STORMWATER POLLUTION PREVENTION PLAN

FOR

DONNELLY - SUGARLOAF

1355 KINGS HIGHWAY

TOWN OF CHESTER
ORANGE COUNTY, NEW YORK

PREPARED BY

ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs
71 Clinton Street
Montgomery, NY 12549

JANUARY 2022

W.O. 1246.01

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1.0 INTRODUCTION

Engineering & Surveying Properties, PC (EP) prepared this report summarizing the potential stormwater impact of the proposed development of the property, known as Donnelly Sugarloaf, on downstream properties and receiving waters.

1.1 PURPOSE

The purpose of the Stormwater Pollution Prevention Plan (SWPPP) is to:

a. Maintain existing drainage patterns as much as possible and continue the conveyance of upland watershed runoff;

b. Mitigate increases in stormwater runoff resulting from the proposed development without adversely affecting downstream conditions;

c. Mitigate potential stormwater impacts and prevent soil erosion and sedimentation resulting from stormwater runoff.

1.2 SCOPE

The scope of the SWPPP for Donnelly Sugarloaf described herein is as follows:

a) Describe and estimate existing stormwater runoff conditions;

b) Describe and estimate proposed stormwater runoff conditions;

c) Describe and evaluate stormwater management facilities planned as part of the proposed development.

2.0 PROJECT DESCRIPTION

The Donnelly Sugarloaf project is a development of a project site on ±2.31 acres located on the western side of Kings Highway and east of Creamery Pond in the hamlet of Sugarloaf which is within the Town of Chester, Orange County, New York. The project is defined as Town of Chester tax lot, Section 13 Block 3 Lots 2. A site location map is included as Figure 1 in Appendix 1.

As proposed, the Donnelly Sugarloaf project involves the construction of a ±7,800 square foot catering facility with attached residence on the northern edge of the parcel which will be added onto the existing structure on site. A detached 24’x40’ accessory barn is proposed to be constructed in the southwest corner of the parcel. Access to the site will come via an existing driveway from Kings Highway which will be utilized as a one-way entrance and a separate existing driveway will be used as an exit. Associated parking

areas and infrastructure will be built/ expanded to serve the proposed project. Two stormwater management facilities will be constructed to mitigate stormwater runoff quality and quantity increases from the proposed expansion as well as a water quality basin.

3.0 TOPOGRAPHY AND SOILS

The existing topography in the Donnelly Sugarloaf project area is generally sloping across the site to the west, ranging from approximately 533 feet above mean sea level (AMSL) to 503 feet AMSL. The eastern portion of the project site is gently sloped (0%-10%) making up approximately 48% of the site. Moderate sloped areas (10%-15%) consist of approximately 12% of the site. The area of significant slope (15%-25%) on site represents 20% of the site area, with the remaining portion of the site (20%) consisting of severe slopes (>25%). The majority of the significant and severe slopes generally exist across the center of the project site sloping down towards Creamery Pond.

Soils information for the Donnelly Sugarloaf project area was assembled from data provided by the U.S. Department of Agriculture Soil Conservation Service printed in the Soil Survey of Orange County identifies the presence of Hoosic (HoB & HoC) and Alden (Ab) soil complexes within the areas of the proposed project site. These soils are considered to be a part of the “A” & “D” hydrologic soils group. The soils survey also shows small areas of water from Creamery Pond. A soil map is included as in Appendix 2.

4.0 METHODOLOGY

The methodology utilized for this analysis is based upon the U.S.D.A. Soil Conservation Service’s Technical Release No. 20 and Technical Release No. 55, as utilized by the software entitled Hydrology Studio.

Hydrology Studio is a Microsoft Windows based program for analyzing the hydrology and hydraulics of stormwater runoff. It utilizes the latest techniques to predict the stormwater flows from any given storm event.

Hydrology Studio has the capability of computing hydrographs (representing discharge rates characteristic of specific watershed conditions, precipitation and geologic factors), combining hydrographs, and routing flows through pipes, streams and ponds. A drainage

model can consist of four different components - subareas, combinations, reaches and reservoirs.

A subarea consists of a relatively homogeneous area of land, which produces a volume and rate of runoff unique to that watershed. A subarea combination is the hydrologic addition of two subareas in order to determine the peak runoff at a design point. A reach is a channelized conveyance structure which routes the runoff from one point to another. A reservoir consists of a natural or man-made impoundment which temporarily stores stormwater runoff and that empties in a manner determined by various hydraulic structures located at its outlet.

The SWPPP for the Donnelly Sugarloaf was based upon the New York State Stormwater Management Design Manual published by the New York State Department of Environmental Conservation (NYSDEC) issued on January 2015. Criteria set forth by this manual, requires analysis and determination of the required Water Quality Volume (WQv), to provide extended detention of the 1-year storm event for Stream Channel Protection (Cpv), to control the peak discharge of the 10-year storm event also known as Overbank Flood Protection Criteria (Qp), and to control the peak discharge and safely pass the 100-year storm event otherwise known as Extreme Flood Control Criteria (Qf).

The SWPPP for Donnelly Sugarloaf was developed utilizing the “five step” process for Stormwater Site Planning and Practice Selection. The five steps consist of site planning, determination of the water quality treatment volume, runoff reduction volumes applied through the use of “green technologies”, application of standard stormwater management practices (SMP’s) for remaining water quality volumes, and application of volume and peak rate control methods as required. Each of the five “steps” is further discussed in detail within this report.

5.0 STORMWATER MANAGEMENT PLANNING

5.1 INITIAL SITE PLANNING

Development of the proposed site plan within the “site planning” process was an iterative process with different conceptual layouts developed for the project site. The current proposed plan was developed after careful consideration of many planning techniques and potential environmental impacts. The proposed site plan

was devised to protect and preserve natural features, maintain natural drainage patterns, and avoid to the greatest extent practical, the disturbance of erodible soils. The site plan with proposed watershed boundaries can be seen as Figure 3 in Appendix 1.

The hydrologic and hydraulic analysis was performed by delineating the tributary watershed to the design point and then dividing these tributary areas into relatively homogeneous subareas. The separation of the watershed into subareas was dictated by watershed conditions, methods of collection, conveyance and points of discharge. Watershed characteristics for each subarea were then assessed from topographical maps, soil surveys, site investigations and land use maps.

5.1.1 EXISTING CONDITIONS

The existing watershed within the site and areas contributory to the site's discharge location consists of two (2) distinct drainage areas with two (2) design points. The existing property generally slopes to the west and existing stormwater runoff from a majority of the site flow towards Creamery Pond on the western edge of the property. The remaining area is located along the eastern portion of the site and flows towards Kings Highway. Figure 2 in Appendix 1 identifies the subareas and their corresponding design points. The characteristics of each of the existing subareas of this watershed are detailed within Table 1 below.

The watershed was delineated and a contributory area, a curve number (CN) and time of concentration (Tc) was determined for the watershed. Calculations for the CN's and Tc's are included in Appendices 3 and 4, respectively. It should be noted that the total contributory area includes off-site areas where appropriate and therefore, the total drainage area size will differ from the project development area.

TABLE 1: EXISTING DRAINAGE AREA CHARACTERISTICS

DRAINAGE AREA DESIGNATION	DRAINAGE AREA SIZE (Ac.)	CN	Tc (min)
EX – A	1.10	80	10.20
EX – B	1.71	54	9.60
TOTAL	**2.81**		

The watershed responses to the 1-, 10- and 100-year 24-hour storm events were computed and evaluated at the design point. The peak rates of runoff at each of the 1-, 10-, & 100-year storm events are presented in Table 9. Stormwater computations are attached at the end of this report in Appendices 7 & 8.

5.1.2 PROPOSED CONDITIONS

For this analysis, the existing watersheds was broken down into a post-development watershed consisting of two (2) subareas and one (1) stormwater facility while maintaining the two design points. The subareas under the proposed development are identified in Figure 3. The characteristics of each proposed subarea are detailed in Table 2 below. It should be noted that the total contributory area includes off-site area and therefore, the total drainage area size will differ from the project development area.

TABLE 2: PROPOSED DRAINAGE AREA CHARACTERISTICS

DRAINAGE AREA DESIGNATION	DRAINAGE AREA SIZE (Ac.)	CN	Tc (min)
PR–A	0.75	86	13.20
PR–B1	0.98	85	10.80
PR-B2	0.54	84	6.00
PR-B3	0.53	54	13.20
TOTAL	**2.81**		

5.2 WATER QUALITY VOLUME

The second step of the stormwater site planning process is determination of the required water quality treatment volume (WQ_v). WQ_v is calculated using the 90% Rule as defined by NYSDEC Stormwater Management Design Manual. The 90% Rule is defined as:

$$WQ_v = [(P)(R_v)(A)] / 12$$

Where: P is the 90% Rainfall Event Number
R_v is equal to 0.05 + 0.009*I
I is the Impervious Cover in percent
A is the subarea total acreage

The WQ_v was calculated for both watersheds encompassing the entire project site, as well as including additional off-site areas. The results of the WQ_v calculations are included in Table 3 below.

TABLE 3: REQUIRED WATER QUALITY VOLUMES

	WQ_v (Ac-ft)
SITE	0.133

5.3 RUNOFF REDUCTION VOLUME

Step three of the stormwater site planning process is the incorporation of "green infrastructure technologies" and standard SMP's with runoff reduction volume (RR_v) capacity. The intended result of RR_v, is to treat 100% of the WQ_v and replicate pre-development hydrology, however if unattainable, provide the minimum RR_v required and provide additional treatment for the remaining WQ_v. Each of the following green technologies and standard SMP's with RR_v capacity were analyzed for implementation along with an explanation of how they are used or unable to be used on this project. The location of the green technologies used can be seen in Figure 4.

Green Technologies

- Conservation of Natural Areas
    - The property is small, and proposed as almost fully developed therefore conservation of natural areas is not proposed.

- Sheet flow to Riparian Buffers / Filter Areas
    - As all areas suitable for a riparian buffer and filter areas are contributary offsite and would preclude any future development of adjacent properties, therefore the implementation of this practice is not proposed.
- Vegetated Open Swales
    - As all areas suitable for vegetated open swales have been accounted for in other green technologies, the implementation for this practice is not proposed.
- Tree Planting / Tree Box
    - The site design proposes a landscaping plan however this landscaping will be utilized for aesthetic purposes only and will not be designed to incorporate stormwater quality treatment.
- Disconnection of Rooftop runoff
    - Due to a lack of filter strips or grassed areas uphill of the stormwater conveyance paths, the rooftop runoff from the proposed buildings will be directly connected to catch basins.
- Stream Daylighting
    - There are no culverted/piped streams on-site that can be day-lighted therefore this technology is not applicable to this project.
- Rain Gardens
    - Due to the fact that most of the tributary roof areas or pavement drainage areas consist of areas greater than 1,000 sq.ft., rain gardens could not be utilized as a green technology on this project.
- Green Roof
    - As all the areas of the proposed development, including all new rooftop areas, have been accounted for in other green technologies, the implementation of this practice is not proposed.
- Stormwater Planters
    - Stormwater planters are suitable for small runoff areas such as rooftops or plaza and courtyards. This project is utilizing other

technologies for treatment of rooftop runoff; therefore, the green technology of stormwater planters was not implemented.

- Rain Tanks/Cistern
  - Rain Tanks and cisterns are well-suited to treat rooftop runoff, however as previously stated, the rooftop disconnect technology was included in the design for this project.
- Porous Pavement
  - Porous pavement was not considered as areas eligible for porous pavement have already been considered under a different runoff reduction practice and soil type "D" is not desirable for this practice.
- Soil Restoration
  - Soil restoration measures must be applied to all areas of disturbance that will be re-established as non-impervious cover to recover the original properties and porosity of the soil to the greatest extent practical. Soil restoration techniques and requirements are discussed further in Section 5.6 of this report.

Standard SMP's with RR_v Capacity

- Infiltration Practice
  - The use of infiltration practices is proposed as the soils were found to be very porous and allow for significant infiltration rates.

- Bio-Retention Practice
  - A bio-retention facility has not been considered due to the lack of area to incorporate into the design and therefore is not proposed.

- Dry Swale (Open Channel Practice)
  - Dry swales were not utilized for this project as all areas of proposed development have been accounted in other green technologies.

The RR_v for each of the green technologies used has been calculated for the point of analysis. The total RR_v was calculated and compared to the WQ_v for the design point. The minimum RR_v is based upon the hydrological soil group (HSG)

classification within the watershed and is defined a Specific Reduction Factor (*S*). The reduction factors for each HSG are shown below in Table 4.

*TABLE 4: SPECIFIC REDUCTION FACTOR (S)**

HSG	*S*
A	0.55
B	0.40
C	0.30
D	0.20

* Watersheds with multiple HSG's shall utilize a weighted average

$RR_{v\ MIN}$ was calculated for each watershed in accordance with the following formula:

$$RR_{v\ MIN} = [(P)(0.95)(S)(I)] / 12$$

The total calculated RR_v provided is compared to the $RR_{v\ MIN}$ to ensure that the green technologies proposed are providing the minimum reduction of the WQ_v as required. The $RR_{v\ MIN}$ and the total RR_v provided along with the revised WQ_v are shown below in Table 5. The revised WQ_v is calculated using the 90% rule as noted in Section 5.2 above, however, the contributory area and impervious area are reduced through the application of green technologies that have been utilized. The calculations for the required and adjusted water quality volumes along with the runoff reduction volumes calculations are shown in Appendix 5.

TABLE 5: RUNOFF REDUCTION VOLUMES & REVISED WQV

$RR_{v\ MIN}$	Total RR_v (Provided)	Revised WQ_v
0.064	0.074	0.051

5.4 APPLICATION OF STANDARD SMP'S FOR THE REVISED WQ_v

Continuing with the stormwater site planning process, step four is to ensure treatment for the remaining WQ_v is provided. The Design volume of Basin (WQv Provided) accounts to 0.096 ac-ft as shown on the calculations page 2 of 2 in Appendix 5. The RRv provided (0.086 ac-ft) is greater than the RRv min. (0.022 ac-ft) but in accordance with NYSDEC guidelines only 90% of the required WQv can be accounted as RRv, so the remainder of WQv is accounted for within the

infiltration chambers since they are considered standard SMPs with RRv capacity. In addition, the entire 1 year runoff volume is infiltrated therefore meeting the RRv requirements.

5.5 VOLUME AND PEAK RATE CONTROL

The fifth and final step of the stormwater site planning process is to apply volume and peak rate control as necessary through the use of standard stormwater management practices. In preparing the SWPPP, it was determined that on-site stormwater facility of an underground storage system will be necessary to mitigate the potential increase in peak stormwater runoff rates from the proposed site improvements.

5.5.1 CHANNEL PROTECTION VOLUME

The required volume control consists of Channel Protection Volume (Cp_v) which is designed to protect downstream channels from erosion. The Cp_v is achieved through providing extended detention of the 1-year storm event for any volume not previously reduced through runoff reduction volume reduction (RR_v), for a period of 24 hours. The calculated 1-year storm event runoff volume along with the required Cp_v volume provided are shown in Table 6. However, as the total 1-year storm runoff from all paved areas are infiltrated back into the ground, no additional Cp_v is required.

TABLE 6: CALCULATED CHANNEL PROTECTION VOLUMES (CPV)

Basin	1-Yr Runoff Volume (Ac-ft)	RR_v Provided (Ac-ft)	Cp_v Required (Ac-ft)	Cp_v Provided (Ac-ft)
Underground Detention	0.000	0.074	0.000	0.000

5.5.2 PEAK RATE CONTROL

The peak discharge rate is controlled utilizing the storage volume available in the stormwater pond and controlling discharge through an overflow weir. The watershed responses to the 1-, 10- and 100-year - 24-hour storm events were computed and evaluated at the aforementioned design points. The peak rates of runoff realized at the design points are presented in Table 9 below. Stormwater computations are attached at the end of this report.

The total peak runoff rates at the design point for the existing condition as well as the final proposed condition have been calculated and shown below in Table 9. The peak runoff rates have been reduced in the proposed conditions during the 1-, 10- and 100-year design storms for all drainage areas on site.

TABLE 7: SUMMARY OF RESULTS AT THE DESIGN POINTS

Criteria		Design Point A	Design Point B
1 – YEAR (Cpv)	Existing (cfs)	1.03	0.024
	Proposed (cfs)	1.01	0.022
	Reduction (cfs)	-0.03	-0.002
	Reduction (%)	-2.8%	-8.3%
10 – YEAR (Qp)	Existing (cfs)	2.89	1.11
	Proposed (cfs)	2.38	0.94
	Reduction (cfs)	-0.51	-0.17
	Reduction (%)	-17.7%	-15.1%
100 – YEAR (Qf)	Existing (cfs)	6.40	5.26
	Proposed (cfs)	4.80	4.61
	Reduction (cfs)	-1.60	-0.65
	Reduction (%)	-24.9%	-12.4%

Since the runoff rates have been decreased in the post-development condition, there will be no adverse impact to the downstream receiving waters. Therefore, the SWPPP designed for the Donnelly Sugarloaf will accomplish the intent of its design.

5.6 SOIL RESTORATION

Soil restoration is intended to recover the original properties and porosity of the soil to the greatest extent practicable. Soil restoration measures shall be applied to any disturbed area within the project prior to establishment of permanent vegetation and installation of landscaping. Any proposed impervious areas do not require soil restoration measures. Soil restoration measures such as tilling allows for compacted soil to gather oxygen and create temporary and even permanent air voids and when combined with the incorporation of organic material, greatly

improves the soils characteristics to temporarily store water and subsequent runoff reduction through infiltration and evapotranspiration.

Various soil disturbance activities related to construction of land development within various soil types and the associated minimum required soil restoration techniques are shown in Table 9.

TABLE 8: SOIL RESTORATION REQUIREMENTS

Type of Soil Disturbance	Soil Restoration Requirement		Comments / Examples
No Soil Disturbance	Restoration not permitted		Preservation of Natural Features
Minimal Soil Disturbance	Restoration not required		Clearing and Grubbing
Areas where topsoil is stripped only – NO change in grade.	HSG A & B	HSG C & D	Protect Areas from any ongoing construction activities.
	Apply 6" of topsoil	Aerate* and apply 6" of topsoil	
Areas of cut or fill	HSG A & B	HSG C & D	
	Aerate* and apply 6" of topsoil	Apply full Soil Restoration**	
Heavy traffic areas on site (especially in a zone 5'-25' around buildings, but not within the 5' perimeter around the foundation walls)	Apply full Soil Restoration** (de-compaction and compost enhancement)		
Areas where Runoff Reduction and/or Infiltration Practices are applied.	Restoration not required, but maybe applied to enhance the reduction specified for appropriate practices		Keep construction equipment from crossings these areas. To protect newly installed practice from any ongoing construction activities construct a single phase operation fence area.
Redevelopment projects	Soil restoration is required on redevelopment projects in areas where existing impervious area will be converted to pervious area		

* Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.

** Per "Deep Ripping and De-compaction Guidelines", NYSDEC 2008

6.0 EROSION AND SEDIMENT CONTROL MEASURES

Soil erosion and sediment control measures have been detailed on the plans and outlined herein. The following are general measures that should be implemented:

a. Damage to surface waters resulting from erosion and sedimentation shall be minimized by stabilizing disturbed areas and by removing sediment from construction site discharge.

b. Following the completion of construction activities in any portion of the site, permanent vegetation shall be re-established on all exposed soils within 14 days. Also, in areas where construction will temporarily cease for 21 days or more, the site shall be stabilized within 7 days of the last construction activity. After completion of final rough grading, topsoil shall be spread to a depth of 6 inches or more and tested for nutrient and soil composition. The topsoil shall be amended as necessary to encourage successful growth of proposed vegetation.

c. Site preparation activities shall be planned to minimize the area and duration of soil disturbance. The project is proposed to be built in a single phase while limiting the amount of disturbance at any one time. The plans approved for construction contains a detailed "Erosion & Settlement Control Plan" which depicts the limits of grading along with the required earth cut and fill locations (including stockpile (topsoil and excess material) locations if necessary). In addition, site specific phased erosion control measures required are shown on the approved plans for construction. In accordance with the NYSDEC GP-0-20-001 permit.

d. Permanent traffic corridors shall be established and "routes of convenience" shall be avoided. Off-site sediment tracking shall be minimized through regularly scheduled sweeping and good housekeeping of construction vehicles.

e. Additional measures shall be implemented for any site work occurring during the "winter months period" which generally consists of November 15th through April 1st. The additional measures shall be in accordance with the Standards

and Specifications for Winter Stabilization as detailed in the New York State Standards and Specifications for Erosion Control, latest edition, as published by the New York State Department of Environmental Conservation

f. A qualified professional shall inspect and log the erosion and sediment control measures once every seven days once earth disturbance has commenced and continue until the site has achieved final stabilization in accordance with the requirements. During times of possible inactivity (i.e. winter months), upon the site being temporarily stabilized, the professional shall perform inspections monthly. The professional shall make recommendations to the operator on how to maintain the integrity and function of all temporary erosion control measures throughout the duration of the development process. Any deficiencies in the measures shall be corrected as soon as possible by the operator.

g. An up to date Construction Site Log Book which includes this SWPPP for "Donnelly Sugarloaf" shall be maintained on site at all times during construction. The Construction Site Log Book shall include at a minimum the following items:

- SPDES General Permit for Stormwater Discharges (Permit No. GP- 0-20-001)
- A copy of the Final (or updated if revised) SWPPP
- A copy of the Final (or updated if revised) Site Plans
- A copy of the Notice of Intent (NOI)
- A copy of the MS4 Signoff (if applicable)
- A copy of the 5 acre waiver from the MS4 (if applicable)
- A copy of the Acknowledgement of the NOI from the NYSDEC
- Owner & Contractor Certifications
- Copies of all erosion & sediment control inspections

h. .

In particular, the following measures will be implemented:

a. Pre-Construction Installation: Prior to any disturbance on site, silt fence shall be installed in accordance with the approved plans in the area of the first phase. Prior to commencement of any subsequent phase, silt fence shall be installed in the proper phase in accordance with the approved plans. Siltation barriers

shall be maintained in good condition and reinforced, extended, repaired or replaced as necessary.

b. In no case shall erodible materials be stockpiled within 25 feet of any ditch, stream or other surface water body.

c. Permanent vegetative cover: Immediately following the completion of construction activity in any portion of the site, permanent vegetation shall be established on all exposed soils by properly seeding at a coverage rate as noted on the approved plans and covered with straw. Water shall be applied to newly seeded areas as needed until grass cover is well established.

d. Washouts shall be immediately repaired, reseeded and protected from further erosion. All accumulated sediment shall be removed and contained in appropriate spoil areas. To effectively control wind erosion, water shall be applied to all exposed soils as necessary

7.0 LONG TERM MAINTENANCE OF WATER QUALITY FEATURES

Upon completion of the project, the ownership and maintenance of the stormwater facilities shall be of private ownership. The responsible entity shall be responsible to ensure that the facilities operate and function as designed through proper maintenance as follows.

a. Regular inspection and maintenance of the proposed facility is required to ensure its long-term water quality and quantity reduction functions. Maintenance requirements for the underground storage facility are as follows:

   i. The isolator row of the underground chamber units shall be inspected every 6 months and cleaned at a minimum of once every 2 years and if sediment accumulation reaches a depth greater than 4”.

   ii. All catch basins, outlet manholes and end sections shall be inspected annually for debris and operability. Any deficiencies shall be repaired or removed immediately.

iii. Catch basins shall be vacuum cleaned once every three years or if determined necessary upon visual inspection.

8.0 SUMMARY OF FINDINGS AND CONCLUSIONS

Based on the analysis of the pre-development and post-development stormwater conditions, and the implementation of stormwater quality and sediment and erosion control measures, the potential stormwater impacts of the "Monarch Woods Senior Community" project will be mitigated to the greatest extent practical.

a. Prevent increases in flooding and flood damage through the reduction of the rate of runoff from all areas.

b. Reduce the erosion potential from the development through the reduction of the rate of runoff from the project site and through the implementation of the soil and erosion control measures outlined on the project plans and as highlighted herein.

c. Decreases non-point source pollution and water quality degradation through the use of multiple "green technologies" including sheet flow to filter strips, vegetated open swales, tree plantings, roof top connections, soil restoration.

d. Those portions of the site which do not direct runoff into a stormwater management practice, will sheet flow through proposed lawn areas and through existing vegetative cover prior to discharging from the site.

e. All criteria set forth in the New York State Stormwater Management Design Manual have been met.

f. Post-development peak discharge rates will be reduced below pre-development peak discharge rates or their impacts minimized.

g. Sediment and erosion control measures are designed to minimize erosion loss and downstream sediment deposits.

APPENDIX 1

FIGURES

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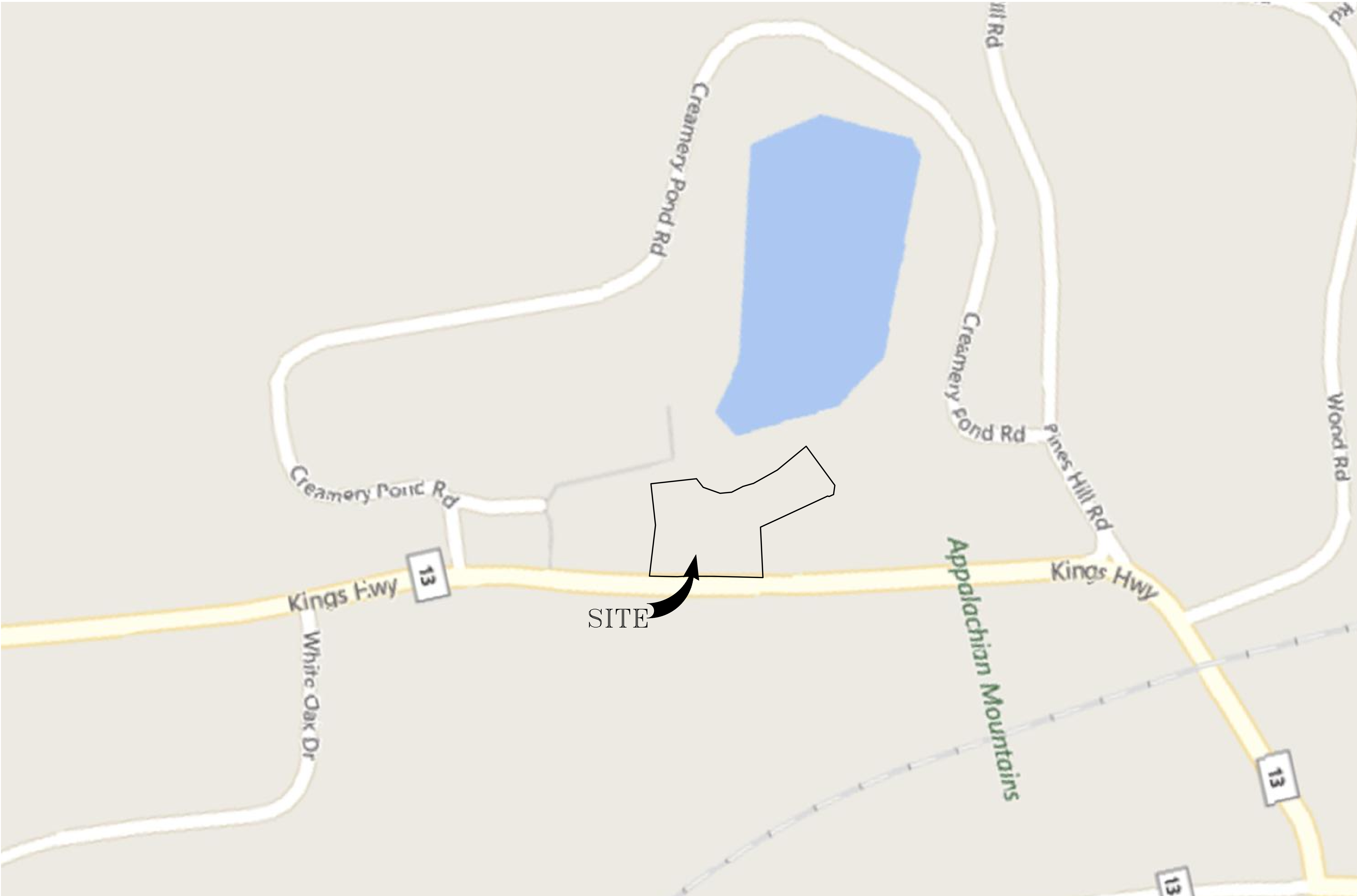

Drawing Name: Z:\1246.01 – Donnelly – Sugarloaf\SWM\SWM.dwg Date Printed: Dec 22, 2020, 2:29pm

LOCATION MAP

DONNELLY - SUGARLOAF
1355 KINGS HIGHWAY
TOWN OF CHESTER
ORANGE COUNTY, NEW YORK

DATE: 12/22/20	JOB # 1246.01
SCALE: 1" = 40'	SHEET # F-1

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REPUTED OWNER:
VALENTINE
TAX MAP ID: 14-7-22.1
DEED BOOK: 5088, PAGE: 325
(FILED MAP 81-99, LOT 20)

REPUTED OWNER:
VALENTINE
TAX MAP ID: 14-7-22.1
DEED BOOK: 5088, PAGE: 325
(FILED MAP 81-99, LOT 20)

CREAMERY POND

PAVED WALK

15" CMP

WLF1

WLF2

WLF3

WLF5

WLF6

WLF8

WLF9

WLF10

DESIGN POINT B

PAVEMENT REMAINS

D

C

FM LOT 1

EX-B

WOOD DECK AND STEPS

4" PVC

GRAVEL SURFACE

TIME OF CONCENTRATION PATH (TYP)

B

WELL CASING

2 STORY FRAME BUILDING

HANDICAP RAMP

RETAINING WALLS (TYP)

OWNER:
ASSOC., LLC
): 13-3-3.2
378, PAGE: 638
16-08, LOT 2)

GRAVEL DRIVEWAY

A

PAVERS WALK

FRAME SHED

GRAVEL SURFACE

TIME OF CONCENTRATION PATH (TYP)

C

D

EX-A

24.8'

10.3'±

OHW

E

CONC LID

DESIGN POINT A

F

KINGS HIGHWAY
(PAVED SURFACE AKA COUNTY ROAD 13)

159.13'

S 11°31'58" E

N 11°31'58" W 33.22'

12" HDPE TO ADJOINERS CATCH BASIN

REPUTED OWNER:
FURY
TAX MAP ID: 14-6-11
DEED BOOK: 13998, PAGE: 32

REPUTED OWNER:
SCARANE
TAX MAP ID: 14-6-12
DEED BOOK: 13739, PAGE: 803

2 STORY FRAME BUILDING

REPUTED OWNER:
ZUNGOLI
TAX MAP ID: 14-6-13
DEED BOOK: 5682, PAGE: 24

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JOB # 1246.01
SHEET # F-2
DATE: 01/10/22
SCALE: 1" = 40'

DONNELLY - SUGARLOAF
1355 KINGS HIGHWAY
TOWN OF CHESTER
ORANGE COUNTY, NEW YORK

EXISTING CONDITIONS

Drawing Name: Z:\1246.01 – Donnelly – Sugarloaf\SWM\SWM.dwg Date Printed: Jan 10, 2022, 1:29pm

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VALENTINE
TAX MAP ID: 14-7-22.1
DEED BOOK: 5088, PAGE: 325
(FILED MAP 81-99, LOT 20)

DEED BOOK: 5991, PAGE: 299
(FILED MAP 168-00, LOT 31)

REPUTED OWNER:
VALENTINE
TAX MAP ID: 14-7-22,1
DEED BOOK: 5088, PAGE: 325
(FILED MAP 81-99, LOT 20)

CREAMERY POND

DESIGN POINT B

PR-B3

PR-B2

REPUTED OWNER:
ACK OFFICE ASSOC., LLC
TAX MAP ID: 13-3-3.2
DEED BOOK: 12878, PAGE: 638
(FILED MAP 116-08, LOT 2)

FM LOT 1

REPUTED OWNER:
SCARANE
TAX MAP ID: 14-6-12
DEED BOOK: 13739, PAGE: 803

REPUTED OWNER:
FURY
TAX MAP ID: 14-6-11
DEED BOOK: 13998, PAGE: 329

12" HDPE TO ADJOINERS CATCH BASIN

TIME OF CONCENTRATION PATH (TYP)

PR-B1

PR-A

REPUTED OWNER:
ZUNGOLI
TAX MAP ID: 14-6-13
DEED BOOK: 5682, PAGE: 24

DESIGN POINT A

CONC LID

15" CMP

4" PVC

OHW

WLF1 WLF2 WLF3 WLF6 WLF8 WLF10

N 11°31'58" W 33.22'

S 11°31'58" E

159.13'

24.8'±

10.3'±

MONTGOMERY OFFICE
71 CLINTON STREET
MONTGOMERY, NY 12549
Ph: (845) 457-7727
WWW.EP-PC.COM

ENGINEERING & SURVEYING PROPERTIES
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JOB #	1246.01	SHEET #	F-3
DATE:	01/10/22	SCALE:	1" = 40'

DONNELLY - SUGARLOAF
1355 KINGS HIGHWAY
TOWN OF CHESTER
ORANGE COUNTY, NEW YORK

PROPOSED CONDITIONS

Drawing Name: Z:\1246.01 – Donnelly – Sugarloaf\SWM\SWM.dwg Date Printed: Jan 14, 2022, 11:26am

DEED BOOK: 5991, PAGE: 299
(FILED MAP 168-00, LOT 31)

REPUTED OWNER:
VALENTINE
TAX MAP ID: 14-7-22.1
DEED BOOK: 5088, PAGE: 325
(FILED MAP 81-99, LOT 20)

REPUTED OWNER:
VALENTINE
TAX MAP ID: 14-7-22,1
DEED BOOK: 5088, PAGE: 325
(FILED MAP 81-99, LOT 20)

REPUTED OWNER:
ACK OFFICE ASSOC., LLC
TAX MAP ID: 13-3-3.2
DEED BOOK: 12878, PAGE: 638
(FILED MAP 116-08, LOT 2)

REPUTED OWNER:
SCARANE
TAX MAP ID: 14-6-12
DEED BOOK: 13739, PAGE: 803

REPUTED OWNER:
FURY
TAX MAP ID: 14-6-11
DEED BOOK: 13998, PAGE: 329

REPUTED OWNER:
ZUNGOLI
TAX MAP ID: 14-6-13
DEED BOOK: 5682, PAGE: 24

FOREBAY

WATER QUALITY BASIN

FM LOT 1

INFILTRATION CHAMBERS

CONC LID

WLF1 WLF2 WLF3 WLF4 WLF5 WLF6 WLF7 WLF8 WLF9 WLF10

504 506 508 510 512 514 516 518 520 522 524 526 528

159.13'

N 11°31'58" W 33.22'

S 11°31'58" E

24.8'±

10.3'±

OHW

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ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

JOB #	1246.01
SHEET #	F-4
DATE:	01/10/22
SCALE:	1" = 40'

DONNELLY - SUGARLOAF
1355 KINGS HIGHWAY
TOWN OF CHESTER
ORANGE COUNTY, NEW YORK

GREEN INFRASTRUCTURE

Drawing Name: Z:\1246.01 – Donnelly – Sugarloaf\SWM\SWM.dwg Date Printed: Jan 14, 2022, 11:24am

APPENDIX 2

SOILS MAP AND

CLASSIFICATIONS, SOILS

TESTING RESULTS & RAINFALL

DATA

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ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

INFILTRATION TEST RESULTS

WO. NO.	DATE	REVISED	SHEET	OF
1246.01	**04/20/21**		**1**	**1**

PROJECT TITLE
Donnelly - Sugarloaf

LOCATION
Town of Chester

CALCULATED BY
MP

APPROVED BY
RW

REF DRAWING(S)

Test Hole Number	Test Hole Depth	Test Hole Diameter	Time	Infiltration Test Runs (Water drop in inches over One Hour)				Average Drop
1	24"	6"	Start:	10:20 AM	11:20 AM	12:20 PM	1:20 AM	23.0
			Finish:	11:20 AM	12:20 PM	1:20 AM	2:20 AM	
			Drop:	24.00	24.00	24.00	20.00	
Comments:								
2	24"	6"	Start:	10:50 AM	11:25 AM	12:18 PM	1:18 AM	23.0
			Finish:	11:25 AM	12:18 PM	1:18 AM	2:18 AM	
			Drop:	24.00	24.00	24.00	20.00	
Comments:								
3	24"	6"	Start:	9:25 AM	10:25 AM	11:30 AM	12:25 PM	24.0
			Finish:	10:25 AM	11:20 AM	12:25 PM	1:25 AM	
			Drop:	24.00	24.00	24.00	24.00	
Comments:								
4	24"	6"	Start:	9:45 AM	10:30 AM	11:30 AM	12:30 PM	24.0
			Finish:	10:30 AM	11:30 AM	12:30 PM	1:30 AM	
			Drop:	24.00	24.00	24.00	24.00	
Comments:								
			Start:					
			Finish:					
			Drop:					
Comments:								
			Start:					
			Finish:					
			Drop:					
Comments:								
			Start:					
			Finish:					
			Drop:					
Comments:								
			Start:					
			Finish:					
			Drop:					
Comments:								

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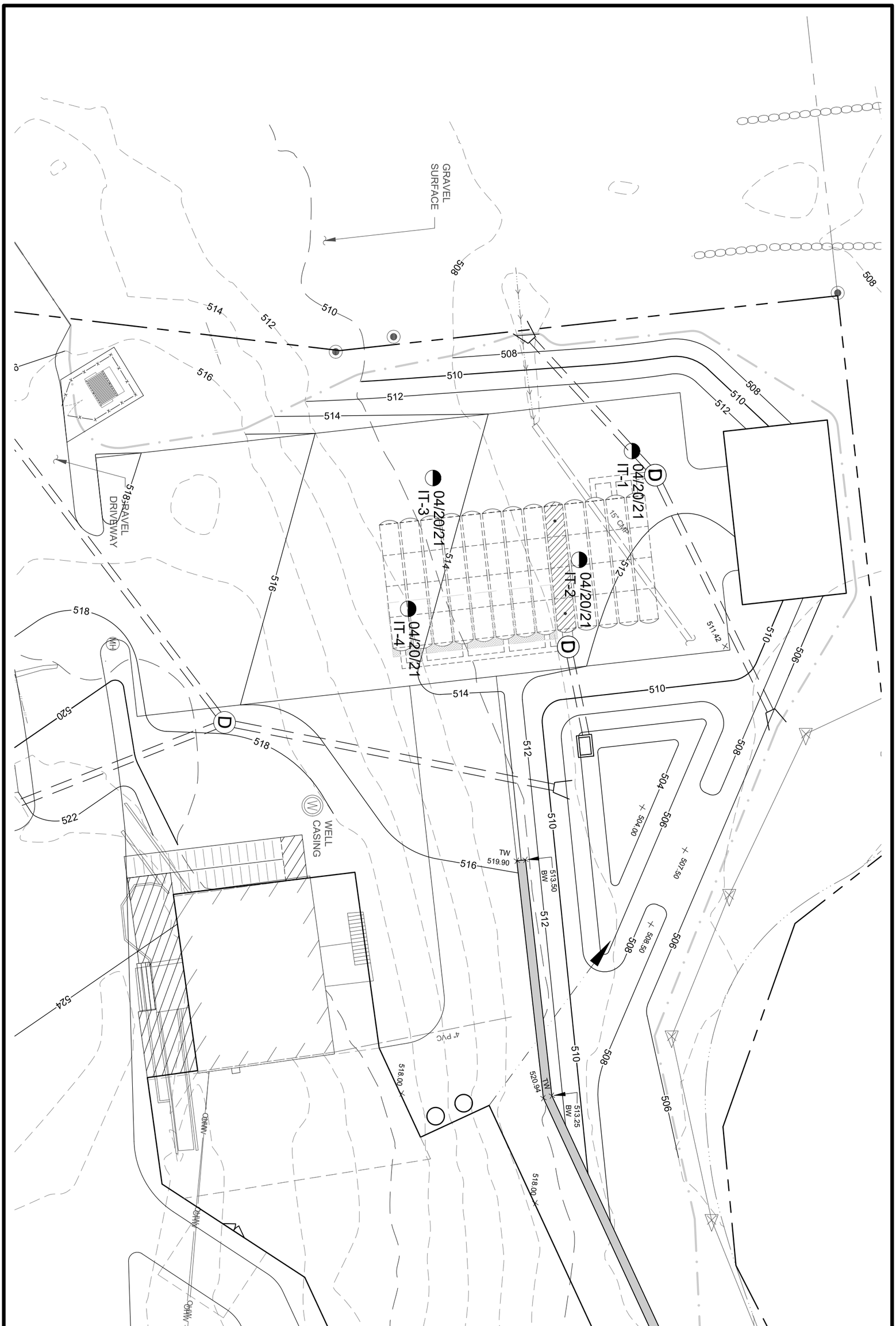

INFILTRATION TESTING LOCATIONS	DONNELLY - SUGARLOAF 1355 KINGS HIGHWAY TOWN OF CHESTER ORANGE COUNTY, NEW YORK	DATE: 01/19/22	JOB # 1246.01	ENGINEERING & SURVEYING PROPERTIES Achieving Successful Results with Innovative Designs	MONTGOMERY OFFICE 71 CLINTON STREET MONTGOMERY, NY 12549 Ph: (845) 457-7727 WWW.EP-PC.COM
		SCALE: 1" = 20'	SHEET # T-1		

Extreme Precipitation Tables

Northeast Regional Climate Center

Data represents point estimates calculated from partial duration series. All precipitation amounts are displayed in inches.

Smoothing	Yes
State	New York
Location	
Longitude	74.288 degrees West
Latitude	41.317 degrees North
Elevation	0 feet
Date/Time	Wed, 08 Jan 2020 14:48:20 -0500

Extreme Precipitation Estimates

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.33	0.51	0.63	0.82	1.03	1.28	**1yr**	0.89	1.20	1.46	1.79	2.19	2.66	3.07	**1yr**	2.35	2.95	3.39	4.09	4.73	**1yr**
2yr	0.40	0.62	0.76	1.00	1.25	1.55	**2yr**	1.08	1.45	1.77	2.17	2.65	3.22	3.67	**2yr**	2.85	3.53	4.04	4.76	5.42	**2yr**
5yr	0.46	0.72	0.90	1.20	1.54	1.94	**5yr**	1.33	1.79	2.23	2.74	3.33	4.03	4.64	**5yr**	3.57	4.46	5.09	5.88	6.65	**5yr**
10yr	0.52	0.81	1.03	1.39	1.81	2.29	**10yr**	1.56	2.10	2.65	3.26	3.97	4.79	5.54	**10yr**	4.24	5.33	6.07	6.91	7.77	**10yr**
25yr	0.60	0.95	1.21	1.68	2.24	2.87	**25yr**	1.93	2.60	3.32	4.10	5.00	6.02	7.02	**25yr**	5.33	6.75	7.66	8.55	9.56	**25yr**
50yr	0.68	1.09	1.39	1.95	2.63	3.40	**50yr**	2.27	3.06	3.95	4.88	5.94	7.16	8.40	**50yr**	6.33	8.08	9.13	10.05	11.19	**50yr**
100yr	0.77	1.24	1.60	2.27	3.09	4.03	**100yr**	2.67	3.60	4.69	5.82	7.08	8.51	10.06	**100yr**	7.54	9.67	10.90	11.82	13.11	**100yr**
200yr	0.87	1.42	1.84	2.63	3.64	4.77	**200yr**	3.14	4.23	5.58	6.93	8.44	10.14	12.05	**200yr**	8.97	11.59	13.02	13.90	15.37	**200yr**
500yr	1.04	1.70	2.22	3.23	4.53	5.98	**500yr**	3.91	5.25	7.01	8.72	10.64	12.78	15.31	**500yr**	11.31	14.72	16.47	17.24	18.97	**500yr**

Lower Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.30	0.46	0.56	0.76	0.93	1.11	**1yr**	0.80	1.09	1.23	1.56	2.03	2.28	2.59	**1yr**	2.02	2.49	2.80	3.81	4.31	**1yr**
2yr	0.38	0.59	0.72	0.98	1.21	1.45	**2yr**	1.04	1.42	1.64	2.11	2.62	3.12	3.55	**2yr**	2.76	3.41	3.91	4.64	5.28	**2yr**
5yr	0.43	0.66	0.81	1.12	1.42	1.68	**5yr**	1.23	1.64	1.92	2.46	3.07	3.73	4.29	**5yr**	3.30	4.13	4.76	5.48	6.23	**5yr**
10yr	0.47	0.72	0.89	1.24	1.61	1.89	**10yr**	1.39	1.84	2.15	2.75	3.48	4.26	4.90	**10yr**	3.77	4.71	5.50	6.21	7.01	**10yr**
25yr	0.53	0.81	1.01	1.44	1.89	2.18	**25yr**	1.63	2.13	2.51	3.23	4.07	5.03	5.88	**25yr**	4.45	5.65	6.65	7.34	8.16	**25yr**
50yr	0.59	0.89	1.11	1.60	2.15	2.44	**50yr**	1.85	2.39	2.83	3.65	4.61	5.66	6.77	**50yr**	5.01	6.51	7.69	8.36	9.20	**50yr**
100yr	0.65	0.98	1.23	1.78	2.44	2.73	**100yr**	2.11	2.67	3.19	4.12	5.23	6.36	7.81	**100yr**	5.63	7.51	8.91	9.50	10.32	**100yr**
200yr	0.73	1.09	1.39	2.01	2.80	3.06	**200yr**	2.42	2.99	3.60	4.69	5.95	7.18	9.02	**200yr**	6.35	8.68	10.35	10.82	11.57	**200yr**
500yr	0.85	1.26	1.62	2.36	3.35	3.56	**500yr**	2.89	3.48	4.24	5.58	7.08	8.38	10.94	**500yr**	7.42	10.52	12.64	12.87	13.52	**500yr**

Upper Confidence Limits

	5min	10min	15min	30min	60min	120min		1hr	2hr	3hr	6hr	12hr	24hr	48hr		1day	2day	4day	7day	10day	
1yr	0.36	0.55	0.68	0.91	1.12	1.35	**1yr**	0.97	1.32	1.56	1.97	2.42	2.86	3.32	**1yr**	2.53	3.19	3.67	4.31	5.10	**1yr**
2yr	0.41	0.63	0.78	1.05	1.30	1.55	**2yr**	1.12	1.52	1.77	2.26	2.80	3.36	3.82	**2yr**	2.97	3.67	4.22	4.93	5.65	**2yr**
5yr	0.50	0.78	0.96	1.32	1.68	1.99	**5yr**	1.45	1.95	2.27	2.91	3.63	4.36	4.95	**5yr**	3.86	4.76	5.45	6.30	7.08	**5yr**
10yr	0.59	0.91	1.13	1.58	2.04	2.44	**10yr**	1.76	2.39	2.76	3.55	4.44	5.37	6.14	**10yr**	4.75	5.91	6.67	7.58	8.47	**10yr**
25yr	0.75	1.13	1.41	2.02	2.65	3.19	**25yr**	2.29	3.12	3.62	4.65	5.78	7.08	8.06	**25yr**	6.26	7.75	8.71	9.70	10.78	**25yr**
50yr	0.88	1.34	1.67	2.41	3.24	3.81	**50yr**	2.80	3.73	4.42	5.68	7.05	8.76	9.91	**50yr**	7.75	9.53	10.65	11.70	12.94	**50yr**
100yr	1.05	1.59	1.99	2.87	3.94	4.65	**100yr**	3.40	4.54	5.39	6.93	8.60	10.85	12.19	**100yr**	9.60	11.72	13.03	14.11	15.56	**100yr**
200yr	1.25	1.88	2.38	3.44	4.80	5.67	**200yr**	4.14	5.54	6.58	8.46	10.49	13.48	15.00	**200yr**	11.93	14.42	15.95	17.01	18.73	**200yr**
500yr	1.58	2.34	3.02	4.38	6.23	7.36	**500yr**	5.38	7.20	8.57	11.02	13.63	17.96	19.69	**500yr**	15.89	18.93	20.82	21.80	23.96	**500yr**

Powered by ACIS Northeast Regional Climate Center

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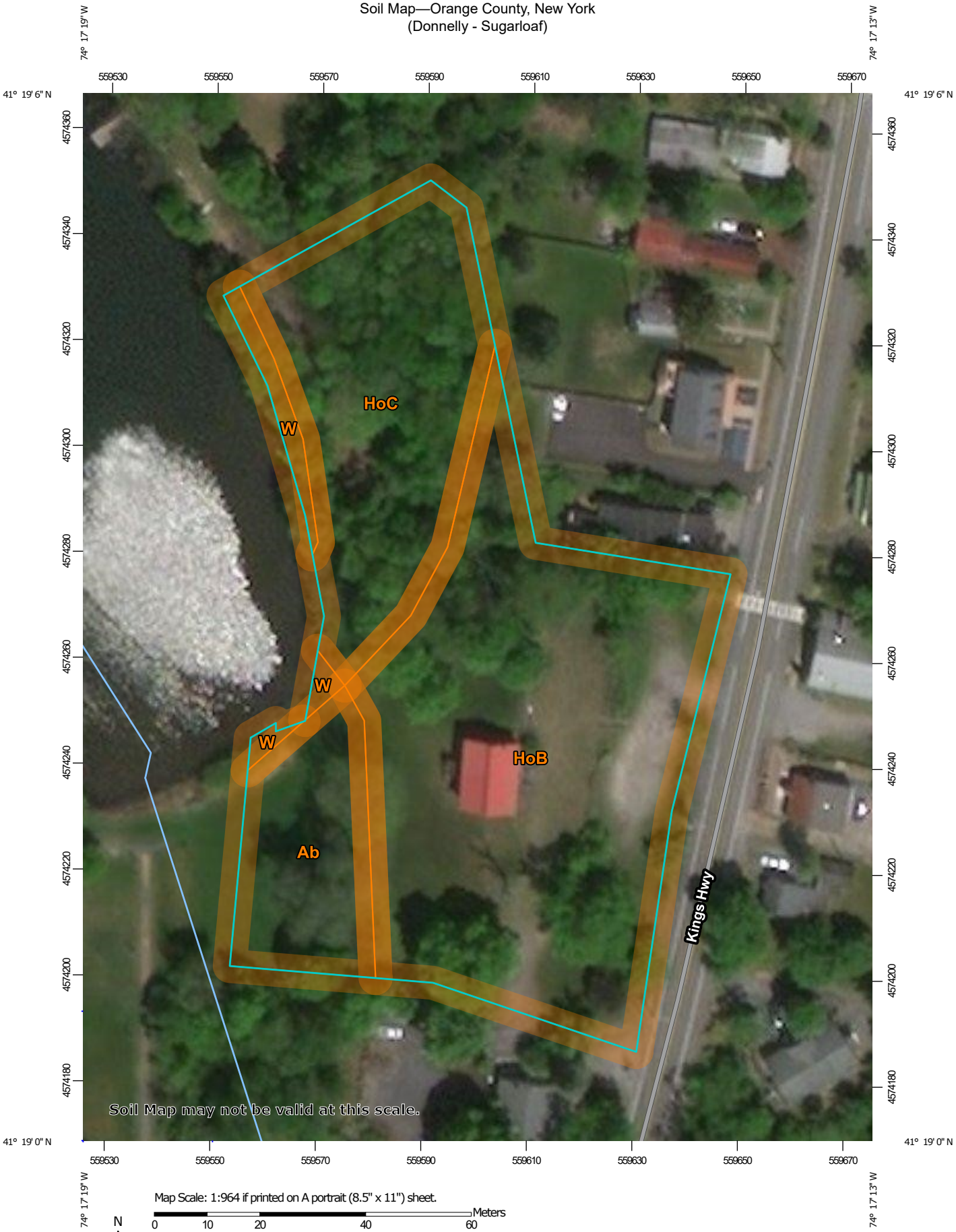
Soil Map—Orange County, New York
(Donnelly - Sugarloaf)



Map Scale: 1:964 if printed on A portrait (8.5" x 11") sheet.

N

Meters
0 10 20 40 60

Feet
0 45 90 180 270

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Orange County, New York
Survey Area Data: Version 20, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 7, 2013—Feb 26, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ab	Alden silt loam	0.3	12.4%
HoB	Hoosic gravelly sandy loam, 3 to 8 percent slopes	1.3	56.8%
HoC	Hoosic gravelly sandy loam, 8 to 15 percent slopes	0.7	28.4%
W	Water	0.1	2.4%
Totals for Area of Interest		**2.3**	**100.0%**

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APPENDIX 3

CURVE NUMBER

CALCULATIONS

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ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

CURVE NUMBER (CN) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1246.01	**01/14/22**		**1**	**6**

PROJECT TITLE: **Donnelly - Sugarloaf**
LOCATION: **Town of Chester**
CALCULATED BY: **MP**
APPROVED BY: **RW**
REF DRAWING(S):

1. Runoff curve number (CN) [Existing] Proposed Subarea: **EX-A**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
	Impervious Areas			
D	Paved Parking Lots, Roofs & Driveways	98	0.55	53.90
A	Lawn - Poor Condition	68	0.44	29.92
D	Lawn - Poor Condition	89	0.00	
A	Woods - Fair Condition	36	0.11	3.96
D	Woods - Fair Condition	79	0.00	
		TOTAL =	1.10	87.78

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{87.78}{1.1}$$

CN (weighted) = 79.800 Use CN= **80**

2. Runoff S = 2.50

		Storm #1	*Storm #2*	*Storm #3*
Frequency	yr			
Rainfall, P	in			
Runoff, Q	in			

(Use P and CN with table 2-1, fig 2-1, or eqns. 2-3 and 2-4)

ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

CURVE NUMBER (CN) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1246.01	**01/14/22**		**2**	**6**

PROJECT TITLE: **Donnelly - Sugarloaf**
LOCATION: **Town of Chester**
CALCULATED BY: **MP**
APPROVED BY: **RW**
REF DRAWING(S):

1. Runoff curve number (CN) [Existing] Proposed Subarea: **EX-B**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
	Impervious Areas			
D	Paved Parking Lots, Roofs & Driveways	98	0.04	3.92
A	Lawn - Poor Condition	68	0.34	23.12
D	Lawn - Poor Condition	89	0.20	17.80
A	Woods - Fair Condition	36	0.99	35.64
D	Woods - Fair Condition	79	0.14	11.06
		TOTAL =	1.71	91.54

$$\text{CN (weighted)} = \frac{\text{total product}}{\text{total area}} = \frac{91.54}{1.71}$$

CN (weighted) = 53.532 Use CN= **54**

2. Runoff S = 8.52

		Storm #1	*Storm #2*	*Storm #3*
Frequency	yr			
Rainfall, P	in			
Runoff, Q	in			

(Use P and CN with table 2-1, fig 2-1, or eqns. 2-3 and 2-4)

ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

CURVE NUMBER (CN) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1246.01	**01/14/22**		**3**	**6**

PROJECT TITLE: **Donnelly - Sugarloaf**
LOCATION: **Town of Chester**
CALCULATED BY: **MP**
APPROVED BY: **RW**
REF DRAWING(S):

1. Runoff curve number (CN) Existing [Proposed] Subarea: **PR-A**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
	Impervious Areas			
	Paved Parking Lots, Roofs & Driveways	98	0.60	58.80
A	Lawn - Good Condition	39	0.15	5.85
D	Lawn - Good Condition	80	0.00	
A	Woods - Fair Condition	36	0.00	
D	Woods - Fair Condition	79	0.00	
		TOTAL =	0.75	64.65

$$CN\ (weighted) = \frac{\text{total product}}{\text{total area}} = \frac{64.65}{0.75}$$

CN (weighted) = 86.200 Use CN= **86**

2. Runoff S = 1.63

		Storm #1	*Storm #2*	*Storm #3*
Frequency	yr			
Rainfall, P	in			
Runoff, Q	in			

(Use P and CN with table 2-1, fig 2-1, or eqns. 2-3 and 2-4)

ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

CURVE NUMBER (CN) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1246.01	**01/14/22**		**4**	**6**

PROJECT TITLE: **Donnelly - Sugarloaf**
LOCATION: **Town of Chester**
CALCULATED BY: **MP**
APPROVED BY: **RW**
REF DRAWING(S):

1. Runoff curve number (CN) Existing [Proposed] Subarea: **PR-B1**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
	Impervious Areas			
	Paved Parking Lots, Roofs & Driveways	98	0.73	71.54
A	Lawn - Good Condition	39	0.20	7.80
D	Lawn - Good Condition	80	0.05	4.00
A	Woods - Fair Condition	36	0.00	
D	Woods - Fair Condition	79	0.00	
		TOTAL =	0.98	83.34

$$CN\ (weighted) = \frac{\text{total product}}{\text{total area}} = \frac{83.34}{0.98}$$

CN (weighted) = 85.041 Use CN= **85**

2. Runoff S = 1.76

		Storm #1	*Storm #2*	*Storm #3*
Frequency	yr			
Rainfall, P	in			
Runoff, Q	in			

(Use P and CN with table 2-1, fig 2-1, or eqns. 2-3 and 2-4)

ENGINEERING & SURVEYING PROPERTIES
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CURVE NUMBER (CN) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1246.01	**01/14/22**		**5**	**6**

PROJECT TITLE: **Donnelly - Sugarloaf**
LOCATION: **Town of Chester**
CALCULATED BY: **MP**
APPROVED BY: **RW**
REF DRAWING(S):

1. Runoff curve number (CN) Existing [Proposed] Subarea: **PR-B2**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
	Impervious Areas			
	Paved Parking Lots, Roofs & Driveways	98	0.41	40.18
A	Lawn - Good Condition	39	0.13	5.07
D	Lawn - Good Condition	80	0.00	
A	Woods - Fair Condition	36	0.00	
D	Woods - Fair Condition	79	0.00	
		TOTAL =	0.54	45.25

$$CN\ (weighted) = \frac{\text{total product}}{\text{total area}} = \frac{45.25}{0.54}$$

CN (weighted) = 83.796 Use CN= **84**

2. Runoff S = 1.90

		Storm #1	*Storm #2*	*Storm #3*
Frequency	yr			
Rainfall, P	in			
Runoff, Q	in			

(Use P and CN with table 2-1, fig 2-1, or eqns. 2-3 and 2-4)

ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

CURVE NUMBER (CN) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1246.01	**01/14/22**		**6**	**6**

PROJECT TITLE: **Donnelly - Sugarloaf**
LOCATION: **Town of Chester**
CALCULATED BY: **MP**
APPROVED BY: **RW**
REF DRAWING(S):

1. Runoff curve number (CN) Existing [Proposed] Subarea: **PR-B3**

Soil Name & Hydrologic Group	Cover Description (cover type, treatment & conditions)	CN	Area (acres)	Product of CN x Area
	Impervious Areas			
	Paved Parking Lots, Roofs & Driveways	98	0.00	
A	Lawn - Good Condition	39	0.29	11.31
D	Lawn - Good Condition	80	0.14	11.20
A	Woods - Fair Condition	36	0.04	1.44
D	Woods - Fair Condition	79	0.06	4.74
		TOTAL =	0.53	28.69

$$CN\ (weighted) = \frac{\text{total product}}{\text{total area}} = \frac{28.69}{0.53}$$

CN (weighted) = 54.132 Use CN= **54**

2. Runoff S = 8.52

		Storm #1	*Storm #2*	*Storm #3*
Frequency	yr			
Rainfall, P	in			
Runoff, Q	in			

(Use P and CN with table 2-1, fig 2-1, or eqns. 2-3 and 2-4)

APPENDIX 4

TIME OF CONCENTRATION

CALCULATIONS

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ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1246.01	**01/14/22**		**1**	**6**

PROJECT TITLE: **Donnelly - Sugarloaf**
LOCATION: **Town of Chester**
CALCULATED BY: **MP**
APPROVED BY: **RW**
REF DRAWING(S): **DWG LAST REV. 1/8/20**

Existing | Proposed Area: **EX-A**

1. Sheet Flow

Segment ID		A-B	B-C	C-D		
Surface Description (table 3-1)		Paved	Grass: D	Paved		
Manning's roughness coeff., 'n' (table 3-1)		0.01	0.24	0.01		
Flow length, L (total L ≤ 300 ft)	ft	4	83	13		
Two-year 24-hour rainfall, P_2	in	3.22	3.22	3.22		
Land Slope, s	ft/ft	0.036	0.036	0.036		
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\, s^{0.4}}$	hr	0.001	0.161	0.003		0.166

2. Shallow Concentrated Flow

Segment ID		D-E	E-F			
Surface description (paved or unpaved)		Unpaved	Unpaved			
Flow length, L	ft	61.5	46.4			
Watercourse slope, s	ft/ft	0.110	0.040			
Average velocity, V (figure 3-1)	ft/s	5.351	3.227			
$T_t = \frac{L}{3600\, V}$	hr	0.003	0.004			0.007

3. Channel Flow

Segment ID						
Cross sectional flow area, a	ft^2					
Wetted perimeter, p_w	ft					
Hydraulic radius, $r = a/p_w$	ft					
Channel slope, s	ft/ft					
Manning's roughness coefficient, n						
$V = \frac{1.49\, r^{2/3}\, s^{1/2}}{n}$	ft/s					
Flow Length, L	ft					
$T_t = \frac{L}{3600\, V}$	hr					

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) hr = **0.17**

min = **10.20**

ENGINEERING & SURVEYING PROPERTIES
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TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1246.01	**01/14/22**		**2**	**6**

PROJECT TITLE: **Donnelly - Sugarloaf**
LOCATION: **Town of Chester**
CALCULATED BY: **MP**
APPROVED BY: **RW**
REF DRAWING(S): **DWG LAST REV. 1/8/20**

Existing | Proposed Area: **EX-B**

1. Sheet Flow

		Segment ID	A-B	B-C			
Surface Description (table 3-1)			Grass: D	Grass: D			
Manning's roughness coeff., 'n' (table 3-1)			0.24	0.24			
Flow length, L (total L ≤ 300 ft)	ft		62	62			
Two-year 24-hour rainfall, P_2	in		3.22	3.22			
Land Slope, s	ft/ft		0.090	0.200			
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\, s^{0.4}}$	hr		0.089	0.064			0.153

2. Shallow Concentrated Flow

		Segment ID	C-D				
Surface description (paved or unpaved)			Unpaved				
Flow length, L	ft		102.8				
Watercourse slope, s	ft/ft		0.044				
Average velocity, V (figure 3-1)	ft/s		3.384				
$T_t = \frac{L}{3600\, V}$	hr		0.008				0.008

3. Channel Flow

		Segment ID					
Cross sectional flow area, a	ft^2						
Wetted perimeter, p_w	ft						
Hydraulic radius, $r = a/p_w$	ft						
Channel slope, s	ft/ft						
Manning's roughness coefficient, n							
$V = \frac{1.49\, r^{2/3}\, s^{1/2}}{n}$	ft/s						
Flow Length, L	ft						
$T_t = \frac{L}{3600\, V}$	hr						

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) hr = **0.16**

min = **9.60**

ENGINEERING & SURVEYING PROPERTIES
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TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1246.01	**01/14/22**		**3**	**6**

PROJECT TITLE: **Donnelly - Sugarloaf**
LOCATION: **Town of Chester**
CALCULATED BY: **MP**
APPROVED BY: **RW**
REF DRAWING(S): **DWG LAST REV. 1/8/20**

Existing | Proposed — Area: **PR-A**

1. Sheet Flow

		Segment ID	A-B				
Surface Description (table 3-1)			Grass: D				
Manning's roughness coeff., 'n' (table 3-1)			0.24				
Flow length, L (total L ≤ 300 ft)	ft		100				
Two-year 24-hour rainfall, P_2	in		3.50				
Land Slope, s	ft/ft		0.030				
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$	hr		0.193				0.193

2. Shallow Concentrated Flow

		Segment ID	B-C	C-D			
Surface description (paved or unpaved)			Unpaved	Unpaved			
Flow length, L	ft		38.4	323.7			
Watercourse slope, s	ft/ft		0.033	0.050			
Average velocity, V (figure 3-1)	ft/s		2.931	3.608			
$T_t = \frac{L}{3600\,V}$	hr		0.004	0.025			0.029

3. Channel Flow

		Segment ID					
Cross sectional flow area, a	ft^2						
Wetted perimeter, p_w	ft						
Hydraulic radius, $r = a/p_w$	ft						
Channel slope, s	ft/ft						
Manning's roughness coefficient, n							
$V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$	ft/s						
Flow Length, L	ft						
$T_t = \frac{L}{3600\,V}$	hr						

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) **hr =** **0.22**

min = **13.20**

ENGINEERING & SURVEYING PROPERTIES
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TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1246.01	**01/14/22**		**4**	**6**

PROJECT TITLE: **Donnelly - Sugarloaf**
LOCATION: **Town of Chester**
CALCULATED BY: **MP**
APPROVED BY: **RW**
REF DRAWING(S): **DWG LAST REV. 1/8/20**

Existing | Proposed Area: **PR-B1**

1. Sheet Flow

		Segment ID	A-B	B-C			
Surface Description (table 3-1)			Grass: D	Paved			
Manning's roughness coeff., 'n' (table 3-1)			0.24	0.01			
Flow length, L (total L ≤ 300 ft)	ft		87	13			
Two-year 24-hour rainfall, P_2	in		3.50	3.50			
Land Slope, s	ft/ft		0.030	0.050			
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$	hr		0.173	0.003			0.176

2. Shallow Concentrated Flow

		Segment ID	C-D	D-E			
Surface description (paved or unpaved)			Unpaved	Unpaved			
Flow length, L	ft		7.0	29.0			
Watercourse slope, s	ft/ft		0.010	1.000			
Average velocity, V (figure 3-1)	ft/s		1.613	16.135			
$T_t = \frac{L}{3600\,V}$	hr		0.001	0.000			0.002

3. Channel Flow

		Segment ID					
Cross sectional flow area, a	ft^2						
Wetted perimeter, p_w	ft						
Hydraulic radius, $r = a/p_w$	ft						
Channel slope, s	ft/ft						
Manning's roughness coefficient, n							
$V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$	ft/s						
Flow Length, L	ft						
$T_t = \frac{L}{3600\,V}$	hr						

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) hr = 0.18

min = 10.80

ENGINEERING & SURVEYING PROPERTIES
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TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1246.01	**01/14/22**		**5**	**6**

PROJECT TITLE: **Donnelly - Sugarloaf**
LOCATION: **Town of Chester**
CALCULATED BY: **MP**
APPROVED BY: **RW**
REF DRAWING(S): **DWG LAST REV. 1/8/20**

Existing | Proposed Area: **PR-B2**

1. Sheet Flow

Segment ID		A-B	B-C			
Surface Description (table 3-1)		Grass: D	Paved			
Manning's roughness coeff., 'n' (table 3-1)		0.24	0.01			
Flow length, L (total L ≤ 300 ft)	ft	13	87			
Two-year 24-hour rainfall, P_2	in	3.50	3.50			
Land Slope, s	ft/ft	0.200	0.020			
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\, s^{0.4}}$	hr	0.018	0.017			0.035

2. Shallow Concentrated Flow

Segment ID		C-D	D-E			
Surface description (paved or unpaved)		Paved	Unpaved			
Flow length, L	ft	58.0	57.0			
Watercourse slope, s	ft/ft	0.020	0.500			
Average velocity, V (figure 3-1)	ft/s	2.875	11.409			
$T_t = \frac{L}{3600\, V}$	hr	0.006	0.001			0.007

3. Channel Flow

Segment ID						
Cross sectional flow area, a	ft^2					
Wetted perimeter, p_w	ft					
Hydraulic radius, $r = a/p_w$	ft					
Channel slope, s	ft/ft					
Manning's roughness coefficient, n						
$V = \frac{1.49\, r^{2/3}\, s^{1/2}}{n}$	ft/s					
Flow Length, L	ft					
$T_t = \frac{L}{3600\, V}$	hr					

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) hr = 0.04

min = 2.40

USE MINIMUM TC OF 6 MINUTES

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TIME OF CONCENTRATION (Tc) WORKSHEET

WO. NO.	DATE	REVISED	SHEET	OF
1246.01	**01/14/22**		**6**	**6**

PROJECT TITLE: **Donnelly - Sugarloaf**
LOCATION: **Town of Chester**
CALCULATED BY: **MP**
APPROVED BY: **RW**
REF DRAWING(S): **DWG LAST REV. 1/8/20**

Existing | Proposed — Area: **PR-B3**

1. Sheet Flow

		Segment ID	A-B				
Surface Description (table 3-1)			Woods: L				
Manning's roughness coeff., 'n' (table 3-1)			0.40				
Flow length, L (total L ≤ 300 ft)	ft		100				
Two-year 24-hour rainfall, P_2	in		3.50				
Land Slope, s	ft/ft		0.060				
$T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$	hr		0.221				0.221

2. Shallow Concentrated Flow

		Segment ID	B-C				
Surface description (paved or unpaved)			Unpaved				
Flow length, L	ft		5.7				
Watercourse slope, s	ft/ft		0.020				
Average velocity, V (figure 3-1)	ft/s		2.282				
$T_t = \frac{L}{3600\,V}$	hr		0.001				0.001

3. Channel Flow

		Segment ID	C-D				
Cross sectional flow area, a	ft^2		0.75				
Wetted perimeter, p_w	ft		12.00				
Hydraulic radius, $r = a/p_w$	ft		0.06				
Channel slope, s	ft/ft		0.025				
Manning's roughness coefficient, n			0.012				
$V = \frac{1.49\,r^{2/3}\,s^{1/2}}{n}$	ft/s		3.009				
Flow Length, L	ft						
$T_t = \frac{L}{3600\,V}$	hr		0.000				0.000

Total Tc For Watershed or Subarea (Add Steps 6, 11, and 19) hr = **0.22**

min = **13.20**

APPENDIX 5

WATER QUALITY VOLUME & RUNOFF REDUCTION

VOLUME CALCULATIONS

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ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

WATER QUALITY VOLUME (WQ_v) CALCULATION SHEET

WO. NO.	DATE	REVISED	SHEET	OF
1246.01	**01/14/22**	**-**	**1**	**2**

PROJECT TITLE: **Donnelly - Sugarloaf**

LOCATION: **Town of Chester**

CALCULATED BY: **MP**

APPROVED BY: **RW**

Stormwater Management Design Point Designation: **DP-B**

$WQ_v = (P * R_v * A) / (12)$

Drainage Area	90% Rainfall Event # (**P**)	Total Drainage Area (**A**)	Total Impervious Area (**I**)	R_v (0.05 + 0.009*I%)	WQ_v Required (Ac-ft)	**WQv** Required (ft^3)
DP-B	1.40	2.31	1.14	0.494	0.133	5,793.5

HSG	**Area (Ac.)**	**%**	**S**
A	2.02	87%	0.55
B	0.00	0%	0.40
C	0.00	0%	0.30
D	0.29	13%	0.20

Minimum RRv = (P * 0.95 * S * I) / (12)

P = 1.40
S = 0.51
I = 1.14
$RR_{v\ MIN}$ **0.064** Ac-ft

Green Technology	**Implemented ? Yes**	**No**	Drainage Area Reduction	Contributing Drainage Area Reduction	Total Drainage Area Reduction	Total Impervious Area Reduction
Area Reduction Practices						
Conservation of Natural Areas	☐	☑	-	-	-	-
Sheet Flow to Riparian Buffers or Filter Strips	☐	☑	-	-	-	-
Tree Planting / Tree Box	☐	☑	-	-	-	-
		Subtotals			0.00	0.00

Revised WQ_v after Area Deductions	**P**	**A**	**I**	R_v	WQ_v	$RR_{v\ AREA}$
	1.40	2.31	1.14	0.494	0.133	**0.000**

Disconnection of Rooftop Runoff — Impervious Area Reduction: 0.00 Acres

Revised WQ_v after Impervious Disconnect	**P**	**A**	**I**	R_v	WQ_v	$RR_{v\ IMP}$
	1.40	2.31	1.14	0.494	0.133	**0.000**

Source Control WQ_v Treatment Practices	**Yes**	**No**	WQ_v	$RR_{v\ SC}$*	**(A)** Reduction	**(I)** Reduction
Vegetated Open Swales	☐	☑	-	-	-	-
Rain Garden	☐	☑	-	-	-	-
Green Roof	☐	☑	-	-	-	-
Stormwater Planters	☐	☑	-	-	-	-
Rain Tanks / Cisterns	☐	☑	-	-	-	-
Porous Pavement	☐	☑	-	-	-	-
Standard SMP's with RRv Capacity						
Infiltration	☑	☐	0.082	0.074	0.98	0.73
Bio-Retention	☐	☑	-	-	-	-
Dry Swale (Open Channel)	☐	☑	-	-	-	-
		Subtotals	0.082	**0.074**	0.98	0.73

Is The Total RR_v ($RR_{v\ AREA}$ + $RR_{v\ IMP}$ + $RR_{v\ SC}$) **0.074** **≥ $RR_{v\ MIN}$?** **0.064** **YES**

WQ_v Required by Standard Practices	**P**	**A**	**I**	R_v	WQ_v (Ac-ft)	WQ_v (ft^3)
	1.40	1.33	0.41	0.327	0.051	2,213.2

** For Source Control (if used) RRv calculations see attached Green Technology RRv Calculation Sheets*

ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

RUNOFF REDUCTION VOLUME (RRv) CALCULATION SHEET

WO. NO.	DATE	REVISED	SHEET	OF
1246.01	**01/14/22**		**2**	**2**

PROJECT TITLE		LOCATION
Donnelly - Sugarloaf		**Town of Chester**
CALCULATED BY **MP**	APPROVED BY **RW**	Stormwater Management Design Point Designation **DP-B**

INFILTRATION PRACTICES

Requirement Checks	Yes	No	Notes:
Infiltration rate (k) $\geq$ 0.5"/$_{hr}$	☑	☐	
Pretreatment provided	☑	☐	
Design Complies with Required Elements of Practice	☑	☐	
Infiltration designed to exfiltrate through bottom of practice only?	☑	☐	

Drainage Area (Ac.)	0.98	
Impervious Area (Ac.)	0.73	
Rainfall Event # (P)	1.40	
Rv	0.720	
$WQv_{REQ'D}$	0.082	
A_t (ft^2)		Surface area of infiltration trench
d_t (ft)		depth of trench
n	0.400	porosity
V_t (ft^3)		Design Volume of Trench (WQ_v Provided)
$V_t > WQv_{REQ'D}$		
A_b (ft^2)	2,269.0	Surface area of infiltration basin
D_b (ft)	3	depth of basin
V_b (ft^3)	6,807.0	Design Volume of basin (WQ_v Provided)
V_b (ac-ft)	0.156	Design Volume of basin (WQ_v Provided)
$V_t > WQv_{REQ'D}$	**YES**	
RRv	0.074	

APPENDIX 6

HYDROGRAPH

SUMMARIES & DIAGRAMS

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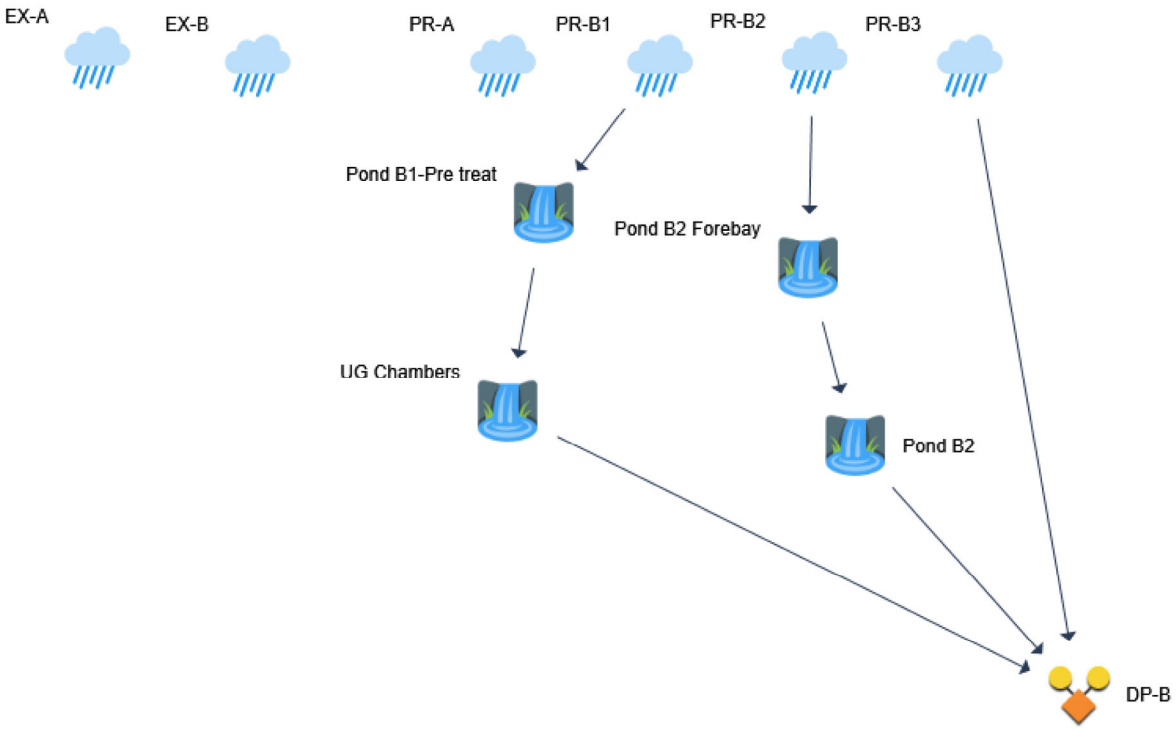
Basin Model

Hydrology Studio v 3.0.0.21

Project Name: Donnelly - Sugarloaf

01-14-2022



Hydrograph by Return Period

Project Name: Donnelly - Sugarloaf

01-14-2022

Hydrology Studio v 3.0.0.21

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Outflow (cfs)							
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
1	NRCS Runoff	EX-A	1.034				2.886			6.401
2	NRCS Runoff	EX-B	0.024				1.109			5.261
3	NRCS Runoff	PR-A	1.005				2.376			4.804
4	NRCS Runoff	PR-B1	1.244				3.021			6.198
5	NRCS Runoff	PR-B2	0.760				1.879			3.890
6	NRCS Runoff	PR-B3	0.007				0.318			1.505
7	Pond Route	Pond B1-Pre treat	1.244				3.000			6.142
8	Pond Route	UG Chambers	0.000				0.665			3.334
9	Pond Route	Pond B2 Forebay	0.613				1.696			3.648
10	Pond Route	Pond B2	0.017				0.037			0.373
11	Junction	DP-B	0.022				0.939			4.606

APPENDIX 7

EXISTING 1-, 10-, 100-YEAR

DESIGN STORM

HYDROGRAPHS

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Hydrograph 1-yr Summary

Project Name: Donnelly - Sugarloaf

01-14-2022

Hydrology Studio v 3.0.0.21

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	NRCS Runoff	EX-A	1.034	12.17	4,085	----		
2	NRCS Runoff	EX-B	0.024	12.53	599	----		
3	NRCS Runoff	PR-A	1.005	12.13	3,861	----		
4	NRCS Runoff	PR-B1	1.244	12.13	4,795	----		
5	NRCS Runoff	PR-B2	0.760	12.07	2,281	----		
6	NRCS Runoff	PR-B3	0.007	13.67	191	----		
7	Pond Route	Pond B1-Pre treat	1.244	12.17	4,575	4	507.06	2,276
8	Pond Route	UG Chambers	0.000	12.53	0.000	7	507.19	133
9	Pond Route	Pond B2 Forebay	0.613	12.13	1,784	5	511.04	8,170
10	Pond Route	Pond B2	0.017	18.10	1,255	9	508.46	1,710
11	Junction	DP-B	0.022	15.17	1,447	6, 8, 10		

Hydrograph Report

Project Name: Donnelly - Sugarloaf

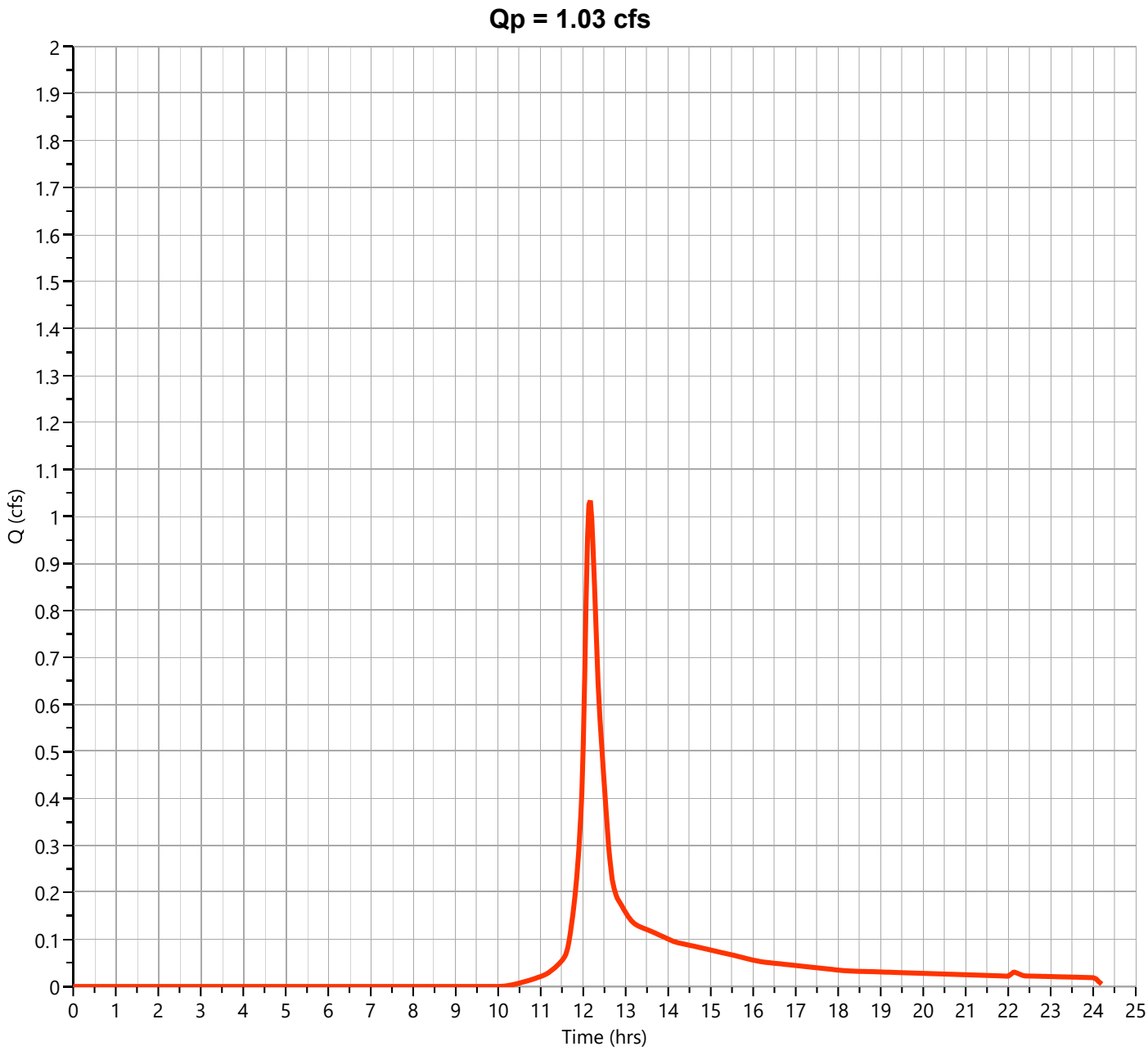
Hydrology Studio v 3.0.0.21

01-14-2022

EX-A

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.034 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.17 hrs
Time Interval	= 2 min	Runoff Volume	= 4,085 cuft
Drainage Area	= 1.09 ac	Curve Number	= 80
Tc Method	= User	Time of Conc. (Tc)	= 10.2 min
Total Rainfall	= 2.66 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Donnelly - Sugarloaf

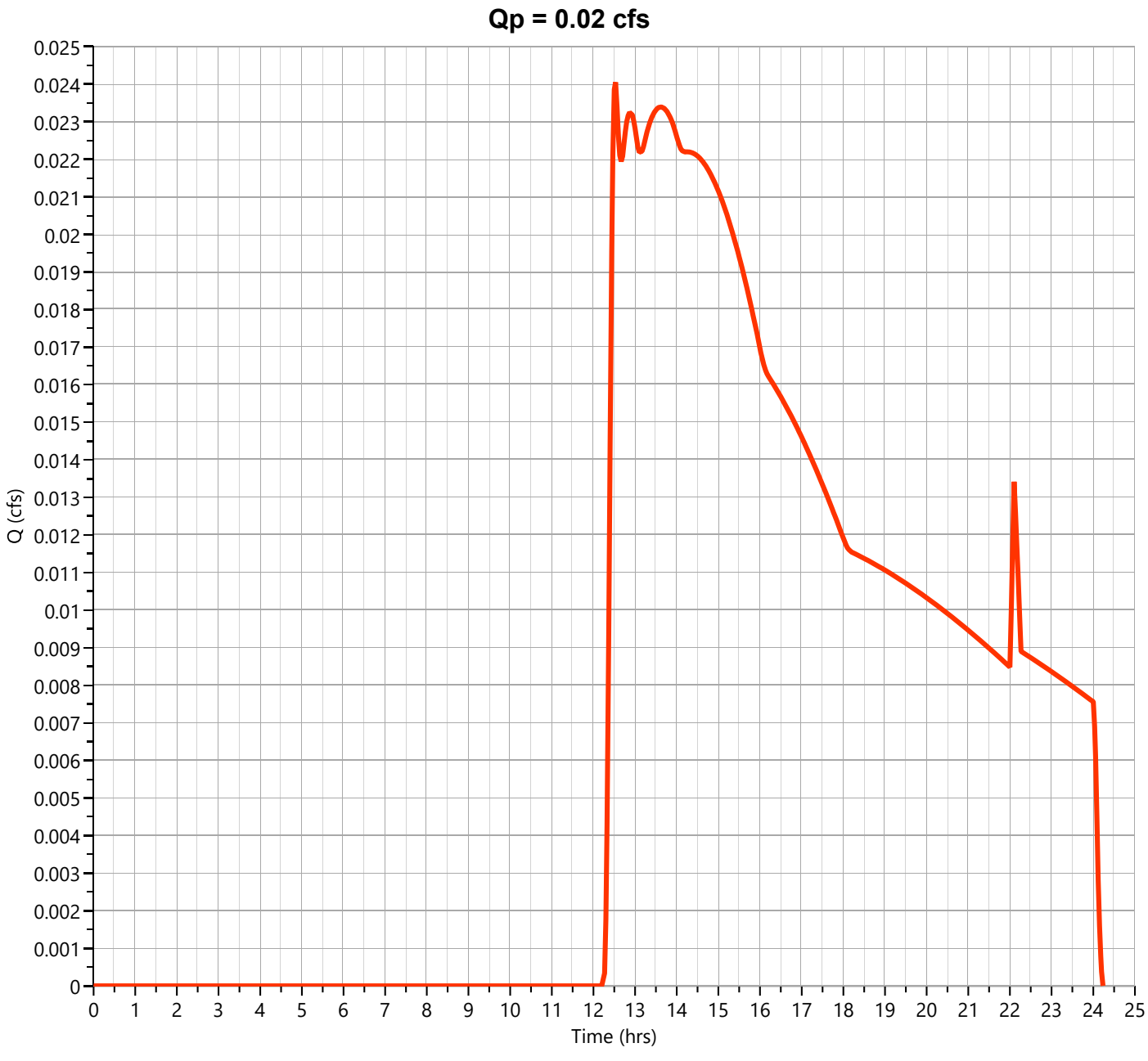
Hydrology Studio v 3.0.0.21

01-14-2022

EX-B

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.024 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.53 hrs
Time Interval	= 2 min	Runoff Volume	= 599 cuft
Drainage Area	= 1.71 ac	Curve Number	= 54
Tc Method	= User	Time of Conc. (Tc)	= 9.6 min
Total Rainfall	= 2.66 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph 10-yr Summary

Project Name: Donnelly - Sugarloaf

01-14-2022

Hydrology Studio v 3.0.0.21

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	NRCS Runoff	EX-A	2.886	12.13	11,060	----		
2	NRCS Runoff	EX-B	1.109	12.13	5,094	----		
3	NRCS Runoff	PR-A	2.376	12.13	9,185	----		
4	NRCS Runoff	PR-B1	3.021	12.13	11,646	----		
5	NRCS Runoff	PR-B2	1.879	12.07	5,658	----		
6	NRCS Runoff	PR-B3	0.318	12.20	1,628	----		
7	Pond Route	Pond B1-Pre treat	3.000	12.17	11,425	4	507.15	2,369
8	Pond Route	UG Chambers	0.665	12.37	592	7	508.79	1,828
9	Pond Route	Pond B2 Forebay	1.696	12.10	5,160	5	511.11	8,345
10	Pond Route	Pond B2	0.037	17.90	4,632	9	510.07	4,312
11	Junction	DP-B	0.939	12.37	6,852	6, 8, 10		

Hydrograph Report

Project Name: Donnelly - Sugarloaf

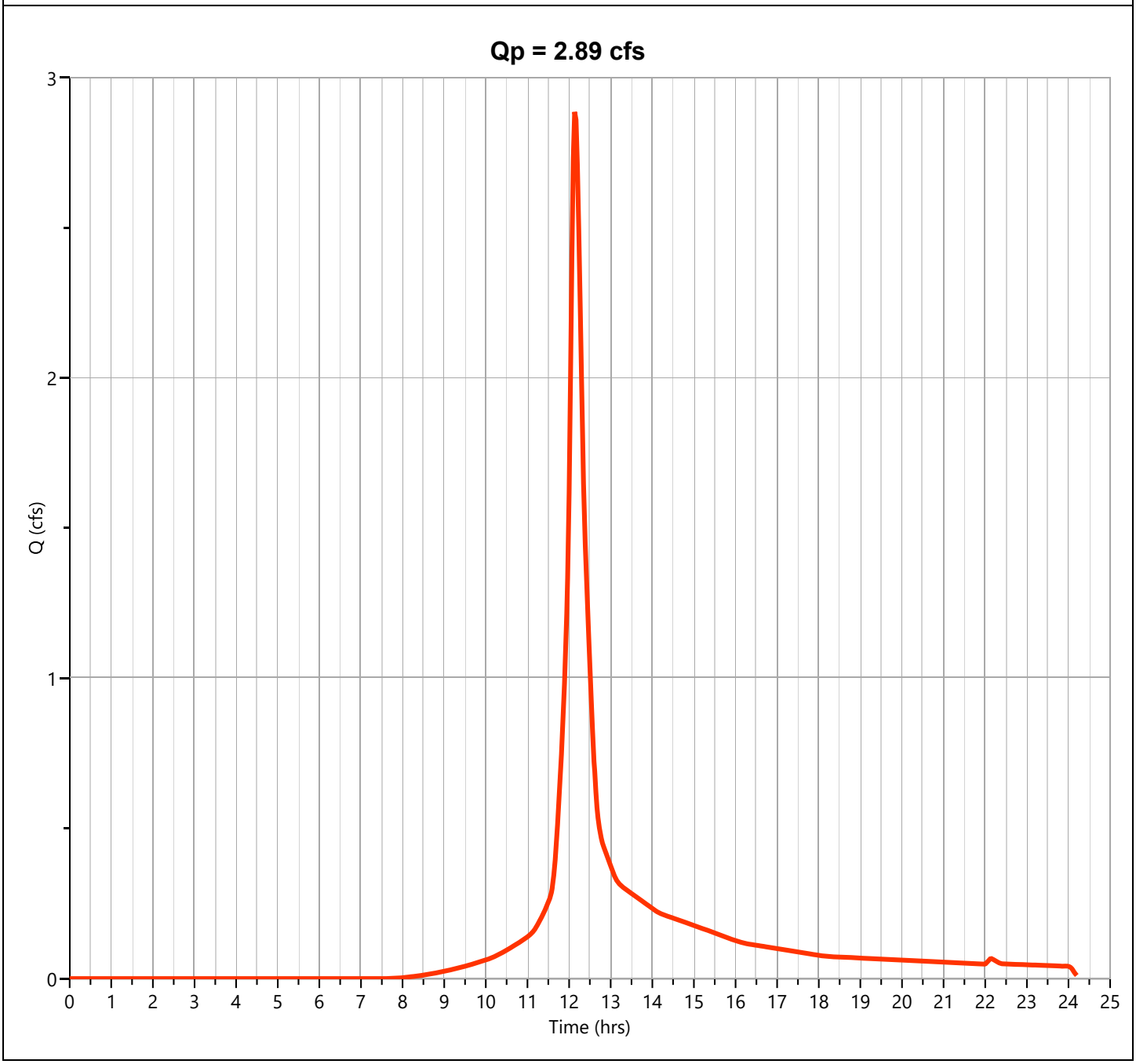
Hydrology Studio v 3.0.0.21

01-14-2022

EX-A

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 2.886 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.13 hrs
Time Interval	= 2 min	Runoff Volume	= 11,060 cuft
Drainage Area	= 1.09 ac	Curve Number	= 80
Tc Method	= User	Time of Conc. (Tc)	= 10.2 min
Total Rainfall	= 4.79 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Donnelly - Sugarloaf

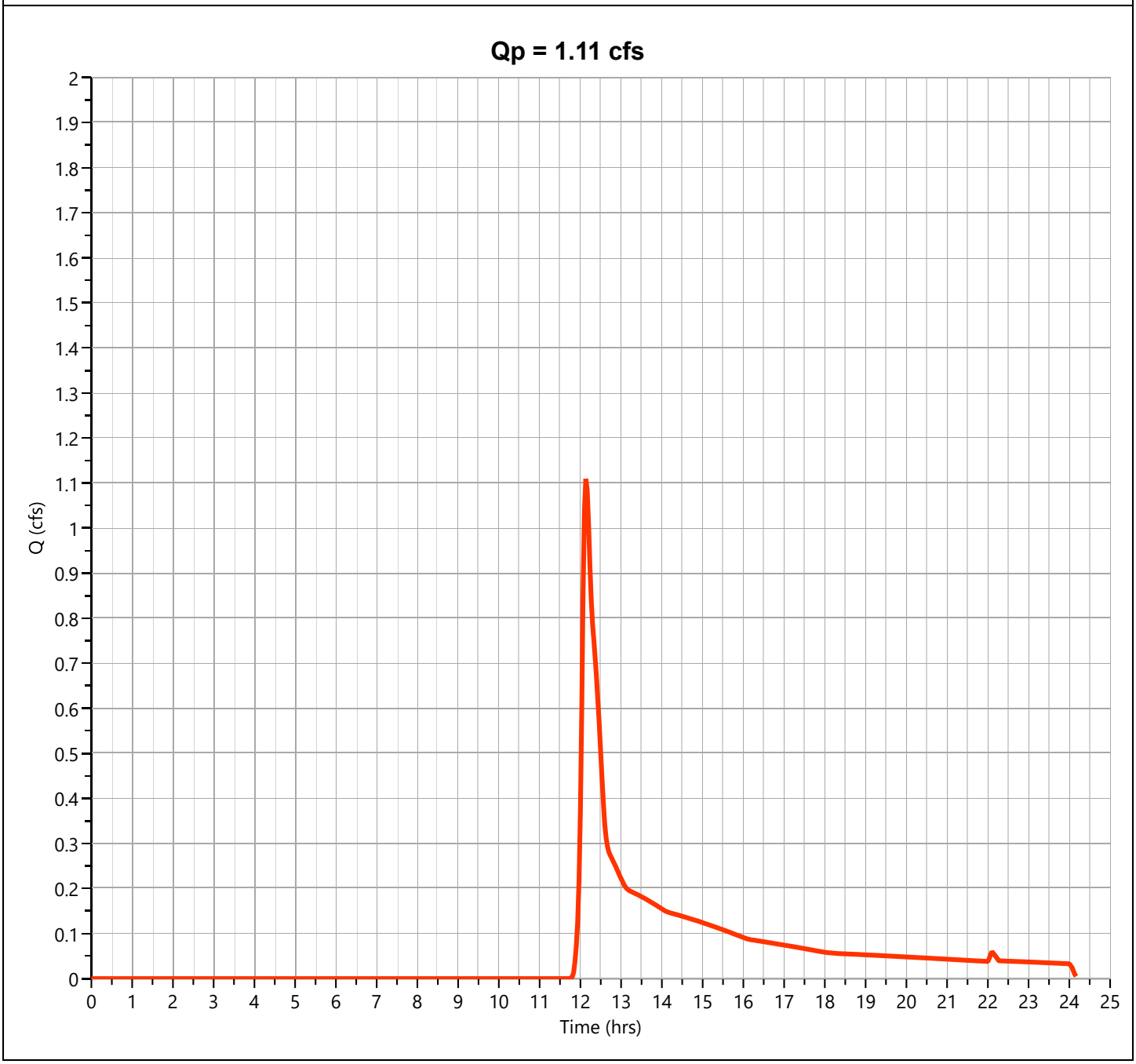
Hydrology Studio v 3.0.0.21

01-14-2022

EX-B

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.109 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.13 hrs
Time Interval	= 2 min	Runoff Volume	= 5,094 cuft
Drainage Area	= 1.71 ac	Curve Number	= 54
Tc Method	= User	Time of Conc. (Tc)	= 9.6 min
Total Rainfall	= 4.79 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph 100-yr Summary

Project Name: Donnelly - Sugarloaf

01-14-2022

Hydrology Studio v 3.0.0.21

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	NRCS Runoff	EX-A	6.401	12.13	24,909	----		
2	NRCS Runoff	EX-B	5.261	12.10	18,764	----		
3	NRCS Runoff	PR-A	4.804	12.13	19,166	----		
4	NRCS Runoff	PR-B1	6.198	12.13	24,602	----		
5	NRCS Runoff	PR-B2	3.890	12.07	12,103	----		
6	NRCS Runoff	PR-B3	1.505	12.17	5,998	----		
7	Pond Route	Pond B1-Pre treat	6.142	12.13	24,382	4	507.27	2,507
8	Pond Route	UG Chambers	3.334	12.30	6,004	7	510.14	3,510
9	Pond Route	Pond B2 Forebay	3.648	12.10	11,605	5	511.22	8,615
10	Pond Route	Pond B2	0.373	12.90	11,057	9	511.22	7,746
11	Junction	DP-B	4.606	12.23	23,059	6, 8, 10		

Hydrograph Report

Project Name: Donnelly - Sugarloaf

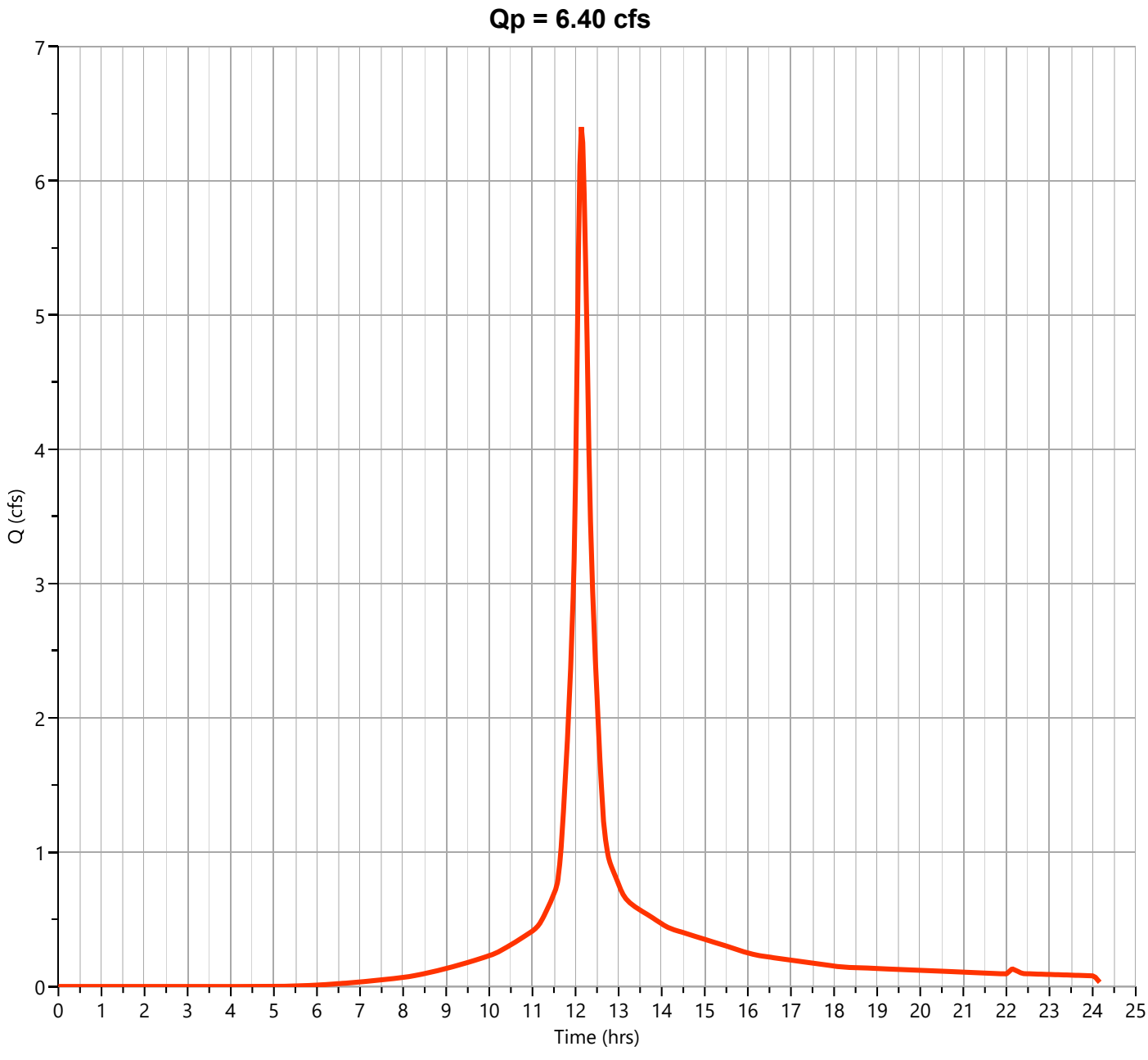
Hydrology Studio v 3.0.0.21

01-14-2022

EX-A

Hyd. No. 1

Hydrograph Type	= NRCS Runoff	Peak Flow	= 6.401 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.13 hrs
Time Interval	= 2 min	Runoff Volume	= 24,909 cuft
Drainage Area	= 1.09 ac	Curve Number	= 80
Tc Method	= User	Time of Conc. (Tc)	= 10.2 min
Total Rainfall	= 8.51 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Donnelly - Sugarloaf

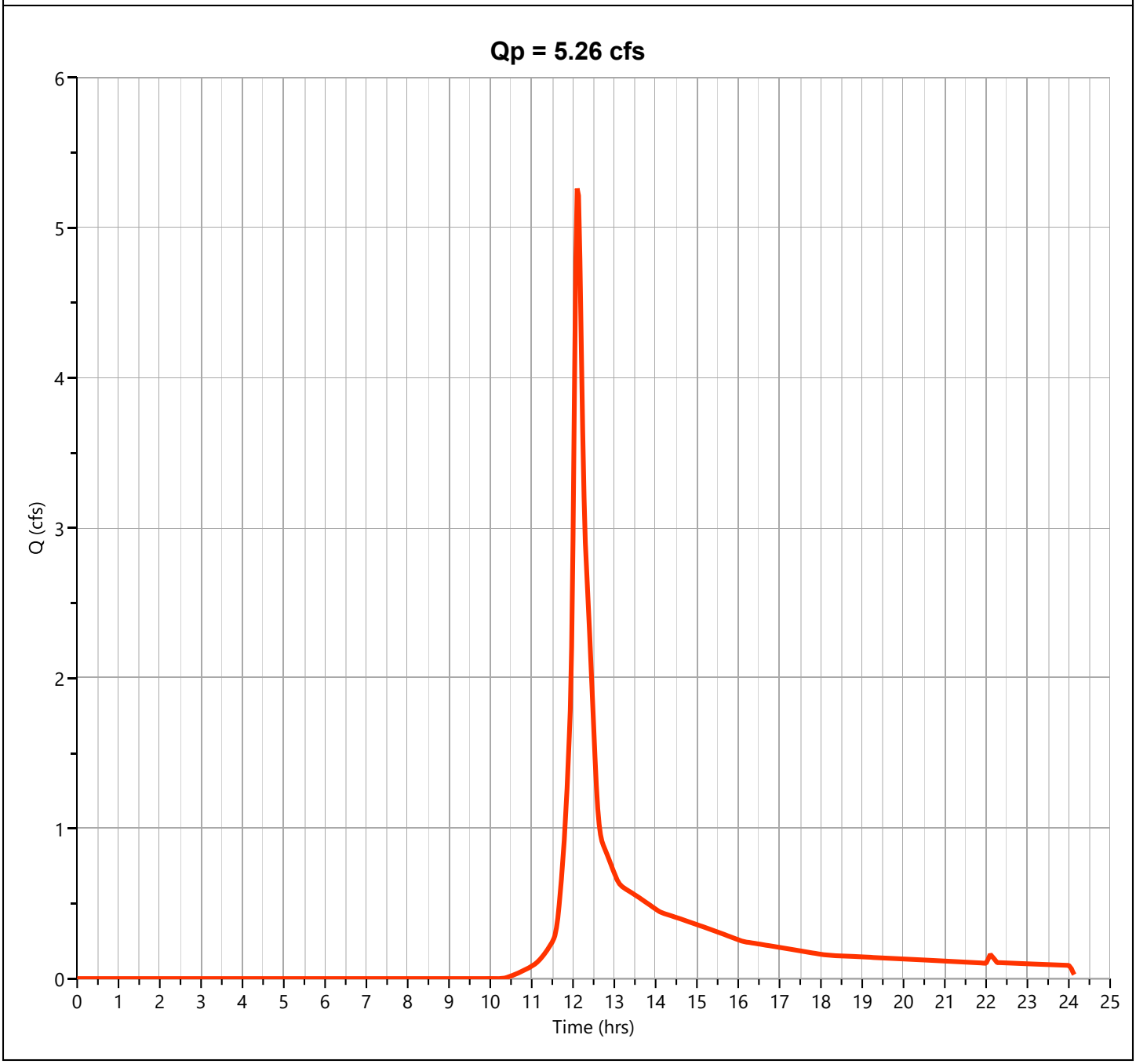
Hydrology Studio v 3.0.0.21

01-14-2022

EX-B

Hyd. No. 2

Hydrograph Type	= NRCS Runoff	Peak Flow	= 5.261 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.10 hrs
Time Interval	= 2 min	Runoff Volume	= 18,764 cuft
Drainage Area	= 1.71 ac	Curve Number	= 54
Tc Method	= User	Time of Conc. (Tc)	= 9.6 min
Total Rainfall	= 8.51 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



APPENDIX 8

PROPOSED 1-, 10-, 100-YEAR

DESIGN STORM

HYDROGRAPHS

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Hydrograph 1-yr Summary

Project Name: Donnelly - Sugarloaf

01-14-2022

Hydrology Studio v 3.0.0.21

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	NRCS Runoff	EX-A	1.034	12.17	4,085	----		
2	NRCS Runoff	EX-B	0.024	12.53	599	----		
3	NRCS Runoff	PR-A	1.005	12.13	3,861	----		
4	NRCS Runoff	PR-B1	1.244	12.13	4,795	----		
5	NRCS Runoff	PR-B2	0.760	12.07	2,281	----		
6	NRCS Runoff	PR-B3	0.007	13.67	191	----		
7	Pond Route	Pond B1-Pre treat	1.244	12.17	4,575	4	507.06	2,276
8	Pond Route	UG Chambers	0.000	12.53	0.000	7	507.19	133
9	Pond Route	Pond B2 Forebay	0.613	12.13	1,784	5	511.04	8,170
10	Pond Route	Pond B2	0.017	18.10	1,255	9	508.46	1,710
11	Junction	DP-B	0.022	15.17	1,447	6, 8, 10		

Hydrograph Report

Project Name: Donnelly - Sugarloaf

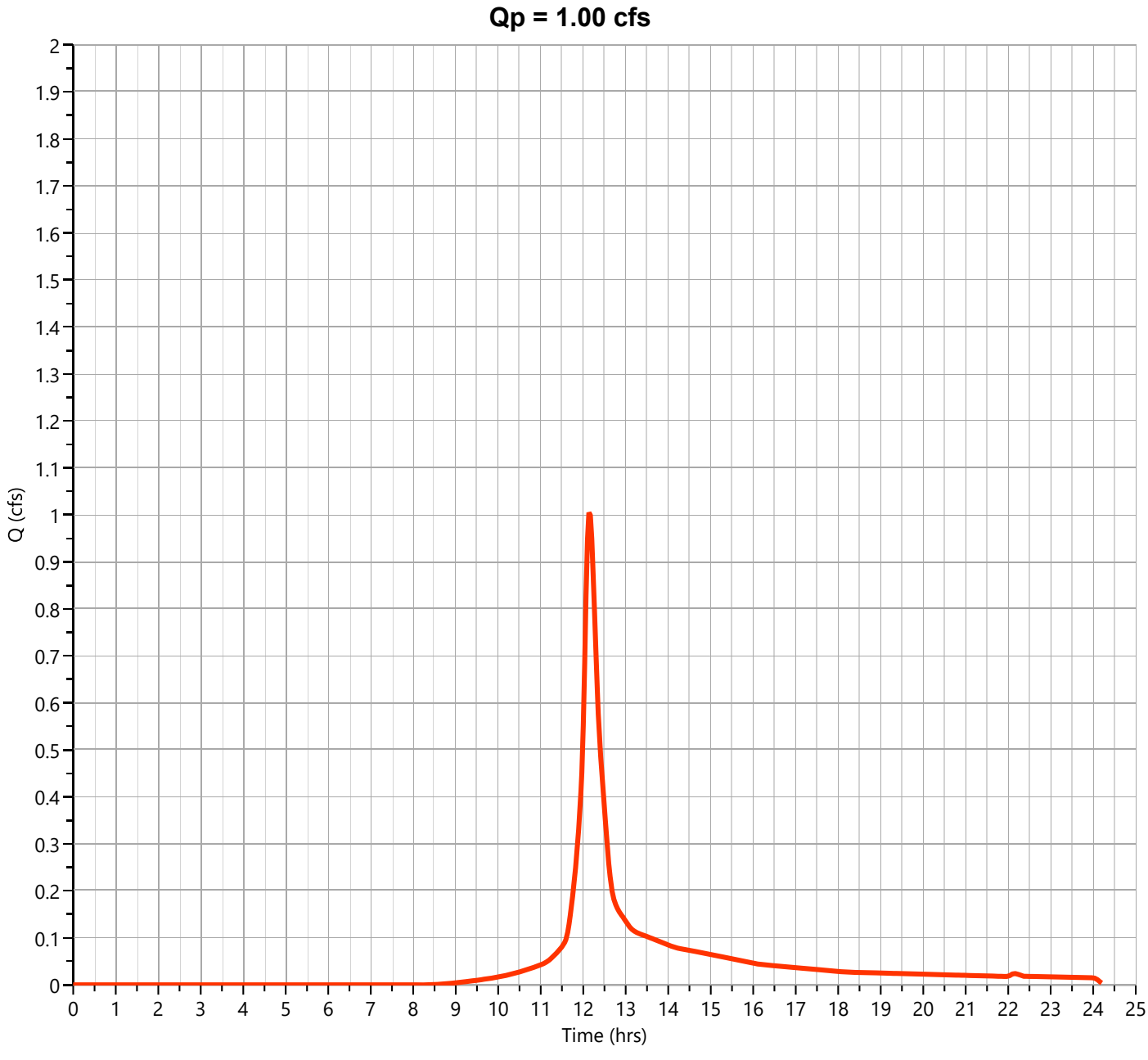
Hydrology Studio v 3.0.0.21

01-14-2022

PR-A

Hyd. No. 3

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.005 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.13 hrs
Time Interval	= 2 min	Runoff Volume	= 3,861 cuft
Drainage Area	= 0.75 ac	Curve Number	= 86
Tc Method	= User	Time of Conc. (Tc)	= 13.2 min
Total Rainfall	= 2.66 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Donnelly - Sugarloaf

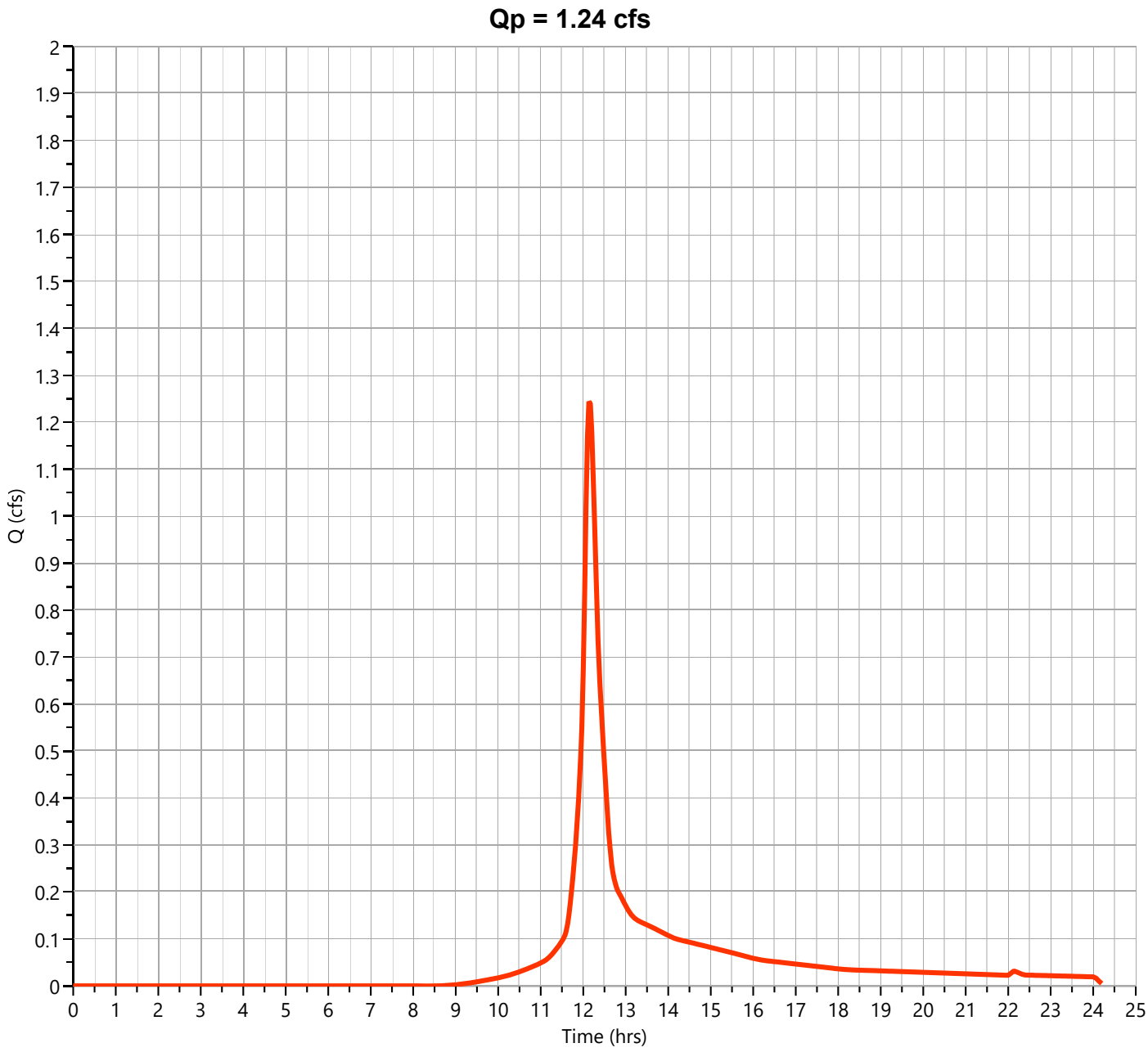
Hydrology Studio v 3.0.0.21

01-14-2022

PR-B1

Hyd. No. 4

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.244 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.13 hrs
Time Interval	= 2 min	Runoff Volume	= 4,795 cuft
Drainage Area	= 0.98 ac	Curve Number	= 85
Tc Method	= User	Time of Conc. (Tc)	= 10.8 min
Total Rainfall	= 2.66 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Donnelly - Sugarloaf

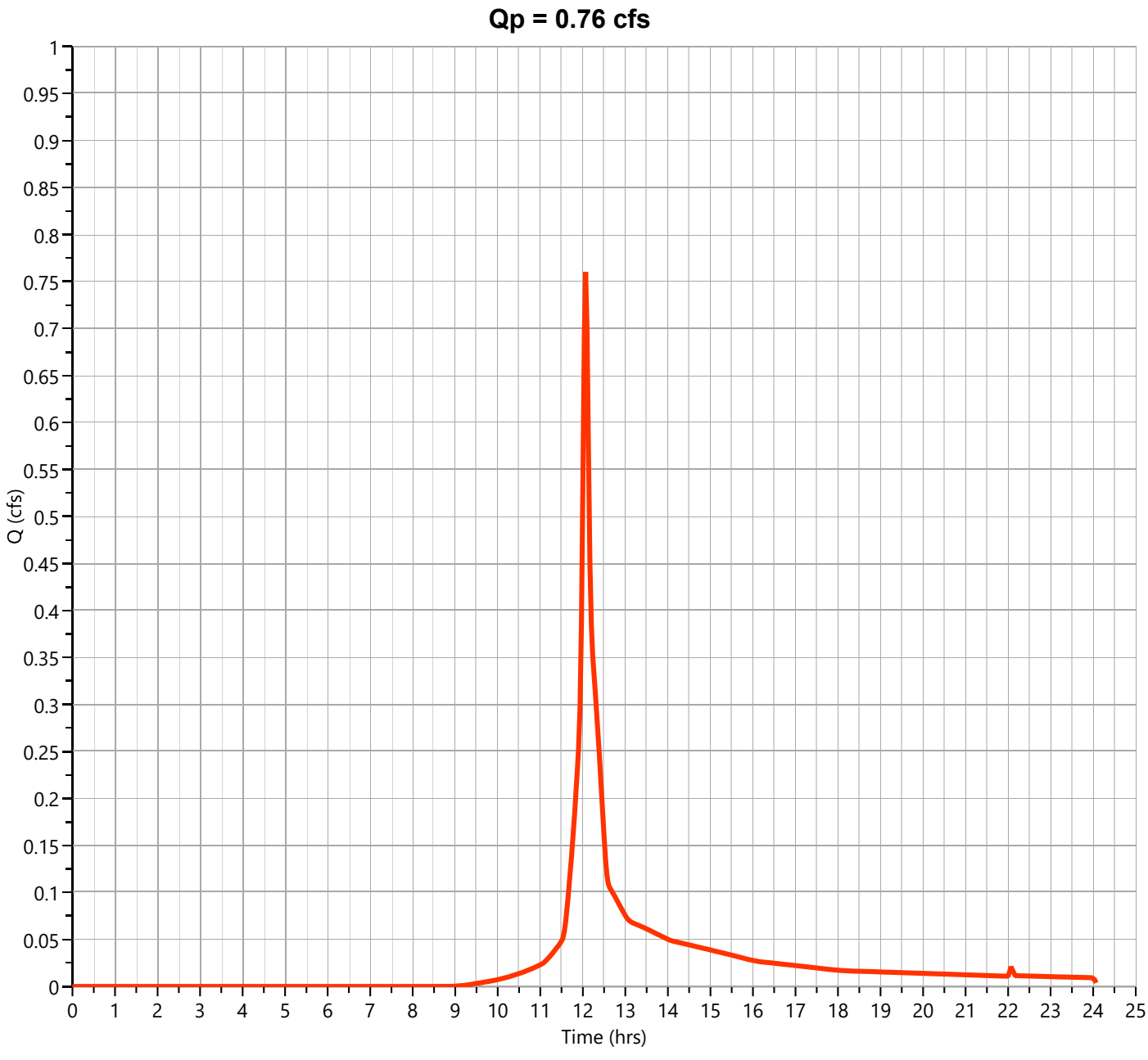
Hydrology Studio v 3.0.0.21

01-14-2022

PR-B2

Hyd. No. 5

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.760 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.07 hrs
Time Interval	= 2 min	Runoff Volume	= 2,281 cuft
Drainage Area	= 0.54 ac	Curve Number	= 84
Tc Method	= User	Time of Conc. (Tc)	= 6.0 min
Total Rainfall	= 2.66 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-14-2022

PR-B3

Hyd. No. 6

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.007 cfs
Storm Frequency	= 1-yr	Time to Peak	= 13.67 hrs
Time Interval	= 2 min	Runoff Volume	= 191 cuft
Drainage Area	= 0.53 ac	Curve Number	= 54
Tc Method	= User	Time of Conc. (Tc)	= 13.2 min
Total Rainfall	= 2.66 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484

Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-14-2022

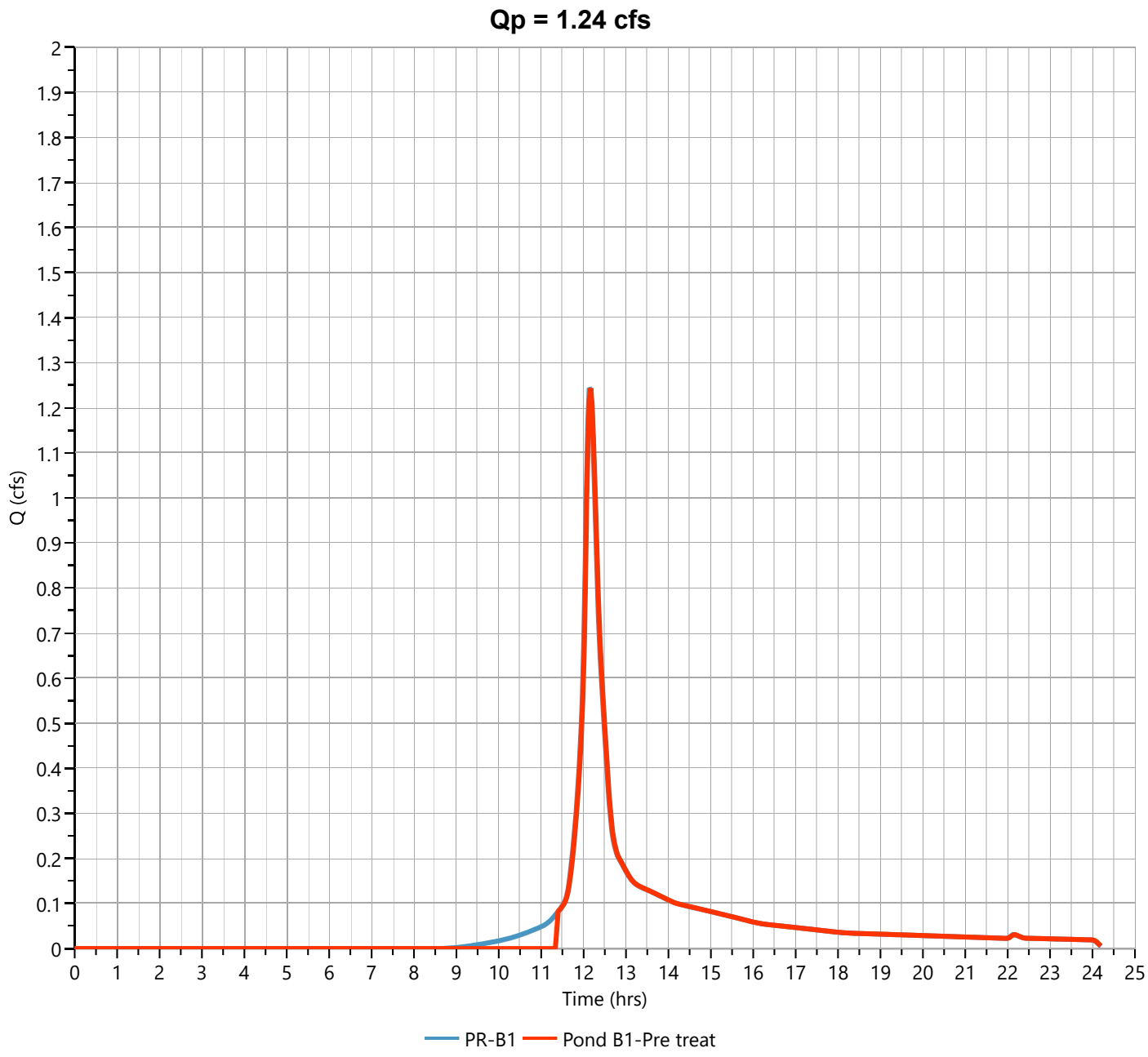
Pond B1-Pre treat

Hyd. No. 7

Hydrograph Type	= Pond Route	Peak Flow	= 1.244 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.17 hrs
Time Interval	= 2 min	Hydrograph Volume	= 4,575 cuft
Inflow Hydrograph	= 4 - PR-B1	Max. Elevation	= 507.06 ft
Pond Name	= Pond B1	Max. Storage	= 2,276 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 506.80 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 10 min



Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

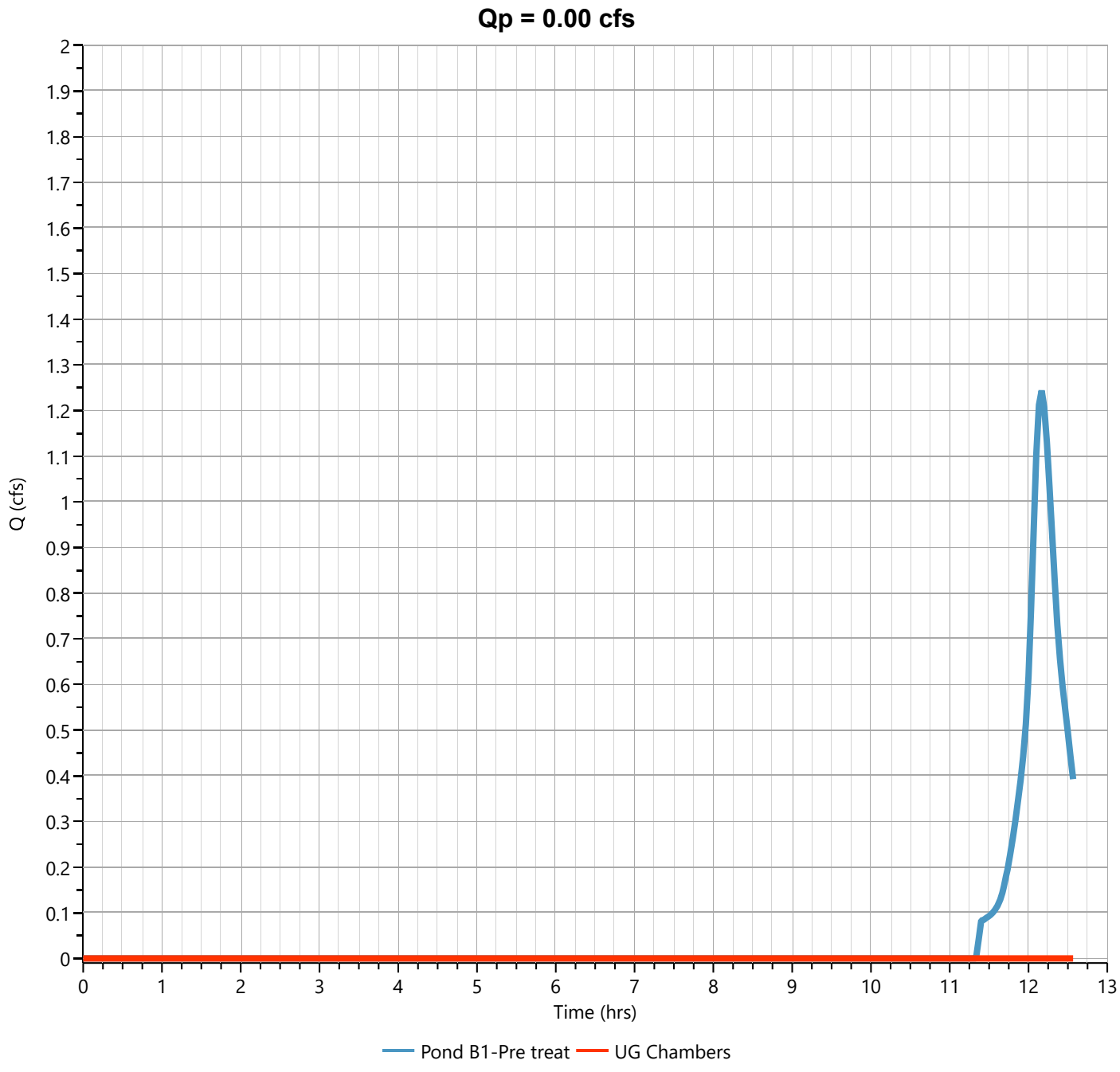
01-14-2022

UG Chambers

Hyd. No. 8

Hydrograph Type	= Pond Route	Peak Flow	= 0.000 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.53 hrs
Time Interval	= 2 min	Hydrograph Volume	= 0.000 cuft
Inflow Hydrograph	= 7 - Pond B1-Pre treat	Max. Elevation	= 507.19 ft
Pond Name	= SC-740 Chambers	Max. Storage	= 133 cuft

Pond Routing by Storage Indication Method



Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-14-2022

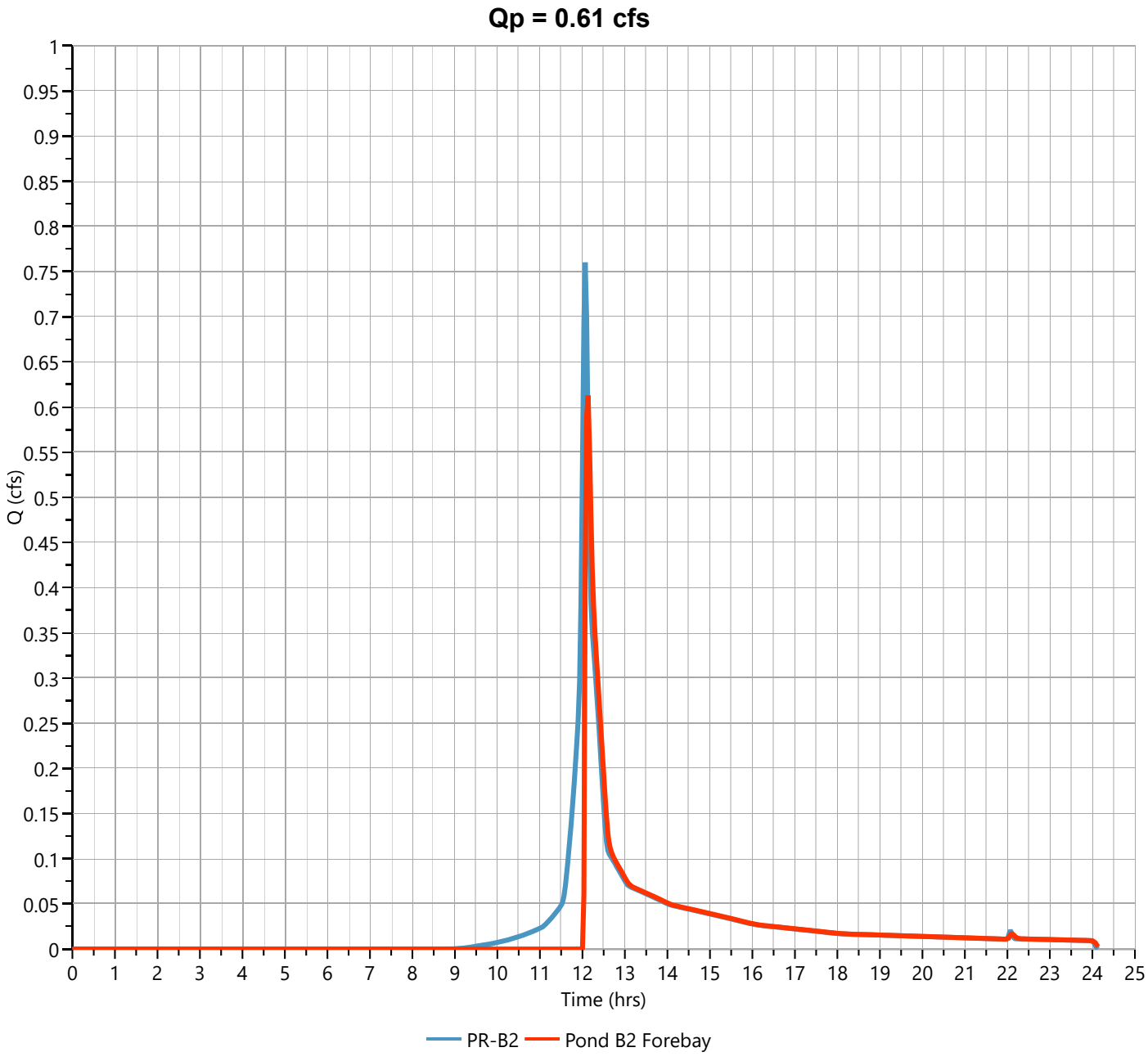
Pond B2 Forebay

Hyd. No. 9

Hydrograph Type	= Pond Route	Peak Flow	= 0.613 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.13 hrs
Time Interval	= 2 min	Hydrograph Volume	= 1,784 cuft
Inflow Hydrograph	= 5 - PR-B2	Max. Elevation	= 511.04 ft
Pond Name	= Pond B2-Forebay	Max. Storage	= 8,170 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 510.80 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 42 min



Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-14-2022

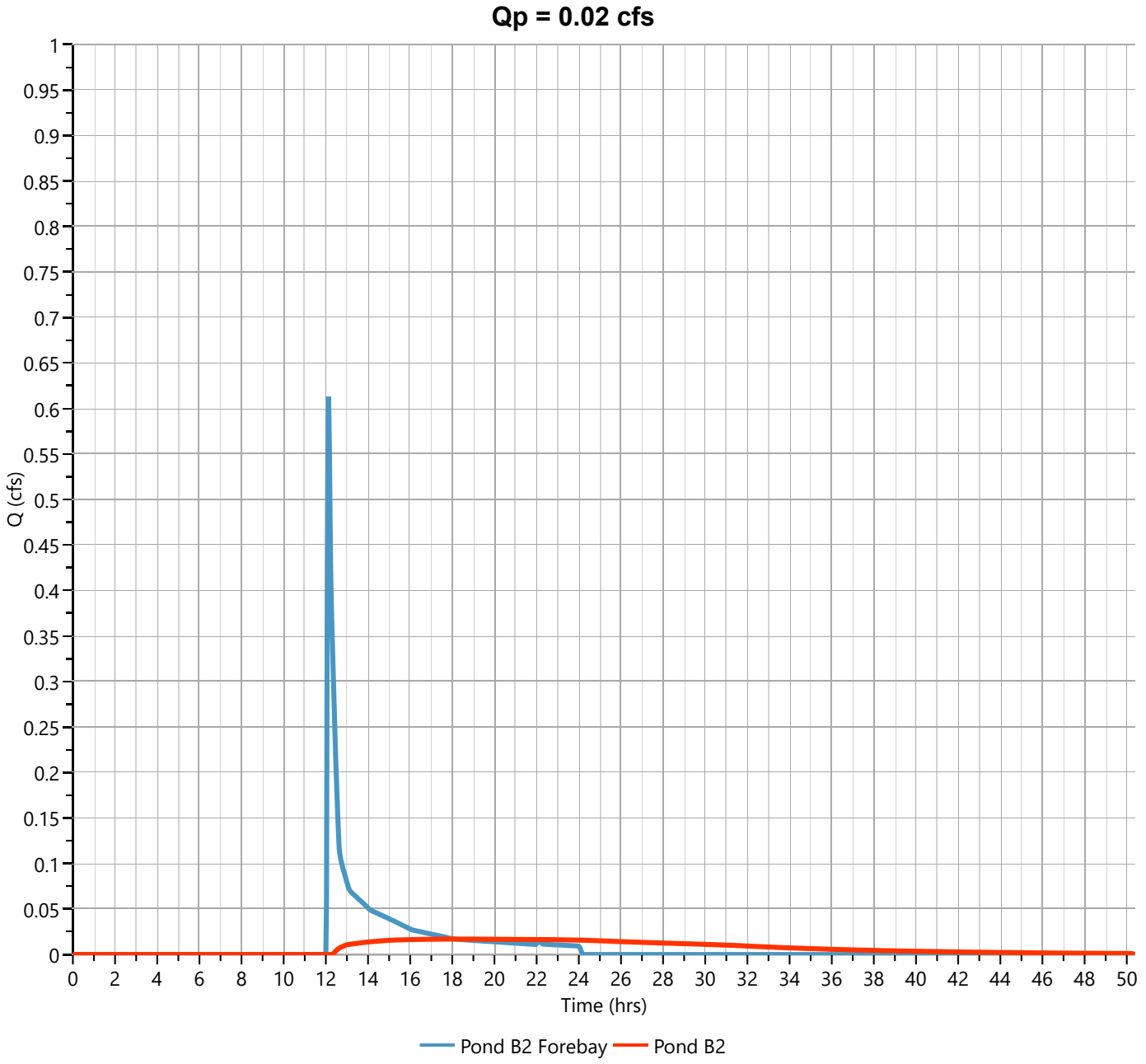
Pond B2

Hyd. No. 10

Hydrograph Type	= Pond Route	Peak Flow	= 0.017 cfs
Storm Frequency	= 1-yr	Time to Peak	= 18.10 hrs
Time Interval	= 2 min	Hydrograph Volume	= 1,255 cuft
Inflow Hydrograph	= 9 - Pond B2 Forebay	Max. Elevation	= 508.46 ft
Pond Name	= Pond B2	Max. Storage	= 1,710 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 507.00 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 10.33 hrs



Hydrograph Report

Project Name: Donnelly - Sugarloaf

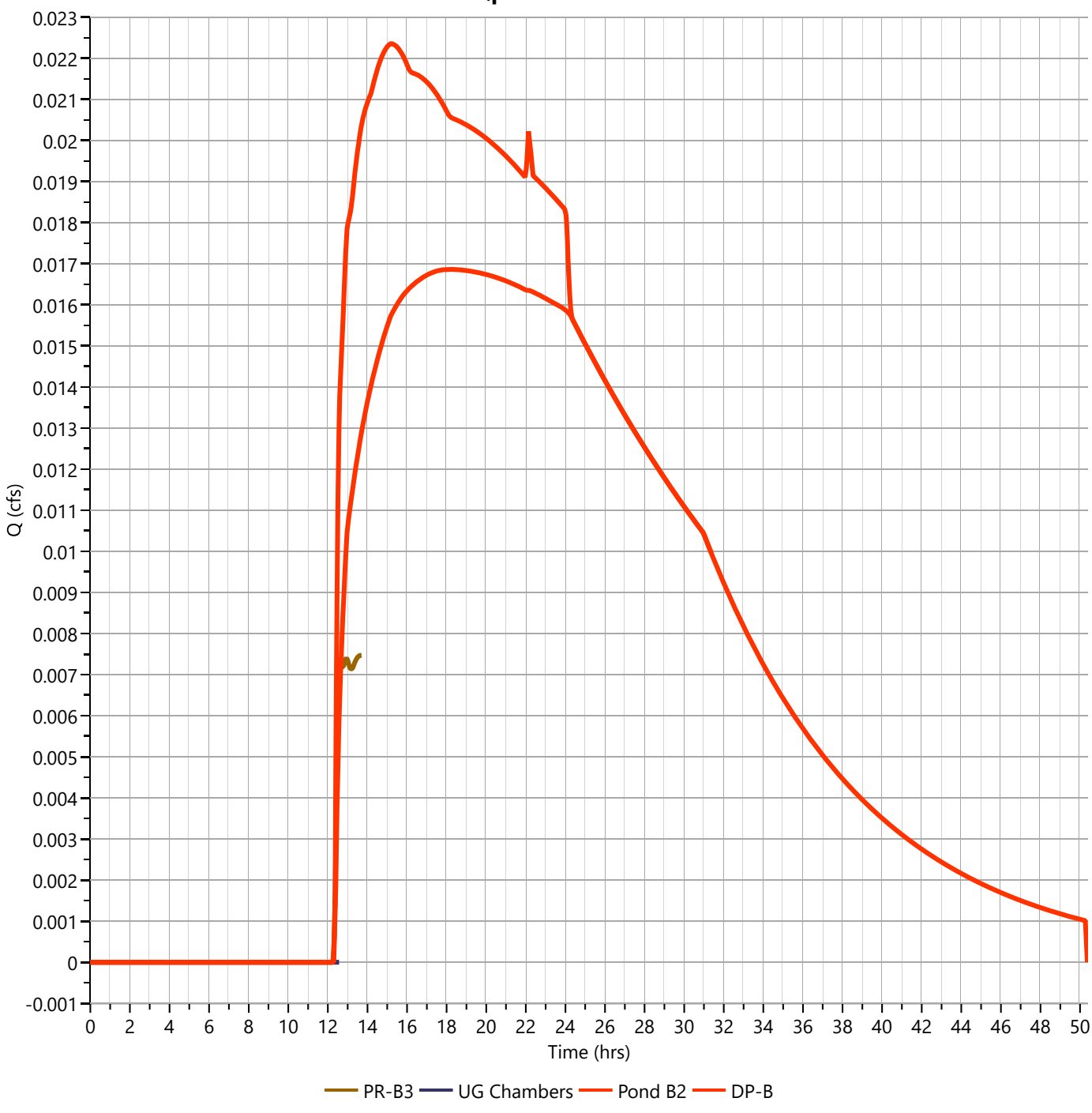
Hydrology Studio v 3.0.0.21

01-14-2022

DP-B

Hyd. No. 11

Hydrograph Type	= Junction	Peak Flow	= 0.022 cfs
Storm Frequency	= 1-yr	Time to Peak	= 15.17 hrs
Time Interval	= 2 min	Hydrograph Volume	= 1,447 cuft
Inflow Hydrographs	= 6, 8, 10	Total Contrib. Area	= 0.53 ac



Hydrograph 10-yr Summary

Project Name: Donnelly - Sugarloaf

01-14-2022

Hydrology Studio v 3.0.0.21

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	NRCS Runoff	EX-A	2.886	12.13	11,060	----		
2	NRCS Runoff	EX-B	1.109	12.13	5,094	----		
3	NRCS Runoff	PR-A	2.376	12.13	9,185	----		
4	NRCS Runoff	PR-B1	3.021	12.13	11,646	----		
5	NRCS Runoff	PR-B2	1.879	12.07	5,658	----		
6	NRCS Runoff	PR-B3	0.318	12.20	1,628	----		
7	Pond Route	Pond B1-Pre treat	3.000	12.17	11,425	4	507.15	2,369
8	Pond Route	UG Chambers	0.665	12.37	592	7	508.79	1,828
9	Pond Route	Pond B2 Forebay	1.696	12.10	5,160	5	511.11	8,345
10	Pond Route	Pond B2	0.037	17.90	4,632	9	510.07	4,312
11	Junction	DP-B	0.939	12.37	6,852	6, 8, 10		

Hydrograph Report

Project Name: Donnelly - Sugarloaf

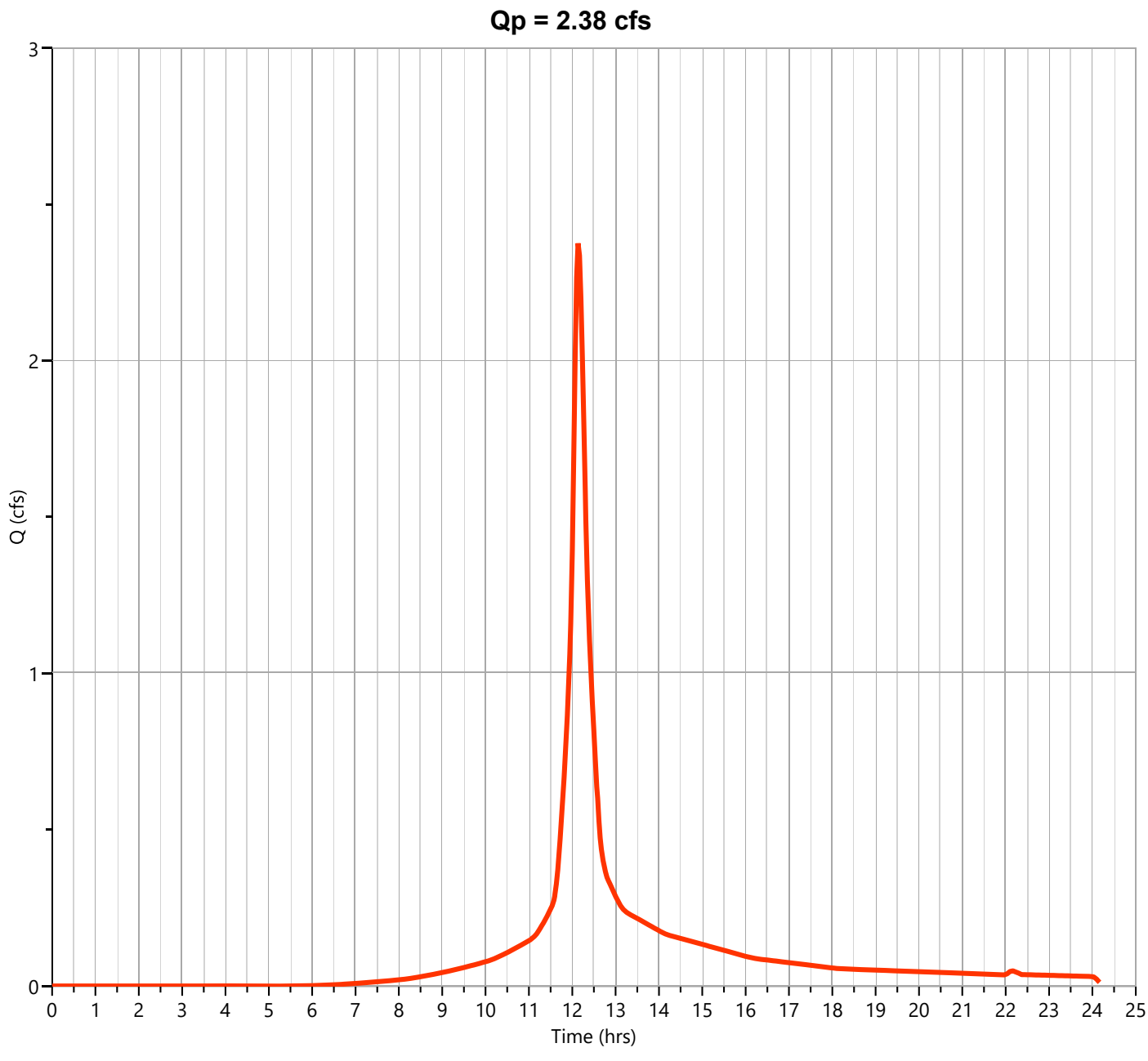
Hydrology Studio v 3.0.0.21

01-14-2022

PR-A

Hyd. No. 3

Hydrograph Type	= NRCS Runoff	Peak Flow	= 2.376 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.13 hrs
Time Interval	= 2 min	Runoff Volume	= 9,185 cuft
Drainage Area	= 0.75 ac	Curve Number	= 86
Tc Method	= User	Time of Conc. (Tc)	= 13.2 min
Total Rainfall	= 4.79 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Donnelly - Sugarloaf

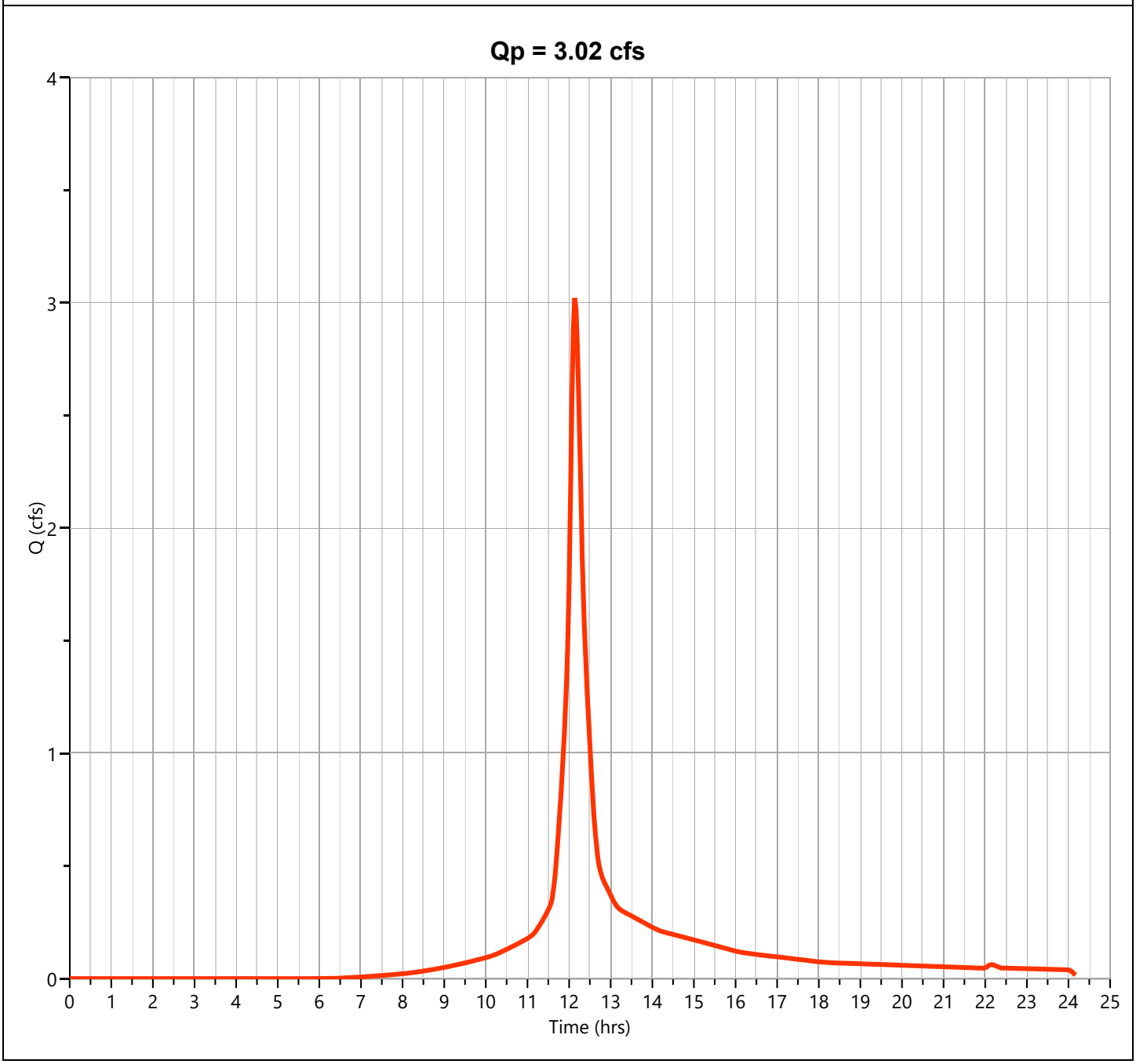
Hydrology Studio v 3.0.0.21

01-14-2022

PR-B1

Hyd. No. 4

Hydrograph Type	= NRCS Runoff	Peak Flow	= 3.021 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.13 hrs
Time Interval	= 2 min	Runoff Volume	= 11,646 cuft
Drainage Area	= 0.98 ac	Curve Number	= 85
Tc Method	= User	Time of Conc. (Tc)	= 10.8 min
Total Rainfall	= 4.79 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Donnelly - Sugarloaf

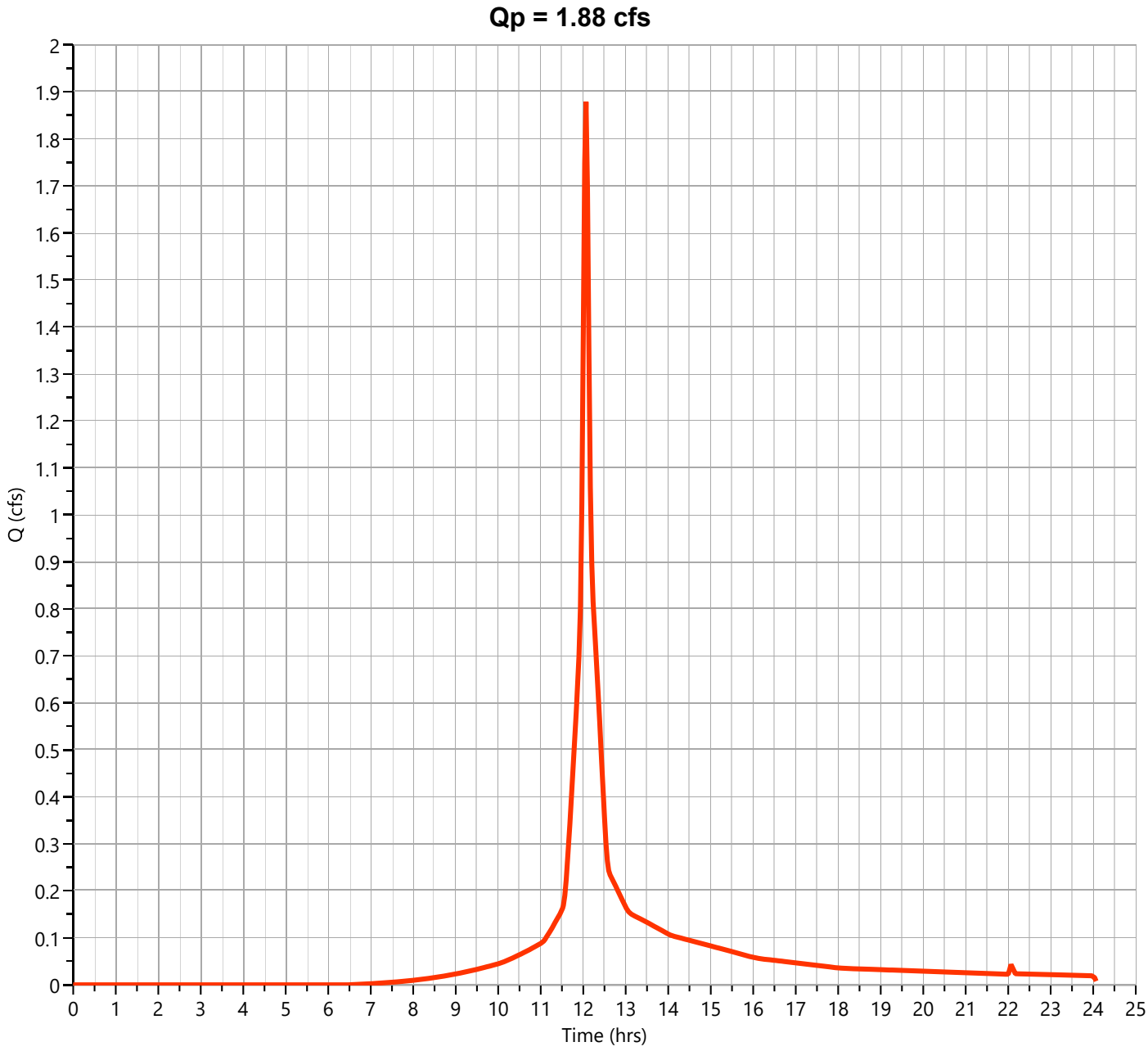
Hydrology Studio v 3.0.0.21

01-14-2022

PR-B2

Hyd. No. 5

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.879 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.07 hrs
Time Interval	= 2 min	Runoff Volume	= 5,658 cuft
Drainage Area	= 0.54 ac	Curve Number	= 84
Tc Method	= User	Time of Conc. (Tc)	= 6.0 min
Total Rainfall	= 4.79 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Donnelly - Sugarloaf

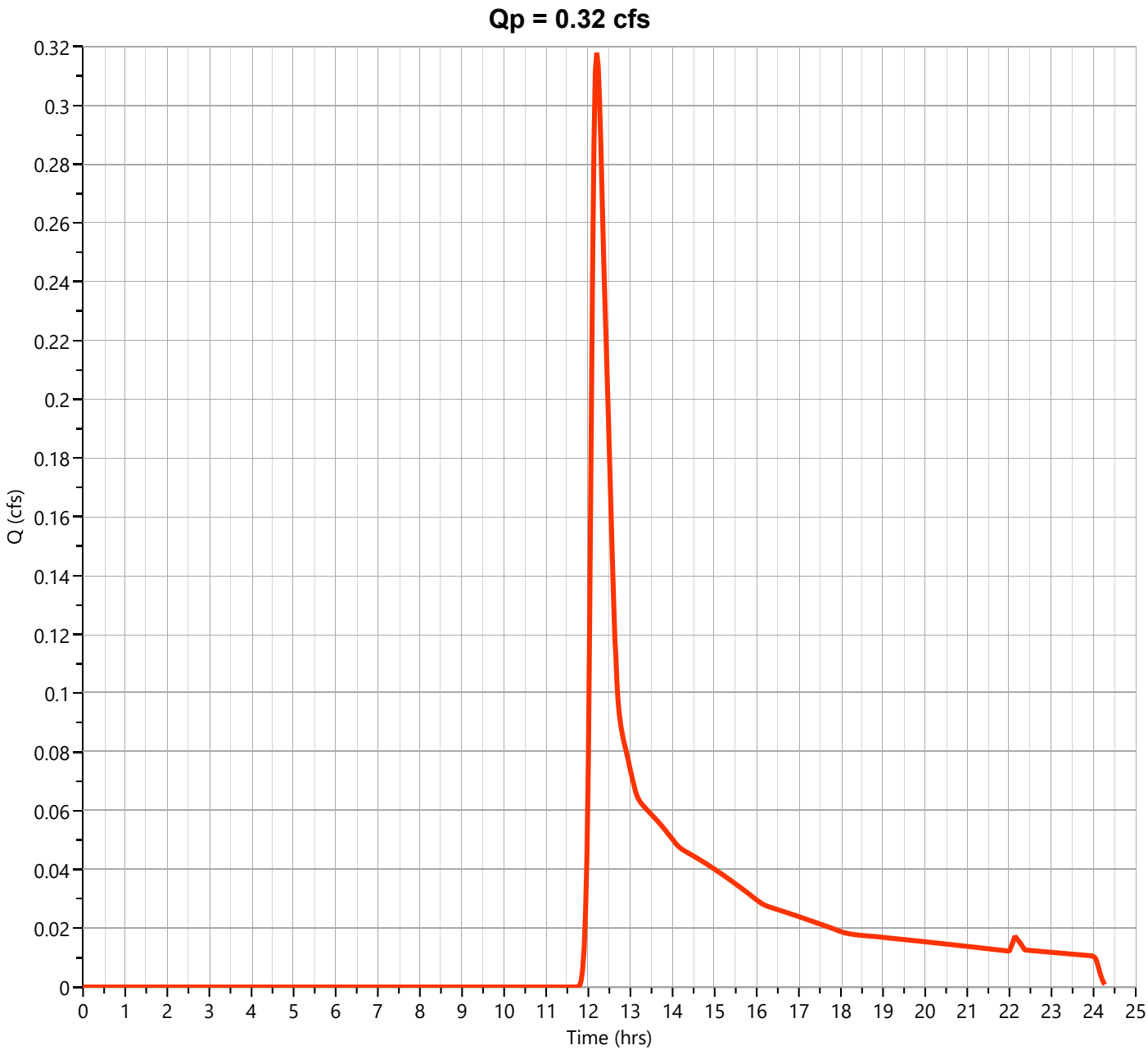
Hydrology Studio v 3.0.0.21

01-14-2022

PR-B3

Hyd. No. 6

Hydrograph Type	= NRCS Runoff	Peak Flow	= 0.318 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.20 hrs
Time Interval	= 2 min	Runoff Volume	= 1,628 cuft
Drainage Area	= 0.53 ac	Curve Number	= 54
Tc Method	= User	Time of Conc. (Tc)	= 13.2 min
Total Rainfall	= 4.79 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-14-2022

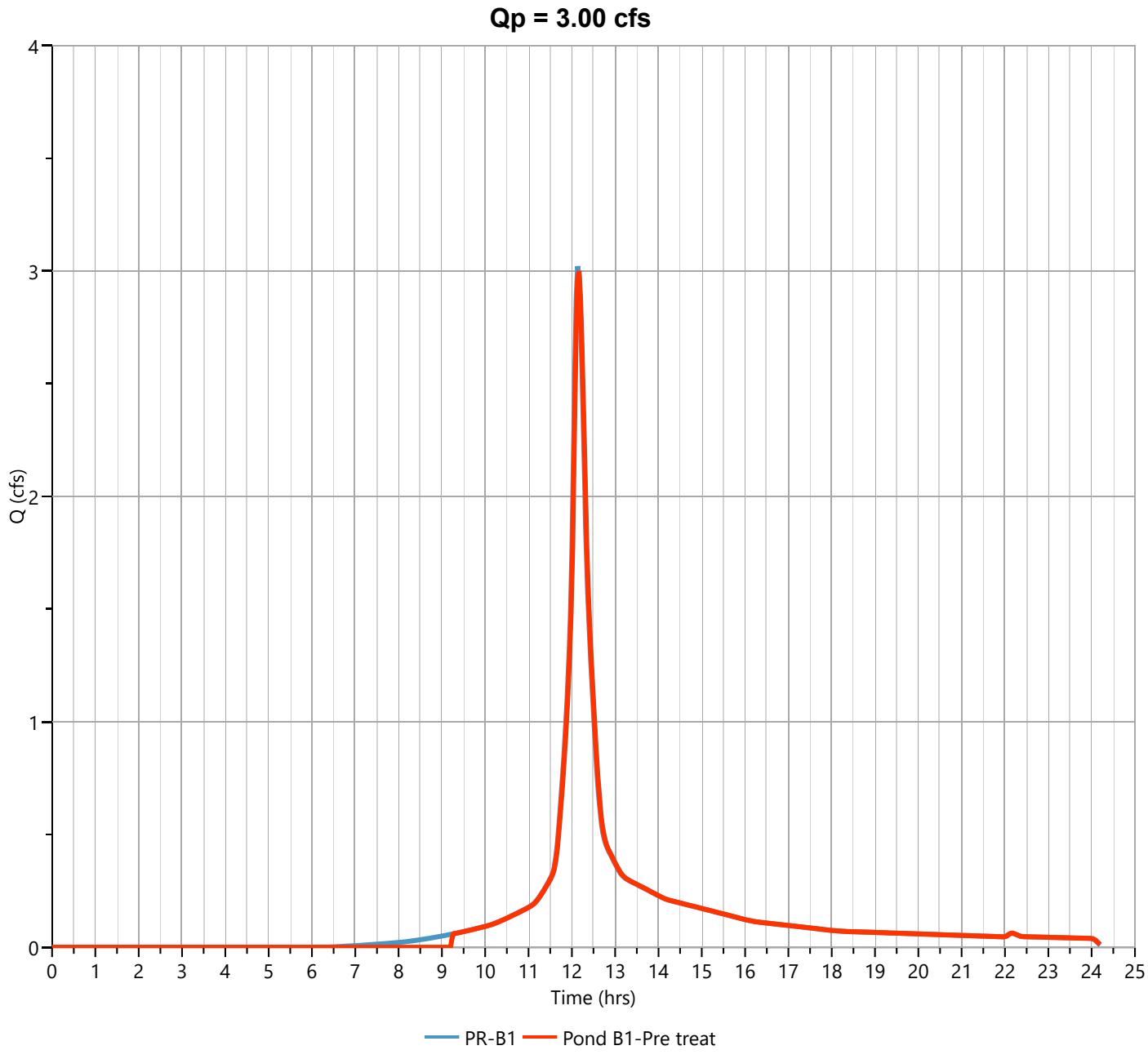
Pond B1-Pre treat

Hyd. No. 7

Hydrograph Type	= Pond Route	Peak Flow	= 3.000 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.17 hrs
Time Interval	= 2 min	Hydrograph Volume	= 11,425 cuft
Inflow Hydrograph	= 4 - PR-B1	Max. Elevation	= 507.15 ft
Pond Name	= Pond B1	Max. Storage	= 2,369 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 506.80 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 7 min



Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

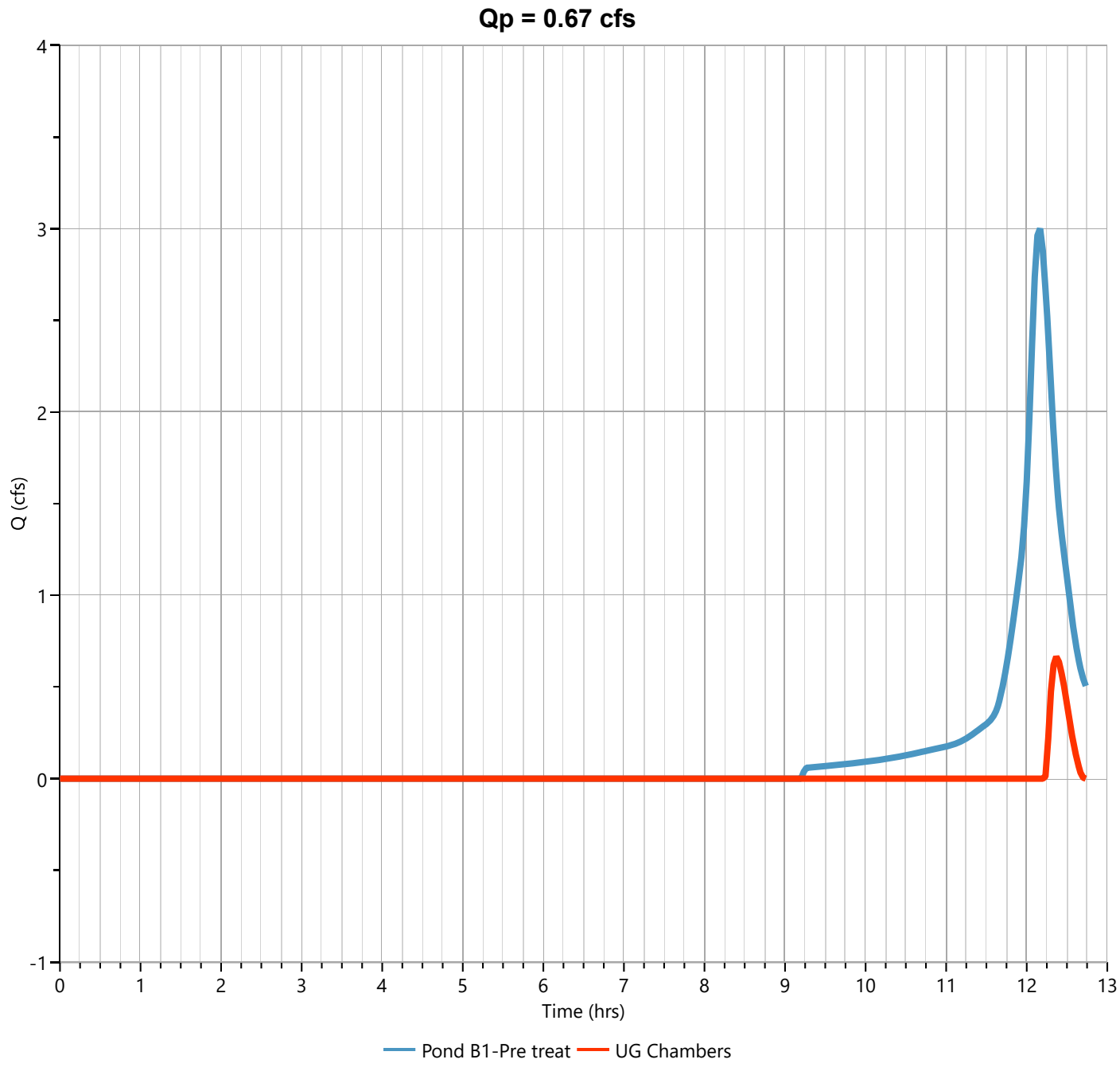
01-14-2022

UG Chambers

Hyd. No. 8

Hydrograph Type	= Pond Route	Peak Flow	= 0.665 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.37 hrs
Time Interval	= 2 min	Hydrograph Volume	= 592 cuft
Inflow Hydrograph	= 7 - Pond B1-Pre treat	Max. Elevation	= 508.79 ft
Pond Name	= SC-740 Chambers	Max. Storage	= 1,828 cuft

Pond Routing by Storage Indication Method



Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-14-2022

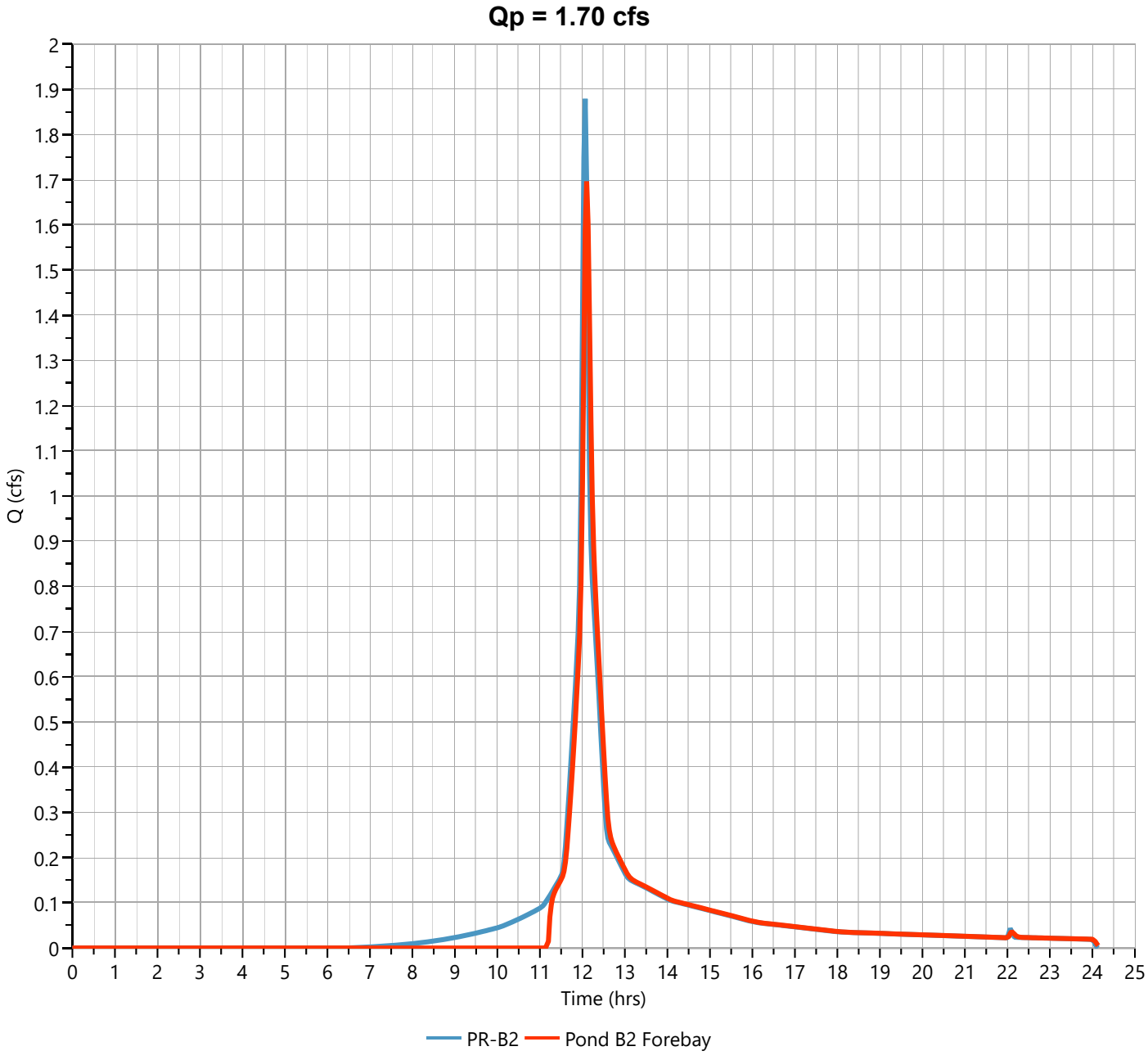
Pond B2 Forebay

Hyd. No. 9

Hydrograph Type	= Pond Route	Peak Flow	= 1.696 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.10 hrs
Time Interval	= 2 min	Hydrograph Volume	= 5,160 cuft
Inflow Hydrograph	= 5 - PR-B2	Max. Elevation	= 511.11 ft
Pond Name	= Pond B2-Forebay	Max. Storage	= 8,345 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 510.80 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 23 min



Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-14-2022

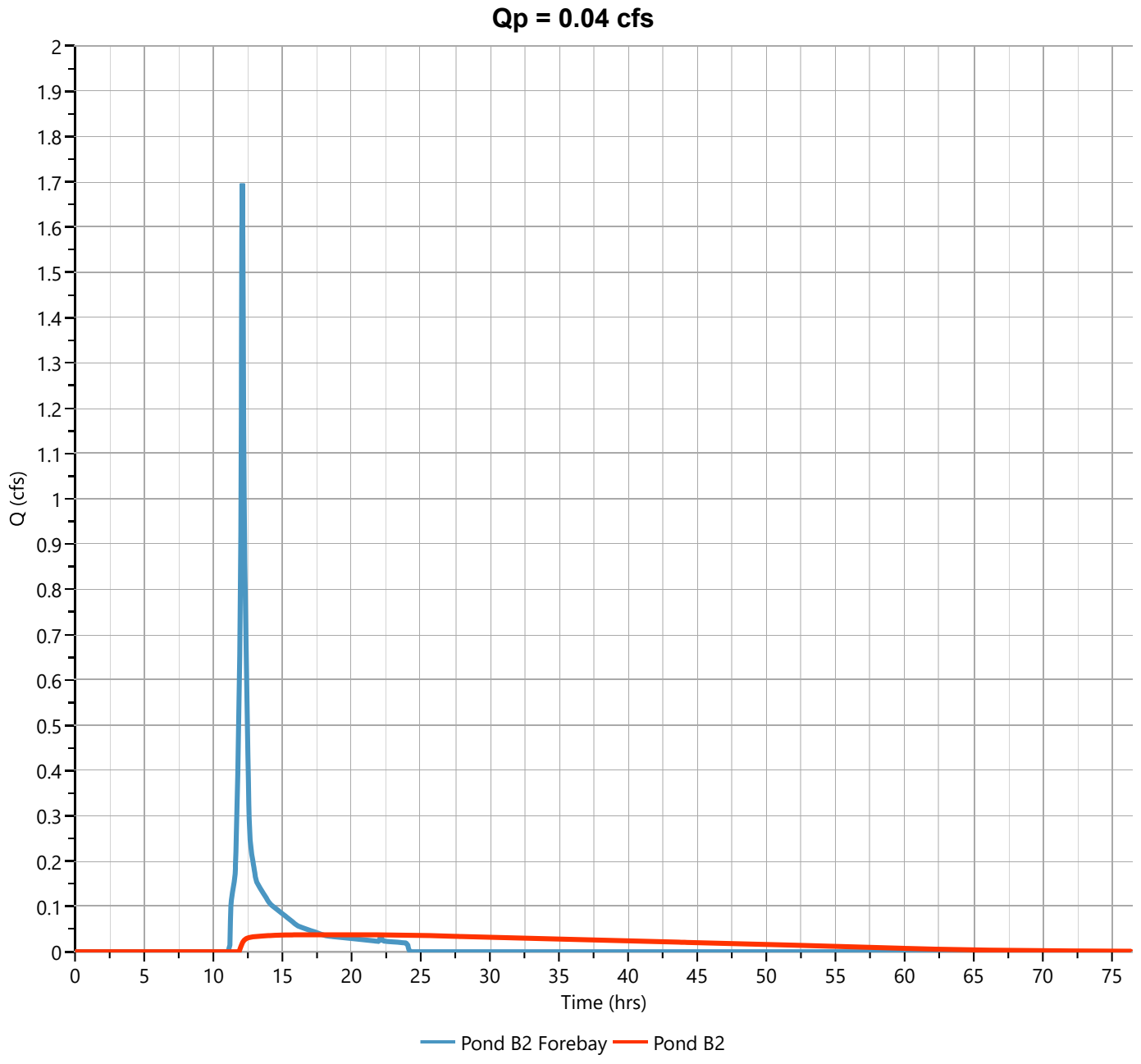
Pond B2

Hyd. No. 10

Hydrograph Type	= Pond Route	Peak Flow	= 0.037 cfs
Storm Frequency	= 10-yr	Time to Peak	= 17.90 hrs
Time Interval	= 2 min	Hydrograph Volume	= 4,632 cuft
Inflow Hydrograph	= 9 - Pond B2 Forebay	Max. Elevation	= 510.07 ft
Pond Name	= Pond B2	Max. Storage	= 4,312 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 507.00 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 18.59 hrs



Hydrograph Report

Project Name: Donnelly - Sugarloaf

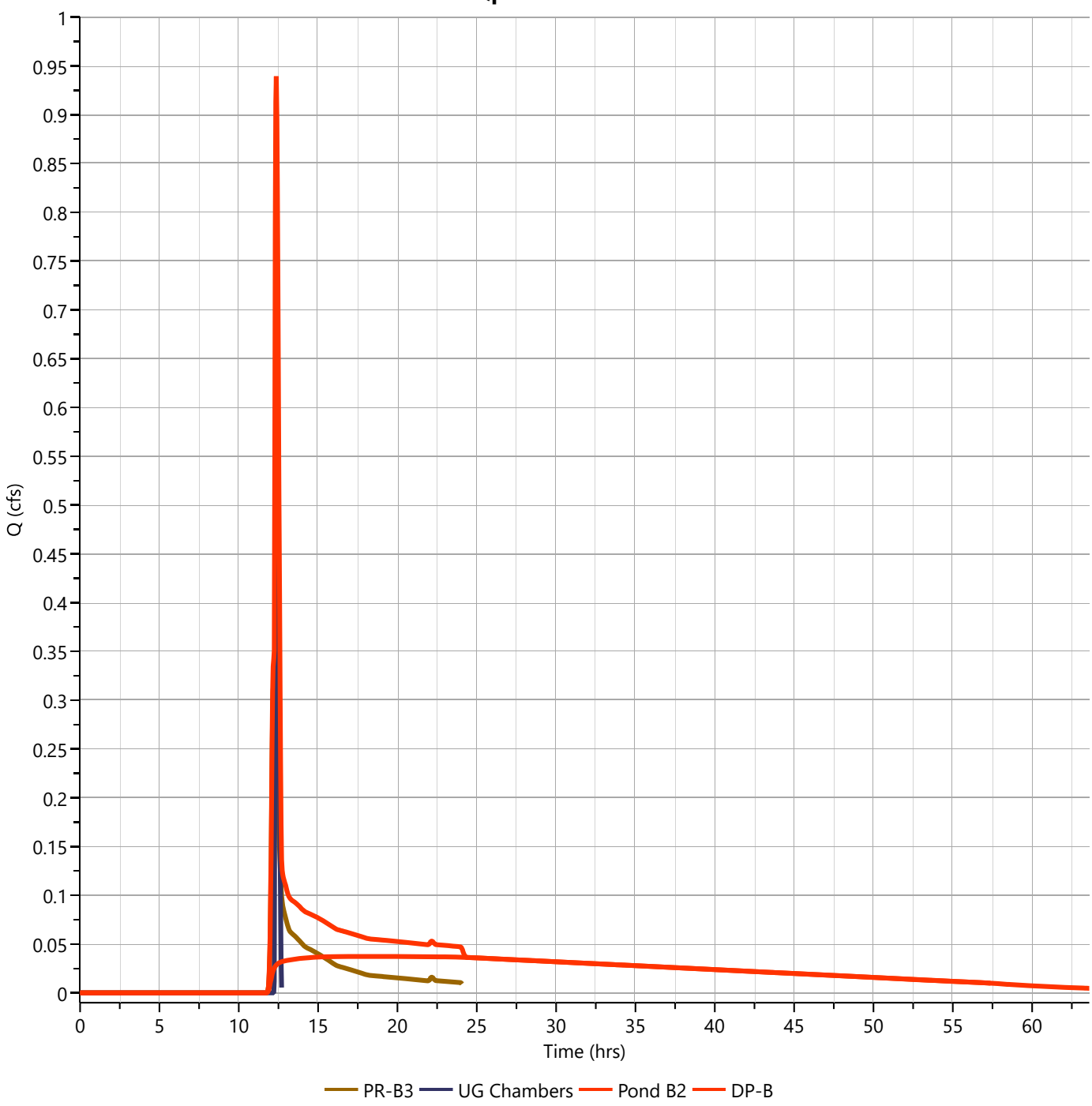
Hydrology Studio v 3.0.0.21

01-14-2022

DP-B

Hyd. No. 11

Hydrograph Type	= Junction	Peak Flow	= 0.939 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.37 hrs
Time Interval	= 2 min	Hydrograph Volume	= 6,852 cuft
Inflow Hydrographs	= 6, 8, 10	Total Contrib. Area	= 0.53 ac



Hydrograph 100-yr Summary

Project Name: Donnelly - Sugarloaf

01-14-2022

Hydrology Studio v 3.0.0.21

Hyd. No.	Hydrograph Type	Hydrograph Name	Peak Flow (cfs)	Time to Peak (hrs)	Hydrograph Volume (cuft)	Inflow Hyd(s)	Maximum Elevation (ft)	Maximum Storage (cuft)
1	NRCS Runoff	EX-A	6.401	12.13	24,909	----		
2	NRCS Runoff	EX-B	5.261	12.10	18,764	----		
3	NRCS Runoff	PR-A	4.804	12.13	19,166	----		
4	NRCS Runoff	PR-B1	6.198	12.13	24,602	----		
5	NRCS Runoff	PR-B2	3.890	12.07	12,103	----		
6	NRCS Runoff	PR-B3	1.505	12.17	5,998	----		
7	Pond Route	Pond B1-Pre treat	6.142	12.13	24,382	4	507.27	2,507
8	Pond Route	UG Chambers	3.334	12.30	6,004	7	510.14	3,510
9	Pond Route	Pond B2 Forebay	3.648	12.10	11,605	5	511.22	8,615
10	Pond Route	Pond B2	0.373	12.90	11,057	9	511.22	7,746
11	Junction	DP-B	4.606	12.23	23,059	6, 8, 10		

Hydrograph Report

Project Name: Donnelly - Sugarloaf

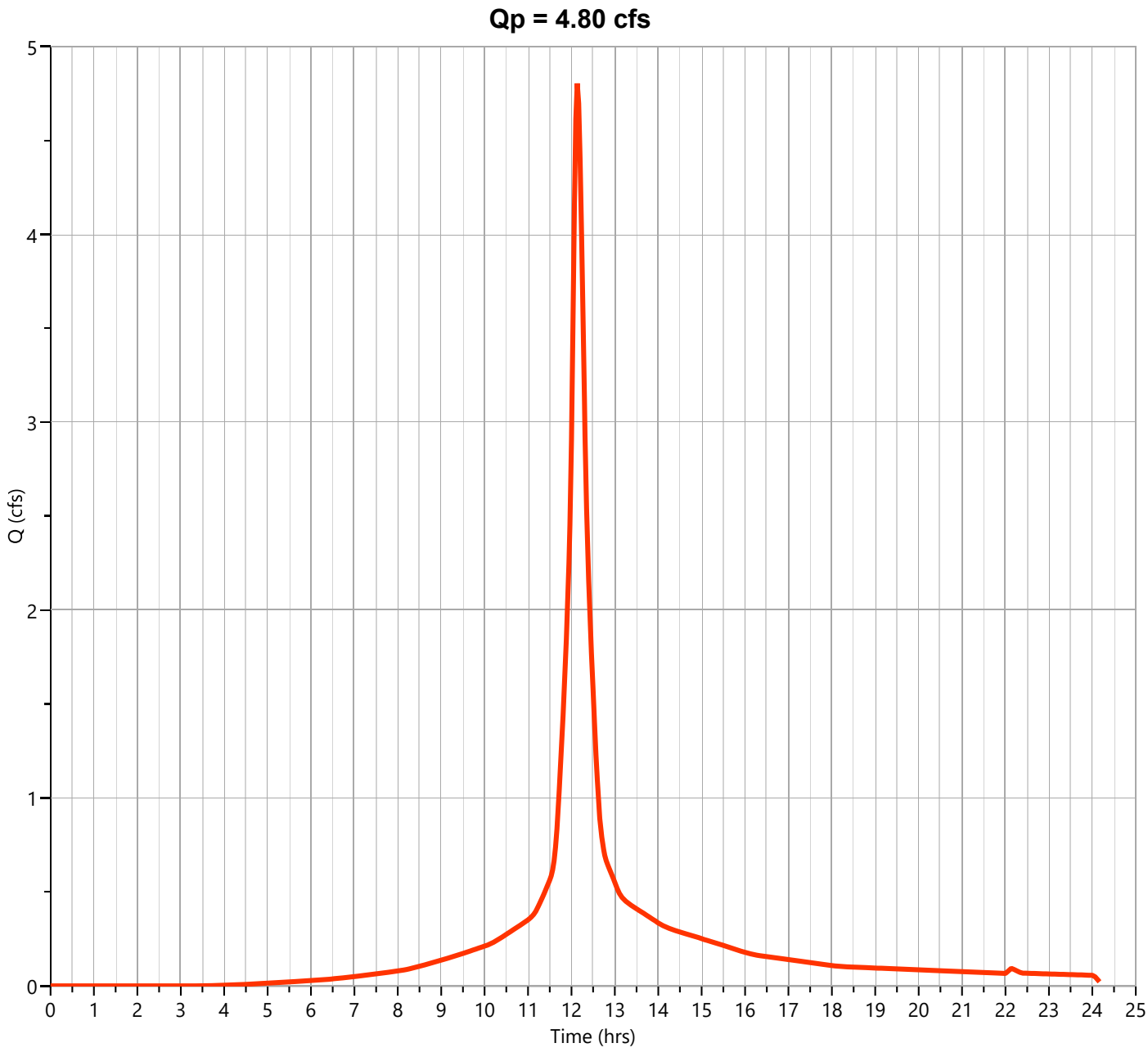
Hydrology Studio v 3.0.0.21

01-14-2022

PR-A

Hyd. No. 3

Hydrograph Type	= NRCS Runoff	Peak Flow	= 4.804 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.13 hrs
Time Interval	= 2 min	Runoff Volume	= 19,166 cuft
Drainage Area	= 0.75 ac	Curve Number	= 86
Tc Method	= User	Time of Conc. (Tc)	= 13.2 min
Total Rainfall	= 8.51 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Donnelly - Sugarloaf

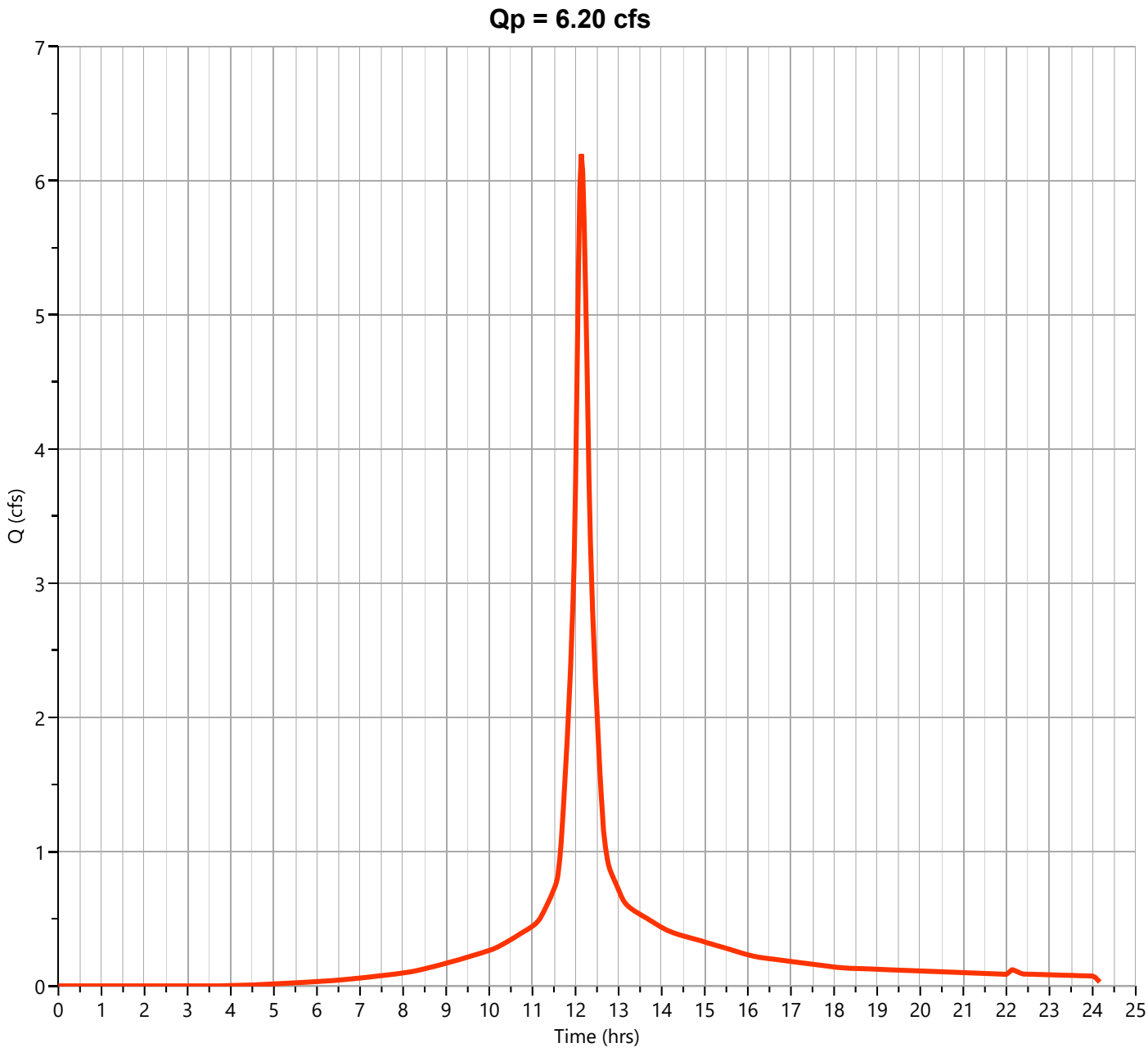
Hydrology Studio v 3.0.0.21

01-14-2022

PR-B1

Hyd. No. 4

Hydrograph Type	= NRCS Runoff	Peak Flow	= 6.198 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.13 hrs
Time Interval	= 2 min	Runoff Volume	= 24,602 cuft
Drainage Area	= 0.98 ac	Curve Number	= 85
Tc Method	= User	Time of Conc. (Tc)	= 10.8 min
Total Rainfall	= 8.51 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Donnelly - Sugarloaf

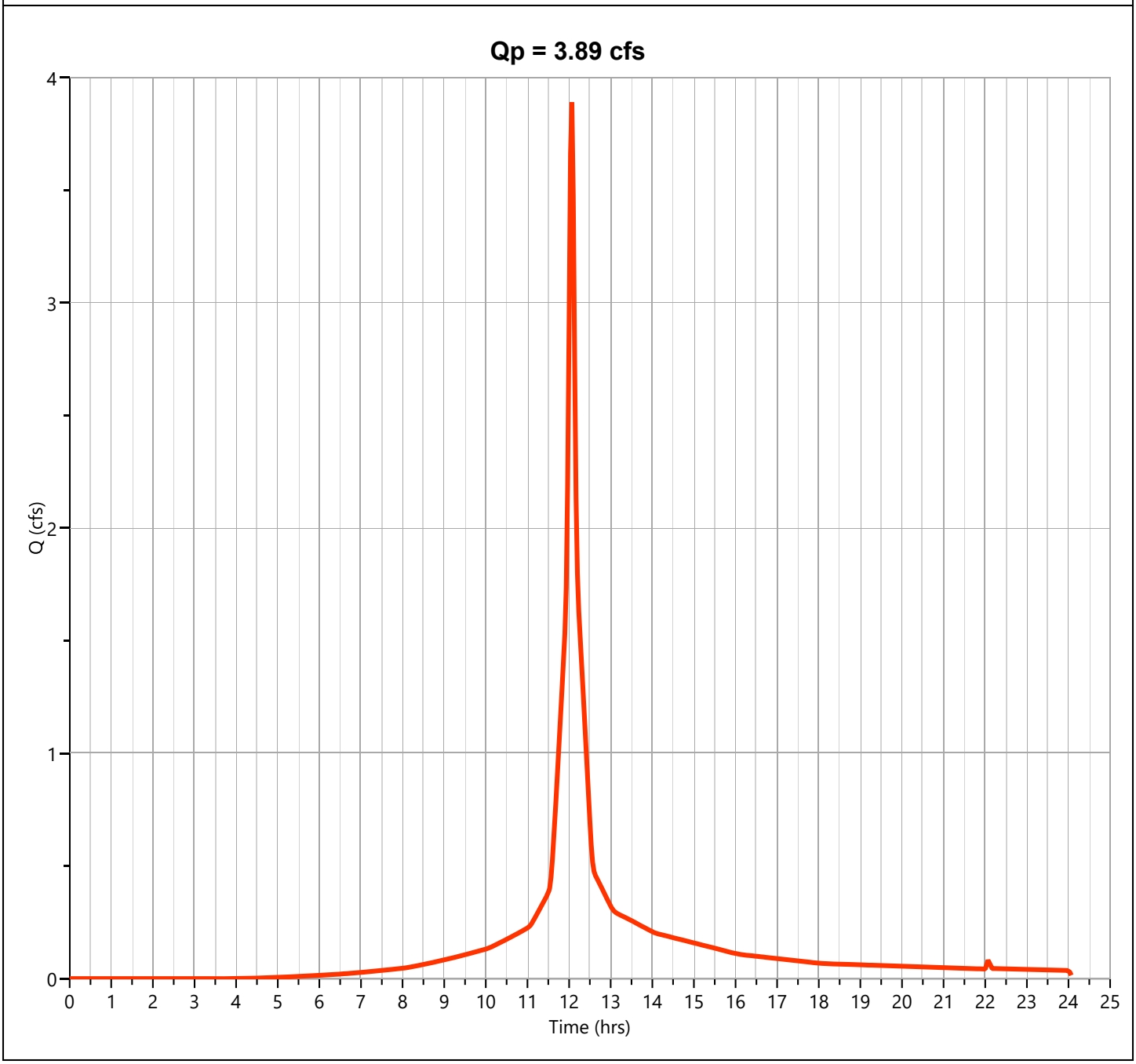
Hydrology Studio v 3.0.0.21

01-14-2022

PR-B2

Hyd. No. 5

Hydrograph Type	= NRCS Runoff	Peak Flow	= 3.890 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.07 hrs
Time Interval	= 2 min	Runoff Volume	= 12,103 cuft
Drainage Area	= 0.54 ac	Curve Number	= 84
Tc Method	= User	Time of Conc. (Tc)	= 6.0 min
Total Rainfall	= 8.51 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Donnelly - Sugarloaf

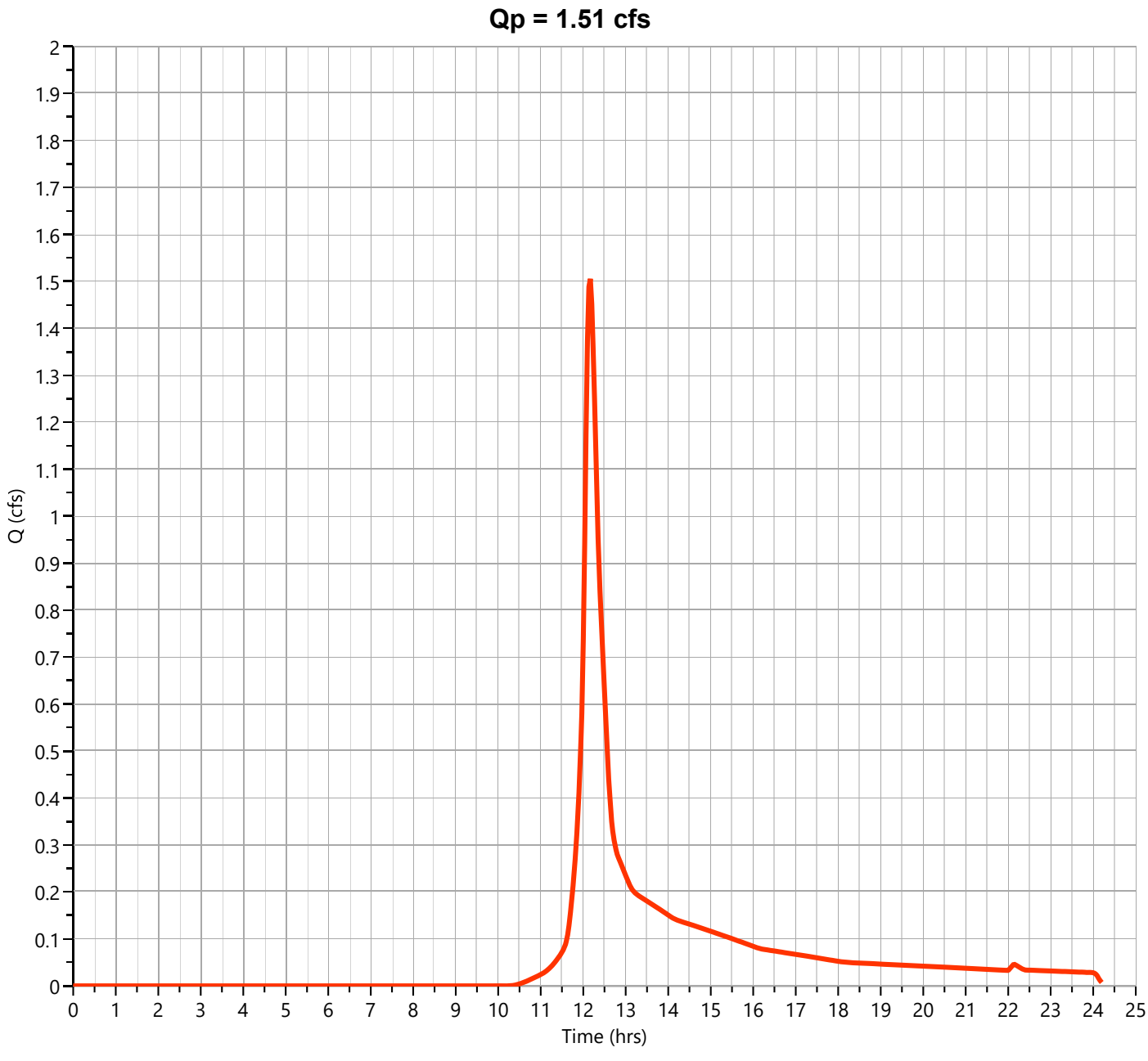
Hydrology Studio v 3.0.0.21

01-14-2022

PR-B3

Hyd. No. 6

Hydrograph Type	= NRCS Runoff	Peak Flow	= 1.505 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.17 hrs
Time Interval	= 2 min	Runoff Volume	= 5,998 cuft
Drainage Area	= 0.53 ac	Curve Number	= 54
Tc Method	= User	Time of Conc. (Tc)	= 13.2 min
Total Rainfall	= 8.51 in	Design Storm	= Type III
Storm Duration	= 24 hrs	Shape Factor	= 484



Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-14-2022

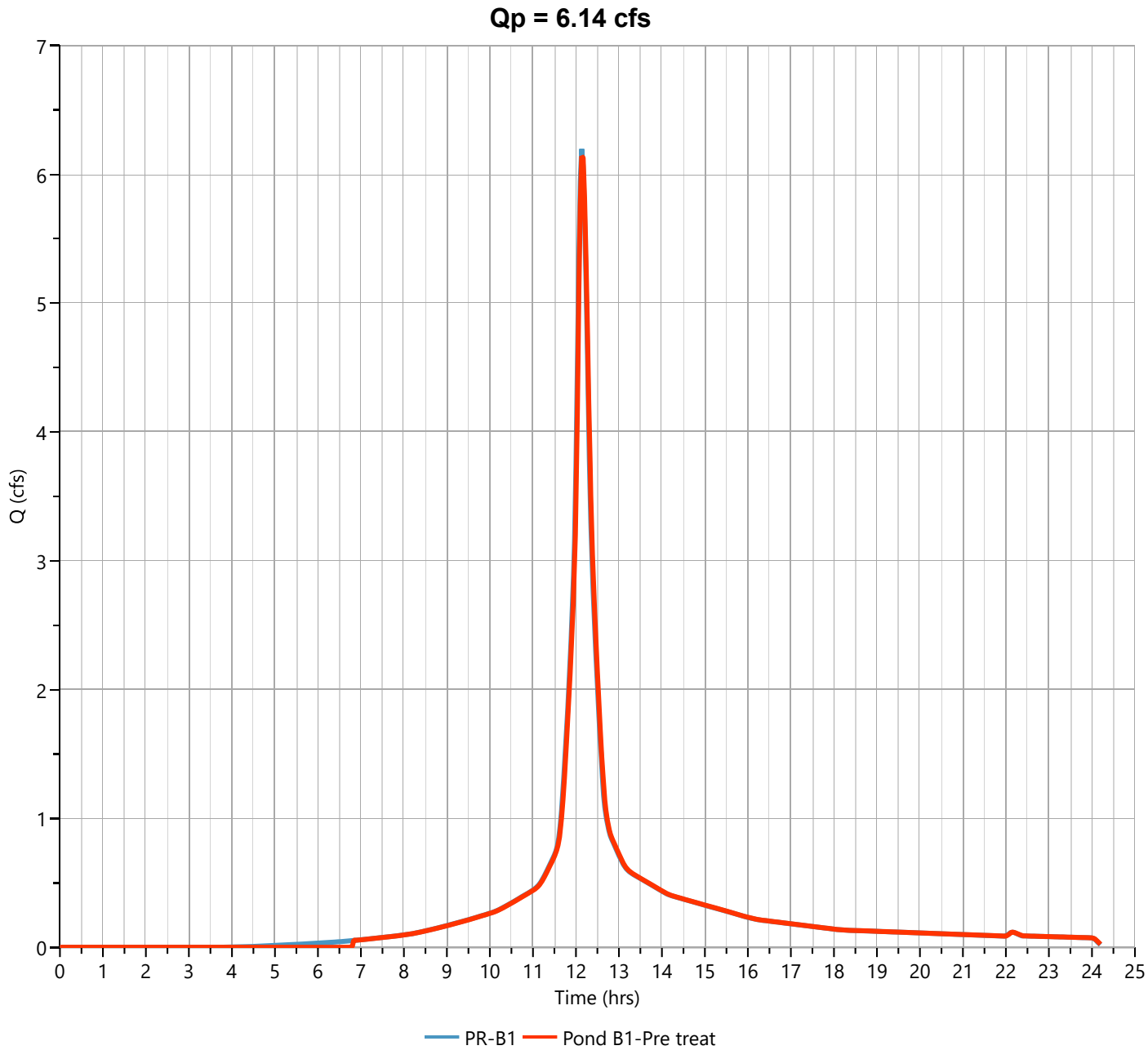
Pond B1-Pre treat

Hyd. No. 7

Hydrograph Type	= Pond Route	Peak Flow	= 6.142 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.13 hrs
Time Interval	= 2 min	Hydrograph Volume	= 24,382 cuft
Inflow Hydrograph	= 4 - PR-B1	Max. Elevation	= 507.27 ft
Pond Name	= Pond B1	Max. Storage	= 2,507 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 506.80 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 5 min



Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

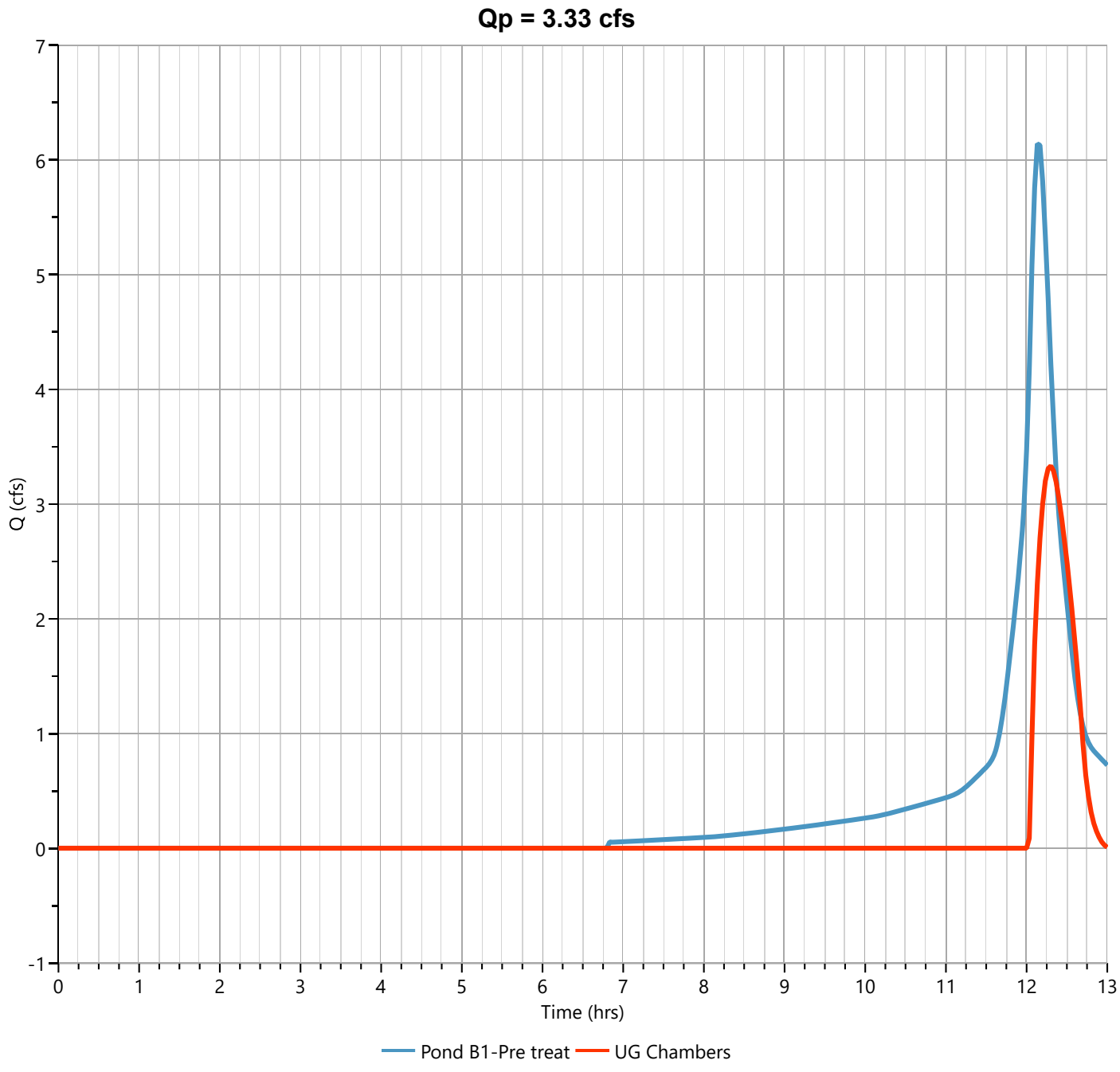
01-14-2022

UG Chambers

Hyd. No. 8

Hydrograph Type	= Pond Route	Peak Flow	= 3.334 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.30 hrs
Time Interval	= 2 min	Hydrograph Volume	= 6,004 cuft
Inflow Hydrograph	= 7 - Pond B1-Pre treat	Max. Elevation	= 510.14 ft
Pond Name	= SC-740 Chambers	Max. Storage	= 3,510 cuft

Pond Routing by Storage Indication Method



Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-14-2022

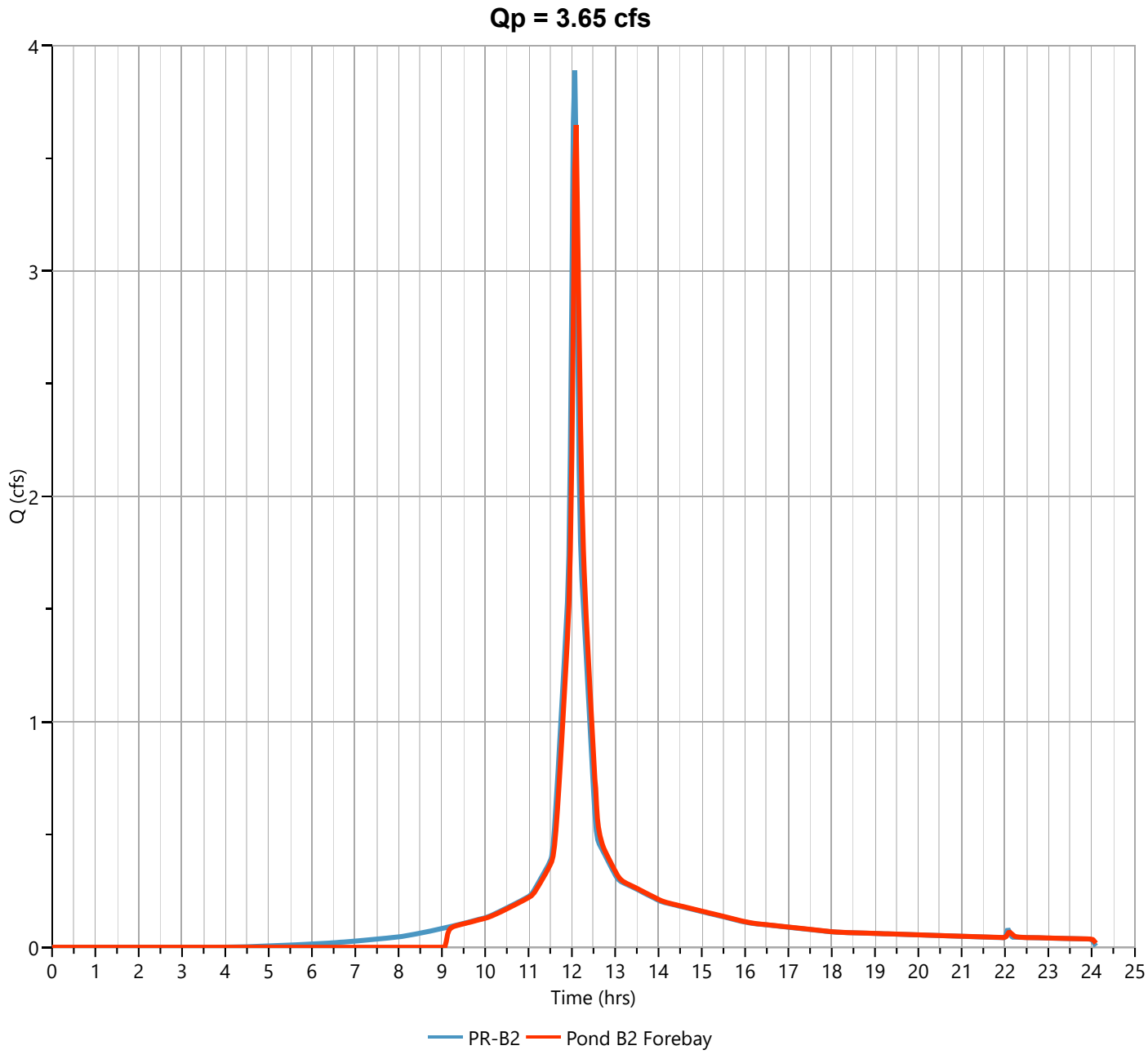
Pond B2 Forebay

Hyd. No. 9

Hydrograph Type	= Pond Route	Peak Flow	= 3.648 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.10 hrs
Time Interval	= 2 min	Hydrograph Volume	= 11,605 cuft
Inflow Hydrograph	= 5 - PR-B2	Max. Elevation	= 511.22 ft
Pond Name	= Pond B2-Forebay	Max. Storage	= 8,615 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 510.80 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 20 min



Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-14-2022

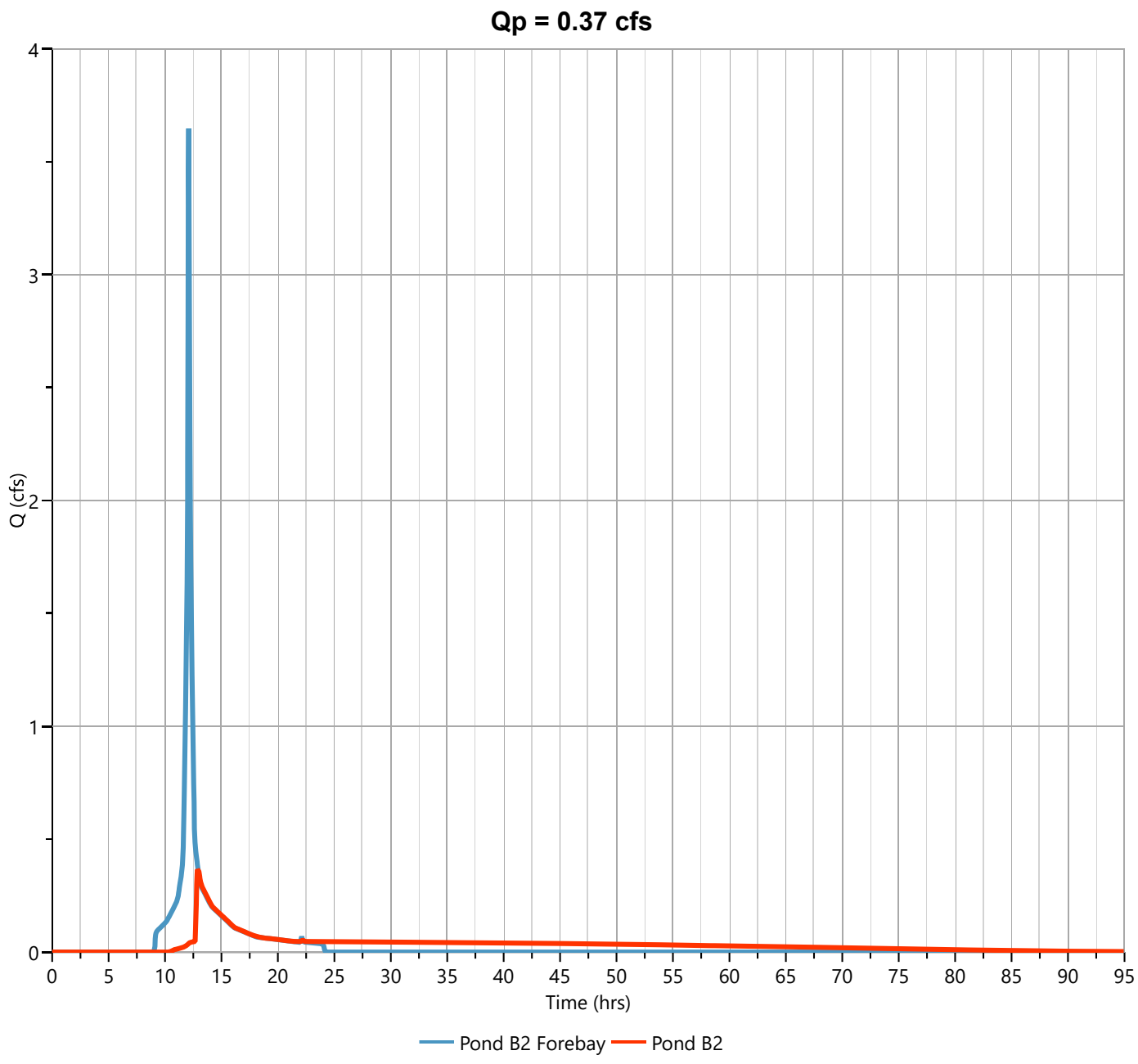
Pond B2

Hyd. No. 10

Hydrograph Type	= Pond Route	Peak Flow	= 0.373 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.90 hrs
Time Interval	= 2 min	Hydrograph Volume	= 11,057 cuft
Inflow Hydrograph	= 9 - Pond B2 Forebay	Max. Elevation	= 511.22 ft
Pond Name	= Pond B2	Max. Storage	= 7,746 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 507.00 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 21.57 hrs



Hydrograph Report

Project Name: Donnelly - Sugarloaf

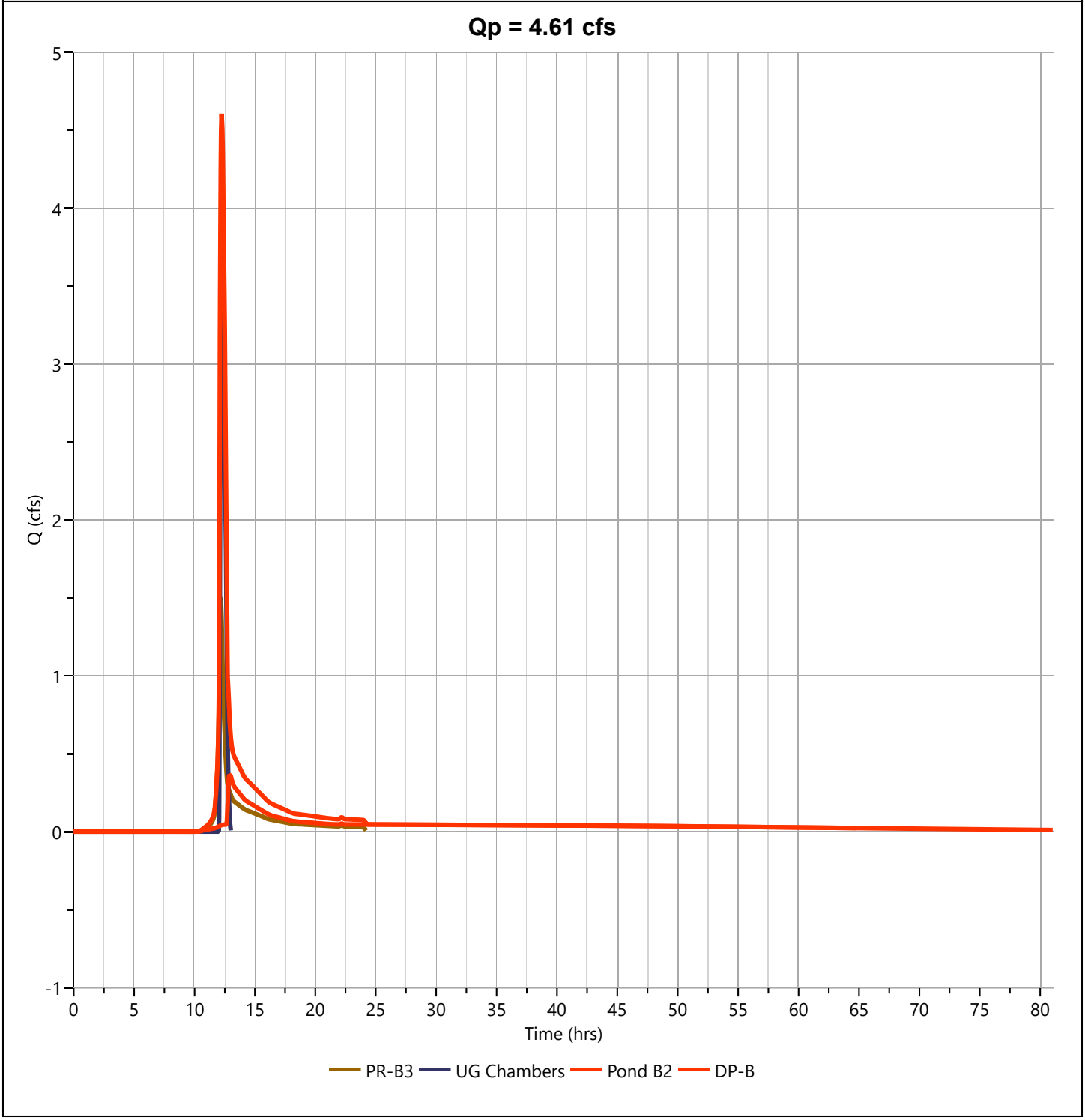
Hydrology Studio v 3.0.0.21

01-14-2022

DP-B

Hyd. No. 11

Hydrograph Type	= Junction	Peak Flow	= 4.606 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.23 hrs
Time Interval	= 2 min	Hydrograph Volume	= 23,059 cuft
Inflow Hydrographs	= 6, 8, 10	Total Contrib. Area	= 0.53 ac



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APPENDIX 9

RESERVOIR REPORTS

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Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

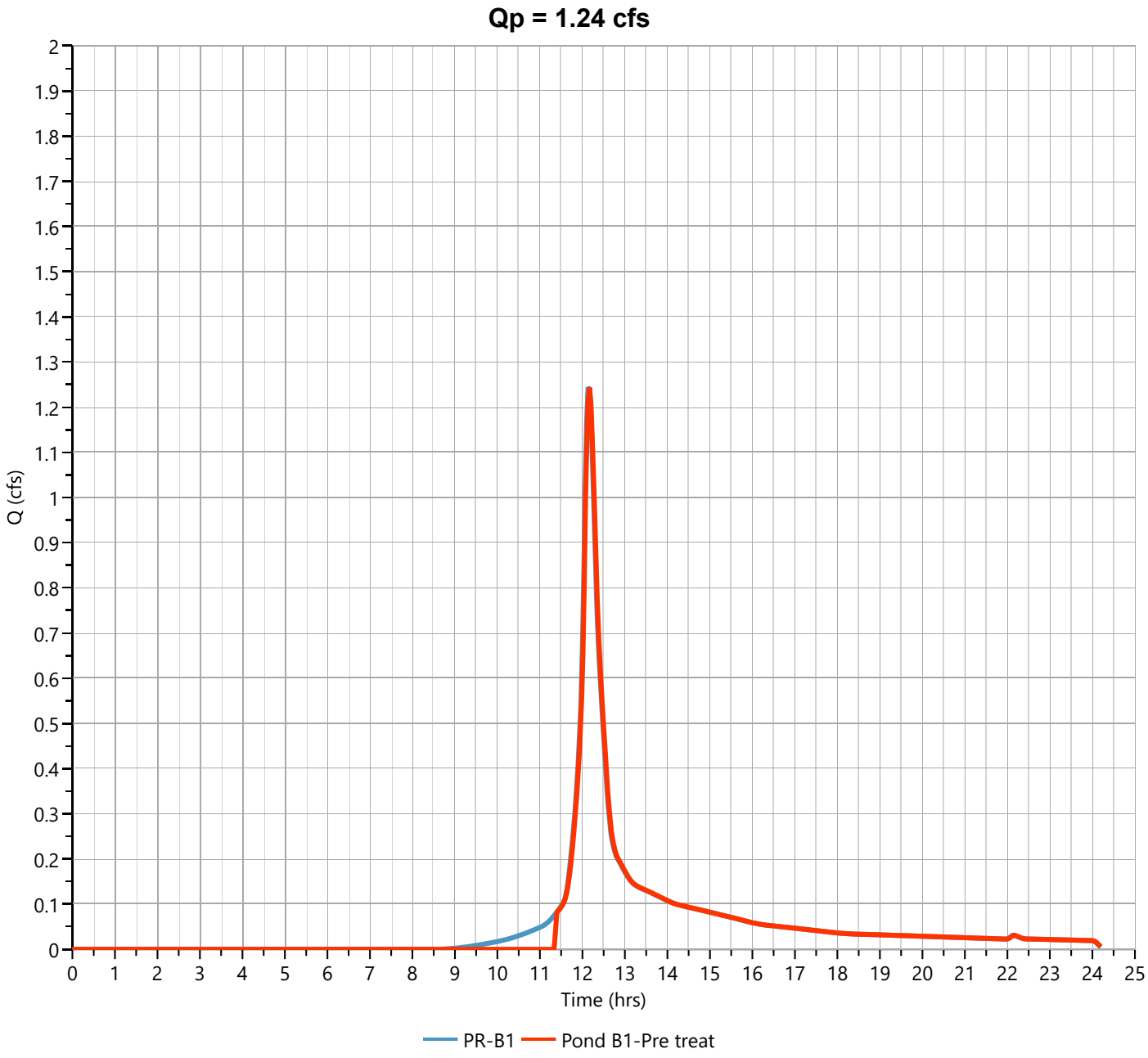
Pond B1-Pre treat

Hyd. No. 7

Hydrograph Type	= Pond Route	Peak Flow	= 1.244 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.17 hrs
Time Interval	= 2 min	Hydrograph Volume	= 4,575 cuft
Inflow Hydrograph	= 4 - PR-B1	Max. Elevation	= 507.06 ft
Pond Name	= Pond B1	Max. Storage	= 2,276 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 506.80 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 10 min



Pond Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

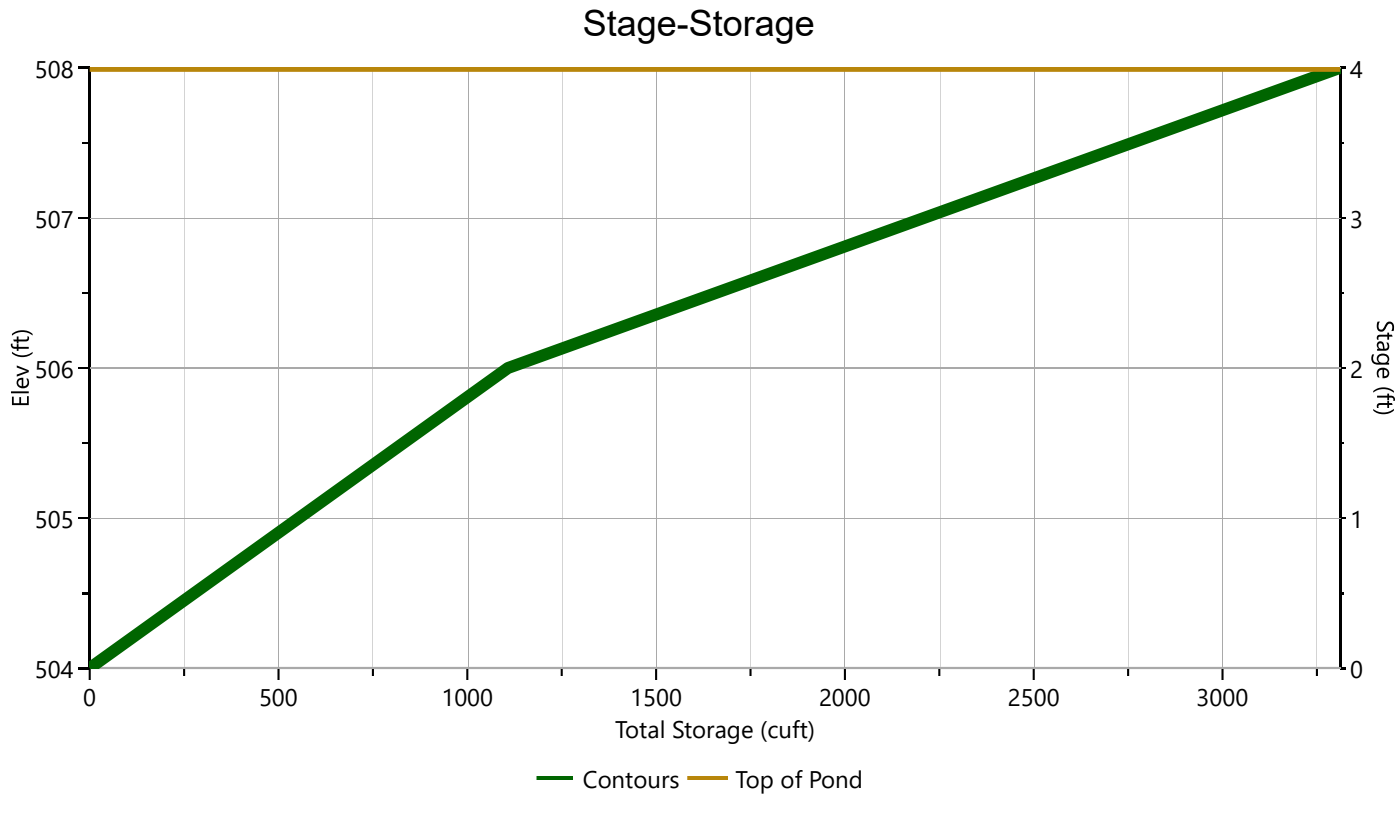
Pond B1

Stage-Storage

User Defined Contours	
Description	**Input**
Bottom Elevation, ft	504.00
Voids (%)	100.00
Volume Calc	Conic

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incr. Storage (cuft)	Total Storage (cuft)
0.00	504.00	331	0.000	0.000
2.00	506.00	812	1,108	1,108
4.00	508.00	1,420	2,204	3,311



Pond Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

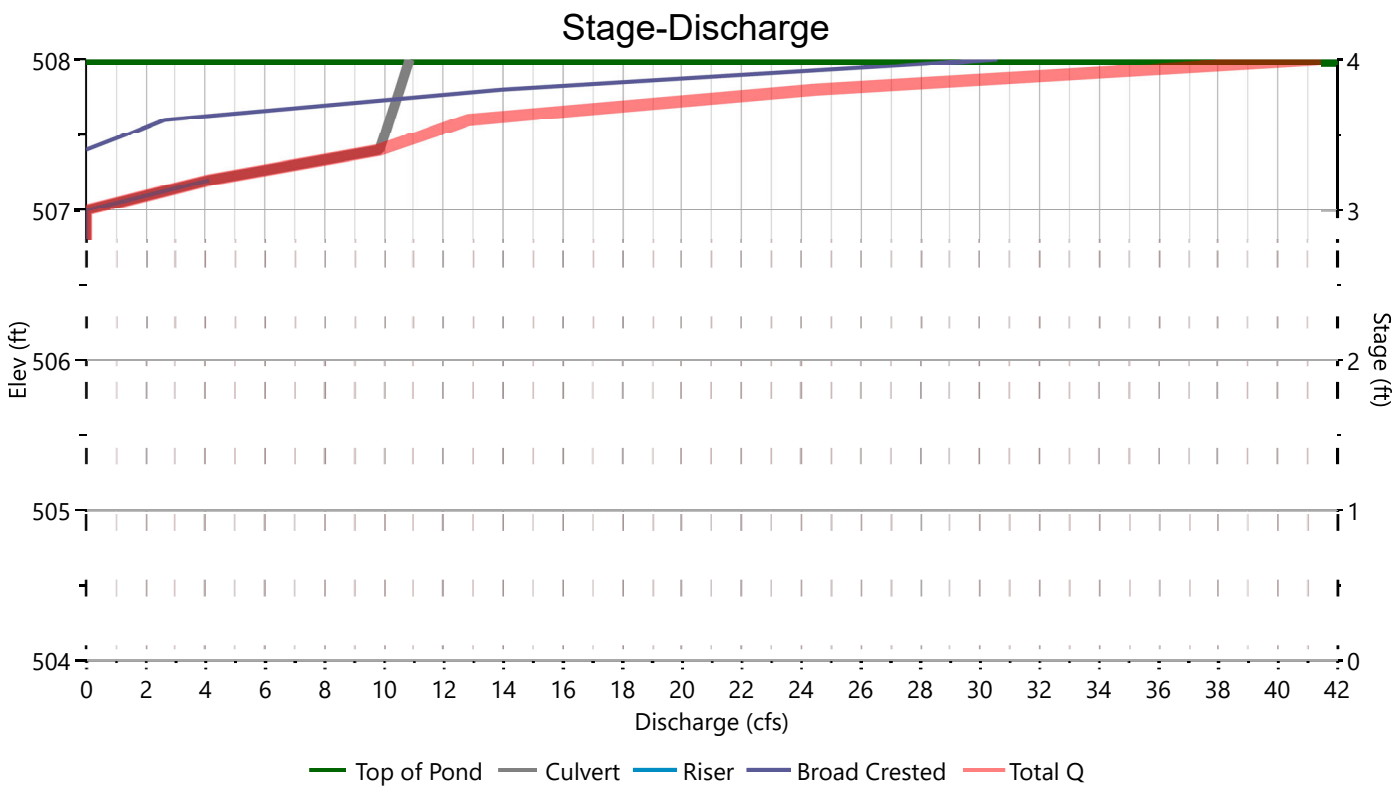
Pond B1

Stage-Discharge

Culvert / Orifices	Culvert	Orifices			Orifice Plate	
		1	2	3		
Rise, in	15				Orifice Dia, in	
Span, in	15				No. Orifices	
No. Barrels	1				Invert Elevation, ft	
Invert Elevation, ft	504.00				Height, ft	
Orifice Coefficient, Co	0.60				Orifice Coefficient, Co	
Length, ft	20					
Barrel Slope, %	.01					
N-Value, n	0.013					

Weirs	Riser*	Weirs			Ancillary	
		1	2	3		
Shape / Type	Circular	Broad Crested			Exfiltration, in/hr	
Crest Elevation, ft	507	507.5				
Crest Length, ft	14	25				
Angle, deg		18.4 (3:1)				
Weir Coefficient, Cw	3.3	3.3				

**Routes through Culvert.*



Pond Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

Pond B1

Stage-Storage-Discharge Summary

Stage (ft)	Elev. (ft)	Storage (cuft)	Culvert (cfs)	Orifices, cfs			Riser (cfs)	Weirs, cfs			Pf Riser (cfs)	Exfil (cfs)	User (cfs)	Total (cfs)
				1	2	3		1	2	3				
0.00	504.00	0.000	0.000				0.000	0.000						0.000
2.00	506.00	1,108	0.000				0.000	0.000						0.000
4.00	508.00	3,311	10.85 ic				0.000	30.57						41.42

Suffix key: ic = inlet control, oc = outlet control, s = submerged weir

Pond Report

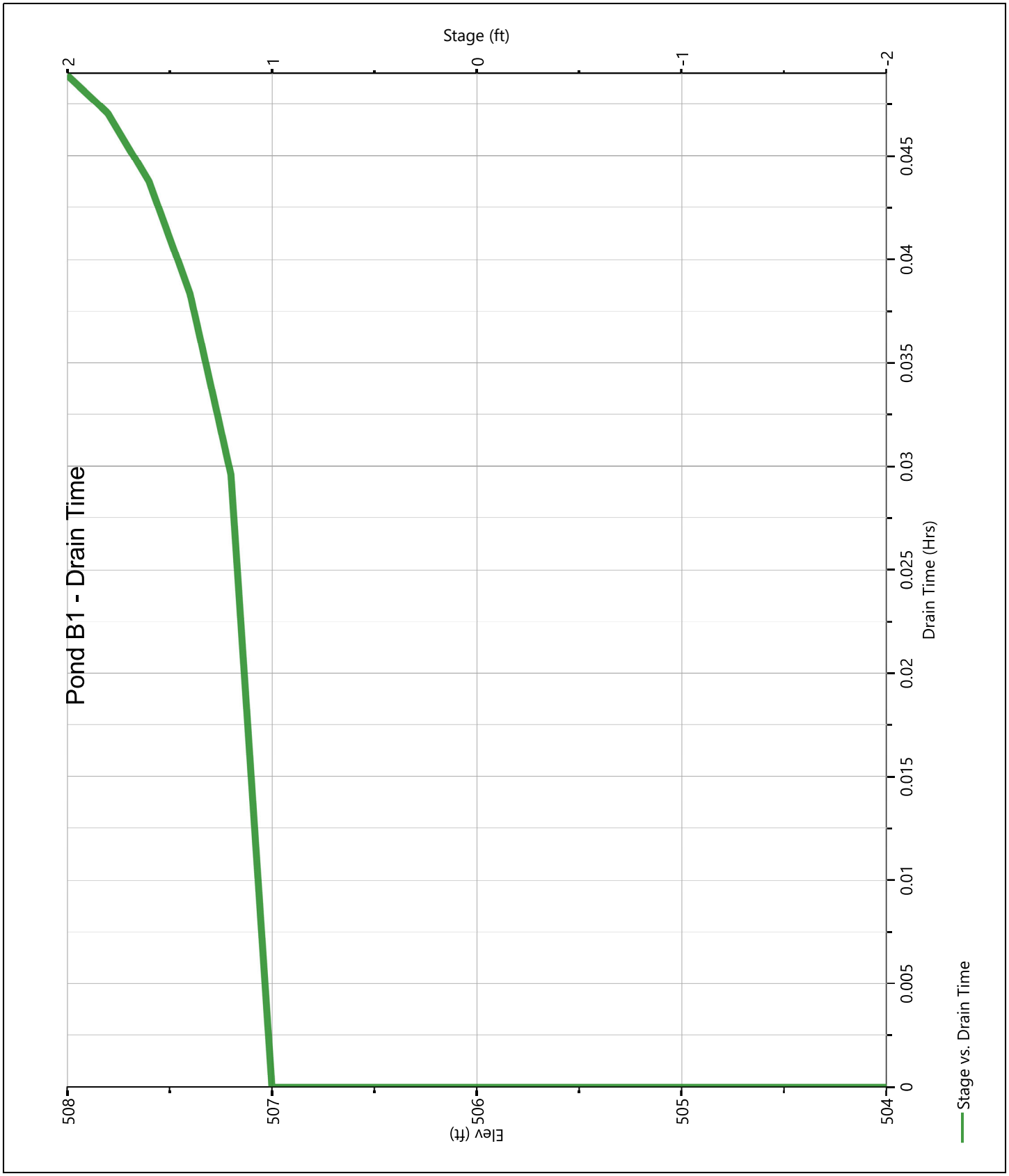
Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

Pond B1

Pond Drawdown



Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

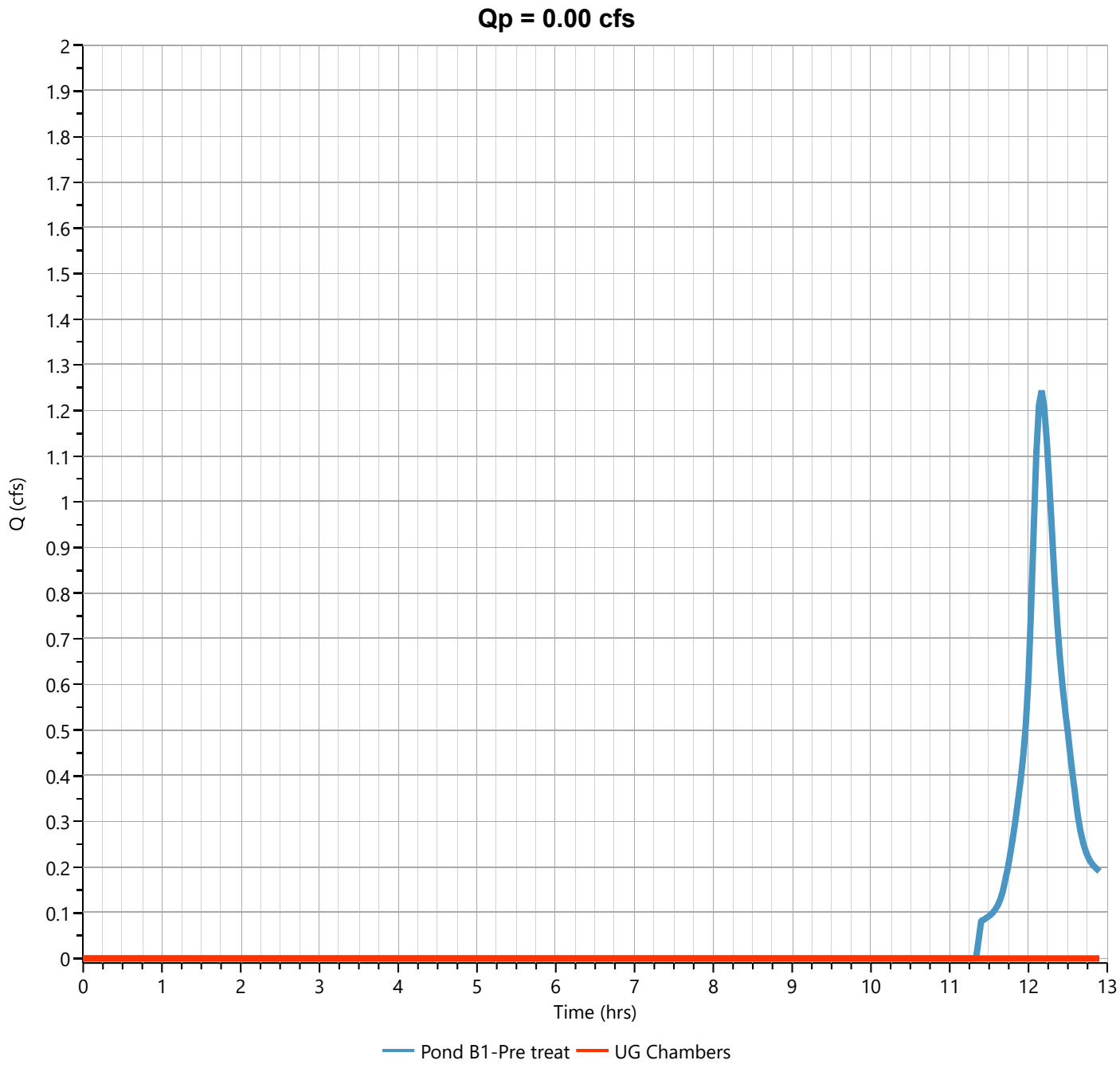
01-11-2022

UG Chambers

Hyd. No. 8

Hydrograph Type	= Pond Route	Peak Flow	= 0.000 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.87 hrs
Time Interval	= 2 min	Hydrograph Volume	= 0.000 cuft
Inflow Hydrograph	= 7 - Pond B1-Pre treat	Max. Elevation	= 507.19 ft
Pond Name	= SC-740 Chambers	Max. Storage	= 133 cuft

Pond Routing by Storage Indication Method



Pond Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

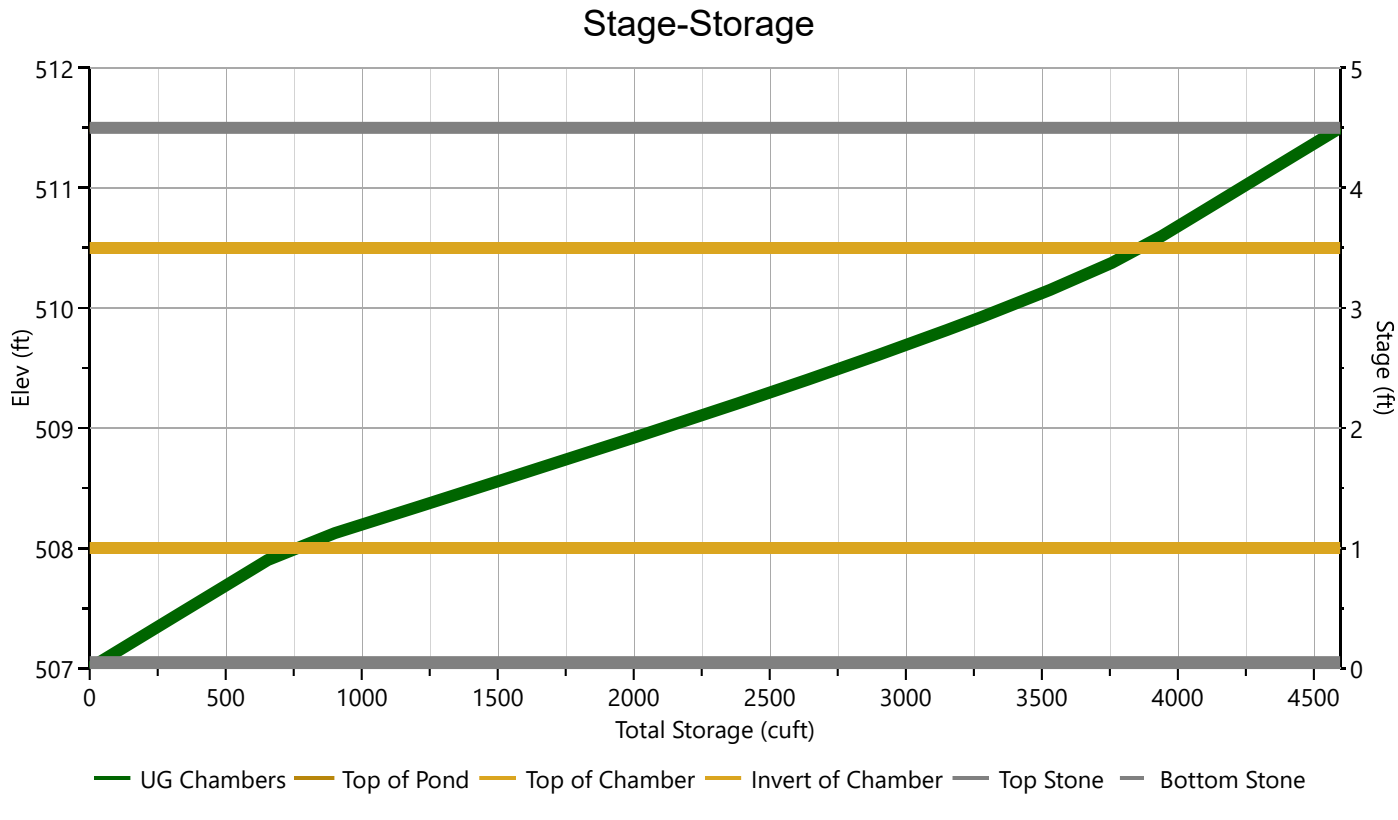
SC-740 Chambers

Stage-Storage

StormTech® SC-740™ Chamber	
Description	**Input**
Chamber Height, in	30
Chamber Shape	Arch
Chamber Width, in	51
Installed Length, ft	7.12
No. Chambers	48
Bare Chamber Stor, cuft	2,203
No. Rows	8
Space Between Rows, in	6
Stone Above, in	12
Stone Below, in	12
Stone Sides, in	12
Stone Ends, in	12
Encasement Voids, %	40.00
Encasement Bottom Elevation, ft	507.00

Stage / Storage Table

Stage (in)	Elevation (ft)	Contour Area (sqft)	Incr. Storage (cuft)	Total Storage (cuft)
0.0	507.00	1,819	0.000	0.000
2.7	507.23	1,819	164	164
5.4	507.45	1,819	164	327
8.1	507.68	1,819	164	491
10.8	507.90	1,819	164	655
13.5	508.13	1,819	246	901
16.2	508.35	1,819	314	1,216
18.9	508.58	1,819	312	1,528
21.6	508.80	1,819	309	1,837
24.3	509.03	1,819	305	2,142
27.0	509.25	1,819	298	2,440
29.7	509.48	1,819	291	2,731
32.4	509.70	1,819	281	3,011
35.1	509.93	1,819	268	3,279
37.8	510.15	1,819	251	3,530
40.5	510.38	1,819	227	3,758
43.2	510.60	1,819	184	3,941
45.9	510.83	1,819	164	4,105
48.6	511.05	1,819	164	4,269
51.3	511.28	1,819	164	4,433
54.0	511.50	1,819	164	4,596



Pond Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

SC-740 Chambers

Stage-Discharge

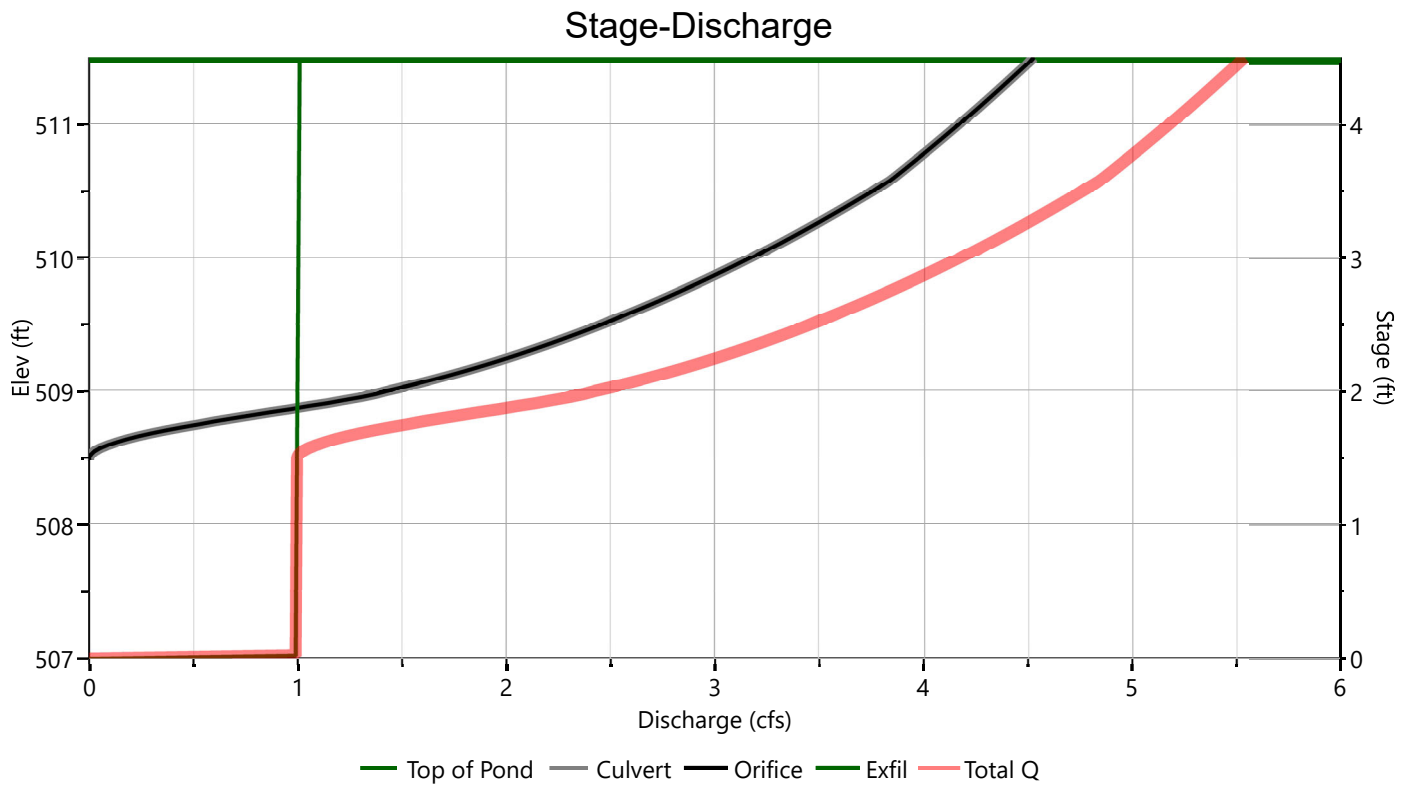
Culvert / Orifices	Culvert	Orifices		
		1*	2	3
Rise, in	15	6		
Span, in	15	6		
No. Barrels	1	3		
Invert Elevation, ft	507.00	508.50		
Orifice Coefficient, Co	0.60	0.60		
Length, ft	80			
Barrel Slope, %	.01			
N-Value, n	0.013			

Weirs	Riser*	Weirs		
		1	2	3
Shape / Type				
Crest Elevation, ft				
Crest Length, ft				
Angle, deg				
Weir Coefficient, Cw				

Perforated Riser	
Hole Diameter, in	
No. holes	
Invert Elevation, ft	
Height, ft	
Orifice Coefficient, Co	

Ancillary	
Exfiltration, in/hr	23.50**

*Routes through Culvert. **Exfiltration extracted from outflow hydrograph. Rate applied to contours.



Pond Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

SC-740 Chambers

Stage-Storage-Discharge Summary

Stage (ft)	Elev. (ft)	Storage (cuft)	Culvert (cfs)	Orifices, cfs			Riser (cfs)	Weirs, cfs			Pf Riser (cfs)	Exfil (cfs)	User (cfs)	Total (cfs)
				1	2	3		1	2	3				
0.00	507.00	0.000	0.000	0.000								0.000		0.000
0.23	507.23	164	0.000	0.000								0.991		0.991
0.45	507.45	327	0.000	0.000								0.992		0.992
0.68	507.68	491	0.000	0.000								0.993		0.993
0.90	507.90	655	0.000	0.000								0.994		0.994
1.13	508.13	901	0.000	0.000								0.995		0.995
1.35	508.35	1,216	0.000	0.000								0.996		0.996
1.58	508.58	1,528	0.053 oc	0.053								0.997		1.049
1.80	508.80	1,837	0.690 oc	0.690								0.998		1.688
2.03	509.03	2,142	1.487 oc	1.487								0.999		2.486
2.25	509.25	2,440	2.005 oc	2.005								1.000		3.005
2.48	509.48	2,731	2.415 oc	2.415								1.001		3.415
2.70	509.70	3,011	2.764 oc	2.764								1.002		3.766
2.93	509.93	3,279	3.074 oc	3.074								1.003		4.077
3.15	510.15	3,530	3.355 oc	3.355								1.004		4.359
3.38	510.38	3,758	3.615 oc	3.615								1.005		4.620
3.60	510.60	3,941	3.853 oc	3.853								1.006		4.859
3.82	510.83	4,105	4.033 oc	4.033								1.007		5.039
4.05	511.05	4,269	4.205 oc	4.205								1.008		5.212
4.27	511.28	4,433	4.370 oc	4.370								1.009		5.379
4.50	511.50	4,596	4.529 oc	4.529								1.010		5.539

Suffix key: ic = inlet control, oc = outlet control, s = submerged weir

Pond Report

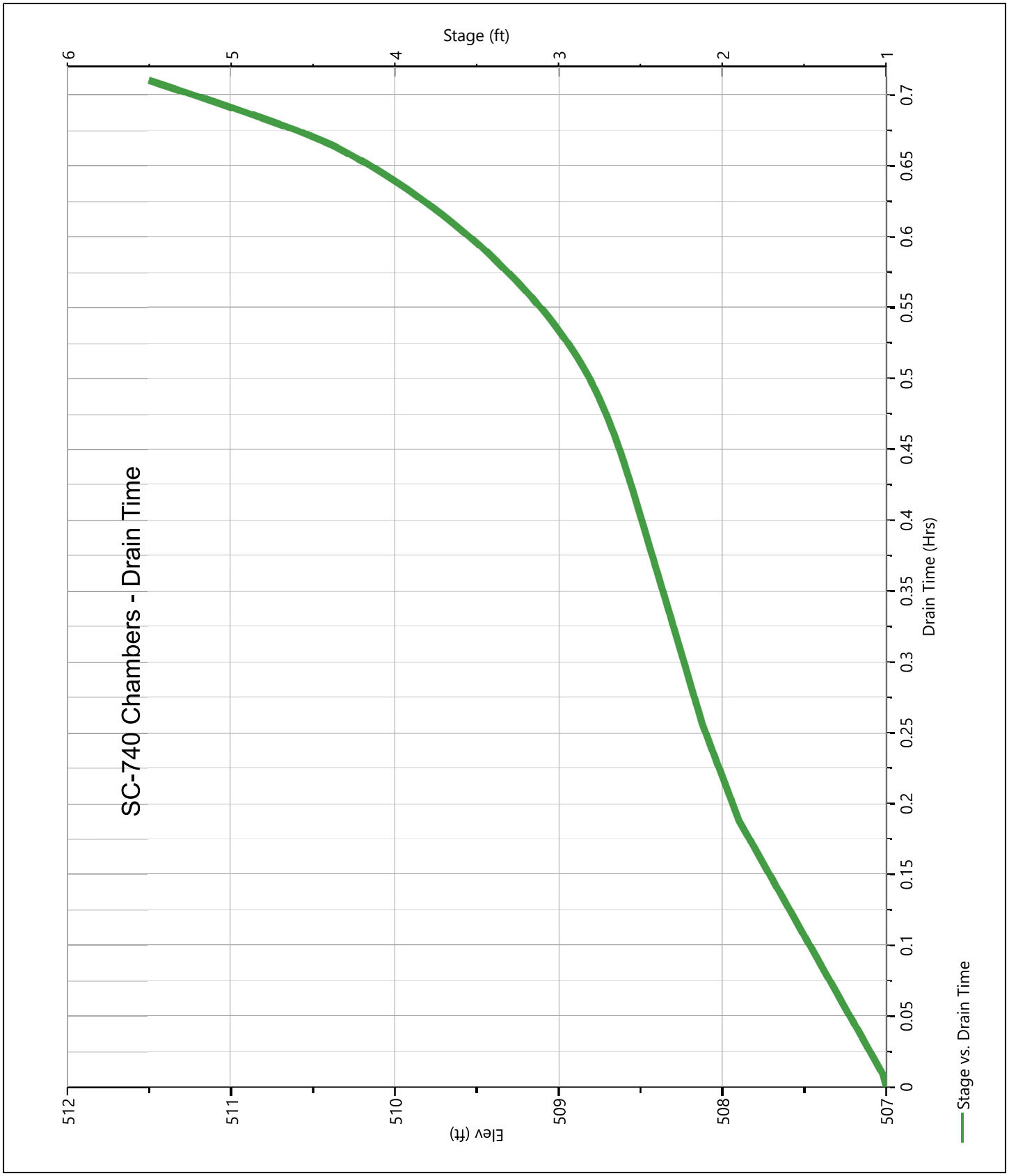
Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

SC-740 Chambers

Pond Drawdown



Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

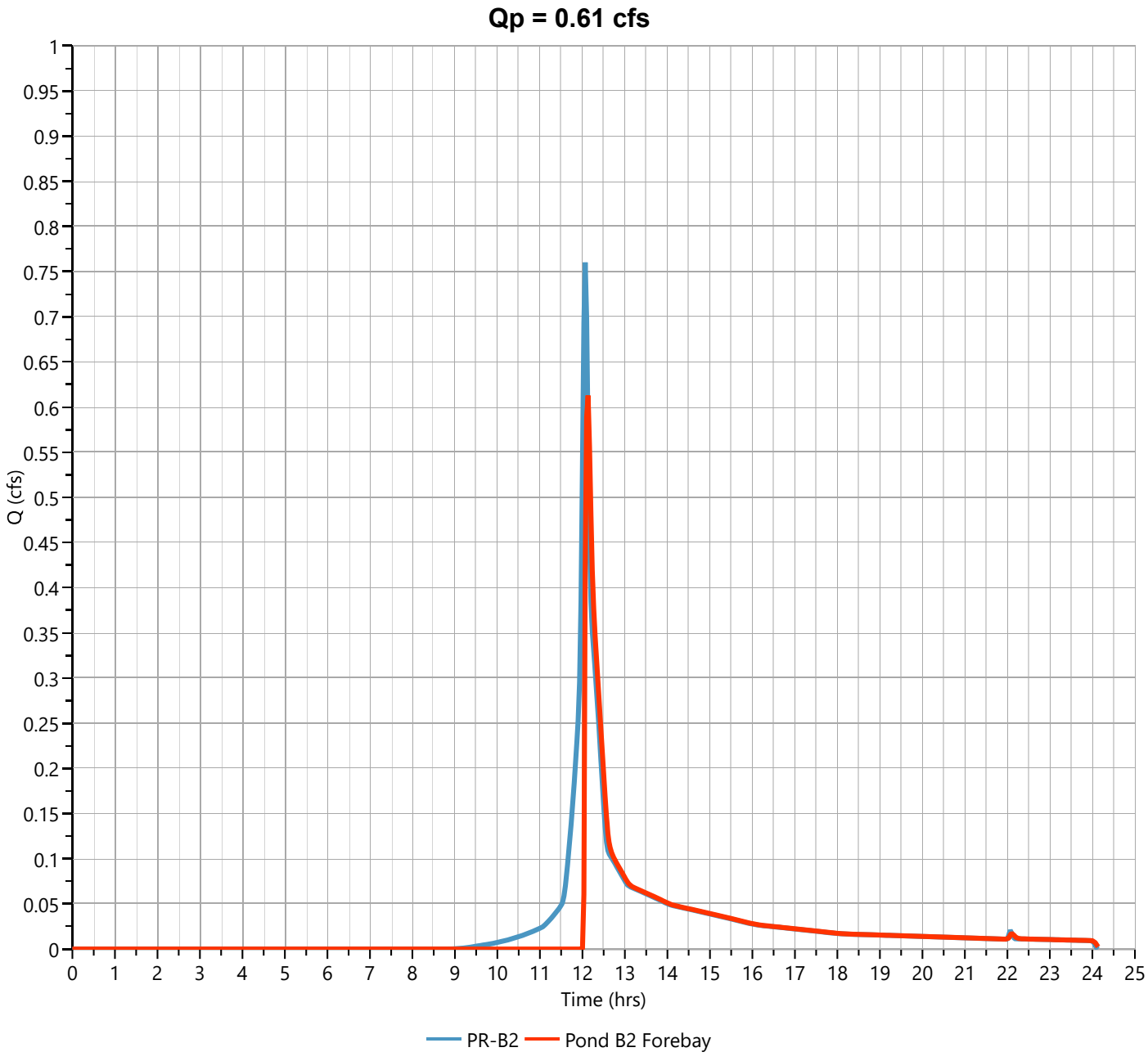
Pond B2 Forebay

Hyd. No. 9

Hydrograph Type	= Pond Route	Peak Flow	= 0.613 cfs
Storm Frequency	= 1-yr	Time to Peak	= 12.13 hrs
Time Interval	= 2 min	Hydrograph Volume	= 1,784 cuft
Inflow Hydrograph	= 5 - PR-B2	Max. Elevation	= 511.04 ft
Pond Name	= Pond B2-Forebay	Max. Storage	= 8,170 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 510.80 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 42 min



Pond Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

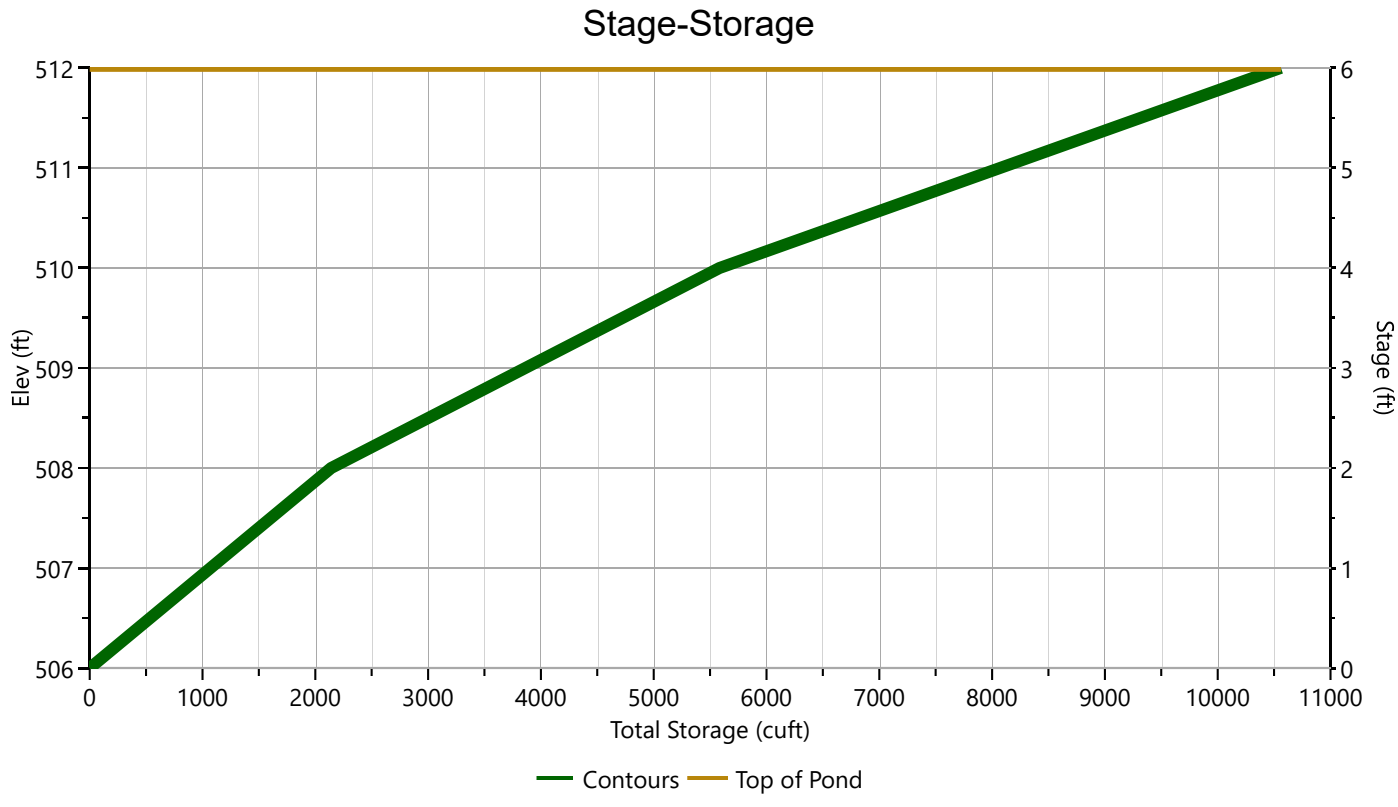
Pond B2-Forebay

Stage-Storage

User Defined Contours	
Description	**Input**
Bottom Elevation, ft	506.00
Voids (%)	100.00
Volume Calc	Conic

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incr. Storage (cuft)	Total Storage (cuft)
0.00	506.00	791	0.000	0.000
2.00	508.00	1,377	2,141	2,141
4.00	510.00	2,090	3,442	5,583
6.00	512.00	2,911	4,978	10,561



Pond Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

Pond B2-Forebay

Stage-Discharge

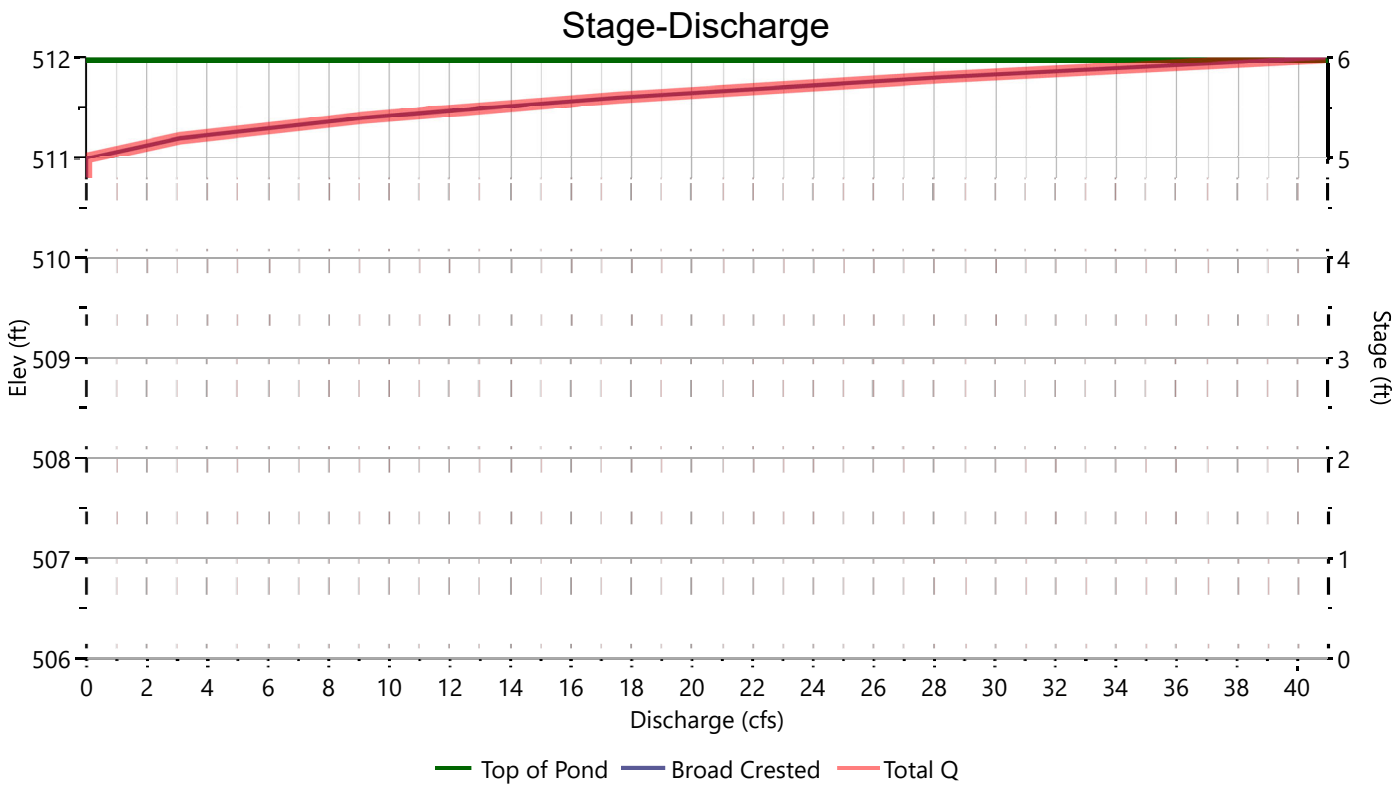
Culvert / Orifices	Culvert	Orifices		
		1	2	3
Rise, in				
Span, in				
No. Barrels				
Invert Elevation, ft				
Orifice Coefficient, Co				
Length, ft				
Barrel Slope, %				
N-Value, n	0.000			

Perforated Riser	
Hole Diameter, in	
No. holes	
Invert Elevation, ft	
Height, ft	
Orifice Coefficient, Co	

Weirs	Riser*	Weirs		
		1	2	3
Shape / Type		Broad Crested		
Crest Elevation, ft		511		
Crest Length, ft		10		
Angle, deg		18.4 (3:1)		
Weir Coefficient, Cw		3.3		

Ancillary	
Exfiltration, in/hr	

**Routes through Culvert.*



Pond Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

Pond B2-Forebay

Stage-Storage-Discharge Summary

Stage (ft)	Elev. (ft)	Storage (cuft)	Culvert (cfs)	Orifices, cfs			Riser (cfs)	Weirs, cfs			Pf Riser (cfs)	Exfil (cfs)	User (cfs)	Total (cfs)
				1	2	3		1	2	3				
0.00	506.00	0.000						0.000						0.000
2.00	508.00	2,141						0.000						0.000
4.00	510.00	5,583						0.000						0.000
6.00	512.00	10,561						40.92						40.92

Suffix key: ic = inlet control, oc = outlet control, s = submerged weir

Pond Report

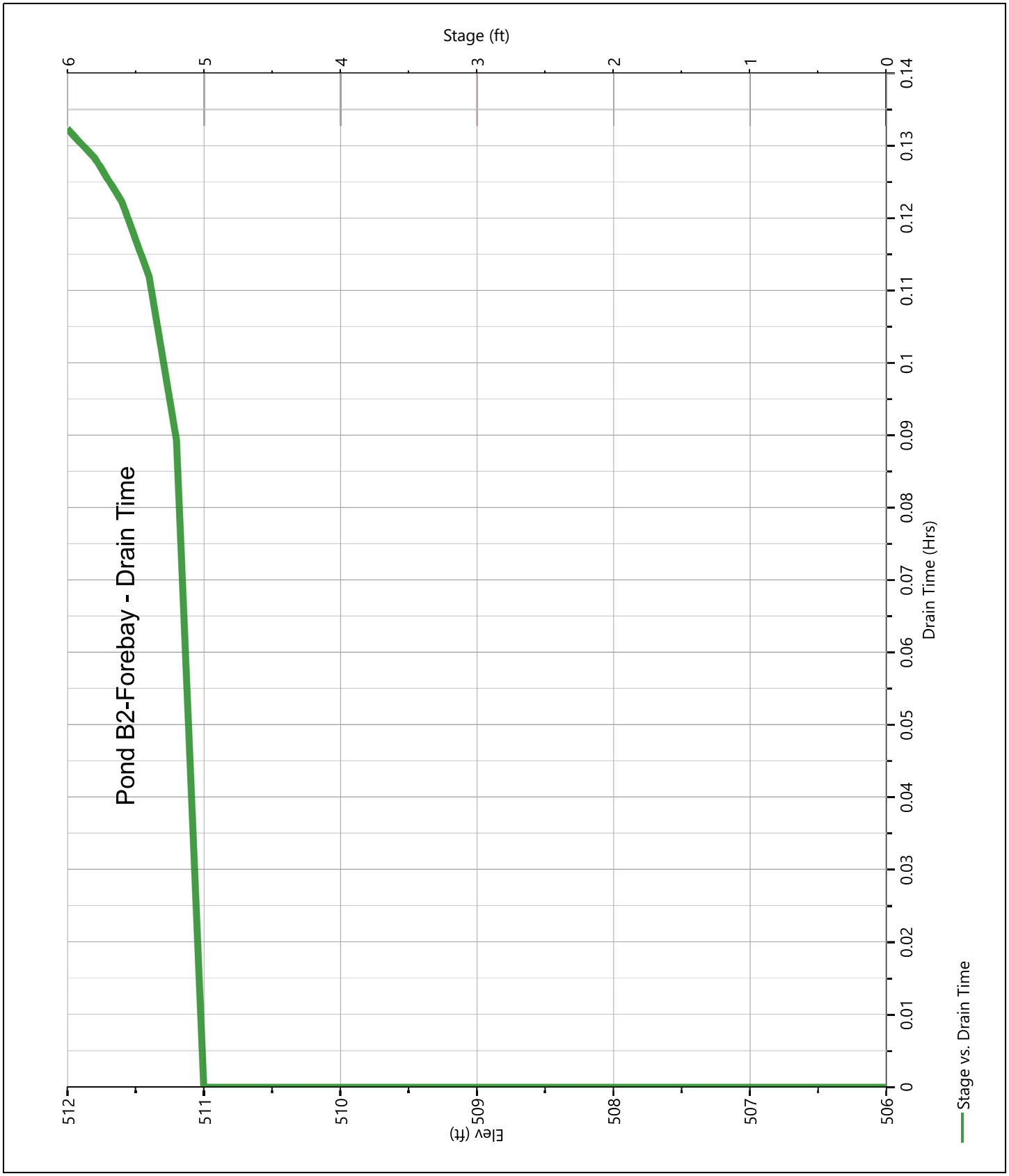
Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

Pond B2-Forebay

Pond Drawdown



Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

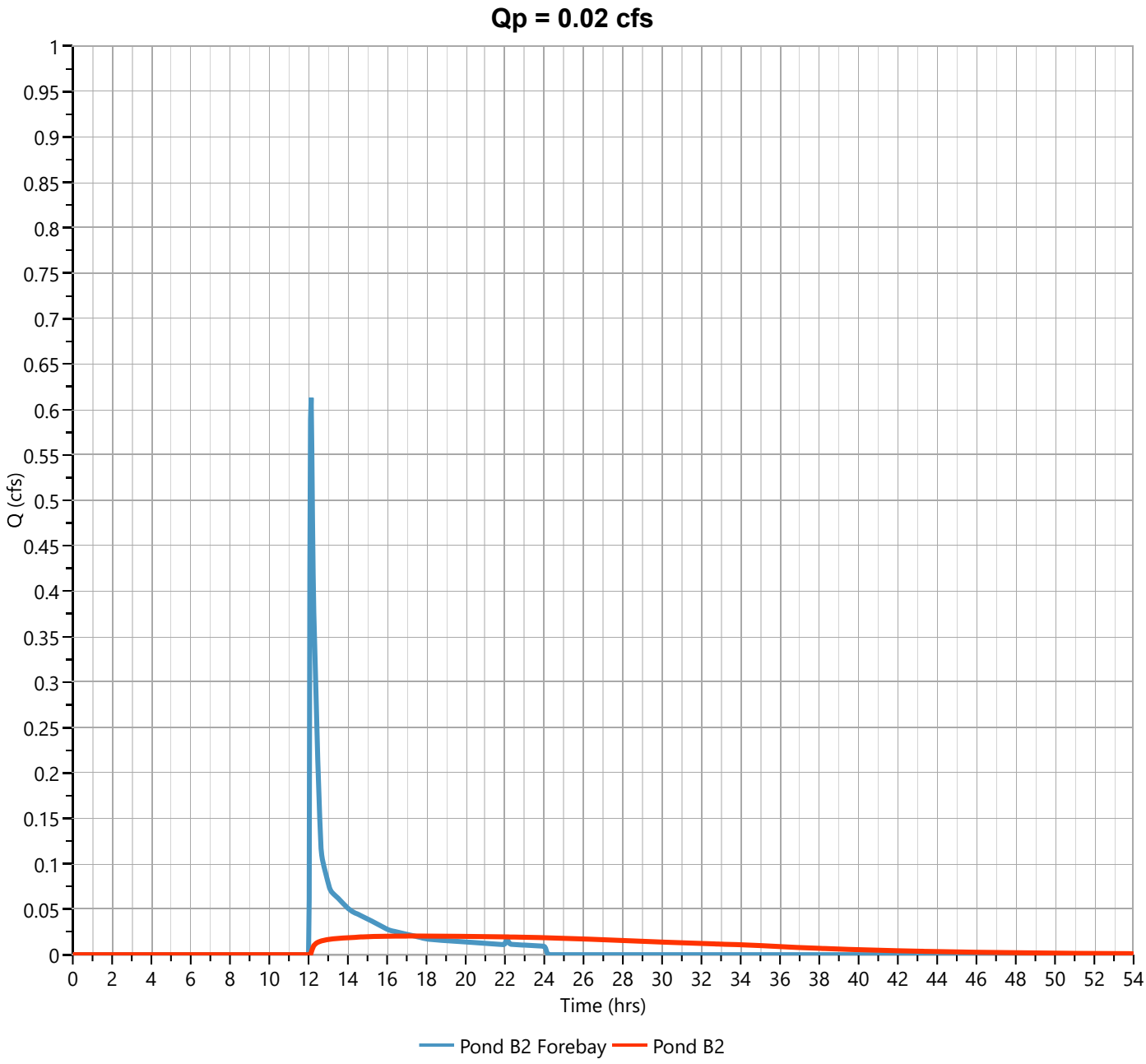
Pond B2

Hyd. No. 10

Hydrograph Type	= Pond Route	Peak Flow	= 0.020 cfs
Storm Frequency	= 1-yr	Time to Peak	= 17.40 hrs
Time Interval	= 2 min	Hydrograph Volume	= 1,654 cuft
Inflow Hydrograph	= 9 - Pond B2 Forebay	Max. Elevation	= 508.65 ft
Pond Name	= Pond B2	Max. Storage	= 2,009 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 507.80 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 10.96 hrs



Pond Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

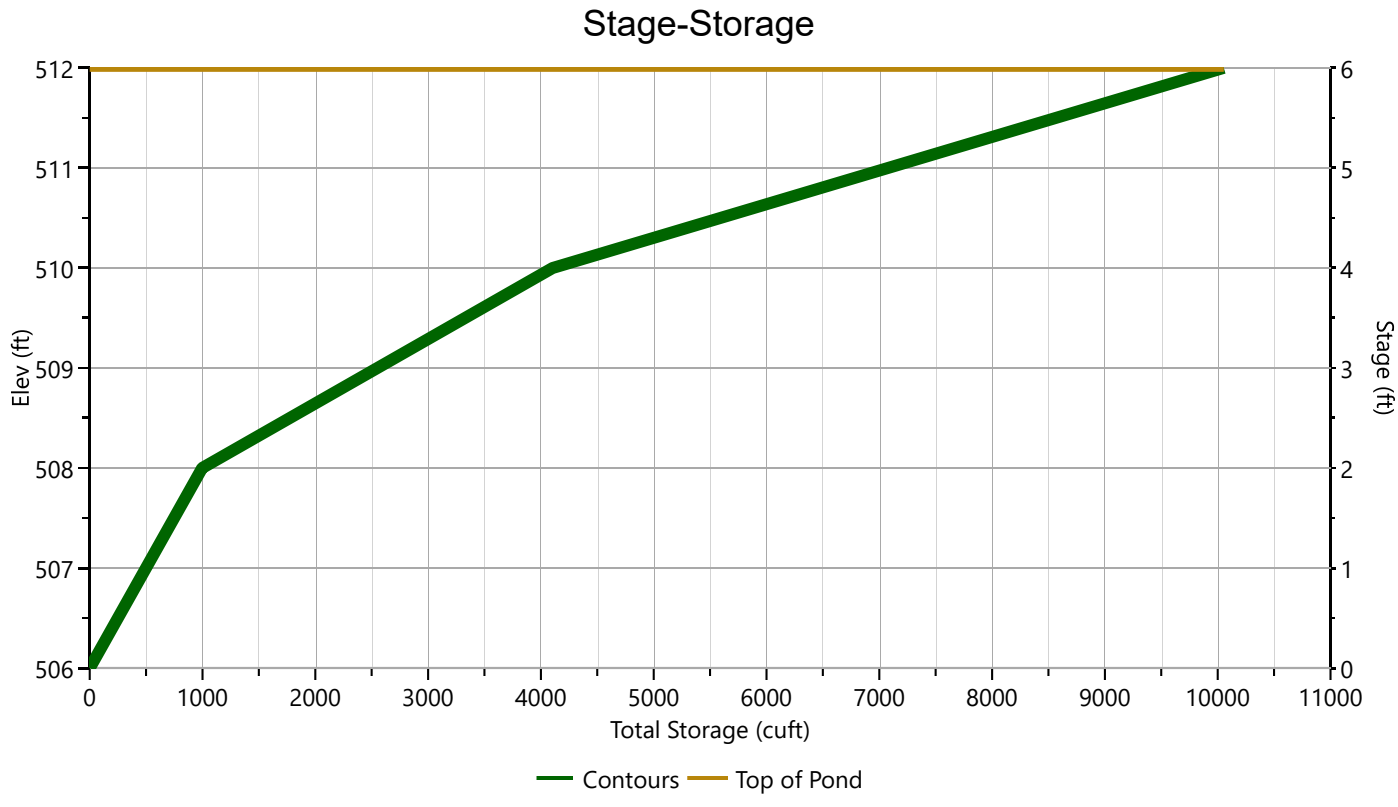
Pond B2

Stage-Storage

User Defined Contours	
Description	**Input**
Bottom Elevation, ft	506.00
Voids (%)	100.00
Volume Calc	Conic

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour Area (sqft)	Incr. Storage (cuft)	Total Storage (cuft)
0.00	506.00	153	0.000	0.000
2.00	508.00	960	997	997
4.00	510.00	2,236	3,107	4,104
6.00	512.00	3,781	5,949	10,054



Pond Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

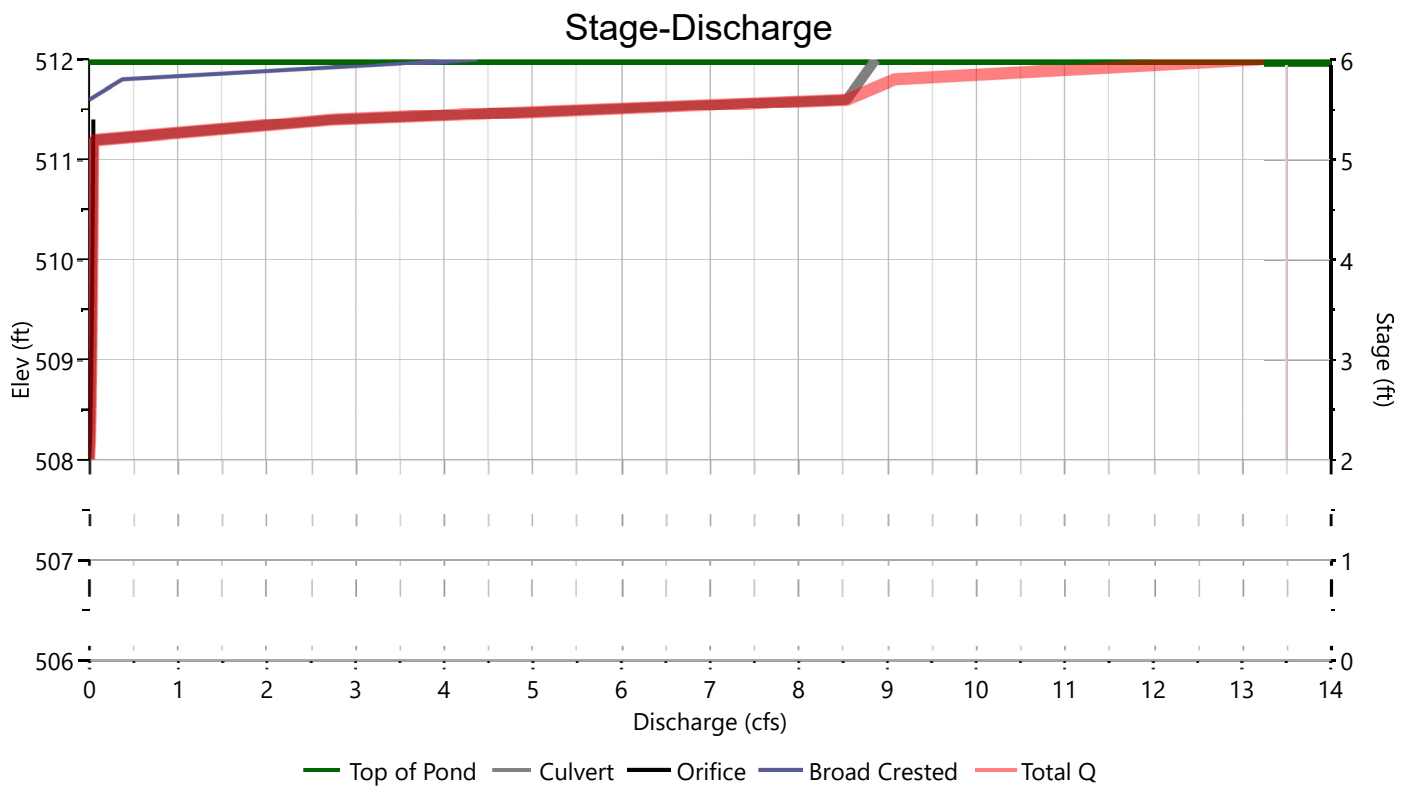
01-11-2022

Pond B2

Stage-Discharge

Culvert / Orifices	Culvert	Orifices			Orifice Plate	
		1*	2	3		
Rise, in	12	1			Orifice Dia, in	
Span, in	12	1			No. Orifices	
No. Barrels	1	1			Invert Elevation, ft	
Invert Elevation, ft	506.00	508.00			Height, ft	
Orifice Coefficient, Co	0.60	0.60			Orifice Coefficient, Co	
Length, ft	27					
Barrel Slope, %	.5					
N-Value, n	0.013					
Weirs	**Riser***	**Weirs**			**Ancillary**	
		1	2	3		
Shape / Type	Box	Broad Crested			Exfiltration, in/hr	
Crest Elevation, ft	511.25	511.75				
Crest Length, ft	14	10				
Angle, deg		18.4 (3:1)				
Weir Coefficient, Cw	3.3	3.3				

**Routes through Culvert.*



Pond Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

Pond B2

Stage-Storage-Discharge Summary

Stage (ft)	Elev. (ft)	Storage (cuft)	Culvert (cfs)	Orifices, cfs			Riser (cfs)	Weirs, cfs			Pf Riser (cfs)	Exfil (cfs)	User (cfs)	Total (cfs)
				1	2	3		1	2	3				
0.00	506.00	0.000	0.000	0.000			0.000	0.000						0.000
2.00	508.00	997	0.000	0.000			0.000	0.000						0.000
4.00	510.00	4,104	0.037 ic	0.037			0.000	0.000						0.037
6.00	512.00	10,054	8.868 ic	0.000			0.000	4.373						13.24

Suffix key: ic = inlet control, oc = outlet control, s = submerged weir

Pond Report

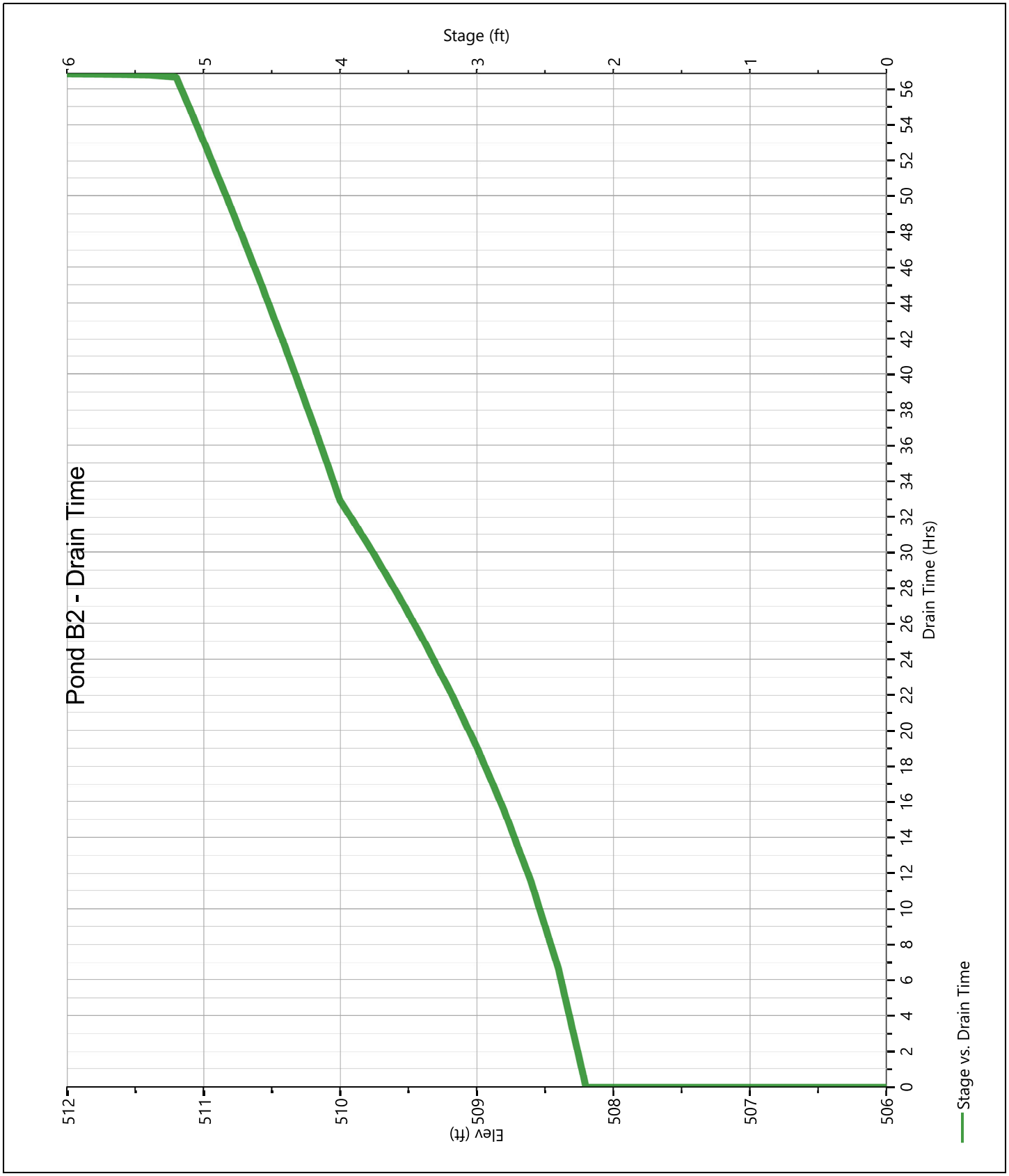
Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

Pond B2

Pond Drawdown



Hydrograph Report

Project Name: Donnelly - Sugarloaf

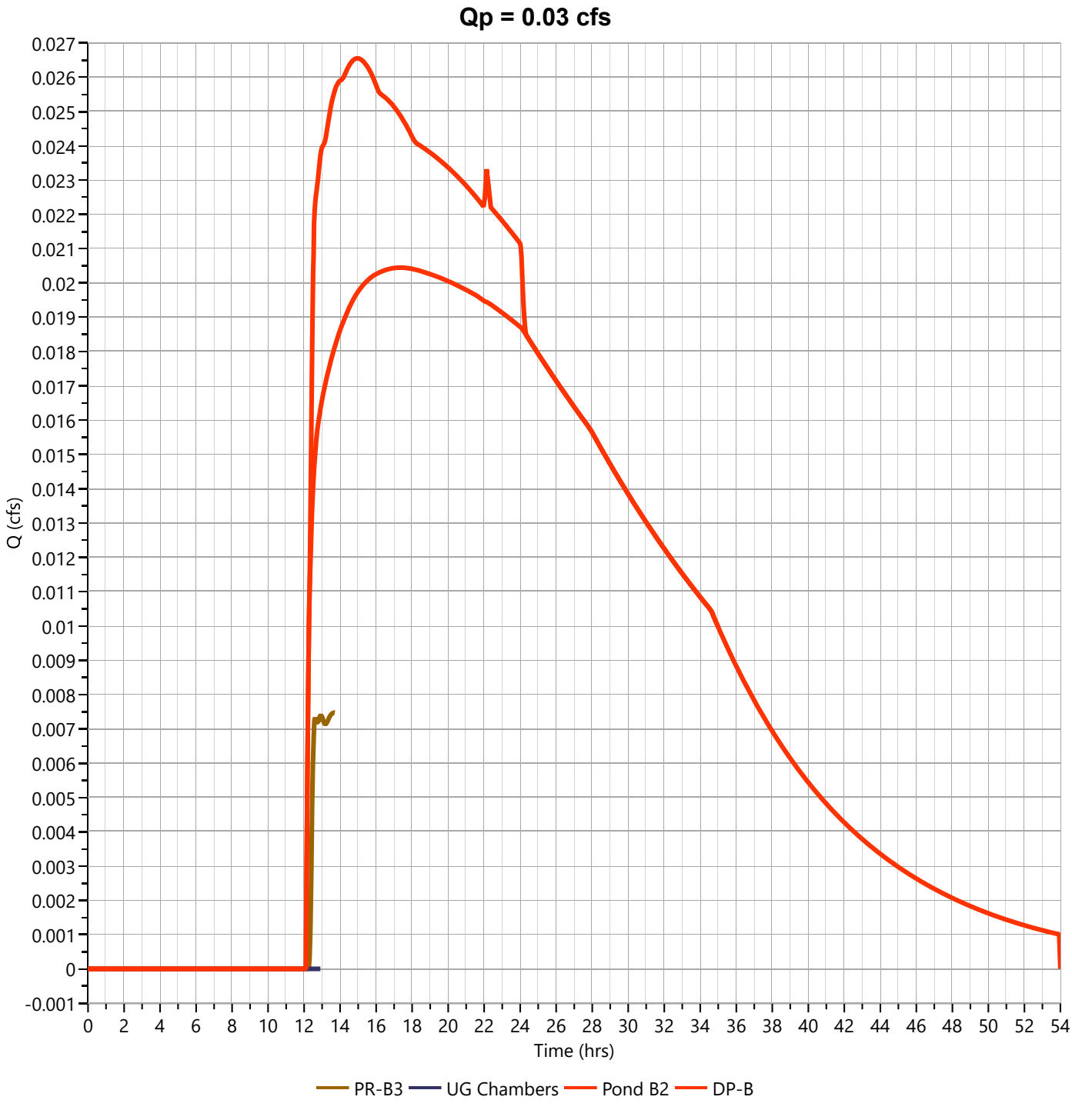
Hydrology Studio v 3.0.0.21

01-11-2022

DP-B

Hyd. No. 11

Hydrograph Type	= Junction	Peak Flow	= 0.027 cfs
Storm Frequency	= 1-yr	Time to Peak	= 14.93 hrs
Time Interval	= 2 min	Hydrograph Volume	= 1,846 cuft
Inflow Hydrographs	= 6, 8, 10	Total Contrib. Area	= 0.53 ac



Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

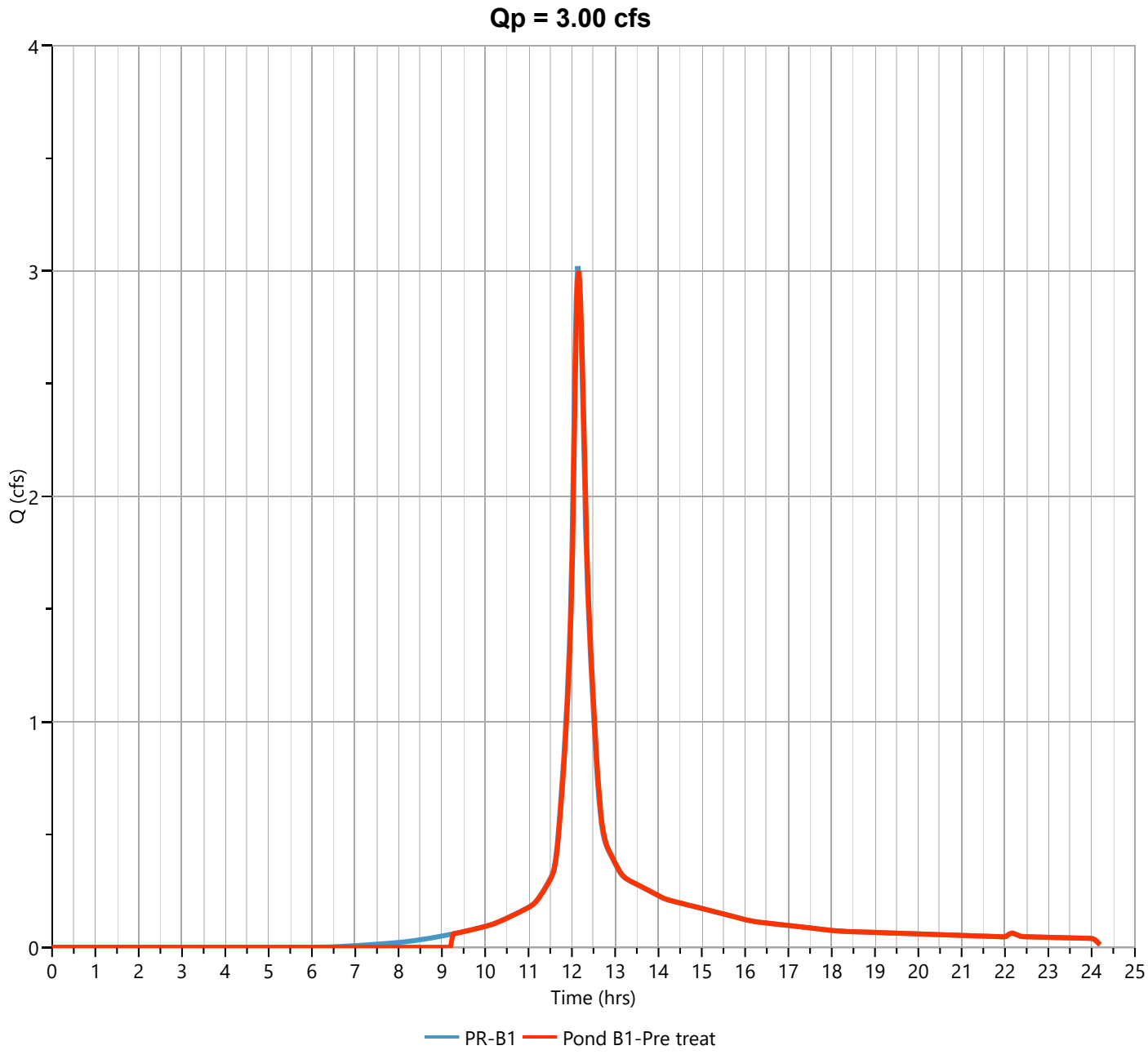
Pond B1-Pre treat

Hyd. No. 7

Hydrograph Type	= Pond Route	Peak Flow	= 3.000 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.17 hrs
Time Interval	= 2 min	Hydrograph Volume	= 11,425 cuft
Inflow Hydrograph	= 4 - PR-B1	Max. Elevation	= 507.15 ft
Pond Name	= Pond B1	Max. Storage	= 2,369 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 506.80 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 7 min



Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

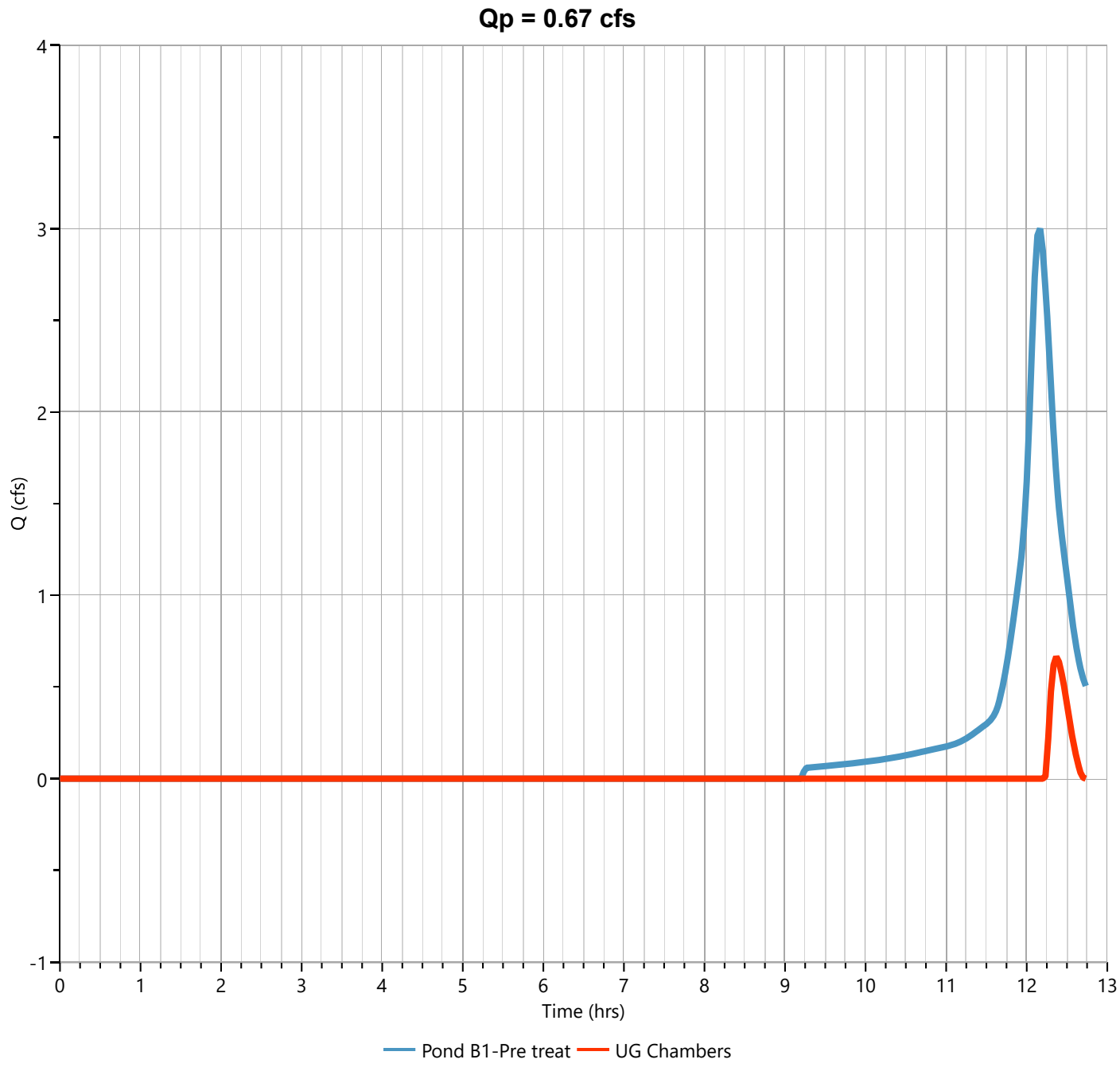
01-11-2022

UG Chambers

Hyd. No. 8

Hydrograph Type	= Pond Route	Peak Flow	= 0.665 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.37 hrs
Time Interval	= 2 min	Hydrograph Volume	= 592 cuft
Inflow Hydrograph	= 7 - Pond B1-Pre treat	Max. Elevation	= 508.79 ft
Pond Name	= SC-740 Chambers	Max. Storage	= 1,828 cuft

Pond Routing by Storage Indication Method



Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

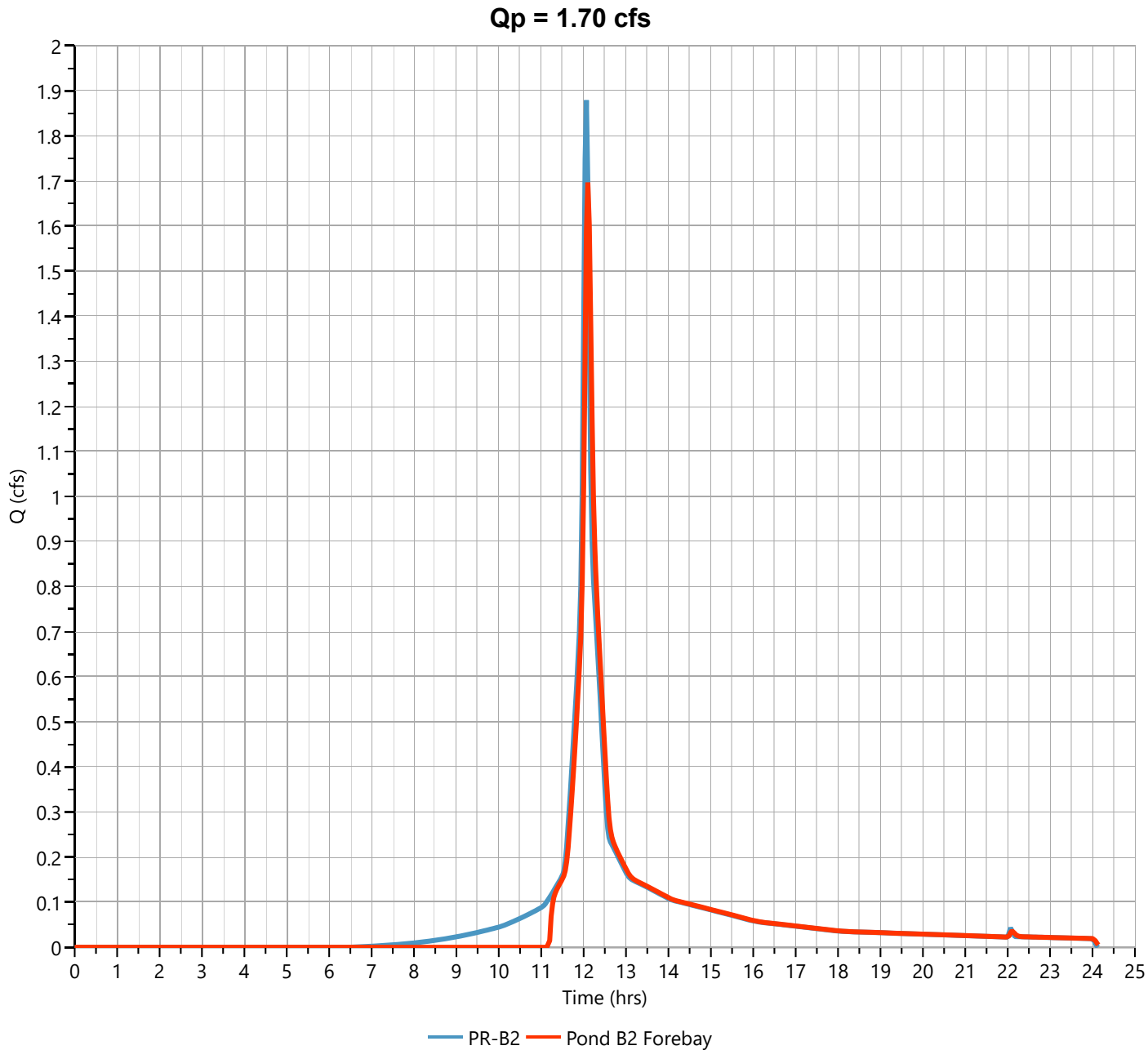
Pond B2 Forebay

Hyd. No. 9

Hydrograph Type	= Pond Route	Peak Flow	= 1.696 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.10 hrs
Time Interval	= 2 min	Hydrograph Volume	= 5,160 cuft
Inflow Hydrograph	= 5 - PR-B2	Max. Elevation	= 511.11 ft
Pond Name	= Pond B2-Forebay	Max. Storage	= 8,345 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 510.80 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 23 min



Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

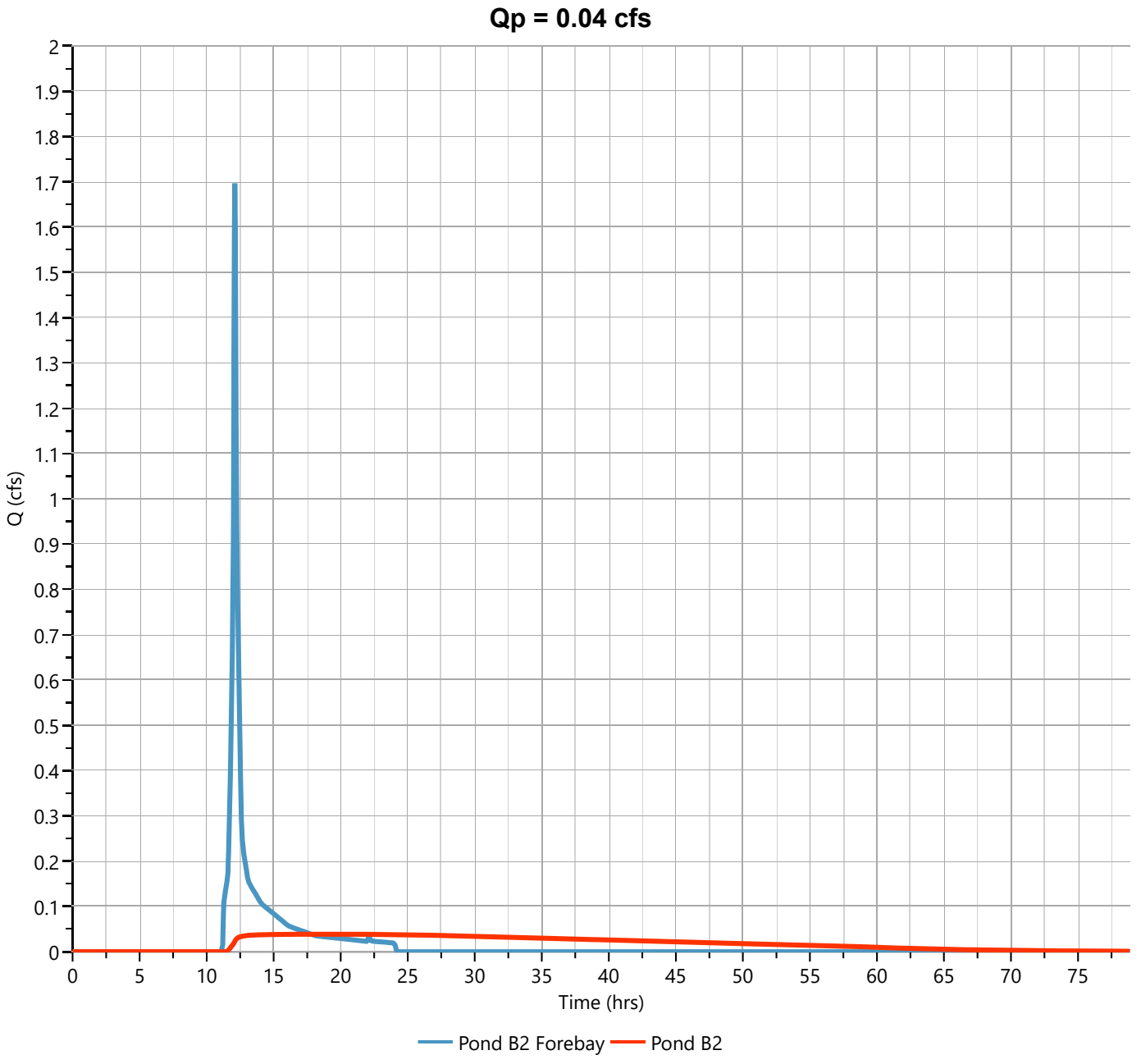
Pond B2

Hyd. No. 10

Hydrograph Type	= Pond Route	Peak Flow	= 0.038 cfs
Storm Frequency	= 10-yr	Time to Peak	= 17.80 hrs
Time Interval	= 2 min	Hydrograph Volume	= 5,031 cuft
Inflow Hydrograph	= 9 - Pond B2 Forebay	Max. Elevation	= 510.19 ft
Pond Name	= Pond B2	Max. Storage	= 4,665 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 507.80 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 19.38 hrs



Hydrograph Report

Project Name: Donnelly - Sugarloaf

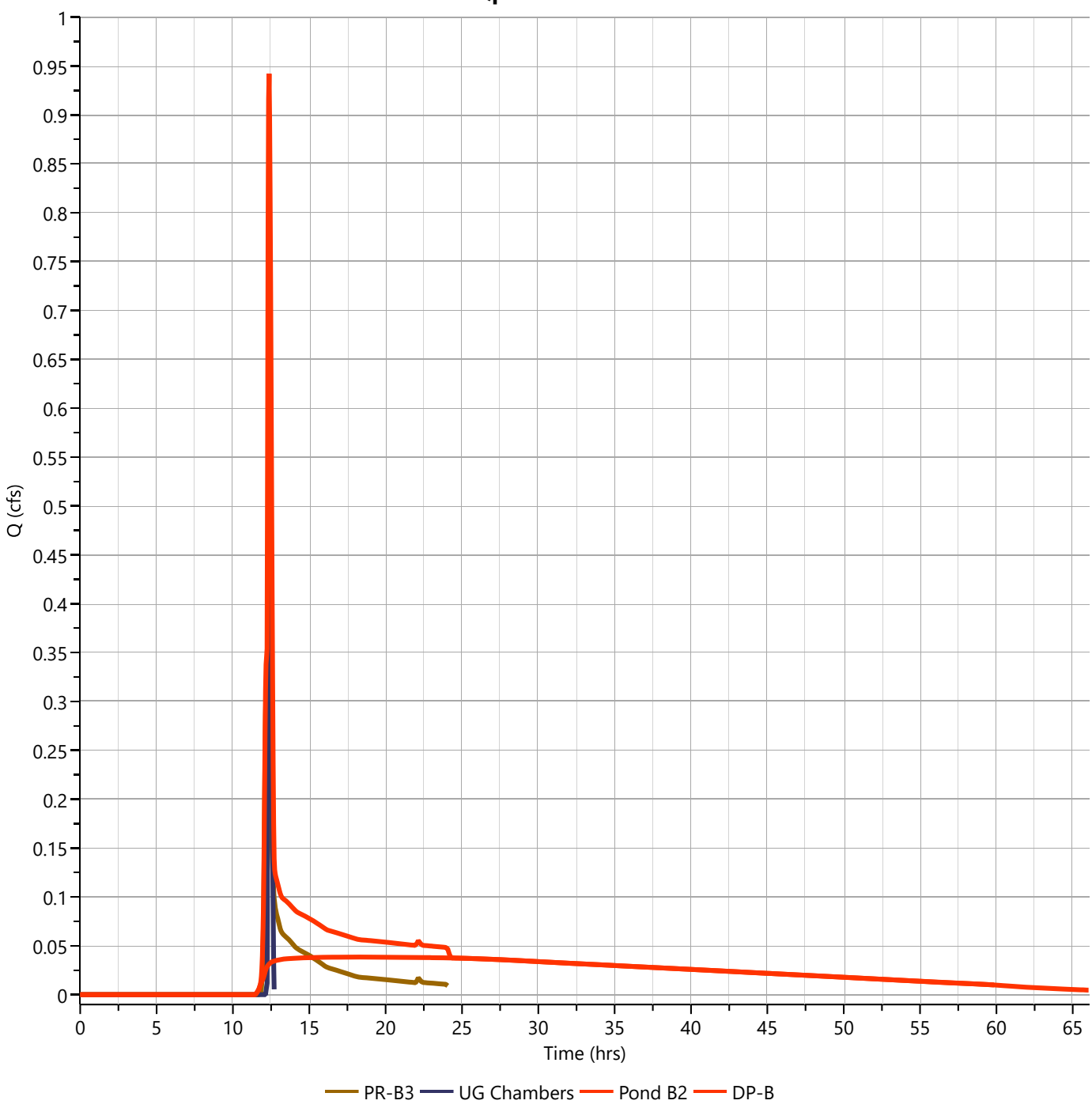
Hydrology Studio v 3.0.0.21

01-11-2022

DP-B

Hyd. No. 11

Hydrograph Type	= Junction	Peak Flow	= 0.942 cfs
Storm Frequency	= 10-yr	Time to Peak	= 12.37 hrs
Time Interval	= 2 min	Hydrograph Volume	= 7,251 cuft
Inflow Hydrographs	= 6, 8, 10	Total Contrib. Area	= 0.53 ac



Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

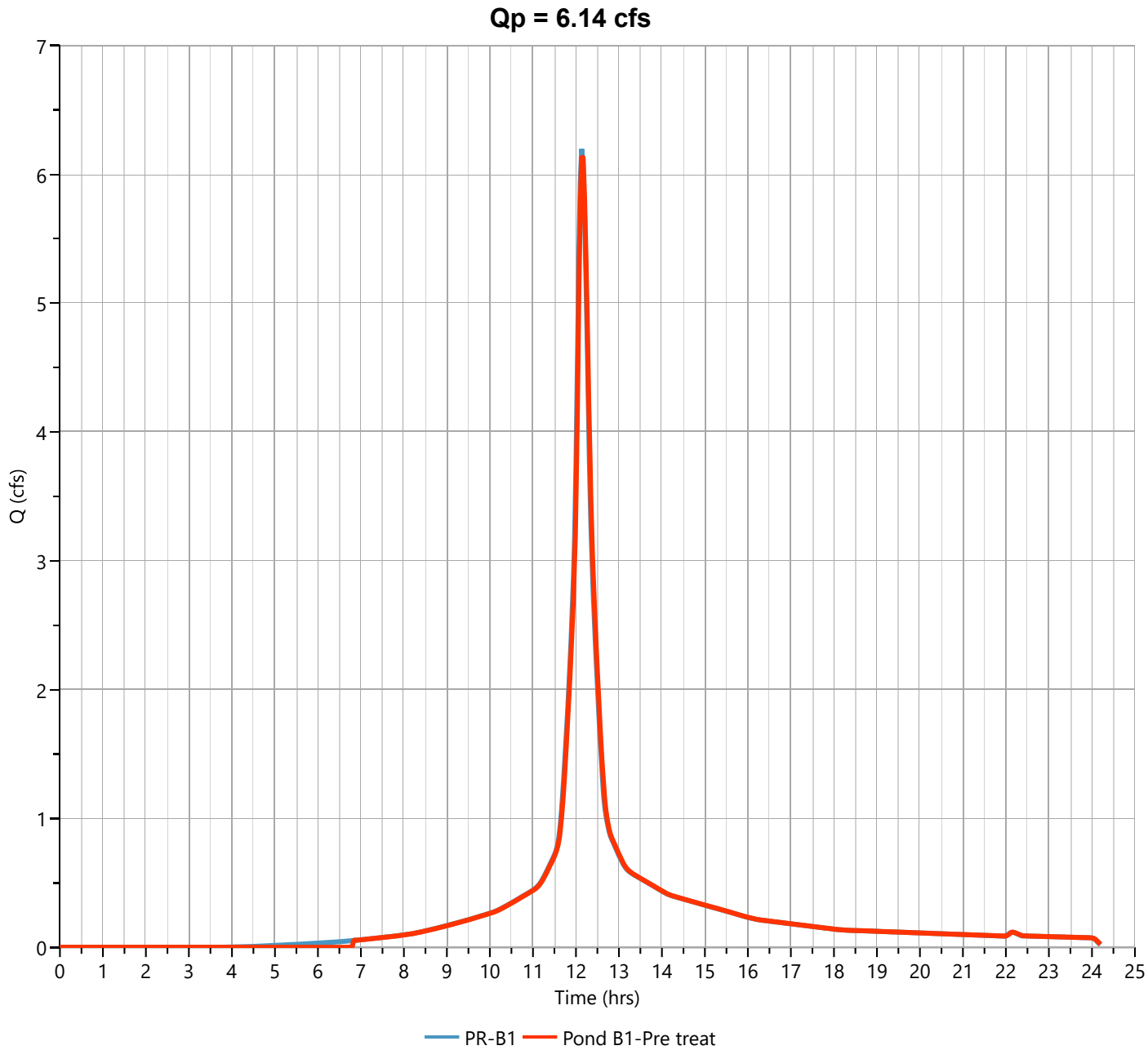
Pond B1-Pre treat

Hyd. No. 7

Hydrograph Type	= Pond Route	Peak Flow	= 6.142 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.13 hrs
Time Interval	= 2 min	Hydrograph Volume	= 24,382 cuft
Inflow Hydrograph	= 4 - PR-B1	Max. Elevation	= 507.27 ft
Pond Name	= Pond B1	Max. Storage	= 2,507 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 506.80 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 5 min



Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

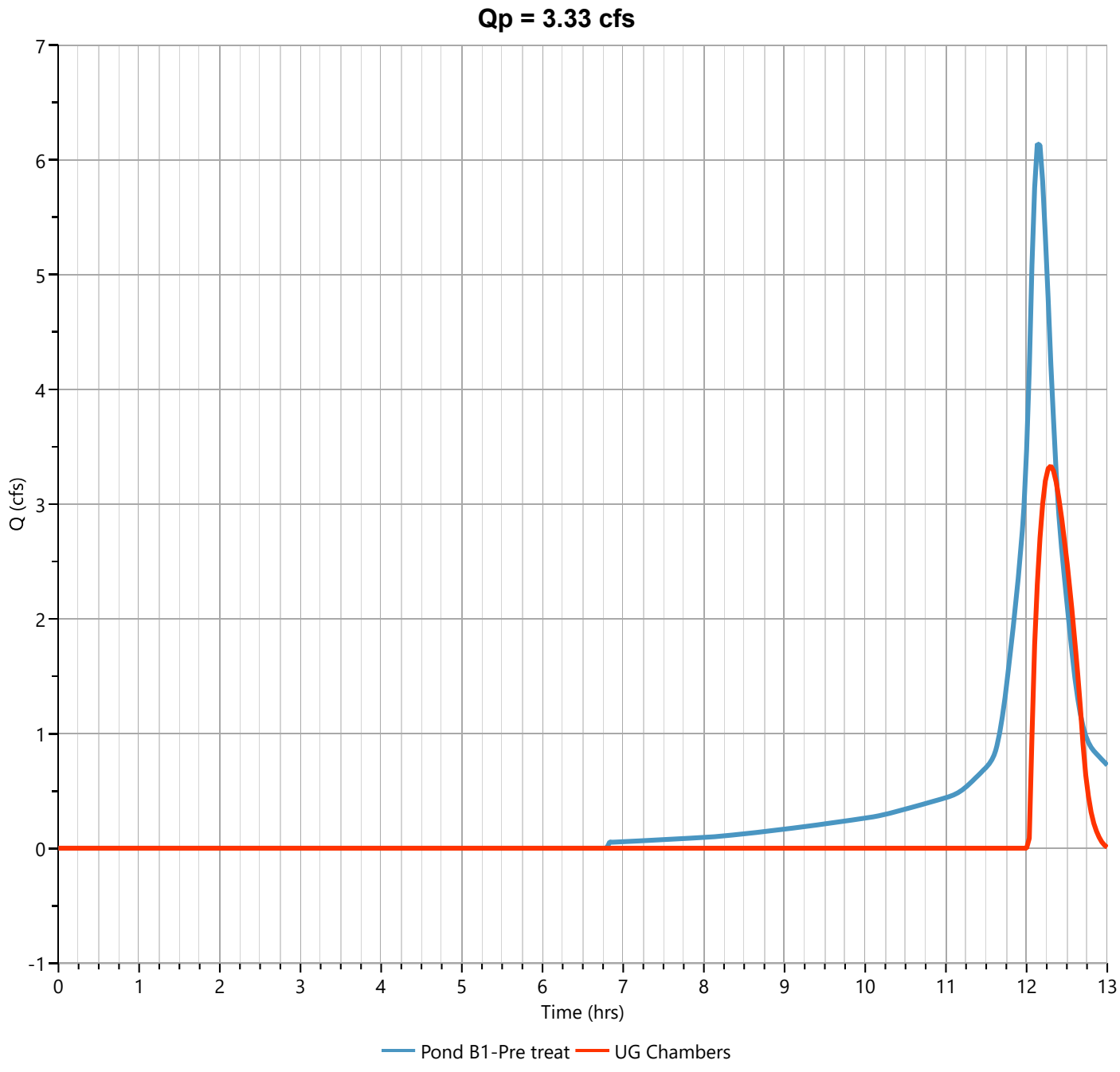
01-11-2022

UG Chambers

Hyd. No. 8

Hydrograph Type	= Pond Route	Peak Flow	= 3.334 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.30 hrs
Time Interval	= 2 min	Hydrograph Volume	= 6,004 cuft
Inflow Hydrograph	= 7 - Pond B1-Pre treat	Max. Elevation	= 510.14 ft
Pond Name	= SC-740 Chambers	Max. Storage	= 3,510 cuft

Pond Routing by Storage Indication Method



Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

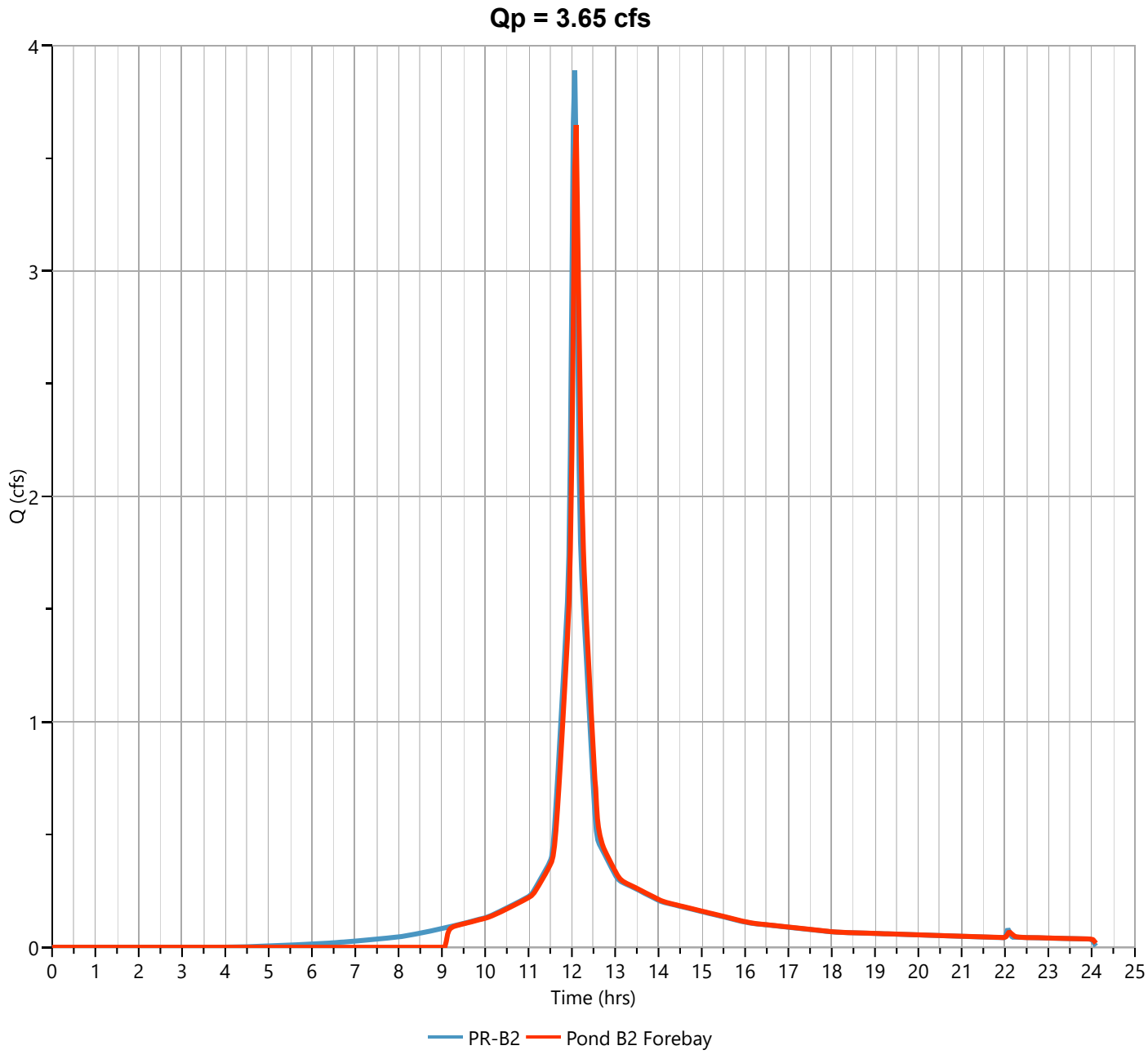
Pond B2 Forebay

Hyd. No. 9

Hydrograph Type	= Pond Route	Peak Flow	= 3.648 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.10 hrs
Time Interval	= 2 min	Hydrograph Volume	= 11,605 cuft
Inflow Hydrograph	= 5 - PR-B2	Max. Elevation	= 511.22 ft
Pond Name	= Pond B2-Forebay	Max. Storage	= 8,615 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 510.80 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 20 min



Hydrograph Report

Project Name: Donnelly - Sugarloaf

Hydrology Studio v 3.0.0.21

01-11-2022

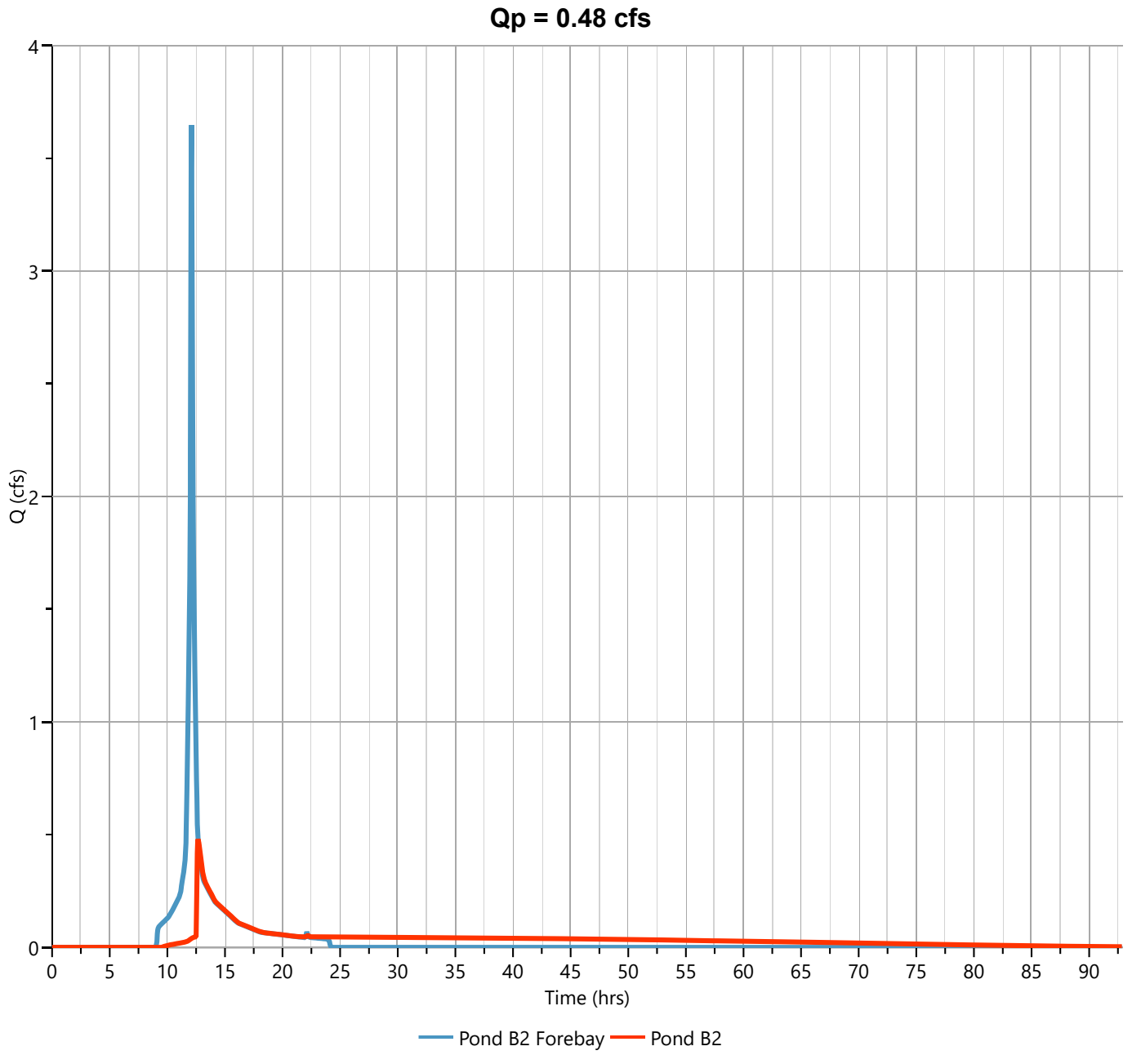
Pond B2

Hyd. No. 10

Hydrograph Type	= Pond Route	Peak Flow	= 0.479 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.67 hrs
Time Interval	= 2 min	Hydrograph Volume	= 11,456 cuft
Inflow Hydrograph	= 9 - Pond B2 Forebay	Max. Elevation	= 511.23 ft
Pond Name	= Pond B2	Max. Storage	= 7,770 cuft
Routing Option	= Wet Pond	Wet Pond Elevation	= 507.80 ft

Pond Routing by Storage Indication Method

Center of mass detention time = 20.63 hrs



Hydrograph Report

Project Name: Donnelly - Sugarloaf

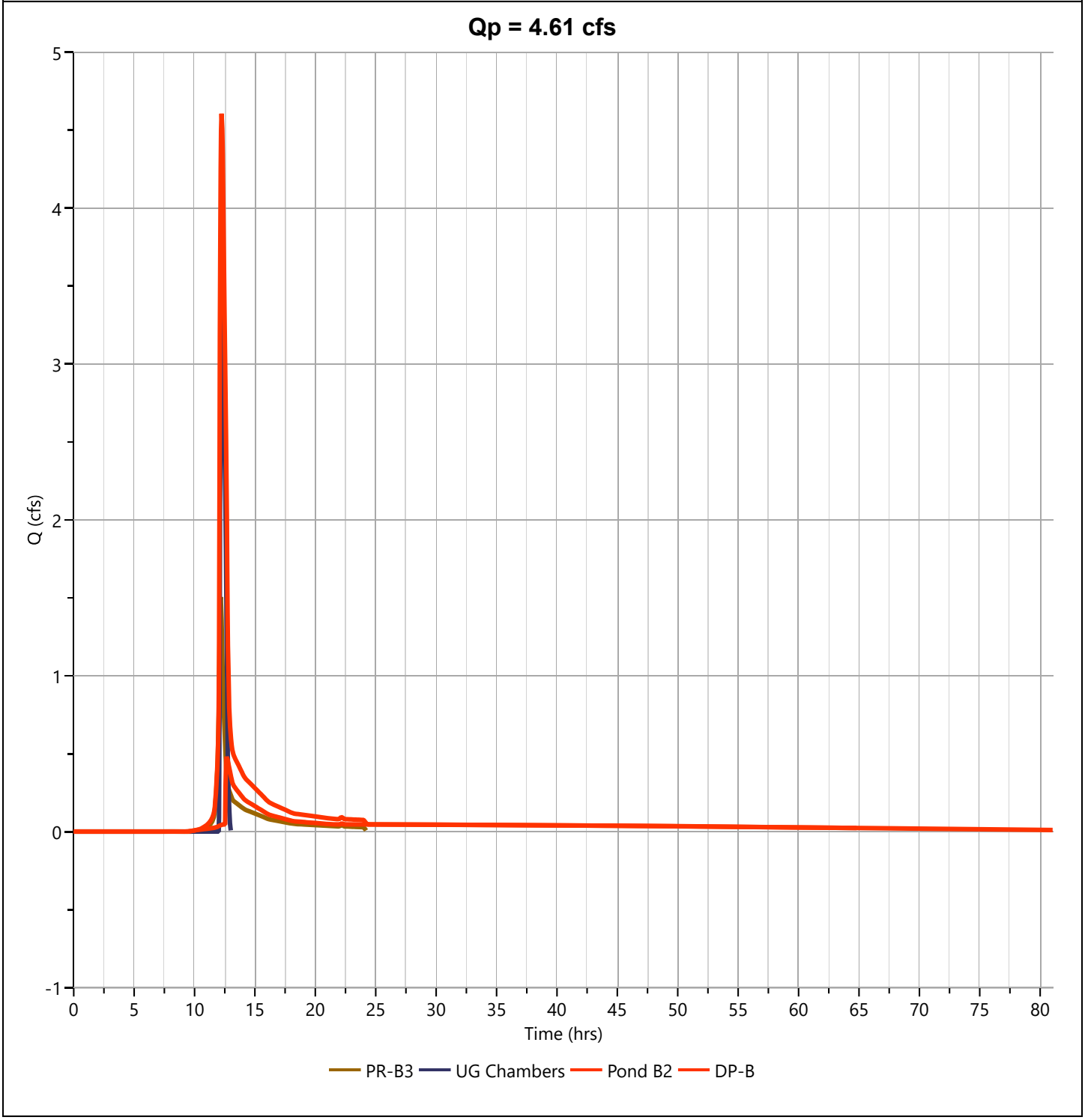
Hydrology Studio v 3.0.0.21

01-11-2022

DP-B

Hyd. No. 11

Hydrograph Type	= Junction	Peak Flow	= 4.607 cfs
Storm Frequency	= 100-yr	Time to Peak	= 12.23 hrs
Time Interval	= 2 min	Hydrograph Volume	= 23,458 cuft
Inflow Hydrographs	= 6, 8, 10	Total Contrib. Area	= 0.53 ac



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APPENDIX 10

CONSTRUCTION SITE

INSPECTION FORM,

NOTICE OF INTENT,

AND MS4 ACCEPTANCE

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SWPPP INSPECTION REPORT

ENGINEERING & SURVEYING PROPERTIES
Achieving Successful Results with Innovative Designs

W.O. No.:	Date:	Greater than 5 Ac. Of Disturbance? Waiver?	Page Of
Project Name:		Weather Conditions: ☐ Dry ☐ Rain ☐ Snow	
		Soil Conditions: ☐ Dry ☐ Wet ☐ Saturated	
Location:		Arrival Time :	Photographs Taken? ☐ Yes ☐ No
		Departing Time:	

Owner:	**Phone:**	**Documents on-site?**		SWPPP:	
Contractor:	**Phone:**	Weekly Inspections:		NOI:	

1. Description of current activities onsite and phase of construction (attach sketch showing areas of stabilization, current work, and photo locations):

2. Description of the condition of the runoff at all points of discharge from the construction site (including onsite conveyance systems):	3. Description of the condition of all natural surface water bodies located within, or immediately adjacent to the construction site:

4. Identify all erosion and sediment control practices that require repair and/or maintenance:	5. Identify all erosion and sediment control practices that were not installed properly or are not functioning as designed:

6. Identify current status of construction for all post-construction stormwater management practices:	7. Corrective action(s) required to erosion and sediment control measures and post-construction stormwater management practices:

Was the owner and contractor(s) notified of the deficiencies and repairs needed within one (1) business day? ☐ Yes ☐ No

Qualified Inspector

Notice:

This inspection was performed solely for the purpose of determining compliance with NYSDEC SPDES General Permit:

☐ GP-02-01
☐ GP-08-001
☐ GP-10-001

Name and Title

Signature

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0644089821

NOTICE OF INTENT

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

NYR _____ (for DEC use only)

Stormwater Discharges Associated with Construction Activity Under State Pollutant Discharge Elimination System (SPDES) General Permit # GP-0-15-002

All sections must be completed unless otherwise noted. Failure to complete all items may result in this form being returned to you, thereby delaying your coverage under this General Permit. Applicants must read and understand the conditions of this Permit and prepare a Stormwater Pollution Prevention Plan prior to submitting this NOI. Applicants are responsible for identifying and obtaining other DEC permits that may be required.

- IMPORTANT -

RETURN THIS FORM TO THE ADDRESS ABOVE

OWNER/OPERATOR MUST SIGN FORM

Owner/Operator Information

Owner/Operator (Company Name/Private Owner Name/Municipality Name)

Owner/Operator Contact Person Last Name (NOT CONSULTANT)

Owner/Operator Contact Person First Name

Owner/Operator Mailing Address

City

State Zip -

Phone (Owner/Operator) - Fax (Owner/Operator) - -

Email (Owner/Operator)

FED TAX ID - (not required for individuals)

Project Site Information

Project/Site Name

Street Address (NOT P.O. BOX)

Side of Street

○ **North** ○ **South** ○ **East** ○ **West**

City/Town/Village (THAT ISSUES BUILDING PERMIT)

State N Y Zip - County DEC Regio

Name of Nearest Cross Street

Distance to Nearest Cross Street (Feet)

Project Relation to Cross Street

○ **North** ○ **South** ○ **East** ○ **West**

Tax Map Numbers
Section-Block-Parcel

Numbers

1. Provide the Geographic Coordinates for the project site in NYTM Units. To do this you **must** go to the NYSDEC Stormwater Interactive Map on the DEC website at:

www.dec.ny.gov/maps/stormviewer.htm

Zoom into your Project location such that you can accurately click on the centroid of your site. Once you have located your project site, go to the tool boxes on the top and choose Identify. Then click on the center of your site and a new window containing the X and Y coordinates in UTM will pop up. Transcribe these coordinates into the boxes below. For problems with the interactive map use the help function.

X Coordinates (Easting)

Y Coordinates (Northing) 4

2. What is the nature of this construction project?

○ **New Construction**

○ **Redevelopment with increase in impervious area**

○ **Redevelopment with no increase in impervious area**

3. Select the predominant land use for both pre and post development conditions.
SELECT ONLY ONE CHOICE FOR EACH

Pre-Development Existing Land Use

- ○ FOREST
- ○ PASTURE/OPEN LAND
- ○ CULTIVATED LAND
- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISION
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDENTIAL
- ○ INSTITUTIONAL/SCHOOL
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ ROAD/HIGHWAY
- ○ RECREATIONAL/SPORTS FIELD
- ○ BIKE PATH/TRAIL
- ○ LINEAR UTILITY
- ○ PARKING LOT
- ○ OTHER

Post-Development Future Land Use

- ○ SINGLE FAMILY HOME
- ○ SINGLE FAMILY SUBDIVISIO — Number of Lots
- ○ TOWN HOME RESIDENTIAL
- ○ MULTIFAMILY RESIDE
- ○ INSTITUTIONAL/SC
- ○ INDUSTRIAL
- ○ COMMERCIAL
- ○ MUNICIPA
- ○ ROAD/ WAY
- ○ RE ATIONAL/SPO S FIELD
- ○ B PATH/TRAI
- ○ LIN UTILI (water, sewer, gas, etc.)
- ○ PARKIN
- ○ CLEARING/ DING ONLY
- ○ DEMOLITION, REDEVELOPMENT
- ○ ELL DRILLING IVITY *(Oil, Gas, etc.)
- ○

***Note:** for gas well drilli n-high vol raulic fractured wells only

4. In accordance with e larger mon plan development or sale, enter the total ject site a ; the tota rea to be disturbed; existing imper s area to b isturbed (fo edevelopment activities); an e future rea constructed within the disturbed area. (d to hearest of an acre.)

Total Site	Tot rea To Be D rbed	Existing Impervious Area To Be Disturbed	Future Impervious Area Within Disturbed Area
.		.	.

you plan to dist more than 5 acres of soil at any one time? ○ **Yes** ○ **No**

6. In te the percent e of each Hydrologic Soil Group(HSG) at the site.

A	B	C	D
%	%	%	%

7. Is this a phased project? ○ **Yes** ○ **No**

8. Enter the planned start and end dates of the disturbance activities.

Start Date / / – **End Date** / /

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.

Name

9a. Type of waterbody identified in Question 9?

- ○ Wetland / State Jurisdiction On Site (Answer 9b)
- ○ Wetland / State Jurisdiction Off Site
- ○ Wetland / Federal Jurisdiction On Site (Answer 9b)
- ○ Wetland / Federal Jurisdiction Off Site
- ○ Stream / Creek On Site
- ○ Stream / Creek Off Site
- ○ River On Site
- ○ River Off Site
- ○ Lake On Site
- ○ Lake Off Site
- ○ Other Type On Site
- ○ Other Type Off Site

9b. How [illegible] the wetland identified?

- ○ Regulator[illegible]p
- [illegible]eated by Consultant
- ○ Deli[illegible]d by Army Corps of Engineers
- ○ Other (identify)

10. Has the sur[illegible] waterbody [illegible] question 9 been identified as a 303(d) segmen[illegible] Appen[illegible]02? ○ **Yes** ○ **No**

11. Is th[illegible]roject lo[illegible]d in one of the Watersheds identified in Ar[illegible] GP-0-i[illegible]2? ○ **Yes** ○ **No**

12. Is the project [illegible]ated in [illegible]e of the watershed areas associated [illegible]th AA and AA-S classified waters? ○ **Yes** ○ **No**
[illegible]f no, skip quest[illegible] 13.

13. Do[illegible]his const[illegible]tion activity disturb land with no exis[illegible] impe[illegible]ous cover and where the Soil Slope Phase is identi[illegible]d a[illegible]n E or F on the USDA Soil Survey? ○ **Yes** ○ **No**
If Yes, [illegible]is the acreage to be disturbed?
[illegible].[illegible]

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area? ○ **Yes** ○ **No**

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)? ○ **Yes** ○ **No** ○ **Unknown**

16. What is the name of the municipality/entity that owns the separate storm sewer system?

17. Does any runoff from the site enter a sewer classifi as a Combined Sewer? ○ **Yes** ○ **No** **nknown**

18. Will future use of this site be an agricultura roperty as defined by the NYS Agriculture and Markets L ○ **Yes** ○ **No**

19. Is this property owned by a state authority, st ac y, federal government or local government? ○ **Yes** ○ **No**

20. Is this a remediation project be under a Depart t approved work plan? (i.e. CERCLA, CRA, tary Cleanu Agreement, etc.) ○ **Yes** ○ **No**

21. Has the required Erosion and Sedimen ont l component of the SWPPP been developed nformance w e current NYS Standards and Speci for Eros and Sediment Control (aka Blue Book)? ○ **Yes** ○ **No**

22. Does this co ruction act ty require development of a SWPPP that ludes the n truction tormwater management practice comp t (i.e , Water Quality and Quantity Contr ac es/techniques) ○ **Yes** ○ **No**
If No, skip ques 3 and 27-39.

23. the po nstruc stormwater management practice component f the SWPPP develo in conformance with the current NYS Stormwater Man ent Des Manual? ○ **Yes** ○ **No**

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:

- ○ **Professional Engineer (P.E.)**
- ○ **Soil and Water Conservation District (SWCD)**
- ○ **Registered Landscape Architect (R.L.A)**
- ○ **Certified Professional in Erosion and Sediment Control (CPESC)**
- ○ **Owner/Operator**
- ○ **Other**

SWPPP Preparer

Contact Name (Last, Space, First)

Mailing Address

City

State Zip -

Phone - - F - -

Email

SWPPP Preparer Certific

I he[illegible]y that [illegible] Stormwater Pollution Prevention Plan (SWPPP) for th[illegible] project [illegible]been pr[illegible]ed in accordance with the terms and conditions of t[illegible] GP-0-15-002 [illegible]urtherm[illegible] I understand that certifying false, incorrect [illegible] inaccurate ini[illegible]ation is [illegible]violation of this permit and the laws of the State of New York [illegible] could subject me to criminal, civil and/or [illegible]dministrative proc[illegible]ings.

First Name **MI**

L[illegible] Nam[illegible]

Signature

Date / /

25. Has a construction sequence schedule for the planned management practices been prepared? ○ Yes ○ No

26. Select **all** of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural

- ○ Check Dams
- ○ Construction Road Stabilization
- ○ Dust Control
- ○ Earth Dike
- ○ Level Spreader
- ○ Perimeter Dike/Swale
- ○ Pipe Slope Drain
- ○ Portable Sediment Tank
- ○ Rock Dam
- ○ Sediment Basin
- ○ Sediment Traps
- ○ Silt Fence
- ○ Stabilized Construction Entrance
- ○ Storm Drain Inle ion
- ○ Straw/Hay Bal ike
- ○ Temporary ess Waterw Crossing
- ○ Temporar rmdrain
- ○ Temporary S
- ○ Turbidity Curt

Biotechnic

- ○ Brush Matting
- Wattling

Vegetative M ures

- ○ Brush Matti
- ○ Dune Stab ization
- ○ Grass Waterway
- ○ Mu ing
- ○ otecting Vegetation
- Recreation a Improvement
- ding
- ○ S
- ○ Straw Bale Dike
- ○ Streamba rotection
- mporary
- g
- ○ Vegetating Waterways

Permanent Structural

- ○ Debris Basin
- ○ Diversion
- ○ Grade Stabilization Structure
- ○ Land Grading
- ○ Lined Waterway (Rock)
- ○ Paved Channel (Concrete)
- ○ Paved Flume
- ○ Retaining Wall
- ○ Riprap Slope Protection
- ○ Rock Outlet Protection
- ○ Streambank Protection

Other

Post-construction Stormwater Management Practice (SMP) Requirements

Important: Completion of Questions 27-39 is not required if response to Question 22 is No.

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.

- ○ **Preservation of Undisturbed Areas**
- ○ **Preservation of Buffers**
- ○ **Reduction of Clearing and Grading**
- ○ **Locating Development in Less Sensitive Areas**
- ○ **Roadway Reduction**
- ○ **Sidewalk Reduction**
- ○ **Driveway Reduction**
- ○ **Cul-de-sac Reduction**
- ○ **Building Footprint Reduction**
- ○ **Parking Reduction**

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).

- ○ All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5-5 of the Design Manual (see page 5-22).
- ○ Compacted areas were considered as impervious cover when calculating the **WQv Required** and the compacted areas are assigned a post-construction Hydrologic Soil Group (HSG) designation that is one level less permeable than existing conditions in the hydrology analysis.

28. Provide the total Water Quality Volume (WQv) required for this project (based on plan/layout).

Total WQv required

[ ][ ][ ].[ ][ ] **acre-feet**

29. Identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and standard SMPs with RRv Capacity in Table 1 (See Page 9) that were used to reduce the total WQv required(#28).

Also, provide in Table 1 the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use Tables 1 and 2 to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

Table 1 - Runoff Reduction (RR) Techniques and Standard Stormwater Management Practices (SMPs)

	Total Contributing Area (acres)		Total Contributing Impervious Area(acres)
RR Techniques (Area Reduction)			
○ Conservation of Natural Areas (RR-1)		and/or	
○ Sheetflow to Riparian Buffers/Filters Strips (RR-2)		and/or	
○ Tree Planting/Tree Pit (RR-3)		and/	
○ Disconnection of Rooftop Runoff (RR-4)		a or	
RR Techniques (Volume Reduction)			
○ Vegetated Swale (RR-5)			
○ Rain Garden (RR-6)			
○ Stormwater Planter (RR-7)			
○ Rain Barrel/Cistern (RR-8)			
○ Porous Pavement (RR-9)			
○ Green Roof (RR-10)			
Standard SMPs with RRv Capacity			
○ Infiltration Trench (I-1)			
○ Infiltration Basin (I-2)			
○ Dry Well (I-3)			
○ Underground Infiltrati tem (I-4)			
○ Bioretention (F-5)			
○ Dry Swale (O-1)			
Standard SMPs			
○ Micropool Extended tion (P-1)			
○ Wet			
○ Extended tion (			
○ Multiple Pond Sy n (P-4)			
○ Pocket Pond (P-5)			
○ face Sand Filte F-1)			
○ Und ound Sand lter (F-2)			
○ Perime Sand lter (F-3)			
○ Organic F (F-4)			
○ Shallow Wetland (W-1)			
○ Extended Detention Wetland (W-2)			
○ Pond/Wetland System (W-3)			
○ Pocket Wetland (W-4)			
○ Wet Swale (O-2)			

Table 2 - Alternative SMPs
(DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Alternative SMP	**Total Contributing Impervious Area(acres)**
○ **Hydrodynamic**	
○ **Wet Vault**	
○ **Media Filter**	
○ **Other**	

Provide the name and manufacturer of the Alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Name

Manufacturer

Note: Redevelopment projects which do not use RR techniques, will use questions 28, 29, 33 and 33a to provide SMP based total WQv required and total WQv provided for the project.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity entered in question

Total RRv provided

acre-feet

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28).

○ **Yes** ○ **No**

If Yes, go to question 36.
If No, go to question 32

32. Provide Minimum RRv required based on HSG.
[Minimum RRv Required = (P)(0.95)(Ai)/12, Ai=(S)(Aic)]

Minimum RRv Required

acre-feet

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?

○ **Yes** ○ **No**

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.
If No, sizing criteria has not been met, so NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. Identify the Standard SMPs in Table 1 and, if applicable, the Alternative SMPs in Table 2 that were used to treat the remaining total WQv(=Total WQv Required in 28 - Total RRv Provided in 30).

Also, provide in Table 1 and 2 the total impervious area that contributes runoff to each practice selected.

Note: Use Tables 1 and 2 to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the Standard SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question 29.

WQv Provided

☐☐☐.☐☐☐ **acre-feet**

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - RRv provided by the practice. (See Table 5.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a). ☐☐☐.☐☐☐

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)? ○ **Yes** ○ **No**

If Yes, go to question 36.
If No, sizing criteria has not been met, and NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv) required and provided or select waiver (#36a), if applicable.

CPv Required ☐☐☐.☐☐☐ **acre-feet**

CPv Provided ☐☐☐.☐☐☐ **acre-feet**

36a. The requirement to provide channel protection has been waived because:

○ Site discharges directly to tidal waters or a first order or larger stream.

○ Reduction of the total CPv is achieved on site through runoff reduction techniques or infiltration systems.

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (#37a), if applicable.

Total Overbank Flood Control Criteria (Qp)

Pre-Development ☐☐☐.☐☐☐ **CFS**

Post-development ☐☐☐.☐☐☐ **CFS**

Total Extreme Flood Control Criteria (Qf)

Pre-Development ☐☐☐.☐☐☐ **CFS**

Post-development ☐☐☐.☐☐☐ **CFS**

37a. The need to meet the Qp and Qf criteria has been waived because:

- ○ Site discharges directly to tidal waters or a fifth order or larger stream.
- ○ Downstream analysis reveals that the Qp and Qf controls are not required

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed? ○ **Yes** ○ **No**

If Yes, Identify the entity responsible for the long term Operation and Maintenance

39. Use this space to summarize the specific site [illegible]ons and justification for not reducing 100% of WQv required(#28). (See [illegible]tion 32a) This space can also be used for other pertinent pr[illegible]t information.

40. Identify other DEC permits, existing and new, that are required for this project/facility.

- ○ Air Pollution Control
- ○ Coastal Erosion
- ○ Hazardous Waste
- ○ Long Island Wells
- ○ Mined Land Reclamation
- ○ Solid Waste
- ○ Navigable Waters Protection / Article 15
- ○ Water Quality Certificate
- ○ Dam Safety
- ○ Water Supply
- ○ Freshwater Wetlands/Article 24
- ○ Tidal Wetlands
- ○ Wild, Scenic and Recreational River
- ○ Stream Bed or Bank Protection / Article 15
- ○ Endangered or Threatened Species(Incidental Take Permit)
- ○ Individual SPDES
- ○ SPDES Multi-Sector GP N
- ○ Other
- ○ None

41. Does this project require US Army Corps of Engineers Wetland Permit? ○ **Yes** ○ **No**
If Yes, Indicate Size of Impact. .

42. Is this project subject to the requirements of a regulated, traditional land use control MS4? ○ **Yes** ○ **No**
(If Yes, skip question 43)

43. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI? ○ **Yes** ○ **No**

44. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned. N Y R

Owner/Operator Certification

I have read or been advised of the permit conditions and believe that I understand them. I also understand that, under the terms of the permit, there may be reporting requirements. I hereby certify that this document and the corresponding documents were prepared under my direction or supervision. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. I further understand that coverage under the general permit will be identified in the acknowledgment that I will receive as a result of submitting this NOI and can be as long as sixty (60) business days as provided for in the general permit. I also understand that, by submitting this NOI, I am acknowledging that the SWPPP has been developed and will be implemented as the first element of construction, and agreeing to comply with all the terms and conditions of the general permit for which this NOI is being submitted.

Print First Name **MI**

Print Last Name

Owner/Operator Signature

Date / /

NYS Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

*(NOTE: Attach Completed Form to Notice Of Intent and Submit to Address Above)

I. Project Owner/Operator Information
1. Owner/Operator Name:
2. Contact Person:
3. Street Address:
4. City/State/Zip:
II. Project Site Information
5. Project/Site Name:
6. Street Address:
7. City/State/Zip:
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information
8. SWPPP Reviewed by:
9. Title/Position:
10. Date Final SWPPP Reviewed and Accepted:
IV. Regulated MS4 Information
11. Name of MS4:
12. MS4 SPDES Permit Identification Number: NYR20A _____
13. Contact Person:
14. Street Address:
15. City/State/Zip:
16. Telephone Number:

MS4 SWPPP Acceptance Form - continued

V. Certification Statement - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative

I hereby certify that the final Stormwater Pollution Prevention Plan (SWPPP) for the construction project identified in question 5 has been reviewed and meets the substantive requirements in the SPDES General Permit For Stormwater Discharges from Municipal Separate Storm Sewer Systems (MS4s). Note: The MS4, through the acceptance of the SWPPP, assumes no responsibility for the accuracy and adequacy of the design included in the SWPPP. In addition, review and acceptance of the SWPPP by the MS4 does not relieve the owner/operator or their SWPPP preparer of responsibility or liability for errors or omissions in the plan.

Printed Name:

Title/Position:

Signature:

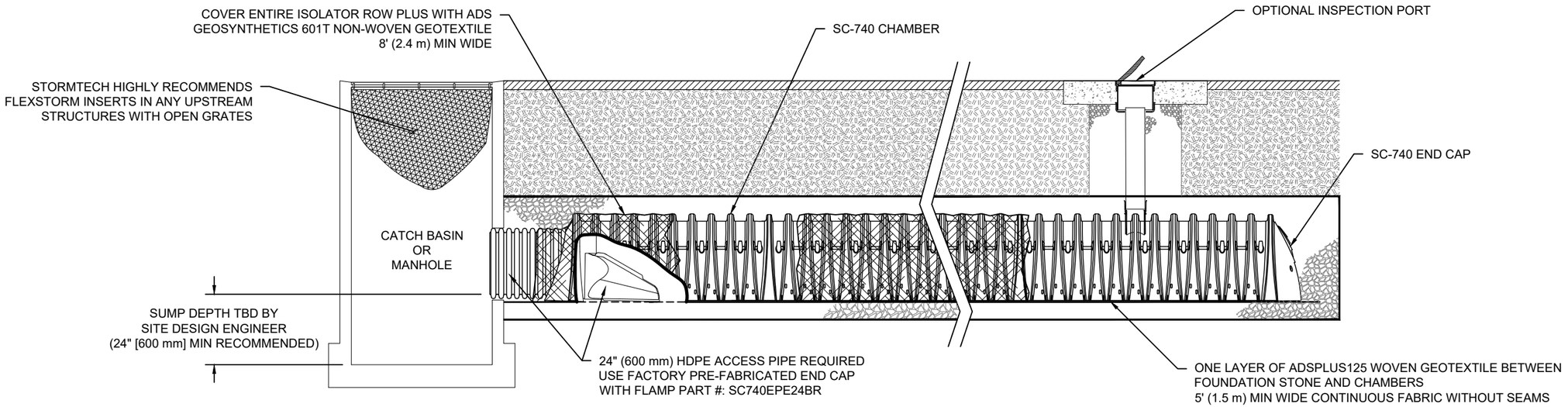
Date:

VI. Additional Information

(NYS DEC - MS4 SWPPP Acceptance Form - January 2015)

APPENDIX 11

SYSTEM MAINTENANCE AND OPERATION PROCEEDURES, CONSTRUCTION WASTE MANAGEMENT & SPILL PREVENTION PLANS



SC-740 ISOLATOR ROW PLUS DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

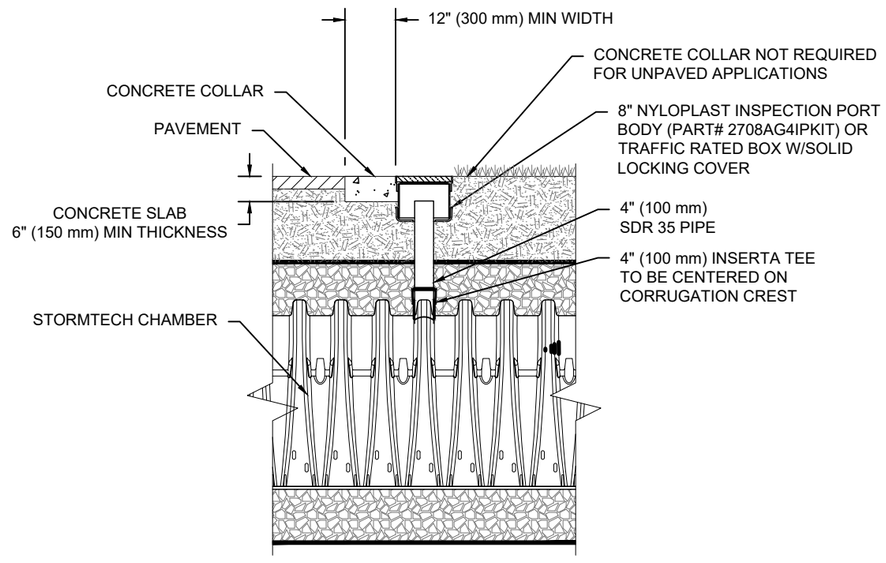
STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.

2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



NOTE:
INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION CREST.

4" PVC INSPECTION PORT DETAIL
(SC SERIES CHAMBER)
NTS

DONNELLY SUGARLOAF
TOWN OF CHESTER, NY
DATE: DRAWN: PP
PROJECT #: CHECKED: N/A

DESCRIPTION	CHK	DRW	DATE

StormTech® Chamber System
888-892-2694 | WWW.STORMTECH.COM
4640 TRUEMAN BLVD
HILLIARD, OH 43026
1-800-733-7473

CONSTRUCTION WASTE MANAGEMENT & SPILL PREVENTION PLAN

Early in the construction activities, land clearing materials will be collected and recycled either off site or re-used on site as erosion control materials. During early phase construction activities, cardboard, concrete, metal, wood and general trash collection dumpsters will be on site for collection and processing. As the project progresses, concrete dumpsters will be changed over to drywall collection, site clearing dumpsters will be changed over to finish material containers, etc. Typically, (4) open top containers will be on site for the duration of the project. General waste and cardboard/paper containers will be on site for the duration of the project. The contractor will be responsible for organizing and placing containers on site and timely removal/replacement when containers are filled to capacity. As necessary, the contractor will provide areas of collection or hoppers for subcontractors to utilize for intermediate storage of construction and demolition (CD) materials. All containers will be clearly identified with signage indicating stored materials.

Those CD materials generated on this project will be salvaged and re-processed as listed. The contractor will research available processing sources specific to the job site and make all trades aware of project qualifying CD recyclable materials as follows:

Brick: Materials will be stored on site and palletized by processor who will resell as product.

Cardboard: Materials will be separated on the jobsite and stored within dedicated on-site dumpster and delivered loose to processor. Processor will bale materials and deliver/resell to end market users.

Concrete: Scrap and loose materials will either be crushed on site and used for aggregate or stored within dedicated on-site dumpster and delivered to processor. Processor will reuse or resell materials as clean fill back or crush and use for aggregate.

Metals: Materials will be sorted and stored within dedicated on-site dumpster and delivered to processor. Processor will sell materials to metal recyclers (steel, aluminum, brass, copper, lead, stainless).

Stone and Granite: Materials will be collected on site in piles or containers and processor will palletize and haul materials. Processor will re-sell as product or crushed and use as aggregate.

Plastic, paper goods, and aluminum cans: Materials will be collected on job site within construction trailers, cantina areas, etc. and stored in on-site trailers. Materials will be hauled/recycled by processor.

Drywall: Waste materials will be sorted and collected in dedicated on-site containers or materials will be ground on site and used as an erosion control product. Hauled materials to processor will be processed as a soil amendment or used in alternate fuel mixture.

Wood or Lumber: Materials will be sorted and stored on-site within dedicated on-site containers and either resold as retail lumber by processor or ground and mixed with commercial land

clearing and/or approved materials for erosion control applications. Lumber will need to be clean, no paint or other wood treatment.

Land Clearing Debris: Woody materials (stumps, large limbs) will be ground on-site and used for soil erosion control products or hauled to processor to be ground as re-sold as erosion control products.

Roofing Shingles: Materials will be stored on site and processed as temporary road base, mixed into hot asphalt mix or used as alternate fuel blend or hauled offsite via appropriate methods to an authorized disposal/recycling facility.

Fuel Tanks: On site storage of fuel chemicals shall be equipped with a spill kit. The contractor must provide secondary containment for storing any hazardous chemicals on site.
Equipment storage: All equipment stored on site shall be inspected daily by the contractor for any oil or lubricant spills or leaks. Any leaks shall be repaired immediately. In addition all equipment must be closely inspected prior to working in the Town R.O.W.

Spill Response: The contractor shall clean all spills immediately and shall report all spills to the New York State Department of Environmental Conservation.
This Plan will be displayed in the construction jobsite trailer at all times.