

Green Infrastructure Rapid Assessment Plan

Larkin Creek Watershed

August 2013

Prepared by:

**The Stormwater Coalition of Monroe County
and Monroe County Department of Environmental Services**

Prepared for:

New York State Environmental Protection Fund

Round 10

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Cover Photo: 163 Larkins Crossing (looking north)

List of Abbreviations

cfs	cubic feet per second
CWP	Center for Watershed Protection
E	Education
EMC	Event Mean Concentration
EPA	US Environmental Protection Agency
GI	Green Infrastructure
GIS	Geographic Information System
GPS	Global Positioning System
IC	Impervious Cover
I	Infiltration
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
POC	Pollutant of Concern
S	Flood Storage
CP	Channel Protection
CR	Community Revitalization
Sc	Source Control
SWAAP	Stormwater Assessment and Action Plan
RH	Riparian Habitat
Wq	Water Quality
WS	Watershed
USGS	US Geological Survey

Section 1. Assessment Overview

1.1 PROBLEM STATEMENT:

Similar to many developing areas, growth in Monroe County has caused some unfortunate consequences to water quality. One consequence is that developed areas shed larger volumes of stormwater from impervious surfaces (roads, buildings and parking lots) than natural landscapes. Because there is more volume, there is more pollution. Typical pollutants include: petroleum products and heavy metals from vehicles; fertilizers, chemicals and animal waste from lawns; and, sediment from eroded streambanks, construction sites and roadways.

A second consequence is that streams more frequently flow full or overflow their banks. High stormwater flows can cause flooding, damage property, and harm fish and wildlife habitat. Common damages from high flows are eroded stream banks, wider and deeper stream channels, and excessive sediment deposition. The degradation results in poor water quality and added maintenance costs to municipalities and property owners. In Monroe County, stormwater pollution and associated wet weather flows have harmed virtually all urban streams, the Genesee River and Lake Ontario's shoreline.

1.2 PURPOSE:

Developing plans to improve our impacted water resources is the objective of this the Rapid Green Infrastructure Assessment Plan (Plan). Due to limited funding, a method was devised to quickly evaluate multiple watersheds for stormwater retrofit potential. The main product is a ranked inventory of retrofit projects that, if constructed, could improve water quality and stream health while providing flow attenuation that will reduce erosive storm flows and localized drainage problems. A second significant product is the creation of multiple, electronic data files and maps that lay the foundation for future, more in-depth studies. The Plan is a simplified version of more detailed Stormwater Assessment and Action Plans being done in other parts of Monroe County. These larger studies include water quality sampling as well as modeling the effects of the current watershed's condition and the potential improvement from proposed retrofits. The field work completed for this report was kept to a minimum and only a summary report is produced (herein). The project was conducted with funding from New York's Environmental Protection Fund, the Monroe County Department of Environmental Services, and the Stormwater Coalition of Monroe County.

1.3 SETTING:

Larkin Creek originates south of the New York State Barge Canal in the Town of Ogden and flows north emptying into Buck Pond in the Braddock Bay Fish and Wildlife Management Area in the Town of Greece (Figure 1). The watershed is roughly 11,000 acres or 17 square miles. Smith Creek is a named tributary that discharges from the west into Larkin Creek north of Latta Road. Land use is nearly evenly split between residential (northern portion) and rural/agricultural (southern portion) while a dense commercial and industrial area in the middle portion of the watershed runs along a portion of Ridge Road West (Figure 2). Table 1 shows other key watershed characteristics.

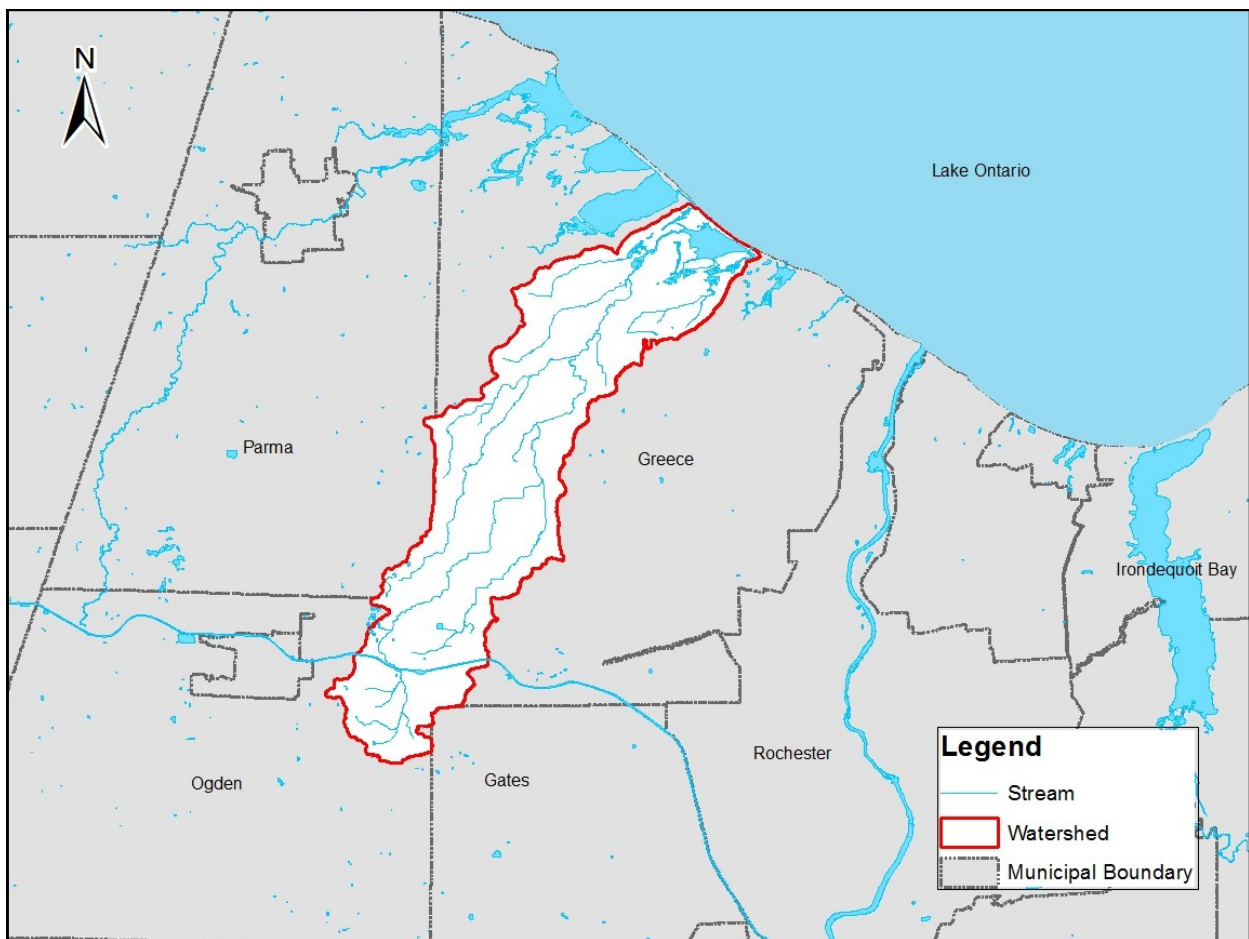


Figure 1: Larkin Creek watershed.

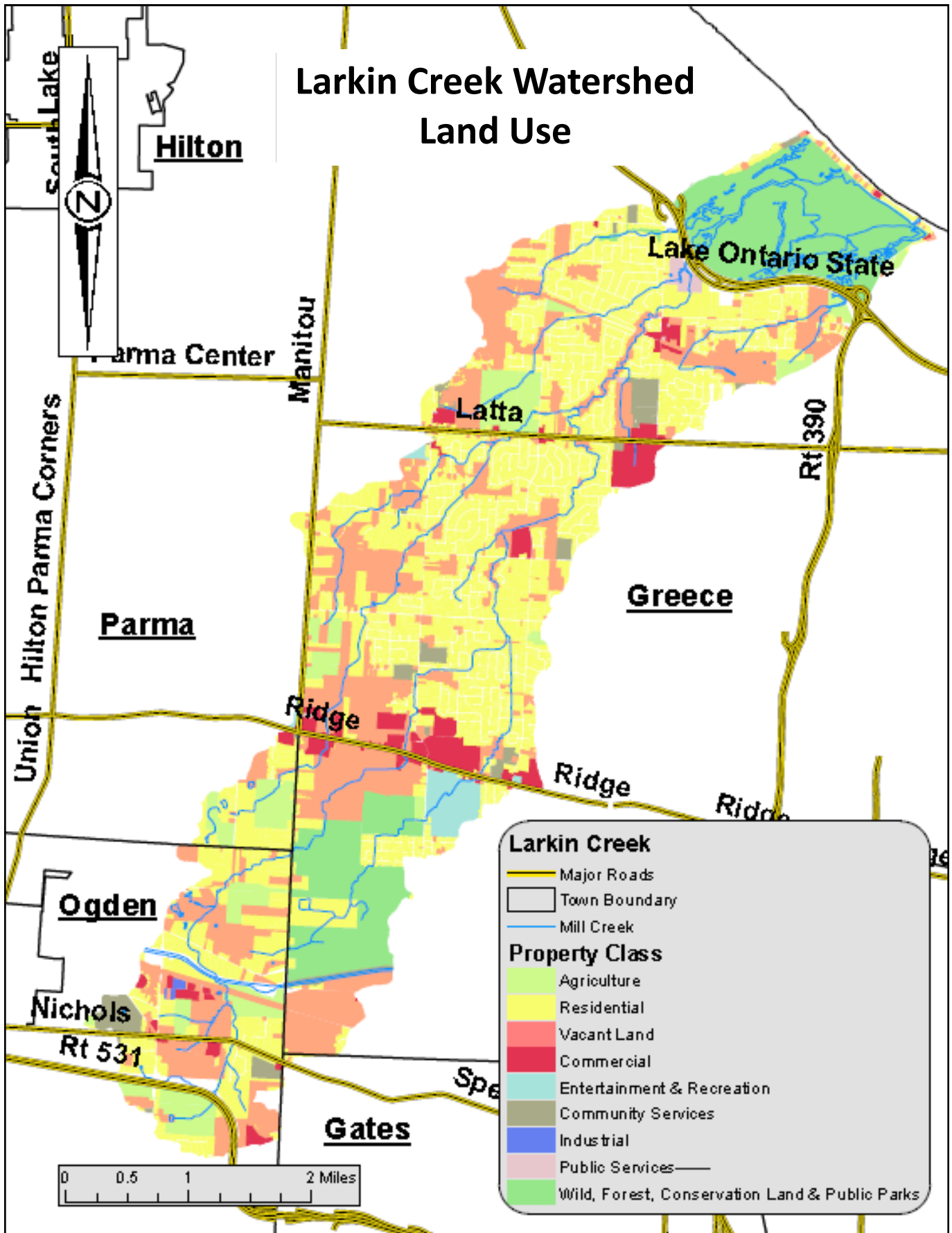


Figure 1: Land cover and land use within Larkin Creek main branch watershed.

Table 1. Watershed Data	
Metric	Value
Area	10,974 (Acres)
Mapped Stream Length	30 (Miles)
Percent of Stream Channelized	30%
Primary/secondary land use	Residential/Vacant Land
Land Use (percent of watershed)	
Agricultural	7%
Residential	44%
Vacant Land	24%
Commercial	4%
Recreation & Entertainment	1%
Community Service	3%
Industrial	<1%
Public Services	<1%
Wild, Forested, Conservation Lands & Public Parks	16%
# of Stormwater Outfalls	245
Current Impervious Cover (%)	20
Estimated Future Impervious Cover (%)*	25
Wetland acres	≈1600 acres
Municipal Jurisdiction	Greece 80%, Ogden 16%, Parma 3%, Gates 1%

* estimated for 20 year build out

1.4 WATERSHED CHARACTERISTICS:

1.4.1 Water Quality Concerns According to the New York State Department of Environmental Conservation’s “Lake Ontario Basin Waterbody Inventory and Priority Waterbodies List” (NYSDEC 2004), Larkin Creek and its tributaries have minor impairments. An excerpt from the waterbody datasheet states that “... *A biological (macroinvertebrate) assessment of Larkin Creek near North Greece (at Latta Road) was conducted in 1999. Sampling results indicated moderately impacted water quality conditions. The fauna was dominated by riffle beetles and nonpoint source nutrient enrichment was indicated as the primary cause of impact to the stream. (DEC/DOW, BWAM/SBU, June 2005).*” The full waterbody datasheet is included in Appendix A.

All waters in New York State are assigned a letter classification that denotes their best uses. Letter classes A, B, C, and D are assigned to fresh surface waters. Best uses include: source of drinking water, swimming, boating, fishing, and shellfishing. Larkin Creek is classified as “C”. The best usage of Class C waters is fishing where NYSDEC states: *These waters shall be suitable for fish, shellfish, and wildlife propagation and survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes.*

Buck Pond is class B where NYSDEC states the best usage of Class B waters are “... *primary and secondary contact recreation and fishing. These waters shall be suitable for fish, shellfish, and wildlife propagation and survival*”.

In 2002, Buck Pond was added to NYSDEC’s “Waterbody Inventory/Priority Waterbodies List” (revised 2013, NYSDEC). This list is referred to as the “303d” list because it refers to section 303(d) of the Federal Clean Water Act which requires states to identify “Impaired Waters”, where specific designated uses are not fully supported. The 303d list identifies those waters that do not support appropriate uses and that require development of a Total Maximum Daily Load (TMDL) or other restoration strategy. The pollutant listed as impairing Buck Pond is phosphorus from urban runoff. In July 2010, a draft TMDL was developed by NYS DEC. The report modeled the sources of phosphorus and estimated that 41.7% of the load to Buck Pond came from developed land (Figure 3). In all, its estimated that 72% of the load is from anthropogenic sources. TMDL implementation was subsequently placed on hold allowing time for local stakeholders to develop a strategy to reduce loads.

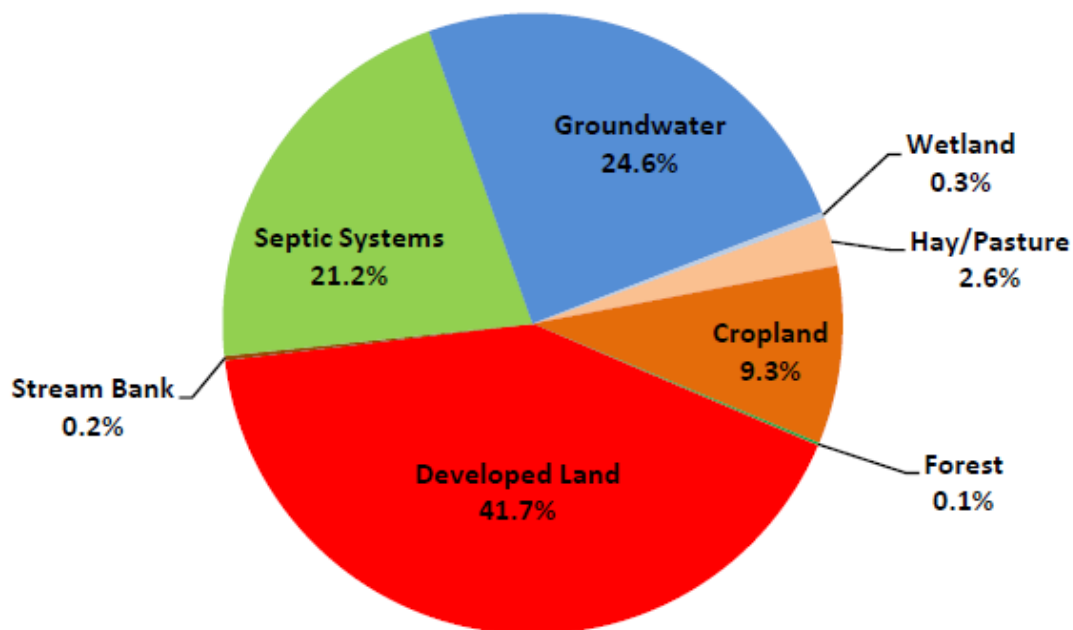


Figure 3: Estimated Sources of Total Phosphorus Loading to Buck Pond (EPA 2010)

Additional studies of Larkin Creek water quality have been done by SUNY Brockport professors (Buttner, 1989; Makarewicz, 1989; and Noll 2005). General statements from Makarewicz include: “The Creek received treated effluent from the Greece Long Pond Road Sewage Treatment Plant until 1973 when the plant was closed... Nitrate levels at Larkin Creek appear to have increased dramatically since the early 70's... Home construction in the Larkin Creek watershed appeared to be reflected in generally higher turbidity throughout the summer of 1987 as compared to the other study sites. Annual mean daily turbidity was considerably higher in Larkin Creek (29.01 NTU) than in other creeks (mean annual range = 9.45 - 14.55 NTU). Turbidity ranged as high as 533 NTU in Larkin Creek during one rain storm. During this rain event, as observed by the author, topsoil was being eroded away from an unprotected construction site west of the sampling site...”

1.4.2 Impervious Cover Analysis The Center for Watershed Protection developed the “Impervious Cover Model” (ICM) using the relationship between subwatershed impervious cover and stream quality indicators to predict a typical stream’s health. It has been confirmed by nearly 60 peer-reviewed stream research studies (Figure 4) . The ICM shows that stream quality decline becomes evident when the watershed impervious cover exceeds ten percent. Larkin Creek has an average of 20 percent impervious cover identifying stream quality somewhere between poor and good with impacted aquatic life. Based on current zoning it is predicted that watershed impervious cover will increase to 25% in the next 20 years.

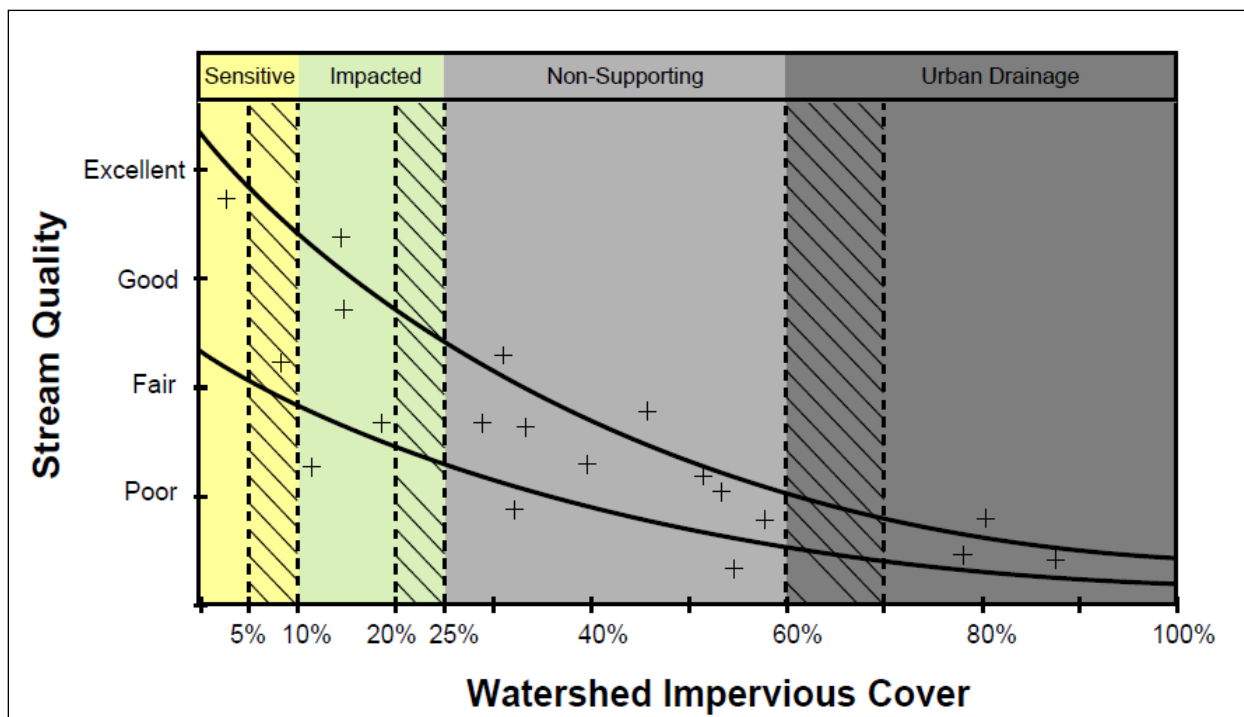


Figure 4. Impervious Cover Model

1.4.3 Drainage Concerns Interviews with DPW staff at the Town of Greece and a review of their Comprehensive Drainage Study (Larsen 1974) identified drainage issue areas. While most drainage issues have been addressed by an active stormwater management program in the Town, some minor drainage concerns persist in low-lying areas downstream of the Erie Canal.

1.4.4 Streambank Erosion Staff documented and photographed many eroded streambank locations throughout the watershed and revisited sites previously assessed by the Monroe County Soil & Water Conservation District in 2001. All sites were visited and show mostly minor eroded stream banks however, several showed significant erosion rates and likely contribute measurable sediment loads to the creek (Figure 5).



Figure 5. Eroded Streambank (just south of Latta Road crossing)

1.4.5 Soils A simplistic yet useful way to define how much stormwater runs off the pervious land surface is to determine soils' infiltration capabilities, their ability to absorb stormwater. Soil scientist have categorized soils into four categories, A through D. A and B soils are well drained and absorb much of the stormwater that drains on or over them. C and D soils are more poorly drained. However, the soils in some parts of this watershed are not categorized, denoting areas that have been so altered by land development that grouping a specific soil type is not feasible. The amount of each soil type in Larkin Creek is: A soils 10%; B soils 28%; C soils 38%; D soils or not verified 16% (Figure 6). The large percentage of B soils will allow for infiltration-type stormwater retrofits. These practices can prevent and reduce flooding, drainage problems, and streambank erosion as well as greatly improving water quality in Larkin Creek.

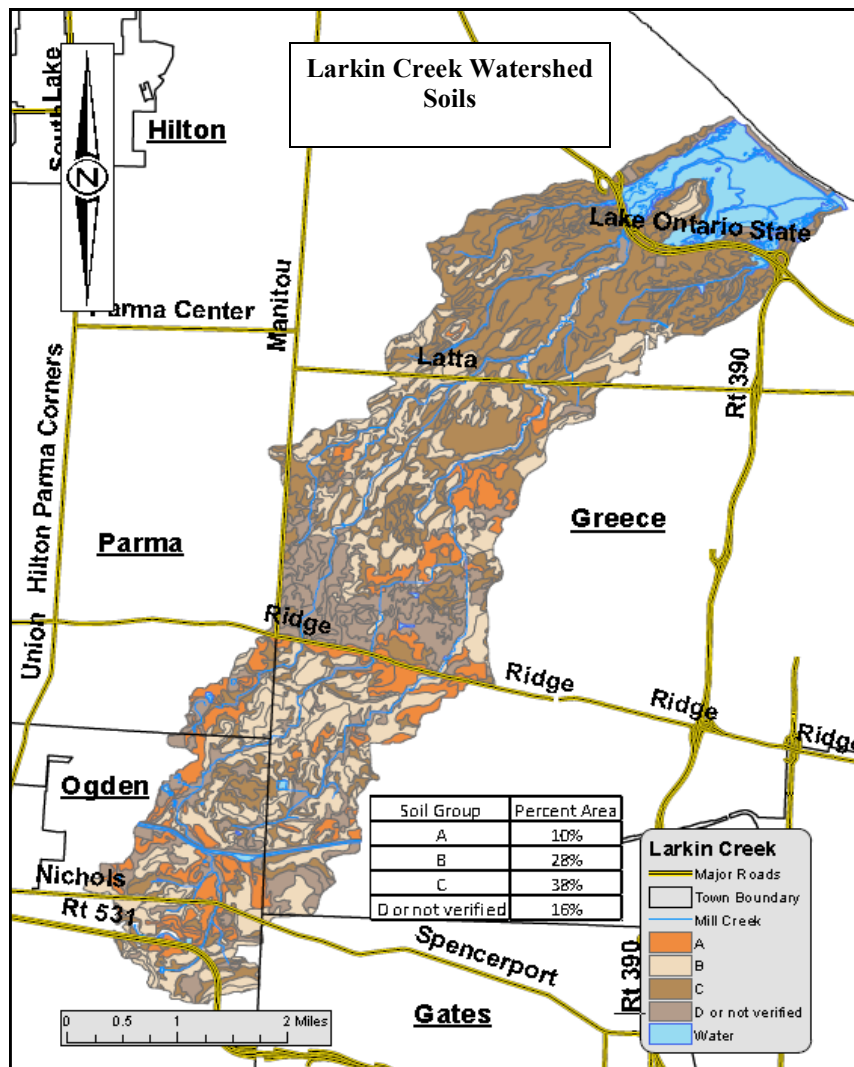


Figure 6. Hydric Soils Map of Larkin Creek

Section 2. Retrofit Inventory

An inventory of potential retrofit sites was generated using GIS mapping tools to locate public properties, stormwater practices like ponds, old urban areas (built before stormwater management requirements) and, pervious soil areas. Next, the appropriate stormwater management practice was determined for the properties identified and those were ranked based on their feasibility, how much they would improve water quality and, be cost-effective. While the stormwater management practice types focused on green infrastructure (stormwater volume-reducing practices such as infiltration) retrofitting stormwater ponds is a highly cost-effective practice and these projects rank well and are recommended. Complete details of *methods used to complete the rapid assessment and retrofit ranking is explained in a reference document titled “Assessment Methodology, Project Descriptions, and Retrofit Ranking Criteria For Monroe County Green Infrastructure Rapid Assessment Plans”*.

Two broad categories of retrofit project types were considered:

- 1) New stormwater ponds, upgrades to existing stormwater ponds and new stormwater storage to existing drainage channels
- 2) Green Infrastructure (GI). This category was divided and ranked by where a GI project might be installed and includes:
 - Public Right of Ways,
 - Older Residential Neighborhoods, and
 - Other Locations (such as areas with large impervious surfaces ie shopping malls)

Other watershed retrofitting that would help meet water quality goals include the investigation and remediation of any stormwater hotspots (Appendix C) and dechannelization and revegetation of straightened and degraded stream corridors (Appendix D). However these projects are outside the scope of this report and therefore were not ranked. Figure 6 shows project locations and project number within the watershed. Table 2 lists project addresses and how they scored. Diagrams of the top scoring projects follow the table.

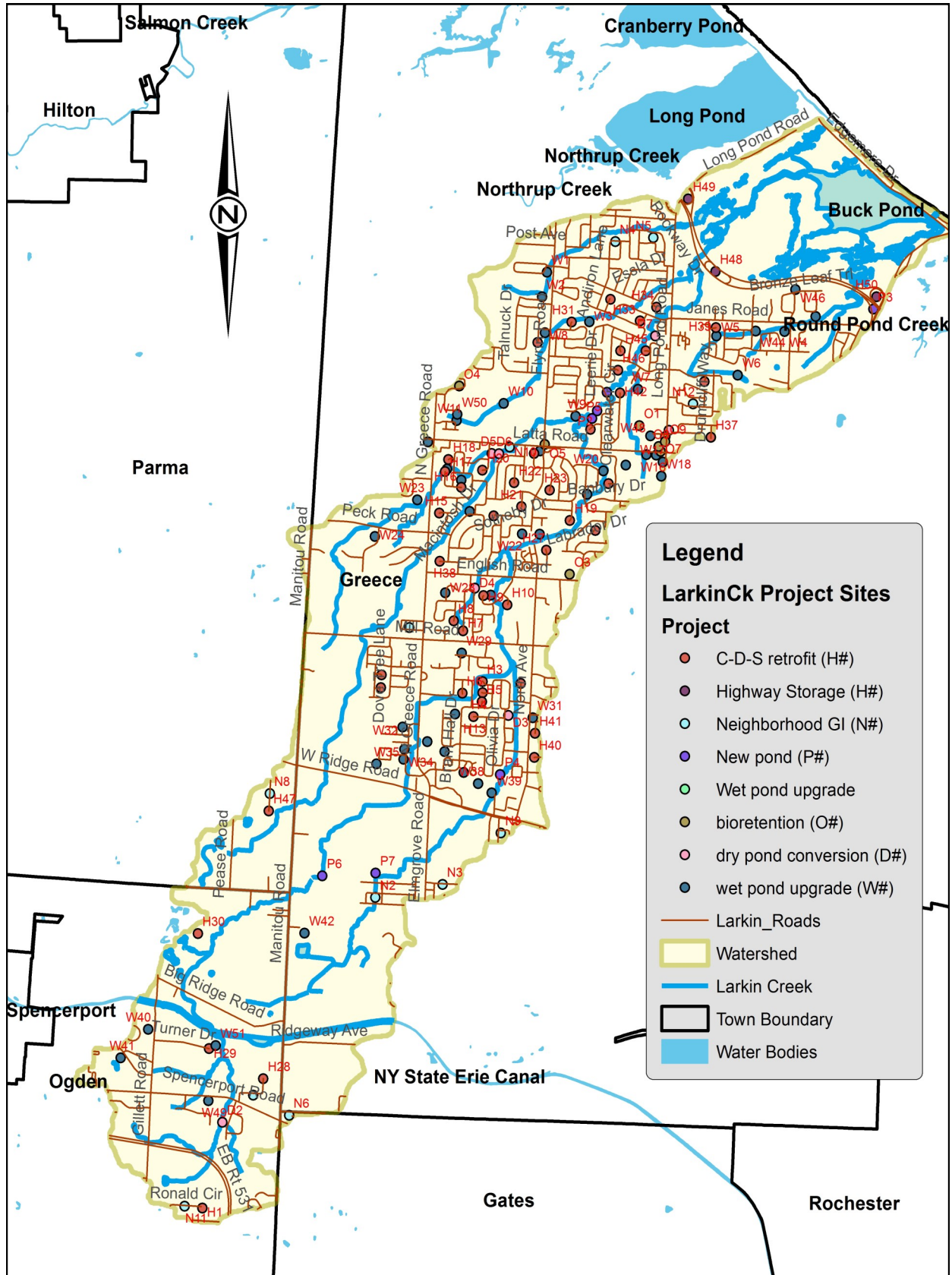


Figure 8. Retrofit Project Locations Map in Larkin Creek Watershed

Table 2: Larkin Creek Retrofit Ranking List

Map I.D.	Project Type	Overall Rank	Project Location	Feasibility	Watershed Benefits	Cost Effectiveness	Score
P2	New pond	1	T/O Greece behind 135 Brandy Brook Ln	5	I, WQ, F, CP	3	13
P5	New pond	1	T/O Greece behind 30 Spring Ck Cir	5	I, WQ, F, CP	3	13
P7	New pond	1	Canal Ponds Park CO Monroe East Branch	5	I, WQ, F, CP	3	13
W4	wet pond upgrade	2	T/O Greece 605 Kirk Rd creek flows thru	5	I, WQ, CP	3	12
W6	wet pond upgrade	2	crosby ln 10 ac town owned parcel once retrifid	5	I, WQ, CP	3	12
W13	wet pond upgrade	2	T/O Greece 724 McIntosh Dr	5	I, WQ, CP	3	12
W19	wet pond upgrade	2	T/O Greece 231 Red Struce Ln	5	I, WQ, CP	3	12
W29	wet pond upgrade	2	310 rumford rd town of greece	5	I, WQ, CP	3	12
D3	dry pond conversion	3	234 Olivia Dr T/O Greece	5	WQ, F, CP,	3	11
D4	dry pond conversion	3	76 mill hollow crossing T/O Greece	5	I, WQ, F, CP,	3	11
D5	dry pond conversion	3	78 Silver Fox Cir T/O Greece/divert smith ck	5	WQ, F, CP,	3	11
D6	dry pond conversion	3	back of 80 Spring Tree Ln T/O Greece	5	WQ, F, CP,	3	11
H48	Highway Storage	3	NYS Parkway at inside of U turns	5	WQ, F, CP,	3	11
H49	Highway Storage	3	NYS Parkway cloverleaf at WB off ramp Long Pond Rd	5	WQ, F, CP,	3	11
H50	Highway Storage	3	NYS Parkway cloverleaf at WB off ramp 390 S	5	WQ, F, CP,	3	11
P1	New pond	3	T/O Greece next to 206 crystal ck dr	5	WQ, F, CP,	3	11
P3	New pond	3	NYS Parkway cloverleaf at EB off ramp 390 S	5	WQ, F, CP,	3	11
P4	New pond	3	T/O Greece 10 ac parcel creek flows through	5	WQ, F, CP,	3	11
P6	New pond	3	Greece Canal Park CO Monroe- Main branch	5	WQ, F, CP,	3	11
O4	Other GI	4	bioretention a Villas at Fieldstone	3	I, WQ, SC	3	10
O7	Other GI	4	bioretention a 3166 Latta rd commercial parking lot retrofit	3	I, WQ, SC	3	10

Larkin Creek Retrofit Ranking List (Cont)

Map I.D.	Project Type	Overall Rank	Project Location	Feasibility	Watershed Benefits	Cost Effectiveness	Score
H3	C-D-S retrofit	4	Shepperton Way	3	I, WQ, SC	3	10
H4	C-D-S retrofit	4	Ashford Cir	3	I, WQ, SC	3	10
H5	C-D-S retrofit	4	Tropez Pl	3	I, WQ, SC	3	10
H6	C-D-S retrofit	4	Meadow Creek Cir	3	I, WQ, SC	3	10
H7	C-D-S retrofit	4	Country Wood Landing	3	I, WQ, SC	3	10
H8	C-D-S retrofit	4	Sunset Ridge trail	3	I, WQ, SC	3	10
H9	C-D-S retrofit	4	Carrington Dr	3	I, WQ, SC	3	10
H10	C-D-S retrofit	4	Glencross Cir	3	I, WQ, SC	3	10
H11	C-D-S retrofit	4	Timber oak Cir	3	I, WQ, SC	3	10
H13	C-D-S retrofit	4	La Solis Cir	3	I, WQ, SC	3	10
H14	C-D-S retrofit	4	Lemington Cir	3	I, WQ, SC	3	10
H15	C-D-S retrofit	4	Jersey Black Cir	3	I, WQ, SC	3	10
H16	C-D-S retrofit	4	White Rabbit Tr	3	I, WQ, SC	3	10
H17	C-D-S retrofit	4	Sara Minni Dr	3	I, WQ, SC	3	10
H18	C-D-S retrofit	4	Southern Pine Cir	3	I, WQ, SC	3	10
H19	C-D-S retrofit	4	Stratford Ln	3	I, WQ, SC	3	10
H20	C-D-S retrofit	4	Silver Fox Cir	3	I, WQ, SC	3	10
H21	C-D-S retrofit	4	Hillbridge Cir	3	I, WQ, SC	3	10
H22	C-D-S retrofit	4	Groveview Cir	3	I, WQ, SC	3	10
H23	C-D-S retrofit	4	Covered Bridge Cir	3	I, WQ, SC	3	10
H24	C-D-S retrofit	4	Old Tavern Cir	3	I, WQ, SC	3	10
H25	C-D-S retrofit	4	Black Spruce Cir	3	I, WQ, SC	3	10
H26	C-D-S retrofit	4	Mystic Pine Cir	3	I, WQ, SC	3	10
H27	C-D-S retrofit	4	Wainswright Cir	3	I, WQ, SC	3	10
H28	C-D-S retrofit	4	Hiawatha Tr	3	I, WQ, SC	3	10
H29	C-D-S retrofit	4	Turner Dr	3	I, WQ, SC	3	10

Larkin Creek Retrofit Ranking List (Cont)

Map I.D.	Project Type	Overall Rank	Project Location	Feasibility	Watershed Benefits	Cost Effectiveness	Score
H35	C-D-S retrofit	4	Timmarron Trail	3	I, WQ, SC	3	10
H36	C-D-S retrofit	4	Delecorte Cir	3	I, WQ, SC	3	10
H37	C-D-S retrofit	4	Geiger Cir	3	I, WQ, SC	3	10
H38	C-D-S retrofit	4	crab apple lane	3	I, WQ, SC	3	10
H39	C-D-S retrofit	4	Hale Cir	3	I, WQ, SC	3	10
H40	C-D-S retrofit	4	Gentry Cir	3	I, WQ, SC	3	10
H41	C-D-S retrofit	4	Camomile Ln	3	I, WQ, SC	3	10
H42	C-D-S retrofit	4	Clearwater Cir	3	I, WQ, SC	3	10
H43	C-D-S retrofit	4	Spring Creek Cir	3	I, WQ, SC	3	10
H44	C-D-S retrofit	4	Crosswood Ct	3	I, WQ, SC	3	10
H45	C-D-S retrofit	4	Weather Wood Ln	3	I, WQ, SC	3	10
H46	C-D-S retrofit	4	Dutchmans Hollow	3	I, WQ, SC	3	10
H47	C-D-S retrofit	4	Orchard Hills Dr	3	I, WQ, SC	3	10
W1	wet pond upgrade	4	jonquil lane t/o Greece	5	WQ, Cp	3	10
W2	wet pond upgrade	4	avery park lane to be T/O Greece	5	WQ, Cp	3	10
W5	wet pond upgrade	4	45 Hale Cir T/O greece	5	WQ, Cp	3	10
W7	wet pond upgrade	4	T/O Greece Town Hall northwest cor pond	5	WQ, Cp	3	10
W12	wet pond upgrade	4	T/O Greece SMC of Flynn and Latta	5	WQ, Cp	3	10
W17	wet pond upgrade	4	3177 Latta Road Wegmans 1 of 4 ponds	3	I, WQ, CP	3	10
W20	wet pond upgrade	4	prvt w/easement 192 N Churce Rd	3	I, WQ, CP	3	10
W21	wet pond upgrade	4	pickering dr east pond T/O greece	5	WQ, Cp	3	10
H30	C-D-S retrofit	4	Golden Pond Tr	3	I, WQ, SC	3	10
H31	C-D-S retrofit	4	Felicia Court	3	I, WQ, SC	3	10
H32	C-D-S retrofit	4	Wood Run Cir	3	I, WQ, SC	3	10
H33	C-D-S retrofit	4	Wood CutterscCir	3	I, WQ, SC	3	10
H34	C-D-S retrofit	4	Jay Vee Ln	3	I, WQ, SC	3	10

Larkin Creek Retrofit Ranking List (Cont)

Map I.D.	Project Type	Overall Rank	Project Location	Feasibility	Watershed Benefits	Cost Effectiveness	Score
W1	wet pond upgrade	4	jonquil lane t/o Greece	5	WQ, Cp	3	10
W2	wet pond upgrade	4	lavery park lane to be T/O Greece	5	WQ, Cp	3	10
W5	wet pond upgrade	4	45 Hale Cir T/O greece	5	WQ, Cp	3	10
W7	wet pond upgrade	4	T/O Greece Town Hall northwest cor pond	5	WQ, Cp	3	10
W12	wet pond upgrade	4	T/O Greece SWC of Flynn and Latta	5	WQ, Cp	3	10
W17	wet pond upgrade	4	3177 Latta Road Wegmans 1 of 4 ponds	3	I,WQ, CP	3	10
W20	wet pond upgrade	4	prvt w/easement 192 N Churce Rd	3	I,WQ, CP	3	10
W21	wet pond upgrade	4	pickering dr east pond T/O greece	5	WQ, Cp	3	10
W22	wet pond upgrade	4	pickering dr west pond T/O Greece	5	WQ, Cp	3	10
W24	wet pond upgrade	4	pvt SWC Peck and Putney Place	3	I, WQ, Cp	3	10
W26	wet pond upgrade	4	515 White Rabbit Tr prv with easement	3	I,WQ, CP	3	10
W27	wet pond upgrade	4	T/O Greece 57 Carrington Dr 5 acre parcel w creek	5	WQ, Cp	3	10
W30	wet pond upgrade	4	546 Bram Hall Dr T/O Greece	5	WQ, Cp	3	10
W32	wet pond upgrade	4	25 Creek House Dr T/O Greece	5	WQ, Cp	3	10
W34	wet pond upgrade	4	White Swan Dr south - apt private	3	I,WQ, CP	3	10
W40	wet pond upgrade	4	48 Pirates Cove HOA	3	I,WQ, CP	3	10
W41	wet pond upgrade	4	SpencerportCentral School pond @ parking lot	5	WQ, Cp	3	10
W32	wet pond upgrade	4	25 Creek House Dr T/O Greece	5	WQ, Cp	3	10
W34	wet pond upgrade	4	White Swan Dr south - apt private	3	I,WQ, CP	3	10
W40	wet pond upgrade	4	48 Pirates Cove HOA	3	I,WQ, CP	3	10
W41	wet pond upgrade	4	SpencerportCentral School pond @ parking lot	5	WQ, Cp	3	10
W42	wet pond upgrade	4	7 Julia Way pvt w easmnt	3	I,WQ, CP	3	10
W46	wet pond upgrade	4	T/O Greece 122 Bronze Leaf Tr	5	WQ, Cp	3	10
W47	wet pond upgrade	4	N Greece Fire District 5 acre parcel	3	I,WQ, CP	3	10
W22	wet pond upgrade	4	pickering dr west pond T/O Greece	5	WQ, Cp	3	10
W24	wet pond upgrade	4	pvt SWC Peck and Putney Place	3	I, WQ, Cp	3	10
W26	wet pond upgrade	4	515 White Rabbit Tr prv with easement	3	I,WQ, CP	3	10
W27	wet pond upgrade	4	T/O Greece 57 Carrington Dr 5 acre parcel w creek	5	WQ, Cp	3	10
W30	wet pond upgrade	4	546 Bram Hall Dr T/O Greece	5	WQ, Cp	3	10

Larkin Creek Retrofit Ranking List (Cont)

Map I.D.	Project Type	Overall Rank	Project Location	Feasibility	Watershed Benefits	Cost Effectiveness	Score
W42	wet pond upgrade	4	7 Julia Way pvt w easmnt	3	I,WQ, CP	3	10
W46	wet pond upgrade	4	T/O Greece 122 Bronze Leaf Tr	5	WQ, Cp	3	10
W47	wet pond upgrade	4	N Greece Fire District 5 acre parcel	3	I,WQ, CP	3	10
W48	wet pond upgrade	4	649 Long Pond commercial	3	I,WQ, CP	3	10
W49	wet pond upgrade	4	20 Kingsford Lane Senior Housing	3	I,WQ, CP	3	10
W50	wet pond upgrade	4	1 colonnade ter common area HOA	3	I,WQ, CP	3	10
D1	dry pond conversion	5	pvt w/esmnt 39 kentucky xing	3	WQ, F,CP,	3	9
D2	dry pond conversion	5	15 valerie tr private property w/easement	3	WQ, F,CP,	3	9
D7	dry pond conversion	5	505 Long Pond Rd Professional bldg. prvt	3	WQ, F,CP,	3	9
N1	Neighborhood GI	5	Brogan Subdivision built 1965	2	CR, WQ, E, SC	3	9
N2	Neighborhood GI	5	Country Club Subd	2	CR, WQ, E, SC	3	9
N3	Neighborhood GI	5	Berkshire Meadow	2	CR, WQ, E, SC	3	9
N4	Neighborhood GI	5	Country Place	2	CR, WQ, E, SC	3	9
N5	Neighborhood GI	5	Lakecrest Manor	2	CR, WQ, E, SC	3	9
N6	Neighborhood GI	5	Maplehurst	2	CR, WQ, E, SC	3	9
N7	Neighborhood GI	5	North Greece Meadows	2	CR, WQ, E, SC	3	9
N8	Neighborhood GI	5	Orchard Hills	2	CR, WQ, E, SC	3	9
N9	Neighborhood GI	5	Craig Hill	2	CR, WQ, E, SC	3	9
N10	Neighborhood GI	5	Latta Garden Subd	2	CR, WQ, E, SC	3	9
N11	Neighborhood GI	5	Sunshine Valley	2	CR, WQ, E, SC	3	9
N12	Neighborhood GI	5	Squredale	2	CR, WQ, E, SC	3	9

Larkin Creek Retrofit Ranking List (Cont)

Map I.D.	Project Type	Overall Rank	Project Location	Feasibility	Watershed Benefits	Cost Effectiveness	Score
W3	wet pond upgrade	6	whispering pines sec 7 +8 on 5 lots prv w/ easmnt	3	WQ, Cp	3	8
W8	wet pond upgrade	6	10 Turning Leaf forest glen subd w/easement	3	WQ, Cp	3	8
W9	wet pond upgrade	6	154 Blue Birch Dr pvt w/ easement	3	WQ, Cp	3	8
W11	wet pond upgrade	6	meadowland tr off N Greece rd apartments	3	WQ, Cp	3	8
W14	wet pond upgrade	6	south of Latta rd PO - Wegmans vacant land	3	WQ, Cp	3	8
W15	wet pond upgrade	6	3177 Latta Road Wegmans 1 of 4 ponds	3	WQ, Cp	3	8
W16	wet pond upgrade	6	3177 Latta Road Wegmans 1 of 4 ponds	3	WQ, Cp	3	8
W18	wet pond upgrade	6	3177 Latta Road Wegmans 1 of 4 ponds	3	WQ, Cp	3	8
W23	wet pond upgrade	6	back of res lots 214&226 Wilnick Cir	3	WQ, Cp	3	8
W25	wet pond upgrade	6	70 Sara Minni Dr prv with easement	3	WQ, Cp	3	8
W28	wet pond upgrade	6	windstone dr masi dev future sw	3	WQ, Cp	3	8
W31	wet pond upgrade	6	11,13,15 Camomile Ln prv w easmnt	3	WQ, Cp	3	8
W33	wet pond upgrade	6	White Swan Dr North -apt private	3	WQ, Cp	3	8
W35	wet pond upgrade	6	kohl's plaza 4100 w ridge road commercial	3	WQ, Cp	3	8
W36	wet pond upgrade	6	Annie Lane apartments off bram hall dr	3	WQ, Cp	3	8
W37	wet pond upgrade	6	3580 w ridge road s of jade dr plaza commercial	3	WQ, Cp	3	8
W38	wet pond upgrade	6	3580 w ridge n of walmart commercial	3	WQ, Cp	3	8
W43	wet pond upgrade	6	111 Blue Aspen Way	3	WQ, Cp	3	8
W44	wet pond upgrade	6	30 Legends way - on empty lot alaimo enterprises	3	WQ, Cp	3	8
W45	wet pond upgrade	6	lifetime asst inc - 501C3? 1108 N Greece Rd	3	WQ, Cp	3	8
W51	wet pond upgrade	6	46 Turner Rd spencerport	3	WQ, Cp	3	8
O1	Other GI	6	bioretention at 3216 Latta Rd (Greece DPW - parcel west of)	3	WQ, SC	3	8
O3	Other GI	6	bioretention a Pinebrook Elementray 2300 English Road	3	WQ, SC	3	8
O5	Other GI	6	bioretention a NEC Flynn and Latta commercial plaza	3	WQ, SC	3	8
O6	Other GI	6	bioretention a 649 Long Pond Rd parking lot retrofit	3	WQ, SC	3	8
O8	Other GI	6	bioretention a 649 Long Pond Road commercial parking lot	3	WQ, SC	3	8
O9	Other GI	6	bioretention a 649 Long Pond Road commercial parking lot	3	WQ, SC	3	8

References:

Center for Watershed Protection. 2004a. *Unified Stream Assessment: A User's Manual*. Manual 10 in the Urban Subwatershed Restoration Manual Series. Center for Watershed Protection, Inc. Ellicott City, MD.

2004b. *Unified Subwatershed and Site Reconnaissance: A User's Manual*. Manual 11 in the Urban Subwatershed Restoration Manual Series.

2005. *An Integrated Framework to Restore Small Urban Streams User's Manual*. Manual 1 in the Urban Subwatershed Restoration Manual Series.

2007. *Stormwater Retrofit Practices*. Manual 3 in the Urban Subwatershed Restoration Manual Series.

New York State Department of Environmental Conservation. 2004. *Ontario Basin Waterbody Inventory and Priority Waterbodies List, Revised 2007*

2012. *The Final New York State October 2012 (revised February 2013) 2012 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy*.

SUNY College at Brockport. 1989. Buttner, J.K., and S.E. Seibold. *Survey of macroinvertebrates from Northrup, Buttonwood and Larkin Creeks*. Department of Biological Sciences.

1989. Makarewicz, J.C. *Chemical Analysis Of Water From Buttonwood. Larkin. Round Pond And Northrup Creeks. Lake Ontario Basin West*. Department of Biological Sciences.

2007. Mark R. Noll, Ph.D, Magee, E., Department of the Earth Sciences. *Stressed Stream Analysis of the Larkin and Northrup Creek Watersheds, Monroe County, New York*

U.S. Environmental Protection Agency Region 2. *Total Maximum Daily Loads (TMDLs) for Phosphorus in Buck, Long, and Cranberry Ponds Monroe County, New York July 2010*

APPENDIX A

NYSDEC PWL Datasheet

Larkin Creek and tribs (0301-0023)**Impaired Seg****Waterbody Location Information**

Revised: 05/08/2007

Water Index No:	Ont 122-P153- 2	Drain Basin:	Lake Ontario
Hydro Unit Code:	04130001/100	Str Class:	C
Waterbody Type:	River	Reg/County:	8/Monroe Co. (28)
Waterbody Size:	46.3 Miles	Quad Map:	BRADDOCK HEIGHTS (H-10-4)
Seg Description:	entire stream and tribs (includes Buck Pond tribs)		

Water Quality Problem/Issue Information (CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
AQUATIC LIFE	Impaired	Suspected

Type of Pollutant(s)

Known: ---
 Suspected: NUTRIENTS
 Possible: ---

Source(s) of Pollutant(s)

Known: ---
 Suspected: URBAN/STORM RUNOFF
 Possible: ---

Resolution/Management Information

Issue Resolvability:	1 (Needs Verification/Study (see STATUS))	
Verification Status:	3 (Cause Identified, Source Unknown)	
Lead Agency/Office:	DOW/Reg8	Resolution Potential: Medium
TMDL/303d Status:	n/a	

Further Details

Aquatic life support in Larkin Creek is thought to be impaired by nutrients attributed to urban/suburban nonpoint sources. The waterbody is listed as impaired but because only one 1999 sampling event was conducted on the creek, additional monitoring is recommended to verify conditions.

A biological (macroinvertebrate) assessment of Larkin Creek near North Greece (at Latta Road) was conducted in 1999. Sampling results indicated moderately impacted water quality conditions. The fauna was dominated by riffle beetles and nonpoint source nutrient enrichment was indicated as the primary cause of impact to the stream. (DEC/DOW, BWAM/SBU, June 2005)

This segment includes the entire stream and all tribs. The waters of the stream are Class B from the mouth to Long Pond Road and Class C for the remainder of the reach. Tribs to this reach/segment, including Smith Creek (-3), are primarily Class C; some tribs are Class B. This segment also includes smaller tribs to Buck Pond (-1, -1a, -3).

