



Wirth Lake Excess Nutrients TMDL project

*Stakeholder Meeting #1
February 17th, 2009*

Minnesota Pollution Control Agency



The Total Maximum Daily Load (TMDL) Program:

A Brief Overview



Legal Authority

Federal Clean Water Act (CWA) of 1972 – framework for protecting, restoring water quality

Focus:
CWA Section 303 – establishes national water quality standards and Impaired Waters (TMDL) programs

The Impaired Waters List



Minn. 2008 Impaired Waters List

To date-
2,575
impairments
on
1,382 water
bodies

(As of 6/18/2008)

303(d) Lists:

- Inform/educate the public
- Ensure that *further study* of impaired waters occurs (**the TMDL Study**)
- Encourage action to restore water quality

What is a Total Maximum Daily Load (TMDL)?

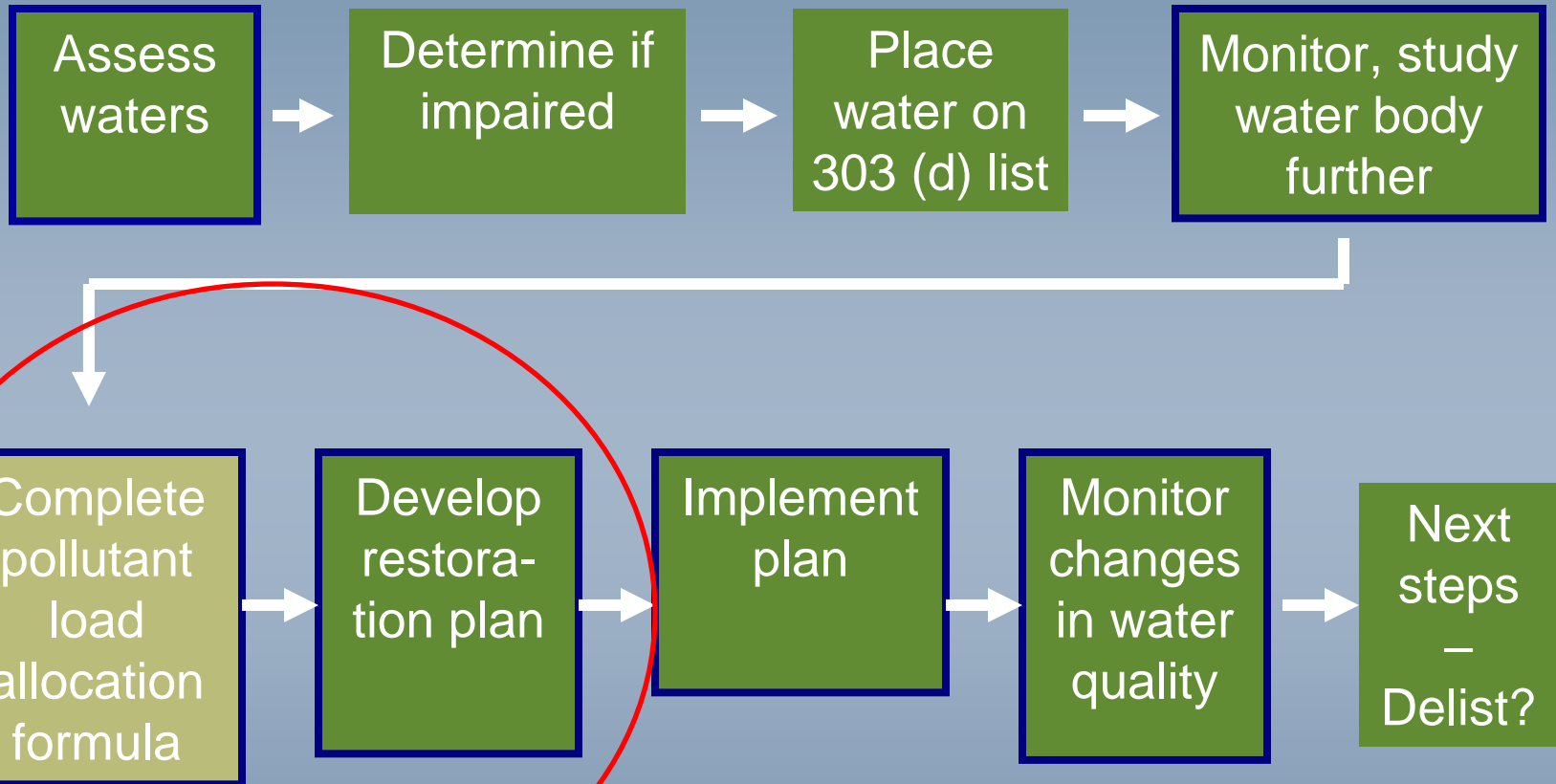
- It is a process



- It is a formula



TMDLs – The Process





TMDL – A Mathematical Formula

A TMDL Study must complete this pollution load allocation formula:

$$\text{LA(s)} + \text{WLA(s)} + \text{Margin of Safety} + \text{Reserve Capacity} = \text{Total Maximum Daily Load}$$

Where:

LA = Load allocations from nonpoint sources

WLA = Waste load allocations from point (permitted) sources

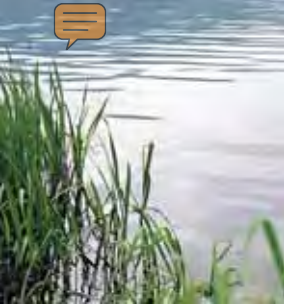

Margin of Safety = to account for potential scientific error

Reserve capacity = set aside for future development

The allocation formula determines ...

the maximum amount
of a specific
pollutant that can be
discharged to a
waterbody and still
meet water quality
standards





TMDLs require technical skills and people skills

A quantitative analysis which determines the maximum amount of a specific pollutant that a waterbody can safely handle and still meet beneficial uses

A collaborative process bringing together

- Citizens
- Industry
- Agriculture
- Local, state and federal governments
- Forestry

to solve a water quality problem



Water Quality Standards: A Brief Overview



Beneficial Use Classifications

Use Class	Beneficial Use
Class 1	Drinking Water
Class 2	Aquatic life and recreation
2A	Cold water fisheries, trout waters
2Bd	Cool and warm water fisheries, drinking water
2B	Cool and warm water fisheries
2C	Indigenous fish and associated aquatic community
2D	Wetlands
Class 3	Industrial uses and cooling
Class 4A	Agriculture and wildlife uses
Class 5	Aesthetics and navigation
Class 6	Other uses
Class 7	Limited resource value waters



Numeric Water Quality Standards

- Sets a specific concentration for a certain pollutant in water that will allow maintenance of beneficial uses
- All use classifications have numeric standards associated with them (*except Class 6 – other uses*)
- Ideally, if the numeric standard is not exceeded, the beneficial use will be protected



Lake Nutrient Criteria Development

- Considers regional patterns & distributions;
- Varying uses of lakes & differences among deep & shallow lakes;
- Consider fishery (aquatic life) requirements;
- Shallow lakes –emphasis on plant communities relative to P, chl-a, & Secchi;
- Use of sediment cores to re-affirm regional patterns & estimate background;
- Accounts for lake user perceptions;

Minnesota's Lake Eutrophication Criteria

Ecoregion	TP	Chl-a	Secchi
(classification)	ppb	ppb	meters
NLF – Lake trout (Class 2A)	12	3	4.8
NLF – Stream trout (Class 2A)	20	6	2.5
NLF – Aquatic Rec. Use (Class 2B)	30	9	2.0
CHF – Stream trout (Class 2a)	20	6	2.5
CHF – Aquatic Rec. Use (Class 2b)	40	14	1.4
CHF – Aquatic Rec. Use (Class 2b) Shallow lakes	60	20	1.0
WCP & NGP – Aquatic Rec. Use (Class 2B)	65	22	0.9
WCP & NGP – Aquatic Rec. Use (Class 2b) Shallow lakes	90	30	0.7

Wirth Lake (Lake ID 27-0037)

■ Lake Characteristics

Lake Area (acres): 39.88
Littoral Area (acres): 23 (58%)
Maximum Depth (ft): 25

Wirth Lake is classified
as a deep lake

■ Lake Water Quality Data Summary

Total Phosphorus Mean: 53 ppb (parts per billion)
Total Phosphorus Standard Error: 2 ppb
Total Phosphorus # of Observations: 78

STD =
40 ppb

Chlorophyll-a Mean: 23.5 ppb
Chlorophyll-a Standard Error: 1.7 ppb
Chlorophyll-a # of Observations: 77

STD =
14 ppb

Secchi Disk Mean: 1.6 meters
Secchi Disk Standard Error: 0.1 meters
Secchi Disk # of Observations: 81

STD = 1.4
meters



The Wirth Lake Excess Nutrients TMDL:

Project Details



Project Team

- Minnesota Pollution Control Agency – Project Sponsor and Project Leadership Role
- Bassett Creek Watershed Management Commission – Project Partner and Local Water Resource Management Leader
- Minneapolis Park & Recreation – Project Partner
- Barr Engineering – Technical Expertise



Scope of Work

- update the watershed and in-lake water quality response modeling developed for the BCWMC Wirth Lake plan
- calibrate the modeling to the most recent monitoring data for the lake
- evaluate watershed control measures and in-lake management techniques for phosphorus load reductions
- determine the margin of safety (MOS) and waste load (WLA) and load allocations (LA) for phosphorus
- develop implementation and compliance monitoring plans
- coordinate/communicate with a citizen-stakeholder-technical advisory committee (CSTAC)
- write the TMDL report that fulfills MPCA and EPA requirements

Project Timeline

- Work plan development and contractor selection: March – July 2008

Wirth Lake Excess Nutrients TMDL Tasks and Timeline	2008				2009									
	Se pt.	O ct.	N ov .	D ec .	J an.	F eb.	M ar ch	A pr il	M ay	J une	J ul y	A ug.	S ept .	O ct.
Task 1: Past Study and Existing Data Review, Analyses, and Summary														
Task 2: Modeling														
Task 3: Stakeholder and Public Participation Process														
Task 4: Evaluate Improvement Options/Develop Allocations and Implementation Plan														
Task 5: Develop Monitoring Plan														
Task 6: Write Draft and Final TMDL Report														



Project Website

<http://www.pca.state.mn.us/water/tmdl/project-wirthlake.html>



Your Role

- Review and Comment on project progress
- Provide input and data where needed
- Assist in determining how to split up the load allocation (specifically the WLA)
- Assist in the development of the Implementation Plan
- Review and Comment on Draft TMDL
- Approve and agree to follow through with Implementation Plan activities

QUESTIONS???

Brooke C. Asleson
Project Manager
Regional Division-Watershed Section
Minnesota Pollution Control Agency

phone: (651) 757-2205

email: Brooke.Asleson@pca.state.mn.us