CLA Engineers, Inc.

Civil • Structural • Survey

 317 MAIN STREET
 •
 NORWICH, CT 06360
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June 5, 2025

Meredith Badalucca, Assistant Planner Stacy Radford, Zoning & Wetlands Officer Town of Montville Department of Land Use & Development 310 Norwich-New London Turnpike Uncasville, CT 06382

RE: Land Use Application -25SUB3 (001-007-00A) Silver Falls Road Montville, CT CLA-7885

Meredith/Stacy,

Attached are responses to all comments received for the above referenced project. Please contact me with any questions.

#### **ENGINEERING COMMENTS** – Letter dated 5-11-25

Erosion and Sedimentation Control Bond Estimate

- Please coordinate the area of seeding with the proposed area of disturbance. **Revised**
- Please include a line item for spreading stockpiled topsoil over the proposed areas of disturbance.
   Included

#### Stormwater Modeling

- Please correct the 10-year, 24-hour rainfall total presented in the Table on page 132 of the revised report. It should be 5.14 inches instead of 4.15 inches.
   Corrected – see attached revised sheet
- Please evaluate the contributing watersheds of the proposed 15-inch culverts located at approximately STA 1+00 and approximately STA 2+30 to demonstrate that they are sized for the appropriate design storm and evaluate the 100-year discharge velocities to ensure that the appropriately sized riprap is specified. These two culverts do not appear to be included in the updated Drainage Report.

Culvert and rip-rap at STA 2+30 were evaluated and found to be adequate as it receives limited watershed flow- see attached.

Culvert at STA 1+00 was installed to provide wetland conductivity with insignificant watershed flow.

#### **Resubdivision Plans**

• Please include the statement regarding the proposed grading within the limits of the flood plain on Sheet 3.

#### Statement added to plan

- Please provide construction details for the sediment forebay and stone check dam. **Provided**
- Please provide details for the proposed grassed lined swales and riprap swales. **Provided**

#### **OTHER:**

#### Planner Comments: Drafting comments addressed on sheet 4

Soil Scientist Comments:

This section is in response to a comment letter from Ian Cole CSS dated May 24, 2025

- Note that CLA does not claim that the shrub plantings are to offset the permanent filling of 4950 S.F. of inland wetlands. Mr. Cole requests larger shrubs and additional details regarding the location and monitoring of the plantings. These have been provided on the project plans. The shrubs will be 3-4 feet tall and planted in the native wetland soil at locations chosen by the soil scientist. They will be monitored for 2 years with 100% replacement of any shrubs that die.
- CLA is aware that should additional work proceed in Waterford, additional permits on the municipal, state and federal level will be required. The plans properly present the portion of the work regulated by Montville. At this time, it is uncertain if the additional work outside of Waterford will proceed, however if it does it will be presented to the regulatory authorities as a full and complete project.

Please contact us with any questions.

Sincerely,

alle

Robert A. DeLuca, P.E.

c: D. Gjergjaj

Prepared by CLA Engineers, Inc.

	<b>EROSION &amp; SEDIMENTATION CONTROL - BOND ESTIMATE</b>									
	Silver Falls Road Subdivision, Montville CT									
	Item	Qty	Unit	Unit Price	Estimate					
1	Construction Entrance	1	L.S.	\$2,500.00	\$2,500.00					
2	WQV Basin #1	1	L.S.	\$5,000.00	\$5,000.00					
3	E&S: Silt Fence Installation & Maintenance	3100	L.F.	\$2.50	\$7,750.00					
4	E&S: DBL Silt Fence Installation & Maintenance	450	L.F.	\$5.00	\$2,250.00					
5	Install Seed Mix over Disturbed Areas	23,950	S.Y.	\$0.35	\$8,382.50					
6	Topsoil over disurbed area	1	L.S.	\$5,000.00	\$5,000.00					
				Total :	<u>\$30,882.50</u>					

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

### Hyd. No. 1

Existing Watershed #1

Hydrograph type =	SCS Runoff	Peak discharge	= 53.72 cfs
Storm frequency =	⊧ 10 yrs	Time to peak	= 756 min
Time interval =	6 min	Hyd. volume	= 479,613 cuft
Drainage area =	= 129.000 ac	Curve number	= 55*
Basin Slope =	0.0 %	Hydraulic length	= 0 ft
Tc method =	: TR55	Time of conc. (Tc)	= 46.90 min
Total precip. =	5.14 in	Distribution	= Custom
Storm duration =	M:\NOAA Type D Distribution.	යි <b>ls</b> ape factor	= 484

\* Composite (Area/CN) = [(129.000 x 55)] / 129.000



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

### Hyd. No. 2

Existing watershed #2

Hydrograph type	= SCS Runoff	Peak discharge	= 81.68 cfs
Storm frequency	= 10 yrs	Time to peak	= 786 min
Time interval	= 6 min	Hyd. volume	= 964,695 cuft
Drainage area	= 257.000 ac	Curve number	= 55
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 76.40 min
Total precip.	= 5.14 in	Distribution	= Custom
Storm duration	= M:\NOAA Type D Dis	tribution.comsape factor	= 484



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

### Hyd. No. 3

Proposed Watershed #1

Hydrograph type	= SCS Runoff	Peak discharge	= 53.72 cfs
Storm frequency	= 10 yrs	Time to peak	= 756 min
Time interval	= 6 min	Hyd. volume	= 479,613 cuft
Drainage area	= 129.000 ac	Curve number	= 55*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 46.90 min
Total precip.	= 5.14 in	Distribution	= Custom
Storm duration	= M:\NOAA Type D Dis	= 484	

\* Composite (Area/CN) = [(1.000 x 98) + (2.400 x 61) + (125.600 x 55)] / 129.000



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

### Hyd. No. 4

Proposed Watershed #2

Hydrograph type	= SCS Runoff	Peak discharge	= 81.68 cfs
Storm frequency	= 10 yrs	Time to peak	= 786 min
Time interval	= 6 min	Hyd. volume	= 964,695 cuft
Drainage area	= 257.000 ac	Curve number	= 55*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 76.40 min
Total precip.	= 5.14 in	Distribution	= Custom
Storm duration	= M:\NOAA Type D Distribution	. Collsape factor	= 484

\* Composite (Area/CN) = [(0.850 x 61) + (1.000 x 98) + (255.150 x 55)] / 257.000



4

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

### Hyd. No. 6

Common Drive North Side Swale

Hydrograph type	= SCS Runoff	Peak discharge	= 0.764 cfs
Storm frequency	= 10 yrs	Time to peak	= 732 min
Time interval	= 6 min	Hyd. volume	= 3,248 cuft
Drainage area	= 0.360 ac	Curve number	= 76*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 17.80 min
Total precip.	= 5.14 in	Distribution	= Custom
Storm duration	= M:\NOAA Type D Distribution	ය <b>ිs</b> ape factor	= 484

\* Composite (Area/CN) = [(0.180 x 98) + (0.180 x 54)] / 0.360



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

### Hyd. No. 7

Common Drive South Side Swale

Hydrograph type	= SCS Runoff	Peak discharge	= 0.251 cfs		
Storm frequency	= 10 yrs	Time to peak	= 750 min		
Time interval	= 6 min	Hyd. volume	= 2,218 cuft		
Drainage area	= 0.880 ac	Curve number	= 49*		
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft		
Tc method	= TR55	Time of conc. (Tc)	= 21.90 min		
Total precip.	= 5.14 in	Distribution	= Custom		
Storm duration	= M:\NOAA Type D Distribution	= M:\NOAA Type D Distribution.comsape factor			

\* Composite (Area/CN) = [(0.170 x 98) + (0.123 x 54) + (0.590 x 34)] / 0.880



6

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Wednesday, 05 / 14 / 2025

### Hyd. No. 8

To WQV Basin 2

Hydrograph type	= SCS Runoff	Peak discharge	= 0.433 cfs
Storm frequency	= 10 yrs	Time to peak	= 750 min
Time interval	= 6 min	Hyd. volume	= 4,343 cuft
Drainage area	= 2.040 ac	Curve number	= 47*
Basin Slope :	= 0.0 %	Hydraulic length	= 0 ft
Tc method =	= TR55	Time of conc. (Tc)	= 21.70 min
Total precip.	= 5.14 in	Distribution	= Custom
Storm duration	M:\NOAA Type D Distribution.	= 484	

\* Composite (Area/CN) = [(0.240 x 98) + (0.530 x 54) + (1.270 x 34)] / 2.040



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

### Hyd. No. 9

WQV2 OUTFLOW

Hydrograph type	= Reservoir	Peak discharge	= 0.045 cfs
Storm frequency	= 10 yrs	Time to peak	= 1014 min
Time interval	= 6 min	Hyd. volume	= 828 cuft
Inflow hyd. No.	= 8 - To WQV Basin 2	Max. Elevation	= 187.59 ft
Reservoir name	= wqv2	Max. Storage	= 2,188 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



8

## **Pond Report**

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

#### Pond No. 1 - wqv2

#### Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 185.00 ft

#### Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)		
0.00	185.00	00	0	0		
1.00	186.00	900	300	300		
2.00	187.00	1,260	1,075	1,375		
2.50	187.50	1,420	670	2,044		
3.00	188.00	1,680	774	2,818		
4.00	189.00	2,160	1,915	4,733		

#### **Culvert / Orifice Structures**

#### **Weir Structures**

	[A]	[B]	[C]	[PrfRsr]		[A]	[B]	[C]	[D]
Rise (in)	= 15.00	Inactive	Inactive	Inactive	Crest Len (ft)	Inactive	Inactive	Inactive	Inactive
Span (in)	= 15.00	0.00	0.00	0.00	Crest El. (ft)	= 187.50	0.00	0.00	0.00
No. Barrels	= 1	0	0	0	Weir Coeff.	= 3.33	3.33	3.33	3.33
Invert El. (ft)	= 187.50	0.00	0.00	0.00	Weir Type	= 1			
Length (ft)	= 200.00	0.00	0.00	0.00	Multi-Stage	= Yes	No	No	No
Slope (%)	= 1.20	0.00	0.00	n/a					
N-Value	= .012	.013	.013	n/a					
Orifice Coeff.	= 0.60	0.60	0.60	0.60	Exfil.(in/hr)	= 1.000 (by	Contour)		
Multi-Stage	= n/a	No	No	No	TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s). Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	185.00	0.00				0.00				0.000		0.000
0.10	30	185.10	0.00				0.00				0.002		0.002
0.20	60	185.20	0.00				0.00				0.004		0.004
0.30	90	185.30	0.00				0.00				0.006		0.006
0.40	120	185.40	0.00				0.00				0.008		0.008
0.50	150	185.50	0.00				0.00				0.010		0.010
0.60	180	185.60	0.00				0.00				0.012		0.012
0.70	210	185.70	0.00				0.00				0.015		0.015
0.80	240	185.80	0.00				0.00				0.017		0.017
0.90	270	185.90	0.00				0.00				0.019		0.019
1.00	300	186.00	0.00				0.00				0.021		0.021
1.10	407	186.10	0.00				0.00				0.022		0.022
1.20	515	186.20	0.00				0.00				0.022		0.022
1.30	622	186.30	0.00				0.00				0.023		0.023
1.40	730	186.40	0.00				0.00				0.024		0.024
1.50	837	186.50	0.00				0.00				0.025		0.025
1.60	945	186.60	0.00				0.00				0.026		0.026
1.70	1.052	186.70	0.00				0.00				0.027		0.027
1.80	1,160	186.80	0.00				0.00				0.027		0.027
1.90	1,267	186.90	0.00				0.00				0.028		0.028
2.00	1,375	187.00	0.00				0.00				0.029		0.029
2.05	1,442	187.05	0.00				0.00				0.030		0.030
2.10	1,509	187.10	0.00				0.00				0.030		0.030
2.15	1,576	187.15	0.00				0.00				0.030		0.030
2.20	1.643	187.20	0.00				0.00				0.031		0.031
2.25	1,710	187.25	0.00				0.00				0.031		0.031
2.30	1.777	187.30	0.00				0.00				0.031		0.031
2.35	1,844	187.35	0.00				0.00				0.032		0.032
2.40	1.910	187.40	0.00				0.00				0.032		0.032
2.45	1.977	187.45	0.00				0.00				0.032		0.032
2.50	2.044	187.50	0.00				0.00				0.033		0.033
2.55	2,122	187.55	0.01 ic				0.00				0.033		0.046
2.60	2,199	187.60	0.05 ic				0.00				0.034		0.084
2.65	2.277	187.65	0.11 ic				0.00				0.035		0.145
2.70	2.354	187.70	0.19 ic				0.00				0.035		0.228
2.75	2.431	187.75	0.30 ic				0.00				0.036		0.334
2.80	2.509	187.80	0.42 ic				0.00				0.036		0.459
1.00	2,000		0				0.00						

Continues on next page ...

2	
wqv2	
Stage / Storage / Discharge	Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
2.85	2,586	187.85	0.57 ic				0.00				0.037		0.604
2.90	2,664	187.90	0.73 ic				0.00				0.038		0.768
2.95	2,741	187.95	0.91 ic				0.00				0.038		0.948
3.00	2,818	188.00	1.10 ic				0.00				0.039		1.143
3.10	3,010	188.10	1.54 ic				0.00				0.040		1.577
3.20	3,201	188.20	2.02 ic				0.00				0.041		2.057
3.30	3,393	188.30	2.53 ic				0.00				0.042		2.569
3.40	3,584	188.40	3.06 ic				0.00				0.043		3.102
3.50	3,776	188.50	3.58 ic				0.00				0.044		3.629
3.60	3,967	188.60	4.09 ic				0.00				0.046		4.131
3.70	4,159	188.70	4.52 ic				0.00				0.047		4.563
3.80	4,350	188.80	4.85 ic				0.00				0.048		4.902
3.90	4,542	188.90	5.20 ic				0.00				0.049		5.250
4.00	4,733	189.00	5.53 ic				0.00				0.050		5.577

...End

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

### Hyd. No. 11

**To Future Crossing** 

Hydrograph type	= SCS Runoff	Peak discharge	= 9.875 cfs
Storm frequency	= 10 yrs	Time to peak	= 732 min
Time interval	= 6 min	Hyd. volume	= 42,144 cuft
Drainage area	= 5.180 ac	Curve number	= 73*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 13.90 min
Total precip.	= 5.14 in	Distribution	= Custom
Storm duration	= M:\NOAA Type D Distribution	ഷ്ണിsape factor	= 484

\* Composite (Area/CN) = [(3.000 x 98) + (0.550 x 56) + (1.630 x 34)] / 5.180



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

### Hyd. No. 12

Combined to Future Crossing

Hydrograph type Storm frequency	= Combine = 10 yrs	Peak discharge Time to peak	= 9.875 cfs = 732 min
Time interval	= 6 min	Hyd. volume	= 42,973 cuft
Inflow hyds.	= 9, 11	Contrib. drain. area	= 5.180 ac



Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

#### Wednesday, 05 / 14 / 2025

### Hyd. No. 14

Hydrograph type Storm frequency Time interval Inflow hyd, No	<ul> <li>Reservoir</li> <li>10 yrs</li> <li>6 min</li> <li>12 - Combined to Future Cross</li> </ul>	Peak discharge Time to peak Hyd. volume stithms Elevation	<ul> <li>9.327 cfs</li> <li>732 min</li> <li>33,525 cuft</li> <li>129 29 ft</li> </ul>
Inflow hyd. No.	<ul><li>= 12 - Combined to Future Cros</li><li>= WQB1</li></ul>	slinhagx. Elevation	= 129.29 ft
Reservoir name		Max. Storage	= 5,576 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



## **Pond Report**

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

#### Pond No. 2 - WQB1

#### Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 127.50 ft

#### Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)	
0.00	127.50	00	0	0	
0.50	128.00	3,120	520	520	
1.50	129.00	4,460	3,770	4,290	
2.50	130.00	5,000	4,727	9,017	

#### **Culvert / Orifice Structures**

#### Weir Structures

	[A]	[B]	[C]	[PrfRsr]		[A]	[B]	[C]	[D]
Rise (in)	= 0.00	0.00	0.00	0.00	Crest Len (ft)	= 25.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00	Crest El. (ft)	= 129.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0	Weir Coeff.	= 2.60	3.33	3.33	3.33
Invert El. (ft)	= 0.00	0.00	0.00	0.00	Weir Type	= Broad			
Length (ft)	= 0.00	0.00	0.00	0.00	Multi-Stage	= No	No	No	No
Slope (%)	= 0.00	0.00	0.00	n/a					
N-Value	= .013	.013	.013	n/a					
Orifice Coeff.	= 0.60	0.60	0.60	0.60	Exfil.(in/hr)	= 1.000 (by	Contour)		
Multi-Stage	= n/a	No	No	No	TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s). Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	127.50					0.00				0.000		0.000
0.05	52	127.55					0.00				0.007		0.007
0.10	104	127.60					0.00				0.014		0.014
0.15	156	127.65					0.00				0.022		0.022
0.20	208	127.70					0.00				0.029		0.029
0.25	260	127.75					0.00				0.036		0.036
0.30	312	127.80					0.00				0.043		0.043
0.35	364	127.85					0.00				0.051		0.051
0.40	416	127.90					0.00				0.058		0.058
0.45	468	127.95					0.00				0.065		0.065
0.50	520	128.00					0.00				0.072		0.072
0.60	897	128.10					0.00				0.075		0.075
0.70	1,274	128.20					0.00				0.078		0.078
0.80	1,651	128.30					0.00				0.082		0.082
0.90	2,028	128.40					0.00				0.085		0.085
1.00	2,405	128.50					0.00				0.088		0.088
1.10	2,782	128.60					0.00				0.091		0.091
1.20	3,159	128.70					0.00				0.094		0.094
1.30	3,536	128.80					0.00				0.097		0.097
1.40	3,913	128.90					0.00				0.100		0.100
1.50	4,290	129.00					0.00				0.103		0.103
1.60	4,762	129.10					2.06				0.104		2.160
1.70	5,235	129.20					5.81				0.106		5.920
1.80	5,708	129.30					10.68				0.107		10.79
1.90	6,180	129.40					16.45				0.108		16.55
2.00	6,653	129.50					22.98				0.109		23.09
2.10	7,126	129.60					30.21				0.111		30.32
2.20	7,599	129.70					38.07				0.112		38.18
2.30	8,071	129.80					46.51				0.113		46.63
2.40	8,544	129.90					55.50				0.114		55.62
2.50	9,017	130.00					65.00				0.116		65.12

## **Hydraflow Rainfall Report**

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020

Return	Intensity-Duration-Frequency Equation Coefficients (FHA)								
(Yrs)	В	D	E	(N/A)					
1	18.1733	3.5000	0.7010						
2	22.7904	3.9000	0.7142						
3	0.0000	0.0000	0.0000						
5	26.8118	3.1000	0.7005						
10	32.8535	3.8000	0.7098						
25	38.4672	3.6000	0.7049						
50	43.8334	3.7000	0.7074						
100	48.6510	3.7000	0.7060						

File name: Brooklyn 2024.IDF

#### Intensity = B / (Tc + D)^E

Return		Intensity Values (in/hr)											
(Yrs)	5 min	10	15	20	25	30	35	40	45	50	55	60	
1	4.05	2.93	2.35	1.99	1.74	1.55	1.41	1.29	1.20	1.12	1.05	0.99	
2	4.78	3.48	2.79	2.36	2.06	1.84	1.67	1.53	1.42	1.32	1.24	1.17	
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
5	6.19	4.42	3.53	2.97	2.59	2.31	2.09	1.92	1.78	1.66	1.56	1.47	
10	7.02	5.10	4.09	3.46	3.02	2.70	2.45	2.25	2.08	1.94	1.82	1.72	
25	8.44	6.11	4.90	4.14	3.62	3.23	2.93	2.69	2.49	2.32	2.18	2.06	
50	9.49	6.88	5.52	4.67	4.08	3.64	3.30	3.03	2.81	2.62	2.46	2.32	
100	10.56	7.67	6.15	5.21	4.55	4.06	3.68	3.38	3.13	2.92	2.74	2.59	

Tc = time in minutes. Values may exceed 60.

Ρ	recip.	file name: M:\7	000\7300\7386 Reyno	olds St. Improvements\St	udies-Calculations\Danielson	storms.pcp

	Rainfall Precipitation Table (in)									
Storm Distribution	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr		
SCS 24-hour	2.89	3.45	0.00	4.37	5.14	6.19	6.98	7.82		
SCS 6-Hr	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
Custom	2.89	3.45	0.00	4.37	5.14	6.19	6.98	7.82		

## **Culvert Report**

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc.

Wednesday, May 14 2025

### 2+30 Crossing

Invert Elev Dn (ft)	= 130.50	Calculations	
Pipe Length (ft)	= 35.00	Qmin (cfs)	= 1.43
Slope (%)	= 2.86	Qmax (cfs)	= 1.43
Invert Elev Up (ft)	= 131.50	Tailwater Elev (ft)	= (dc+D)/2
Rise (in)	= 15.0		. ,
Shape	= Circular	Highlighted	
Span (in)	= 15.0	Qtotal (cfs)	= 1.43
No. Barrels	= 1	Qpipe (cfs)	= 1.43
n-Value	= 0.012	Qovertop (cfs)	= 0.00
Culvert Type	= Circular Concrete	Veloc Dn (ft/s)	= 1.59
Culvert Entrance	= Square edge w/headwall (C)	Veloc Up (ft/s)	= 3.36
Coeff. K,M,c,Y,k	= 0.0098, 2, 0.0398, 0.67, 0.5	HGL Dn (ft)	= 131.36
		HGL Up (ft)	= 131.97
Embankment		Hw Elev (ft)	= 132.14
Top Elevation (ft)	= 134.00	Hw/D (ft)	= 0.52
Top Width (ft)	= 24.00	Flow Regime	= Inlet Cont

Тор Top Width (ft) Crest Width (ft)

=	134.00	
=	24.00	
_	10 00	

= 40.00

= Inlet Control

