Clean Water and the Capital Bill

Julie Moore, Secretary
Agency of Natural Resources
January 27, 2017

Why We Need Clean Water

- **Use and enjoyment of Vermonters**
  - Drinking water
  - Swimming
  - Fishing

- **Support tourism, at annual spending of $2.5 billion**
  - Lake Champlain a key attraction for visitors
  - Second home-owners in towns bordering the Lake spend $150 million annually
  - Overnight visitors in Champlain Valley spend over $300 million annually
  - Day visitors spend $30 million annually

- **Maintain property values**

- **Integral to the Vermont brand**
  - Our environmental is our economy

Human Activity Can Harm Our Waters






“All-In” Approach

Wastewater Treatment

Forestry

Runoff from Developed Land

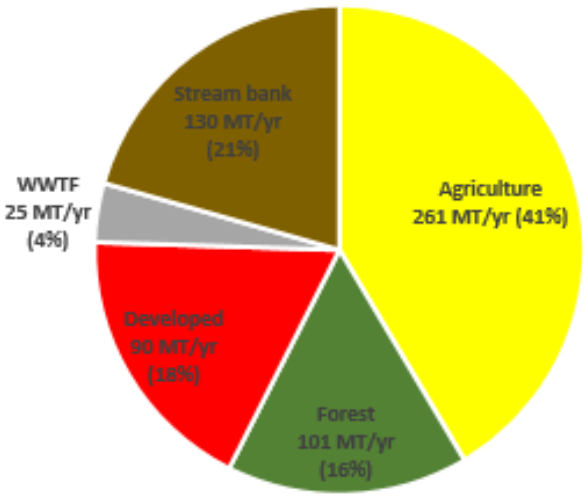
River Channels

Agriculture

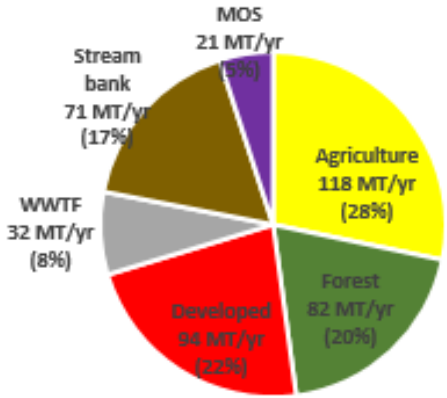
Roads

VERMONT

Base Load
631 Metric Tons/Year



Vermont Reduction
Required = 213 mt/yr (34%)

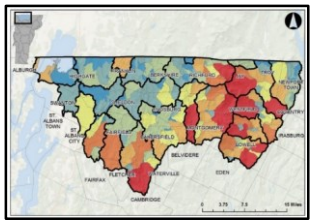


TMDL Loading Capacity and Allocations
418 Metric Tons/yr

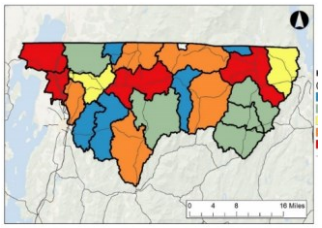
34% phosphorus reduction over 20 years

Modeling assists with implementation of regulatory programs that control nutrient pollution

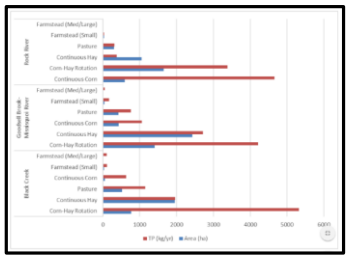
Forests



State roads/facilities



Agriculture



Wastewater treatment facilities

Facility (permit ID)	Permit expiration date	Planned permit re-issuance year	Design flow MGD	IMC[1] 7Q10 /LMM	Current permitted load (mt P/yr)	TMDL WLA (mt P/yr)	2015 Flow (MGD) / / Percent of Design Flow	Treatment type	# of CSOs	Receiving water
Fairfax (3-1194)	9/30/10	2017-18	0.078	0.001/< 0.001	0.539	0.539	0.033 / 42%	Aerated lagoon	0	Lamoille River
Jeffersonville (3-1323)	3/31/10	2017-18	0.077	0.001/< 0.001	0.532	0.532	0.036 / 47%	Aerated lagoon	0	Lamoille River
Johnson (3-1149)	3/31/09	2017-18	0.270	0.029/0 .012	0.224	0.224	0.120 / 44%	Sequential batch reactor	0	Gihon River
Morrisville (3-1155)	12/31/13	2017-18	0.550	0.018/0 .007	0.352	0.352	0.221 / 40%	Sequential batch reactor	0	Lamoille River
Milton (3-1203)	12/31/10	2017-18	1.000	0.010/0 .004	0.829	0.829	0.245 / 25%	Sequential batch reactor	0	Lamoille River
Hardwick (3-1142)	12/31/09	2017-18	0.371	0.023/0 .009	0.410	0.410	0.220 / 59%	Aerated lagoon	0	Lamoille River
PBM Nutritionals (3-1209)	6/30/12	2017-18	0.425	NA	0.352	0.352	0.125 / 29%	Activated Sludge upgrade to Movable Bed Bio Reactor	0	Lamoille River

Local roads

Town	Paved Roads (kg/yr)	Unpaved Roads (kg/yr)	Town	Paved Roads (kg/yr)	Unpaved Roads (kg/yr)
Bakersfield	332.5	263.4	Jay	249.5	70.1
Belvidere	---	---	Lowell	316.6	67.4
Berkshire	291.5	144.4	Montgomery	302.7	119.3
Cambridge	108.4	53.3	Newport Town	256.2	104.4
Eden	4.7	---	Richford	280.3	81.0
Enosburgh	357.8	177.4	Sheldon	240.9	56.7
Fairfax	0.1	---	St. Albans Town	87.1	43.5
Fairfield	398.4	232.5	Swanton	398.6	27.0
Fletcher	11.0	10.6	Troy	210.2	58.1
Franklin	247.8	59.4	Westfield	196.7	43.9
Highgate	402.9	66.4			
Total loading from all roads (kg/yr)		6374			
Total reduction based on overall		2180			

Three-acre parcels

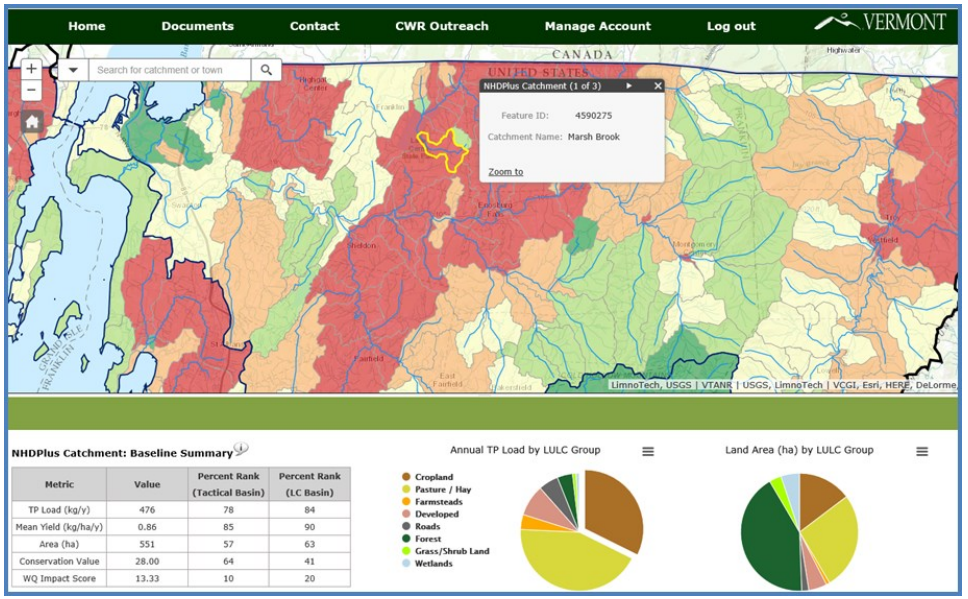
Town	Parcels (#)	Impervious (acres)
Eden	1	0.1
Highgate	8	75.5
Jay	4	74.0
Lowell	2	22.0
Montgomery	2	15.8
Richford	4	25.6
Swanton	8	38.1
Troy	1	3.6
Total	30	254.7

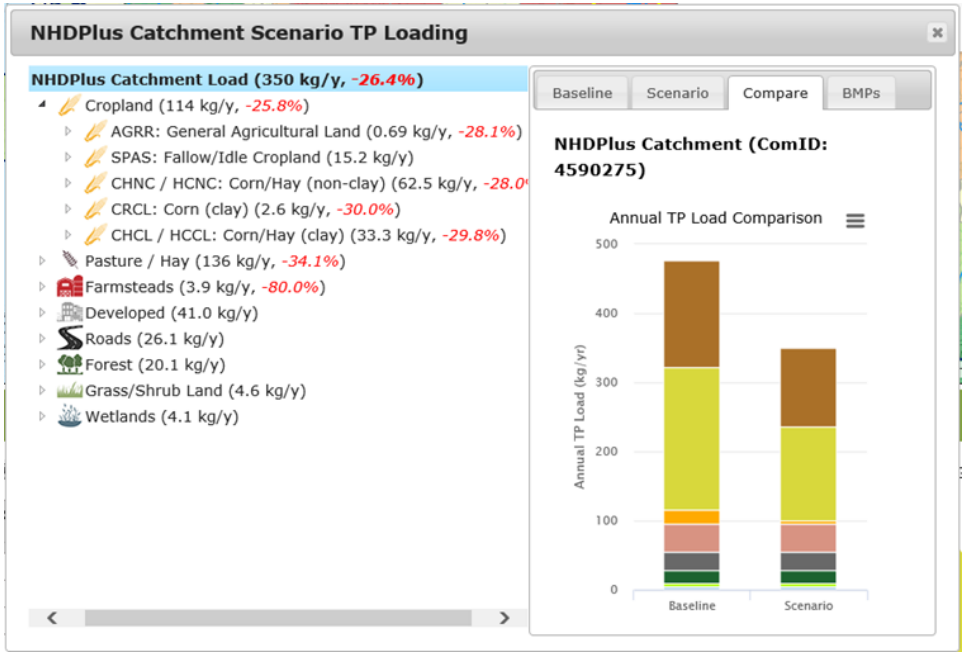
- Allows each tactical basin plan to express the estimated total load, and “sub-allocation” associated with each regulated sector within the TMDL.
- Produce estimates of P loss by land use AND regulatory program
- These estimates are expressed at appropriate geographic scales.
- “Critical Catchment maps” for each regulated sector
- Great planning and communication tool.

Program Highlights

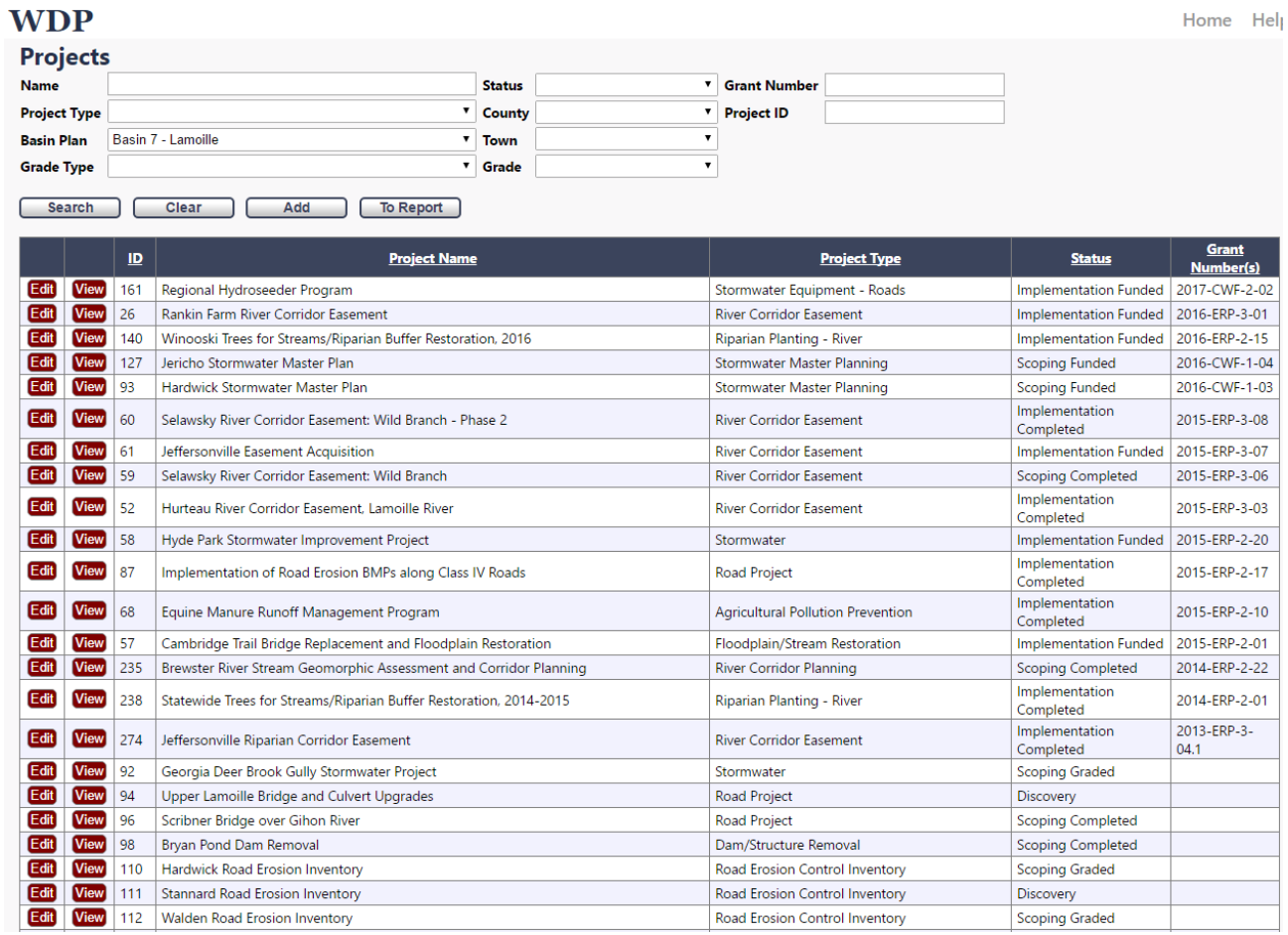
- Online phosphorus planning/mapping program - coming in March, 2017
- Funded by Keurig GMCR with support from TNC, DEC, and others
- Presents online maps of phosphorus pollution and appropriate reduction practices.
- Can be used to map phosphorus reduction projects from DECs database for public.

Clean Water Roadmap





Tactical basin plans present continually-refreshing lists of actions and projects



WDP

Home Hel

Projects

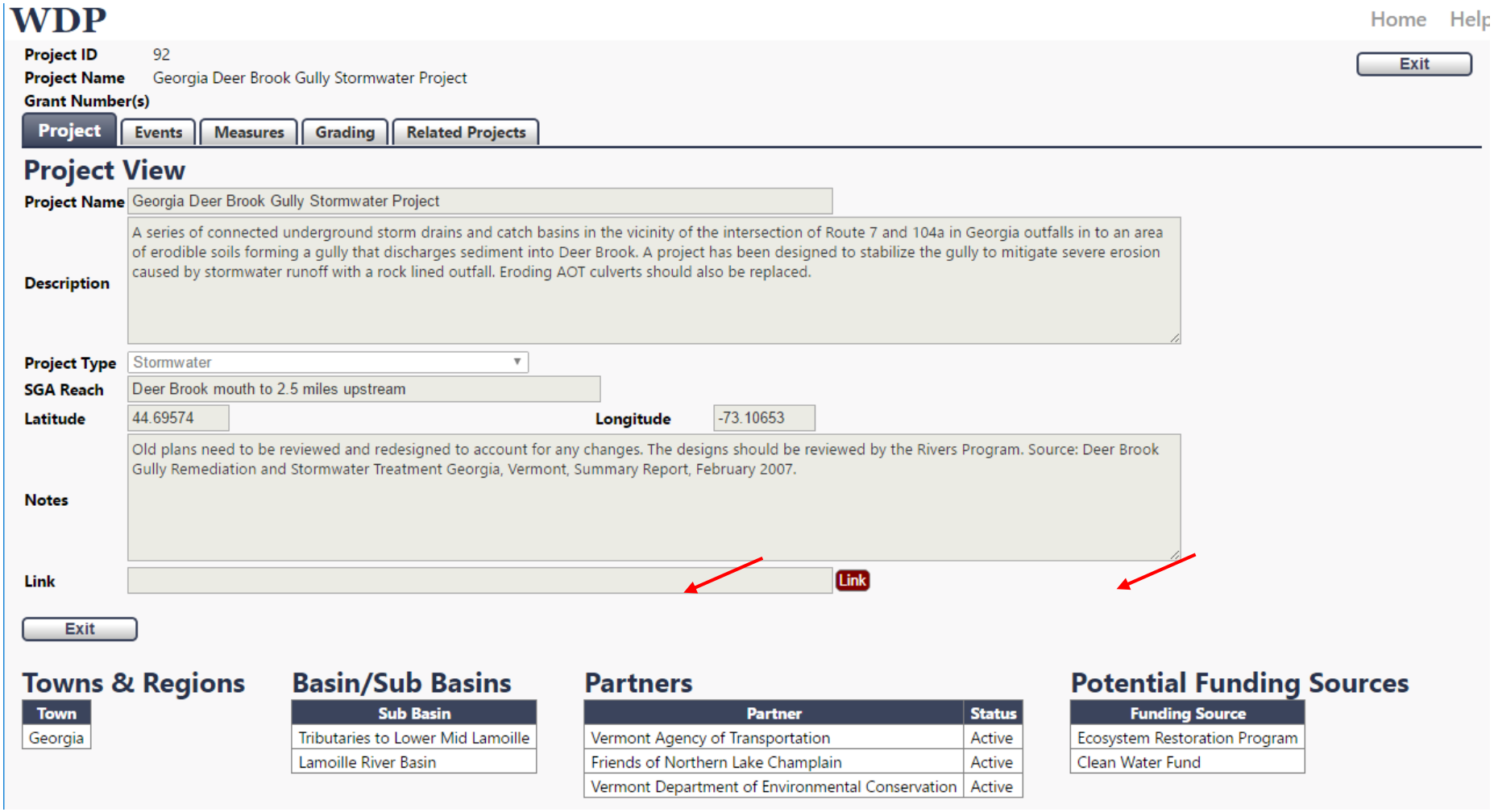
Name		**Status**		**Grant Number**	
Project Type		**County**		**Project ID**	
Basin Plan	Basin 7 - Lamoille	**Town**			
Grade Type		**Grade**			

Search Clear Add To Report

		ID	Project Name	Project Type	Status	Grant Number(s)
Edit	View	161	Regional Hydroseeder Program	Stormwater Equipment - Roads	Implementation Funded	2017-CWF-2-02
Edit	View	26	Rankin Farm River Corridor Easement	River Corridor Easement	Implementation Funded	2016-ERP-3-01
Edit	View	140	Winooski Trees for Streams/Riparian Buffer Restoration, 2016	Riparian Planting - River	Implementation Funded	2016-ERP-2-15
Edit	View	127	Jericho Stormwater Master Plan	Stormwater Master Planning	Scoping Funded	2016-CWF-1-04
Edit	View	93	Hardwick Stormwater Master Plan	Stormwater Master Planning	Scoping Funded	2016-CWF-1-03
Edit	View	60	Selawsky River Corridor Easement: Wild Branch - Phase 2	River Corridor Easement	Implementation Completed	2015-ERP-3-08
Edit	View	61	Jeffersonville Easement Acquisition	River Corridor Easement	Implementation Funded	2015-ERP-3-07
Edit	View	59	Selawsky River Corridor Easement: Wild Branch	River Corridor Easement	Scoping Completed	2015-ERP-3-06
Edit	View	52	Hurteau River Corridor Easement, Lamoille River	River Corridor Easement	Implementation Completed	2015-ERP-3-03
Edit	View	58	Hyde Park Stormwater Improvement Project	Stormwater	Implementation Funded	2015-ERP-2-20
Edit	View	87	Implementation of Road Erosion BMPs along Class IV Roads	Road Project	Implementation Completed	2015-ERP-2-17
Edit	View	68	Equine Manure Runoff Management Program	Agricultural Pollution Prevention	Implementation Completed	2015-ERP-2-10
Edit	View	57	Cambridge Trail Bridge Replacement and Floodplain Restoration	Floodplain/Stream Restoration	Implementation Funded	2015-ERP-2-01
Edit	View	235	Brewster River Stream Geomorphic Assessment and Corridor Planning	River Corridor Planning	Scoping Completed	2014-ERP-2-22
Edit	View	238	Statewide Trees for Streams/Riparian Buffer Restoration, 2014-2015	Riparian Planting - River	Implementation Completed	2014-ERP-2-01
Edit	View	274	Jeffersonville Riparian Corridor Easement	River Corridor Easement	Implementation Completed	2013-ERP-3-04.1
Edit	View	92	Georgia Deer Brook Gully Stormwater Project	Stormwater	Scoping Graded	
Edit	View	94	Upper Lamoille Bridge and Culvert Upgrades	Road Project	Discovery	
Edit	View	96	Scribner Bridge over Gihon River	Road Project	Scoping Completed	
Edit	View	98	Bryan Pond Dam Removal	Dam/Structure Removal	Scoping Completed	
Edit	View	110	Hardwick Road Erosion Inventory	Road Erosion Control Inventory	Scoping Graded	
Edit	View	111	Stannard Road Erosion Inventory	Road Erosion Control Inventory	Discovery	
Edit	View	112	Walden Road Erosion Inventory	Road Erosion Control Inventory	Scoping Graded	

- All projects that have a potential water quality benefit are entered into an online database
- Projects are prioritized with partner input (RPCs, Cons. Districts).
- Database summaries are publicly available.
- Ready projects meeting key criteria become the highest priority for funding.

Tactical basin plans identify key partners and funding, when known



WDP

Home Help

Project ID 92
Project Name Georgia Deer Brook Gully Stormwater Project
Grant Number(s)

Exit

Project | Events | Measures | Grading | Related Projects

Project View

Project Name Georgia Deer Brook Gully Stormwater Project

Description A series of connected underground storm drains and catch basins in the vicinity of the intersection of Route 7 and 104a in Georgia outfalls in to an area of erodible soils forming a gully that discharges sediment into Deer Brook. A project has been designed to stabilize the gully to mitigate severe erosion caused by stormwater runoff with a rock lined outfall. Eroding AOT culverts should also be replaced.

Project Type Stormwater

SGA Reach Deer Brook mouth to 2.5 miles upstream

Latitude 44.69574 **Longitude** -73.10653

Notes Old plans need to be reviewed and redesigned to account for any changes. The designs should be reviewed by the Rivers Program. Source: Deer Brook Gully Remediation and Stormwater Treatment Georgia, Vermont, Summary Report, February 2007.

Link Link

Exit

Towns & Regions

Town
Georgia

Basin/Sub Basins

Sub Basin
Tributaries to Lower Mid Lamoille
Lamoille River Basin

Partners

Partner	Status
Vermont Agency of Transportation	Active
Friends of Northern Lake Champlain	Active
Vermont Department of Environmental Conservation	Active

Potential Funding Sources

Funding Source
Ecosystem Restoration Program
Clean Water Fund

DEC's basin plans support prioritization of projects for funding

Online Basin Plan Documents

Hudson River Drainage Basin:
Battenkill, Hoosic, Walloomsac

Lake Champlain Drainage Basin:
Southern Lake Champlain *
Otter, Little Otter, Lewis Creeks
Northern Lake Champlain
Missisquoi Bay †
Lamoille
Winooski

Connecticut River Drainage Basin:
White
Ottauquechee, Black ‡
West, Williams, Saxtons ‡
Deerfield ‡
Stevens, Wells, Waits, Ompompanoosuc §
Passumpsic
Upper Connecticut River

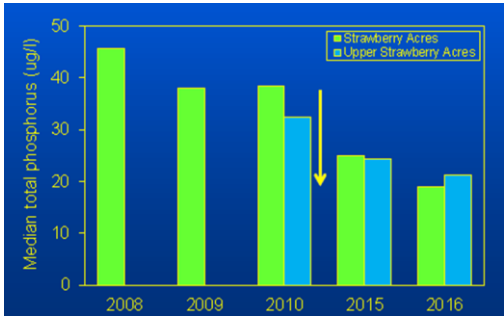
Lake Memphremagog Drainage Basin:
Lake Memphremagog, Coaticook, Tomifobia

Online Implementation Tables

	ID	Project Name	Project Type	Status	Grant Number(s)
Edit	94	Upper Lamoille Bridge and Culvert Upgrades	Road Project	Discovery	
Edit	98	Bryan Pond Dam Removal	Dam Removal	Discovery	
Edit	111	Stannard Road Erosion Inventory	Road Erosion Control Inventory	Discovery	
Edit	113	Wheelock Road Erosion Inventory	Road Erosion Control Inventory	Discovery	
Edit	116	Westford Road Erosion Inventory	Road Erosion Control Inventory	Discovery	
Edit	118	Milton Road Erosion Inventory	Road Erosion Control Inventory	Discovery	
Edit	119	Georgia Road Erosion Inventory	Road Erosion Control Inventory	Discovery	
Edit	120	Fletcher Road Erosion Inventory	Road Erosion Control Inventory	Discovery	
Edit	121	Fairfax Road Erosion Inventory	Road Erosion Control Inventory	Discovery	
Edit	125	Woodbury Road Erosion Inventory	Road Erosion Control Inventory	Discovery	
Edit	159	Elmore Garage Stormwater Project	Stormwater	Discovery	
Edit	162	Seymour River Watershed Stream Geomorphic Assessment and River Corridor Plan	Corridor Planning	Discovery	
Edit	290	Mapping and baseline data (in lieu of a full Phase 2) for the tributaries to the Upper Lamoille	Corridor Planning	Discovery	
Edit	291	Proofing Culvert Inventory for Upper Lamoille	Road Project	Discovery	
Edit	292	Watershed Education Projects	Education & Outreach	Discovery	
Edit	295	Lamoille River Paddlers' Trail Support	Public Engagement	Discovery	
Edit	296	Flood Resiliency Workshop and Related Projects	Education & Outreach	Discovery	
Edit	297	Lamoille County Planning Commission Water Quality Database Updates	Technical Assistance	Discovery	
Edit	302	Rodman Brook Remediation Project	Floodplain/Stream Restoration	Discovery	
Edit	303	Lowell asbestos mine- Hutchins Brook,	Floodplain/Stream Restoration	Discovery	
Edit	304	Johnson State College Monitoring Project	Water Quality Sampling	Discovery	
Edit	305	Garage Seep in Waterville Village	Floodplain/Stream Restoration	Discovery	
Edit	314	Mapping and baseline data (in lieu of a full Phase 2) for the tributaries to the Upper Lamoille	Corridor Planning	Discovery	
Edit	315	Cabot Road Culvert Replacement, Walden	Road Project	Discovery	
Edit	323	Berm Mapping for Cemetery Brook	Floodplain/Stream Restoration	Discovery	
Edit	324	Culvert Replacement Project, Lakeshore Road Greensboro	Road Project	Discovery	
Edit	325	Restoration Project Bachelor Brook, Greensboro	Road Project	Discovery	
Edit	326	Buffer Plantings on Tate Brook, Greensboro	Riparian Planting - River	Discovery	
Edit	327	Upstream Buffer Planting, Tate Brook, Greensboro	Riparian Planting - River	Discovery	
Edit	328	The North Shore Road culvert replacement, Greensboro	Road Project	Discovery	
Edit	329	Dry Culvert stabilization, Greensboro	Road Project	Discovery	
Edit	330	Porter Brook Buffer Planting, Caspian Lake Tributary in Greensboro	Riparian Planting - River	Discovery	

Funded projects

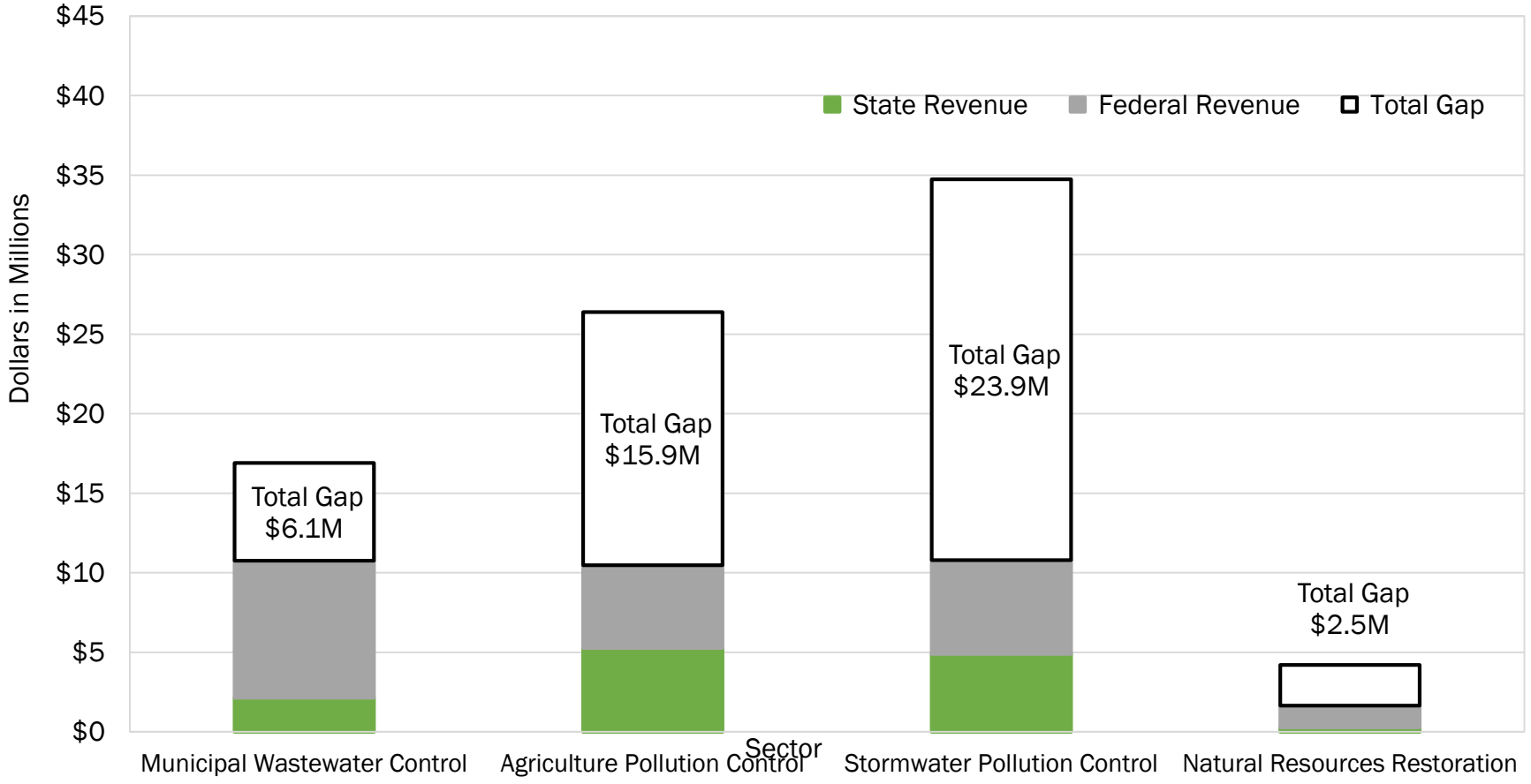
Phosphorus Reduction



Funding for project implementation comes from many sources

… but current spending does not address full need → funding gap

Vermont Total Annualized "Tier 1" Clean Water Costs, Revenues, and Funding Gap



Annual Tier 1 Costs = $82.2M, Annual Revenues = $33.7M, Annual Gap = $48.5M

Tier 1 Defined as: Incremental costs associated with TMDLs, Act 64 (2015) and CSO Policy (2016); includes public and private costs statewide

Websites:

Tactical Basin Planning

dec.vermont.gov/watershed/map/basin-planning

Vermont Clean Water Initiative

cleanwater.vermont.gov/