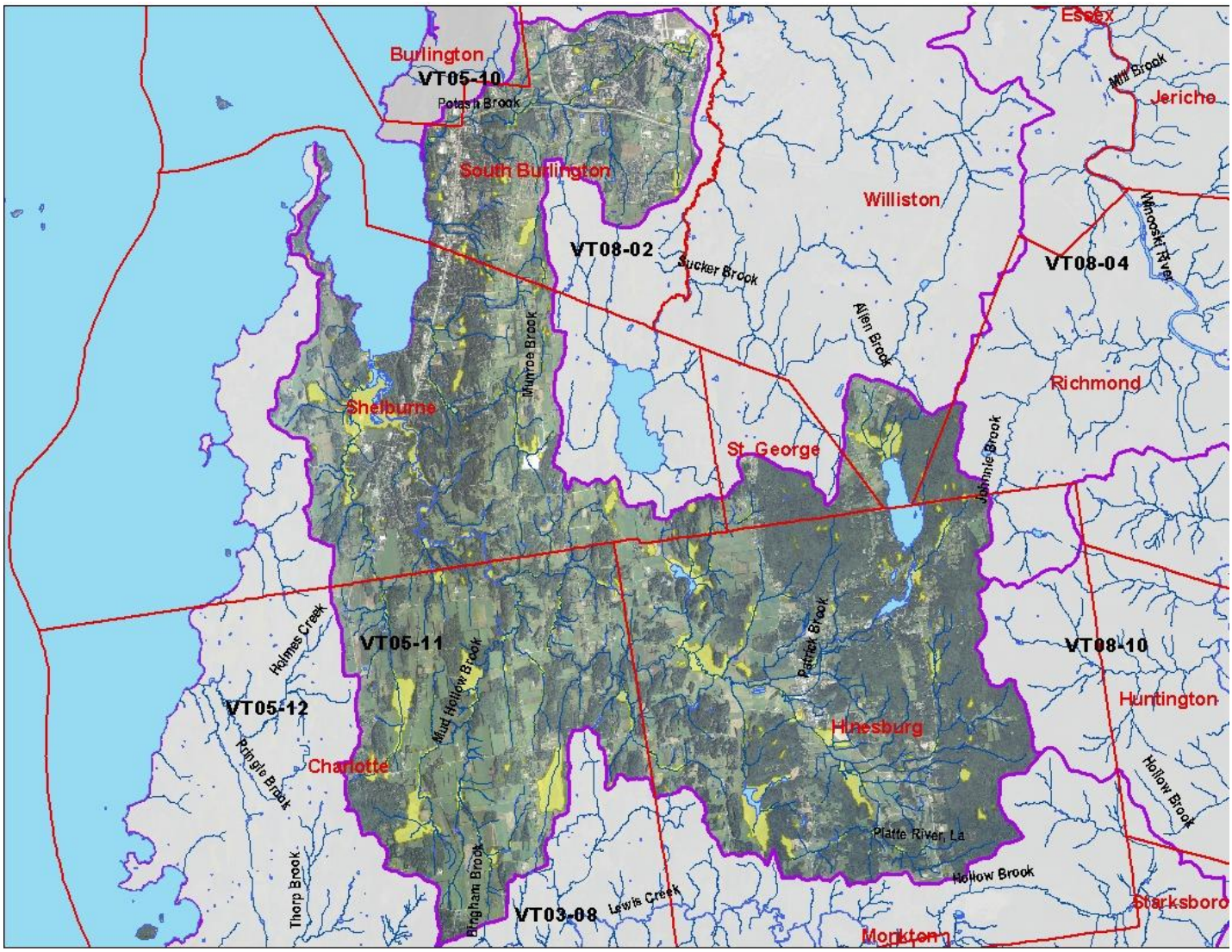
Shelburne Bay Watershed

Updated Assessment Information June 2013

There are four named streams and their tributaries that flow into Shelburne Bay. They include the LaPlatte River and its tributaries; Munroe Brook and its tributaries; Bartlett Brook and its tributaries; and Potash Brook and its tributaries. A full assessment of the Shelburne Bay streams was last done in December 2003 in a Basin 5 Upper Lake Champlain Direct Drainage Assessment Report. A plan for this basin was published in February 2009 and that plan included some updated river and stream and lake and pond water quality information. Now an update of assessment information is being done by subwatershed and more recent information on rivers and streams and lakes and ponds is given below.



Shelburne Bay Lake and Stream Segments with Impacts Summary

Stream or lake segment	Milage & Status	Pollutant	Source	Other Info.
Shelburne Bay	***Impaired***– Part A list	PCBs		Elevated level of PCBs in lake trout
LaPlatte River – from mouth to Hinesburg	10.5 miles ***Impaired***- Part D list	E. coli	ag runoff	EPA approved TMDL Sept 30, 2011.
LaPlatte River – at its mouth	0.2 miles ***Impaired***- Part D list	mercury	atmospheric deposition	EPA approved regional TMDL on Dec. 20, 2007.
Munroe Brook	2.8 miles ***Impaired***– Part D list	stormwater	urban runoff	EPA approved TMDL August 21, 2008.
Munroe Brook North Fork	0.8 miles ***Impaired***	stormwater	urban runoff	Not specifically called out in TMDL
Bartlett Brook	0.7 miles ***Impaired***– Part D list	stormwater	urban runoff	EPA approved TMDL September 30, 2007
Potash Brook	5.2 miles ***Impaired***- Part D list	stormwater	urban runoff, erosion	EPA approved TMDL December 19, 2006
Potash Brook	1.0 miles ***Impaired***– Part D list	E. coli	urban runoff, illicit discharges	EPA approved TMDL Sept 30, 2011.
Mud Hollow Brook	3.0 miles ***Impaired***- Part D list	E. coli	ag runoff	EPA approved TMDL Sept 30, 2011.
Shelburne Bay	***Altered***- Part E list	Eurasian watermilfoil, zebra mussels	----	Weevils present in the bay; native mussels being eliminated
Lake Iroquois	***Altered***- Part E list	Eurasian watermilfoil	---	Weevils augmented 1996-2011
LaPlatte River, from mouth to Hinesburg	10.5 miles ***Stressed***	turbidity, sediment, thermal & habitat modifications	streambank erosion, channel instability, land development	
Patrick Brook	***Stressed***	physical modification	land development, channelization	

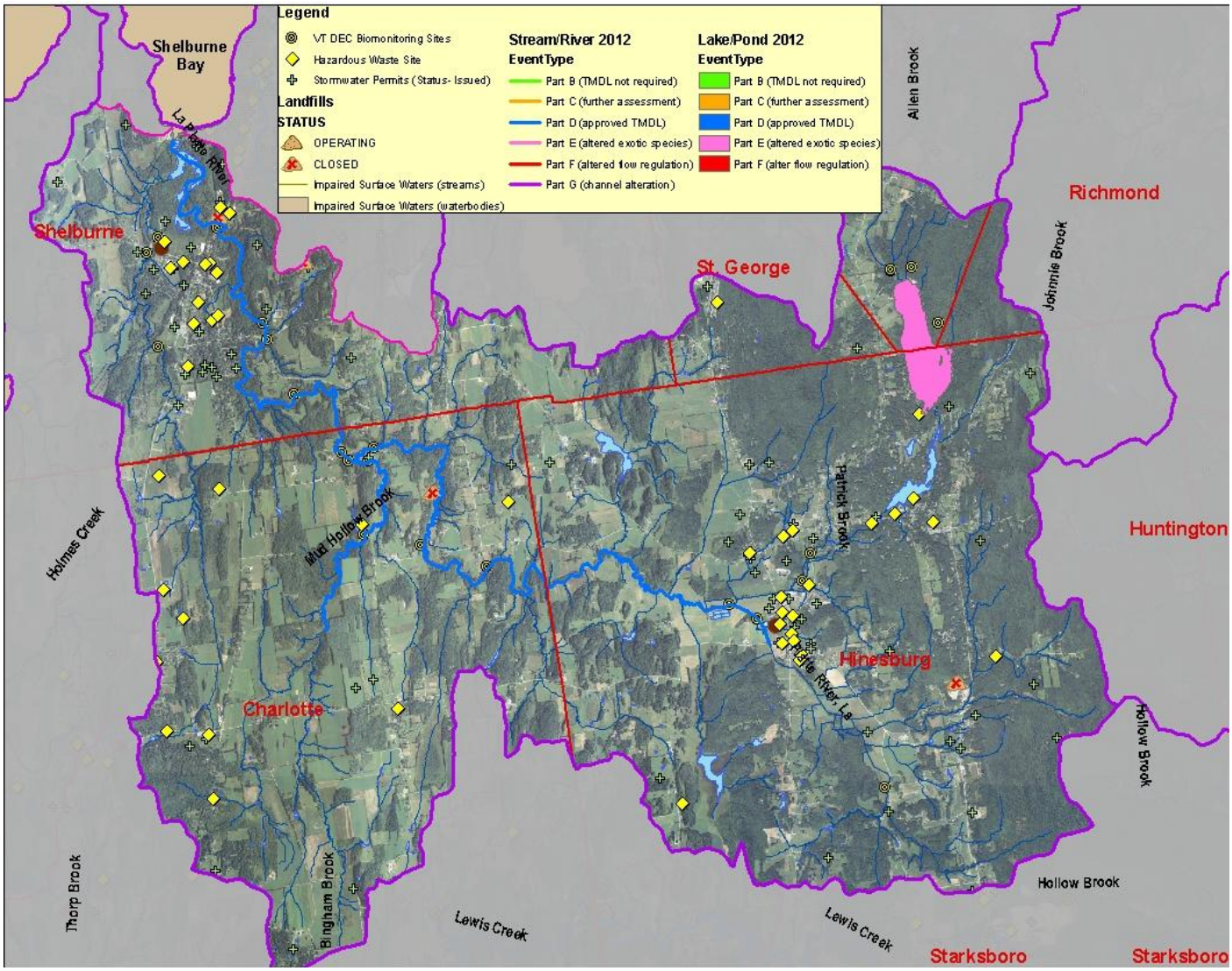
LaPlatte River and tributary streams

General Description

The LaPlatte River watershed is located in Chittenden County and is 57.4 square miles or 36,740 acres in size. The LaPlatte River mainstem is about 15 miles long and major tributaries include Patrick Brook, Mud Hollow Brook, and McCabes Brook. A U.S. Geological Survey (USGS) gaging station is located on the LaPlatte River at Shelburne Falls about two miles above the mouth.

Assessment Information for LaPlatte River

The map below compiles some of the assessment information for the LaPlatte River and its tributaries. Shown are the Vermont DEC biomonitoring sites (macroinvertebrate or fish communities), hazardous waste sites, stormwater permits that have been issued, landfill locations, as well as impaired, altered, or stressed streams and which priority water list that waterbody is on.



Biological Monitoring

Table 1. Macroinvertebrate community assessment LaPlatte River

	Rm 3.4	Rm 5.8	Rm 14.9
2003	---	---	good-fair
2009	excellent	excellent	----
2011	---	very good	----

Stormwater

Table 2. Number of stormwater permits to the LaPlatte River and its tributaries*

Stream	# operational permit	Multi-sector general permits (MSGPs)	# construction permit
LaPlatte R & unnamed tribs	37	2	11
McCabes Brook	9	---	2
Bingham Brook & unnamed tribs	---	---	1
Patrick Brook & unnamed tribs	6	---	---

*based on a count from the Vermont DEC Stormwater database as of 3/27/2013.

Physical Assessments and Condition

Phase 2 physical assessments, both geomorphic and habitat assessments, have been done on the LaPlatte River itself, unnamed tributaries, McCabe's Brook, Mud Hollow Brook, Patrick Canal, and Beecher Hill Brook. Below is a brief summary of the segment results based on the habitat assessment condition (versus the geomorphic assessment condition). There were no reference habitat conditions identified in the segment assessments for the LaPlatte or its tributaries per this physical assessment.

Table 3. Habitat assessment results for LaPlatte watershed streams

	good	fair	poor	unassessed
LaPlatte River	7	11	1	0
McCabes Brook	1	3	0	9
Mud Hollow Brook	2	2	0	1
Patrick Brook	3	1	1	0
Beecher Hill Brook	1	3	0	1

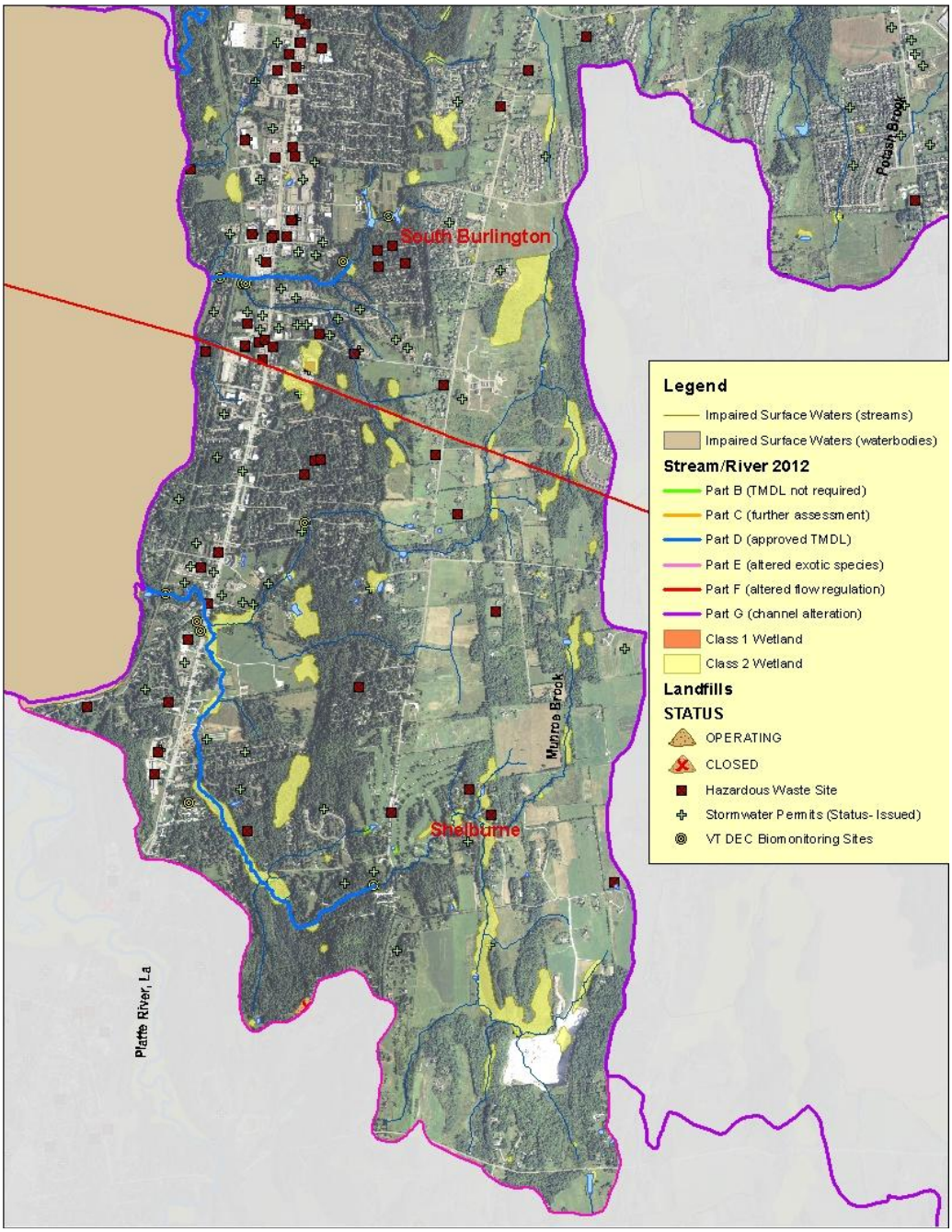
River corridor plans, which contain a lot of information and analysis, are listed at the end of this report. There are also Phase 2 data and assessment reports for these streams.

Munroe Brook

Munroe Brook and its fairly extensive system of tributaries are mainly within the town of Shelburne although one main tributary originates in South Burlington. The brook empties into the southeastern corner of Shelburne Bay.

Assessment Information for Munroe Brook

The map below compiles some of the assessment information for the LaPlatte River and its tributaries. Shown are the Vermont DEC biomonitoring sites (macroinvertebrate or fish communities), hazardous waste sites, stormwater permits, landfill locations, as well as impaired, altered, or stressed streams and which priority water list that waterbody is on.



Biological Monitoring

Table 4. Macroinvertebrate community assessment Munroe Brook

Year	Rm 0.3	Rm 0.4	Rm 2.8	North Trib rm 0.8
1999	---	poor	---	---
2002	fair	---	---	fair-poor
2004	fair	---	---	fair-poor
2009	fair	---	good	---
2011	fair		good	fair

Table 5. Biological sampling sites locations on Munroe Brook

Rivermile	Location
Rm 0.3	Located in first riffle above railroad crossing
Rm 0.4	Located below Bay Road about 50 meters
Rm 0.5	Located just below Route 7 Bridge crossing, in deep pool.
Rm 1.2	Located immediately below the culvert at the third bridge near Deer Run
Rm 1.9	Located below Webster Road
Rm 2.8	Located 100m below Spear Street Bridge
North Trib Rm 0.8	From Shelburne Rd, go east on Hullcrest Rd. At stop sign take left on Pinehurst Dr. (Next to playground/park).

Stormwater Impacts

Table 6. Number of stormwater permits to the Munroe Brook *

Stream	# operational permits[1]	Multi-sector general permits (MSGPs)[2]	# construction permit[2]
Munroe Brook	23	1	10

1 from:
http://www.vtwaterquality.org/stormwater/docs/swimpairedwatersheds/sw_munroedischarges.pdf
2 based on a count from the Vermont DEC Stormwater database as of 3/27/2013.

Bartlett Brook

The headwaters of Bartlett Brook begin west of Spear Street in South Burlington and flow generally westward. There are two forks of Bartlett Brook: the North Fork and the South Fork. The watershed of this brook is heavily developed and the impacts on the brook are from urban runoff. Bartlett Brook is shown on the map above with Munroe Brook

Biological Monitoring

Table 7. Macroinvertebrate sampling on Bartlett Brook from 2002 – 2011.

Year	Rm 0.2	Rm 0.4	Rm 0.5
2002	poor	---	---
2003	poor	poor	---
2004	poor	---	---
2009	---	fair	fair
2011	poor	---	---

Table 8. Fish community assessment on Bartlett Brook 2001 - 2011

	Rm 0.2	Rm 0.4
2001	Fair	
2002	---	fair
2003	Poor	poor
2004	Good	fair
2008	Good	good
2009	---	poor

Table 9. Biological sampling sites locations on Bartlett Brook

Rivermile	Location
Rm 0.2	Located 50m below Bingham Rd, off of Bartlett Bay Rd
Rm 0.4	Located 20m below outfall pipe at southwest corner of Shearer Chevrolet parking lot. Fish reach spans 0.4 & 0.5 sites.
Rm 0.5	This site was created in order to sample above the 0.4 site where effluent was released from a holding pond.
Rm 0.7	Located east of Green Mountain Power Parking Lot, 1/4mi below UVM Horticulture Farm.
Rm 1.0	Located above horticulture farm pond on eastern branch. Not sampled by VTDEC.

During an October 2009 macroinvertebrate sampling event, a pulse of blue-gray water came downstream to the point of collection (it hit just after the sample had been collected). It turns out city workers periodically open the valve allowing a release of sediment pond water to occur in order to keep the valves working. Because of the discharge, DEC staff went collected insects above the discharge stream and there were obvious differences. The upstream site contained several northern two-lined salamanders (*Eurycea bislineata*) and crayfish (*Orconectes virilis*) that were not collected downstream.

Stormwater Impacts

Table 10. Number of stormwater permits to the Bartlett Brook *

Stream	# operational permits[1]	Multi-sector general permits (MSGPs)[2]	# construction permit[2]
Bartlett Brook	24	---	---

1 from:
http://www.vtwaterquality.org/stormwater/docs/swimpairedwatersheds/sw_bartlettdischarges.pdf
2 based on a count from the Vermont DEC Stormwater database as of 3/27/2013.

Physical Assessments and Condition

Table 10. Geomorphic Assessment Phase 2 results for Bartlett Brook

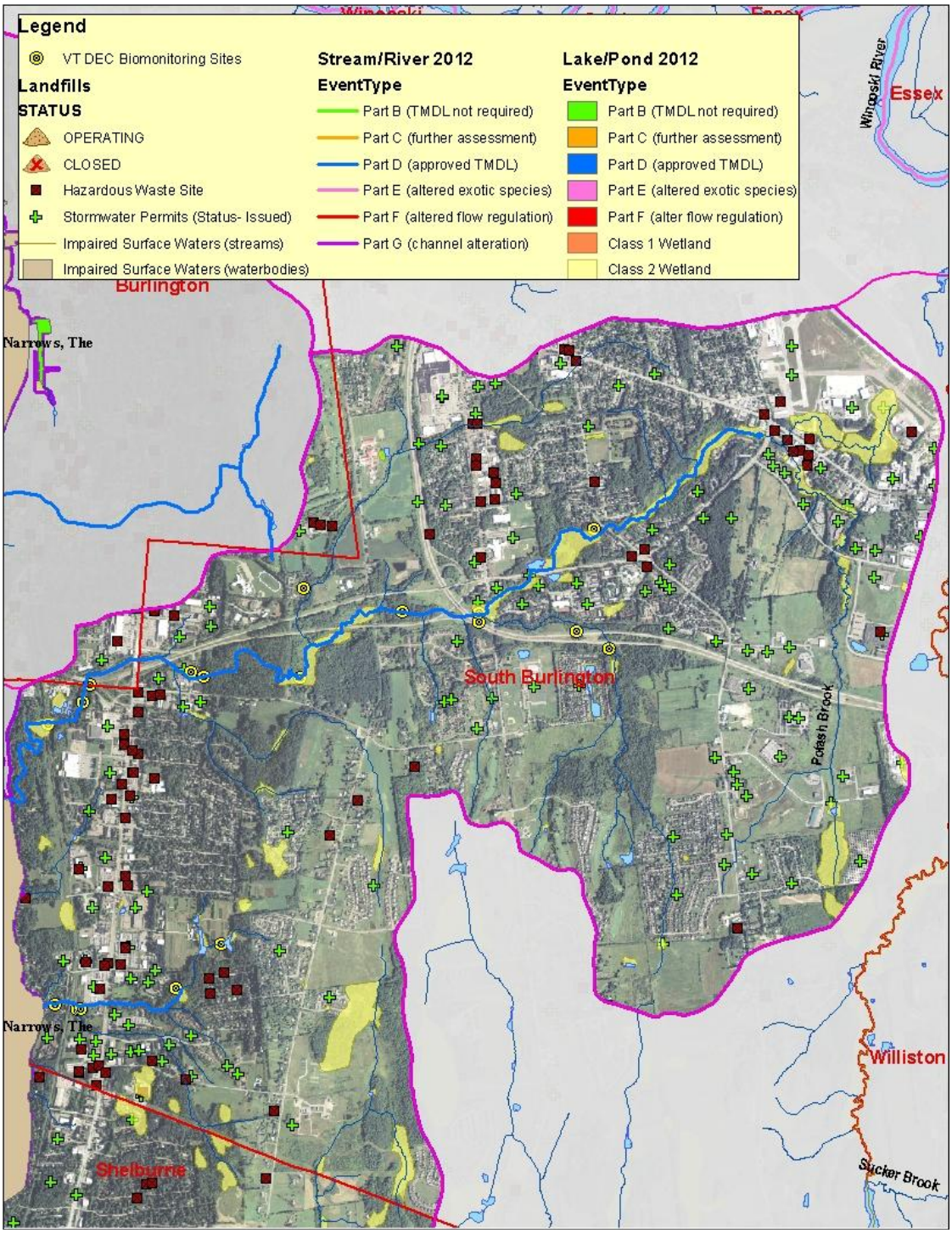
P2EXPORT					
ProjectName	**Segment**	**Length**	**StreamName**	**Habitat Assess**	**Geomorph Assess**
Bartlett Brook	M01-	776	Main Stem Bartlett Bk	Fair	Fair
Bartlett Brook	M02-	2181	Main Stem Bartlett Bk	Fair	Fair
Bartlett Brook	M03-		Main Stem Bartlett Bk		Fair
Bartlett Brook	M04-	377	Main Stem Bartlett Bk	Fair	Fair
Bartlett Brook	M05A	1300	Main Stem Bartlett Bk	Fair	Fair
Bartlett Brook	M05B	1325	Main Stem Bartlett Bk	Fair	Fair
Bartlett Brook	T1.01A	1614	Bartlett Tributary	Fair	Fair
Bartlett Brook	T1.01B	795	Bartlett Tributary	Fair	Fair
Bartlett Brook	T1.02-	967	Bartlett Tributary	Fair	Fair

Other Tributaries to the Bay

There are several small tributaries to Shelburne Bay between Munroe Brook and Potash Brook in addition to Bartlett Brook described above. These tributaries have local names. One is called Farrell tributary because it is on Farrell land. And one is Nesti Stream that was once two small streams directly to the Bay but the railroad construction diverted the flow of one into the other so that are essentially one stream now.

Potash Brook

Potash Brook originates in the eastern part of the city of South Burlington and meanders north and then west emptying into Lake Champlain at the northern end of Shelburne Bay. The watershed is 7.5 square miles in area. The brook flows largely through suburban and urban areas and has been relocated and culverted due to the interstate and other roads. There are many stormwater discharges to this small brook.



Biological Monitoring

Table 8. Macroinvertebrate sampling results Potash Brook

Year	Rm 0.4	Rm 0.7	Rm 1.0	Rm 1.8	Rm 1.9	Rm 2.1	Rm 3.0	Rm 4.3
2001	---	poor	poor	---	---	---	---	poor
2003	---	poor	---	---	---	---	---	---
2004	---	poor	poor	---	poor	fair	fair-poor	poor
2005	---	fair-poor	---	---	---	---	---	---
2007	---	fair-poor	---	---	---	---	---	---
2008	---	fair	---	---	---	---	---	---
2009	---	fair-poor	fair	---	---	---	---	---
2010	---	fair	---	---	---	---	---	---
2011	fair-poor	fair-poor	fair-poor	poor	---	good	fair-poor	poor

Table 9. Macroinvertebrate sampling results Potash Brook tributaries

	Trib 3 rm 0.3	Trib 7 rm 0.1	Trib 7 rm 0.5	Trib 7 rm 0.7	Trib 7 rm 1.2
2004	poor	Poor	---	---	---

Table 10. Biological sampling sites locations on Potash Brook

Rivermile	Location
Rm 0.4	Located below RR crossing about 1300ft - well below Lowes
Rm 0.7	Located 100ft below discharge from Champlain Water District treatment pond
Rm 1.0	Located below Queen City Park Rd about 50m, below bedrock slide.
Rm 1.8	Located above Farrel St bridge 50m
Rm 1.9	Located above Farrel St Bridge about 100m.
Rm 2.1	Above tributary, just east of powerline at edge of UVM's east woods natural area. 100m upstream of powerline.
Rm 3.0	Located above Spear Street about 250m, above a small drainage from the north.
Rm 3.6	Located above Spear Street about 250m, above a small drainage from the north.
Rm 4.3	Located below Hinesburg Road and sewage pump station about 10m.
Trib 7-rm 0.1	Located below Dorset St crossing, 100m south of mainstem

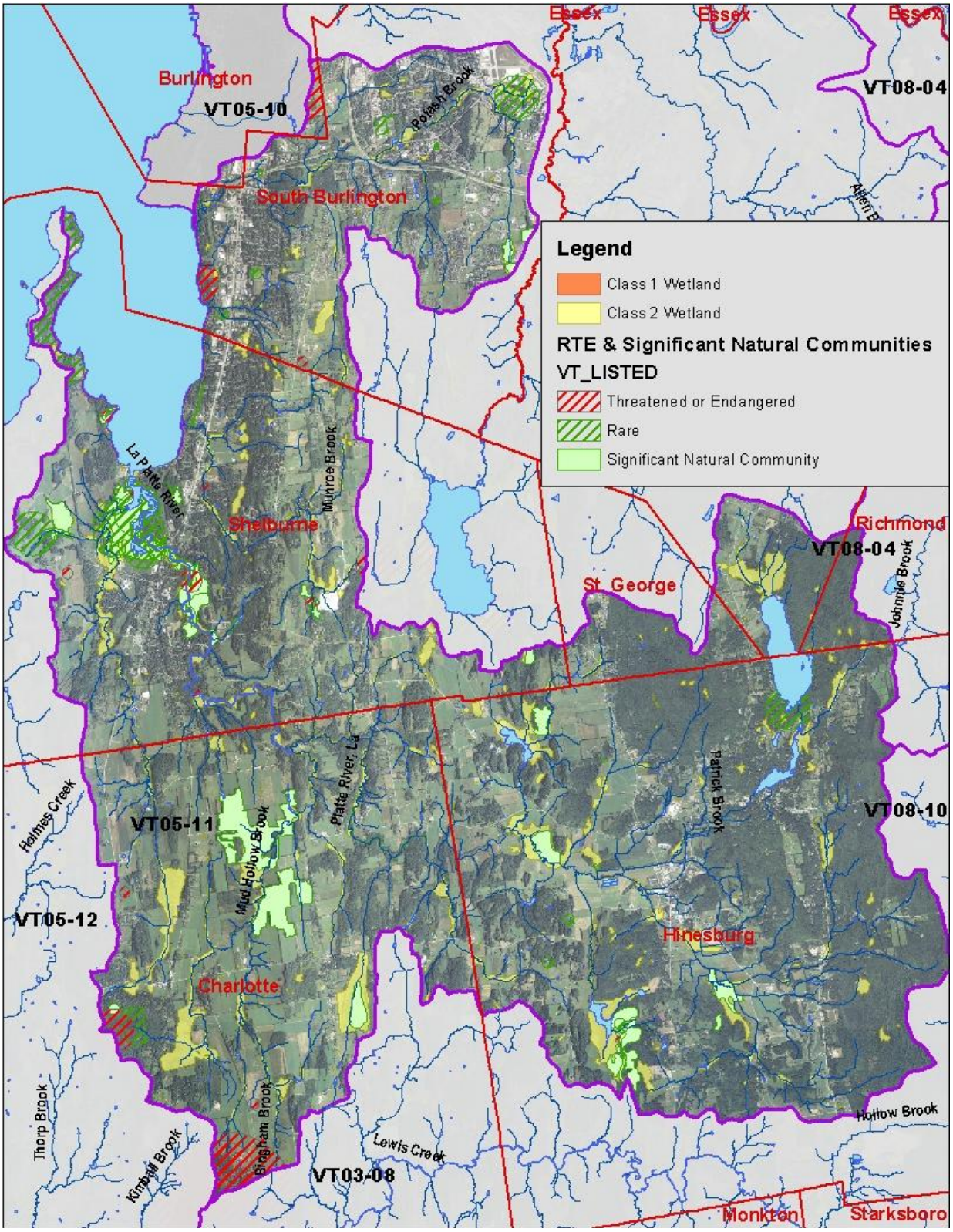
Stormwater Impacts

Table 11. Number of stormwater permits to the Potash Brook and its tributaries

Stream	# operational permits[1]	Multi-sector general permits (MSGPs)[2]	# construction permit[2]
Potash Brook	84	0	5

1 –http://www.vtwaterquality.org/stormwater/docs/swimpairedwatersheds/sw_potashdischarges.pdf
2 - based on a count from the Vermont DEC Stormwater database as of 3/27/2013.

Rare, Threatened, and Endangered Species and Significant Natural Communities in Shelburne Bay subwatershed



The La Platte River subwatershed has several areas that include a mosaic of significant natural communities, as well as additional rare or threatened and endangered species.

Hinesburg Limy Cobble and Wetlands

This area includes a mature mesic oak-hickory-northern hardwoods forest. On the deeper-soiled, lower slopes the forest tends towards a beech- maple association, while on the drier hill shoulders and summits, hophornbeam and oaks are more dominant. It also includes northern white cedar swamp (previously red maple-northern white cedar swamp). On the lower ground to the north are beaver pond and marsh and on slightly higher ground to the south, is red maple-black ash swamp with unusual stand of large, old white pine and a cedar-hardwood swamp. Combining the mosses, herbs and the low shrubs, the ground is very dense with plant cover. This swamp is a remnant portion of a much larger swamp that has been flooded by beaver.

The five natural community types that comprise this site include: Mesic Maple-Ash-Hickory-Oak Forest; Transition Hardwood Talus Woodland; Wet Clayplain Forest; Limestone Bluff Cedar-Pine Forest; and Northern White Cedar Swamp. There are two threatened or endangered plants and two locations of a rare plant.

LaPlatte River Marsh and Riparian Corridor

LaPlatte River Marsh is a complex of floodplain forest, marsh and shrub swamp at the mouth of the LaPlatte River, in a cove of Shelburne Bay. The river is lined by floodplain forests and mud shores. Beyond the floodplain forest in backwaters are areas of marsh, shrub swamp and sedge meadow. Sandplain and Sand-Over-Clay forests occur in the uplands. Upstream from Route 7, the wetland and floodplain natural communities continue, and additional upland natural communities such as cliffs and oak-pine forest are also present. Beyond the boundaries of the natural area lie a large expanse of developed land and agriculture.

The Lakeside Floodplain Forest in the mapping area is dominated by Silver Maple and Green Ash. Silver maples up to 25 meters tall and 75 cm DBH are present. Common Winterberry is sometimes present. The herb layer is mostly bare in some areas, and in other areas is dominated by Sensitive Fern, Creeping Yellow-Loosestrife, Royal Fern, and Marsh Fern. Lakeside Floodplain Forest occupies the low backwaters behind natural levees, while Silver Maple-Sensitive Fern Riverine Floodplain Forest occurs on the natural levees of the LaPlatte River and further upstream away from the lake. The area of Sand-Over-Clay Forest supports a varying overstory, with Eastern Hemlock and Red Maple each locally dominant.

Upstream aways in Hinesburg, there is the Upper LaPlatte River Floodplain Forest and the Hinesburg Green Ash Swamp both significant natural communities that are part of the LaPlatte riparian corridor. In addition, the LaPlatte River has the endangered Stonecat and Channel Darter.

References

1) Aquatic Life Support Use Assessment of Bartlett Brook, 2009. Prepared by the Vermont Department of Environmental Conservation, Water Quality Division, Biomonitoring and Aquatic Studies Section, Waterbury, Vermont.

2) Biological and Aquatic Life Use Attainment Assessment of Munroe Brook July 2011. Prepared by the Vermont Department of Environmental Conservation, Water Quality Division, Biomonitoring and Aquatic Studies Section, Waterbury, Vermont.

3) LaPlatte River Corridor Plan, Reaches M6-M11, Towns of Charlotte and Shelburne, Vermont, April 2008. Prepared by the LaPlatte Watershed Partnership.

4) Stream Corridor Plan: LaPlatte River and Tributaries, Town of Hinesburg Vermont, June 2007. Prepared by the LaPlatte Watershed Partnership.

5) Water Quality Supplement LaPlatte Watershed 2011 Data and Pilot Flow Study, March 2012. Prepared for Water Quality Section Vermont Department of Environmental Conservation and The Town of Shelburne, Vermont by The LaPlatte River Partnership.