Town of Clinton

Road-Stream Crossing Inventory & Management Plan

Sean Carroll, CCEDC

Town Board Presentation

Tuesday, December 12, 2023

Cornell Cooperative Extension
Dutchess County

About CCEDC

Mission: Through quality educational programs, Cornell Cooperative Extension Dutchess County builds strong and healthy youth, adults, families and communities while enhancing the economic, social, agricultural and natural resources of Dutchess County.

Program Areas

- Agriculture/Horticulture
- Family and Consumer Education
- 4-H Youth Development
- Environment & Energy

www.ccedutchess.org

@CCEDutchess

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Hudson Valley Climate Resilience Partnership

- Regional partnership of six Hudson Valley counties
- Partnering with local municipalities to provide free technical assistance and support for climate resilience and Climate Smart Communities projects
- Project funding provided by:
  - NYSDEC Hudson River Estuary Program
  - NYS Water Resources Institute (WRI)
  - Cornell University

Project website:

www.climateresiliencepartnership.org

NEW YORK STATE | Department of Environmental Conservation

New York State Water Resources Institute Cornell University

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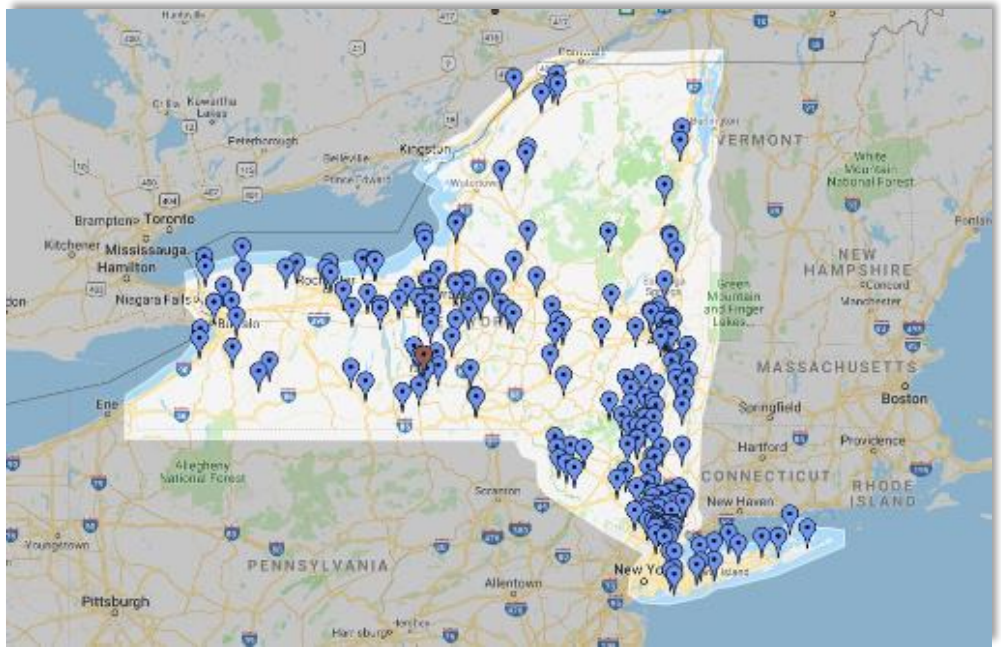
The NYS Climate Smart Communities Program

- New York State program that helps local governments take action to reduce greenhouse gas emissions and adapt to a changing climate
- Offers **free** technical assistance, grants, and rebates for electric vehicles
- Town of Clinton is a registered, or "pledged" Climate Smart Community
- Numerous actions, pertaining to:
  - Energy efficiency & clean, renewable energy retrofits
  - Climate-smart land use policies
  - **Resilience to climate change**



NEW YORK STATE OF OPPORTUNITY. | Climate Smart Communities

https://climatesmart.ny.gov/

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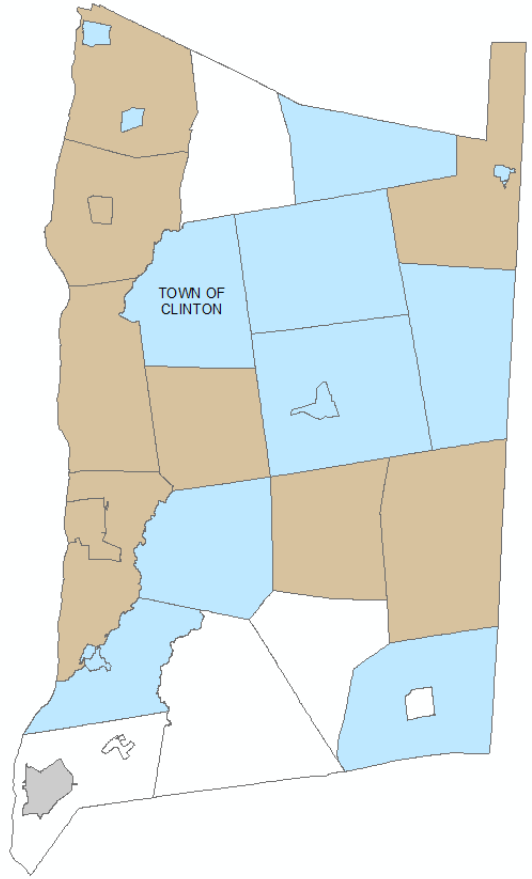
The NYS Climate Smart Communities Program

- Town of Clinton "Registered" as a Climate Smart Community

- Clinton involved in many CSC actions (with assistance from CCEDC and others)

- CSC points from Road-Stream Crossing Inventory & Management Plan:
  - Inventory: 2 points ✓
  - Management Plan/Prioritization: 2 points ✓
  - Right-size at least one culvert/bridge: **6 points!**

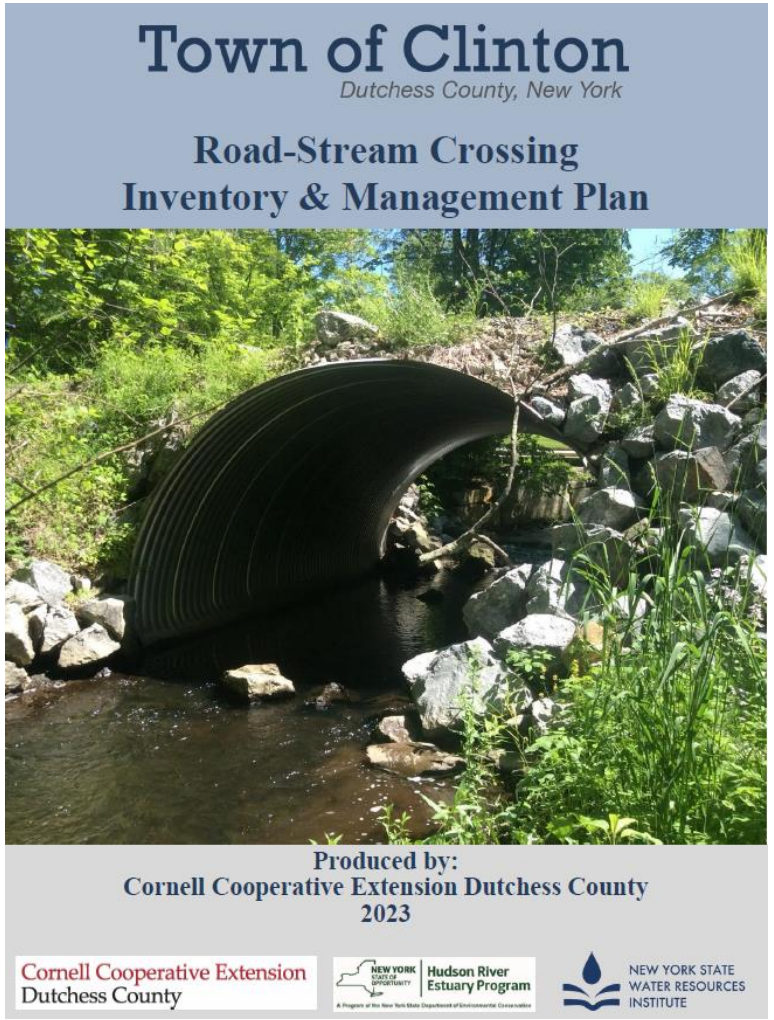


Road-Stream Crossing Inventory and Management Plan

- Pledge Element 7: Enhance community resilience to climate change
- Action Item: Culverts & Dams

- **Purpose & Goals:**
  - Assemble an inventory of culverts, bridges, and dams within municipality, including information on structure dimensions, materials, condition, and photos
  - Develop a priority list and management plan for which culverts, bridges, and/or dams need attention, resizing, repair, or replacement
  - ***Assist the community in finding and applying for grant opportunities for this work***

- Again, all **FREE** to Town of Clinton



Town of Clinton Culverts Inventory Process

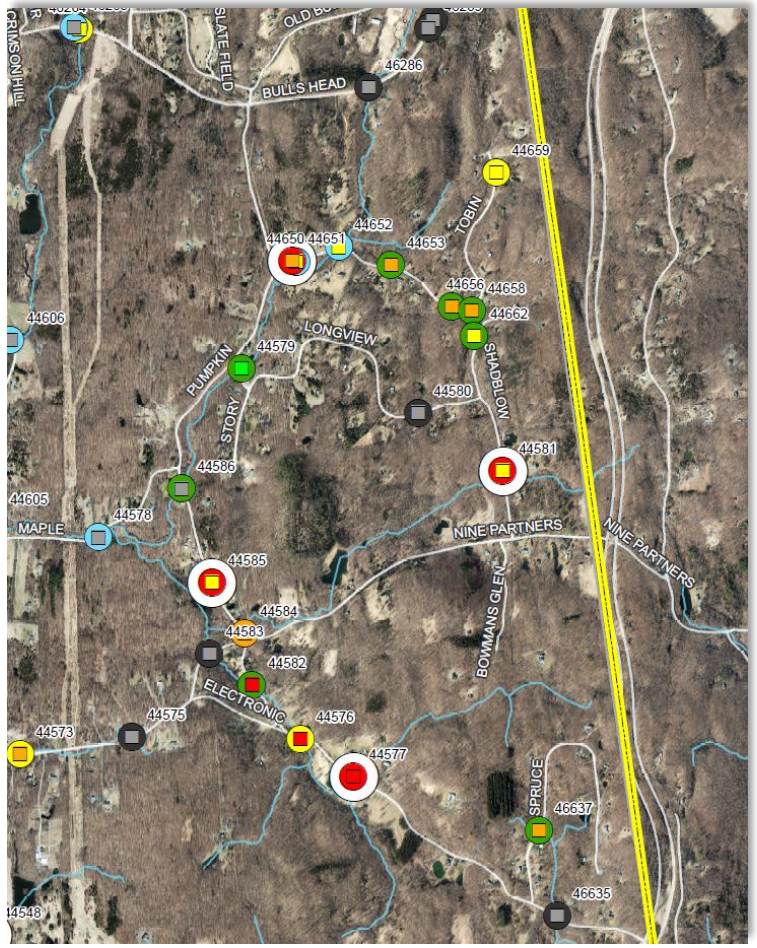
- Working closely with:
  - Supervisor Whitton
  - Highway Staff (Todd Martin & Melissa Karchmer)
  - Climate Smart Communities Task Force (Joe Phelan)
  - Conservation Advisory Council [CAC] (Barbara Mansell)

Town of Clinton
Dutchess County, New York

- **2022**: Mapped assessed culverts, discussed priorities for repair/replacement, site visits, 'committee' meetings, public outreach

- **2023**: Assembled final inventory, prioritization and management plan

- **2024 and beyond** : Seeking and applying for funding, feasibility studies, culvert replacements



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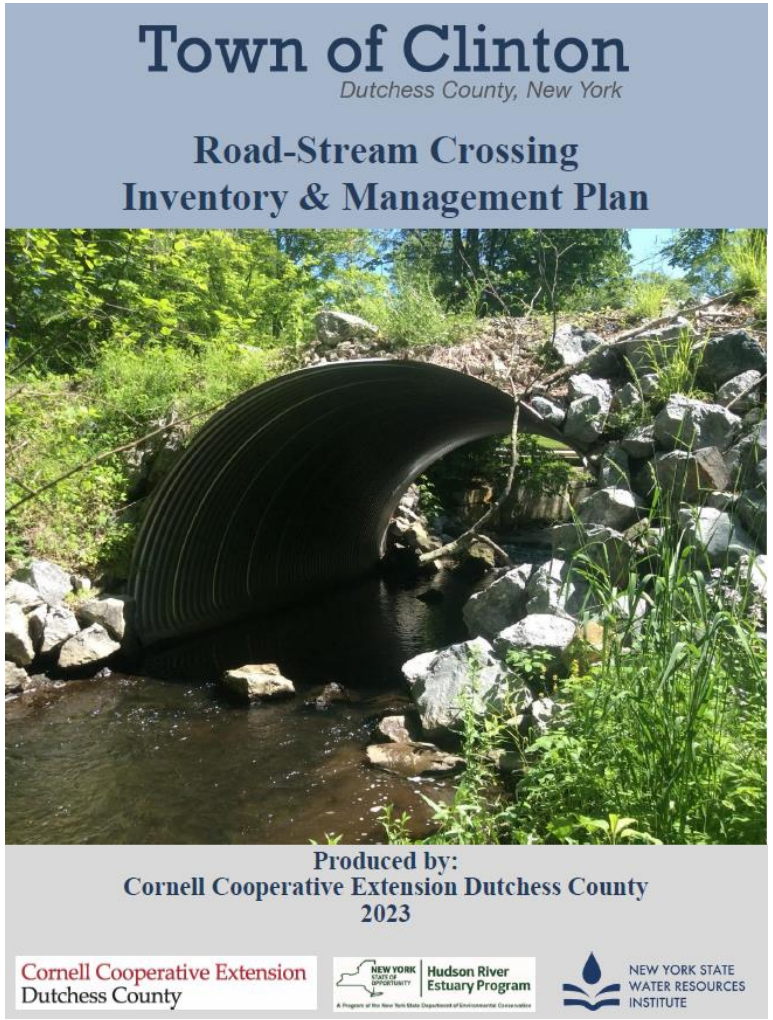
Public Outreach Component

- Public Survey
  - Soliciting Clinton residents' feedback and local knowledge as it pertains to culverts, bridges and dams within the Town
  - Shared at Clinton Community Day and other Town events
  - Copies here tonight

- Presentations at Town meetings
  - Town Board presentation in October 2022 and again tonight

Culvert & Bridge Inventory Document

- Introduction
  - Executive Summary
  - Partners, Funders and Advisors
  - Aquatic Connectivity Overview
  - Methods & Procedures
  - NAACC Scoring Protocol
  - Flood Risk Justification
  - Funding Opportunities
  - Interpretive Guide
  - Priority Crossings
- Crossing Inventory
  - Town-owned Structures
  - County-owned Structure
  - State-owned Structures



Road: Lake Drive **Stream:** Wappinger Creek **Map Key:** C2

Results

Barrier Evaluation: Significant barrier
Aquatic Organism Passage Score: 0.27
Condition/Maintenance: OK
Max Return Interval: 1

Location

Coordinates: 41.90280, -73.81355
Location Description: 41.90280 N, -73.81355 W
Date Observed: 6/1/2017
Survey ID: 44608

Stream and Crossing

Crossing Characteristics

Crossing Type: Culvert
Length: 33
Number of structures/cells: 1
Constriction: Moderate
Alignment: Flow-Aligned
Dry Passage/Height: No
Constriction: Moderate

Stream Characteristics

Scour Pool: None
Water Depth/Velocity Matches Stream: Yes/Yes
Substrate Matches Stream: None
Substrate Type: None
Substrate Coverage: None

Upstream

Downstream

Crossing Comments: No data

Road

Road Type/Surface: Paved
Road Fill Height (feet): 1.7
Road Ownership: Town

Return Interval (Years)	Peak Flow (cfs)	Culvert Capacity (cfs)	Pass/Fail
2	0.86	1.02	Pass
5	1.51	1.02	Fail
25	2.69	1.02	Fail
50	3.71	1.02	Fail
100	5.13	1.02	Fail
200	6.19	1.02	Fail

Structure 1 of 1

Material: Plastic
Physical Barrier (s)/Severity: None
Internal Features/Structures: None
Slope Matches Stream (%): 9
Structure Comments: No data
Outlet Armoring: None

Inlet

Outlet

Inlet

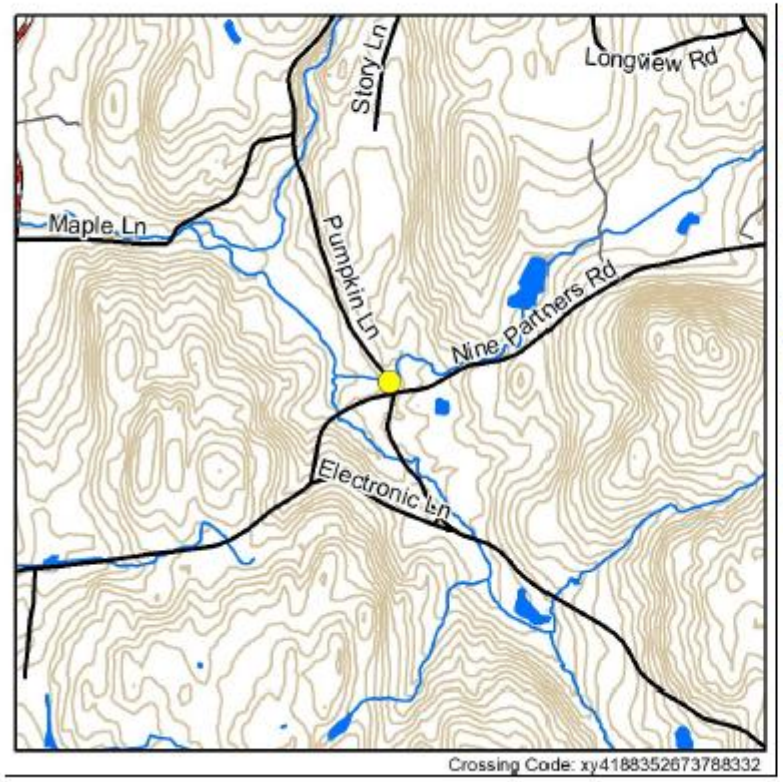
Inlet Shape/Type: Round Culvert, Projecting
Inlet Drop/Grade: At Stream Grade
Width: 2.5, Height: 2.5
Substrate/Water Width: 0.8
Water Depth: 0.1
Abutment Height: No data

Outlet

Outlet Shape: Round Culvert
Outlet Drop/Grade: Free Fall
Drop to Stream Surface/Bottom: 0.8/1
Width: 2.5, Height: 2.5
Substrate/Water Width: 0.5
Water Depth: 0.1

Culvert & Bridge Inventory Document

Road: **Pumpkin Lane** **Stream:** **Wappinger Creek**



Results

Barrier Evaluation: Significant barrier
Aquatic Organism Passage Score: 0.22
Condition/Maintenance: Poor
Max Return Interval: 1

Location

Coordinates: 41.88383, -73.78870
Location Description: 41.88383 N, -73.78870 W
Date Observed: 5/31/2017
Survey ID: 44584

North Atlantic Aquatic Connectivity Collaborative
NAACC

Culvert & Bridge Inventory Document

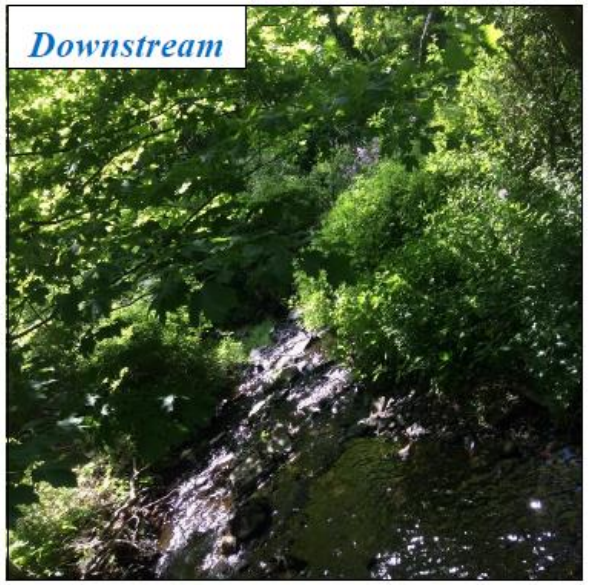
Stream and Crossing

Crossing Characteristics

Crossing Type: Culvert
Length: 38.5
Number of structures/cells: 1
Constriction: Moderate
Alignment: Skewed (>45°)
Dry Passage/Height: No
Constriction: Moderate

Stream Characteristics

Scour Pool: Large
Water Depth/Velocity Matches Stream: Yes/Yes
Substrate Matches Stream: None
Substrate Type: None
Substrate Coverage: None



Crossing Comments: No data

North Atlantic Aquatic Connectivity Collaborative
NAACC

Culvert & Bridge Inventory Document

ROAD
Road Type/Surface: Paved
Road Fill Height (feet): 1.6
Road Ownership: Town

Return Interval (Years)	Peak Flow (cfs)	Culvert Capacity (cfs)	Pass/Fail
2	1.29	2.3	Pass
5	3.76	2.3	Fail
25	9.97	2.3	Fail
50	16.37	2.3	Fail
100	26.18	2.3	Fail
200	33.83	2.3	Fail

Culvert & Bridge Inventory Document

STRUCTURE 1 OF 1

Material: Metal
Physical Barrier (s)/Severity: None
Internal Features/Structures: None

Slope Matches Stream (%): 1.8
Structure Comments: No data
Outlet Armoring: None

Inlet

Outlet

INLET

Inlet Shape/Type: Round Culvert, Headwall
Inlet Drop/Grade: At Stream Grade
Width: 3.5, Height: 3.5
Substrate/Water Width: 2.9
Water Depth: 0.2
Abutment Height: No data

OUTLET

Outlet Shape: Round Culvert
Outlet Drop/Grade: Free Fall Onto Cascade
Drop to Stream Surface/Bottom: 0.9/2.5
Width: 4.1, Height: 4.2
Substrate/Water Width: 1.7
Water Depth: 0.2

North Atlantic Aquatic Connectivity Collaborative
NAACC

Flood Risk Priorities

- Based on modeling performed by Cornell University
- Taking into consideration:
  - The shortest flood intervals (i.e. most likely to flood the road in smaller storms)
  - The culvert capacity (i.e. largest potential of flood water to be released)
- Prioritizing by “Capacity Difference”
  - Refers to the difference (cfs) between the culverts current modeled capacity and the modeled peak flow of a 2-year storm event.

Pumpkin Ln

Lake Dr

Fiddler’s Bridge Rd

Aquatic Organism Barrier Priorities

- Road-stream crossings with the lowest aquatic organism passability (AOP) score (i.e. most likely to be a barrier to organisms looking to travel upstream)

- Based on in-field assessments done according to the NAACC protocol.

Shadblow Ln

Fiddler's Bridge Rd

Centre Rd

Overall Town of Clinton Priorities

#1 - Pumpkin Ln
(near intersection with
Nine Partners Rd)

"**Significant** Barrier"
(NAACC score = 0.22)

Max Return Interval:
2-year storm

Return Interval (Years)	Peak Flow (cfs)	Culvert Capacity (cfs)	Pass/Fail
2	1.29	2.3	Pass
5	3.76	2.3	Fail
25	9.97	2.3	Fail
50	16.37	2.3	Fail
100	26.18	2.3	Fail
200	33.83	2.3	Fail

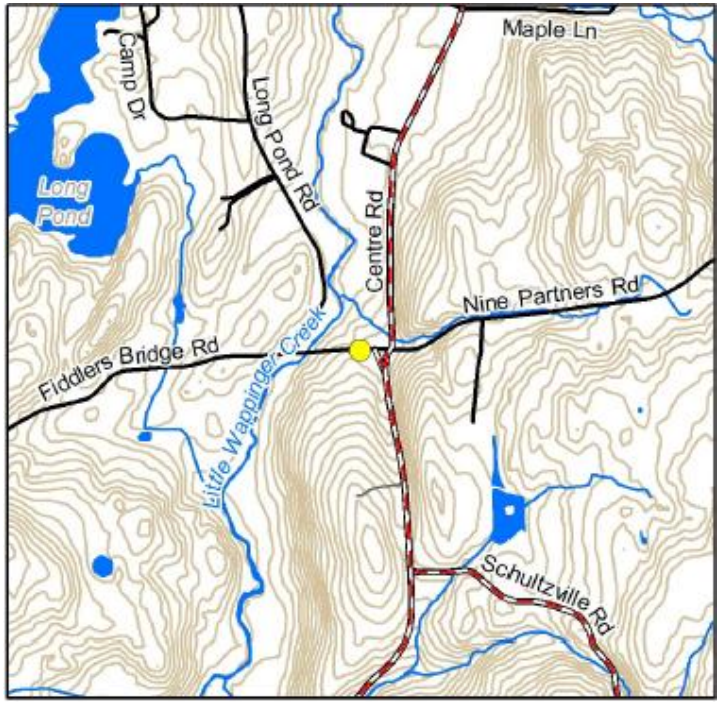
Overall Town of Clinton Priorities

#2 – Fiddler's Bridge Rd
(just west of Golden Russet)

"**Severe** Barrier"
(NAACC score = 0.01)

Max Return Interval:
Unable to be modelled due to lack of flow at time of assessment

However, history of flooding and impact on downstream resident(s)/household



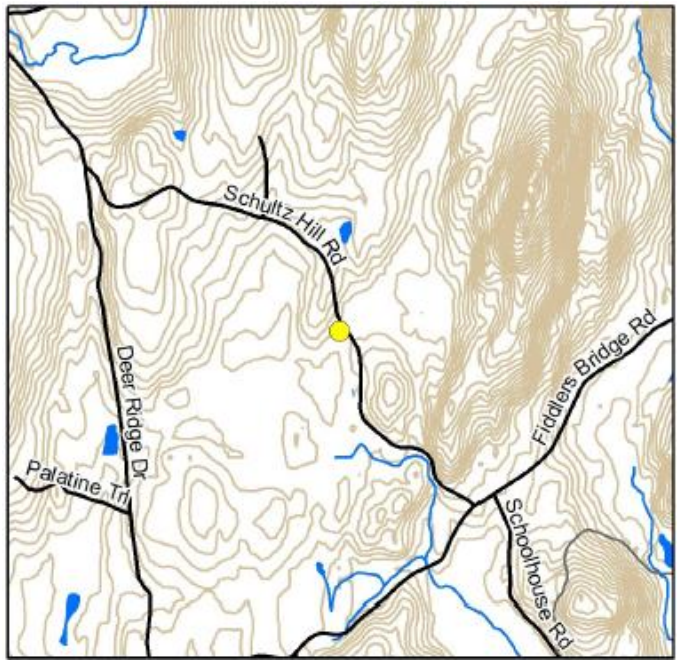
Overall Town of Clinton Priorities

#3 – Schultz Hill Rd

"**Moderate** Barrier"
(NAACC score = 0.58)

Max Return Interval:
1-year storm

Return Interval (Years)	Peak Flow (cfs)	Culvert Capacity (cfs)	Pass/Fail
2	1.53	0.46	Fail
5	3.38	0.46	Fail
25	7.17	0.46	Fail
50	10.67	0.46	Fail
100	15.76	0.46	Fail
200	19.59	0.46	Fail



Overall Town of Clinton Priorities

#s 4 & 5 – Woodlea Rd

Both "**Severe** Barriers"
(NAACC score = 0.01 & 0.16)

Max Return Interval:
1-year storm

Funding Opportunities

BRIDGE NY - https://www.dot.ny.gov/BRIDGENY

Provides assistance for local governments to rehabilitate and replace bridges and culverts

- Focus on projects that address poor structural conditions, mitigate weight restrictions or detours, facilitate economic development, or increase competitiveness, improve resilience and/or reduce the risk of flooding
- $200 million awarded in per year
- $50 million available for culvert & bridge projects

Funding Opportunities

Water Quality Improvement Project (WQIP) Program - https://www.dec.ny.gov/pubs/4774.html

The Water Quality Improvement Project (WQIP) program is a competitive, reimbursement grant program that funds projects that directly improve water quality or aquatic habitat or protect a drinking water source.

Eligible Project Types & Required Match (2024)

- Wastewater Treatment Improvement (high priority projects 25%, general projects 60%)
- Nonagricultural Nonpoint Source Abatement and Control (25%)
- Land Acquisition for Source Water Protection (25%)
- Salt Storage (50%)
- Aquatic Connectivity Restoration (25%)
- Marine District Habitat Restoration (25%)

Eligible Applicants (2024)

- Municipalities and Soil and Water Conservation Districts are eligible for all project types.
- Not-for-Profit Corporations are eligible for Aquatic Connectivity Restoration, Marine District Habitat Restoration, and Land Acquisition for Source Water Protection only.

Funding Opportunities

Green Innovation Grant Program (GIGP) - https://efc.ny.gov/gigp

Through the Governor's Consolidated Funding Application (CFA) process, the Green Innovation Grant Program (GIGP) supports projects across New York State that utilize unique EPA-designated green stormwater infrastructure design and create cutting-edge green technologies.

Competitive grants are awarded annually to projects that improve water quality and mitigate the effects of climate change through the implementation of one or more of the following green practices: Green Stormwater Infrastructure, Energy Efficiency, Water Efficiency and Environmental Innovation.

Next Steps

- **BRIDGE NY** Funding Deadline: January 19th
- Road-Stream Crossing Inventory & Mgmt Plan (w/ priorities) excellent “leg-up” in application process & funding success
- CCEDC to provide guidance to Town throughout application process, as needed

Thank you!
Questions?

Sean Carroll

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