Lake Champlain
Total Maximum Daily Load (TMDL) and Restoration Plan

Public Meeting

hosted by

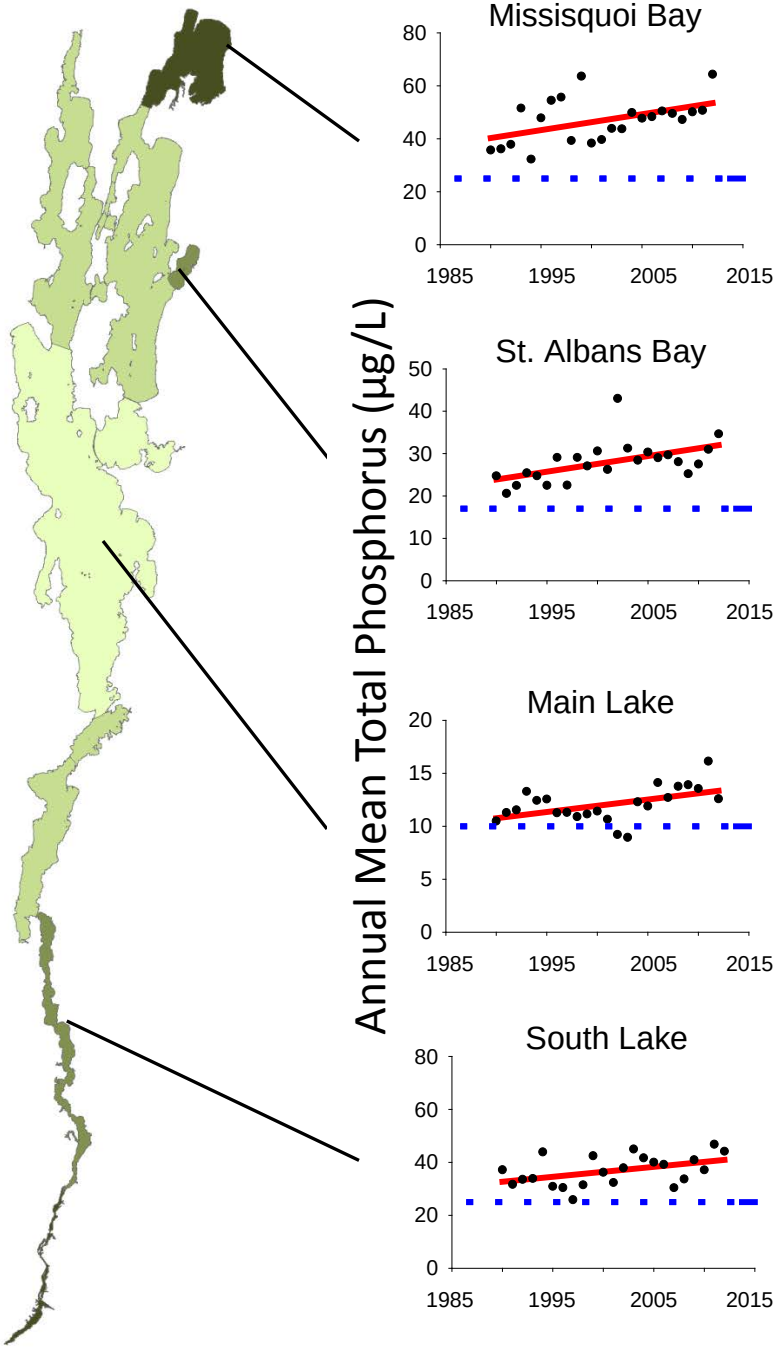
State of Vermont

U.S. Environmental Protection Agency, Region 1

Desired Meeting Outcomes

Provide an understanding of the phosphorous reductions needed to restore Lake Champlain, and what the law requires us to do

Receive public input on Vermont's policy options being considered to achieve the reductions



Lessons learned from the past 20 years

Phosphorus levels in the lake are above the allowable standards.

Vermont has taken many important actions, especially in the last 10 years.

Cleaning up the lake ecosystem is complex and recovery will take time.

We need to do a lot more.

Restoring Lake Champlain

Pollution Sources & Solutions

Pollution Source
Municipal Stormwater Runoff

Stormwater runoff, hitting hard surfaces and mobilizing sediments

Stormwater-flow impaired Centennial Brook

Investments that Work
Stormwater Treatment

Green stormwater infrastructure, Montpelier

VTrans/VDEC constructed gravel wetland, St. Albans

Pollution Source
Road Runoff

Eroding roadside ditch

Storm-damaged gravel road

Investments that Work

Best Practices to Save Roads and Water Quality

Vermont Better Back Roads-funded drainage and culvert projects

Pollution Source

Unstable Stream Channels

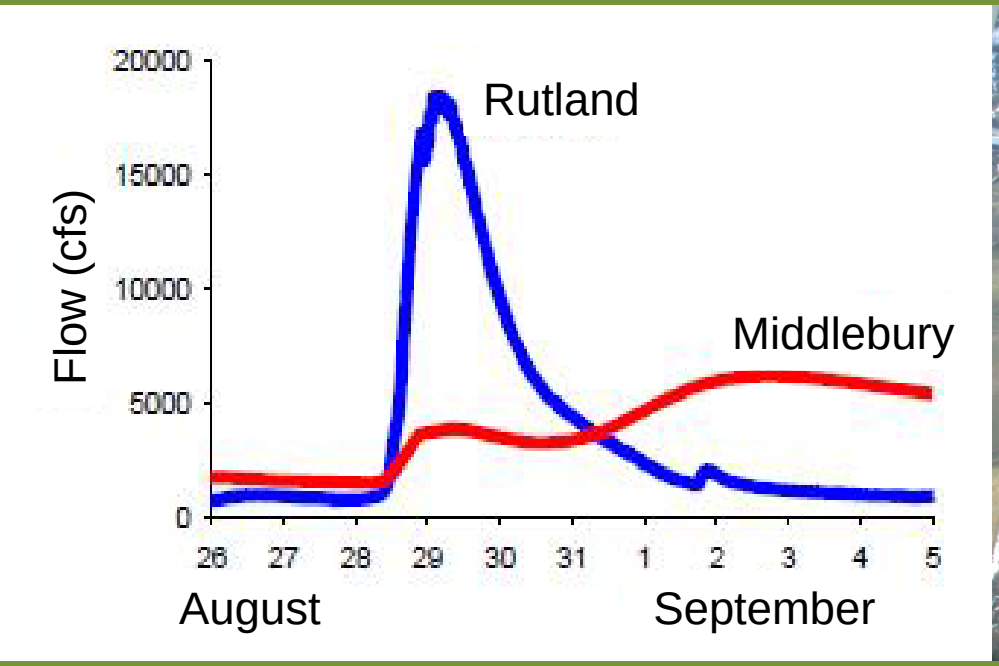
Floodplain development

Channelization

Stormwater-flow impaired Centennial Brook

Investments that Work

Floodplain and River Corridor Restoration



Dampening of Irene's floodflow in the Otter Creek due to floodplain restoration & protection

Restored 200 acres of floodplain, Black Creek in Fairfield and Lamoille River in Bakersfield

Pollution Source
Runoff from Logging Operations

Poor stream crossing at logging job

Poor management of drainage along logging road

Investments that Work
Sound Logging Road Practices

Temporary stream crossing along logging road

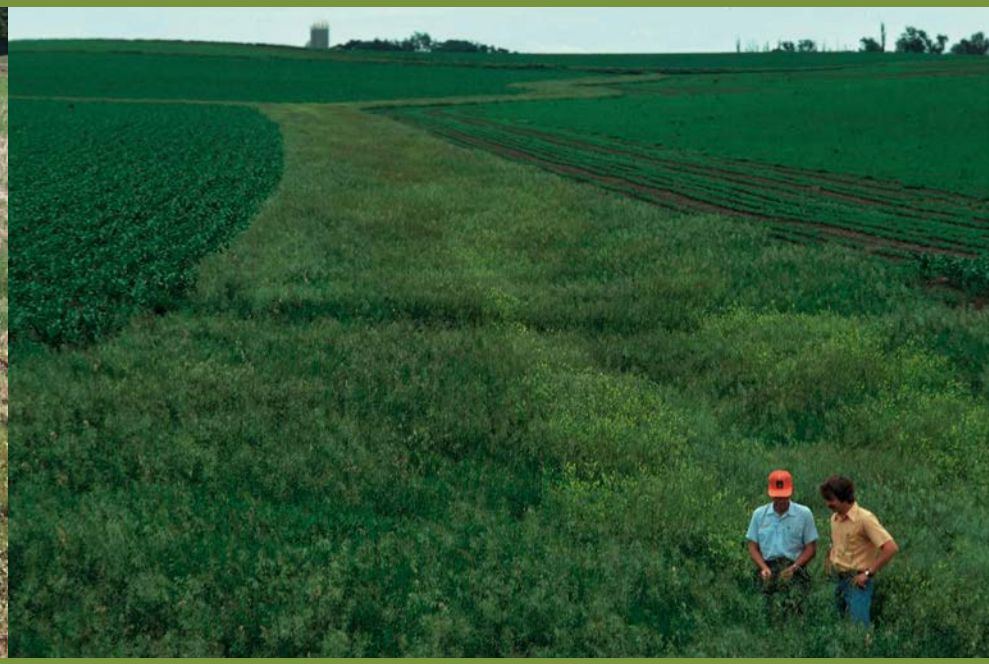
Pollution Source
Agricultural Runoff

Impacts from
livestock access

Eroding gully

Investments that Work
Reducing Agricultural Runoff

Manure injection



Grassed waterway
to prevent gullying

Restoring Lake Champlain Basin
Proposed Commitments

Enhance water quality rules for agriculture (Accepted Agricultural Practices, AAPs).

Develop a stormwater permit for state highways.

Develop a stormwater permit for town roads.

Require additional stormwater treatment for more densely developed areas.

Revise Vermont Stormwater Management Manual for new development.

Improve rules for managing rivers and floodplains.

Enhance water quality rules for logging (Accepted Management Practices, AMPs).

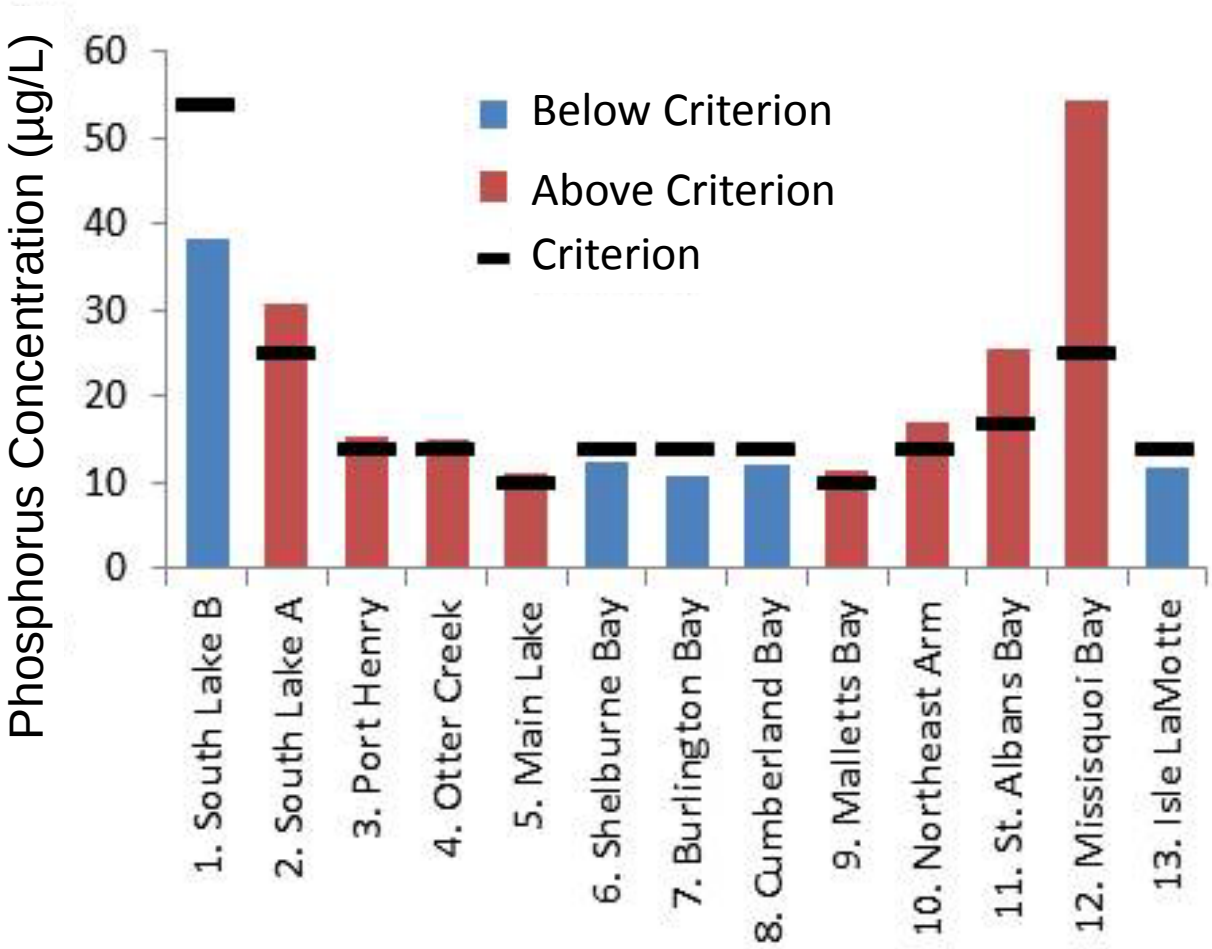
Worst Case Scenario

Vermont does not commit to any further nonpoint source load reductions.

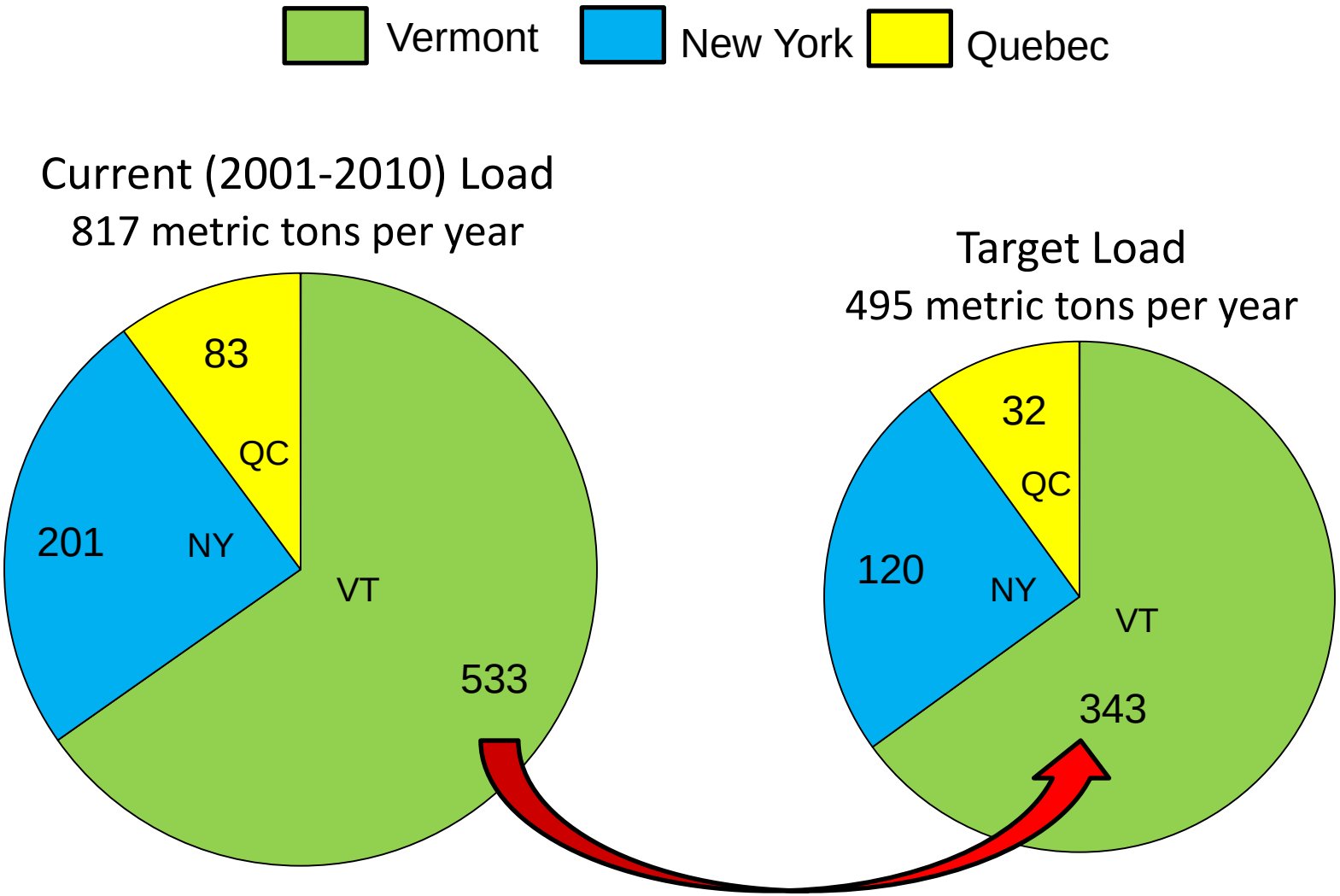
EPA uses authority to impose wastewater treatment to limits of technology everywhere, plus offsets.

Lake standards are not achieved in most lake areas.

Predicted phosphorus concentrations in Lake Champlain segments

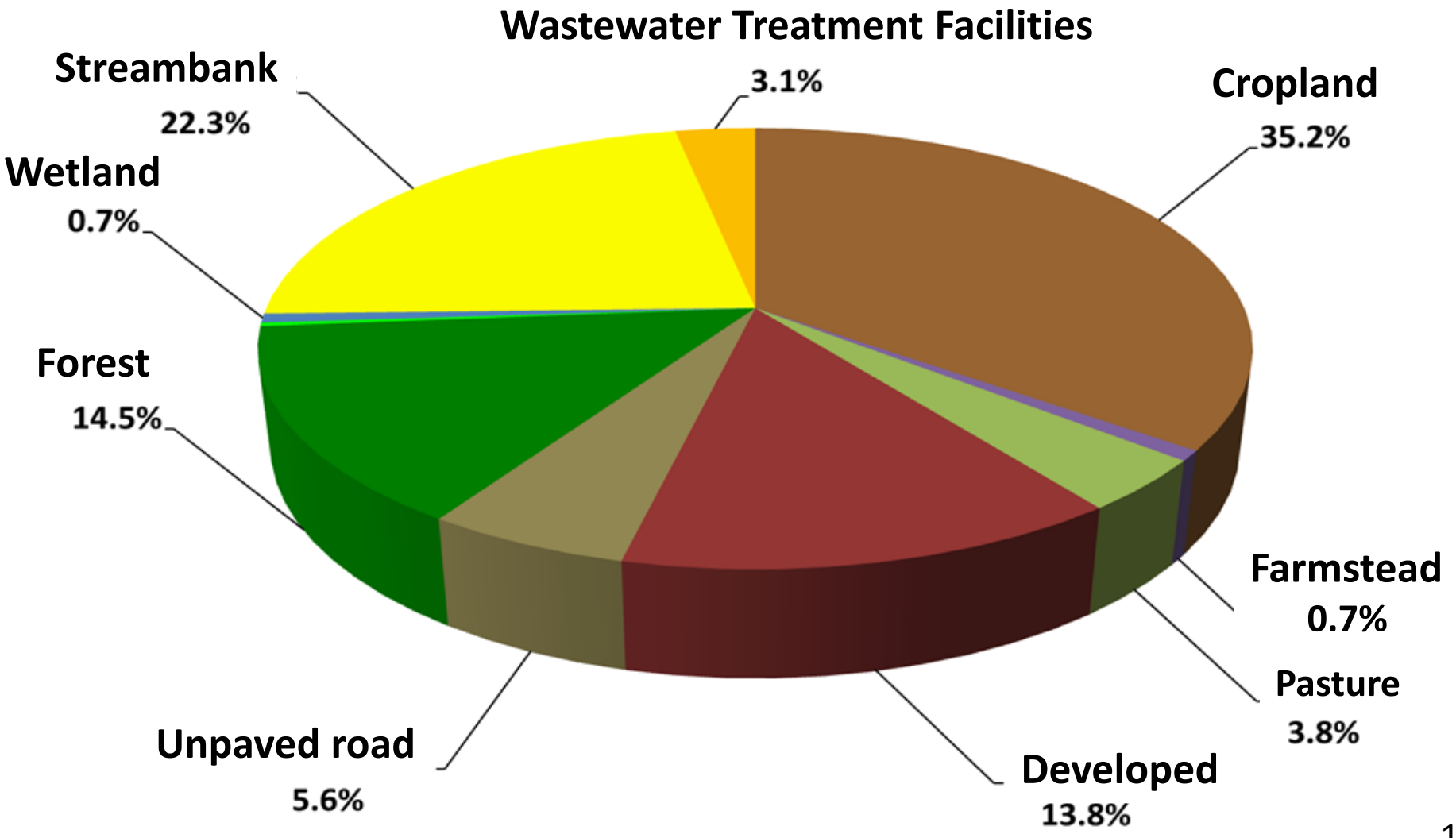


Preliminary TMDL Results for Lake Champlain



Sources of phosphorus in the Vermont portion of the Lake Champlain Basin

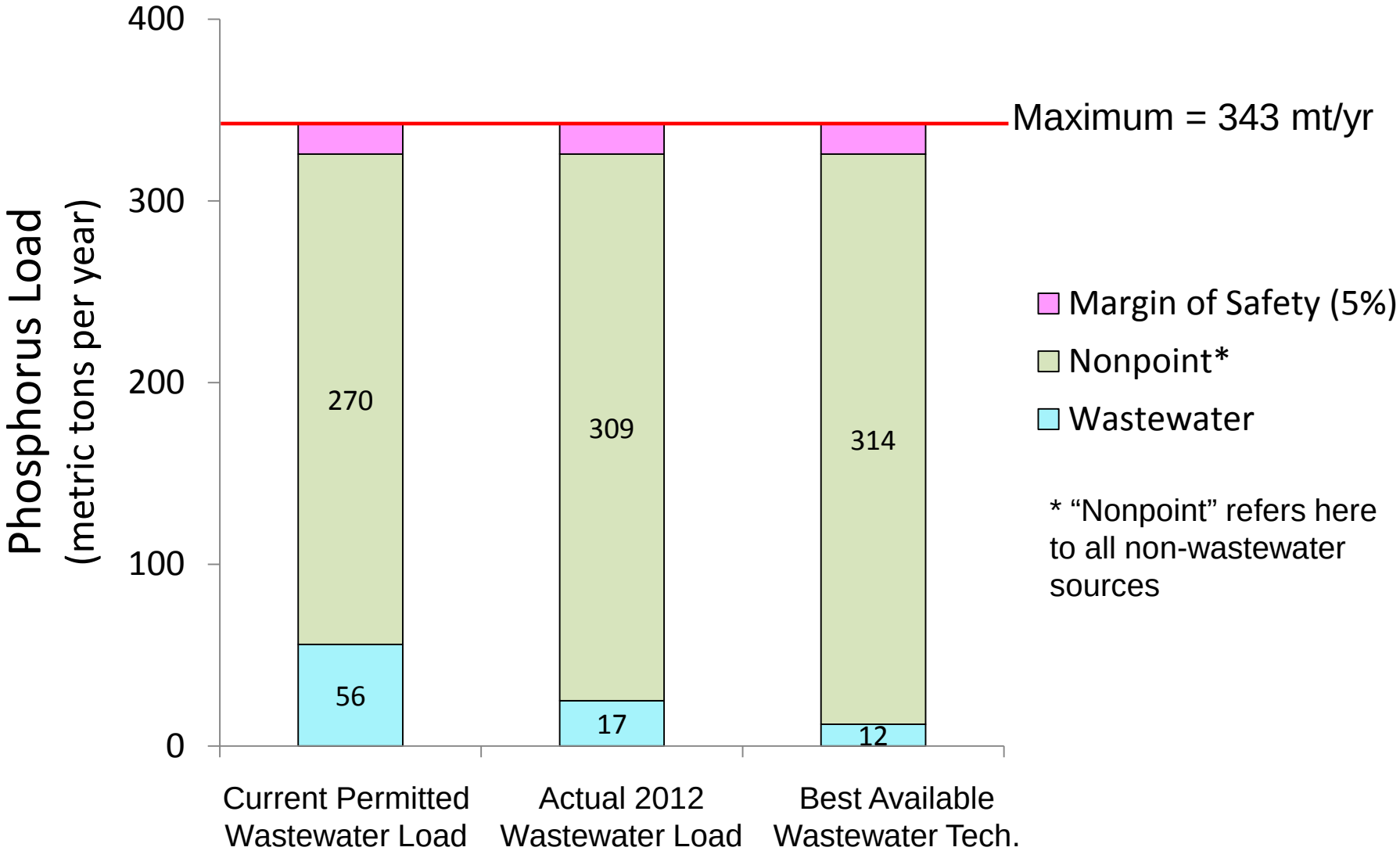
(from EPA – Tetra Tech, 2013)



TMDL = WLA + LA + MOS

TMDL	WLA	LA	MOS
Total Maximum Daily Load (Total Loading Capacity)	Wasteload Allocation ("Point Sources")	Load Allocation ("Nonpoint sources")	Margin of Safety
The amount of pollution the lake can receive and still meet water quality standards. Determined by data and modeling. Will be expressed at the lake segment level (e.g., Main Lake; St. Albans Bay, etc.).	Achieved by federally required permits or other regulations. **Examples** - Wastewater discharges - Construction stormwater - Municipal Separate Storm Sewer Systems (MS4s) - Combined Sewer Overflow (CSOs) - Concentrated Animal Feeding Operations (CAFOs)	Achieved by regulatory or non-regulatory methods. Requires "reasonable assurances." **Examples** - Agricultural runoff - Unregulated stormwater - River channel instability - Road drainage networks - Forest runoff	Could be a percentage (e.g., 5%) of the TMDL.

Allowable Vermont phosphorus loads under three different scenarios (preliminary results)



Scenario Tool to help determine needed reductions

It's important for EPA to have confidence that nonpoint source reductions can be attained

EPA developed a scenario tool to help understand potential effects of best management practices in each watershed

The tool showed that needed nonpoint source reductions can be achieved in 10 out of 12 segments with a very aggressive level of effort addressing all source sectors

- EPA is still working to identify management scenarios that will fully attain targets in South Lake B and Missisquoi Bay

EPA believes the State's draft proposed actions, with some strengthening, can achieve the load reductions needed

Phosphorus load reductions required in Vermont lake segment watersheds

An example scenario

Lake Segment	Current Vermont Load	TMDL Target Load	Net Load Reduction Required	Percent Load Reduction Required with 5% MOS	Percent Reduction Achievable from a BMP Scenario
1. South Lake B	41.2	23.9	17.3	45%	**35%**
2. South Lake A	3.7	2.1	1.5	45%	**58%**
3. Port Henry	2.8	2.1	0.7	28%	**72%**
4. Otter Creek	137.1	105.5	31.6	27%	**37%**
5. Main Lake	143.9	104.4	39.6	31%	**32%**
6. Shelburne Bay	9.0	6.5	2.5	31%	**38%**
7. Burlington Bay	3.0	2.9	0.1	6%	**9%**
9. Malletts Bay	53.6	41.7	11.9	26%	**38%**
10. Northeast Arm	1.2	1.0	0.3	27%	**44%**
11. St. Albans Bay	9.3	5.4	4.0	45%	**55%**
12. Missisquoi Bay	124.7	44.3	80.4	66%	**40%**
13. Isle LaMotte	3.5	2.7	0.8	27%	**57%**
TOTAL	**533**	**343**	**190**	**39%**	

TMDL Total Maximum Daily Load | **MOS** Margin of Safety | **BMP** Best Management Practices

Timeline

Lake Champlain Restoration Plan
(Phosphorus TMDL)

November 21, 2013	State releases Draft Proposal for Restoring Lake Champlain
December 2-11, 2013	EPA & State hold **6 public meetings** to discuss Draft Proposal
by January 17, 2014	State works with the RPCs to hold **12 additional municipal meetings** and receives **comments** from public & EPA on Draft Proposal
Winter, 2014	EPA prepares the pollution load allocations (i.e., TMDL's load and wasteload allocations) , other components
Spring, 2014	State submits to EPA final Policy Commitments to meet the TMDL's reasonable assurances provision
Spring, 2014	State provides EPA a letter from the Governor & leadership of the General Assembly, supporting the Policy Commitments
Late Spring, 2014	EPA issues Draft TMDL and opens **public comment period**
Summer, 2014	EPA issues final TMDL; State begins implementation

Further Thoughts?

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More Information

VTDEC Restoring Lake Champlain
http://www.watershedmanagement.vt.gov/erp/champlain/

EPA information on Vermont Lake Champlain Phosphorus TMDL
http://www.epa.gov/region1/eco/tmdl/lakechamplain.html