* Tip: Double click or hover over comment bubble in top left corner to see presentation notes

The Total Maximum Daily Load (TMDL) process and the Northeast Lakeshore TMDL

WISCONSIN
DEPT. OF NATURAL RESOURCES

Photo: Silver Creek (Algoma)

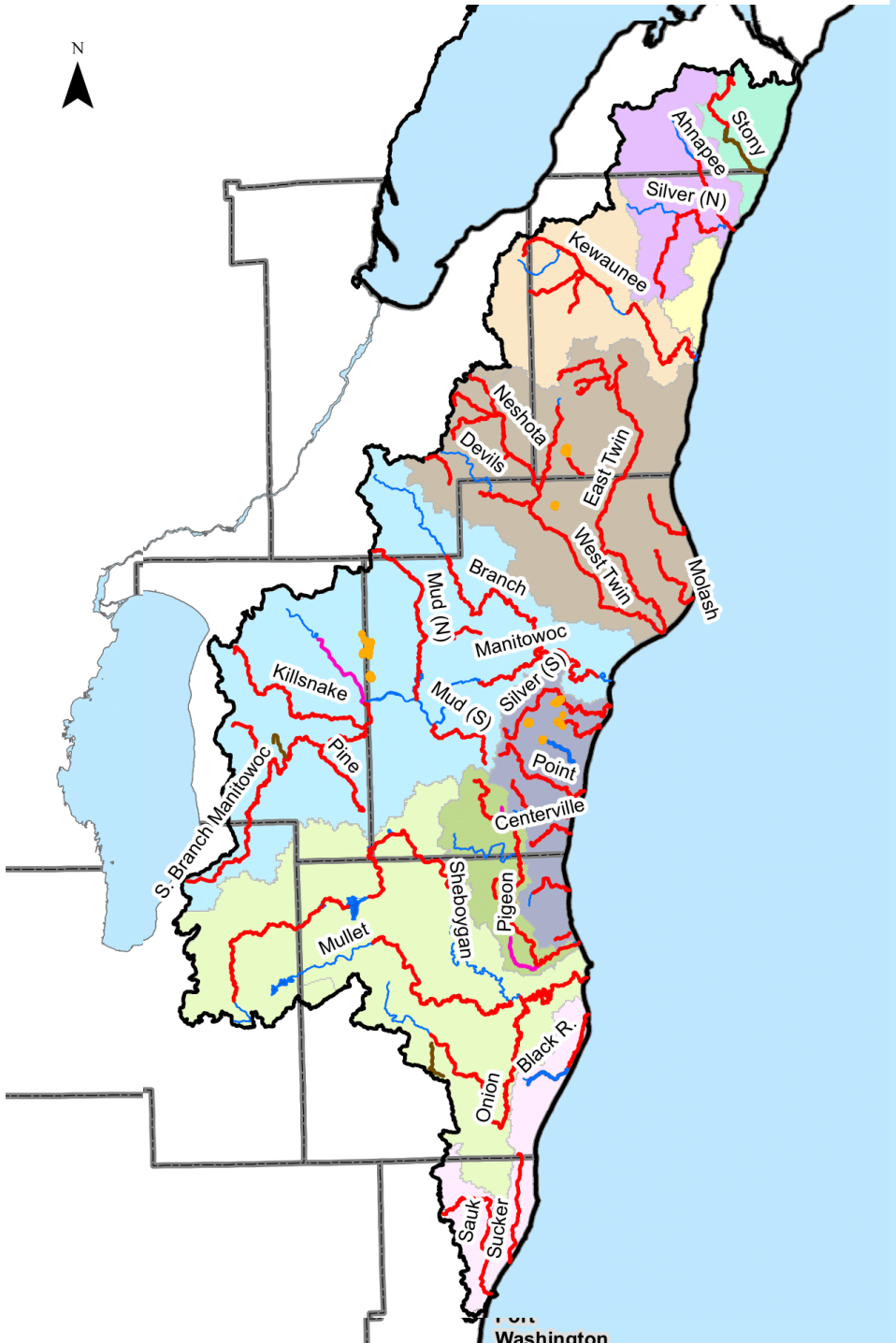
Northeast Lakeshore TMDL

Study area
- Cover nearly 2,000 square miles
- Includes many major river basins

Impaired waters (Draft 2020 list)
- Stream Segments
  - TP impaired: 74
  - TSS impaired: 3
  - TP & TSS impaired: 3
- Lakes
  - TP impaired: 13

Focused on streams and rivers (not Lake Michigan)

Funding from legislature in 2017



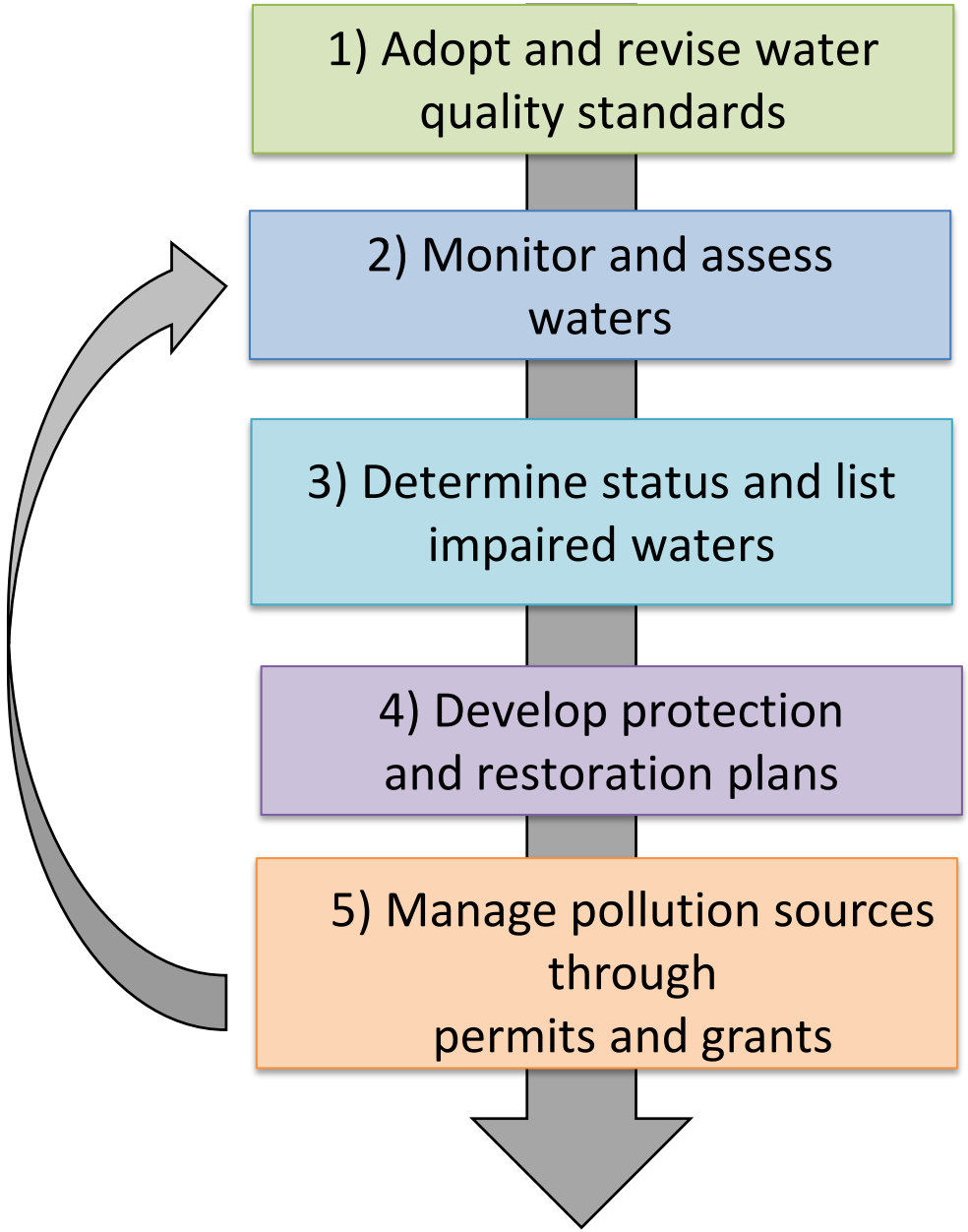
Clean Water Act

- TMDL development and implementation is part of the Clean Water Act

- Federal Law
  - Established in 1972
  - Amended in 1977

- Goal of “fishable, swimmable waters”

Clean Water Act



→ **TMDL Development**

→ **TMDL Implementation**

Clean Water Act

1) Adopt and revise water quality standards

Water Quality Standards- defined in two different ways

1) Activities or "Designated Uses":
   - Fish & Aquatic Life
   - Recreation
   - Public Health

2) Water Quality Criteria:
   - **Numeric:** phosphorus, dissolved oxygen, pH, bacteria, toxic substances, etc.
   - **Narrative:** "no objectionable deposits", "substances in concentrations or combinations shall not be harmful to humans, fish, plants, or other aquatic life."

Per Wis. Stat. s. 281.15 water quality standards must be adopted by rule

Clean Water Act

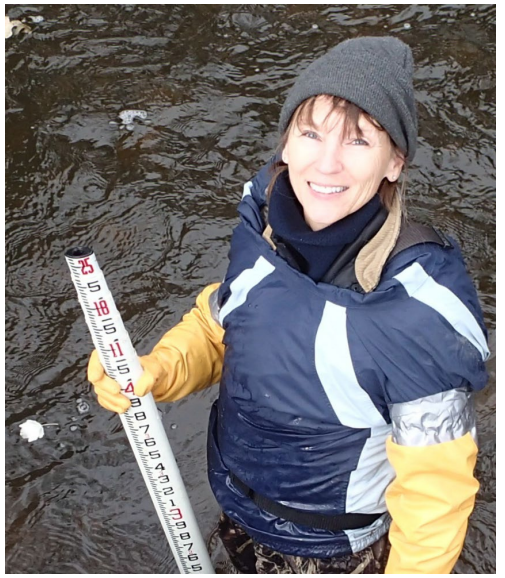
1) Adopt and revise water quality standards

2) Monitor and assess waters

Assessments in the NE Lakeshore TMDL area

5,000 acres of lakes
~ 90% assessed (4600 acres)

3,000 miles of streams,
~ 55% assessed (1700 miles)



Mary Gansberg, DNR biologist, NE Region

Craig Helker, DNR biologist, SE Region

Clean Water Act

1) Adopt and revise water quality standards

2) Monitor and assess waters

3) Determine status and list impaired waters

Section 303(d)- Impaired waters list

- States submit their impaired waters list to EPA every 2 years
- Wisconsin's most recent list submitted April 1, 2020

NE Lakeshore waterbodies on the 2020 Draft Impaired Waters List

Streams

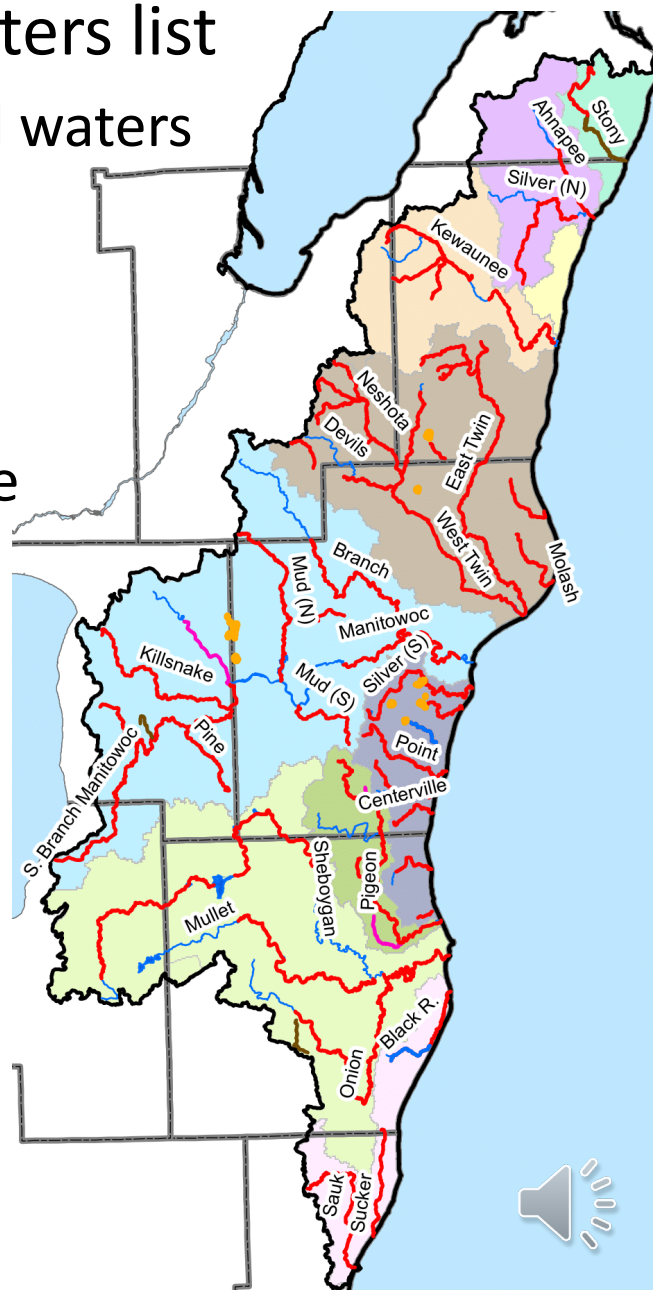
TP impaired: 593 miles

TSS impaired: 13 miles

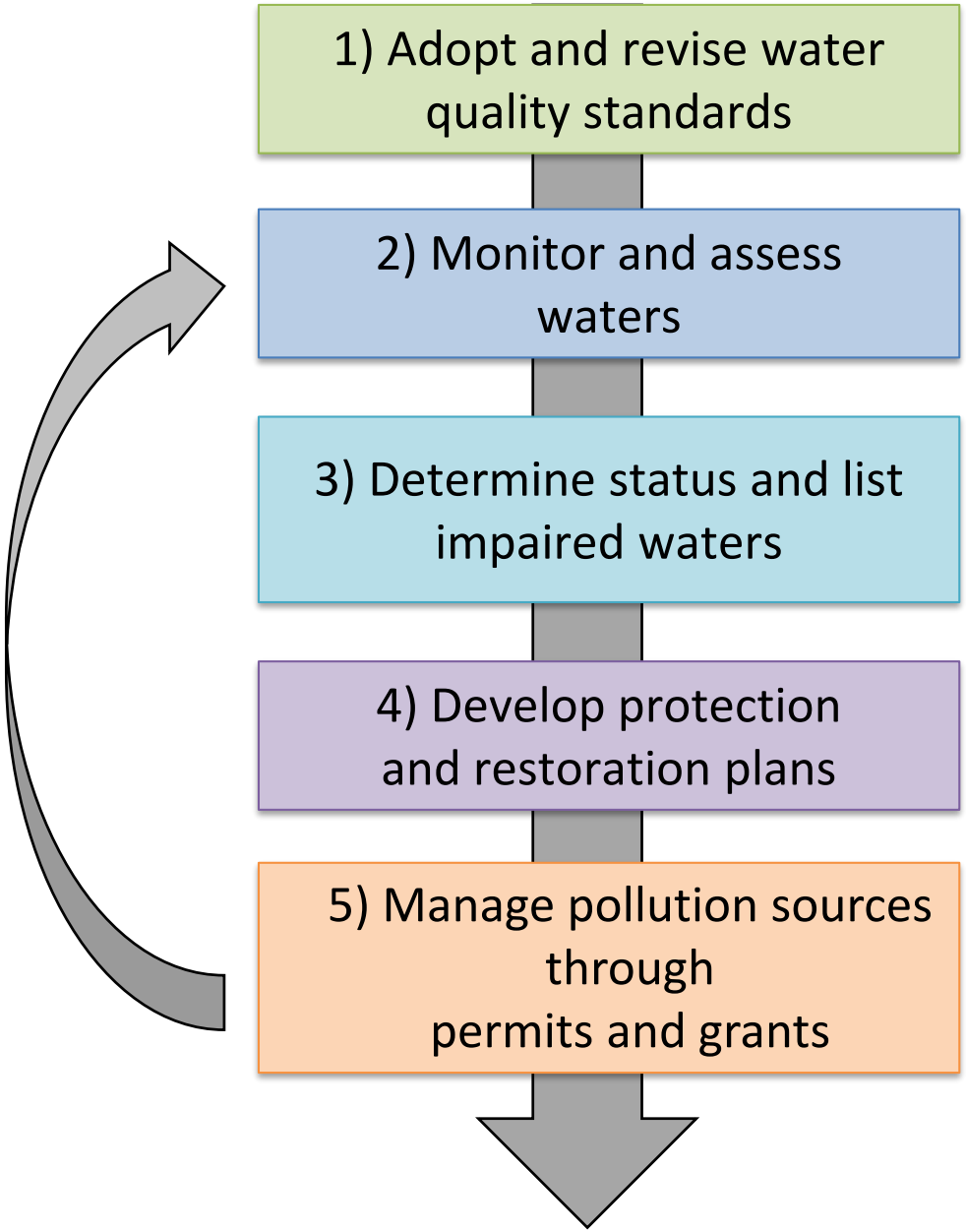
TP & TSS impaired: 15 miles

Lakes

TP impaired: 500 acres



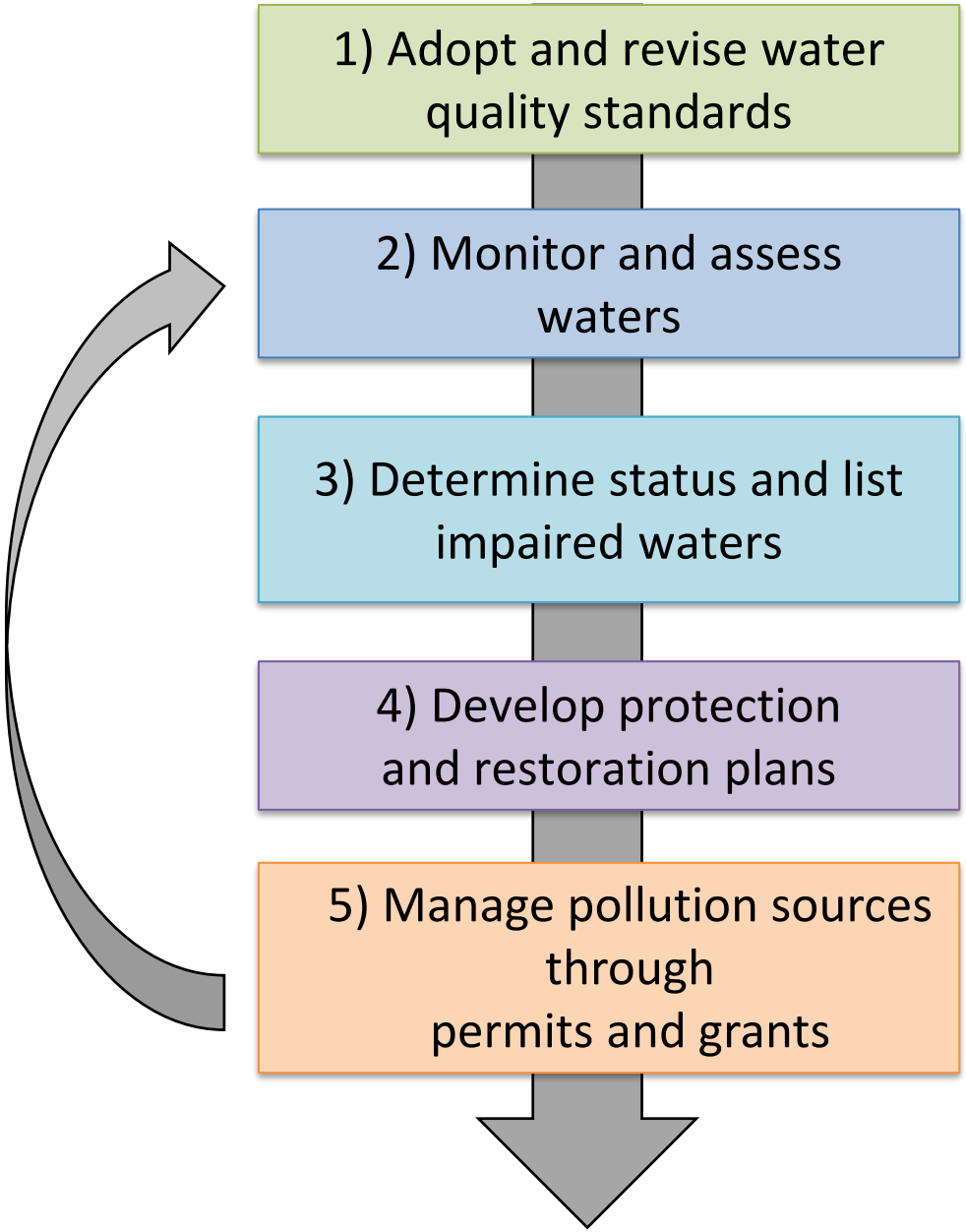
Clean Water Act



TMDL Development

TMDL Implementation

Clean Water Act



TMDLs do not create new rules or regulatory requirements but rather rely on existing rules for implementation

TMDLs helps prioritize the use of existing programs and resources to target areas with the highest pollutant runoff

→ **TMDL Development**

→ **TMDL Implementation**

NEL TMDL addresses TP and TSS; studies N

Nutrients

Phosphorus (TP)

Nitrogen (N)

Fuel excess algae growth

↙ Decrease dissolved oxygen, harming certain fish and aquatic organisms

↘ Decrease recreation

Sediment

(Total Suspended Solids – TSS)

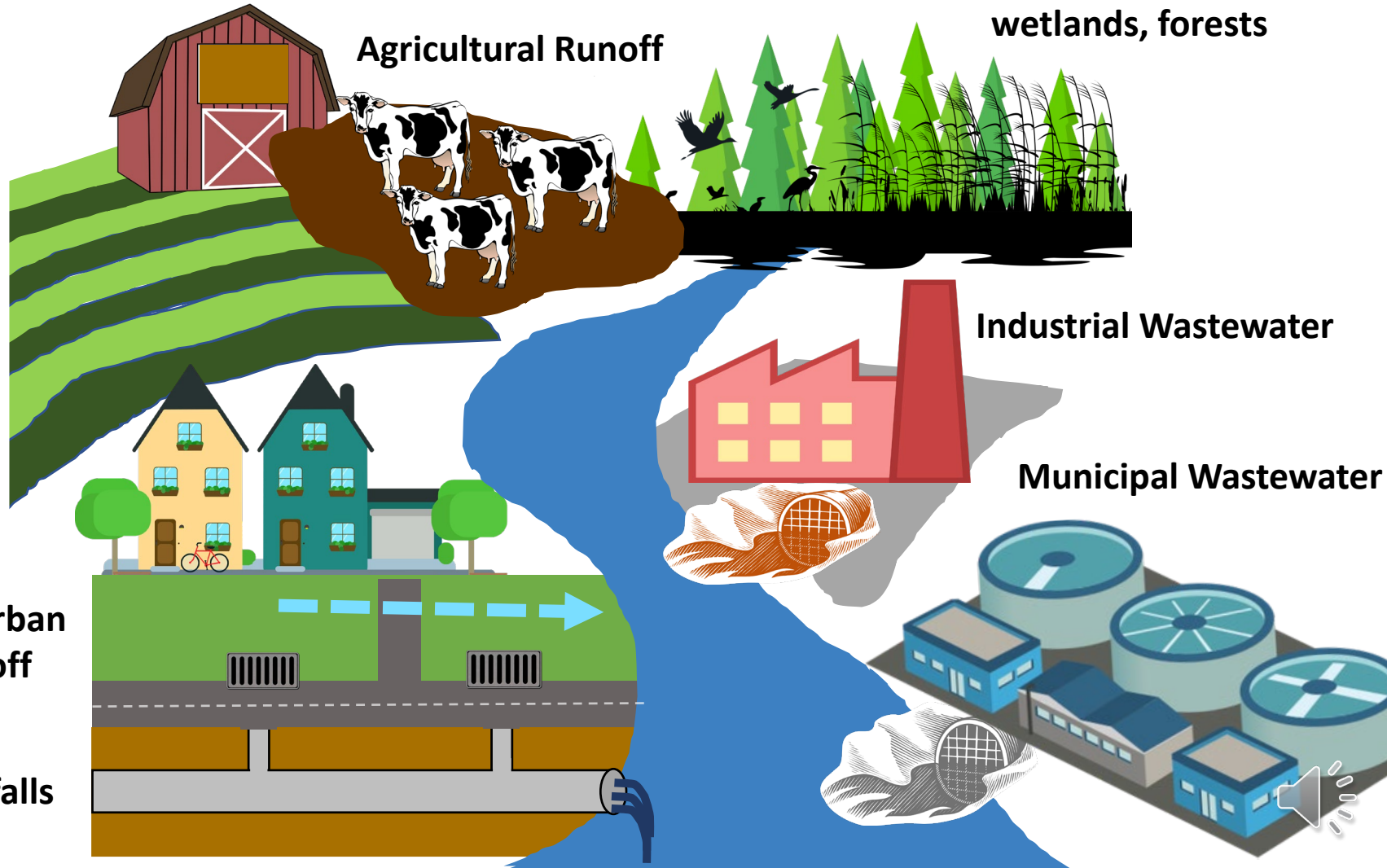
Covers rocky habitat needed by certain fish and aquatic insects

Watersheds, Phosphorus, and Sediment

Total Maximum Daily Load (TMDL)
A framework for watershed restoration

TMDLs address pollution from many different sources

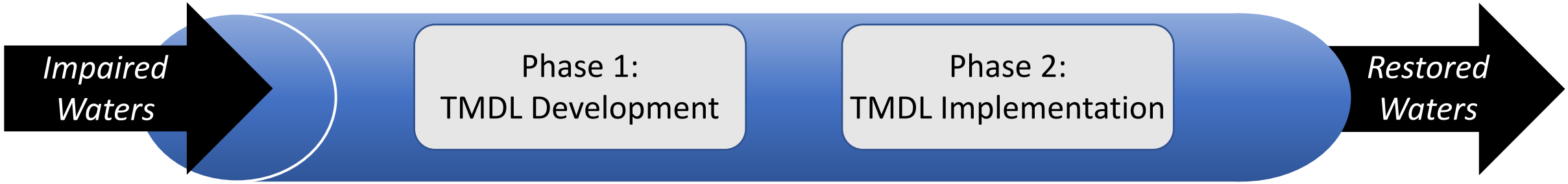
TMDLs address pollution in surface waters, not groundwater



Total Maximum Daily Load (TMDL):

Amount of a pollutant a waterbody can receive and still meet water quality standards.

Total Maximum Daily Load Process



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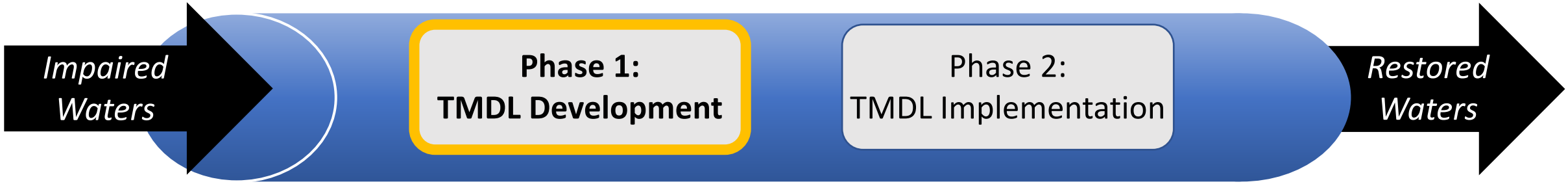

TMDL Development

Public outreach/communication

1 Calculate Baseline loads

What are the current pollutant loads and how much is coming from each source?

2 Determine loading capacity

What amount of pollutant can a waterbody receive?

3 Allocate load among sources

What amount of pollutant reduction is needed from each source?

TMDL Development

Public outreach/communication

1 **Calculate Baseline loads**

What are the current pollutant loads and how much is coming from each source?

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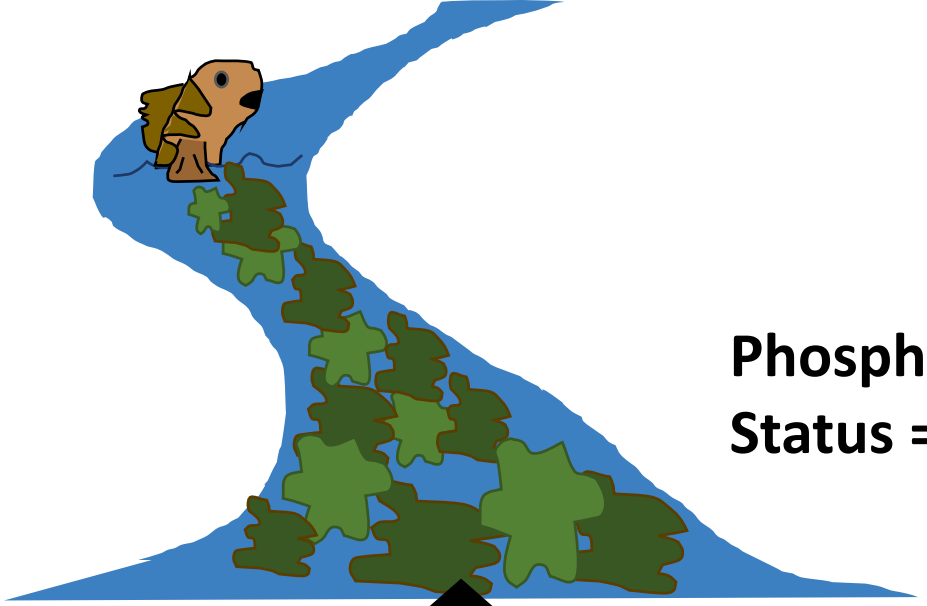
What amount of pollutant reduction is needed from each source?

TMDL Example

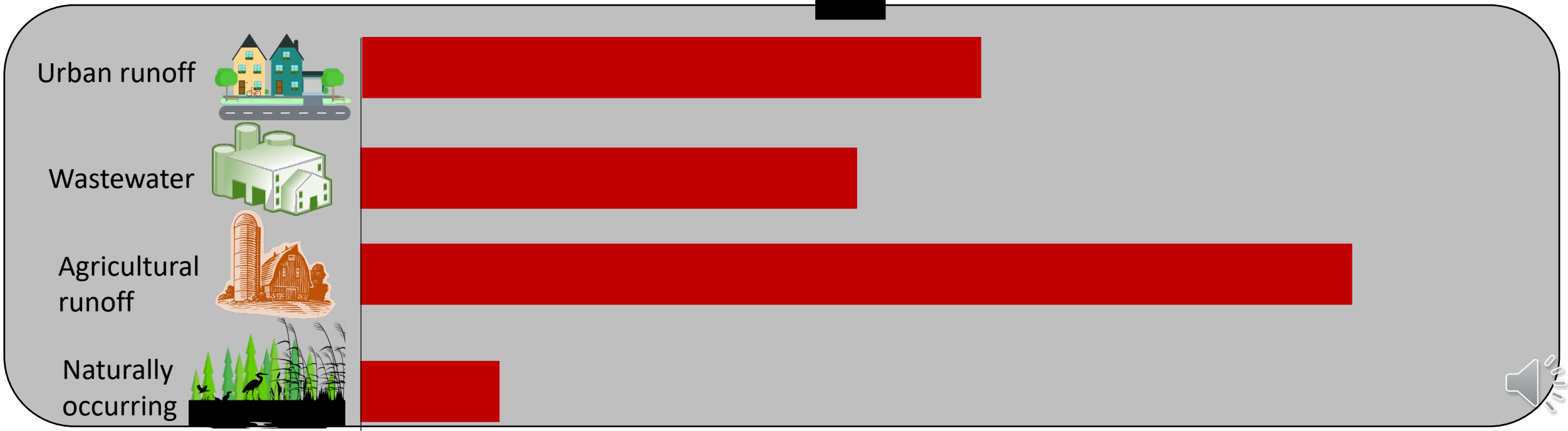
Waterbody: Stream
Pollutant: phosphorus
Criteria: 75 µg/L



Phosphorus = 150 µg/L
Status = Impaired

1) Baseline Load Analysis,
Uses watershed surveys and watershed models

10,000 lb of P per year



TMDL Example

Waterbody: Stream
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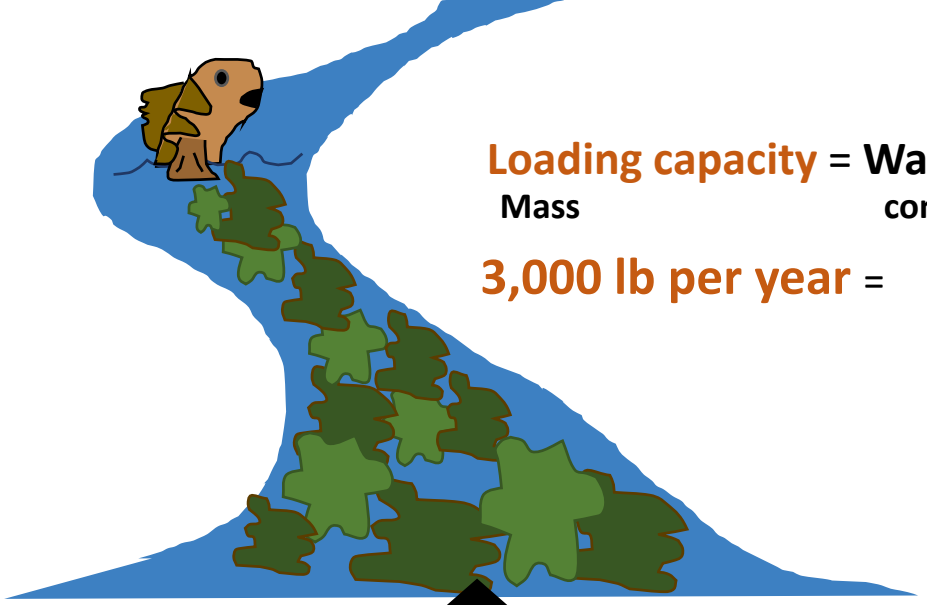
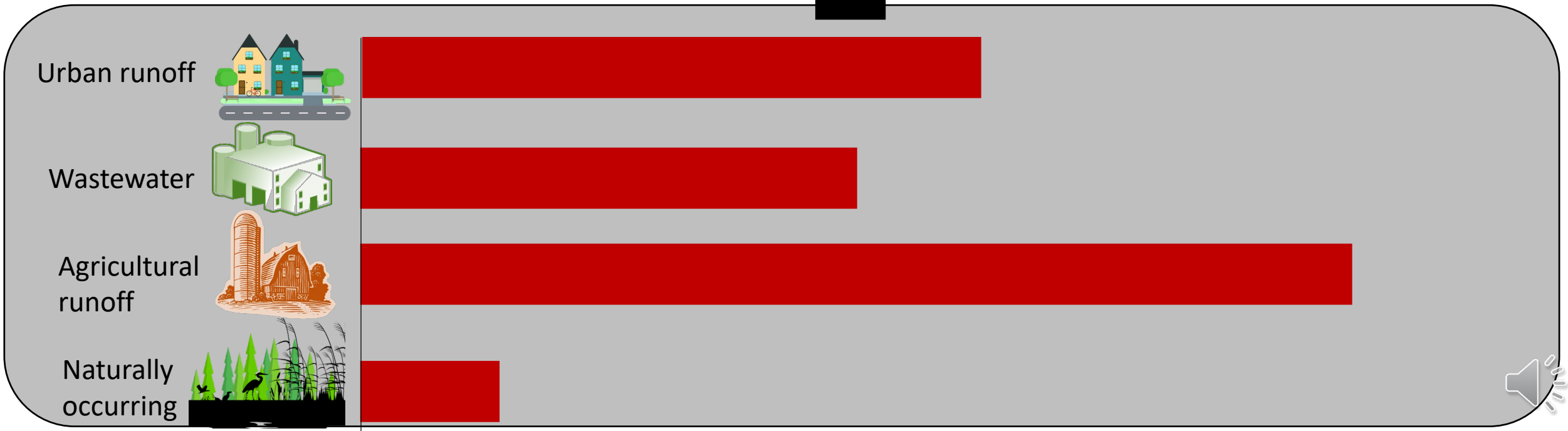
1) **Baseline Load Analysis**
2) **Loading Capacity**



Loading capacity = **Water quality criteria** * **Streamflow**
Mass **concentration** **volume per year**

3,000 lb per year = **75 µg/L** * **20 million liters**

10,000 lb of P per year



TMDL Example

Waterbody: Stream
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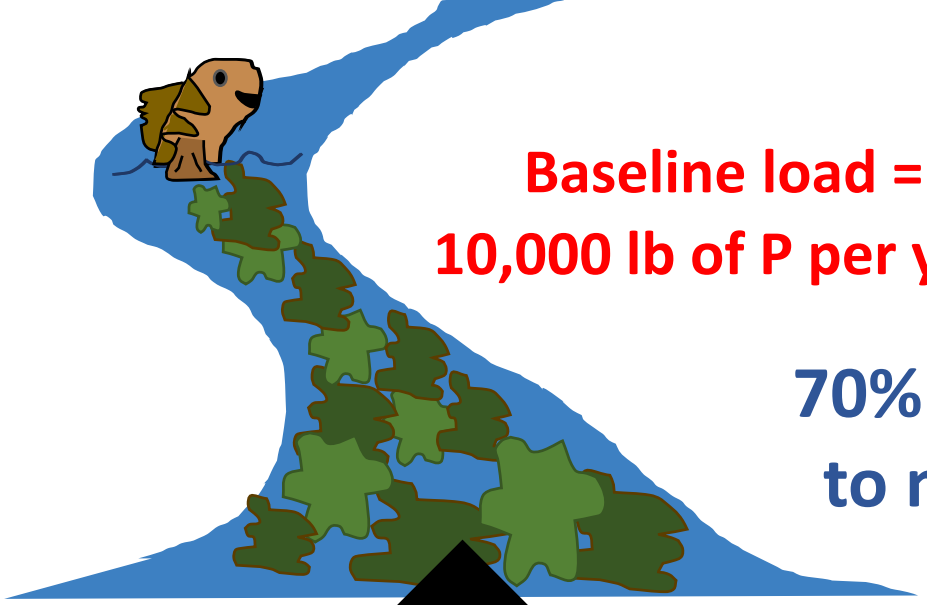
1) **Baseline Load Analysis**
2) **Loading Capacity**
3) **Allocations**

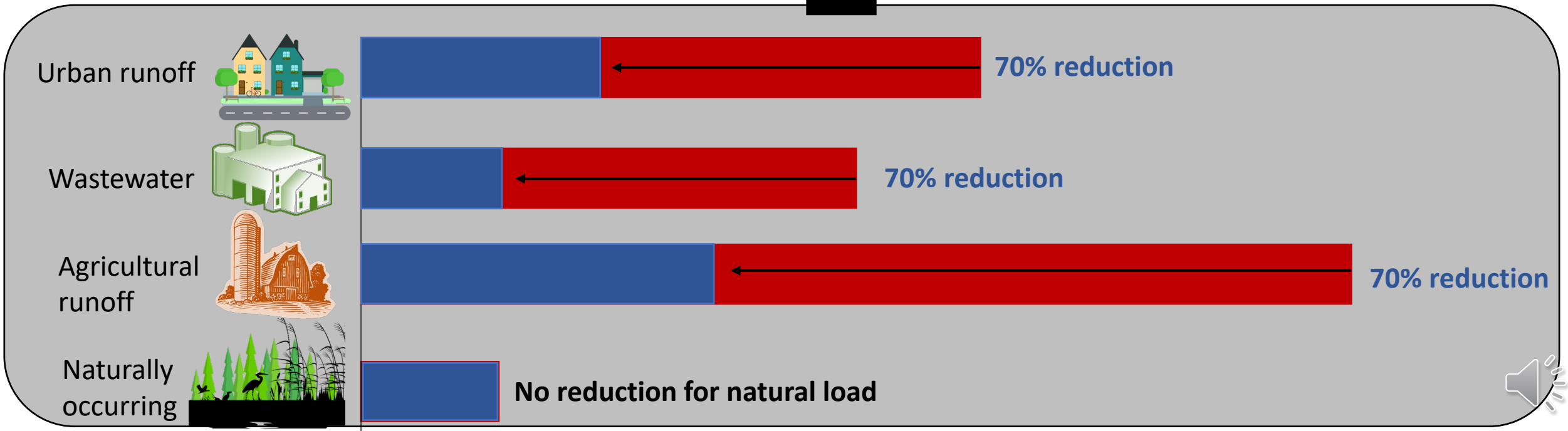


Baseline load = 10,000 lb of P per year

Loading capacity = 3,000 lb per year

70% reduction needed to meet water quality standards

3,000 lb of P per year



Development Efforts for the NE Lakeshore TMDL

Many involved…

Legislature funding

Statute 281.145

Local Watershed Groups

EPA funding to contract the Cadmus Group

Citizen Monitoring Volunteers

UW GB – Manitowoc Students

County Land and Water Conservation Departments

Brown, Calumet, Door, Kewaunee, Fond du Lac, Manitowoc, Ozaukee, Sheboygan

TMDL development – How to stay engaged

Stream monitoring

Watershed model contract: Nov. 2018 – May 2021

2017

WI legislature supports NE Lakeshore TMDL

2018

2019

Completed inventory of WPDES permit holders and effluent monitoring data

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Completed collection of agricultural management data

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Mid June, webinar 1: TMDL Overview

Early July, webinar 2: Water quality data and impairments (3 separate presentations for each basin).

Late July, webinar 3: Watershed model introduction and data inputs

August, webinar 4: Watershed model setup

Public comment period on model setup report

2021

Stakeholder meetings/webinar. Late 2020 to early 2021.

Present draft watershed modeling report, baseline load results, and allocation me

Public comment period on model report.

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Public comment period on draft allocations

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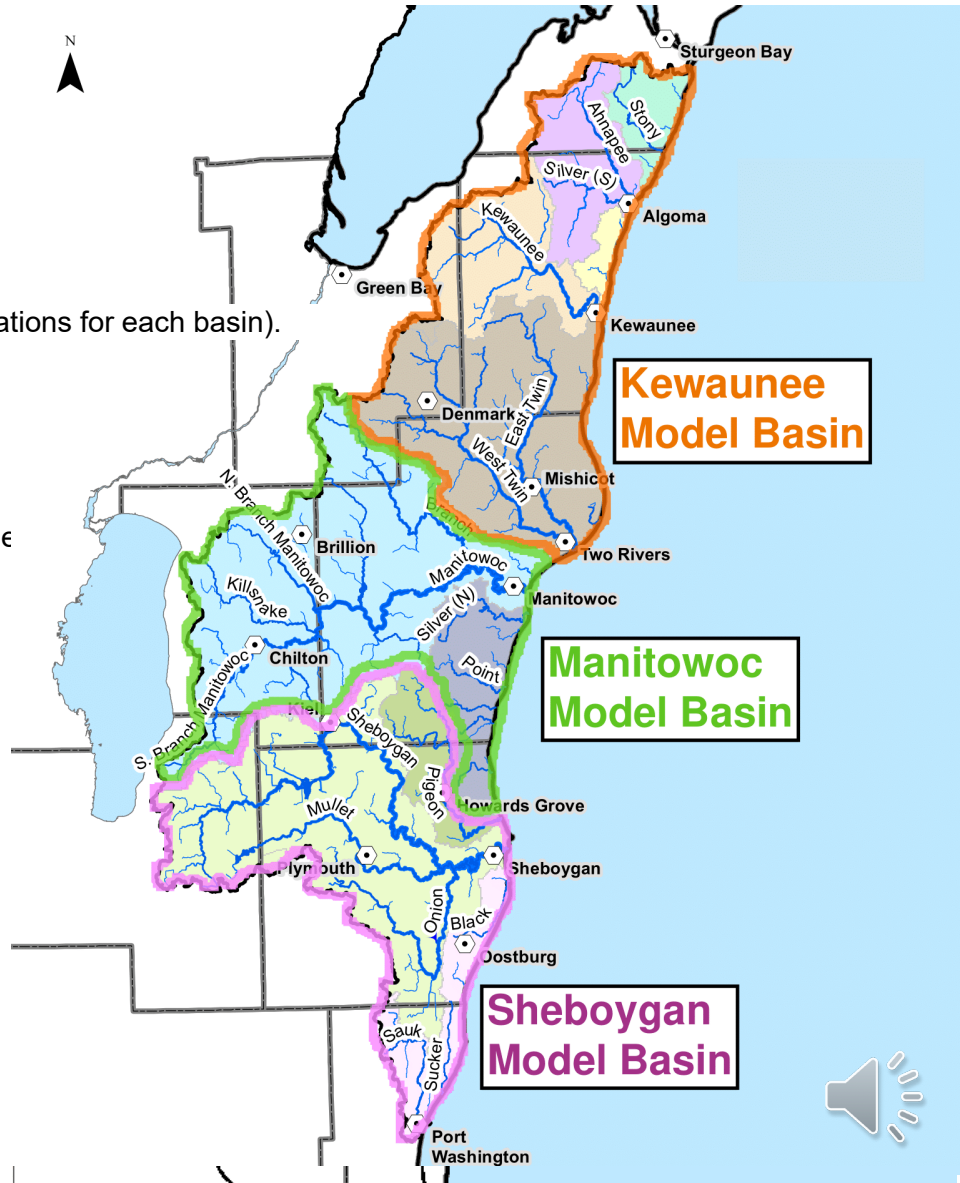
Present draft TMDL report

Public comment period on TMDL report

2022

Mid 2022: Anticipated submittal of TMDL report to EPA for approval

2023: Anticipated start of the TMDL implementation phase



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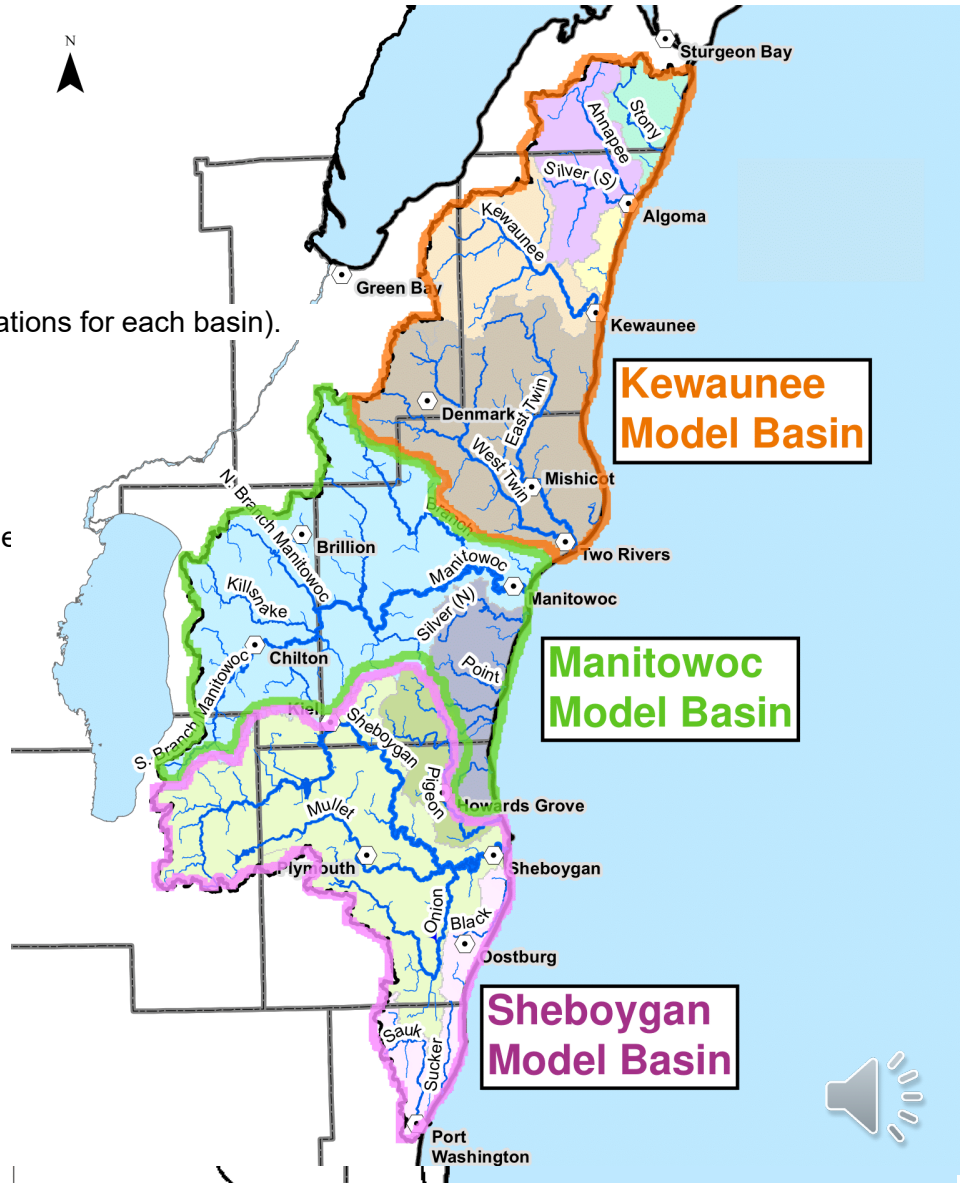
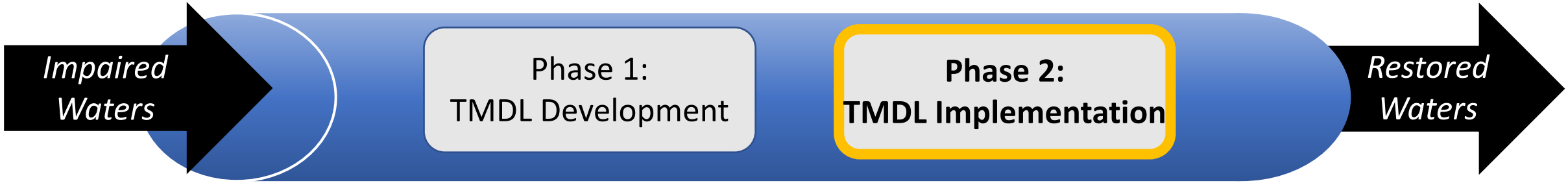
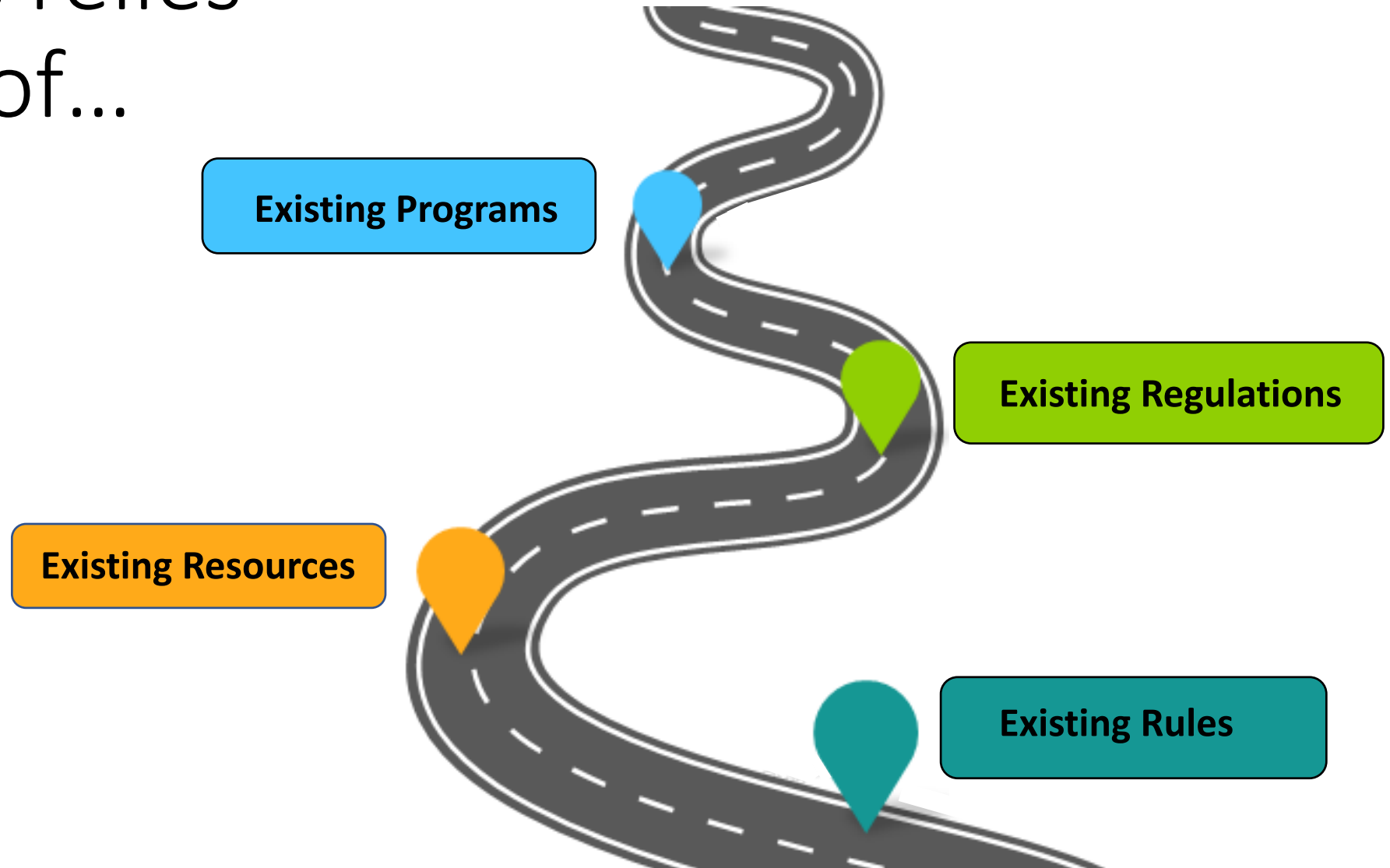


Total Maximum Daily Load (TMDL) Process



Implementation of TMDL plans relies on the use of…



Implementation Mechanisms

- **Point sources (wastewater dischargers and permitted MS4s):** Wisconsin Pollutant Discharge Elimination System (WPDES) permits
- **Nonpoint sources:** NR 151 Agricultural & Non-Agricultural Performance Standards
- **Others:** Local construction site erosion control ordinances, manure storage ordinances, shoreland zoning, etc.



Wastewater Allocations

(municipal and industrial dischargers)

- Once EPA has approved the TMDL, the next permit must contain an expression of the WLA consistent with the TMDL.
- Implemented through NR 217 and permits.
- Baseline loads and conditions included in the TMDL.
- Allocations listed by facility.
- Reserve capacity will be included in this TMDL.

Permitted MS4s

- Assigned individual allocations for each subbasin.

- Implemented in permit with an extended compliance schedule with specified benchmarks.

- See existing general permit for more information

https://dnr.wi.gov/topic/StormWater/documents/WPDES-WI-S050075.pdf

Nonpoint Implementation

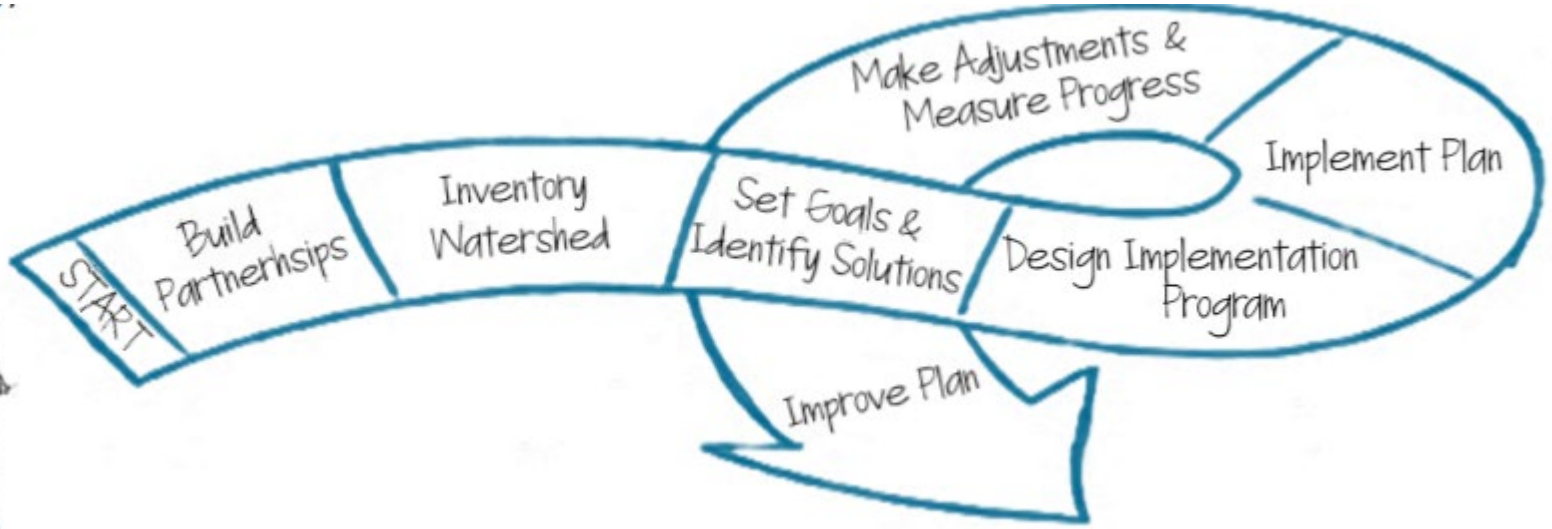
- Allocations will be expressed as an edge of field targets consistent with the SnapPlus model.
- The TMDL baseline will be also expressed as an edge of field target allowing for the use of a percent reduction framework for implementation.
- Compliance with TMDL agricultural targets is voluntary unless promulgated through NR 151.004. Cost share requirements still in place.

SNAPPLUS
WISCONSIN'S NUTRIENT MANAGEMENT PLANNING SOFTWARE

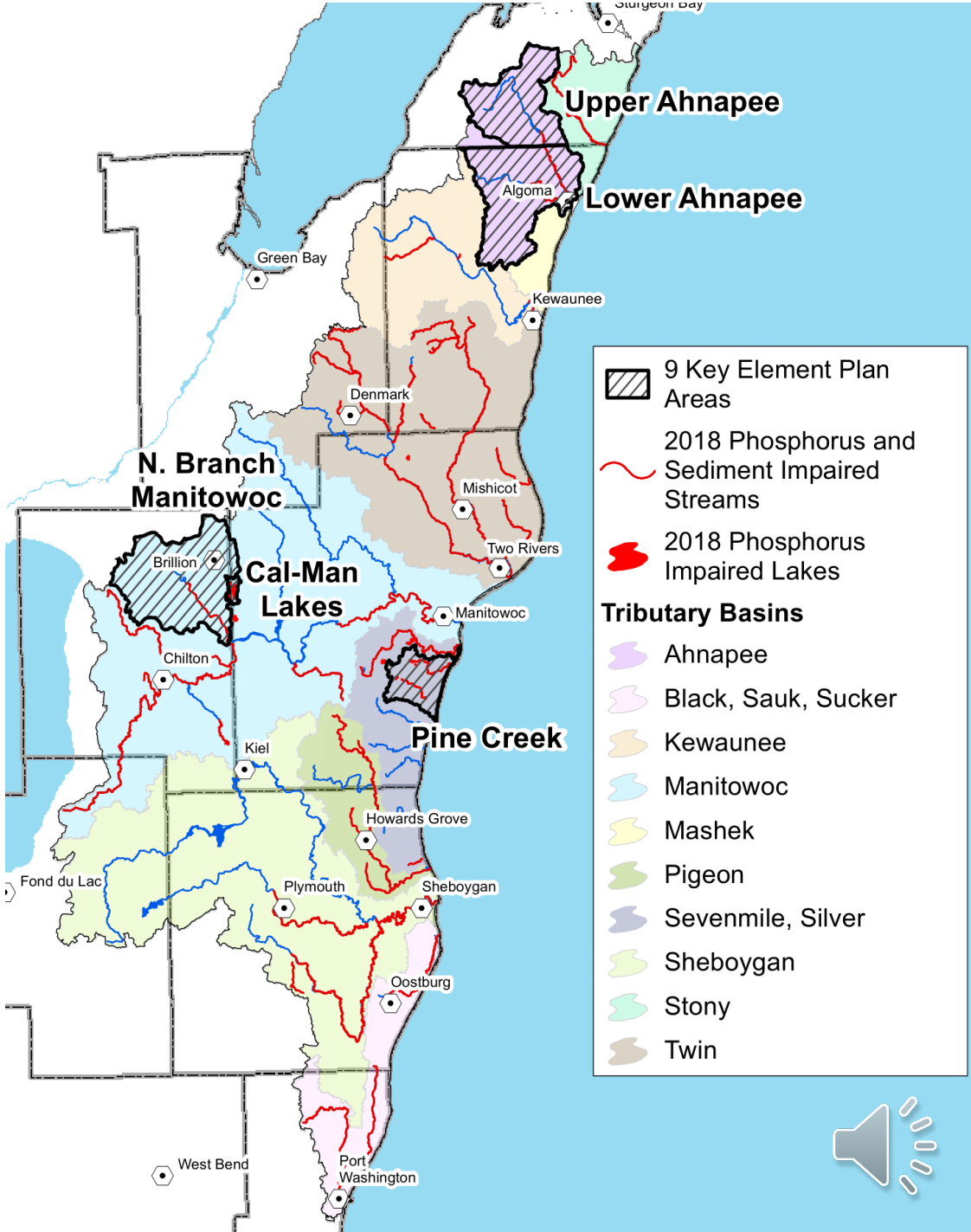
Nonpoint Implementation: 9 Key Element Plans

1. **Identify the causes and sources** that need to be controlled to achieve pollutant load reductions. This includes quantifying significant sources and background levels using maps and tables.
2. **Estimate the pollutant load reductions** expected from selected management measures.
3. **Describe management measures** that need to be implemented to achieve load reductions. Map priority areas for implementing practices.
4. **Estimate amounts of technical and financial assistance needed,** associated costs, and/or the sources and authorities that will be relied upon, to implement the Plan.
5. **Develop an information & education component** to encourage participation and Plan implementation.
6. **Develop a schedule** for implementing the management measures identified in the Plan.
7. **Describe interim, measurable milestones** to assess if the Plan is being implemented.
8. **Identify a set of criteria** to determine whether Plan objectives are or are not being achieved over time. Outline how and when the Plan will be revised if progress is not being made.
9. **Develop a monitoring component** to evaluate the effectiveness of the implementation efforts over time using criteria from elements 6, 7 and 8.

Graphic adapted from the EPA



Nine Key Element Plan areas



Summer 2020 Webinar Series

Webinar 1: TMDL process and introduction to the NE Lakeshore TMDL

Thursday
June
25
10 AM CT

- Overview development and implementation process
- Project progress
- Future outreach

Webinar 2: Water Quality Data and Impairments

Thursday
July
9
10 AM CT

- Stream monitoring methods
- Impaired waters and water quality
- data for each major drainage basin
  - Kewaunee/Twin/Ahnapee
  - Manitowoc
  - Sheboygan

Webinar 3: Watershed Model Introduction and Data inputs

Anticipated
Late July

- Overview of the Soil and Water Assessment Tool and relation to TMDL development
- Model inputs
  - TMDL subbasins
  - Permitted point sources
  - Permitted urban stormwater areas (MS4s)
  - Agricultural land use and practice data

Webinar 4: Watershed Model setup

Anticipated
Late August

- Model parameters and assumptions
- Development of Hydrologic Response Units (HRUs)
- Calibration and Validation methods

Contact information

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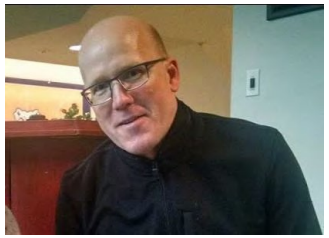

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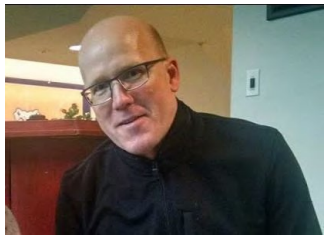

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