STORM WATER MANAGEMENT ANALYSIS

for

50 Kettle Creek Road
Weston, Connecticut

March 8, 2023

Prepared for:
Tom Kelley

Prepared by:

ENGINEERING

15 Research Drive
Woodbridge, Connecticut 06525
Phone: (203) 881-8145
www.bbengrs.com

Bryan P. Nesteriak, PE, LS 23556

Job #1097

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1.0 PROJECT DESCRIPTION

The proposed project includes the construction of a dwelling, driveway, pool, and porch located at 50 Kettle Creek Road in Weston, Connecticut. The existing dwelling will be demolished. The storm water runoff from the proposed dwelling, pool and a portion of the driveway will be collected, detained, and treated on-site with the use of an underground detention system.

2.0 SOIL ANALYSIS

The subject parcel was researched and tested for storm water infiltration suitability. According to the Soil Survey of Fairfield County the parcel is underlain with Paxton and Montauk fine sandy loams (84B), hydrologic soil group "C". The soils were confirmed with excavated test pits. The results of the on-site testing are located on the Site Development Plan.

3.0 METHODOLOGY & ANALYSIS

Watershed

This study was prepared using the Soil Conservation Service (SCS) methodology. This method outlines procedures for calculating peak rates of runoff resulting from precipitation events and procedures for developing runoff hydrographs. The calculations use the unit hydrograph method as described by Technical Release 55 (TR-55). The rates of runoff for the pre-development and post-development conditions were compared to determine any change as a result of the improvements.

Composite values for area, curve number (CN) and time of concentration (Tc) were calculated for each the pre-development and post-development condition. The curve numbers were calculated using the following values:

Cover Description	Hyd. Condition	CN
Lawn Area: grassland	Fair "C"	76
Impervious: dwelling driveway, porch etc.	-	98

The value calculated for the pre-development condition was as follows:

Description	Area	CN	Tc
Pre-Development	**2.05 acres**	**77**	**21.9 min.**
[Existing Lawn: grassland	1.96 acres	76]	
[Impervious: house, driveway, etc.	0.09 acres	98]	

The post-development condition was modeled as two sub-watersheds, one which will be detained, and the other that will flow overland off-site. Pond 1 Inflow, the detained sub-watershed, consists of runoff from the proposed driveway and lawn area. It will be collected and treated by the underground concrete galleys. Pond 2 Inflow, the detained sub-watershed, consists of runoff from the proposed dwelling. It will be collected and treated by the underground concrete galleys. Undetained Area consists of runoff from the patio, a portion of the driveway, and vegetated land that will be allowed to flow offsite naturally as it does today. Values used for the post-development condition were as follows:

Description	Area	CN	Tc
Undetained Area	**1.76 acres**	**76**	**17.8 min.**
[Proposed Lawn: grassland	1.74 acres	76]	
[Impervious: driveway, porch, etc.	0.02 acres	98]	
Pond 1 Inflow	**0.19 acres**	**91**	**6.0 min.**
[Proposed Lawn: grassland	0.09 acres	76]	
[Impervious: driveway, etc.	0.10 acres	98]	
Pond 2 Inflow	**0.08 acres**	**98**	**6.0 min.**
[Impervious: dwelling, etc.	0.08 acres	98]	

The design storm used for this study is the 24-hour SCS Type III cumulative rainfall distribution. Precipitation frequency estimates for the site were taken from NOAA Atlas 14, Volume 10 and are included in this report under appendix B. All the watersheds were analyzed by the computer program *Hydraflow Hydrographs Extension for AutoCAD Civil 3D 2019*; the results of which are located in Appendix B. For convenience and to conserve resources, the drainage calculations included in the appendices of this report were limited to the 50-year storm event.

Detention System

Runoff from the driveway will be collected by the trench drain and will be directed into the underground detention system. Runoff from the roof will be collected and directed to the underground detention system. Due to the size of the system, it is not expected that excess stormwater will overflow the underground detention system up to the 50-year storm event. The system has been designed to contain and infiltrate the 50-year runoff volume and keep the proposed development's runoff flow rates below that of the calculated pre-development rates.

The proposed detention system was routed with the use of the computer program *Hydraflow Hydrographs Extension for AutoCAD Civil 3D 2019*; the results of which are located in Appendix B. Infiltration rates were used as part of the design; however, the values used were half the measured rates for a factor of safety.

Results

The calculated storm water peak flows are as follows:

CONDITIONFLOW	2-YEAR FLOW	10-YEAR FLOW	25-YEAR FLOW	25-YEAR FLOW
PREDEVELOPMENT	2.128 CFS	4.108 CFS	5.825 CFS	7.038 CFS
Undetained Area	1.953 CFS	3.846 CFS	5.498 CFS	6.668 CFS
Pond 1 Inflow	0.437 CFS	0.711 CFS	0.932 CFS	1.085 CFS
Pond 1 Route	0.000 CFS	0.000 CFS	0.000 CFS	0.000 CFS
Pond 2 Inflow	0.236 CFS	0.346 CFS	0.435 CFS	0.496 CFS
Pond 2 Route	0.000 CFS	0.000 CFS	0.000 CFS	0.000 CFS
Pool Inflow	0.059 CFS	0.086 CFS	0.109 CFS	0.124 CFS
Pool Route	0.000 CFS	0.010 CFS	0.073 CFS	0.140 CFS
FINAL COMBINED	1.953 CFS	3.846 CFS	5.498 CFS	6.737 CFS

In order to accurately analyze the post-development condition, the Pre-Development hydrograph is compared to a combined hydrograph consisting of the undetained area hydrograph and the final combined hydrographs that result from detention pond outflows.

CONDITION	2-YEAR FLOW	10-YEAR FLOW	25-YEAR FLOW	25-YEAR FLOW
PREDEVELOPMENT	2.128 CFS	4.108 CFS	5.825 CFS	7.038 CFS
FINAL COMBINED	1.953 CFS	3.846 CFS	5.498 CFS	6.737 CFS
PROPOSED CHANGE	-0.175 CFS	-0.262 CFS	-0.327 CFS	-0.301 CFS

The proposed change shows that the storm water flow rates are expected to be reduced as a result of the development and proposed system.

4.0 STORM WATER QUALITY ANALYSIS

The majority of storm water introduced to the system will be roof runoff where the observance of any oils, grease or particulates is remote. Since the driveway is small and its use is primarily limited to residential vehicles, the anticipated levels of sediment and oils should be negligible

The system was planned in accordance with design considerations found in the 2004 Connecticut Stormwater Quality Manual. As stated in the manual they should be enabled to infiltrate the full Water Quality Volume (WQV). The underground detention system (Pond 1) was designed to handle 358.2% of the WQV of the entire site. The underground detention system (Pond 2) was designed to handle 173.5% of the WQV of the entire site. Calculations for the system are located in Appendix B.

The homeowner will be responsible for the implementation of an annual maintenance program which should include driveway sweeping, gutter and trench drain cleaning and pipe maintenance. Proper fertilizer and pesticide management and household pet waste management should be observed.

5.0 CONCLUSION

The proposed storm water collection system has been designed to adequately convey the required storm event without any adverse impacts or increase in overall storm water flow and while maintaining adequate water quality.

6.0 REFERENCES

1. *Urban Hydrology for Small Watersheds*, Technical Release No. 55, USDA Soil Conservation Service Publication, June 1986.

2. Rainfall Frequency Values for Connecticut with 24-Hour Storm Duration, United States Department of Commerce and Weather Bureau, T.P. 40, May 1961.

3. *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*, The Connecticut Council on Soil and Water Conservation.

4. Debo, Thomas N. and Reese, Andrew J., *Municipal Stormwater Management*, Second Edition, Boca Raton, Lewis Publishers, 2003

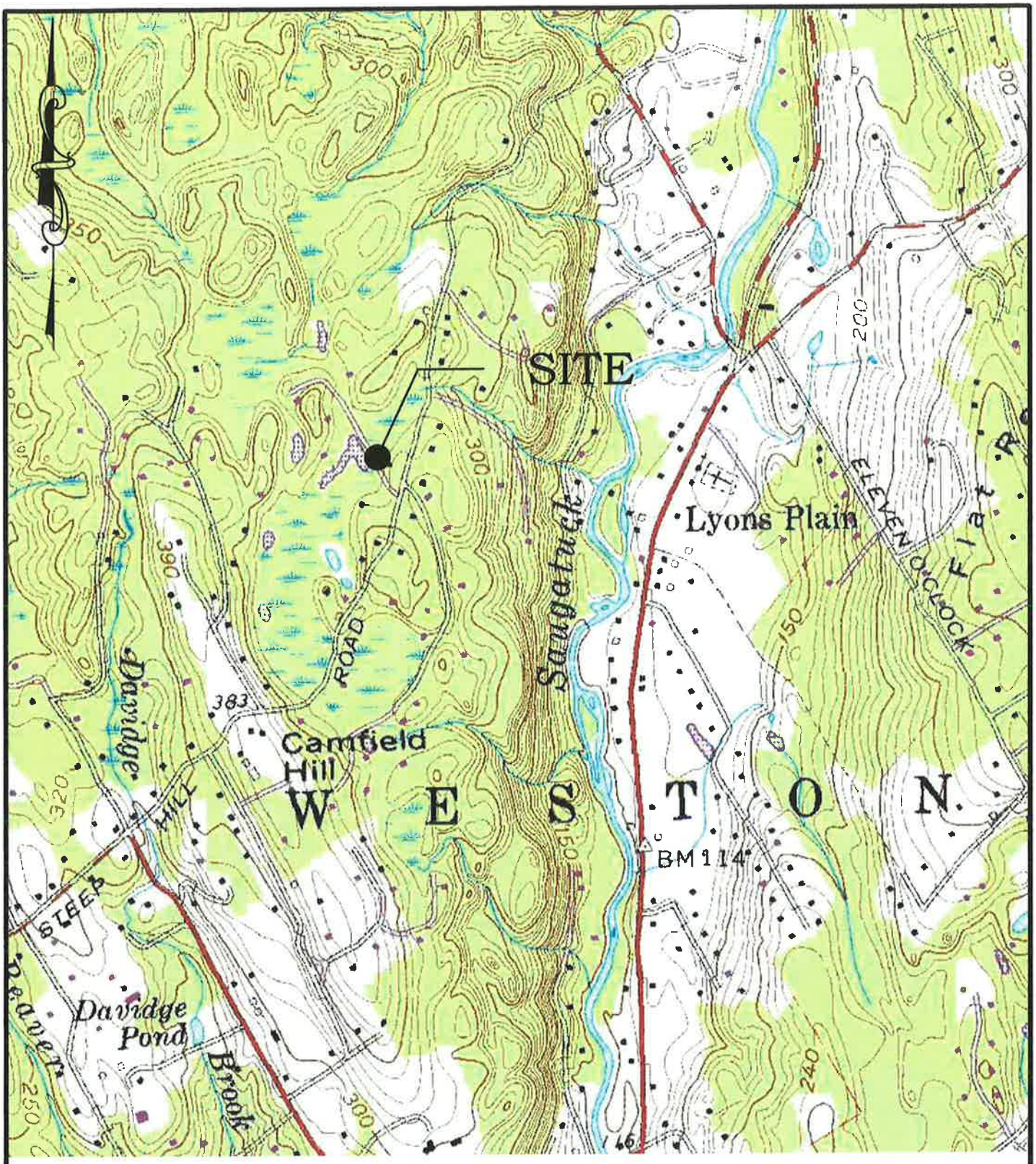
5. *2004 Connecticut Stormwater Quality Manual*, Connecticut Department of Environmental Protection.

6. *Web Soil Survey*. 8/1/2006. National Resources Conservation Service <http://websoilsurvey.nrcs.usda.gov/app/>

APPENDIX A
Figures

CONTENTS:

- USGS Location Map
- Pre-Development Watershed Area Map
- Post-Development Watershed Area Map



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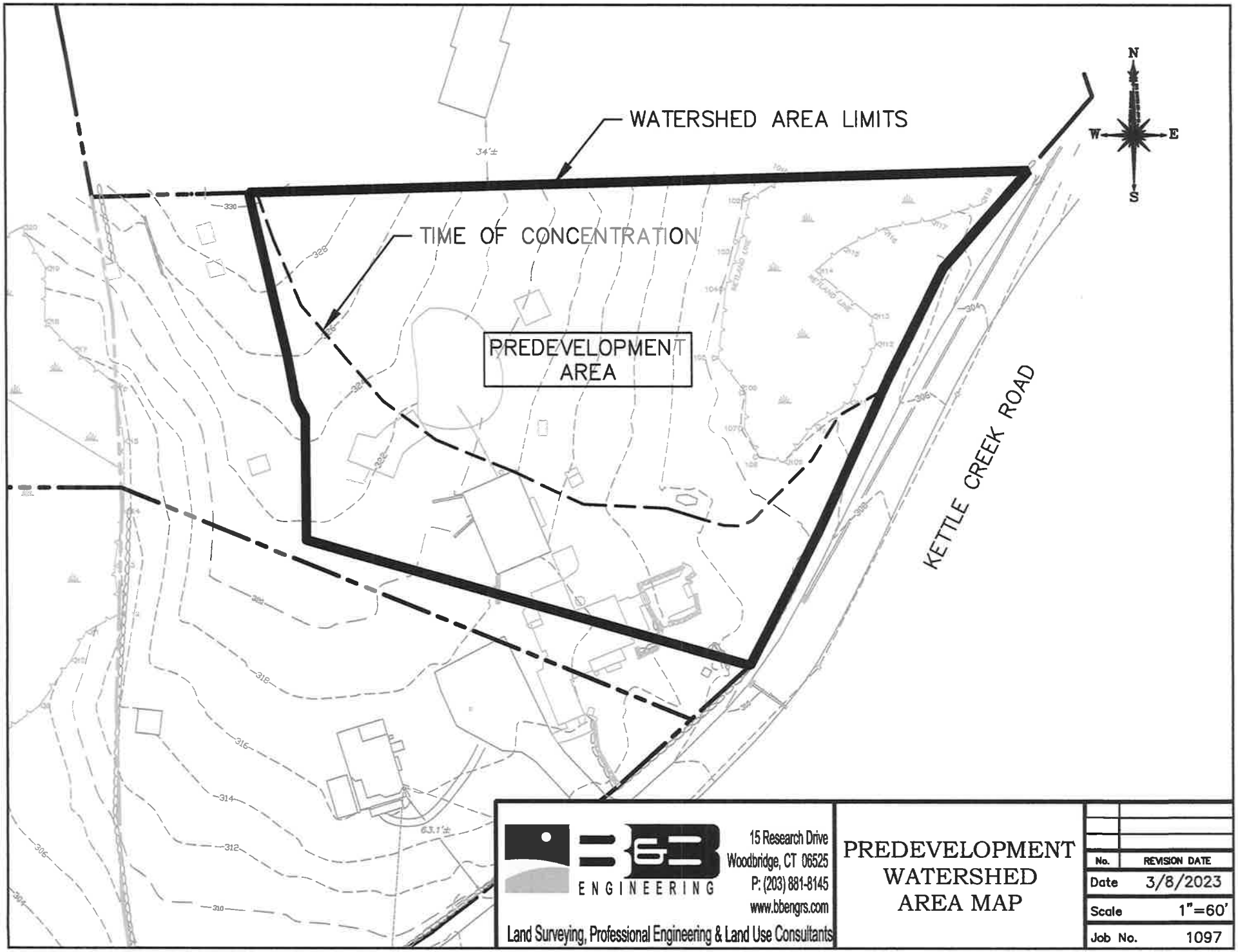
Drawing Title

USGS LOCATION MAP

OF

50 KETTLE CREEK ROAD
WESTON, CT

No.	REVISION DATE
Date	3/8/2023
Scale	1"=1000'
Job No.	1097



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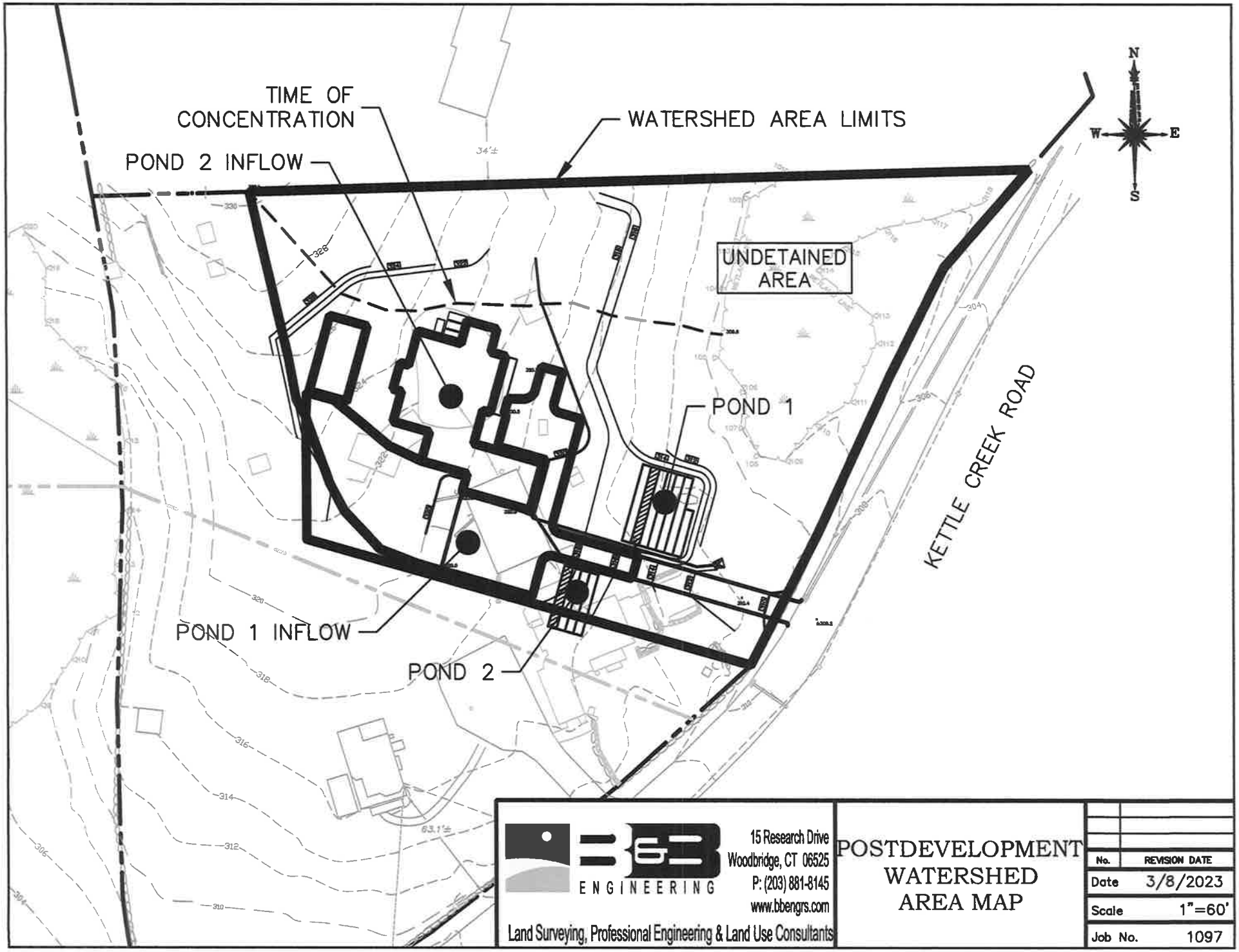
PREDEVELOPMENT WATERSHED AREA MAP

No.	REVISION DATE
Date	3/8/2023
Scale	1"=60'
Job No.	1097



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POSTDEVELOPMENT WATERSHED AREA MAP

No.	REVISION DATE
Date	3/8/2023
Scale	1"=60'
Job No.	1097

APPENDIX B

Hydrograph Data & Calculations

CONTENTS:

- Hydrograph Return Period Recap
- Graphical Hydrograph Reports
- Pond Report
- Storm Water Quality Calculations

Hydrograph Return Period Recap

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

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	-----	-----	2.128	-----	-----	4.108	5.825	7.038	-----	PREDEVELOPMENT
3	SCS Runoff	-----	-----	1.953	-----	-----	3.846	5.498	6.668	-----	Undetained
5	SCS Runoff	-----	-----	0.437	-----	-----	0.711	0.932	1.085	-----	Pond 1 Inflow
6	Reservoir	5	-----	0.000	-----	-----	0.000	0.000	0.000	-----	Pond 1 Route
8	SCS Runoff	-----	-----	0.236	-----	-----	0.346	0.435	0.496	-----	Pond 2 Inflow
9	Reservoir	8	-----	0.000	-----	-----	0.000	0.000	0.000	-----	Pond 2 Route
11	SCS Runoff	-----	-----	0.059	-----	-----	0.086	0.109	0.124	-----	Pool Inflow
12	Reservoir	11	-----	0.000	-----	-----	0.010	0.073	0.140	-----	Pool Route
14	Combine	3, 6, 9, 12,	-----	1.953	-----	-----	3.846	5.498	6.737	-----	FINAL COMBINED

Hydrograph Summary Report

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

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	7.038	3	735	33,639	-----	-----	-----	PREDEVELOPMENT
3	SCS Runoff	6.668	3	732	29,815	-----	-----	-----	Undetained
5	SCS Runoff	1.085	3	726	3,805	-----	-----	-----	Pond 1 Inflow
6	Reservoir	0.000	3	543	0	5	315.27	1,452	Pond 1 Route
8	SCS Runoff	0.496	3	726	1,922	-----	-----	-----	Pond 2 Inflow
9	Reservoir	0.000	3	n/a	0	8	315.19	674	Pond 2 Route
11	SCS Runoff	0.124	3	726	481	-----	-----	-----	Pool Inflow
12	Reservoir	0.140	3	729	241	11	323.98	244	Pool Route
14	Combine	6.737	3	732	30,056	3, 6, 9, 12,	-----	-----	FINAL COMBINED

Hydrograph Report

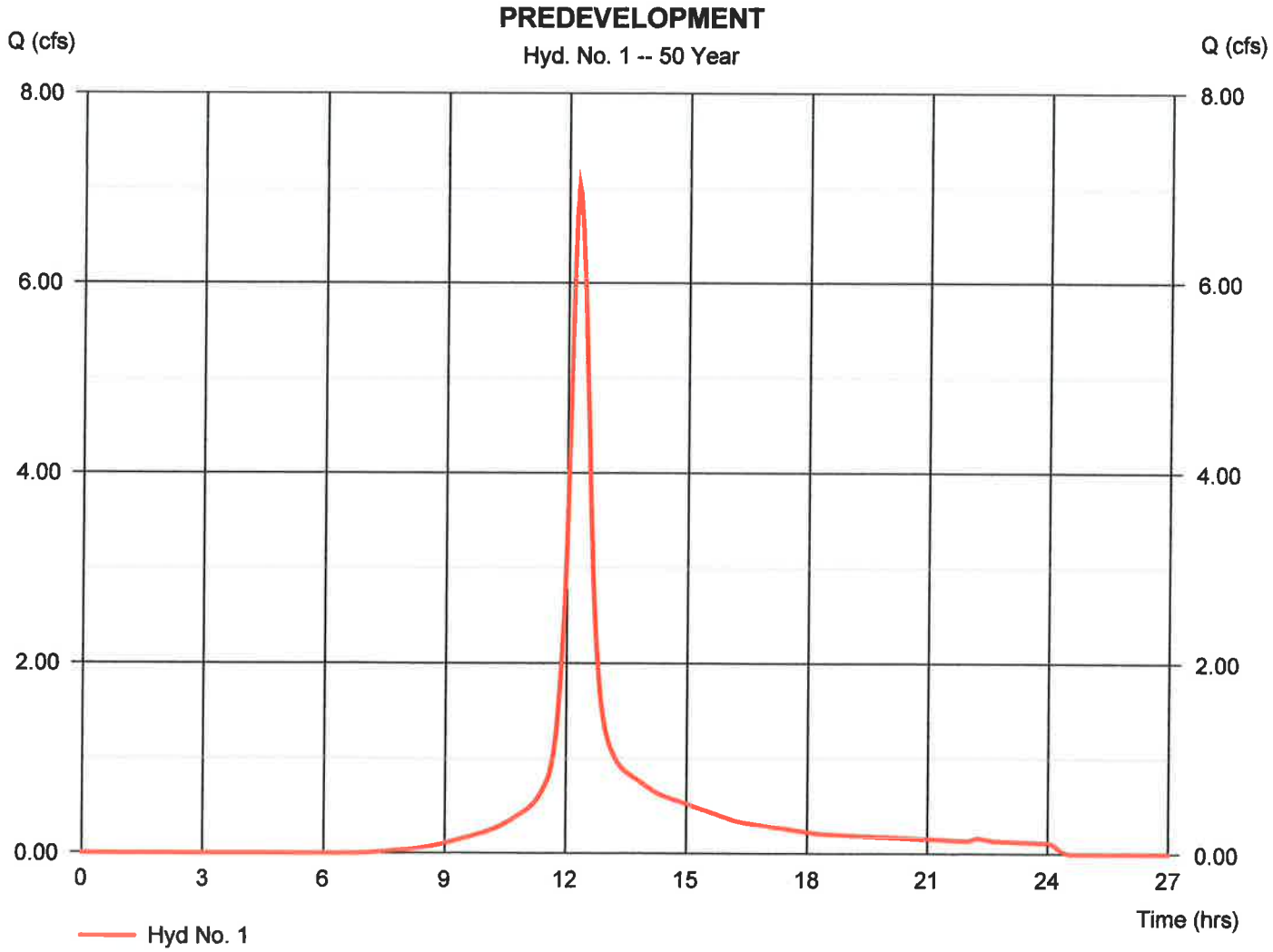
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Wednesday, 03 / 8 / 2023

Hyd. No. 1

PREDEVELOPMENT

Hydrograph type	= SCS Runoff	Peak discharge	= 7.038 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.25 hrs
Time interval	= 3 min	Hyd. volume	= 33,639 cuft
Drainage area	= 2.050 ac	Curve number	= 77*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 21.90 min
Total precip.	= 7.30 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.960 x 76) + (0.090 x 98)] / 2.050



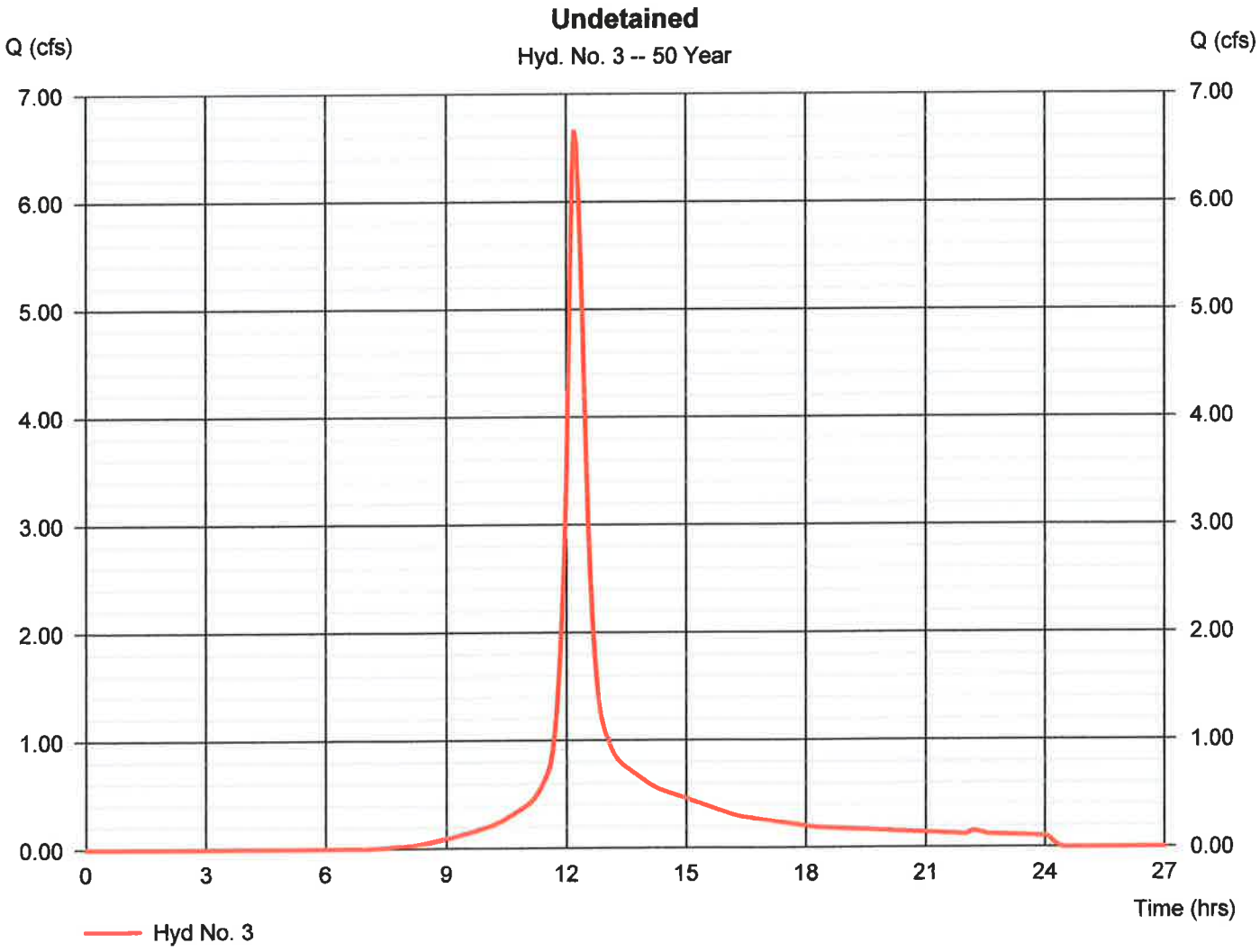
Hydrograph Report

Hyd. No. 3

Undetained

Hydrograph type	= SCS Runoff	Peak discharge	= 6.668 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.20 hrs
Time interval	= 3 min	Hyd. volume	= 29,815 cuft
Drainage area	= 1.760 ac	Curve number	= 76*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= TR55	Time of conc. (Tc)	= 17.80 min
Total precip.	= 7.30 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.740 x 76) + (0.020 x 98)] / 1.760



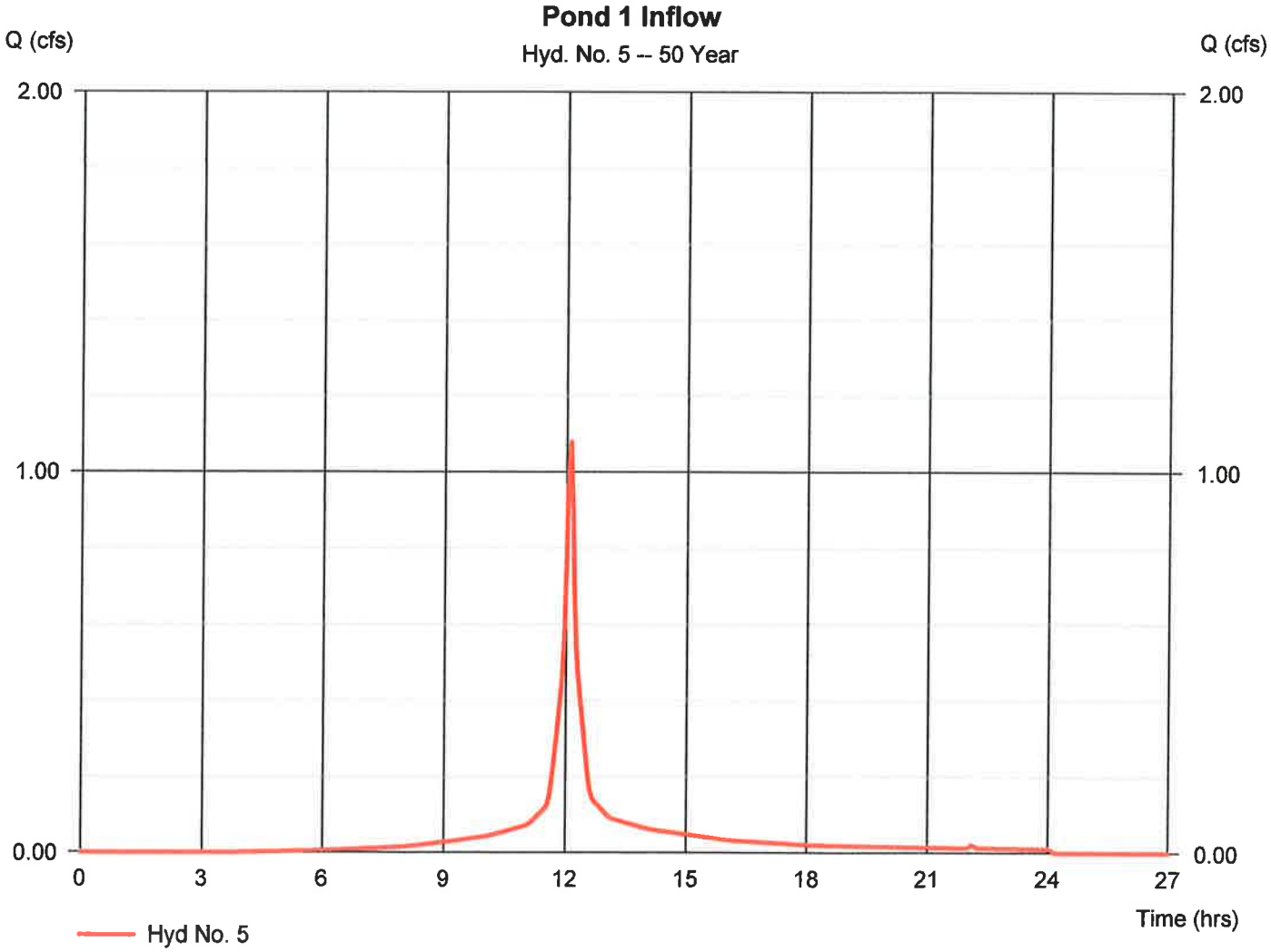
Hydrograph Report

Hyd. No. 5

Pond 1 Inflow

Hydrograph type	= SCS Runoff	Peak discharge	= 1.085 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 3,805 cuft
Drainage area	= 0.190 ac	Curve number	= 88*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.30 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.090 x 76) + (0.100 x 98)] / 0.190



Hydrograph Report

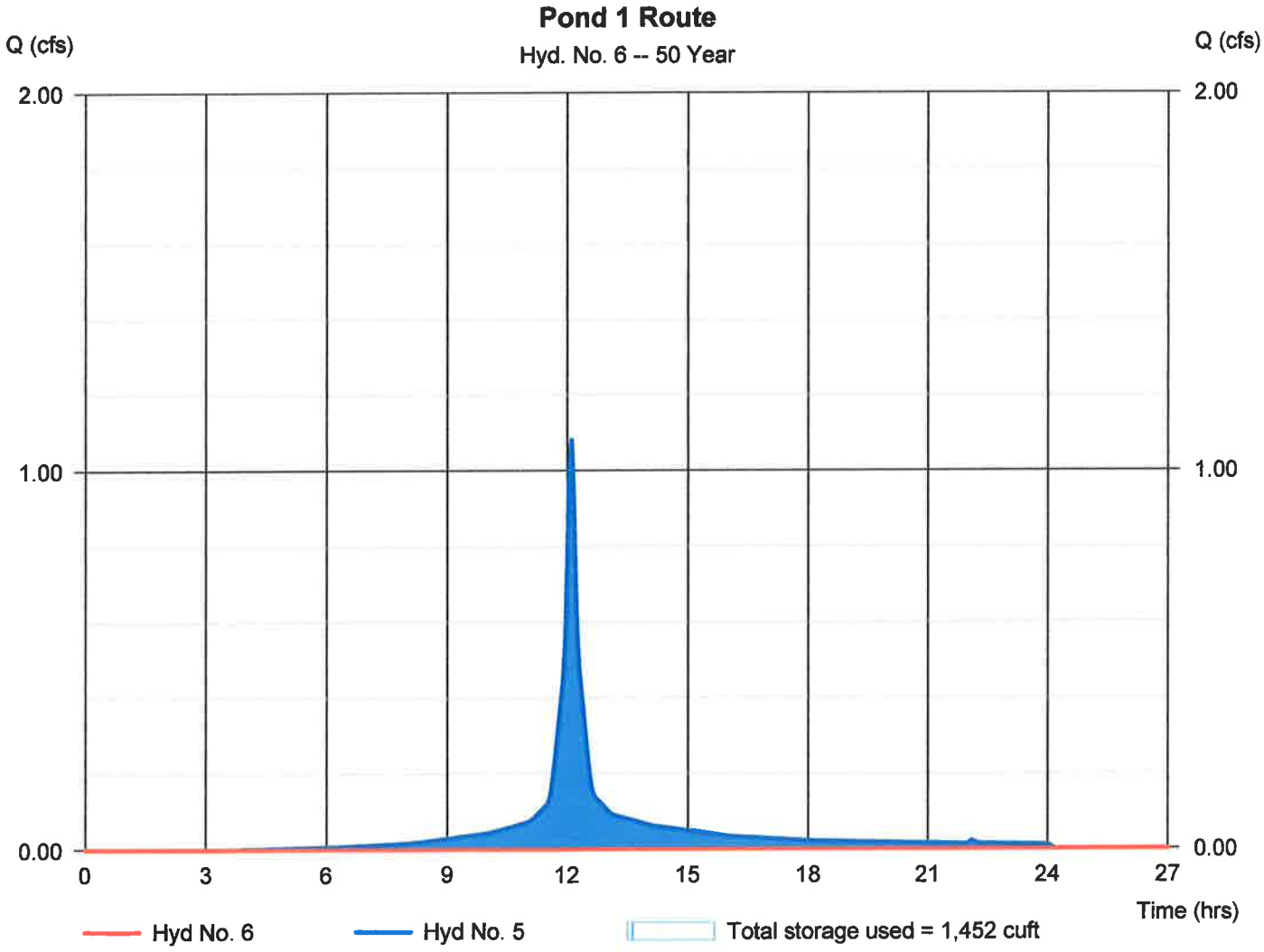
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 — Wednesday, 03 / 8 / 2023

Hyd. No. 6

Pond 1 Route

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 50 yrs	Time to peak	= 9.05 hrs
Time interval	= 3 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 5 - Pond 1 Inflow	Max. Elevation	= 315.27 ft
Reservoir name	= Pond 1	Max. Storage	= 1,452 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 1 - Pond 1

Pond Data

UG Chambers -Invert elev. = 313.80 ft, Rise x Span = 1.50 x 2.83 ft, Barrel Len = 264.00 ft, No. Barrels = 1, Slope = 0.00%, Headers = No
Encasement -Invert elev. = 313.30 ft, Width = 3.83 ft, Height = 2.00 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	313.30	n/a	0	0
0.20	313.50	n/a	81	81
0.40	313.70	n/a	81	162
0.60	313.90	n/a	126	288
0.80	314.10	n/a	171	458
1.00	314.30	n/a	171	629
1.20	314.50	n/a	171	799
1.40	314.70	n/a	171	970
1.60	314.90	n/a	171	1,140
1.80	315.10	n/a	171	1,311
2.00	315.30	n/a	171	1,482

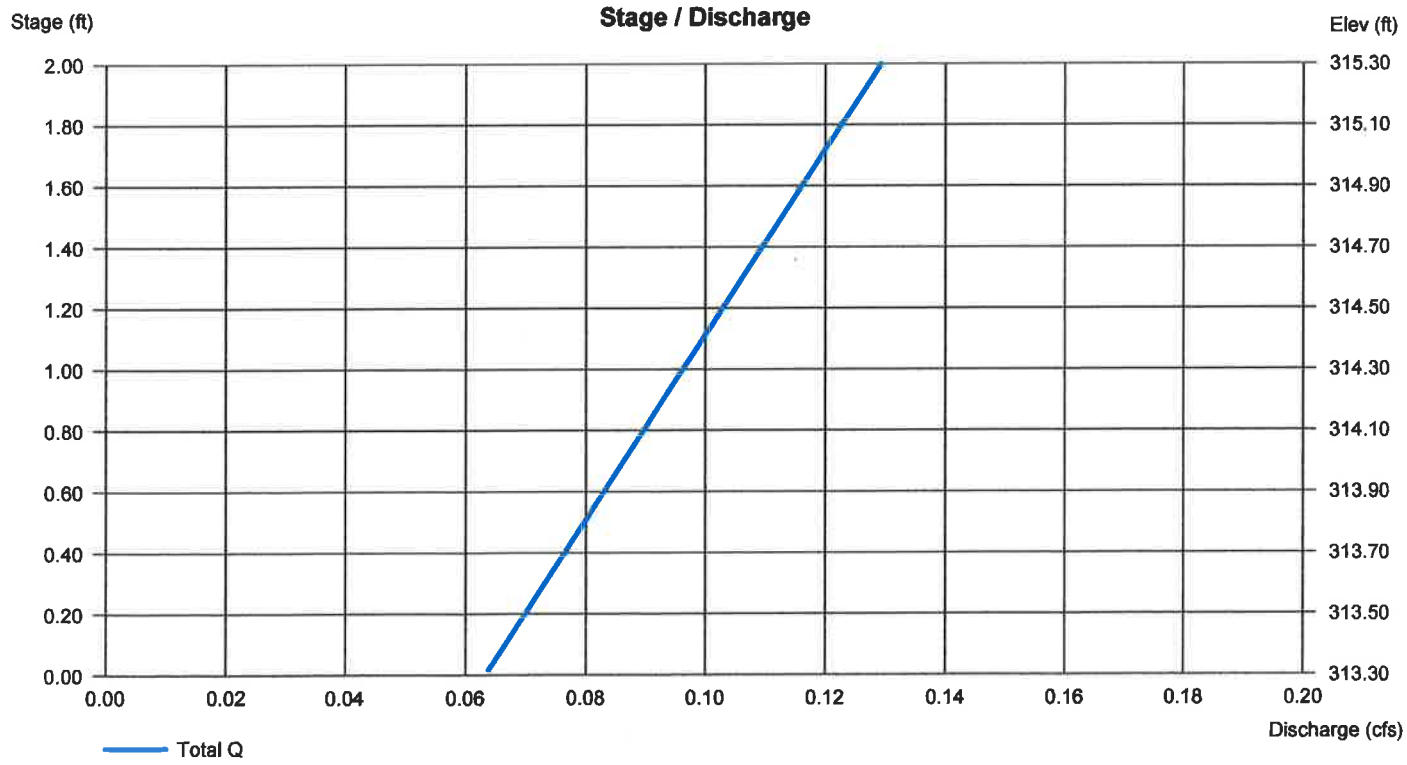
Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
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
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	Inactive	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No
Exfil.(in/hr)	= 2.700 (by Wet area)			
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).

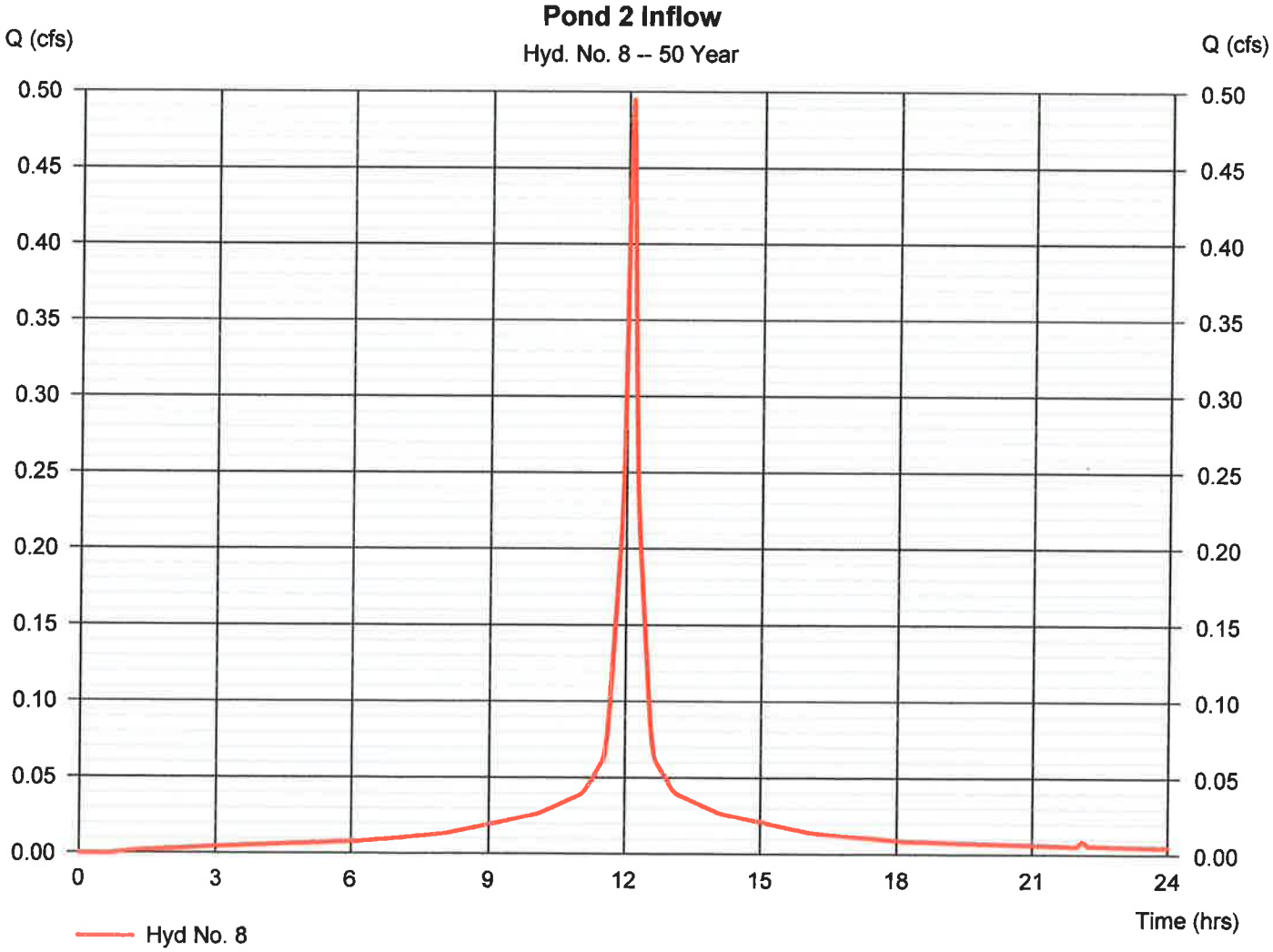


Hydrograph Report

Hyd. No. 8

Pond 2 Inflow

Hydrograph type	= SCS Runoff	Peak discharge	= 0.496 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 1,922 cuft
Drainage area	= 0.080 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.30 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



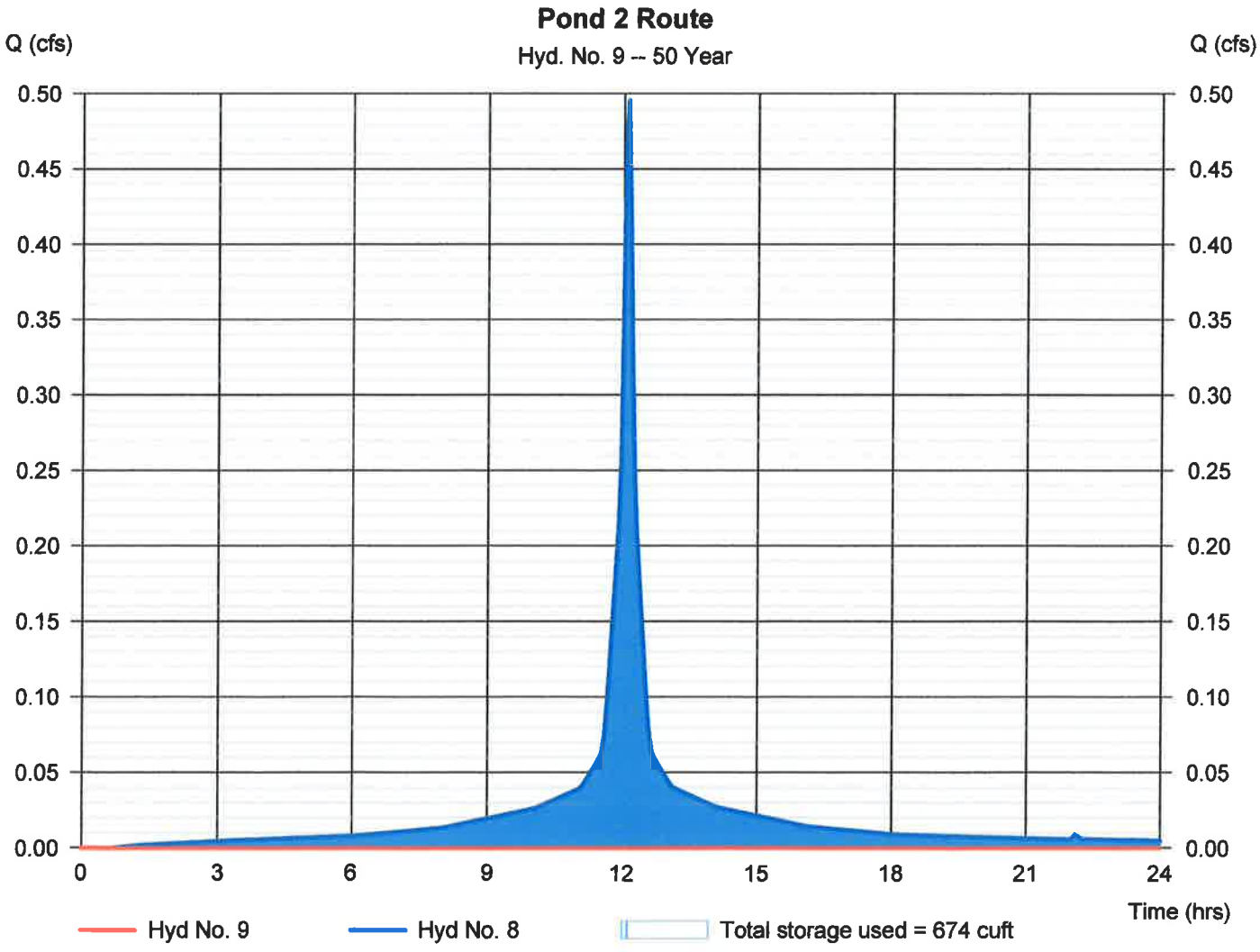
Hydrograph Report

Hyd. No. 9

Pond 2 Route

Hydrograph type	= Reservoir	Peak discharge	= 0.000 cfs
Storm frequency	= 50 yrs	Time to peak	= n/a
Time interval	= 3 min	Hyd. volume	= 0 cuft
Inflow hyd. No.	= 8 - Pond 2 Inflow	Max. Elevation	= 315.19 ft
Reservoir name	= Pond 2	Max. Storage	= 674 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Pond No. 3 - Pond 2

Pond Data

UG Chambers -Invert elev. = 313.80 ft, Rise x Span = 1.50 x 2.83 ft, Barrel Len = 128.00 ft, No. Barrels = 1, Slope = 0.00%, Headers = No
Encasement -Invert elev. = 313.30 ft, Width = 3.83 ft, Height = 2.00 ft, Voids = 40.00%

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	313.30	n/a	0	0
0.20	313.50	n/a	39	39
0.40	313.70	n/a	39	78
0.60	313.90	n/a	61	139
0.80	314.10	n/a	83	222
1.00	314.30	n/a	83	305
1.20	314.50	n/a	83	388
1.40	314.70	n/a	83	470
1.60	314.90	n/a	83	553
1.80	315.10	n/a	83	636
2.00	315.30	n/a	83	718

Culvert / Orifice Structures

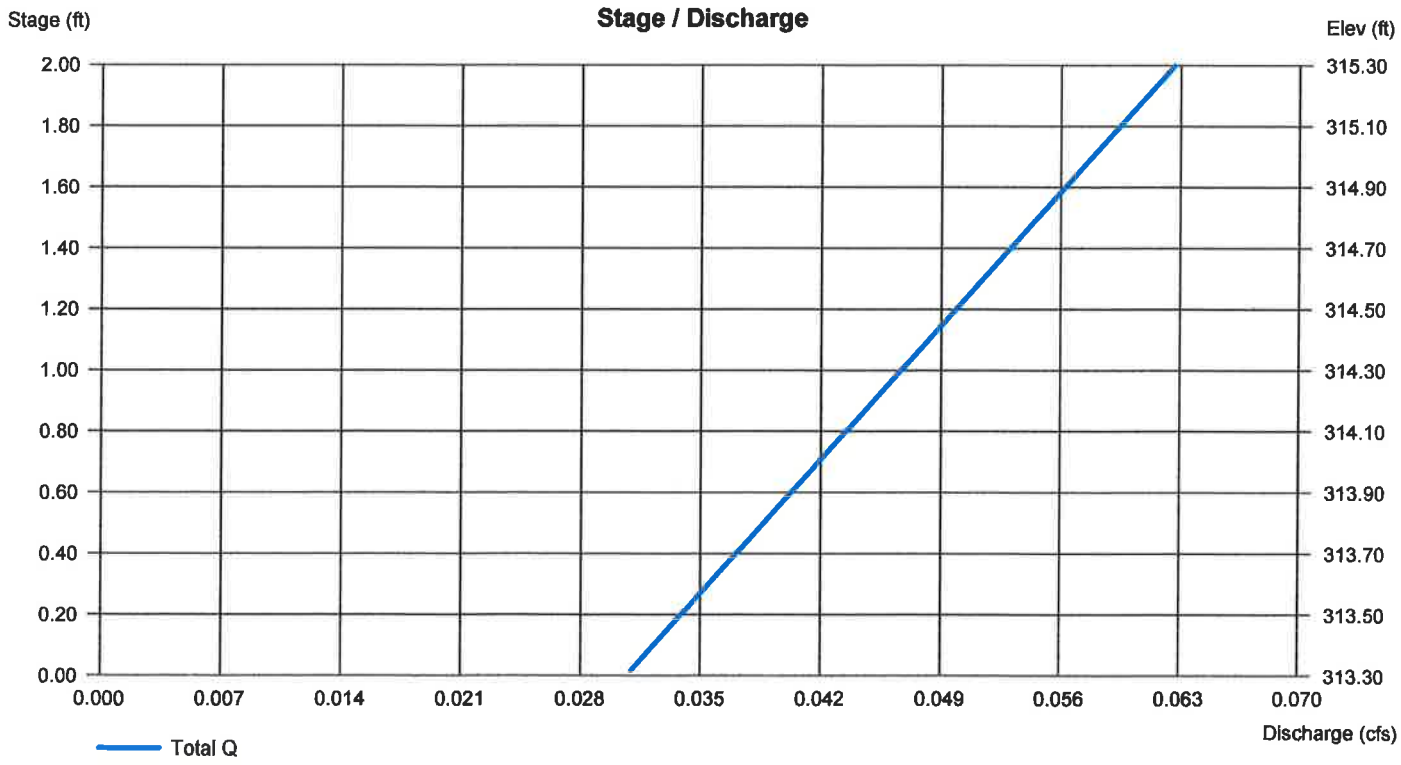
	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	Inactive	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 2.700 (by Wet area)
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).

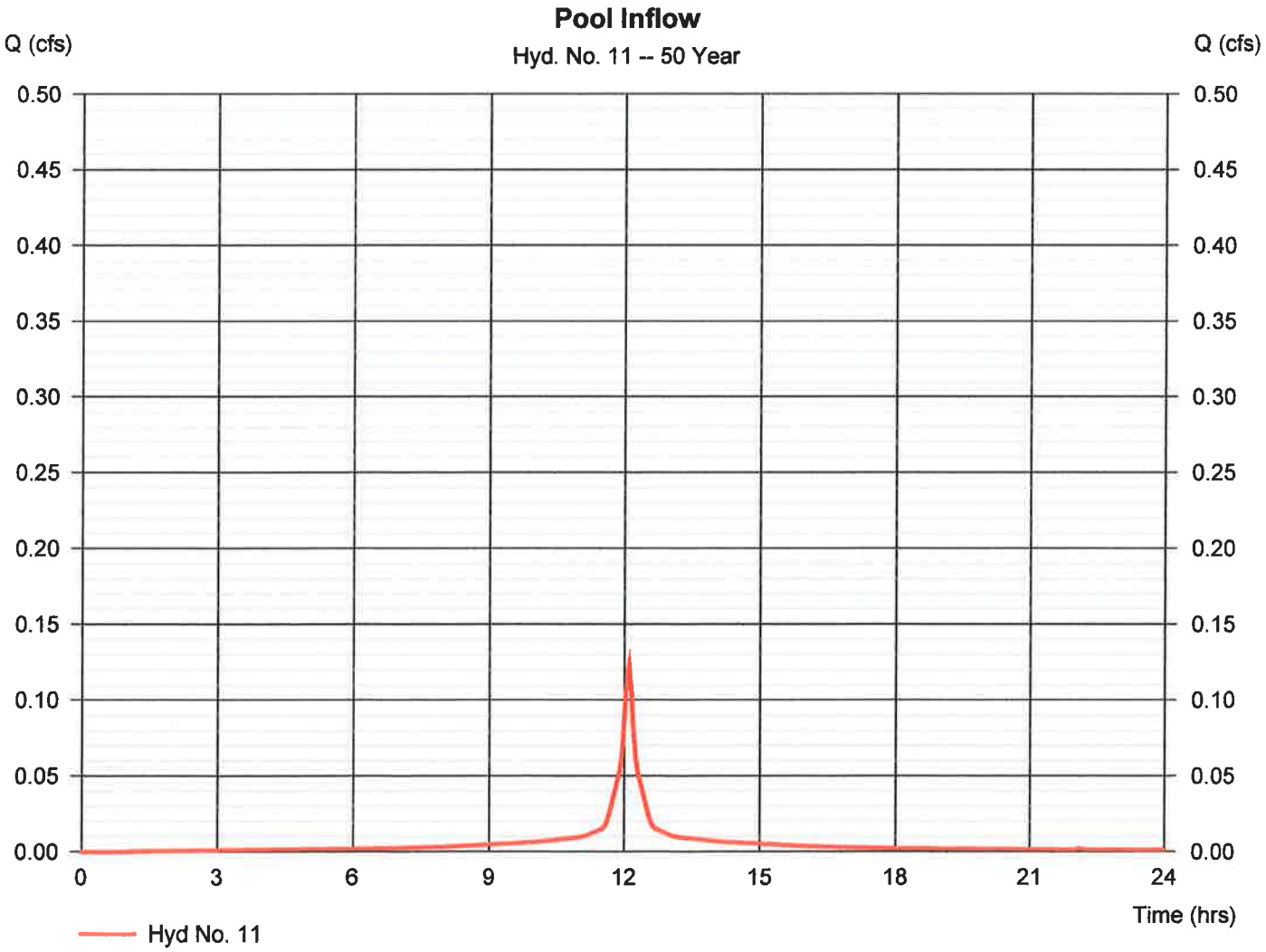


Hydrograph Report

Hyd. No. 11

Pool Inflow

Hydrograph type	= SCS Runoff	Peak discharge	= 0.124 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.10 hrs
Time interval	= 3 min	Hyd. volume	= 481 cuft
Drainage area	= 0.020 ac	Curve number	= 98
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 7.30 in	Distribution	= Type III
Storm duration	= 24 hrs	Shape factor	= 484



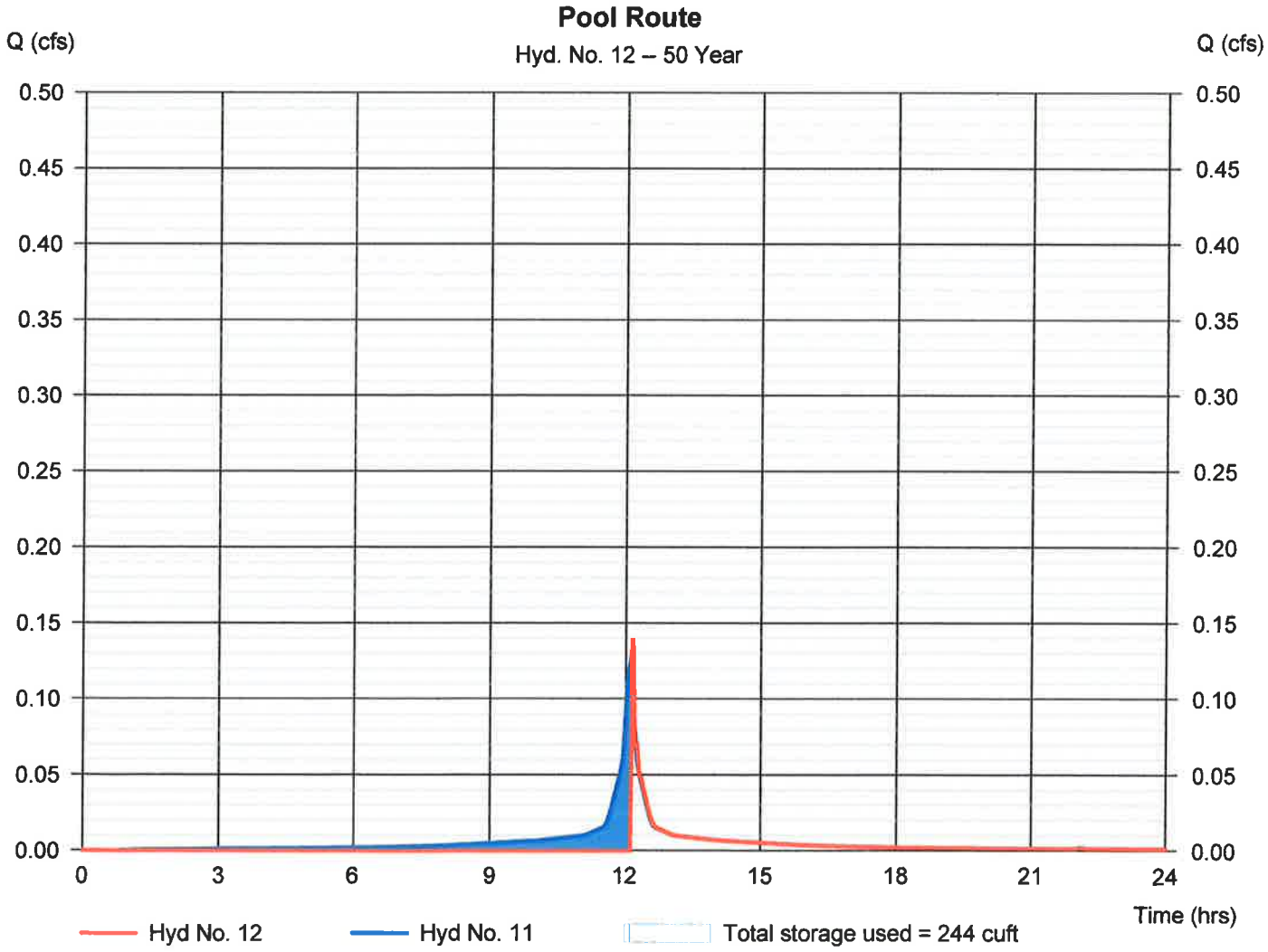
Hydrograph Report

Hyd. No. 12

Pool Route

Hydrograph type	= Reservoir	Peak discharge	= 0.140 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.15 hrs
Time interval	= 3 min	Hyd. volume	= 241 cuft
Inflow hyd. No.	= 11 - Pool Inflow	Max. Elevation	= 323.98 ft
Reservoir name	= Pool	Max. Storage	= 244 cuft

Storage Indication method used.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® 2019 by Autodesk, Inc. v2020 Wednesday, 03 / 8 / 2023

Pond No. 5 - Pool

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 323.67 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	323.67	800	0	0
1.00	324.67	800	800	800

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 0.00	0.00	0.00	0.00
Span (in)	= 0.00	0.00	0.00	0.00
No. Barrels	= 0	0	0	0
Invert El. (ft)	= 0.00	0.00	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
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
Multi-Stage	= n/a	No	No	No

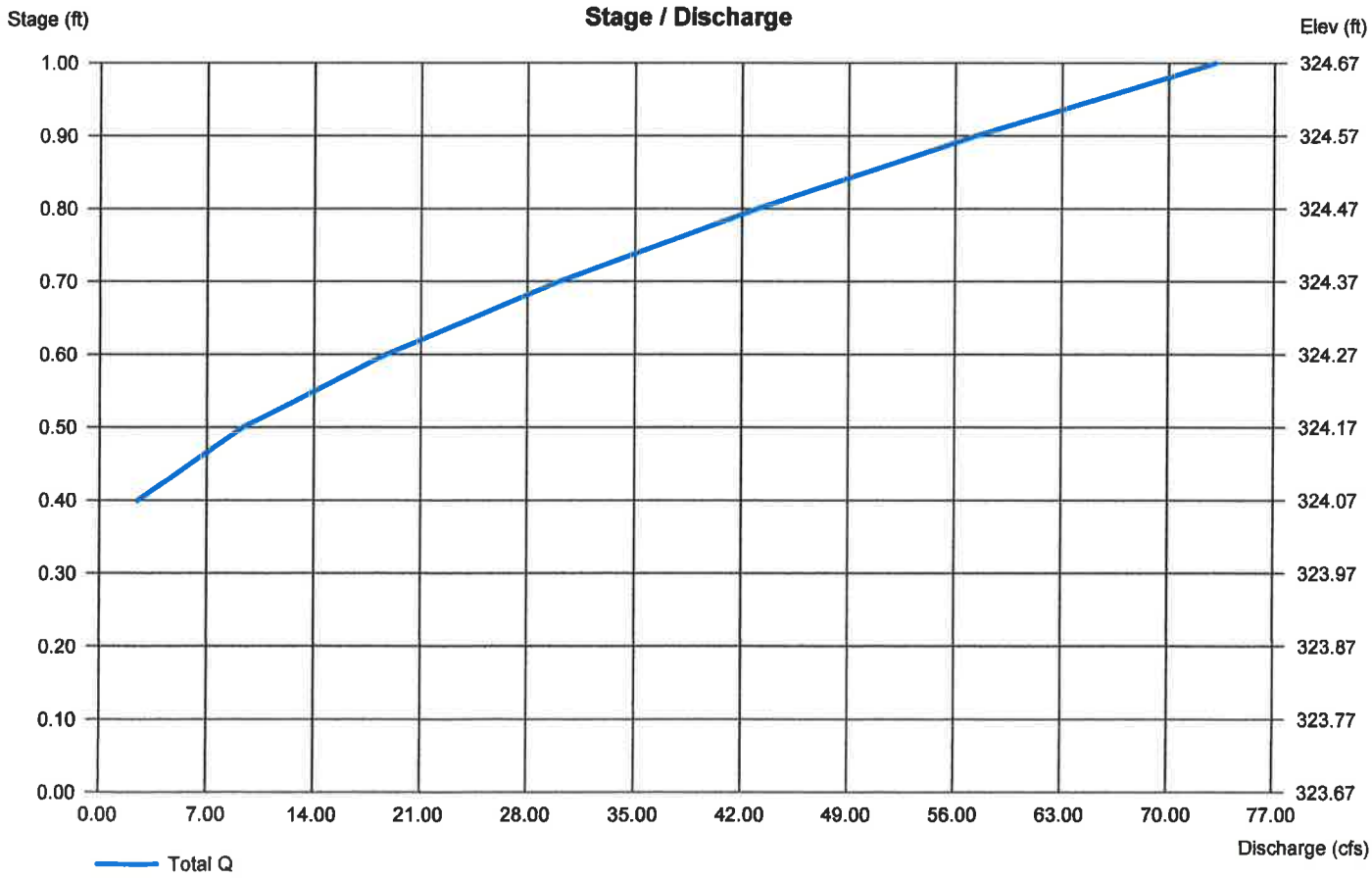
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 40.00	0.00	0.00	0.00
Crest El. (ft)	= 324.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 0.000 (by Contour)

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).

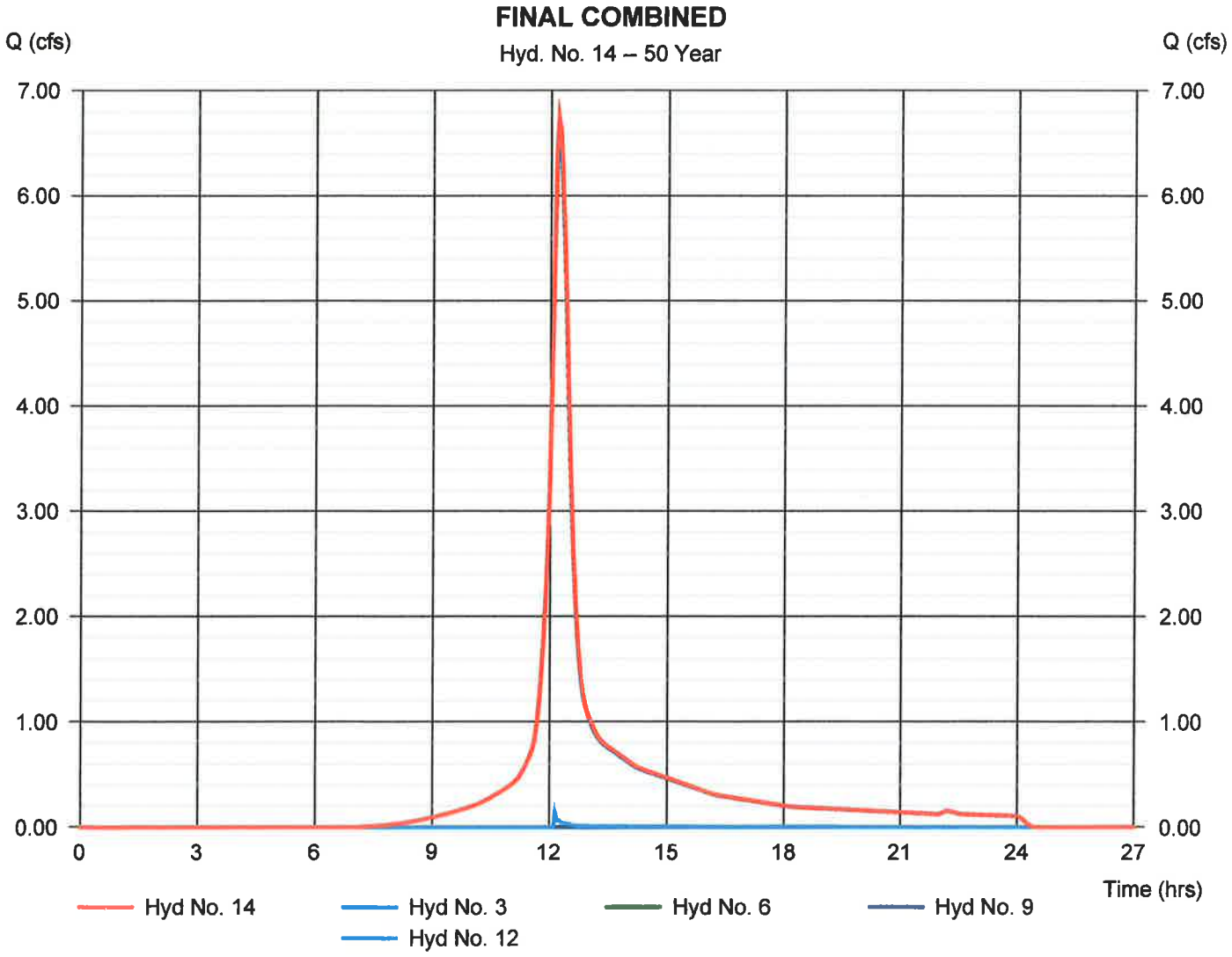


Hydrograph Report

Hyd. No. 14

FINAL COMBINED

Hydrograph type	= Combine	Peak discharge	= 6.737 cfs
Storm frequency	= 50 yrs	Time to peak	= 12.20 hrs
Time interval	= 3 min	Hyd. volume	= 30,056 cuft
Inflow hyds.	= 3, 6, 9, 12	Contrib. drain. area	= 1.760 ac



STORM WATER QUALITY CALCULATIONS (POND 1)

Underground Detention System

as defined by "2004 Connecticut Stormwater Quality Manual"

Watershed:

Determine "Water Quality Volume" (WQV)

I = percent impervious cover = **35.3** %

$$WQV = \frac{1" (R)(A)}{12}$$

R = volumetric runoff coefficient = 0.05 + 0.009(I)

= 0.05 + 0.009 (35.3) = **0.368**

$$= \frac{1" (0.3677) \quad (0.31)}{12}$$

A = site area in acres = **0.31**

= 0.009 Acre-Feet

= 414 CF **Volume of designed basin = 1482 CF**

PER THE MANUAL, THE INFILTRATION SUTRUCTURES SHOULD BE DESIGNED TO MAINTAIN AT LEAST THE WATER QUALITY VOLUME (WQV)

AS DESIGNED, THE DETENTION SYSTEM HAS A TOTAL CAPACITY OF **1482 CF,** which EQUATES TO **358.2%** OF THE WQV.

THEREFORE, THE SYSTEMS COMPLY WITH THE REQUIREMENTS OF THE 2004 CONNECTICUT STORMWATER QUALITY MANUAL FOR UNDERGROUND INFILTRATION SYSTEMS.

E N G I N E E R I N G

STORM WATER QUALITY CALCULATIONS (POND 2)

Underground Detention System

as defined by "2004 Connecticut Stormwater Quality Manual"

Watershed:

Determine "Water Quality Volume" (WQV)

I = percent impervious cover = **35.3** %

$$WQV = \frac{1" (R)(A)}{12}$$

R = volumetric runoff coefficient = 0.05 + 0.009(I)

= 0.05 + 0.009 (35.3) = **0.368**

$$= \frac{1" (0.3677) \quad (0.31)}{12}$$

A = site area in acres = **0.31**

= 0.009 Acre-Feet

= 414 CF **Volume of designed basin = 718 CF**

PER THE MANUAL, THE INFILTRATION SUTRUCTURES SHOULD BE DESIGNED TO MAINTAIN AT LEAST THE WATER QUALITY VOLUME (WQV)

AS DESIGNED, THE DETENTION SYSTEM HAS A TOTAL CAPACITY OF **718 CF,** which EQUATES TO **173.5%** OF THE WQV.

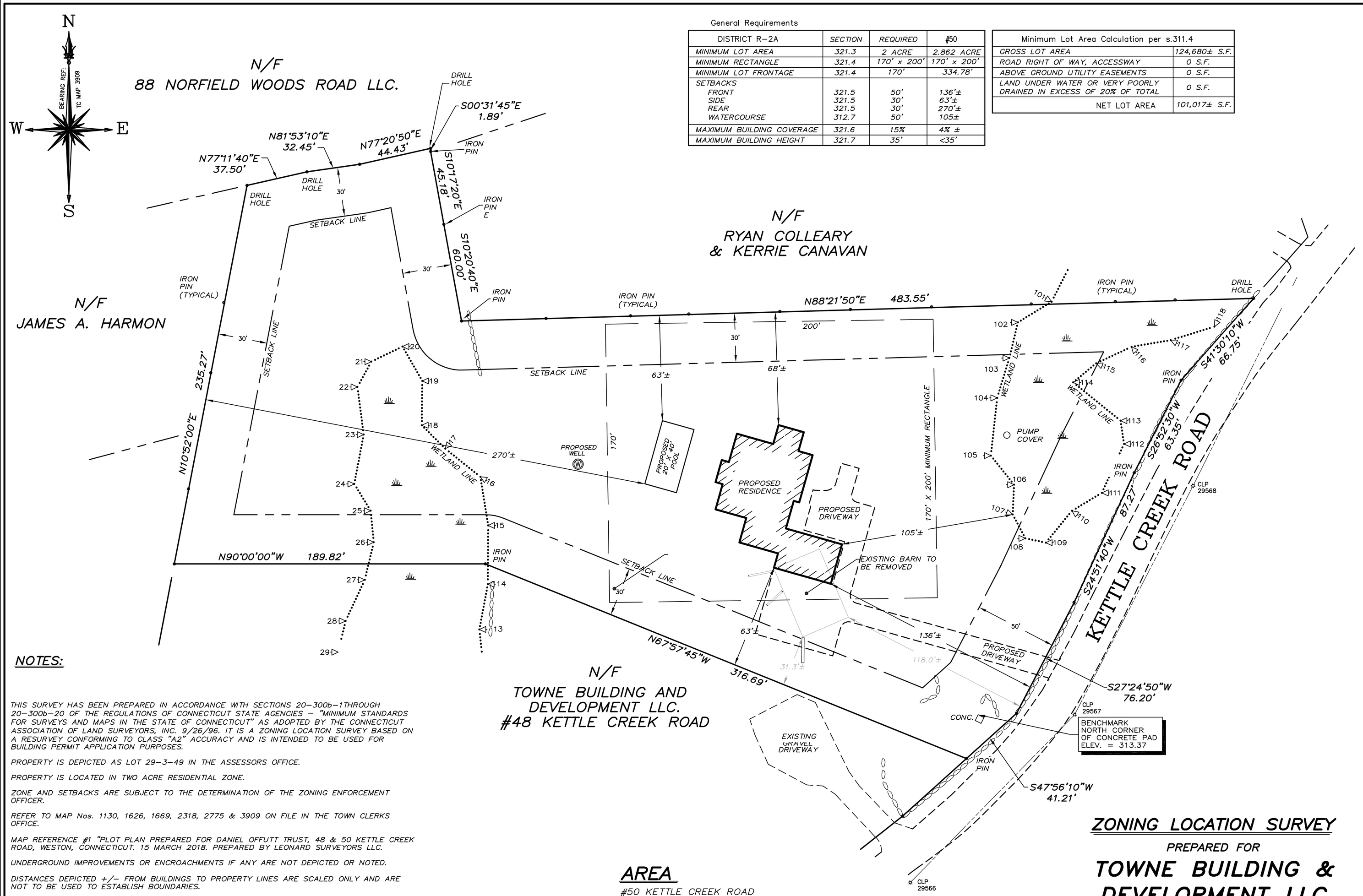
THEREFORE, THE SYSTEMS COMPLY WITH THE REQUIREMENTS OF THE 2004 CONNECTICUT STORMWATER QUALITY MANUAL FOR UNDERGROUND INFILTRATION SYSTEMS.

E N G I N E E R I N G

General Requirements

DISTRICT R–2A	SECTION	REQUIRED	#50
MINIMUM LOT AREA	321.3	2 ACRE	2.862 ACRE
MINIMUM RECTANGLE	321.4	170' x 200'	170' x 200'
MINIMUM LOT FRONTAGE	321.4	170'	334.78'
SETBACKS			
FRONT	321.5	50'	136'±
SIDE	321.5	30'	63'±
REAR	321.5	30'	270'±
WATERCOURSE	312.7	50'	105±
MAXIMUM BUILDING COVERAGE	321.6	15%	4% ±
MAXIMUM BUILDING HEIGHT	321.7	35'	<35'

Minimum Lot Area Calculation per s.311.4	
GROSS LOT AREA	124,680± S.F.
ROAD RIGHT OF WAY, ACCESSWAY	0 S.F.
ABOVE GROUND UTILITY EASEMENTS	0 S.F.
LAND UNDER WATER OR VERY POORLY DRAINED IN EXCESS OF 20% OF TOTAL	0 S.F.
NET LOT AREA	101,017± S.F.



NOTES:

THIS SURVEY HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20–300b–1THROUGH 20–300b–20 OF THE REGULATIONS OF CONNECTICUT STATE AGENCIES – "MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. 9/26/96. IT IS A ZONING LOCATION SURVEY BASED ON A RESURVEY CONFORMING TO CLASS "A2" ACCURACY AND IS INTENDED TO BE USED FOR BUILDING PERMIT APPLICATION PURPOSES.

PROPERTY IS DEPICTED AS LOT 29–3–49 IN THE ASSESSORS OFFICE.

PROPERTY IS LOCATED IN TWO ACRE RESIDENTIAL ZONE.

ZONE AND SETBACKS ARE SUBJECT TO THE DETERMINATION OF THE ZONING ENFORCEMENT OFFICER.

REFER TO MAP Nos. 1130, 1626, 1669, 2318, 2775 & 3909 ON FILE IN THE TOWN CLERKS OFFICE.

MAP REFERENCE #1 "PLOT PLAN PREPARED FOR DANIEL OFFUTT TRUST, 48 & 50 KETTLE CREEK ROAD, WESTON, CONNECTICUT. 15 MARCH 2018. PREPARED BY LEONARD SURVEYORS LLC.

UNDERGROUND IMPROVEMENTS OR ENCROACHMENTS IF ANY ARE NOT DEPICTED OR NOTED.

DISTANCES DEPICTED +/– FROM BUILDINGS TO PROPERTY LINES ARE SCALED ONLY AND ARE NOT TO BE USED TO ESTABLISH BOUNDARIES.

THIS SURVEY WAS PREPARED FOR A SPECIFIC PURPOSE, ANY USE OTHER THAN THAT WHICH WAS ORIGINALLY INTENDED IS A MISUSE OF THIS INFORMATION AND RENDERS THE PREPARERS DECLARATION NULL AND VOID.

UNAUTHORIZED ALTERATIONS OR ADDITIONS TO THIS SURVEY, WHICH BEARS THE LICENSED SURVEYORS LIVE SIGNATURE AND EMBOSSED SEAL, RENDERS ANY DECLARATION NOTED HEREON NULL AND VOID.

AREA

#50 KETTLE CREEK ROAD

124,680± S.F.
2.862± ACRES

ZONING LOCATION SURVEY

PREPARED FOR

TOWNE BUILDING & DEVELOPMENT LLC

50 KETTLE CREEK ROAD
WESTON, CONNECTICUT

BRAUTIGAM LAND SURVEYORS, P.C.

90 South Main Street
Newtown, Connecticut 06470
Telephone (203) 270–7810
E–mail: Surveying@BrautigamLand.com

TO MY KNOWLEDGE AND BELIEF, THIS SURVEY AND MAP ARE "SUBSTANTIALLY CORRECT" AS NOTED HEREON.

PAUL A. BRAUTIGAM CT. LIC. No. 15166

THE SURVEY DEPICTED HEREON IS NULL AND VOID WITHOUT THE LICENSED SURVEYORS LIVE SIGNATURE AND EMBOSSED SEAL.

FOR TOWN ARCHIVE PURPOSES ONLY

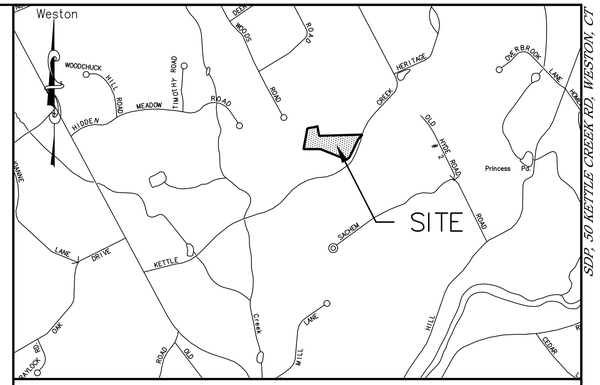
NOT A LIVE SIGNATURE

JOB No. 9320001–01	SCALE: 1" = 40'	DRAWN BY: SRM
FIELD NOTES: N/A	DATE: 3/29/2023	CHECKED BY: PAB

©

40 0 40 80 120

9320001–01.DWG



LOCATION MAP
SCALE: 1"=800'

SITE STATISTICS
SINGLE FAMILY DWELLING

ZONING DISTRICT "R-2AC"	REQUIRED	PROPOSED
BULK STATISTICS		
MIN. LOT AREA	2.00 ACRES (87,120 SF)	2.86 ACRES (124,681 SF)
MIN. BUILDING SETBACK (FRONT)	50'	136.5'
MIN. BUILDING SETBACK (SIDE)	30'	63.7'
MIN. BUILDING SETBACK (REAR)	30'	>30'
MAX. HEIGHT	35'	(SEE ARCH. PLANS)
MAX. BUILDING COVERAGE	15% = 16,699.0 SF	DWELLING: 3,720 SF TOTAL: 3,720 SF (3.0%)

GENERAL NOTES

1. PROPERTY IS ALSO KNOWN AS TOWN OF WESTON ON ASSESSORS MAP 1130, 1626, 1669, 2318, 2775.
2. TOTAL AREA: = 124,681 SQ.FT. OR 2.86 ACRES
3. PROPERTY LIES IN ZONING DISTRICT "R-2AC".
4. CONTOURS AND ELEVATIONS SHOWN HEREON REFER TO A RELATIVE DATUM.
5. PROPERTY DOES NOT LIE WITHIN A FLOOD HAZARD ZONE AS DETERMINED BY FEMA.
6. PROPOSED FOOTPRINTS ARE BASED OFF OF DRAWINGS OBTAINED FROM THE OWNER AND/OR ARCHITECT. CONTRACTOR SHOULD REFER TO ARCHITECTURAL DRAWINGS FOR EXACT STRUCTURE DIMENSIONS & ACTUAL LOCATIONS OF UTILITY ENTRANCES.
7. LOCATION OF ALL UNDERGROUND UTILITIES DEPICTED HEREON ARE APPROXIMATE AND ARE BASED ON FIELD LOCATION OF VISIBLE STRUCTURES SUCH AS CATCH BASINS, MANHOLES, WATER GATES, ETC., AND COMPILING INFORMATION FROM PLANS SUPPLIED BY THE RESPECTIVE UTILITY COMPANIES AND GOVERNMENT AGENCIES. ALL CONTRACTORS ARE REQUIRED BY STATE REGULATIONS TO CONTACT CALL-BEFORE-YOU-DIG AT 1-800-922-4455 FOR LOCATION AND STAKEOUT OF UTILITIES PRIOR TO ANY EXCAVATION.
8. IF THERE ARE ANY VARIATIONS ON THIS MAP WITH WHAT IS FOUND OR DESIRED IN THE FIELD, THE CONTRACTOR SHALL CONTACT AND NOTIFY THE SITE ENGINEER IMMEDIATELY PRIOR TO COMMENCING THE RELATED WORK TO DETERMINE THE CORRECT COURSE OF ACTION.
9. B&B ENGINEERING, LLC MAKES NO GUARANTEE WITH THIS PLAN UNLESS B&B INSPECTS ALL ASPECTS OF CONSTRUCTION.
10. MAP REFERENCES
    a. BOUNDARY AND TOPOGRAPHIC INFORMATION OBTAINED FROM A MAP ENTITLED "TOPOGRAPHIC SURVEY OF 48&50 KETTLE CREEK, WESTON, PREPARED FOR TOWNE BUILDERS, DATED 6/12/2020, REVISED ON 7/8/2020", PREPARED BY BRAUTIGAM LAND SURVEYORS, P.C., NEWTOWN, CT
    b. EXISTING SOIL TEST DATA OBTAINED FROM MAPS ENTITLED "PROPOSED SITE SKETCH, DANIEL OFFUT FARM, #48 KETTLE CREEK ROAD, WESTON, CONNECTICUT" AND "PROPOSED SITE SKETCH, DANIEL OFFUT FARM, #50 KETTLE CREEK ROAD, WESTON, CONNECTICUT", DATED 1/7/2018, PREPARED BY FORCE ENGINEERING & CONSTRUCTION LLC, EASTON, CT 06612.

LEGEND

- C.H.D. Conn. Hwy. Dept. Monument
- Mon. Monument
- Iron Pin to be Set
- Conc. Monument to be Set
- I. Pipe Iron Pipe
- I.P. Iron Pin
- D.H. Drill Hole
- Pile of Stones
- F.P. Fence Post
- Fnd. Found
- n/f Now or Formerly
- Property Line
- Property Line (adjoining)
- Building Setback Line
- Easement Line
- Centerline
- Ledge or Boulders
- Earth or gravel fill
- x123.4 Existing Spot Elevation
- Proposed Spot Elevation
- INV: Invert Elevation of Pipe
- W.G. Water gate valve
- G.G. Gas gate valve
- W Water main (existing)
- W Water main (proposed)
- Hydrant
- WS Water service lateral
- G Gas Main (existing)
- G Gas main (proposed)
- SS Sanitary sewer lateral
- S Sanitary Sewer Main (existing)
- S Sanitary Sewer Main (proposed)
- Stone Wall
- Barbed Wire Fence
- Fence
- Utility Pole
- Existing Manhole
- Proposed Manhole
- Existing Catch Basin/Pipe
- Proposed Storm Pipe
- Proposed Catch Basin
- Building (existing)
- Evergreen Tree
- Deciduous Tree
- Swamp or Wetlands
- Watercourse
- 123 Existing Contours
- [123] Proposed Contours
- R.C.P. Reinforced Concrete Pipe
- C.M.P. Corrugated Metal Pipe
- PT A Percolation Test Location
- TP 100 Deep Test Pit Location
- Stone Retaining Wall
- Retaining Wall
- Wetland Limit
- WL100 Wetland Flag Number
- Wetland Setback
- Benchmark
- Silt Fence
- Well (existing)
- Well (proposed)
- Anti-Mud Tracking Pad

No.	Date	REVISION DESCRIPTION

SCALE: 1"=30'
0 15 30 60 90

B&B ENGINEERING
15 Research Drive
Woodbridge, CT 06525
P: (203) 881-8145
www.bbengrs.com
Land Surveying, Professional Engineering & Land Use Consultants

PROPOSED SITE DEVELOPMENT PLAN
OF
50 KETTLE CREEK ROAD
WESTON, CONNECTICUT
PREPARED FOR
TOM KELLEY
TOWNE BUILDING & DEVELOPMENT
28 HERMIT LANE
WESTPORT, CONNECTICUT

TO THE BEST OF MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

BRYAN P. NESTERIAK, CT. P.E.,L.S. 23556

Date	3/8/2023
Scale	1"=30'
Job No.	1097
Drawing No.	1 of 2

THIS DOCUMENT, THE IDEAS, AND DESIGN INCORPORATED HEREON IS AN INSTRUMENT OF PROFESSIONAL SERVICE AND THE PROPERTY OF B&B ENGINEERING, LLC. AND IS NOT TO BE REPRODUCED OR USED IN WHOLE OR IN PART FOR ANY EXTENSION OF THIS PROJECT OR FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF B&B ENGINEERING, LLC. THIS DRAWING IS NOT A FINAL, AND VALID DOCUMENT WITHOUT A SIGNATURE OF THE CERTIFYING PROFESSIONAL AND A LIVE WET STAMP OR EMBOSSED SEAL.

SDP: 50 KETTLE CREEK RD, WESTON, CT

DEEP TESTS

TEST HOLES DONE BY OTHERS ON 1/3/2019

DT 1
0"–8" TOPSOIL
8"–29" ORANGE/BROWN SILTY LOAM
29"–70" GREY/BROWN MOD. COMPACT SILTY SAND
ROOTS @ 31"
MOTTLING @ 29"
WATER @ 39"
NO LEDGE
RESTRICTIVE @ 29"

DT 2
0"–10" TOPSOIL
10"–33" ORANGE/BROWN SILTY LOAM
33"–79" GREY/BROWN MOD. COMPACT SILTY SAND
ROOTS @ 33"
MOTTLING @ 33"
WATER @ 46"
NO LEDGE
RESTRICTIVE @ 33"

DT 3
0"–8" TOPSOIL
8"–28" ORANGE/BROWN SILTY LOAM
28"–62" TAN SILTY SAND
ROOTS @ 28"
MOTTLING @ 28"
WATER @ 35"
NO LEDGE
RESTRICTIVE @ 28"

DT 4
0"–7" TOPSOIL
7"–34" ORANGE/BROWN SILTY LOAM
34"–70" GREY/BROWN SANDY SILT
ROOTS @ 24"
MOTTLING @ 34"
WATER @ 36"
NO LEDGE
RESTRICTIVE @ 34"

DT 5
0"–9" TOPSOIL
9"–35" ORANGE/BROWN SILTY LOAM
35"–81" GREY/BROWN COMPACT SANDY SILT
ROOTS @ 42"
MOTTLING @ 35"
WATER @ 42"
NO LEDGE
RESTRICTIVE @ 35"

DEEP TESTS

TESTED ON 4/19/2022 BY B&B ENGINEERING

TP A
0–11" TOPSOIL
11"–35" ORANGE BROWN SILTY SANDY LOAM
35"–91" GREY COMPACT SILTY SANDY LOAM
MOTTLING @ 27"
WATER @ 36"
NO LEDGE

TP B
0–10" TOPSOIL
10"–25" ORANGE BROWN SILTY SANDY LOAM
25"–92" GREY COMPACT SILTY SANDY LOAM
MOTTLING @ 25"
WATER @ 56"
NO LEDGE
ROOTS @ 19"

TP C
0–10" TOPSOIL
10"–31" ORANGE BROWN SILTY SANDY LOAM
31"–80" GREY COMPACT SILTY SANDY LOAM
MOTTLING @ 20"
WATER @ 32"
NO LEDGE
ROOTS @ 55"

TP D
0–13" TOPSOIL
13"–24" ORANGE BROWN SILTY SANDY LOAM
24"–49" GREY COMPACT SILTY SANDY LOAM
MOTTLING @ 28"
WATER @ 33"
NO LEDGE
ROOTS @ 28"

TP E
0–10" TOPSOIL
10"–33" ORANGE BROWN SILTY SANDY LOAM
33"–92" GREY COMPACT SILTY SANDY LOAM
MOTTLING @ 33"
WATER @ 36"
NO LEDGE
ROOTS @ 65"

TP F
0–12" TOPSOIL
12"–35" ORANGE BROWN SILTY SANDY LOAM
35"–101" GREY COMPACT SILTY SANDY LOAM
MOTTLING @ 36"
WATER @ 56"
NO LEDGE
ROOTS @ 43"

TP G
0–12" TOPSOIL
12"–28" ORANGE BROWN SILTY SANDY LOAM
28"–96" GREY COMPACT SILTY SANDY LOAM
MOTTLING @ 33"
WATER @ 42"
NO LEDGE
ROOTS @ 37"

TP I
0–13" TOPSOIL
13"–40" ORANGE BROWN SILTY SANDY LOAM
40"–110" GREY COMPACT SILTY SANDY LOAM
MOTTLING 36"
WATER @ 35"
NO LEDGE
ROOTS @ 49"

TP J
0–12" TOPSOIL
12"–20" ORANGE BROWN SILTY SANDY LOAM
20"–80" GREY COMPACT SILTY SANDY LOAM
MOTTLING @ 20"
WATER @ 20"
NO LEDGE
ROOTS @ 23"

TP–101
0–12" TOPSOIL
12"–26" ORANGE BROWN SILTY SANDY LOAM
26"–84" GREY COMPACT SILTY SANDY LOAM
MOTTLING @ 26"
WATER @ 46"
NO LEDGE

TP–102
0–24" TOPSOIL
24"–46" ORANGE BROWN SILTY SANDY LOAM
46"–82" GREY COMPACT SILTY SANDY LOAM
MOTTLING @ 39"
WATER @ 56"
NO LEDGE

PERCOLATION TESTS

TEST STARTED 26.0" BELOW GRADE

P–1	READING	RATE (MIN./IN)
15:37	14.50"	–
15:44	17.00"	2.8
15:58	19.50"	5.6
16:08	20.75"	8.0
16:20	21.75"	12.0
16:37	23.25"	11.3
16:51	DRY	–

TEST STARTED 18.0" BELOW GRADE

P–2	READING	RATE (MIN./IN)
15:36	6.00"	–
15:45	7.75"	5.1
15:59	10.00"	6.2
16:09	11.00"	10.0
16:21	12.50"	8.0
16:38	14.00"	11.3
16:52	15.00"	14.0

TEST STARTED 20.0" BELOW GRADE

P–3	READING	RATE (MIN./IN)
15:34	10.00"	–
15:46	13.25"	3.7
16:00	15.00"	8.0
16:10	16.00"	10.0
16:22	17.00"	12.0
16:39	18.00"	17.0
16:53	19.00"	14.0

TEST STARTED 24.0" BELOW GRADE

P–4	READING	Rate (min/in)
15:38	12.50"	–
15:47	16.75"	2.1
16:01	20.00"	4.3
16:11	21.50"	6.7
16:23	23.00"	8.0
16:36	DRY	–

"SELECT FILL" SPECIFICATIONS

1. FILL SHALL NOT CONTAIN ANY MATERIAL LARGER THAN 3 INCHES.
2. UP TO 65% OF THE DRY WEIGHT OF THE SAMPLE MAY BE RETAINED ON THE #4 SIEVE.
3. OF THE MATERIAL THAT PASSES THE #4 SIEVE, IT MUST PASS THE FOLLOWING CRITERIA:

SIEVE SIZE	PERCENT PASSING	
	WET SIEVE	DRY SIEVE
#4	100	100
#10	70–100	70–100
#40	10–50	10–75
#100	0–20	0–5
#200	0–5	0–2.5

NOTES
1. PERCENT PASSING THE #40 SIEVE CAN BE INCREASED TO NO GREATER THAN 75% IF THE PERCENT PASSING THE #100 SIEVE DOES NOT EXCEED 10% AND THE #200 SIEVE DOES NOT EXCEED 5%.
2. SIEVE ANALYSIS TO BE SUBMITTED TO THE DESIGN ENGINEER AND THE HEALTH DEPARTMENT BEFORE THE START OF CONSTRUCTION.

GENERAL SEPTIC NOTES

1. THIS SYSTEM IS NOT DESIGNED FOR BACKWASH FROM A WATER SOFTENING SYSTEM OR THE OUTFLOW FROM A GARBAGE DISPOSAL OR TUB IN EXCESS OF 100 GALLONS.
2. THIS SYSTEM IS TO BE CONSTRUCTED IN ACCORDANCE WITH ALL STATE AND LOCAL HEALTH REGULATIONS.
3. THE INSTALLATION OF THE SEPTIC SYSTEM SHALL BE UNDER THE SUPERVISION OF A PROFESSIONAL ENGINEER.
4. IT IS THE RESPONSIBILITY OF THE INSTALLER TO KEEP LOCAL HEALTH DEPARTMENT AND THE ENGINEER OF RECORD INFORMED OF CONSTRUCTION PROGRESS.
5. ALL PIPING BETWEEN HOUSE AND SEPTIC TANK SHALL BE FOUR INCHES IN DIAMETER WITH A MINIMUM SLOPE OF 1/4" PER FOOT OR SIX INCHES IN DIAMETER WITH A MINIMUM SLOPE OF 1/8" PER FOOT. MATERIALS MAY BE CAST IRON (HUBLESS OR BELL AND SPIGOT) ASTM A74, DUCTILE IRON ANSIA21.51, PVC SCHEDULE 40, ASTM D 2665, EXTRA STRENGTH PVC AWWA C–900 100 PSI MIN, DUCTILE IRON AND A 21.51, OR PVC ASTM 7 1760.
6. ALL PIPE USED BETWEEN THE SEPTIC TANK AND LEACHING AREA SHALL BE 4" SDR–35 PVC PIPE WITH WATERTIGHT JOINTS OR EQUIVALENT EQUAL. PIPE SHALL BE SET ON A MINIMUM SLOPE OF 1/4" PER FOOT.
7. STRIP AND STOCKPILE TOPSOIL AND REMOVE BOULDERS PRIOR TO PLACING FILL. ALL TOPSOIL MUST BE REMOVED IN FILL SYSTEMS.
8. THE MAXIMUM DEPTH OF THE BOTTOM OF A LEACHING SYSTEM BELOW FINISHED GRADE SHALL BE EIGHT (8) FEET. ANY FIELD CHANGES TO THE PROPOSED FINISH GRADE MUST BE APPROVED BY THE DESIGN ENGINEER AND THE LOCAL HEALTH DEPARTMENT.
9. SEPTIC TANK ACCESS SHALL BE OUTFITTED WITH 24" DIAMETER RISERS IF THE TOP OF THE TANK IS DEEPER THAN 12" FROM FINISHED GRADE.
10. RISER COVERS SHALL WEIGH A MINIMUM OF 59 LBS OR THE COVER SHALL BE PROVIDED WITH A LOCK SYSTEM TO PREVENT UNAUTHORIZED ENTRANCE. IT IS RECOMMENDED THAT TANK COVERS BE LEFT ON THE TANK FOR SAFETY REASONS AND TO AVOID POTENTIAL ODOR PROBLEMS WHEN MANHOLE RISERS ASSEMBLIES ARE UTILIZED OVER CLEANOUT OPENINGS. SHOULD THE TANK COVER BE REMOVED WHEN EQUIPPED WITH A RISER ASSEMBLY, A SECONDARY SAFETY LID OR DEVICE SHALL BE PROVIDED.
11. B&B ENGINEERING ASSUMES NO RESPONSIBILITY FOR COMPLIANCE WITH PLAN SPECIFICATIONS UNLESS B&B ENGINEERING SUPERVISES ALL PHASES OF THE INSTALLATION.
12. AS–BUILT DRAWING TO BE PREPARED BY PROFESSIONAL ENGINEER PRIOR TO BACKFILLING.
13. FINAL GRADING TO BE COMPLETED IMMEDIATELY AFTER COMPLETION OF AS–BUILT DRAWING.
14. THERE ARE NO WELLS WITHIN 75' OF PROPOSED SEPTIC SYSTEM.
15. THERE ARE NO STORM WATER DRAINAGE INFILTRATION SYSTEMS WITHIN 50' OF THE PROPOSED SEPTIC SYSTEM.

GRADING & DRAINAGE NOTES

1. ABBREVIATIONS
   PVC = POLYVINYL CHLORIDE PIPE (SDR–35)
   HDPE = HIGH DENSITY POLYETHYLENE PIPE
   RCP = REINFORCED CONCRETE PIPE
   MH = MANHOLE
   CB = CATCH BASIN
   INV = INVERT
   LF = LINEAR FEET
   ACCMP = ASPHALT COATED CORRUGATED METAL PIPE
   HERCP = HORIZONTAL ELIPTICAL REINFORCED CONCRETE PIPE
2. THE CONTRACTOR SHALL FLUSH AND CLEAN ALL EXISTING ON–SITE STORM PIPING AND STRUCTURES THAT ARE TO BE MAINTAINED.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SIZING THE DRAINAGE STRUCTURES FOR THE INDICATED PIPE CONNECTIONS.
4. THE PIPE LENGTHS SHOWN ARE APPROXIMATE.
5. ALL PROPOSED CATCH BASINS SHALL HAVE A 2' SUMP, UNLESS OTHERWISE SPECIFIED.
6. ALL SLOPES TO BE NO GREATER THAN 3' HORIZONTAL TO 1' VERTICAL.

PROPOSED SEPTIC SYSTEM

DESIGN DATA

PROPOSED BEDROOMS:	6
REQUIRED SEPTIC TANK	1,500 GALLON
PROPOSED SEPTIC TANK	1,500 GALLON
PRIMARY LEACHING SYSTEM	
DESIGN PERCOLATION RATE	10.1–20.0 MIN./INCH
E.L.A. REQUIRED	1,125.0 SF
LEACHING SYSTEM (LF)	114 LF OF GEOMATRIX GST 6212
E.L.A. PROVIDED	114 LF X 10.0 ELA = 1,140.0 SF
RESERVE SYSTEM	
LEACHING SYSTEM (LF)	GEOMATRIX GST 6224 (64 LF)
E.L.A. PROVIDED	64 LF X 18.1 ELA = 1,158.4 SF

ELEVATIONS

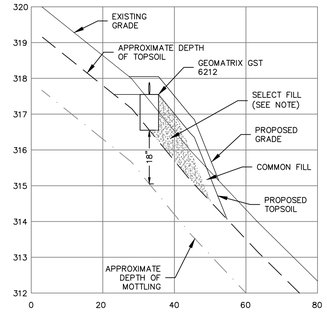
INVERT AT HOUSE	318.60
SEPTIC TANK INLET INVERT	318.00
SEPTIC TANK OUTLET INVERT	317.75
DISTRIBUTION BOX 1	317.55
BOTTOM ELEV. ROW 1	316.55

M.L.S.S.

RESTRICTIVE LAYER

DEEP TEST #	DT–1	DT–2	DT–3
ELEVATION	318.0	317.5	316.0
SYSTEM EMBEDMENT	––	––	D/G
DESIGN RL DEPTH	29"	33"	28"
AVERAGE DESIGN RL	[((29+33)/2)+28)/2]= 29.5"		

HYDRAULIC FACTOR (HF)	
AVERAGE DESIGN RESTRICTIVE LAYER	29.5"
SLOPE	6.1–8.0%
DESIGN HYDRAULIC FACTOR	28.0
PERCOLATION FACTOR (PF)	
PERCOLATION RATE	10.1–20.0 MIN./INCH
DESIGN PERCOLATION FACTOR	1.25
FLOW FACTOR (FF)	
# OF BEDROOMS	6 BEDROOMS
DESIGN FLOW FACTOR	750/300 = 2.5
MINIMUM LEACHING SYSTEM SPREAD (M.L.S.S.)	
M.L.S.S.	(HF) x (PF) x (FF)
M.L.S.S. REQUIRED	28 X 1.25 X 2.5= 87.5 LF
ML.S.S. PROVIDED	114.0 LF



CROSS - SECTION 'A - A'

SCALE: HORIZ.1"=20'; VERT.1"=2'

SEDIMENTATION & SOIL EROSION SPECIFICATIONS

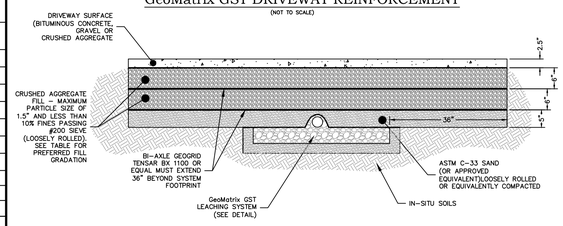
1. THESE GUIDELINES SHALL APPLY TO ALL WORK CONSISTING OF ANY AND ALL TEMPORARY AND OR PERMANENT MEASURES TO CONTROL WATER POLLUTION AND SOIL EROSION AS MAY BE REQUIRED, DURING THE CONSTRUCTION OF THE PROJECT.
2. ALL CONSTRUCTION ACTIVITIES SHALL PROCEED SO THAT POLLUTION OF ANY WETLANDS, WATERCOURSES, WATERBODY, AND OR CONDUIT CARRYING WATER, ETC. DOES NOT OCCUR. THE CONTRACTOR SHALL LIMIT, INSOFAR AS POSSIBLE, THE SURFACE AREA OF EARTH MATERIALS EXPOSED BY CONSTRUCTION METHODS AND IMMEDIATELY PROVIDE PERMANENT AND TEMPORARY POLLUTION CONTROL MEASURES TO PREVENT CONTAMINATION OF ADJACENT WETLANDS, WATERCOURSES AND WATERBODIES, AND TO PREVENT, INSOFAR AS POSSIBLE EROSION ON THE SITE.
3. CONSTRUCTION METHODS SHALL BE IN ACCORDANCE WITH THE PROVISIONS SET FORTH IN THE "GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL" (2002) BY THE STATE OF CONNECTICUT COUNCIL ON SOIL AND WATER CONSERVATION.

IMPLEMENTATION NOTES

1. THE EROSION AND SEDIMENTATION CONTROL MEASURES ARE TO BE INSTALLED PRIOR TO CONSTRUCTION WHENEVER POSSIBLE. ALL CONTROL MEASURES ARE TO BE MAINTAINED IN AN EFFECTIVE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD. ADDITIONAL MEASURES ARE TO BE INSTALLED IF NECESSARY OR REQUIRED DURING CONSTRUCTION PERIOD.
2. LAND DISTURBANCE SHALL BE KEPT TO A MINIMUM. RESTABLIZATION TO BE SCHEDULED AS SOON AS PRACTICAL.
3. POST AND FABRIC SILTATION BARRIERS SHALL BE INSTALLED AT THE TOE OF ALL CRITICAL CUT AND FILL SLOPES. SILT FENCES AND BARRIERS MUST BE CLEANED OR REPLACED WHEN SOIL HAS REACHED ONE–THIRD THE HEIGHT OF THE FENCE.
4. ALL STORM DRAINAGE OUTLETS MUST BE STABILIZED, AS REQUIRED, BEFORE THE DISCHARGE POINTS BECOME OPERATIONAL.
5. SEDIMENT TRAPS, IF APPLICABLE, MUST BE CLEANED WHEN CAPACITY HAS BEEN REDUCED BY AN AVERAGE OF 2' OVER ITS TOTAL AREA OR TO 80% OF ITS DESIGN VOLUMES, WHICHEVER OCCURS FIRST.
6. SEDIMENT REMOVED FROM THE CONTROL STRUCTURES SHALL BE DISPOSED OF IN A MANNER CONSISTENT WITH THE INTENT OF THE PLAN AND IN ACCORDANCE WITH LOCAL, STATE, & FEDERAL REGULATIONS.
7. FILL MATERIAL SHALL BE FREE FROM DEBRIS PERISHABLE OR COMBUSTIBLE MATERIAL AND FROZEN OR WET EARTH OR STONES LARGER THAN 6 INCHES IN MAXIMUM DIMENSION. FILL SHALL BE PLACED IN MAXIMUM 12 INCH LOOSE LIFTS AND COMPACTED TO WITHIN 90% OF THE MODIFIED PROCTOR TEST RESULT.
8. PAVEMENT BASE COURSE MUST BE PLACED IN ALL PROPOSED PAVEMENT AREAS UPON COMPLETION OF FINE GRADING.
9. PERMANENT LANDSCAPED AREAS SHALL BE SEEDED OR SODDED ON ALL EXPOSED AREAS IMMEDIATELY AFTER FINAL GRADING. MULCH AS NECESSARY FOR SEED PROTECTION AND ESTABLISHMENT. LIME AND FERTILIZE PRIOR TO PERMANENT SEEDING.
   9.1. TOPSOIL PREPARATION:
   9.1.1. TOPSOIL SHOULD BE A MINIMUM OF FOUR INCHES DEEP (COMPACTED) BEFORE SEEDING.
   9.1.2. HAVE TOPSOIL TESTED FOR PH; ADD LIME AS NECESSARY TO ACHIEVE PH OF 6.5. APPLY FERTILIZER AT A RATE OF 300 POUNDS PER ACRE OR SEVEN POUNDS PER 4,000 SQUARE FEET USING 10–20–10 OR EQUIVALENT. IN ADDITION, 300 POUNDS 38–0–0 PER ACRE OF SLOW RELEASE NITROGEN MAY BE USED IN LIEU OF TOP DRESSING.
   9.1.3. WORK LIME AND FERTILIZER INTO SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF FOUR INCHES WITH A DISC, SPRINGTOOTH HARROW OR OTHER SUITABLE EQUIPMENT. THE FINAL HARROWING OR DISCING OPERATION SHOULD BE ON THE GENERAL CONTOUR. CONTINUE ALL CLAY OR SILTY SOIL AND COARSE SANDS SHOULD BE ROLLED TO FIRM THE SEED BED WHEREVER FEASIBLE.
   9.1.4. REMOVE FROM THE SURFACE ALL STONES ONE INCH OR LARGER IN ANY DIMENSION. REMOVE ALL OTHER DEBRIS, SUCH AS WIRE, CABLE, TREE ROOTS, PIECES OF CONCRETE, CLODS, LUMP, OR OTHER UNSUITABLE MATERIAL.
   9.1.5. INSPECT SEED BED JUST BEFORE SEEDING. IF TRAFFIC HAS LEFT SOIL COMPACT, THE AREA MUST BE RE–TILLED AND COMPACTED AS ABOVE.
   9.2. SEED MIXTURE (APPLY AT A RATE OF 200 POUNDS/ACRE):
   9.2.1. 10% KENTUCKY BLUEGRASS – BARON MIX
   9.2.2. 20% PERENNIAL RYEGRASS
   9.2.3. 70% TURF TYPE TALL FESCUE
10. THE CONTRACTOR/OWNER IS RESPONSIBLE FOR ALL PAVED ROADWAYS ON AND OFF SITE AND MUST ENSURE THE SITE IS FREE OF SITE GENERATED SEDIMENT AT ALL TIMES. DUST SHALL BE CONTROLLED BY SPRINKLING OR ANOTHER APPROVED METHOD.
11. ALL EROSION AND SEDIMENT CONTROL DEVICES MUST BE INSPECTED ON A DAILY BASIS AND CLEANED IMMEDIATELY AFTER EACH STORM.
12. WHERE DEWATERING IS NECESSARY, THERE SHALL NOT BE A DISCHARGE DIRECTLY INTO WETLANDS OR WATERCOURSES. PROPER METHODS AND DEVICES SHALL BE UTILIZED TO THE EXTENT PERMITTED BY LAW, SUCH AS PUMPING WATER INTO A TEMPORARY SEDIMENTATION STRUCTURE OR BOWL, PROVIDING SURGE PROTECTION AT THE INLET AND THE OUTLET OF PUMPS, OR FLOATING THE INTAKE OF THE PUMP, OR OTHER METHODS TO MINIMIZE AND RETAIN THE SUSPENDED SOLIDS. IF PUMPING OPERATION CAUSES TURBIDITY PROBLEMS, THE OPERATION SHALL CEASE UNTIL FEASIBLE MEANS OF CONTROLLING TURBIDITY ARE DETERMINED AND IMPLEMENTED.
13. THE RESPONSIBILITY FOR: IMPLEMENTING THE EROSION AND SEDIMENT CONTROL PLAN, INFORMING ALL CONCERNED OF THE REQUIREMENT OF THE PLAN; NOTIFYING THE PLANNING AND ZONING COMMISSION, ITS DESIGNATED REPRESENTATIVE OF ANY TRANSFER OF RESPONSIBILITY AND SEEING THAT A COPY OF THE PLAN IS RECEIVED BY ANY SUCCESSOR IN INTEREST TO THE TITLE OF THE LAND OR ANY PORTION THEREOF IS ASSIGNED TO THE OWNER OF RECORD.
14. ANY CONVEYANCE OF THIS PROJECT PRIOR TO ITS COMPLETION, WILL TRANSFER FULL RESPONSIBILITY FOR COMPLIANCE WITH THE CERTIFIED PLAN TO ANY SUBSEQUENT OWNERS.

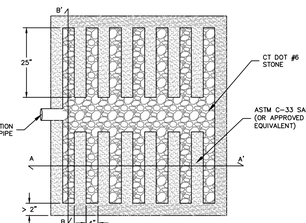
GeoMatrix GST DRIVEWAY REINFORCEMENT

(NOT TO SCALE)

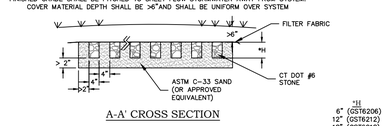


CRUSHED AGGREGATE FILL GRADATION	
SIZE	% PASSING
1–1/2"	100
3/4"	50–100
#4	25–50
#40	10–20
#100	5–15
#200	LESS THAN 10

GEOMATRIX GST LEACHING SYSTEM

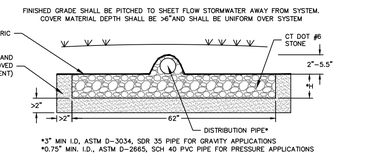


PLAN VIEW



A–A' CROSS SECTION

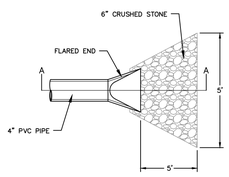
*H
6" (GST6206)
12" (GST6212)
18" (GST6218)
24" (GST6224)
30" (GST6230)
36" (GST6236)



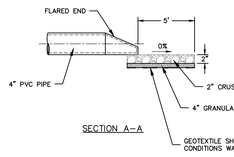
*3" MIN I.D, ASTM D–3034, SDR 35 PIPE FOR GRAVITY APPLICATIONS
*0.75" MIN. I.D., ASTM D–2665, SCH 40 PVC PIPE FOR PRESSURE APPLICATIONS

B–B' CROSS SECTION

RIP–RAP APRON

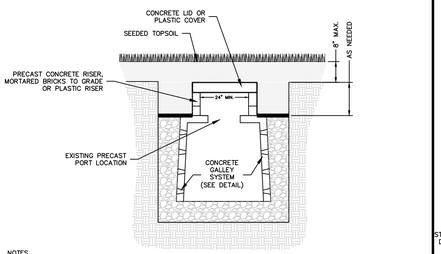


FLARED END PLAN VIEW



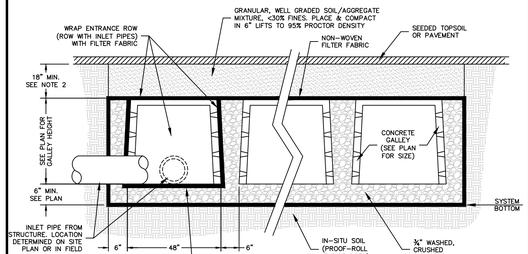
SECTION A–A

CONCRETE GALLEY ACCESS MANHOLE



NOTES
1. SEE PLAN FOR LOCATION OF MANHOLES. IN GENERAL THE ACCESS SHOULD BE LOCATED AT INLET AND OUTLET LOCATIONS, AND IN AREAS THAT PROVIDES ACCESS TO MAINTAIN THE ISOLATOR ROW, OR OTHER PERTINENT LOCATIONS.
2. MANHOLE SHALL BE LOCATED WHERE AN EXISTING PORT HAS BEEN PRECAST INTO THE CONCRETE UNIT.
3. IF A PLASTIC COVER IS SELECTED, THEN THE RISER MUST ALSO BE PLASTIC. THE COVER SHALL BE PROPERLY SCREWED AND ATTACHED TO THE RISER. A CONCRETE LID IS ACCEPTABLE TO BE USED ON A PLASTIC RISER, AS LONG AS THE RISER IS RATED TO HANDLE THE WEIGHT OF THE LID.
4. IF THE PRECAST PORT IS LOCATED WITHIN 8" OF FINISHED GRADE, A RISER IS NOT NEEDED.
5. CONTRACTOR SHALL TAKEN ACCURATE HORIZONTAL MEASUREMENTS TO THE MANHOLES ACCESSES FROM AT LEAST 3 PERMANENT CORNERS OF A STRUCTURE OR OTHER PERTINENT HARDSCAPE THAT WILL BE ABLE TO BE LOCATED ON A LAND SURVEY. MEASUREMENTS SHALL BE PROVIDED TO THE PROJECT ENGINEER AND SURVEYOR.

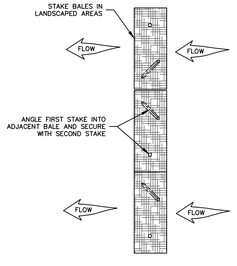
CONCRETE GALLEY DETENTION SYSTEM



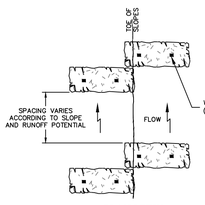
NOTES
1. SEE PLAN FOR QUANTITY, LOCATION, & ARRANGEMENT OF GALLEYS.
2. COVER MAY BE REDUCED IF GALLEYS ARE H–20 LOADING COMPLIANT. COORDINATE WITH SITE ENGINEER.
3. ALL TOPSOIL AND MISCELLANEOUS FILL SHALL BE REMOVED BELOW THE DETENTION AREA.
4. MEASURES SHOULD BE TAKEN TO PREVENT MIGRATION OF NATIVE FINES INTO BACKFILL MATERIAL, WHEN REQUIRED.
5. IF LEDGE OR GROUNDWATER IS ENCOUNTERED WHILE EXCAVATING FOR THE PROPOSED SYSTEM, THE DESIGN ENGINEER SHALL BE NOTIFIED IN ORDER TO DETERMINE IF FIELD CHANGES ARE NECESSARY.

HAY BALE EROSION PROTECTION

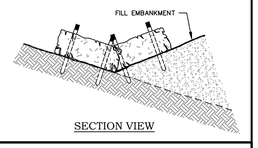
TRANSVERSE SLOPE TREATMENT



TOE OF SLOPE TREATMENT

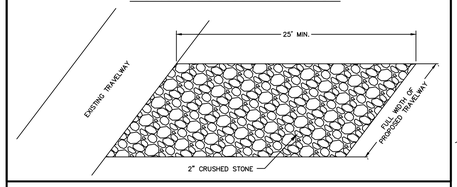


PLAN VIEW

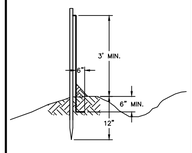


SECTION VIEW

CONSTRUCTION ENTRANCE

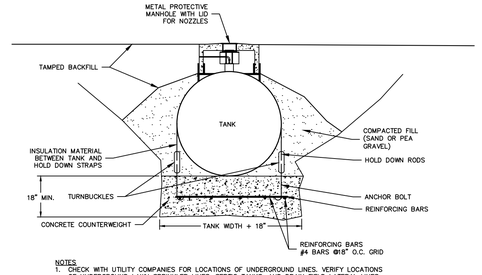


SILT FENCE



INSTALLATION NOTES:
1. EXCAVATE AND SECURE BOTTOM 8" OF SILT FENCE BELOW GRADE AS SHOWN.
2. EXCEPT FOR THE END POST, DRIVE ALL POSTS INTO THE GROUND AT BACK SIDE OF TRENCH SPACED A MAXIMUM OF 10 FT O. C.

UNDERGROUND PROPANE TANK



NOTES
1. CHECK WITH UTILITY COMPANIES FOR LOCATIONS OF UNDERGROUND LINES. VERIFY LOCATIONS OF UNDERGROUND LAWN SPRINKLER LINES, SEPTIC TANKS, AND DRAIN FIELD LATERAL LINES BEFORE AUGURING GROUND ANCHORS. MAINTAIN PROPER SEPARATION IN ACCORDANCE WITH LOCAL, STATE & FEDERAL GUIDELINES.

No.	Date	REVISION DESCRIPTION

B&B ENGINEERING
15 Research Drive
Woodbridge, CT 06525
P: (203) 881–8145
www.bbengrs.com
Land Surveying, Professional Engineering & Land Use Consultants

PROPOSED SITE DEVELOPMENT PLAN

OF

50 KETTLE CREEK ROAD

WESTON, CONNECTICUT

PREPARED FOR

TOM KELLEY

TOWNE BUILDING & DEVELOPMENT
28 HERMIT LANE
WESTPORT, CONNECTICUT

TO THE BEST OF MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON.

BRYAN P. WESTERIAK, CT. P.E.,L.S. 23556

Date	3/8/2023
Scale	1"=30'
Job No.	1097
Drawing No.	2 of 2

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SDP; 50 KETTLE CREEK RD, WESTON, CT