Turbidity TMDL Allocations

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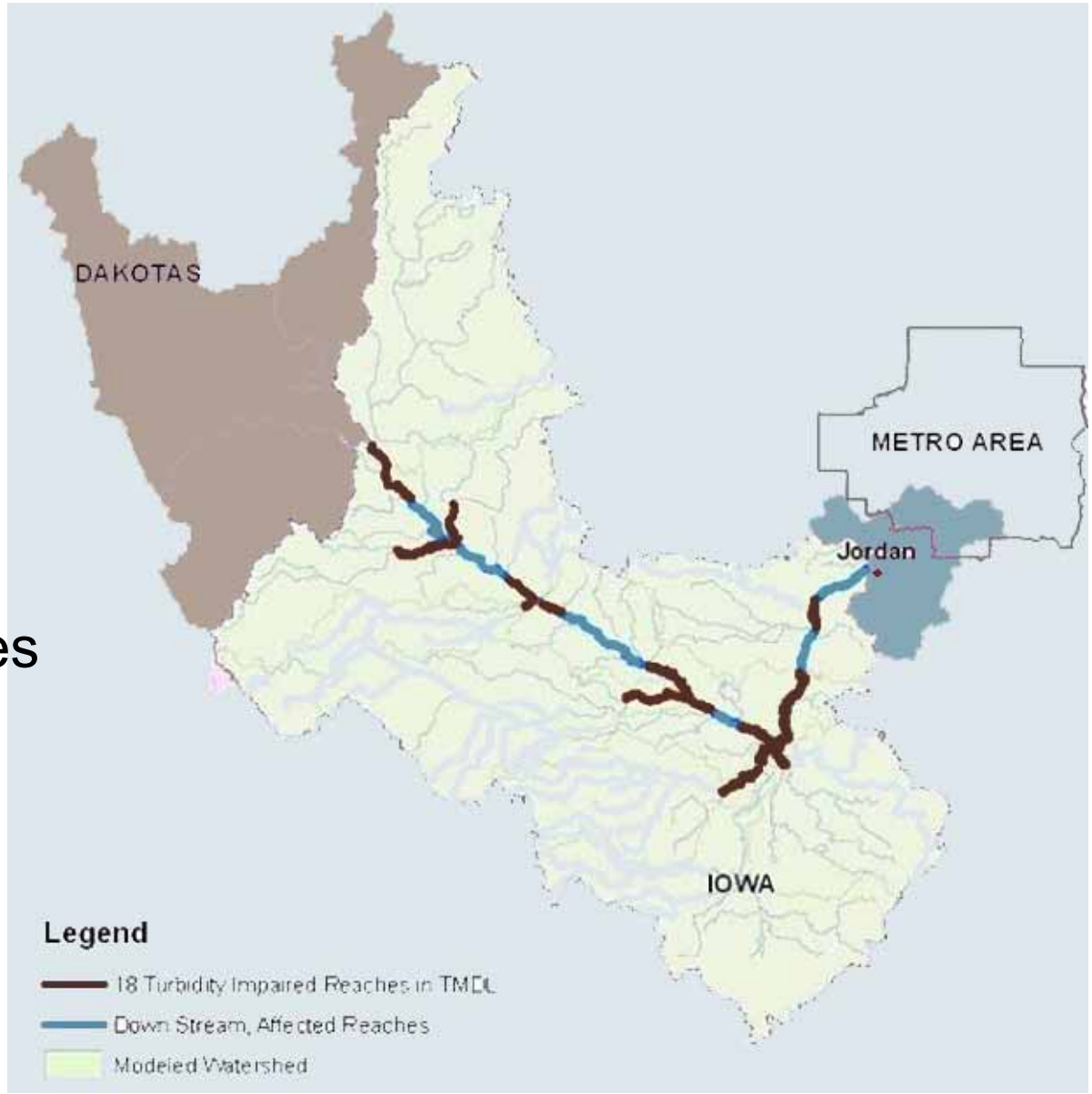
Minnesota River Turbidity TMDL

- 18 reaches
- 9 on major tributaries
- 9 on the mainstem



The heart of a TMDL study is the pollutant load allocation

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Formula–

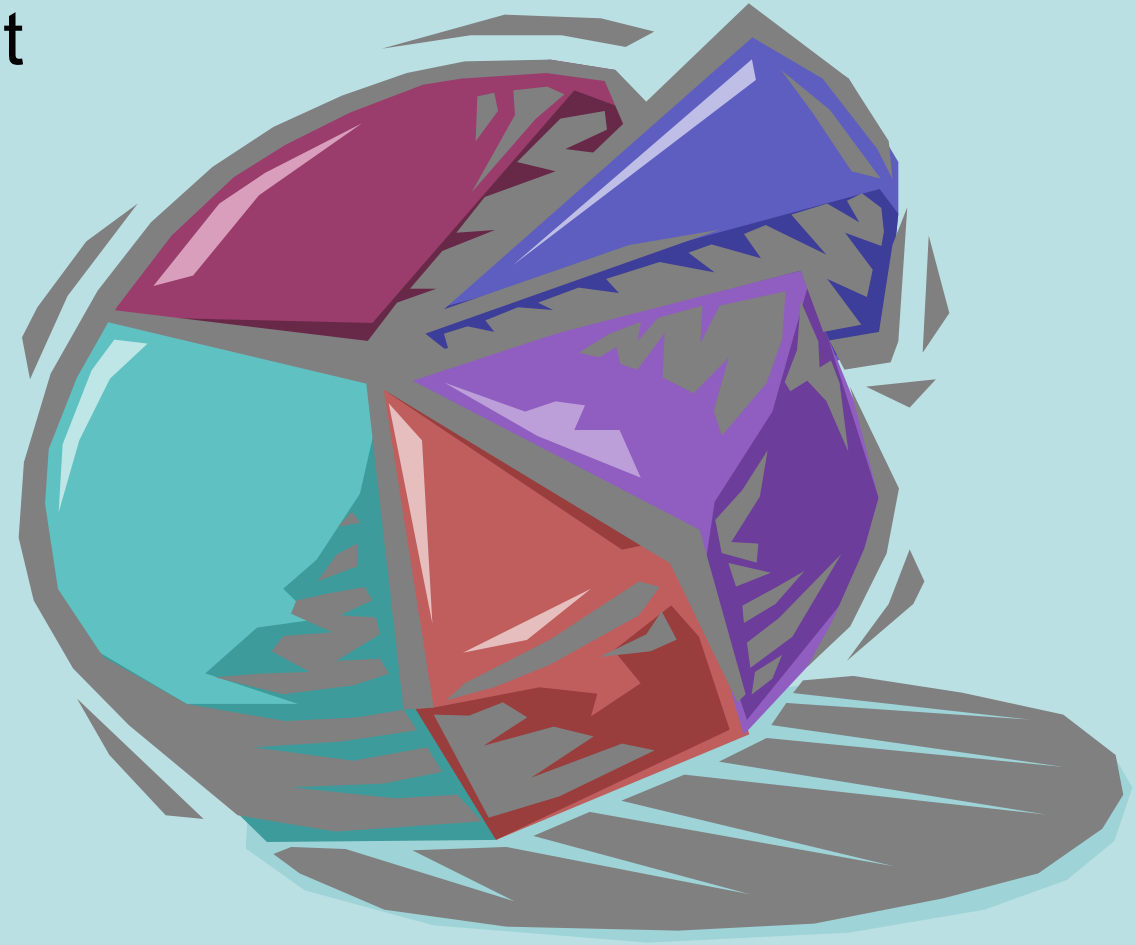
LA(s) + WLA(s) + Margin of Safety + Reserve Capacity =

Total Maximum Daily Load

LA	Load allocations from nonpoint sources
WLA	Waste load allocations from point sources
Margin of Safety	To account for potential scientific error
Reserve Capacity	Set aside for future development

Next step…

Develop pollutant load allocations



Pollutant load allocation process at a glance

Review standards/ determine allowable load

Estimate actual pollutant load

Determine load reduction needed and set targets

Develop implementation strategies and plan

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Step 1: Review water quality standards and determine allowable load

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Review standards/ determine allowable load

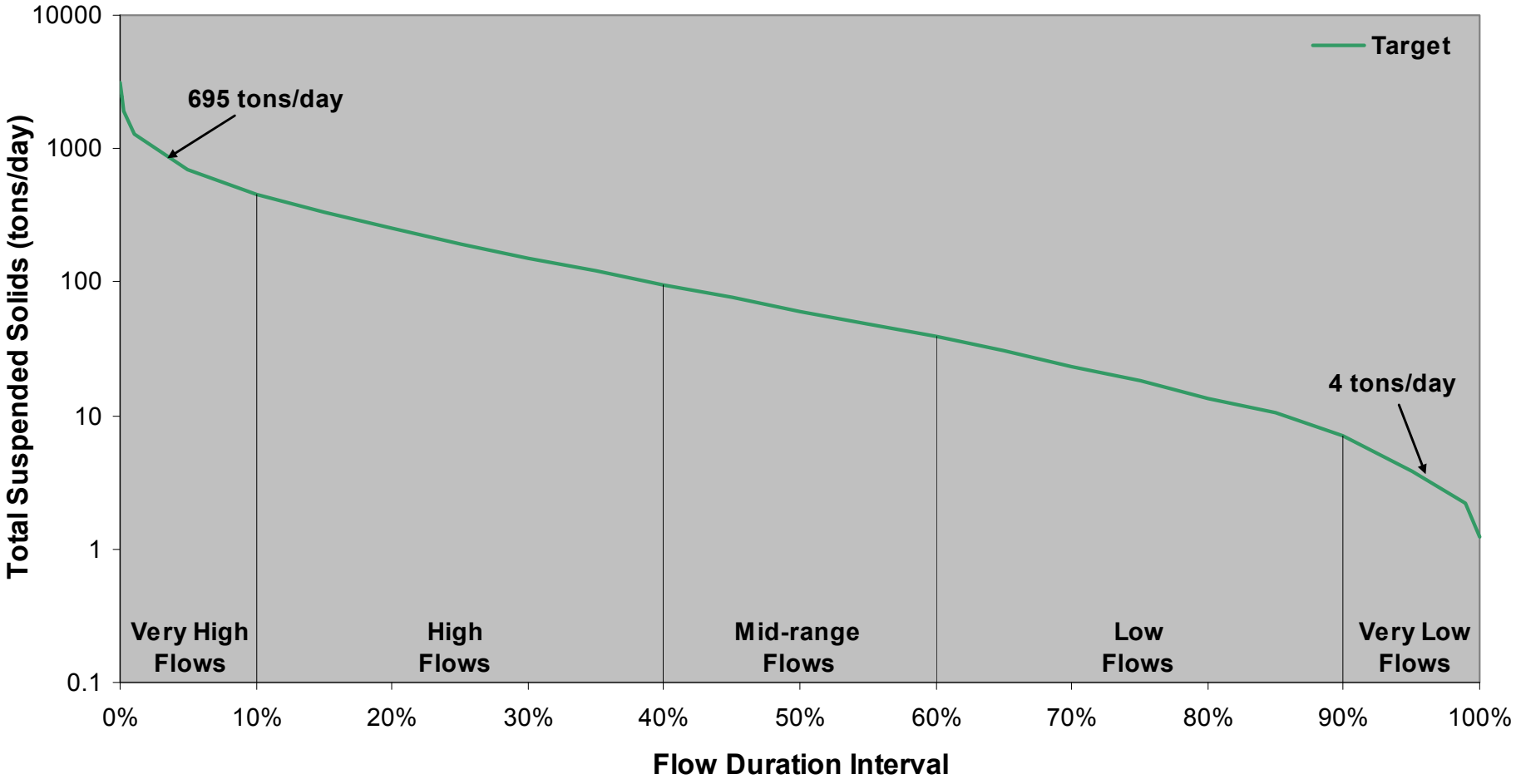
Calculate allowable pollutant load for your waterbody

Flow x turbidity surrogate = allowable load

Le Sueur River near Rapidan Load Duration Curve

(1977-2006 Flow Data; Loading Capacity at 90 mg/L TSS)

USGS Gage: 05320500



Le Sueur River near Rapidan Load Duration Curve

(1977-2006 Flow Data; 1998-2006 TSS Data; Loading Capacity at 90 mg/L TSS)

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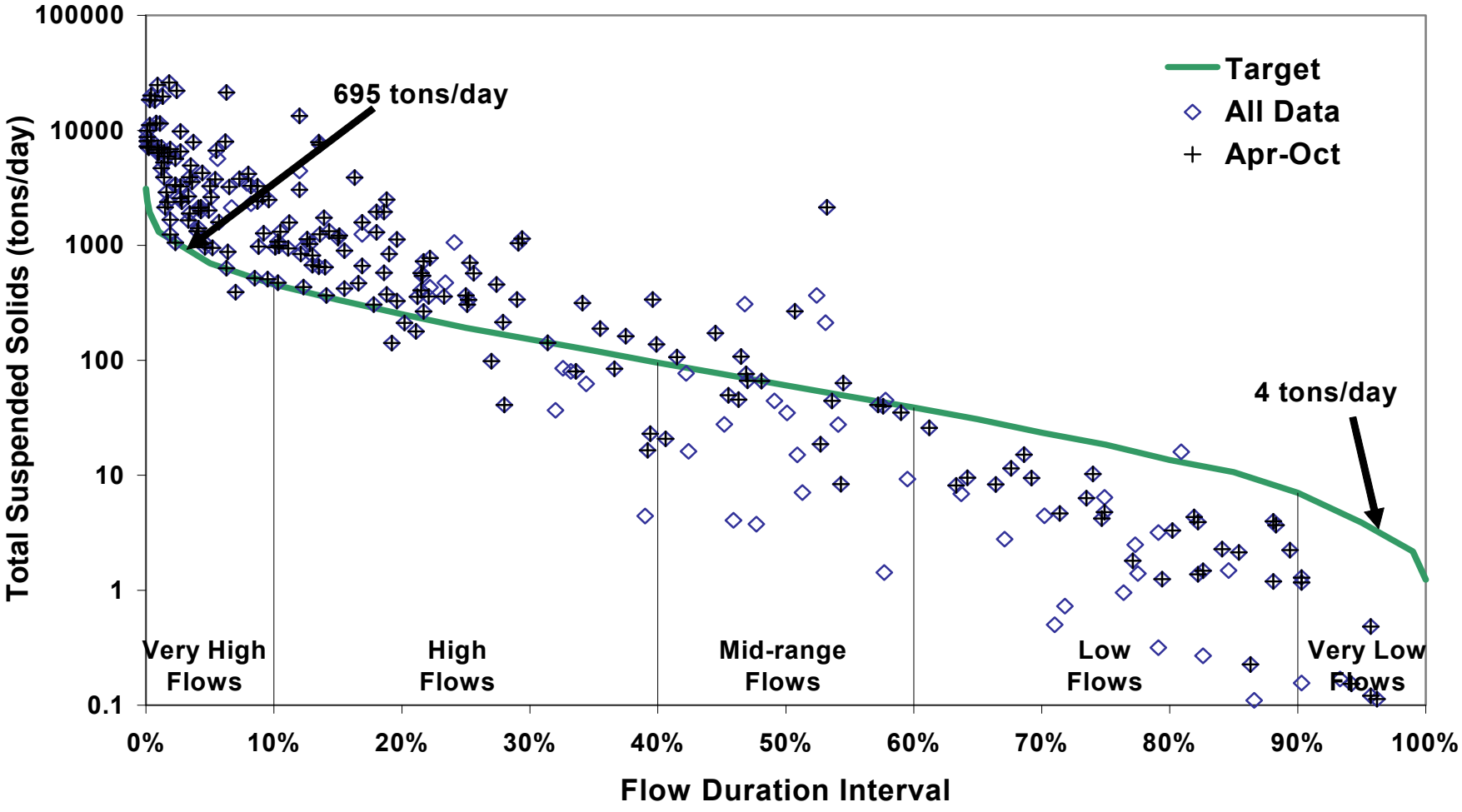

Step 2: Estimate actual pollutant loads

Estimate actual pollutant load

Estimate actual pollutant load using monitoring data and permitted discharges

Step 3: Determine load reduction needed and set targets

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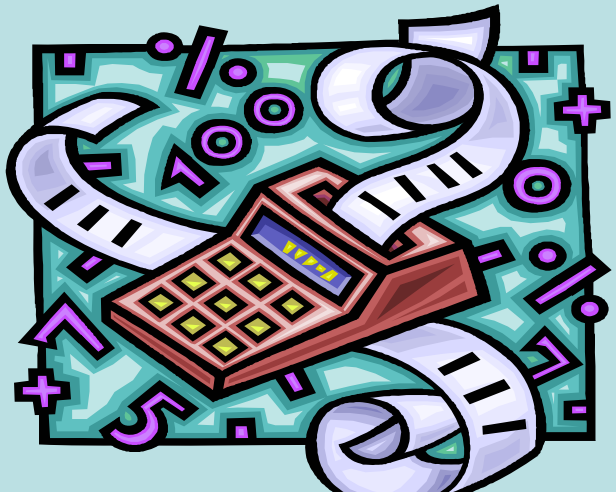
Determine load reduction needed and set targets

Use load duration curve to establish allowable load.

Set allocations for permitted sources in WLA.

Estimate load allocation.



Step 4: Discuss potential restoration options among experts

Develop management strategies (implementation plan)

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TMDL Report vs. Implementation Strategy

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TMDL – needs to meet EPA requirement.
The pollutant load allocation ensures that water quality standards will be maintained for a stream, while allowing for human development *(present and future)*

Implementation Strategy – reasonable implementation activities and schedule to work toward water quality improvement

Source assessment vs. allocation

- Source assessment – where it's from and current contribution

Example

1,000 tons per day

700 from near channel

300 from upland

Source assessment vs. allocation

- Allocation – amount projected to come from source once sediment loads are reduced to meet targets

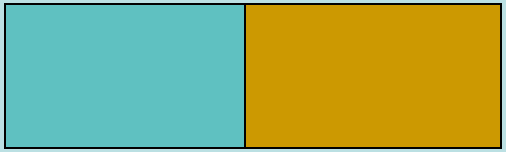
Example future conditions

420 from near channel

180 from upland

600 tons per day

or



300 from near channel

300 from upland

600 tons per day

Possible options for load allocation

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1	2
One number Load allocation: 500 tons per day	Divide into near channel sources vs. upland sources Load allocation: Near channel sources 350 tons per day Upland sources 150 tons per day

Select final pollutant reduction option

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Potential criteria for selecting pollutant load reduction options –

Ravines

Banks/Bluffs

Upland

Allocation approach

- Wastewater – categorical?
- Stormwater – considering alternatives
- Nonpoint
  - One number
  - Break out uplands and near channel sources

Consistency with other TMDLs

Lake Pepin

- Model results show approximate 50% reduction
- Allocation approach likely to be similar

Upstream Turbidity TMDLs

- Sharing information – sources and surrogates
- Gathering input