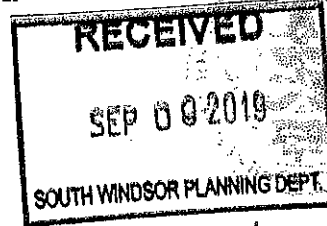


**TOWN OF SOUTH WINDSOR
PLANNING & ZONING COMMISSION
APPLICATION FORM**

Application Number: 19-45P
Official Receipt Date: 9-10-19
Munis Application #: 201901997



APPLICANT: NuWay Tobacco Co.

CID: 2004113

PROJECT NAME: NuWay Tobacco Co. Boiler Addition

COMPLETE LOCATION OF PROPERTY: 200 Sullivan Avenue

OWNER OF RECORD ON LAND RECORDS: 200 Sullivan Avenue, LLC

OWNER ADDRESS: P.O. Box 415, East Windsor Hill, CT 06028

GIS PIN # 87300200 ZONE 1

NAME, ADDRESS, TELEPHONE & EMAIL ADDRESS OF PERSON TO WHOM INQUIRIES SHOULD BE DIRECTED:

Suzanne P. Choate, P.E., Design Professionals, Inc., 21 Jeffrey Drive, South Windsor, CT

06074, 860-291-8755, schoate@dpinc.co

CID: 3008564

Estimated presentation time: N/A

THIS APPLICATION IS FOR: (Check all that apply):

- ☐ Zone Change to _____ (Public Hearing and Certificate of Mailing Required)
- ☐ Open Space Subdivision/Resubdivision (Public Hearing and Certificate of Mailing Required)
- ☐ Subdivision ☐ Minor ☐ Major
- ☐ Resubdivision (Public Hearing Required) ☐ Minor ☐ Major
- ☐ Conditional Subdivision
- ☐ Special Exception to Table _____ (Public Hearing and Certificate of Mailing Required)
- ☒ Site Plan of Development ☐ New ☒ Modification Building(s) Sq Ft less than 5000 sf
- ☐ General Plan of Development
- ☐ Earth Filling (Sec. 7.6) and/or Earth Removal (Sec. 7.16) (Public Hearing and Certificate of Mailing Required)
- ☐ Regulation Amendment ☐ Zoning ☐ Subdivision - Attach proposed amendment (Public Hearing Required)
- ☐ Temporary and Conditional Permit (Public Hearing Required) for _____
- ☐ Temporary and Conditional Permit Renewal for _____
- ☐ Detached In Law Apartment or ☐ Accessory Apartment (Public Hearing and Certificate of Mailing Required)
- ☐ Major Home Occupation (Certificate of Mailing Required) for _____
- ☐ Other (explain in detail) _____

PLEASE NOTE: An Application Pending Sign is required to be posted on the property for all applications ten (10) days prior to being heard by the Commission.

Signature of Applicant

Print Name of Applicant

Signature of Property Owner

Print Name of Property Owner

Revised 1/9/2017



P.O. BOX 1167
21 JEFFREY DRIVE
SOUTH WINDSOR, CT 06074
PHONE: 860.291.8755
FAX: 860.291.8757
www.designprofessionalsinc.com

CIVIL & TRAFFIC ENGINEERS / LAND SURVEYORS / PLANNERS / LANDSCAPE ARCHITECTS
Serving Connecticut, Massachusetts, & Rhode Island

LETTER OF TRANSMITTAL

To: Town of South Windsor
Planning Department
1540 Sullivan Avenue
South Windsor CT 06074

Date: 9/4/2019

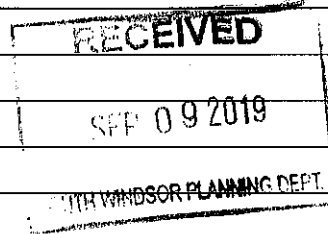
DPI Project No. 2829

Re: Site Plan Modification Boiler Addition

WE ARE SENDING YOU:

- ☐ Attached ☐ Under separate cover via _____ the following items:
☐ Shop Drawings ☒ Prints ☐ Renderings ☐ Specifications
☐ Copy of Letter ☐ Change Order ☐ _____

COPIES	DATE	NO.	DESCRIPTION
3	9/9/2019		Site Plan Modification Boiler Addition Plans
2	9/9/2019		Site Plan Check List
2	9/9/2019		Stormwater Management Report
1	9/9/2019		Site Plan Application
1	9/6/2019		Check #015714 - \$160



THESE ARE TRANSMITTED AS CHECKED BELOW:

- ☒ For Approval ☐ For review and comment ☐ No exceptions taken
☐ For your use ☐ For bids due ☐ Make corrections
☐ As requested ☐ Prints returned after loan to us ☐ Make corrections

REMARKS:

SIGNED:

Suzanne P. Choate, P.E.

CC:

TOWN OF SOUTH WINDSOR CHECKLIST
REQUIRED INFORMATION SITE PLANS

APPLICANT NuWay Tobacco Co.

PROJECT NAME NuWay Tobacco Co. Boiler Addition

This checklist must be signed by plan preparer (P.E./L.S.) declaring that all required information is provided. Items 1-7 are required for all applications; items 8-11 required where appropriate.

Check mark for each item supplied.

- X 1. On each sheet for plans or maps, title block with the following information:
- X a. Name, address and telephone of applicant.
- X b. Name, address and telephone number of Land Surveyor or Professional Engineer.
- X c. Name of Development.
- X d. Date when drawings were made.
- X 2. Key Map: An overall map drawn to a scale of 1 inch equals either 100 feet or 200 feet. This map will show the overall design of the Development and surrounding property within 500 feet.
- X a. Data block which gives needed zoning information such as percentage of lot coverage, acreage of tract, number of apartment units, parking requirements, etc.
- X b. Outline of buildings.
- X c. Layout of streets.
- X d. Surrounding property boundaries-within 500 feet.
- X e. Names of abutting property owners.
- N/A f. Proposed open spaces and recreation areas.
- X g. Driveway cuts on abutting properties and any properties across from proposed site.
- X h. Distance to and name of nearest intersection street.
- X 3. Architectural Elevations: See attached checklist for Architecture and Design Review.

X

4. Plot Plan: A layout map of the proposed site drawn to a scale of 1 inch equals 40 feet on either of the following size sheets: (1) 24" x 36" with a 3/4" ruled margin; (2) 18" x 24" with a 1/2" ruled margin, containing the following data:

X

- a. Distance and bearings of all boundary lines and acreage of site. Iron pins required at all property angle points and shown on map.

N/A

- b. Proposed streets and street lines with center line station, curve data, and parking spaces.

X

- c. Building lines in accordance with zoning regulations.

X

- d. Proposed buildings and other structures, including signs, outside lighting, and dumpsters (on concrete pad and screened).

X

- e. Easements, noting grantors, grantees, and purpose must be shown in table format, e.g. below

Grantor	Grantee	Type of Easement	Date Filed	Vol/Pg

X

- f. Names of abutting property owners.

X

- g. Monuments will be indicated at corners and angles of all streets and at all points of curvature and tangency. The monumented points within proposed site shall be coordinated. These coordinates shall appear in tabular form on the plot plan. The accessibility of these CGS points shall be determined by the Town Engineer.

X

- h. All open space or other common or public land uses shall be indicated.

X

- i. A-2 certification; P.E./L.S. Seal.

X

5. Topographic Map: A map drawn to a scale of 1 inch to 40 feet on sheets not exceeding 24 inches by 36 inches, including ruled margins shall in addition to the requirements of the plot plans show the following:

X

- a. All existing and proposed buildings.

X

- b. Curb Lines and pavement width, sidewalks.

X

- c. Existing and proposed sanitary sewers.

X

- d. Existing and proposed water and all existing utilities.

- | | |
|--------------|--|
| X | e. Present wooded area indicated by foliage lines. Any trees to be saved should be shown. |
| X | f. Existing and proposed contours shall be shown in not less than two-foot intervals, but in cases of relatively level land, the contours shall be one-foot intervals and spot elevations. |
| X
_____ | g. Regulated wetlands and 100-year floodplain or note that none are present. |
| X
_____ | h. Proposed storm drainage system, showing all catch basins, endwalls, manholes, lengths and sizes of pipes and elevations of structures. (Maximum distance between catch basins shall be 300 feet and minimum size of storm drain lines shall be 15 inches, within Town ROW.) If plan/profile sheet is provided all of this does not need to be shown. Only top of frame elevations and inverts of open discharge pipe shall be shown on this plan. |
| N/A
_____ | i. Connections of all springs into proposed storm drainage system as needed. |
| N/A
_____ | j. Location and indications of existing brook channels, and 100-year flood limits. |
| X
_____ | k. A-2 & T-2 Certification; P.E & L.S. Seals. |
| N/A
_____ | 6. Landscaping plan |
| X
_____ | 7. Drainage calculations: - Zero Runoff Increase per attached guidelines. |
| N/A
_____ | 8. Traffic Report |
| N/A
_____ | 9. Site Lighting Plan |
| N/A
_____ | 10. Plans and Profiles: A plan and profile of the proposed streets drawn on plan/profile paper of scales 1 inch to 40 feet horizontally, and 1 inch to 4 feet vertically on sheets not exceeding 24 inches by 36 inches, including ruled margins and containing the following: |
| N/A
_____ | a. Layout of streets in sections coordinated by stations with the profile. |
| N/A
_____ | b. Street plan showing roadways, drainage, sanitary sewer (including house sewer), foundation drains, lot lines, buildings including all utilities with elevations (top frame and inverts), size, type, length, slopes of pipes. |
| N/A
_____ | c. Sight line at driveway & street intersections. |

N/A

- d. Profile of roadway showing existing and finished grades. Roadway profile will show all tangent grade and all vertical curve information.

N/A

- e. Profile will show all catch basins and all drainage lines between catch basins with all invert and top of frame elevations, sizes, lengths and slopes of pipes.

N/A

- f. Where any storm drainage line discharges into an existing brook sufficient profile of this brook will be shown to determine conditions.

N/A

- g. CGS datum shall be used on all sites accessible to these controls. The Town Engineer shall, based on standard engineering practices, determine the accessibility of these controls.

N/A

- h. Profiles shall show all sanitary sewer lines and manholes, including elevations, (inverts, top of frame) sizes, lengths, and slopes of pipes. Top of foundation elevations for building shall be shown.

N/A

11. Open Space Site Improvement Plans: For sites which require or include a provision for open spaces, a plan which contains data for site improvement may be required. This map shall be drawn to a scale of 1 inch equals 40 feet.

N/A

12. Sanitary Report: Where individual sanitary sewage disposal systems are proposed, the final plans shall include a Sanitary Report certified by a Professional Engineer. The report shall demonstrate the feasibility of the proposed individual systems.



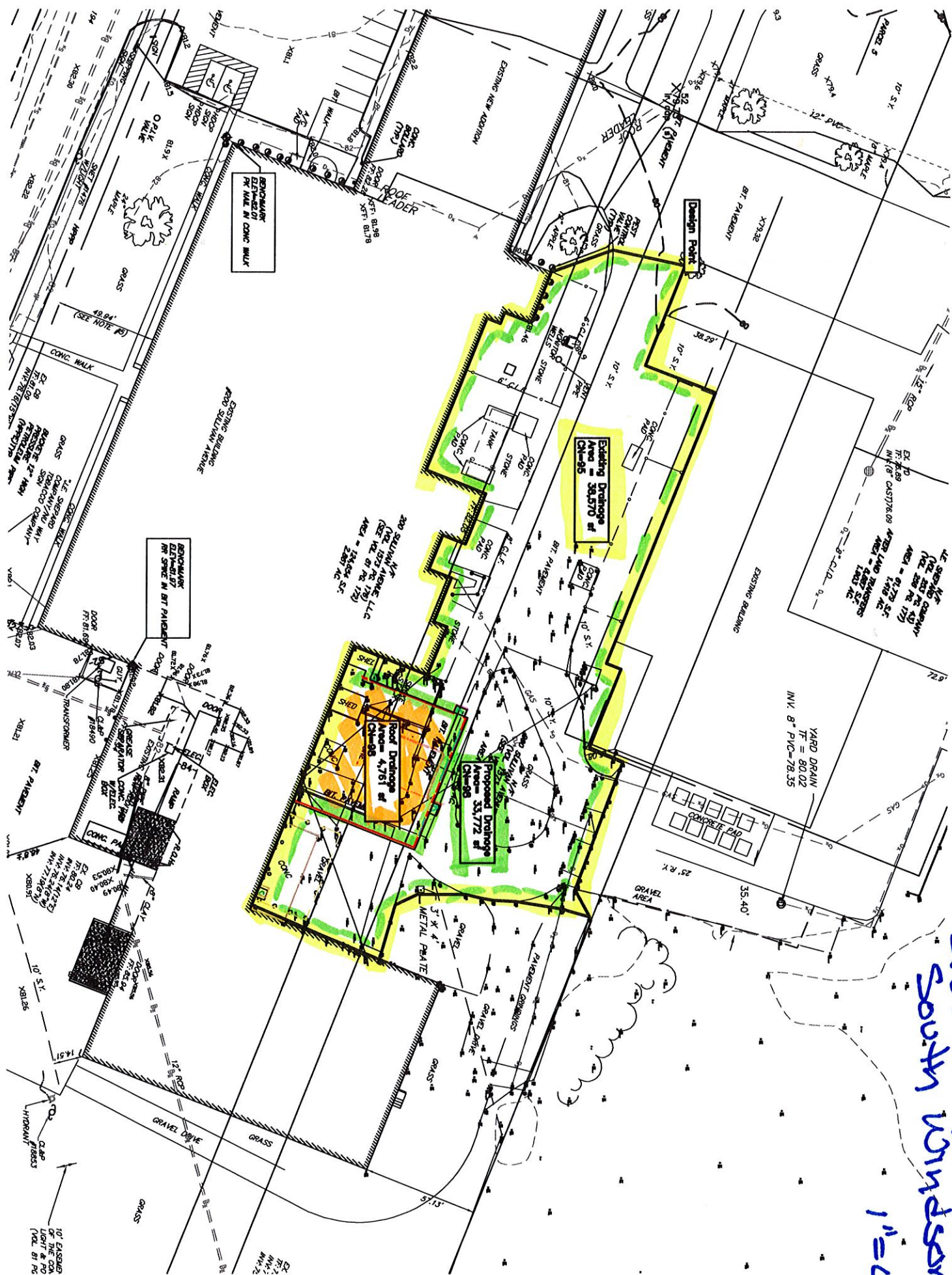
Suzanne P. Choate, P.E.

PLAN PREPARER (P.E./L.S.)

9/9/19

DATE

Drainage Area Map
200 Southaven Ave.
South Windsor, CT



**Stormwater Management Report
Building Addition for Boilers
200 Sullivan Avenue
South Windsor, Connecticut**

Prepared by:

**Design Professionals, Inc.
21 Jeffrey Drive
South Windsor, CT 06074**

September 9, 2019

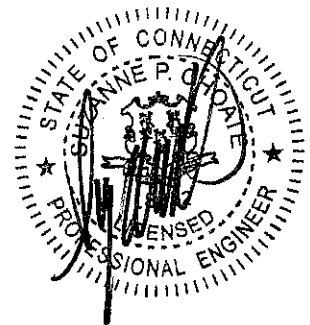


Table of Contents

<u>Section</u>	<u>Page</u>
Introduction	4
Pre- and Post-Development Site Conditions	4
Analysis of Results	4
Conclusion	5

Appendices

A	Pre- and Post-Development Drainage HydroCAD Report
B	NRCS Soil Map & Data
C	Test Pit Logs
D	Drainage Area Map

Introduction

NuWay Tobacco is proposing a building addition for new boilers on 200 Sullivan Ave., South Windsor, Connecticut (± 7.3 -acre parcel). The property is referenced with the GIS PIN: 87300200. The proposed development includes a building addition, a minor area of new pavement for access to the boilers, and an underground chamber system.

Pre- and Post-Development Site Conditions

The existing site is utilized as an industrial property. The NRCS Soil Survey indicates the soil on site to primarily be Hydrologic Soil Group B, 'Moderately well drained.' Refer to Appendix B for the NRCS Soil Map & Data. The range of infiltration indicated is 1.98 to 5.95 in/hr. The test pit data (included in Appendix C) indicates that the ground water is approximately 7 feet below grade.

The proposed development changes $\pm 3,089$ square feet from grass to pavement. The proposed building addition (4,761 square feet) is placed on an existing impervious area.

An evaluation was performed to quantify the change in peak rate of stormwater runoff generated toward Sullivan Avenue for the 2-, 10-, 25-, 50- and 100-year storm events. The building addition is proposed to drain to an underground infiltration chamber system. The chamber design utilizes a conservative infiltration rate of 2 in/hr based on the NRCS soil type and confirmation by our test pit. The Natural Resources Conservation Service's TR-55 Manual was followed in predicting the peak rates of runoff and volumes. HydroCAD computer modeling software was utilized. Refer to the HydroCAD Report in Appendix A, the Table in the Analysis section and the Drainage Area Map included in Appendix D.

The chamber system emergency overflow will to be the surface by way of a riser with a grate on top of the system. This overflow will only occur when the system is well over the 100-year storm event and will flow overland across the Rye Street parcel (Solar Farm).

Analysis of Results

The following table contains the data generated from the HydroCAD software:

Area		2 year	10 year	25 year	50 year	100 year
Design Point	Pre	2.49	4.11	5.11	5.84	6.65
	Post	2.36	3.78	4.66	5.30	6.01

As seen in the table above, we expect the area effected by the subject project will result in peak rates in the proposed condition that are less than the peak rates of the existing condition for 2-, 10-, 25-, 50- and 100-year design storms.

The chamber system is set 3 feet above groundwater (groundwater elevation 75.3) and utilizes the infiltration rate of 2 in/hr.

The top of the chamber elevation is 80.30 and the bottom is 78.97, with the bottom of stone at 78.47. All storms are contained within the chambers.

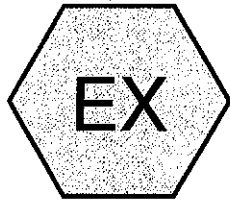
The following table indicates the rates directed to the proposed chambers as well as the storm water elevations for each of the storms:

Roof	2 year	10 year	25 year	50 year	100 year
Storm Flow (cfs)	0.33	0.53	0.66	0.75	0.85
Stormwater Elevation	79.07	79.43	79.70	79.93	80.27

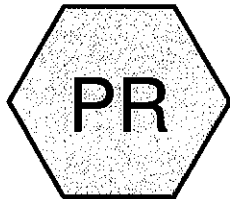
Conclusion

Our calculations indicate the proposed development will produce a lower flow rate than existing conditions toward Sullivan Avenue and infiltrate the proposed clean storm water underground.

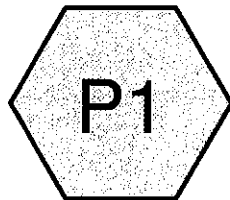
APPENDIX A
Pre- and Post-Development Drainage HydroCAD Report



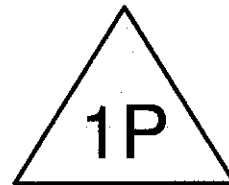
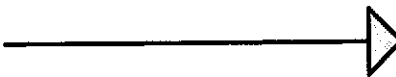
Exist Paved Area



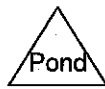
Prop Paved Area



Proposed Roof



Chambers



2829 Boiler - Drainage

Type III 24-hr 2-yr Rainfall=3.14"

Prepared by Hewlett-Packard Company

Printed 9/9/2019

HydroCAD® 10.00-20 s/n 09320 © 2017 HydroCAD Software Solutions LLC

Page 2

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EX: Exist Paved Area

Runoff Area=38,570 sf 91.20% Impervious Runoff Depth=2.59"
Flow Length=60' Slope=0.0200 '/' Tc=6.6 min CN=95 Runoff=2.49 cfs 0.191 af

Subcatchment P1: Proposed Roof

Runoff Area=4,761 sf 100.00% Impervious Runoff Depth=2.91"
Tc=6.0 min CN=98 Runoff=0.33 cfs 0.026 af

Subcatchment PR: Prop Paved Area

Runoff Area=33,772 sf 100.00% Impervious Runoff Depth=2.91"
Tc=6.0 min CN=98 Runoff=2.36 cfs 0.188 af

Pond 1P: Chambers

Peak Elev=79.07' Storage=0.007 af Inflow=0.33 cfs 0.026 af
Outflow=0.06 cfs 0.026 af

2829 Boiler - Drainage*Type III 24-hr 10-yr Rainfall=4.98"*

Prepared by Hewlett-Packard Company

Printed 9/9/2019

HydroCAD® 10.00-20 s/n 09320 © 2017 HydroCAD Software Solutions LLC

Page 3

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EX: Exist Paved Area Runoff Area=38,570 sf 91.20% Impervious Runoff Depth=4.40"
Flow Length=60' Slope=0.0200 1' Tc=6.6 min CN=95 Runoff=4.11 cfs 0.325 af

Subcatchment P1: Proposed Roof Runoff Area=4,761 sf 100.00% Impervious Runoff Depth=4.74"
Tc=6.0 min CN=98 Runoff=0.53 cfs 0.043 af

Subcatchment PR: Prop Paved Area Runoff Area=33,772 sf 100.00% Impervious Runoff Depth=4.74"
Tc=6.0 min CN=98 Runoff=3.78 cfs 0.306 af

Pond 1P: Chambers Peak Elev=79.43' Storage=0.014 af Inflow=0.53 cfs 0.043 af
Outflow=0.06 cfs 0.043 af

2829 Boiler - Drainage*Type III 24-hr 25-yr Rainfall=6.13"*

Prepared by Hewlett-Packard Company

Printed 9/9/2019

HydroCAD® 10.00-20 s/n 09320 © 2017 HydroCAD Software Solutions LLC

Page 4

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EX: Exist Paved Area Runoff Area=38,570 sf 91.20% Impervious Runoff Depth=5.54"
Flow Length=60' Slope=0.0200 '/ Tc=6.6 min CN=95 Runoff=5.11 cfs 0.409 af

Subcatchment P1: Proposed Roof Runoff Area=4,761 sf 100.00% Impervious Runoff Depth=5.89"
Tc=6.0 min CN=98 Runoff=0.66 cfs 0.054 af

Subcatchment PR: Prop Paved Area Runoff Area=33,772 sf 100.00% Impervious Runoff Depth=5.89"
Tc=6.0 min CN=98 Runoff=4.66 cfs 0.381 af

Pond 1P: Chambers Peak Elev=79.70' Storage=0.019 af Inflow=0.66 cfs 0.054 af
Outflow=0.06 cfs 0.054 af

2829 Boiler - Drainage*Type III 24-hr 50-yr Rainfall=6.97"*

Prepared by Hewlett-Packard Company

Printed 9/9/2019

HydroCAD® 10.00-20 s/n 09320 © 2017 HydroCAD Software Solutions LLC

Page 5

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EX: Exist Paved Area

Runoff Area=38,570 sf 91.20% Impervious Runoff Depth=6.38"

Flow Length=60' Slope=0.0200 '/' Tc=6.6 min CN=95 Runoff=5.84 cfs 0.470 af

Subcatchment P1: Proposed Roof

Runoff Area=4,761 sf 100.00% Impervious Runoff Depth=6.73"

Tc=6.0 min CN=98 Runoff=0.75 cfs 0.061 af

Subcatchment PR: Prop Paved Area

Runoff Area=33,772 sf 100.00% Impervious Runoff Depth=6.73"

Tc=6.0 min CN=98 Runoff=5.30 cfs 0.435 af

Pond 1P: Chambers

Peak Elev=79.93' Storage=0.022 af Inflow=0.75 cfs 0.061 af

Outflow=0.06 cfs 0.061 af

2829 Boiler - Drainage

Type III 24-hr 100-yr Rainfall=7.90"

Prepared by Hewlett-Packard Company

Printed 9/9/2019

HydroCAD® 10.00-20 s/n 09320 © 2017 HydroCAD Software Solutions LLC

Page 6

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EX: Exist Paved Area

Runoff Area=38,570 sf 91.20% Impervious Runoff Depth=7.30"
Flow Length=60' Slope=0.0200 '/' Tc=6.6 min CN=95 Runoff=6.65 cfs 0.539 af

Subcatchment P1: Proposed Roof

Runoff Area=4,761 sf 100.00% Impervious Runoff Depth=7.66"
Tc=6.0 min CN=98 Runoff=0.85 cfs 0.070 af

Subcatchment PR: Prop Paved Area

Runoff Area=33,772 sf 100.00% Impervious Runoff Depth=7.66"
Tc=6.0 min CN=98 Runoff=6.01 cfs 0.495 af

Pond 1P: Chambers

Peak Elev=80.27' Storage=0.026 af Inflow=0.85 cfs 0.070 af
Outflow=0.07 cfs 0.070 af

2829 Boiler - Drainage

Prepared by Hewlett-Packard Company

HydroCAD® 10.00-20 s/n 09320 © 2017 HydroCAD Software Solutions LLC

Type III 24-hr 2-yr Rainfall=3.14"

Printed 9/9/2019

Page 7

Summary for Subcatchment EX: Exist Paved Area

Runoff = 2.49 cfs @ 12.09 hrs, Volume= 0.191 af, Depth= 2.59"

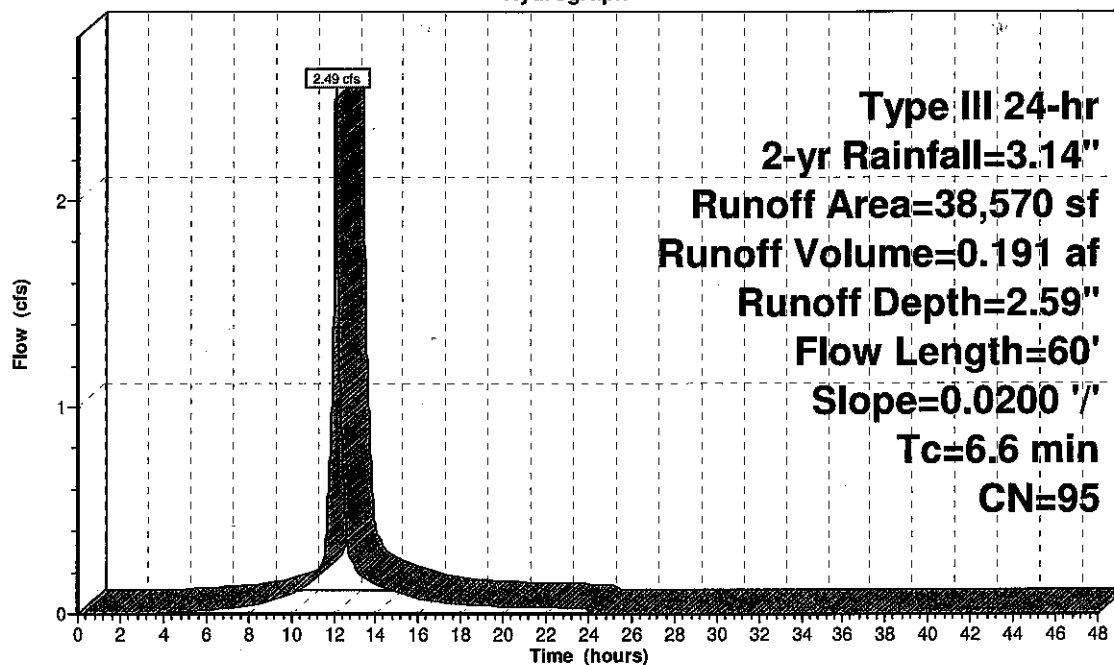
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.14"

Area (sf)	CN	Description
35,174	98	Paved parking, HSG B
3,396	61	>75% Grass cover, Good, HSG B
38,570	95	Weighted Average
3,396		8.80% Pervious Area
35,174		91.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	60	0.0200	0.15		Sheet Flow, grass area
					Grass: Short n= 0.150 P2= 3.15"

Subcatchment EX: Exist Paved Area

Hydrograph



2829 Boiler - Drainage

Prepared by Hewlett-Packard Company

HydroCAD® 10.00-20 s/n 09320 © 2017 HydroCAD Software Solutions LLC

Type III 24-hr 2-yr Rainfall=3.14"

Printed 9/9/2019

Page 8

Summary for Subcatchment P1: Proposed Roof

Runoff = 0.33 cfs @ 12.08 hrs, Volume= 0.026 af, Depth= 2.91"

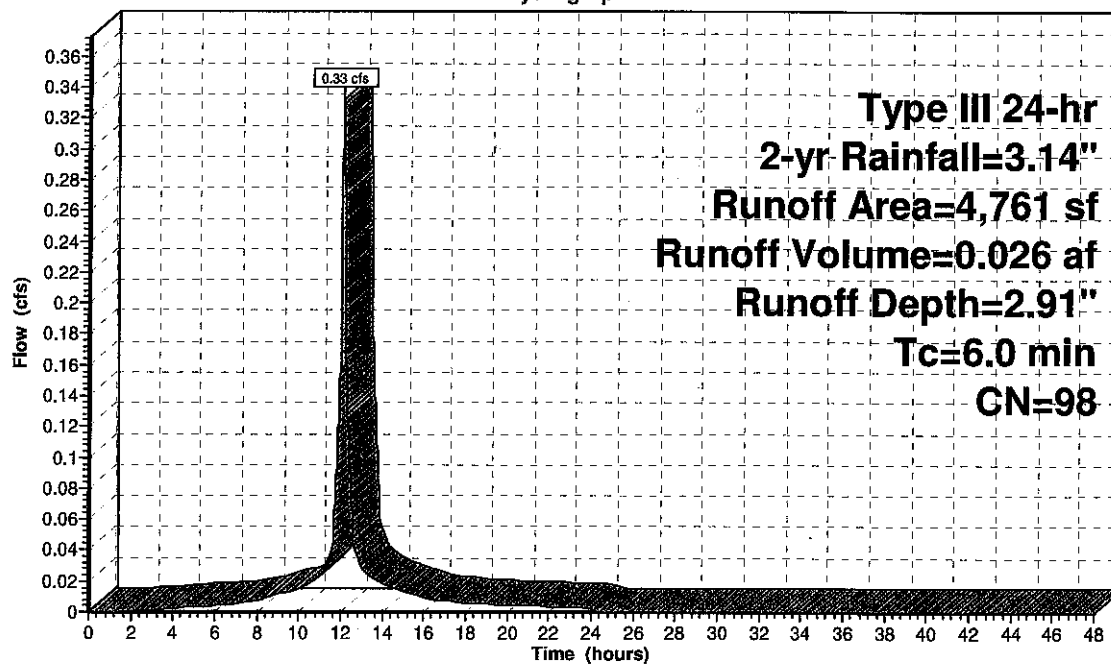
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.14"

Area (sf)	CN	Description
4,761	98	Paved parking, HSG B
4,761		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, Minimum Paved

Subcatchment P1: Proposed Roof

Hydrograph



2829 Boiler - Drainage

Prepared by Hewlett-Packard Company

HydroCAD® 10.00-20 s/n 09320 © 2017 HydroCAD Software Solutions LLC

Type III 24-hr 2-yr Rainfall=3.14"

Printed 9/9/2019

Page 9

Summary for Subcatchment PR: Prop Paved Area

Runoff = 2.36 cfs @ 12.08 hrs, Volume= 0.188 af, Depth= 2.91"

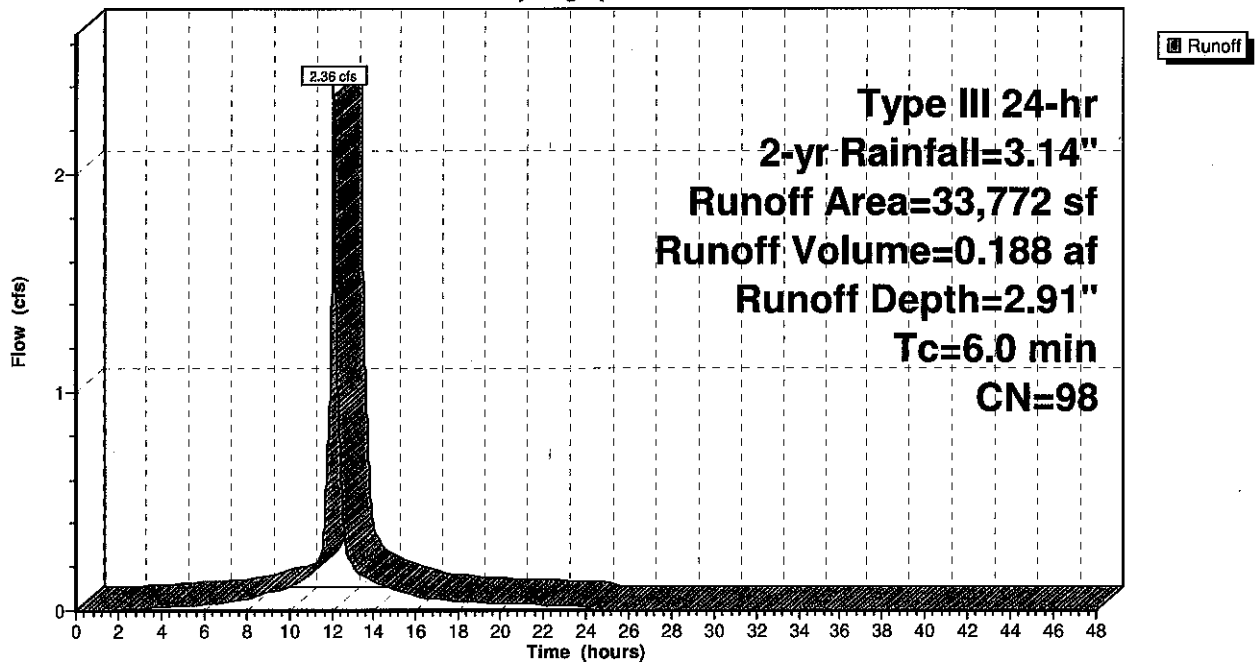
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.14"

Area (sf)	CN	Description
33,772	98	Paved parking, HSG B
33,772		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					Direct Entry, paved area

Subcatchment PR: Prop Paved Area

Hydrograph



2829 Boiler - Drainage

Type III 24-hr 2-yr Rainfall=3.14"

Prepared by Hewlett-Packard Company

Printed 9/9/2019

HydroCAD® 10.00-20 s/n 09320 © 2017 HydroCAD Software Solutions LLC

Page 10

Summary for Pond 1P: Chambers

Inflow Area = 0.109 ac, 100.00% Impervious, Inflow Depth = 2.91" for 2-yr event
 Inflow = 0.33 cfs @ 12.08 hrs, Volume= 0.026 af
 Outflow = 0.06 cfs @ 12.54 hrs, Volume= 0.026 af, Atten= 83%, Lag= 27.6 min
 Discarded = 0.06 cfs @ 12.54 hrs, Volume= 0.026 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
 Peak Elev= 79.07' @ 12.54 hrs Surf.Area= 0.025 ac Storage= 0.007 af

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 29.6 min (786.4 - 756.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	78.47'	0.018 af	14.83"W x 74.40"L x 2.33'H Field A 0.059 af Overall - 0.014 af Embedded = 0.046 af x 40.0% Voids
#2A	78.97'	0.014 af	ADS_StormTech SC-310 +Cap x 40 Inside #1 Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap 4 Rows of 10 Chambers
		0.032 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	78.47'	2.000 in/hr Exfiltration over Wetted area

Discarded OutFlow Max=0.06 cfs @ 12.54 hrs HW=79.07' (Free Discharge)
 ↑ **1=Exfiltration** (Exfiltration Controls 0.06 cfs)

2829 Boiler - Drainage

Prepared by Hewlett-Packard Company

HydroCAD® 10.00-20 s/n 09320 © 2017 HydroCAD Software Solutions LLC

Type III 24-hr 2-yr Rainfall=3.14"

Printed 9/9/2019

Page 11

Pond 1P: Chambers - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-310 +Cap (ADS StormTech® SC-310 with cap length)

Effective Size= 28.9"W x 16.0"H => 2.07 sf x 7.12'L = 14.7 cf

Overall Size= 34.0"W x 16.0"H x 7.56'L with 0.44' Overlap

34.0" Wide + 6.0" Spacing = 40.0" C-C Row Spacing

10 Chambers/Row x 7.12' Long +0.60' Cap Length x 2 = 72.40' Row Length +12.0" End Stone x 2 = 74.40' Base Length

4 Rows x 34.0" Wide + 6.0" Spacing x 3 + 12.0" Side Stone x 2 = 14.83' Base Width

6.0" Base + 16.0" Chamber Height + 6.0" Cover = 2.33' Field Height

40 Chambers x 14.7 cf = 589.7 cf Chamber Storage

2,575.1 cf Field - 589.7 cf Chambers = 1,985.4 cf Stone x 40.0% Voids = 794.2 cf Stone Storage

Chamber Storage + Stone Storage = 1,383.8 cf = 0.032 af

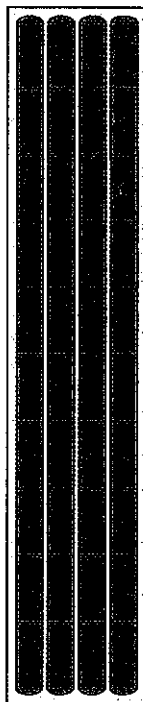
Overall Storage Efficiency = 53.7%

Overall System Size = 74.40' x 14.83' x 2.33'

40 Chambers

95.4 cy Field

73.5 cy Stone



2829 Boiler - Drainage

Prepared by Hewlett-Packard Company

HydroCAD® 10.00-20 s/n 09320 © 2017 HydroCAD Software Solutions LLC

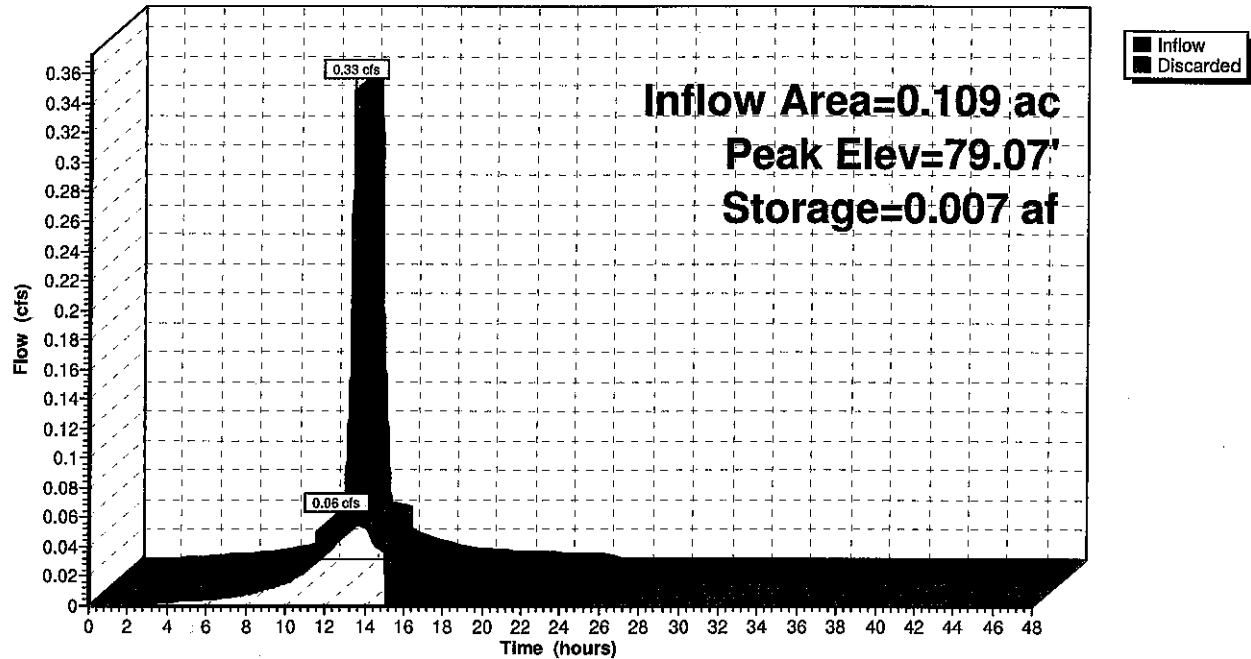
Type III 24-hr 2-yr Rainfall=3.14"

Printed 9/9/2019

Page 12

Pond 1P: Chambers

Hydrograph



2829 Boiler - Drainage

Prepared by Hewlett-Packard Company

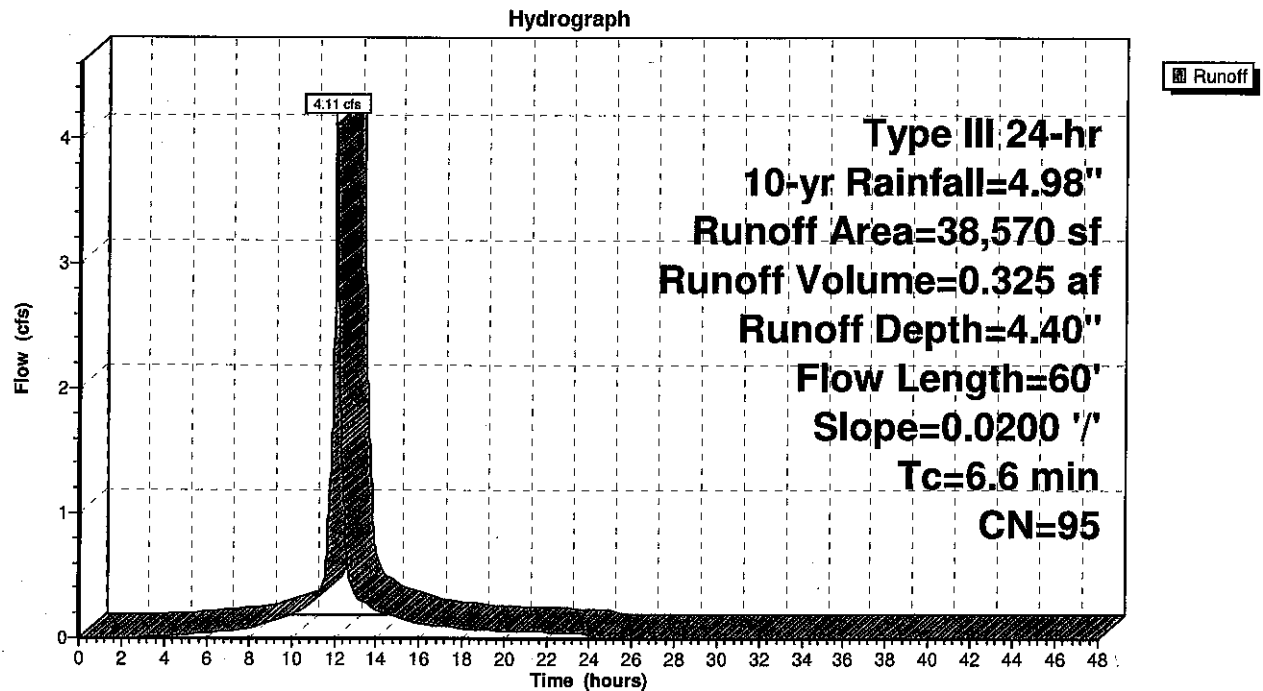
HydroCAD® 10.00-20 s/n 09320 © 2017 HydroCAD Software Solutions LLC

Type III 24-hr 10-yr Rainfall=4.98"

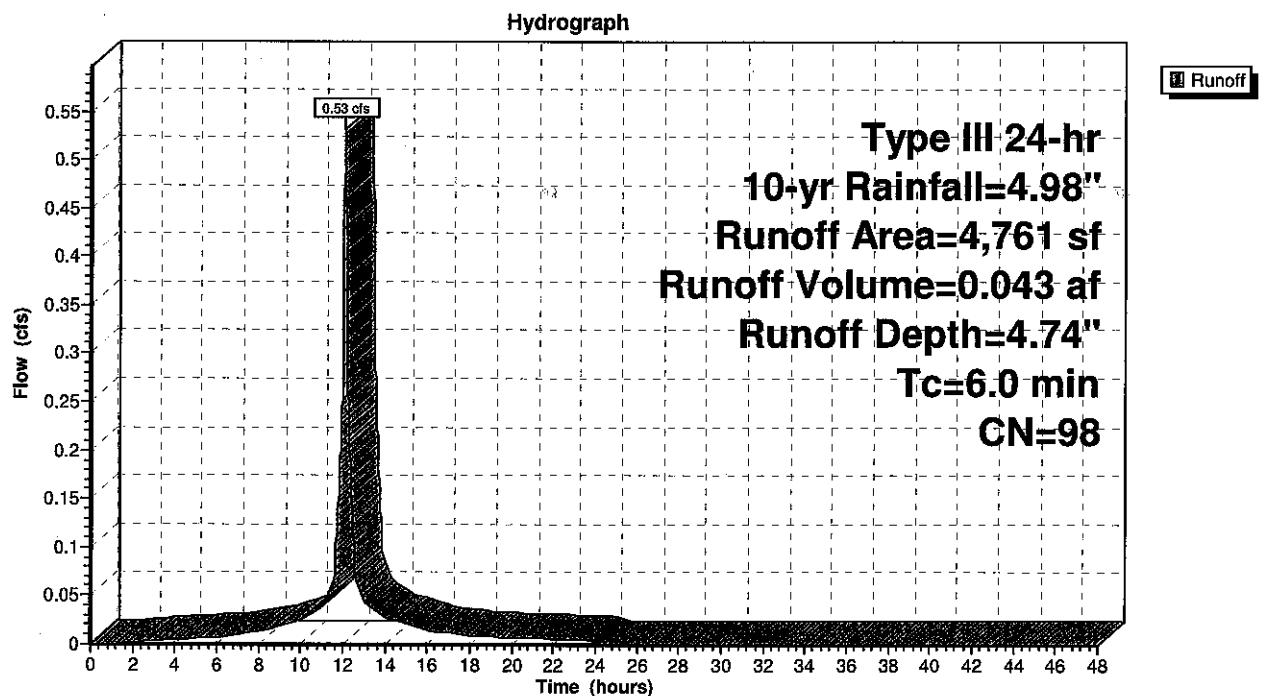
Printed 9/9/2019

Page 13

Subcatchment EX: Exist Paved Area



Subcatchment P1: Proposed Roof



2829 Boiler - Drainage

Prepared by Hewlett-Packard Company

HydroCAD® 10.00-20 s/n 09320 © 2017 HydroCAD Software Solutions LLC

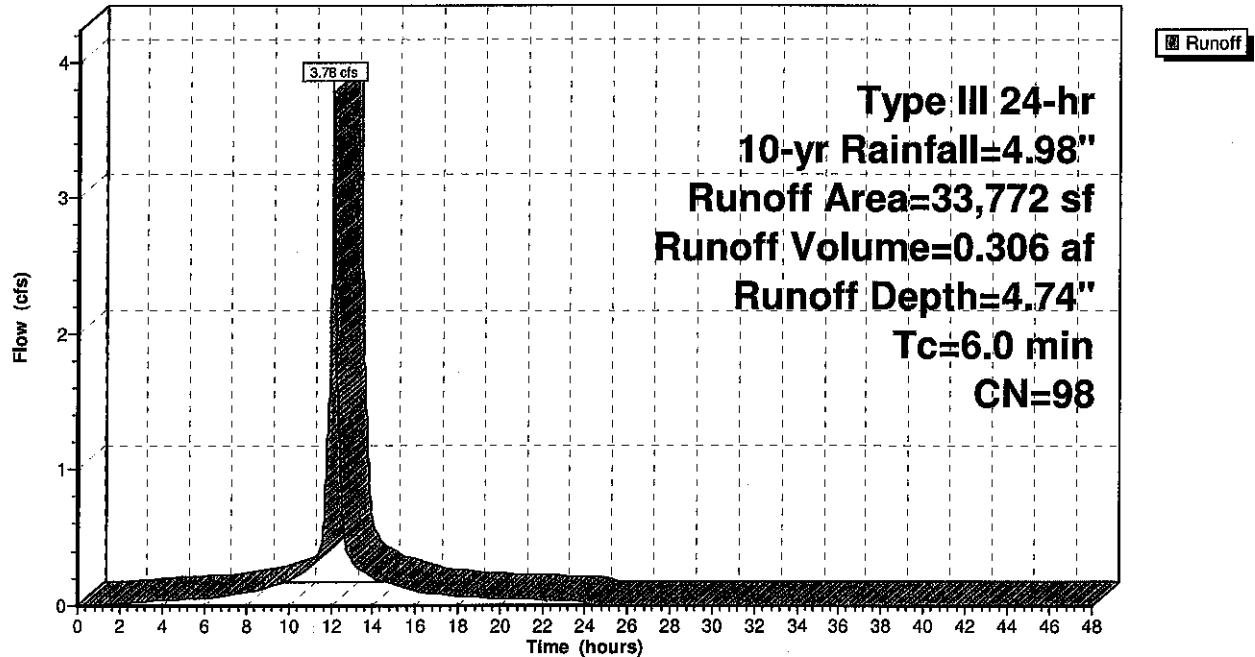
Type III 24-hr 10-yr Rainfall=4.98"

Printed 9/9/2019

Page 14

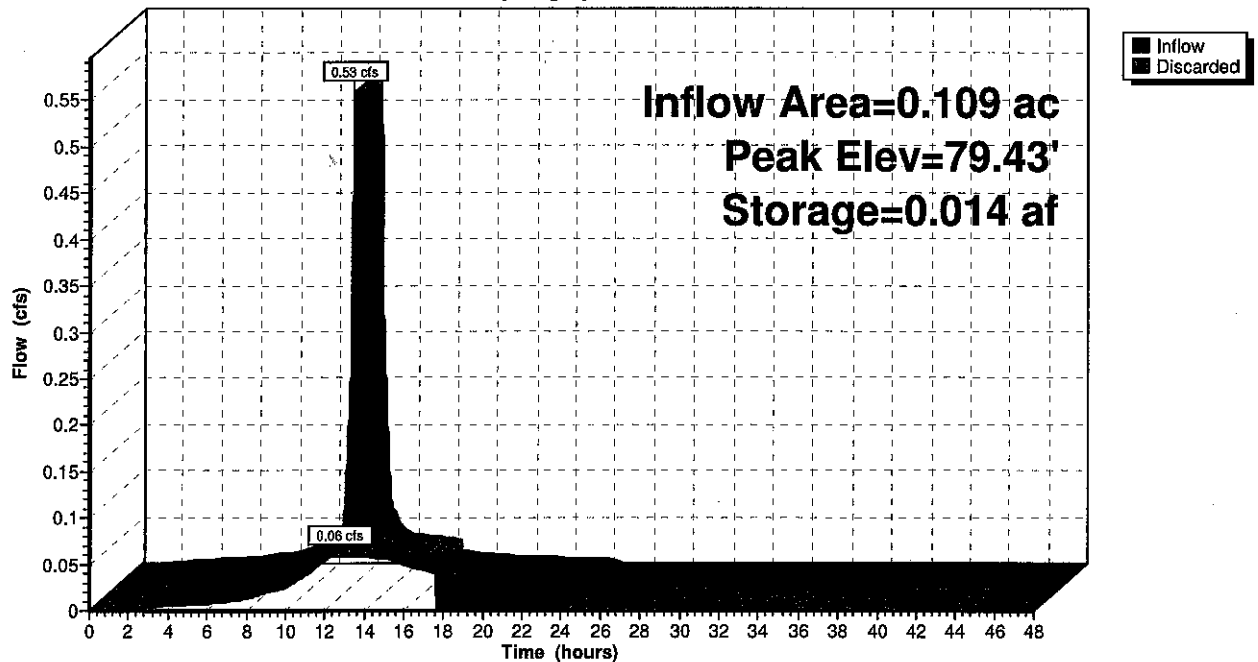
Subcatchment PR: Prop Paved Area

Hydrograph



Pond 1P: Chambers

Hydrograph



2829 Boiler - Drainage

Prepared by Hewlett-Packard Company

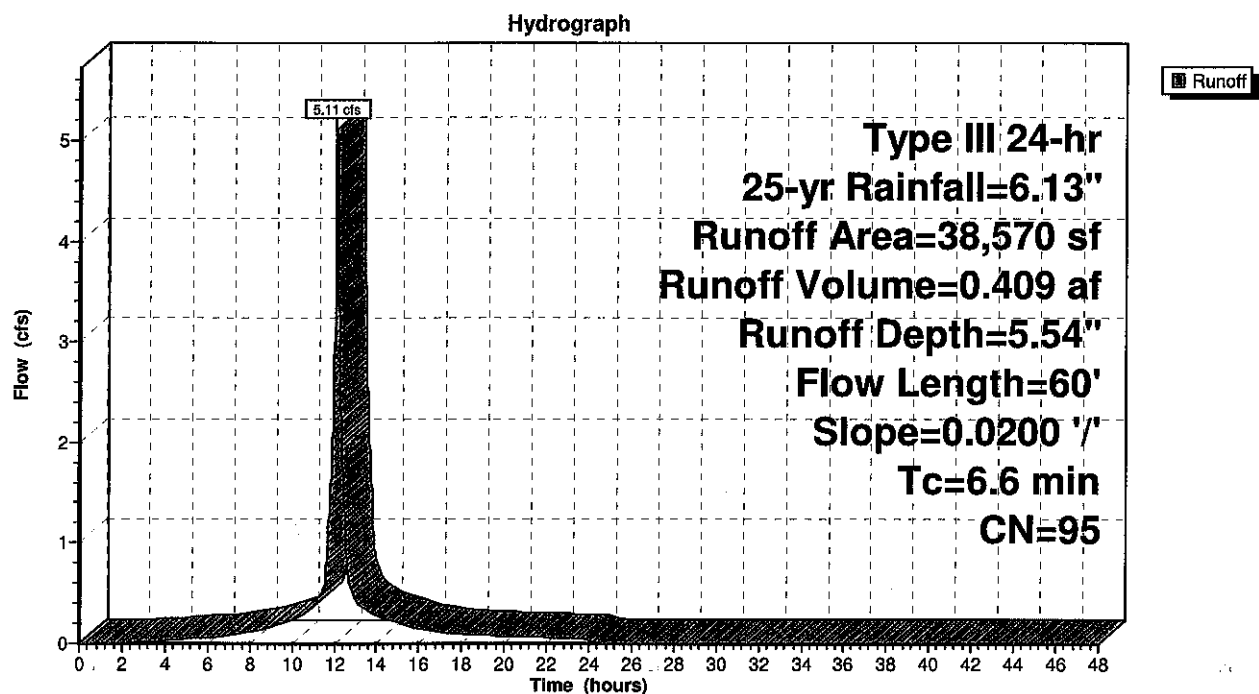
HydroCAD® 10.00-20 s/n 09320 © 2017 HydroCAD Software Solutions LLC

Type III 24-hr 25-yr Rainfall=6.13"

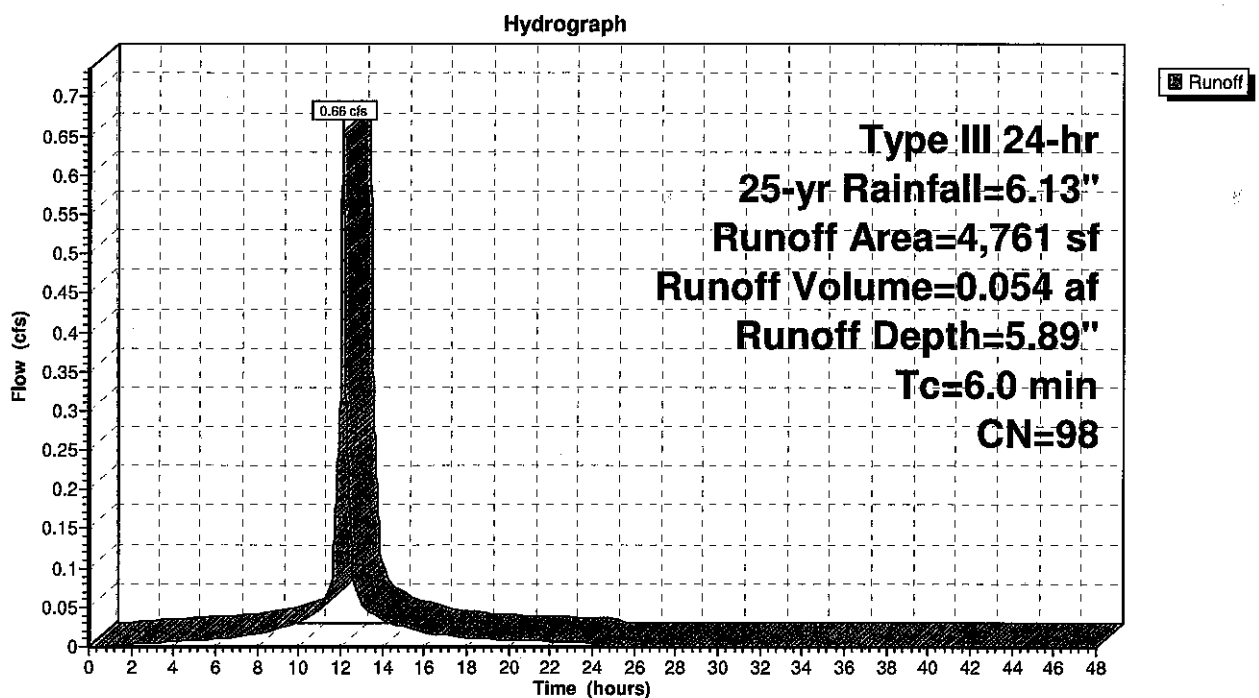
Printed 9/9/2019

Page 15

Subcatchment EX: Exist Paved Area



Subcatchment P1: Proposed Roof



2829 Boiler - Drainage

Prepared by Hewlett-Packard Company

HydroCAD® 10.00-20 s/n 09320 © 2017 HydroCAD Software Solutions LLC

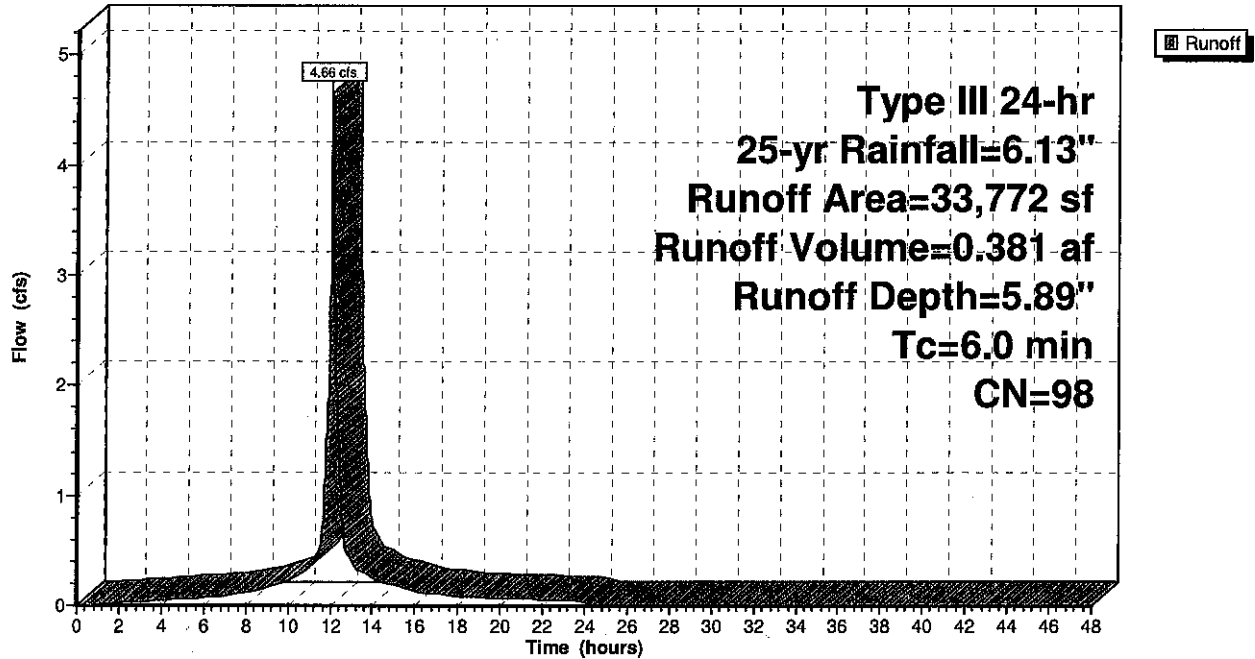
Type III 24-hr 25-yr Rainfall=6.13"

Printed 9/9/2019

Page 16

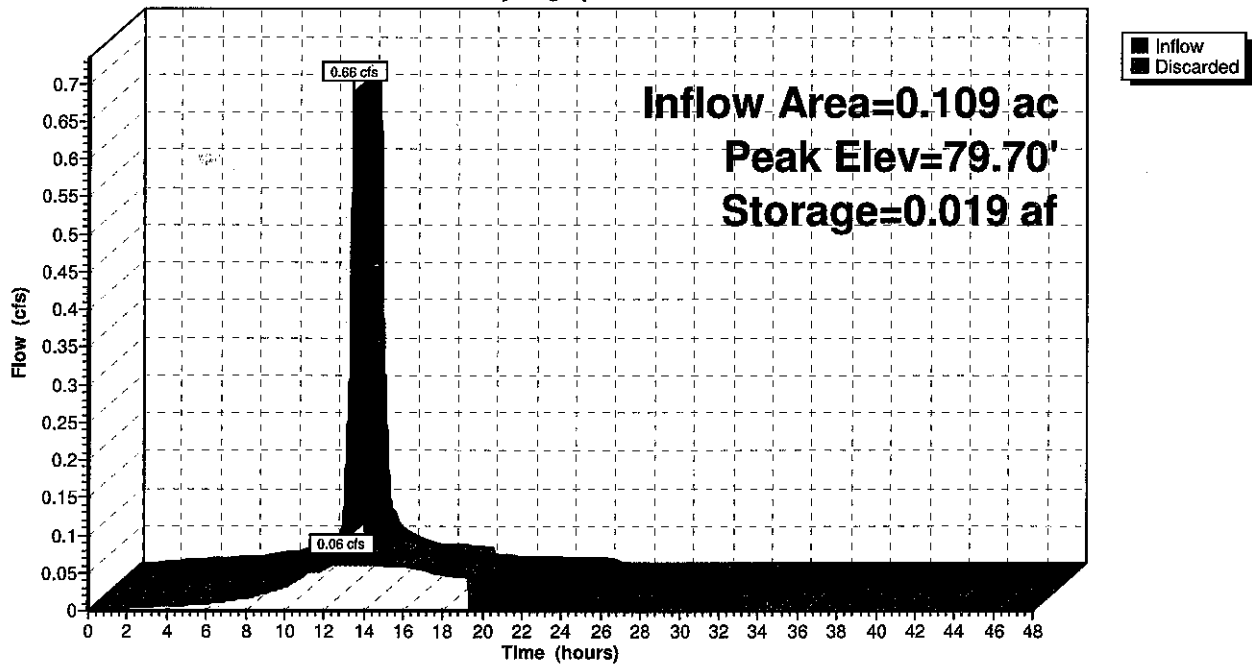
Subcatchment PR: Prop Paved Area

Hydrograph



Pond 1P: Chambers

Hydrograph



2829 Boiler - Drainage

Prepared by Hewlett-Packard Company

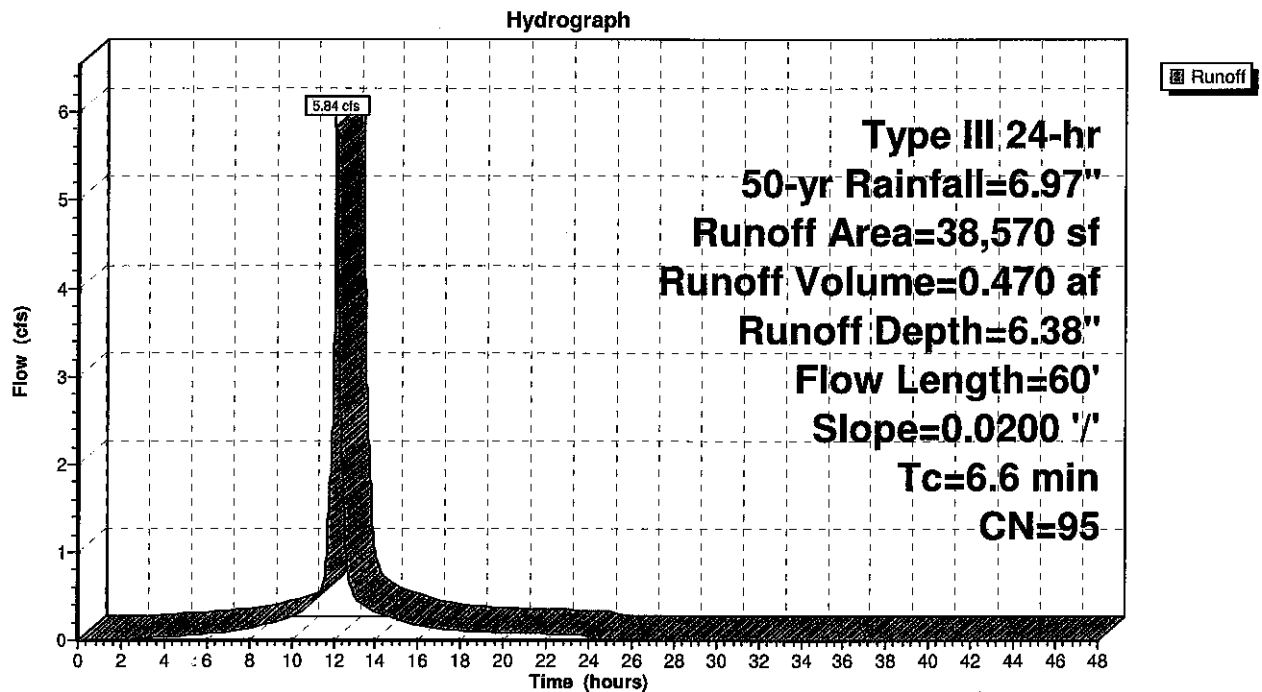
HydroCAD® 10.00-20 s/n 09320 © 2017 HydroCAD Software Solutions LLC

Type III 24-hr 50-yr Rainfall=6.97"

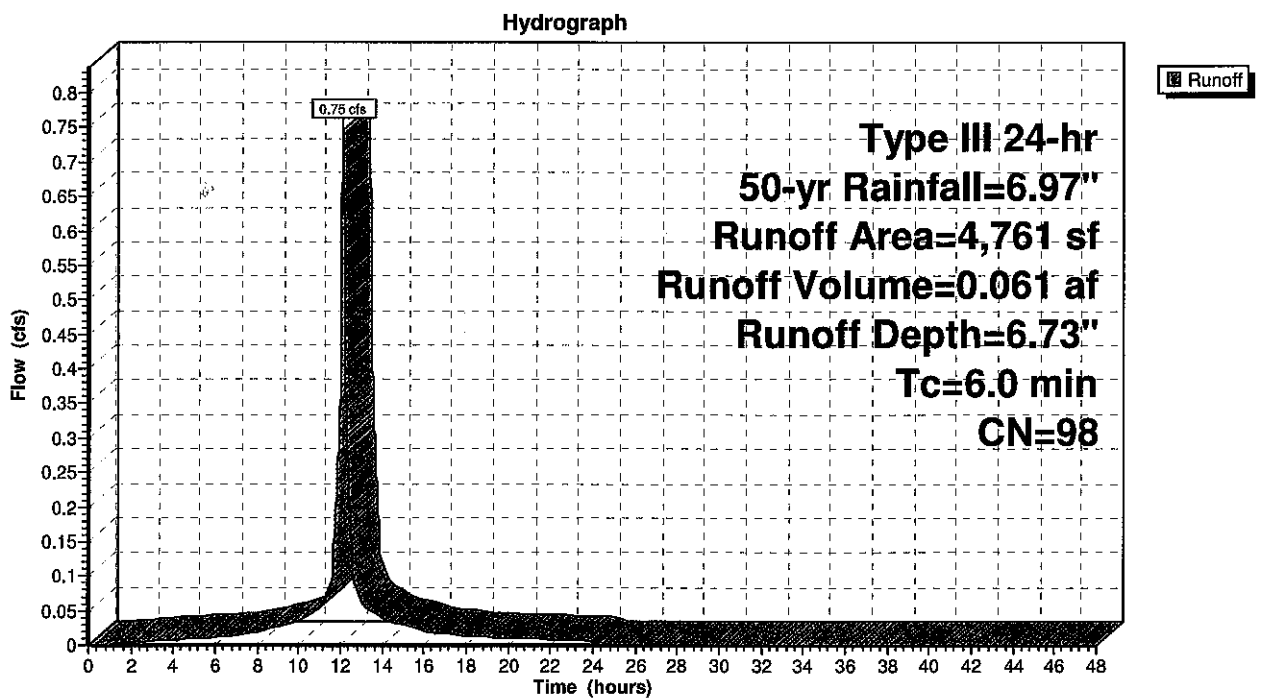
Printed 9/9/2019

Page 17

Subcatchment EX: Exist Paved Area



Subcatchment P1: Proposed Roof



2829 Boiler - Drainage

Prepared by Hewlett-Packard Company

HydroCAD® 10.00-20 s/n 09320 © 2017 HydroCAD Software Solutions LLC

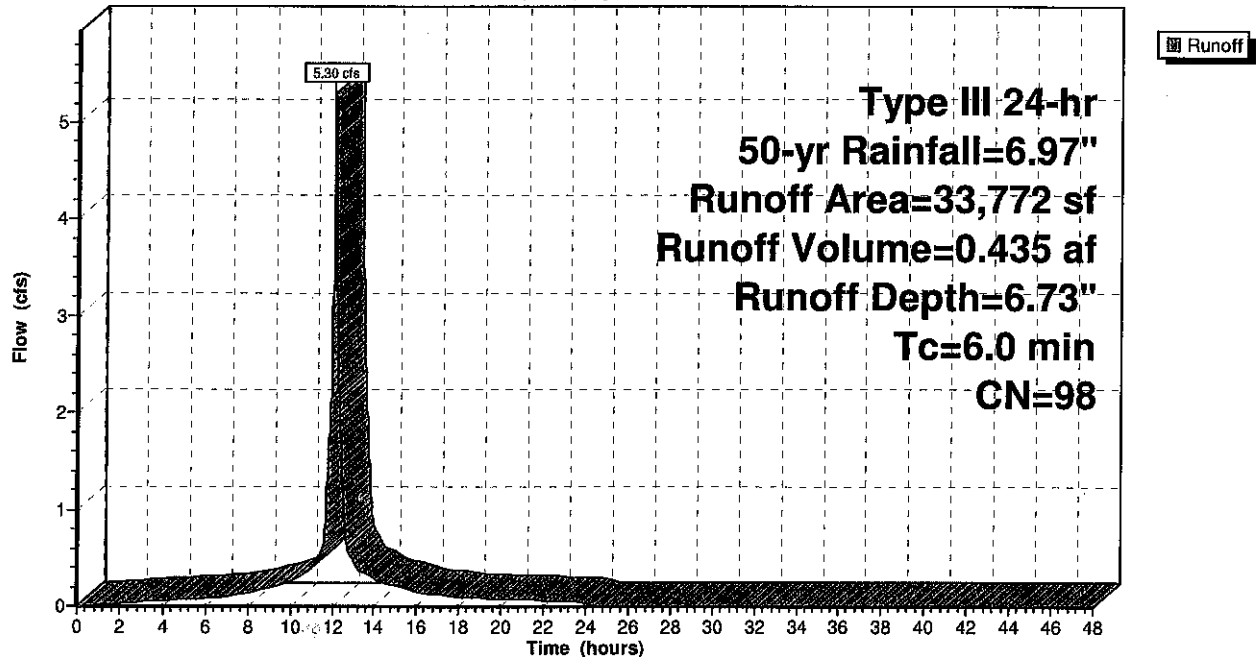
Type III 24-hr 50-yr Rainfall=6.97"

Printed 9/9/2019

Page 18

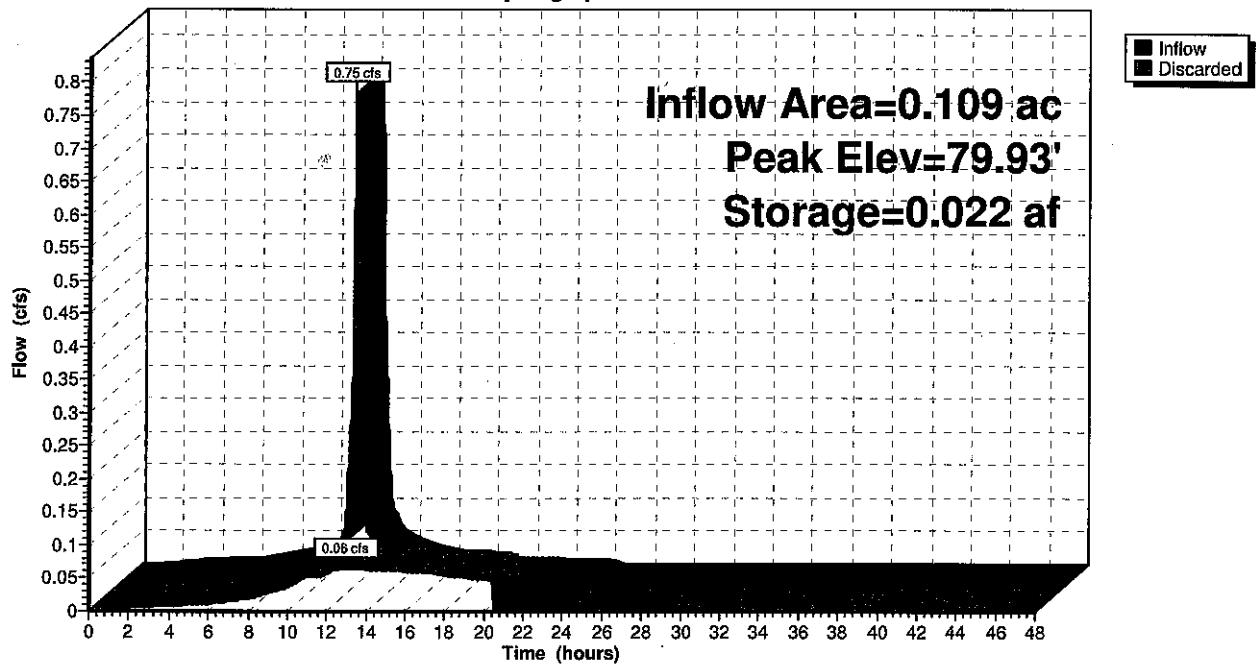
Subcatchment PR: Prop Paved Area

Hydrograph



Pond 1P: Chambers

Hydrograph



2829 Boiler - Drainage

Prepared by Hewlett-Packard Company

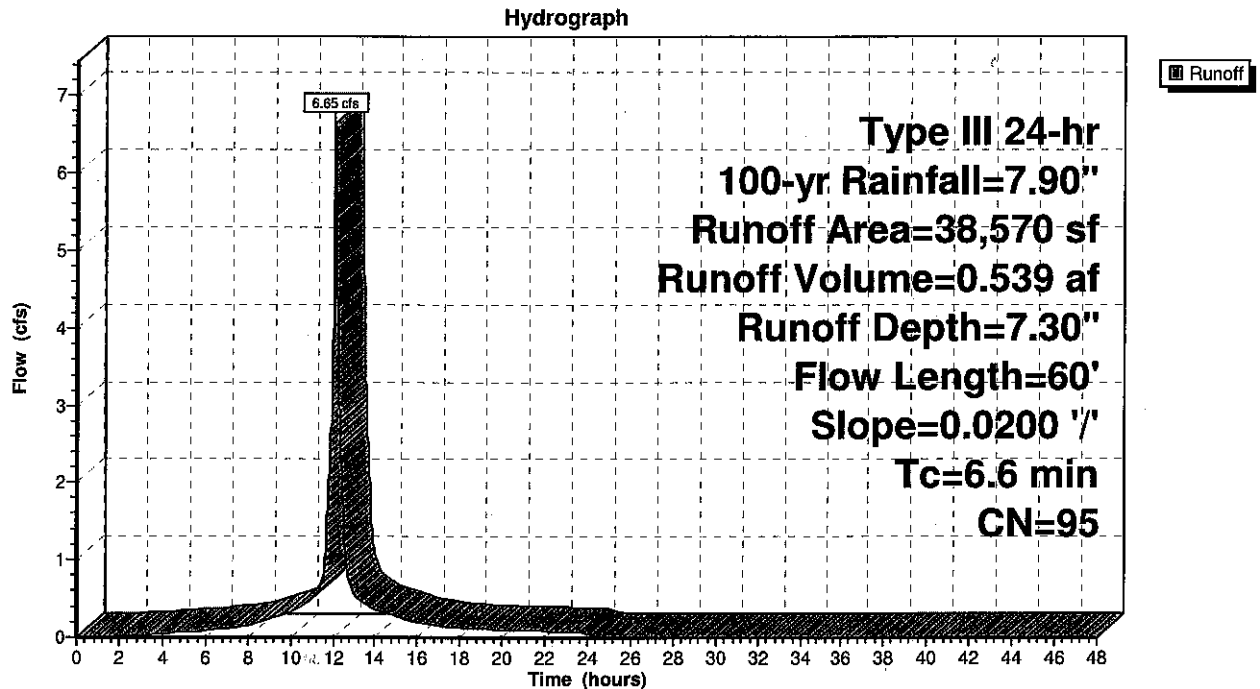
HydroCAD® 10.00-20 s/n 09320 © 2017 HydroCAD Software Solutions LLC

Type III 24-hr 100-yr Rainfall=7.90"

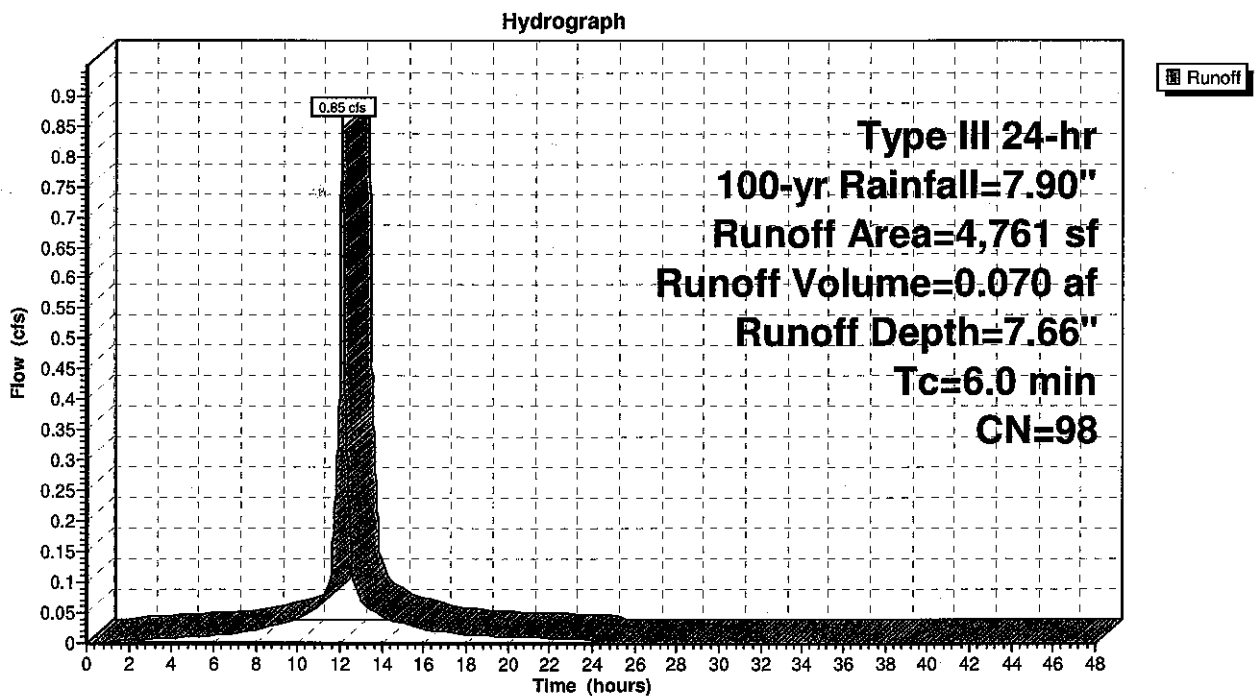
Printed 9/9/2019

Page 19

Subcatchment EX: Exist Paved Area



Subcatchment P1: Proposed Roof



2829 Boiler - Drainage

Prepared by Hewlett-Packard Company

HydroCAD® 10.00-20 s/n 09320 © 2017 HydroCAD Software Solutions LLC

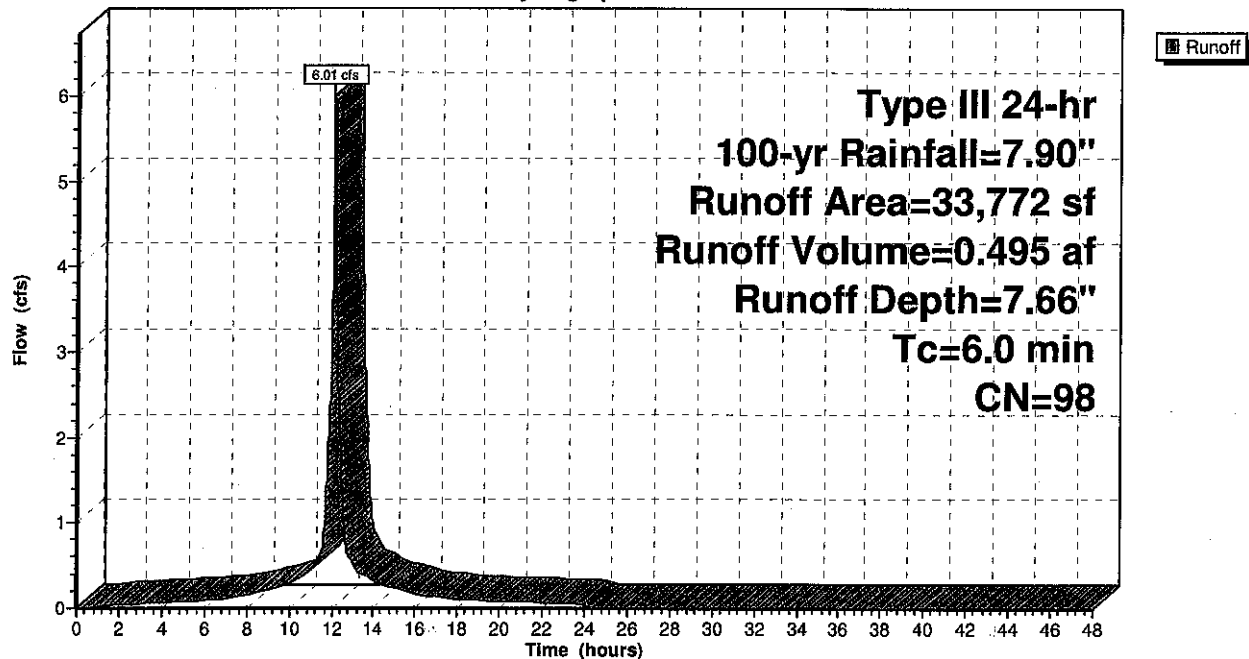
Type III 24-hr 100-yr Rainfall=7.90"

Printed 9/9/2019

Page 20

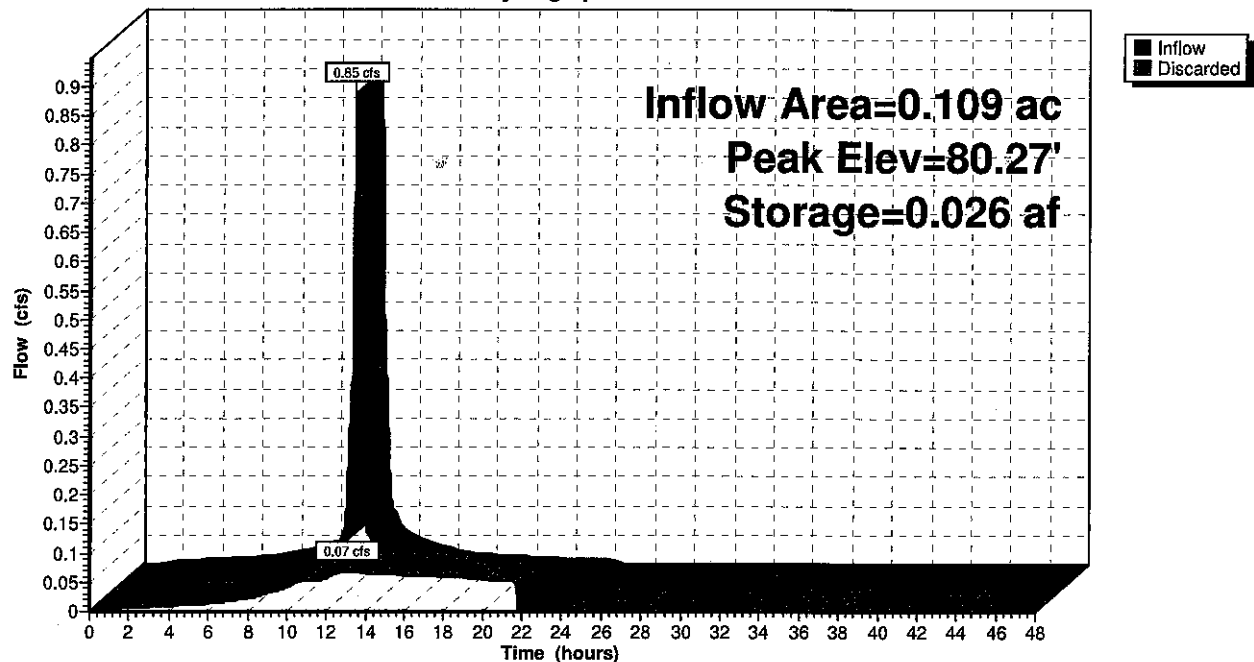
Subcatchment PR: Prop Paved Area

Hydrograph



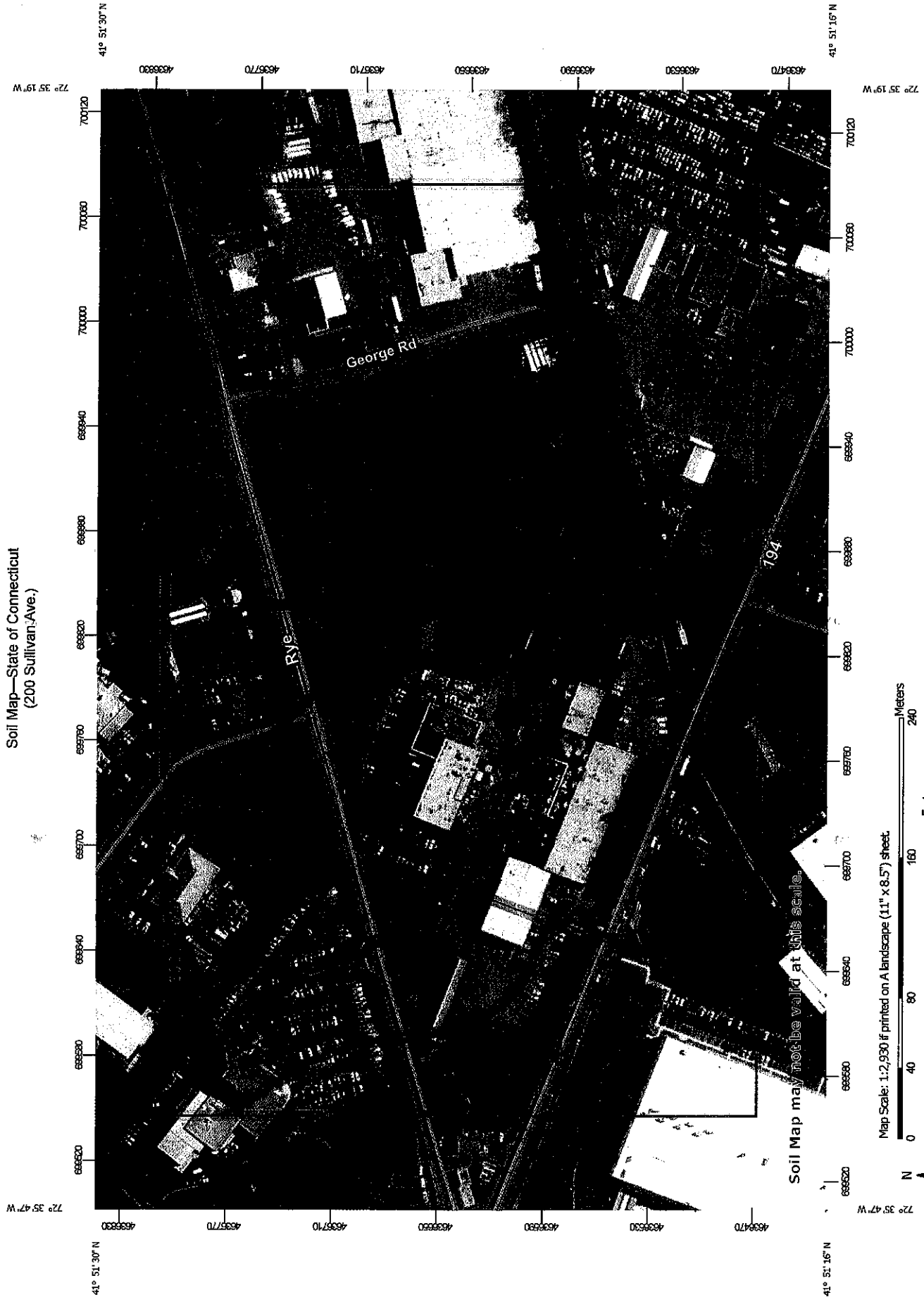
Pond 1P: Chambers

Hydrograph



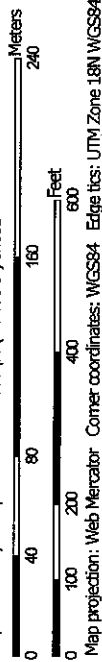
APPENDIX B
NRCS Soil Map & Data

Soil Map—State of Connecticut
(200 Sullivan Ave.)



Soil Map may not be valid at this scale.

Map Scale: 1:2,930 if printed on A landscape (11" x 8.5") sheet.



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

MAP LEGEND

	Area of Interest (AOI)		Soil Map Unit Polygons		Soil Map Unit Lines		Soil Map Unit Points		Special Point Features		Water Features		Streams and Canals		Transportation		Rails		Interstate Highways		US Routes		Major Roads		Local Roads		Background		Aerial Photography		Spoil Area		Stony Spot		Very Stony Spot		Wet Spot		Other		Special Line Features
	Soils		Soil Map Unit Polygons		Soil Map Unit Lines		Soil Map Unit Points		Special Point Features		Water Features		Streams and Canals		Transportation		Rails		Interstate Highways		US Routes		Major Roads		Local Roads		Background		Aerial Photography		Spoil Area		Stony Spot		Very Stony Spot		Wet Spot		Other		Special Line Features

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: State of Connecticut
Survey Area Data: Version 18, Dec 6, 2018

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

Date(s) aerial images were photographed: Aug 27, 2016—Oct 30, 2017

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
13	Walpole sandy loam, 0 to 3 percent slopes	6.2	13.9%
23A	Sudbury sandy loam, 0 to 5 percent slopes	17.4	39.1%
29A	Agawam fine sandy loam, 0 to 3 percent slopes	1.7	3.8%
304	Udorthents, loamy, very steep	0.4	0.8%
306	Udorthents-Urban land complex	18.9	42.4%
Totals for Area of Interest		44.6	100.0%

State of Connecticut

23A—Sudbury sandy loam, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 9lkv
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Sudbury and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sudbury

Setting

Landform: Terraces, outwash plains
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Sandy and gravelly glaciofluvial deposits derived from granite and/or schist and/or gneiss

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 5 inches: sandy loam
Bw1 - 5 to 17 inches: gravelly sandy loam
Bw2 - 17 to 25 inches: sandy loam
2C - 25 to 60 inches: stratified gravel to sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components**Agawam**

Percent of map unit: 5 percent
Landform: Terraces, outwash plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Merrimac

Percent of map unit: 5 percent
Landform: Terraces, outwash plains, kames
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Ninigret

Percent of map unit: 5 percent
Landform: Terraces, outwash plains
Down-slope shape: Linear
Across-slope shape: Concave
Hydric soil rating: No

Tisbury

Percent of map unit: 3 percent
Landform: Terraces, outwash plains
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Walpole

Percent of map unit: 2 percent
Landform: Drainageways on terraces, depressions on terraces
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Data Source Information

Soil Survey Area: State of Connecticut
Survey Area Data: Version 18, Dec 6, 2018

State of Connecticut

306—Udorthents-Urban land complex

Map Unit Setting

National map unit symbol: 9lmg
Elevation: 0 to 2,000 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 120 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 50 percent
Urban land: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Drift

Typical profile

A - 0 to 5 inches: loam
C1 - 5 to 21 inches: gravelly loam
C2 - 21 to 80 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 1.98 in/hr)
Depth to water table: About 54 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

Description of Urban Land

Typical profile

H - 0 to 6 inches: material

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 8

Hydrologic Soil Group: D

Hydric soil rating: Unranked

Minor Components

Unnamed, undisturbed soils

Percent of map unit: 8 percent

Hydric soil rating: No

Udorthents, wet substratum

Percent of map unit: 5 percent

Down-slope shape: Convex

Across-slope shape: Linear

Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent

Hydric soil rating: No

Data Source Information

Soil Survey Area: State of Connecticut

Survey Area Data: Version 18, Dec 6, 2018

APPENDIX C

Test Pit Logs



P.O. BOX 1167
21 JEFFREY DRIVE
SOUTH WINDSOR, CT 06074
PHONE: 860.291.8755
FAX: 860.291.8757
www.designprofessionalsinc.com

CIVIL & TRAFFIC ENGINEERS / LAND SURVEYORS / PLANNERS / LANDSCAPE ARCHITECTS
Serving Connecticut, Massachusetts, & Rhode Island

DPI Project #2829
Building Addition
200 Sullivan Ave.
South Windsor, CT 06074

DEEP TEST PIT RESULTS

The following deep test pits were witnessed by
Daniel Jameson, P.E. of Design Professionals, Inc. on 7/25/19

TEST PIT #3

0" – 12"	TOP SOIL
12" – 18"	YELLOW BROWN LOAMY M-F SAND
18" – 90"	TAN M-F SAND

WATER AT 84"

APPENDIX D
Drainage Area Map

Drainage Area Map
200 Sullivan Ave.
South Windsor, Ct
1" = 60'

