HYDROLOGY REPORT

Please see Appendix E for the *Preliminary Hydrology and Hydraulics Report, August 16, 2023*.

SUMMARY		
Drainage Area	40.39	mi^2
Q1.1	525	ft^3/s
Q10	1795	ft^3/s
Q25	2245	ft^3/s
Q50	2595	ft^3/s
Q100	2960	ft^3/s
Q500	3810	ft^3/s

Reported by: Abigail Dempsey
Date: August 16, 2023

Note: All elevations based on North American Vertical Datum (NAVD) of 1988.

In summary, the bridge was designed to match the existing low chord while widening the span by 24.5'. There is approximately 7" of clearance at Q50 water elevations, which is less than the 2' freeboard suggested in the *Bridge Design Guide*. However, as previously discussed in this document, raising the profile grade was determined to have too many impacts and was not necessary for this low volume road.

SUMMARY

		Existing Structure	Recommended Structure
		40' Single Span Steel	64.5' Single Span Steel
Total Area of Waterway Opening	ft^2	326	454
Headwater Elevation @ Q1.1	ft	395.7	395.2
Headwater Elevation @ Q10	ft	399.7	398.9
Headwater Elevation @ Q25	ft	400.8	399.9
Headwater Elevation @ Q50	ft	401.5	400.7
Headwater Elevaton @ Q100	ft	403.1	401.5
Headwater Elevation @ Q500	ft	403.9	403.8
Freeboard @ Q50	ft	-0.14	0.45
Freeboard @ Q100	ft	-1.74	-0.35
Outlet Velocity @ Q1.1	ft/s	4.28	5.24
Outlet Velocity @ Q10	ft/s	5.76	6.69
Outlet Velocity @ Q25	ft/s	6.02	6.89
Outlet Velocity @ Q50	ft/s	6.22	6.89
Outlet Velocity @ Q100	ft/s	4.05	6.81
Outlet Velocity @ Q500	ft/s	3.98	4.04

Reported by: Abigail Dempsey
Date: August 16, 2023

Note: All elevations based on North American Vertical Datum (NAVD) of 1988.