

February 22, 2022

Mr. Jeffrey Smith, Town Supervisor
Honorable Town Board
Town of Shelby
4062 Salt Works Road
Medina, NY 14103

SUBJECT: REVIEW OF STAMP DISCHARGE TO OAK ORCHARD CREEK

Dear Supervisor Smith and Honorable Town Board Members:

Wendel was retained to perform an independent review of the design reports, design drawings, and comment letters produced related to the proposed STAMP Wastewater Treatment Facility and Force Main project and its discharge to Oak Orchard Creek. To complete this review, the following data sources were utilized:

- Design Report: “STAMP Discharge Analysis to Oak Orchard Creek”, prepared by JM Davidson Engineering, PC, May 2020.
- Comment Letter: Village of Medina/Town of Shelby to NYS Department of Environmental Conservation (DEC), September 2, 2021.
- Comment Letter: Genesee County Economic Development Center to NYS DEC, September 17, 2021.
- Comment Letter: CPL to NYS DEC, October 15, 2021.
- Design Report: “STAMP Force Main, Main Pump Station, & Onsite Wastewater Treatment Facility – Basis of Design Report”, prepared by CPL, Updated October 2021.
- Design Drawings: “STAMP Force Main”, prepared by CPL, September 2021.

An area of particular focus was the hydraulic model of Oak Orchard Creek developed by JM Davidson Engineering. Wendel reviewed the model referenced in the design report from May 2020 and recreated the statistical analysis used to estimate flows in Oak Orchard Creek.

Based on this effort, Wendel provides the following comments:

- 1) The hydraulic model of Oak Orchard Creek developed by JM Davidson, PC meets our expectations for a hydraulic model of a stream. It is our opinion that this modeling effort provides a reasonable estimate of real-world conditions in Oak Orchard Creek.
- 2) The statistical analysis used to estimate flows meets our expectations for this type of work. Wendel was also able to independently confirm the flow values used for Oak Orchard Creek.



- 3) Wendel agrees with JM Davidson, PC that the increased flow from the STAMP Discharge will not have a noticeable impact on the 100yr flood elevations downstream nor will it have an impact on the stream velocity or water levels.
- 4) Wendel disagrees with JM Davidson, PC that the outfall discharge has been designed to minimize soil erosion. Our review of the Basis of Design Report from CPL shows no documentation or calculations of how the outfall was designed to avoid soil erosion.
- 5) It is our opinion that the outfall has not been adequately designed to avoid soil erosion. Specifically, the rip-rap section is too thin. On Page 3.28 of the NYS Standards and Specifications for Erosion and Sediment Control, it states that the minimum lining thickness shall be 1.5 times the maximum stone size. The maximum stone size for this project is heavy stone rip-rap with a diameter of 23" inches as per the NYS DOT Specification for Heavy Stone Rip-Rap. This would lead to a minimum lining thickness of 34.5". This is larger than the actual lining thickness of 24" or 32" shown on design drawings FM D-05R and FM S-61R (attached).
- 6) The lack of proper lining thickness can lead to loss of stone protection over time. Without stone protection, the outfall would likely erode discharging sediment to Oak Orchard Creek.
- 7) The outlet structure detail shown on design drawing FM D-05R is incomplete. It is difficult to determine the outlet shape directly upstream of the outlet protection outside of the structure. This is important as it will determine the flow characteristics exiting the outlet.
- 8) There is an existing ditch at the site of the force main outfall which allows flow from a 24" stormwater culvert underneath South Gravel Road to drain to Oak Orchard Creek. Nowhere in the design drawings or design report is this flow accounted for. The design should show and/or explain how these existing stormwater flows are conveyed to Oak Orchard Creek after construction of the force main outlet structure.

In conclusion, it is Wendel's opinion that the discharge from STAMP will not have an impact on the 100yr flood elevations or velocities downstream, but this discharge will likely have an impact on erosion near the force main outlet if design changes are not made. It is in the best interests of the Town of Shelby to request that the force main outlet be redesigned to better protect against erosion in the future.

The Town also asked Wendel to comment on potential increases to flow from the force main as the STAMP project progresses. Currently, the force main is being designed and permitted for a maximum flow of 6 MGD. With changes in the pump station design, the flow in the force main could be increased above 6 MGD. It is our recommendation that the Town of Shelby ask GCEDC and the NYS DEC to agree that any increases of flow above 6 MGD require further review from the Town and additional analysis from GCEDC before any permits are issued.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Scott M. Rybarczyk".

Scott M. Rybarczyk, PE