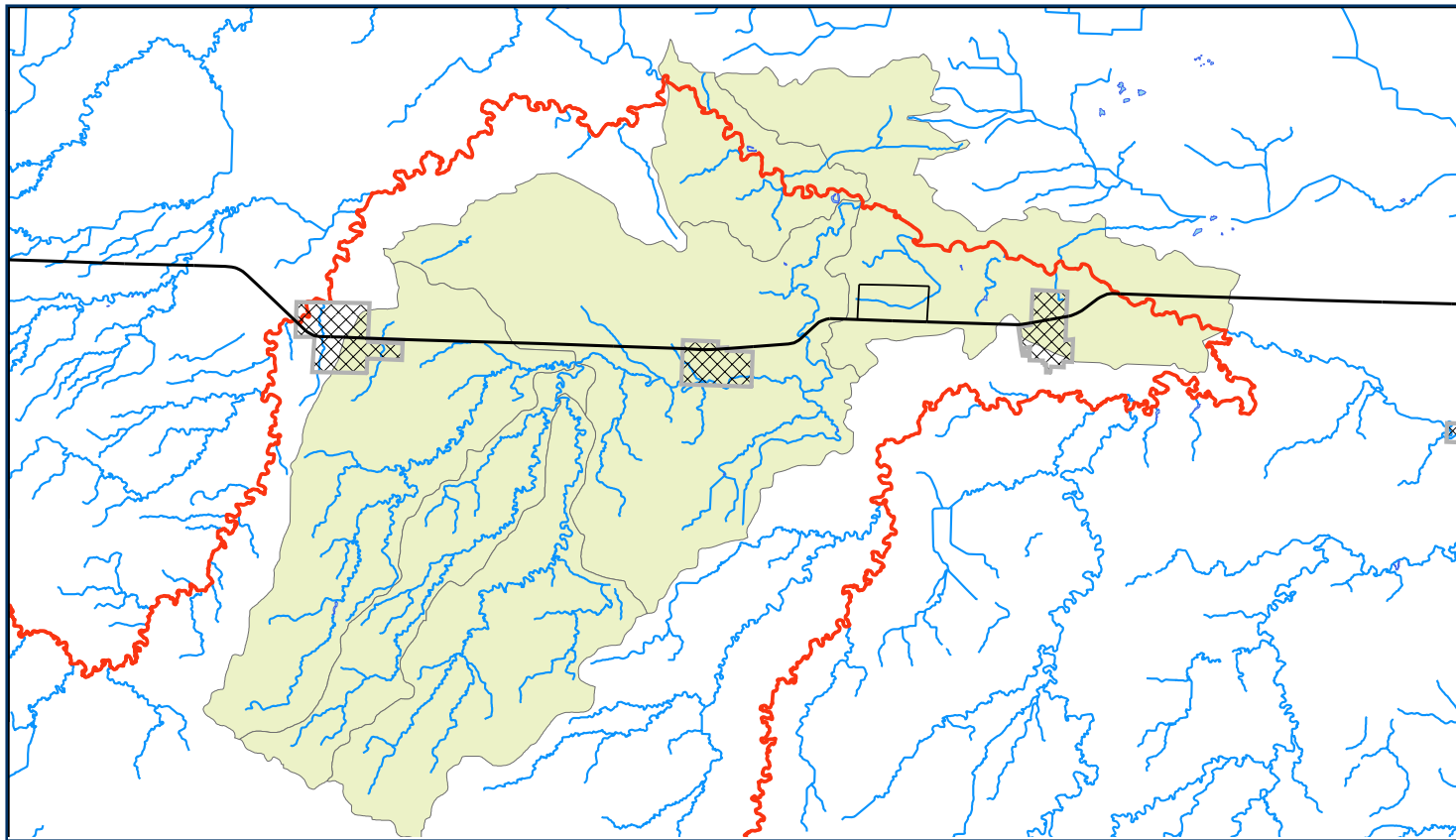


# Loads at the impaired reaches



## Loads at the impaired reaches –

Cottonwood River: Plum Creek to Dutch Charlie Creek



# Loads at the impaired reaches

- Point source vs non-point source
- Permit data
  - Construction & Industrial stormwater
  - Waste Water treatment.
  - Municipal separate storm sewer system (MS4) permits.

# Cottonwood River Outlet

	Flow Zone				
	High	Moist	Mid	Dry	Low
Total Daily Loading Capacity	410	112	36	12	3
	Tons/day				
<b>Waste Load Allocation</b>					
Permitted Wastewater Treatment Facilities	3.82	3.82	3.82	3.82	
Communities Subject to MS4 NPDES Requirements	1.14	0.31	0.10	0.03	0.01
Construction and Industrial Stormwater	0.06	0.02	0.01	0.01	0.01
<b>Load Allocation</b>	363.98	96.65	28.47	6.94	
<b>Margin of Safety</b>	41.00	11.20	3.60	1.20	0.30

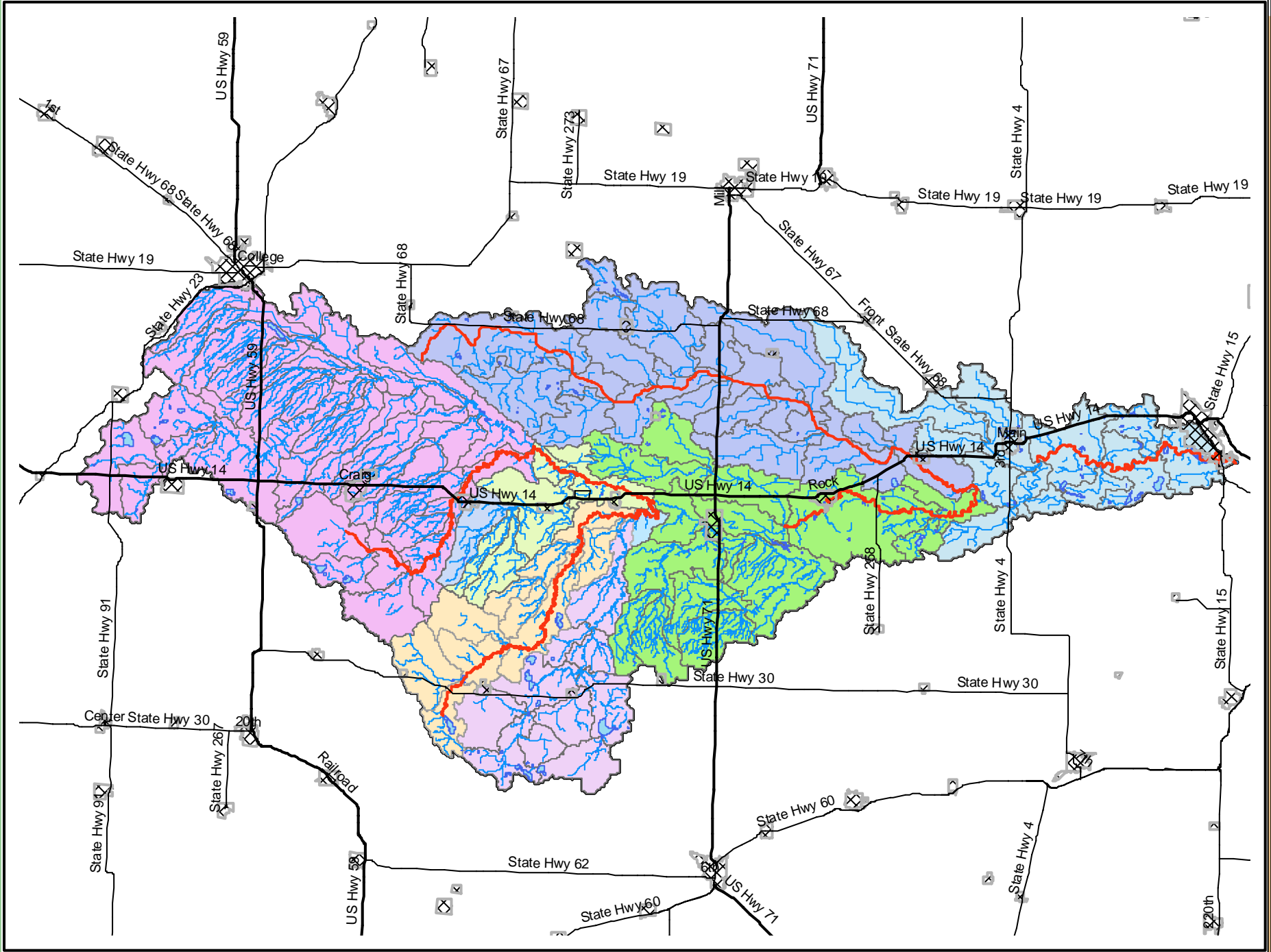
# Loads at the impaired reaches –

## Cottonwood River: Plum Creek to Dutch Charlie Creek

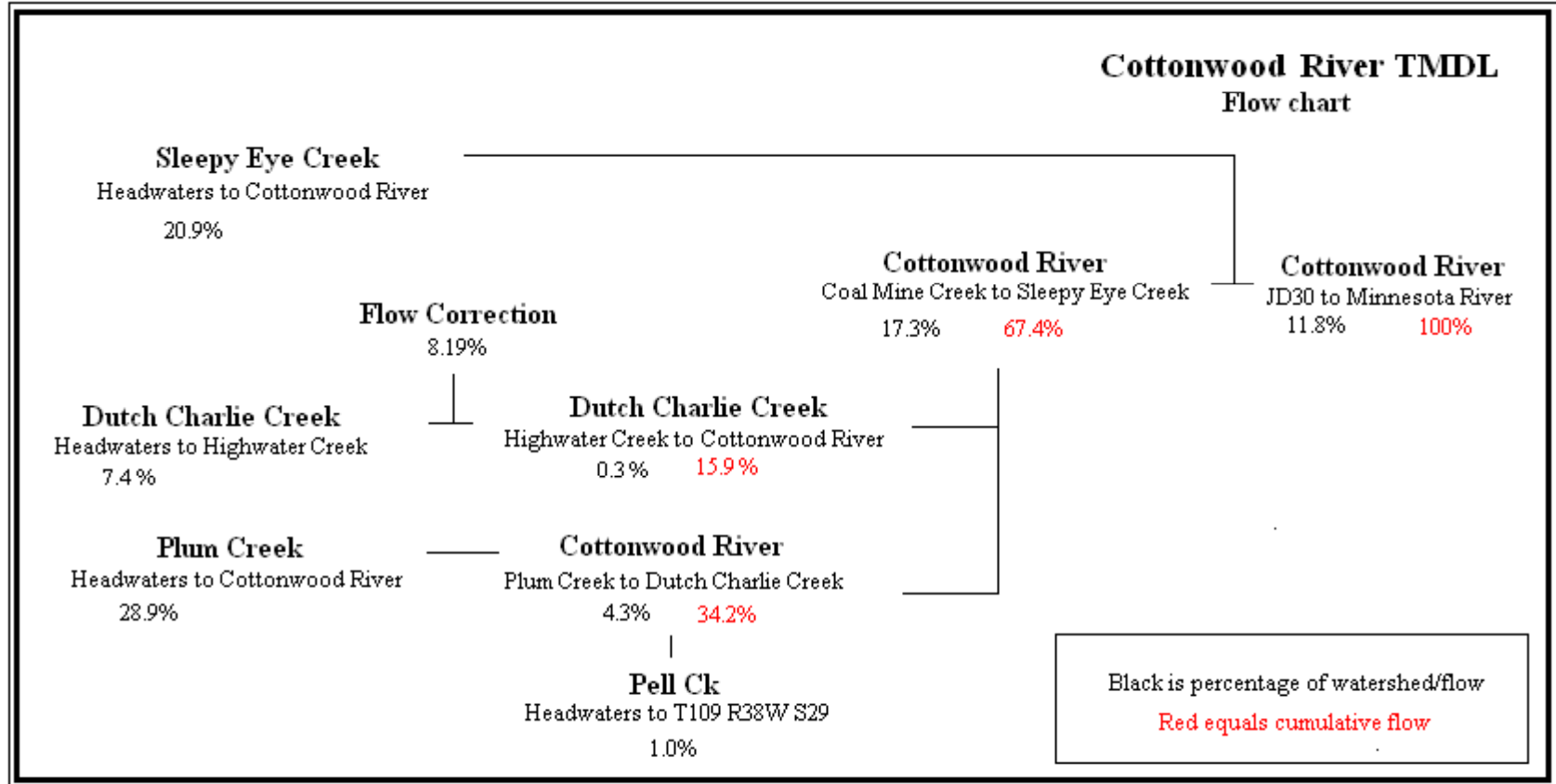
Cottonwood - Plum Cr to Dutch Charlie Cr	140.7	38.4	12.4	4.1	1.2
<b>Total Daily Loading Capacity</b>					
<b>Wasteload allocation</b>					
Wastewater Treatment and Industrial	0.00	0.00	0.00	0.00	0.00
MS4 Communities	0.00	0.00	0.00	0.00	0.00
Industrial Stormwater(NPDES)	0.00	0.00	0.00	0.00	0.00
Construction stormwater	0.00	0.00	0.00	0.00	0.00
<b>Wasteload allocation Total</b>	0.00	0.00	0.00	0.00	0.00
<b>Load Allocation</b>					
	87.16	20.01	8.65	1.74	0.32

# Remaining load allocations:

- Typically broken down into:
  - Upland (field, forest, grass lands)
  - Ravines
  - Stream bank/bluff
- Based on the MN river model, each value is about 30% of the load.
  - We may examine the impaired reaches, and see if the breakdowns should be refined.



# Loads at the impaired reaches



## Next steps...

- Calculate the reductions necessary
- Write the TMDL
- Develop an implementation plan to address the impairment

# Thank you.

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# What can I do?

- Individual
  - If you agree or disagree, get informed on the issues as much as you can.
  - Write letters, talk leaders in your communities (from local to federal).
  - Attend local, county, state and other meetings.
  - Attend the TMDL workgroup meetings.
  - Prepare well thought out, researched opinions and ideas.
- Group
  - Talk to you local group representative, or work to become one yourself.
  - Inform the groups you are associated with of the study.
  - Make sure a representative is present at all the meetings to record what was discussed, where things are headed, and express the ideas and opinions of the group.

## What can I do?

- **STAY INVOLVED**