ACTION NOTIFICATION FORM

HUD PROGRAMMATIC OPINION

Submit this form to NMFS 60 days prior to the anticipated completion of the project's environmental review. Submit by email to: ***HUDBiOp.wcr@noaa.gov*****.** Applies only to projects that qualify for inclusion under NMFS' HUD Programmatic Biological Opinion for Projects in Oregon **# WCR-2016-4853**.

PROJECT NAME	**DATE OF REQUEST**

PROJECT APPLICANT INFORMATION		**PROJECT LOCATION INFORMATION**	
RESPONSIBLE ENTITY	VALOR PLACE APARTMENTS	**COUNTY**	LINN
NAME	BETH FREELANDER	**PHONE**	541-791-0209	**STREET ADDRESS**	2080 QUEEN AVE. SE
TITLE	PLANNER II	beth.freelander@albanyoregon.gov	**CITY**	ALBANY	**ZIP**	97322
HUD OFFICE/PROGRAM	HUD-VASH FUNDING	**6TH FIELD HUC NAME**	MUDDY CREEK-WILLAMETTE RIVER
NAME	RACHEL CARLSON	**PHON**	503-756-3557	**6TH FIELD HUC #**	1709000306
TITLE	CRS DIRECTOR	**EMAIL**		**PROJECT LATITUDE**	44.62 N
APPLICANT /CONSULTANT		**LONGITUDE**	-123.09 W
NAME	BRIAN VANDETTA	**PHONE**	541 451-5125	**CONSTRUCTION START DATE**	AUGUST 5, 2024
TITLE	DESIGN ENGINEER	brian@udelleng.com	**CONSTRUCTION END DATE**	OCTOBER 2025

NMFS SPECIES & CRITICAL HABITAT PRESENT IN ACTION AREA

- [X] UPPER WILLAMETTE RIVER CHINOOK
- [X] UPPER WILLAMETTE RIVER STEELHEAD
- [X] LOWER COLUMBIA RIVER CHINOOK
- [X] LOWER COLUMBIA RIVER COHO
- [X] LOWER COLUMBIA RIVER STEELHEAD
- [ ] COLUMBIA RIVER CHUM
- [ ] MIDDLE COLUMBIA RIVER STEELHEAD
- [ ] UPPER COLUMBIA RIVER CHINOOK
- [ ] UPPER COLUMBIA RIVER STEELHEAD
- [ ] OREGON COAST COHO
- [ ] SOUTHERN OREGON/ NORTHERN CALIFORNIA COASTS COHO
- [ ] SNAKE RIVER SPRING/ SUMMER-RUN CHINOOK
- [ ] SNAKE RIVER FALL-RUN CHINOOK
- [ ] SNAKE RIVER STEELHEAD
- [ ] SNAKE RIVER SOCKEYE
- [ ] SOUTHERN DPS GREEN STURGEON
- [ ] EULACHON

EFH SPECIES OCCURRING IN THE ACTION AREA

- [X] PACIFIC SALMON, CHINOOK
- [X] PACIFIC SALMON, COHO
- [ ] COASTAL PELAGICS
- [ ] GROUNDFISH

PROJECT DESCRIPTION

LINN BENTON HOUSING AUTHORITY/CLAYTON MEADOWS, LLC PROPOSE TO CONSTRUCT A 30-UNIT, AFFORDABLE HOUSING APARTMENT COMPLEX INCLUDING ASSOCIATED SITE, UTILITY AND PARKING LOT IMPROVEMENTS.

STORMWATER INFORMATION FORM
HUD PROGRAMMATIC OPINION

RENEWAL JUNE 30, 2024

If you are submitting a project that includes a stormwater plan for review, please fill out the following cover sheet **to be included with** any stormwater management plan and any other supporting materials. Please have the project engineer provide their signed stamp in the box to the right. Submit this form with/or after the Action Implementation Form to NMFS at ***HUDBiOp.wcr@noaa.gov***.

PROJECT INFORMATION				**NMFS PROJECT TRACKING #: WCR-** -
PROJECT NAME	VALOR PLACE APARTMENTS		**COUNTY**	LINN
TYPE OF PROJECT (select all that apply)	☐ REDEVELOPMENT	☒ RESIDENTIAL	☐ INSTITUTIONAL	
	☒ NEW DEVELOPMENT	☐ COMMERCIAL	☐ OTHER	
HAVE YOU CONTACTED ANYONE AT NMFS	☒ YES ☐ NO	**If Yes, Who:**	BRAD RAWLS	
NEAREST RECEIVING WATER	WILLAMETTE RIVER			
STORMWATER DESIGNER / ENGINEER INFORMATION	**NAME**	BRIAN VANDETTA		
AFFILIATION/FIRM	UDELL ENGINEERING	**PHONE** 541-451-5125	**EMAIL**	brian@udelleng.com
STORMWATER DESIGN MANUAL USED, INCLUDING YEAR/VERSION	CITY OF ALBANY 2015			
DESCRIBE WHICH ELEMENTS OF YOUR STORMWATER PLAN THAT CAME FROM THE MANUAL EMPLOYED	THE WATER QUALITY PLANTER AND SWALE GENERAL DESIGN PARAMETERS, AMENDED SOILS REQUIREMENTS AND LANDSCAPE PLANTING REQUIREMENTS.			

DESIGN STORMS

1	**2-YEAR, 24-HOUR STORM** [Consult: http://www.nws.noaa.gov/ohd/hdsc/noaaatlas2.htm]	2.49	**INCHES**	0.10	**IN/HR**
2	**WATER QUALITY DESIGN STORM (50% OF 2-YEAR, 24-HOUR STORM)** [Except climate regions 4 & 9 (67%) and climate region 5 (75%)]	1.245	**INCHES**		
3	**WATER QUANTITY DESIGN STORM (10-YEAR, 24-HOUR STORM)** [Consult: http://www.wrcc.dri.edu/pcpnfreq/or10y24.gif]	3.37	**INCHES**		

SITE CHARACTERISTICS

4	**TOTAL PROJECT AREA** [Lot/Parcel acreage + any additional ground disturbance area]	0.806	**ACRES**	35,118	**FT²**
5	**TOTAL IMPERVIOUS SURFACE AREA** [Existing impervious acreage + Proposed impervious acreage]	0.569	**ACRES**	24,784	**FT²**
6	**TOTAL LANDSCAPE AREA** [Landscaping acreage + Vegetated treatment facility acreage]	0.237	**ACRES**	10.334	**FT²**
7	**WILL IMPERVIOUS AREA BE REDUCED FROM CURRENT CONDITIONS? IF YES, BY HOW MUCH?**	☒ YES ☐ NO	**ACRES**		**FT²**
8	**IS THE SITE CONTAMINATED?** [If yes, provide investigation results to NMFS]	☐ YES ☒ NO			

WATER QUALITY INFORMATION

9 ARE LOW IMPACT DEVELOPMENT (LID) METHODS INCORPORATED INTO DESIGN? ☒ YES ☐ NO

10 HOW MUCH OF TOTAL STORMWATER IS TREATED USING LID? 100% OF NEW OR REPLACED % 1,993.9 FT^3

11 SPECIFIC LID WATER QUALITY TREATMENT ELEMENTS INCORPORATED

SITE DESIGN ELEMENTS	TREATMENT METHODS	OTHER LID WATER QUALITY TREATMENT METHODS
☐ SITE LAYOUT	☐ VEGETATED ROOF	☐ LID NAME SOURCE
☐ CLUSTERED DEVELOPMENT	☒ INFILTRATION RAIN GARDEN / LID SWALE	☐ LID NAME SOURCE
☐ DE-PAVE EXISTING PAVEMENT	☒ INFILTRATION STORMWATER PLANTERS	☐ LID NAME SOURCE
☐ CONSERVE SOILS W/ BEST DRAINAGE	☐ SOAKAGE TRENCH	
☐ TREE PROTECTION	☐ DRYWELL	
☐ CONSTRUCTION SEQUENCING	☐ WATER QUALITY SWALE	
☐ REFORESTATION/TREE PLANTING	☐ VEGETATED FILTER STRIPS	
☒ RESTORED SOILS	☐ LINED RAIN GARDEN/LID SWALE	
☒ POROUS PAVEMENT	☒ LINED STORMWATER PLANTER	

12 DESCRIBE THE TREATMENT TRAIN, INCLUDING PRETREATMENT AND LID BMPS USED TO TREAT WATER QUALITY

THE PROPOSED TREATMENT FOR THE PROJECT IS 100% TREATMENT BY VEGETATED PLANTERS AND A SWALE. TWO OF THE PLANTERS ARE LINED DUE TO THEIR PROXIMITY TO THE PROPOSED BUILDING.

13 WHY THIS TREATMENT TRAIN WAS CHOSEN FOR THE PROJECT SITE

THIS TREATMENT TRAIN WAS UTILIZED BECAUSE IT MIMICS THE NATURAL TREATMENT OF GENERATED STORMWATERS AND HAS BEEN PROVEN TO BE VERY EFFECTIVE.

14 PAGE IN STORMWATER PLAN WHERE MORE DETAILS CAN BE FOUND SHEET C300-C303 OF 50% DESIGN

15 STORMWATER TREATMENT REQUIRED VOLUME 1,993.9 FT^3 PEAK DISCHARGE 0.126 CFS AREA TREATED 19,218 FT^2

16 IS THE WATER QUALITY DESIGN STORM FULLY TREATED? VOLUME ☒ YES ☐ NO PEAK DISCHARGE ☒ YES ☐ NO

17 IF ANSWER TO 16 IS "NO," WHY NOT? HOW WILL PROJECT OFFSET THE EFFECTS FROM UNTREATED STORMWATER?

WATER QUANTITY INFORMATION

18 DOES THE PROJECT DISCHARGE DIRECTLY INTO A MAJOR WATER BODY? ☐ YES ☒ NO
[Large water body = ocean, estuary, mainstem Columbia River, Willamette River downstream of Eugene]

19	PRE-DEVELOPMENT RUNOFF RATE AND VOLUME	WATER QUALITY DESIGN STORM (50% OF 2-YEAR, 24-HOUR)	0.008 CFS	FT^3
		WATER QUANTITY DESIGN STORM (10-YEAR 24-HOUR)	0.265 CFS	FT^3
20	POST-DEVELOPMENT RUNOFF RATE AND VOLUME	WATER QUALITY DESIGN STORM (50% OF 2-YEAR, 24-HOUR)	0.038 CFS	FT^3
		WATER QUANTITY DESIGN STORM (10-YEAR 24-HOUR)	0.233 CFS	FT^3

** POST-DEVELOPMENT RUNOFF RATE MUST BE LESS THAN OR EQUAL TO PRE-DEVELOPMENT RUNOFF RATE **

WATER QUANTITY INFORMATION (CONTINUED)

21 METHODS USED TO LIMIT STORMWATER DISCHARGE FROM PROJECT

THE MAIN METHOD USED TO LIMIT STORMWTER DISCHARGE IS FLOW RESTRICTING ORIFICES AND ONSITE DETENTION VOLUME. ONSITE SOILS HAVE VERY POOR INFILTRATION RATES SO ONSITE DISPOSAL IS NOT LARGE BUT IT WILL OCCUR AT A RATE OF APPROXIMATELY 0.20 IN/HR. NO CREDIT WAS TAKEN FOR THIS IN THE SIZING CALCULATIONS.

22 PAGE IN STORMWATER PLAN WHERE MORE DETAILS CAN BE FOUND: SHEET C111, C301, C302 AND SHEET C600

23 SPECIFIC LID DISCHARGE REDUCTION ELEMENTS INCORPORATED

MANAGEMENT METHODS		OTHER LID WATER QUANTITY MANAGEMENT ELEMENTS
☒ POROUS PAVEMENT	☐ SOAKAGE TRENCH	☐ LID NAME
☒ INFILTRATION RAIN GARDEN / LID SWALE	☐ DRYWELL	SOURCE
☒ INFILTRATION STORMWATER PLANTERS	☐ DOWNSPOUT DISCONNECTION	

24 ARE BOTH WATER QUANTITY DESIGN STORMS FULLY MANAGED (I.E. ATTENUATED)? VOLUME ☐ YES ☒ NO PEAK DISCHARGE ☐ YES ☒ NO

25 IF NO, WHY NOT? HOW WILL THE PROJECT OFFSET THE EFFECTS FROM UNMANAGED STORMWATER?

THE LOWER END STORM (50% OF 2-YEAR) IS NOT FULLY MANAGED DUE TO A LIMITATION IN ORIFICE SIZE IN THE CITY OF ALBANY ENGINEERING DESIGN STANDARDS. THE UPPER LIMIT STORM (10-YEAR) IS FULLY MANAGED.

26 IS THE POST-DEVELOPED PEAK DISCHARGE >0.5 CFS DURING THE 2-YEAR, 24-HOUR STORM EVENT? IF YES, FLOW CONTROL MANAGEMENT REQUIRED ☐ YES ☒ NO

27 FLOW CONTROL PROPOSED NA CFS % OF 2-YEAR, 24-HOUR STORM EVENT

MAINTENANCE AND INSPECTION PLAN

28 HAVE YOU INCLUDED A STORMWATER MAINTENANCE AND INSPECTION PLAN? EXAMPLE CITY REQUIRED AGREEMENT IS ATTACHED. ☐ NO

29 CONTACT INFORMATION FOR THE PARTY/PARTIES THAT WILL BE LEGALLY RESPONSIBLE FOR PERFORMING/ CONTRACTING THE INSPECTIONS AND MAINTENANCE OF THE STORMWATER FACILITIES:

NAME: DONNA HOLT, EXECUTIVE DIRECTOR

AFFILIATION/RESPONSIBILITY: LINN-BENTON HOUSING AUTHORITY

PHONE: 541-918-7314 EMAIL: donn@l-bha.org

NAME

AFFILIATION/RESPONSIBILITY

PHONE EMAIL

NAME

AFFILIATION/RESPONSIBILITY

PHONE EMAIL

NAME

AFFILIATION/RESPONSIBILITY

PHONE EMAIL

OTHER RELEVANT INFORMATION

THE STORMWATER QUALITY TREATMENT WAS MODELED WITH HYDROCAD VERSION 10.00-22 UTILIZING THE SANTA BARBARA UNIT HYDROGRAPH METHOD WITH AN INPUT OF 1.245 INCHES OF RAINFALL. ALL WATER QUALITY PLANTERS OR SWALE EFFECTIVELY INFILTRATED 100 PERCENT OF THE STORMWATERS GENERATED BY 1.245 INCHES OF RAINFALL THROUGH THE 18-INCHES OF GROWING MEDIA.

Udell Engineering & Land Surveying, LLC

63 East Ash Street, Lebanon, OR 97355
Ph: 541-451-5125 • Fax: 541-451-1366

LETTER OF TRANSMITTAL

Date: **March 26, 2024**

To: **City of Albany**

Attn: **Beth Freelander, Anne Catlin and Aaron Hiemstra**

Re: **Submittal for HUD Programmatic Opinion**

Project Name: Valor Place Apartments

Address: **2080 Queen Avenue SE Albany, Oregon 97322**

County: **Linn**

Assessor: **T 11 S, R 03 W, Section 08DB, Tax Lot 6000**

Project Description:
Linn Benton Housing Authority (LBHA)/Clayton Meadows, LLC propose to construct a 30-Unit, affordable housing development with associated site, utility and parking lot improvements.

HUD Funding Sources: HUD-VASH VOUCHERS

Current and Recent Land Uses:
The parent parcel is currently improved with a 50-unit, three-story, affordable housing apartment development. A tentative partition was approved by the City of Albany for a 2-parcel land partition on January 25, 2024. The final partition plat is pending final approval. The proposed 30-unit development will be constructed on proposed Parcel 1.
USGS Map: **See attached maps.**

Detailed Survey Map:
See attached Existing Conditions/Demo Map sheet C101 without drone imagery and sheet C102 with drone imagery. The existing trees proposed for removal are noted on the survey.

Habitat Information:
The site is currently vacant with full grass cover and sparce deciduous trees as illustrated on the attached survey. The native soils are noted in the Geotechnical Report as being Concord Silt Loam. The Geotechnical Report also noted that the area of proposed Parcel 1 appeared to be a depository for excavated materials generated likely from the construction of the existing 50-unit apartment complex. There are no existing defined drainage features on the subject site. There are no known or documented wetlands on the subject site.

Color Photos: See attached Photos

Aerial Photo:
As mentioned previously the detailed survey includes a copy with drone imagery performed by Udell Engineering and Land Surveying, LLC.

Local Stormwater System:
The City of Albany owned existing stormwater system in the project area drains west within Queen Ave. SE for approximately ¼ mile before it discharges into Periwinkle Creek. The stormwaters then flow in Periwinkle Creek for approximately 1.25 miles before discharging into the Willamette River. The local stormwater system is not treated prior to discharging into Periwinkle Creek nor prior to discharging into the Willamette River.

Valor Place Stormwater Treatment:
The stormwaters generated by the impervious surfaces added with the Valor Place Apartment will be treated for both water quality and water quantity.

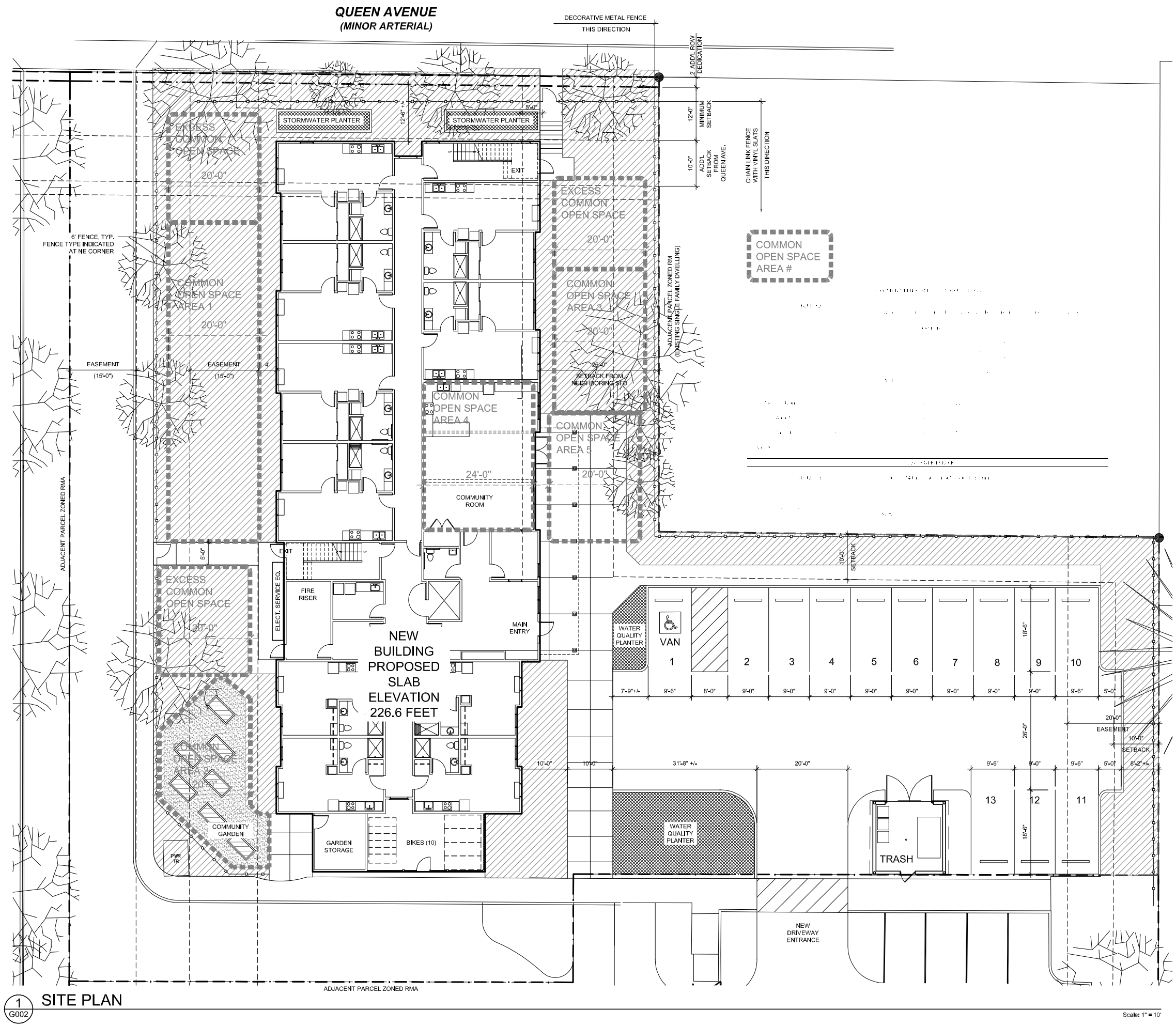
Water Quality: The stormwaters will be routed through vegetated water quality planters or swales that will be designed per the City of Albany Standards and sized to treat 50% of a 2-Year, 24-Hour storm event. The sizing was determined by the use of Hydrocad Version 10.0 stormwater modeling software utilizing the Santa Barbara Unit Hydrograph method. After interacting with the vegetations in the planters or swale the stormwaters will infiltrate through the 18-inches of growing media where they will be routed to the discharge conveyance piping.

Water Quantity: The stormwaters generated by the developed portion of the site will be routed through a flow control manhole that contains restrictive orifices. The orifices will limit the runoff rates for the post construction stormwaters. The orifice size calculated to limit the release rates to the rates of the pre-development conditions for the 50% of a 2-Year, 2-Year and 5-Year 24-Hour storm events was well below the City of Albany minimum allowed of 2-inches in diameter. Therefore, the design release rate for the lower end storm events is governed by the 2-inch minimum orifice size. A buried stormwater detention system is included to store the necessary volume of water to allow the orifices to effectively restrict the post development flows to pre-development rates.

A 50% Drainage Plan is included for illustration.

Respectfully,

Brian Vandetta PE, PLS
Udell Engineering and Land Surveying, LLC



1 G002 SITE PLAN

Scale: 1" = 10'

DEVELOPMENT CODE SUMMARY

Address: 2080 Queen Ave SE, Albany, Oregon 97322
Map: 11S03W08-DB; Tax Lot: 6000
Development Site Area: 0.77 acres (33,363 s.f.)
Base Zone: RMA Residential Medium Density Attached
Overlays: Airport Approach Overlay (Height only - Fig 4.410-1)
Adjacent Zones: RMA - Res Medium Density Attached, RM - Res Medium Density
Proposed Use: 3 Story Multi-family building with 30 dwelling units and related support spaces
(22) 1 bedroom units, (8) studio units

Minimum Property Size or Land Requirements by Unit Type:
Studio and 1-bedroom units 1,500 sf/unit,
30% area reduction bonus per Table 3,220-6 = 1,050 sf/unit (1bd and studios)
New Project will have at least 20% of units set aside for persons whose household income is less than or equal to 50% AMI - 30% area reduction bonus is permitted.
Minimum Lot size for desired program on Development Site:

22 new 1bd x 1,050	–	23,100 s.f.
8 new studios x 1,050	=	8,400 s.f.
Total:		31,500 s.f. (< 33,363)

Setbacks

Per table 3,190-1:	Minimum Front = 12'
Per Table 8,240-1:	Maximum Setback not applicable (Minor Arterial)
Per 8,240(3)(a)(i):	Frontage Requirements not applicable (Minor Arterial)
Per 8,270(3)(b):	30' setback from east PL and existing single-family home *(20' provided)*
Per 3,320:	Special Noise Corridor - additional 10' *(zero additional provided)*

Maximum Allowable Height
Per table 3,190-1: 60' (34' +/- provided)
Maximum Allowable Lot Coverage
Per table 3,190-1: 70% (26% provided)

Open Space (per 8,220)

Common:	15% of the total development site area per Table 8,220-1, 3,753 s.f. required (includes 25% reduction - see table)
Private:	Required for at least 80% of units and subject to the standards in ADC 8,220(3) *(private patios/balconies not provided)*

Façade design, articulation, and windows (per 8,255 - street facing),

Articulation:	min. of two features from 8,225 (2)
provided:	(b) eaves/overhang greater than 12"
	(c) offset in façade
	(g) other - raised planters
Street-facing windows:	15% of total façade area required per 8,225 (3) (15% provided)

Minimum Landscaped Area
Per table 3,190-1: All yards adjacent to streets plus required open space
– Areas to be Landscaped

Bicycle Parking (per 9,030)
Per table 9,030: 1 space per dwelling unit required (30 total)
22 standard, 8 oversized (25%)
Sheltered and Secure
(10 spaces provided - 6 standard, 4 oversized)

BDA
Architecture and Planning, PC
bdarch.net
541.683.8661
1369 Olive Street
Eugene, OR 97401

REGISTERED PROFESSIONAL ENGINEER
MICHAEL P. FORBES
OREGON
PRELIMINARY NOT FOR CONSTRUCTION

Revision Summary	
Revision Number	Revision Date

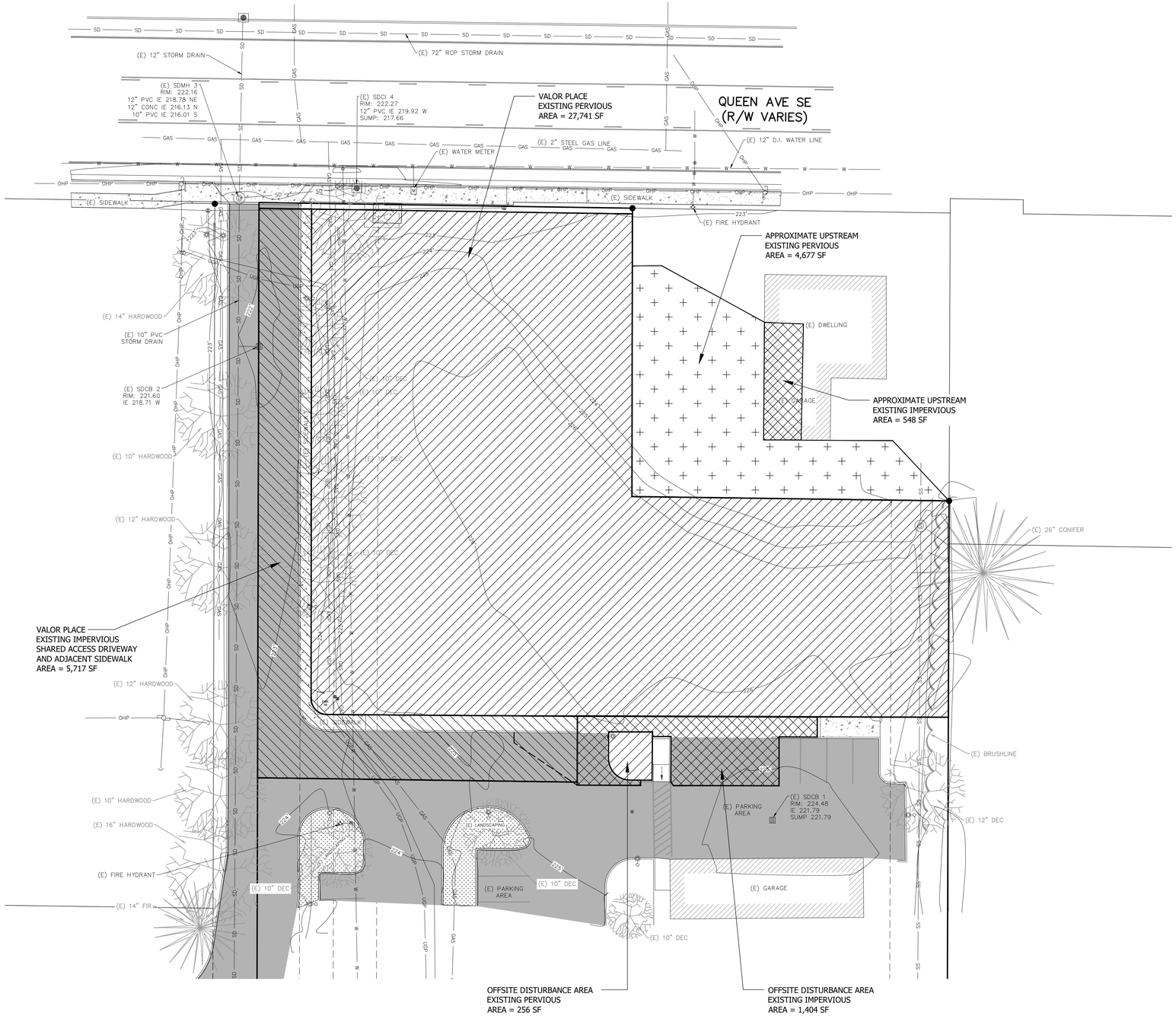
VALOR PLACE APARTMENTS
2080 QUEEN AVENUE
ALBANY, OREGON
LINN BENTON HOUSING AUTHORITY

SITE PLAN
DEVELOPMENT CODE SUMMARY

date 03-08-2024
file
d.b. mm

G002

VALOR PLACE APARTMENTS
PCSWMP



CLIENT:
LBHA/
CLAYTON MEADOWS LLC
1250 SE QUEEN AVE
ALBANY, OREGON 97322

UDELL ENGINEERING
AND
LAND SURVEYING, LLC
63 EAST ASH ST.
LEBANON, OREGON 97355
(541) 451-5125 PH.
(541) 451-1366 FAX

EXISTING SITE COVERAGE

VALOR PLACE APARTMENTS
2080 QUEEN AVE SE
ALBANY, OREGON

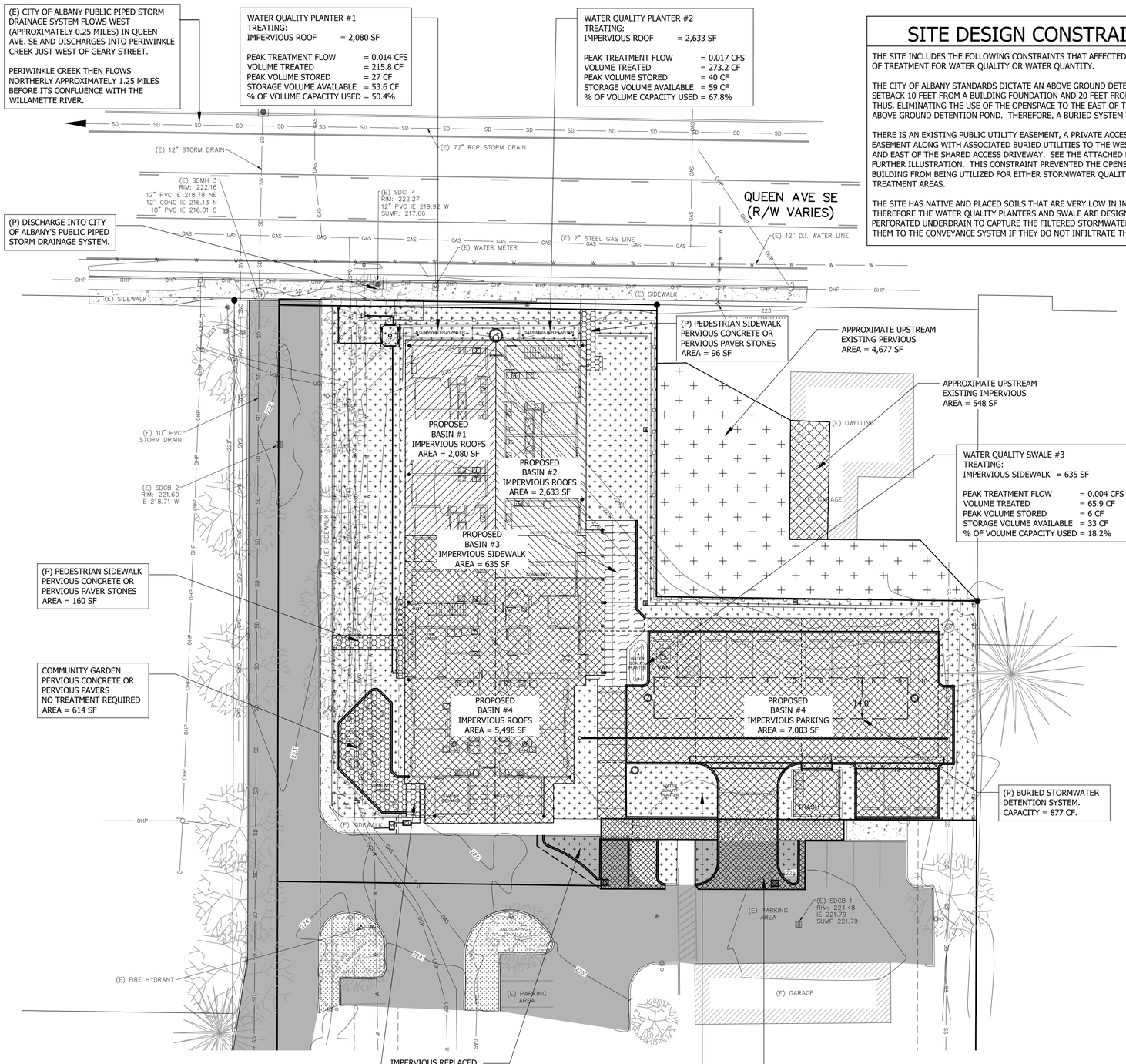
DATE: MARCH 9, 2024
PROJECT: 23-078 LBHA QUEEN AVE
DRAWN BY: BSV, MLM
CHECKED BY: BSV

REGISTERED PROFESSIONAL ENGINEER
51041PE
OREGON
JULY 21, 1998
BRIAN VANDETTA
RENEWAL JUNE 30, 2024

PLAN REVISIONS	DATE

Sheet C110

SCALE: SEE BARSCALE



SITE DESIGN CONSTRAINTS:

THE SITE INCLUDES THE FOLLOWING CONSTRAINTS THAT AFFECTED THE DESIGN OR CHOICE OF TREATMENT FOR WATER QUALITY OR WATER QUANTITY.

THE CITY OF ALBANY STANDARDS DICTATE AN ABOVE GROUND DETENTION POND BE SETBACK 10 FEET FROM A BUILDING FOUNDATION AND 20 FEET FROM A PROPERTY LINE. THUS, ELIMINATING THE USE OF THE OPENSPACE TO THE EAST OF THE BUILDING FOR AN ABOVE GROUND DETENTION POND. THEREFORE, A BURIED SYSTEM WAS SELECTED.

THERE IS AN EXISTING PUBLIC UTILITY EASEMENT, A PRIVATE ACCESS AND UTILITY EASEMENT ALONG WITH ASSOCIATED BURIED UTILITIES TO THE WEST OF THE BUILDING AND EAST OF THE SHARED ACCESS DRIVEWAY. SEE THE ATTACHED DETAILED SURVEY FOR FURTHER ILLUSTRATION. THIS CONSTRAINT PREVENTED THE OPENSPACE WEST OF THE BUILDING FROM BEING UTILIZED FOR EITHER STORMWATER QUALITY OR QUANTITY TREATMENT AREAS.

THE SITE HAS NATIVE AND PLACED SOILS THAT ARE VERY LOW IN INFILTRATION VALUE. THEREFORE THE WATER QUALITY PLANTERS AND SWALE ARE DESIGNED WITH A PERFORATED UNDERDRAIN TO CAPTURE THE FILTERED STORMWATERS AND TRANSPORT THEM TO THE CONVEYANCE SYSTEM IF THEY DO NOT INFILTRATE THE NATIVE SOILS.

VALOR PLACE APARTMENTS PCSWMP

MAP HATCH LEGEND:

- BASIN #1 IMPERVIOUS AREA. THIS AREA IS TREATED FOR STORMWATER QUALITY BY WQ PLANTER #1.
- BASIN #2 IMPERVIOUS AREA. THIS AREA IS TREATED FOR STORMWATER QUALITY BY WQ PLANTER #2.
- BASIN #3 IMPERVIOUS AREA. THIS AREA IS TREATED FOR STORMWATER QUALITY BY WQ SWALE #3.
- BASIN #4 ONSITE IMPERVIOUS AREA. THIS AREA IS TREATED FOR STORMWATER QUALITY BY WQ PLANTER #4.
- BASIN #4 OFFSITE IMPERVIOUS AREA. THIS AREA IS TREATED FOR STORMWATER QUALITY BY WQ PLANTER #4.
- ISOLATED PEDESTRIAN TRAFFIC AREAS THAT WILL BE CONSTRUCTED WITH PERVIOUS CONCRETE OR PERVIOUS PAVER STONES. NO STORMWATER TREATMENT REQUIRED.
- LANDSCAPE AREAS. NO STORMWATER TREATMENT REQUIRED.

N

1 INCH
0 20'

STORMWATER FLOW CONTROL SUMMARY (2-INCH DIA. ORIFICE CONTROLS)

STORM EVENT	PRE-DEVELOPMENT RELEASE RATE (CFS)	W/UPSTREAM NEIGHBOR PRE-DEVELOPMENT RELEASE RATE (CFS)	POST-DEVELOPMENT RELEASE RATE (CFS)	VOLUME STORED (CF)	VOLUME AVAILABLE (CF)
50% OF 2-YR	0.006	0.008	0.038	3	877
2-YR	0.076	0.098	0.120	267	877
5-YR	0.107	0.137	0.132	421	877
10-YR	0.154	0.195	0.188	587	877
25-YR	0.211	0.265	0.233	779	877

LID TREATMENT SUMMARY:

100% OF THE DEVELOPMENT'S IMPERVIOUS SURFACES WILL BE EFFECTIVELY TREATED FOR WATER QUALITY OF THE WATER QUALITY STORM EVENT EQUALING 50% OF THE 2-YR, 24 HOUR STORM EVENT.

THE SITE EXISTING SOILS ARE VERY POOR DRAINING WITH TESTED INFILTRATION RATES OF APPROXIMATELY 0.2 IN/HOUR. LANDSCAPE AREAS WILL RECEIVE A SOIL AMENDMENT TO INCREASE THIS INFILTRATION RATE SO THAT 100% OF THE WATER QUALITY STORM EVENT WILL INFILTRATE THE LANDSCAPED AREAS, THUS HAVING THEM ACT AS GRASSY FILTER STRIPS BUT RECEIVING NO RUN-OFF FROM ADJACENT IMPERVIOUS SURFACES.

LID MAINTENANCE SUMMARY:

RESPONSIBLE PARTY: DONNA HOLT, EXECUTIVE DIRECTOR
LINN-BENTON HOUSING AUTHORITY
541-918-7314
donna@l-bha.org

PERVIOUS CONCRETE/PAVER STONES: ANNUAL MAINTENANCE SCHEDULE.

SUMMER: MAKE NOTED STRUCTURAL REPAIRS.
FALL: VACUUM SWEEP SURFACE.
WINTER: MONITOR INFILTRATION RATES.
SPRING: VACUUM SWEEP.
ALL SEASONS: MANUALLY WEED OR TORCH WEEDS AS NECESSARY. NO PESTICIDE APPLICATIONS.

WATER QUALITY PLANTERS AND SWALE: ANNUAL MAINTENANCE SCHEDULE.

SUMMER: MAKE STRUCTURAL REPAIRS, CLEAN OVERFLOW STRUCTURES AND REMOVE WEED BUILD UP.
FALL: REPLANT EXPOSED SOILS AND REPLACE DEAD PLANTS. REMOVE SEDIMENT BUILD UP AND PLANT DEBRIS.
WINTER: MONITOR INFILTRATION RATES. CLEAN GUTTERS AND DOWNSPOUTS THAT DRAIN TO FACILITY.
SPRING: REMOVE SEDIMENT BUILD UP AND PLANT DEBRIS. REPLANT EXPOSED SOIL AREAS.
ALL SEASONS: WEED AS NECESSARY.

PCSWMP WAS PREPARED BY: BRIAN VANDETTA PE, PLS
UDELL ENGINEERING AND LAND SURVEYING, LLC
541-451-5125
brian@udelleng.com

PLAN REVISIONS	DATE

CLIENT:
LBHA/
CLAYTON MEADOWS LLC
1250 SE QUEEN AVE
ALBANY, OREGON 97322

UDELL ENGINEERING AND LAND SURVEYING, LLC
63 EAST ASH ST.
LEBANON, OREGON 97355
(541) 451-5125 PH.
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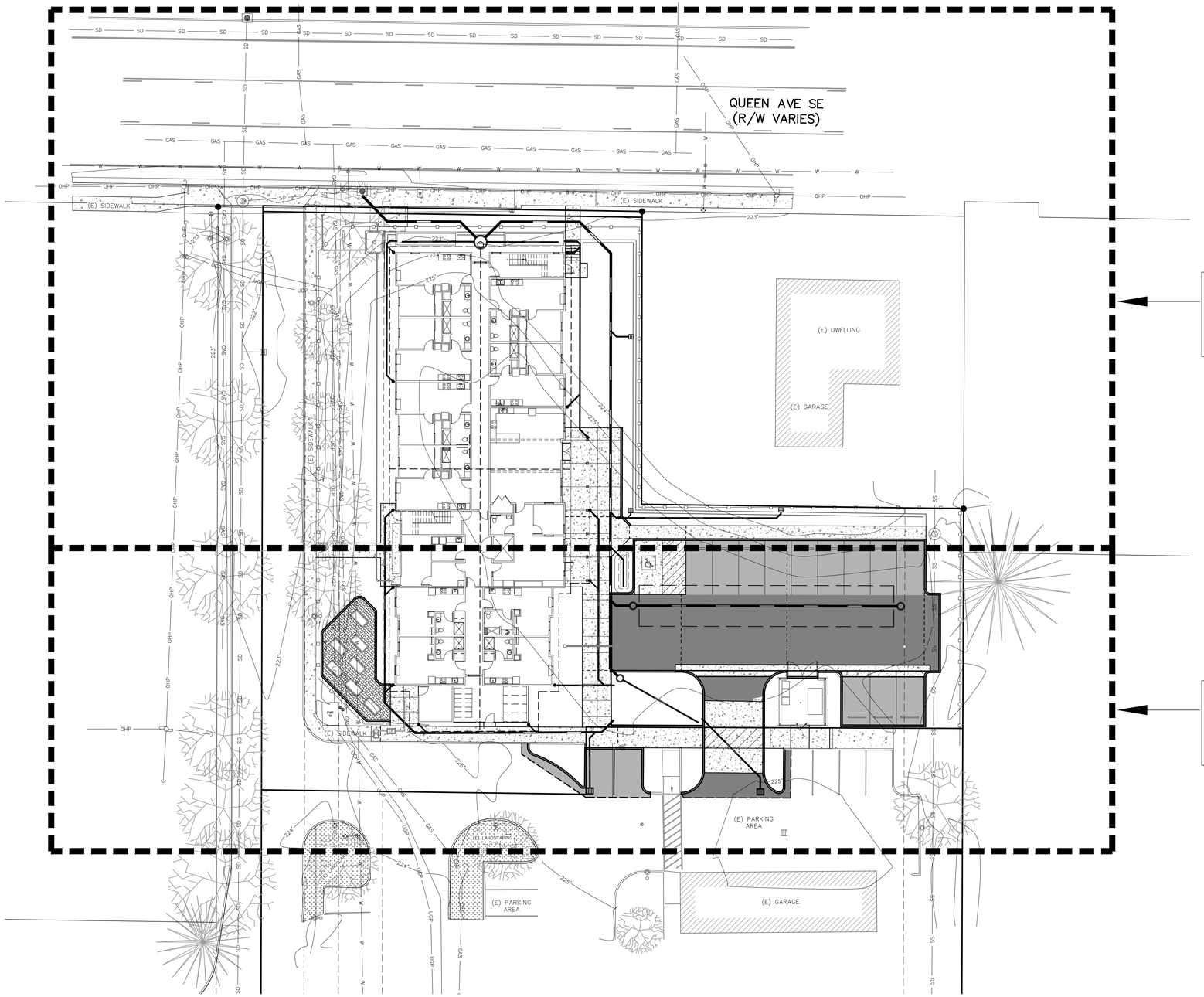
POST CONSTRUCTION TREATMENTS
VALOR PLACE APARTMENTS
2080 QUEEN AVE SE
ALBANY, OREGON

DATE: MARCH 8, 2024
PROJECT: 23-078 LBHA QUEEN AVE
DRAWN BY: BSV, MLM
CHECKED BY: BSV

REGISTERED PROFESSIONAL ENGINEER
51041PE
OREGON
JULY 21, 1998
BRIAN VANDETTA
RENEWAL JUNE 30, 2024

Sheet C111

SCALE: SEE BARSCALE



SEE SHEET C 301
PRELIMINARY DRAINAGE
PLAN NORTH

SEE SHEET C 302
PRELIMINARY DRAINAGE
PLAN SOUTH

N

1 INCH
0 20'

CLIENT:
LBHA/
CLAYTON MEADOWS LLC
1250 SE QUEEN AVE
ALBANY, OREGON 97322

UDELL ENGINEERING
AND
LAND SURVEYING, LLC
63 EAST ASH ST.
LEBANON, OREGON 97355
(541) 451-5125 PH.
(541) 451-1366 FAX

PRELIMINARY DRAINAGE PLAN OVERVIEW

VALOR PLACE APARTMENTS
2080 QUEEN AVE SE
ALBANY, OREGON

DATE: MARCH 6, 2024
PROJECT: 23-078 LBHA QUEEN AVE
DRAWN BY: BSV, MLM
CHECKED BY: BSV

THIS PLAN SET IS FOR PLANNING PURPOSES ONLY. NOT TO BE USED FOR CONSTRUCTION.

THIS IS AN ENGINEERED STORM DRAINAGE SYSTEM.

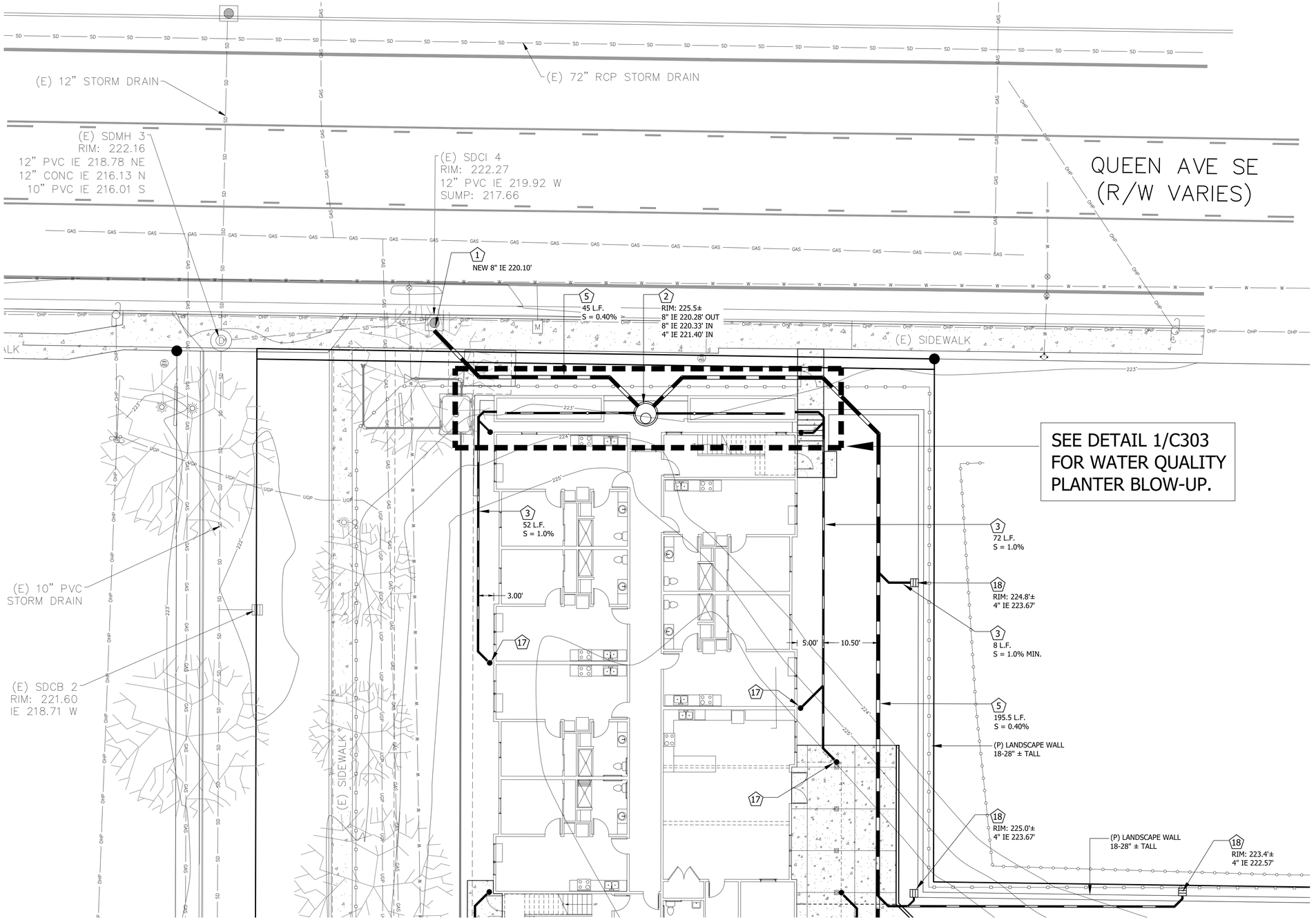
DOWNSPOUT NOTE:
CONNECT ALL ROOF DRAIN DOWNSPOUTS TO PIPED STORM DRAIN SYSTEM WITH MANUFACTURED FITTING PER CURRENT STATE OF OREGON PLUMBING SPECIALTY CODE.

ATTENTION
CONTRACTOR SHALL POTHOLE EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION. REPORT FINDINGS TO ENGINEER.

PLAN REVISIONS	DATE

Sheet C300

SCALE: SEE BARSCALE



STORM DRAIN NOTES

1	CONNECT TO EXISTING PUBLIC CURB INLET. CORE DRILL TO ACCEPT A NEW 8" DIAMETER PIPE. GROUT VOIDS WITH NON-SHRINK GROUT.
2	INSTALL PRIVATE 48" DIAMETER CONCRETE FLOW CONTROL STORM DRAIN MANHOLE PER DETAIL (1/C600)
3	INSTALL 4" PRIVATE PVC STORM PIPE WITH TRACER WIRE PER CURRENT STATE OF OREGON PLUMBING SPECIALTY CODE.
4	INSTALL 6" PRIVATE PVC STORM PIPE WITH TRACER WIRE PER CURRENT STATE OF OREGON PLUMBING SPECIALTY CODE.
5	INSTALL 8" PRIVATE PVC STORM PIPE WITH TRACER WIRE PER CURRENT STATE OF OREGON PLUMBING SPECIALTY CODE.
6	INSTALL 4" PRIVATE PVC DOUBLE PERFORATED STORM PIPE WITH TRACER WIRE PER CURRENT STATE OF OREGON PLUMBING SPECIALTY CODE.
7	INSTALL 8" PRIVATE PVC TRIPLE PERFORATED STORM PIPE WITH TRACER WIRE AND OPEN GRADED ROCK FOR STORMWATER DETENTION PER CURRENT STATE OF OREGON PLUMBING SPECIALTY CODE. SEE DETAIL (2/C600)
8	CONSTRUCT WATER QUALITY PLANTER WITH IMPERMEABLE LINER PER CITY OF ALBANY STANDARDS AND DETAIL (3/C600)
9	CONSTRUCT WATER QUALITY PLANTER (NO LINER) PER CITY OF ALBANY STANDARDS AND DETAIL (4/C600)
10	CONSTRUCT WATER QUALITY SWALE (NO LINER) PER CITY OF ALBANY STANDARDS AND DETAIL (5/C600)
11	INSTALL PRIVATE 4" ATRIUM OVERFLOW PER CITY OF ALBANY STANDARDS AND CURRENT STATE OF OREGON PLUMBING SPECIALTY CODE.
12	INSTALL PRIVATE 24" DIAMETER BEEHIVE OVERFLOW PER CITY OF ALBANY STANDARDS AND CURRENT STATE OF OREGON PLUMBING SPECIALTY CODE. SEE DETAIL (6/C600)
13	INSTALL PRIVATE STEEL CATCH BASIN PER DETAIL (1/C601)
14	INSTALL PRIVATE 24" DIAMETER STORM MANHOLE PER DETAIL (2/C601)
15	INSTALL DRAINAGE CURB OPENING PER DETAIL (3/C601)
16	INSTALL PRIVATE CLEAN-OUT PER CURRENT STATE OF OREGON PLUMBING SPECIALTY CODE.
17	EXTEND 4" PRIVATE STORM TO WITHIN 5.0' OF BUILDING FOR ROOF DOWNSPOUT CONNECTION. SEE ARCHITECTURAL PLANS FOR CONTINUATION.
18	INSTALL PRIVATE 18-INCH POLY LANDSCAPE AREA DRAIN TO CAPTURE YARD SURFACE DRAINAGE PER CURRENT STATE OF OREGON PLUMBING SPECIALTY CODE.

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PRELIMINARY DRAINAGE PLAN NORTH

VALOR PLACE APARTMENTS
2080 QUEEN AVE SE
ALBANY, OREGON

DATE: MARCH 8, 2024
PROJECT: 23-078 LBHA QUEEN AVE
DRAWN BY: BSV, MLM
CHECKED BY: BSV

THIS PLAN SET IS FOR PLANNING PURPOSES ONLY. NOT TO BE USED FOR CONSTRUCTION.

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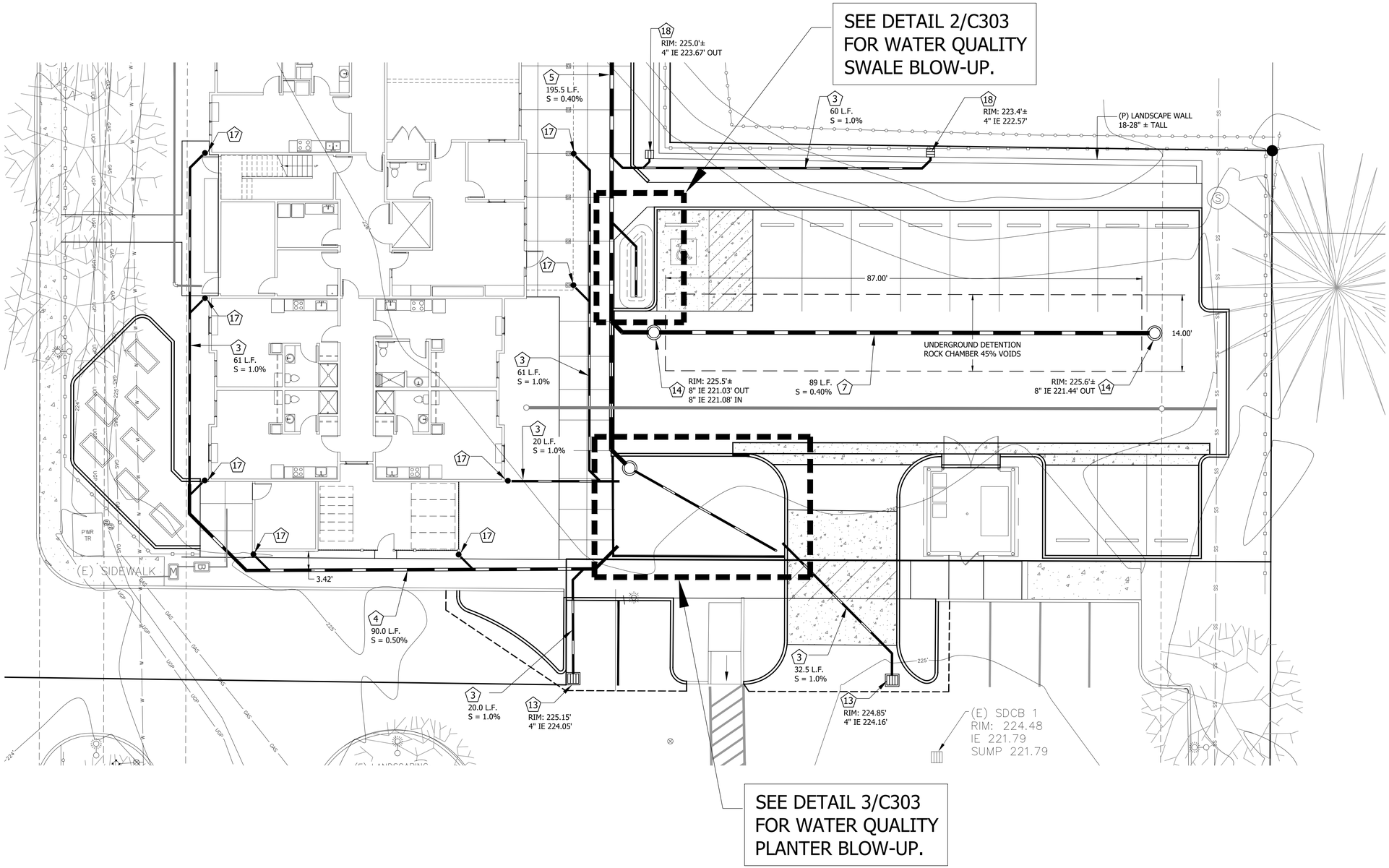
DOWNSPOUT NOTE:
CONNECT ALL ROOF DRAIN DOWNSPOUTS TO PIPED STORM DRAIN SYSTEM WITH MANUFACTURED FITTING PER CURRENT STATE OF OREGON PLUMBING SPECIALTY CODE.

ATTENTION
CONTRACTOR SHALL POTHOLE EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION. REPORT FINDINGS TO ENGINEER.

PLAN REVISIONS	DATE

Sheet C301

SCALE: SEE BARSCALE



STORM DRAIN NOTES

1. CONNECT TO EXISTING PUBLIC CURB INLET. CORE DRILL TO ACCEPT A NEW 8" DIAMETER PIPE. GROUT VOIDS WITH NON-SHRINK GROUT.
2. INSTALL PRIVATE 48" DIAMETER CONCRETE FLOW CONTROL STORM DRAIN MANHOLE PER DETAIL (1/C600)
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8. CONSTRUCT WATER QUALITY PLANTER WITH IMPERMEABLE LINER PER CITY OF ALBANY STANDARDS AND DETAIL (3/C600)
9. CONSTRUCT WATER QUALITY PLANTER (NO LINER) PER CITY OF ALBANY STANDARDS AND DETAIL (4/C600)
10. CONSTRUCT WATER QUALITY SWALE (NO LINER) PER CITY OF ALBANY STANDARDS AND DETAIL (5/C600)
11. INSTALL PRIVATE 4" ATRIUM OVERFLOW PER CITY OF ALBANY STANDARDS AND CURRENT STATE OF OREGON PLUMBING SPECIALTY CODE.
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18. INSTALL PRIVATE 18-INCH POLY LANDSCAPE AREA DRAIN TO CAPTURE YARD SURFACE DRAINAGE PER CURRENT STATE OF OREGON PLUMBING SPECIALTY CODE.

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THIS IS AN ENGINEERED STORM DRAINAGE SYSTEM.

DOWNSPOUT NOTE:
CONNECT ALL ROOF DRAIN DOWNSPOUTS TO PIPED STORM DRAIN SYSTEM WITH MANUFACTURED FITTING PER CURRENT STATE OF OREGON PLUMBING SPECIALTY CODE.

ATTENTION
CONTRACTOR SHALL POTHOLE EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION. REPORT FINDINGS TO ENGINEER.

PLAN REVISIONS	DATE

Sheet C302

SCALE: SEE BARSCALE

CLIENT:
LBHA/
CLAYTON MEADOWS LLC
1250 SE QUEEN AVE
ALBANY, OREGON 97322

UDELL ENGINEERING AND LAND SURVEYING, LLC
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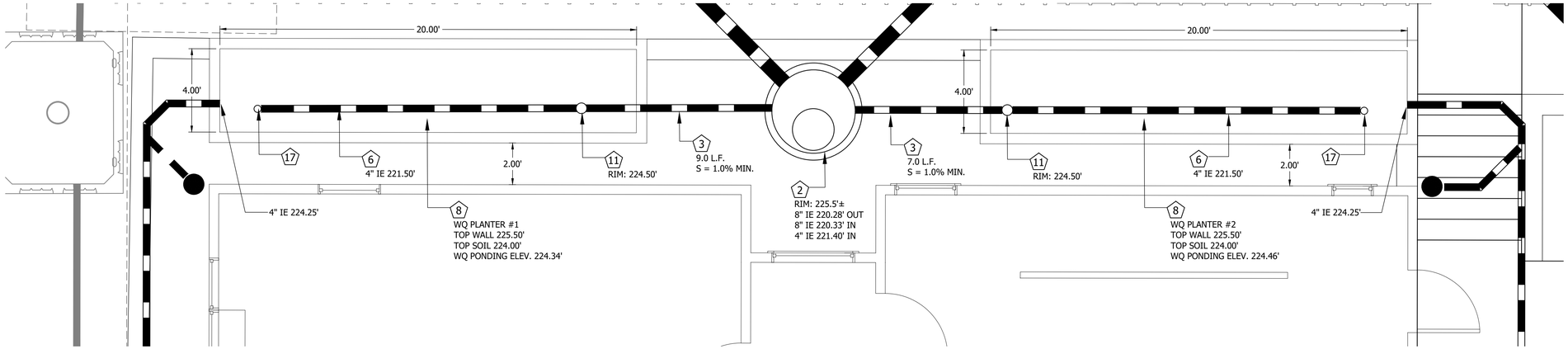
LEBANON, OREGON 97355
(541) 451-5125 PH.
(541) 451-1366 FAX

PRELIMINARY DRAINAGE PLAN SOUTH

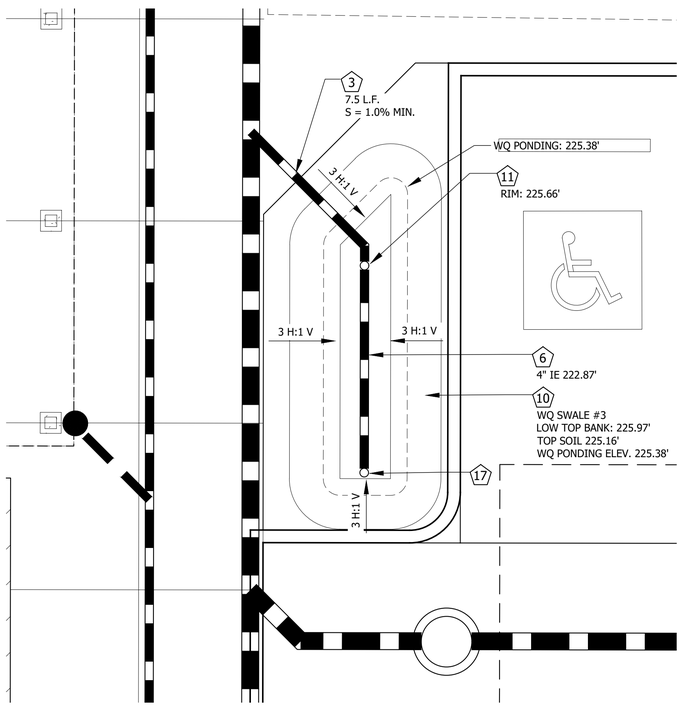
VALOR PLACE APARTMENTS
2080 QUEEN AVE SE
ALBANY, OREGON

DATE: MARCH 9, 2024
PROJECT: 23-078 LBHA QUEEN AVE
DRAWN BY: BSV, MLM
CHECKED BY: BSV



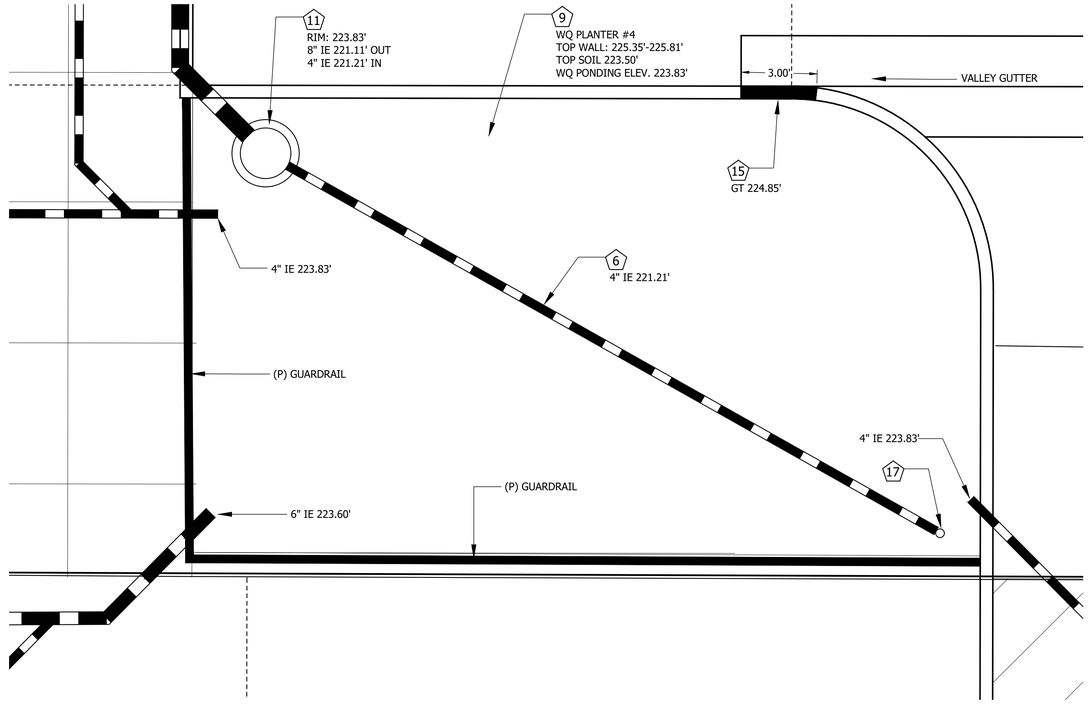
1 C303 **WATER QUALITY PLANTER #1 AND #2 DETAILING**

NTS



2 C303 **WATER QUALITY SWALE #3 DETAILING**

NTS



3 C303 **WATER QUALITY PLANTER #4 DETAILING**

NTS

STORM DRAIN NOTES

1. CONNECT TO EXISTING PUBLIC CURB INLET. CORE DRILL TO ACCEPT A NEW 8" DIAMETER PIPE. GROUT VOIDS WITH NON-SHRINK GROUT.
2. INSTALL PRIVATE 48" DIAMETER CONCRETE FLOW CONTROL STORM DRAIN MANHOLE PER DETAIL (1/C600)
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10. CONSTRUCT WATER QUALITY SWALE (NO LINER) PER CITY OF ALBANY STANDARDS AND DETAIL (5/C600)
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13. INSTALL PRIVATE STEEL CATCH BASIN PER DETAIL (1/C601)
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15. INSTALL DRAINAGE CURB OPENING PER DETAIL (3/C601)
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18. INSTALL PRIVATE 18-INCH POLY LANDSCAPE AREA DRAIN TO CAPTURE YARD SURFACE DRAINAGE PER CURRENT STATE OF OREGON PLUMBING SPECIALTY CODE.

1 INCH
0 3'

CLIENT:
LBHA/
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PRELIMINARY DRAINAGE DETAILS

VALOR PLACE APARTMENTS
2080 QUEEN AVE SE
ALBANY, OREGON

DATE: MARCH 8, 2024
PROJECT: 23-078 LBHA QUEEN AVE
DRAWN BY: BSV, MLM
CHECKED BY: BSV

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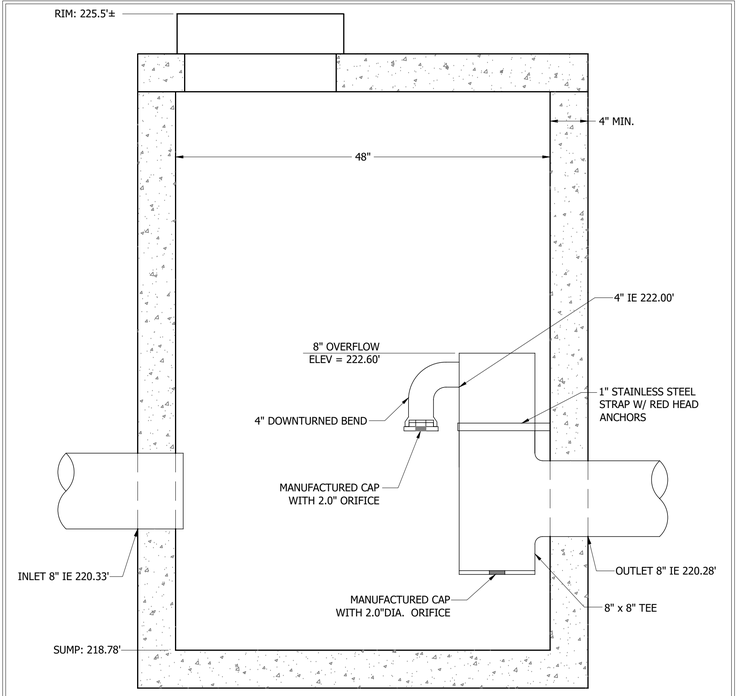
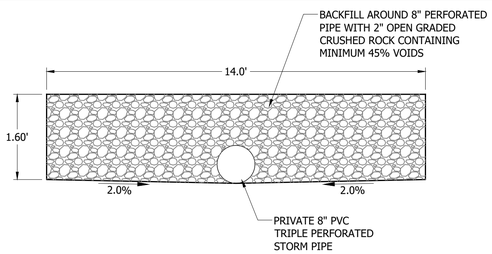
PLAN REVISIONS	DATE

Sheet C303

SCALE: SEE BARSCALE



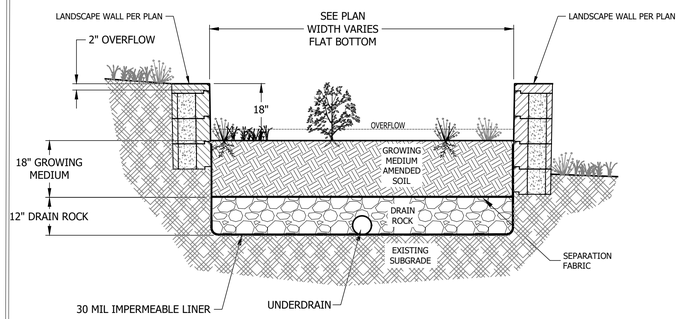
1 C600 FLOW CONTROL MANHOLE
NTS



2 C600 DETENTION SYSTEM TYPICAL SECTION
NTS

SWALE SOIL AMENDMENT: THE GROWING MEDIUM SHALL BE AN AMENDED SOIL PER THE STANDARDS IN THE CITY OF ALBANY ENGINEERING STORMWATER STANDARDS.

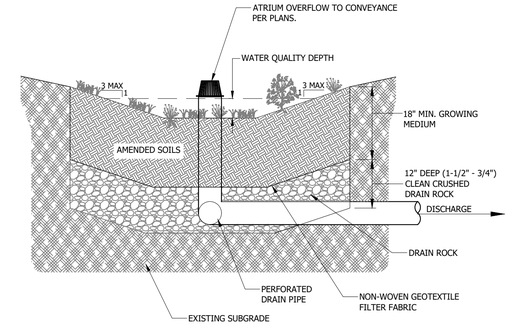
SWALE PLANTING: THE SWALES SHALL BE PLANTED PER STANDARDS IN THE CITY OF ALBANY ENGINEERING STORMWATER STANDARDS.



3 C600 TYPICAL WATER QUALITY PLANTER CROSS SECTION W/ WALL
NTS

SWALE SOIL AMENDMENT: THE GROWING MEDIUM SHALL BE AN AMENDED SOIL PER THE STANDARDS IN THE CITY OF ALBANY ENGINEERING STORMWATER STANDARDS.

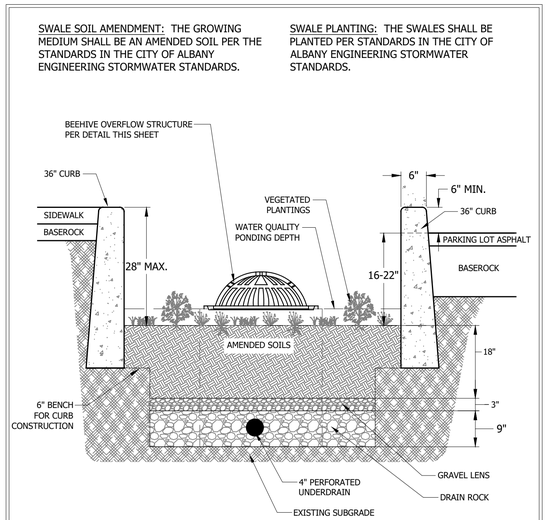
SWALE PLANTING: THE SWALES SHALL BE PLANTED PER STANDARDS IN THE CITY OF ALBANY ENGINEERING STORMWATER STANDARDS.



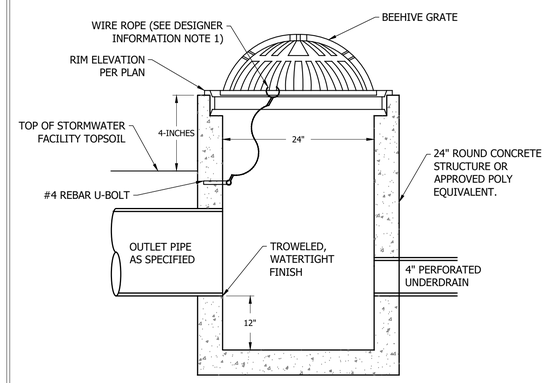
5 C600 TYPICAL VEGETATED WATER QUALITY SWALE SECTION
NTS

SWALE SOIL AMENDMENT: THE GROWING MEDIUM SHALL BE AN AMENDED SOIL PER THE STANDARDS IN THE CITY OF ALBANY ENGINEERING STORMWATER STANDARDS.

SWALE PLANTING: THE SWALES SHALL BE PLANTED PER STANDARDS IN THE CITY OF ALBANY ENGINEERING STORMWATER STANDARDS.



4 C600 TYPICAL VEGETATED WATER QUALITY PLANTER PARKING AREA PLANTER SECTION
NTS



DESIGNER INFORMATION

1. WIRE ROPE BETWEEN 1/8"-3/16" DIAMETER, STAINLESS STEEL, 7 STRANDS OF 19 WIRES.

6 C600 BEEHIVE OVERFLOW CATCH BASIN
NTS

CLIENT:
LBHA/
CLAYTON MEADOWS LLC
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(541) 451-5125 PH.
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DRAINAGE DETAILS

VALOR PLACE APARTMENTS
2080 QUEEN AVE SE
ALBANY, OREGON

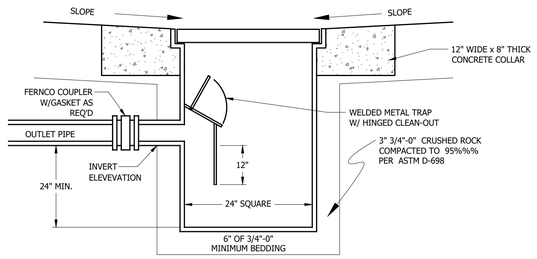
DATE: MARCH 9, 2024
PROJECT: 23-078 LBHA QUEEN AVE
DRAWN BY: BSV, MLM
CHECKED BY: BSV

THIS PLAN SET IS FOR PLANNING PURPOSES ONLY. NOT TO BE USED FOR CONSTRUCTION.

PLAN REVISIONS	DATE

Sheet C600

SCALE: SEE BARSCALE

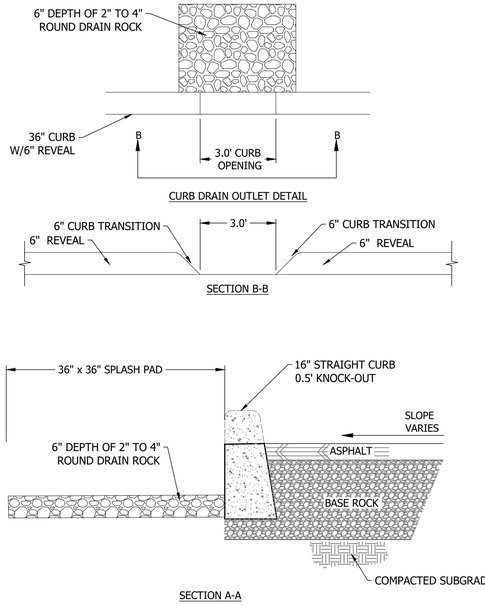


NOTES

1. THIS DRAWING PROVIDES BASIC REQUIREMENTS FOR PRIVATE CATCH BASIN CONSTRUCTION IN COMPLIANCE WITH SECTION 1408 OF THE UNIFORM PLUMBING CODE.
2. THE ABOVE DETAIL APPLIES FOR STEEL CATCH BASINS. CONCRETE IS ALSO AN APPROVED MATERIAL. SEE INTERNATIONAL CODE FOR DETAILS.
3. GRATES SHALL BE MADE OF APPROVED MATERIALS AND SHALL BE CAPABLE OF SUPPORTING THE ANTICIPATED LOAD. GRATE TO BE DESIGNED TO PREVENT BICYCLE WHEELS AND TIRES FROM BECOMING ENTRAPPED.

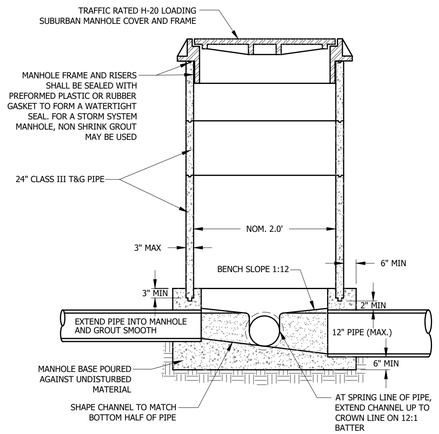
1 / C601 **24" STEEL CATCH BASIN**

NTS



3 / C601 DRAINAGE CURB OPENING DETAILS

NTS



NOTES:

1. ALL CONCRETE SHALL BE COMMERCIAL GRADE CONCRETE OF 4,000 PSI MINIMUM AT 28 DAYS.
2. CHANNELS SHALL BE CONSTRUCTED TO PROVIDE SMOOTH SLOPES AND RADII TO OUTLET.
3. PIPE CONNECTIONS SHALL BE GROUTED WITH NON-SHRINK GROUT.

2 / C601 **24" STORM DRAIN MANHOLE**

NTS

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PLAN REVISIONS	DATE

Sheet C601

SCALE: SEE BARSCALE

CLIENT:
LBHA/
CLAYTON MEADOWS LLC
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DRAINAGE DETAILS

VALOR PLACE APARTMENTS
2080 QUEEN AVE SE
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DATE: MARCH 9, 2024
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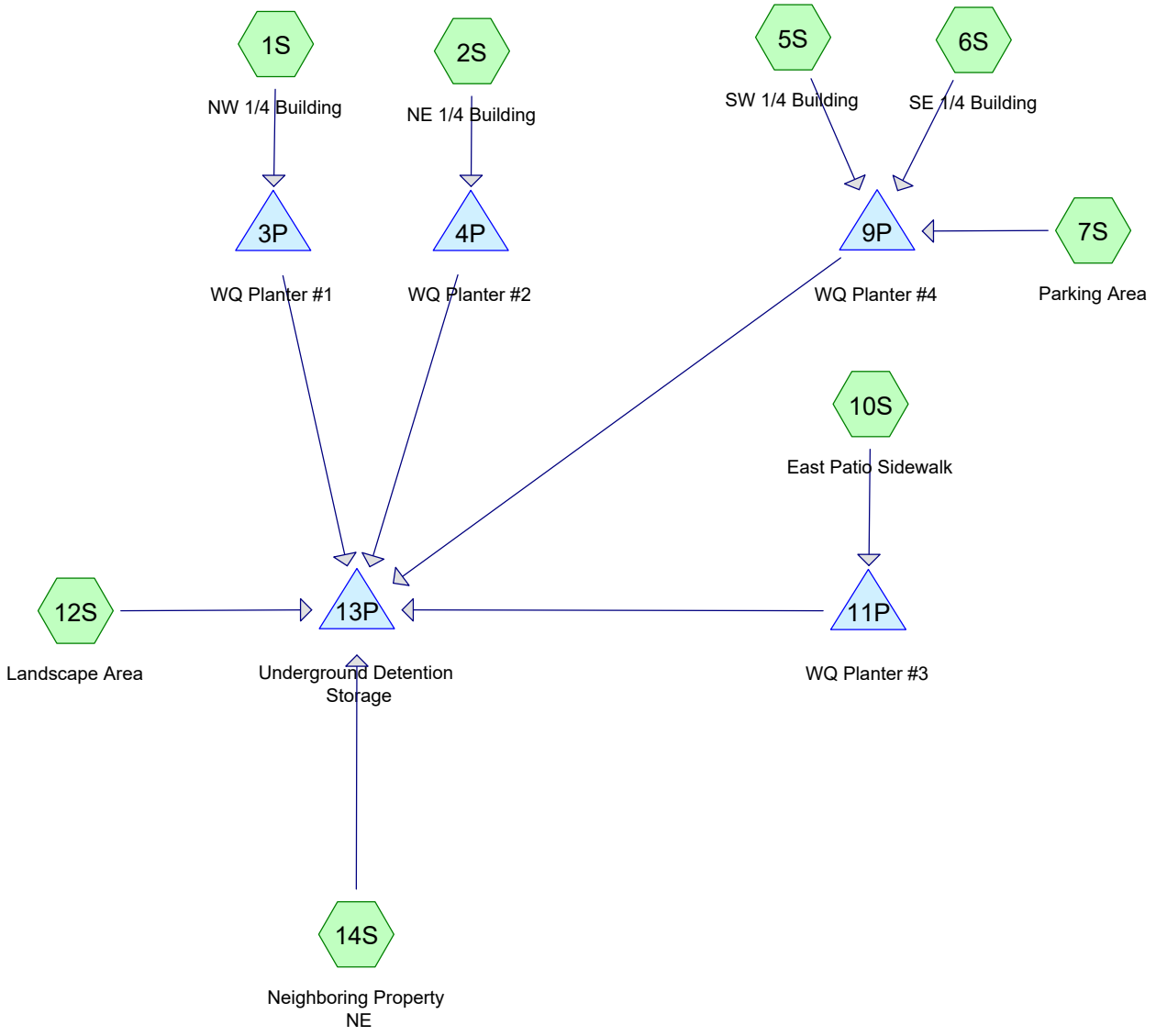


Subcat Reach Pond Link

Routing Diagram for 23-078 LBHA Valor Place Apt Post Dev Model

Prepared by Udell Engineering and Land Surveying, LLC, Printed 3/6/2024

HydroCAD® 10.00-22 s/n 05283 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
4,245	74	>75% Grass cover, Good, HSG C (12S)
4,677	80	>75% Grass cover, Good, HSG D (14S)
7,003	99	Paved parking, HSG D (7S)
1,371	99	REPLACED PARKING, HSG D (7S)
10,209	99	Roofs, HSG D (1S, 2S, 5S, 6S)
548	98	Roofs, HSG D (14S)
635	99	Unconnected pavement, HSG D (10S)

Soil Listing (all nodes)

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
4,245	HSG C	12S
24,443	HSG D	1S, 2S, 5S, 6S, 7S, 10S, 14S
0	Other	

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Su Nu
0	0	4,245	4,677	0	8,922	>75% Grass cover, Good	
0	0	0	7,003	0	7,003	Paved parking	
0	0	0	1,371	0	1,371	REPLACED PARKING	
0	0	0	10,757	0	10,757	Roofs	
0	0	0	635	0	635	Unconnected pavement	

Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: NW 1/4 Building Runoff Area=2,080 sf 100.00% Impervious Runoff Depth=1.131"
Tc=5.0 min CN=0/99 Runoff=0.014 cfs 196 cf

Subcatchment2S: NE 1/4 Building Runoff Area=2,633 sf 100.00% Impervious Runoff Depth=1.131"
Tc=5.0 min CN=0/99 Runoff=0.017 cfs 248 cf

Pond 3P: WQ Planter #1 Peak Elev=224.34' Storage=27 cf Inflow=0.014 cfs 196 cf
Outflow=0.004 cfs 196 cf

Pond 4P: WQ Planter #2 Peak Elev=224.46' Storage=40 cf Inflow=0.017 cfs 248 cf
Outflow=0.004 cfs 248 cf

Subcatchment5S: SW 1/4 Building Runoff Area=2,901 sf 100.00% Impervious Runoff Depth=1.131"
Tc=5.0 min CN=0/99 Runoff=0.019 cfs 274 cf

Subcatchment6S: SE 1/4 Building Runoff Area=2,595 sf 100.00% Impervious Runoff Depth=1.131"
Tc=5.0 min CN=0/99 Runoff=0.017 cfs 245 cf

Subcatchment7S: Parking Area Runoff Area=8,374 sf 100.00% Impervious Runoff Depth=1.131"
Tc=5.0 min CN=0/99 Runoff=0.055 cfs 790 cf

Pond 9P: WQ Planter #4 Peak Elev=223.81' Storage=172 cf Inflow=0.091 cfs 1,308 cf
Outflow=0.025 cfs 1,308 cf

Subcatchment10S: East Patio Sidewalk Runoff Area=635 sf 100.00% Impervious Runoff Depth=1.131"
Tc=5.0 min CN=0/99 Runoff=0.004 cfs 60 cf

Pond 11P: WQ Planter #3 Peak Elev=225.38' Storage=6 cf Inflow=0.004 cfs 60 cf
Outflow=0.002 cfs 60 cf

Subcatchment12S: Landscape Area Runoff Area=4,245 sf 0.00% Impervious Runoff Depth=0.073"
Flow Length=20' Slope=0.0250 '/' Tc=4.1 min CN=74/0 Runoff=0.001 cfs 26 cf

Pond 13P: Underground Detention Storage Peak Elev=221.11' Storage=3 cf Inflow=0.038 cfs 1,951 cf
Outflow=0.038 cfs 1,951 cf

Subcatchment14S: Neighboring Property Runoff Area=5,225 sf 10.49% Impervious Runoff Depth=0.261"
Flow Length=50' Slope=0.0050 '/' Tc=16.2 min CN=80/98 Runoff=0.003 cfs 114 cf

Summary for Subcatchment 1S: NW 1/4 Building

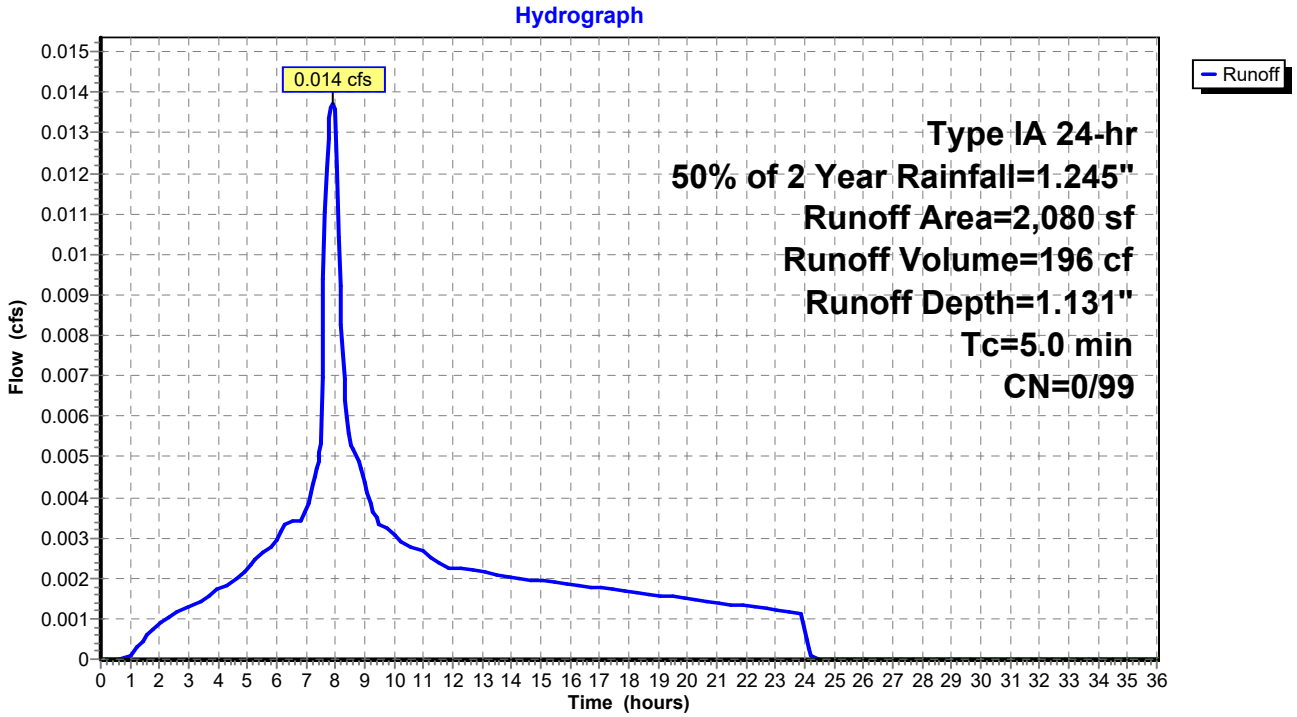
Runoff = 0.014 cfs @ 7.90 hrs, Volume= 196 cf, Depth= 1.131"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 50% of 2 Year Rainfall=1.245"

	Area (sf)	CN	Description
*	2,080	99	Roofs, HSG D
	2,080	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 1S: NW 1/4 Building



Summary for Subcatchment 2S: NE 1/4 Building

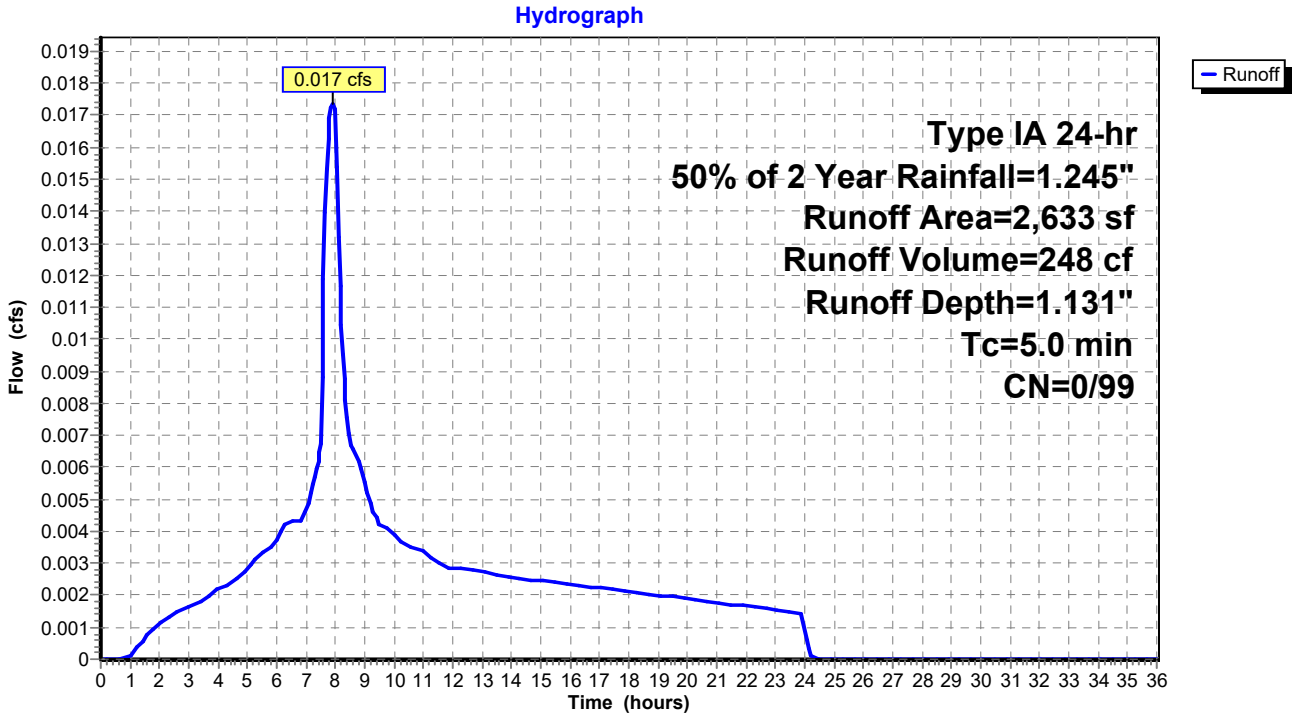
Runoff = 0.017 cfs @ 7.90 hrs, Volume= 248 cf, Depth= 1.131"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 50% of 2 Year Rainfall=1.245"

	Area (sf)	CN	Description
*	2,633	99	Roofs, HSG D
	2,633	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: NE 1/4 Building



Summary for Pond 3P: WQ Planter #1

Inflow Area = 2,080 sf,100.00% Impervious, Inflow Depth = 1.131" for 50% of 2 Year event
Inflow = 0.014 cfs @ 7.90 hrs, Volume= 196 cf
Outflow = 0.004 cfs @ 7.10 hrs, Volume= 196 cf, Atten= 73%, Lag= 0.0 min
Primary = 0.004 cfs @ 7.10 hrs, Volume= 196 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 224.34' @ 9.25 hrs Surf.Area= 80 sf Storage= 27 cf

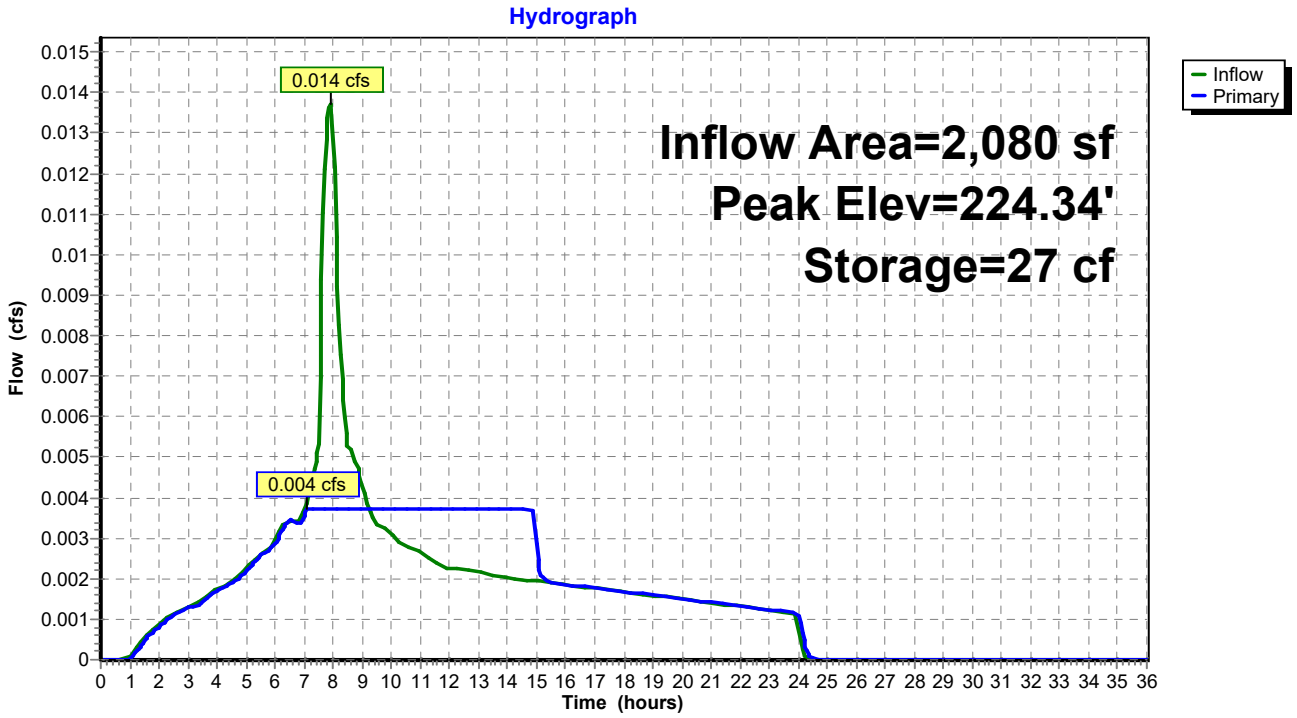
Plug-Flow detention time= 42.4 min calculated for 196 cf (100% of inflow)
Center-of-Mass det. time= 42.4 min (716.0 - 673.6)

Volume	Invert	Avail.Storage	Storage Description
#1	224.00'	120 cf	**4.00'W x 20.00'L x 1.50'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	224.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	225.00'	**4.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.004 cfs @ 7.10 hrs HW=224.02' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.004 cfs)
└─**2=Orifice/Grate** (Controls 0.000 cfs)

Pond 3P: WQ Planter #1



Summary for Pond 4P: WQ Planter #2

Inflow Area = 2,633 sf,100.00% Impervious, Inflow Depth = 1.131" for 50% of 2 Year event
Inflow = 0.017 cfs @ 7.90 hrs, Volume= 248 cf
Outflow = 0.004 cfs @ 6.30 hrs, Volume= 248 cf, Atten= 77%, Lag= 0.0 min
Primary = 0.004 cfs @ 6.30 hrs, Volume= 248 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 224.46' @ 9.80 hrs Surf.Area= 88 sf Storage= 40 cf

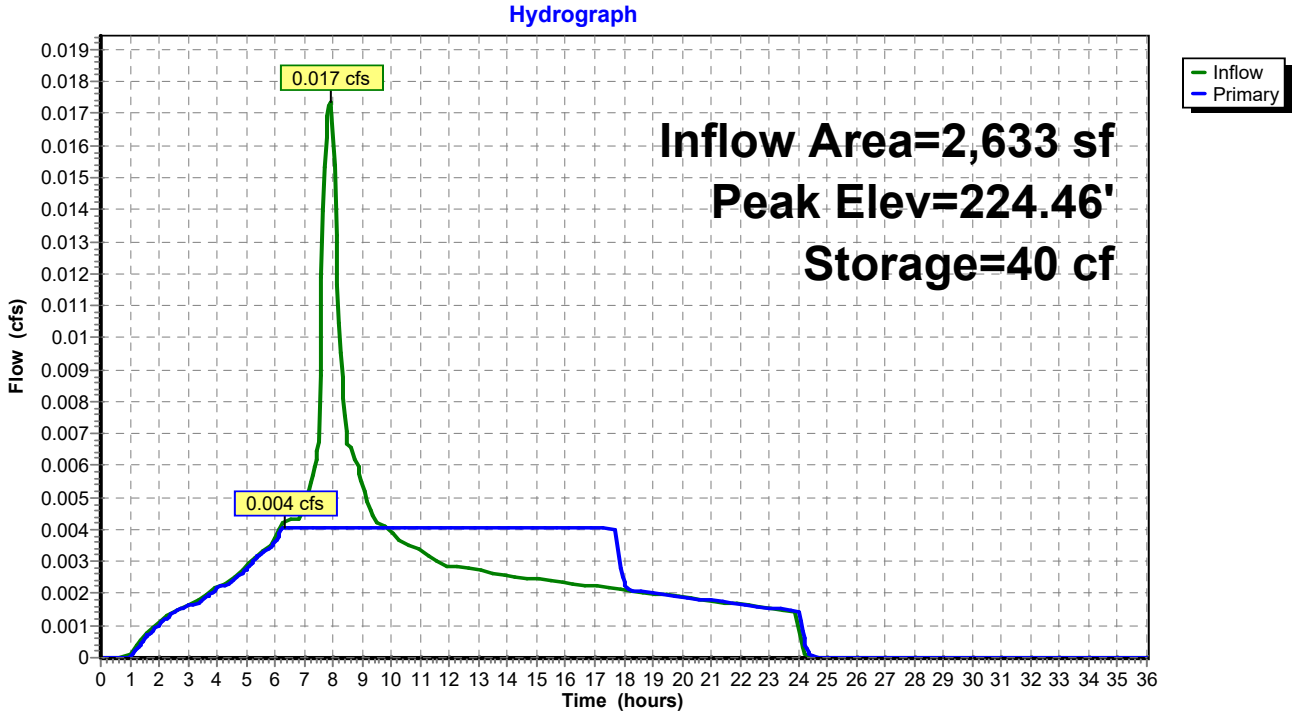
Plug-Flow detention time= 67.3 min calculated for 248 cf (100% of inflow)
Center-of-Mass det. time= 67.2 min (740.9 - 673.6)

Volume	Invert	Avail.Storage	Storage Description
#1	224.00'	132 cf	**4.00'W x 22.00'L x 1.50'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	224.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	225.00'	**4.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.004 cfs @ 6.30 hrs HW=224.02' (Free Discharge)
└─**1=Exfiltration** (Exfiltration Controls 0.004 cfs)
└─**2=Orifice/Grate** (Controls 0.000 cfs)

Pond 4P: WQ Planter #2



Summary for Subcatchment 5S: SW 1/4 Building

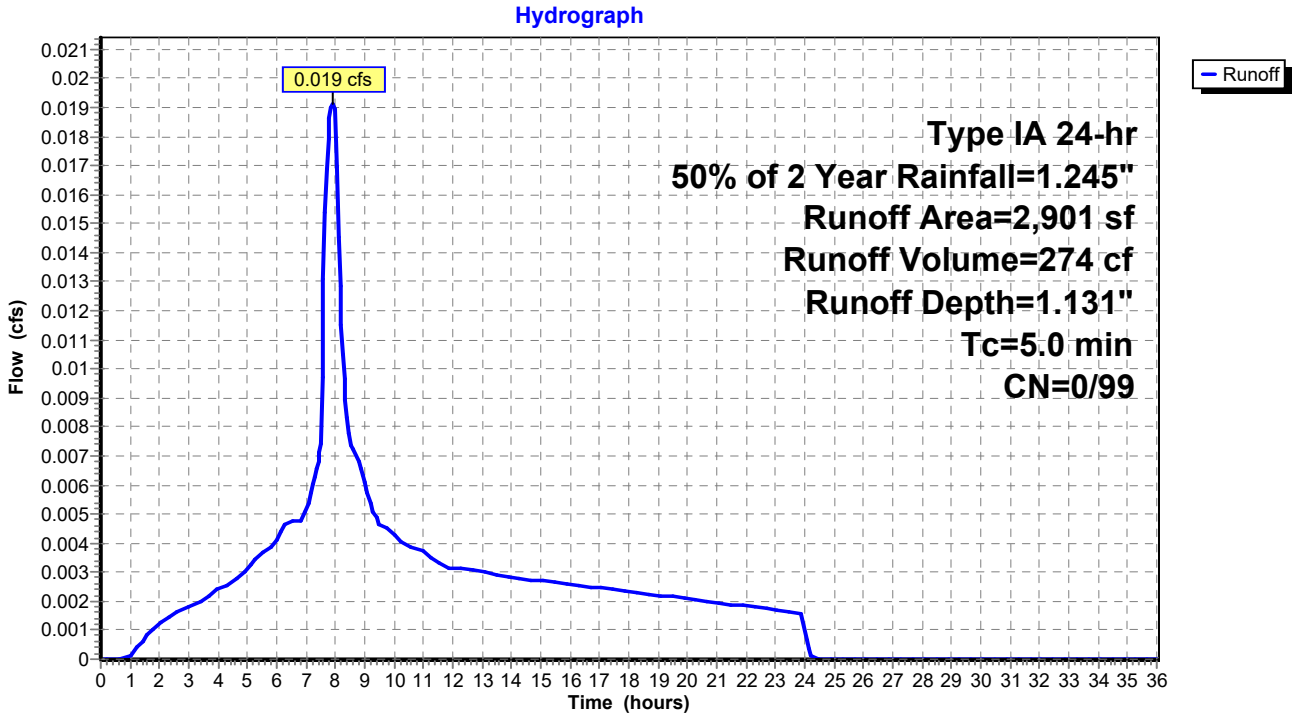
Runoff = 0.019 cfs @ 7.90 hrs, Volume= 274 cf, Depth= 1.131"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 50% of 2 Year Rainfall=1.245"

	Area (sf)	CN	Description
*	2,901	99	Roofs, HSG D
	2,901	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: SW 1/4 Building



Summary for Subcatchment 6S: SE 1/4 Building

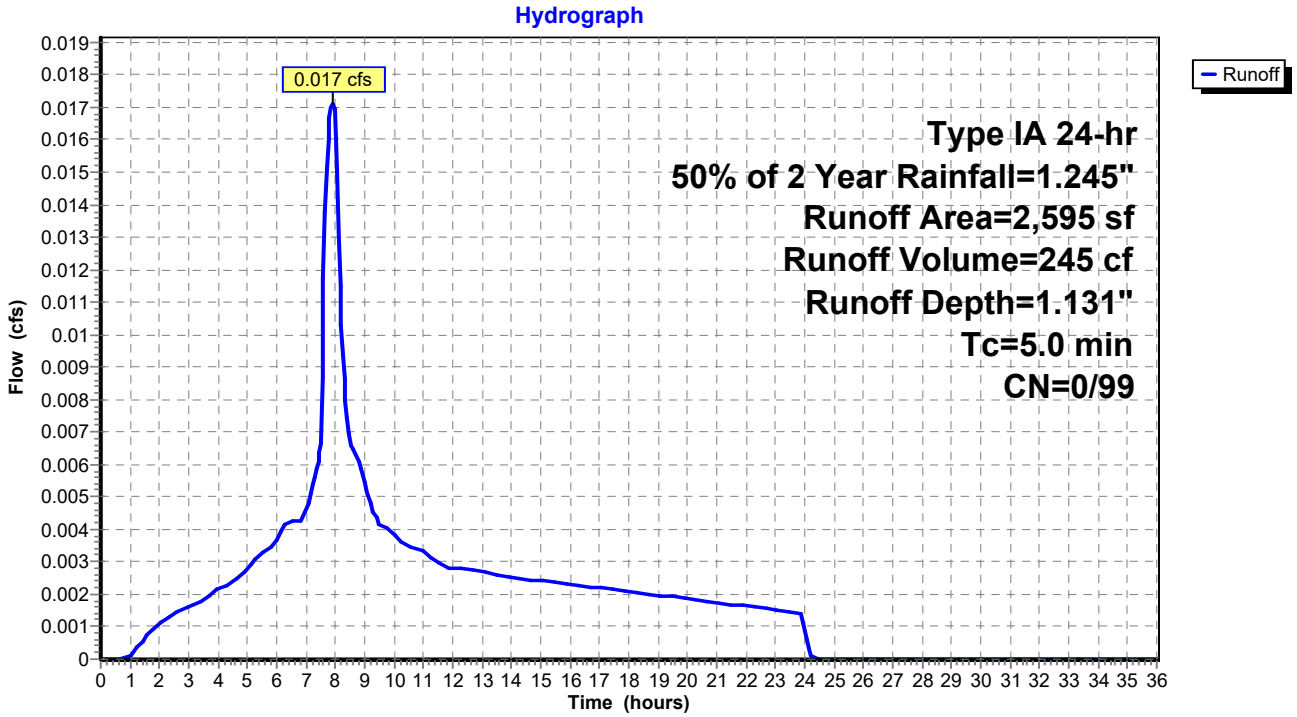
Runoff = 0.017 cfs @ 7.90 hrs, Volume= 245 cf, Depth= 1.131"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 50% of 2 Year Rainfall=1.245"

	Area (sf)	CN	Description
*	2,595	99	Roofs, HSG D
	2,595	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 6S: SE 1/4 Building



Summary for Subcatchment 7S: Parking Area

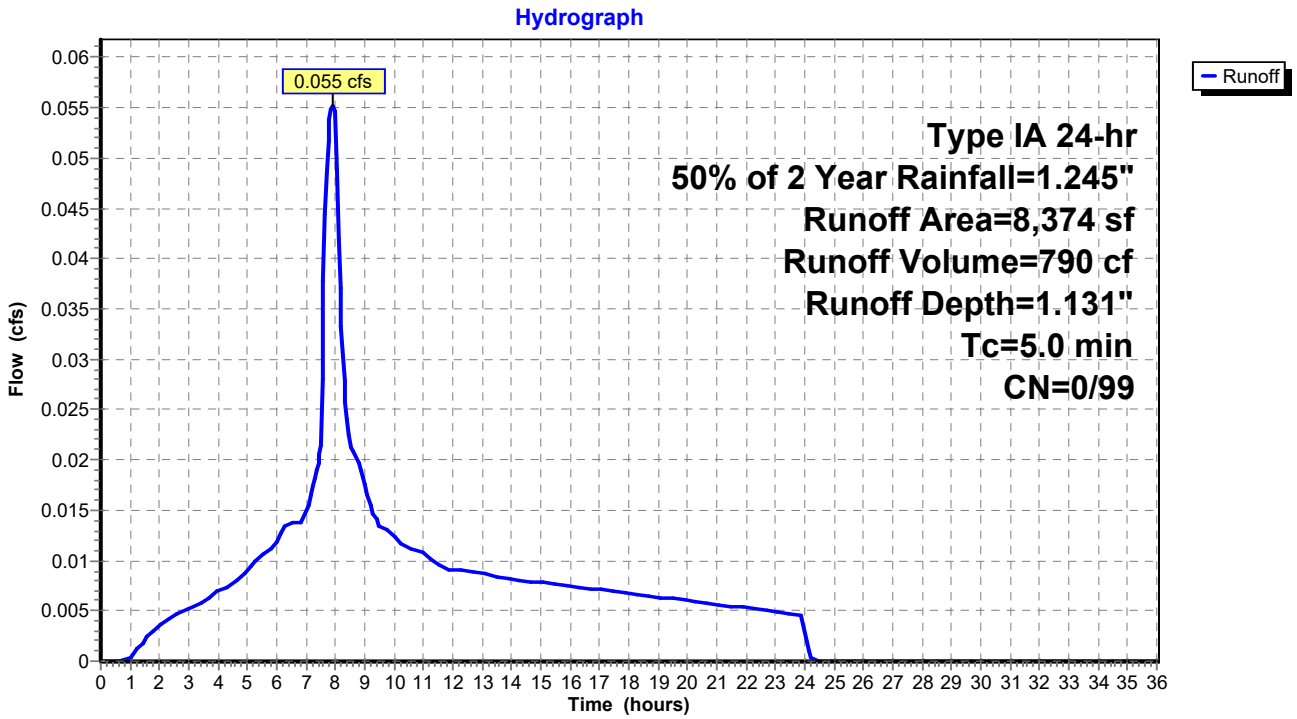
Runoff = 0.055 cfs @ 7.90 hrs, Volume= 790 cf, Depth= 1.131"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 50% of 2 Year Rainfall=1.245"

	Area (sf)	CN	Description
*	7,003	99	Paved parking, HSG D
*	1,371	99	REPLACED PARKING, HSG D
	8,374	99	Weighted Average
	8,374	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 7S: Parking Area



Summary for Pond 9P: WQ Planter #4

Inflow Area = 13,870 sf,100.00% Impervious, Inflow Depth = 1.131" for 50% of 2 Year event
Inflow = 0.091 cfs @ 7.90 hrs, Volume= 1,308 cf
Outflow = 0.025 cfs @ 7.15 hrs, Volume= 1,308 cf, Atten= 72%, Lag= 0.0 min
Primary = 0.025 cfs @ 7.15 hrs, Volume= 1,308 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 223.81' @ 9.19 hrs Surf.Area= 550 sf Storage= 172 cf

Plug-Flow detention time= 36.9 min calculated for 1,308 cf (100% of inflow)
Center-of-Mass det. time= 36.9 min (710.5 - 673.6)

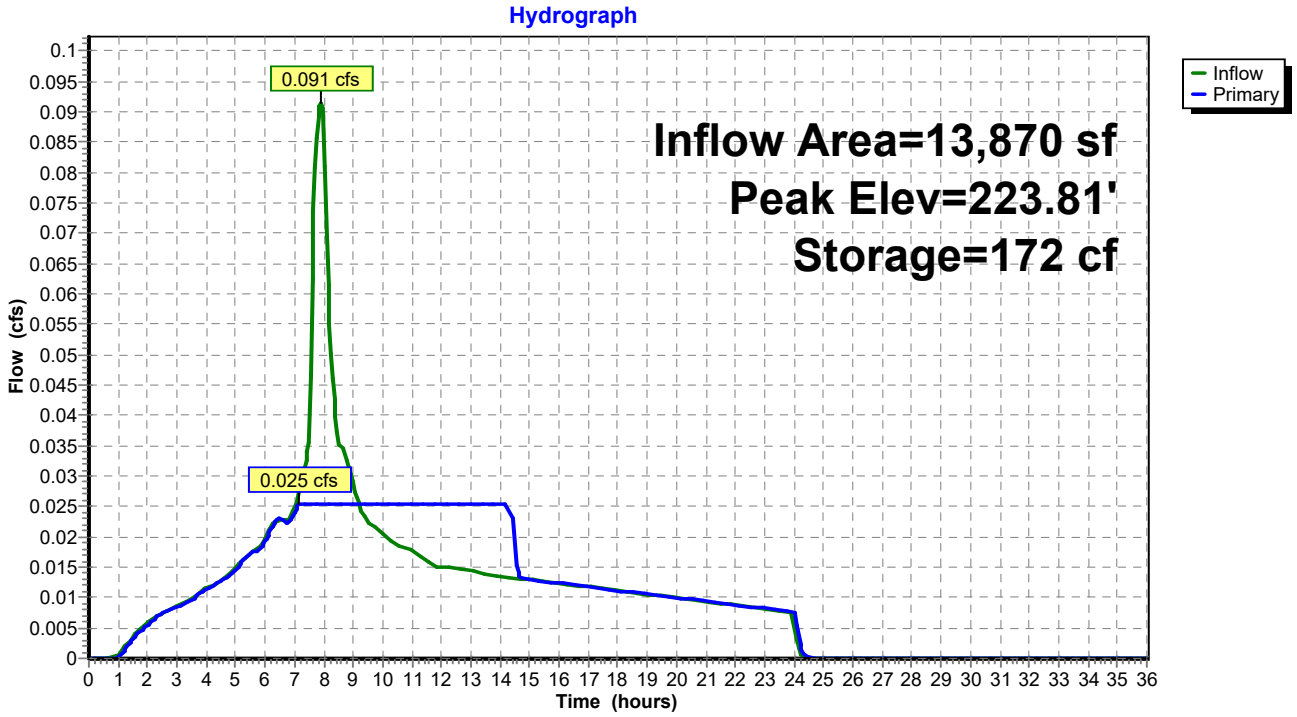
Volume	Invert	Avail.Storage	Storage Description
#1	223.50'	550 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
223.50	550	0	0
224.50	550	550	550

Device	Routing	Invert	Outlet Devices
#1	Primary	223.50'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	223.86'	**24.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.025 cfs @ 7.15 hrs HW=223.51' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.025 cfs)
└**2=Orifice/Grate** (Controls 0.000 cfs)

Pond 9P: WQ Planter #4



Summary for Subcatchment 10S: East Patio Sidewalk

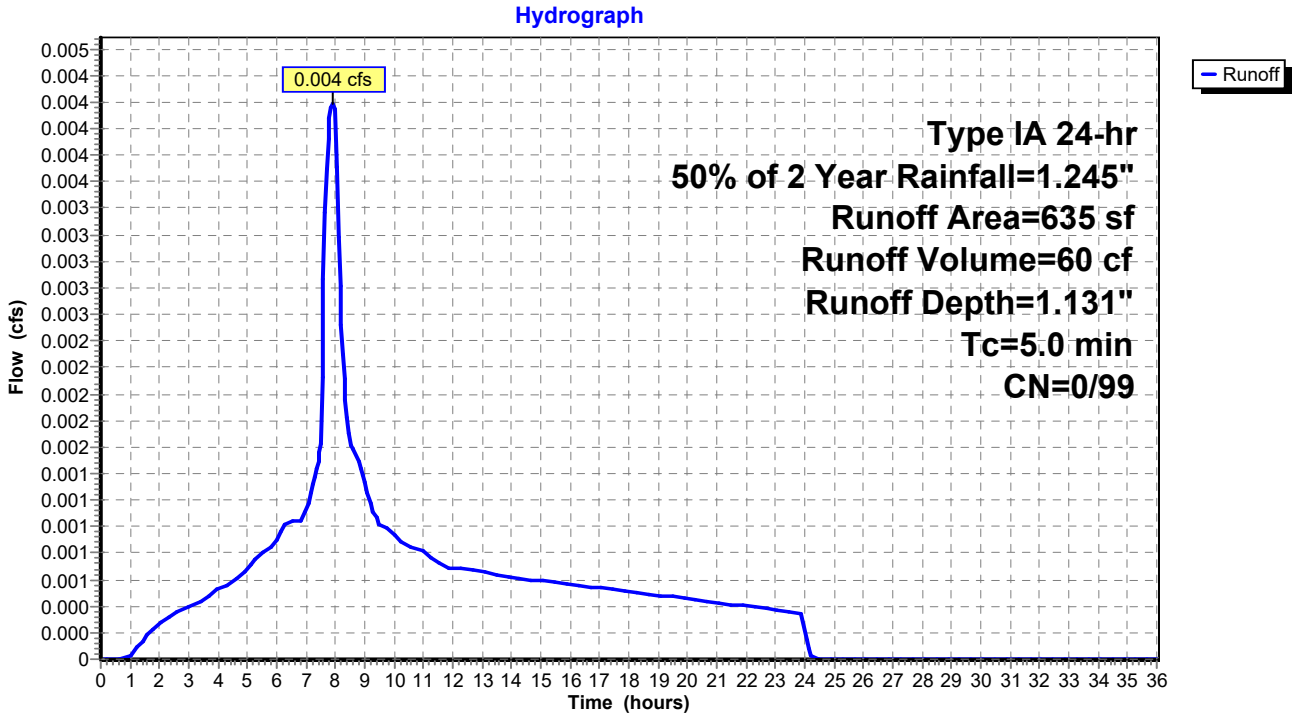
Runoff = 0.004 cfs @ 7.90 hrs, Volume= 60 cf, Depth= 1.131"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 50% of 2 Year Rainfall=1.245"

	Area (sf)	CN	Description
*	635	99	Unconnected pavement, HSG D
	635	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Developed Impervious**

Subcatchment 10S: East Patio Sidewalk



Summary for Pond 11P: WQ Planter #3

Inflow Area = 635 sf,100.00% Impervious, Inflow Depth = 1.131" for 50% of 2 Year event
Inflow = 0.004 cfs @ 7.90 hrs, Volume= 60 cf
Outflow = 0.002 cfs @ 8.44 hrs, Volume= 60 cf, Atten= 58%, Lag= 32.3 min
Primary = 0.002 cfs @ 8.44 hrs, Volume= 60 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 225.38' @ 8.44 hrs Surf.Area= 37 sf Storage= 6 cf

Plug-Flow detention time= 18.5 min calculated for 60 cf (100% of inflow)
Center-of-Mass det. time= 18.5 min (692.1 - 673.6)

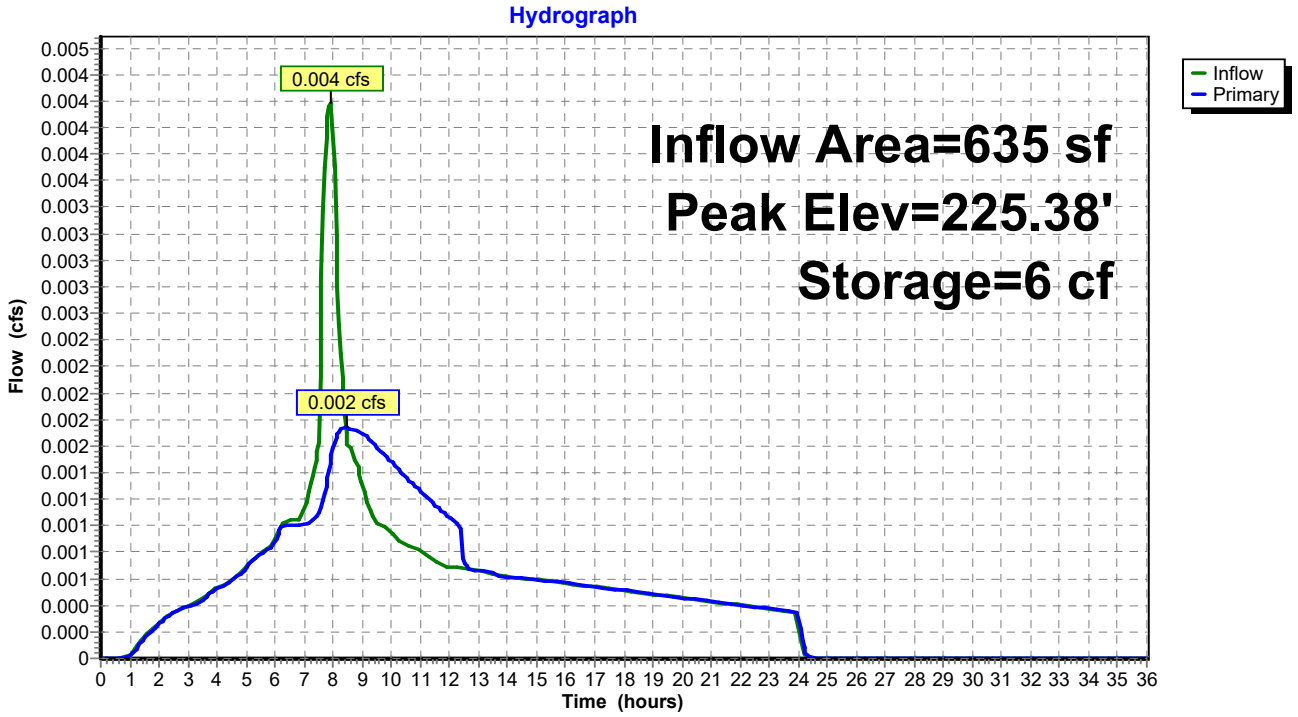
Volume	Invert	Avail.Storage	Storage Description
#1	225.16'	33 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
225.16	21	0	0	21
225.83	84	33	33	86

Device	Routing	Invert	Outlet Devices
#1	Primary	225.16'	**2.000 in/hr Exfiltration over Wetted area**
#2	Primary	225.66'	**4.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.002 cfs @ 8.44 hrs HW=225.38' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.002 cfs)
2=Orifice/Grate (Controls 0.000 cfs)

Pond 11P: WQ Planter #3



Summary for Subcatchment 12S: Landscape Area

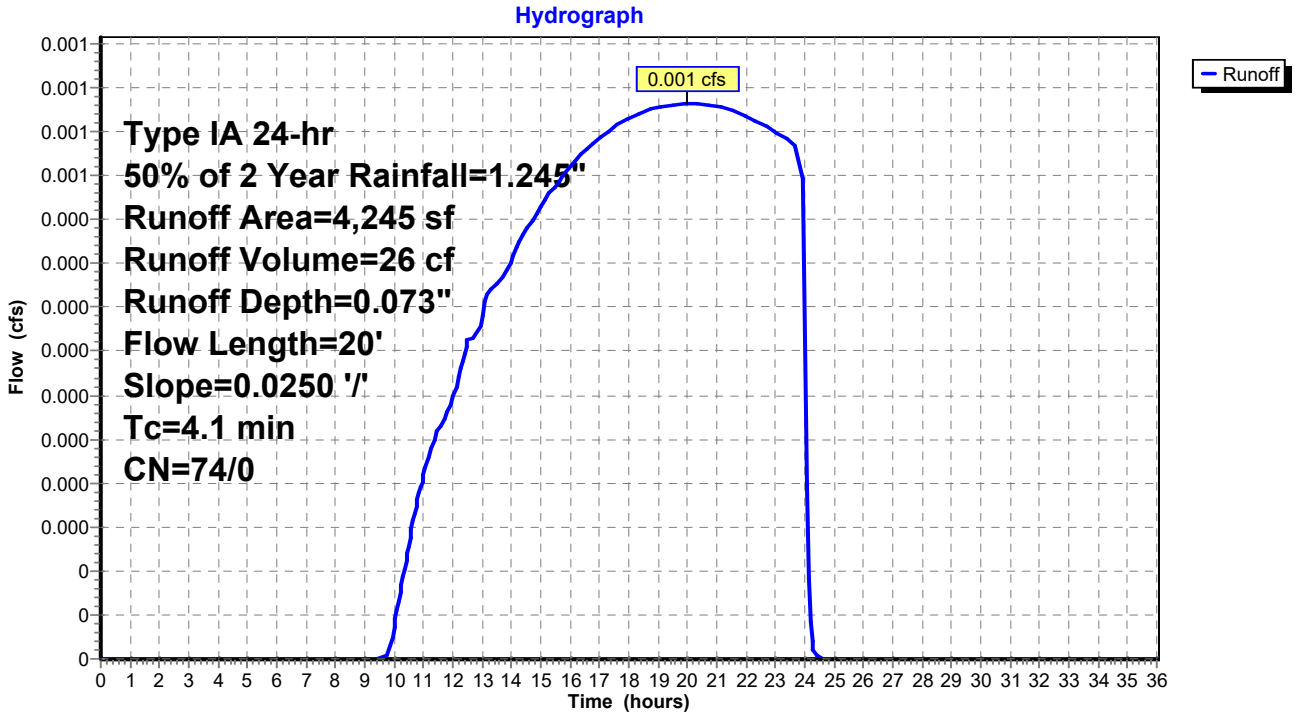
Runoff = 0.001 cfs @ 20.00 hrs, Volume= 26 cf, Depth= 0.073"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 50% of 2 Year Rainfall=1.245"

Area (sf)	CN	Description
4,245	74	>75% Grass cover, Good, HSG C
4,245	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	20	0.0250	0.08		**Sheet Flow, Developed Landscape Area** Grass: Dense n= 0.240 P2= 2.490"

Subcatchment 12S: Landscape Area



Summary for Pond 13P: Underground Detention Storage

Inflow Area = 28,688 sf, 68.90% Impervious, Inflow Depth = 0.816" for 50% of 2 Year event
Inflow = 0.038 cfs @ 8.06 hrs, Volume= 1,951 cf
Outflow = 0.038 cfs @ 8.10 hrs, Volume= 1,951 cf, Atten= 0%, Lag= 2.1 min
Primary = 0.038 cfs @ 8.10 hrs, Volume= 1,951 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 221.11' @ 8.10 hrs Surf.Area= 1,218 sf Storage= 3 cf

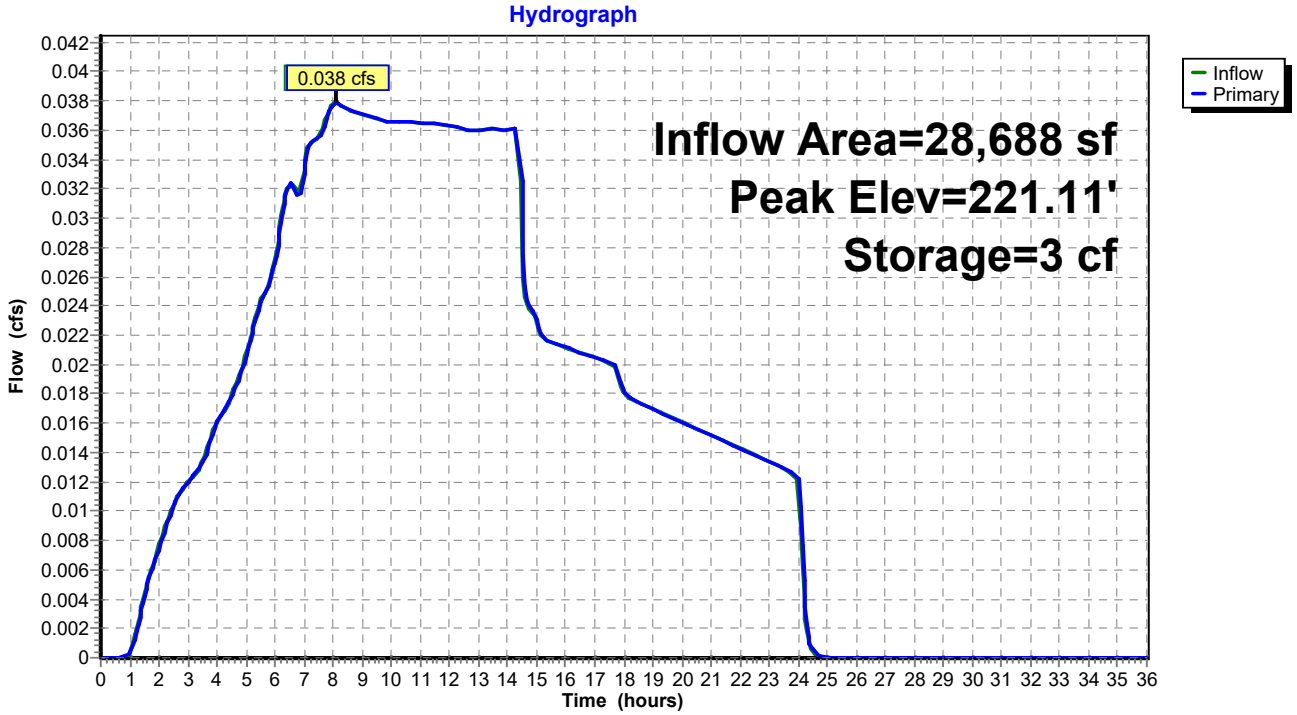
Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1.5 min (730.4 - 728.8)

Volume	Invert	Avail.Storage	Storage Description
#1	221.10'	877 cf	**14.00'W x 87.00'L x 1.60'H Prismatoid** 1,949 cf Overall x 45.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	220.28'	**2.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	222.00'	**2.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.095 cfs @ 8.10 hrs HW=221.11' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.095 cfs @ 4.38 fps)
└**2=Orifice/Grate** (Controls 0.000 cfs)

Pond 13P: Underground Detention Storage



Summary for Subcatchment 14S: Neighboring Property NE

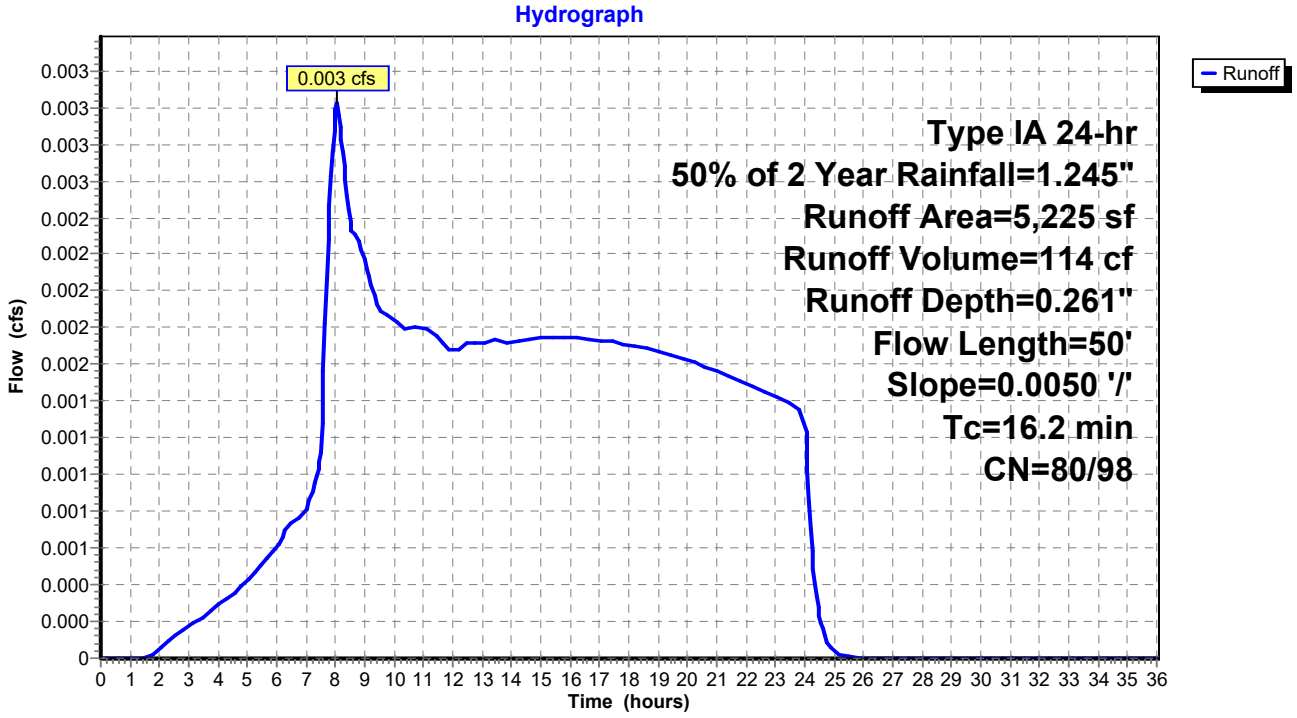
Runoff = 0.003 cfs @ 8.04 hrs, Volume= 114 cf, Depth= 0.261"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 50% of 2 Year Rainfall=1.245"

Area (sf)	CN	Description
4,677	80	>75% Grass cover, Good, HSG D
548	98	Roofs, HSG D
5,225	82	Weighted Average
4,677	80	89.51% Pervious Area
548	98	10.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	50	0.0050	0.05		**Sheet Flow, Neighbor's Yard** Grass: Dense n= 0.240 P2= 2.490"

Subcatchment 14S: Neighboring Property NE



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: NW 1/4 Building Runoff Area=2,080 sf 100.00% Impervious Runoff Depth=2.373"
Tc=5.0 min CN=0/99 Runoff=0.028 cfs 411 cf

Subcatchment2S: NE 1/4 Building Runoff Area=2,633 sf 100.00% Impervious Runoff Depth=2.373"
Tc=5.0 min CN=0/99 Runoff=0.036 cfs 521 cf

Pond 3P: WQ Planter #1 Peak Elev=225.02' Storage=82 cf Inflow=0.028 cfs 411 cf
Outflow=0.016 cfs 411 cf

Pond 4P: WQ Planter #2 Peak Elev=225.04' Storage=92 cf Inflow=0.036 cfs 521 cf
Outflow=0.036 cfs 521 cf

Subcatchment5S: SW 1/4 Building Runoff Area=2,901 sf 100.00% Impervious Runoff Depth=2.373"
Tc=5.0 min CN=0/99 Runoff=0.039 cfs 574 cf

Subcatchment6S: SE 1/4 Building Runoff Area=2,595 sf 100.00% Impervious Runoff Depth=2.373"
Tc=5.0 min CN=0/99 Runoff=0.035 cfs 513 cf

Subcatchment7S: Parking Area Runoff Area=8,374 sf 100.00% Impervious Runoff Depth=2.373"
Tc=5.0 min CN=0/99 Runoff=0.113 cfs 1,656 cf

Pond 9P: WQ Planter #4 Peak Elev=223.90' Storage=220 cf Inflow=0.187 cfs 2,743 cf
Outflow=0.187 cfs 2,743 cf

Subcatchment10S: East Patio Sidewalk Runoff Area=635 sf 100.00% Impervious Runoff Depth=2.373"
Tc=5.0 min CN=0/99 Runoff=0.009 cfs 126 cf

Pond 11P: WQ Planter #3 Peak Elev=225.66' Storage=20 cf Inflow=0.009 cfs 126 cf
Outflow=0.003 cfs 126 cf

Subcatchment12S: Landscape Area Runoff Area=4,245 sf 0.00% Impervious Runoff Depth=0.603"
Flow Length=20' Slope=0.0250 '/' Tc=4.1 min CN=74/0 Runoff=0.009 cfs 213 cf

Pond 13P: Underground Detention Storage Peak Elev=221.59' Storage=267 cf Inflow=0.255 cfs 4,460 cf
Outflow=0.120 cfs 4,460 cf

Subcatchment14S: Neighboring Property Runoff Area=5,225 sf 10.49% Impervious Runoff Depth=1.027"
Flow Length=50' Slope=0.0050 '/' Tc=16.2 min CN=80/98 Runoff=0.021 cfs 447 cf

Summary for Subcatchment 1S: NW 1/4 Building

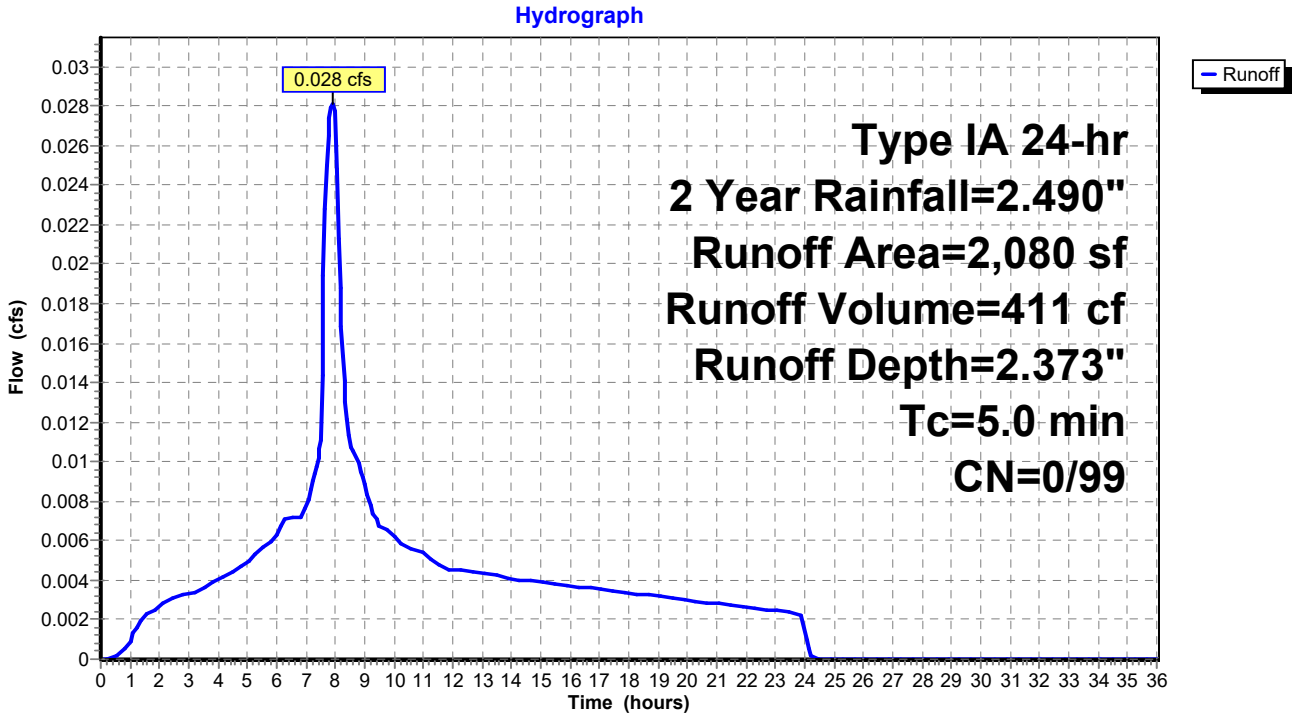
Runoff = 0.028 cfs @ 7.90 hrs, Volume= 411 cf, Depth= 2.373"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 2 Year Rainfall=2.490"

	Area (sf)	CN	Description
*	2,080	99	Roofs, HSG D
	2,080	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 1S: NW 1/4 Building



Summary for Subcatchment 2S: NE 1/4 Building

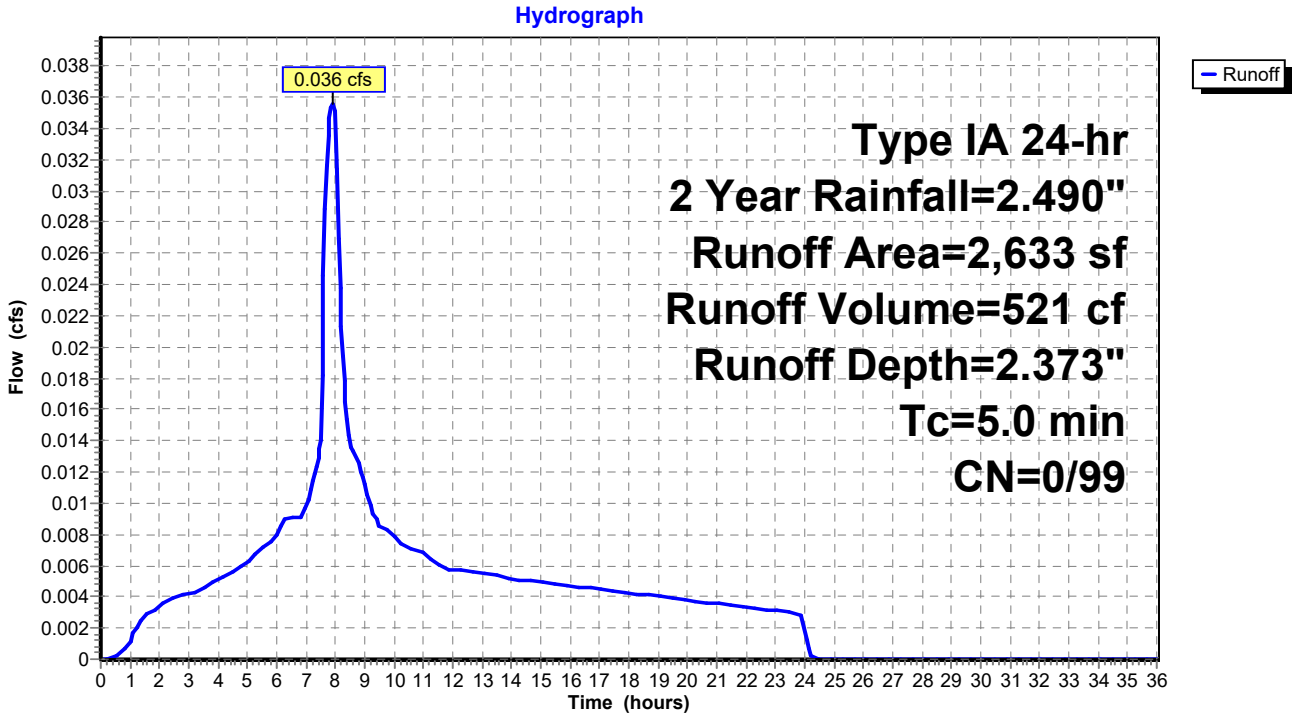
Runoff = 0.036 cfs @ 7.90 hrs, Volume= 521 cf, Depth= 2.373"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 2 Year Rainfall=2.490"

	Area (sf)	CN	Description
*	2,633	99	Roofs, HSG D
	2,633	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: NE 1/4 Building



Summary for Pond 3P: WQ Planter #1

Inflow Area = 2,080 sf,100.00% Impervious, Inflow Depth = 2.373" for 2 Year event
Inflow = 0.028 cfs @ 7.90 hrs, Volume= 411 cf
Outflow = 0.016 cfs @ 8.26 hrs, Volume= 411 cf, Atten= 43%, Lag= 22.1 min
Primary = 0.016 cfs @ 8.26 hrs, Volume= 411 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 225.02' @ 8.26 hrs Surf.Area= 80 sf Storage= 82 cf

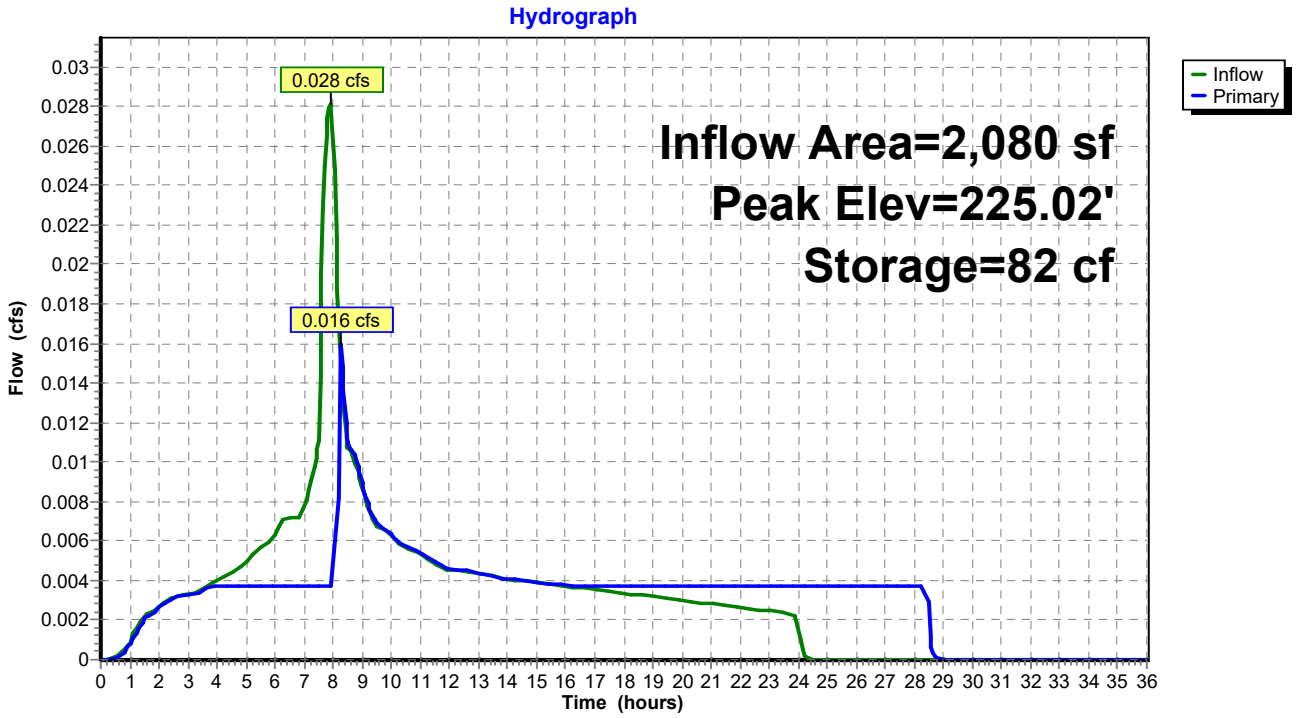
Plug-Flow detention time= 209.1 min calculated for 411 cf (100% of inflow)
Center-of-Mass det. time= 209.2 min (865.0 - 655.8)

Volume	Invert	Avail.Storage	Storage Description
#1	224.00'	120 cf	**4.00'W x 20.00'L x 1.50'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	224.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	225.00'	**4.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.015 cfs @ 8.26 hrs HW=225.02' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.004 cfs)
└**2=Orifice/Grate** (Weir Controls 0.012 cfs @ 0.49 fps)

Pond 3P: WQ Planter #1



Summary for Pond 4P: WQ Planter #2

Inflow Area = 2,633 sf,100.00% Impervious, Inflow Depth = 2.373" for 2 Year event
Inflow = 0.036 cfs @ 7.90 hrs, Volume= 521 cf
Outflow = 0.036 cfs @ 8.02 hrs, Volume= 521 cf, Atten= 0%, Lag= 7.4 min
Primary = 0.036 cfs @ 8.02 hrs, Volume= 521 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 225.04' @ 8.02 hrs Surf.Area= 88 sf Storage= 92 cf

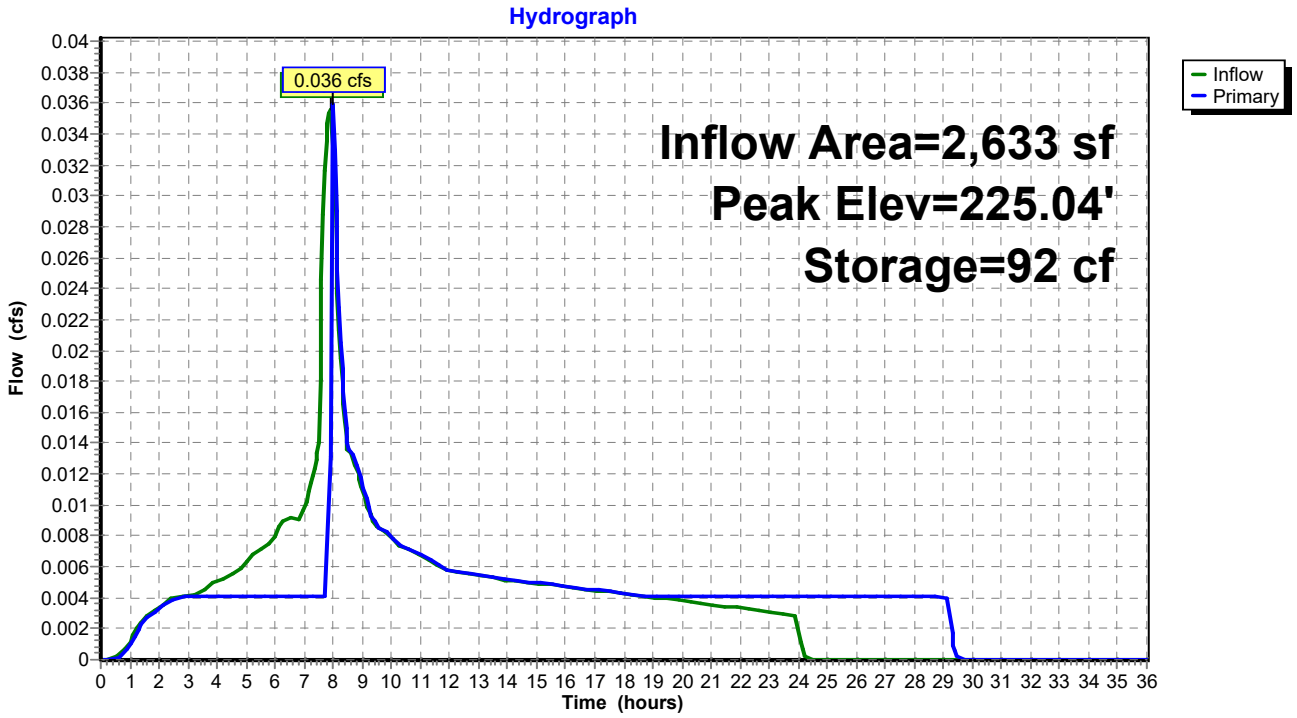
Plug-Flow detention time= 196.9 min calculated for 520 cf (100% of inflow)
Center-of-Mass det. time= 197.1 min (852.9 - 655.8)

Volume	Invert	Avail.Storage	Storage Description
#1	224.00'	132 cf	**4.00'W x 22.00'L x 1.50'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	224.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	225.00'	**4.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.034 cfs @ 8.02 hrs HW=225.04' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.004 cfs)
└**2=Orifice/Grate** (Weir Controls 0.030 cfs @ 0.67 fps)

Pond 4P: WQ Planter #2



Summary for Subcatchment 5S: SW 1/4 Building

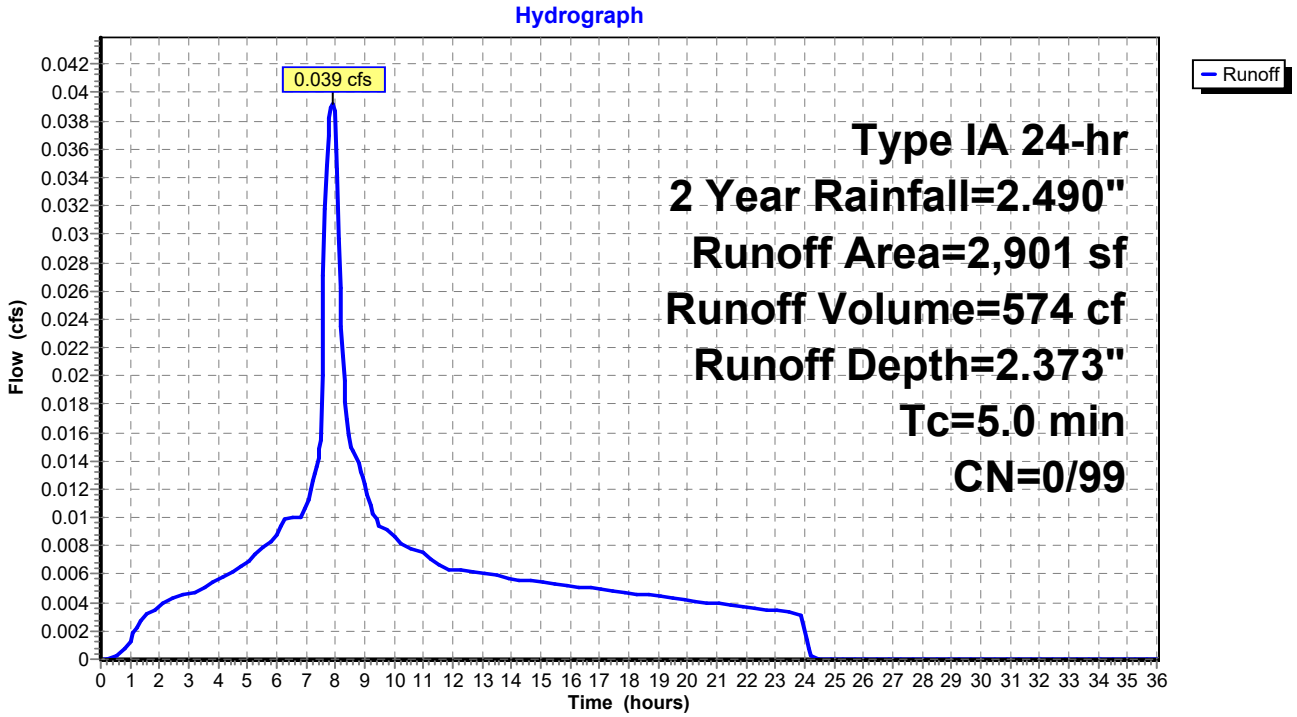
Runoff = 0.039 cfs @ 7.90 hrs, Volume= 574 cf, Depth= 2.373"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 2 Year Rainfall=2.490"

	Area (sf)	CN	Description
*	2,901	99	Roofs, HSG D
	2,901	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: SW 1/4 Building



Summary for Subcatchment 6S: SE 1/4 Building

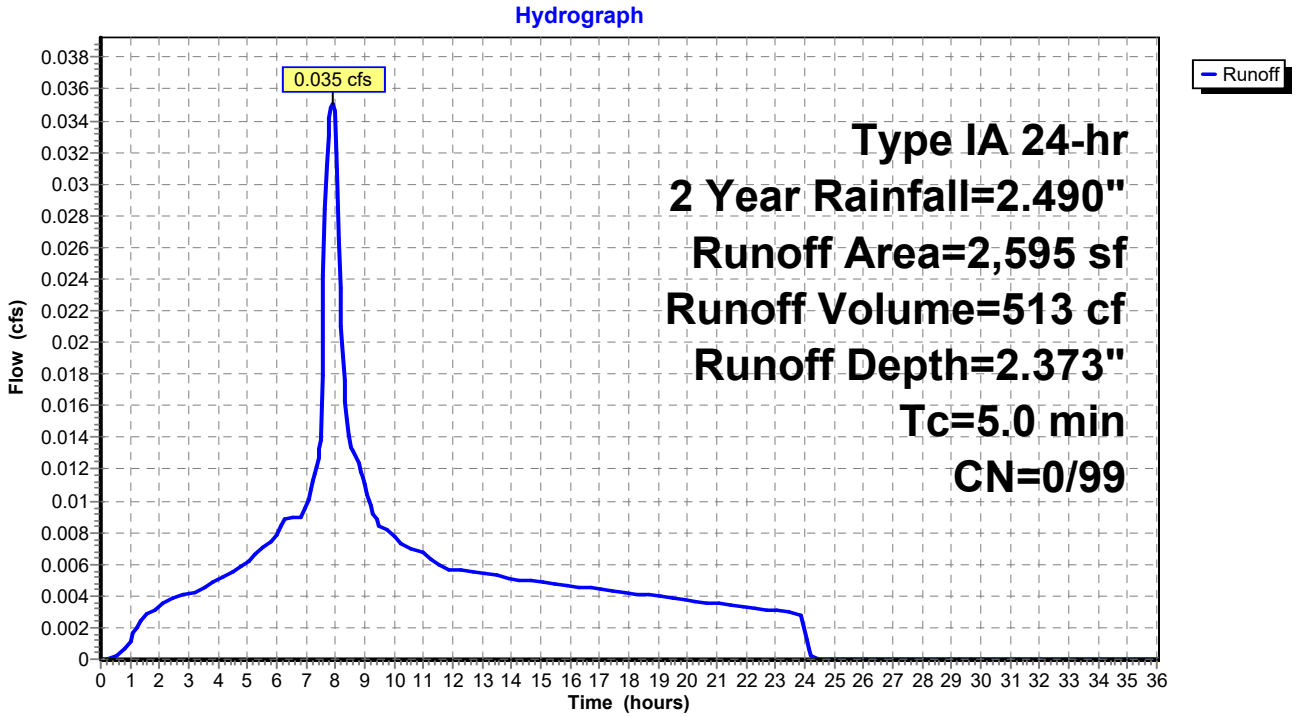
Runoff = 0.035 cfs @ 7.90 hrs, Volume= 513 cf, Depth= 2.373"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 2 Year Rainfall=2.490"

	Area (sf)	CN	Description
*	2,595	99	Roofs, HSG D
	2,595	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 6S: SE 1/4 Building



Summary for Subcatchment 7S: Parking Area

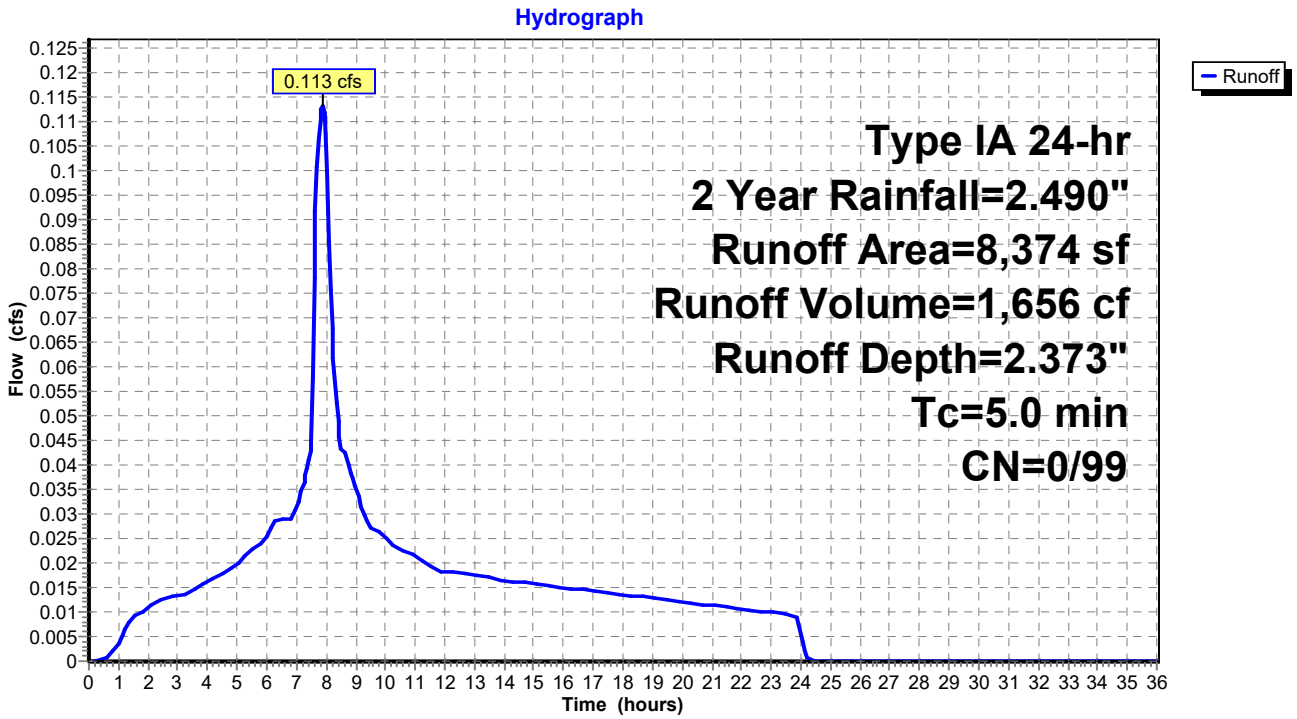
Runoff = 0.113 cfs @ 7.90 hrs, Volume= 1,656 cf, Depth= 2.373"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 2 Year Rainfall=2.490"

	Area (sf)	CN	Description
*	7,003	99	Paved parking, HSG D
*	1,371	99	REPLACED PARKING, HSG D
	8,374	99	Weighted Average
	8,374	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 7S: Parking Area



Summary for Pond 9P: WQ Planter #4

Inflow Area = 13,870 sf,100.00% Impervious, Inflow Depth = 2.373" for 2 Year event
Inflow = 0.187 cfs @ 7.90 hrs, Volume= 2,743 cf
Outflow = 0.187 cfs @ 7.92 hrs, Volume= 2,743 cf, Atten= 0%, Lag= 1.6 min
Primary = 0.187 cfs @ 7.92 hrs, Volume= 2,743 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 223.90' @ 7.92 hrs Surf.Area= 550 sf Storage= 220 cf

Plug-Flow detention time= 68.2 min calculated for 2,739 cf (100% of inflow)
Center-of-Mass det. time= 68.1 min (723.9 - 655.8)

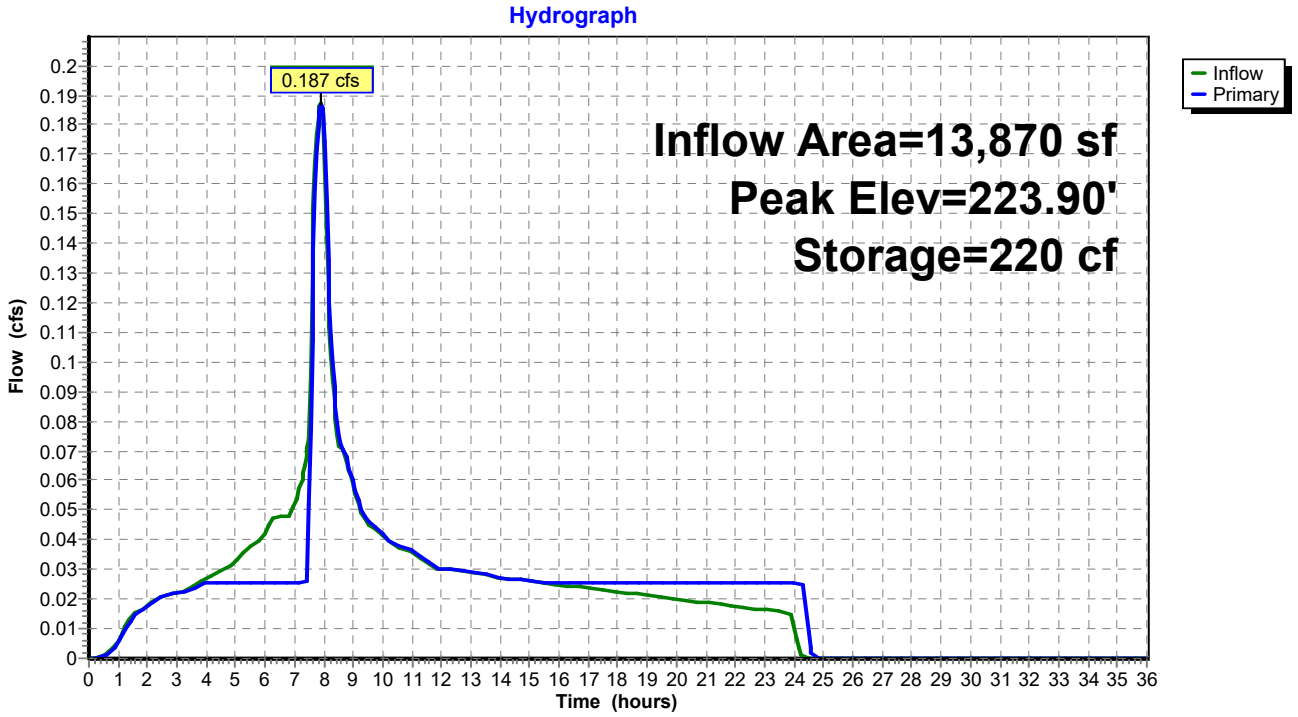
Volume	Invert	Avail.Storage	Storage Description
#1	223.50'	550 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
223.50	550	0	0
224.50	550	550	550

Device	Routing	Invert	Outlet Devices
#1	Primary	223.50'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	223.86'	**24.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.187 cfs @ 7.92 hrs HW=223.90' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.025 cfs)
└**2=Orifice/Grate** (Weir Controls 0.161 cfs @ 0.65 fps)

Pond 9P: WQ Planter #4



Summary for Subcatchment 10S: East Patio Sidewalk

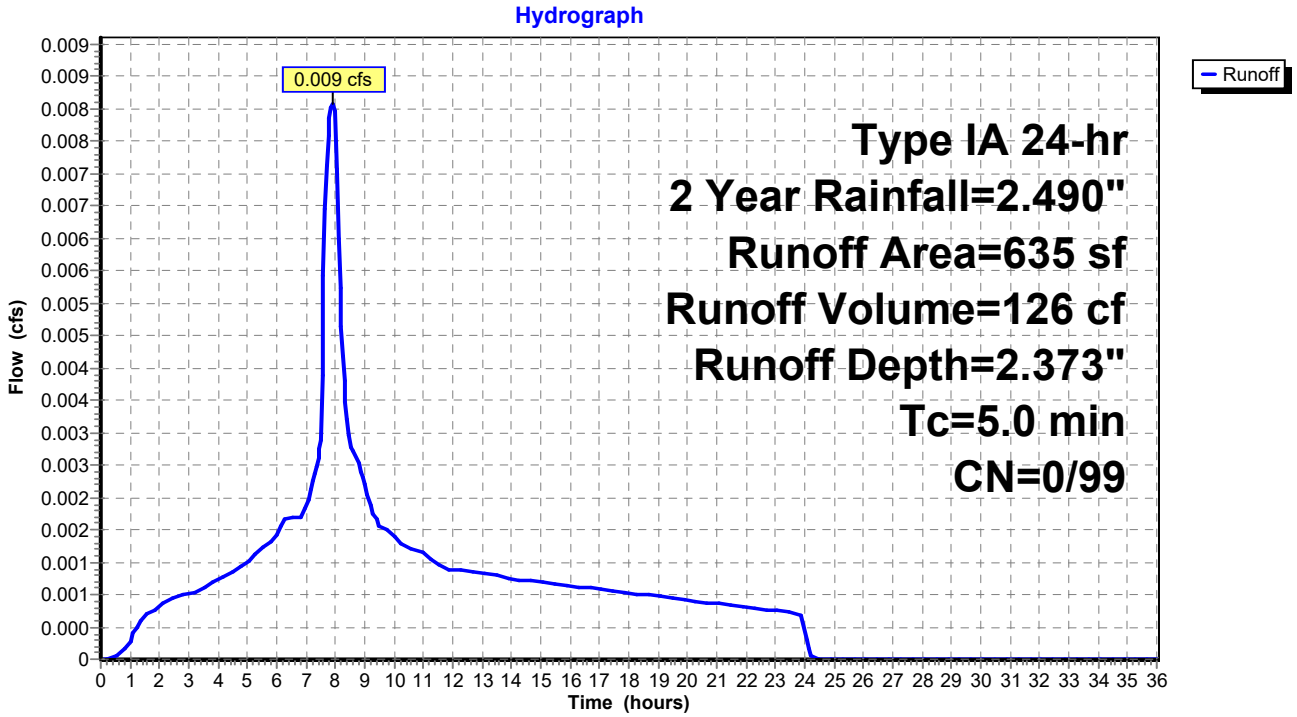
Runoff = 0.009 cfs @ 7.90 hrs, Volume= 126 cf, Depth= 2.373"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 2 Year Rainfall=2.490"

	Area (sf)	CN	Description
*	635	99	Unconnected pavement, HSG D
	635	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Developed Impervious**

Subcatchment 10S: East Patio Sidewalk



Summary for Pond 11P: WQ Planter #3

Inflow Area = 635 sf,100.00% Impervious, Inflow Depth = 2.373" for 2 Year event
Inflow = 0.009 cfs @ 7.90 hrs, Volume= 126 cf
Outflow = 0.003 cfs @ 8.67 hrs, Volume= 126 cf, Atten= 63%, Lag= 46.4 min
Primary = 0.003 cfs @ 8.67 hrs, Volume= 126 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 225.66' @ 8.67 hrs Surf.Area= 64 sf Storage= 20 cf

Plug-Flow detention time= 56.7 min calculated for 126 cf (100% of inflow)
Center-of-Mass det. time= 56.7 min (712.5 - 655.8)

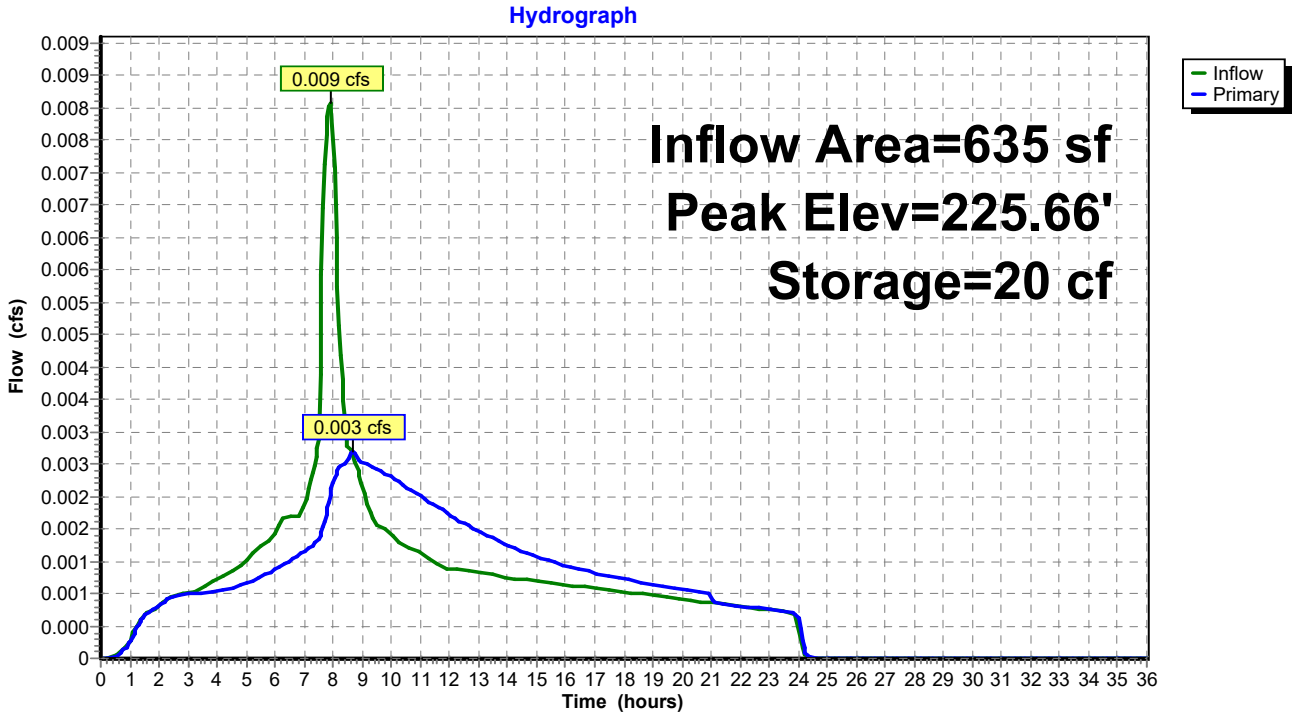
Volume	Invert	Avail.Storage	Storage Description
#1	225.16'	33 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
225.16	21	0	0	21
225.83	84	33	33	86

Device	Routing	Invert	Outlet Devices
#1	Primary	225.16'	**2.000 in/hr Exfiltration over Wetted area**
#2	Primary	225.66'	**4.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.003 cfs @ 8.67 hrs HW=225.66' (Free Discharge)
1=Exfiltration (Exfiltration Controls 0.003 cfs)
2=Orifice/Grate (Weir Controls 0.000 cfs @ 0.10 fps)

Pond 11P: WQ Planter #3



Summary for Subcatchment 12S: Landscape Area

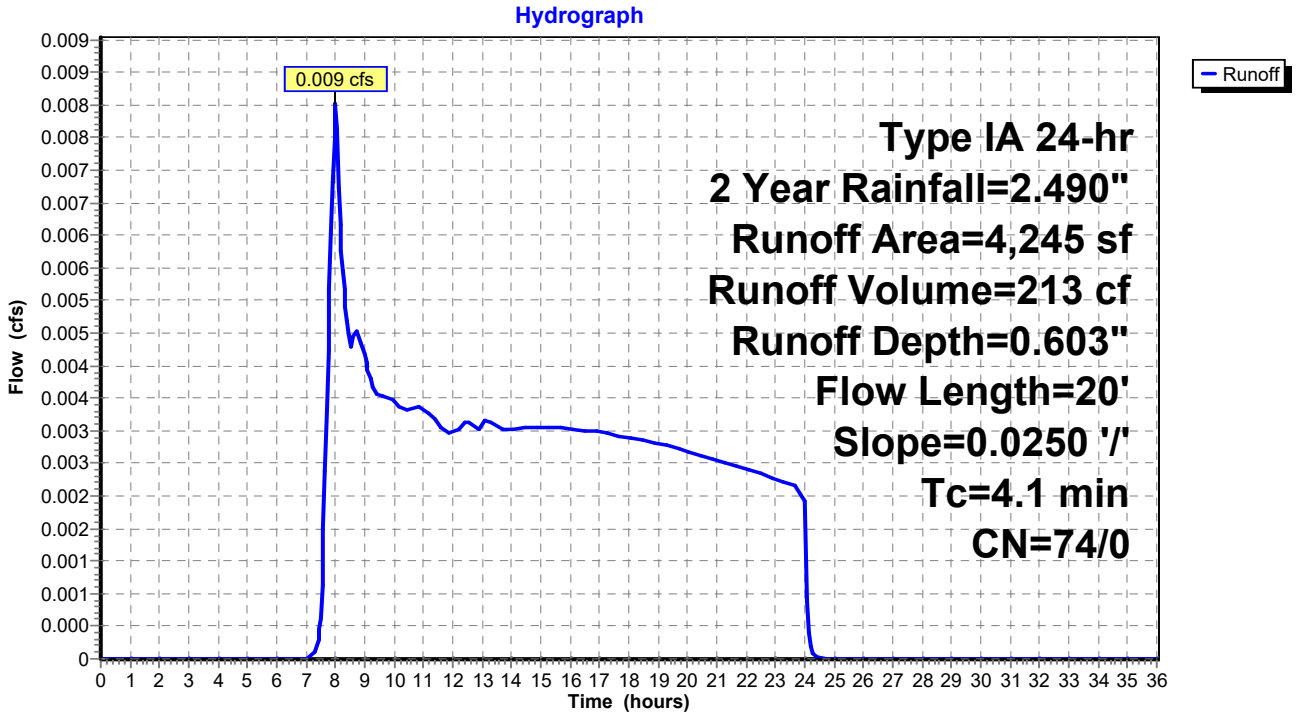
Runoff = 0.009 cfs @ 8.00 hrs, Volume= 213 cf, Depth= 0.603"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 2 Year Rainfall=2.490"

Area (sf)	CN	Description
4,245	74	>75% Grass cover, Good, HSG C
4,245	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	20	0.0250	0.08		**Sheet Flow, Developed Landscape Area** Grass: Dense n= 0.240 P2= 2.490"

Subcatchment 12S: Landscape Area



Summary for Pond 13P: Underground Detention Storage

Inflow Area = 28,688 sf, 68.90% Impervious, Inflow Depth = 1.866" for 2 Year event
Inflow = 0.255 cfs @ 8.00 hrs, Volume= 4,460 cf
Outflow = 0.120 cfs @ 8.54 hrs, Volume= 4,460 cf, Atten= 53%, Lag= 32.2 min
Primary = 0.120 cfs @ 8.54 hrs, Volume= 4,460 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 221.59' @ 8.54 hrs Surf.Area= 1,218 sf Storage= 267 cf

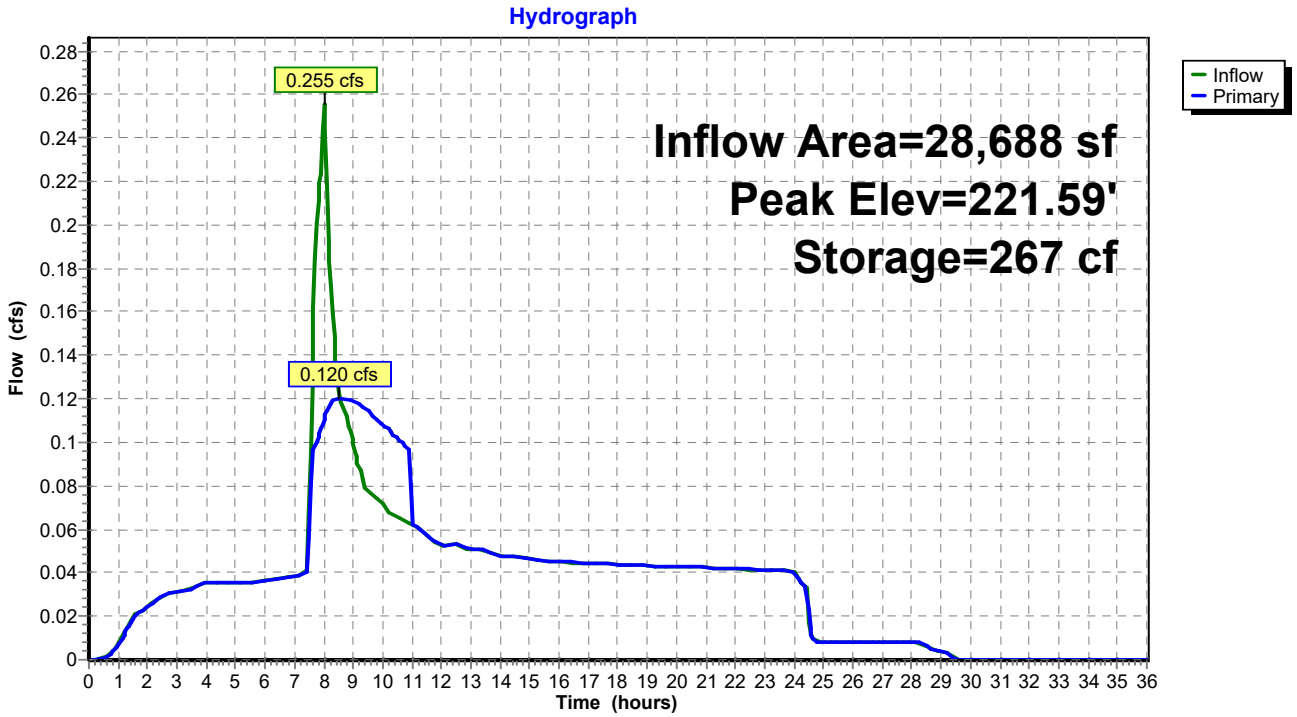
Plug-Flow detention time= 8.3 min calculated for 4,454 cf (100% of inflow)
Center-of-Mass det. time= 8.3 min (778.4 - 770.0)

Volume	Invert	Avail.Storage	Storage Description
#1	221.10'	877 cf	**14.00'W x 87.00'L x 1.60'H Prismatoid** 1,949 cf Overall x 45.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	220.28'	**2.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	222.00'	**2.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.120 cfs @ 8.54 hrs HW=221.59' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.120 cfs @ 5.50 fps)
└**2=Orifice/Grate** (Controls 0.000 cfs)

Pond 13P: Underground Detention Storage



Summary for Subcatchment 14S: Neighboring Property NE

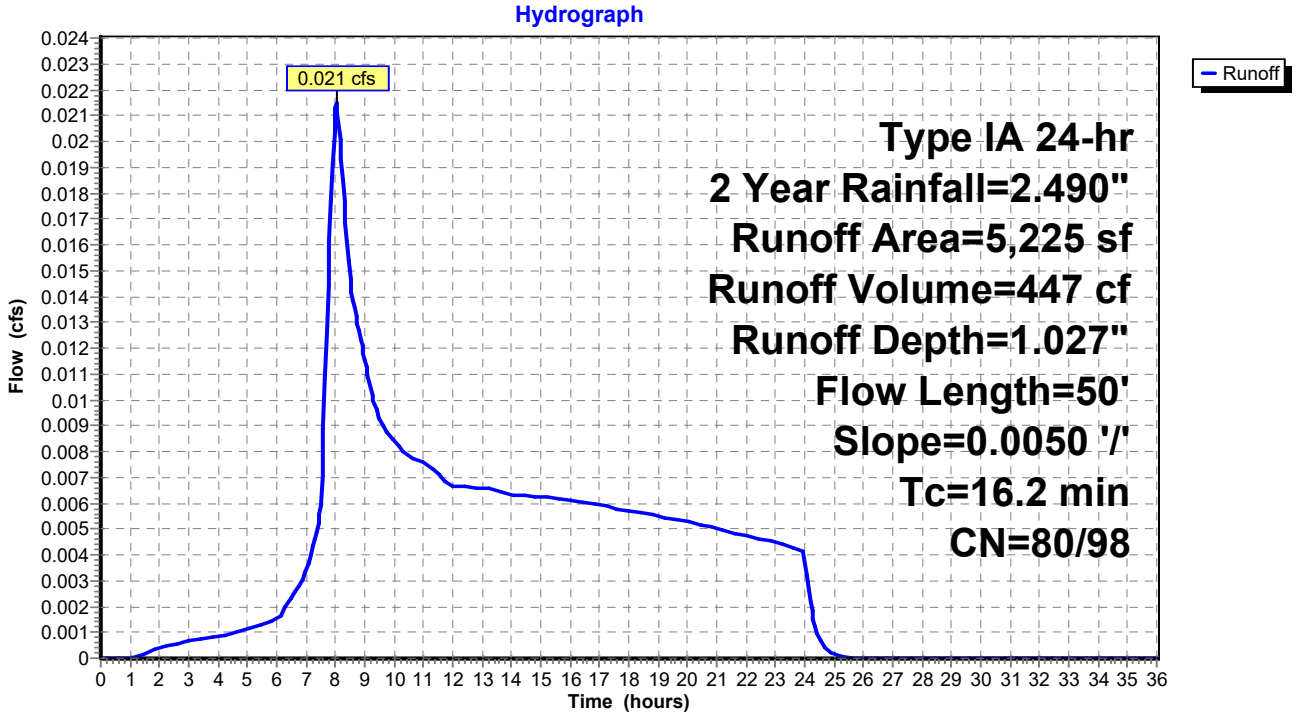
Runoff = 0.021 cfs @ 8.03 hrs, Volume= 447 cf, Depth= 1.027"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 2 Year Rainfall=2.490"

Area (sf)	CN	Description
4,677	80	>75% Grass cover, Good, HSG D
548	98	Roofs, HSG D
5,225	82	Weighted Average
4,677	80	89.51% Pervious Area
548	98	10.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	50	0.0050	0.05		**Sheet Flow, Neighbor's Yard** Grass: Dense n= 0.240 P2= 2.490"

Subcatchment 14S: Neighboring Property NE



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: NW 1/4 Building Runoff Area=2,080 sf 100.00% Impervious Runoff Depth=2.742"
Tc=5.0 min CN=0/99 Runoff=0.032 cfs 475 cf

Subcatchment2S: NE 1/4 Building Runoff Area=2,633 sf 100.00% Impervious Runoff Depth=2.742"
Tc=5.0 min CN=0/99 Runoff=0.041 cfs 602 cf

Pond 3P: WQ Planter #1 Peak Elev=225.04' Storage=83 cf Inflow=0.032 cfs 475 cf
Outflow=0.032 cfs 475 cf

Pond 4P: WQ Planter #2 Peak Elev=225.05' Storage=92 cf Inflow=0.041 cfs 602 cf
Outflow=0.041 cfs 602 cf

Subcatchment5S: SW 1/4 Building Runoff Area=2,901 sf 100.00% Impervious Runoff Depth=2.742"
Tc=5.0 min CN=0/99 Runoff=0.045 cfs 663 cf

Subcatchment6S: SE 1/4 Building Runoff Area=2,595 sf 100.00% Impervious Runoff Depth=2.742"
Tc=5.0 min CN=0/99 Runoff=0.040 cfs 593 cf

Subcatchment7S: Parking Area Runoff Area=8,374 sf 100.00% Impervious Runoff Depth=2.742"
Tc=5.0 min CN=0/99 Runoff=0.130 cfs 1,914 cf

Pond 9P: WQ Planter #4 Peak Elev=223.90' Storage=222 cf Inflow=0.216 cfs 3,170 cf
Outflow=0.215 cfs 3,170 cf

Subcatchment10S: East Patio Sidewalk Runoff Area=635 sf 100.00% Impervious Runoff Depth=2.742"
Tc=5.0 min CN=0/99 Runoff=0.010 cfs 145 cf

Pond 11P: WQ Planter #3 Peak Elev=225.67' Storage=21 cf Inflow=0.010 cfs 145 cf
Outflow=0.008 cfs 145 cf

Subcatchment12S: Landscape Area Runoff Area=4,245 sf 0.00% Impervious Runoff Depth=0.821"
Flow Length=20' Slope=0.0250 '/' Tc=4.1 min CN=74/0 Runoff=0.014 cfs 290 cf

Pond 13P: Underground Detention Storage Peak Elev=221.87' Storage=421 cf Inflow=0.330 cfs 5,249 cf
Outflow=0.132 cfs 5,249 cf

Subcatchment14S: Neighboring Property Runoff Area=5,225 sf 10.49% Impervious Runoff Depth=1.302"
Flow Length=50' Slope=0.0050 '/' Tc=16.2 min CN=80/98 Runoff=0.029 cfs 567 cf

Summary for Subcatchment 1S: NW 1/4 Building

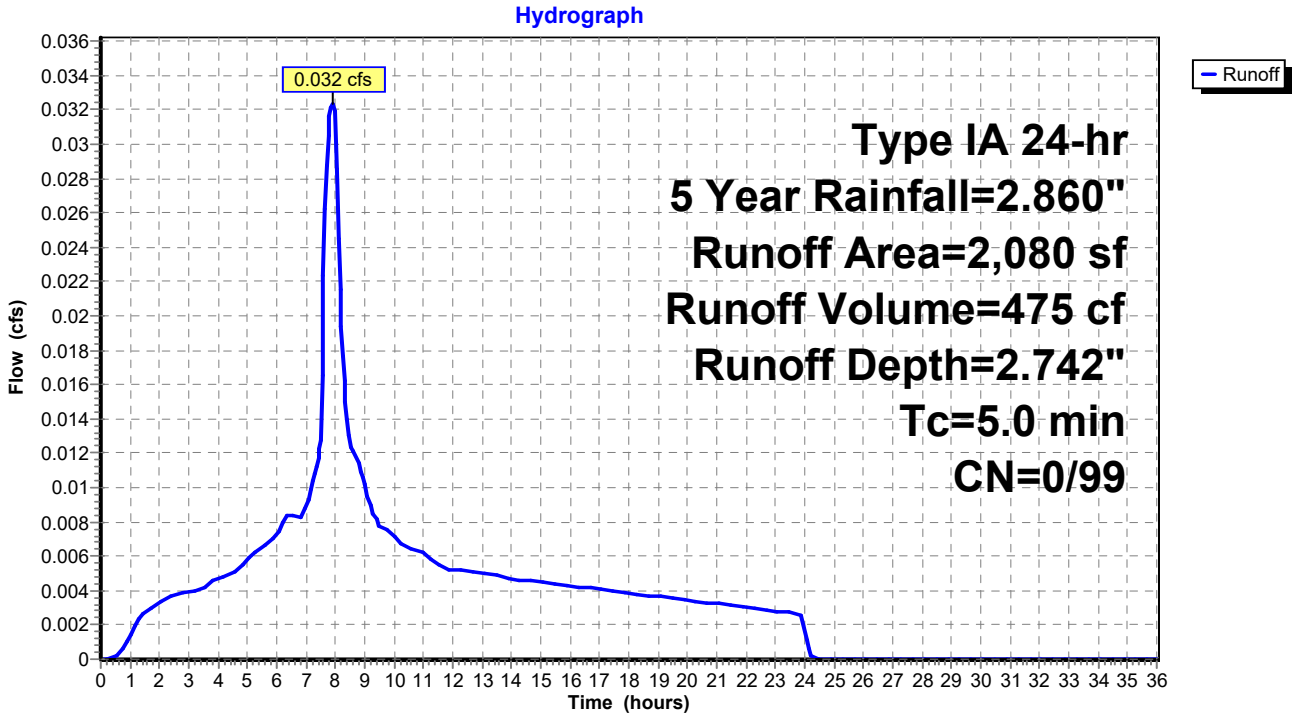
Runoff = 0.032 cfs @ 7.89 hrs, Volume= 475 cf, Depth= 2.742"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 5 Year Rainfall=2.860"

	Area (sf)	CN	Description
*	2,080	99	Roofs, HSG D
	2,080	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 1S: NW 1/4 Building



Summary for Subcatchment 2S: NE 1/4 Building

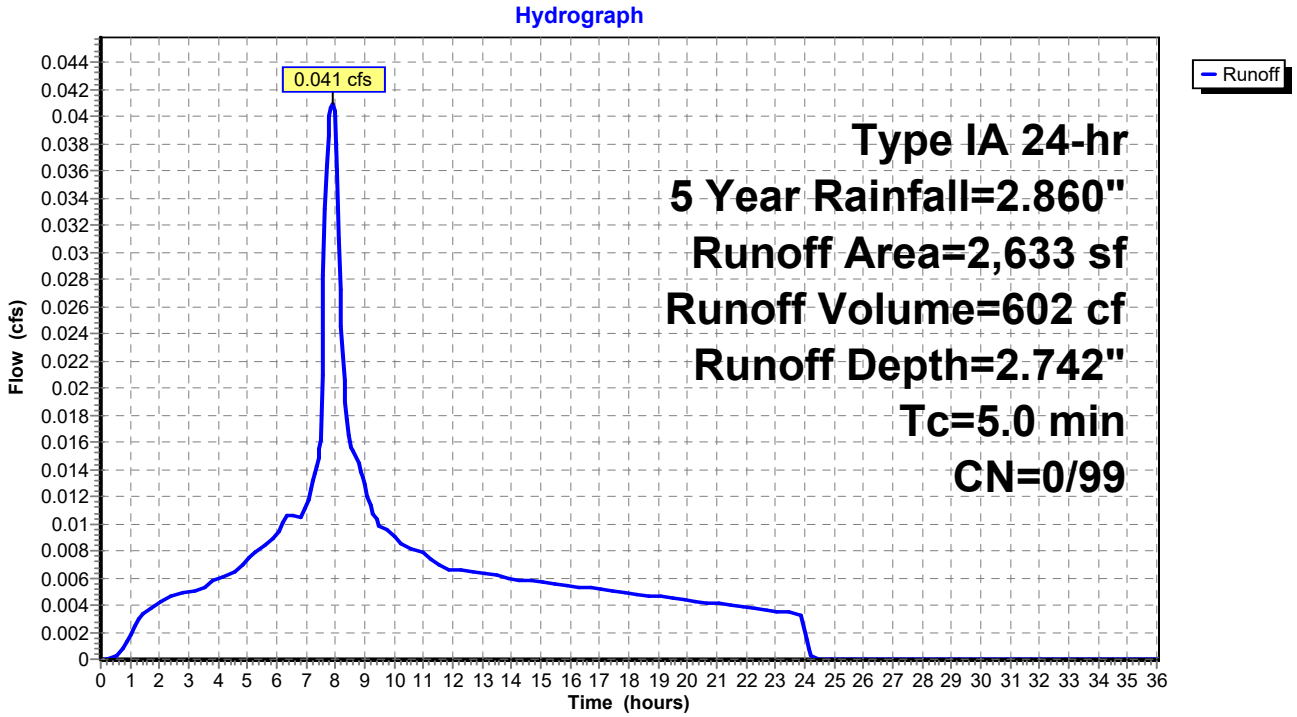
Runoff = 0.041 cfs @ 7.89 hrs, Volume= 602 cf, Depth= 2.742"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 5 Year Rainfall=2.860"

	Area (sf)	CN	Description
*	2,633	99	Roofs, HSG D
	2,633	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: NE 1/4 Building



Summary for Pond 3P: WQ Planter #1

Inflow Area = 2,080 sf,100.00% Impervious, Inflow Depth = 2.742" for 5 Year event
Inflow = 0.032 cfs @ 7.89 hrs, Volume= 475 cf
Outflow = 0.032 cfs @ 8.01 hrs, Volume= 475 cf, Atten= 0%, Lag= 6.9 min
Primary = 0.032 cfs @ 8.01 hrs, Volume= 475 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 225.04' @ 8.01 hrs Surf.Area= 80 sf Storage= 83 cf

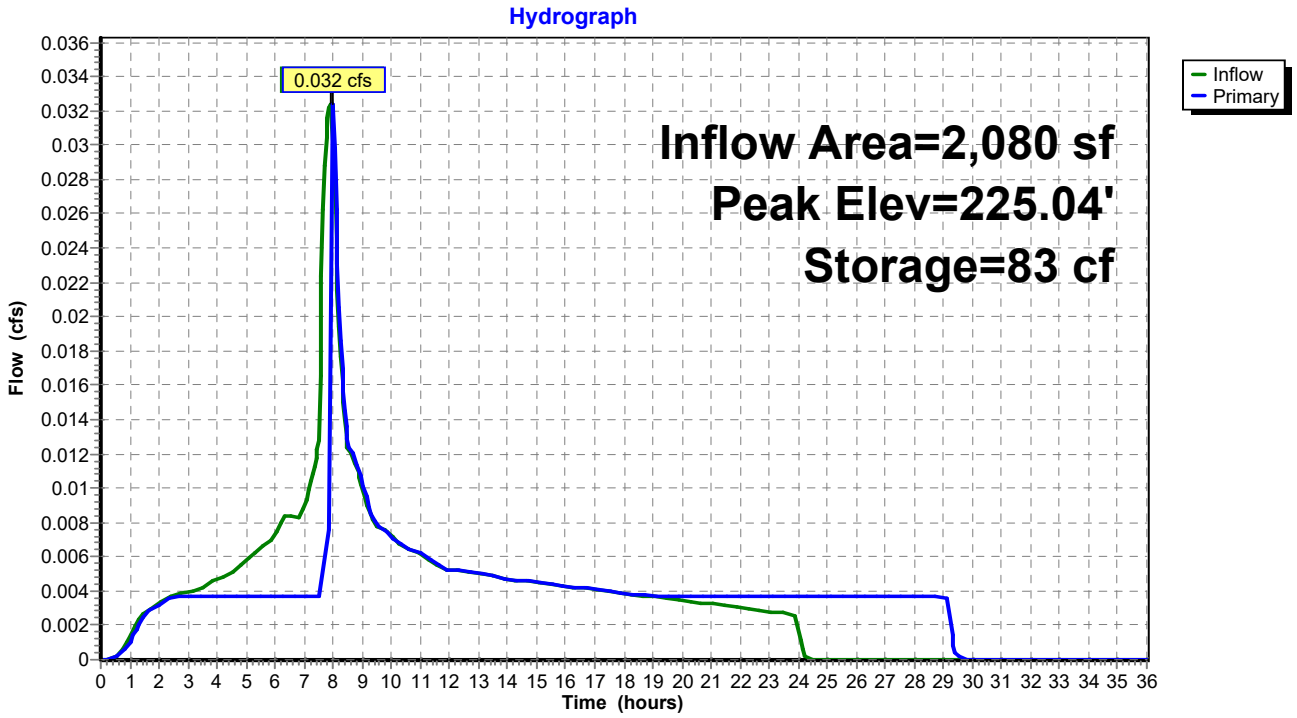
Plug-Flow detention time= 196.5 min calculated for 475 cf (100% of inflow)
Center-of-Mass det. time= 196.5 min (849.7 - 653.2)

Volume	Invert	Avail.Storage	Storage Description
#1	224.00'	120 cf	**4.00'W x 20.00'L x 1.50'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	224.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	225.00'	**4.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.031 cfs @ 8.01 hrs HW=225.04' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.004 cfs)
└**2=Orifice/Grate** (Weir Controls 0.028 cfs @ 0.66 fps)

Pond 3P: WQ Planter #1



Summary for Pond 4P: WQ Planter #2

Inflow Area = 2,633 sf,100.00% Impervious, Inflow Depth = 2.742" for 5 Year event
Inflow = 0.041 cfs @ 7.89 hrs, Volume= 602 cf
Outflow = 0.041 cfs @ 7.92 hrs, Volume= 602 cf, Atten= 0%, Lag= 1.4 min
Primary = 0.041 cfs @ 7.92 hrs, Volume= 602 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 225.05' @ 7.92 hrs Surf.Area= 88 sf Storage= 92 cf

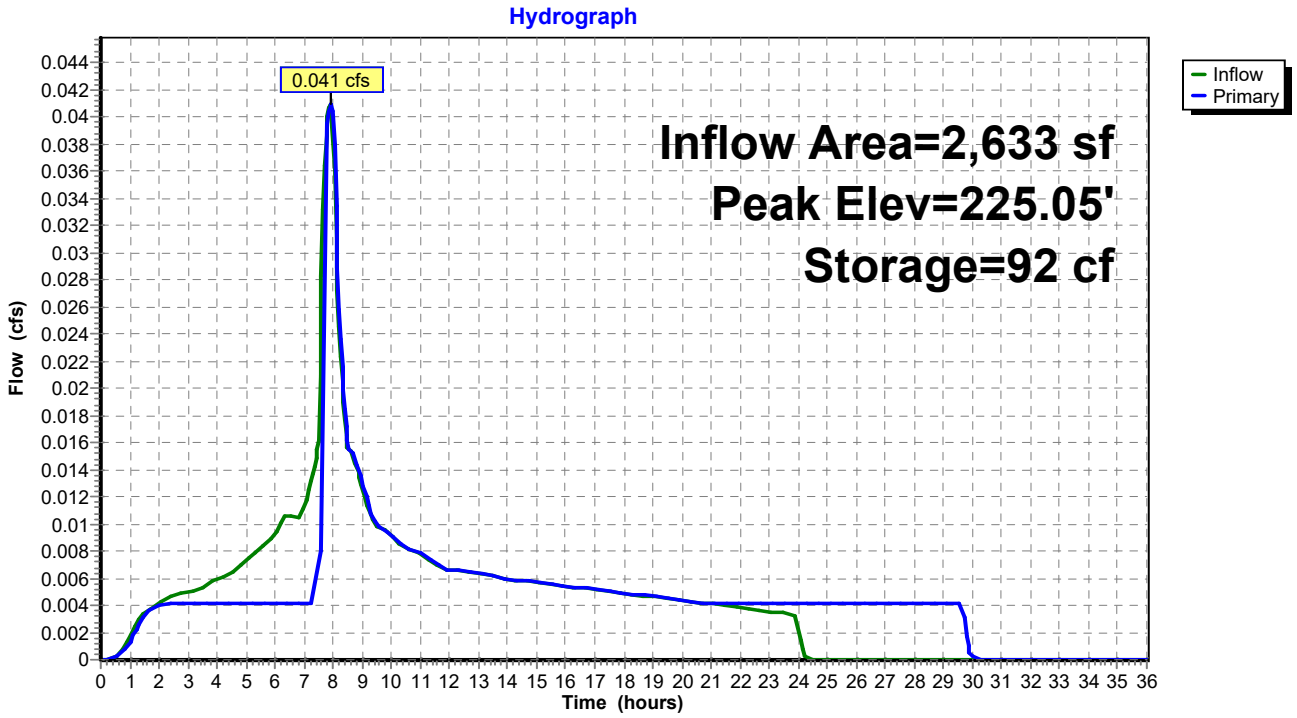
Plug-Flow detention time= 181.5 min calculated for 601 cf (100% of inflow)
Center-of-Mass det. time= 181.7 min (834.9 - 653.2)

Volume	Invert	Avail.Storage	Storage Description
#1	224.00'	132 cf	**4.00'W x 22.00'L x 1.50'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	224.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	225.00'	**4.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.041 cfs @ 7.92 hrs HW=225.05' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.004 cfs)
└**2=Orifice/Grate** (Weir Controls 0.037 cfs @ 0.72 fps)

Pond 4P: WQ Planter #2



Summary for Subcatchment 5S: SW 1/4 Building

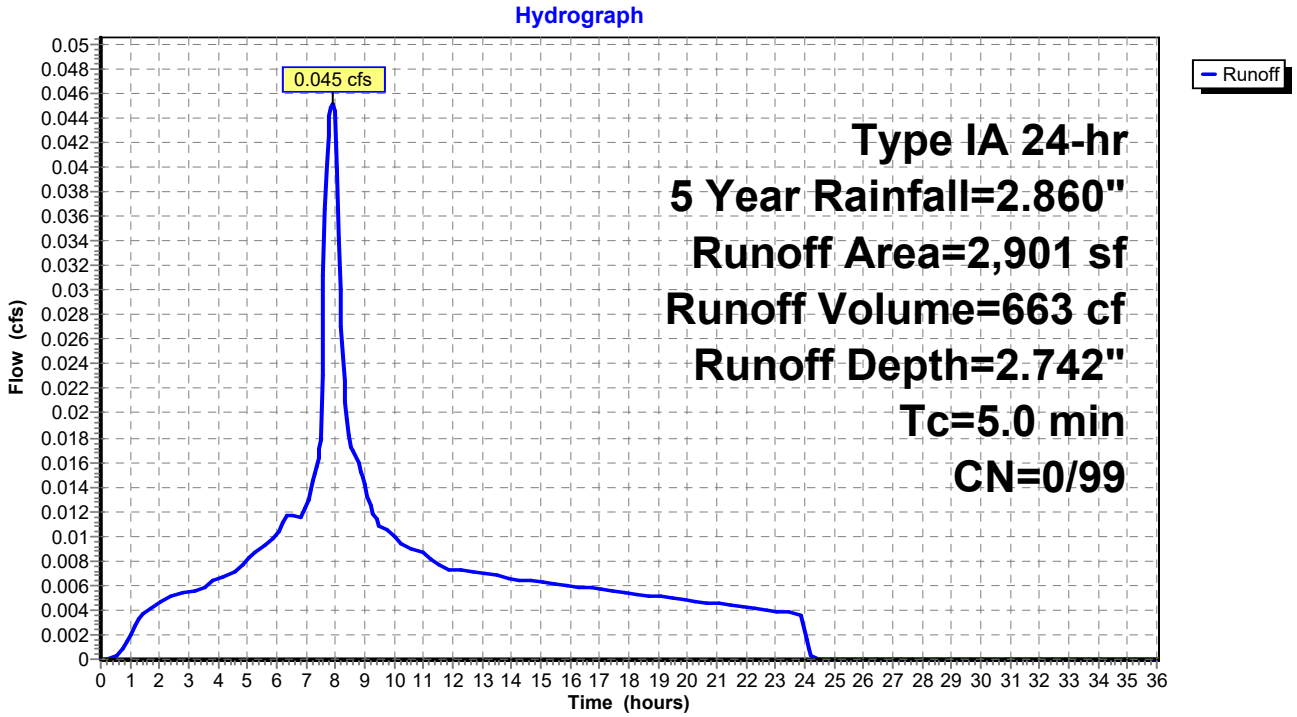
Runoff = 0.045 cfs @ 7.89 hrs, Volume= 663 cf, Depth= 2.742"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 5 Year Rainfall=2.860"

	Area (sf)	CN	Description
*	2,901	99	Roofs, HSG D
	2,901	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: SW 1/4 Building



Summary for Subcatchment 6S: SE 1/4 Building

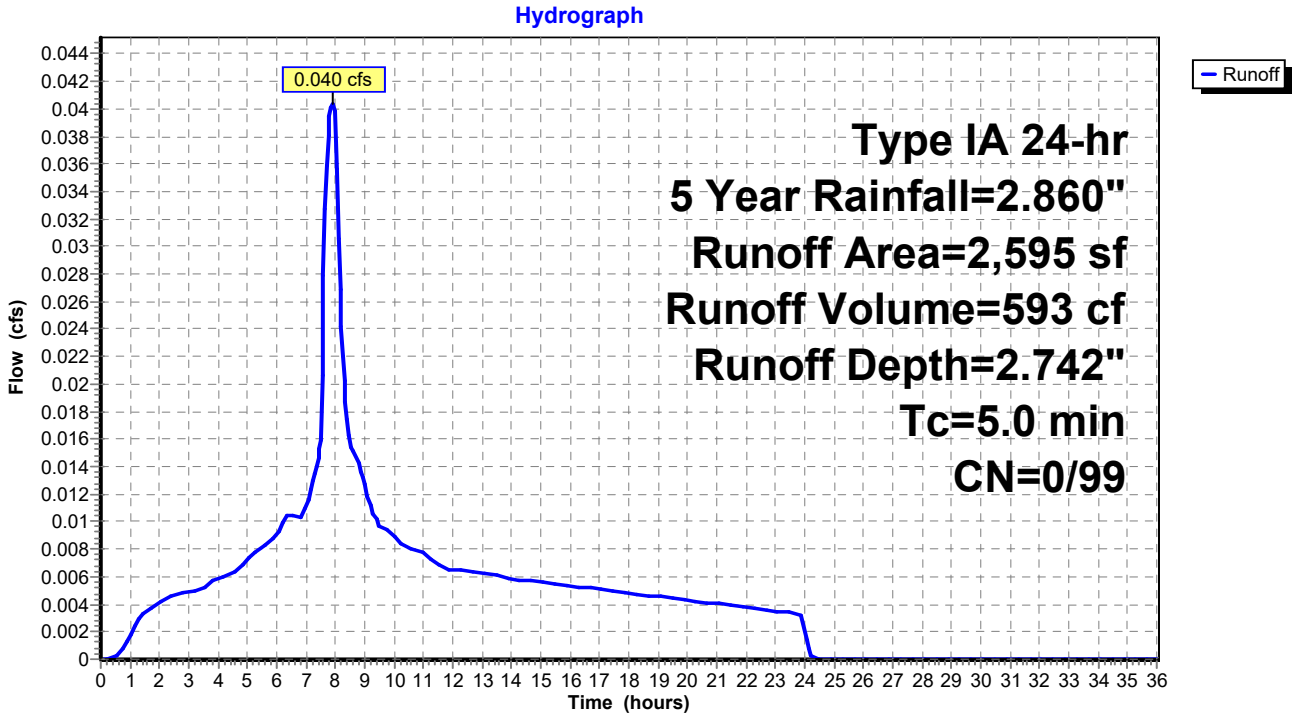
Runoff = 0.040 cfs @ 7.89 hrs, Volume= 593 cf, Depth= 2.742"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 5 Year Rainfall=2.860"

	Area (sf)	CN	Description
*	2,595	99	Roofs, HSG D
	2,595	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 6S: SE 1/4 Building



Summary for Subcatchment 7S: Parking Area

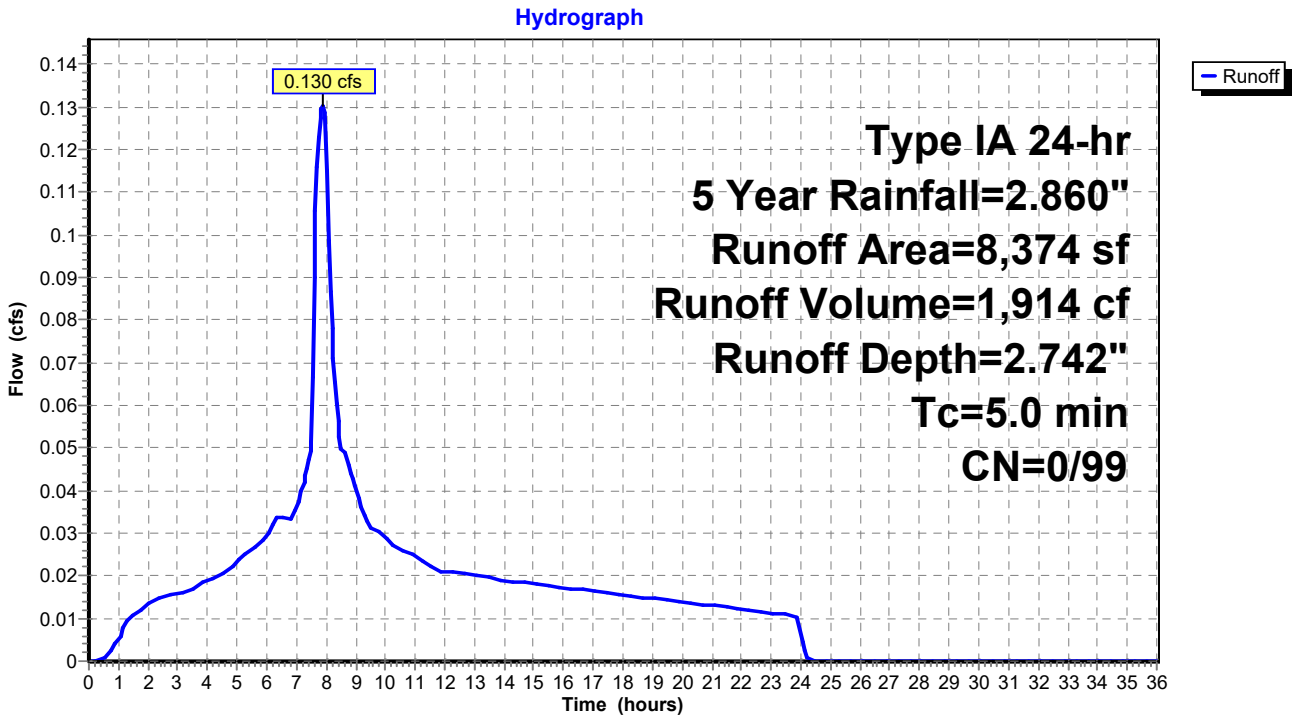
Runoff = 0.130 cfs @ 7.89 hrs, Volume= 1,914 cf, Depth= 2.742"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 5 Year Rainfall=2.860"

	Area (sf)	CN	Description
*	7,003	99	Paved parking, HSG D
*	1,371	99	REPLACED PARKING, HSG D
	8,374	99	Weighted Average
	8,374	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 7S: Parking Area



Summary for Pond 9P: WQ Planter #4

Inflow Area = 13,870 sf,100.00% Impervious, Inflow Depth = 2.742" for 5 Year event
Inflow = 0.216 cfs @ 7.89 hrs, Volume= 3,170 cf
Outflow = 0.215 cfs @ 7.92 hrs, Volume= 3,170 cf, Atten= 0%, Lag= 1.4 min
Primary = 0.215 cfs @ 7.92 hrs, Volume= 3,170 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 223.90' @ 7.92 hrs Surf.Area= 550 sf Storage= 222 cf

Plug-Flow detention time= 68.5 min calculated for 3,165 cf (100% of inflow)
Center-of-Mass det. time= 68.5 min (721.7 - 653.2)

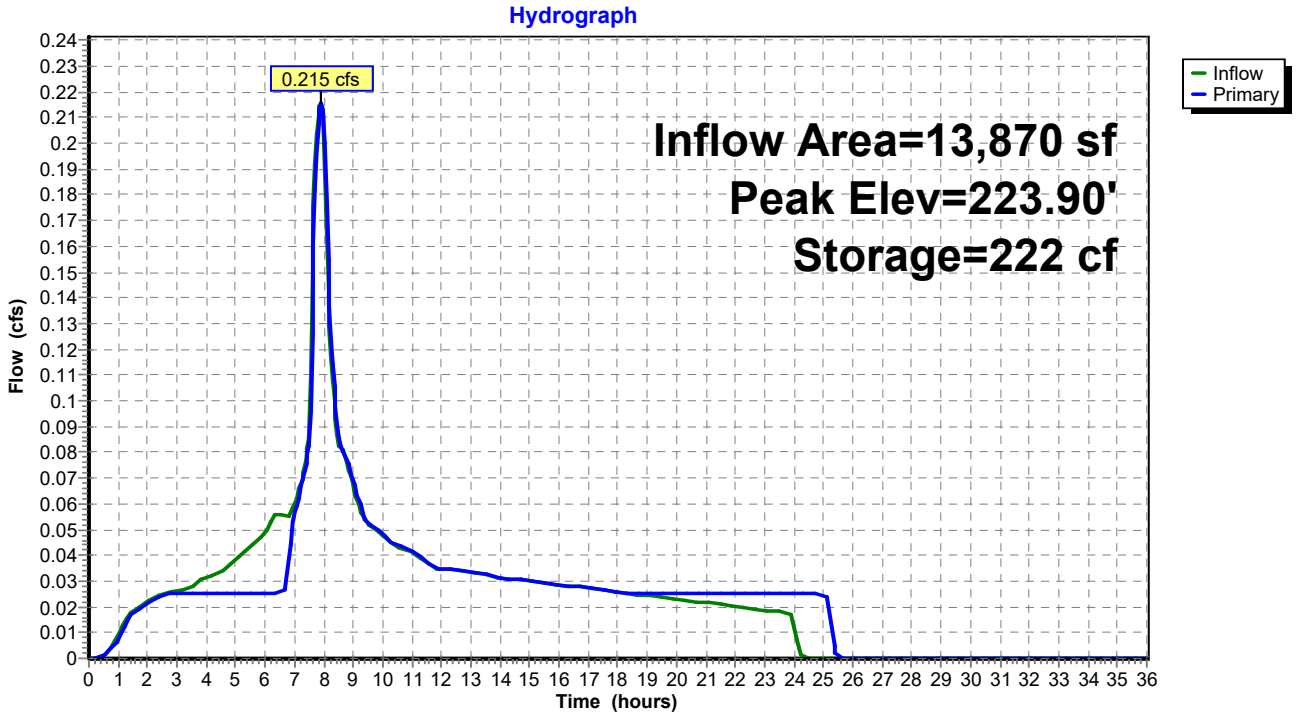
Volume	Invert	Avail.Storage	Storage Description
#1	223.50'	550 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
223.50	550	0	0
224.50	550	550	550

Device	Routing	Invert	Outlet Devices
#1	Primary	223.50'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	223.86'	**24.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.214 cfs @ 7.92 hrs HW=223.90' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.025 cfs)
└**2=Orifice/Grate** (Weir Controls 0.189 cfs @ 0.68 fps)

Pond 9P: WQ Planter #4



Summary for Subcatchment 10S: East Patio Sidewalk

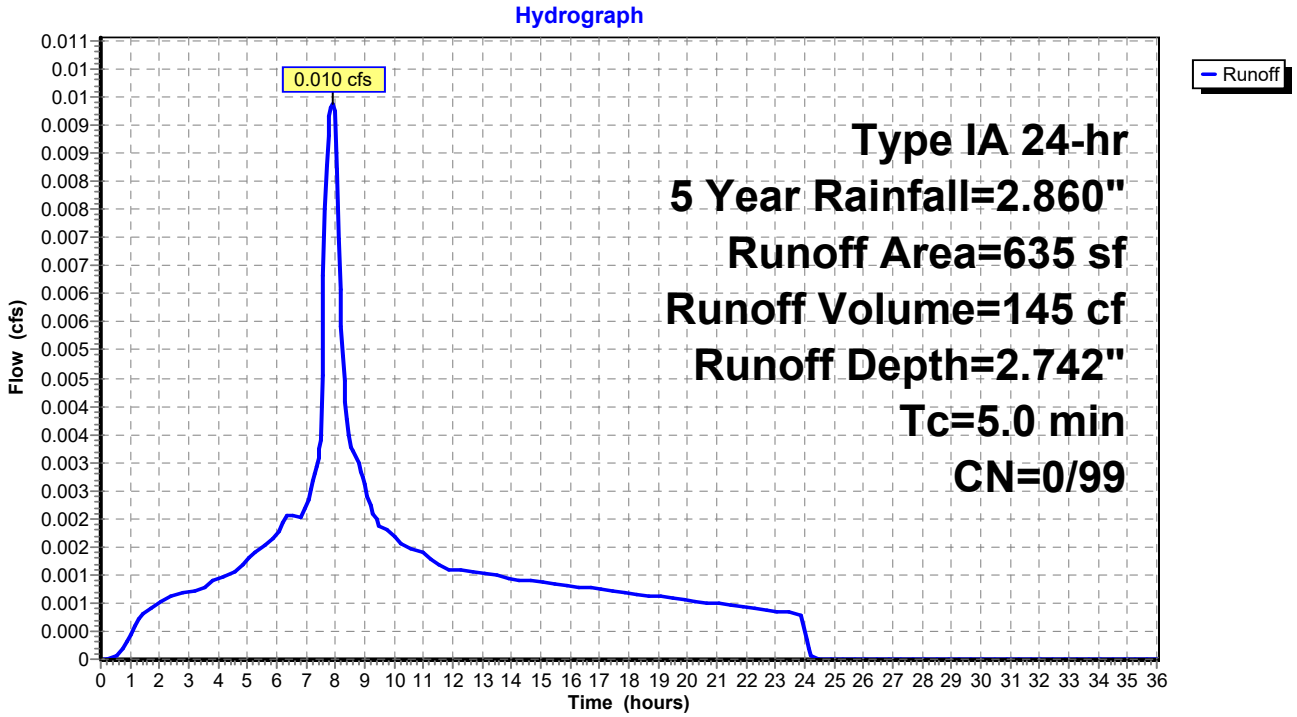
Runoff = 0.010 cfs @ 7.89 hrs, Volume= 145 cf, Depth= 2.742"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 5 Year Rainfall=2.860"

	Area (sf)	CN	Description
*	635	99	Unconnected pavement, HSG D
	635	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Developed Impervious**

Subcatchment 10S: East Patio Sidewalk



Summary for Pond 11P: WQ Planter #3

Inflow Area = 635 sf,100.00% Impervious, Inflow Depth = 2.742" for 5 Year event
Inflow = 0.010 cfs @ 7.89 hrs, Volume= 145 cf
Outflow = 0.008 cfs @ 8.10 hrs, Volume= 145 cf, Atten= 19%, Lag= 12.3 min
Primary = 0.008 cfs @ 8.10 hrs, Volume= 145 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 225.67' @ 8.10 hrs Surf.Area= 65 sf Storage= 21 cf

Plug-Flow detention time= 60.8 min calculated for 145 cf (100% of inflow)
Center-of-Mass det. time= 60.7 min (713.9 - 653.2)

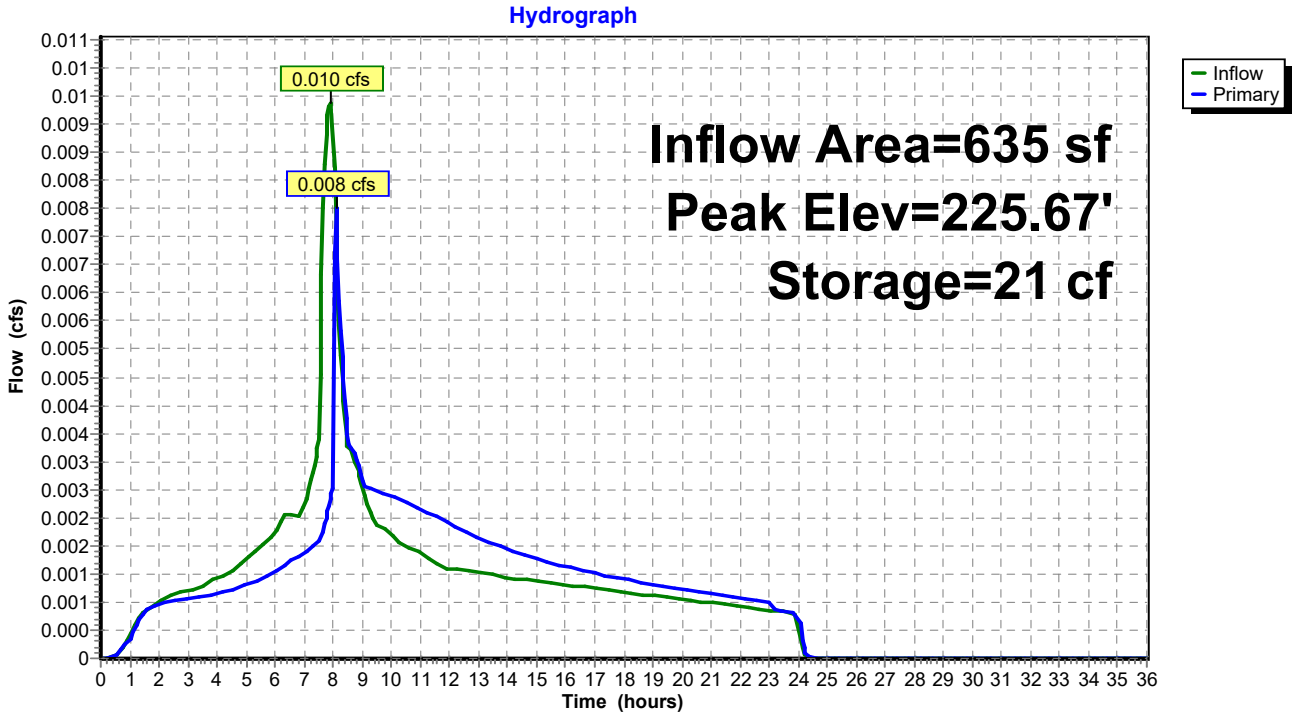
Volume	Invert	Avail.Storage	Storage Description
#1	225.16'	33 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
225.16	21	0	0	21
225.83	84	33	33	86

Device	Routing	Invert	Outlet Devices
#1	Primary	225.16'	**2.000 in/hr Exfiltration over Wetted area**
#2	Primary	225.66'	**4.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.008 cfs @ 8.10 hrs HW=225.67' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.003 cfs)
└**2=Orifice/Grate** (Weir Controls 0.005 cfs @ 0.36 fps)

Pond 11P: WQ Planter #3



Summary for Subcatchment 12S: Landscape Area

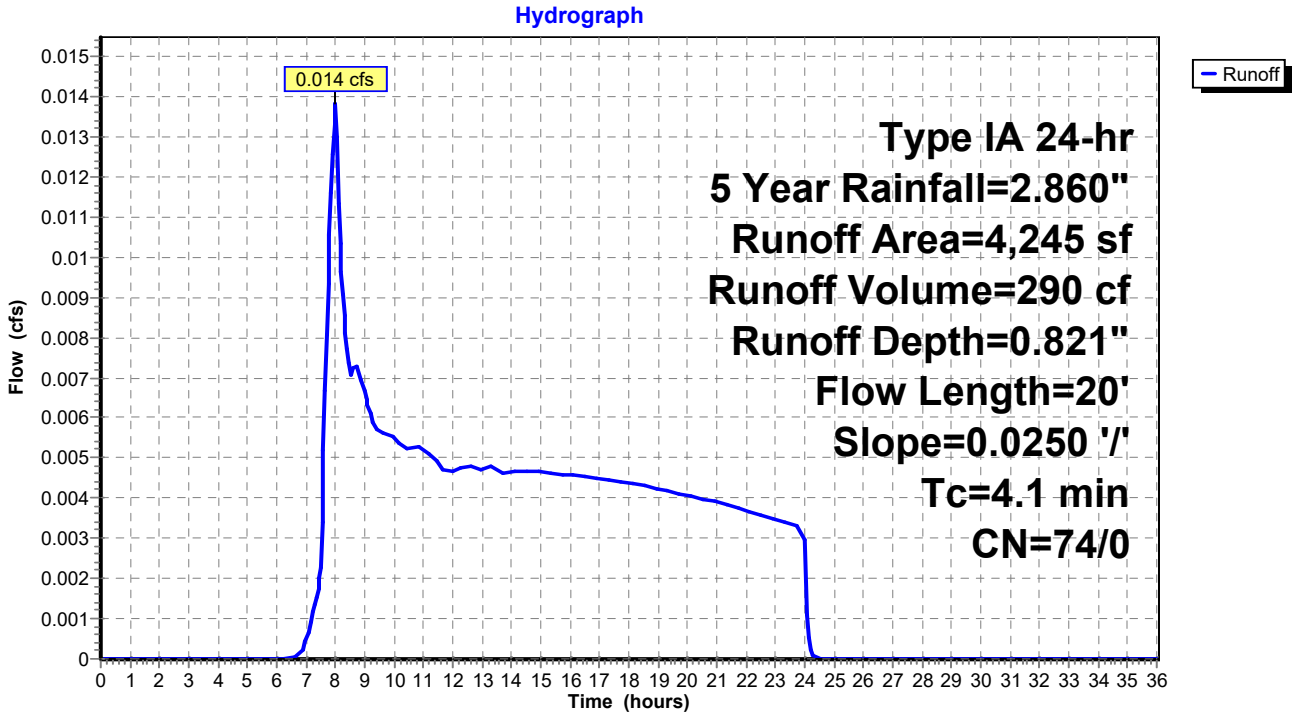
Runoff = 0.014 cfs @ 7.99 hrs, Volume= 290 cf, Depth= 0.821"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 5 Year Rainfall=2.860"

Area (sf)	CN	Description
4,245	74	>75% Grass cover, Good, HSG C
4,245	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	20	0.0250	0.08		**Sheet Flow, Developed Landscape Area** Grass: Dense n= 0.240 P2= 2.490"

Subcatchment 12S: Landscape Area



Summary for Pond 13P: Underground Detention Storage

Inflow Area = 28,688 sf, 68.90% Impervious, Inflow Depth = 2.196" for 5 Year event
Inflow = 0.330 cfs @ 7.99 hrs, Volume= 5,249 cf
Outflow = 0.132 cfs @ 8.76 hrs, Volume= 5,249 cf, Atten= 60%, Lag= 46.7 min
Primary = 0.132 cfs @ 8.76 hrs, Volume= 5,249 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 221.87' @ 8.76 hrs Surf.Area= 1,218 sf Storage= 421 cf

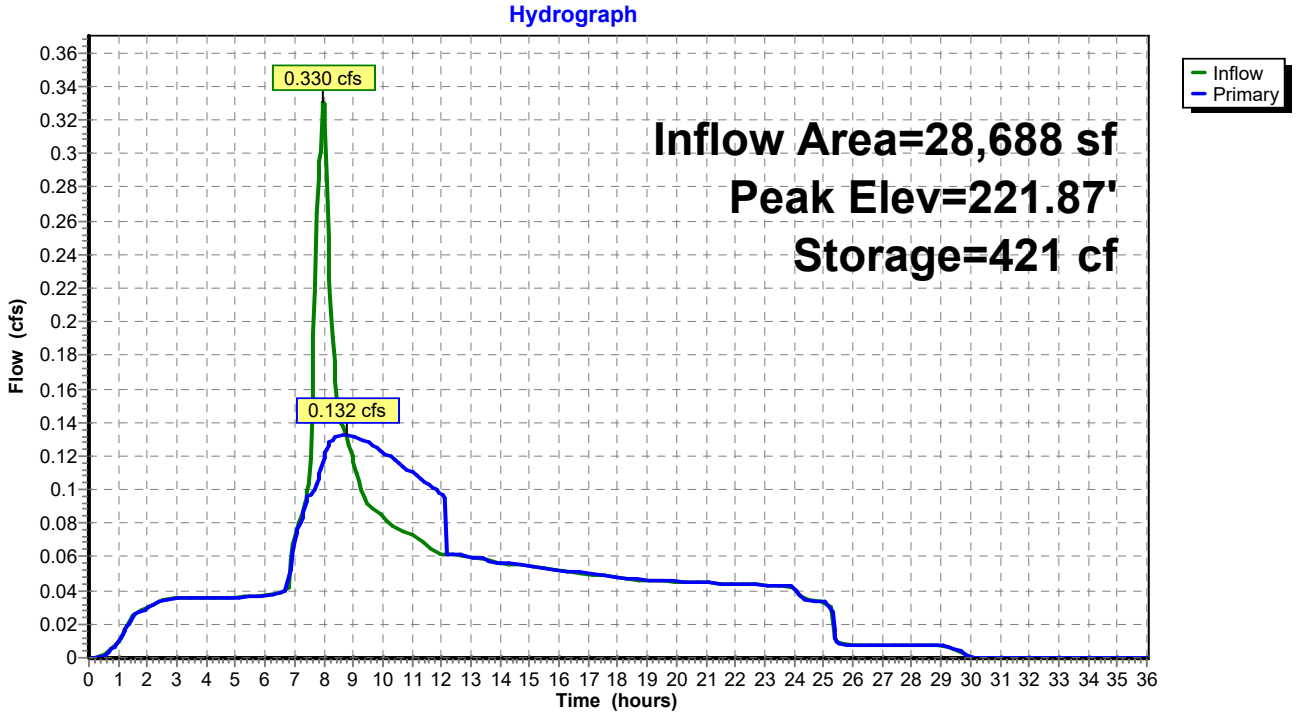
Plug-Flow detention time= 13.7 min calculated for 5,241 cf (100% of inflow)
Center-of-Mass det. time= 13.7 min (778.1 - 764.5)

Volume	Invert	Avail.Storage	Storage Description
#1	221.10'	877 cf	**14.00'W x 87.00'L x 1.60'H Prismatoid** 1,949 cf Overall x 45.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	220.28'	**2.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	222.00'	**2.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.132 cfs @ 8.76 hrs HW=221.87' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.132 cfs @ 6.07 fps)
└**2=Orifice/Grate** (Controls 0.000 cfs)

Pond 13P: Underground Detention Storage



Summary for Subcatchment 14S: Neighboring Property NE

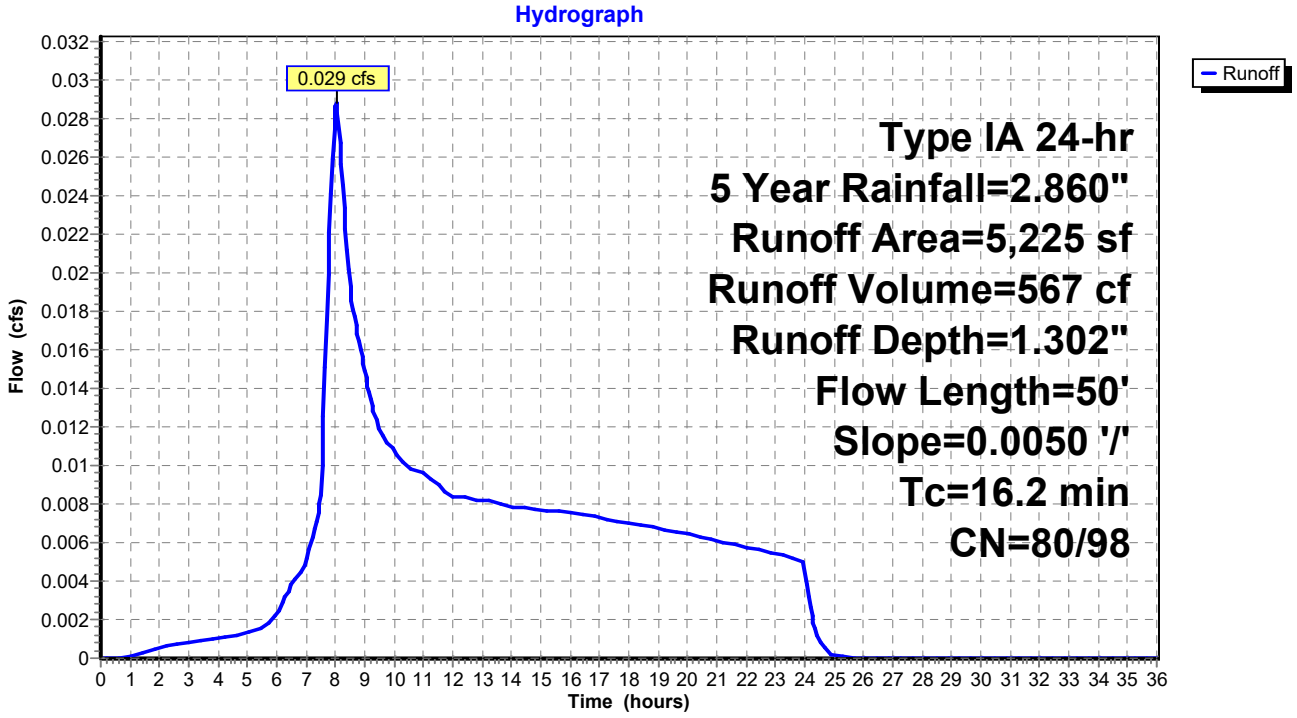
Runoff = 0.029 cfs @ 8.03 hrs, Volume= 567 cf, Depth= 1.302"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 5 Year Rainfall=2.860"

Area (sf)	CN	Description
4,677	80	>75% Grass cover, Good, HSG D
548	98	Roofs, HSG D
5,225	82	Weighted Average
4,677	80	89.51% Pervious Area
548	98	10.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	50	0.0050	0.05		**Sheet Flow, Neighbor's Yard** Grass: Dense n= 0.240 P2= 2.490"

Subcatchment 14S: Neighboring Property NE



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: NW 1/4 Building Runoff Area=2,080 sf 100.00% Impervious Runoff Depth=3.252"
Tc=5.0 min CN=0/99 Runoff=0.038 cfs 564 cf

Subcatchment2S: NE 1/4 Building Runoff Area=2,633 sf 100.00% Impervious Runoff Depth=3.252"
Tc=5.0 min CN=0/99 Runoff=0.048 cfs 713 cf

Pond 3P: WQ Planter #1 Peak Elev=225.05' Storage=84 cf Inflow=0.038 cfs 564 cf
Outflow=0.038 cfs 564 cf

Pond 4P: WQ Planter #2 Peak Elev=225.05' Storage=93 cf Inflow=0.048 cfs 713 cf
Outflow=0.048 cfs 713 cf

Subcatchment5S: SW 1/4 Building Runoff Area=2,901 sf 100.00% Impervious Runoff Depth=3.252"
Tc=5.0 min CN=0/99 Runoff=0.053 cfs 786 cf

Subcatchment6S: SE 1/4 Building Runoff Area=2,595 sf 100.00% Impervious Runoff Depth=3.252"
Tc=5.0 min CN=0/99 Runoff=0.048 cfs 703 cf

Subcatchment7S: Parking Area Runoff Area=8,374 sf 100.00% Impervious Runoff Depth=3.252"
Tc=5.0 min CN=0/99 Runoff=0.154 cfs 2,269 cf

Pond 9P: WQ Planter #4 Peak Elev=223.91' Storage=225 cf Inflow=0.255 cfs 3,758 cf
Outflow=0.254 cfs 3,758 cf

Subcatchment10S: East Patio Sidewalk Runoff Area=635 sf 100.00% Impervious Runoff Depth=3.252"
Tc=5.0 min CN=0/99 Runoff=0.012 cfs 172 cf

Pond 11P: WQ Planter #3 Peak Elev=225.68' Storage=21 cf Inflow=0.012 cfs 172 cf
Outflow=0.012 cfs 172 cf

Subcatchment12S: Landscape Area Runoff Area=4,245 sf 0.00% Impervious Runoff Depth=1.151"
Flow Length=20' Slope=0.0250 '/' Tc=4.1 min CN=74/0 Runoff=0.022 cfs 407 cf

Pond 13P: Underground Detention Storage Peak Elev=222.17' Storage=587 cf Inflow=0.411 cfs 6,356 cf
Outflow=0.188 cfs 6,356 cf

Subcatchment14S: Neighboring Property Runoff Area=5,225 sf 10.49% Impervious Runoff Depth=1.702"
Flow Length=50' Slope=0.0050 '/' Tc=16.2 min CN=80/98 Runoff=0.040 cfs 741 cf

Summary for Subcatchment 1S: NW 1/4 Building

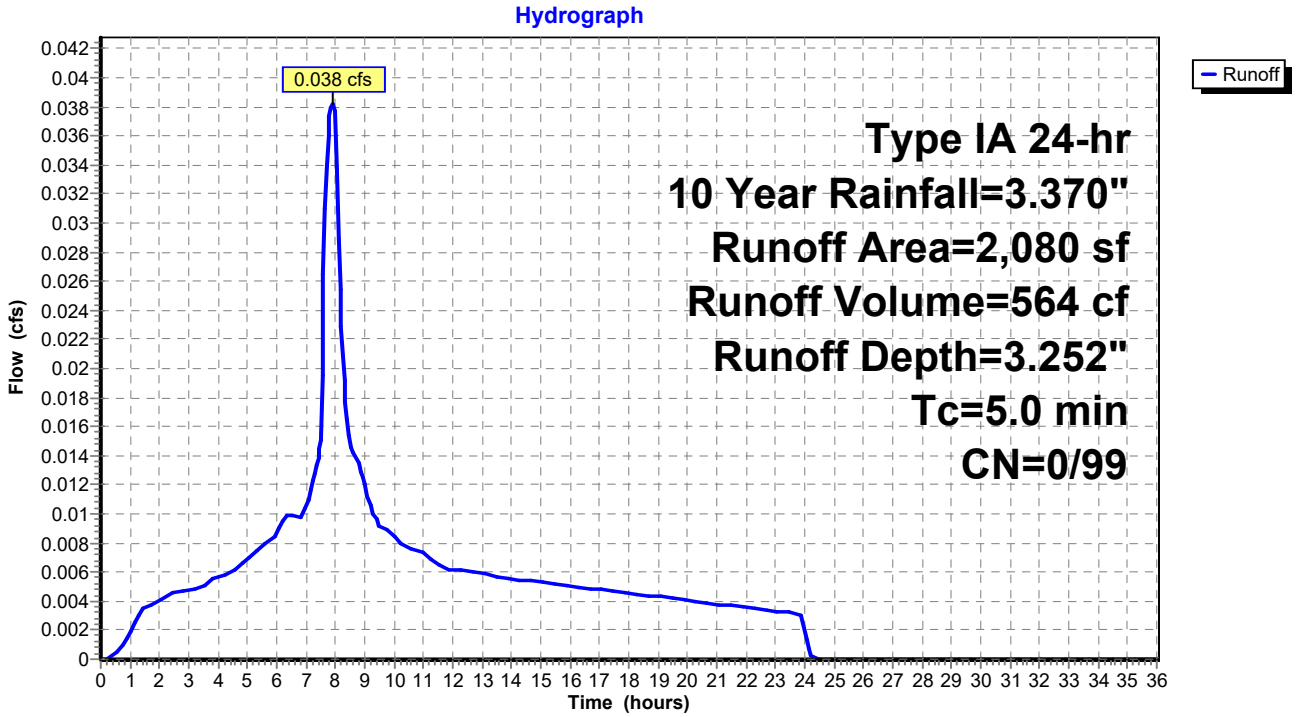
Runoff = 0.038 cfs @ 7.89 hrs, Volume= 564 cf, Depth= 3.252"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10 Year Rainfall=3.370"

	Area (sf)	CN	Description
*	2,080	99	Roofs, HSG D
	2,080	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 1S: NW 1/4 Building



Summary for Subcatchment 2S: NE 1/4 Building

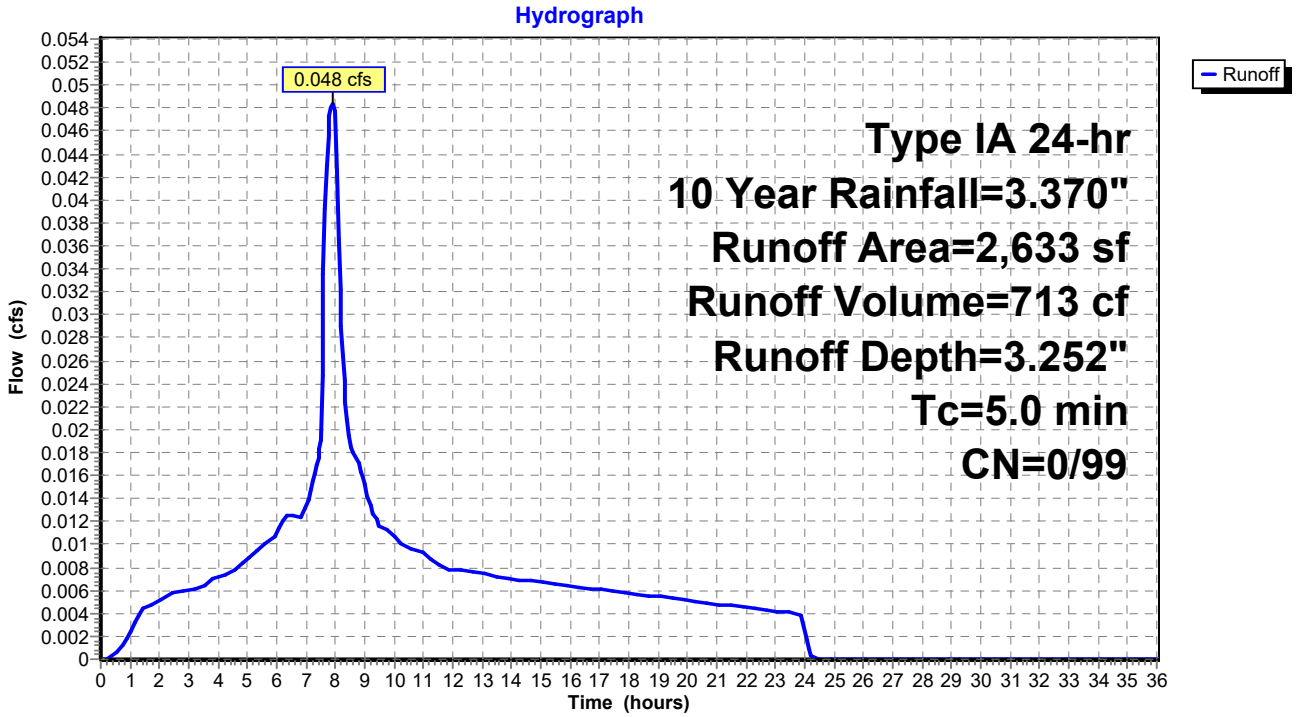
Runoff = 0.048 cfs @ 7.89 hrs, Volume= 713 cf, Depth= 3.252"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10 Year Rainfall=3.370"

	Area (sf)	CN	Description
*	2,633	99	Roofs, HSG D
	2,633	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: NE 1/4 Building



Summary for Pond 3P: WQ Planter #1

Inflow Area = 2,080 sf,100.00% Impervious, Inflow Depth = 3.252" for 10 Year event
Inflow = 0.038 cfs @ 7.89 hrs, Volume= 564 cf
Outflow = 0.038 cfs @ 7.92 hrs, Volume= 564 cf, Atten= 0%, Lag= 1.3 min
Primary = 0.038 cfs @ 7.92 hrs, Volume= 564 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 225.05' @ 7.92 hrs Surf.Area= 80 sf Storage= 84 cf

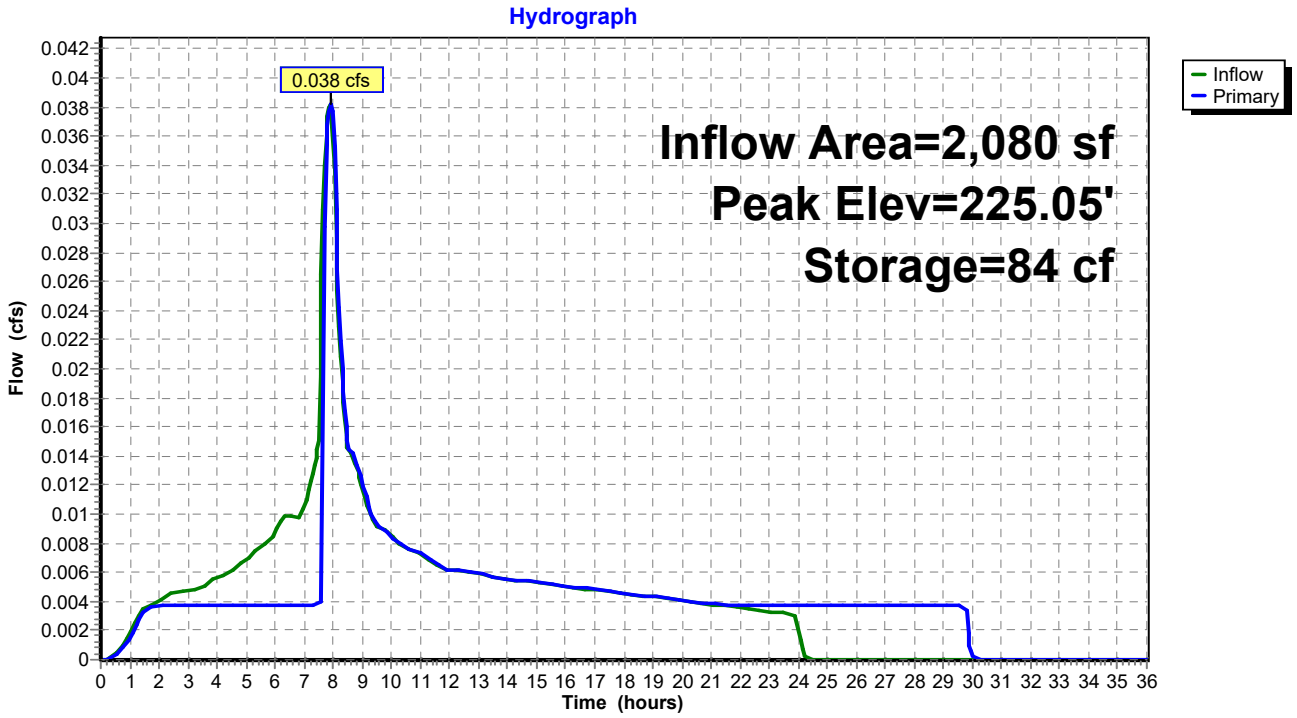
Plug-Flow detention time= 178.6 min calculated for 564 cf (100% of inflow)
Center-of-Mass det. time= 178.6 min (829.0 - 650.4)

Volume	Invert	Avail.Storage	Storage Description
#1	224.00'	120 cf	**4.00'W x 20.00'L x 1.50'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	224.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	225.00'	**4.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.038 cfs @ 7.92 hrs HW=225.05' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.004 cfs)
└**2=Orifice/Grate** (Weir Controls 0.034 cfs @ 0.70 fps)

Pond 3P: WQ Planter #1



Summary for Pond 4P: WQ Planter #2

Inflow Area = 2,633 sf,100.00% Impervious, Inflow Depth = 3.252" for 10 Year event
Inflow = 0.048 cfs @ 7.89 hrs, Volume= 713 cf
Outflow = 0.048 cfs @ 7.91 hrs, Volume= 713 cf, Atten= 0%, Lag= 1.2 min
Primary = 0.048 cfs @ 7.91 hrs, Volume= 713 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 225.05' @ 7.91 hrs Surf.Area= 88 sf Storage= 93 cf

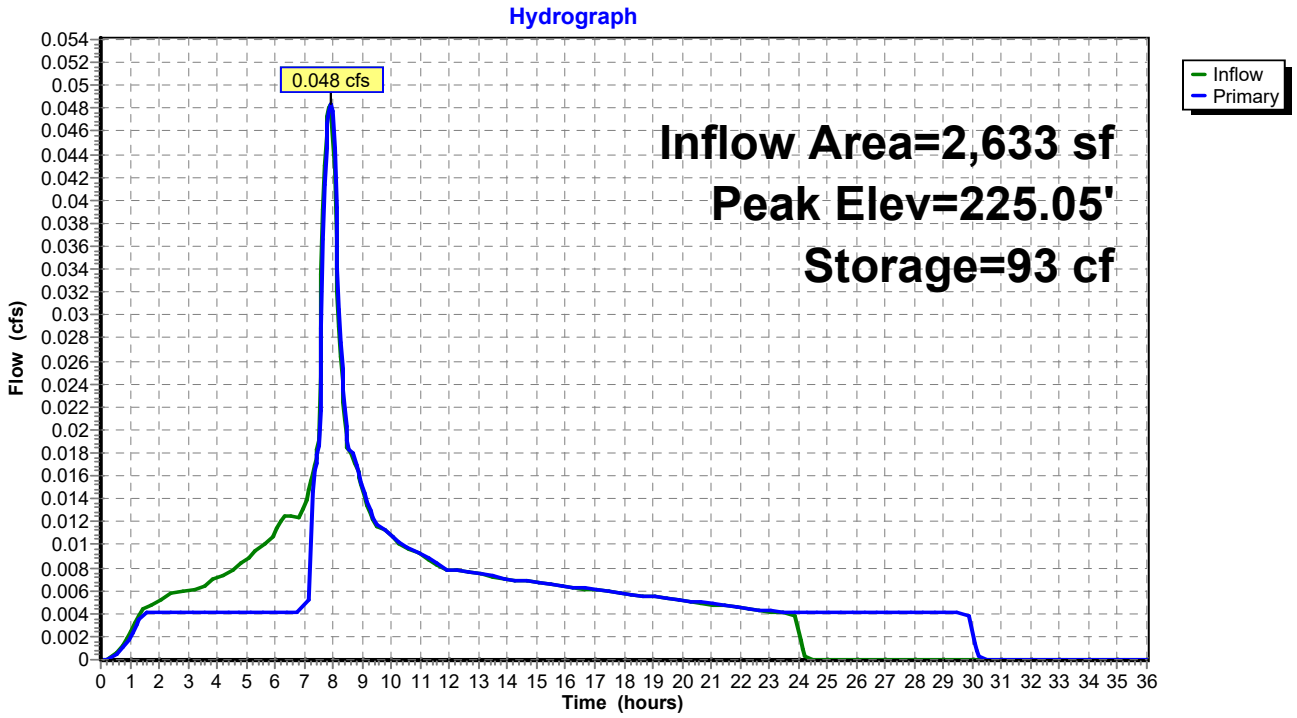
Plug-Flow detention time= 162.0 min calculated for 712 cf (100% of inflow)
Center-of-Mass det. time= 162.3 min (812.7 - 650.4)

Volume	Invert	Avail.Storage	Storage Description
#1	224.00'	132 cf	**4.00'W x 22.00'L x 1.50'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	224.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	225.00'	**4.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.048 cfs @ 7.91 hrs HW=225.05' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.004 cfs)
└**2=Orifice/Grate** (Weir Controls 0.044 cfs @ 0.77 fps)

Pond 4P: WQ Planter #2



Summary for Subcatchment 5S: SW 1/4 Building

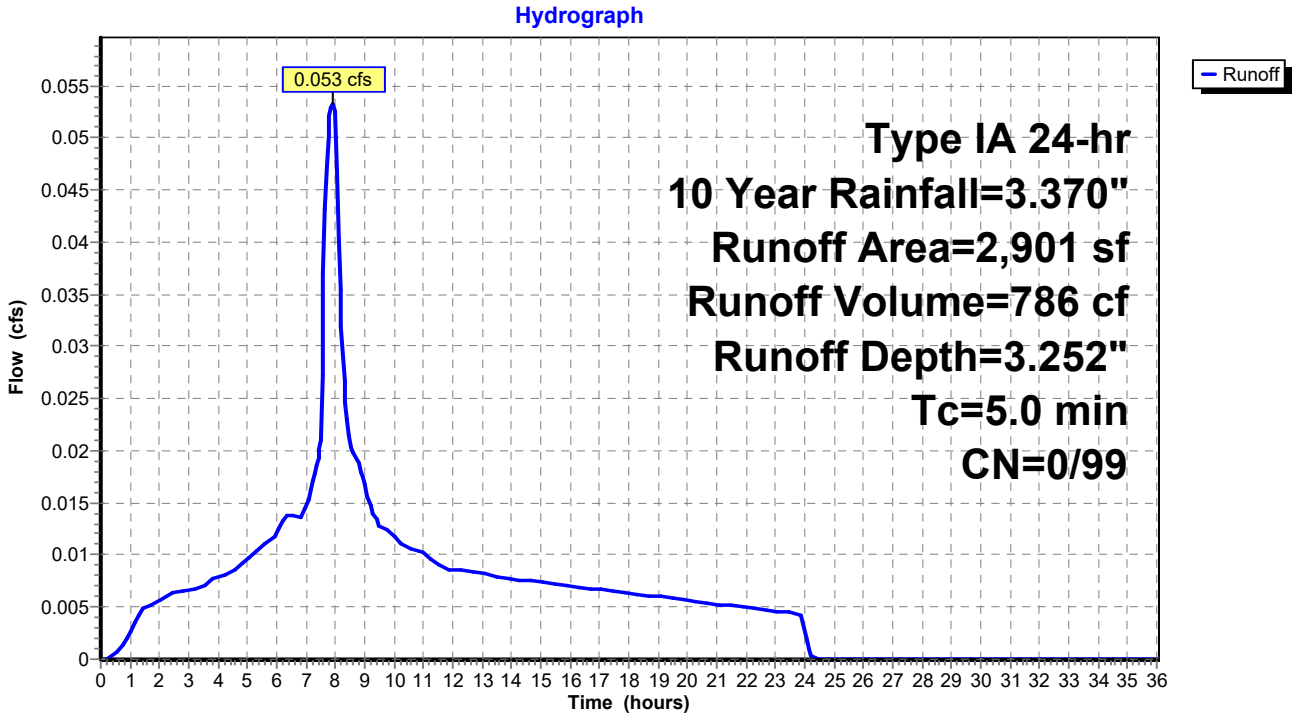
Runoff = 0.053 cfs @ 7.89 hrs, Volume= 786 cf, Depth= 3.252"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10 Year Rainfall=3.370"

	Area (sf)	CN	Description
*	2,901	99	Roofs, HSG D
	2,901	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: SW 1/4 Building



Summary for Subcatchment 6S: SE 1/4 Building

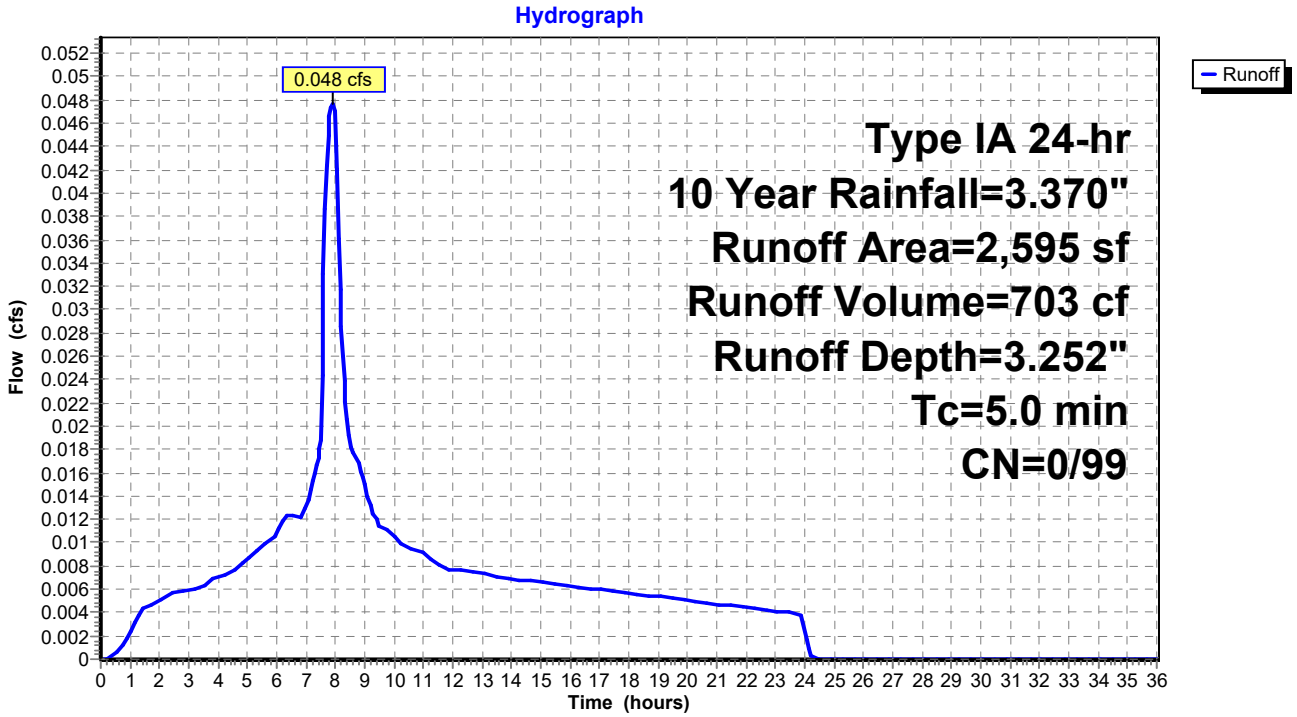
Runoff = 0.048 cfs @ 7.89 hrs, Volume= 703 cf, Depth= 3.252"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10 Year Rainfall=3.370"

	Area (sf)	CN	Description
*	2,595	99	Roofs, HSG D
	2,595	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 6S: SE 1/4 Building



Summary for Subcatchment 7S: Parking Area

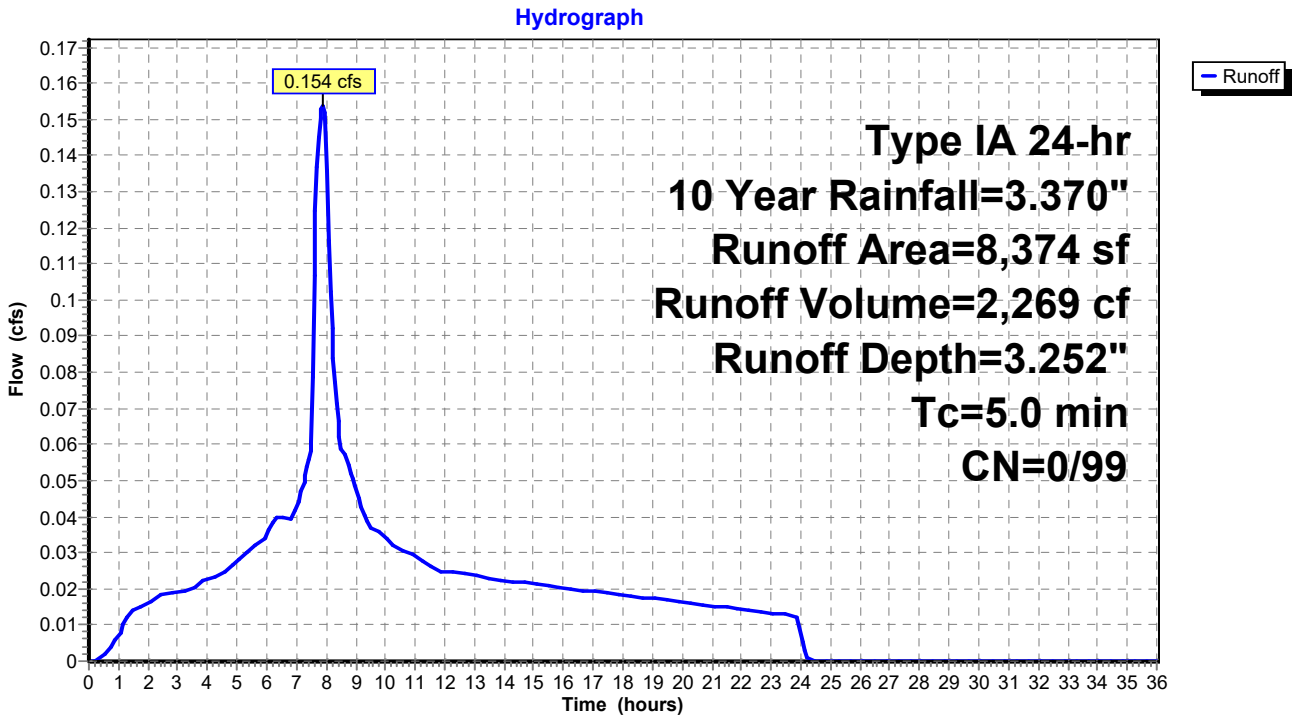
Runoff = 0.154 cfs @ 7.89 hrs, Volume= 2,269 cf, Depth= 3.252"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10 Year Rainfall=3.370"

	Area (sf)	CN	Description
*	7,003	99	Paved parking, HSG D
*	1,371	99	REPLACED PARKING, HSG D
	8,374	99	Weighted Average
	8,374	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 7S: Parking Area



Summary for Pond 9P: WQ Planter #4

Inflow Area = 13,870 sf,100.00% Impervious, Inflow Depth = 3.252" for 10 Year event
Inflow = 0.255 cfs @ 7.89 hrs, Volume= 3,758 cf
Outflow = 0.254 cfs @ 7.92 hrs, Volume= 3,758 cf, Atten= 0%, Lag= 1.4 min
Primary = 0.254 cfs @ 7.92 hrs, Volume= 3,758 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 223.91' @ 7.92 hrs Surf.Area= 550 sf Storage= 225 cf

Plug-Flow detention time= 65.0 min calculated for 3,758 cf (100% of inflow)
Center-of-Mass det. time= 65.0 min (715.5 - 650.4)

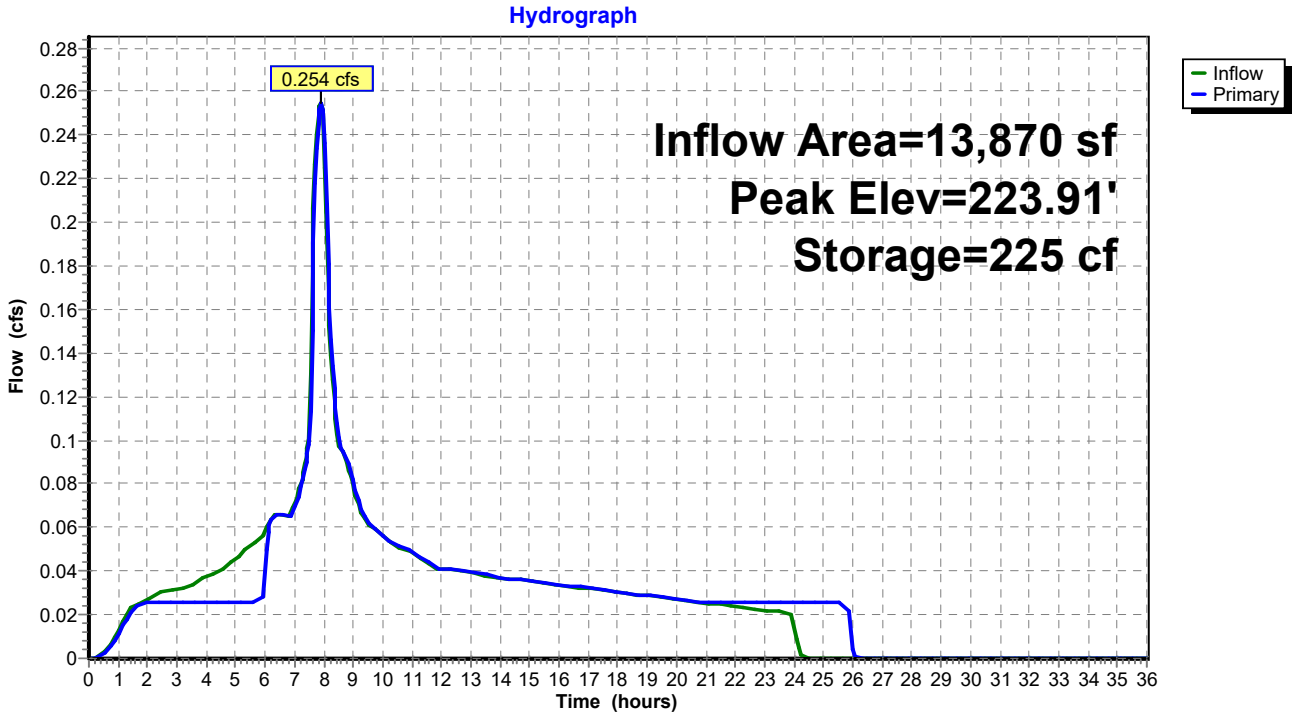
Volume	Invert	Avail.Storage	Storage Description
#1	223.50'	550 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
223.50	550	0	0
224.50	550	550	550

Device	Routing	Invert	Outlet Devices
#1	Primary	223.50'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	223.86'	**24.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.254 cfs @ 7.92 hrs HW=223.91' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.025 cfs)
└**2=Orifice/Grate** (Weir Controls 0.228 cfs @ 0.73 fps)

Pond 9P: WQ Planter #4



Summary for Subcatchment 10S: East Patio Sidewalk

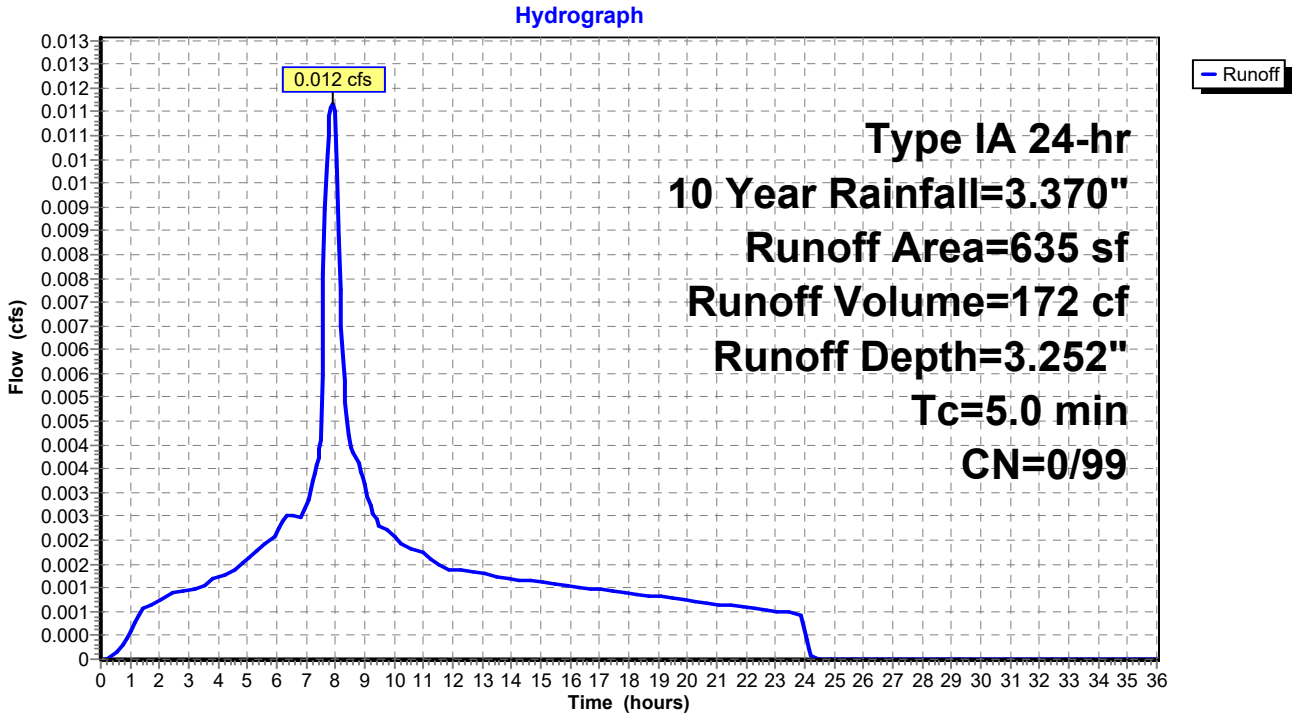
Runoff = 0.012 cfs @ 7.89 hrs, Volume= 172 cf, Depth= 3.252"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10 Year Rainfall=3.370"

	Area (sf)	CN	Description
*	635	99	Unconnected pavement, HSG D
	635	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Developed Impervious**

Subcatchment 10S: East Patio Sidewalk



Summary for Pond 11P: WQ Planter #3

Inflow Area = 635 sf,100.00% Impervious, Inflow Depth = 3.252" for 10 Year event
Inflow = 0.012 cfs @ 7.89 hrs, Volume= 172 cf
Outflow = 0.012 cfs @ 7.96 hrs, Volume= 172 cf, Atten= 0%, Lag= 4.0 min
Primary = 0.012 cfs @ 7.96 hrs, Volume= 172 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 225.68' @ 7.96 hrs Surf.Area= 66 sf Storage= 21 cf

Plug-Flow detention time= 65.7 min calculated for 172 cf (100% of inflow)
Center-of-Mass det. time= 65.6 min (716.0 - 650.4)

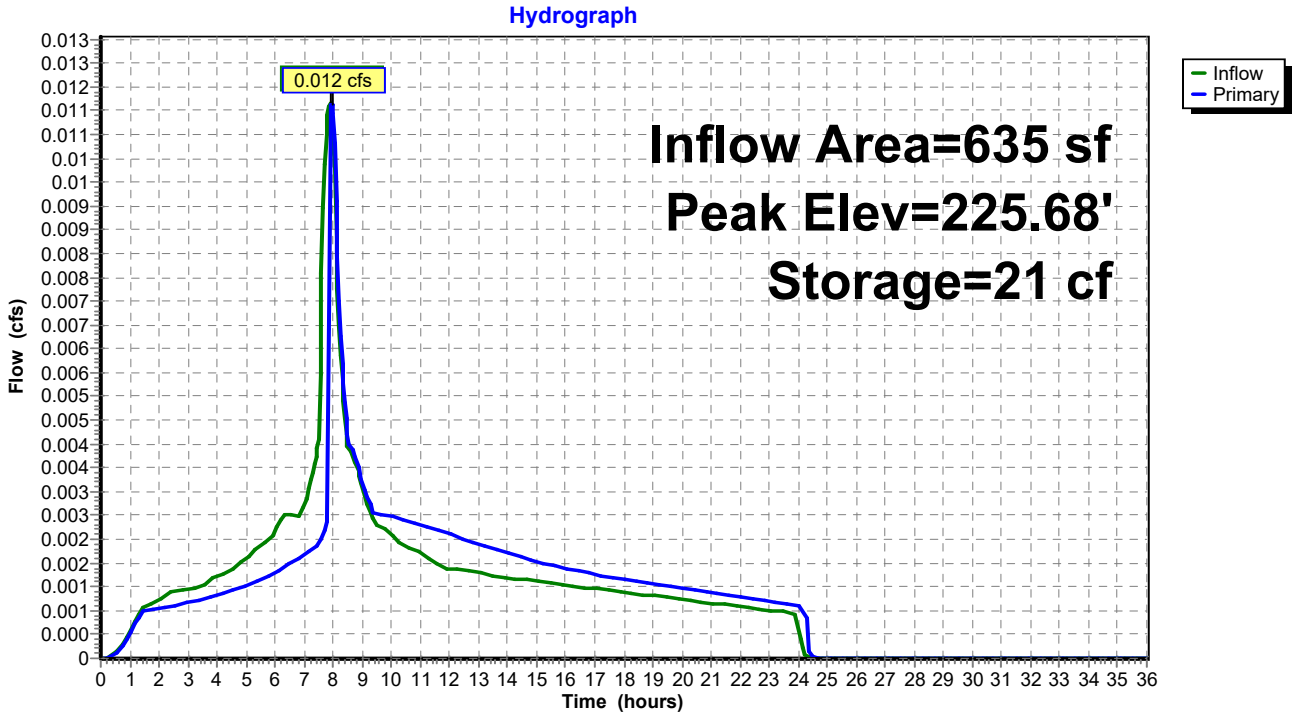
Volume	Invert	Avail.Storage	Storage Description
#1	225.16'	33 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
225.16	21	0	0	21
225.83	84	33	33	86

Device	Routing	Invert	Outlet Devices
#1	Primary	225.16'	**2.000 in/hr Exfiltration over Wetted area**
#2	Primary	225.66'	**4.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.011 cfs @ 7.96 hrs HW=225.68' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.003 cfs)
└**2=Orifice/Grate** (Weir Controls 0.008 cfs @ 0.44 fps)

Pond 11P: WQ Planter #3



Summary for Subcatchment 12S: Landscape Area

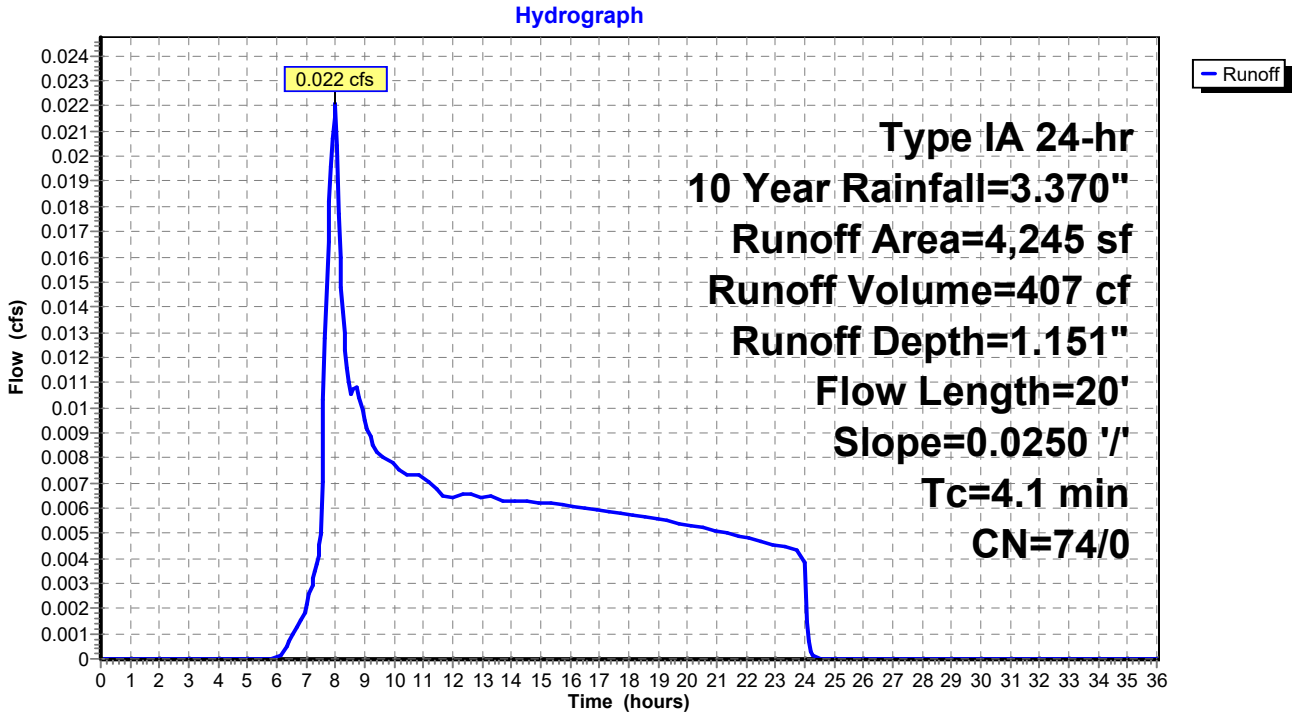
Runoff = 0.022 cfs @ 7.99 hrs, Volume= 407 cf, Depth= 1.151"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10 Year Rainfall=3.370"

Area (sf)	CN	Description
4,245	74	>75% Grass cover, Good, HSG C
4,245	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	20	0.0250	0.08		**Sheet Flow, Developed Landscape Area** Grass: Dense n= 0.240 P2= 2.490"

Subcatchment 12S: Landscape Area



Summary for Pond 13P: Underground Detention Storage

Inflow Area = 28,688 sf, 68.90% Impervious, Inflow Depth = 2.659" for 10 Year event
Inflow = 0.411 cfs @ 7.95 hrs, Volume= 6,356 cf
Outflow = 0.188 cfs @ 8.45 hrs, Volume= 6,356 cf, Atten= 54%, Lag= 30.1 min
Primary = 0.188 cfs @ 8.45 hrs, Volume= 6,356 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 222.17' @ 8.45 hrs Surf.Area= 1,218 sf Storage= 587 cf

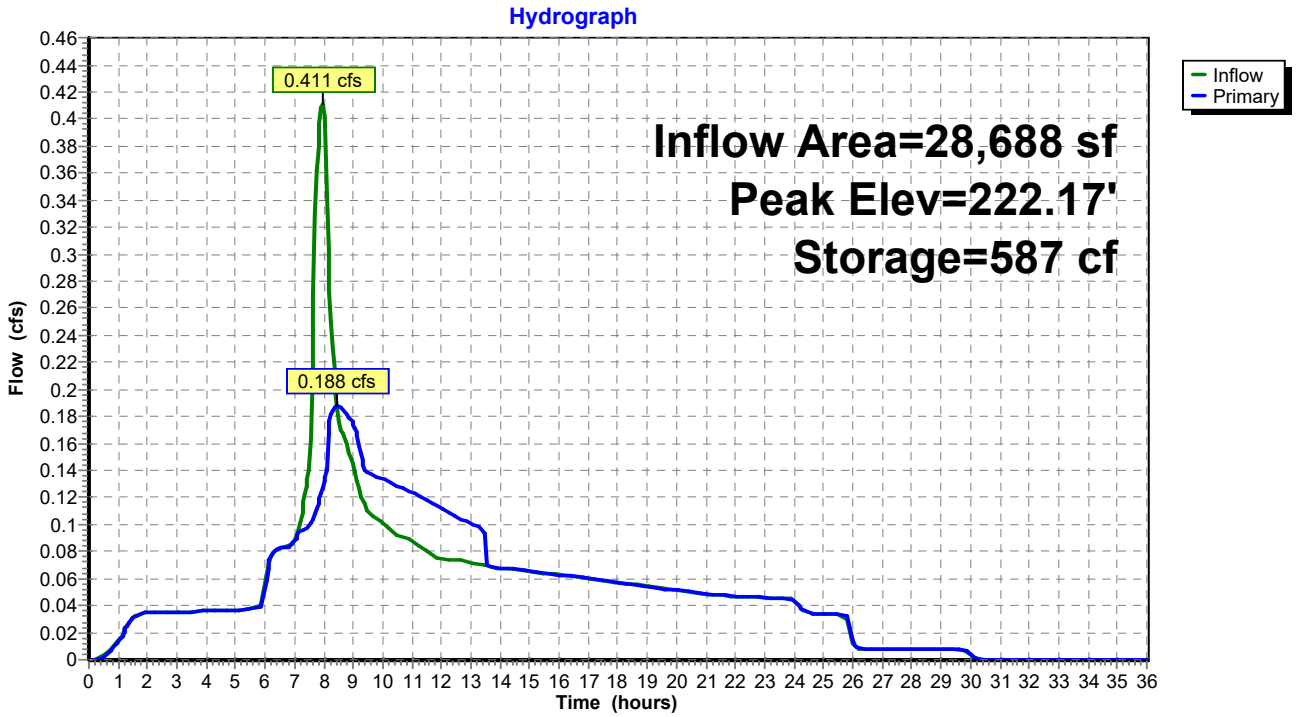
Plug-Flow detention time= 18.6 min calculated for 6,356 cf (100% of inflow)
Center-of-Mass det. time= 18.6 min (773.8 - 755.2)

Volume	Invert	Avail.Storage	Storage Description
#1	221.10'	877 cf	**14.00'W x 87.00'L x 1.60'H Prismatoid** 1,949 cf Overall x 45.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	220.28'	**2.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	222.00'	**2.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.188 cfs @ 8.45 hrs HW=222.17' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.144 cfs @ 6.62 fps)
└**2=Orifice/Grate** (Orifice Controls 0.043 cfs @ 1.99 fps)

Pond 13P: Underground Detention Storage



Summary for Subcatchment 14S: Neighboring Property NE

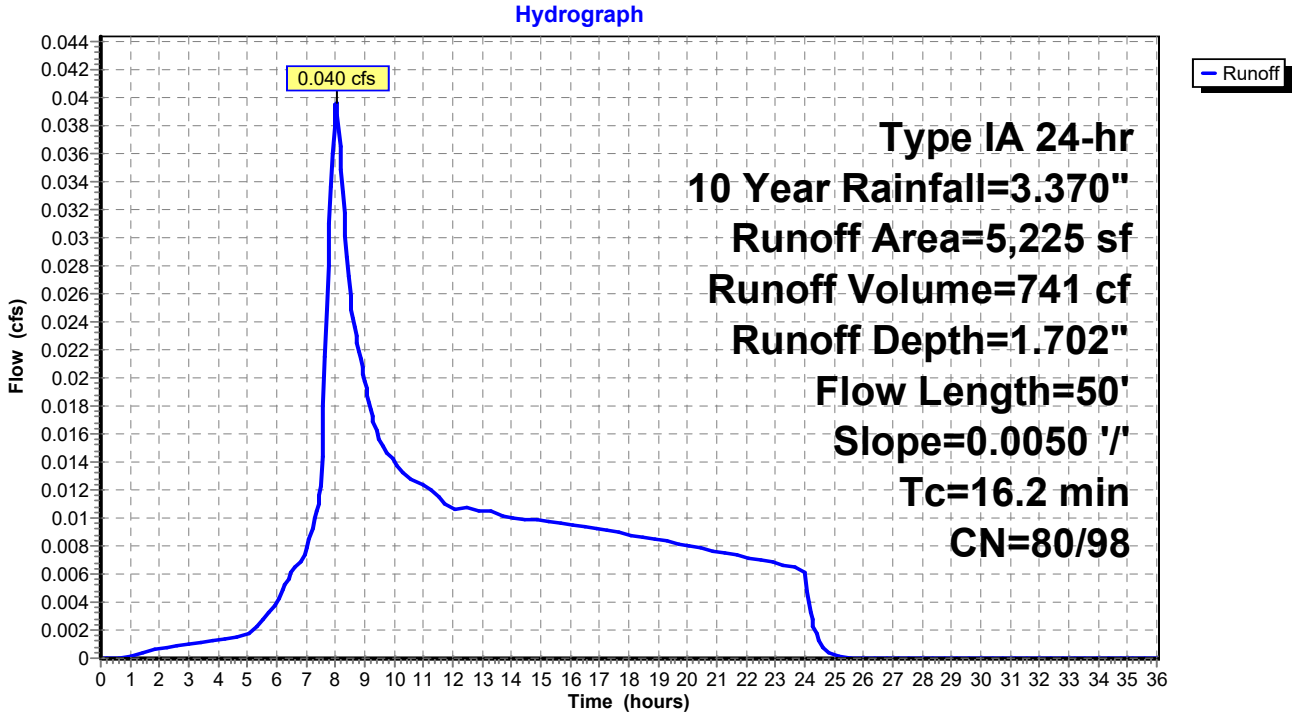
Runoff = 0.040 cfs @ 8.02 hrs, Volume= 741 cf, Depth= 1.702"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 10 Year Rainfall=3.370"

Area (sf)	CN	Description
4,677	80	>75% Grass cover, Good, HSG D
548	98	Roofs, HSG D
5,225	82	Weighted Average
4,677	80	89.51% Pervious Area
548	98	10.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	50	0.0050	0.05		**Sheet Flow, Neighbor's Yard** Grass: Dense n= 0.240 P2= 2.490"

Subcatchment 14S: Neighboring Property NE



Time span=0.00-36.00 hrs, dt=0.05 hrs, 721 points
Runoff by SBUH method, Split Pervious/Imperv.
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: NW 1/4 Building Runoff Area=2,080 sf 100.00% Impervious Runoff Depth=3.821"
Tc=5.0 min CN=0/99 Runoff=0.045 cfs 662 cf

Subcatchment2S: NE 1/4 Building Runoff Area=2,633 sf 100.00% Impervious Runoff Depth=3.821"
Tc=5.0 min CN=0/99 Runoff=0.057 cfs 838 cf

Pond 3P: WQ Planter #1 Peak Elev=225.05' Storage=84 cf Inflow=0.045 cfs 662 cf
Outflow=0.045 cfs 662 cf

Pond 4P: WQ Planter #2 Peak Elev=225.06' Storage=93 cf Inflow=0.057 cfs 838 cf
Outflow=0.057 cfs 838 cf

Subcatchment5S: SW 1/4 Building Runoff Area=2,901 sf 100.00% Impervious Runoff Depth=3.821"
Tc=5.0 min CN=0/99 Runoff=0.062 cfs 924 cf

Subcatchment6S: SE 1/4 Building Runoff Area=2,595 sf 100.00% Impervious Runoff Depth=3.821"
Tc=5.0 min CN=0/99 Runoff=0.056 cfs 826 cf

Subcatchment7S: Parking Area Runoff Area=8,374 sf 100.00% Impervious Runoff Depth=3.821"
Tc=5.0 min CN=0/99 Runoff=0.180 cfs 2,667 cf

Pond 9P: WQ Planter #4 Peak Elev=223.92' Storage=229 cf Inflow=0.298 cfs 4,417 cf
Outflow=0.298 cfs 4,417 cf

Subcatchment10S: East Patio Sidewalk Runoff Area=635 sf 100.00% Impervious Runoff Depth=3.821"
Tc=5.0 min CN=0/99 Runoff=0.014 cfs 202 cf

Pond 11P: WQ Planter #3 Peak Elev=225.68' Storage=22 cf Inflow=0.014 cfs 202 cf
Outflow=0.014 cfs 202 cf

Subcatchment12S: Landscape Area Runoff Area=4,245 sf 0.00% Impervious Runoff Depth=1.552"
Flow Length=20' Slope=0.0250 '/' Tc=4.1 min CN=74/0 Runoff=0.032 cfs 549 cf

Pond 13P: Underground Detention Storage Peak Elev=222.52' Storage=779 cf Inflow=0.494 cfs 7,615 cf
Outflow=0.233 cfs 7,615 cf

Subcatchment14S: Neighboring Property Runoff Area=5,225 sf 10.49% Impervious Runoff Depth=2.172"
Flow Length=50' Slope=0.0050 '/' Tc=16.2 min CN=80/98 Runoff=0.053 cfs 946 cf

Summary for Subcatchment 1S: NW 1/4 Building

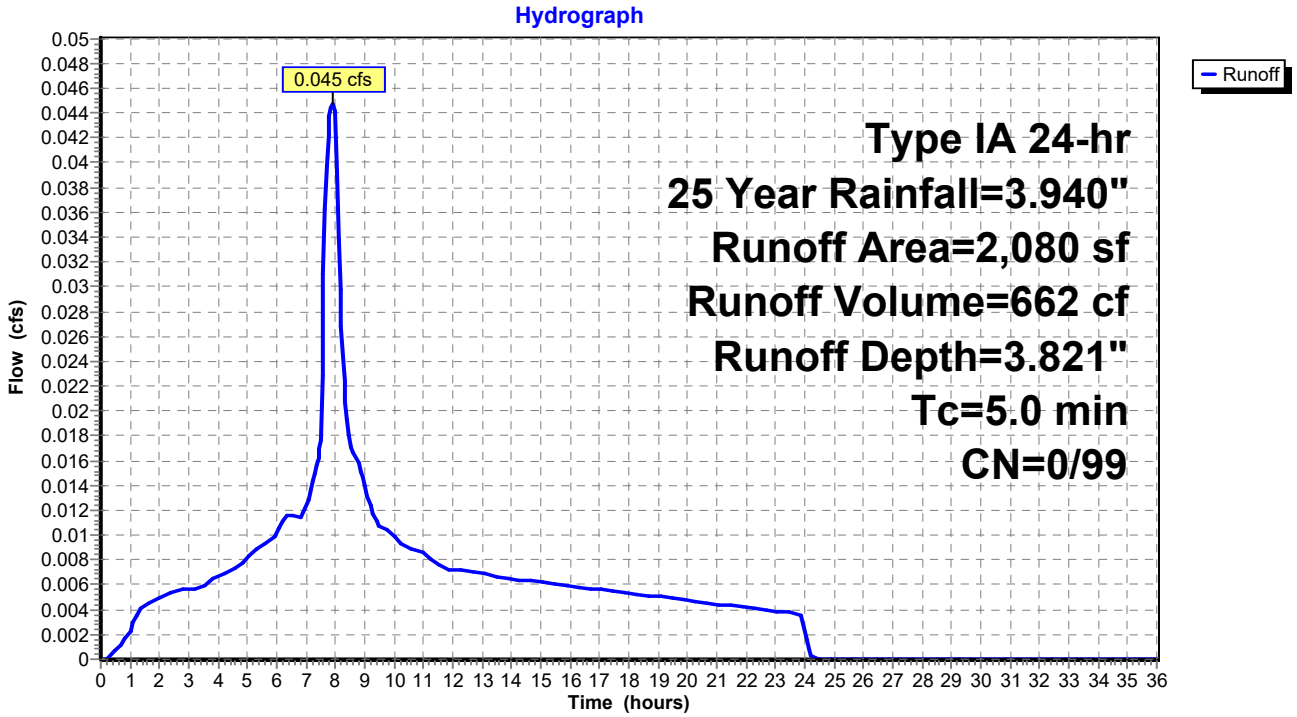
Runoff = 0.045 cfs @ 7.89 hrs, Volume= 662 cf, Depth= 3.821"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 25 Year Rainfall=3.940"

	Area (sf)	CN	Description
*	2,080	99	Roofs, HSG D
	2,080	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 1S: NW 1/4 Building



Summary for Subcatchment 2S: NE 1/4 Building

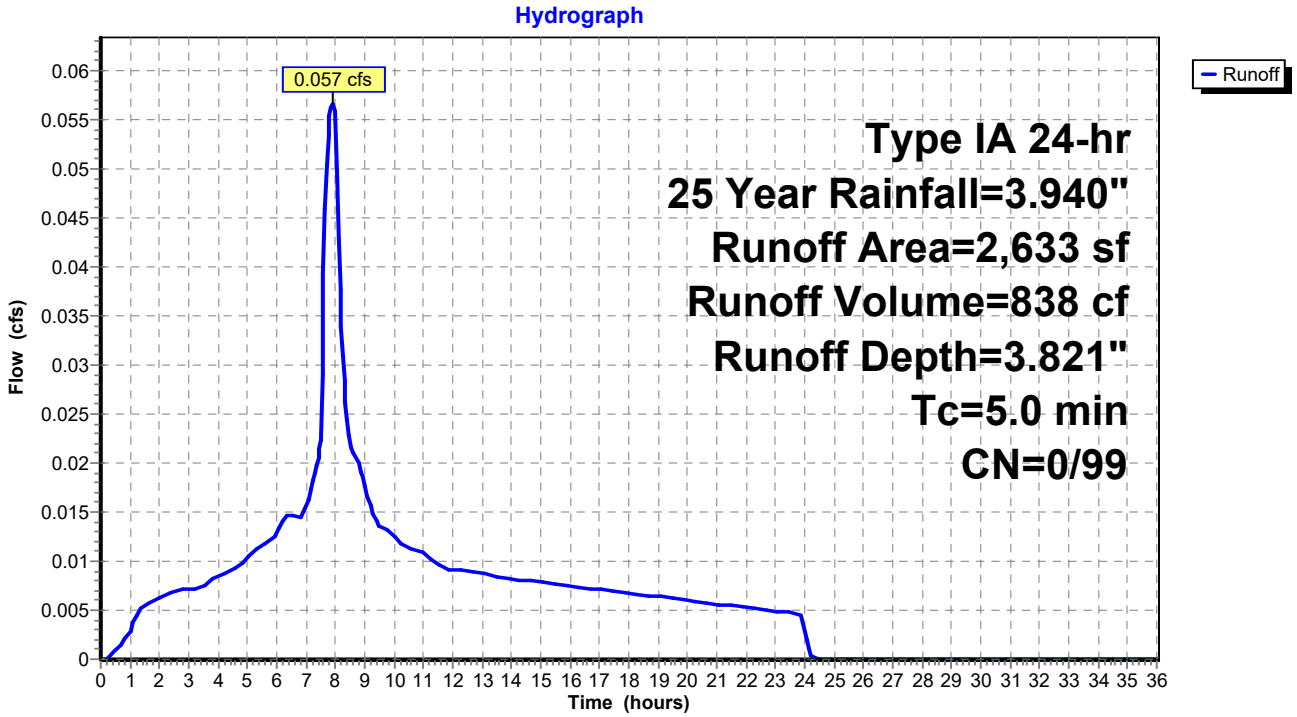
Runoff = 0.057 cfs @ 7.89 hrs, Volume= 838 cf, Depth= 3.821"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 25 Year Rainfall=3.940"

	Area (sf)	CN	Description
*	2,633	99	Roofs, HSG D
	2,633	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 2S: NE 1/4 Building



Summary for Pond 3P: WQ Planter #1

Inflow Area = 2,080 sf,100.00% Impervious, Inflow Depth = 3.821" for 25 Year event
Inflow = 0.045 cfs @ 7.89 hrs, Volume= 662 cf
Outflow = 0.045 cfs @ 7.91 hrs, Volume= 662 cf, Atten= 0%, Lag= 1.1 min
Primary = 0.045 cfs @ 7.91 hrs, Volume= 662 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 225.05' @ 7.91 hrs Surf.Area= 80 sf Storage= 84 cf

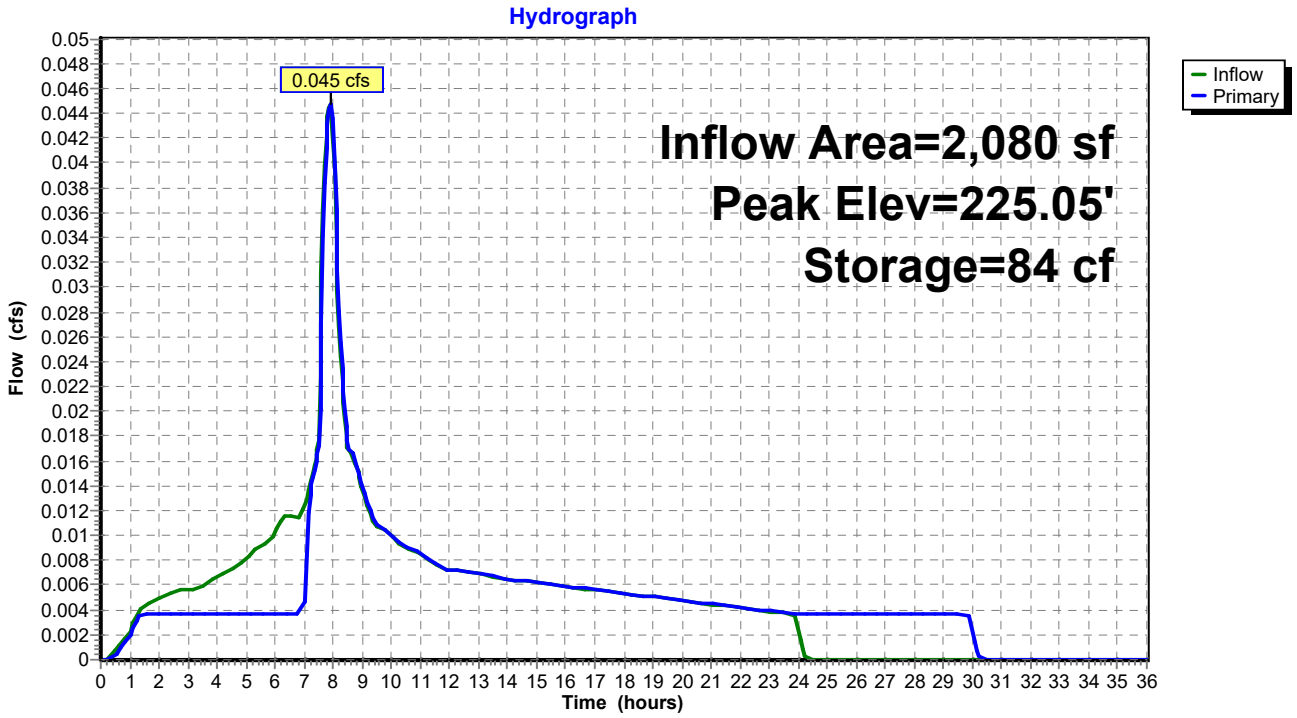
Plug-Flow detention time= 160.3 min calculated for 662 cf (100% of inflow)
Center-of-Mass det. time= 160.3 min (808.4 - 648.1)

Volume	Invert	Avail.Storage	Storage Description
#1	224.00'	120 cf	**4.00'W x 20.00'L x 1.50'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	224.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	225.00'	**4.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.044 cfs @ 7.91 hrs HW=225.05' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.004 cfs)
└**2=Orifice/Grate** (Weir Controls 0.041 cfs @ 0.75 fps)

Pond 3P: WQ Planter #1



Summary for Pond 4P: WQ Planter #2

Inflow Area = 2,633 sf,100.00% Impervious, Inflow Depth = 3.821" for 25 Year event
Inflow = 0.057 cfs @ 7.89 hrs, Volume= 838 cf
Outflow = 0.057 cfs @ 7.91 hrs, Volume= 838 cf, Atten= 0%, Lag= 1.2 min
Primary = 0.057 cfs @ 7.91 hrs, Volume= 838 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 225.06' @ 7.91 hrs Surf.Area= 88 sf Storage= 93 cf

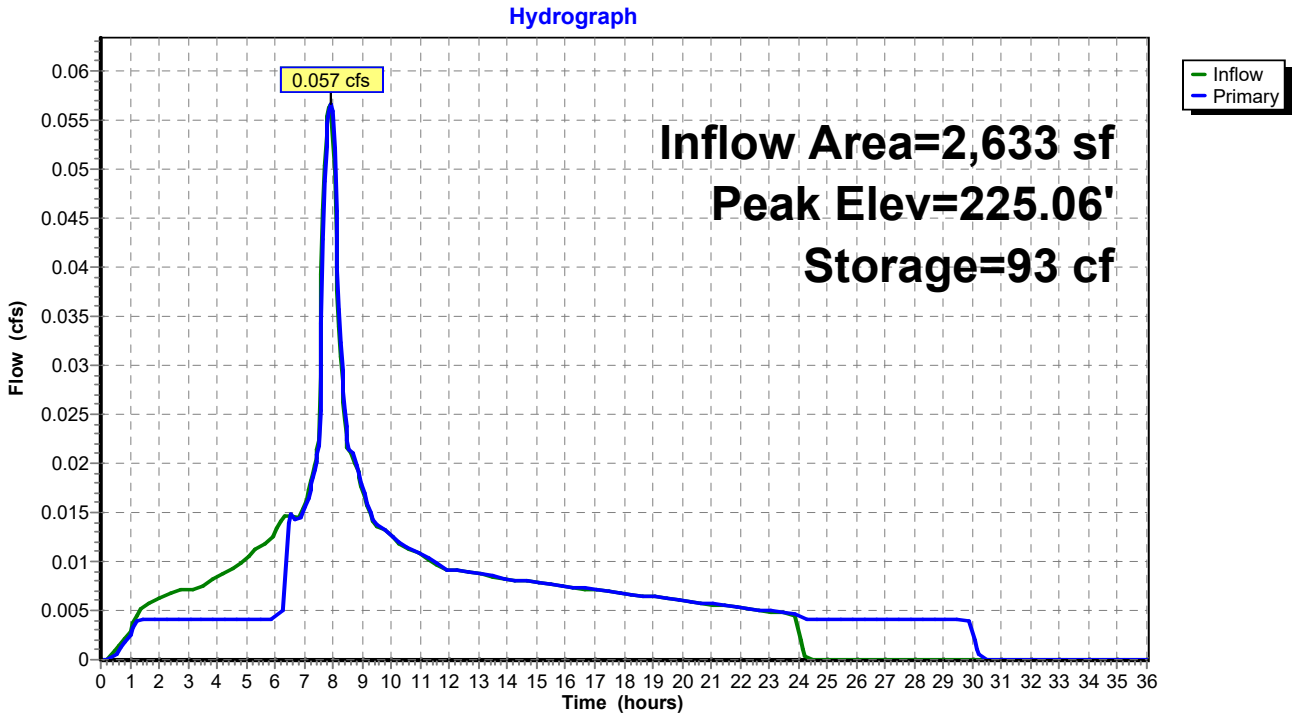
Plug-Flow detention time= 143.4 min calculated for 837 cf (100% of inflow)
Center-of-Mass det. time= 143.7 min (791.8 - 648.1)

Volume	Invert	Avail.Storage	Storage Description
#1	224.00'	132 cf	**4.00'W x 22.00'L x 1.50'H Prismatoid**

Device	Routing	Invert	Outlet Devices
#1	Primary	224.00'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	225.00'	**4.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.056 cfs @ 7.91 hrs HW=225.06' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.004 cfs)
└**2=Orifice/Grate** (Weir Controls 0.052 cfs @ 0.81 fps)

Pond 4P: WQ Planter #2



Summary for Subcatchment 5S: SW 1/4 Building

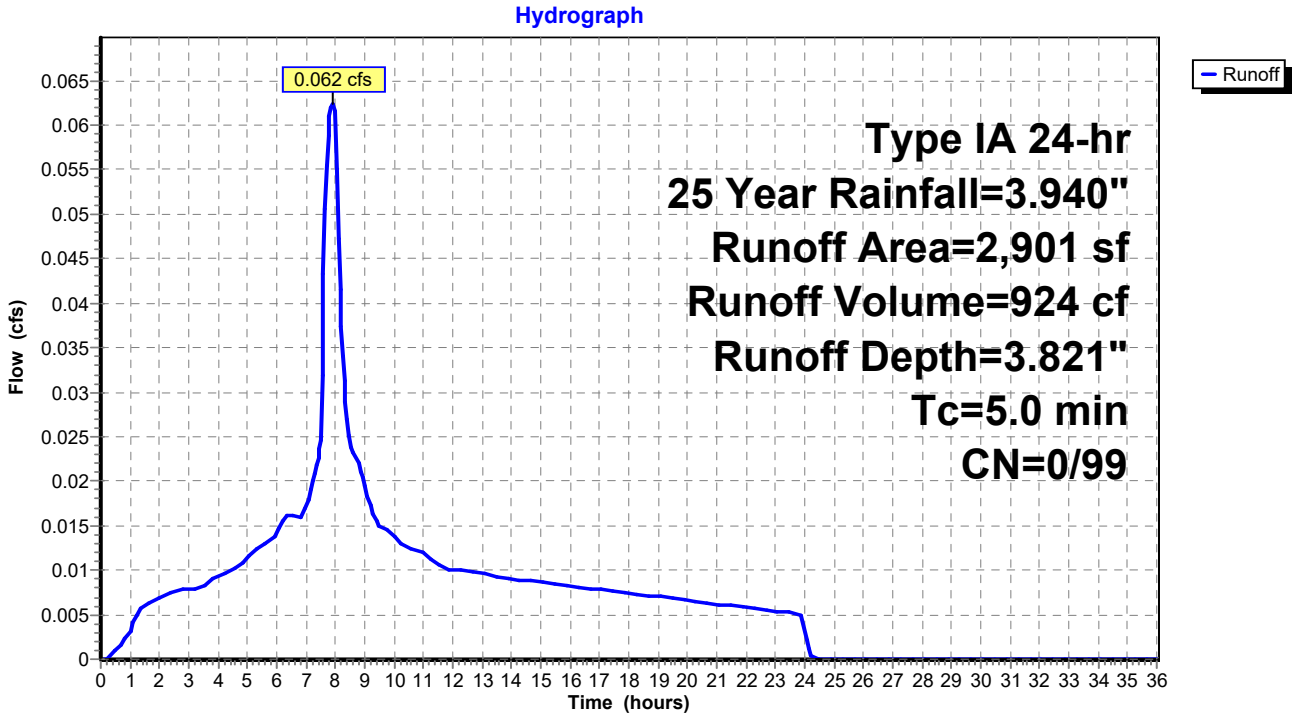
Runoff = 0.062 cfs @ 7.89 hrs, Volume= 924 cf, Depth= 3.821"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 25 Year Rainfall=3.940"

	Area (sf)	CN	Description
*	2,901	99	Roofs, HSG D
	2,901	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 5S: SW 1/4 Building



Summary for Subcatchment 6S: SE 1/4 Building

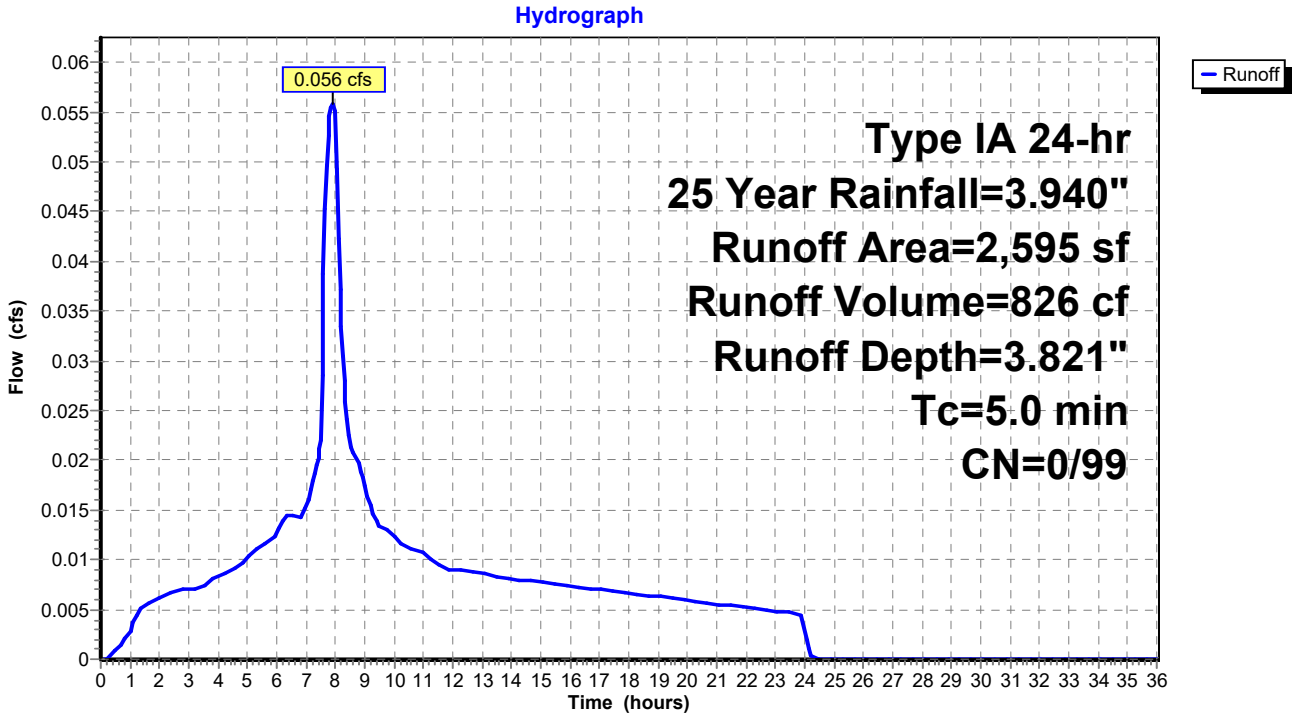
Runoff = 0.056 cfs @ 7.89 hrs, Volume= 826 cf, Depth= 3.821"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 25 Year Rainfall=3.940"

	Area (sf)	CN	Description
*	2,595	99	Roofs, HSG D
	2,595	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 6S: SE 1/4 Building



Summary for Subcatchment 7S: Parking Area

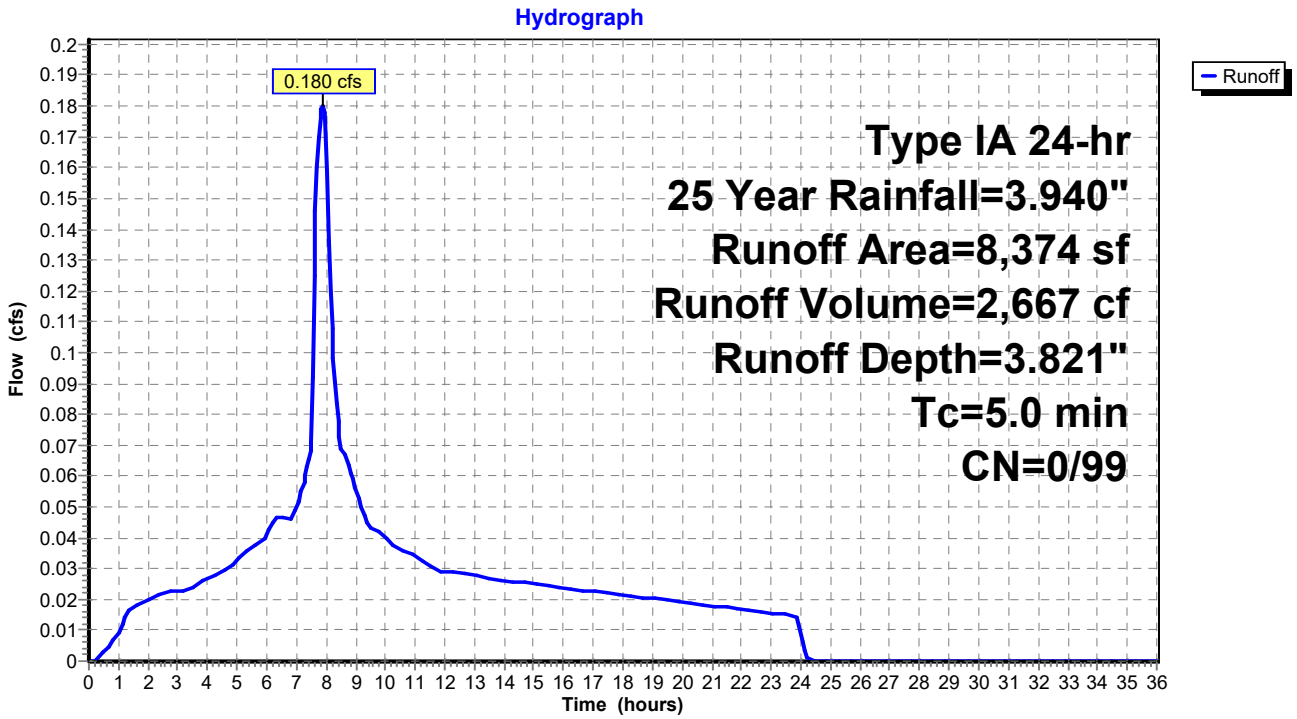
Runoff = 0.180 cfs @ 7.89 hrs, Volume= 2,667 cf, Depth= 3.821"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 25 Year Rainfall=3.940"

	Area (sf)	CN	Description
*	7,003	99	Paved parking, HSG D
*	1,371	99	REPLACED PARKING, HSG D
	8,374	99	Weighted Average
	8,374	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry,**

Subcatchment 7S: Parking Area



Summary for Pond 9P: WQ Planter #4

Inflow Area = 13,870 sf,100.00% Impervious, Inflow Depth = 3.821" for 25 Year event
Inflow = 0.298 cfs @ 7.89 hrs, Volume= 4,417 cf
Outflow = 0.298 cfs @ 7.92 hrs, Volume= 4,417 cf, Atten= 0%, Lag= 1.3 min
Primary = 0.298 cfs @ 7.92 hrs, Volume= 4,417 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 223.92' @ 7.92 hrs Surf.Area= 550 sf Storage= 229 cf

Plug-Flow detention time= 59.4 min calculated for 4,417 cf (100% of inflow)
Center-of-Mass det. time= 59.4 min (707.5 - 648.1)

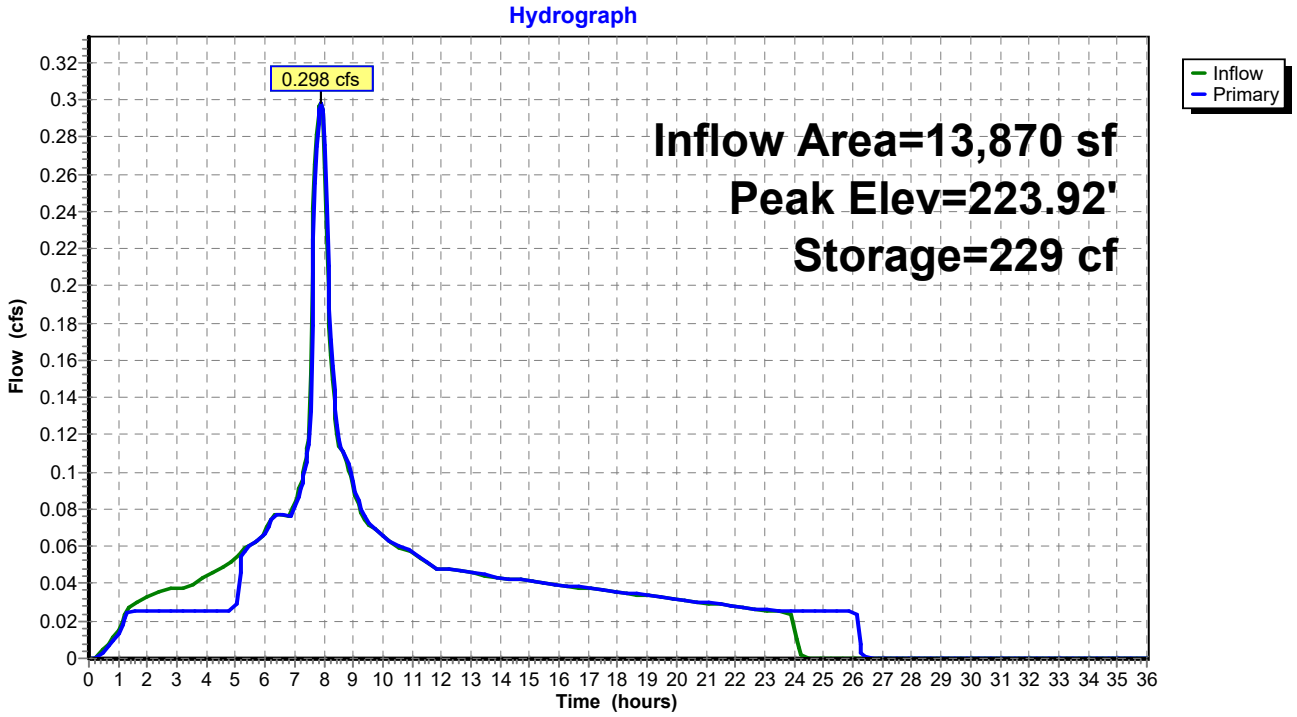
Volume	Invert	Avail.Storage	Storage Description
#1	223.50'	550 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
223.50	550	0	0
224.50	550	550	550

Device	Routing	Invert	Outlet Devices
#1	Primary	223.50'	**2.000 in/hr Exfiltration over Surface area**
#2	Primary	223.86'	**24.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.297 cfs @ 7.92 hrs HW=223.92' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.025 cfs)
└**2=Orifice/Grate** (Weir Controls 0.271 cfs @ 0.77 fps)

Pond 9P: WQ Planter #4



Summary for Subcatchment 10S: East Patio Sidewalk

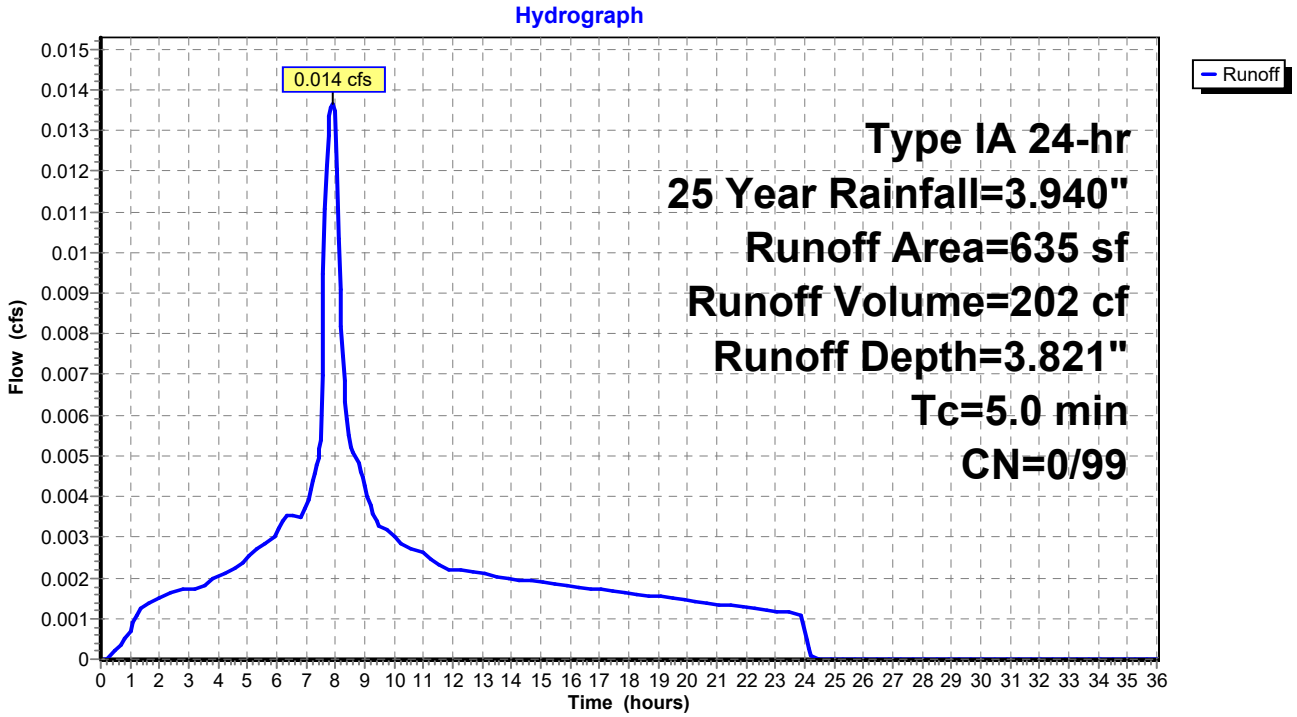
Runoff = 0.014 cfs @ 7.89 hrs, Volume= 202 cf, Depth= 3.821"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 25 Year Rainfall=3.940"

	Area (sf)	CN	Description
*	635	99	Unconnected pavement, HSG D
	635	99	100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, Developed Impervious**

Subcatchment 10S: East Patio Sidewalk



Summary for Pond 11P: WQ Planter #3

Inflow Area = 635 sf,100.00% Impervious, Inflow Depth = 3.821" for 25 Year event
Inflow = 0.014 cfs @ 7.89 hrs, Volume= 202 cf
Outflow = 0.014 cfs @ 7.92 hrs, Volume= 202 cf, Atten= 0%, Lag= 1.6 min
Primary = 0.014 cfs @ 7.92 hrs, Volume= 202 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 225.68' @ 7.92 hrs Surf.Area= 66 sf Storage= 22 cf

Plug-Flow detention time= 69.6 min calculated for 202 cf (100% of inflow)
Center-of-Mass det. time= 69.5 min (717.7 - 648.1)

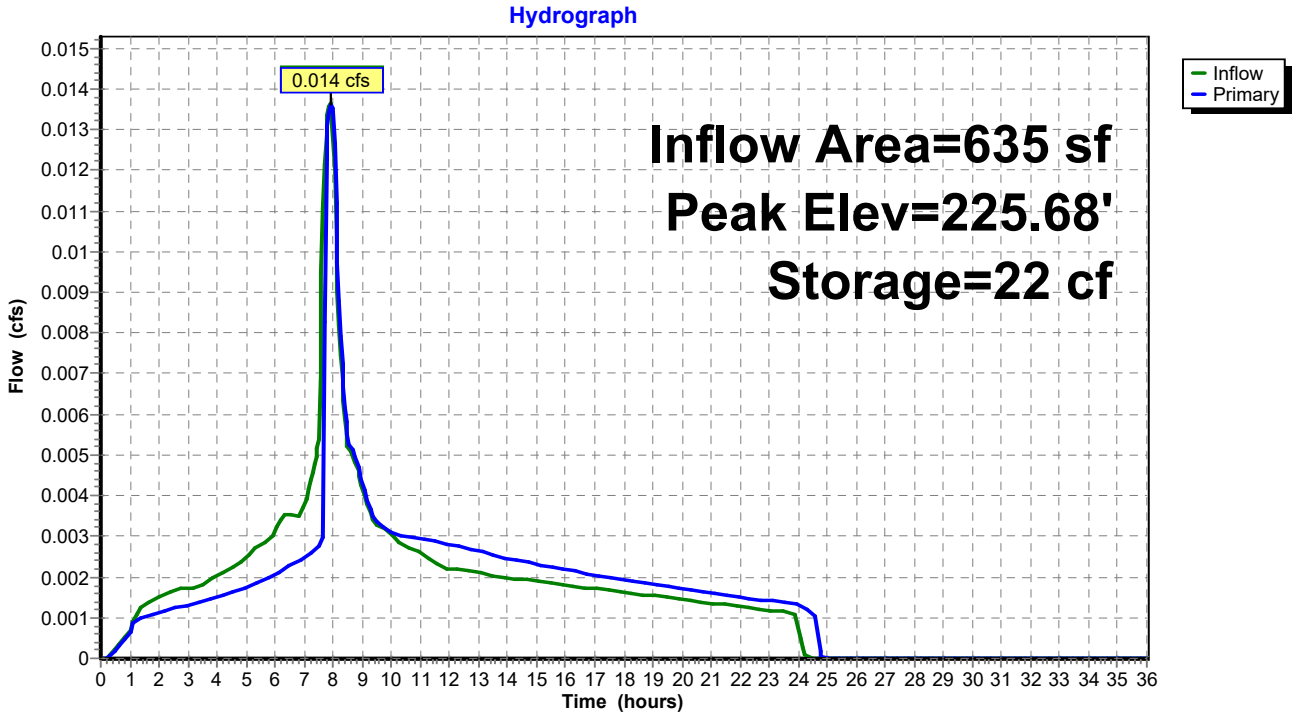
Volume	Invert	Avail.Storage	Storage Description
#1	225.16'	33 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
225.16	21	0	0	21
225.83	84	33	33	86

Device	Routing	Invert	Outlet Devices
#1	Primary	225.16'	**2.000 in/hr Exfiltration over Wetted area**
#2	Primary	225.66'	**4.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.014 cfs @ 7.92 hrs HW=225.68' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.003 cfs)
└**2=Orifice/Grate** (Weir Controls 0.010 cfs @ 0.47 fps)

Pond 11P: WQ Planter #3



Summary for Subcatchment 12S: Landscape Area

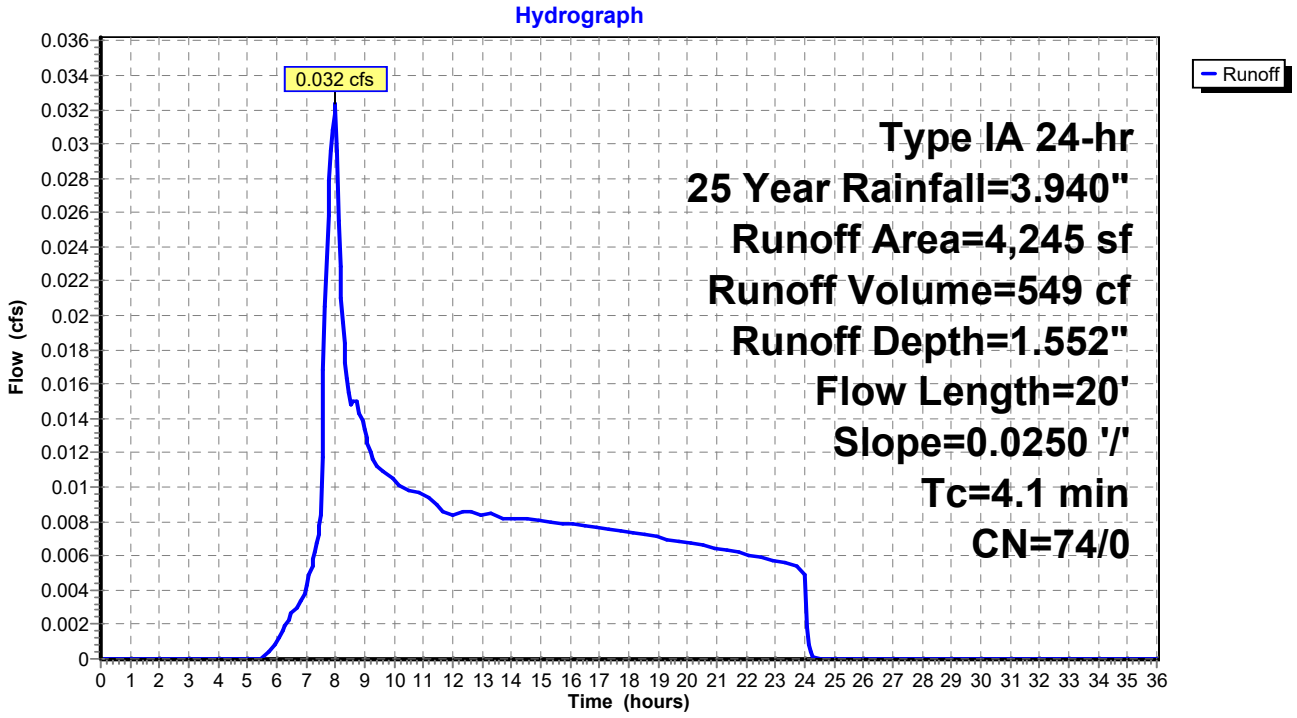
Runoff = 0.032 cfs @ 7.98 hrs, Volume= 549 cf, Depth= 1.552"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 25 Year Rainfall=3.940"

Area (sf)	CN	Description
4,245	74	>75% Grass cover, Good, HSG C
4,245	74	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.1	20	0.0250	0.08		**Sheet Flow, Developed Landscape Area** Grass: Dense n= 0.240 P2= 2.490"

Subcatchment 12S: Landscape Area



Summary for Pond 13P: Underground Detention Storage

Inflow Area = 28,688 sf, 68.90% Impervious, Inflow Depth = 3.185" for 25 Year event
Inflow = 0.494 cfs @ 7.94 hrs, Volume= 7,615 cf
Outflow = 0.233 cfs @ 8.42 hrs, Volume= 7,615 cf, Atten= 53%, Lag= 28.7 min
Primary = 0.233 cfs @ 8.42 hrs, Volume= 7,615 cf

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 222.52' @ 8.42 hrs Surf.Area= 1,218 sf Storage= 779 cf

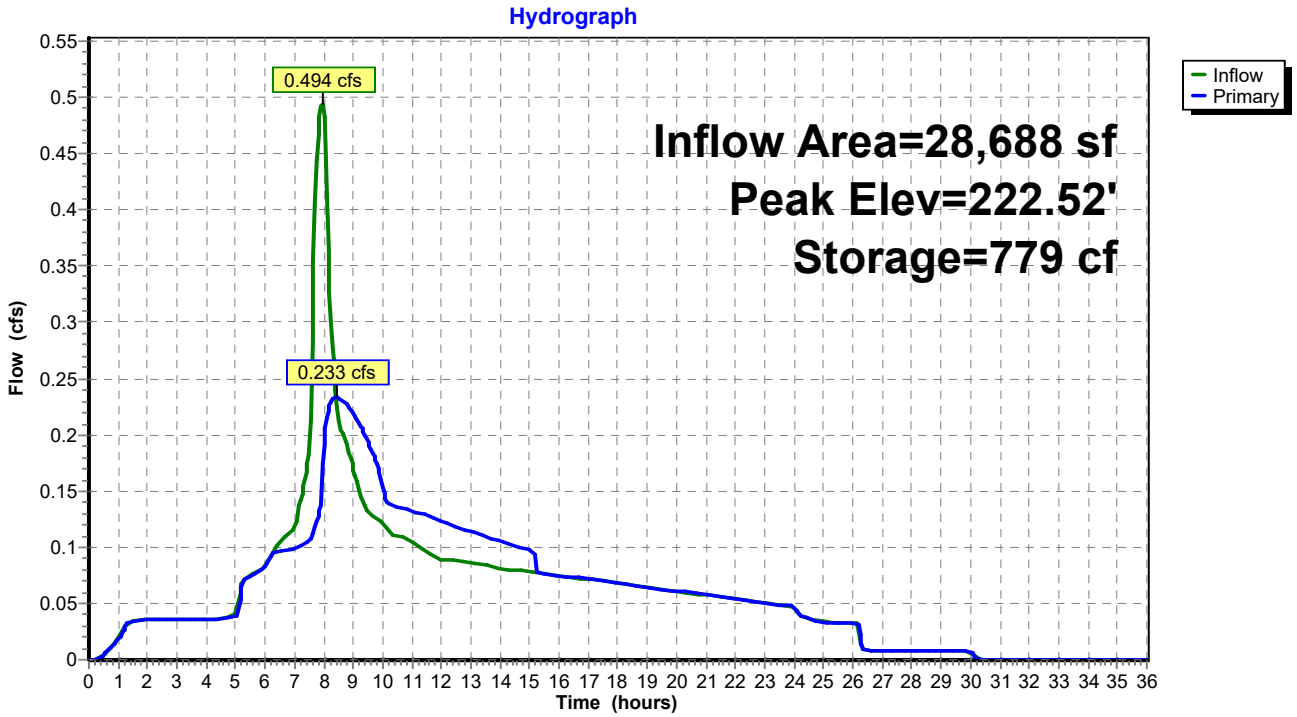
Plug-Flow detention time= 23.1 min calculated for 7,615 cf (100% of inflow)
Center-of-Mass det. time= 23.1 min (768.0 - 744.9)

Volume	Invert	Avail.Storage	Storage Description
#1	221.10'	877 cf	**14.00'W x 87.00'L x 1.60'H Prismatoid** 1,949 cf Overall x 45.0% Voids

Device	Routing	Invert	Outlet Devices
#1	Primary	220.28'	**2.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Primary	222.00'	**2.000" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.233 cfs @ 8.42 hrs HW=222.52' (Free Discharge)
└─**1=Orifice/Grate** (Orifice Controls 0.157 cfs @ 7.21 fps)
└─**2=Orifice/Grate** (Orifice Controls 0.076 cfs @ 3.48 fps)

Pond 13P: Underground Detention Storage



Summary for Subcatchment 14S: Neighboring Property NE

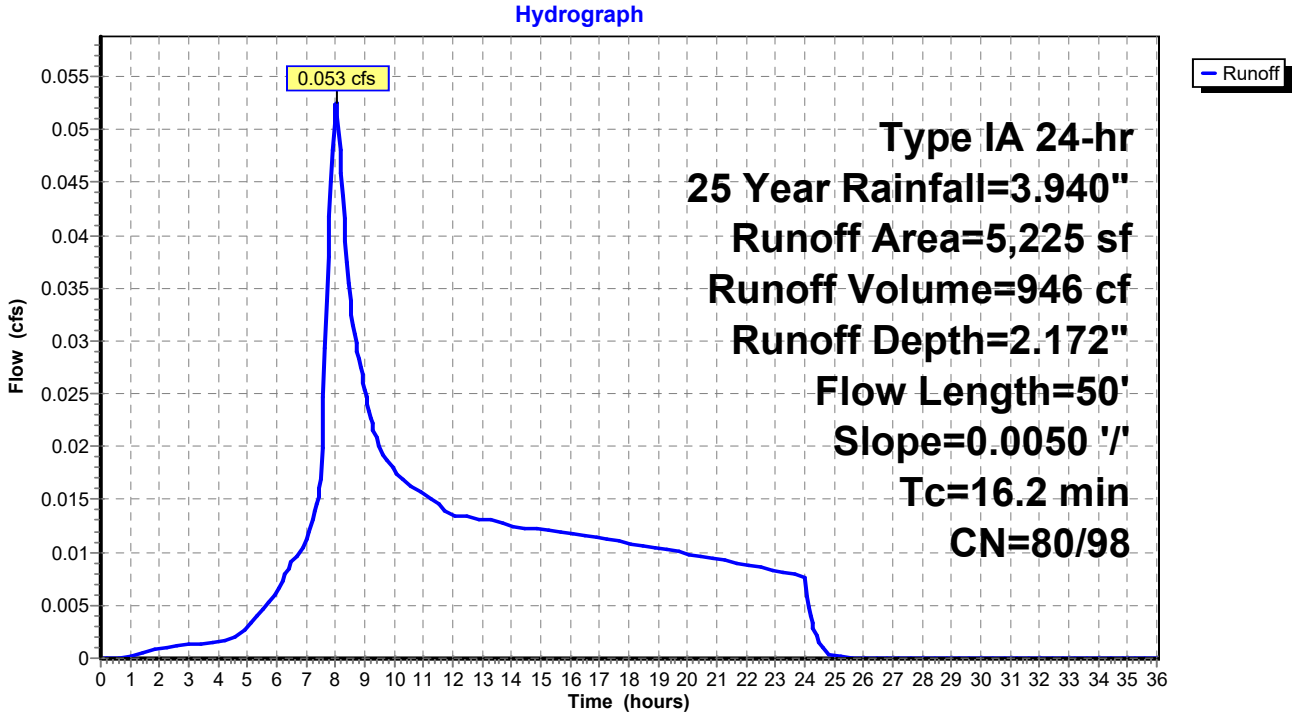
Runoff = 0.053 cfs @ 8.02 hrs, Volume= 946 cf, Depth= 2.172"

Runoff by SBUH method, Split Pervious/Imperv., Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type IA 24-hr 25 Year Rainfall=3.940"

Area (sf)	CN	Description
4,677	80	>75% Grass cover, Good, HSG D
548	98	Roofs, HSG D
5,225	82	Weighted Average
4,677	80	89.51% Pervious Area
548	98	10.49% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.2	50	0.0050	0.05		**Sheet Flow, Neighbor's Yard** Grass: Dense n= 0.240 P2= 2.490"

Subcatchment 14S: Neighboring Property NE



PRIVATE STORMWATER FACILITIES
OPERATIONS AND MAINTENANCE AGREEMENT

This Agreement is made and entered into this _____ day of _____ 20___, by and between City of Albany (City) and _____ (Owner).

RECITALS

A. Owner has developed or will develop the private stormwater facilities (Facilities) listed below and shown on attached, and/or referenced, as-built construction drawings for _____ _____ in order to satisfy the requirements of Chapter 12.45 of the Albany Municipal Code.

B. The Facilities enable development of property while mitigating the impacts of additional surface water and pollutants associated with stormwater runoff prior to discharge from the property to the public stormwater system or waters of the state. The consideration for this Agreement is connection to the public stormwater system or waters of the state.

C. The property benefited by the Facilities and subject to the obligation of this Agreement is described with the legal description below or in Exhibit A (Property) attached hereto and incorporated by reference.

D. The Facilities have been designed by a registered design professional and constructed to accommodate the anticipated volume of runoff and to detain and treat runoff in accordance with Albany's Municipal Code, Development Code, Engineering standards, and Construction Specifications, as applicable.

E. For the Facilities to function properly over time, they must be maintained in accordance with the attached Operations and Maintenance (O&M) Plan.

F. The O&M Plan represents current best management practices for O&M activities. It is acknowledged that best management practices for O&M activities may change over time.

G. Even with routine maintenance conducted through the O&M Plan, over time, there is potential for the Facilities to lose treatment capacity through extended filtration and absorption of pollutants.

H. Failure to inspect and maintain the Facilities can result in an unacceptable impact to the public stormwater system and/or waters of the state.

NOW, THEREFORE, it is agreed by and between the parties as follows:

1. INCORPORATION OF RECITALS The recitals above are acknowledged and agreed to by all parties.
2. CONSIDERATION Owner undertakes the obligations set forth herein in consideration of development approval granted by the City and acknowledges that said consideration is adequate to support these obligations.
3. PARTIES The terms of this agreement apply to the named parties, their agents, contractors, successors, and assigns.
4. O&M PLAN As best management practices for O&M activities change over time the owner will be bound to the most current standard operation and maintenance requirements set forth in the most current version of the City's Engineering Standards or like requirements. It is the City's responsibility to notify the owner of any required modifications to current practices.

5. TERM Owners obligations hereunder are perpetual and may only be modified or eliminated by amendment as described herein.
6. OWNER INSPECTIONS Owner agrees to operate, inspect and maintain each Facility in accordance with design parameters and the O&M Plan, attached hereto as Exhibit B and incorporated by reference. Owner shall retain a copy of this agreement, the O&M plan, and applicable as-built drawings on site. The owner shall also maintain a log of all inspection activities on site. The agreements, O&M plan, as-builts, and maintenance log shall be available to the City upon request or during City inspections.
7. OWNER NOTICE OF FACILITY FAILURE Owner shall provide notice to the City if Facilities fail to function as designed. Notice shall be provided within ten (10) days of identifying the failure. Additionally, Owner shall provide immediate notice to the City of any potentially damaging discharge or spill to the Facilities, public storm drain system, or water of the state.
8. DEFICIENCIES All aspects in which the Facilities fail to satisfy the O&M Plan, and/or provide the level of treatment intended with their design, shall be noted as "Deficiencies".
9. OWNER CORRECTIONS All Deficiencies shall be corrected at Owner's expense within thirty (30) days after completion of the inspection. In addition to the maintenance practices identified in the O&M Plan, corrections may include replacement of treatment soil, vegetation, drain rock, and/or other system components as applicable if the City determines that the Facility no longer provides the designed level of treatment. If more than 30 days is reasonably needed to correct a Deficiency, Owner shall have a reasonable period to correct the Deficiency so long as the correction is commenced within the 30-day period and is diligently prosecuted to completion.
10. CITY INSPECTIONS Owner grants City right of entry to inspect the Facilities. City will endeavor to give ten (10) days prior notice to Owner, except that no notice shall be required in case of an emergency. Inspections are not limited to the activities identified in the O&M plan and may include testing as necessary to determine if the Facilities are retaining their designed treatment capacity. City shall determine whether Deficiencies need to be corrected. Owner will be notified in writing of the Deficiencies and shall make corrections within 30 days of the date of the notice.
11. RIGHT OF ENTRY Owner herby authorizes and consents to the exercise of all entry authority granted to the City pursuant to AMC 12.45.150 as it now exists, or may hereafter be amended, to permit inspections and testing of the private post-construction stormwater quality facilities. The same rights of entry shall apply to City Corrections.
12. CITY CORRECTIONS If correction of all Owner or City identified Deficiencies is not completed within thirty (30) days (or the "reasonable period" as described in Section 9, whichever is larger) after Owner's inspection or City notice, City shall have the right to have any Deficiencies corrected. City shall have access to the Facilities for the purpose of correcting such Deficiencies. Owner shall pay all costs reasonably incurred by City for work performed to correct the Deficiencies (City Correction Costs) following Owner's failure to correct any Deficiencies in the Facilities. Owner shall pay City the City Correction Costs within thirty (30) days of the date of the invoice. Owner understands and agrees that upon non-payment, City Correction Costs shall be secured by a lien on the Property for the City Correction Cost plus interest and penalties which lien, shall take priority over all other liens and encumbrances to the maximum extent permitted by law. City Correction Costs are defined as all City expenses incurred in taking the corrective actions authorized herein. These costs include, but are not limited to, all amounts paid, or to be paid, to third party contractors as well as all direct and

indirect City costs including, but not limited to, labor, benefits, equipment, engineering, administrative, and legal costs. Costs will be determined using the City's current cost accounting methodology.

13. EMERGENCY MEASURES If at any time City reasonably determines that the Facilities create any imminent threat to public health, safety or welfare, City is hereby granted immediate right of access and may immediately and without prior notice to Owner take measures reasonably designed to remedy the threat. City shall provide notice of the threat and the measures taken to Owner as soon as reasonably practicable, and charge Owner for the cost of these corrective measures.
14. COVENANT RUNNING WITH THE LAND The terms of this agreement shall be recorded with the appropriate records department of the County in which the property is located and shall be a covenant running with the land and binding on all owners of the Property present and future, and their heirs, successors and assigns. Owner shall notify City of any change in property ownership and/or change in the owner representative designated to receive notices in Section 21 below.
15. AMENDMENTS The terms of this Agreement may be amended only by mutual agreement of the parties. Any amendments shall be in writing, shall refer specifically to this Agreement, and shall be valid only when executed by the owners of the Property, City and recorded in the Official Records of the county where the Property is located.
16. REMEDIES CUMULATIVE Remedies provided herein for breach of this agreement are cumulative and in addition to any and all other civil and criminal remedies.
17. VENUE AND ATTORNEY FEES Any litigation concerning this Agreement shall be brought in the Circuit Court of the State of Oregon for Linn County and the prevailing party shall be entitled to recover all costs, including reasonable attorney's fees as may be determined by the court, including those on appeal.
18. SEVERABILITY The invalidity of any section, clause, sentence, or provision of this Agreement shall not affect the validity of any other part of this Agreement, which can be given effect without such invalid part or parts.
19. AMBIGUITIES in this agreement, if any, shall not be resolved against the drafter.
20. COMPLETE INTEGRATION This Agreement is a complete integration of all of the parties' understandings and expectations of the other with regard to the subject of this Agreement. Prior discussions or representations which are not included in this Agreement are of no effect.
21. NOTICES Any notice required or permitted under this Agreement shall be given when actually delivered within three (3) business days following deposit in the United States Mail, certified mail, and addressed as follows:

    A. To the Owner:

    _____

    _____

    _____

    B. To the City: City of Albany, Public Works Department
    Attn: Public Works Director
    P.O. Box 490
    Albany, OR 97321

IN WITNESS WHEREOF, Owner has signed this Agreement.

OWNER:

Signature:_____

Name:_____

Title:_____

Address:_____

[Use this notary block if Owner is an individual.]

STATE OF _____

County of _____

This instrument was acknowledged before me this _____ day of _____, 20____.

_____
Notary Public

[Use this notary block only if Owner is an entity.]

STATE OF_____

County of _____

This instrument was acknowledged before me this_____day of _____, 20___, by

_____ (name of person) as_____ (title) of

_____ (name of entity).

_____
Notary Public

CITY OF ALBANY:

_____
Public Works Director, or designee Date

Stormwater Quality Facilities O&M Checklists

The following checklists provide guidance for operating, inspecting, troubleshooting, and maintaining stormwater quality facilities in a post-construction setting. The required and recommended inspection frequency for inspections is also included.

O&M checklists are provided for the following types of facilities:

- Planter/Curb Extension/Swale
- Pervious Pavement
- ~~Green Roof~~
- ~~Water Quality (Pretreatment) Manhole~~
- ~~Dry Ponds~~

Planter/Curb Extension/Swale – O&M Checklist

These vegetated post-construction stormwater quality facilities are designed to accept stormwater runoff from adjacent impervious surfaces. They remove pollutants by filtering runoff through vegetation and soil media. Water should drain through the facility within 24 hrs after a storm event. This checklist describes required and recommended inspection and maintenance activities to provide for proper facility function.

Inspection Timing	Facility Feature	Problem	Conditions to Check for	Maintenance Practices
Required: Annually *Recommended: Monthly from November-April and after any large storm (e.g., 1 inch in 24 hrs)*	General	Sediment accumulation in treatment area	Sediment depth exceeds 2 ins.	Remove sediment from vegetated treatment area. Rake to ensure facility is level across bottom and water drains freely through soil media. Replace soil media or vegetation as needed
Required: Annually *Recommended: Monthly from November-April and after any large storm (1 inch in 24 hrs)*	General	Erosion scouring	Eroded or scoured facility bottom due to flow channelization, or higher flows	Repair ruts or bare areas by filling with facility soil media; repair or add splash blocks or rock energy dissipaters at curb and pipe inlets; regrade and replant large bare areas; use erosion control measures as needed
Required: Annually *Recommended: Monthly from November-April and after any large storm (1 inch in 24 hrs)*	General	Standing water	Standing water in the facility between storms that does not drain freely; no standing water should exist within 48 hrs after any large storm (1 inch in 24 hrs or larger)	Remove sediment or trash blockages and rake soil to clear of debris; remove sediment from clean-outs and clear perforated underdrains as needed
Required: Annually *Recommended: Monthly*	General	Rodents	Evidence of rodents or water piping through facility via rodent holes	Repair facility, fill rodent holes, and remove rodents
Required: Annually *Recommended: Monthly during growing season*	General	Insects	Insects such as wasps and hornets interfere with maintenance activities	Remove harmful insects and insect nests as needed
Required: Annually *Recommended: Monthly and after any large storm (1 inch in 24 hrs)*	General	Trash and debris	Visual evidence of trash, debris or dumping	Remove trash and debris from facility
Required: Annually *Recommended: Monthly from November-April and after any large storm (e.g., 1 inch in 24 hrs)*	General	Contamination and pollution	Any evidence of spills or excess oil, gasoline, contaminants, or other pollutants	Remove/cleanup contaminants. Coordinate removal/cleanup with City of Albany Public Works
Required: Annually *Recommended: Annually and after any large storm (1 inch in 24 hrs)*	General	Facility malfunction; lack of drainage even after maintenance for sediment or standing water	Facility is not receiving flow and/or draining properly; structural malfunction or broken, misaligned or missing parts have created a safety, drainage, and/or other design problem	Repair or replace entire facility or broken/non-functioning elements to meet design standards and plans

Planter/Curb Extension/Swale – O&M Checklist (continued)

Inspection Timing	Facility Feature	Problem	Conditions to Check for	Maintenance Practices
Required: Annually *Recommended: Monthly and after any large storm (1 inch in 24 hrs)*	Inlets/Outlets	Obstructed or non-working inlet/outlet	Inlet/outlet areas clogged with sediment, vegetation or debris; sediment trap, if present, is half or more full; overflow or clean-out pipes are damaged or parts are missing	Remove material to clear inlet and outlet areas, inflow pipes or downspouts, and sediment traps. Clear perforated drain pipe as needed. Repair or replace drain pipe, cap, grate structure or other elements as needed.
Required: Annually *Recommended: Monthly from November-June*	Inlets/Outlets	Vegetation blockages	Vegetation blocking more than 10% of the inlet or outlet opening	Trim or remove excess vegetation and soil. No vegetation should block flow at inlets/outlets or overflows. If removing excess vegetation, protect area from erosion.
Required: Annually *Recommended: Monthly and after any large storm (1 inch in 24 hrs)*	Check Dams	Erosion, scouring, flow undermining	Scoured flow paths around sides or from underneath check dams; wood rot or holes; check dam is properly attached, aligned and secure; ballast rock on downstream side is in place	Repair ruts and scour areas with compost or facility soil media; Replace ballast rock; Repair or replace check dam as needed.
Required: Annually *Recommended: Monthly*	Vegetation	Dead or Stressed vegetation and/or poor vegetation coverage	Vegetation is dead, stressed, sparse, bare or soil eroded in more than 10% of the facility	Determine cause of poor growth and correct the condition; replant with containerized plants as needed to meet design density standards. Replant per the approved planting plan if available.
Required: Annually *Recommended: Monthly during growing season*	Vegetation	Invasive vegetation and weeds	Nuisance weeds present. Invasive vegetation is present, including but not limited to the following: Himalayan Blackberry; Reed Canary Grass; Teasel English Ivy; Nightshade; Clematis; Cattail Thistle; Scotch Broom	Remove excessive weeds and invasive vegetation.
Required: Annually *Recommended: Monthly during growing season*	Vegetation	Excessive shading	Vegetation growth is poor because sunlight does not reach facility	Remove brushy vegetation as needed; re-plant with shade tolerant plants from City facility plant lists as needed.
Required: Annually *Recommended: Monthly from November-April and after any large storm (e.g., 1 inch in 24 hrs)*	Liner (If Applicable)	Exposed or damaged liner, leaks from lined facility	Exposed or damaged liner with evidence of, or potential for damage or leakage	Repair or replace liner and restore cover material.
Required: Annually *Recommended: Annually*	Signage	No parking signs or paint striping is not present or visually clear (only where required on project plans)	Signs are missing, bent or vandalized. Paint striping on street-side curb is faded or missing	Repair/replace signs and re-paint striping as needed.

Note: No chemical control measures such as herbicides, insecticides, pesticides, fertilizers, and rodenticides shall be used in post-construction stormwater quality facilities without prior approval from the City of Albany.

Pervious Pavement – O&M Checklist

These facilities are impervious area reduction measures designed with a porous surface and an underlying stone layer that temporarily stores rainwater that percolates through the surface before infiltrating into the subsoil or being collected in underlying drain pipes and being discharged to the stormwater system. This checklist describes required and recommended inspection and maintenance activities to provide for proper facility function. For manufactured paver systems, the manufacturer's maintenance recommendations shall also be followed.

Inspection Timing	Facility Feature	Problem	Conditions to Check for	Maintenance Practices
Required: Bi-annually *Recommended: Twice per year and after large storms (1 inch in 24 hrs)*	Pavement Surface	Sediment and debris deposits, potentially reducing infiltration capacity	Sediment and debris deposits across surface	Sweep with regenerative air sweeper at least twice per year as a preventive measure against clogging.
Required: Annually *Recommended: Monthly for areas near landscaping, adjacent to impervious areas, or in pathways of dirty vehicles*	Pavement Surface	Sediment and debris deposits, water infiltrates unevenly across surface or ponds in low areas	Clogged surface, water ponding, and/or water infiltrating unevenly across surface	Concrete or asphalt pervious pavement: Power wash; paver systems: unclog with vacuum sweeper truck or method per manufacturer's recommendations do not use surfactants; use inlet protection measures to collect debris and filter power wash runoff.
Required: Annually *Recommended: Annually*	Structural components	Cracked or moving edge constraints; cracked or settled pavement	Cracked or moving edge constraints, or cracked or settled pavement that affects overall performance	Repair all cracks, settlement or other defects that affect performance of facility per design professional's or manufacturers' specifications.
Required: Annually during fall *Recommended: Monthly during the Fall*	General	Leaf litter deposition on surface	Leaf litter that could affect stormwater infiltration through pavement	Sweep leaf litter and sediment to prevent surface clogging and ponding.
Required: Annually *Recommended: Monthly during growing season*	Vegetation	Weeds	Weeds that cover 10% of the surface area	Remove weeds by hand, power washing, or other approved method; use inlet protection measures if power washing.
Required: Annually *Recommended: Annually and after power washing, vacuum sweeping, and weeding)*	Filter medium between pavers	Aggregate loss in pavers	Settling of pavers or lack of aggregate around pavers	Reset pavers and replace pore space with aggregate from original design.

Note: No chemical control measures such as herbicides, insecticides, pesticides, fertilizers, and rodenticides shall be used in post-construction stormwater quality facilities without prior approval from the City of Albany.