DRAINAGE CALCULATIONS, HYDRAULICS & HYDROLOGY REPORT

PROPOSED APARTMENTS
303, 307, 309 NORWICH-NEW LONDON TURNPIKE
UNCASVILLE, CT

NOVEMBER 2022

CLA Engineers, Inc

PROPOSED APARTMENTS
303, 307, 309 NORWICH-NEW LONDON TURNPIKE
UNCASVILLE, CT

The project proposes to convert the existing commercial buildings into residential apartments. The site presently contains two existing buildings, which have previously been used as commercial buildings, including warehouse, retail, and office space. The buildings are presently vacant.

The site is fully developed with 90% of the site either paved or buildings. There will be a small decrease in impervious area once the project is completed.

There are no existing stormwater treatment/management systems on the site. There is no detention, infiltration, or water quality treatment on the site. There is one catch basin in the southeast corner of the site, which outlets to the rear of the site, with no water quality treatment. (Please see Sheet 1 of the site development plans – Existing Conditions).

The project proposes to include oil/water separators and a dry well system to decrease the runoff from the property. A new catch basin (catch basin 1)will be installed in rear of building 303, at the back of the upper parking area, which will outlet to an oil/water separator and then into three interconnected dry wells. In the lower parking area the project proposes to replace the existing catch basin with a double catch basin (catch basin 2), which will outlet to an oil/water separator and then outlet to a riprap splash pad.

The dry well system has been designed to contain the 50 year storm event for the upper area. Once redevelopment of the site is completed, the proposed dry well system will provide for a reduction in stormwater runoff from the site.

The proposed use of the site, residential apartments, is an improvement over commercial uses, from a water quality view. Residential land use tends to be less intense

and have fewer potential sources of stormwater pollutants and less volume as compared to than commercial land uses. With the conversion from commercial to residential use, and the installation of oil/water separators, the proposed project will provide a much needed improvement to the water quality treatment.

GREEN SITE DESIGN LLC
Civil • Structural • Survey
317 Main Street
NORWICH, CONNECTICUT 06360
(860) 892-1380

PROJECT NAME: _____

PROJECT NO: _____ SHEET NO. _____ OF _____

BY: _____ DATE _____

SCALE: _____

CATCH BASIN #1

VOLUME OF DRY WELL STRUCTURES:

(3 DRYWELLS)(πr^2)(DEPTH)

$3(\pi(3^2))(8\text{ FT}) = 679\text{ CF}$

CRUSHED STONE VOLUME:

$(3)(10' \times 10' - (\pi r^2))(10'\text{DEPTH}) = 2,160(0.5) = 1,080\text{ CF}$

TOTAL STORAGE VOLUME = 1,759 CF

THE DRY WELL SYSTEM WILL CONTAIN THE 50YEAR VOLUME (SEE ATTACHED HYDROGRAPHS) FOR CB #1

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

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	Rational	1.304	1	5	782	------	------	------	Catch Basin 1
2	Rational	1.642	1	5	985	------	------	------	Catch Basin 2

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Wednesday, Nov 30, 2022

Hyd. No. 1

Catch Basin 1

Hydrograph type	= Rational	Peak discharge	= 1.304 cfs
Storm frequency	= 2 yrs	Time to peak	= 5 min
Time interval	= 1 min	Hyd. volume	= 782 cuft
Drainage area	= 0.300 ac	Runoff coeff.	= 0.9
Intensity	= 4.828 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/3

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Wednesday, Nov 30, 2022

Hyd. No. 2

Catch Basin 2

Hydrograph type	= Rational	Peak discharge	= 1.642 cfs
Storm frequency	= 2 yrs	Time to peak	= 5 min
Time interval	= 1 min	Hyd. volume	= 985 cuft
Drainage area	= 0.400 ac	Runoff coeff.	= 0.85
Intensity	= 4.828 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/3

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

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	Rational	1.946	1	5	1,168	------	------	------	Catch Basin 1
2	Rational	2.451	1	5	1,471	------	------	------	Catch Basin 2

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Wednesday, Nov 30, 2022

Hyd. No. 1

Catch Basin 1

Hydrograph type	= Rational	Peak discharge	= 1.946 cfs
Storm frequency	= 10 yrs	Time to peak	= 5 min
Time interval	= 1 min	Hyd. volume	= 1,168 cuft
Drainage area	= 0.300 ac	Runoff coeff.	= 0.9
Intensity	= 7.208 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/3

Hydrograph Report

Hyd. No. 2

Catch Basin 2

Hydrograph type	= Rational	Peak discharge	= 2.451 cfs
Storm frequency	= 10 yrs	Time to peak	= 5 min
Time interval	= 1 min	Hyd. volume	= 1,471 cuft
Drainage area	= 0.400 ac	Runoff coeff.	= 0.85
Intensity	= 7.208 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/3

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

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	Rational	2.343	1	5	1,406	------	------	------	Catch Basin 1
2	Rational	2.951	1	5	1,770	------	------	------	Catch Basin 2

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Wednesday, Nov 30, 2022

Hyd. No. 1

Catch Basin 1

Hydrograph type	= Rational	Peak discharge	= 2.343 cfs
Storm frequency	= 25 yrs	Time to peak	= 5 min
Time interval	= 1 min	Hyd. volume	= 1,406 cuft
Drainage area	= 0.300 ac	Runoff coeff.	= 0.9
Intensity	= 8.678 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/3

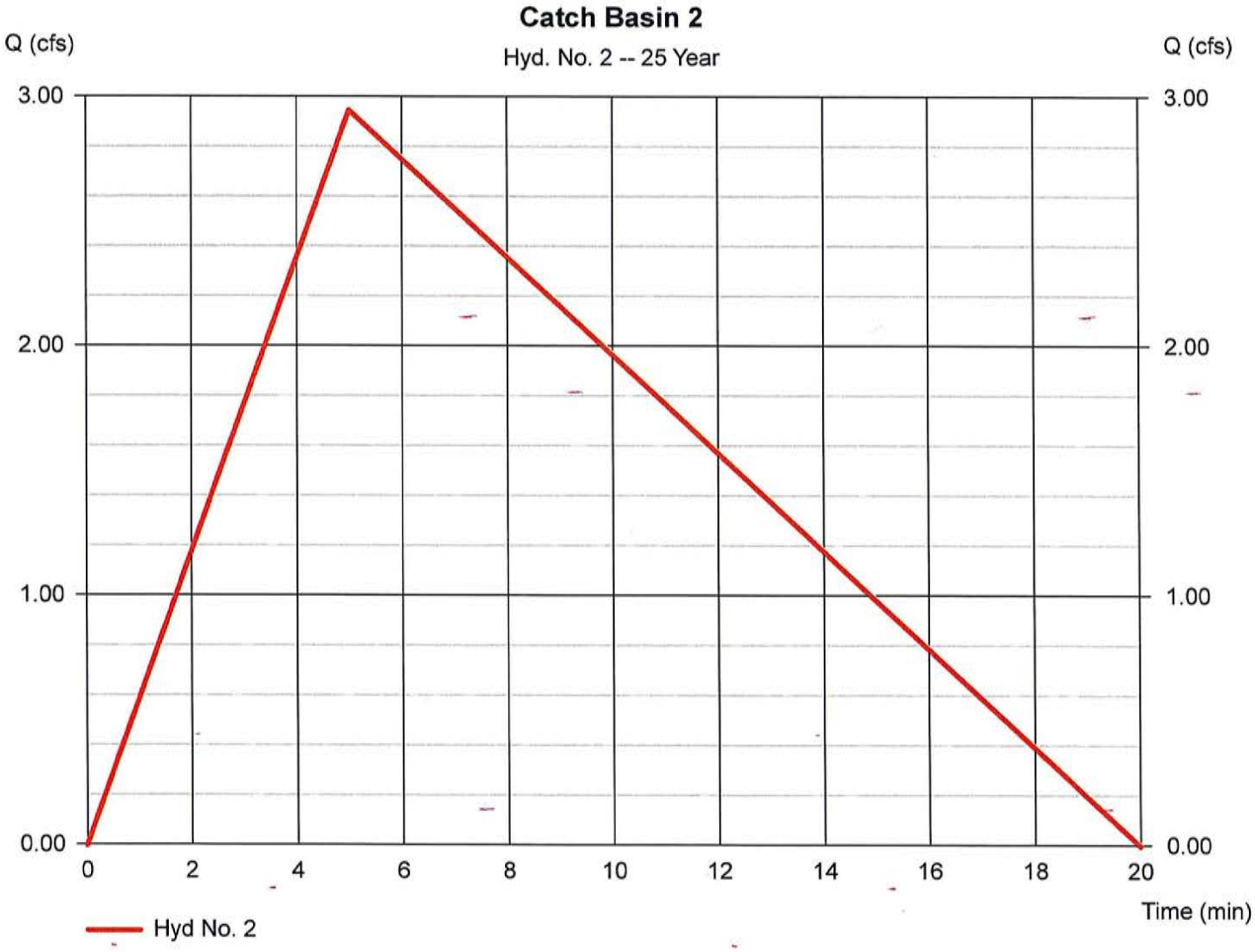
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Wednesday, Nov 30, 2022

Hyd. No. 2

Catch Basin 2

Hydrograph type	= Rational	Peak discharge	= 2.951 cfs
Storm frequency	= 25 yrs	Time to peak	= 5 min
Time interval	= 1 min	Hyd. volume	= 1,770 cuft
Drainage area	= 0.400 ac	Runoff coeff.	= 0.85
Intensity	= 8.678 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/3



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

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	Rational	2.637	1	5	1,582	------	------	------	Catch Basin 1
2	Rational	3.320	1	5	1,992	------	------	------	Catch Basin 2

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Wednesday, Nov 30, 2022

Hyd. No. 1

Catch Basin 1

Hydrograph type	= Rational	Peak discharge	= 2.637 cfs
Storm frequency	= 50 yrs	Time to peak	= 5 min
Time interval	= 1 min	Hyd. volume	= 1,582 cuft
Drainage area	= 0.300 ac	Runoff coeff.	= 0.9
Intensity	= 9.765 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/3

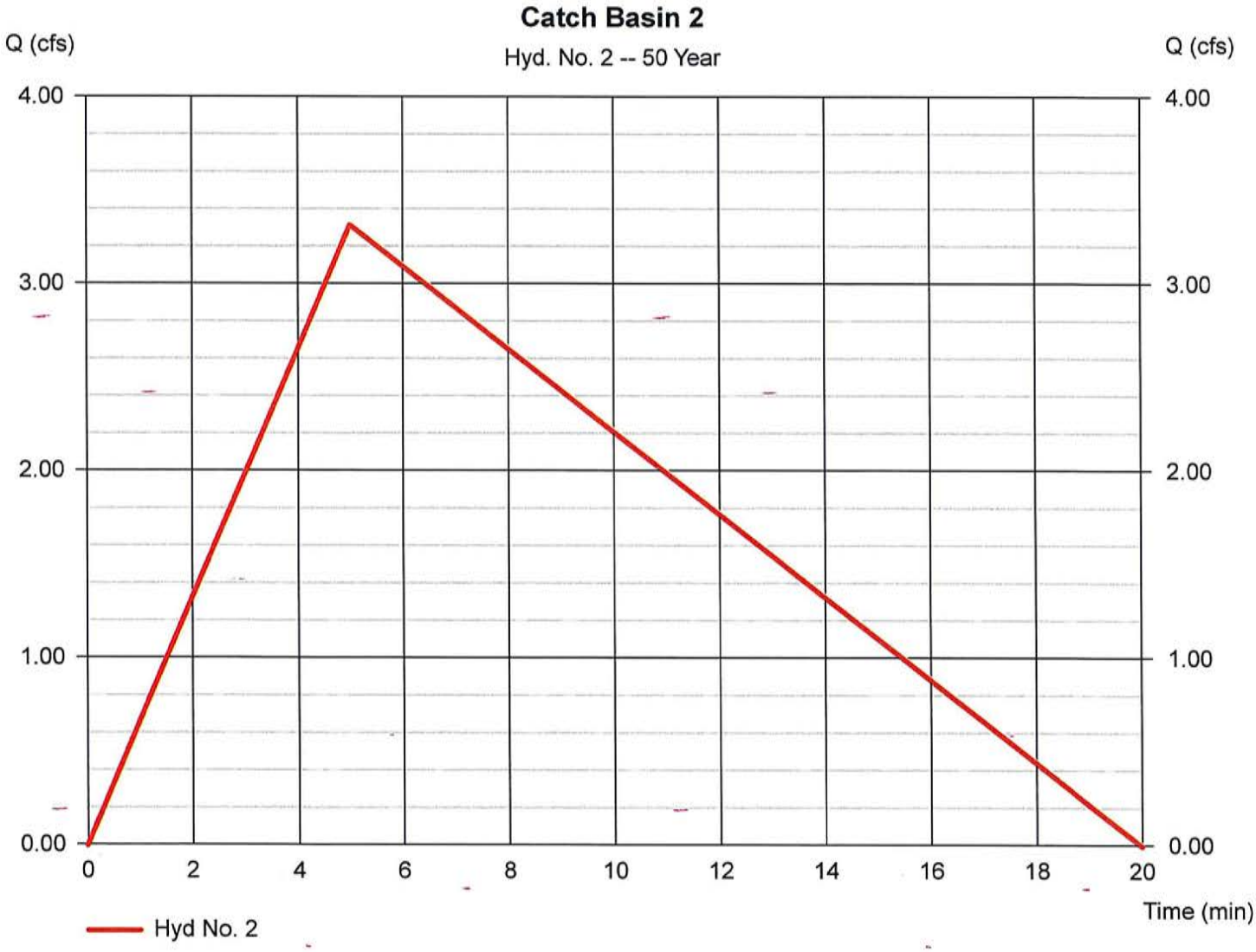
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Wednesday, Nov 30, 2022

Hyd. No. 2

Catch Basin 2

Hydrograph type	= Rational	Peak discharge	= 3.320 cfs
Storm frequency	= 50 yrs	Time to peak	= 5 min
Time interval	= 1 min	Hyd. volume	= 1,992 cuft
Drainage area	= 0.400 ac	Runoff coeff.	= 0.85
Intensity	= 9.765 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/3



Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066

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	Rational	2.969	1	5	1,781	------	------	------	Catch Basin 1
2	Rational	3.738	1	5	2,243	------	------	------	Catch Basin 2

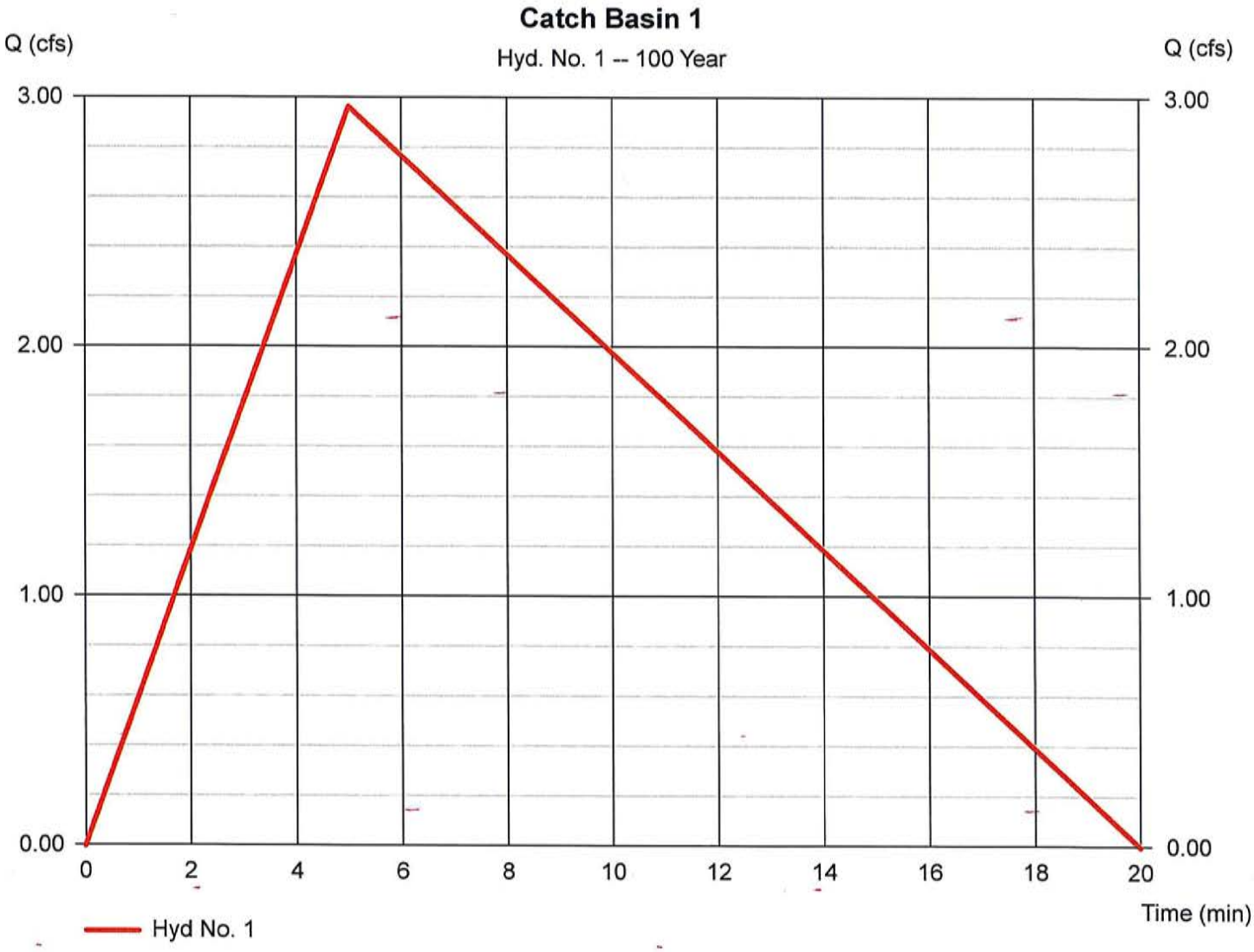
Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Wednesday, Nov 30, 2022

Hyd. No. 1

Catch Basin 1

Hydrograph type	= Rational	Peak discharge	= 2.969 cfs
Storm frequency	= 100 yrs	Time to peak	= 5 min
Time interval	= 1 min	Hyd. volume	= 1,781 cuft
Drainage area	= 0.300 ac	Runoff coeff.	= 0.9
Intensity	= 10.995 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/3



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2009 by Autodesk, Inc. v6.066 Wednesday, Nov 30, 2022

Hyd. No. 2

Catch Basin 2

Hydrograph type	= Rational	Peak discharge	= 3.738 cfs
Storm frequency	= 100 yrs	Time to peak	= 5 min
Time interval	= 1 min	Hyd. volume	= 2,243 cuft
Drainage area	= 0.400 ac	Runoff coeff.	= 0.85
Intensity	= 10.995 in/hr	Tc by User	= 5.00 min
IDF Curve	= GSD-60 NOAA.IDF	Asc/Rec limb fact	= 1/3