## The Passumpsic Watershed Water Quality Assessment Report 2018

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## Table 1. NLCD 2011 Land Cover for the Passumpsic River Watershed.

Sub Watershed	Forested	Developed	Agriculture	Wetlands	Sub Watershed	Forested	Developed	Agriculture	Wetlands
Millers Run	76.3	6.9	<mark>9.8</mark>	2.0	Upper Tributaries	67.4	11.2	14.3	1.8
Sleepers River	73.6	6.2	14.7	1.8	West Branch	71.2	6.3	12.9	6.3
Joes Brookon	75.1	4.6	8.7	5.0	East Branch	84.4	3.5	4.7	3.4
Lower Tributaries	69.9	RYEGATI	13.4	1.3	Moose River	82.1	3.1	3.3 <sub>G</sub>	RANI 5.8







Reach T202 is entirely straightened, shows evidence of dredging, and has no vegetated buffer. This reach is unable to access its floodplain due to a berm on its right bank. Hubbard Hill Bridge is undersized, causing

scour downstream. T203 is well buffered except the upstream left bank.

**T204** in its upper reach is pinned along a valley wall on the right bank by route 122. This reach is largely entrenched except for a few points of access to the floodplain. Development along the river banks has straightened the river, removing reference riffle pool form habitats, leaving a plane bed. The bridges on this reach are significantly undersized, causing major geomorphic conflicts. Erosion is common throughout **T206a** most evidently in meander bends. Vegetated buffers are minimal and bank armoring is failing. Deposition is significant and has embedded riffle habitat. Habitat in Millers Run is poorest in this reach. For more information see Millers Run Corridor Plan.

Macroinvertebrate communities have been monitored at two locations, Map ID A and B in 2004 and 2005 respectively. Both samples passed biocriteria.

ATER QUALITY REMEDIATION PRIORITIES

1 Mile

0 0.250.5

Aquatic Life in DISHMILL BROOK (BURKE) is stressed from its mouth upstream 1.3 miles due to sedimentation from upstream development and backwater intrusion from the East Burke Dam. embedding Sedimentation is instream

habitat, compromising its riffle-pool system (A). Elevated peak flows from upstream flow regime modifications and other stormwater inputs are also scouring stream banks. The impacts of scour are enhanced in portions of the reach where woody riparian vegetation is lacking. For more information on the Water's geomorphological conditions of DISHMILL BROOK, see the Dishmill Brook Watershed River Corridor Plan.

Aquatic life has been monitored at map ID (C Macroinvertebrates have failed biocriteria four out of five monitoring events, passing most recently at map ID 3 in 2015. The fish community in Dishmill Brook has performed exceedingly well, scoring near reference condition four out of four monitoring events; the earliest monitoring event occurred in 1989 and the most recent event occurred in 2015.

Aquatic Life in DISHMILL BROOK TRIB #2 (BURKE) is stressed due to sedimentation from upstream development. Habitat embeddedness is greater in trib #2 than mainstem Dishmill (A).

Aquatic life has been monitored at map ID(A)&(B) since 1988. The macroinvertebrates have failed three out of six times, passing most recently at both sites during 2006, 2010, and 2015. Similarly to the fish community in the mainstem, the fish in trib #2 have performed exceedingly well, scoring near reference condition two out of two monitoring events in 2010 &

Embeddedness refers to the extent cobble and boulders in a stream are sunken into sand and silt. As rocks become more sunken into sand and silt, the availability of habitat for macroinvertebrates and fish decreases.

surface

Stream

assumpsic **Vatershed** 



Prior to 1983, 1 million gallons of liquid waste and 760 tons of semi-solid wastes containing metal plating wash waters, waste oils, electroplating sludges, paint sludges, chlorinated solvent sludges, caustic cleaners and metallic salts were disposed of directly on the ground or in lagoons. To remediate the site, construction of a multi-layer cap, industrial waste site areas, gas collection sites, a permeable reactive barrier, and bio-enhanced natural attenuation area was completed in 2005. Maintenance and monitoring has continued since. A compensatory wetland was constructed to offset wetland loss due to construction at the Parker Landfill.

V	N	n	0	M	g	
9.8	UX.		U	UN I		122

From 2014 EPA Re	eview Rep	<u>port</u>		
(ug/l)	1990-1994 Max	2001-2004 Max	2005-2008 Max	2009-2013 Max
Acetone	15	10	ND	7.03
Trichloroethene	21	920	50	30.6
Vinyl Chloride	1	5.2	0.513	0.359
Cis-1,2-Dichloroethene	42	350	17.8	25.3
Trans-1,2-Dichloroethene	42	2.4	ND	0.277
Aluminum	116	34100	199	3320
Antimony	56.5	7.9	ND	ND
Barium	291.5	258	31.7	112
Cadmium	NS	0.8	ND	ND
Calcium	79400	36700	59700	73200
Chromium	11.2	52.3	ND	ND
Cobalt	NS	19.9	13.4	3.22
Iron	33750	51400	945	16100
Lead	NS	61.4	13.4	13.3
Magnesium	9375	11300	6050	7060
Manganese	3350	6990	249	2060
Nickel	38.8	32.3	ND	ND
Pottasium	10040	4780	3060	3920
Selenium	NS	8.3	ND	ND
Silver	14.4	4.7	ND	ND
Sodium	23550	15100	15100	ND
Thallium	1.6	18	ND	ND
Zinc	NS	238	9.77	64.7
O Surface Wa Monitoring	Black shading exceed criteria			



Passumpsic Watershed 8





1 Mile

Passumpsic Watershed

SLEEPERS RIVER from its mouth to CSO #27 (St. Johnsbury).

0.25

JOHNSBU

0.5

CSOs are sewer systems that collect and treat stormwater runoff and domestic and industrial wastewater indiscriminately. During large rain events, CSOs can be overwhelmed, discharging both stormwater and wastewater directly to surface water. Between 01/01/2008 and 10/16/2018, the six CSOs illustrated here discharged between 52,900 and 64,600 gallons of untreated storm and wastewater. <u>More Info</u>

Date	Gallons
6/12/2012	Unknown
12/18/2014	2700
12/16/2014	900
12/11/2014	48000
7/16/2008	Unknown
6/24/2008	Unknown
<mark>6/8/2017</mark>	100 to 1,000
6/29/2016	100 to 1,000
7/27/2018	1,000 to 10,000
7/27/2018	100 to 1,000
	Date 6/12/2012 12/18/2014 12/16/2014 12/11/2014 7/16/2008 6/24/2008 6/24/2008 6/29/2016 7/27/2018 7/27/2018

WATER QUALITY REMEDIATION PRIORITIES



QUALITY REMEDIATION PRIORITIES Aquatic life in SIMPONS BROOK (WATERFORD) is stressed due to an unknown Macroinvertebrates cause. have been sampled at map ID B in 2005 and 2006 and passed biocriteria. Fish have been sampled at Map ID B in 2005 and 2006 also, but have failed with fish densities exceedingly low. In 2006, Map ID A was sampled. Fish densities were higher, giving the site a passing grade.

> WATERFOR All chemical parameters were below thresholds in the Vermont Water Quality Standards. No sedimentation or excess algae growth has been observed. And no impassable structures exist above or below map ID B on the mainstem.

Reduced Passage The 1st tributary entering Simpons Brook flows through a reduced passage culvert at Hale Rd in the upper reach and then through an impassable culvert at Old Silo Rd and then again through reduced passage culvert at Hale Rd before Passumpsic. Increasing entering the stream connectivity with appropriate sized culverts along this tributary may increase fish density in Simpsons.

> Aquatic life in SLEEPERS RIVER (DANVILLE, St. JOHNSBURY) is stressed due to oil spills and dumping of heavy metals, iron wastes, acids, solvents, and paint wastes from hazardous waste sites.

> > The site of most concern is the former Colt Industrial facility (<u>VTDEC Site No. 870029</u>, now EnPro Holdings, Inc.). Oil sheens in Sleepers River were reported in 1975, 1984, 1993, 2000, and 2003.

> > Remediation actions including pumping and bailing have removed approximately 11,636 gallons of fuel oil as of May 19, 2017. The goals established for site closure have been met: No fuel oil greater than 0.01 feet in all wells for a one year period and no active seeps to the Sleepers River. Fuel oil has been below 0.01 feet for eight have vears and no seeps been reported since 2003.

> > > life Aquatic in Sleepers River has been monitored once at sites A & B and twice at C, D, & E. All of which have passed biocriteria.

assumpsid Watershed VCGI

Location of former 10,000 gal fuel tanks С

DAMVI

В

0

URY

0.25 0.5

Culverts

Impassable

7

В

1 Mile

0 0.5 1 2 Mile



Γ.	map IL		Sciedin Name	Julion	Neeus	_ Map ID	Stream Name
	1	501558	Arcadia Brook	2	Bug	1	Bean Brook
	2	501550	Dunne Mountain Trib	0.2	Bug & Fish	. ·	Deall DIOOK
1	3	501549	Millers Run	11	Bug	2	East Branch, Newark
	4	501548	Millers Run	7	Bug	3	Sutton River
	5	501570	Dish Mill Brook	2.1	Bug	5	
	6	501560	East Branch Pass. River	1.7	Fish	4	West Branch, Sutton
-	7	501559	East Branch Pass. River	1.4	Fish	5	Roundy Brook
L	8	501536	Moose River	23.2	Bug & Fish		
1	9	501543	South Wheelock Branch	5.2	Bug & Fish	o	Miller Run, above Dunne Mth Trib
1	10	501531	Pope Brook	3.2	Bug	7	Fall Brook
	11	501535	Moose River	14.3	Bug	Q	Lower South Wheeleck
	12	501519	Pope Brook Trib	0.1	Bug	0	Lower South Wheelock
	13	501530	North Brook	0.4	Bug & Fish	9	Kirby Brook
	14	501520	Burroughs Brook	0.9	Bug	10	Morril Brook
	15	501541	Roberts Brook	0.1	Bug & Fish		
	16	501510	Joes Brook	17.3	Bug	11	Joes Brook Trib 8
á	17	501509	Joes Brook	14.7	Bug	12	Rake Factory Brook

D



