EAST HAMPTON CONSERVATION-LAKE COMMISSION
860-267-4468

APPLICATION REVIEW

Meetings are held on the 2nd Thursday of the month per the attached schedule.

PROPERTY LOCATION: Edgewater Hills

PROJECT NAME: Salt Pond Apartments

APPLICANT: Edgewater Hill Enterprises, LLC **DAYTIME PHONE:** 860-267-6822

MAILING ADDRESS: 10 Edgewater Circle, Suite 2

OWNER IF DIFFERENT: _____

MAILING ADDRESS: _____

ACTIVITY: **P&Z Application:** _____

IWWA Application: IW-20-035

ZBA Application: _____

REVIEW DATE: _____

COMMENTS: _____

_____

_____

_____

_____

_____

Revised 10/01/2013

Received 12/16/20

ck# 1004

Office Use Only
Fee Paid $585.00 Date Approved _____ Permit Number IW-20-035
Public Hearing: YES NO Agent Approval: YES NO

TOWN OF EAST HAMPTON
INLAND WETLANDS & WATERCOURSES AGENCY

Date: December 15, 2020

1. Name of Applicant* Edgewater Hill Enterprises, LLC, Edgewater Hill Properties, LLC, Edgewater Hill Apartments, LLC and Edgewater Homes I, LLC
Phone Numbers: Home _____, Business (860) 267-6822, Cell (860) 398-0325
Home Address: Street n/a Town _____ State/Zip _____
Business Address: Street 10 Edgewater Circle, Suite 2 Town East Hampton State/Zip CT 06424
* All applications MUST list contact phone numbers. If the applicant is a Limited Liability Corporation or a Corporation, provide the managing member's or responsible corporate officer's name, address, and telephone number.

2. Name of Property Owner (if different from Applicant): Edgewater Hill Enterprises, LLC** Phone (860) 267-6822
Address: Street 10 Edgewater Circle, Suite 2 Town East Hampton State/Zip CT 06374
As the legal owner of the property listed on this application I hereby consent to the proposed activities. I hereby authorize the members and agents of the Agency to inspect the subject land, at reasonable times, during the pendency of the application and for the life of the permit.
Printed Name: SEE ATTACHED, Signature: SEE ATTACHED, Date: SEE ATTACHED

3. Provide the applicant's interest in the land. Owner and co-Declarants of Edgewater Hill, a planned community under the Connecticut Common Interest Ownership Act

4. Site Location and Description: Assessor's Map 10A, Block 85, Lot Lot 5C
Address: Street 000 East High Street Town East Hampton State/Zip CT 06424
Note: It is the applicant's responsibility to provide the correct site address, map, block, and lot number for the legal notice.
Provide a description of the land in sufficient detail to allow identification of the inland wetlands and watercourses, the area(s) (in acres or square feet) of wetlands or watercourses to be disturbed, soil type(s), and wetland vegetation.
Area of Wetland to be disturbed: Permanent: 2,250 Temporary: 750 ~~acres or~~ sq. ft.
Area of Watercourse to be disturbed _____ acres or sq. ft.
Area of Upland Review Area to be disturbed: 298,993 ~~acres or~~ sq. ft. (area within 200' of Lake Pocotopaug associated wetlands)
TOTAL AREA OF DISTURBANCE _____ **acres or sq. ft.**
Will fill be needed on site? Yes (No) If yes, how much fill is needed? n/a cubic yards
The property contains (circle one or more)
WETLANDS, BROOK, RIVER, INTERMITTANT STREAM, VERNAL POOL, SWAMP, (OTHER) See attached.
Description of soil types on site: See attached continuation.
Description of wetland vegetation: See attached continuation.
Name of Soil Scientist and date of survey: Marilee Gonzalez; Date: February, March and April, 2008

5. Attach a written narrative of the purpose and description of the proposed activity and proposed erosion and sedimentation controls, best management practices, and mitigation measures which may be considered as a condition of issuing a permit for the proposed regulated activity including but not limited to; measures to:
(1) prevent or minimize pollution or other environmental damage, (2) maintain or enhance existing environmental quality, or (3) in the following order of priority: restore, enhance or create productive wetland or watercourse resources. Depending on the complexity of the project, include the following: sequence of operations, drainage computations with pre and post construction runoff quantities and runoff rates, plans clearly showing the drainage areas corresponding to the drainage computations, existing wetland inventory and functional assessment, soils report, construction plans signed by a certified soils scientist, licensed surveyor, and licensed professional engineer. Include a construction schedule, impacts to vegetation, and pictures that clearly show the existing conditions of all areas to be disturbed and/or cleared of vegetation.
6. Provide information of all alternatives considered. List all alternatives which would cause less or no environmental impact to wetlands or watercourses and state why the alternative as set forth in the application was chosen. All such alternatives shall be diagramed on a site plan or drawing.

**together with Co-Declarants of Edgewater Hill, Edgewater Hill Properties, LLC, Edgewater Hill Apartments, LLC and Edgewater Homes I, LLC

Attach plans showing all alternatives considered.

No alternatives considered. This development is consistent with the Master Plan for Edgewater Hill which has been approved by the Town of East Hampton Inland Wetlands and Watercourses Commission and involves, in addition to the proposed development, site grading and infrastructure installation necessary for the completion of Edgewater Circle which is the named thoroughfare required for the development of the Edgewater Hill Mixed Use Community Project.

7. Attach a site plan showing the proposed activity and existing and proposed conditions in relation to wetlands and watercourses and identifying any further activities associated with, or reasonably related to, the proposed regulated activity which are made inevitable by the proposed regulated activity and which may have an impact on wetlands or watercourses. Include a colored grading plan showing areas to be filled (green) and areas to be excavated (brown) that clearly shows existing and proposed contours and proposed limits of disturbance.

8. Attach the names and mailing addresses of adjacent landowners. Attach additional sheets if necessary.
Name SEE ATTACHED Address _____
Name _____ Address _____
Name _____ Address _____

9. Attach a completed DEEP reporting form.
The Agency shall revise or correct the information provided by the applicant and submit the form to the Commissioner of Environmental Protection in accordance with section 22a-39-14 of the Regulations of Connecticut State Agencies.

10. Attach the appropriate filing fee based on the fee schedule in Section 19 of the regulations.
Fee: $585.00 (Make check payable to "The Town of East Hampton")

11. Name of Erosion Control Agent (Person Responsible for Compliance): Stephen J. Motto
Phone Numbers: Home n/a, Business (860) 267-6822, Cell (860) 398-0325
Address: Street 10 Edgewater Circle, Suite 2 Town East Hampton State/Zip CT 06424

12. Are you aware of any wetland violations (past or present) on this property? YES (NO)
If yes, explain _____

13. Are you aware of any vernal pools located on or adjacent (within 500')to the property? (YES) NO

14. For projects that do not fall under the ACOE Category 1 general permit – Have you contacted the Army Corps of Engineers? YES NO N/A

15. Is this project within a public water supply aquifer protection area or a public water supply watershed area? YES (NO)
If so, have you notified the Commissioner of the Connecticut Department of Public Health and the East Hampton WPCA? YES (NO)
(Proof of notification must be submitted with your application.)

16. PUBLIC HEARINGS ONLY. The applicant must provide proof of mailing notices to the abutters prior to the hearing date.

17. ***As the applicant I am familiar with all the information provided in the application and I am aware of the penalties for obtaining a permit through deception or through inaccurate or misleading information.***
Printed name: SEE ATTACHED, Signature: SEE ATTACHED, Date: December 15, 2020
Please Note: You or a representative must attend the Inland Wetlands meeting to present you application.

CONTINUATION OF WETLANDS APPLICATION OF EDGEWATER HILL ENTERPRISES, LLC, EDGEWATER HILL PROPERTIES, LLC, EDGEWATER HILL APARTMENTS, LLC AND EDGEWATER HOMES I, LLC DECEMBER 15, 2015

The property contains (circle one or more)
WETLANDS, BROOK, RIVER, INTERMITTENT STREAM, VERNAL POOL, SWAMP, OTHER Isolated hillside seep (Series H); hillside drainage way.
Description of soil types on site: See Project Narrative submitted herewith.
Description of wetland vegetation: Black Birch, Tulip, Red Oak, Ash and American Beech (B Series), Red Maple, American Beech, Black Birch and American Elm, Sweet Pepper-Bush, Japanese Barberry, Poison Ivy, Violets, Virginia Creeper, Christmas Ferns, Jack-And-A-Pulpit, Rubis, Bittersweet and Asters (Series H)

As the legal owner of the property listed on this application I hereby consent to the proposed activities. I hereby authorize the members and agents of the Agency to inspect the subject land, at reasonable times, during the pendency of the application and for the life of the permit.

EDGEWATER HILL ENTERPRISES, LLC Date: December 15, 2020

By:_____
Stephen L. Motto, its Manager

EDGEWATER HILL APARTMENTS, LLC

By:_____ Date: December 15, 2020
Stephen L. Motto, its Member

EDGEWATER HILL PROPERTIES, LLC

By:_____ Date: December 15, 2020
Stephen L. Motto, its Member

EDGEWATER HOMES I, LLC

By:_____ Date: December 15, 2020
Stephen L. Motto, its Manager

As the applicant I am familiar with all the information provided in the application and I am aware of the penalties for obtaining a permit through deception or through inaccurate or misleading information.

EDGEWATER HILL ENTERPRISES, LLC Date: December 15, 2020

By:_____
Stephen L. Motto, its Manager

EDGEWATER HILL APARTMENTS, LLC

By:_____ Date: December 15, 2020
Stephen L. Motto, its Member

EDGEWATER HILL PROPERTIES, LLC

By:_____ Date: December 15, 2020
Stephen L. Motto, its Member

EDGEWATER HOMES I, LLC

By:_____ Date: December 15, 2020
Stephen L. Motto, its Manager

HELLER, HELLER & McCOY

Attorneys at Law

736 Norwich-New London Turnpike
Uncasville, Connecticut 06382

Sidney F. Heller (1903-1986)
Harry B. Heller (hellermccoy@sbcglobal.net)
William E. McCoy (bcmccoy@hellermccoy.com)

Mary Gagne O'Donal (mgodonal@hellermccoy.com)
Andrew J. McCoy (amccoy@hellermccoy.com)

Telephone: (860) 848-1248
Facsimile: (860) 848-4003

RECEIVED
DEC 16 2020
TIME

December 15, 2020

East Hampton Inland Wetlands and Watercourses
Commission
1 Community Drive
East Hampton, CT 06424

Re: Permit Application for the Salt Pond Apartments at Edgewater Hill, a component of the Edgewater Hill Mixed Use Development

Dear Commissioners:

Please be advised that this office represents Edgewater Hill Enterprises, LLC, the owner of property located on the easterly side of and easterly of East High Street (Connecticut Route 66) in the Town of East Hampton, Connecticut, together with Edgewater Hill Properties, LLC, Edgewater Hill Apartments, LLC and Edgewater Homes I, LLC, the Co-Declarants of Edgewater Hill. The property owned by Edgewater Hill Enterprises, LLC is a component of the real property which received inland wetland review from the Town of East Hampton Inland Wetlands and Watercourses Commission and Master Plan approval from the Town of East Hampton Planning and Zoning Commission. The horizontal layout of the proposed Salt Pond Apartments at Edgewater Hill is substantially in compliance with that delineated on the Master Plan.

Submitted herewith and constituting the permit application to the Town of East Hampton Inland Wetlands and Watercourses Commission are the following:

1. Ten (10) copies of the completed application form including the "Checklist for a Complete Application".

2. A check in the amount of $585.00 representing payment of the application fee for the instant permit application, including the State of Connecticut $60.00 surcharge, which application fee is calculated as follows:

Residential use fee:	$75.00
One lot @ $50.00/lot:	50.00

More than 5,000 square feet of inland wetland and upland review area disturbance:	400.00
State of Connecticut fee:	60.00
TOTAL:	**$585.00**

3. One (1) 24"x36" print of the site development plan entitled "Site Development Plan Salt Pond Apartments at Edgewater Hill Prepared for Edgewater Hill Enterprises, LLC 000 East High Street (CT Route 66) East Hampton, Connecticut December 2020 Applicant/Property Owners: Edgewater Hill Enterprises, LLC 138 East High Street East Hampton, CT 06424 Property Info: 000 East High Street Assessor's ID: 10A/85/5C Area: 59.41 +/- Acres Sheets 1 of 25 to 25 of 25" prepared by Boundaries, L.L.C. In addition, Boundaries, L.L.C. will provide you with electronic copies of the site development plan for distribution to municipal consulting agencies and members of the Town of East Hampton Inland Wetlands and Watercourses Commission.

4. An Authorization signed by Edgewater Hill Enterprises, LLC authorizing the law firm of Heller, Heller & McCoy and the engineering/surveying firm of Boundaries, L.L.C. to represent its interests in all proceedings before the Town of East Hampton Inland Wetlands and Watercourses Commission with respect to the permit application.

5. An Authorization signed by Edgewater Hill Properties, LLC, as Co-Declarant of Edgewater Hill, authorizing the law firm of Heller, Heller & McCoy and the engineering/surveying firm of Boundaries, L.L.C. to represent its interests in all proceedings before the Town of East Hampton Inland Wetlands and Watercourses Commission with respect to the permit application.

6. An Authorization signed by Edgewater Hill Apartments, LLC, as Co-Declarant of Edgewater Hill, authorizing the law firm of Heller, Heller & McCoy and the engineering/surveying firm of Boundaries, L.L.C. to represent its interests in all proceedings before the Town of East Hampton Inland Wetlands and Watercourses Commission with respect to the permit application.

7. An Authorization signed by Edgewater Homes I, LLC, as Co-Declarant of Edgewater Hill, authorizing the law firm of Heller, Heller & McCoy and the engineering/surveying firm of Boundaries, L.L.C. to represent its interests in all proceedings before the Town of East Hampton Inland Wetlands and Watercourses Commission with respect to the permit application.

8. Ten (10) copies of the Project Narrative entitled "Project Narrative of Edgewater Hill Enterprises, LLC to East Hampton Inland Wetlands and Watercourses Commission" which, in addition to the project overview, general procedures narrative, construction

narrative, construction maintenance requirements, permanent maintenance requirements and delineation of no feasible and prudent alternative, contains the soil report.

9. Two (2) copies of the Stormwater Management Report and Drainage Calculations for the project prepared by Boundaries, L.LC.

10. Connecticut Department of Energy and Environmental Protection Statewide Inland Wetlands Reporting Form.

11. Three (3) copies of a report entitled "Natural Resource Evaluation Edgewater Hill Master Plan Proposed Mixed-Use Development East High Street (CT Route 66) East Hampton, CT Prepared For: Fuss & O'Neill January 6, 2012" prepared by Land-Tech Consultants, Inc. Environmental Scientists and Engineers. This report was initially prepared in conjunction with the evaluation of and permitting of the Master Plan for the Edgewater Hill Mixed Use Development. The analysis contained therein provides a complete description of the existing wetland and watercourse resources on the entire Edgewater Hill site as well as an evaluation of their functions and values.

12. Required photographs of the pre-development project site.

Request is hereby made that you place this matter on the agenda of the December 30, 2020 meeting of the Town of East Hampton Inland Wetlands and Watercourses Commission. Should you have any questions or require any additional information at this time, please feel free to contact the undersigned.

Should you have any questions concerning the application, or need any additional information, please feel free to contact the undersigned.

Very truly yours,

Harry B. Heller

HBH/rmb

RECEIVED
DEC 16 2020
TIME_____

AUTHORIZATION

Edgewater Hill Enterprises, LLC hereby authorizes the law firm of Heller, Heller & McCoy to submit an application to the Town of East Hampton Inland Wetlands and Watercourses Commission on its behalf for licenses to conduct regulated activities in conjunction with the development of the proposed Salt Pond Apartments at Edgewater Hill, a component of the Edgewater Hill Mixed Use Lifestyle Community located on the easterly side of East High Street (Connecticut Route 66) in the Town of East Hampton, Connecticut in accordance with a site development plan entitled "Site Development Plan Salt Pond Apartments at Edgewater Hill Prepared for Edgewater Hill Enterprises, LLC 000 East High Street (CT Route 66) East Hampton, Connecticut Applicant/Property Owner: Edgewater Hill Enterprises, LLC 138 East High Street East Hampton, CT 06424 Property Info: 000 East High Street Assessor's ID: 10A/85/5C Area: 59.41 +/- Acres Sheets 1 of 25 to 25 of 25" prepared by Boundaries, L.L.C.

Edgewater Hill Enterprises, LLC hereby further authorizes the law firm of Heller, Heller & McCoy and the surveying/engineering firm of Boundaries, L.L.C. to represent its interests in all proceedings before the Town of East Hampton Inland Wetlands and Watercourses Commission with respect to said permit application.

Dated at East Hampton, Connecticut this 16th day of December, 2020.

EDGEWATER HILL ENTERPRISES, LLC

By: _____
Stephen J. Motto, its Manager

Z:\Edgewater Hill Enterprises, LLC\Salt Pond Apartments\Wetlands\Authorization (Enterprises).docx

LAND-TECH CONSULTANTS, INC.

ENVIRONMENTAL SCIENTISTS AND ENGINEERS

RECEIVED
DEC 16 2020
TIME_____

NATURAL RESOURCE EVALUATION

EDGEWATER HILL MASTER PLAN
PROPOSED MIXED-USE DEVELOPMENT

East High Street (CT Route 66)
East Hampton, CT

Prepared for:
Fuss & O'Neill

January 6, 2012

205 PLAYHOUSE CORNER SOUTHBURY, CT 06488
PHONE 203.264.8300 FAX: 203.264.5995

ON THE WEB: WWW.LANDTECHCONSULT.COM

31 FRANKLIN STREET WESTPORT, CT 06880
PHONE 203.454.2110 FAX: 203.454.4971

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1.0 EXECUTIVE SUMMARY

A master plan has been prepared for a multi-use development on property on the east side of East High Street (CT Route 66) between Lake Vista Drive and Laurel Ridge in East Hampton, CT. Along Route 66, the property supports two single-family residences, a motel complex, and associated outbuildings. The existing buildings are served by public sewer and on-site wells. The remainder of the property is largely undeveloped and consists of a relatively large area of contiguous woodland. The property is located within the DD, Design Development zone according to the East Hampton Zoning Map (9/15/1990).

The applicant is proposing a phased development of the property. Phase 1 is a mix of commercial and residential development consisting of seven sub-phases including a market square, multi-family housing, single family attached dwellings, and single family detached dwellings. Phases 2 through 5 include a mix of multi-family housing, single family attached dwellings, and single family detached dwellings.

2.0 NATURAL RESOURCES

2.1 Setting

The 76.4 acre site is located on the east side of East High Street (CT Route 66). To the west of Route 66 is the shoreline community surrounding Lake Pocotopaug, which consists of high density residential development. The subject property is bound to the north by single family residential development along Laurel Ridge and to the southwest by Lake Vista Drive. A large undeveloped tract of forested land borders the property to the south and east.

2.2 Site Geology

The property is underlain by Brimfield schist. Brimfield schist is gray, rusty-weathering, medium-coarse-grained interlayered schist and gneiss.

Till materials dominate the surface geology of the site. The glacial till sediments were laid down directly by glacial ice and glacial ice melt-out and are characterized by a non-sorted matrix of sand, silt, and clay with variable amounts of stones and large boulders (CTDEEP GIS Database).

Upland soils are identified as Woodbridge fine sandy loam, Canton and Charlton Soils, Charlton-Chatfield complex, Hollis-Chatfield complex, Paxton and Montauk fine sandy loams, Paxton-Urban Land complex, and Udorthents,. The wetland soils are mapped as Ridgebury, Leicester, and Whitman; poorly drained and very poorly drained soils that developed in glacial till (CTDEEP GIS).

2.3 Watershed

The majority of the property is located west of a ridgeline that divides the property into two sub-regional drainage basins. The larger western portion of the site lies within the Pine Brook subregional drainage basin (CTDEEP #4709). Runoff from the western portion of site drains westward to an existing 30" culvert under East High Street and then to Lake Pocotopaug.

The smaller eastern portion of the site, east of the ridgeline, drains to Cattle Lot Brook within the Dickinson Creek subregional drainage basin (CT DEEP #4708). The Pine

Brook and the Dickinson Creek subbasins are located within the Salmon River regional basin which drains to the Connecticut River.

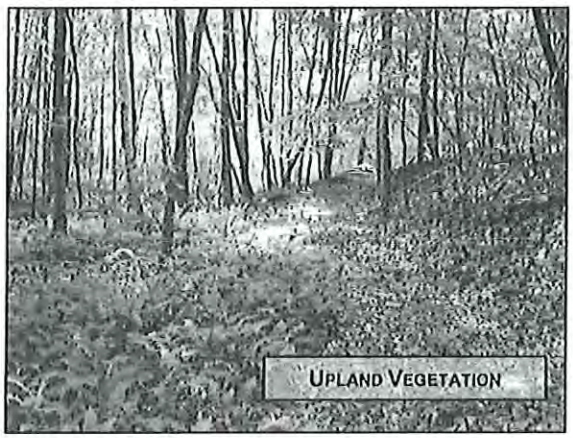
2.4 Aquifer Protection Area

The site is not located within a designated preliminary or final Aquifer Protection Zone as mapped by the CTDEP in the revised March 2009 Aquifer Mapping.

2.5 FEMA Flood Zones

There are no mapped FEMA (Federal Emergency Management Administration) flood zones or areas of special flood hazard on the property.

2.6 Upland Vegetation



The northwestern portion of the property along Route 66, is developed containing two residences and a motel complex. These areas are surrounded by typical maintained lawn and plantings/gardens. The remainder of the on-site uplands supports a contiguous hardwood dominated canopy and shrub/sapling understory. Dominant tree species include sugar maple (*Acer saccharum*), red maple (*Acer rubrum*), tulip tree (*Liriodendron tulipifera*), red, black and white oak (*Quercus rubra, Quercus vellutina, Quercus alba*), black and yellow birch (*Betula lenta, Betula alleghaniensis*), Shagbark and pignut hickory (*Carya glabra, Carya cordiformis*). The understory is predominately saplings of overstory species as well as numerous shrub and vine species. The sparse herbaceous community includes such species as Christmas fern (*Polystichum acrostichoides*), Virginia creeper (*Parthenocissus quinquefolia*), various sedges, and rose twisted-stalk (*Streptopus lanceolatus*).

2.7 Critical Habitats/Species of Concern

A review of the CTDEEP Natural Diversity Database (NDDB) indicates that there are no mapped extant populations of endangered, threatened or special concern species or rare habitats on the property, however a shaded area associated with a protected or high interest species is located within one-half mile of the project site. An NDDB review application has been filed with the CTDEEP's NDDB. The response letter will be provided upon receipt.

2.8 Wildlife

The site contains a large area of contiguous upland and wetland habitats. The mosaic of uplands and wetlands in the interior of the site is expected to support diverse avian, mammal, reptile, and amphibian populations. During a site visit on August 3, 2011, a few wood frogs and one spotted salamander were observed in the wooded uplands in the vicinity of the vernal pools. The presence of these obligate vernal pool species in close proximity to the pools during the non-breeding season indicates the adjacent upland

woodlands contain the necessary habitat to support these species during the remainder of the year. More detail on the vernal pools is found in Section 3.2.

The property is connected to a large undisturbed wooded parcel to the east and south allowing for unobstructed daily and seasonal movements by wildlife. The subject parcel is bordered to north, west and southwest by dense residential development which restricts the movements of many species in these directions.

3.0 WETLAND EVALUATION

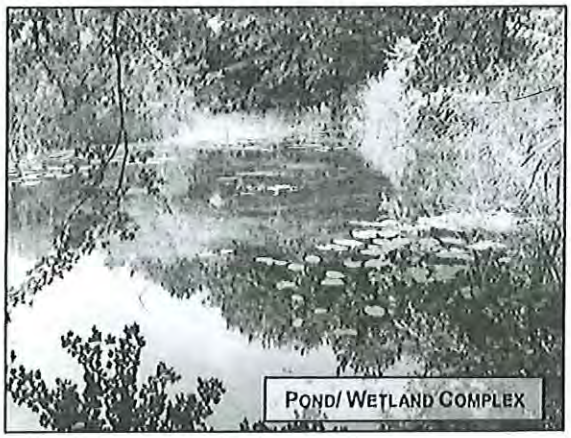
3.1 WETLAND DESCRIPTIONS

There are eight wetland systems and four vernal pools on the property. The four vernal pools are located within Wetland A. In total the wetlands comprise approximately 8.5 acres on the property. On-site wetlands consist of one very large convoluted system which is situated in the central portion of the property and seven small isolated wetlands located primarily around the property's periphery.

Wetland A

Wetland A is by far the largest wetland on the property. Wetland A is located in the central portion of the property and consists of several lobes and a highly convoluted edge which primarily follows the highly variable topography. Representative areas of the wetland were characterized in the field and discussed below.

Wetland A1 (Wetland Flags A101 to A141, B200 to B221)



The northwestern lobe of Wetland A is labeled as Wetland A1. It is pond/wetland complex consisting of a matrix of open water, emergent wetland, and wooded wetlands. The open water portions support dense mats of submerged aquatic vegetation (likely naiad), yellow pond lily (*Nuphar lutea*), various sedges, and common reed (*Phragmites australis*). The wooded wetland and riparian areas have a diverse stratified vegetative community. Common species include sassafras (*Sassafras albidum*), red maple (*Acer rubrum*), cottonwood (*Populus deltoids*), witch hazel, sweet pepper-bush (*Clethra alnifolia*), spicebush (*Lindera benzoin*), bladder sedge (*Carex intumescens*), tussock sedge (*Carex stricta*), lurid sedge (*Carex lurida*), jack-in-the-pulpit (*Arisaema triphyllum*), halberd-leaved tearthumb (*Polygonum arifolium*), cinnamon fern (*Osmunda cinnamomea*), sensitive fern (*Onoclea sensibilis*), sphagnum moss (*Sphagnum spp.*) and violets among other species.

East of pond is a meadow/ shrub community with some standing water. The wetland is densely vegetated. Species include red maple saplings, sweet pepper-bush, high-bush blueberry (*Vaccinium corymbosum*), rubus, steeplebush (*Spiraea tomentosa*), skunk

cabbage (*Symplocarpus foetidus*), spicebush, dewberry, cinnamon fern, and hay scented fern (*Dennstaedtia punctilobula*).

The south side of wetland A-1 is an emergent marsh dominated by Juncus sp., various sedges, and Common reed.

Wetland Corridor between Wetland A1 & A2 (Wetland Flags A141 to 147, B221 to B226)

The narrow constriction between Wetlands A1 and A2 consists of a hillside intermittent watercourse with boulder and cobble substrate. Evidence of erosion and undercutting is common. The stream is well shaded during the growing season. Vegetation along the banks of the stream is dominated by yellow birch (*Betula alleghaniensis*), black birch (*Betula lenta*), and red maple (*Acer rubrum*) saplings, winged euonymus (*Euonymus alatus*), Japanese barberry (*Berberis thunbergii*), poison ivy (*Toxicodendron radicans*), witch hazel (*Hamamelis virginiana*), jack-and-a-pulpit (*Arisaema triphyllum*), skunk cabbage (*Symplocarpus foetidus*), spicebush (*Lindera benzoin*), Christmas fern (*Polystichum acrostichoides*), cinnamon fern (*Osmunda cinnamomea*), and hay scented fern (*Dennstaedtia punctilobula*).

Wetland A2 (Wetland Flags A147 to A233, B226 to B290)

Wetland A2 is a three lobed wooded wetland in the south central portion of the property. Dominant overstory species throughout the wetland include red maple, American beech (*Fagus grandifolia*), tulip tree (*Liriodendron tulipifera*), yellow birch, black birch, white ash (*Fraxinus Americana*), and American elm (*Ulmus Americana*). Photograph to the right shows typical vegetation strata in the western lobe. The photograph was taken on August 3, 2011.

Understory species in the northern lobes include witch hazel, sweet pepper-bush, spicebush, ironwood, Japanese barberry, poison ivy, skunk cabbage, cinnamon fern, sensitive fern, sphagnum moss and violet (*Viola sp.*).

The dominant overstory canopy species in the eastern lobe include red maple, American beech, black birch, white oak, red oak, hickory, black cherry (*Prunus serotina*), and American elm. The understory is dominated by witch hazel, high-bush blueberry, ironwood, green briar, sweet pepper-bush, and cinnamon fern. The photograph to the right (taken August 3, 2011) shows a representative area within the eastern lobe.

The overstory of the southern lobe is consistent with the rest of the wetland. The herbaceous species in the southern lobe consists of Virginia creeper (*Parthenocissus quinquefolia*), stinging nettle (*Urtica dioica*), Japanese stilt grass (*Microstegium vimineum)*, violet, poison ivy, skunk cabbage, smartweed (Polygonum hydropiperoides), various sedges, Christmas fern, cinnamon fern, hay scented fern, and sensitive fern.

Three vernal pools area clustered in the center of Wetland A2. A discussion of the vernal pools is provided in Section 3.2. A variable width channel (6 foot wide typical) carries seasonal water from the southern lobe through the western lobe of Wetland A2 and into the wetland corridor and into the southern portion of Wetland A1.

Wetland A3 (Wetland Flags A232 to A253, B290 to B304)

The proposed road crossing between wetlands A2 and A3 is a hillside drainage way with no defined channel or bank. Surface water flows easterly towards the central portion of the property. The photograph to the left was taken August 3, 2011 and faces southwest. This wetland supports an overstory canopy of black birch, tulip tree, red oak, ash, and American beech. The understory is comprised of

spice bush, Japanese barberry, Christmas fern, and cinnamon fern. Vernal pool 3 is located in this wetland.

Wetland C (*Roadside Wetland*)

The roadside wetland is a typical drainage ditch, located in a low area parallel to East High Street, designed to transport stormwater. The extended presence of stormwater in the ditch has led to the development of wetland soils. The wetland receives storm flows from the existing developed areas of the property discharging the flows from the north end of the ditch, to the west under Route 66. The wetland is densely vegetated within the ditch and the adjacent uplands. Species include oriental bittersweet, cattail, jewelweed, skunk cabbage, elderberry, joe-pye weed, queen Anne's lace, wormwood, ragweed, nettle, and rugosa rose.

Wetland D (*Wetland Flags D400 to D408*)

Wetland D is a forested wetland within a shallow depression adjacent to Wetland A-2. This wetland has characteristics and vegetation similar to Wetland A-2 and is separated from the larger wetland by a narrow band of moderately well drained soils.

Wetland E (*Wetland Flags E500 to E504*)

Wetland E is a small valley depression between two bedrock ridges in the southeast corner of the site. It is separated from the larger Wetland F by a narrow band of non-wetland soil (possibly fill for an old road bed). Wetland E contains saturated soils with no standing water. It is vegetated with red maple, white ash, ironwood, Japanese barberry and Christmas fern

Wetland F (*Wetland Flags F600 to F611*)

Wetland F straddles the southern property boundary in the southeast corner of the site. Wetland F is the northern tip of a much larger wetland that extends off-site to the south. Similar to Wetland E it lies within a valley depression between two bedrock ridges. Wetland F contains seasonal standing water and is vegetated with red maple, black and yellow birch, high bush blueberry, mountain laurel, and wild grape. Off-site portions of this wetland contain areas of standing water with the characteristics of a vernal pool.

Wetland G (*Wetland Flags G700 to G706*) and **Wetland H** (*Wetland Flags H800 to H807*)

Wetlands G and H are hillside seep wetlands located on the north facing slope of the hill along the southern property boundary. These wetlands are shaded by red maple, American beech, black birch, and American elm. Understory species include, sweet pepper-bush, Japanese barberry, poison ivy, violets, Virginia creeper, Christmas fern, jack-and-a-pulpit, rubus, bittersweet, and asters.

Wetland J (Wetland FlagsJ1000 to J1010))

Wetland J is a forested wetland that is located in the northeast corner of the property within a bedrock controlled depression. Dominant vegetation includes: red maple, iron wood, black birch, yellow birch, spicebush, cinnamon fern, sensitive fern, Japanese barberry, high-bush blueberry, Virginia creeper, and Christmas fern. Mayflower, poison ivy, and white oak, and tulip tree saplings are located around the wetland edge. Boulders and exposed bedrock are common throughout the wetland. Water stained leaves were present in August 2011.

3.2 VERNAL POOLS

A vernal pool is a small, isolated body of standing freshwater that provides breeding habitat for certain species of wildlife. There are no applicable local or state regulations defining or protecting vernal pools in East Hampton, CT, however, the criteria of a vernal pool generally accepted in the State of Connecticut is that outlined in *A Guide to the Identification and Protection of Vernal Pool Wetlands of Connecticut* published by the University of Connecticut, Cooperative Extension System. Using these criteria, a vernal pool:

- Contains water for approximately two months during the growing season;
- Occurs within a confined depression or basin that lacks a permanent outlet stream. (It is the opinion of many biologists that many vernal pools can function very well with a permanent outlet and therefore this criterion is used on a case by case basis.)
- Lacks any fish population; and
- Dries out most years, usually by late summer.

In addition to these physical characteristics, the presence of certain animal species is used to confirm the existence of a vernal pool. Some species are considered obligate (or indicator) vernal pool species meaning that they rely on vernal pools for breeding and early development. The presence of obligate species is also used to evaluate the functionality and quality of the vernal pool. These species include: spotted salamander (*Ambystoma maculatum*), Jefferson salamander (*Ambystoma jeffersonianum*), marbled salamander (*Ambystoma opacum*), wood frog (*Rana sylvatica*), eastern spadefoot toad (*Scaphiopus h. holbrookii*) and fairy shrimp (*Eubranchipus spp.*). The presence of one or more of these obligate species in a pool that meets the physical criteria, confirms the pool as a "vernal pool" and, therefore, increases the relative function or value of the pool.

Our evaluation of the vernal pools is based on two investigations. The first investigation was conducted by Fuss & O'Neill in March of 2008. Potential vernal pools were investigated using generally accepted methods to identify the presence and abundance of obligate or facultative species in the form of deposited egg masses, developing larvae or adults. Land-Tech Consultants, Inc. conducted a follow up field investigation of the pools on August 3, 2011. The focus of this investigation was to gather physical and biological data on the previously identified wetlands and vernal pools and the adjacent uplands on the property. During this ecological investigation, Land-Tech inspected the physical conditions of the identified vernal pools and noted any evidence of wetland dependant wildlife species. The following descriptions of the vernal pools incorporate the findings of both Fuss & O'Neill's and Land-Tech's investigations.

Vernal pools 1, 2 and 4 are clustered in the southern portion of the property within 350± feet of each other. Vernal pool 3 is located approximately 450' south of vernal pool 2. All are within the same contiguous forest and well within the documented seasonal migration ranges for most vernal pools species, therefore, it is likely that genetic material is being shared between the four vernal pools either by the same population or by different populations that interbreed.

Vernal Pool 1

Vernal pool #1 is situated in a 1,490 ± s.f. basin located in Wetland A2. The basin is shaded by red oak, red maple, American beech, and iron wood. A small watercourse runs through the southwestern portion of the basin, therefore the vernal pool has both an inlet and outlet. During the March 2008 investigation, F&O observed five (5) spotted salamander (*Ambystoma maculatum*), and six (6) wood frog (*Rana sylvaticus*) egg masses. In addition, two adult wood frogs were observed in amplexus. An extensive dip netting effort of the pool did not result in the identification of any marbled salamander larvae or fairy shrimp. A single four-toed salamander (*Hemidactylium scutatum*) and one spotted turtle (*Clemmys guttata*) were also observed utilizing the pool in March 2008. The pool contained approximately 10 s.f. of standing water in August 2011.

Vernal Pool 2

This vernal pool is located within a 2,430 ± s.f. basin in the southern lobe of Wetland A2. In August 2011, the pool contained stained leaves and no rooted vegetation. Vegetation surrounding the basin includes red oak, red maple and American beech. The basin contains an outlet. F&O identified three (3) spotted salamander and 17 wood frog egg masses in March 2008. An adult spotted salamander was found a couple hundred feet southwest of this pool and a wood frog was found between this pool and VP 4 during the August 2011 inspection.

Vernal Pool 3

Vernal pool #3 is approximately 1,820 ± s.f. in size and is located south of the cluster of the other three vernal pools in wetland A3. This pool shows the same characteristics as vernal pool number 2 as it is being shaded by overstory trees of red oak and red maple, and contains an outlet. F&O observed three (3) spotted salamander and over 30 wood frog egg masses in March 2008.

Vernal Pool 4

Vernal pool number four is the largest of the vernal pools at 17,020 ± s.f. and is situated within the eastern lobe of wetland A2. The depression receives water from an upland stream but contains no outlet and contains abundant microtopography. The pool contains numerous attachments sites. A small portion of the pool contained approximately 1 foot of water during the August 2011 inspection. F&O identified three (3) spotted salamander and over 160 wood frog egg masses. This suggests that this is a well established breeding pool. The borders of the pool support red maples, elderberry, high-bush blueberry, and sweet pepper-bush. Dragonflies and green frogs were present near the basin in August 2011, indicating that this pool stays moist and supports an abundant insect population which is a primary food source for the amphibian species.

The following table summarizes the observed wildlife species associated with the vernal pools.

Table 1 – Vernal Pool Functions and Rating Category.

Vernal Pool	Observed Species in pool	Total Number of Egg Masses from Obligate Species	Notable Species Observed in the vicinity	Category according to Calhoun and Klemens
1	2 obligate 1 facultative	11		Tier 1
2	2 obligate	20		Tier 1
3	2 obligate	33+		Tier 1
4	2 obligate 1 facultative	163+		Tier 1

3.3 Wetland Evaluation / Function and Value Assessment

The following table summarizes the principal functions and values of the site's wetlands using the US Army Corps of Engineers Highway Methodology Workbook. The evaluation is based on thirteen (13) categories established by the Corps. Wetland functions are defined as "...self-sustaining properties of a wetland ecosystem that exist in the absence of society". Values, on the other hand are defined as "...benefits that derive from either one or more functions and the physical characteristics associated with a wetland". Table 2, below describes of each of the categories of function and value. A summary of the site's wetland functions and values is presented in Table #3.

Table 2. Wetland Functions and Values

	Function	Value	Description
	Groundwater Recharge/Discharge		This function considers the potential for a wetland to serve as a groundwater recharge and/ or discharge area. Recharge should relate to the potential for the wetland to contribute water to an aquifer. Discharge should relate to the potential for the wetland to serve as an area where groundwater can be discharged to the surface.
	Floodflow Alteration		This function considers the effectiveness of the wetland in reducing food damage by attenuation of floodwaters for prolonged periods following precipitation events.
	Fish and Shellfish Habitat		This function considers the effectiveness of seasonal or permanent water bodies associated with the wetland in question for fish and shellfish habitat.
	Sediment/Toxicant/ Pathogen Retention		This function reduces or prevents degradation of water quality. It relates to the effectiveness of the wetland as a trap for sediments, toxicants, or pathogens.
	Nutrient Removal/Retention/ Transformation		This function relates to the effectiveness of the wetland to prevent adverse effects of excess nutrients entering aquifers or surface waters such as ponds, lakes streams, rivers or estuaries.
	Production Export		This function relates to the effectiveness of a wetland to produce food or usable products for humans or other living organisms.
	Sediment / Shoreline Stabilization		This function relates to the effectiveness of a wetland to stabilize streambanks.
	Wildlife Habitat		This function considers the effectiveness of the wetland to provide for various types and populations of animals typically associated with wetlands and the wetland edge. Both resident and/or migrating species must be considered. Species lists of observed and potential animals should be included in the wetland assessment report.
	Recreation (Consumptive and Non-Consumptive)		This value considers the effectiveness of the wetland and associated watercourses to provide recreational opportunities such as canoeing, boating, fishing, hunting, and other active or passive recreational activities. Consumptive activities consume or diminish the plants, animals, or other resources that are intrinsic to the wetland, whereas non-consumptive activities do not.
	Educational / Scientific Value		This value considers the effectiveness of the wetland as a site for an "outdoor classroom" or as a location for scientific study or research.
	Uniqueness / Heritage		This value relates to the effectiveness of the wetland or its associated waterbodies to produce certain special values. Special values may include such things as archeological sites, unusual aesthetic quality, historical events, or unique plants, animals, or geologic features.
	Visual Quality / Aesthetics		This value relates to the visual and aesthetics of the wetland.
ES	Threatened or Endangered Species Habitat		This value relates to the effectiveness of the wetland or associated waterbodies to support threatened or endangered species.

Table 3 – Wetland Function and Value Assessment

		X Principle Function or Value + Capable of Providing of Function or Value							
		WETLAND SYSTEM							
SYMBOL	PARAMETER	A	C	D	E	F	G	H	J
WETLAND FUNCTIONS									
	GROUNDWATER RECHARGE/DISCHARGE	X		+	+	+	+	+	+
	FLOODFLOW ALTERATION	X							
	FISH AND SHELLFISH HABITAT								
	SEDIMENT/TOXICANT/PATHOGEN RETENTION	X	+	+	+	+			+
	NUTRIENT REMOVAL/RETENTION/TRANSFORMATION	X	+	+	+	+			+
	PRODUCTION EXPORT	X	+						
	SEDIMENT/SHORELINE STABILIZATION								
	WILDLIFE HABITAT	X		+	+	+			+
WETLAND VALUES									
	RECREATION								
	EDUCATIONAL/SCIENTIFIC VALUE								
	UNIQUENESS/HERITAGE								
	VISUAL QUALITY/AESTHETICS	X							
ES	THREATENED OR ENDANGERED SPECIES HABITAT								

Wetland A - Pond/Wetland/Vernal Pool Complex

The pond/wetland/vernal complex is a very large wetland system with diverse habitats and vegetative communities, thereby providing many functions and values to the surrounding landscape. The large expansive system provides both groundwater recharge during low flow periods and serves to discharge groundwater. As a large wetland system in a low-lying area, with an open water component, the complex serves to store flood flows. Sediment trapping and nutrient attenuation functions are provided by the wetland due to the large contact area and dense vegetation. The wetland provides abundant wildlife habitat in its open water, vernal pool and diverse vegetative communities. Open water areas and a large frog population provides food source for stalking birds such as herons and egrets, and occasionally hawks, and mammals such as fox, skunk, and coyote. The large wetland and associated fruit and nut bearing vegetation provides foraging and primary habitat for many bird and small and large mammal species as well as amphibians and reptiles.

Wetland C

The roadside wetland, though small, provides some limited functions. Sediments and nutrients may be trapped and attenuated in the dense vegetation of the system but the wetlands small size relative to the watershed, short contact times, and limited storage potential limits these functions. The vegetation also provides limited function for production export through the production of fruits and seeds which serve as food sources for transient wildlife, however landscape position, next to a busy roadway, limits this function as well.

Wetland D, E, F & J

These small isolated wetland systems have similar characteristics and wetlands functions. The wetlands provide both groundwater recharge during dry periods and serves to discharge groundwater during wet periods. These wetlands have a limited ability to trap sediments and attenuate nutrients as they capture upland runoff from surrounding areas. These wetlands provide wildlife habitat is association with large contiguous surrounding forested areas. Fruit and nut bearing vegetation provides foraging and habitat for bird and small and large mammal species.

Wetland G and H

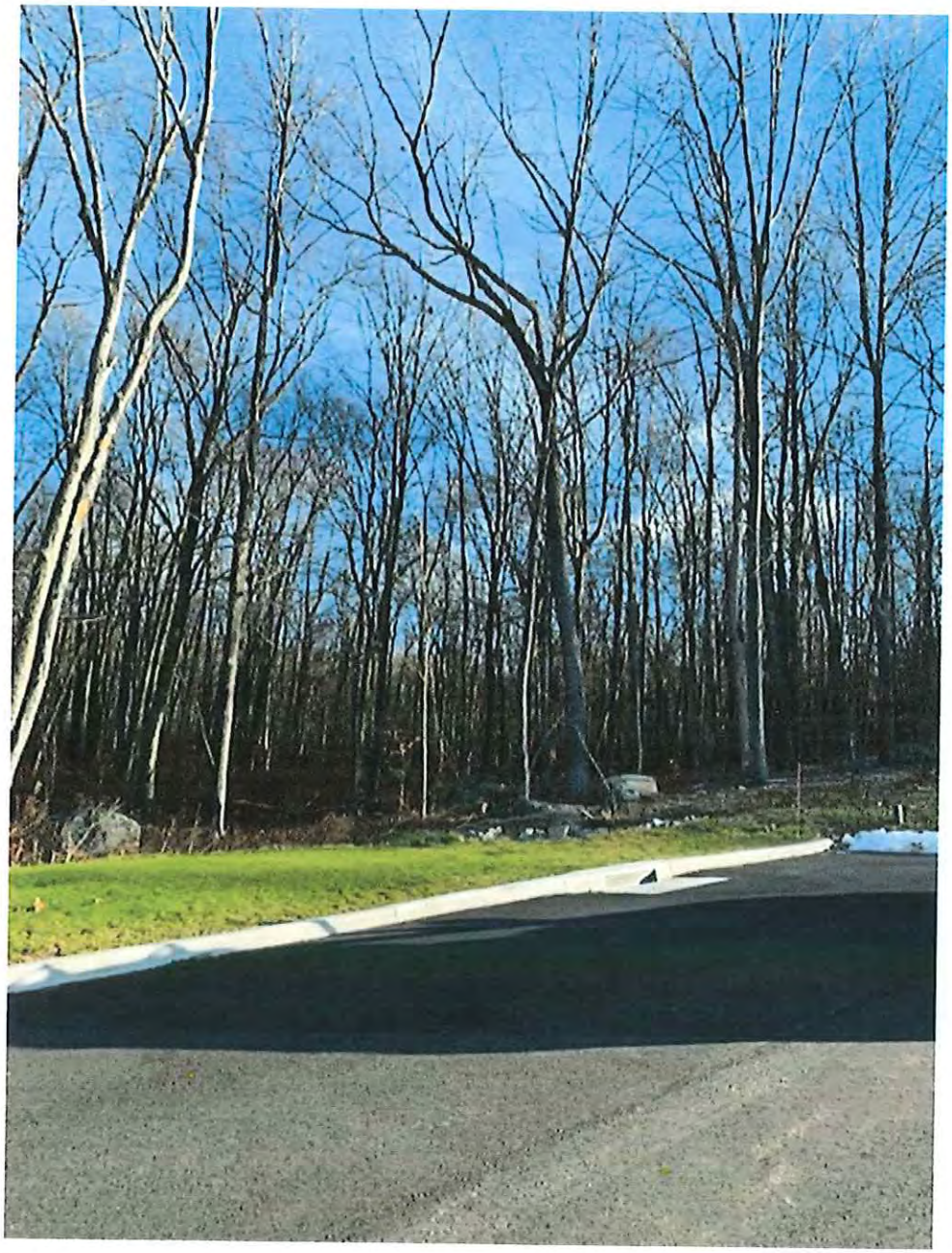
These hillside seep wetlands have limited functions due to their small size and hillside landscape position. The primary functions of these hillside seeps is groundwater discharge.

4.0 REFERENCES

U.S. Army Corps of Engineers, New England Division. November 1995. The Highway Methodology Workbook Supplement: Wetland Functions and Values, A Descriptive Approach.

Calhoun, A. J. K. and M. W. Klemens. 2002. Best development practices: Conserving pool-breeding amphibians in residential and commercial developments in the northeastern United States. MCA Technical Paper No. 5, Metropolitan Conservation Alliance, Wildlife Conservation Society, Bronx, New York.

CTDEP GIS Database. Connecticut Department of Environmental Protection, Hartford, CT.



APPLICATION OF EDGEWATER HILL ENTERPRISES, LLC TO EAST HAMPTON INLAND WETLANDS AND WATERCOURSES COMMISSION

NARRATIVE DESCRIPTION AND CONSTRUCTION SEQUENCE RELATIVE TO THE DEVELOPMENT OF SALT POND APARTMENTS AT EDGEWATER HILL, CONTAINING FORTY (40) PROPOSED RESIDENTIAL UNITS AND CONSTITUTING A COMPONENT OF THE EDGEWATER HILL MASTER PLANNED COMMUNITY 000 EAST HIGH STREET (CONNECTICUT ROUTE #66), EAST HAMPTON, CONNECTICUT

RECEIVED
DEC 16 2020
TIME

DATE: DECEMBER 16, 2020

PROJECT OVERVIEW:

Salt Pond Apartments at Edgewater Hill is a proposed forty (40) unit residential community within the overall Edgewater Hill Master Planned Community located on the southerly, easterly and westerly sides of Edgewater Circle in the Town of East Hampton, Connecticut. The development of the Salt Pond Apartments at Edgewater Hill is consistent with the approved Master Plan for the Edgewater Hill Community which was reviewed by the Town of East Hampton Inland Wetlands and Watercourses Commission on April 25, 2012. The site plan submitted herewith is consistent with that Master Plan review. The project will be served by public water and public sewer.

In conjunction with the development of the Salt Pond Apartments at Edgewater Hill, the Applicant is proposing to conduct three (3) regulated activities, as hereinafter described. The development plan for the Salt Pond Apartments at Edgewater Hill has been formulated by the Applicant's consulting engineers, Boundaries, L.L.C. to (i) attain consistency with the approved Master Plan for Edgewater Hill and (ii) accomplish the following goals while allowing the Applicant to develop this phase of the Edgewater Hill Project in accordance with the conceptual design contemplated by the Edgewater Hill Master Plan:

(a) To avoid, to the maximum extent possible, wetland and environmental resources located on the Property.

(b) To renovate stormwater runoff from improved portions of the project site in accordance with the 2004 Connecticut Stormwater Quality Manual.

(c) To regulate and attenuate peak runoff flows during design storm events, and to renovate stormwater runoff quality in recognition of the fact that development is occurring in the ecologically sensitive Lake Pocotopaug Protection Area.

In order to accomplish the above listed development goals, the Applicant has incorporated the following mitigation measures into the design for Salt Pond Apartments at Edgewater Hill:

1. To fill a small pocket of isolated wetlands (designated by the H Series of Wetland Flags), comprising 2,250 square feet of wetland area as contemplated by the Master Plan for Edgewater Hill.

2. To maintain improvements outside of the limits of the 100 foot setback from the vernal pool located interior to Wetland A as contemplated by the Master Plan approval for Edgewater Hill.

3. By incorporating into the project vernacular a comprehensive stormwater management and water quality renovation system to comply with the requirements of the Town of East Hampton Regulations, the 2004 State of Connecticut Stormwater Quality Manual and to preserve the quality of stormwater runoff draining to Lake Pocotopaug.

4. To incorporate into the project design mitigation methodologies to control erosion and sedimentation during construction.

In conjunction with the instant application, the Applicant is seeking permits from the Town of East Hampton Inland Wetlands and Watercourses Commission for the following activities in conjunction with the development of the Salt Pond Apartments at Edgewater Hill:

1. A permit to permanently fill Wetland H which is a small, isolated wetland pocket which is not hydraulically connected with any other wetland on the project site. The Natural Resource Evaluation for the Edgewater Hill Master Plan prepared by Land-Tech Consultants, Inc. describes Wetland H as follows:

   "Wetlands G and H are hillside seep wetlands located on the north facing slope of the hill along the southerly property boundary. These wetlands are favored by Red Maple, American Beech, Black Birch and American Elm. Understory species include Sweet Pepper-Bush, Japanese Barberry, Poison Ivy, Violets, Virginia Creeper, Christmas Fern, Jack-A-Pulpit, Rubis, Bittersweet and Asters... These hillside seep wetlands have limited functions due to their small size and hillside landscape position. The primary function of these hillside seeps is groundwater discharge."

2. To temporarily disturb 750 square feet of the wetland area (a component of Wetland A as described in the Land-Tech Consultants, Inc. report and depicted by Wetland Flags B-296 – B-305 to the West) by the installation of a corduroy crossing in order to enable access to the construction site from The Neighborhood at Edgewater Hill in conjunction with the development of the Salt Pond Apartments at Edgewater Hill. This temporary disturbance will be removed upon the completion of construction.[1]

[1] It should be noted that future applications submitted by the Applicants to the Town of East Hampton Inland Wetlands and Watercourses Commission will encompass a future permanent crossing in this location in order to complete the

3. To disturb 298,993 square feet of upland review area in conjunction with the development of the Salt Pond Apartments at Edgewater Hill.[2]

SITE SOIL CHARACTERISTICS

Soil characteristics on the project site are as follows:

UPLAND SOILS:

(a) **86d - Paxton and Montauk Fine Sandy Loams – 15 to 35% Slopes, Extremely Stony.**

The Paxton series consists of well-drained, non-stony to extremely stony soils that formed in compact, loamy glacial till. Paxton soils are found on the landscape on drumloidal upland landforms. Slopes range from 3 to 35%. Paxton soils are found in a drainage sequence on the landscape with moderately well-drained Woodbridge soils, poorly drained Ridgebury soils and very poorly drained Whitman soils. They are near somewhat excessively drained Hollis soils and well-drained Montauk, Charlton and Canton soils. Paxton soils have a more firm and compact C horizon than Canton and Charlton soils, are deeper to bedrock than Hollis soils, and have more silt in the Cx horizon than Montauk soils.

Montauk soils consist of well-drained, non-stony to extremely stony soils that formed in compact, sandy glacial till. Montauk soils are found on drumloidal upland landforms. Slopes range from 3 to 35%. The Montauk soils are found near well-drained Canton, Charlton and Paxton soils, moderately well-drained Woodbridge soils and poorly drained Ridgebury soils. Montauk soils have a more firm and compact C horizon than Canton and Charlton soils. Montauk soils have more sand in the Cx horizon than Paxton soils. The soil stratification for this soil is as follows:

Paxton and similar soils: 0" – 8" fine sandy loam; 8" –15" fine sandy loam; 15" – 26" fine sandy loam; 26" – 65" gravelly fine sandy loam.

Montauk and similar soils: 0" – 4" fine sandy loam; 4" –14" fine sandy loam; 14" – 25" sandy loam; 25" – 39" gravelly loamy coarse sand; 39" – 60" gravelly sandy loam.

The depth to bedrock is very deep in both soil groups. Permeability is very slow to moderate. Both soils are contained in Hydrologic Group C.

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construction of Edgewater Circle, the main thoroughfare which connects all components of the Edgewater Hill Master Planned Community.

[2] It should be noted that the amount of upland review area disturbance is dictated, in part, by the 200 foot upland review area in the Lake Pocotopaug Protection Area, and by the fact that the upland review area encompasses area adjacent to Wetland H which the Applicant is proposing to fill.

(b) **46c – Woodbridge, Very stony fine sandy loam – 8-15% Slopes.**

This sloping, moderately well-drained soil is found on drumloidal, glacial upland landforms. Stones and boulders cover 1 – 8% of the surface. Mapped areas are dominantly irregular in shape and mostly 2 – 25 acres. Included with this soil in mapping are small areas of well-drained Montauk, Broadbrook and Paxton soils and moderately well-drained Rainbow and Sutton soils. Permeability is moderate in the surface layer and subsoil and slow or very slow in the substratum. The soil stratification for this Woodbridge soil is as follows:

0" – 2" Moderately decomposed plant material.

2" – 9" Fine sandy loam.

9" – 25" Fine sandy loam.

20" – 32" Fine sandy loam.

32" – 67" Gravelly fine sandy loam.

The depth to the restrictive layer is 20" – 43". This soil is in Hydrologic Group C/D.

WETLAND SOILS:

(a) **Ridgebury, Leicester and Whitman Soils:**

These nearly level, poorly drained and very poorly drained soils are found in drainageways and depressions on glacial till upland hills, ridges, plains and drumloidal landforms. Stones and boulders cover 8 to 25 percent of the surface. Mapped areas are long and narrow or irregular in shape and mostly 2 to 40 acres. Slopes range from 0 to 3 percent. The mapped acreage of this undifferentiated group is about 35 percent Ridgebury soil, 30 percent Leicester soil, 20 percent Whitman soil and 15 percent other soils. Some mapped areas consist of one of these soils, and other areas consist of two or three. These soils were mapped together because there are no major differences in use and management. Typically, the Ridgebury soil has a black, fine sandy loam surface layer 4 inches thick. The subsoil is gray and brown, mottled fine sandy loam 16 inches thick. The substratum is very firm, brittle, grayish-brown, mottled sandy loam to a depth of 60 inches or more. The Leicester soil has a very dark gray, fine sandy loam surface layer 6 inches thick. The subsoil is dark grayish-brown, grayish-brown and pale olive, mottled fine sandy loam 26 inches thick. The substratum is light olive gray, mottled gravelly fine sandy loam to a depth of 60 inches or more. The Whitman soil has a black, fine sandy loam surface layer 9 inches thick. The subsoil is dark grayish-brown, mottled fine sandy loam 7 inches thick. The substratum is very firm, brittle, grayish-brown, mottled fine sandy loam to a depth of 60 inches or more. The Ridgebury soil has a seasonally high water table at a depth of about 6 inches. Permeability is moderate or moderately rapid in the surface layer and subsoil and slow or very slow in the substratum. The available water capacity is moderate. Runoff is very slow or slow. The Leicester

soil has a seasonally high water table at a depth of about 6 inches. Permeability is moderate or moderately rapid. The available water capacity is moderate. Runoff is very slow or slow. The Whitman soil has a high water table at or near the surface for most of the year. Permeability is moderate or moderately rapid in the surface layer and subsoil and slow or very slow in the substratum. The available water capacity is moderate. Runoff is very slow, or the soil is ponded.

GENERAL PROCEDURES:

1. Prior to commencing construction of the Salt Pond Apartments at Edgewater Hill, the Applicant, the Applicant's contractor and the Applicant's consulting engineer shall meet with the East Hampton Wetlands Enforcement Officer and the East Hampton Zoning Enforcement Officer to agree upon the method of installation and maintenance of erosion and sediment control measures for the development of the project.

2. The project site shall be cleared within the clearing limits delineated on a plan entitled "Salt Pond Apartments at Edgewater Hill 'Overall Layout Plan' Prepared for Edgewater Hill Enterprises, LLC 000 East High Street - East Hampton, Connecticut Scale: 1" = 30' Date: December 2020 Job I.D. No. 20-2853 Sheet No. 4/25 Boundaries LLC 179 Pachaug River Drive, Griswold, CT 06351 T 860.376.2006/www.boundariesllc.net". Upon clearing the construction area, the Applicant shall install erosion and sediment control measures as delineated on a plan entitled "Salt Pond Apartments at Edgewater Hill 'Erosion and Sedimentation Control Plan' Prepared for Edgewater Hill Enterprises, LLC 000 East High Street - East Hampton, Connecticut Scale: 1" = 30' Date: December 2020 Job I.D. No. 20-2853 Sheet No. 16/25 Boundaries LLC 179 Pachaug River Drive, Griswold, CT 06351 T 860.376.2006/www.boundariesllc.net" (the "Erosion Control Plan").

3. The Applicant shall install the anti-tracking pad at the construction entrance to the project site in the location delineated on the Erosion Control Plan.

4. Subsequent to the installation of perimeter erosion and sediment control measures in accordance with the Erosion Control Plan and the Erosion Control Narrative delineated on a plan entitled "Salt Pond Apartments at Edgewater Hill 'Erosion and Sedimentation Control Notes' Prepared for Edgewater Hill Enterprises, LLC 000 East High Street - East Hampton, Connecticut Scale: As Noted Date: December 2020 Job I.D. No. 20-2853 Sheet No. 18/25 Boundaries LLC 179 Pachaug River Drive, Griswold, CT 06351 T 860.376.2006/www.boundariesllc.net" (the "Erosion Control Narrative"), the Applicant shall notify the East Hamptons Wetlands Enforcement Officer and the East Hampton Zoning Enforcement Officer that erosion and sediment control measures for Salt Pond Apartments at Edgewater Hill have been installed and request that the same be inspected and approved by the East Hampton Wetlands Enforcement Officer and the East Hampton Zoning Enforcement Officer. In addition, the Applicant shall notify Steven Trinkaus, professional engineer, and third party review consultant for the protection of the Lake Pocotopaug watershed, to inspect and approve the installation of erosion and sediment control measures.

5. All activities in conjunction with the development of the project shall be conducted in accordance with the terms and provisions of the Erosion Control Plan, the Erosion Control Narrative and this Narrative. The East Hampton Wetlands Enforcement Officer, the East Hampton Zoning Enforcement Officer and Steven Trinkaus, third party consultant, shall have authority to modify any construction details or procedures hereinafter contained as warranted by field conditions for the duration of the development of the project. For purposes of this Narrative, the "Plan" is defined as the "Site Development Plan Salt Pond Apartments at Edgewater Hill Prepared for Edgewater Hill Enterprises, LLC 000 East High Street (CT Route 66) - East Hampton, Connecticut Applicant/Property Owners: Edgewater Hill Enterprises, LLC 138 East High Street East Hampton, CT 06424 Property Info: 000 East High Street Assessor's ID: 10A/85/5C Area: 59.41 +/- Acres Sheets 1 of 25 to 25 of 25" prepared by Boundaries, L.L.C.

6. All erosion and sediment control measures shall be inspected at least weekly while construction is ongoing, and after every storm event resulting in precipitation greater than one-tenth (0.10") of one (1") inch and repaired and maintained as necessary.

7. Unless notification otherwise is provided in writing to the East Hampton Wetland Enforcement Officer and East Hampton Zoning Enforcement Officer, Stephen J. Motto of 267 Hog Hill Road, East Hampton, Connecticut 06424 (Office Address: 138 East High Street, East Hampton, Connecticut 06424) Telephone: (860) 267-6822 Cell Phone: (860) 398-0325, e-mail: stephen.motto@dreamdevelopersct.com shall be the designated representative of the Applicant responsible for the implementation of the erosion and sediment control plan for the project. All erosion and sediment control measures shall be inspected and maintained and/or repaired, as necessary, on a weekly basis during the construction and stabilization periods and after each storm occurrence meeting the threshold specified above.

8. Throughout construction, the Applicant shall install and maintain inlet sediment control devices in accordance with the Erosion Control Narrative in the catch basins delineated on the Erosion Control Plan in order to insure that no sediments are introduced into any stormwater collected and discharged from the drainage system.

9. Throughout construction, and until the site is fully stabilized, the Applicant shall maintain the existing turbidity curtain at the pond outlet of the pond located on the easterly side of Edgewater Circle and shall further maintain the existing turbidity curtain at the stormwater outlet to Lake Pocotopaug.

10. During the stabilization period, any erosion which occurs shall be immediately repaired by the Applicant, re-seeded with the seeding mixes set forth in the Erosion Control Narrative, and re-stabilized.

11. At such time as stabilization has been achieved and certification thereof received from the East Hampton Wetlands Enforcement Officer and the East Hampton Zoning Enforcement Officer, inlet control devices, hay bales, silt fence and turbidity curtains shall be removed.

In addition, the temporary sediment traps shall be graded, loamed and seeded in accordance with the Grading Plan for the project and the Erosion Control Narrative.

12. If any erosion and sediment control measure fails, or is not installed or maintained in accordance with this Narrative, the Plan, the directives of the East Hampton Wetlands Enforcement Officer, the directives of the East Hampton Zoning Enforcement Officer and/or the recommendation of Steven Trinkaus, third party consultant, the Applicant, or its successors, shall be required to cease all development activities on the project until such time as said erosion and sediment control measures have been installed in accordance with this Narrative, the Plan and the directives of the East Hampton Wetlands Enforcement Officer, the East Hampton Zoning Enforcement Officer and/or Steven Trinkaus and approval of the same has been certified by the East Hampton Wetlands Enforcement Officer, the East Hampton Zoning Enforcement Officer and/or Steven Trinkaus, in writing.

CONSTRUCTION SEQUENCING:

(a) **Site Improvements.**

1. Prior to the commencement of construction activities, the Applicant shall install silt fence backed by staked haybales along the downgradient periphery of the project area in the location delineated on the Erosion Control Plan.

2. The Applicant shall install the anti-tracking pad in accordance with the Anti-Tracking Pad Detail as depicted on a plan entitled "Salt Pond Apartments at Edgewater Hill 'Erosion and Sedimentation Control Notes and Details' Prepared for Edgewater Hill Enterprises, LLC 000 East High Street - East Hampton, Connecticut Scale: As Noted Date: December 2020 Job I.D. No. 20-2853 Sheet No. 19/25 Boundaries LLC 179 Pachaug River Drive, Griswold, CT 06351 T 860.376.2006/www.boundariesllc.net".

3. Upon the installation of erosion control measures, the Applicant shall contact the East Hampton Wetlands Enforcement Officer, the East Hampton Zoning Enforcement Officer and Steven Trinkaus to perform an inspection of the installation of said erosion control measures. In no event shall construction activities with respect to the construction of improvements for the Salt Pond Apartments at Edgewater Hill be commenced until such time as the East Hampton Wetlands Enforcement Officer, the East Hampton Zoning Enforcement Officer and Steven Trinkaus have inspected and approved the installation of erosion control measures.

4. Upon certification of the installation of erosion control measures, the Applicant shall grub the location for the installation of site improvements in conjunction with the construction of the Salt Pond Apartments at Edgewater Hill in accordance with the phasing requirements as delineated on the Erosion Control Plan. Any vegetation, including stumps, removed from the area shall either be (i) ground in

place or (ii) disposed of in a location approved in advance by the East Hampton Wetlands Enforcement Officer and the East Hampton Zoning Enforcement Officer. No construction debris shall be deposited in any area regulated pursuant to the regulations promulgated by the Town of East Hampton Inland Wetlands and Watercourses Commission. In addition, no construction debris or stumps shall be buried on the project site.

5. The Applicant shall install the temporary haul road from the existing southerly terminus of Edgewater Circle (in the Neighborhood at Edgewater Hill) in order to access the development site for the Salt Pond Apartments at Edgewater Hill in accordance with the Site Logistics Plan, including the construction of Temporary Sediment Trap 3 located on the northerly side of the temporary haul road in the location delineated on the Site Logistics Plan. In conjunction with the development of the temporary haul road, the Applicant shall install a continuous line of wood chip berm at the down gradient limits of grading as depicted on the Site Logistics Plan as well as the installation of water bars with haybale check dams at outlets in the location depicted on the Site Logistics Plan.

6. Any surface soil and subsoil removed from the construction area shall be stored in a surface soil stockpile in the location delineated on a plan entitled "Salt Pond Apartments at Edgewater Hill 'Site Logistics Plan' Prepared for Edgewater Hill Enterprises, LLC 000 East High Street - East Hampton, Connecticut Scale: As Noted Date: December 2020 Job I.D. No. 20-2853 Sheet No. 17/25 Boundaries LLC 179 Pachaug River Drive, Griswold, CT 06351 T 860.376.2006/ www.boundariesllc.net" (the "Site Logistics Plan"). Since the development of the Salt Pond Apartments at Edgewater Hill results in a net export of fill, the surface soil export from the Project shall remain stockpiled in the surface soil stockpile location for use in future phases of the development of the Edgewater Hill Mixed Use Lifestyle Community. The surface soil stockpile shall be stabilized by installing a single row of silt fence around the stockpile location. The stockpile shall be constructed at a slope not to exceed 3:1 and shall be stabilized by seeding with a perennial ryegrass mix and mulch. The perennial ryegrass mix shall be applied at a rate of 40 pounds per acre. Mulch shall be applied at the rate of 80 pounds per 1,000 square feet and shall be spread by hand or with a mulch blower.

7. The temporary sedimentation traps shall be excavated and rough shaped and utilized as temporary sedimentation basins throughout the duration of construction of the Salt Pond Apartments at Edgewater Hill. At such time as any temporary sedimentation trap is filled to more than 50 percent of its available wet storage area, sediments shall be removed from the temporary sediment traps and placed outside of the upland review area or removed from the site.

8. Construction of the Salt Pond Apartments at Edgewater Hill shall thereafter proceed sequentially in accordance with the Erosion Control Narrative.

9. Once all disturbed areas have been thoroughly stabilized, all erosion control devices shall be removed.

10. It is anticipated that construction activities in conjunction with the development of the Salt Pond Apartments at Edgewater Hill will commence in the late winter or early spring of 2021 and be completed within an eighteen (18) month period.

MAINTENANCE REQUIREMENTS

1. As delineated in the General Procedures section of this Narrative, the Applicant shall, during construction of the project, be responsible for inspecting all erosion control measures installed in the active development phase of the project on a twice weekly basis and after each storm event resulting in the deposition of in excess of 0.10" of precipitation.

2. At any time that sediment reaches one-half of the height of the silt fence, wood chip berms or water bars, the sediment shall be removed to the surface soil stockpile location.

3. Temporary sedimentation traps shall be inspected in accordance with the inspection schedule required pursuant to the General Procedures section of this Narrative. At such time as temporary sedimentation traps are filled to 50% of their capacity, excavation equipment shall be introduced into the temporary sediment traps and all collected sediment shall be excavated and removed from the sedimentation traps to restore the temporary sedimentation traps to their designed capacity. Removed sediment shall be stored in the temporary surface soil stockpile location.

4. Check dams and water bars shall be inspected in accordance with the inspection schedule required pursuant to the requirements of the General Procedures section of this Narrative and cleaned and repaired as necessary in order to insure their functional utility.

5. Inlet sediment control devices shall be inspected weekly and after every storm event resulting in more than 0.10" of precipitation and cleaned as necessary. If any inspection discloses any breach in an inlet sediment control device, the inlet sediment control device shall be replaced immediately.

PERMANENT MAINTENANCE SCHEDULE

1. All parking areas, roadways, sidewalks, driveways and other impervious areas (other than rooftops) shall be swept clean of sand, litter and other possible pollutants twice each year, once between November 14 and December 15 (after leaf fall has concluded) and once during the month of April (after the possibility of further sanding has ended). All material accumulated as a result of the sweeping activities shall be disposed of in accordance with law.

2. The Applicant shall utilize a sand/salt mix of 80/20 for winter roadway, parking lot and sidewalk treatments.

3. All catch basin sumps shall be cleaned at least once per year during the period April 15 and May 30. All material cleaned from catch basin sumps shall be disposed of in accordance with law.

4. A monthly inspection of all stormwater structures installed within the project, including the water quality forebay and the stormwater detention basins, and outfalls, shall be conducted for floating debris or surface debris. Any floating or surface debris encountered shall be removed and properly disposed of.

5. Except during the grow-in period, each water quality forebay shall be inspected once per year. At such time as accumulated sediments attain a depth of 12", accumulated sediments shall be removed and disposed of in accordance with law. The water quality forebays and detention basins shall be mowed once each year at the conclusion of the growing season.

6. The Applicant shall be responsible for compliance with all of the terms and provisions of this Narrative, including adherence to the maintenance requirements contained in this section hereof.

7. During the first two (2) years subsequent to the completion of the project, the Applicant shall inspect all downgradient discharge areas within the project for channelization subsequent to any storm event resulting in the deposition of in excess of 1" of rainfall. If channelization is occurring, the Applicant shall immediately retain the services of a certified soil and erosion control specialist in order to design remedial measures required to diffuse the flow causing the channelization and shall forthwith implement the remedial measures designed by the certified soil and erosion control specialist.

DELINEATION OF NO FEASIBLE AND PRUDENT ALTERNATIVE

As defined in Connecticut General Statutes §22a-38(17) "feasible" means able to be constructed or implemented consistent with sound engineering principles. As defined in §22a-38(18) of the Connecticut General Statutes, "prudent" means economically or otherwise reasonable in light of the social benefits to be derived from the proposed regulated activity provided cost may be considered in deciding what is prudent and further provided a mere showing of expense will not necessarily show an alternative is imprudent.

Feasible and prudent alternatives need only be demonstrated to the municipal inland wetlands and watercourses commission in situations in which the proposed regulated activity is reasonably likely to have a significant adverse impact on wetland and watercourse resources. In formulating the methodology for the development of the Master Plan for Edgewater Hill, great care was taken by the Applicants' engineer and land planners to avoid direct impacts to significant wetlands and watercourses. This methodology was incorporated into the Master Plan designed for Edgewater Hill and has been incorporated into the engineering design of the phase of the Master Plan development which incorporates the Salt Pond Apartments at Edgewater Hill which is being submitted for consideration. While the East Hampton Inland Wetlands and Watercourses

Commission is not required to make a finding of "no feasible and prudent alternative" unless it makes a determination that the activities proposed in conjunction with the development of the Salt Pond Apartments at Edgewater Hill constitutes significant activities, the following is offered in support of the design philosophy which governed the design of this environmentally sensitive approach to the proposed development of Edgewater Hill in general and the Salt Pond Apartments at Edgewater Hill in particular.

As stated in the introductory section of this Narrative, the proposed Salt Pond Apartments at Edgewater Hill are being developed in accordance with the Master Plan which was reviewed by the Town of East Hampton Inland Wetlands and Watercourses Commission and the Town of East Hampton Planning and Zoning Commission in 2012. As depicted on the Master Plan, the development of Edgewater Circle and its associated grading which provides a continuous loop road system within Edgewater Hill necessary for public safety and convenience, requires the elimination of a small isolated pocket of wetlands delineated as "Wetland H" in the project wetland resources and impact analysis prepared by Land-Tech Consultants, Inc. for presentation to the Town of East Hampton Inland Wetlands and Watercourses Commission in conjunction with the Master Plan approval. As stated previously, the "Natural Resources Evaluation Report" dated January 6, 2012 prepared by Land-Tech Consultants, Inc. describes Wetland H as an isolated hillside seep wetland which has limited functionality due to its small size and hillside landscape position. The Inland Wetlands and Watercourses Act, and the regulations promulgated thereunder by the East Hampton Inland Wetlands and Watercourses Commission, contemplates that a municipal inland wetlands and watercourses commission must perform a balancing function in evaluating each application for a permit to conduct regulated activities in inland wetlands and watercourses and upland review areas adjacent to inland wetlands and watercourses. In doing so, the municipal wetlands commission must balance the preservation of valuable inland wetland and watercourse resources against the need for economic development both within the municipality, in particular, and the State of Connecticut, in general. This task necessarily involves a prioritization of the value of wetland and watercourse resources which may be impacted by any particular development initiative.

In the instant situation, the natural resource evaluation report prepared by Land-Tech Consultants, Inc. has determined that Wetland H is a wetland resource of limited functional value due to (i) its location on the landscape and (ii) its limited size and function. As indicated previously, the Master Plan for Edgewater Hill contemplated the elimination of this wetland resource. The theme for development for the Edgewater Hill Project, incorporated into the Master Plan approval, requires a loop road throughout the project in order to provide two means of access to all development within the project. In locating Edgewater Circle, both the master planners and the project engineers have located Edgewater Circle, in the vicinity of the proposed development, further away from the more valuable inland wetland and watercourse resources located northeasterly of the proposed development area. The preservation of these more valuable resources has necessitated the elimination of the isolated wetland pocket delineated by the Wetland Series H Flags.

With respect to the protection of additional inland wetland and watercourse resources located both on the project site and exterior thereto, including Lake Pocotopaug, the project

engineer has incorporated a detailed stormwater management and water quality system into the project vernacular in order to ensure that a highly renovated stormwater is released to the site wetlands (including the pond located easterly of Edgewater Circle), and thereafter, through a series of drainage basins, swales and structures, to Lake Pocotopaug. As indicated on the Overall Layout Plan, a significant portion of the project site is located within the 200 foot upland review area required for all wetlands draining to Lake Pocotopaug. In order to attain consistency between the Master Plan approval for Edgewater Hill, including the entire development scheme for the mixed use lifestyle community project, and the protection of the inland wetland and watercourse resources located on and in proximity to the project site, the project design engineer has incorporated a sophisticated stormwater management system for the project as depicted on a plan entitled "Salt Pond Apartments at Edgewater Hill 'Stormwater Management Plan' Prepared for Edgewater Hill Enterprises, LLC 000 East High Street - East Hampton, Connecticut Scale: 1"=30' Date: December 2020 Job I.D. No. 20-2853 Sheet No. 10/25 Boundaries LLC 179 Pachaug River Drive, Griswold, CT 06351 T 860.376.2006/www.boundariesllc.net". The stormwater management and renovation system incorporated into that design has been formulated in order to ensure that the quality and peak volume of stormwater released from the developed site to the inland wetland and watercourse resources both on and in proximity to the project site will be of such quality and character as to be consistent with the preservation of the ecological quality of those resources.

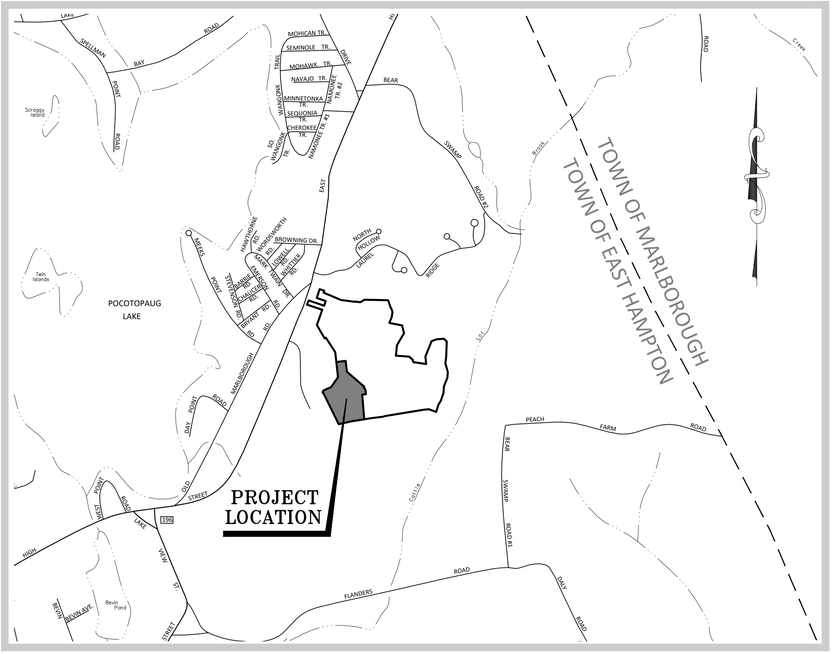
Site Development Plan
Salt Pond Apartments at Edgewater Hill

Prepared For

Edgewater Hill Enterprises, LLC

000 East High Street (CT Route 66)
East Hampton, Connecticut

December 2020



Site Location Map
Scale: 1" = 1,000'

Index To Drawings

Sheet No.	Sheet Title
1	Cover Sheet
2	Improvement Location and Topographic Survey
3	Lot Line Modification Plan
4	Overall Layout Plan
5	Site Layout Plan
6	Edgewater Circle Plan and Profile
7	North Loop Plan and Profile
8	South Loop Plan and Profile
9	Grading Plan
10	Stormwater Management Plan
11	Building Drainage Plan
12	Utilities Plan
13	Landscaping Plan
14	Sight Line Plan and Profiles
15	Retaining Wall Profiles
16	Erosion and Sedimentation Control Plan
17	Site Logistics Plan
18	Erosion and Sedimentation Control Notes
19	Erosion and Sedimentation Control Notes and Details
20	Construction Notes and Details
21	Construction Details
22	Construction Details
23	Construction Details
24	Construction Details
25	Construction Details

"APPROVED BY THE TOWN OF EAST HAMPTON PLANNING AND ZONING COMMISSION"

SIGNATURE OF CHAIRMAN OR SECRETARY *DATE*

"APPROVED BY THE TOWN OF EAST HAMPTON INLAND WETLANDS AND WATERCOURSES COMMISSION"

SIGNATURE OF CHAIRMAN OR SECRETARY *DATE*

Applicants/Property Owners:

Edgewater Hill Enterprises, LLC
138 East High Street
East Hampton, CT 06424

Property Info:

000 East High Street
Assessor's ID: 10A/85/5C
Area: 59.41± Acres

NOT FOR CONSTRUCTION
12/14/2020

29102
DAVID C. McKAY, P.E. *LICENSE NO.* *DATE*

"TO MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON."

70016
JOHN U. FAULISE, JR. *LICENSE NO.* *DATE*

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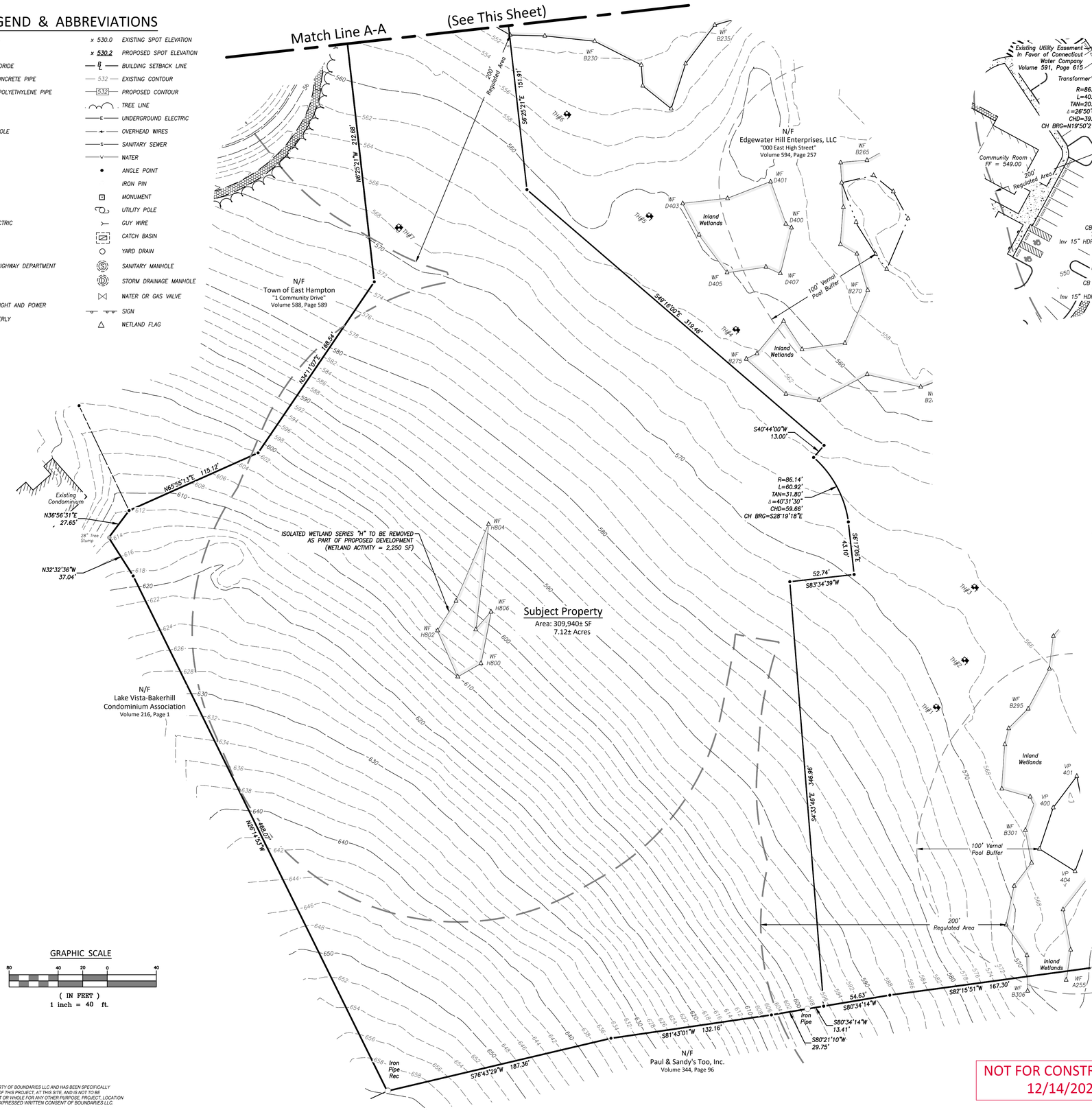
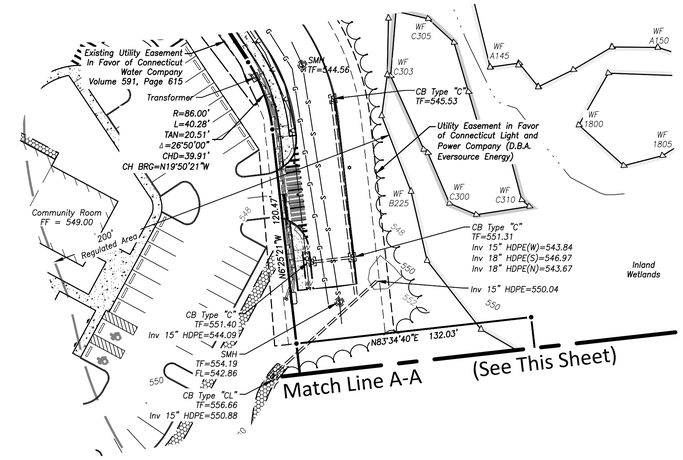
LEGEND & ABBREVIATIONS

±	MORE OR LESS	x 530.0	EXISTING SPOT ELEVATION
TYP	TYPICAL	x 530.2	PROPOSED SPOT ELEVATION
PVC	POLYVINYL CHLORIDE	BL	BUILDING SETBACK LINE
RCP	REINFORCED CONCRETE PIPE	532	EXISTING CONTOUR
HDPE	HIGH DENSITY POLYETHYLENE PIPE	532	PROPOSED CONTOUR
SF	SQUARE FEET		TREE LINE
FF	FINISH FLOOR	E	UNDERGROUND ELECTRIC
SMH	SANITARY MANHOLE		OVERHEAD WIRES
CB	CATCH BASIN	S	SANITARY SEWER
YD	YARD DRAIN	W	WATER
TF	TOP OF FRAME		ANGLE POINT
INV	INVERT		IRON PIN
GV	GAS VALVE		MONUMENT
WV	WATER VALVE		UTILITY POLE
HHE	HANDHOLE ELECTRIC		GUY WIRE
W/	WITH		CATCH BASIN
WF #1	WETLAND FLAG		YARD DRAIN
CHD	CONNECTICUT HIGHWAY DEPARTMENT		SANITARY MANHOLE
MON	MONUMENT		STORM DRAINAGE MANHOLE
REC	RECOVERED		WATER OR GAS VALVE
CL&P	CONNECTICUT LIGHT AND POWER		SIGN
N/F	NOW OR FORMERLY		WETLAND FLAG





SURVEY NOTES

1. THIS SURVEY HAS BEEN PREPARED PURSUANT TO THE REGULATIONS OF CONNECTICUT STATE AGENCIES SECTIONS 20–300B–1 THROUGH 20–300B–20 AND THE "STANDARDS AND SUGGESTED METHODS AND PROCEDURES FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ADOPTED FOR USE BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 29, 2019. IT IS AN IMPROVEMENT LOCATION AND TOPOGRAPHIC SURVEY AND CONFORMS TO HORIZONTAL CLASS A–2 AND TOPOGRAPHIC CLASS T–2 ACCURACY STANDARDS. IT IS INTENDED TO BE USED FOR SITE DEVELOPMENT .
2. NORTH ORIENTATION DEPICTED HEREON IS (NAD83) BASED UPON REFERENCE MAP A.
3. VERTICAL DATUM DEPICTED HEREON IS BASED ON REFERENCE MAP A.
4. THE LOCATIONS OF UNDERGROUND UTILITIES AS SHOWN HEREON ARE BASED ON THE LOCATION OF ABOVE GROUND STRUCTURES AND RECORD DRAWINGS PROVIDED BY OTHERS. NO EXCAVATIONS WERE MADE DURING THE PROGRESS OF THIS SURVEY TO LOCATE BURIED UTILITIES/STRUCTURES. ALL SUBTERRANEAN FEATURES AND IMPROVEMENTS MAY NOT BE DEPICTED OR NOTED HEREON. THE LOCATIONS OF UNDERGROUND UTILITIES/STRUCTURES MAY VARY FROM LOCATIONS SHOWN HEREON. ADDITIONAL BURIED UTILITIES/STRUCTURES MAY BE ENCOUNTERED. CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION OPERATIONS.
5. THE FIELD SURVEY WAS COMPLETED ON MARCH 11, 2020. LAND RECORD AND RELATED RESEARCH WAS COMPLETED ON MAY 1, 2020.

REFERENCE MAP

A. PROPERTY SURVEY "RESUBDIVISION PLAN", PREPARED FOR EDGEWATER HILL ENTERPRISES, LLC, EAST HIGH STREET – EAST HAMPTON, CONNECTICUT, SCALE: 1"=80', DATE: MAY 2020, JOB I.D. NO. 20–2795–3, SHEET 1 OF 2 THROUGH 2 OF 2, PREPARED BY BOUNDARIES, LLC.

B. RESUBDIVISION PLAN, THE NEIGHBOR HOOD AT EDGEWATER HILL, PREPARED FOR EDGEWATER HILL ENTERPRISES, LLC, 000 EAST HIGH STREET (CT ROUTE #66), EAST HAMPTON, CONNECTICUT, DATED: OCTOBER 2018, LAST REVISED: MAY 2, 2019, SHEET 5 OF 18, PREPARED BY: BOUNDARIES LLC.

C. PROPERTY SURVEY "FREE SPLIT PLAN" PREPARED FOR EDGEWATER HILL ENTERPRISES, LLC, EAST HIGH STREET, EAST HAMPTON, CONNECTICUT, DATED: JANUARY 2018, SCALE: 1"= 40', JOB I.D. NO. 17–2524–5, SHEET 1 OF 1 PREPARED BY BOUNDARIES, LLC.

D. COMPILATION PLAN, PREPARED FOR THE TOWN OF EAST HAMPTON, EDGEWATER CIRCLE, EAST HAMPTON, CONNECTICUT, SCALE: 1"=40', DATED: JULY 2018, JOB I.D. NO.: 17–2524–10, PREPARED BY: BOUNDARIES LLC.

TEST HOLE RESULTS

TEST HOLES WERE WITNESSED BY DAVID C. McKAY, P.E. OF BOUNDARIES LLC. ON NOVEMBER 10 AND 11, 2020.

TH#1
0" – 11" TOPSOIL
11" – 34" FINE BROWN SANDY LOAM WITH COBBLES
34" – 40" COMPACT BROWN FINE TO MEDIUM SAND WITH COBBLES AND BOULDERS
40" – 55" COMPACT GRAY SILTY SAND WITH MOTTLES
55" – 109" BROWN FINE TO MEDIUM SAND WITH GRAVEL AND BOULDERS
ROOTS TO 74"
MOTTLING AT 48"
GROUNDWATER SEEPING AT 58", DRY BELOW
NO LEDGE

TH#2
0" – 12" TOPSOIL
12" – 28" BROWN FINE SANDY LOAM WITH COBBLES
28" – 72" COMPACT GRAY SILTY SAND WITH COBBLES, MOTTLED THROUGHOUT
72" – 90" BROWN FINE TO MEDIUM SAND WITH GRAVEL AND COBBLES
ROOTS TO 72"
MOTTLING AT 28"
NO WATER
LEDGE AT 90"

TH#3
0" – 8" TOPSOIL
8" – 25" BROWN FINE SANDY LOAM
25" – 43" COMPACT BROWN TO GRAY SILTY SAND WITH MOTTLES
ROOTS TO 35"
MOTTLING AT 28"
NO WATER
LEDGE AT 43"

TH#4
0" – 11" TOPSOIL
11" – 20" BROWN FINE SANDY LOAM
20" – 68" COMPACT GRAY SILTY SAND WITH COBBLES, MOTTLED
68" – 100" BROWN FINE TO MEDIUM SAND WITH COBBLES
ROOTS TO 24"
MOTTLING AT 20"
WATER SEEPING AT 30", DRY BELOW
NO LEDGE

TH#5
0" – 11" TOPSOIL
11" – 23" BROWN FINE SANDY LOAM
23" – 97" COMPACT GRAY SILTY SAND WITH COBBLES AND BOULDERS
ROOTS TO 34"
MOTTLING AT 23"
NO WATER
LEDGE AT 97"

TH#6
0" – 11" TOPSOIL
11" – 28" BROWN FINE SANDY LOAM
28" – 82" COMPACT GRAY AND BROWN SILTY SAND WITH COBBLES
82" – 112" COMPACT BROWN FINE TO MEDIUM COBBLES
ROOTS TO 32"
MOTTLING AT 28"
NO WATER
LEDGE AT 112"

TH#7
0" – 12" TOPSOIL
12" – 34" BROWN FINE SANDY LOAM
34" – 99" COMPACT GRAY AND BROWN SILTY SAND
99" – 141" COMPACT BROWN FINE TO MEDIUM SAND WITH TRACE GRAVEL
141" – 184" COMPACT BROWN SILTY SAND
ROOTS TO 34"
MOTTLING AT 34"
NO WATER
NO LEDGE

"TO MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON."

JOHN U. FAULISE JR. L.S.	LICENSE NO. 70016	DATE

NOT FOR CONSTRUCTION
12/14/2020

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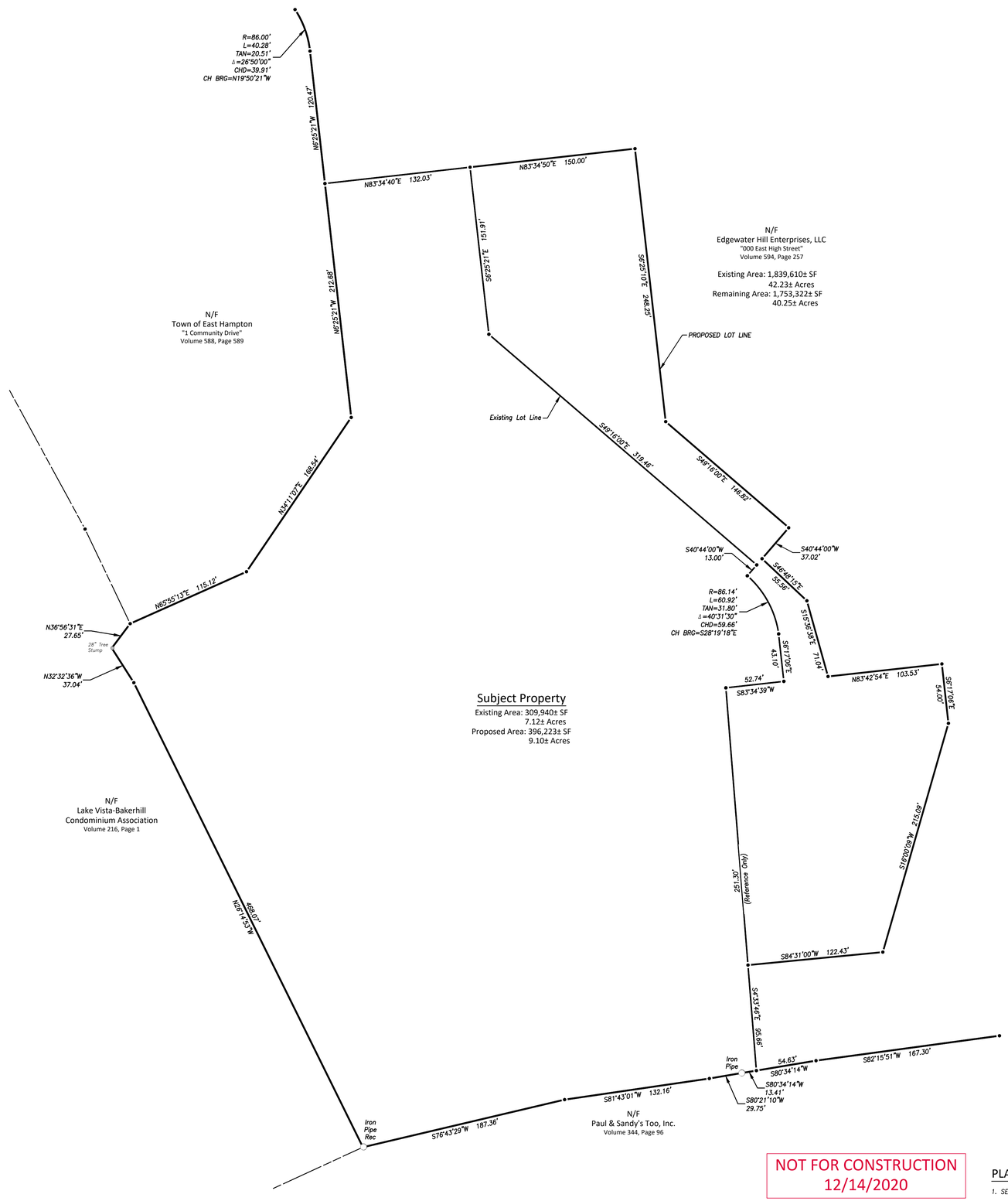
P:\CIVIL 3D PROJECTS\2020\20-2853 EDGEWATER APARTMENTS\DWG\DESIGN\2 EX-CONDITIONS.DWG

CIVIL ENGINEERING · LAND SURVEYING · LAND USE PLANNING · GIS SCIENCE
BOUNDARIES
Boundaries LLC
179 Pachaug River Drive, Griswold, CT 06351
T 860.376.2006 | www.boundariesllc.net

Salt Pond Apartments at Edgewater Hill
"Improvement Location and Topographic Survey"
Prepared for
Edgewater Hill Enterprises, LLC
000 East High Street - East Hampton, Connecticut

SCALE:	1" = 40'
DATE:	December 2020
JOB I.D. NO.	20-2853
Revisions	

SHEET NO.
2 / 25



GRAPHIC SCALE

100 50 25 0 50

(IN FEET)
1 inch = 50 ft.

NOT FOR CONSTRUCTION
12/14/2020

PLAN NOTES

1. SEE SHEET 2 FOR LEGEND & ABBREVIATIONS.

"TO MY KNOWLEDGE AND BELIEF THIS MAP IS SUBSTANTIALLY CORRECT AS NOTED HEREON."

JOHN U. FAULISE JR. L.S. | 70016 LICENSE NO. | DATE

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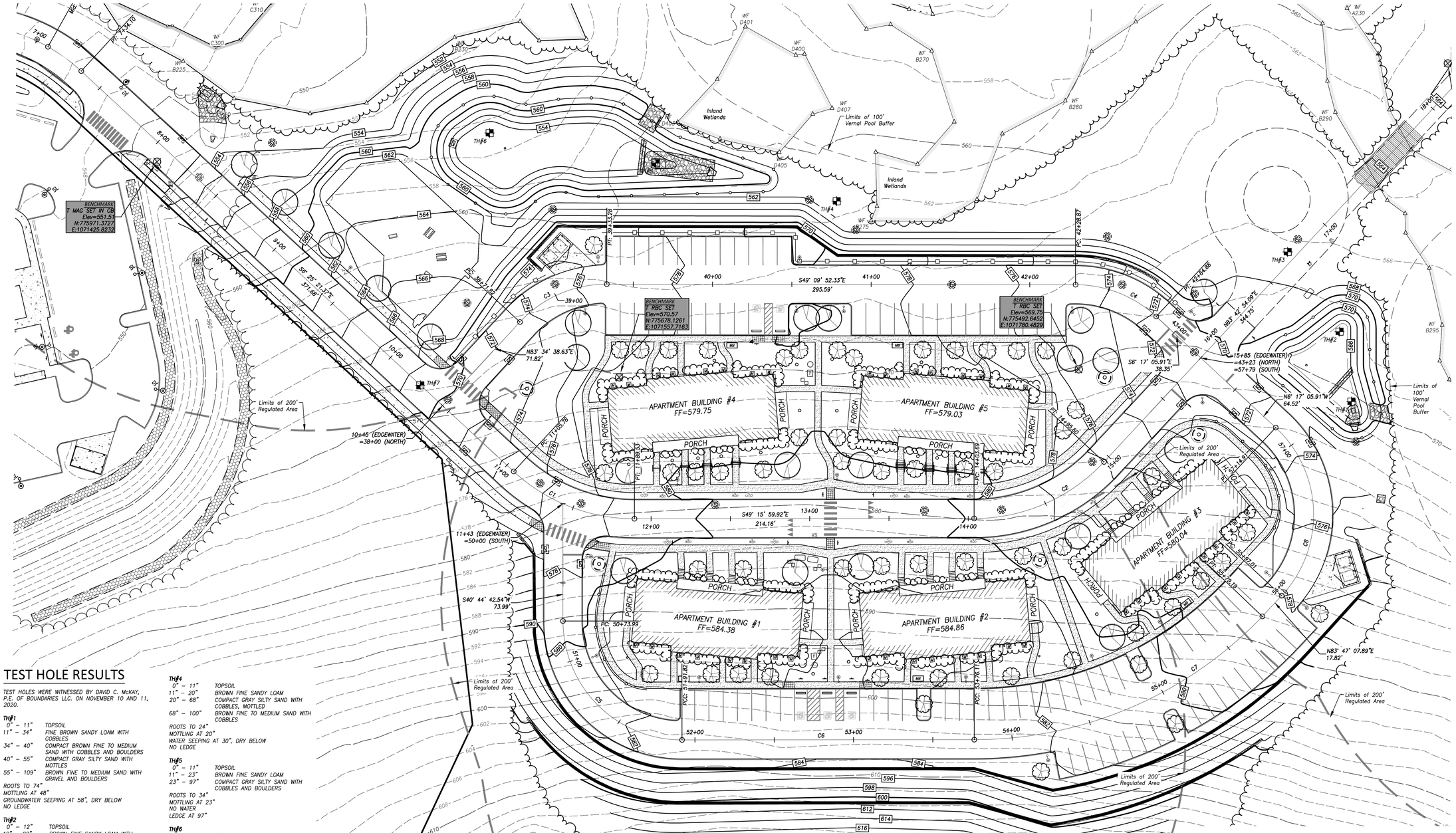
Boundaries LLC
179 Pachaug River Drive Gimwold, CT 06351
T 860.376.2006 | www.boundariesllc.net

Salt Pond Apartments at Edgewater Hill
"Lot Line Modification Plan"
Prepared for
Edgewater Hill Enterprises, LLC
000 East High Street - East Hampton, Connecticut

SCALE: 1" = 50'
DATE: December 2020
JOB I.D. NO. 20-2853
Revisions

SHEET NO.
3
25



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MOTTLING AT 28"
NO WATER
LEDGE AT 90"

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ROOTS TO 35"
MOTTLING AT 28"
NO WATER
LEDGE AT 43"

TH#4

0" – 11"	TOPSOIL
11" – 20"	BROWN FINE SANDY LOAM
20" – 68"	COMPACT GRAY SILTY SAND WITH COBBLES, MOTTLED
68" – 100"	BROWN FINE TO MEDIUM SAND WITH COBBLES

ROOTS TO 24"
MOTTLING AT 20"
WATER SEEPING AT 30", DRY BELOW
NO LEDGE

TH#5

0" – 11"	TOPSOIL
11" – 23"	BROWN FINE SANDY LOAM
23" – 97"	COMPACT GRAY SILTY SAND WITH COBBLES AND BOULDERS

ROOTS TO 34"
MOTTLING AT 23"
NO WATER
LEDGE AT 97"

TH#6

0" – 11"	TOPSOIL
11" – 28"	BROWN FINE SANDY LOAM
28" – 82"	COMPACT GRAY AND BROWN SILTY SAND WITH COBBLES
82" – 112"	COMPACT BROWN FINE TO MEDIUM SAND WITH COBBLES

ROOTS TO 32"
MOTTLING AT 28"
NO WATER
LEDGE AT 112"

TH#7

0" – 12"	TOPSOIL
12" – 34"	BROWN FINE SANDY LOAM
34" – 99"	COMPACT GRAY AND BROWN SILTY SAND
99" – 141"	COMPACT BROWN FINE TO MEDIUM SAND WITH TRACE GRAVEL
141" – 184"	COMPACT BROWN SILTY SAND

ROOTS TO 34"
MOTTLING AT 34"
NO WATER
NO LEDGE

GRAPHIC SCALE

60 30 15 0 30

(IN FEET)
1 inch = 30 ft.

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Curve Table: Alignments

Curve #	Radius	Length	Chord Direction	Start Point	End Point
C1	112.00	83.75	S27° 50' 41"E	N:775676.60 E:1071468.58	N:775604.26 E:1071506.79
C2	112.00	91.91	S72° 46' 33"E	N:775464.51 E:1071669.07	N:775438.05 E:1071754.41
C3	74.51	61.46	S72° 47' 37"E	N:775745.37 E:1071533.11	N:775727.70 E:1071590.17
C4	74.84	56.01	S27° 43' 29"E	N:775534.42 E:1071813.81	N:775485.99 E:1071839.26
C5	75.00	117.83	S04° 15' 37"E	N:775584.84 E:1071430.50	N:775479.06 E:1071438.38
C6	6271829.95	184.30	S49° 16' 00"E	N:775479.06 E:1071438.38	N:775358.79 E:1071578.03
C7	251.52	203.07	S72° 23' 49"E	N:775358.79 E:1071578.03	N:775299.04 E:1071766.38
C8	75.00	117.90	N38° 45' 01"E	N:775300.96 E:1071784.10	N:775383.73 E:1071850.53

PLAN NOTES

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2. SEE SHEET 2 FOR LEGEND & ABBREVIATIONS.

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Salt Pond Apartments at Edgewater Hill
"Overall Layout Plan"
Prepared for
Edgewater Hill Enterprises, LLC
000 East High Street - East Hampton, Connecticut

SCALE: 1" = 30'
DATE: December 2020
JOB I.D. NO. 20-2853
Revisions

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ZONING COMPLIANCE

THE SITE PLAN IS SUBSTANTIALLY COMPLIANT WITH THE EDGEWATER HILL MASTER PLAN.

PARKING CALCULATION

REQUIRED PARKING SPACES ARE PROVIDED IN ACCORDANCE WITH SECTION 7.1.B OF THE TOWN OF EAST HAMPTON ZONING REGULATIONS.

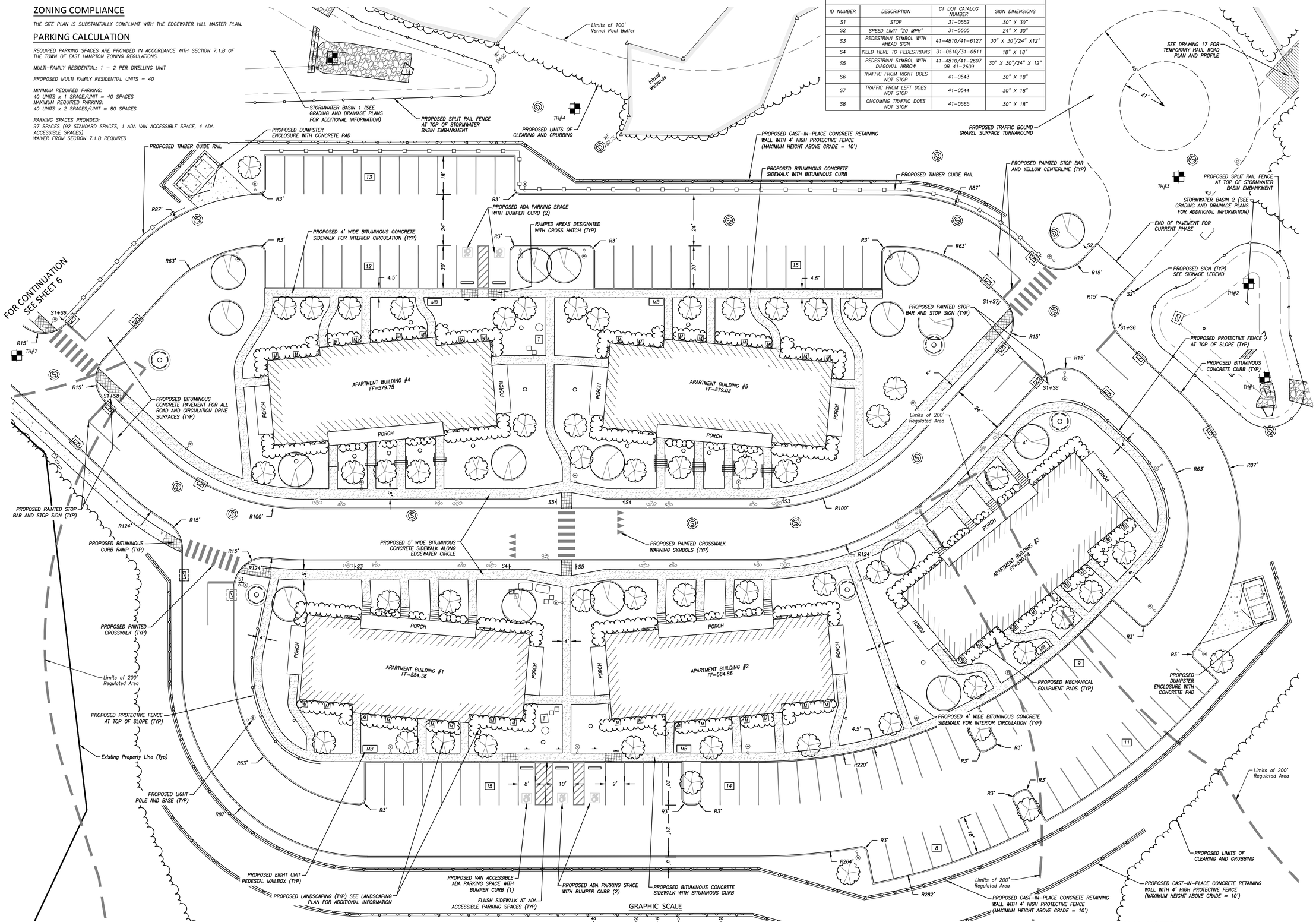
MULTI-FAMILY RESIDENTIAL: 1 – 2 PER DWELLING UNIT

PROPOSED MULTI FAMILY RESIDENTIAL UNITS = 40

MINIMUM REQUIRED PARKING:
40 UNITS x 1 SPACE/UNIT = 40 SPACES
MAXIMUM REQUIRED PARKING:
40 UNITS x 2 SPACES/UNIT = 80 SPACES

PARKING SPACES PROVIDED:
97 SPACES (92 STANDARD SPACES, 1 ADA VAN ACCESSIBLE SPACE, 4 ADA ACCESSIBLE SPACES)
WAIVER FROM SECTION 7.1.B REQUIRED

SIGNAGE LEGEND			
ID NUMBER	DESCRIPTION	CT DOT CATALOG NUMBER	SIGN DIMENSIONS
S1	STOP	31–0552	30" X 30"
S2	SPEED LIMIT "20 MPH"	31–5505	24" X 30"
S3	PEDESTRIAN SYMBOL WITH AHEAD SIGN	41–4810/41–6127	30" X 30"/24" X12"
S4	YIELD HERE TO PEDESTRIANS	31–0510/31–0511	18" X 18"
S5	PEDESTRIAN SYMBOL WITH DIAGONAL ARROW	41–4810/41–2607 OR 41–2609	30" X 30"/24" X 12"
S6	TRAFFIC FROM RIGHT DOES NOT STOP	41–0543	30" X 18"
S7	TRAFFIC FROM LEFT DOES NOT STOP	41–0544	30" X 18"
S8	ONCOMING TRAFFIC DOES NOT STOP	41–0565	30" X 18"



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"Site Layout Plan"
Prepared for
Edgewater Hill Enterprises, LLC
000 East High Street - East Hampton, Connecticut

SCALE: 1" = 20'
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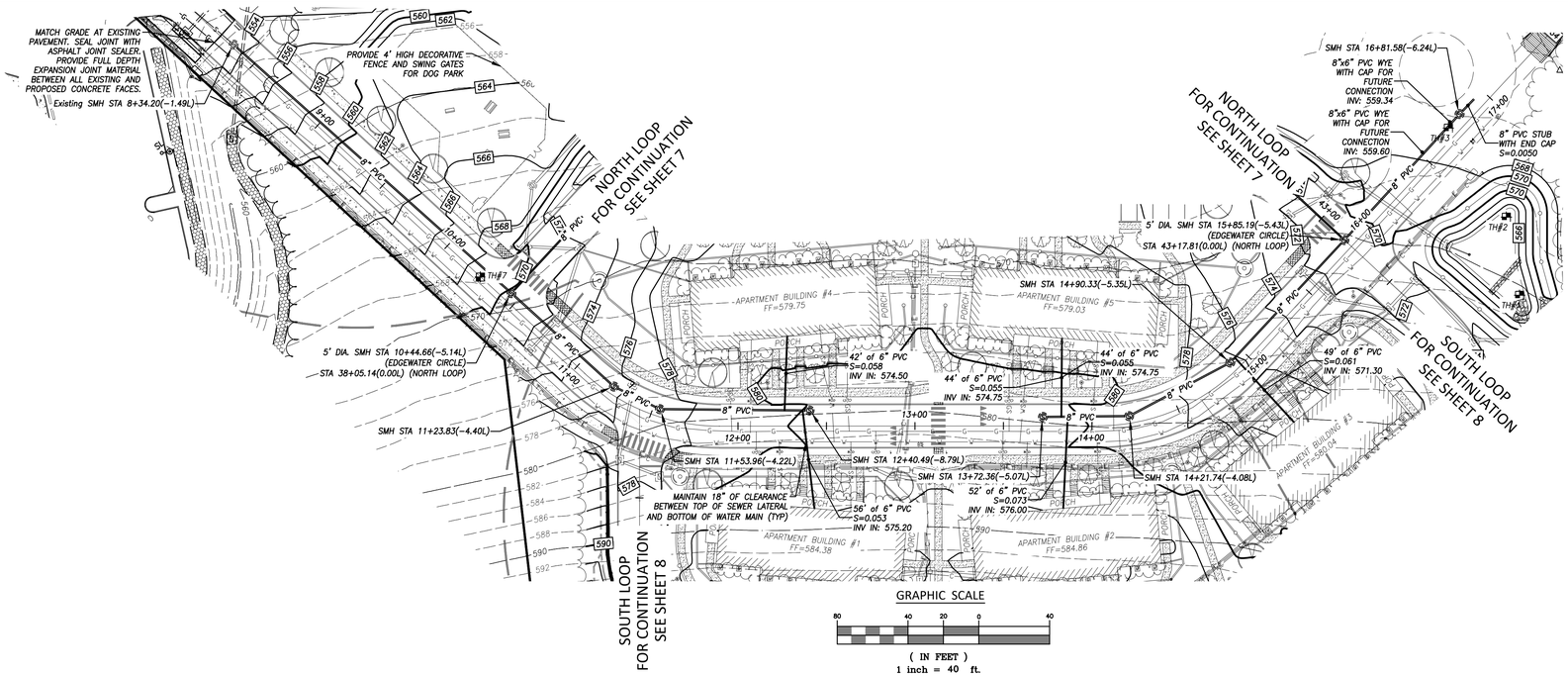
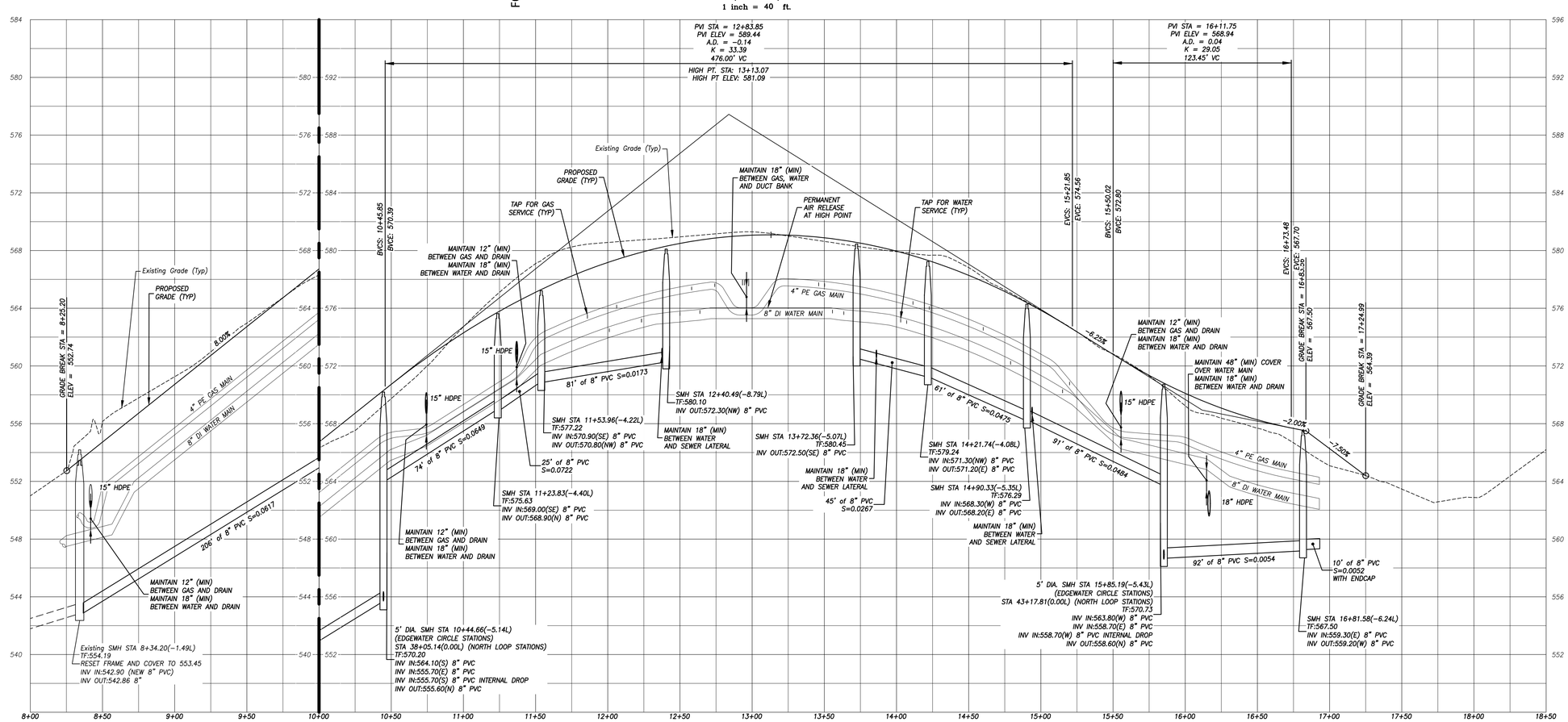


GRAPHIC SCALE

(IN FEET)
1 inch = 40 ft.



CENTERLINE PROFILE - EDGEWATER CIRCLE

HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

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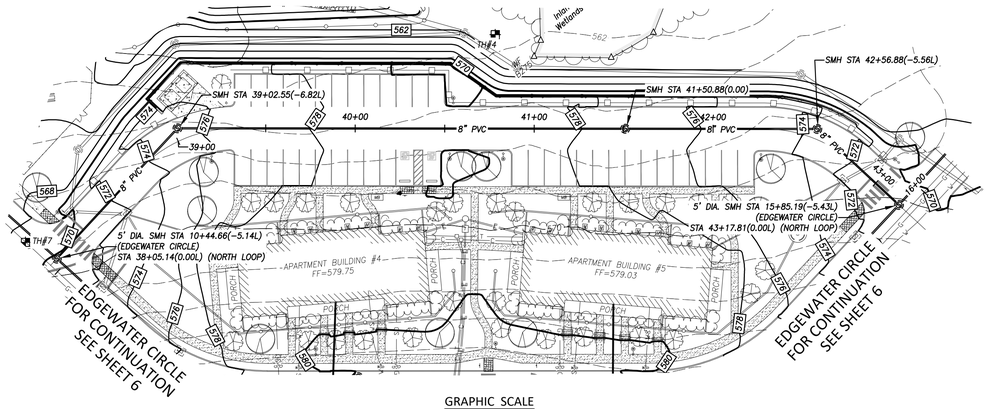
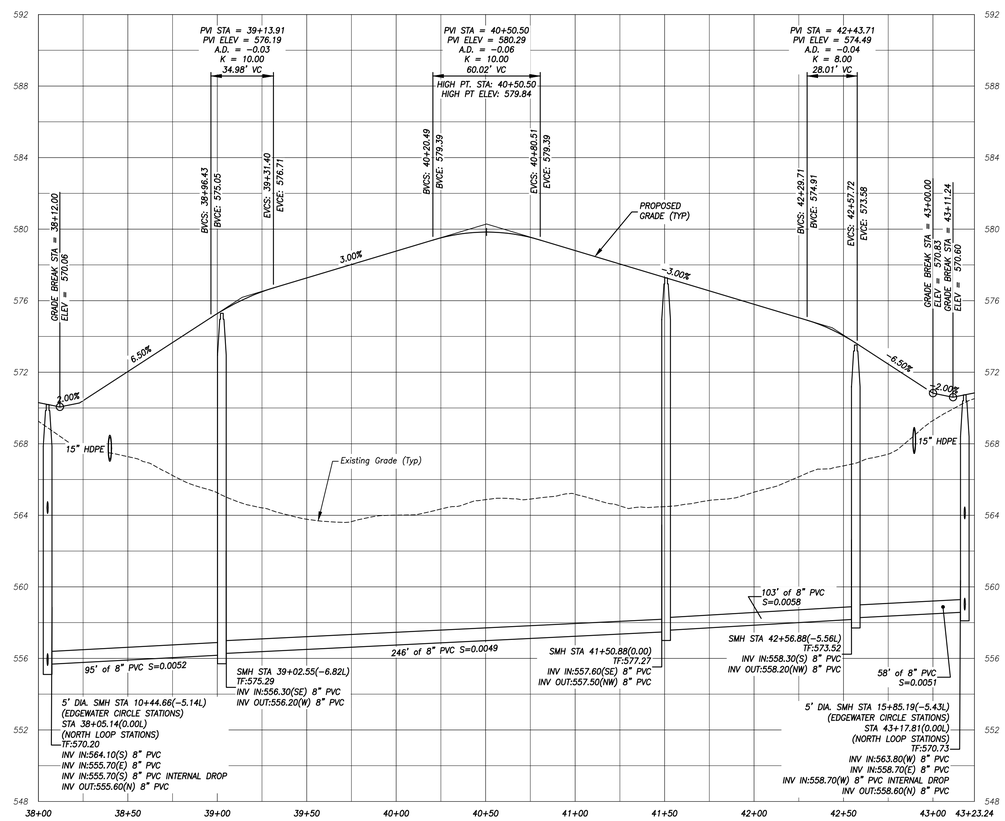


GRAPHIC SCALE

80 40 20 0 40

(IN FEET)
1 inch = 40 ft.



CENTERLINE PROFILE - NORTH LOOP

HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

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"North Loop Plan and Profile"
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SCALE:	1" = 40'
DATE:	December 2020
JOB I.D. NO.	20-2853
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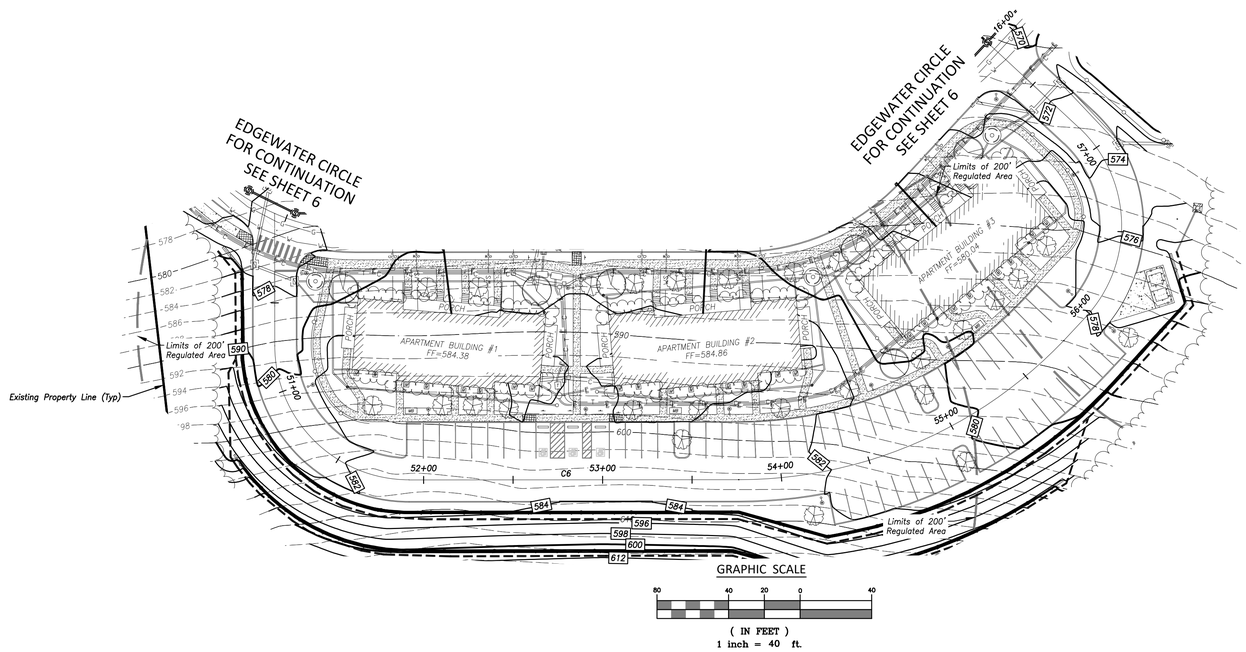

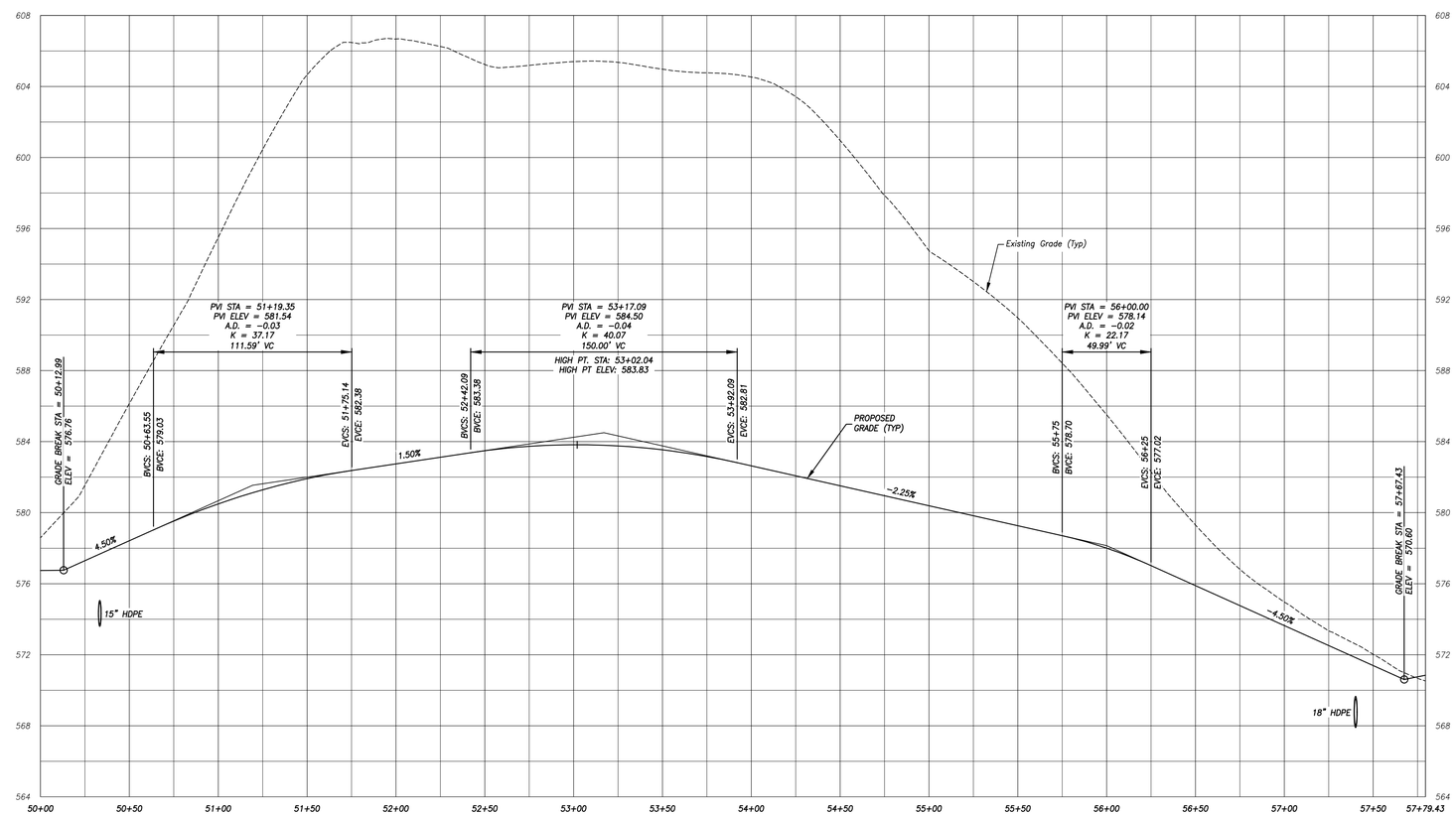

CENTERLINE PROFILE - SOUTH LOOP

HORIZONTAL SCALE: 1"=40'
VERTICAL SCALE: 1"=4'

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"South Loop Plan and Profile"
Prepared for
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000 East High Street - East Hampton, Connecticut

SCALE: 1" = 40'
DATE: December 2020
JOB I.D. NO. 20-2853
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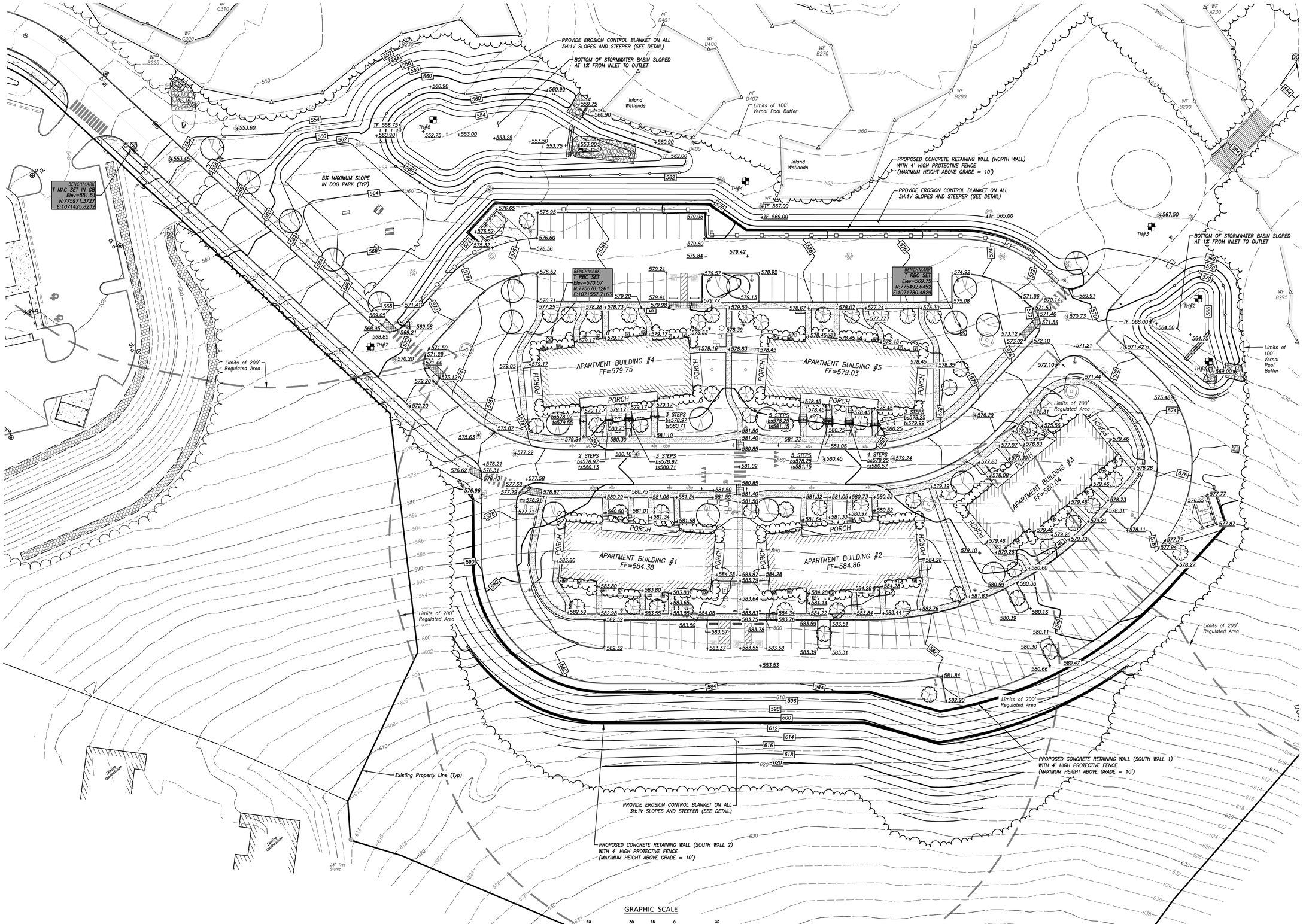

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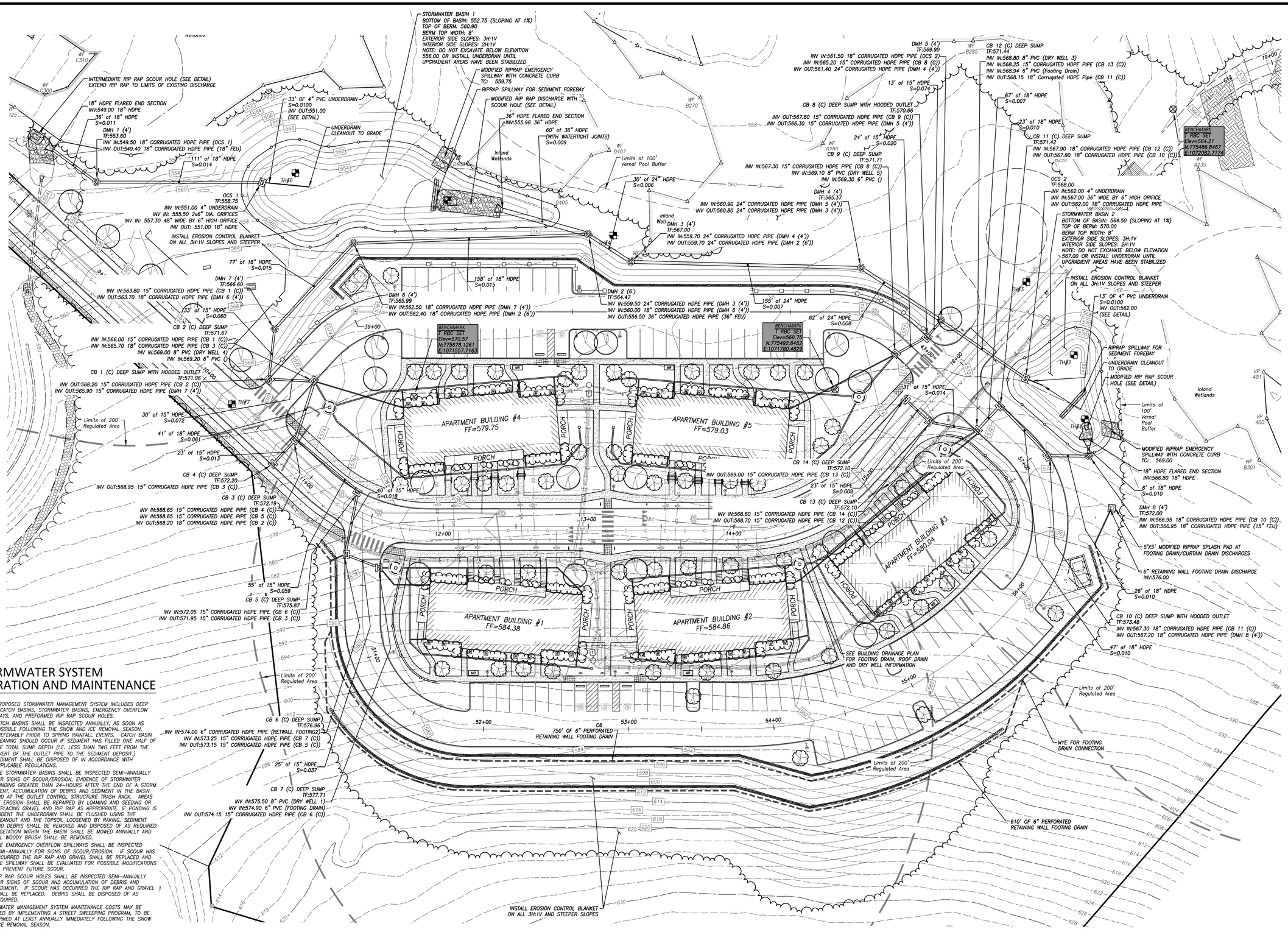

STORMWATER SYSTEM OPERATION AND MAINTENANCE

1. THE PROPOSED STORMWATER MANAGEMENT SYSTEM INCLUDES DEEP SUMP CATCH BASINS, STORMWATER BASINS, EMERGENCY OVERFLOW SPILLWAYS, AND PREFORMED RIP RAP SCOUR HOLES.
   - 1.1. CATCH BASINS SHALL BE INSPECTED ANNUALLY, AS SOON AS POSSIBLE FOLLOWING THE SNOW AND ICE REMOVAL SEASON, PREFERABLY PRIOR TO SPRING RAINFALL EVENTS. CATCH BASIN CLEANING SHOULD OCCUR IF SEDIMENT HAS FILLED ONE HALF OF THE TOTAL SUMP DEPTH (I.E. LESS THAN TWO FEET FROM THE INVERT OF THE OUTLET PIPE TO THE SEDIMENT DEPOSIT.) SEDIMENT SHALL BE DISPOSED OF IN ACCORDANCE WITH APPLICABLE REGULATIONS.
   - 1.2. THE STORMWATER BASINS SHALL BE INSPECTED SEMI-ANNUALLY FOR SIGNS OF SCOUR/EROSION, EVIDENCE OF STORMWATER PONDING GREATER THAN 24-HOURS AFTER THE END OF A STORM EVENT, ACCUMULATION OF DEBRIS AND SEDIMENT IN THE BASIN AND AT THE OUTLET CONTROL STRUCTURE TRASH RACK. AREAS OF EROSION SHALL BE REPAIRED BY LOAMING AND SEEDING OR REPLACING GRAVEL AND RIP RAP AS APPROPRIATE. IF PONDING IS EVIDENT THE UNDERDRAIN SHALL BE FLUSHED USING THE CLEANOUT AND THE TOPSOIL LOOSENED BY RAKING. SEDIMENT AND DEBRIS SHALL BE REMOVED AND DISPOSED OF AS REQUIRED. VEGETATION WITHIN THE BASIN SHALL BE MOWED ANNUALLY AND ALL WOODY BRUSH SHALL BE REMOVED.
   - 1.3. THE EMERGENCY OVERFLOW SPILLWAYS SHALL BE INSPECTED SEMI-ANNUALLY FOR SIGNS OF SCOUR/EROSION. IF SCOUR HAS OCCURRED THE RIP RAP AND GRAVEL SHALL BE REPLACED AND THE SPILLWAY SHALL BE EVALUATED FOR POSSIBLE MODIFICATIONS TO PREVENT FUTURE SCOUR.
   - 1.4. RIP RAP SCOUR HOLES SHALL BE INSPECTED SEMI-ANNUALLY FOR SIGNS OF SCOUR AND ACCUMULATION OF DEBRIS AND SEDIMENT. IF SCOUR HAS OCCURRED THE RIP RAP AND GRAVEL SHALL BE REPLACED. DEBRIS SHALL BE DISPOSED OF AS REQUIRED.
2. STORMWATER MANAGEMENT SYSTEM MAINTENANCE COSTS MAY BE REDUCED BY IMPLEMENTING A STREET SWEEEPING PROGRAM, TO BE PERFORMED AT LEAST ANNUALLY IMMEDIATELY FOLLOWING THE SNOW AND ICE REMOVAL SEASON.

GRAPHIC SCALE

60 30 15 0 30

(IN FEET)
1 inch = 30 ft.

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"Stormwater Management Plan"
Prepared for
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JOB I.D. NO. 20-2853
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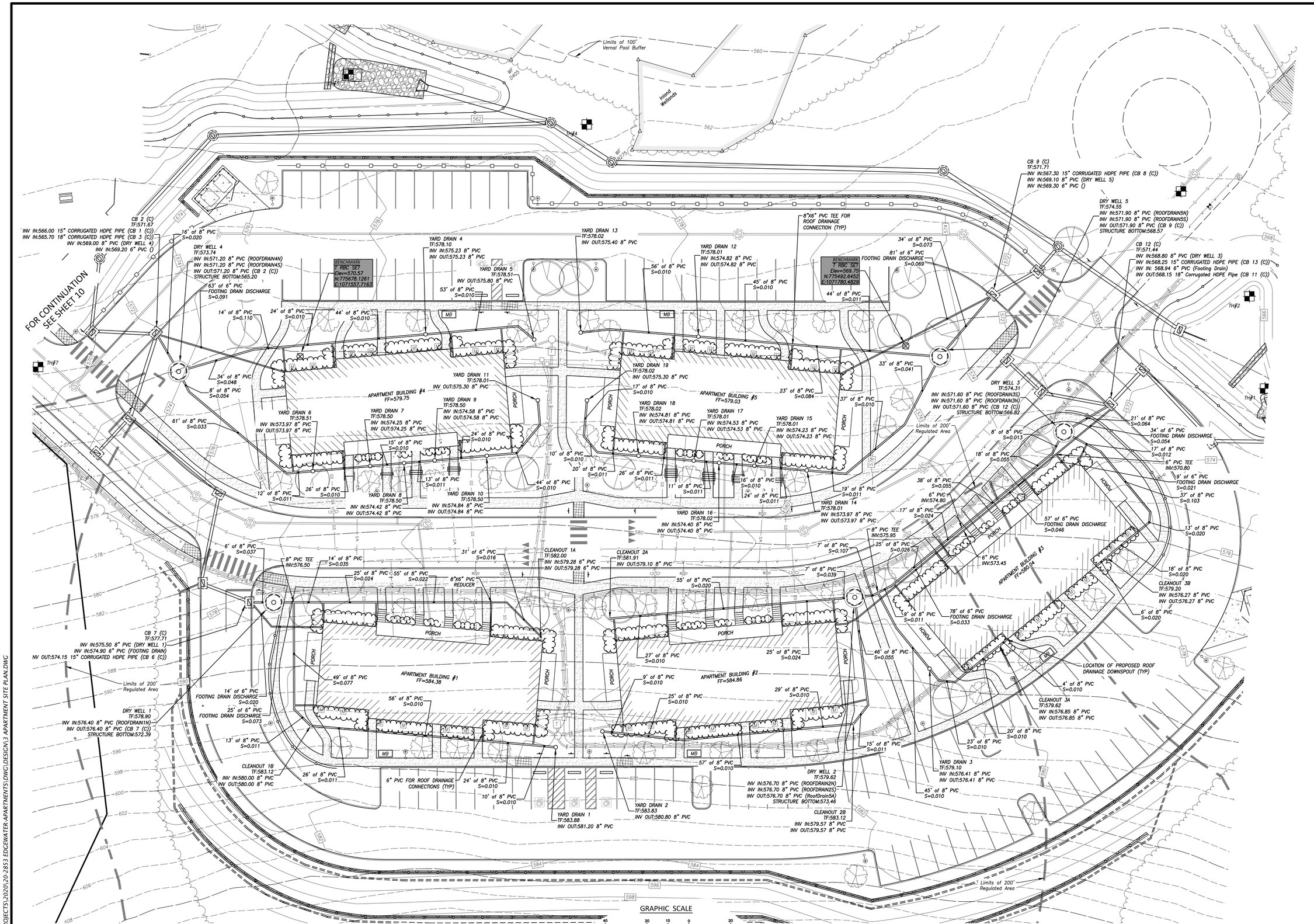

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"Building Drainage Plan"
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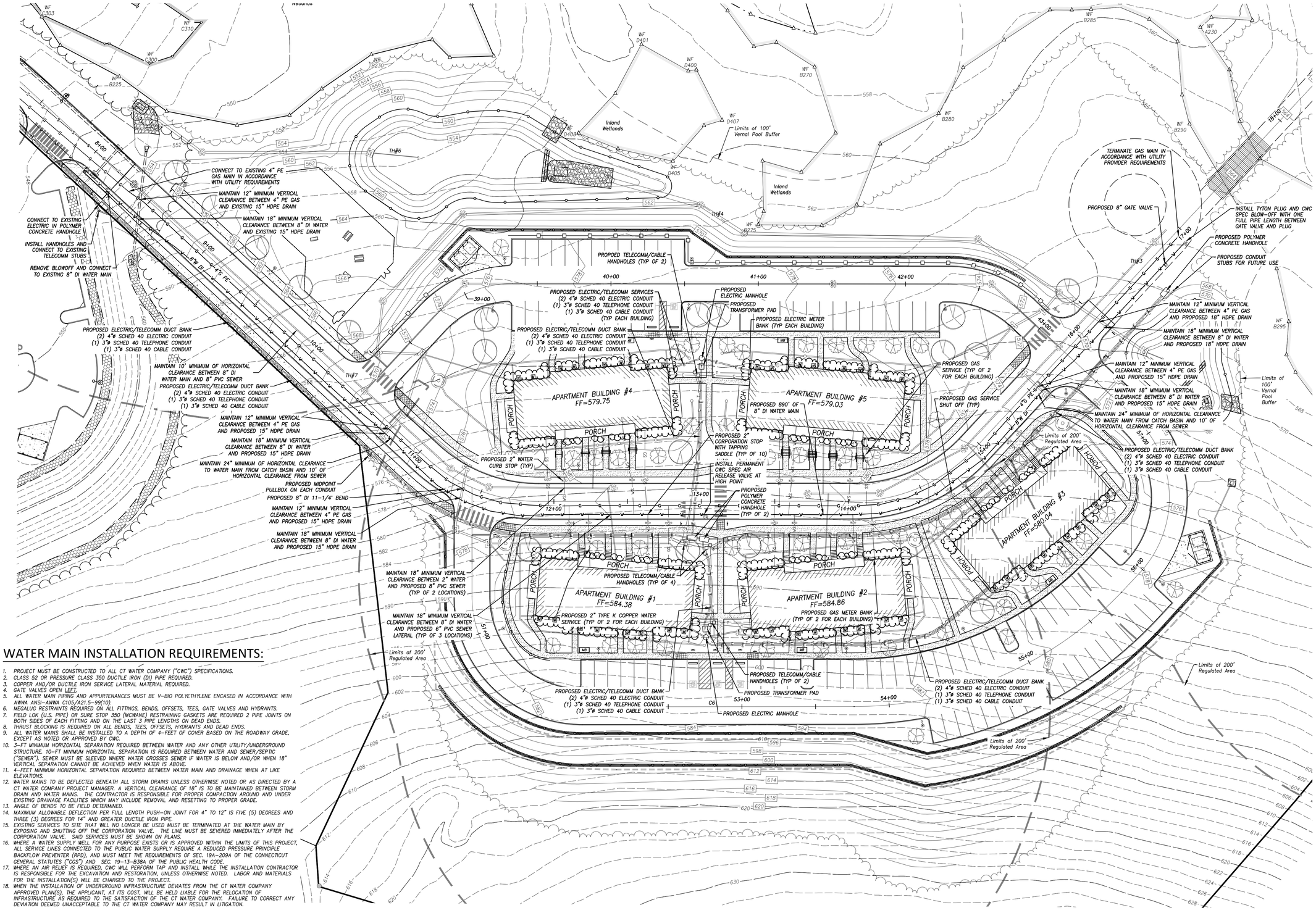

WATER MAIN INSTALLATION REQUIREMENTS:

1. PROJECT MUST BE CONSTRUCTED TO ALL CT WATER COMPANY ("CWC") SPECIFICATIONS.
2. CLASS 52 OR PRESSURE CLASS 350 DUCTILE IRON (DI) PIPE REQUIRED.
3. COPPER AND/OR DUCTILE IRON SERVICE LATERAL MATERIAL REQUIRED.
4. GATE VALVES OPEN LEFT.
5. ALL WATER MAIN PIPING AND APPURTENANCES MUST BE V-BIO POLYETHYLENE ENCASED IN ACCORDANCE WITH AWWA ANSI-AWWA C105/A21.5-99(10).
6. MEGALUG RESTRAINTS REQUIRED ON ALL FITTINGS, BENDS, OFFSETS, TEES, GATE VALVES AND HYDRANTS.
7. FIELD LOK (U.S. PIPE) OR SURE STOP 350 (MCWANE) RESTRAINING GASKETS ARE REQUIRED 2 PIPE JOINTS ON BOTH SIDES OF EACH FITTING AND ON THE LAST 3 PIPE LENGTHS ON DEAD ENDS.
8. THRUST BLOCKING IS REQUIRED ON ALL BENDS, TEES, OFFSETS, HYDRANTS AND DEAD ENDS.
9. ALL WATER MAINS SHALL BE INSTALLED TO A DEPTH OF 4-FEET OF COVER BASED ON THE ROADWAY GRADE, EXCEPT AS NOTED OR APPROVED BY CWC.
10. 3-FT MINIMUM HORIZONTAL SEPARATION REQUIRED BETWEEN WATER AND ANY OTHER UTILITY/UNDERGROUND STRUCTURE. 10-FT MINIMUM HORIZONTAL SEPARATION IS REQUIRED BETWEEN WATER AND SEWER/SEPTIC ("SEWER"). SEWER MUST BE SLEEVED WHERE WATER CROSSES SEWER IF WATER IS BELOW AND/OR WHEN 18" VERTICAL SEPARATION CANNOT BE ACHIEVED WHEN WATER IS ABOVE.
11. 4-FEET MINIMUM HORIZONTAL SEPARATION REQUIRED BETWEEN WATER MAIN AND DRAINAGE WHEN AT LIKE ELEVATIONS.
12. WATER MAINS TO BE DEFLECTED BENEATH ALL STORM DRAINS UNLESS OTHERWISE NOTED OR AS DIRECTED BY A CT WATER COMPANY PROJECT MANAGER. A VERTICAL CLEARANCE OF 18" IS TO BE MAINTAINED BETWEEN STORM DRAIN AND WATER MAINS. THE CONTRACTOR IS RESPONSIBLE FOR PROPER COMPACTION AROUND AND UNDER EXISTING DRAINAGE FACILITIES WHICH MAY INCLUDE REMOVAL AND RESETTING TO PROPER GRADE.
13. ANGLE OF BENDS TO BE FIELD DETERMINED.
14. MAXIMUM ALLOWABLE DEFLECTION PER FULL LENGTH PUSH-ON JOINT FOR 4" TO 12" IS FIVE (5) DEGREES AND THREE (3) DEGREES FOR 14" AND GREATER DUCTILE IRON PIPE.
15. EXISTING SERVICES TO SITE THAT WILL NO LONGER BE USED MUST BE TERMINATED AT THE WATER MAIN BY EXPOSING AND SHUTTING OFF THE CORPORATION VALVE. THE LINE MUST BE SEVERED IMMEDIATELY AFTER THE CORPORATION VALVE. SAID SERVICES MUST BE SHOWN ON PLANS.
16. WHERE A WATER SUPPLY WELL FOR ANY PURPOSE EXISTS OR IS APPROVED WITHIN THE LIMITS OF THIS PROJECT, ALL SERVICE LINES CONNECTED TO THE PUBLIC WATER SUPPLY REQUIRE A REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTER (RPD), AND MUST MEET THE REQUIREMENTS OF SEC. 19A-209A OF THE CONNECTICUT GENERAL STATUTES ("CGS") AND SEC. 19-13-B38A OF THE PUBLIC HEALTH CODE.
17. WHERE AN AIR RELIEF IS REQUIRED, CWC WILL PERFORM TAP AND INSTALL WHILE THE INSTALLATION CONTRACTOR IS RESPONSIBLE FOR THE EXCAVATION AND RESTORATION, UNLESS OTHERWISE NOTED. LABOR AND MATERIALS FOR THE INSTALLATION(S) WILL BE CHARGED TO THE PROJECT.
18. WHEN THE INSTALLATION OF UNDERGROUND INFRASTRUCTURE DEVIATES FROM THE CT WATER COMPANY APPROVED PLAN(S), THE APPLICANT, AT ITS COST, WILL BE HELD LIABLE FOR THE RELOCATION OF INFRASTRUCTURE, AS REQUIRED TO THE SATISFACTION OF THE CT WATER COMPANY. FAILURE TO CORRECT ANY DEVIATION DEEMED UNACCEPTABLE TO THE CT WATER COMPANY MAY RESULT IN LITIGATION.

GRAPHIC SCALE

60 30 15 0 30

(IN FEET)
1 inch = 30 ft.

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PLAN NOTES

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Boundaries LLC
179 Pachaug River Drive Griswold, CT 06351
T 860.376.2006 | www.boundariesllc.net

Salt Pond Apartments at Edgewater Hill
"Utilities Plan"
Prepared for
Edgewater Hill Enterprises, LLC
000 East High Street - East Hampton, Connecticut

SCALE: 1" = 30'
DATE: December 2020
JOB I.D. NO. 20-2853
Revisions

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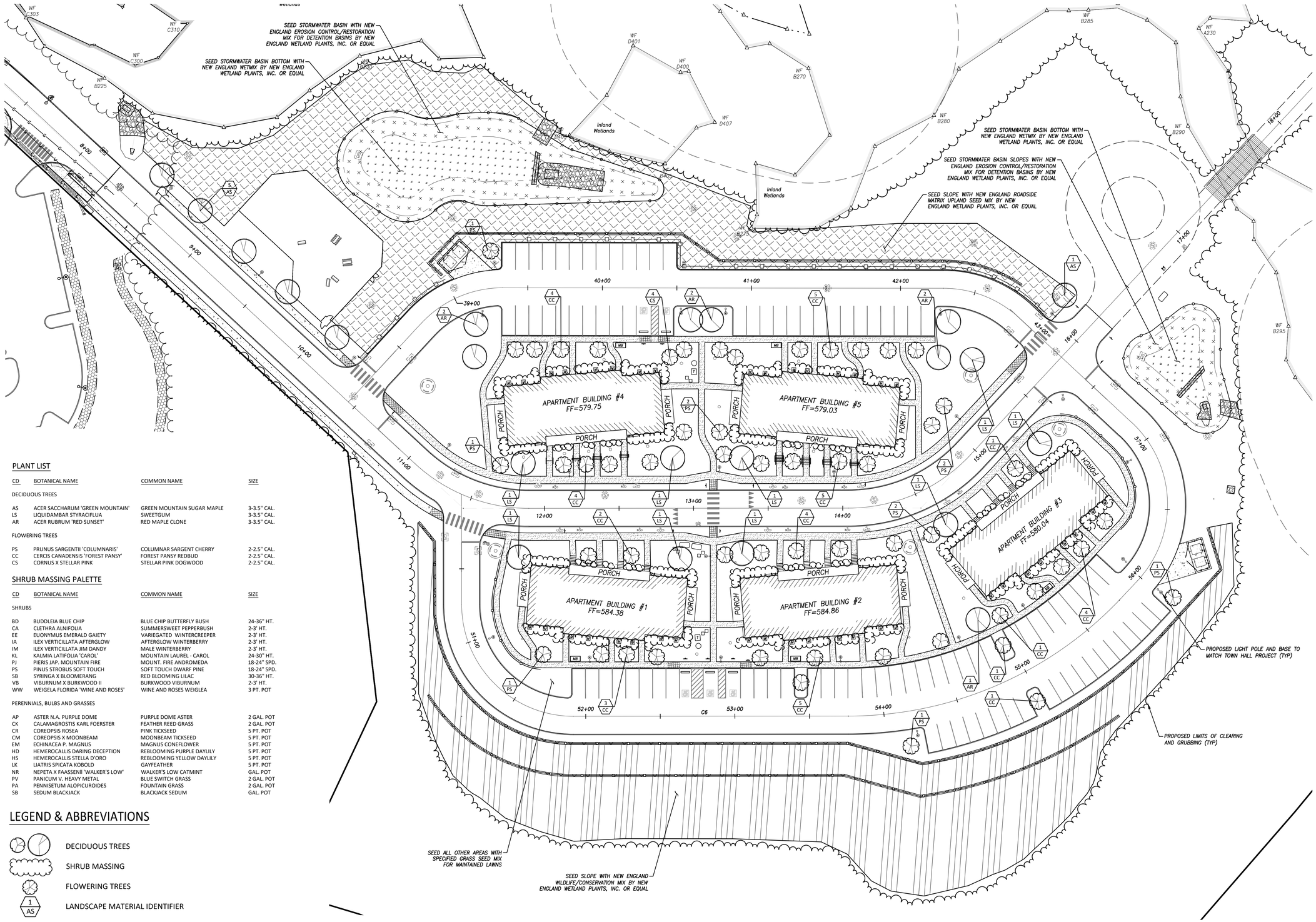

PLANT LIST

CD	BOTANICAL NAME	COMMON NAME	SIZE
DECIDUOUS TREES			
AS	ACER SACCHARUM 'GREEN MOUNTAIN'	GREEN MOUNTAIN SUGAR MAPLE	3-3.5" CAL.
LS	LIQUIDAMBAR STYRACIFLUA	SWEETGUM	3-3.5" CAL.
AR	ACER RUBRUM 'RED SUNSET'	RED MAPLE CLONE	3-3.5" CAL.
FLOWERING TREES			
PS	PRUNUS SARGENTII 'COLUMNARIS'	COLUMNAR SARGENT CHERRY	2-2.5" CAL.
CC	CERCIS CANADENSIS 'FOREST PANSY'	FOREST PANSY REDBUD	2-2.5" CAL.
CS	CORNUS X STELLAR PINK	STELLAR PINK DOGWOOD	2-2.5" CAL.

SHRUB MASSING PALETTE

CD	BOTANICAL NAME	COMMON NAME	SIZE
SHRUBS			
BD	BUDDLEIA BLUE CHIP	BLUE CHIP BUTTERFLY BUSH	24-36" HT.
CA	CLETHRA ALNIFOLIA	SUMMERSWEET PEPPERBUSH	2-3' HT.
EE	EUONYMUS EMERALD GAIETY	VARIEGATED WINTERCREEPER	2-3' HT.
IA	ILEX VERTICILLATA AFTERGLOW	AFTERGLOW WINTERBERRY	2-3' HT.
IM	ILEX VERTICILLATA JIM DANDY	MALE WINTERBERRY	2-3' HT.
KL	KALMIA LATIFOLIA 'CAROL'	MOUNTAIN LAUREL - CAROL	24-30" HT.
PJ	PIERIS JAP. MOUNTAIN FIRE	MOUNT. FIRE ANDROMEDA	18-24" SPD.
PS	PINUS STROBUS SOFT TOUCH	SOFT TOUCH DWARF PINE	18-24" SPD.
SB	SYRINGA X BLOOMERANG	RED BLOOMING LILAC	30-36" HT.
VB	VIBURNUM X BURKWOOD II	BURKWOOD VIBURNUM	2-3' HT.
WW	WEIGELA FLORIDA 'WINE AND ROSES'	WINE AND ROSES WEIGLEA	3 PT. POT
PERENNIALS, BULBS AND GRASSES			
AP	ASTER N.A. PURPLE DOME	PURPLE DOME ASTER	2 GAL. POT
CK	CALAMAGROSTIS KARL FOERSTER	FEATHER REED GRASS	2 GAL. POT
CR	COREOPSIS ROSEA	PINK TICKSEED	5 PT. POT
CM	COREOPSIS X MOONBEAM	MOONBEAM TICKSEED	5 PT. POT
EM	ECHINACEA P. MAGNUS	MAGNUS CONEFLOWER	5 PT. POT
HD	HEMEROCALLIS DARING DECEPTION	REBLOOMING PURPLE DAYLILY	5 PT. POT
HS	HEMEROCALLIS STELLA D'ORO	REBLOOMING YELLOW DAYLILY	5 PT. POT
LK	LIATRIS SPICATA KOBOLD	GAYFEATHER	5 PT. POT
NR	NEPETA X FAASSENII 'WALKER'S LOW'	WALKER'S LOW CATMINT	GAL. POT
PV	PANICUM V. HEAVY METAL	BLUE SWITCH GRASS	2 GAL. POT
PA	PENNISETUM ALOPICUROIDES	FOUNTAIN GRASS	2 GAL. POT
SB	SEDUM BLACKJACK	BLACKJACK SEDUM	GAL. POT

LEGEND & ABBREVIATIONS

- DECIDUOUS TREES
- SHRUB MASSING
- FLOWERING TREES
- 1 AS — LANDSCAPE MATERIAL IDENTIFIER

GRAPHIC SCALE

60 30 15 0 30

(IN FEET)
1 inch = 30 ft.

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PLAN NOTES

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2. SEE SHEET 2 FOR LEGEND & ABBREVIATIONS.

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179 Pachaug River Drive, Gimwold, CT 06351
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Salt Pond Apartments at Edgewater Hill
"Landscaping Plan"
Prepared for
Edgewater Hill Enterprises, LLC
000 East High Street - East Hampton, Connecticut

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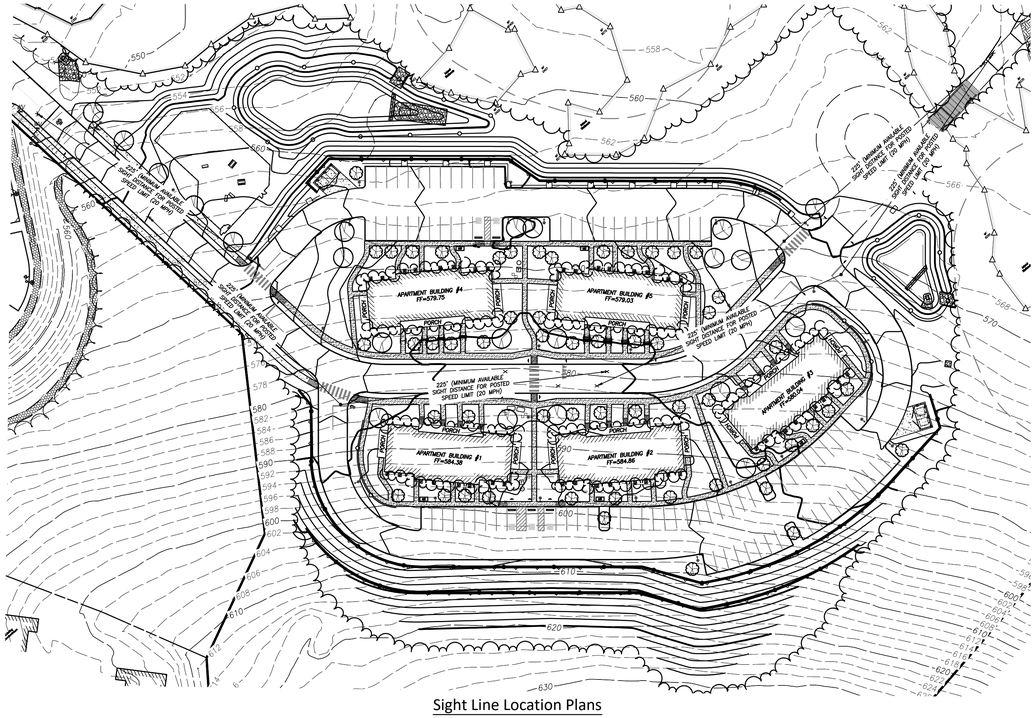
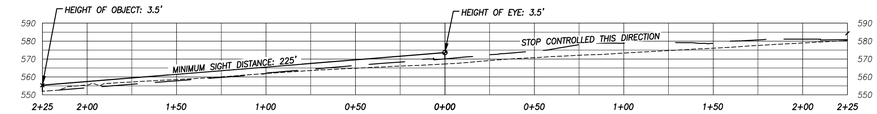


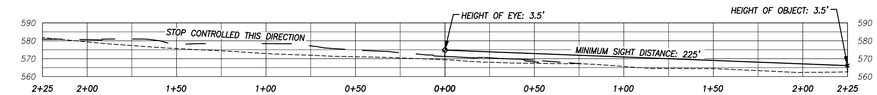
Sight Line Location Plans

Horizontal Scale: 1"=60'



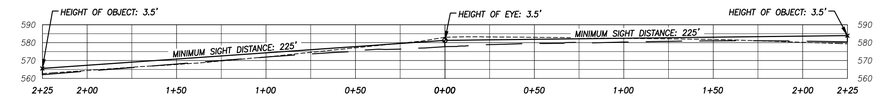
Sight Line Profile - Northwest Entrance

Horizontal Scale: 1"=40'
Vertical Scale: 1"=40'



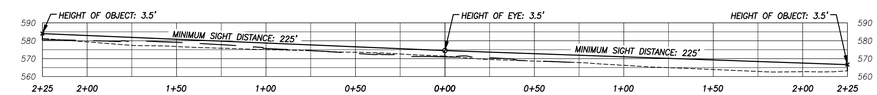
Sight Line Profile - Northeast Entrance

Horizontal Scale: 1"=40'
Vertical Scale: 1"=40'



Sight Line Profile - Southwest Entrance

Horizontal Scale: 1"=40'
Vertical Scale: 1"=40'



Sight Line Profile - Southeast Entrance

Horizontal Scale: 1"=40'
Vertical Scale: 1"=40'

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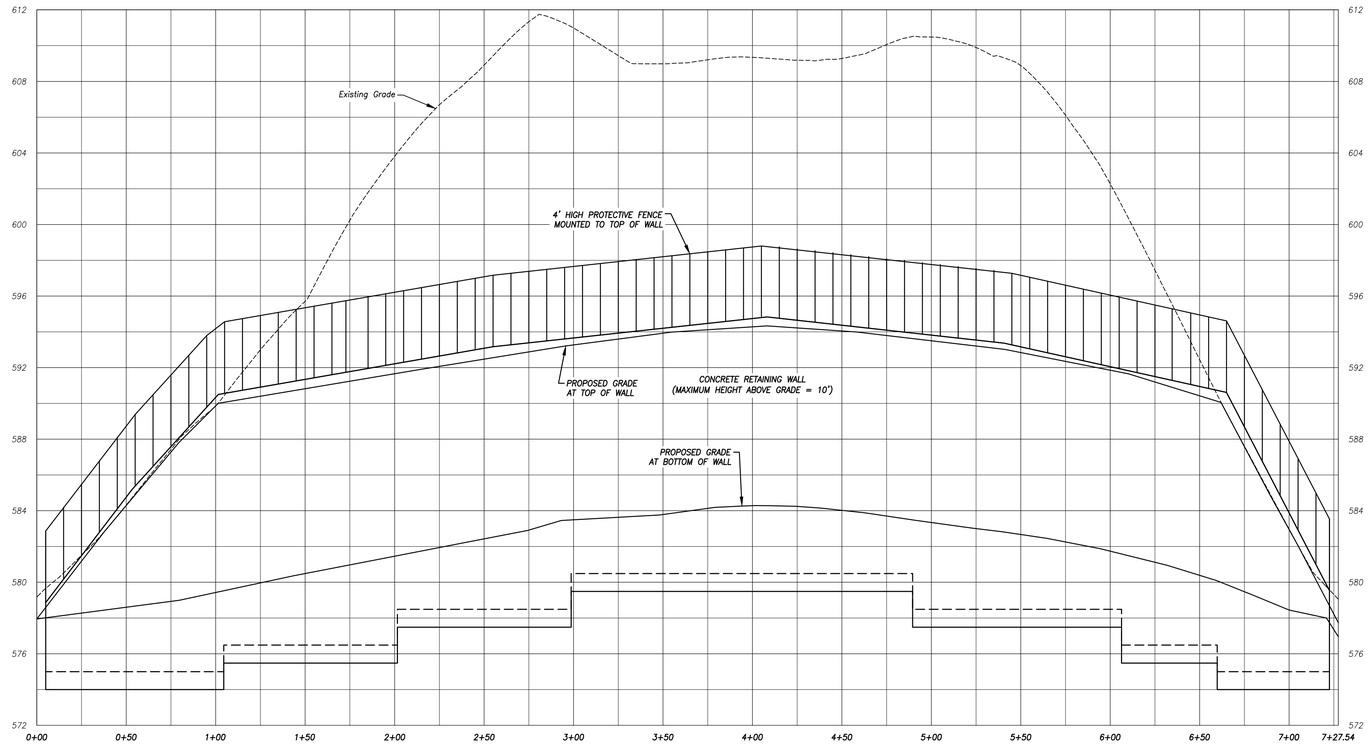
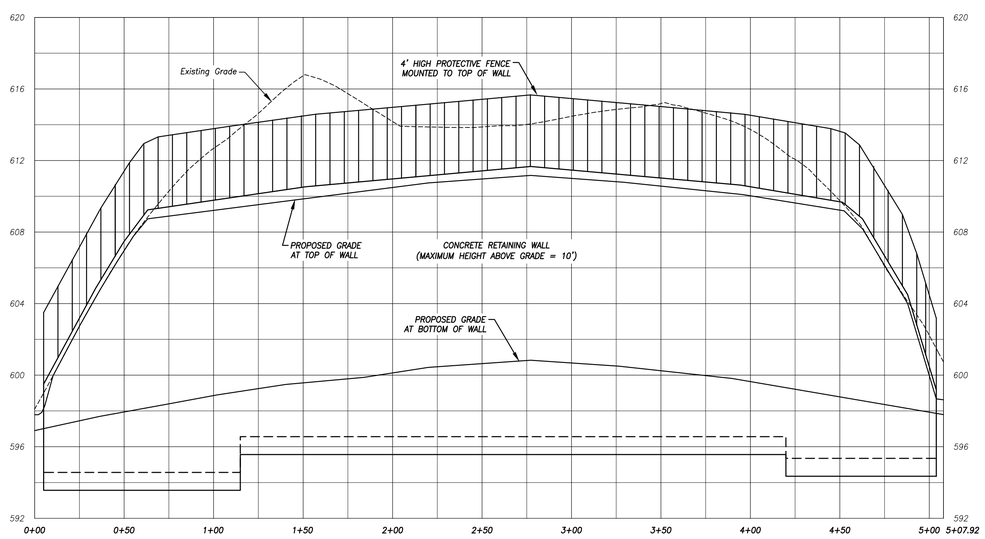


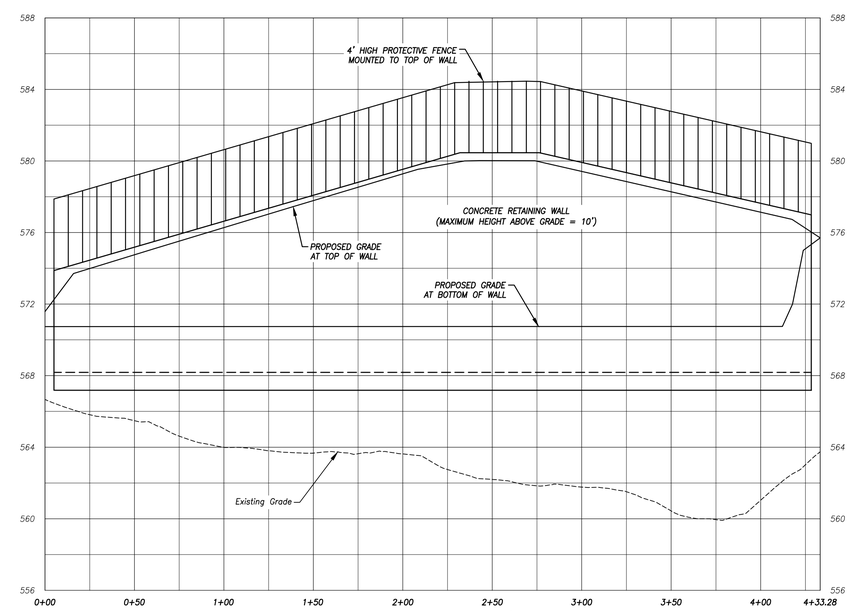
South Retaining Wall 1 Profile

Horizontal Scale: 1"=40'
Vertical Scale: 1"=4'



South Retaining Wall 2 Profile

Horizontal Scale: 1"=40'
Vertical Scale: 1"=4'



North Retaining Wall Profile

Horizontal Scale: 1"=40'
Vertical Scale: 1"=4'

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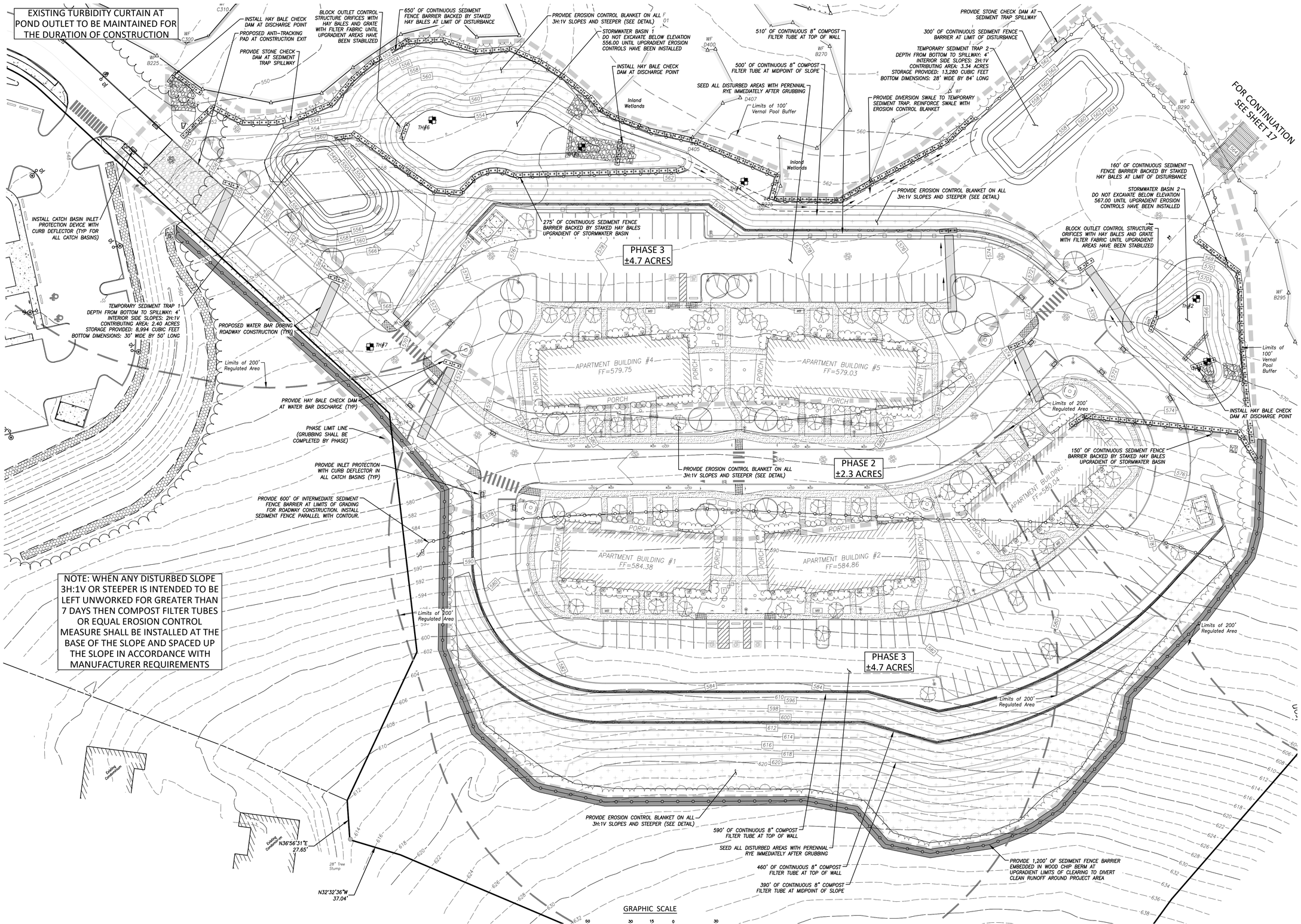

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"Erosion and Sedimentation Control Plan"
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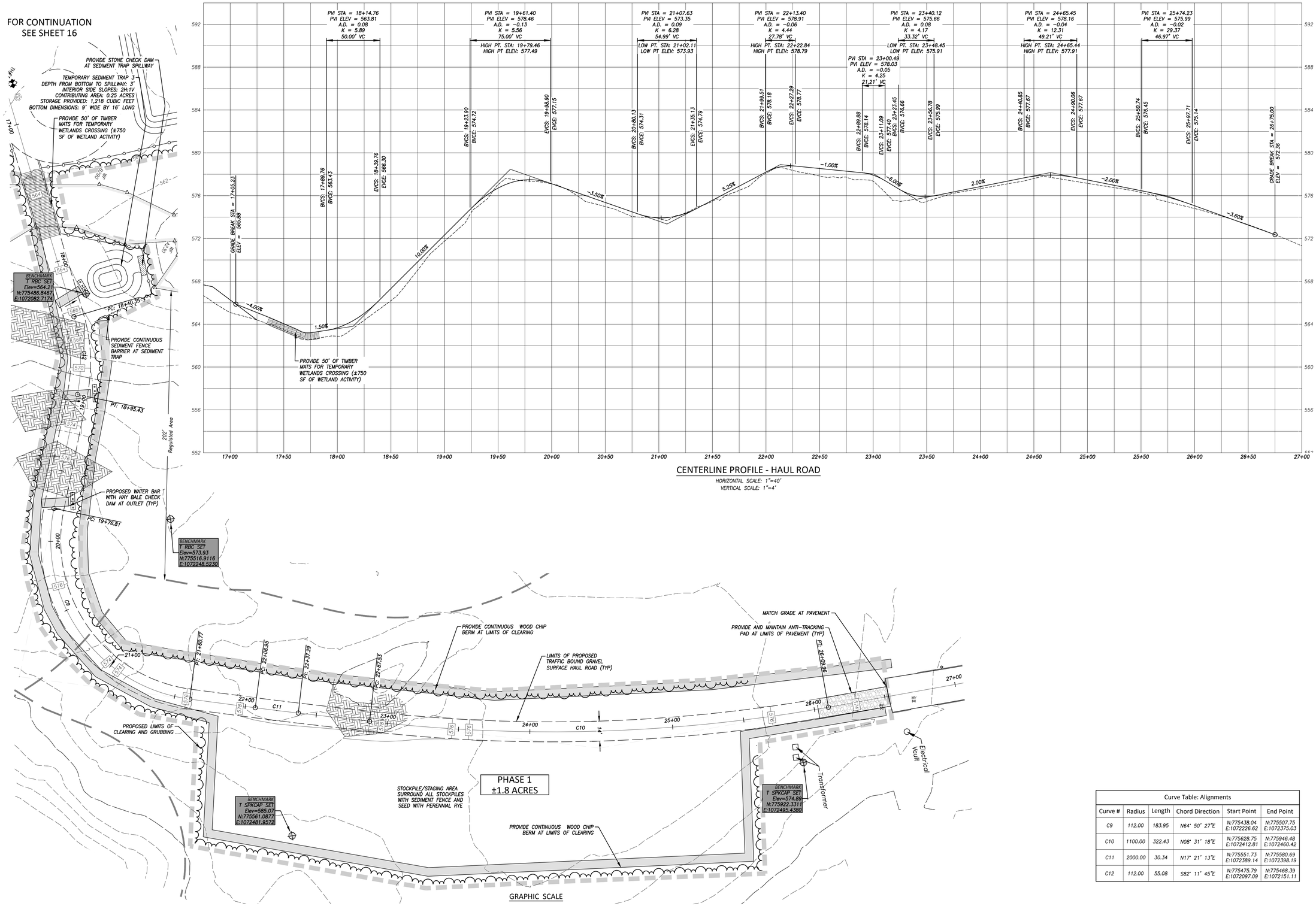
FOR CONTINUATION
SEE SHEET 16



Curve Table: Alignments					
Curve #	Radius	Length	Chord Direction	Start Point	End Point
C9	112.00	183.95	N64° 50' 27"E	N:775438.04 E:1072226.62	N:775507.75 E:1072375.03
C10	1100.00	322.43	N08° 31' 18"E	N:775628.75 E:1072412.81	N:775946.48 E:1072460.42
C11	2000.00	30.34	N17° 21' 13"E	N:775551.73 E:1072389.14	N:775580.69 E:1072398.19
C12	112.00	55.08	S82° 11' 45"E	N:775475.79 E:1072097.09	N:775468.39 E:1072151.11

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NARRATIVE:

THIS PROPOSAL CONSISTS OF THE DEVELOPMENT OF FIVE (5) EIGHT–UNIT APARTMENT BUILDINGS ON ±9.1 ACRES IN THE EDGEWATER HILL MIXED USE DEVELOPMENT DISTRICT. THE PROJECT INCLUDES THE CONSTRUCTION OF ±800 LINEAR FEET OF NEW ACCESS ROADWAY, ASSOCIATED SIDEWALKS, CIRCULATION DRIVES AND PARKING AREAS AND THE EXTENSION OF SEWER, WATER, GAS, ELECTRIC AND COMMUNICATIONS UTILITIES TO SERVICE THE PROPOSED BUILDINGS.

STORMWATER RUNOFF FROM THE PROPOSED IMPERVIOUS AREAS WILL BE COLLECTED IN DEEP SUMP CATCH BASINS WITH HOODED OUTLETS AT THE DOWNSTREAM STRUCTURE PRIOR TO DISCHARGING TO TWO STORMWATER BASINS FOR DETENTION OF PEAK STORMWATER RUNOFF RATES. THE LOW LEVEL OUTLETS OF THE STORMWATER BASINS ARE ELEVATED ABOVE THE BASIN BOTTOMS TO RETAIN THE WATER QUALITY VOLUME ON–SITE FOLLOWING STORM EVENTS. DUE TO THE PRESENCE OF A RESTRICTIVE LAYER AND PERCHED GROUNDWATER TABLES THE BOTTOM OF THE BASINS ARE SLOPED AND WILL BE PROVIDED WITH UNDERDRAINS SIZED TO ALLOW THE BASINS TO DRAIN WITHIN 72 HOURS FOLLOWING STORM EVENTS. GROUNDWATER RECHARGE WILL BE PROVIDED BY DRY WELLS WITH HIGH LEVEL OVERFLOWS THAT WILL CAPTURE THE RUNOFF FROM THE PROPOSED BUILDING ROOFS AND GRASSED AREAS.

ACCORDING TO THE UNITED STATES DEPARTMENT OF AGRICULTURE (USDA), NATURAL RESOURCES CONSERVATION SERVICE (NRCS) WEB SOIL SURVEY FOR THE STATE OF CONNECTICUT, THE SOILS LOCATED IN THE DEVELOPMENT AREA ARE AS FOLLOWS:

3 RIDGEBURY, LEICESTER & WHITMAN SOILS, 0–8% SLOPES, EXTREMELY STONY (HSG D) (CT WETLAND SOIL)
46C WOODBRIDGE FINE SANDY LOAM, 8–15% SLOPES, VERY STONY (HSG C/D)
86D PAXTON AND MONTAUK FINE SANY LOAMS, 15–35% SLOPES, EXTREMELY STONY (HSG C)

INLAND WETLANDS LOCATED UPON THE SUBJECT PROPERTY ARE AS SHOWN ON THE APPROVED EDGEWATER HILL MASTER PLAN, AND PERMITS TO CONDUCT REGULATED ACTIVITIES FOR THE PROPOSED WORK ARE REQUIRED FROM THE MUNICIPAL WETLANDS AND WATERCOURSES AGENCY. THE PROJECT PROPOSES THE REMOVAL OF ISOLATED WETLAND SERIES H (±2,250 SF OF WETLAND ACTIVTY) AND THE INSTALLATION OF TIMBER MATS FOR THE CROSSING OF WETLAND SERIES A/B AT ITS NARROWEST POINT FOR THE HAUL ROAD (±750 SF OF WETLAND ACTIVITY). THE DEVELOPMENT OF THE PROJECT INCLUDES ±3,000 SQUARE FEET (0.07 ACRES) OF WETLAND ACTIVITY, 298,993 SQUARE FEET (6.86 ACRES) OF UPLAND REVIEW AREA ACTIVITY, AND A TOTAL SITE DISTURBANCE OF 377,632 SQUARE FEET (8.67 ACRES).

CONTINUOUS SEDIMENT BARRIERS WILL BE INSTALLED AT LOCATIONS SHOWN PRIOR TO ANY EARTHWORK OPERATIONS. THESE MEASURES WILL BE MAINTAINED UNTIL ALL DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED. GRUBBING OF STUMPS SHALL BE COMPLETED IN PHASES AS SHOWN ON THE EROSION AND SEDIMENTATION CONTROL PLAN TO LIMIT THE AMOUNT OF DISTURBED SOILS AT ANY TIME.

REFERENCE IS MADE TO:

1. CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL, MAY 2002.
2. SOIL SURVEY OF MIDDLESEX COUNTY CONNECTICUT, U.S.D.A. NATURAL RESOURCES CONSERVATION SERVICE.

DEVELOPMENT SCHEDULE:

PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR IS TO SCHEDULE A MANDATORY PRECONSTRUCTION MEETING ON SITE TO DISCUSS ISSUES AS THEY RELATE TO THE PROPOSED PROJECT. THESE ISSUES WILL INCLUDE BUT NOT BE LIMITED TO:

1. RESOURCE PROTECTION.
2. CONSTRUCTION VEHICLE ACCESS, PARKING AND FUELING.
3. CONSTRUCTION METHODS AND SCHEDULING.
4. EXISTING SITE UTILITIES AND MARK–OUT COORDINATION.
5. MATERIAL DELIVERY AND STOCKPILING.
6. UTILITY AS–BUILT DRAWINGS.
7. STORMWATER POLLUTION CONTROL PLAN AND SITE INSPECTION PROCEDURES.

SUGGESTED SEQUENCE OF CONSTRUCTION:

PHASE 1 – INSTALLATION OF EROSION CONTROLS

1. OBTAIN APPROPRIATE PERMITS, NOTIFY TOWN OFFICIALS OF CONSTRUCTION COMMENCEMENT, AND SUBMIT CONSTRUCTION TIMETABLE.
2. FLAG THE LIMITS OF CONSTRUCTION AND CLEARING LIMITS.
3. INSTALL THE CONSTRUCTION ENTRANCE/ANTI–TRACKING PAD.
4. ON–SITE CONSTRUCTION SEQUENCE SHALL START WITH THE MINIMUM AMOUNT OF CLEARING REQUIRED TO INSTALL GEOTEXTILE SEDIMENT FENCE, WOOD CHIP BERMS, AND/OR HAY/STRAW BALES AS SHOWN ON PLAN.
5. INSTALL WOOD CHIP BERMS, SEDIMENT FENCE AND HAY/STRAW BALES AS SHOWN ON THE PLANS OR AS REQUIRED.
6. FOLLOWING INSTALLATION OF THE EROSION CONTROLS, THE CONTRACTOR SHALL CONTACT THE ENGINEER AND TOWN STAFF FOR INSPECTION AND APPROVAL OF INSTALLED MEASURES. NO WORK SHALL COMMENCE UNTIL ALL EROSION CONTROL MEASURES HAVE BEEN INSTALLED AND APPROVED.

PHASE 2 – SITE PREPARATION

1. CLEAR WITHIN THE PROPOSED CLEARING LIMITS AND REMOVE CUT WOOD. CHIP BRUSH AND SLASH, STOCKPILE CHIPS FOR FUTURE USE OR REMOVE OFF SITE. GRUBBING SHALL BE COMPLETED IN PHASES AS SHOWN ON THE EROSION AND SEDIMENTATION CONTROL PLAN TO LIMIT THE AMOUNT OF DISTURBED SOIL AT ANY TIME.
2. STRIP AND STOCKPILE TOPSOIL FROM PROPOSED GRADING AREAS BY PHASE AFTER EROSION AND SEDIMENT CONTROL MEASURES HAVE BEEN INSTALLED. THE TOPSOIL SHALL BE SEEDED IMMEDIATELY AFTER STOCKPILING IN ORDER TO STABILIZE THE SLOPE AND LIMIT SEDIMENT RUNOFF. STOCKPILED TOPSOIL SHALL BE SEEDED AND MULCHED WHEN IT IS TO BE STORED FOR MORE THAN 21 DAYS FROM TIME OF STOCKPILING.
3. MAKE ALL CUTS AND FILLS REQUIRED BY PHASE. ESTABLISH THE SUBGRADE FOR THE TOPSOIL AREAS, PARKING AND ROADWAY AS REQUIRED AND BENCH THE BUILDING TO A SUBGRADE. ALLOW A REASONABLE AMOUNT OF AREA AROUND THE FOOTPRINT OF THE BUILDING FOR THE CONSTRUCTION ACTIVITIES.
4. COMPACT SUBGRADE TO 95% MAXIMUM DENSITY PRIOR TO PLACING FILL OR SUBBASE FOR PAVED AREAS.

PHASE 3 – SITE IMPROVEMENTS AND BUILDING CONSTRUCTION

1. CONSTRUCT TEMPORARY HAUL ROAD, ASSOCIATED TEMPORARY SEDIMENT TRAP, AND ROUGH GRADE EXTENSION OF EDGEWATER CIRCLE.
2. PRIOR TO INSTALLING SURFACE WATER CONTROLS SUCH AS TEMPORARY DIVERSIONS AND WATER BARS, INSPECT EXISTING CONDITIONS TO ENSURE DISCHARGE LOCATIONS ARE STABLE. IF NOT STABLE, REVIEW DISCHARGE CONDITIONS WITH THE DESIGN ENGINEER AND IMPLEMENT ADDITIONAL STABILIZATION MEASURES PRIOR TO INSTALLING WATER SURFACE CONTROLS.
3. CONSTRUCT TEMPORARY SEDIMENT TRAPS 1 AND 2.
4. CONSTRUCT STORMWATER BASINS AND INSTALL UPGRADIENT EROSION CONTROL MEASURES TO PROTECT STORMWATER BASINS FROM RUNOFF. LOAM, SEED AND MULCH STORMWATER BASINS WITH SPECIFIED SEED MIXES.
5. INSTALL ALL SANITARY SEWERS, DRAINAGE SYSTEMS AND UTILITIES TO WITHIN 5 FEET OF THE BUILDING OR AS OTHERWISE MODIFIED BY THE DESIGN ENGINEER TO ADJUST FOR UNFORSEEN SITE CONDITIONS.
6. PERFORM MASS EARTHWORK AS REQUIRED TO ESTABLISH SUB–GRADES FOR BUILDINGS 1 AND 2.
7. PREPARE SUB–BASE, SLOPES, PARKING AREAS, SHOULDER AREAS, ACCESS ROADS AND ANY OTHER AREA OF DISTURBANCE FOR FINAL GRADING.
8. INSTALL SUBBASE AND BASE COURSES OF GRAVEL IN PARKING AREAS.
9. PLACE TOPSOIL WHERE REQUIRED. COMPLETE THE PERIMETER LANDSCAPE PLANTINGS.
10. FINE GRADE, RAKE, SEED AND MULCH TO WITHIN 2 FEET OF THE CURBING.
11. UPON SUBSTANTIAL COMPLETION OF BUILDINGS 1 AND 2, COMPLETE THE BALANCE OF SITE WORK AND STABILIZATION OF ALL OTHER DISTURBED AREAS. INSTALL FIRST COURSE OF PAVING.
12. AFTER STABILIZATION OF ROADWAY AND AREAS SURROUNDING BUILDINGS 1 AND 2 CONTINUE EARTHWORK FOR BUILDINGS 3, 4 AND 5. EXCESS SOILS SHALL BE STOCKPILED IN THE DESIGNATED STAGING AREA, SURROUNDED WITH SILT FENCE, SEEDED WITH RYE GRASS, AND MULCHED WITH HAY.

PHASE 4 – FINAL SEEDING AND CLEANUP

1. EXCAVATE COLLECTED SEDIMENT FROM SEDIMENT TRAPS AND BACKFILL TO DESIGN GRADES.
2. WHEN ALL OTHER WORK HAS BEEN COMPLETED, REPAIR AND SWEEP ALL PAVED AREAS FOR THE FINAL COURSE OF PAVING. INSPECT THE DRAINAGE SYSTEM AND CLEAN AS NEEDED.
3. INSTALL FINAL COURSE OF PAVEMENT AFTER STORMWATER BASIN VEGETATION HAS BEEN ESTABLISHED.
4. ALL DISTURBED AREAS SHALL BE PREPARED WITH TOPSOIL AND SEEDED AND MULCHED ACCORDING TO THIS PLAN.
5. AFTER ALL FINAL GRADED DISTURBED AREAS HAVE BEEN STABILIZED, REMOVE ALL EROSION AND SEDIMENT STRUCTURES. CLEAN ALL STORMWATER STRUCTURES OF SEDIMENT AND DEBRIS.

ANTICIPATED CONSTRUCTION SCHEDULE

NO.	PHASE DESCRIPTION	ESTIMATED DURATION
1	INSTALLATION OF EROSION CONTROLS	2 WEEKS
2	SITE PREPARATION	3 TO 4 MONTHS
3	SITE IMPROVEMENTS AND BUILDING CONSTRUCTION	15 TO 18 MONTHS
4	FINAL PAVING, FINAL SEEDING AND CLEANUP	1 TO 2 MONTHS

EROSION CONTROL OPERATION & MAINTENANCE:

THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSTALLATION AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES THROUGHOUT THE PROJECT. NO CONSTRUCTION SHALL PROCEED UNTIL PROPER SEDIMENTATION AND EROSION CONTROL METHODS HAVE BEEN INSTALLED AS THE SEQUENCE OF CONSTRUCTION NECESSITATES.

MAINTENANCE OF EROSION AND SEDIMENT CONTROLS SHALL BE COMPLETED IN ACCORDANCE WITH THE CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL (2002). THE CONTRACTOR SHALL MAINTAIN A COPY OF THE GUIDELINES ON–SITE AND REFER TO THE APPROPRIATE MAINTENANCE PROCEDURES THAT SHALL BE UTILIZED DURING THE CONSTRUCTION (https://portal.ct.gov/DEEP/Water/Soil–Erosion–and–Sediment–Control–Guidelines/Guidelines–for–Soil–Erosion–and–Sediment–Control).
A SUMMARY OF THE MAINTENANCE REQUIREMENTS FOR THE PROJECT IS PROVIDED BELOW.

DURING CONSTRUCTION, ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE MAINTAINED IN PROPER WORKING ORDER. DISTURBED AREAS SHALL BE KEPT TO A MINIMUM AND SHALL ONLY TAKE PLACE WHERE IMMEDIATELY REQUIRED TO FURTHER CONSTRUCTION. IT IS DESIRABLE FROM AN EROSION PREVENTION PERSPECTIVE TO MINIMIZE DISTURBED AREAS. FINAL GRADING AND SEEDING SHALL TAKE PLACE AS SOON AS PRACTICAL.

A RAIN GAUGE SHALL BE PLACED AT THE PROJECT IN A WORKABLE LOCATION AND MONITORED DURING RAINFALL PERIODS UNTIL ALL DISTURBED AREAS ARE STABILIZED.

EVERY PRECAUTION SHALL BE USED DURING CONSTRUCTION TO PREVENT AND MINIMIZE THE DEGRADATION OF THE EXISTING WATER QUALITY FROM STORMWATER RUNOFF DURING CONSTRUCTION. ALL ACTIVITIES SHALL BE IN CONFORMANCE TO AND CONSISTENT WITH ALL APPLICABLE WATER QUALITY STANDARDS AND MANAGEMENT PRACTICES AS SET FORTH BY LOCAL, STATE AND FEDERAL AGENCIES.

THE SITE CONTRACTOR SHALL APPOINT AN ONSITE AGENT WHO SHALL BE PERSONALLY RESPONSIBLE FOR IMPLEMENTING THIS EROSION AND SEDIMENT CONTROL PLAN AND ENFORCING THE PRESCRIBED SAFEGUARDS DURING THE EXCAVATION AND OPERATION PERIOD.

THIS RESPONSIBILITY INCLUDES THE INSTALLATION AND MAINTENANCE OF CONTROL MEASURES THROUGHOUT THE PROJECT, INFORMING ALL PARTIES ENGAGED ON SITE OF THE REQUIREMENTS AND OBJECTIVES OF THE PLAN, AND NOTIFYING THE PROPER AGENCY AND OFFICIALS OF ANY TRANSFER OF THIS RESPONSIBILITY.

ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REPAIRED, CLEANED AND/OR REPLACED AS NECESSARY THROUGHOUT THE PROJECT IN ORDER TO MAINTAIN COMPLETE AND INTEGRAL EROSION AND SEDIMENT CONTROL PROTECTION. ONCE IN PLACE, ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO REMAIN IN PLACE IN PROPER CONDITION AND BE CONTINUOUSLY MAINTAINED UNTIL FINAL SITE RESTORATION HAS BEEN COMPLETED. FOLLOWING SUCH PERMANENT STABILIZATION, THE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE DISMANTLED, REMOVED, AND DISPOSED OF IN AN APPROVED MANNER. ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES BEYOND THOSE SHOWN ON THE PLANS OR PRESCRIBED HEREIN SHALL BE PUT IN PLACE, WHENEVER NECESSARY, TO ADDRESS FIELD CONDITIONS AND/OR AS ORDERED BY THE ENGINEER.

QUALIFIED PERSONNEL PROVIDED BY THE SITE CONTRACTOR SHALL INSPECT PERIMETER EROSION CONTROL MEASURES, ALL DISTURBED AREAS AND THE LOCATIONS WHERE VEHICLES ENTER AND LEAVE THE SITE. THESE AREAS SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN TWENTY–FOUR HOURS AT THE END OF A STORM THAT IS 0.5 INCHES OR GREATER. ADDITIONAL MEASURES BEYOND THOSE INDICATED AND/OR SHOWN ON THIS PLAN SET OR PRESCRIBED HEREIN SHALL BE PUT IN PLACE, WHENEVER NECESSARY, TO ADDRESS FIELD CONDITIONS AND/OR AS ORDERED BY THE ENGINEER OR TOWN STAFF. WHERE SITES HAVE BEEN TEMPORARILY OR FINALLY STABILIZED, SUCH INSPECTION SHALL BE CONDUCTED AT LEAST ONCE EVERY MONTH FOR THREE CONSECUTIVE MONTHS.

NO SOIL, FILL OR OTHER MATERIALS SHALL BE DEPOSITED IN SURROUNDING INLAND WETLANDS.

ALL TEMPORARY STORAGE AND/OR STOCKPILE AREAS SHALL BE PROPERLY STABILIZED TO PREVENT EROSION AND SUITABLY CONTAINED TO PREVENT TURBID RUNOFF.

DUMPING OF OIL OR OTHER DELETERIOUS MATERIALS ON THE GROUND IS FORBIDDEN. THE APPLICANT SHALL PROVIDE A MEANS OF CATCHING, RETAINING AND PROPERLY DISPOSING OF DRAINED OIL, REMOVED OIL FILTERS, OR OTHER DELETERIOUS MATERIAL FROM EQUIPMENT USED ON SITE. MAJOR VEHICLE MAINTENANCE SHALL BE COMPLETED OFF SITE. ALL OIL SPILLS SHALL BE IMMEDIATELY REPORTED TO THE DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION/HAZARDOUS MATERIALS OFFICE. FAILURE TO DO SO MAY RESULT IN THE IMPOSITION OF FINES UNDER THE APPLICABLE CONNECTICUT GENERAL STATUTES.

DURING CONSTRUCTION, THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE INSPECTION AND MAINTENANCE TO INSURE PROPER PERFORMANCE OF EROSION CONTROL MEASURES. INSPECTION AND MAINTENANCE SHALL INCLUDE, AT A MINIMUM, THE FOLLOWING:

- INSPECT ALL SEDIMENT FENCE, WOOD CHIP BERMS AND OTHER EROSION CONTROL MEASURES. REPAIR OR REPLACE ANY DAMAGED PORTION IN ORDER TO INSURE ITS PROPER AND EFFECTIVE OPERATION. REMOVE ACCUMULATED SEDIMENT IF REQUIRED (GREATER THAN 4" DEPTH).
- INSPECT ALL STOCKPILES. REPAIR OR REPLACE ANY DAMAGED PORTION OF EROSION CONTROL MEASURES SURROUNDING THESE AREAS IN ORDER TO PREVENT SEDIMENTATION DOWNGRADIENT. RESEED AND RE–MULCH AS REQUIRED TO STABILIZE STOCKPILES.
- INSPECT GRASS RESTORED AREAS. REVEGETATE ANY ERODED OR DISTURBED AREAS TO PROVIDE PERMANENT STABILIZATION. RESEED AND/OR REVEGETATE ANY AREAS THAT DO NOT HAVE A SUITABLE STAND OF GRASS OR ANY SCOURED AREAS TO PROVIDE PERMANENT STABILIZATION.
- INSPECT ANTI–TRACKING PAD. REMOVE AND DISPOSE OF PAD AND REPLACE IF PAD IS NO LONGER FUNCTIONING EFFICIENTLY OR ACCUMULATED SEDIMENT IS TO A DEPTH OF 2" BELOW THE STONE SURFACE.
- INSPECT ALL STONE CHECK DAMS, TEMPORARY DIVERSIONS, AND WATER BARS. REMOVE ACCUMULATED SEDIMENT IF REQUIRED (BLOCKING MORE THAN 3" DEPTH OF FLOW).
- INSPECT ALL TEMPORARY AND PERMANENT STORMWATER BASINS. REMOVE ACCUMULATED SEDIMENT IF REQUIRED (GREATER THAN 6" DEPTH), REVEGETATE IF NECESSARY TO PROVIDE STABILIZATION.
- INSPECT DOWNGRADIENT AREAS OF ALL STORMWATER DISCHARGES AND DEVELOPMENT AREAS. STABILIZE ANY ERODED AREAS IF FOUND.

EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMP'S)

MINIMIZE DISTURBED AREA AND PROTECT NATURAL FEATURES AND SOIL

TOPSOIL:

TOPSOIL WILL BE REMOVED AND STOCKPILED ON SITE AND UTILIZED FOR FINAL GRADING. ADDITIONAL TOPSOIL, IF REQUIRED, WILL BE SUPPLIED FROM AN OFF–SITE SOURCE. EXCESS MATERIALS RESULTING FROM "CUT SLOPES" IN THE AREAS OF THE PROPOSED CONSTRUCTION THAT ARE NOT INTENDED FOR REUSE WILL BE IMMEDIATELY REMOVED FROM THE SITE. WHEN SOIL IS STOCKPILED, THE SLOPE OF THE STOCKPILE WILL NOT EXCEED 2 HORIZONTAL TO 1 VERTICAL. GRUBBING OF STUMPS SHALL BE COMPLETED BY PHASE TO MINIMIZE AMOUNT OF DISTURBED SOILS.

INSTALLATION SCHEDULE: AS NOTED, EXCAVATED TOPSOIL WILL BE STOCKPILED ON SITE. SEDIMENT FENCE WILL BE PLACED AROUND ANY STOCKPILES THAT ARE NOT IMMEDIATELY REMOVED FROM THE SITE TO PROTECT THE EXISTING DRAINAGE DITCHES AND OFF SITE AREAS.

MAINTENANCE AND INSPECTION: THE CUT AND FILL AREAS WILL BE INSPECTED WEEKLY FOR EROSION. THESE AREAS WILL BE STABILIZED IMMEDIATELY WITH EROSION CONTROLS OR GRADED TO AVOID POSSIBLE DISTURBANCE TO THE EXISTING DRAINAGE DITCHES OR OFF SITE AREAS. SEE ALSO MAINTENANCE AND INSPECTION PROCEDURES FOR SILT FENCE.

CONTROL STORMWATER FLOWING ONTO AND THROUGH THE PROJECT

AREA FOR SILT TO ACCUMULATE:

BMP/INSTALLATION SCHEDULE: BEFORE ANY GRADING OPERATIONS BEGIN, A WOOD CHIP BERM OR SEDIMENT FENCE WILL BE INSTALLED ADJACENT TO THE AREAS UNDER CONSTRUCTION JUST OUTSIDE THE LIMITS OF DISTURBANCE.

OTHER ADJACENT OFF SITE AREAS WILL ALWAYS BE PROTECTED BY A SEDIMENT FENCE OR ANOTHER BMP UNTIL FINAL STABILIZATION IS ACHIEVED.

SEDIMENT FENCE IS ALSO PROPOSED UPGRADIENT OF DISTURBED AREAS TO MINIMIZE CLEAN RUNOFF ENTERING THE PROJECT AREA.

MAINTENANCE AND INSPECTION: THE GRADED AREAS AND SEDIMENT FENCE WILL BE INSPECTED WEEKLY TO ENSURE THAT THERE ARE NO STRUCTURAL FAILURES AND IMMEDIATELY AFTER RAIN EVENTS.

CONSTRUCTION SPECIFICATIONS

WOOD CHIP BERM:

THE MATERIAL FOR WOOD CHIP BERMS WILL BE ACQUIRED IN CONJUNCTION WITH THE REMOVAL AND CHIPPING OF TREES LOCATED WITHIN THE PROJECT AREA.

INSTALLATION: ERECT WOOD CHIP BERM IN A CONTINUOUS FASHION AT THE SPECIFIED HEIGHT AND WIDTH.

MAINTENANCE:

1. SEDIMENT SHOULD BE REMOVED ONCE IT HAS ACCUMULATED TO A DEPTH OF 4".
2. BERM SHOULD BE REPAIRED IF IT HAS BEEN BREACHED.
3. BERM CAN BE LEFT IN PLACE PERMANENTLY AND LEFT TO DETERIORATE.
4. ALL SEDIMENT ACCUMULATED AT THE BERM SHOULD BE REMOVED AND PROPERLY DISPOSED OF IF THE BERM IS TO BE REMOVED.

SEDIMENT FENCE:

1. THE MATERIAL FOR SEDIMENT FENCES SHOULD BE A PERVIOUS SHEET OF SYNTHETIC FABRIC SUCH AS POLYPROPYLENE, NYLON, POLYESTER, OR POLYETHYLENE YARN.
2. THE STAKES USED TO ANCHOR THE FILTER FABRIC SHOULD BE WOOD OR METAL. WOODEN STAKES SHOULD BE AT LEAST 3 FEET LONG AND HAVE A MINIMUM DIAMETER OF 2 INCHES IF A HARDWOOD LIKE OAK IS USED. STAKES FROM SOFT WOODS LIKE PINE SHOULD BE AT LEAST 4 INCHES IN DIAMETER.
3. ERECT SEDIMENT FENCE IN A CONTINUOUS FASHION FROM A SINGLE ROLL OF FABRIC TO ELIMINATE GAPS IN THE FENCE. IF A CONTINUOUS ROLL OF FABRIC IS NOT AVAILABLE, OVERLAP THE FABRIC FROM BOTH DIRECTIONS ONLY AT STAKES OR POSTS. OVERLAP AT LEAST 6 INCHES. EXCAVATE A TRENCH TO BURY THE BOTTOM OF THE FABRIC FENCE AT LEAST 6 INCHES BELOW THE GROUND SURFACE. THIS HELPS TO PREVENT GAPS FROM FORMING NEAR THE GROUND SURFACE. GAPS WOULD MAKE THE FENCING USELESS AS A SEDIMENT BARRIER.
4. THE HEIGHT OF THE FENCE POSTS SHOULD BE 16 TO 34 INCHES ABOVE THE ORIGINAL GROUND SURFACE. SPACE THE POSTS NO MORE THAN 10 FEET APART.
5. THE FENCE SHOULD BE DESIGNED TO WITHSTAND THE RUNOFF FROM A 10–YEAR PEAK STORM EVENT. ONCE INSTALLED, IT SHOULD REMAIN IN PLACE UNTIL ALL AREAS UPSLOPE HAVE BEEN PERMANENTLY STABILIZED BY VEGETATION OR OTHER MEANS.

INSTALLATION:

1. DIG A 6" DEEP TRENCH ON THE UPHILL SIDE OF THE PROPOSED BARRIER LOCATION.
2. POSITION THE POSTS ON THE DOWNHILL SIDE OF THE FABRIC BARRIER AND DRIVE THE POST 12" INTO THE GROUND.
3. LAY THE BOTTOM 6" OF THE FABRIC BARRIER IN THE TRENCH TO PREVENT UNDERMINING AND BACKFILL. COMPACT BACKFILLED SOILS.

MAINTENANCE:

1. SEDIMENT SHOULD BE REMOVED ONCE IT HAS ACCUMULATED TO 4" DEPTH.
2. FILTER FABRIC SHOULD BE REPLACED WHENEVER IT HAS DETERIORATED TO SUCH AN EXTENT THAT THE EFFECTIVENESS OF THE FABRIC IS REDUCED (APPROXIMATELY SIX MONTHS).
3. SEDIMENT FENCE SHOULD REMAIN IN PLACE UNTIL DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED.
4. ALL SEDIMENT ACCUMULATED AT THE FENCE SHOULD BE REMOVED AND PROPERLY DISPOSED OF BEFORE THE FENCE IS REMOVED.

INSPECTION:

1. INSPECT SEDIMENT FENCE BEFORE ANTICIPATED STORM EVENTS (OR SERIES OF STORM EVENTS SUCH AS INTERMITTENT SHOWERS OVER ONE OR MORE DAYS) AND WITHIN 24 HOURS AFTER THE END OF A STORM EVENT OF 0.5 INCHES OR GREATER, AND AT LEAST ONCE EVERY SEVEN CALENDAR DAYS, AT LEAST 72 HOURS APART.
2. WHERE SITES HAVE BEEN FINALLY OR TEMPORARILY STABILIZED, SUCH INSPECTIONS MAY BE CONDUCTED ONCE PER MONTH.

HAY/STRAW BALE BARRIER

INSTALLATION:

1. EXCAVATE TRENCH 4" AND PLACE MATERIAL UPSLOPE OF TRENCH.
2. PLACE BALES IN A SINGLE ROW IN THE TRENCH, LENGTHWISE, WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER AND THE BINDINGS ORIENTED AROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES (TO AVOID PREMATURE ROTTING OF THE BINDINGS).
3. ANCHOR EACH BALE WITH AT LEAST 2 STAKES, DRIVING THE FIRST STAKE IN EACH BALE TOWARD THE PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER. STAKES MUST BE DRIVEN A MINIMUM OF 18 INCHES INTO THE GROUND. FILL ANY GAPS BETWEEN THE BALES WITH STRAW TO PREVENT WATER FROM ESCAPING BETWEEN THE BALES.
4. BACKFILL THE BALES WITH THE EXCAVATED TRENCH MATERIAL TO A MINIMUM DEPTH OF 4 INCHES ON THE UPHILL SIDE OF THE BALES. TAMP BY HAND OR MACHINE AND COMPACT THE SOIL. LOOSE HAY/STRAW SCATTERED OVER THE DISTURBED AREA IMMEDIATELY UPHILL FROM THE HAY BALE BARRIER TENDS TO INCREASE BARRIER EFFICIENCY.

MAINTENANCE

1. INSPECT THE HAY/STRAW BALE BARRIER AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL AMOUNT OF 0.5 INCH OR GREATER TO DETERMINE MAINTENANCE NEEDS. FOR DEWATERING OPERATIONS, INSPECT FREQUENTLY BEFORE, DURING, AND AFTER PUMPING OPERATIONS. REMOVE THE SEDIMENT DEPOSITS WHEN SEDIMENT DEPOSITS REACH APPROXIMATELY ONE HALF THE HEIGHT OF THE BARRIER.
2. REPLACE OR REPAIR THE BARRIER WITHIN 24 HOURS OF OBSERVED FAILURE. FAILURE OF THE BARRIER HAS OCCURRED WHEN SEDIMENT FAILS TO BE RETAINED BY THE BARRIER BECAUSE:
   (a) THE BARRIER HAS BEEN OVERTOPPED, UNDERCUT OR BYPASSED BY RUNOFF WATER,
   (b) THE BARRIER HAS BEEN MOVED OUT OF POSITION, OR
   (c) THE BALES HAVE DETERIORATED OR BEEN DAMAGED.
3. WHEN REPETITIVE FAILURES OCCUR AT THE SAME LOCATION, REVIEW CONDITIONS AND LIMITATIONS FOR USE AND DETERMINE IF ADDITIONAL CONTROLS ARE NEEDED TO REDUCE FAILURE RATE OR REPLACE HAY/STRAW BALE BARRIER.
4. MAINTAIN THE HAY/STRAW BALE BARRIER UNTIL THE CONTRIBUTING AREA IS STABILIZED. AFTER THE UPSLOPE AREAS HAVE BEEN PERMANENTLY STABILIZED, PULL THE STAKES OUT OF THE HAY BALES. REMOVE SEDIMENT.

DUST CONTROL:

DUST FROM THE SITE WILL BE CONTROLLED BY USING A MOBILE PRESSURE–TYPE DISTRIBUTOR TRUCK THAT WILL APPLY POTABLE WATER AT RATE OF 300 GALLONS PER ACRE AND MINIMIZED AS NEEDED TO AVOID PONDING.

INSTALLATION SCHEDULE: DUST CONTROL WILL BE IMPLEMENTED AS NEEDED ONCE SITE GRADING HAS BEEN INITIATED, AND DURING WINDY CONDITIONS EXCEEDING 20MPH, WHILE SITE GRADING IS OCCURRING. SPRAYING OF POTABLE WATER WILL BE PERFORMED ONCE PER DAY DURING THE MONTHS OF MARCH THROUGH MAY AND NO MORE THAN THREE TIMES PER DAY FROM JUNE TO SEPTEMBER OR WHENEVER DRYNESS OF SOIL WARRANTS IT.

MAINTENANCE SCHEDULE: AT LEAST ONE MOBILE UNIT WILL BE AVAILABLE AT ALL TIMES DURING CONSTRUCTION TO APPLY POTABLE WATER. EACH MOBILE UNIT SHALL BE EQUIPPED WITH A POSITIVE SHUTOFF VALVE TO PREVENT OVER WATERING OF DISTURBED AREAS.

RETAIN SEDIMENT ON-SITE AND CONTROL DEWATERING PRACTICES

SIZE AND CONSTRUCT THE BASIN IN ACCORDANCE WITH THE REQUIREMENTS OF THE "CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL, MAY 2002".

SITE PREPARATION:

CLEAR, GRUB AND STRIP TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS, OR OTHER UNSUITABLE MATERIAL FROM AREAS UNDER THE EMBANKMENT OR ANY STRUCTURAL WORKS RELATED TO THE BASIN.

CLEAR AND GRUB THE AREA OF MOST FREQUENT INUNDATION (MEASURED FROM THE TOP OF THE OUTLET CONTROL STRUCTURE) OF ALL BRUSH AND TREES TO FACILITATE CLEAN OUT AND RESTORATION.

INSTALL SEDIMENT CONTROLS FOR CONTRIBUTING AREAS. INSTALL SEDIMENT CONTROLS TO TRAP SEDIMENT BEFORE IT ENTERS AND LEAVES THE DETENTION BASIN CONSTRUCTION SITE. STABILIZE THE BASIN IN ACCORDANCE WITH THE ENGINEERED DESIGN, STABILIZE THE SPOIL AND BORROW AREAS, AND OTHER DISTURBED AREAS IN ACCORDANCE WITH THE TEMPORARY SEEDING OR PERMANENT SEEDING, WHICHEVER IS APPLICABLE.

INSTALL SAFETY FEATURES AND DEVICES TO PROTECT HUMANS AND ANIMALS FROM SUCH ACCIDENTS AS FALLING OR DROWNING. TEMPORARY FENCING CAN BE USED UNTIL BARRIER PLANTINGS ARE ESTABLISHED. USE PROTECTIVE MEASURES SUCH AS GUARDRAILS AND FENCES ON SPILLWAYS AND IMPOUNDMENTS AS NEEDED.

MAINTENANCE:

INSPECT THE TEMPORARY SEDIMENT BASIN AT LEAST ONCE A WEEK AND WITHIN 24 HOURS OF THE END OF A STORM WITH A RAINFALL AMOUNT OF 0.5 INCHES OR GREATER TO DETERMINE CONDITIONS IN THE BASIN. CLEAN THE BASIN OF COLLECTED SEDIMENTS WHEN SEDIMENT ACCUMULATION EXCEEDS 6 INCHES. SEDIMENT LEVELS SHALL BE MARKED WITHIN THE SEDIMENT STORAGE AREA BY STAKES OR OTHER MEANS SHOWING THE THRESHOLD ELEVATION FOR SEDIMENT CLEANOUT. PRIOR TO THE REMOVAL OF SEDIMENTS, DEWATER THE BASIN THROUGH PUMPING OR OTHER MEANS TO EXPOSE PREVIOUSLY SUBMERGED SEDIMENTS. DO NOT ALLOW ACCUMULATED SEDIMENT TO FLUSH INTO THE DRAINAGEWAY. STOCKPILE THE SEDIMENT IN SUCH A MANNER THAT IT WILL NOT ERODE FROM THE SITE OR INTO A WETLAND, WATERCOURSE OR OTHER SENSITIVE AREA.

TEMPORARY SEDIMENT BASIN BOTTOM SHALL BE 2 FEET ABOVE THE PROPOSED BOTTOM OF THE PERMANENT STORMWATER BASIN. THE STORMWATER BASIN SHALL BE EXCAVATED TO DESIGN GRADES ONLY AFTER ALL UPGRADIENT AREAS HAVE BEEN STABILIZED AND BEFORE FINAL PAVING.

DEWATERING:

BMP DESCRIPTION/INSTALLATION: IN THE EVENT GROUNDWATER IS ENCOUNTERED

DURING CONSTRUCTION, DEWATERING MAY BE REQUIRED THROUGH THE USE OF SUMP PUMPS. INSTALLATION OF SUMPS SHALL FOLLOW THE REQUIREMENTS OF THE SUMP PIT. THE PURPOSE OF THIS PRACTICE IS TO REMOVE EXCESSIVE WATER FROM EXCAVATIONS IN A MANNER THAT IMPROVES THE QUALITY OF THE WATER BEING PUMPED. PUMPED WATER SHALL BE DISCHARGED TO AN APPROVED FILTERING SYSTEM.

CONSTRUCTION SPECIFICATIONS

SUMP PIT

1. A PERFORATED VERTICAL STANDPIPE SHALL BE PLACED IN THE CENTER OF THE PIT TO COLLECT FILTERED WATER. THE STANDPIPE SHALL BE SLOTTED OR PERFORATED CORRUGATED METAL OR PVC PIPE AND ITS DIAMETER AND NUMBER OF PERFORATIONS SHALL BE COMPATIBLE WITH THE PUMP SIZE BEING USED.
2. WATER SHALL THEN BE PUMPED FROM THE CENTER OF THE PIPE TO A SUITABLE DISCHARGE AREA (SEDIMENT FILTER BAG OR DEWATERING SETTLING BASIN).
3. THE PIT SHALL BE FILLED WITH CRUSHED STONE OR GRAVEL NO SMALLER THAN CT DOT #67 SIZE NOR LARGER THAN CT DOT #3 SIZE. CRUSHED STONE SHALL EXTEND A MINIMUM OF 12" BELOW THE BOTTOM OF THE STANDPIPE.
4. DISCHARGE OF WATER PUMPED FROM THE STANDPIPE SHALL BE TO A SUITABLE PRACTICE SUCH AS A SEDIMENT FILTER BAG OR AN APPROVED DEWATERING SETTLING BASIN.
5. FILTER FABRIC SHALL BE WRAPPED AROUND THE STANDPIPE TO ENSURE CLEAN WATER DISCHARGE. IT IS RECOMMENDED THAT 1/4 TO 1/2 INCH HARDWARE CLOTH WIRE MESH BE WRAPPED AROUND AND SECURED TO THE STANDPIPE PRIOR TO ATTACHING THE FILTER FABRIC. THIS WILL INCREASE THE RATE OF WATER SEEPAGE INTO THE STANDPIPE.

SOIL STABILIZATION:

TEMPORARY STABILIZATION:

BMP DESCRIPTION: HYDROMULCHING WILL BE USED ON SLOPES WHERE CONSTRUCTION WILL CEASE FOR MORE THAN 14 DAYS AND OVER THE WINTER MONTHS TO STABILIZE ERODIBLE MATERIALS. HAY/STRAW MULCH AND WOOD FIBER WILL BE MIXED WITH A TACKIFIER AND APPLIED UNIFORMLY BY MACHINE WITH AN APPLICATION RATE OF 2 TONS (100–200 BALES) PER ACRE. THE CONTRACTOR WILL USE CRIMPING EQUIPMENT TO BIND THE MULCH TO THE SOIL IF THE TACKIFIER IS NOT EFFECTIVE. NETTING WILL BE USED ON SMALL AREAS WITH STEEP SLOPES. IN AREAS WHERE HYDROMULCHING IS INACCESSIBLE, HAY/STRAW MULCH WILL BE APPLIED BY HAND AT THE SAME APPLICATION RATE.

TEMPORARY SEEDING WILL BE USED ON ANY AREA WHERE CONSTRUCTION ACTIVITY IS SUSPENDED FOR MORE THAN TWENTY–ONE DAYS TO STABILIZE ERODIBLE MATERIALS. SEE BELOW FOR GUIDANCE ON SEEDING MIXTURES, RATES, AND ACCEPTABLE PLANTING DATES FOR TEMPORARY SEEDING.

INSTALLATION SCHEDULE: PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES WILL TEMPORARILY CEASE FOR MORE THAN 14 DAYS WILL BE STABILIZED WITH MULCH. WHERE CONSTRUCTION ACTIVITIES WILL TEMPORARILY CEASE FOR MORE THAN 21 DAYS IT WILL BE TEMPORARILY SEEDED. WINTER STABILIZATION WILL BE PROVIDED BETWEEN DECEMBER 25 AND MARCH 30.

MAINTENANCE AND INSPECTION: MULCHED AREAS WILL BE INSPECTED WEEKLY TO ENSURE THAT ADEQUATE COVERAGE IS PROVIDED. REPAIRS WILL BE CONDUCTED AS NEEDED.

SEED MIXTURE FOR TEMPORARY SEEDING

	LBS./ACRE	LBS./1000 S.F.
PERENNIAL RYEGRASS	40	1.0

SEE FIGURE TS–2 IN THE 2002 GUIDELINES FOR ADDITIONAL TEMPORARY SEED MIXES.

FINAL STABILIZATION:

PERMANENT SEEDING SHOULD BE APPLIED IMMEDIATELY AFTER THE FINAL DESIGN GRADES ARE ACHIEVED AT THE SITE BUT NO LATER THAN 14 DAYS AFTER CONSTRUCTION ACTIVITIES HAVE PERMANENTLY CEASED. AFTER THE ENTIRE SITE IS STABILIZED, ANY SEDIMENT THAT HAS ACCUMULATED SHALL BE REMOVED AND HAULED OFF SITE. CONSTRUCTION DEBRIS, TRASH, AND TEMPORARY BMP'S SHALL ALSO BE REMOVED AND ANY AREAS DISTURBED DURING REMOVAL SHALL BE SEEDED IMMEDIATELY.

SEEDBED PREPARATION:

1. TOPSOIL WILL BE SPREAD OVER FINAL GRADED AREAS AT A MINIMUM DEPTH OF FOUR INCHES. TOPSOIL SHALL INCLUSIVELY MEAN A SOIL MEETING ONE OF THE FOLLOWING SOIL TEXTURAL CLASSES ESTABLISHED BY THE UNITED STATES DEPARTMENT OF AGRICULTURE CLASSIFICATION SYSTEM BASED UPON THE PROPORTION OF SAND, SILT, AND CLAY SIZE PARTICLES AFTER PASSING A 2 MILLIMETER (MM) SIEVE AND SUBJECTED TO A PARTICLE SIZE ANALYSIS:
   1.1. LOAMY SAND, INCLUDING COARSE, LOAMY FINE, AND LOAMY VERY FINE SAND, SANDY LOAM, INCLUDING COARSE, FINE AND VERY FINE SANDY LOAM, LOAM, OR SILT LOAM WITH NOT MORE THAN 60% SILT;
   1.2. CONTAINING NOT LESS THAN 6% AND NOT MORE THAN 20% ORGANIC MATTER AS DETERMINED BY LOSS–ON–IGNITION OF OVEN DRIED SAMPLES DRIED AT 105 DEGREES CENTIGRADE;
   1.3. POSSESSING A PH RANGE OF 6.0–7.5, EXCEPT IF THE VEGETATIVE PRACTICE BEING USED SPECIFICALLY REQUIRES A LOWER PH, THEN PH MAY BE ADJUSTED ACCORDINGLY;
   1.4. HAVING SOLUBLE SALTS NOT EXCEEDING 500 PPM;
   1.5. AND THAT IS LOOSE AND FRIABLE AND FREE FROM REFUSE, STUMPS, ROOTS, BRUSH, WEEDS, FROZEN PARTICLES, ROCKS, AND STONES OVER 1.25 INCHES IN DIAMETER, AND ANY MATERIAL THAT WILL PREVENT THE FORMATION OF A SUITABLE SEEDBED OR PREVENT SEED GERMINATION AND PLANT GROWTH.
2. FERTILIZER WILL BE APPLIED TO THE SEEDBED AS NEEDED. FERTILIZERS WILL BE COMMERCIAL TYPE OF UNIFORM COMPOSITION, FREE–FLOWING AND CONFORMING TO THE APPLICABLE STATE AND FEDERAL LAWS. CHOOSE NATIVE SPECIES THAT ARE ADAPTED TO LOCAL WEATHER AND SOIL CONDITIONS WHEREVER POSSIBLE TO REDUCE WATER AND FERTILIZER INPUTS AND LOWER MAINTENANCE OVERALL.
3. TOPSOIL WILL BE LOOSENED BY RAKING, TILLING OR OTHER SUITABLE METHODS.

FINAL STABILIZATION SHOULD BE INSTALLED ON PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE PERMANENTLY CEASED BUT NO LATER THAN 14 DAYS AFTER CONSTRUCTION CEASES.

ALL SEEDED AREAS SHALL BE INSPECTED WEEKLY DURING CONSTRUCTION ACTIVITIES FOR FAILURE UNTIL A DENSE COVER OF VEGETATION HAS BEEN ESTABLISHED. IF FAILURE IS NOTICED ON THE SEEDED AREA, THE AREA WILL BE RESEEDED, FERTILIZED AND MULCHED IMMEDIATELY. AFTER CONSTRUCTION IS COMPLETE AT THE SITE PERMANENT STABILIZATION MEASURES WILL BE MONITORED UNTIL FINAL STABILIZATION IS REACHED.

SEED MIXTURE FOR LAWN AREAS

	LBS./ACRE	LBS./1000 S.F.
KENTUCKY BLUEGRASS	20	0.45
CREEPING RED FESCUE	20	0.45
PERENNIAL RYEGRASS	5	0.10
	45	1.00

SEED MIXTURE FOR STORMWATER BASINS

	LBS./ACRE	LBS./1000 S.F.
NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTIONS BASINS BY NEW ENGLAND WETLAND PLANTS, INC. OF AMHERST, MA.	35	0.80

SPECIES: RIVERBANK WILD RYE (ELYMUS RIPARIUS), CREEPING RED FESCUE (FESTUCA RUBRA), LITTLE BLUESTEM (SCHIZACHYRIUM SCOPARIUM), BIG BLUESTEM (ANDROPOGON GERARDII), SWITCH GRASS (PANICUM VIRGATUM), UPLAND BENTGRASS (AGROSTIS PERENNANS), NODDING BUR MARIGOLD (BIDENS CERNUA), HOLLOW–STEM JOE PYE WEED (EUPATORIUM FISTULOSUM/EUTROCHIUM FISTULOSUM), NEW ENGLAND ASTER (ASTER NOVAE–ANGLIAE), BONESET (EUPATORIUM PERFOLIATUM), BLUE VERVAIN (VERBENA HASTATA), SOFT RUSH (JUNCUS EFFUSUS), WOOL GRASS (SCIRPUS CYPERINUS).

THE NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS CONTAINS A SELECTION OF NATIVE GRASSES AND WILDFLOWERS DESIGNED TO COLONIZE GENERALLY MOIST, RECENTLY DISTURBED SITES WHERE QUICK GROWTH OF VEGETATION IS DESIRED TO STABILIZE THE SOIL SURFACE. IT IS AN APPROPRIATE SEED MIX FOR ECOLOGICALLY SENSITIVE RESTORATIONS THAT REQUIRE STABILIZATION AS WELL AS LONG–TERM ESTABLISHMENT OF NATIVE VEGETATION.

SEED MIXTURE FOR STORMWATER BASINS

	LBS./ACRE	LBS./1000 S.F.
NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTIONS BASINS BY NEW ENGLAND WETLAND PLANTS, INC. OF AMHERST, MA.	35	0.80

SPECIES: RIVERBANK WILD RYE (ELYMUS RIPARIUS), CREEPING RED FESCUE (FESTUCA RUBRA), LITTLE BLUESTEM (SCHIZACHYRIUM SCOPARIUM), BIG BLUESTEM (ANDROPOGON GERARDII), SWITCH GRASS (PANICUM VIRGATUM), UPLAND BENTGRASS (AGROSTIS PERENNANS), NODDING BUR MARIGOLD (BIDENS CERNUA), HOLLOW–STEM JOE PYE WEED (EUPATORIUM FISTULOSUM/EUTROCHIUM FISTULOSUM), NEW ENGLAND ASTER (ASTER NOVAE–ANGLIAE), BONESET (EUPATORIUM PERFOLIATUM), BLUE VERVAIN (VERBENA HASTATA), SOFT RUSH (JUNCUS EFFUSUS), WOOL GRASS (SCIRPUS CYPERINUS).

THE NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS CONTAINS A SELECTION OF NATIVE GRASSES AND WILDFLOWERS DESIGNED TO COLONIZE GENERALLY MOIST, RECENTLY DISTURBED SITES WHERE QUICK GROWTH OF VEGETATION IS DESIRED TO STABILIZE THE SOIL SURFACE. IT IS AN APPROPRIATE SEED MIX FOR ECOLOGICALLY SENSITIVE RESTORATIONS THAT REQUIRE STABILIZATION AS WELL AS LONG–TERM ESTABLISHMENT OF NATIVE VEGETATION.

SEED MIXTURE FOR SLOPES ADJACENT TO WETLANDS

	LBS./ACRE	LBS./1000 S.F.
NEW ENGLAND ROADSIDE MATRIX UPLAND SEED MIX BY NEW ENGLAND WETLAND PLANTS, INC. OF AMHERST, MA.	35	0.80

SPECIES:

GRASSES

VIRGINIA WILD RYE (ELYMUS VIRGINICUS), LITTLE BLUESTEM (SCHIZACHYRIUM SCOPARIUM), RED FESCUE (FESTUCA RUBRA), BIG BLUESTEM (ANDROPOGON GERARDII), INDIAN GRASS (SORGHASTRUM NUTANS), SWITCH GRASS (PANICUM VIRGATUM)

WILDFLOWERS

PARTRIDGE PEA (CHAMAECRISTA FASCICULATA), BUTTERFLY MILKWEED (ASCLEPIAS TUBEROSA), PANICLEDLEAF TICK TREFOIL (DESMODIUM PANICULATUM), BEARD TONGUE (PENSTEMON DIGITALIS), BLACK EYED SUSAN (RUDBECKIA HIRTA), HOLLOW–STEM JOE PYE WEED (EUPATORIUM FISTULOSUM/EUTROCHIUM FISTULOSUM)

SHRUBS

GREY DOGWOOD (CORNUS RACEMOSA), SILKY DOGWOOD (CORNUS AMOMUM), STAGHORN SUMAC (RHUS TYPHINA)

THE NEW ENGLAND ROADSIDE MATRIX MIXES ARE DESIGNED FOR USE ALONG ROADS AND HIGHWAYS. THESE MIXES ARE UNUSUAL IN THAT THEY CONTAIN NATIVE GRASSES, WILDFLOWERS, AND SHRUBS THAT ARE BLENDED TOGETHER AS A NATIVE MATRIX SEED MIX. IN AREAS THAT RECEIVE FREQUENT MOWING, THE COLD SEASON GRASSES WILL DOMINATE, SUCH AS THOSE AREAS CLOSET TO THE ROADWAY SHOULDER. IN AREAS FARTHER FROM THE ROAD, WHICH MAY BE MOWN ONLY ONCE EACH YEAR, OR IN HARD TO MOW AREAS, SUCH AS AROUND SIGN POSTS, THE WILDFLOWER COMPONENT WILL BECOME DOMINANT. ALONG CUTS AND SIDE SLOPES WHICH MAY NEVER BE MOWN, THE SHRUB COMPONENT WILL ADD DIVERSITY AND BEAUTY TO THE ROADSIDE PLANTINGS. IT IS A PARTICULARLY
APPROPRIATE SEED MIX FOR ROADSIDES, INDUSTRIAL SITES, OR CUT AND FILL SLOPES.

SEED MIXTURE FOR OTHER UNMOWED SLOPES

	LBS./ACRE	LBS./1000 S.F.
NEW ENGLAND CONSERVATION/WILDLIFE MIX BY NEW ENGLAND WETLAND PLANTS, INC. OF AMHERST, MA.	35	0.80

SPECIES: VIRGINIA WILD RYE (ELYMUS VIRGINICUS), LITTLE BLUESTEM (SCHIZACHYRIUM SCOPARIUM), BIG BLUESTEM (ANDROPOGON GERARDII), RED FESCUE (FESTUCA RUBRA), SWITCH GRASS (PANICUM VIRGATUM), PARTRIDGE PEA (CHAMAECRISTA FASCICULATA), PANICLEDLEAF TICK TREFOIL (DESMODIUM PANICULATUM), INDIAN GRASS (SORGHASTRUM NUTANS), BLUE VERVAIN (VERBENA HASTATA), BUTTERFLY MILKWEED (ASCLEPIAS TUBEROSA), BLACK EYED SUSAN (RUDBECKIA HIRTA), COMMON SNEEZEWEED (HELENIUM AUTUNALE), HEATH ASTER (ASTERPILOSUS/SYMPHYOTRICHUM PILOSUM), EARLY GOLDENROD (SOLIDAGO JUNCEA), UPLAND BENTGRASS (AGROSTIS PERENNANS).

THE NEW ENGLAND CONSERVATION/WILDLIFE MIX PROVIDES A PERMANENT COVER OF GRASSES, WILDFLOWERS, AND LEGUMES. FOR BOTH GOOD EROSION CONTROL AND WILDLIFE HABITAT VALUE. THE MIX IS DESIGNED TO BE A NO MAINTENANCE SEEDING, AND IS APPROPRIATE FOR CUT AND FILL SLOPES, DETENTION BASIN SIDE SLOPES, AND DISTURBED AREAS ADJACENT TO COMMERCIAL AND RESIDENTIAL PROJECTS.

THE RECOMMENDED SEEDING DATES ARE: APRIL 1–JUNE 15 AND AUGUST 1–OCTOBER 1.
SEE FIGURE PS–2 IN THE 2002 GUIDELINES FOR ADDITIONAL PERMANENT SEED MIXES.

SPILL PREVENTION AND CONTROL PLAN:

1. VEHICLE FUELING: REFUELING OF VEHICLES AND EQUIPMENT SHALL BE CONDUCTED IN A DESIGNATED LAYDOWN AREA, AT LEAST 100 FEET FROM WETLANDS OR DRAINAGE STRUCTURES. THE LOCATION WITHIN THE LAYDOWN AREA SHALL BE COMPRISED OF AN IMPERVIOUS SURFACE WITHOUT ACCESS TO ANY SUBSURFACE DRAINAGE STRUCTURES. A SPILL CLEANUP KIT SHALL BE MAINTAINED AT THE FUELING LOCATION.
2. HAZARDOUS MATERIAL STORAGE: HAZARDOUS MATERIALS INCLUDING BUT NOT LIMITED TO FUEL, OIL AND PETROLEUM PRODUCTS AND SOLVENTS SHALL BE STORED IN AN APPROVED COVERED STORAGE UNIT AND PROVIDED WITH SECURED SECONDARY CONTAINMENT WITH AN IMPERVIOUS FLOOR IN ACCORDANCE WITH FEDERAL AND MUNICIPAL REGULATIONS.
3. SAFETY DATA SHEETS, A MATERIAL INVENTORY, AND EMERGENCY CONTACT INFORMATION SHALL BE MAINTAINED AT THE PROJECT OFFICE.
4. SPILL KITS: SPILL KITS SHALL BE STORED WITHIN THE MATERIAL STORAGE AREA, CONCRETE WASHOUT AREAS, AND DESIGNATED FUELING AREA.
5. SPILLS: ALL SPILLS WILL BE CLEANED UP IMMEDIATELY UPON DISCOVERY. SPENT ABSORBENT MATERIALS AND RAGS SHALL BE PLACED IN A SEALED DRUM AND SHALL BE HAULED OFF–SITE IMMEDIATELY AFTER THE SPILL IS CLEANED UP FOR DISPOSAL AT THE APPROPRIATE LANDFILL. SPILLS OR RELEASES OF HAZARDOUS CHEMICALS OR PETROLEUM PRODUCTS SHALL BE PROMPTLY REPORTED TO CTDEEP AT 1–800–424–3338 AND THE NATIONAL RESPONSE CENTER 1–800–424–8802.
   IN ACCORDANCE WITH CONNECTICUT GENERAL STATUES THE CONTRACTOR SHALL WITHIN 24 HOURS OF VERBAL NOTIFICATION COMPLETE A WRITTEN "REPORT OF PETROLEUM OR CHEMICAL PRODUCT DISCHARGE, SPILLAGE OR RELAEASE" AND MAIL IT TO: CTDEEP, BUREAU OF WASTE MANAGEMENT, 79 ELM STREET, HARTFORD, CT, 06106–5127.

INSTALLATION SCHEDULE: THE SPILL PREVENTION AND CONTROL PROCEDURES WILL BE IMPLEMENTED ONCE CONSTRUCTION BEGINS ON–SITE.

NOT FOR CONSTRUCTION
12/14/2020

PLAN NOTES

1. SEE COVER SHEET FOR ENGINEER AND SURVEYOR SIGNATURES AND SEALS.
2. SEE SHEET 2 FOR LEGEND & ABBREVIATIONS.

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\\192.168.2.3\PROJECTS\CIVIL 3D PROJECTS\2020\20-2853 EDGEWATER-APARTMENTS\DWG\DESIGN\4 NOTES AND DETAILS.DWG

BOUNDARIES
CIVIL ENGINEERING · LAND SURVEYING · LAND USE PLANNING · SOIL SCIENCE
Boundaries LLC
179 Pachaug River Drive, Griswold, CT 06351
T 860.376.2006 | www.boundariesllc.net

Salt Pond Apartments at Edgewater Hill
"Erosion and Sedimentation Control Notes"
Prepared for
Edgewater Hill Enterprises, LLC
000 East High Street - East Hampton, Connecticut

SCALE:	As Noted
DATE:	December 2020
JOB I.D. NO.	20-2853
Revisions	
SHEET NO.	18 / 25

SPILL PREVENTION AND CONTROL
BEST MANAGEMENT PRACTICES (BMP'S) DESCRIPTION:

1. MATERIAL HANDLING AND WASTE MANAGEMENT:

WASTE MATERIALS:

ALL WASTE MATERIALS WILL BE COLLECTED AND DISPOSED OF INTO METAL WASTE DUMPSTERS IN DESIGNATED AREAS. DUMPSTERS WILL HAVE A SECURE TIGHT LID, BE PLACED AWAY FROM STORM WATER DRAINS AND STRUCTURES, AND WILL MEET ALL FEDERAL, STATE, AND LOCAL REGULATIONS. ONLY TRASH AND CONSTRUCTION DEBRIS SHALL BE PLACED IN THE DUMPSTERS. CONSTRUCTION MATERIALS SHALL NOT BE BURIED ON SITE.

MAINTENANCE AND INSPECTION: THE DUMPSTERS SHALL BE INSPECTED WEEKLY AND IMMEDIATELY AFTER STORM EVENTS. THE DUMPSTER SHALL BE EMPTIED WEEKLY OR MORE FREQUENTLY IF NEEDED, AND TAKEN TO THE APPROPRIATE LANDFILL.

HAZARDOUS WASTE MATERIALS:

BMP DESCRIPTION: ALL HAZARDOUS WASTE MATERIALS INCLUDING OIL FILTERS, PETROLEUM PRODUCTS, PAINT, AND EQUIPMENT MAINTENANCE FLUIDS SHALL BE STORED IN STRUCTURALLY SOUND AND SEALED SHIPPING CONTAINERS IN A DESIGNATED AREA. HAZARDOUS WASTE MATERIALS SHALL BE STORED IN APPROPRIATE AND CLEARLY MARKED CONTAINERS AND SEGREGATED FROM OTHER NON-WASTE MATERIALS. SECONDARY CONTAINMENT SHALL BE PROVIDED FOR ALL WASTE MATERIALS IN A DESIGNATED AREA AND SHALL CONSIST OF COMMERCIALLY AVAILABLE SPILL PALLETS OR EQUAL. ADDITIONALLY, ALL HAZARDOUS WASTE MATERIALS SHALL BE DISPOSED OF IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS. HAZARDOUS WASTE MATERIALS SHALL NOT BE DISPOSED OF INTO THE ON-SITE DUMPSTERS.

MAINTENANCE AND INSPECTION: THE HAZARDOUS WASTE MATERIALS AREA SHALL BE INSPECTED WEEKLY AND AFTER STORM EVENTS. THE STORAGE AREA SHALL BE KEPT CLEAN, WELL ORGANIZED AND EQUIPPED WITH AMPLE CLEANUP SUPPLIES AS APPROPRIATE FOR THE MATERIALS BEING STORED. SAFETY DATA SHEETS, MATERIAL INVENTORY, AND EMERGENCY CONTACT NUMBERS SHALL BE MAINTAINED IN THE PROJECT OFFICE.

SANITARY WASTE:

BMP DESCRIPTION: PORTABLE TOILETS, LOCATED IN THE STAGING AREA, SHALL BE PROVIDED AT THE SITE THROUGHOUT THE CONSTRUCTION PHASE. THE TOILETS SHALL BE LOCATED AWAY FROM CONCENTRATED DRAINAGE FLOW PATHS AND SHALL HAVE COLLECTION PANS UNDERNEATH AS SECONDARY CONTAINMENT.

MAINTENANCE AND INSPECTION: SANITARY WASTE SHALL BE COLLECTED A MINIMUM OF ONCE A WEEK AND SHALL BE INSPECTED WEEKLY FOR EVIDENCE OF LEAKING HOLDING TANKS.

RECYCLING:

BMP DESCRIPTION: WOOD PALLETS, CARDBOARD BOXES, AND OTHER RECYCLABLE CONSTRUCTION SCRAPS SHALL BE DISPOSED OF IN A DESIGNATED DUMPSTER FOR RECYCLING. THE DUMPSTER SHALL HAVE A SECURE WATERTIGHT LID, BE PLACED AWAY FROM STORMWATER CONVEYANCES AND DRAINS AND MEET ALL LOCAL AND STATE SOLID-WASTE MANAGEMENT REGULATIONS. ONLY SOLID RECYCLABLE CONSTRUCTION SCRAPS FROM THE SITE SHALL BE DEPOSITED IN THE DESIGNATED DUMPSTER.

MAINTENANCE AND INSPECTION: THE RECYCLING DUMPSTER SHALL BE INSPECTED WEEKLY. THE RECYCLING DUMPSTER SHALL BE EMPTIED WHEN FULL AND TAKEN TO AN APPROVED RECYCLING CENTER BY THE CONTRACTOR. IF RECYCLABLE CONSTRUCTION WASTES ARE EXCEEDING THE DUMPSTER'S CAPACITY, THE DUMPSTERS SHALL BE EMPTIED MORE FREQUENTLY.

2. DESIGNATE WASHOUT AREAS:

CONCRETE WASHOUT

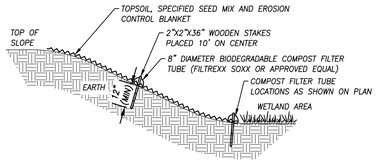
BMP DESCRIPTION: A DESIGNATED TEMPORARY, ABOVE-GRADE CONCRETE WASHOUT AREA SHALL BE CONSTRUCTED FOR CONCRETE WASHOUT. THE WASHOUT AREA SHALL BE LINED WITH PLASTIC SHEETING AT LEAST 10 MILS THICK AND FREE OF HOLES OR TEARS. CONCRETE POURS WILL NOT BE CONDUCTED DURING OR BEFORE AN ANTICIPATED STORM EVENT. CONCRETE MIXER TRUCKS AND CHUTES SHALL BE WASHED IN THE DESIGNATED WASHOUT AREA OR CONCRETE WASTES SHALL BE PROPERLY DISPOSED OF OFF-SITE. WHEN THE TEMPORARY WASHOUT AREA IS NO LONGER NEEDED FOR THE CONSTRUCTION PROJECT, THE HARDENED CONCRETE AND MATERIALS USED TO CONSTRUCT THE AREA WILL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS, AND THE AREA SHALL BE STABILIZED.

INSTALLATION SCHEDULE: THE WASHOUT AREA SHALL BE CONSTRUCTED BEFORE CONCRETE POURS OCCUR AT THE SITE.

3. VEHICLE FUELING AND MAINTENANCE PRACTICES:

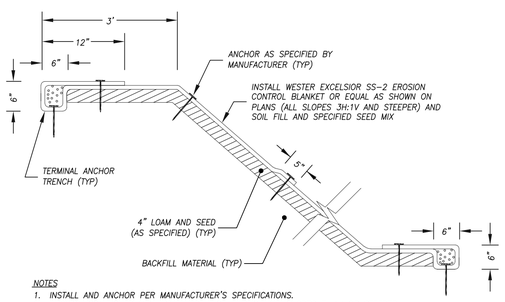
BMP DESCRIPTION: SEVERAL TYPES OF VEHICLES AND EQUIPMENT WILL BE USED ON-SITE THROUGHOUT THE PROJECT, INCLUDING GRADERS, EXCAVATORS, LOADERS, ROLLERS, TRUCKS AND TRAILERS, AND BACKHOES. ALL MINOR EQUIPMENT MAINTENANCE AND FUELING SHALL BE PERFORMED IN THE STAGING AREA. THIS PROPOSED ACTIVITY SHALL BE SITUATED SO THAT DRAINAGE FACILITIES OR WATER COURSES LOCATED IN THE AREA ARE NOT AT RISK FROM POTENTIAL INFILTRATION. ABSORBENT, SPILL-CLEANUP MATERIALS AND SPILL KITS SHALL BE AVAILABLE AT THE COMBINED STAGING AND MATERIALS STORAGE AREA. FUEL SHALL BE DELIVERED TO THE SITE ON AN AS NEEDED BASIS BY A FUEL DELIVERY SERVICE. FUELING AND MINOR MAINTENANCE OF EQUIPMENT WILL ONLY OCCUR IN DESIGNATED FUELING AREAS ON AN IMPERVIOUS SURFACE. VEHICLE AND EQUIPMENT WASHING IS PROHIBITED ON SITE.

INSTALLATION SCHEDULE: BMPS IMPLEMENTED FOR FUELING ACTIVITIES SHALL BEGIN AT THE START OF THE PROJECT.



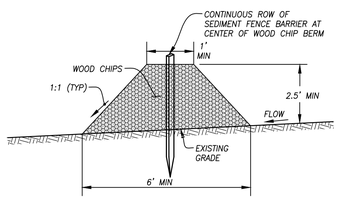
NOTE:
FILTER TUBE SPACING ON 3H:1V SLOPES SHALL BE 30 FEET MAXIMUM. FILTER TUBE SPACING ON 2H:1V SLOPES SHALL BE 20 FEET MAXIMUM.

COMPOST FILTER TUBE INSTALLATION DETAIL
NOT TO SCALE

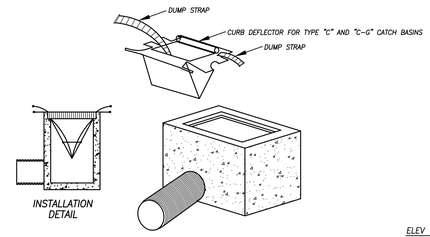


NOTES
1. INSTALL AND ANCHOR PER MANUFACTURER'S SPECIFICATIONS.
2. EROSION CONTROL BLANKET SHALL BE INSTALLED ON ALL SLOPES 3H:1V OR STEEPER.

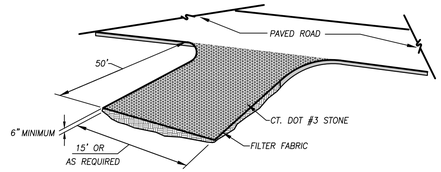
EROSION CONTROL BLANKET DETAIL
NOT TO SCALE



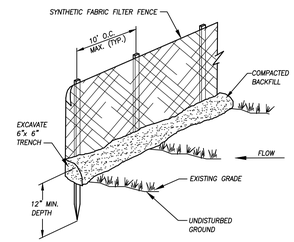
WOOD CHIP BERM WITH SEDIMENT FENCE DETAIL
NOT TO SCALE



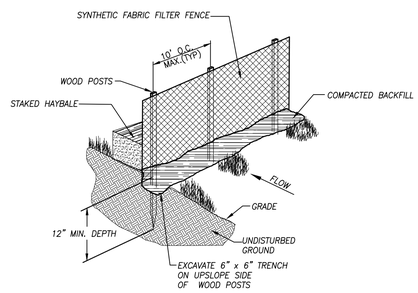
INLET SEDIMENT CONTROL DEVICE
NOT TO SCALE



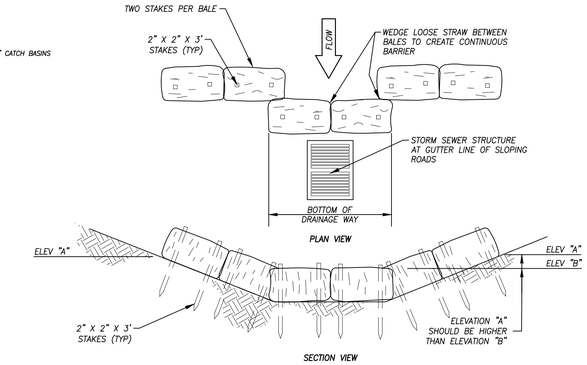
ANTI-TRACKING PAD
NOT TO SCALE



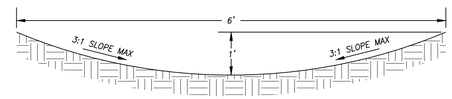
SEDIMENT FENCE DETAIL
NOT TO SCALE



SEDIMENT FENCE BACKED BY HAY BALE BARRIER DETAIL
NOT TO SCALE

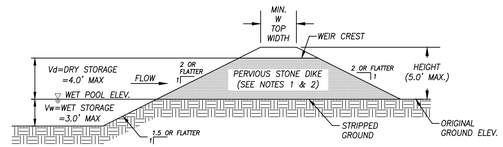


HAY BALE CHECK DAM
NOT TO SCALE



NOTE: DIVERSION CHANNEL TO BE LINED WITH EROSION CONTROL BLANKET INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

DIVERSION SWALE DETAIL
NOT TO SCALE



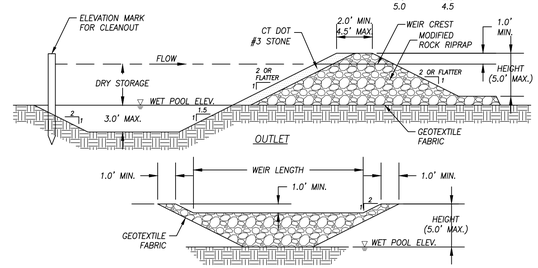
CROSS-SECTION

NOTES:
1. PERVIOUS STONE DIKE SHALL BE CONSTRUCTED OF CT DOT MODIFIED RIPRAP WITH #3 STONE ON FACE.
2. NON-OVERFLOW PORTIONS AND ABUTMENTS OF TEMPORARY SEDIMENT TRAP MAY BE CONSTRUCTED OF COMPACTED EARTH FILL.

TOP WIDTH VS. HEIGHT

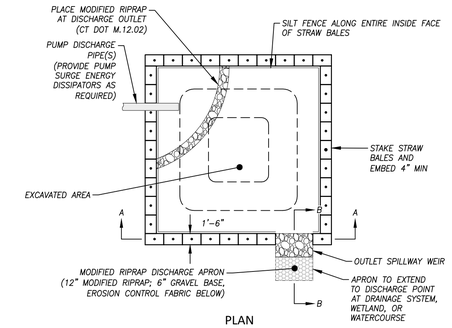
H = HEIGHT OF EMBANKMENT
W = TOP WIDTH OF EMBANKMENT

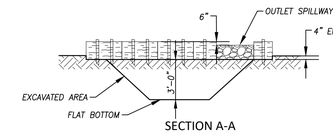
H (ft)	W (ft)
1.5	2.0
2.0	2.0
2.5	2.5
3.0	2.5
3.5	3.0
4.0	3.0
4.5	4.0
5.0	4.5



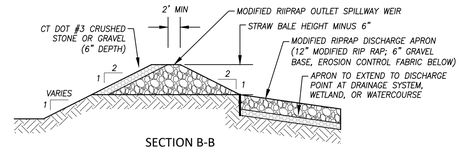
NOTE:
TYPICALLY, SEDIMENT TRAPS ARE REQUIRED FOR ANY DISCHARGE POINT THAT SERVES AN AREA BETWEEN 2 AND 5 DISTURBED ACRES OF LAND. ALL TEMPORARY SEDIMENT TRAPS SHALL BE DESIGNED IN CONFORMANCE WITH THE "2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL". GENERALLY, TEMPORARY SEDIMENT TRAPS SHALL BE SIZED TO PROVIDE A MINIMUM OF 134 CUBIC YARDS OF WATER STORAGE PER ACRE DRAINED. ALL TEMPORARY SEDIMENT TRAPS SHALL BE MAINTAINED TO ASSURE EFFICIENT OPERATION UNTIL THE CONTRIBUTING AREA IS COMPLETELY STABILIZED. TEMPORARY SEDIMENT TRAPS MAY BE RELOCATED DURING CONSTRUCTION TO ACCOMMODATE PHASING. CONTRACTOR SHALL REVIEW LOCATIONS OF TEMPORARY SEDIMENT TRAPS WITH DESIGN ENGINEER PRIOR TO INSTALLATION. NO TEMPORARY SEDIMENT TRAP SHALL HAVE MORE THAN 5 ACRES OF DISTURBED LAND CONTRIBUTING TO IT.

DETAIL FOR TEMPORARY SEDIMENT TRAPS 3 AND 4
NOT TO SCALE





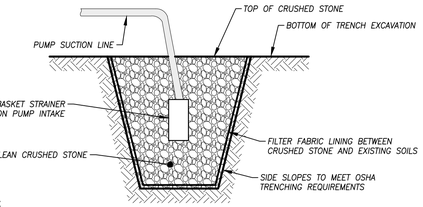
SECTION A-A



SECTION B-B

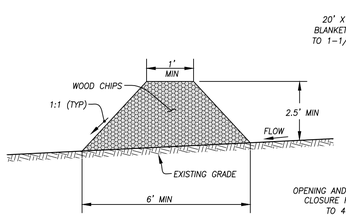
NOTES:
1. THE CONTRACTOR SHALL SIZE BASIN BASED ON THE SELECTED PUMP DISCHARGE FLOWS, AND ENLARGE AS NECESSARY AT NO ADDITIONAL COST TO THE OWNER, TO ALLOW FOR PROPER FUNCTION OF THE BASIN.
2. ALTERNATE PUMPING SETTLING BASINS OR FRACTIONATION TANKS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

TYPICAL PUMP SETTLING BASIN DETAIL
NOT TO SCALE

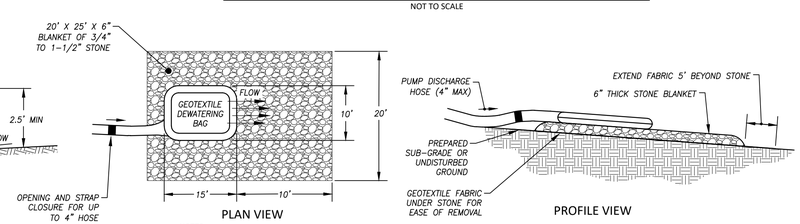


NOTES:
1. THE CONTRACTOR SHALL SIZE SUMP BASED ON THE SELECTED PUMP DISCHARGE FLOWS, AND ENLARGE AS NECESSARY AT NO ADDITIONAL COST TO THE OWNER, TO ALLOW FOR PROPER FUNCTION OF THE SUMP.
2. MINIMUM SUMP DIMENSIONS ARE 2' DEEP (MEASURED FROM THE BOTTOM OF THE TRENCH EXCAVATION) AND 2' DIAMETER.
3. CRUSHED STONE SHALL BE NO SMALLER THAN CT DOT #67 SIZE NOR LARGER THAN CT DOT #3 SIZE.
4. SUMPS SHALL BE EXCAVATED AND RELOCATED AS REQUIRED TO MAINTAIN A DRY EXCAVATION.
5. ALTERNATE PUMP INTAKE PROTECTION AND DEWATERING METHODS MAY BE USED WITH PRIOR APPROVAL OF THE ENGINEER.

TYPICAL PUMP INTAKE DETAIL
NOT TO SCALE

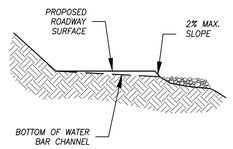


WOOD CHIP BERM DETAIL
NOT TO SCALE

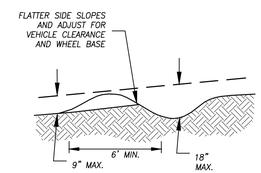


NOTES:
1. GEOTEXTILE BAG MATERIAL SHALL BE A NON-WOVEN MATERIAL.
2. DO NOT OVER PRESSURIZE BAG OR USE BEYOND CAPACITY.
3. LOCATE DISCHARGE SITE ON FLAT UPLAND AREAS AS FAR AWAY AS POSSIBLE FROM STREAMS, WETLANDS, AND OTHER RESOURCES AND POINTS OF CONCENTRATED FLOW.
4. DOWNGRADIENT FROM RECEIVING AREA MUST BE WELL VEGETATED OR OTHERWISE STABLE FROM EROSION, E.G., FOREST FLOOR OR COARSE GRAVEL/STONE.

GEOTEXTILE DEWATERING BAG
NOT TO SCALE



PERPENDICULAR SECTION



ROADWAY SECTION

WATER BAR DETAIL
NOT TO SCALE

NOT FOR CONSTRUCTION
12/14/2020

PLAN NOTES
1. SEE COVER SHEET FOR ENGINEER AND SURVEYOR SIGNATURES AND SEALS.
2. SEE SHEET 2 FOR LEGEND & ABBREVIATIONS.

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CIVIL ENGINEERING · LAND SURVEYING · LAND USE PLANNING · GIS SCIENCE
BOUNDARIES
Boundaries LLC
179 Pachaug River Drive, Gimwold, CT 06351
T 860.376.2006 | www.boundariesllc.net

Salt Pond Apartments at Edgewater Hill
"Erosion and Sedimentation Control Notes and Details"
Prepared for
Edgewater Hill Enterprises, LLC
000 East High Street - East Hampton, Connecticut

SCALE:	As Noted
DATE:	December 2020
JOB I.D. NO.	20-2853
Revisions	
SHEET NO.	19 / 25

P:\CIVIL 3D PROJECTS\2020\20-2853 EDGEWATER APARTMENTS\DWG\DESIGN\4 NOTES AND DETAILS.DWG

GENERAL NOTES

1. THE PROJECT SITE IS PART OF A MIXED USE DEVELOPMENT WITHIN THE MUDD ZONE. THE PROPOSED DEVELOPMENT INCLUDES THE EXTENSION OF EDGEWATER CIRCLE. THE PROJECT IS PART OF THE MIXED USE PHASED CONSTRUCTION OF THE EDGEWATER HILL MASTER PLAN DEVELOPMENT DATED 2012.
2. SUBJECT IS ENTIRELY WITHIN FLOOD ZONE X (AREAS OF MINIMAL FLOOD HAZARD) IN ACCORDANCE WITH FEMA FIRM PANEL NUMBER 09007C0155G, EFFECTIVE DATE 8/28/2008.
3. THE PROPOSED DEVELOPMENT WILL BE SERVED BY PUBLIC WATER, GAS AND SANITARY SEWER.
4. ALL PROPOSED UTILITY INFRASTRUCTURE SHALL BE INSTALLED UNDERGROUND UNLESS SPECIFICALLY NOTED HEREIN IN ACCORDANCE WITH UTILITY COMPANY REQUIREMENTS.
5. ALL EXISTING UTILITY INFORMATION SHOWN HEREIN IS APPROXIMATE ONLY AND SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF THE SITE WORK. THE ENGINEER MAKES NO STATEMENT, WARRANTY, OR GUARANTEE TO THE LOCATION, SIZE, TYPE, QUANTITY OR CONDITION OF THE UTILITIES SHOWN HEREIN.
6. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CONTACT THE "CALL BEFORE YOU DIG" ORGANIZATION AT 1-800-922-4455 A MINIMUM OF THREE (3) BUSINESS DAYS PRIOR TO COMMENCEMENT OF ANY SITE WORK OR SITE DISTURBANCE ON OR ADJACENT TO THE PROJECT SITE.
7. ALL MATERIALS, INSTALLATIONS, CONSTRUCTION AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE EAST HAMPTON SITE PLAN STANDARDS, THE TOWN OF EAST HAMPTON STREET STANDARDS, EAST HAMPTON WPCA SPECIFICATIONS AND THE CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD, BRIDGES, FACILITIES AND INCIDENTAL CONSTRUCTION FORM 817 AS AMENDED.
8. ALL TRAFFIC SIGNAGE, MARKINGS, LOCATIONS AND INSTALLATIONS SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), LATEST EDITION.
9. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN, REVIEW AND ADHERE TO ALL REQUIREMENTS AND ANY CONDITIONS OF APPROVAL ASSOCIATED WITH THE PROJECT FROM THE TOWN OF EAST HAMPTON, CONNECTICUT DEPARTMENT OF ENERGY AND ENVIRONMENTAL PROTECTION AND ALL CUSTODIAL UTILITY COMPANIES.
10. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ALL PERMITS, BONDING AND INSURANCE REQUIRED BY THE TOWN OF EAST HAMPTON AND ALL CUSTODIAL UTILITY COMPANIES.
11. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ALL NECESSARY TRAFFIC CONTROL BARRICADES, SIGNAGE, PERSONNEL AND OTHER EQUIPMENT/ITEMS REQUIRED TO MAINTAIN SAFE AND FULL PUBLIC AND EMERGENCY ACCESS DURING ALL PHASES OF THIS PROJECT.
12. ALL HANDICAP ACCESS ROUTES SHALL BE CONSTRUCTED IN STRICT CONFORMANCE WITH THE AMERICAN DISABILITIES ACT (ADA) CODES, SPECIFICATIONS, RECOMMENDATIONS AND REQUIREMENTS.
13. ALL SITEWORK AND EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE ALL LOCAL AND STATE PERMITS INCLUDING THE CTDEEP GENERAL PERMIT FOR THE DISCHARGE OF WASTEWATERS FROM CONSTRUCTION ACTIVITIES.
14. ANY DISCREPANCIES BETWEEN DESIGN PLAN SHEETS, FIELD CONDITIONS, NOTES AND SPECIFICATIONS OR SITE CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE DESIGN ENGINEER PRIOR TO THE START OF CONSTRUCTION

DEMOLITION & MOBILIZATION NOTES

1. THE CONTRACTOR SHALL SECURE ALL NECESSARY BUILDING PERMITS INCLUDING BUT NOT LIMITED TO CLEARING, SITEWORK, TEMPORARY AND PERMANENT POWER, EXCAVATION, SOIL EROSION AND SEDIMENT CONTROL, AND ALL OTHER APPLICABLE PERMITS.
2. ALL PAVEMENT REMOVAL SHALL BE SAWCUT SMOOTH WITH TRUE ALIGNMENT.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL SURPLUS MATERIAL OFF-SITE. ANY ITEMS/MATERIALS TO BE SAVED FOR FUTURE RE-USE SHALL BE APPROPRIATELY STOCKPILED ON SITE AT A PRE-APPROVED LOCATION AND PROTECTED WITH APPROPRIATE EROSION CONTROL MEASURES.
4. IT IS THE RESPONSIBILITY OF THE CONTRACTOR FOR PROVIDING AND INSTALLING ADEQUATE BARRICADES, FENCING, SIGNAGE AND SITE SECURITY DURING AND AFTER WORKING HOURS. THE CONTRACTOR SHALL EMPLOY THE APPROPRIATE MEANS TO ENSURE THAT PUBLIC SAFETY AND PROJECT SECURITY IS APPROPRIATELY MAINTAINED THROUGHOUT THE PROJECT LIFE.
5. THE CONTRACTOR SHALL BARRICADE AND APPROPRIATELY SIGN ALL EXCAVATED TRENCHES, TEST HOLES AND ALL OTHER EXCAVATIONS TO PREVENT ACCIDENTAL FALLS AND UNAUTHORIZED ENTRY DURING ALL ASPECTS OF THE WORK.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING ALL DEMOLITION, GRADING AND RELATED SITE WORK SUCH THAT NO UNREASONABLE DUST, DEBRIS OR DAMAGE OCCURS TO ADJACENT PROPERTIES OR THE GENERAL PUBLIC.

GRADING NOTES

1. THE CONTRACTOR SHALL REMOVE ALL UNSUITABLE MATERIALS DURING CONSTRUCTION AND UTILITY INSTALLATIONS TO THE SATISFACTION OF THE ENGINEER AND/OR TOWN OFFICIALS.
2. THE SITE SHALL BE GRADED USING STANDARD CONSTRUCTION PRACTICES. EROSION CONTROL BLANKETS, AS APPROVED BY THE ENGINEER, SHALL BE USED ON ALL SLOPES EQUAL TO OR STEEPER THAN 3 HORIZONTAL TO 1 VERTICAL OR AS PRESCRIBED BY THE ENGINEER. INSTALLATION SHALL BE IN STRICT CONFORMANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND SPECIFICATIONS.
3. AREAS TO BE USED FOR STORMWATER MANAGEMENT SHALL NOT BE EXCAVATED TO FULL DEPTH. A MINIMUM OF TWO (2) FEET OF NATURALLY OCCURRING SOIL SHALL REMAIN IN PLACE UNTIL SUCH TIME THAT FINAL GRADING IS APPROPRIATE.
4. ALL DISTURBED AREAS ARE TO BE PERMANENTLY STABILIZED AS SOON AS FEASIBLE. WHERE PERMANENT STABILIZATION IS NOT FEASIBLE, TEMPORARY MEASURES FOR STABILIZATION AS APPROVED BY THE ENGINEER SHALL BE INCORPORATED.
5. ALL PROPOSED GRADES DEPICTED HEREIN REPRESENT FINAL SURFACE ELEVATION OF PAVEMENT, CONCRETE, STONE OR TOPSOIL UNLESS OTHERWISE NOTED.
6. ALL GRADED SURFACES SHALL BE GRADED SUCH THAT THE FINAL GRADE RESULTS IN POSITIVE DRAINAGE FROM ALL SURFACE POINTS.
7. FILL EMBANKMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SECTIONS 2.02.03.5, 6, 7 AND 11 OF CT DOT FORM 817. EMBANKMENTS SHALL BE CONSTRUCTED IN LOOSE LIFTS NOT EXCEEDING 12-INCHES AND COMPACTED TO 95% MAXIMUM DRY DENSITY. FINAL SLOPES SHALL BE TRACKED WITH CLEATED TRACKED EQUIPMENT PRIOR TO THE INSTALLATION OF TOPSOIL.
8. FILL WITHIN THE ZONE OF INFLUENCE OF THE FOUNDATIONS OF THE PROPOSED BUILDINGS SHALL MEET THE REQUIREMENTS OF THE GEOTECHNICAL/STRUCTURAL ENGINEER.

REMOVAL OF LEDGE ROCK

1. CONTRACTOR SHALL OBTAIN BLASTING PERMIT FROM THE TOWN OF EAST HAMPTON PRIOR TO ANY BLASTING ACTIVITIES.
2. ALL EXPLOSIVE DEMOLITION SHALL BE PERFORMED IN STRICT ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS AND ORDINANCES. NO EXPLOSIVE DEMOLITION SHALL TAKE PLACE BETWEEN THE HOURS OF 5:00 PM AND 7:00 AM ON ANY DAY, AND NO EXPLOSIVE DEMOLITION SHALL OCCUR ON SUNDAYS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING A FULL AND COMPLETE PRE-BLAST SURVEY OF ANY AND ALL PROPERTIES THAT MAY BE AFFECTED BY EXPLOSIVE DEMOLITION ACTIVITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE PROTECTION OF ANY PART OF ANY PROPERTY THAT MAY BE AFFECTED BY EXPLOSIVE DEMOLITION ACTIVITIES, AND SHALL BE RESPONSIBLE FOR REPAIR AND/OR REPLACEMENT OF ANY DAMAGED PORTION OF SAID PROPERTIES.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING, RESTORING AND GENERAL MAINTENANCE OF ALL ADJACENT AND ABUTTING PROPERTIES, STRUCTURES, AND PORTIONS THEREOF THAT MAY BE DAMAGED OR OTHERWISE AFFECTED BY THE CONSTRUCTION/DEMOLITION ACTIVITIES ON THIS PROJECT. THE CONTRACTOR'S RESPONSIBILITY SHALL EXTEND TO AT LEAST THE POINT WHERE THE PROPERTY/STRUCTURE IS FULLY RESTORED, REPLACED OR ESTABLISHED AND/OR STABILIZED. ALL EFFORTS, MATERIALS AND INSTALLATION SHALL BE PAID FOR BY THE CONTRACTOR.

LANDSCAPE NOTES

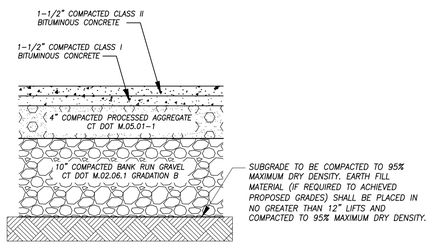
1. ALL DISTURBED AREAS NOT COVERED BY BUILDINGS, DRIVEWAYS, ROADWAYS, WALKWAYS, ETC. SHALL BE GRADED AND STABILIZED AS FOLLOWS:
   A. PLACE A MINIMUM OF 4-INCHES OF TOPSOIL IN ALL DISTURBED AREAS. APPLY LIMESTONE AND FERTILIZER IN ACCORDANCE WITH SOIL TEST RESULTS AND RECOMMENDATIONS.
   B. APPLY SPECIFIED SEED MIXTURE AT RECOMMENDED RATE. SEE EROSION AND SEDIMENTATION CONTROL NOTES.
   C. APPLY STRAW OR HAY MULCH ON ALL SEEDED AREAS.
   D. SEEDING SHALL TAKE PLACE BETWEEN APRIL 1 AND JUNE 15, OR AUGUST 15 AND OCTOBER 1. SEEDING DURING THESE TIME FRAMES INCLUDE APPLICATION OF STRAW OR HAY MULCH AT A RATE OF 2 BALES PER 1000 SF. IF THE SEEDING IS APPLIED OUTSIDE OF THESE TIME FRAMES, THE AREAS SHALL BE STABILIZED WITH STRAW OR HAY MULCH AT A RATE OF 90 LBS PER 1000 SF.
2. GRADED AREAS 3H:1V AND STEEPER SHALL BE SEEDED WITH THE SPECIFIED SEED MIX OR EQUAL AND STABILIZED BY AN EROSION BLANKET.
3. MULCHING SHALL BE APPLIED IN THE FOLLOWING MANNER: SPREAD MULCH BY HAND OR MULCH BLOWER. PUNCH MULCH INTO SOIL SURFACE WITH TRACK MACHINE APPROXIMATELY 2"-3" TO ANCHOR INTO SOIL.
4. STREET TREES SHALL BE BALLED AND BURLAPPED WITH A MINIMUM 2" CALIPER AND MINIMUM 6-FOOT HEIGHT.
5. ALL MATERIALS AND CONSTRUCTION METHODS ARE TO CONFORM TO THE REQUIREMENTS OF THE CT ASSOCIATION OF LANDSCAPE CONTRACTORS SPECIFICATIONS AND THE AMERICAN NURSERYMAN'S STANDARDS FOR NURSERY STOCK.
6. ALL STAKING OR GUYING IS TO BE DONE IMMEDIATELY AFTER PLANTING, BUT IN NO CASE MORE THAN 24-HOURS AFTER PLANTING. AT COMPLETION OF MAINTENANCE PERIOD, REMOVE ALL STAKES, GUYS, FLAGS, TREE WRAP AND ANCHORS.
7. WHEN ALL AREAS ARE STABILIZED, REMOVE ALL EROSION AND SEDIMENT CONTROL DEVICES AND DISPOSE OF ALL ACCUMULATED SEDIMENTS AT A PRE-APPROVED LOCATION.

STORMWATER BASIN NOTES

1. THE STORMWATER MANAGEMENT BASINS SHALL BE STABILIZED PRIOR TO THE DISCHARGE OF STORMWATER INTO THE BASIN. THE BASIN IS TO BE CONSTRUCTED DURING THE DRY SEASON, IF PRACTICAL.
2. ALL EROSION CONTROL MEASURES ARE TO BE THE FIRST ITEM OF CONSTRUCTION AND MAINTAINED UNTIL ALL DISTURBED AREAS ARE PERMANENTLY STABILIZED.
3. THE EXISTING TOPSOIL IS TO BE REMOVED AND STOCKPILE FOR RE-USE IN FINAL STABILIZATION OF THE BASINS.
4. UNTIL SUCH TIME AS THE FINAL GRADING FOR THE BASINS IS TO BE CONDUCTED, THE USE OF HEAVY MACHINERY AND ANY OTHER ACTIVITY THAT MAY COMPACT THE NATURALLY OCCURRING SOILS IS TO BE AVOIDED. SHOULD THE BASIN(S) BE UTILIZED FOR TEMPORARY SEDIMENT TRAPS DURING CONSTRUCTION, A MINIMUM OF TWO (2) VERTICAL FEET OF NATURALLY OCCURRING SOIL ABOVE FINAL GRADE OF THE BASIN SHALL BE MAINTAINED UNTIL SUCH TIME AS ALL UPGRADIENT AREAS ARE PERMANENTLY STABILIZED AND THE BASIN MAY BE CONSTRUCTED.
5. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM ALL REQUIRED MAINTENANCE UNTIL ALL CONSTRUCTION IS ACCEPTED BY THE OWNER.
6. SILT FENCING, HAYBALES OR OTHER EROSION BARRIER IS TO BE EMPLOYED IN A CONTINUOUS ROW WITHIN THE BASIN PERPENDICULAR TO THE BASIN INFLOW TO PREVENT ANY FLOW CHANNELIZATION PRIOR TO ADEQUATE VEGETATION BEING ESTABLISHED WITHIN THE BASIN.
7. STORMWATER BASINS SHALL BE VEGETATED AND STABILIZED PRIOR TO FINAL PAVING AND REMOVAL OF CATCH BASIN INLET PROTECTION AND CURB DEFLECTORS.

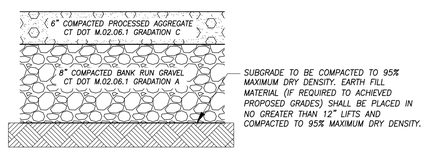
GENERAL UTILITY NOTES

1. THE CONTRACTOR SHALL IMPLEMENT ALL APPLICABLE TOWN OF EAST HAMPTON AND STATE OF CONNECTICUT STANDARDS AND REGULATIONS. ALL SANITARY SEWER UTILITIES SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST APPLICABLE TOWN OF EAST HAMPTON WATER POLLUTION CONTROL AUTHORITY (WPCA) RULES, REGULATIONS AND SPECIFICATIONS. FOUNDATION DRAINS, SUMP PUMPS AND/OR ROOF LEADERS SHALL NOT DISCHARGE INTO THE SANITARY SEWER SYSTEM.
2. ALL DRAINAGE STRUCTURES SHALL BE PRECAST CONCRETE WITH CAST IRON FRAME AND GRATES CAPABLE OF HANDLING H-20 LOADING.
3. ALL DRAINAGE PIPE SHALL BE SMOOTH INTERIOR HIGH DENSITY POLYETHYLENE PIPE (HDPE) OR APPROVED EQUAL UNLESS OTHERWISE NOTED. ALL PIPE SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. A MINIMUM OF TWO FEET OF COVER SHALL BE PROVIDED OVER THE PIPE PRIOR TO ANY VEHICULAR TRAFFIC. ROOF LEADERS AND FOOTING DRAINS SHALL BE 6" (MIN.) SCHEDULE 40 PVC ASTM D1785. ROOF LEADERS SHALL BE DIRECTED TO THE PROPOSED SUBSURFACE INFILTRATION SYSTEMS. FOOTING DRAINS SHALL DAYLIGHT WHERE EVER FEASIBLE. WHERE DAYLIGHT IS NOT FEASIBLE, FOOTING DRAINS SHALL BE CONNECTED INTO THE FORMAL ROADWAY DRAINAGE SYSTEM.
4. ROOF INFILTRATION SYSTEMS SHALL BE COMPRISED OF 8' DIAMETER PRECAST CONCRETE DRYWELLS. EACH SYSTEM WILL INCLUDE 12" OF CRUSHED STONE ON ALL SIDES, EACH SYSTEM WILL INCLUDE AN OVERFLOW RELIEF PIPE ALLOWING VOLUMES GREATER THAN THE STORAGE VOLUME TO BE RELEASED WITHOUT BACKING UP THE ROOF GUTTER LEADERS.
5. LOCATIONS OF ALL TRANSFORMERS, UTILITY VAULTS AND PULL BOXES SHALL BE DETERMINED BY THE UTILITY AUTHORITY. ANY POTENTIAL UTILITY CONFLICT OR CHANGE SHALL BE REVIEWED, EVALUATED AND APPROVED BY THE OWNER AND OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
6. ALL FINAL UTILITY DEMANDS, SIZES AND OPTIMAL BUILDING ENTRY LOCATIONS, SITE LIGHTING, WIRING, UNDER SLAB UTILITY CONNECTIONS AND ALL OTHER UTILITY RELATED INFORMATION SHALL BE DETERMINED BY THE CUSTODIAL UTILITY COMPANIES.
7. ALL WATER MAINS SHALL CONFORM TO THE REQUIREMENTS AND SPECIFICATIONS OF THE CONNECTICUT WATER COMPANY.
8. ALL SANITARY SEWER RELATED WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS AND SPECIFICATIONS OF THE WATER POLLUTION CONTROL AUTHORITY. ALL STRUCTURES SHALL BE PRECAST CONCRETE WITH CAST IRON FRAMES AND GRATES CAPABLE OF HANDLING H-20 LOADINGS. ALL MAIN PIPE RUNS SHALL BE 8" DIAMETER SCHEDULE 40 PVC PIPE. ALL BUILDING SERVICES SHALL BE 6" DIAMETER SCHEDULE 40 PVC CONSTRUCTED AT A SLOPE NO LESS THAN 1" PER FOOT.
9. ALL ELECTRIC, TELEPHONE, COMMUNICATIONS AND RELATED UTILITIES SHALL BE UNDERGROUND IN ACCORDANCE WITH ALL RULES AND REGULATIONS OF THE CUSTODIAL UTILITY COMPANY.
10. ALL SANITARY SEWER RELATED WORK SHALL CONFORM TO THE "EAST HAMPTON WPCA SPECIFICATIONS AND INSPECTION REQUIREMENTS FOR CONNECTION TO PUBLIC SEWERS" INCLUDING BUT NOT LIMITED TO CONSTRUCTION DETAILS, CCTV SURVEY OF ALL NEW MAINS AND AS-BUILT SURVEY PLANS.



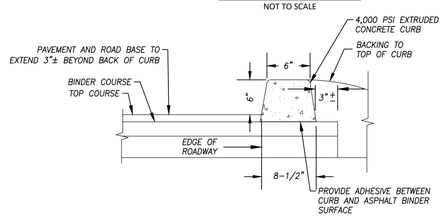
BITUMINOUS CONCRETE PAVEMENT DETAIL

NOT TO SCALE



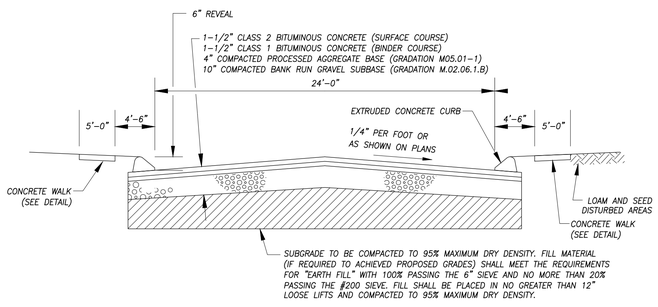
TRAFFIC BOUND GRAVEL SURFACE DETAIL

NOT TO SCALE



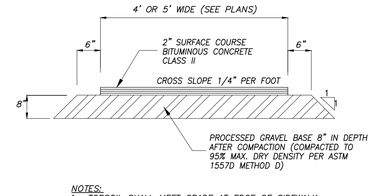
EXTRUDED CONCRETE CURB DETAIL

NOT TO SCALE



TYPICAL CROSS SECTION FOR ROADWAY PAVEMENT

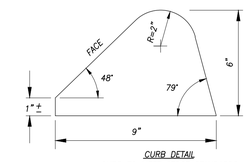
NOT TO SCALE



NOTES:
1. TOPSOIL SHALL MEET GRADE AT EDGE OF SIDEWALK FOR A SMOOTH TRANSITION TO GRASSED AREAS.

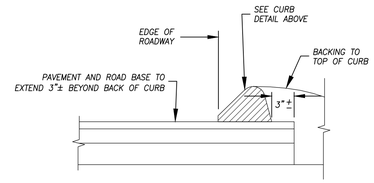
BITUMINOUS CONCRETE SIDEWALK

NOT TO SCALE



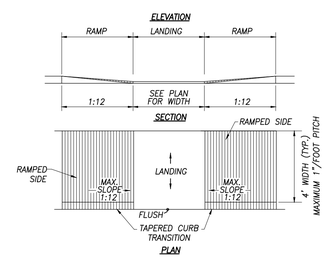
CURB DETAIL

CURB TO MEET CTDOT STANDARDS



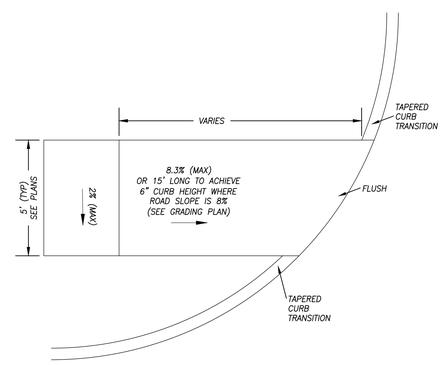
BITUMINOUS CONCRETE LIP CURB DETAIL

NOT TO SCALE



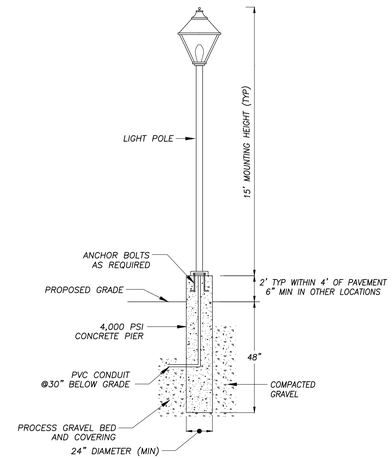
SIDEWALK CURB RAMP AT ACCESSIBLE PARKING DETAIL

NOT TO SCALE



SIDEWALK CURB RAMP DETAIL

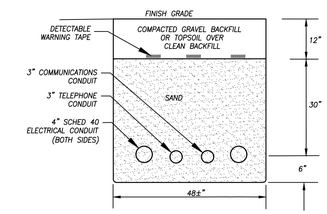
NOT TO SCALE



NOTE:
1. LIGHT POLE BASES SHALL BE 4' MINIMUM FROM EDGE OF ROADS AND PARKING AREAS AND 2' MINIMUM FROM BACK OF SIDEWALK.
2. BASE PLATE BOLT PATTERN PROVIDED BY LIGHTING MANUFACTURER.
3. CONCRETE PIER TO BE SIZED AS REQUIRED BY LIGHTING MANUFACTURER'S STRUCTURAL ENGINEER.
4. MANUFACTURER/MODEL AND INTENSITY OF ALL PROPOSED LIGHTING TO MATCH EXISTING PROJECT LIGHTING (VERIFY WITH OWNER PRIOR TO CONSTRUCTION).
5. ALL LIGHTING FIXTURES AND POLES SHALL BE MATTE BLACK POWDERCOAT OR OTHER SIMILAR DURABLE FINISH.

LIGHT POLE DETAIL

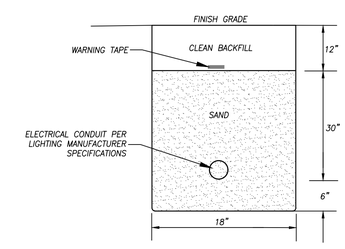
NOT TO SCALE



NOTE:
CONTRACTOR TO CONFIRM UTILITY CONDUIT REQUIREMENTS PRIOR TO CONSTRUCTION

ELECTRIC & TELECOMM TRENCH DETAIL

NOT TO SCALE



NOTE:
CONTRACTOR TO CONFIRM UTILITY CONDUIT REQUIREMENTS PRIOR TO CONSTRUCTION.

SITE LIGHTING CONDUIT TRENCH DETAIL

NOT TO SCALE

NOT FOR CONSTRUCTION
12/14/2020

PLAN NOTES

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2. SEE SHEET 2 FOR LEGEND & ABBREVIATIONS.

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P:\CIVIL 3D PROJECTS\2020\20-2853 EDGEWATER APARTMENTS\DWG\DESIGN\4 NOTES AND DETAILS.DWG

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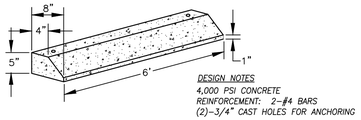
Boundaries LLC
179 Pachaug River Drive Griswold, CT 06351
T 860.376.2006 | www.boundariesllc.net

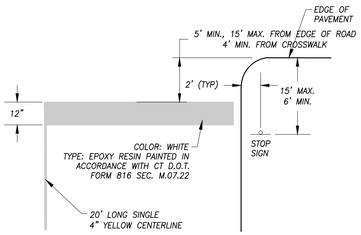
Salt Pond Apartments at Edgewater Hill
"Construction Notes and Details"
Prepared for
Edgewater Hill Enterprises, LLC
000 East High Street - East Hampton, Connecticut

SCALE:	As Noted
DATE:	December 2020
JOB I.D. NO.	20-2853
Revisions	
SHEET NO.	20 / 25



CONCRETE WHEELSTOP DETAIL

NOT TO SCALE



STOP BAR DETAIL

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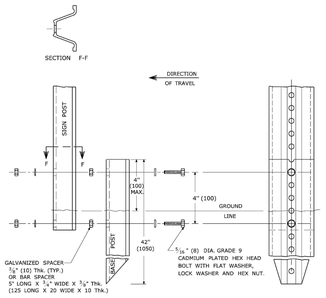
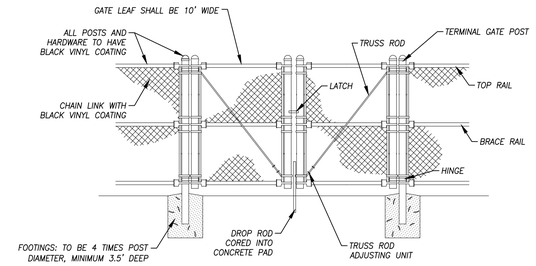


SEE CT DOT STANDARD DETAIL SHEET TR-1208_02 FOR ADDITIONAL DETAILS

CT DOT BREAKAWAY TYPE II SIGN POST DETAIL

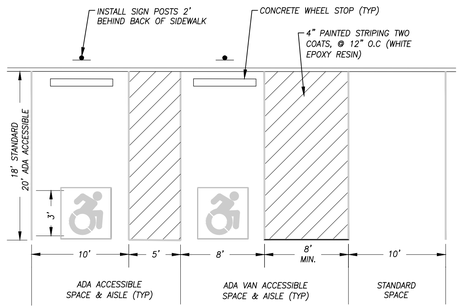
NOT TO SCALE



NOTE:
SWING GATES TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.

6' HIGH SWING GATE DETAIL

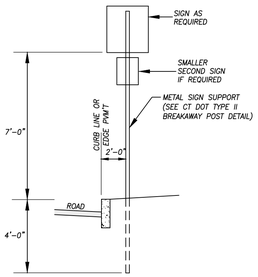
NOT TO SCALE



ADA ACCESSIBLE PARKING SPACE NOTES:
1. SLOPE ON PAVEMENT SHALL BE NO MORE THAN 2% IN ANY DIRECTION.
2. CROSS HATCH AISLES MAY NOT BE SHARED BETWEEN TWO SPACES OF DIFFERENT TYPE.
3. AISLE WIDTH IS 8' FOR VAN ACCESSIBLE SPACES, AND 5' FOR ALL OTHER ACCESSIBLE SPACES.
4. USE CURRENT "SPEEDY" ADA SYMBOL FOR ALL PAVEMENT MARKINGS AND SIGNS.

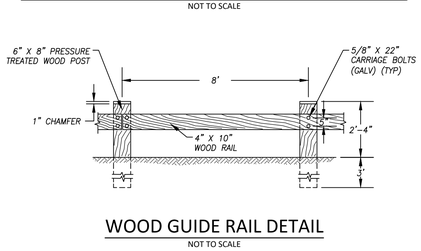
PARKING SPACE DETAILS

NOT TO SCALE



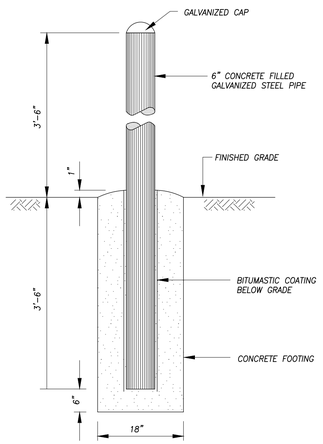
DIRECTIONAL SIGN SUPPORT DETAIL

NOT TO SCALE



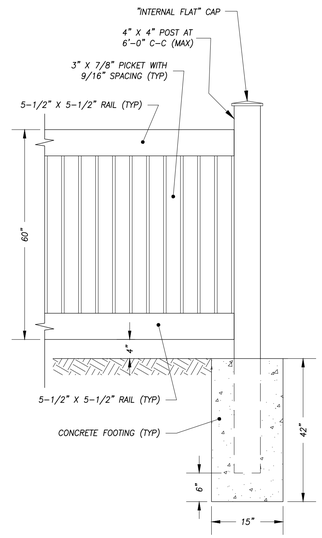
WOOD GUIDE RAIL DETAIL

NOT TO SCALE



BOLLARD DETAIL

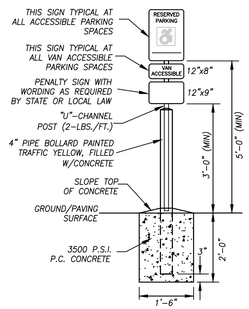
NOT TO SCALE



NOTES:
1. FENCE TO BE "IMPERIAL" SEMI–PRIVATE FENCE SYSTEM IN COLOR WHITE AS MANUFACTURED BY BUFF–TECH, OR APPROVED EQUAL.
2. PROVIDE EQUAL SPACING OF POSTS.

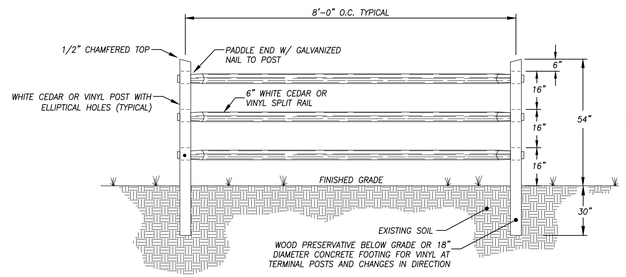
SPLIT RAIL FENCE DETAIL

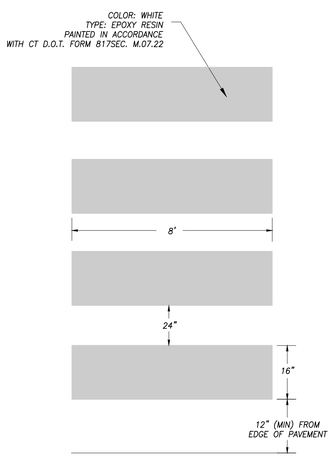
NOT TO SCALE



ACCESSIBLE PARKING SIGN DETAIL

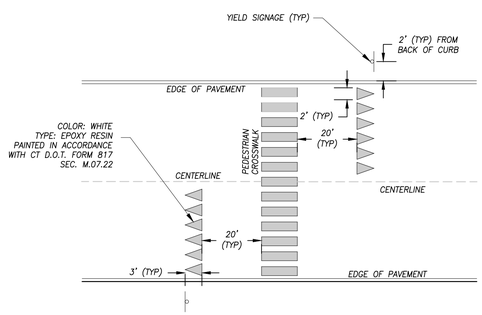
NOT TO SCALE





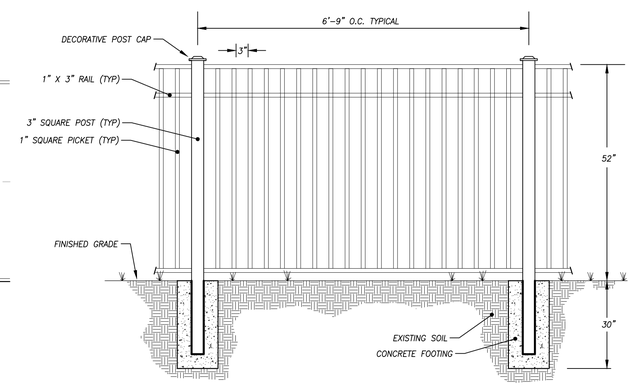
CROSSWALK DETAIL

NOT TO SCALE



CROSSWALK YIELD DETAIL

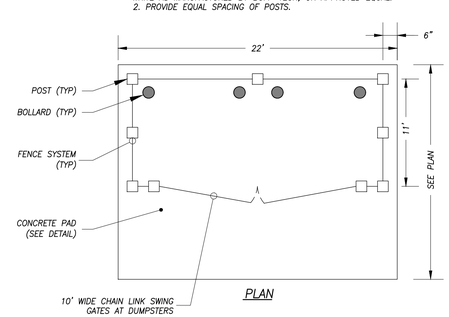
NOT TO SCALE



NOTES:
1. ALL DECORATIVE FENCE SHALL BE MATTE BLACK POWDERCOAT OR OTHER SIMILAR DURABLE FINISH.

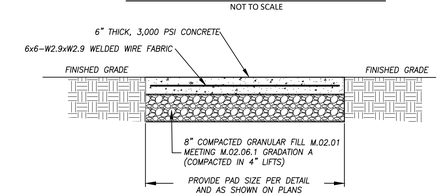
DECORATIVE FENCE DETAIL

NOT TO SCALE



DUMPSTER ENCLOSURE DETAIL

NOT TO SCALE



CONCRETE DUMPSTER PAD DETAIL

NOT TO SCALE

NOT FOR CONSTRUCTION
12/14/2020

PLAN NOTES

1. SEE COVER SHEET FOR ENGINEER AND SURVEYOR SIGNATURES AND SEALS.
2. SEE SHEET 2 FOR LEGEND & ABBREVIATIONS.

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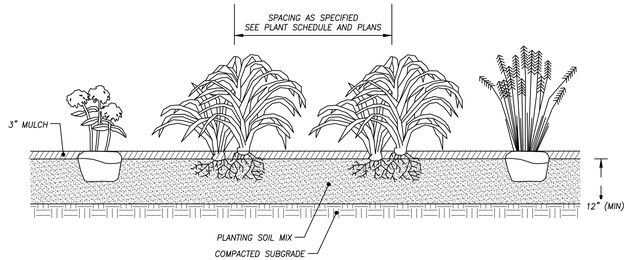
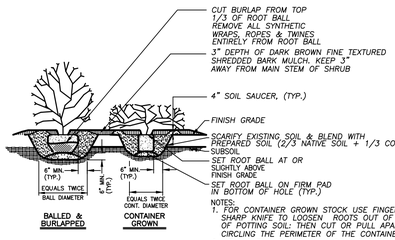


NOTES:
1. ROTOTILL FERTILIZER AND LIME INTO SOIL PRIOR TO PLANTING IN ACCORDANCE WITH SOIL ANALYSIS RECOMMENDATIONS.
2. DO NOT OVER-COMPACT PLANTING BED. WATER THOROUGHLY AFTER PLANTING.
3. ADJUST PLANTING DEPTH AS RECOMMENDED BY SUPPLIER.
4. MULCH SHALL NOT COME INTO CONTACT WITH CROWNS OF PERENNIALS.

PERENNIAL/GROUNDCOVER PLANTING DETAIL

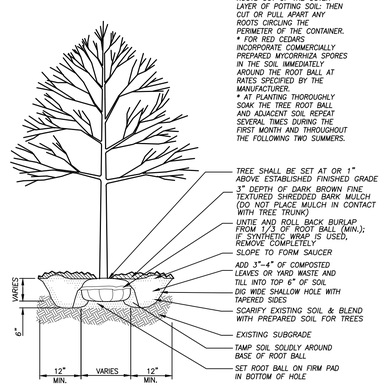
NOT TO SCALE



NOTES:
1. FOR CONTAINER GROWN STOCK USE FINGERS OR A SHARP KNIFE TO LOOSEN ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL; THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER.
2. AT PLANTING THOROUGHLY SOAK THE ROOT MASS AND ADJACENT SOIL. REPEAT SEVERAL TIMES DURING THE FIRST MONTH AND THROUGHOUT THE FOLLOWING TWO SUMMERS.

SHRUB PLANTING DETAIL

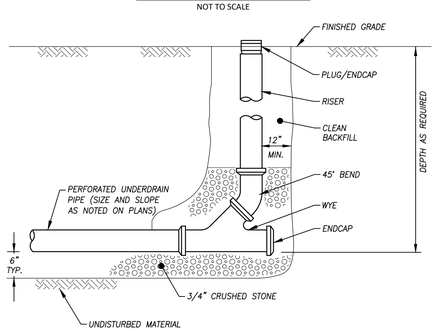
NOT TO SCALE



NOTES:
* DO NOT STAKE OR WRAP TRUNK.
* FOR CONTAINER-GROWN TREES, USE FINGERS OR SMALL HAND TOOLS TO PULL THE ROOTS OUT OF THE OUTER LAYER OF POTTING SOIL; THEN CUT OR PULL APART ANY ROOTS CIRCLING THE PERIMETER OF THE CONTAINER.
* FOR RED CEDARS INCORPORATE COMMERCIALLY PREPARED MYCORRHIZA SPORES IN THE SOIL IMMEDIATELY AROUND THE ROOT BALL AT RATES SPECIFIED BY THE MANUFACTURER.
* AT PLANTING THOROUGHLY SOAK THE TREE ROOT BALL AND ADJACENT SOIL REPEAT SEVERAL TIMES DURING THE FIRST MONTH AND THROUGHOUT THE FOLLOWING TWO SUMMERS.

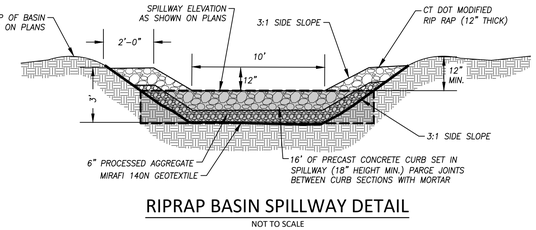
TREE PLANTING DETAIL

NOT TO SCALE



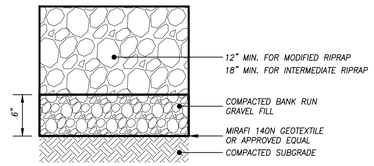
UNDERDRAIN CLEANOUT DETAIL

NOT TO SCALE



RIPRAP BASIN SPILLWAY DETAIL

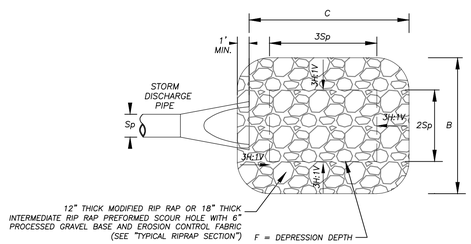
NOT TO SCALE



NOTES:
1. TO BE USED AT PIPE DISCHARGES AND EMERGENCY SPILLWAY CHANNEL.

TYPICAL RIPRAP SECTION

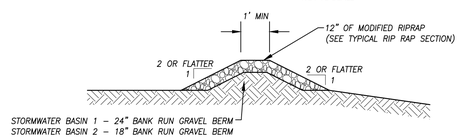
NOT TO SCALE



PIPE Sp	C	B	F	RIPRAP GRADATION
15"	7.5 FT	6.25 FT	0.625 FT	MODIFIED RIPRAP
18"	9 FT	7.5	0.75 FT	MODIFIED RIPRAP
36"	18 FT	15 FT	1.5 FT	MODIFIED RIPRAP

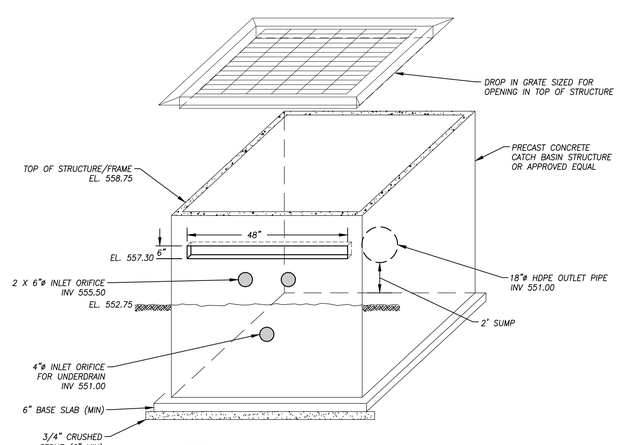
TYPE 1 RIP RAP SCOUR HOLE DETAIL

NOT TO SCALE



SEDIMENT FOREBAY SPILLWAY DETAIL

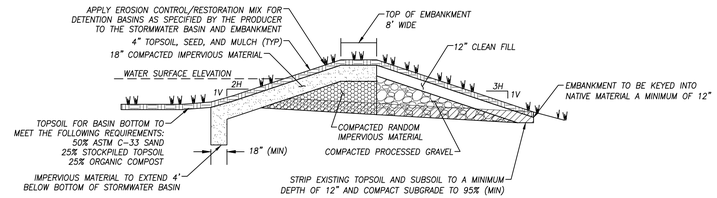
NOT TO SCALE



NOTES:
1. PIN BOTTOM OF STRUCTURE TO LEDGE IF ENCOUNTERED
2. INSTALL TRASH RACK TO PROTECT ALL ORIFICES (SEE DETAIL)

OUTLET CONTROL STRUCTURE 1

NOT TO SCALE

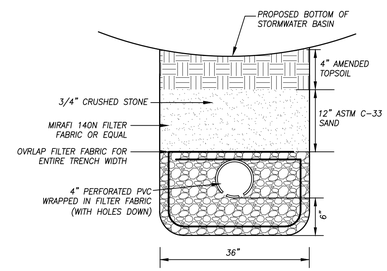


NOTES:
1. REMOVE VEGETATION, DEBRIS, ORGANIC MATERIALS, AND TOPSOIL TO A MINIMUM OF 12" BELOW EXISTING GRADE PRIOR TO EMBANKMENT CONSTRUCTION. COMPACTED EXPOSED SUBSOIL AND SCARIFY SURFACE.
2. FILL MATERIALS SHALL BE PLACED IN LIFTS NOT EXCEEDING 12". PRIOR TO COMPACTION EACH LIFT SHALL BE MOISTENED AS NECESSARY TO ACHIEVE THE OPTIMUM MOISTURE CONTENT. THE TOP 12" OF SUBGRADE AND EACH LIFT SHALL BE COMPACTED TO 95% OF MAXIMUM DENSITY AT OPTIMUM MOISTURE CONTENT AS DETERMINED IN ACCORDANCE WITH ASTM D1557. FILL MATERIAL SHALL NOT BE PLACED ON SURFACES THAT ARE MUDDY, FROZEN, OR CONTAINING FROST, ICE, OR ORGANICS.
3. CLEAN FILL MATERIAL SHALL BE FREE OF ORGANICS AND NO STONES GREATER THAN 3".
4. PROCESSED GRAVEL SHALL MEET THE REQUIREMENTS OF CT DOT FORM 817 M.02.06 GRADATION A.
5. IMPERVIOUS MATERIAL SHALL BE DENSE GRADED AND HAVE A PERMEABILITY RATE OF 1 X 10-4 CM/SEC OR LESS, HAVE A PERCENTAGE OF MATERIALS PASSING THE NO. 200 SIEVE OF GREATER THAN 10%, AND AN EFFECTIVE GRAIN SIZE DIAMETER (D10) OF 0.05 MM OR LESS. IT SHALL BE FREE OF ORGANICS AND SHALL HAVE NO STONES GREATER 2".
6. RANDOM IMPERVIOUS MATERIAL SHALL BE DENSE GRADED AND FREE OF ORGANICS WITH NO STONES LARGER THAN 2". MATERIAL SHALL MEET ONE OF THE FOLLOWING GRADATIONS:

Sieve Size	Percent Passing	
	1-1/4" Processed Aggregate	2" Processed Aggregate
2-1/2"	100	100
2"	100	96
1-1/2"	99	91
1"	61	67
3/4"	51	58
1/4"	40	33
#40	16	15
#200	7	5

STORMWATER BASIN EMBANKMENT DETAIL

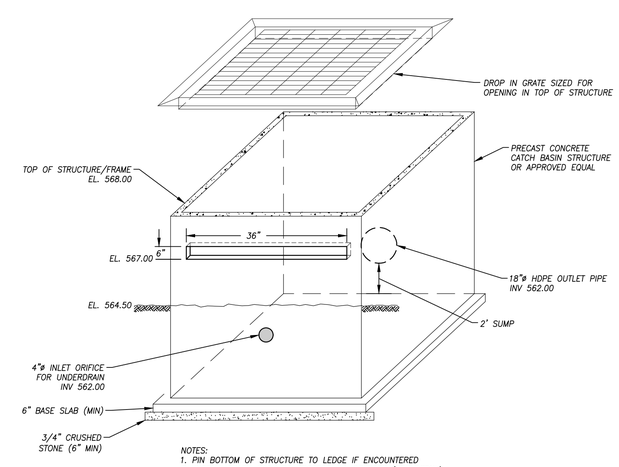
NOT TO SCALE



NOTES:
AMENDED TOPSOIL SHALL MEET THE FOLLOWING REQUIREMENTS:
50% ASTM C-33 SAND
25% STOCKPILED TOPSOIL
25% ORGANIC COMPOST

UNDERDRAIN DETAIL

NOT TO SCALE



NOTES:
1. PIN BOTTOM OF STRUCTURE TO LEDGE IF ENCOUNTERED
2. INSTALL TRASH RACK TO PROTECT ALL ORIFICES (SEE DETAIL)

OUTLET CONTROL STRUCTURE 2

NOT TO SCALE

NOT FOR CONSTRUCTION
12/14/2020

PLAN NOTES

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BOUNDARIES
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T 860.376.2006 | www.boundariesllc.net

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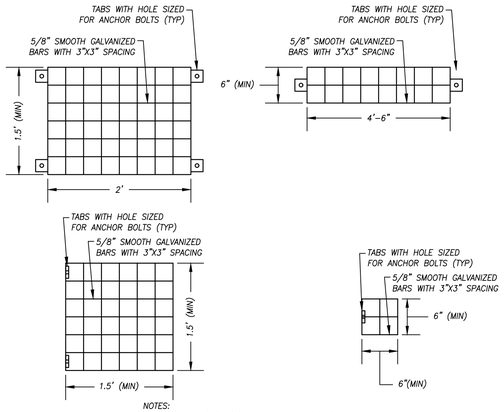
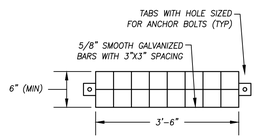
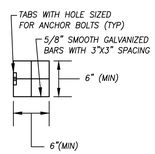


NOTES:
1. GALVANIZE TRASH RACK AFTER WELDING/FABRICATION.

OUTLET CONTROL STRUCTURE 1 TRASH RACK DETAILS

NOT TO SCALE

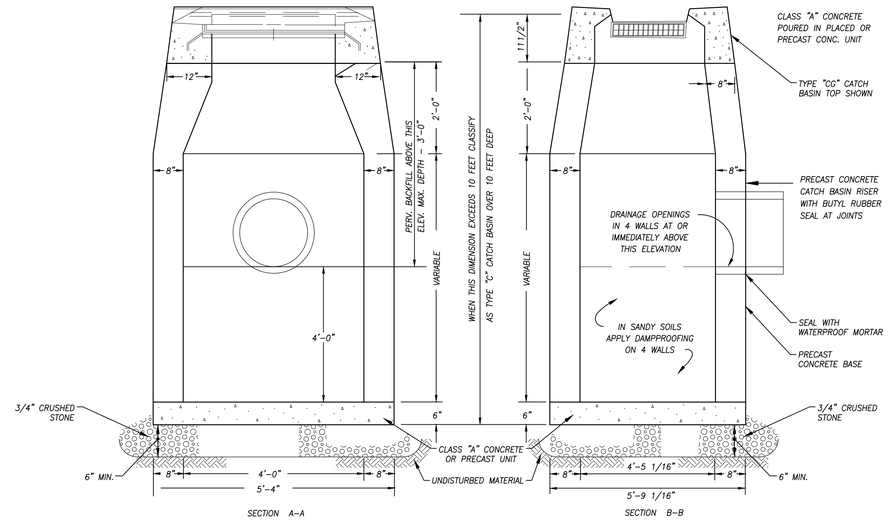




NOTES:
1. GALVANIZE TRASH RACK AFTER WELDING/FABRICATION.

OUTLET CONTROL STRUCTURE 2 TRASH RACK DETAILS

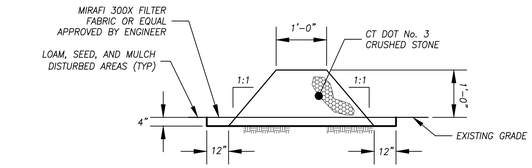
NOT TO SCALE



NOTES:
1. CATCH BASIN TO BE CONSTRUCTED IN ACCORDANCE WITH CT DOT STANDARD DETAIL HW-507_01 AND TOPS TO BE PROVIDED IN ACCORDANCE WITH HW-507_07.
2. WHERE PRECAST CONC. UNIT IS USED FOR SUMP, THE TOP OF THE UNIT SHALL BE AT LEAST 6" BELOW THE BOTTOM OF THE PIPE OUTLETTING FROM THE CATCH BASIN.

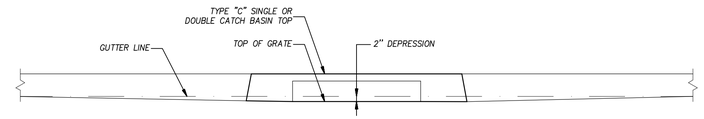
PRECAST CATCH BASIN DETAIL

NOT TO SCALE



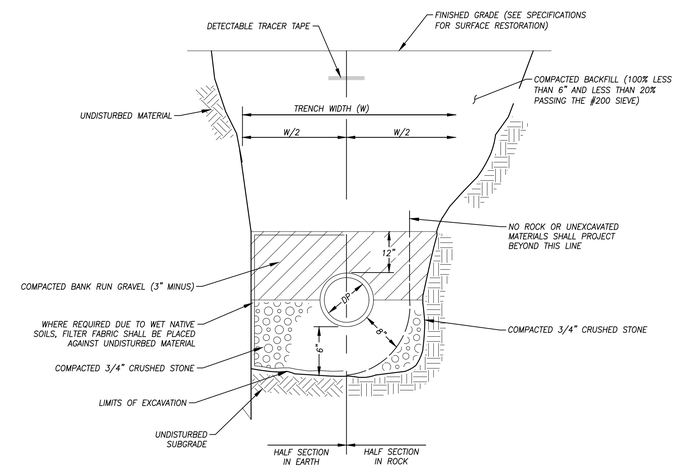
STONE CHECK DAM

NOT TO SCALE



TYPE "C" CATCH BASIN TOP IN A LINE OF 6" BITUMINOUS CURBING DETAIL

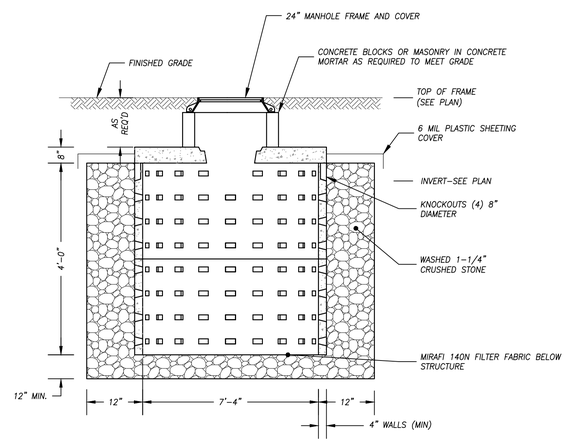
NOT TO SCALE



NOTES:
1. THE TOP 12" OF TRENCH BACKFILL IN TRAVELED WAYS SHALL BE COMPACTED PROCESSED GRAVEL.

TRENCH DETAIL (STORM DRAINAGE)

NOT TO SCALE

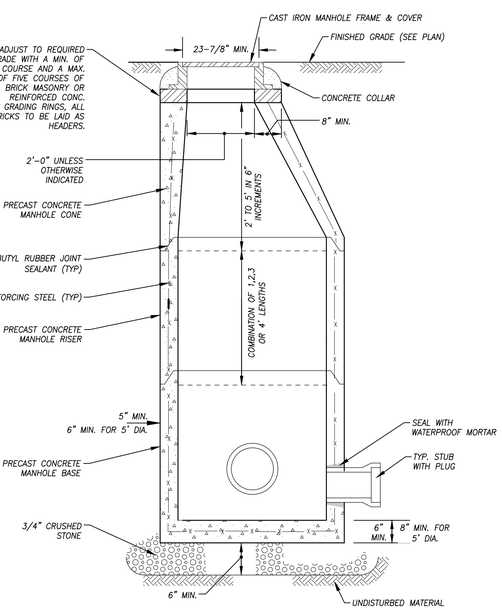


DRYWELL DETAIL

NOT TO SCALE

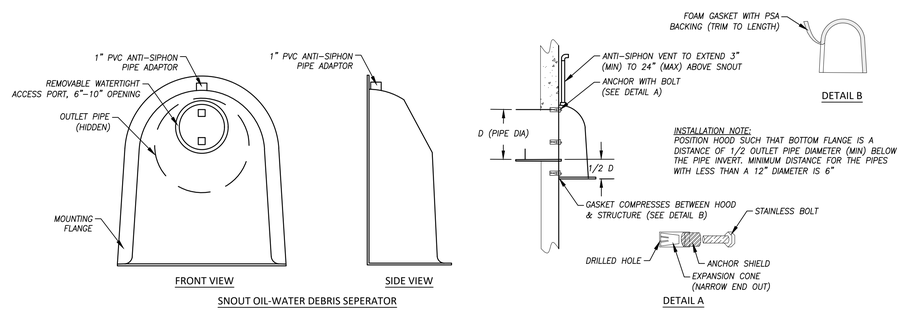
YARD/ROOF DRAIN TRENCH DETAIL

NOT TO SCALE



PRECAST CONCRETE STORM DRAIN MANHOLE DETAIL

NOT TO SCALE



INSTALLATION NOTE:
POSITION HOOD SUCH THAT BOTTOM FLANGE IS A DISTANCE OF 1/2 OUTLET PIPE DIAMETER (MIN) BELOW THE PIPE INVERT. MINIMUM DISTANCE FOR THE PIPES WITH LESS THAN A 12" DIAMETER IS 6"

NOTES:
1. ALL HOODS AND TRAPS FOR CATCH BASINS AND OUTLET CONTROL STRUCTURES SHALL BE AS MANUFACTURED BY BEST MANAGEMENT PRODUCTS, INC., OR EQUAL.
2. THE SIZE AND POSITION OF THE HOOD SHALL BE DETERMINED BY OUTLET PIPE SIZE AND THE MANUFACTURER'S RECOMMENDATIONS.
3. THE SURFACE OF THE STRUCTURE WHERE THE HOOD IS MOUNTED SHALL BE FINISHED SMOOTH AND FREE OF LOOSE MATERIAL.
4. THE HOOD SHALL BE SECURELY ATTACHED TO THE STRUCTURE WALL WITH 3/8" STAINLESS STEEL BOLTS AND OIL-RESISTANT GASKET AS PROVIDED IN THE MANUFACTURER SUPPLIED INSTALLATION KIT.

CATCH BASIN HOODED OUTLET

NOT TO SCALE

NOT FOR CONSTRUCTION
12/14/2020

PLAN NOTES

1. SEE COVER SHEET FOR ENGINEER AND SURVEYOR SIGNATURES AND SEALS.
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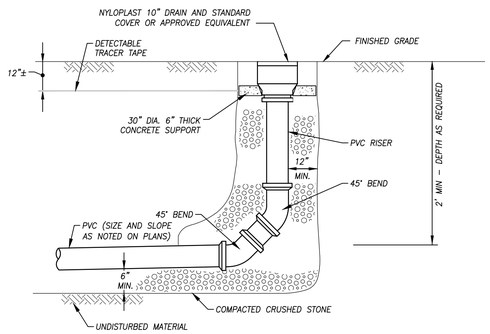
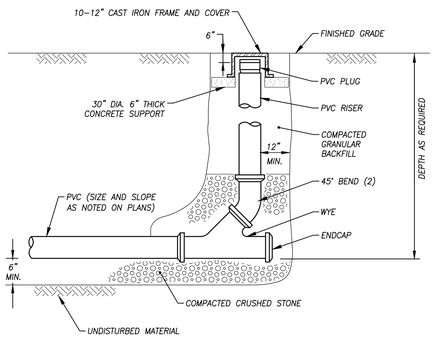


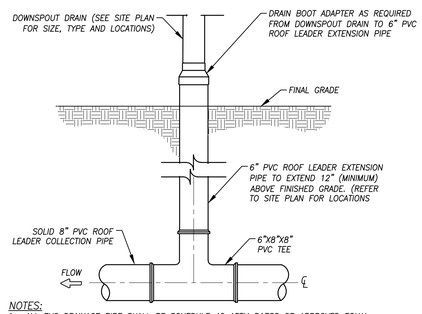
YARD DRAIN DETAIL

NOT TO SCALE



CLEANOUT DETAIL

NOT TO SCALE

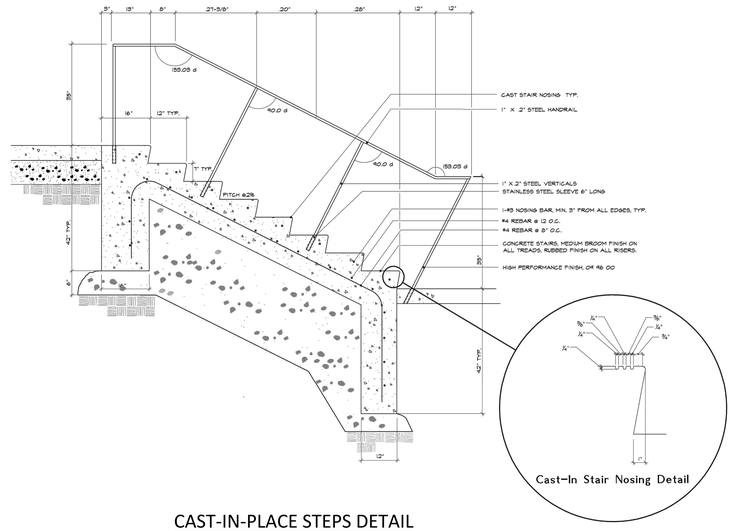


NOTES:
1. ALL PVC DRAINAGE PIPE SHALL BE SCHEDULE 40 ASTM D1785 OR APPROVED EQUAL.
2. DOWNSPOUT DETAILS OR SIZES PROVIDED ON SITE PLAN DRAWINGS SHALL SUPERSEDE INFORMATION IN THIS DETAIL.

DOWNSPOUT CONENCTION & PERIMETER ROOF DRAIN DETAIL

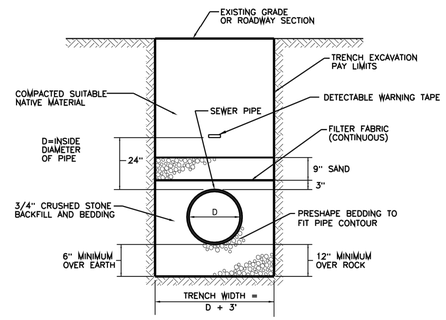
NOT TO SCALE

NOTE: ALL SITE HANDRAILS AND GUARDRAILS SHALL BE PROVIDED AS PART OF DELEGATED DESIGN SUBMITTAL. REFER TO SPECIFICATION SECTION 05 52 13 FOR ADDITIONAL INFORMATION. ALL SIZES INDICATED FOR HANDRAIL / GUARDRAIL MEMBERS SHALL BE CONSIDERED MINIMUMS. EXACT SIZES SHALL BE DETERMINED BY THE PROFESSIONAL ENGINEER RESPONSIBLE FOR COMPLETING DELEGATED DESIGN SUBMITTAL.



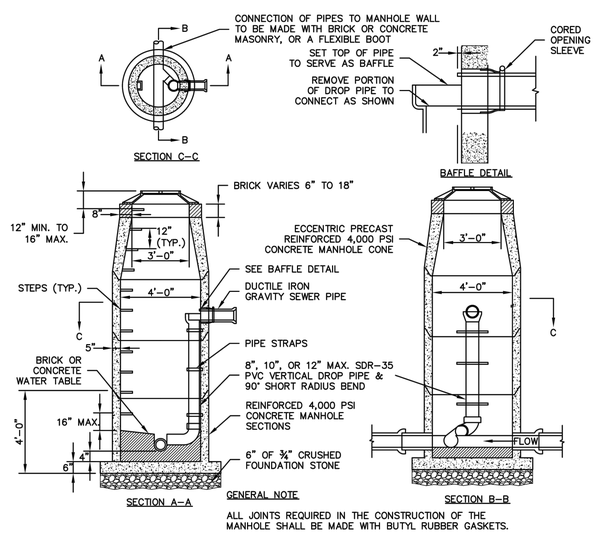
CAST-IN-PLACE STEPS DETAIL

NOT TO SCALE



SEWER TRENCH DETAIL

NOT TO SCALE

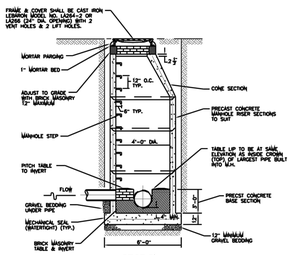


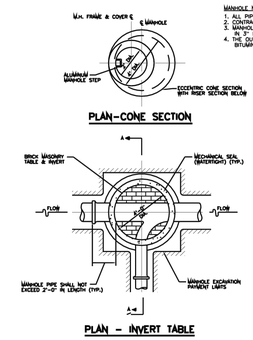
GENERAL NOTE

ALL JOINTS REQUIRED IN THE CONSTRUCTION OF THE MANHOLE SHALL BE MADE WITH BUTYL RUBBER GASKETS.

SEWER MANHOLE DROP CONNECTION DETAIL

NOT TO SCALE

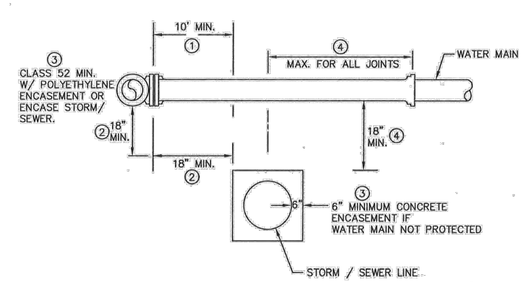




SEWER MANHOLE DETAIL

NOT TO SCALE

1. WHENEVER POSSIBLE MAINTAIN A MINIMUM 10' SEPARATION FROM GRAVITY STORM OR SEWER LINES. ALWAYS MAINTAIN A MINIMUM 10' HORIZONTAL SEPARATION FROM FORCE SEWER MAIN.
2. IF 10' SEPARATION IS NOT POSSIBLE MAINTAIN A MINIMUM OF 18" HORIZONTAL SEPARATION WITH BOTTOM OF WATER MAIN A MINIMUM 18" ABOVE TOP OF STORM OR SEWER LINE
3. IF MINIMUM SEPARATION IS NOT POSSIBLE USE A MINIMUM CLASS 52 DUCTILE IRON PIPE WITH POLYETHYLENE ENCASEMENT, OR CONCRETE ENCASEMENT OF GRAVITY LINE
4. WHEN CROSSING GRAVITY LINES MAINTAIN A MINIMUM 18" VERTICAL SEPARATION WITH JOINTS SPACED AS FAR AS POSSIBLE FROM GRAVITY LINES



SEPARATION BETWEEN WATER AND SEWER LINES

NOT TO SCALE

NOT FOR CONSTRUCTION
12/14/2020

PLAN NOTES

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BOUNDARIES
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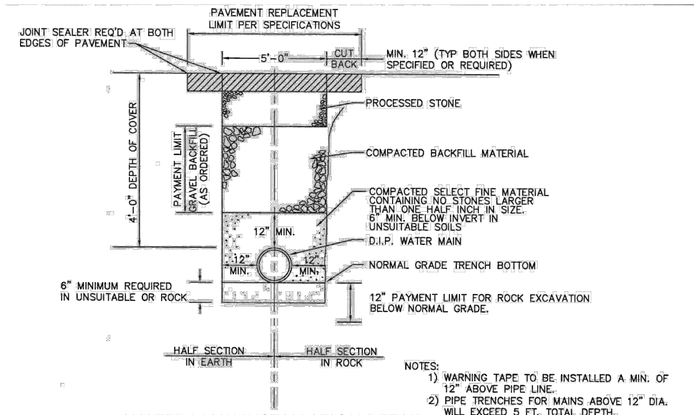
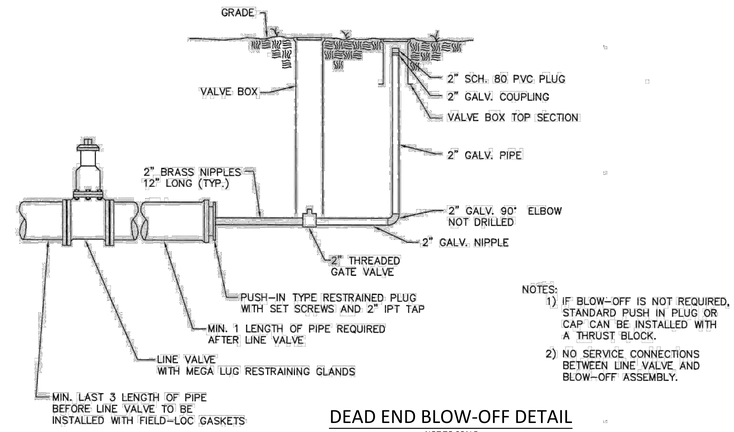


NOTES:
1) WARNING TAPE TO BE INSTALLED A MIN. OF 12" ABOVE PIPE LINE.
2) PIPE TRENCHES FOR MAINS ABOVE 12" DIA. WILL EXCEED 5 FT. TOTAL DEPTH.
3) ALL DUCTILE IRON WATER MAIN AND FITTINGS ARE TO BE POLYWRAPPED.

WATER MAIN INSTALLATION DETAIL

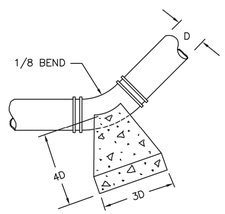
NOT TO SCALE



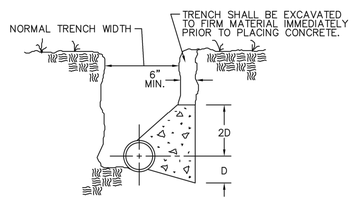
NOTES:
1) IF BLOW-OFF IS NOT REQUIRED, STANDARD PUSH IN PLUG OR CAP CAN BE INSTALLED WITH A THRUST BLOCK.
2) NO SERVICE CONNECTIONS BETWEEN LINE VALVE AND BLOW-OFF ASSEMBLY.

DEAD END BLOW-OFF DETAIL

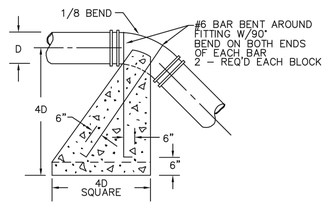
NOT TO SCALE



HORIZONTAL THRUST BLOCK DETAIL (PLAN VIEW)



HORIZONTAL THRUST BLOCK DETAIL

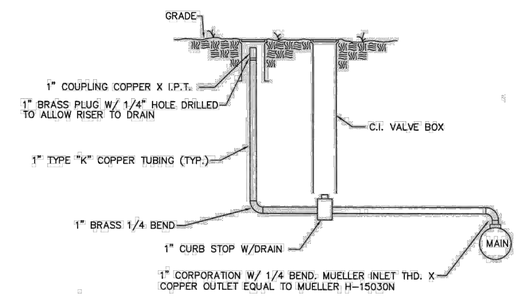


VERTICAL THRUST BLOCK DETAIL

NOTES:
1) 3000 PSI CONCRETE TO BE USED FOR THRUST BLOCKS.
2) D-DIAMETER OF WATER MAIN.
3) MEGA-LUG RESTRAINING GLANDS SHALL BE USED ON ALL MJ FITTINGS.
4) SOLID CONCRETE BLOCKS WITH WEDGES WILL BE PERMITTED ON MAINS UP TO 10" ALL 12" OR LARGER SHALL BE POURED THRUST BLOCKS.
5) LOCKING GASKETS SHALL BE INSTALLED A MIN. 2 FULL PIPE LENGTHS ON EITHER SIDE OF A BEND.

THRUST BLOCK DETAILS

NOT TO SCALE



MANUAL AIR RELEASE VALVE

AIR RELEASE DETAIL

NOT TO SCALE

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12/14/2020

PLAN NOTES

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John U. Faulise, Jr., L.S.
Gerald J. Stefon, L.S.

Demian A. Sorrentino, AICP, C.S.S.

David C. McKay, P.E.
Jacob S. Faulise, E.I.T.

CIVIL ENGINEERING LAND SURVEYING LAND USE PLANNING SOIL SCIENCE

BOUNDARIES

Boundaries LLC
179 Pachaug River Drive
P.O. Box 184
Griswold, CT 06351
T 860.376.2006 | F 860.376.5899

www.boundariesllc.net

STORMWATER MANAGEMENT REPORT

PREPARED FOR:

EDGEWATER HILL ENTERPRISES, LLC

SALT POND APARTMENTS
000 EAST HIGH STREET (CT ROUTE 66)
EAST HAMPTON, CONNECTICUT

DECEMBER 2020

PREPARED BY:

BOUNDARIES LLC

PROJECT I.D. NO. 20-2853

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APPENDIX B HYDROCAD MODELING RESULTS
APPENDIX C SUPPORTING STORMWATER CALCULATIONS
APPENDIX D PROPOSED SITE DEVELOPMENT PLANS

Introduction

On behalf of Edgewater Hill Enterprises, LLC., Boundaries, LLC. has prepared the following stormwater management report for the proposed forty-unit multifamily residential development located south of the East Hampton Town Hall and Police Department in the Edgewater Hill Mixed Use Development. Additional supporting information regarding the proposed development and the construction completed to date can be found in the approved development Master Plan documents prepared by others. The following analysis demonstrates that the proposed stormwater management system provides retention of the water quality volume and attenuation of peak stormwater flows.

The location of the project is shown on the Locus Map included as Figure 1. The FEMA Flood Insurance Rate Map is included as Figure 2.

Wetlands located on the subject properties include an existing man-made pond located in the central portion of the proposed development and upgradient wetland areas that contribute to the pond. Stormwater runoff from the man-made pond and from upgradient undeveloped and developed areas ultimately discharge through a series of open channels and pipes to Lake Pocotopaug.

According to the Natural Resources Conservation Service (NRCS) Web Soil Survey the soils in the project area consist of Woodbridge fine sandy loam, 8 to 15% slopes, very stony, and Paxton and Montauk fine sandy loams, 15 to 35% slopes, extremely stony. Woodbridge soils are classified as Hydrologic Soil Group C/D and Paxton and Montauk soils are classified as Hydrologic Soil Group C. The NRCS Web Soil Survey Soils Report is provided in Appendix A. Given that the soils in the project area are classified as Hydrologic Soil Group C little to no infiltration of runoff is anticipated as part of the stormwater management system.

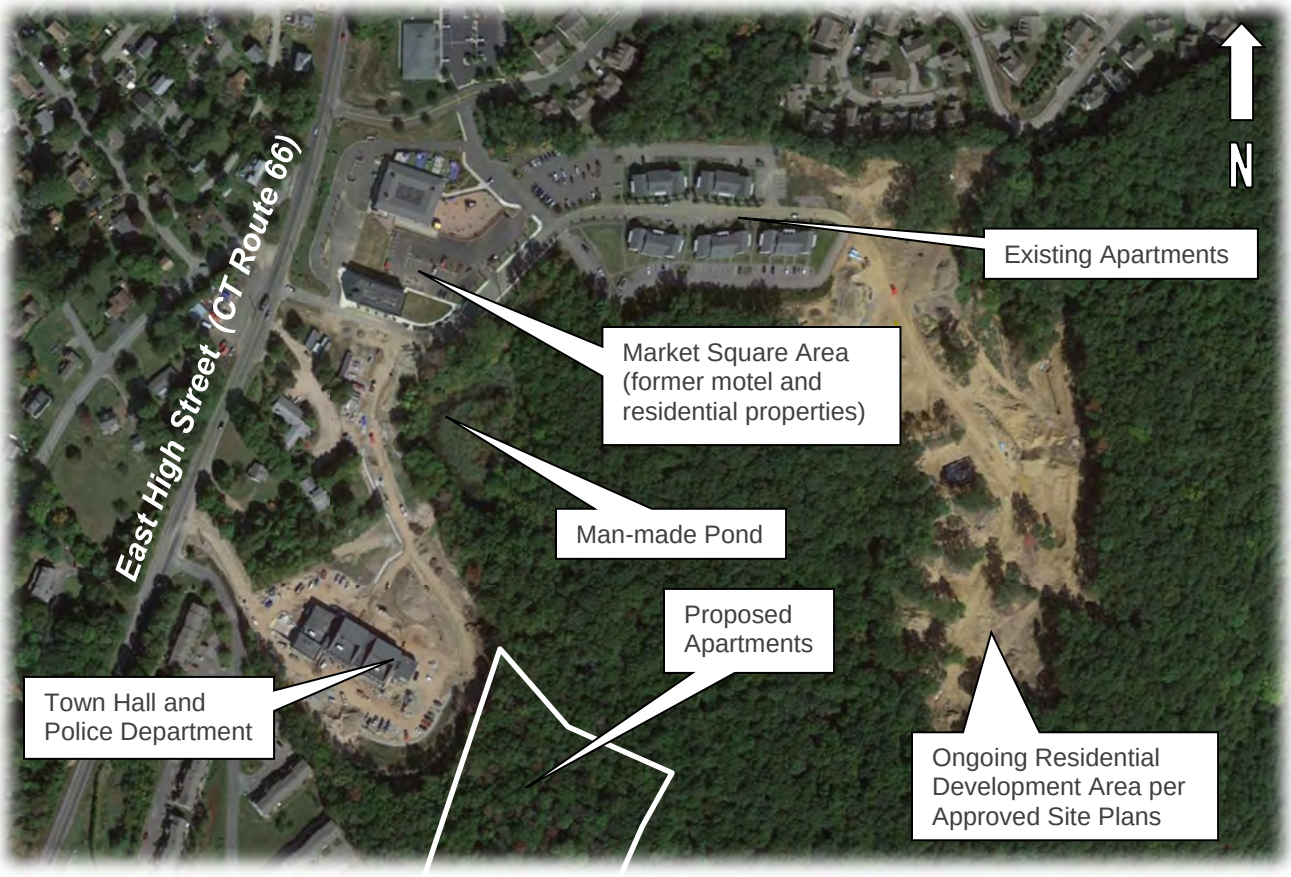
Pre- and post-development conditions hydrographs were estimated using the hydrologic modeling program HydroCAD. The methodology selected was NRCS TR-20. Times of concentration were estimated using multiple segment flow paths as described in the NRCS TR-55 manual. The Type III 24-hour storm was analyzed under antecedent moisture condition two (2). Rainfall totals were as reported by the NOAA Precipitation Frequency Data Server accessed on April 27, 2020. HydroCAD modeling results are presented in Appendix B. Pipe sizing calculations were completed using the calculated Manning's capacity of the pipe reaches. The water quality volume was calculated using the methods detailed in the CT DEEP Stormwater Quality Manual. Supporting calculations are included in Appendix C.

The proposed improvements include the construction of five (5) eight (8) unit apartment buildings, approximately 800 linear feet of new access roadway, associated sidewalks, circulation drives and parking areas and the extension of sewer, water, gas, electric and communications utilities to service the proposed buildings. Stormwater runoff from the proposed impervious areas will be collected in deep sump catch basins with hooded outlets at the downstream structures prior to discharging to two (2) stormwater basins for detention of peak stormwater runoff rates. The low-level outlets of the stormwater basins are elevated above the basin bottoms to retain the water quality volume on-site following storm events. Due to the presence of a restrictive layer and perched groundwater tables the bottom of the basins are sloped and will be provided with underdrains sized to allow the basins to drain within 72 hours following storm events. Groundwater recharge will be provided by dry wells with high level overflows that will capture the runoff from the proposed building roofs and grassed areas. Runoff will discharge to the wetlands system upgradient of the manmade pond in the same location as an existing drainage discharge installed as part of the Town Hall and Police Department project. The proposed site development plans are included in Appendix D. The stormwater basins are intended to provide attenuation of post-development peak discharge rates to match pre-development rates and to retain the water quality volume following storm

events. The stormwater management system has been designed to meet the requirements of the Connecticut Department of Energy and Environmental Protection (CT DEEP) Stormwater Quality Manual and the Connecticut Department of Transportation Drainage Manual for both peak stormwater runoff flow rate attenuation and retention of the stormwater quality volume for the 2, 10, 25, 50 and 100-year storm events.

Pre-Development Conditions

The Edgewater Hill development is located within the Edgewater Hill Mixed Use Development District. The development is being completed utilizing a phased approach. To date, the first two buildings in the Market Square area, the first phase of residential apartment buildings and the new Town Hall and Police Department have been constructed. A third mixed use commercial building in Market Square and additional residential lots are currently under construction. The project area formerly included a motel, residential properties and associated infrastructure. Runoff from the frontage along East High Street (CT Route 66) drains to CT DOT's 30-inch RCP culvert that carries flow under CT Route 66 and ultimately discharges to Lake Pocotopaug. Stormwater runoff from the Town Hall and Police Department, apartments, a small portion of the residential development and upgradient undeveloped areas flows to the existing pond. The pond is drained through an 18-inch diameter HDPE pipe that discharges to the stormwater management system in Edgewater Circle. Runoff from the remainder of the site flows overland to the east (away from State facilities and Lake Pocotopaug) and is not included in this analysis. Existing conditions aerial photography of the properties is shown below.



Aerial Photograph of Site

Pre-development watersheds are shown on Figure 3. Pre-development watersheds were delineated using topographic survey data for the subject parcels and aerial mapping for off-site contributing areas. Land uses were estimated using aerial photography and topographic survey data. The pre-development conditions analyzed in the model are based on the conditions before the Edgewater Hill project was initiated.

Runoff Curve Numbers (CN) used for the pre-development conditions analysis are as follows: 55 (woods with good ground cover) for wooded areas in Hydrologic Soil Group B, 70 (woods with good ground cover) for wooded areas in Hydrologic Soil Group C, 77 (woods with good ground cover) for wooded areas in Hydrologic Soil Group D, 61 (>75% grass cover) for the grassed areas in Hydrologic Soil Group B, 74 (>75% grass cover) for the grassed areas in Hydrologic Soil Group C, 80 (>75% grass cover) for the grassed areas in Hydrologic Soil Group D, 96 (gravel surface) for the exposed dirt/gravel areas, and 98 (impervious) for existing impervious areas such as paved areas, buildings and the pond surface.

The pre-development conditions watersheds are described further below:

Drainage Area #1 (DA #1)

This ±6.8 acre watershed encompasses the western portion of the project area, and is comprised of the former motel, residential properties, and areas that drain directly to the 30-inch culvert under Route 66. The weighted CN of the drainage area is 70. Runoff from this area flows overland to the shoulder of Route 66 prior to leaving the site through the 30-inch culvert.

Drainage Area #2 (DA #2)

This± 45.5 acre watershed encompasses the portion of the site that contributes runoff to the existing pond and is comprised of a portion of the existing residential properties and the wooded undeveloped areas. The weighted CN of the watershed is 66. Runoff from this area flows overland to the pond before it flows through an 18-inch drainage pipe to the 30-inch culvert that crosses Route 66.

Pre-development conditions peak runoff rates were analyzed at the 30-inch culvert, where the runoff leaves the site. Reported peak flow rates are summarized below in Table 1. Detailed modeling results are included in Appendix B.

Table 1
Peak Runoff Rates – Pre-Development Conditions

Design Storm Event	Total Off-Site Peak Runoff Rate – Pond 2P (CFS)	Peak Water Surface Elevation at 30-inch Culvert – Pond 2P (FT)	Time to Peak at 30-inch Culvert – Pond 2P (hours)
2-Year	6.62	521.10	12.57
10-Year	16.88	521.93	12.41
25-Year	21.32	522.26	12.40
50-Year	24.93	522.53	12.39
100-Year	28.78	522.85	12.38

Pre-development conditions peak runoff rates were also analyzed at the limits of the proposed development area. DA-APT EX is the ±9.2 acre wooded area that will be developed as part of this project. The weighted CN of the watershed is 70. Runoff from this area flows overland to the wetland areas

upgradient of the manmade pond. Reported peak flow rates are summarized below in Table 2. Detailed modeling results are included in Appendix B.

Table 2
Peak Runoff Rates – Pre-Development Conditions – Apartments Sub-Watershed

Design Storm Event	Apartments Sub-Waterhsed Peak Runoff Rate – Link 2L (CFS)
2-Year	6.77
10-Year	17.27
25-Year	24.55
50-Year	30.24
100-Year	36.47

Post-Development Conditions

The proposed improvements include the construction of approximately 800 feet of paved road, parking areas and circulation drives to serve the new apartment buildings. Stormwater runoff will be collected in deep sump catch basins with hooded outlets at the downstream structures. The catch basins will discharge to two stormwater basins intended to attenuate peak runoff rates. The water quality volume will be retained below the low-level outlets on the two stormwater basins following storm events.

The proposed stormwater management system components proposed for construction include the following:

- Fourteen (14) deep sump precast concrete catch basins;
- Seven (7) precast concrete drainage manholes;
- Two (2) precast concrete outlet control structures;
- Five (5) precast concrete drywell structures;
- Yard drains, cleanouts and drainage pipe of various diameters; and
- Two stormwater basins.

The proposed stormwater management system is intended to meet the following design standards:

- The post-development peak discharge rates from the 2-year, 10-year, 25-year, 50-year, and 100-year storms are less than or equal to pre-development peak discharge rates;
- The conveyance system leading to, from, and through stormwater management facilities has capacity for the 10-year, 24-hour storm, at a minimum;
- The groundwater recharge volume is captured; and
- The water quality volume is retained following storm events.

The post-development conditions hydrologic model includes the full buildout of the Market Square, the existing daycare, apartment buildings, and the Town Hall and Police Department and associated infrastructure. Individual site plans will need to be prepared for each of the future phases of the Market Square buildout, however the future development of Market Square has been included in the stormwater modeling to demonstrate that the stormwater management system as proposed meets the design standards noted above. Post-development conditions watersheds and the built-out Market Square development are shown on Figure 4. Post-development conditions watersheds were delineated using topographic survey data and the proposed development plans for the subject areas. Land uses were estimated using aerial photography and the proposed development plans. Site development plans are included in Appendix D.

Runoff Curve Numbers (CN) used for the post-development conditions analysis are as follows: 55 (woods with good ground cover) for wooded areas in Hydrologic Soil Group B, 70 (woods with good ground cover) for wooded areas in Hydrologic Soil Group C, 77 (woods with good ground cover) for wooded areas in Hydrologic Soil Group D, 61 (>75% grass cover) for the grassed areas in Hydrologic Soil Group B, 74 (>75% grass cover) for the grassed areas in Hydrologic Soil Group C, 80 (>75% grass cover) for the grassed areas in Hydrologic Soil Group D, 86 (newly graded area) for the mulched play areas in Hydrologic Soil Group B, and 98 (impervious) for existing and proposed impervious areas such as paved roads, driveways, buildings, and the pond surface.

The proposed conditions watersheds are described further below:

Drainage Area #1A (DA #1A)

This 2.1± acre watershed encompasses a portion of the existing Edgewater Hill mixed use development that flows to the 30-inch culvert, and is comprised of the parking lot, access drive, and building associated with the existing daycare. The weighted CN of the watershed is 91. Runoff from this area flows overland to a series of catch basins and discharges to the 30-inch culvert. The discharge to the 30-inch culvert was constructed as part of Phase 1 of the Edgewater Hill Development and will not be modified as part of this project.

Drainage Area #1B (DA #1B)

This 2.2± acre watershed encompasses the remainder of the northern half of the Market Square area and is comprised of the existing play areas associated with the daycare, the proposed buildings in the northern half of Market Square, associated parking areas and access drives, and a portion of the existing road to the apartment buildings. The weighted CN of the watershed is 92. Runoff from this area is collected by a series of catch basins and discharges through a hydrodynamic separator to the existing pond for treatment and attenuation of the runoff. Ultimately the runoff discharges through the 18-inch HDPE pipe to the 30-inch culvert. The discharge to the 30-inch culvert was constructed as part of Phase 1 of the Edgewater Hill Development and will not be modified as part of this project.

Drainage Area #1C (DA #1C)

This 0.3± acre watershed encompasses a portion of the southern half of Market Square and is comprised of the access drives and associated parking constructed as part of the Town Hall and Police Department project. The weighted CN of the watershed is 94. Runoff from this area is collected by a series of catch basins and discharges through a hydrodynamic separator to the existing pond for treatment and attenuation of the runoff. Ultimately the runoff discharges through the 18-inch HDPE pipe to the 30-inch culvert. The discharge to the 30-inch culvert was constructed as part of Phase 1 of the Edgewater Hill Development and will not be modified as part of this project.

Drainage Area #1D (DA #1D)

This 2.0± acre watershed encompasses a portion of the southern half of Market Square, and is comprised of the proposed buildings, parking lots and access drives that will be constructed during future phases of the development. The weighted CN of the watershed is 93. Runoff from this area will be collected by a water quality swale and water quality basin for treatment and attenuation of the runoff prior to discharging to the 30-inch culvert. The discharge to the 30-inch culvert was constructed as part of Phase 1 of the Edgewater Hill Development and will not be modified as part of this project.

Drainage Area #2A (DA #2A)

This 3.6± acre watershed encompasses a portion of the existing residential development associated with the Edgewater Hill project, and is comprised of the existing apartment buildings, existing access drives and associated parking areas. The weighted CN of the drainage area is 84. Runoff from this area is collected by a series of catch basins and discharges to the existing man-made pond.

Drainage Area #2B (DA #2B)

This 2.2± acre watershed encompasses a portion of the access drives for the apartment buildings and currently undeveloped areas and is comprised of the upgradient apartment units and adjacent wooded areas. The weighted CN of the drainage area is 72. Runoff from this area is collected by a catch basin and discharged to a detention basin prior to flowing to the existing man-made pond.

Drainage Area #2C (DA #2C)
This 30.2± acre watershed encompasses the remaining areas that drain to the existing man-made pond and is comprised of the existing wooded and wetland areas. The weighted CN of the drainage area is 68. Runoff from this area flows overland into the existing man-made pond.

Drainage Area #2D (DA #2D)
This 6.4± acre watershed encompasses the Town Hall and Police Department, associated access drives, parking lot and contributing areas. The weighted CN of the drainage area is 83. Runoff from this area is collected by a series of catch basins and swales and discharged to various underground storage/infiltration systems, retention basin and rain garden prior to draining to the existing man-made pond. Stormwater modeling results for this watershed are imported from the detailed model prepared for the Town Hall and Police Department site plan approval.

Drainage Area #2E (DA #2E)
This 3.1± acre watershed encompasses a portion of the southern half of the proposed apartments and contributing areas, and is comprised of the proposed buildings, parking lots and access drives, revegetated areas to be graded, and wooded areas that will remain undisturbed. The weighted CN of the watershed is 80. Runoff from this area will be collected by a series of catch basins and will discharge to Stormwater Basin 2.

Drainage Area #2F (DA #2F)
This 0.1± acre watershed encompasses the revegetated areas to be graded and wooded areas that will remain undisturbed which directly drain to Stormwater Basin 2. The weighted CN of the watershed is 83. Runoff from this area will flow overland and directly discharge to Stormwater Basin 2.

Drainage Area #2G (DA #2G)
This 0.4± acre watershed encompasses the revegetated areas to be graded that will directly drain to Stormwater Basin 1. The weighted CN of the watershed is 81. Runoff from this area will flow overland and directly discharge to Stormwater Basin 1.

Drainage Area #2H (DA #2H)
This 2.7± acre watershed encompasses the western half of the proposed apartments and contributing areas, and is comprised of the proposed buildings, parking lots and access drives, revegetated areas to be graded, and wooded areas that will remain undisturbed. The weighted CN of the watershed is 82. Runoff from this area will be collected by a series of catch basins and discharge to Stormwater Basin 1.

Drainage Area #2I (DA #2I)
This 0.5± acre watershed encompasses the eastern half of the northern apartments and contributing areas, and is comprised of the proposed buildings, parking lots and access drives, and revegetated areas to be graded. The weighted CN of the watershed is 89. Runoff from this area will be collected by a series of catch basins and discharge to Stormwater Basin 1.

Post-development conditions peak runoff rates were analyzed at the 30-inch culvert crossing Route 66. Comparisons of pre- and post-development peak runoff rates, water surface elevations, and time to peak flows at the 30-inch culvert are presented below in Tables 3 through 5.

Table 3
Peak Runoff Rates – Post-Development Conditions vs. Pre-Development Conditions

Storm Event	Post-Development Conditions Total Off-Site Peak Runoff Rate – Pond 2P (CFS)	Pre-Development Conditions Total Off-Site Peak Runoff Rate – Pond 2P (CFS)	Change in Peak Runoff Rate (CFS)
2-Year	6.62	6.62	-0.00
10-Year	14.64	16.88	-2.24
25-Year	20.72	21.32	-0.60
50-Year	24.69	24.93	-0.24
100-Year	28.54	28.78	-0.24

Table 4
Peak Water Surface Elevations – Post-Development Conditions vs. Pre-Development Conditions

Storm Event	Post-Development Conditions Peak Water Surface Elevation at 30-inch Culvert – Pond 2P (FT)	Pre-Development Conditions Peak Water Surface Elevation at 30-inch Culvert – Pond 2P (FT)	Change in Peak Water Surface Elevation (FT)
2-Year	521.10	521.10	0.00
10-Year	521.77	521.93	-0.16
25-Year	522.21	522.26	-0.05
50-Year	522.51	522.53	-0.02
100-Year	522.83	522.85	-0.02

Table 5
Time to Peak Flow – Post-Development Conditions vs. Pre-Development Conditions

Storm Event	Post-Development Conditions Time to Peak Flow at 30-inch Culvert – Pond 2P (hours)	Pre-Development Conditions Time to Peak Flow at 30-inch Culvert – Pond 2P (hours)	Change in Time of Peak Flow (hours)
2-Year	12.15	12.57	-0.42
10-Year	12.45	12.41	+0.04
25-Year	12.20	12.40	-0.20
50-Year	12.19	12.39	-0.20
100-Year	12.18	12.38	-0.20

As presented above, the proposed stormwater management system does not result in increases to off-site flow rates or water surface elevations, and therefore will have no impact to CT DOT drainage facilities and meets the recommendations of the CT DEEP Stormwater Quality Manual for peak flow rate attenuation. The decrease in time to peak flow during the 2-year, 25-year, 50-year and 100-year storm events is measured in minutes and will therefore not result in significant changes to downstream flow patterns. The time to peak flow during the 10-year storm event is essentially unchanged from pre-development conditions. The analysis results presented above include the full build-out of the Market Square area as shown on Figure 4.

An analysis of the proposed development area was also completed independently of the remainder of the overall Edgewater Hill project to confirm that peak flow rates to the on-site wetland system and pond are not increased as a result of the proposed development. Post-development watersheds of the apartment project area only are identified on Figure 5. A comparison of pre- to post-development peak runoff rates is presented below in Table 6.

Table 6
Peak Runoff Rates – Post-Development Conditions vs. Pre-Development Conditions – Apartments Only

Storm Event	Post-Development Conditions Total Off-Site Peak Runoff Rate – Pond 2P (CFS)	Pre-Development Conditions Total Off-Site Peak Runoff Rate – Pond 2P (CFS)	Change in Peak Runoff Rate (CFS)
2-Year	4.03	6.77	-2.74
10-Year	15.67	17.27	-1.60
25-Year	24.46	24.55	-0.09
50-Year	27.65	30.24	-2.59
100-Year	31.94	36.47	-4.53

Stormwater Management System Design

Pipe Sizing

Stormwater runoff from the proposed development area will be collected and discharged to two (2) stormwater basins. The proposed stormwater collection system consists of catch basins and curbing along the proposed roadway and parking lots. The proposed drains are sized for the 10-year storm event, at a minimum, based on the calculated Manning's capacity of each pipe reach in accordance with the Town of East Hampton Zoning Regulations. Pipe sizing calculations are included in Appendix C.

Scour Protection

The piped discharge and overflow spillway will be protected from erosion by rip rap sized in accordance with the recommendations of the CT DOT Drainage Manual. Sizing calculations for the scour protection are summarized in Table 7 and included in Appendix C.

Table 7
Scour Protection Sizing

Stormwater Discharge	100-year Discharge Velocity (FPS)	Proposed Surface Treatment	Typical Allowable Velocity (FPS)
Stormwater Basin 1 Outlet	11.95	Intermediate Rip Rap Scour Hole	14.7 (Per DOT Drainage Manual)
Stormwater Basin 1 Inlet	6.35	Modified Rip Rap Scour Hole	14.7 (Per DOT Drainage Manual)
Stormwater Basin 1 Spillway	1.21	Modified Rip Rap	8 for rip rap (Per DOT Drainage Manual)
Stormwater Basin 2 Inlet	6.2	Modified Rip Rap Scour Hole	14.7 (Per DOT Drainage Manual)
Stormwater Basin 2 Spillway	No Modeled Discharge During 100-year Storm Event	Modified Rip Rap	8 for rip rap (Per DOT Drainage Manual)

Water Quality Volume

The stormwater management system is intended to provide treatment of the runoff from the proposed impervious areas. Treatment of runoff from the site will be accomplished using a series of deep sump catch basin with hooded outlet prior to the discharge to the sediment forebays of the stormwater basins. The stormwater basins are sized to retain the water quality volume associated with the upgradient impervious areas in the storage provided below the low-level outlets. The sediment forebays are sized for 10% of the water quality volume. Sizing calculations for the stormwater basins are summarized in Table 8 and are included in Appendix C.

Table 8
Water Quality Volume Sizing Criteria

Stormwater Basin	Contributing Impervious Area	Contributing Drainage Area	Water Quality Volume	Forebay Volume	Storage Volume Below Low-Level Outlet
Stormwater Basin 1	2.31 acres	7.00 acres	7,674 cubic feet	933 cubic feet	8,281 cubic feet
Stormwater Basin 2	0.99 acres	3.28 acres	3,278 cubic feet	358 cubic feet	3,450 cubic feet

Test holes were completed in the area of the stormwater basins to confirm soil conditions. The bottom of each basin was found to be above ledge rock encountered in the test holes, however the sediment forebay proposed in Stormwater Basin 1 will approximately match the ledge elevation. The soil profile also included a restrictive layer that varied from 3.5 feet in thickness to 4.5 feet in thickness overlaying a layer fine to medium sand with gravel. The restrictive layer has resulted in a perched groundwater table. The deeper excavated areas of the stormwater basins will extend below the restrictive layer allowing for some infiltration of collected runoff, however due to the variability of the soil profile the shallower areas

of the stormwater basin are intended to be provided with a sand filter underdrain that will allow for the water quality volume to drain following storm events to ensure that there is not a standing pool of water in the water quality basin between storm events. The underdrain will be embedded in crushed stone, wrapped in filter fabric, beneath a sand filter layer to filter and treat the stored runoff as it is released after storm events. This system will provide treatment of the water quality volume prior to discharge. Underdrain sizing calculations are included in Appendix C.

Groundwater Recharge Volume

The soils in the project area are mapped as Hydrologic Soil Group C and as such have limited ability for infiltration of stormwater. As mentioned above, the limiting factor for infiltration of runoff is a compact layer of silty sand that results in a perched groundwater table. The underlying soils were found to be fine to medium sand with gravel and were dry while groundwater was found to be seeping into the excavation at the restrictive layer above. Groundwater recharge is intended to be provided using drywells that will collect stormwater runoff from the building roofs and grassed areas surrounding the buildings. The drywells are located in locations where they will be installed below the encountered restrictive layer or in fill materials allowing them to drain between storm events. The drywells will be installed with high level overflows that will connect to the drainage system preventing surface overflows during storm events that exceed the storage capacity of the drywells. The groundwater recharge volume and dry well sizing calculations are included in Appendix C and summarized below in Table 9.

Table 9
Groundwater Recharge Volume Sizing Criteria

Sizing Criteria	Result
Groundwater Recharge Volume	926 cubic feet
Storage Volume Per Dry Well	208 cubic feet
Total Storage Volume	1,040 cubic feet

Construction Phase Stormwater Management

Construction phase stormwater management is intended to be provided in accordance with the erosion and sedimentation control plans included in the Site Development Plans. The following best management practices will be implemented to protect downstream water quality:

- The downgradient sediment fence barrier will be backed by hay bales.
- An upgradient sediment fence barrier embedded in wood chip berm will be installed to divert clean runoff around the disturbed areas.
- Grubbing of stums is intended to be completed by phase.
    - Phase 1 includes the construction of the haul road and staging/stockpile area. Disturbed area will be approximately 1.8 acres. Disturbed areas outside of the gravel road surface will be seeded and mulched.
    - Phase 2 includes the extension of the proposed roadway, sidewalks and utilities. Disturbed areas will be approximately 2.3 acres.
    - Phase 3 includes the mass earthwork required to establishing the pad sites for the proposed buildings. Disturbed area will be approximately 4.7 acres.

- Intermediate sediment barriers will be installed during grading operations.
- Water bars will be constructed in the roadway to direct runoff to the sediment traps.
- Sediment traps are sized for 134 cubic yards of storage per acre of upgradient contributing area.
- Temporary seeding with perennial rye grass is intended for all stockpiles and disturbed areas that will remain unworked for greater than 21 days.

Temporary sediment trap sizing criteria is included in Appendix C and summarized below in Table 9.

Table 9
Temporary Sediment Trap Sizing Criteria

Temporary Sediment Trap	Contributing Area	Storage Volume Required	Storage Volume Below Spillway Elevation
Temporary Sediment Trap 1	2.4 acres	8,683 cubic feet	8,994 cubic feet
Temporary Sediment Trap 2	3.34 acres	12,084 cubic feet	13,280 cubic feet
Temporary Sediment Trap 3	0.25 acres	905 cubic feet	1,037 cubic feet

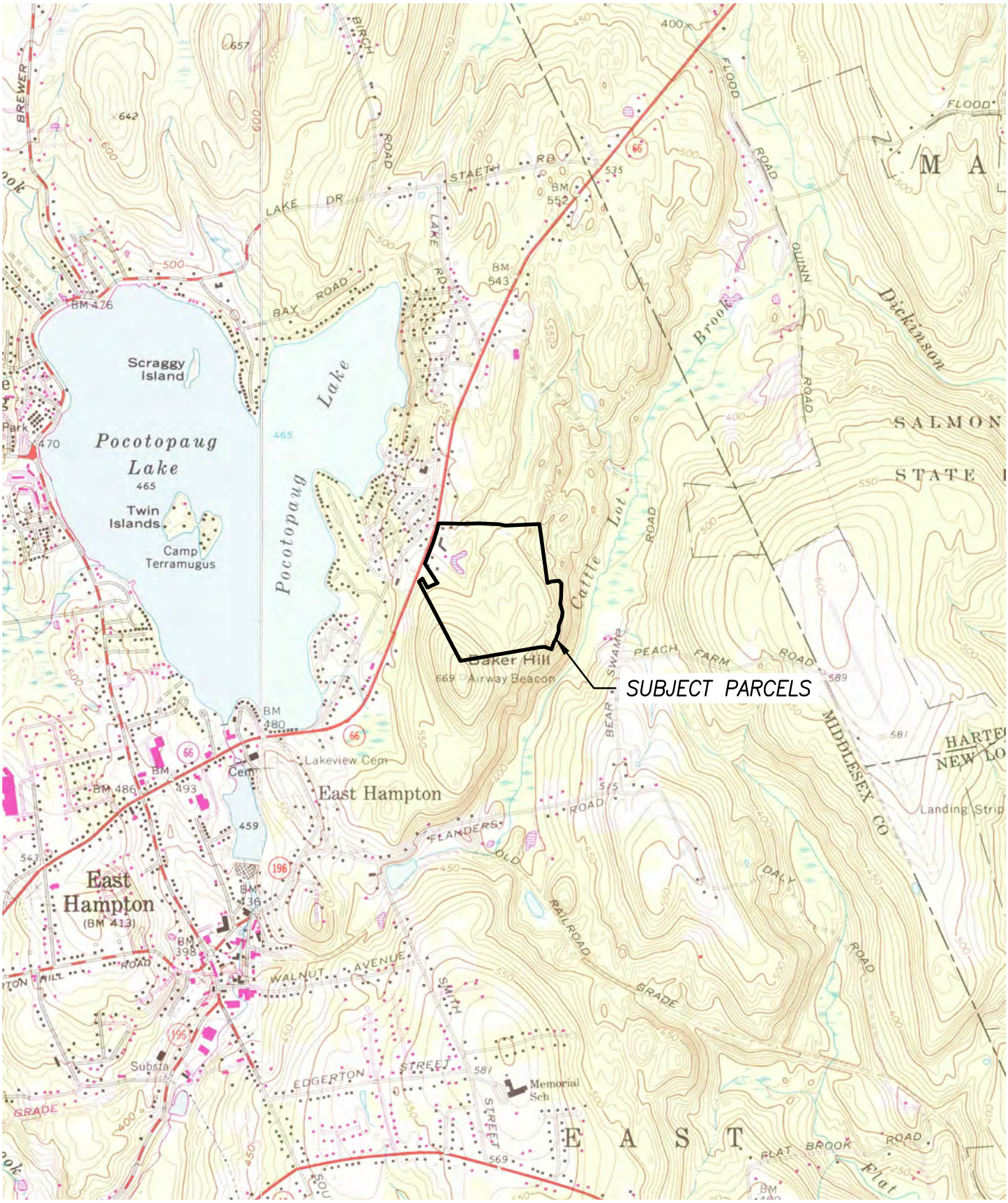
At the completion of construction, the temporary sediment traps will be backfilled, brought to design grades and loamed and seeded for final restoration.

Summary

The proposed stormwater management system is intended to comply with the applicable requirements of CT DEEP, CT DOT and the Town of East Hampton. There will be no drainage impact to CT DOT facilities as a result of the proposed improvements depicted on the enclosed site plans.

The proposed improvements are shown on plans titled “Site Development Plan, Salt Pond Apartments, Prepared for Edgewater Hill Enterprises, LLC., 000 East High Street, East Hampton, Connecticut, December 2020, Job I.D. No. 20-2853, Sheet 1 through Sheet 25 of 25” prepared by Boundaries LLC.

Figures



BOUNDARIES

CIVIL ENGINEERING LAND SURVEYING LAND USE PLANNING SOIL SCIENCE

Boundaries LLC
179 Pachaug River Drive, Griswold, CT 06351
T 860.376.2006 | www.boundariesllc.net

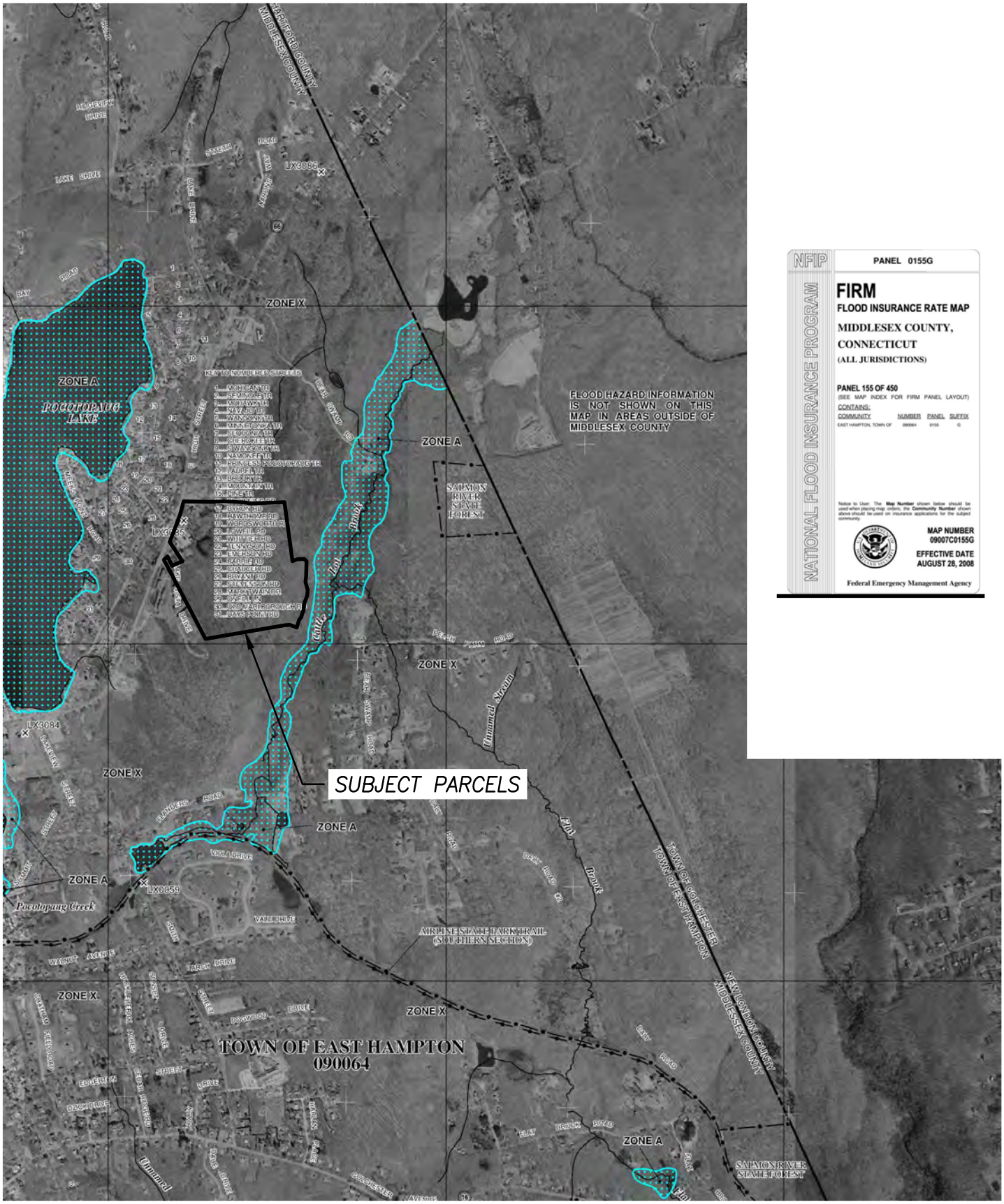
Locus Map

(Middle Haddam - 68 / Moodus - 69 Quads)

Salt Pond Apartments

East High Street, East Hampton, CT

SCALE:	1"=2,000'
DATE:	December 2020
JOB NO.	20-2853
FIGURE	1



BOUNDARIES
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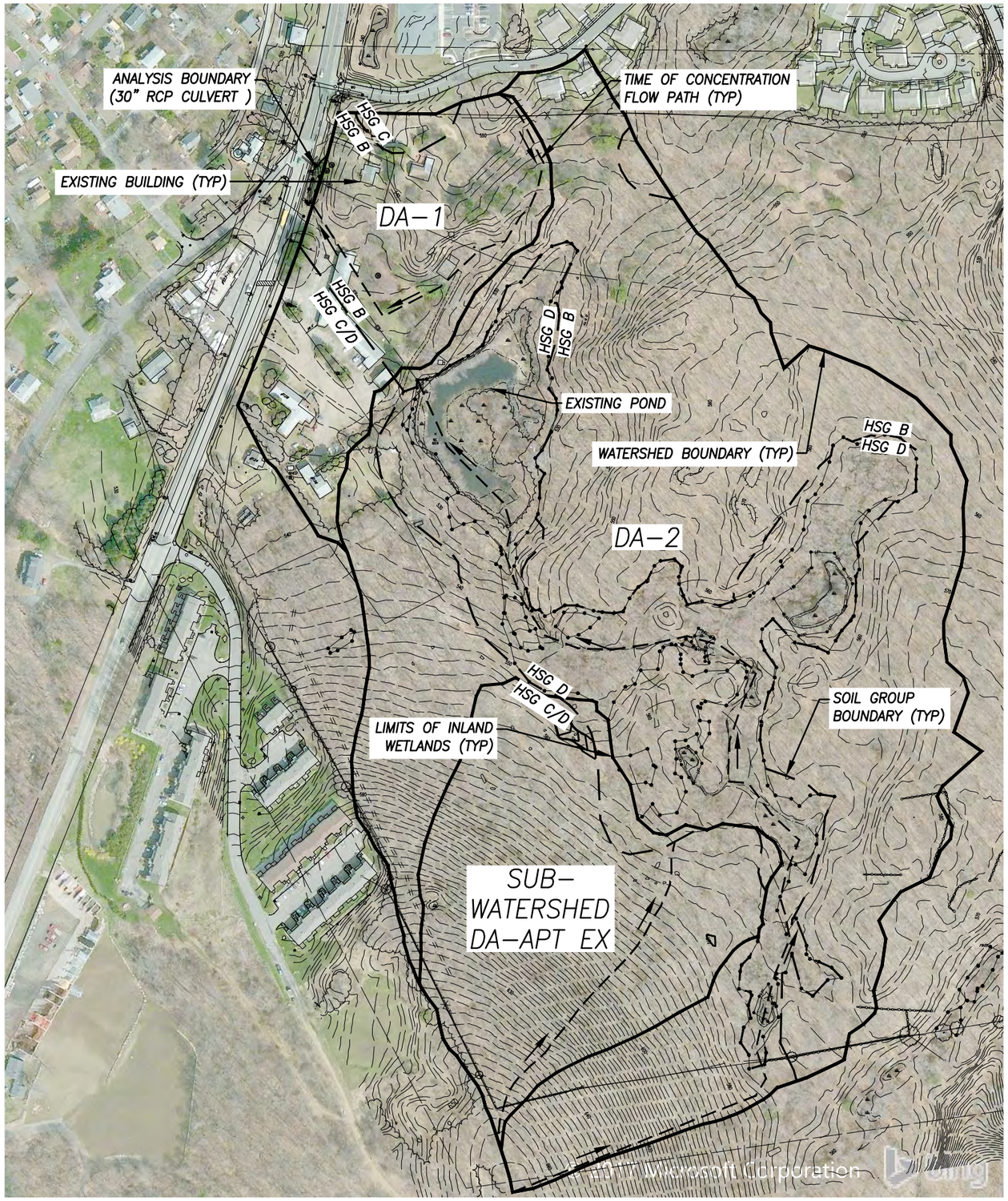
FEMA Flood Insurance Rate Map

Map 090064 Panel 155 G

Salt Pond Apartments

East High Street, East Hampton, CT

SCALE:	1"=2,000'
DATE:	December 2020
JOB NO.	20–2853
FIGURE	2



Overall Pre-Development Conditions

Watershed	Area (acres)	CN Value	Description
DA-1	6.763	70	Former residences, motel and associated parking lot
DA-2	45.453	66	Undeveloped land and two units of Laurel Ridge community
TOTAL	52.216	66	Former residences, motel, two units of Laurel Ridge community and undeveloped land

Sub-Watershed Pre-Development Conditions

Watershed	Area (acres)	CN Value	Description
DA-APT EX	9.242	70	Wooded undeveloped land

GRAPHIC SCALE

500 250 125 0 250

(IN FEET)
1 inch = 250 ft.

BOUNDARIES
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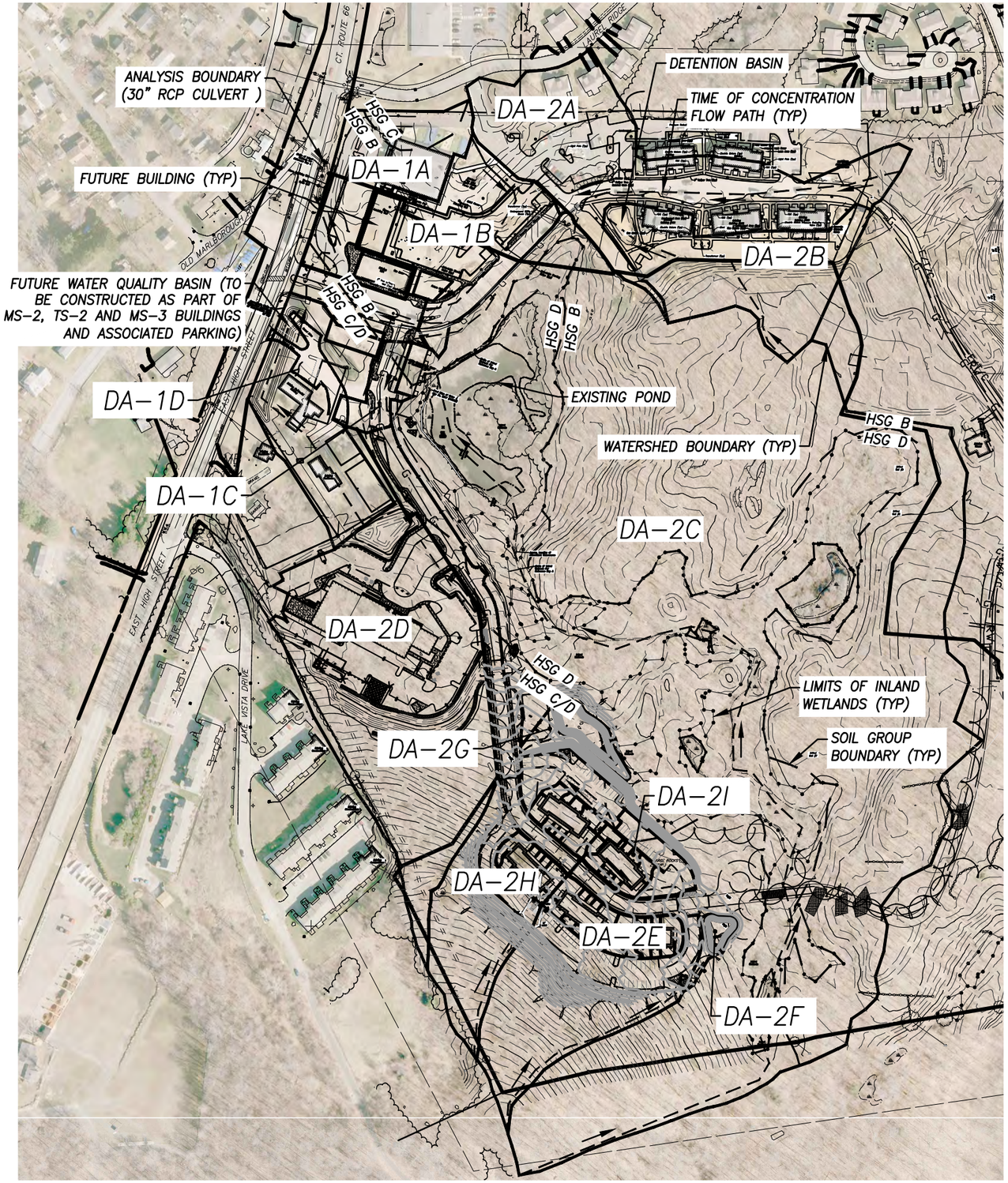
Pre-Development Conditions Watersheds
Salt Pond Apartments
Edgewater Hill Enterprises LLC
East High Street, East Hampton, Connecticut

SCALE: 1"=250'
DATE: December 2020
FIGURE 3



Overall Site Post-Development Conditions

Watershed	Area (acres)	CN Value	Description
DA-1A	2.061	91	Existing Daycare building and parking lot
DA-1B	2.158	92	MS-1 building, proposed TS-1 building, and existing parking lot, and road
DA-1C	0.342	94	Existing road and proposed parking lot
DA-1D	1.962	93	Proposed MS-2 building, future Market Square buildings, parking, and stormwater quality basin
DA-2A	3.613	84	Existing parking lot, roadway and apartment buildings
DA-2B	2.152	72	Existing roadway and apartment buildings
DA-2C	30.199	68	Existing wooded area and wetlands and portion of Edgewater Circle (stormwater from future phases will be evaluated by phase)
DA-2D	6.431	83	Existing Town Hall and Police Department site, roadway and parking
DA-2E	3.136	80	Proposed apartments, roadway, parking (south), and grassed slope
DA-2F	0.141	83	Grassed slope and direct runoff to Stormwater Basin 2
DA-2G	0.444	81	Dog park and grassed slope
DA-2H	2.744	82	Proposed apartments, roadway and parking, and grassed slope
DA-2I	0.536	89	Proposed apartments and parking (north)
TOTAL	55.919	75	Market Square, Daycare, Apartment Buildings, Town Hall and undisturbed areas for future phases

GRAPHIC SCALE

500 250 125 0 250

(IN FEET)
1 inch = 250 ft.

BOUNDARIES
CIVIL ENGINEERING LAND SURVEYING LAND USE PLANNING SOIL SCIENCE
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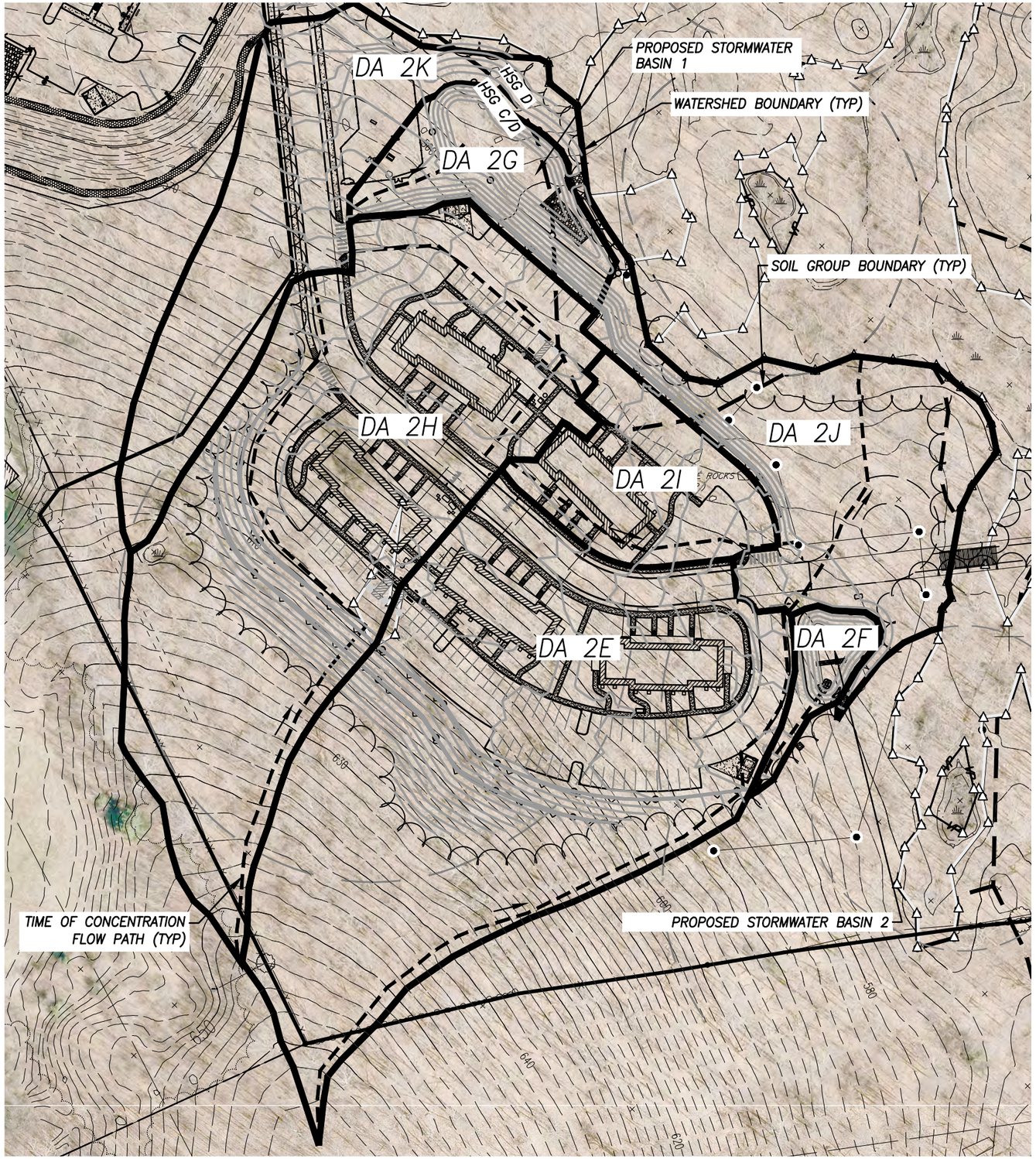
179 Pachaug River Drive, Griswold, CT 06351
T 860.376.2006 | www.boundariesllc.net

Overall Post-Development Conditions Watersheds
Salt Pond Apartments
Edgewater Hill Enterprises LLC
East High Street, East Hampton, Connecticut

SCALE: 1"=250'
DATE: December 2020
FIGURE 4



Post-Development Conditions

Watershed	Area (acres)	CN Value	Description
DA-2E	3.136	80	Proposed apartments, roadway, parking (south) and grassed slope
DA-2F	0.141	83	Grassed slope and direct runoff to Stormwater Basin 2
DA-2G	0.444	81	Dog park and grassed slope and direct Runoff to Stormwater Basin 1
DA-2H	2.744	82	Proposed apartments, roadway, parking and grassed slope
DA-2I	0.536	89	Proposed apartments and parking (north)
DA-2J	2.298	80	Downgradient cleared areas and portions of Edgewater Circle
TOTAL	9.242	81	Apartments project area

GRAPHIC SCALE

200 100 50 0 100

(IN FEET)
1 inch = 100 ft.

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T 860.376.2006 | www.boundariesllc.net

Post-Development Conditions Watershed
Salt Pond Apartments
Edgewater Hill Enterprises LLC
East High Street, East Hampton, Connecticut

SCALE: 1"=40'
DATE: December 2020
FIGURE 5

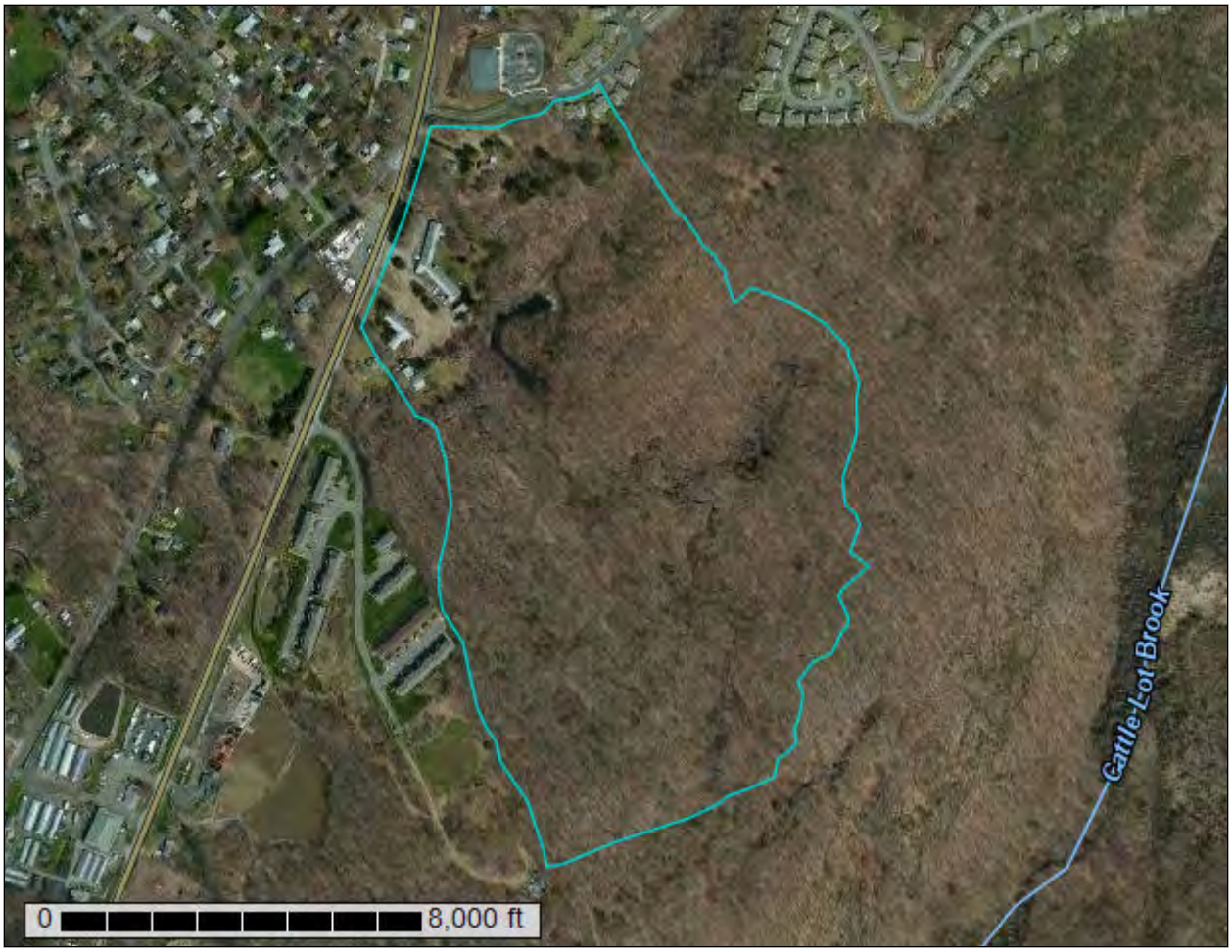
Appendix A
NRCS Web Soil Survey Soils Report

United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for State of Connecticut



April 12, 2017

Custom Soil Resource Report
Soil Map

Map Scale: 1:4,190 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

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

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 15, Sep 28, 2016

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

Date(s) aerial images were photographed: Mar 28, 2011—Apr 18, 2011

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

State of Connecticut (CT600)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	7.2	13.7%
46C	Woodbridge fine sandy loam, 8 to 15 percent slopes, very stony	4.9	9.4%
62C	Canton and Charlton fine sandy loams, 3 to 15 percent slopes, extremely stony	0.2	0.3%
72C	Nipmuck-Brookfield complex, 3 to 15 percent slopes, very rocky	26.1	50.0%
85C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes, very stony	1.0	1.9%
86D	Paxton and Montauk fine sandy loams, 15 to 35 percent slopes, extremely stony	9.3	17.7%
284B	Paxton-Urban land complex, 3 to 8 percent slopes	3.3	6.3%
308	Udorthents, smoothed	0.3	0.6%
Totals for Area of Interest		**52.2**	**100.0%**

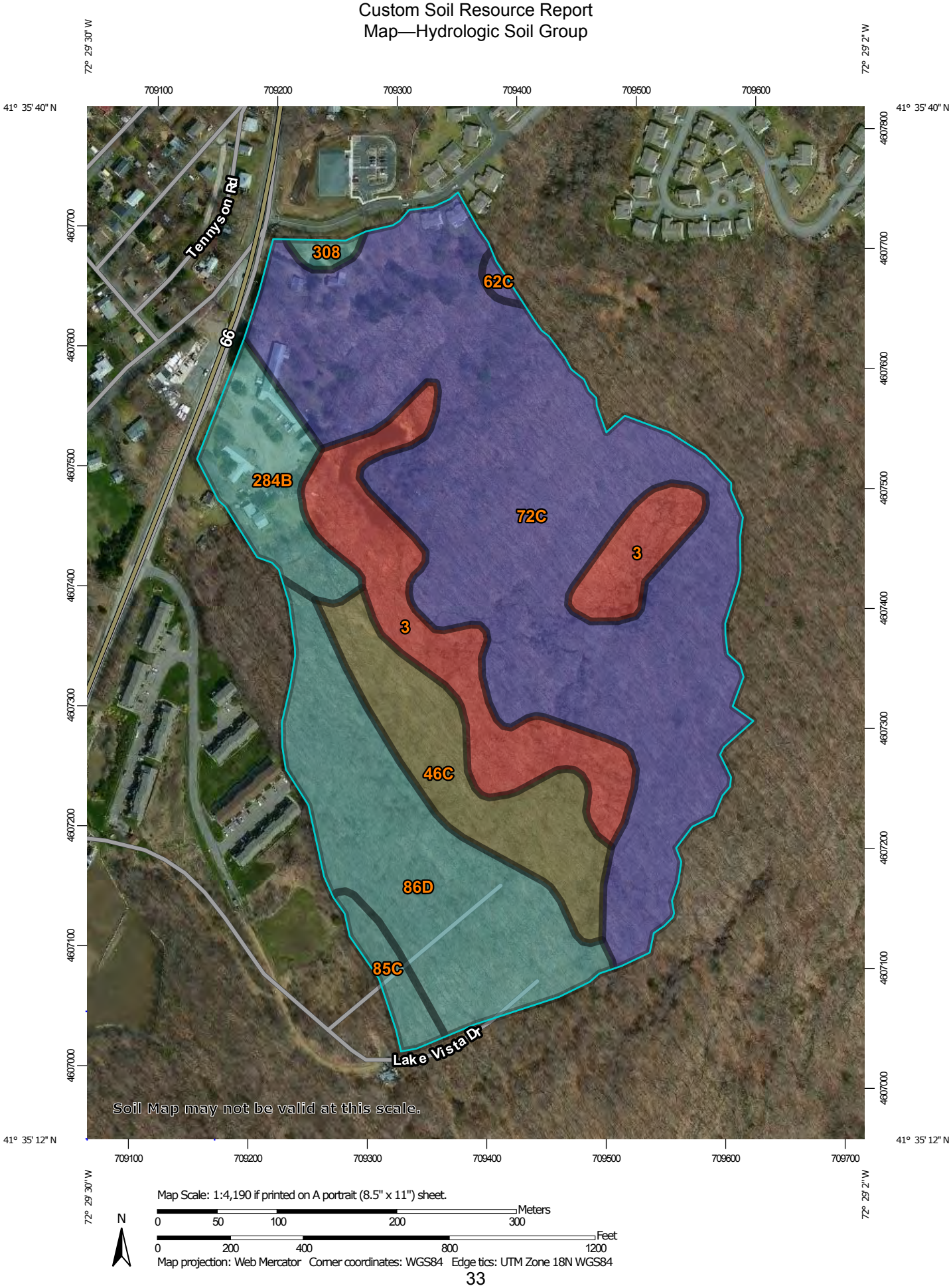
Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties

Map—Hydrologic Soil Group



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

Streams and Canals

Transportation

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

Background

Aerial Photography

MAP INFORMATION

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

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 15, Sep 28, 2016

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

Date(s) aerial images were photographed: Mar 28, 2011—Apr 18, 2011

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.

Table—Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — State of Connecticut (CT600)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
3	Ridgebury, Leicester, and Whitman soils, 0 to 8 percent slopes, extremely stony	D	7.2	13.7%
46C	Woodbridge fine sandy loam, 8 to 15 percent slopes, very stony	C/D	4.9	9.4%
62C	Canton and Charlton fine sandy loams, 3 to 15 percent slopes, extremely stony	B	0.2	0.3%
72C	Nipmuck-Brookfield complex, 3 to 15 percent slopes, very rocky	B	26.1	50.0%
85C	Paxton and Montauk fine sandy loams, 8 to 15 percent slopes, very stony	C	1.0	1.9%
86D	Paxton and Montauk fine sandy loams, 15 to 35 percent slopes, extremely stony	C	9.3	17.7%
284B	Paxton-Urban land complex, 3 to 8 percent slopes	C	3.3	6.3%
308	Udorthents, smoothed	C	0.3	0.6%
Totals for Area of Interest			**52.2**	**100.0%**

Rating Options—Hydrologic Soil Group

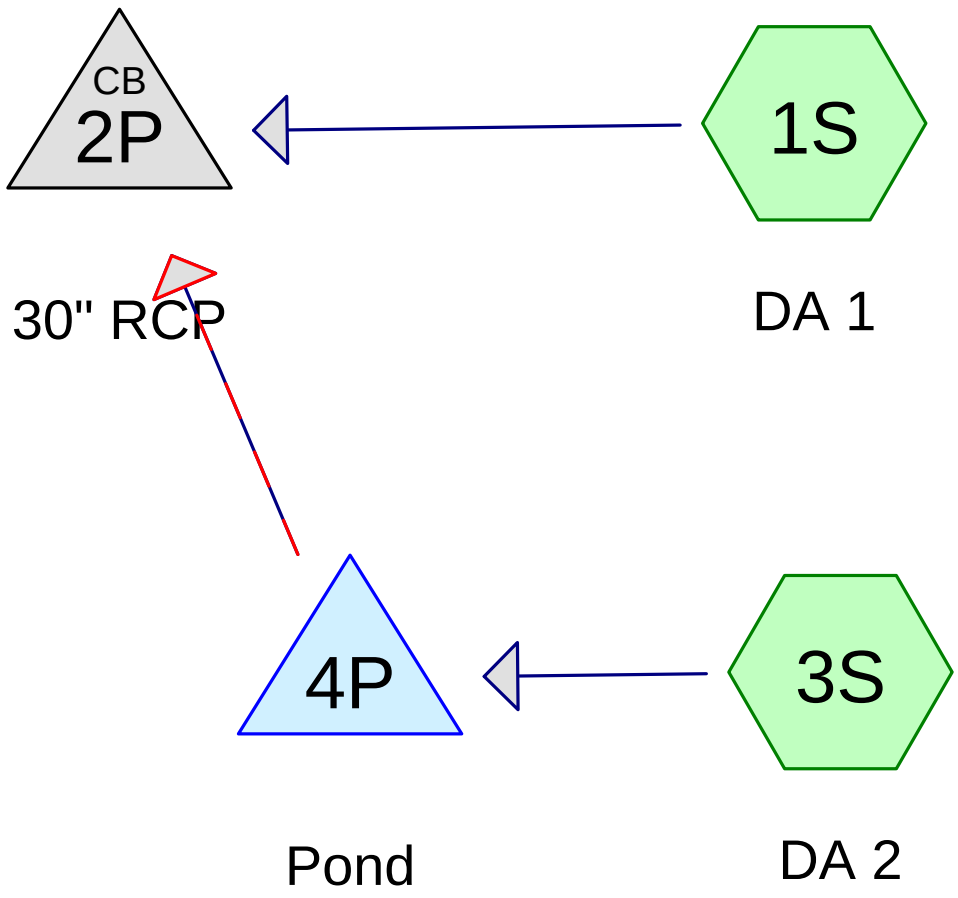
Aggregation Method: Dominant Condition

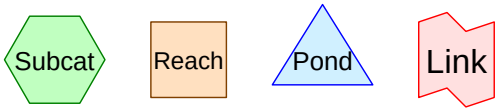
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Appendix B
HydroCAD Modeling Results

Pre-Development Conditions HydroCAD Results





Routing Diagram for Existing to RT 66
Prepared by {enter your company name here}, Printed 12/14/2020
HydroCAD® 10.10-4b s/n 04031 © 2020 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type III 24-hr		Default	24.00	1	3.37	2
2	10-Year	Type III 24-hr		Default	24.00	1	5.18	2
3	25-Year	Type III 24-hr		Default	24.00	1	6.30	2
4	50-Year	Type III 24-hr		Default	24.00	1	7.14	2
5	100-Year	Type III 24-hr		Default	24.00	1	8.04	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.715	61	>75% Grass cover, Good, HSG B (1S, 3S)
1.356	74	>75% Grass cover, Good, HSG C (1S, 3S)
0.090	80	>75% Grass cover, Good, HSG D (3S)
0.076	96	Gravel surface, HSG B (1S, 3S)
0.332	96	Gravel surface, HSG C (1S, 3S)
0.977	98	Paved parking, HSG B (1S)
0.050	98	Paved parking, HSG C (1S, 3S)
0.207	98	Unconnected roofs, HSG B (1S, 3S)
0.155	98	Unconnected roofs, HSG C (1S)
0.839	98	Water Surface, 0% imp, HSG D (3S)
19.980	55	Woods, Good, HSG B (1S, 3S)
15.507	70	Woods, Good, HSG C (1S, 3S)
10.929	77	Woods, Good, HSG D (3S)
52.214	**67**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
22.956	HSG B	1S, 3S
17.401	HSG C	1S, 3S
11.858	HSG D	3S
0.000	Other	
52.214		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	1.715	1.356	0.090	0.000	3.162	>75% Grass cover, Good	1S, 3S
0.000	0.076	0.332	0.000	0.000	0.408	Gravel surface	1S, 3S
0.000	0.977	0.050	0.000	0.000	1.027	Paved parking	1S, 3S
0.000	0.207	0.155	0.000	0.000	0.362	Unconnected roofs	1S, 3S
0.000	0.000	0.000	0.839	0.000	0.839	Water Surface, 0% imp	3S
0.000	19.980	15.507	10.929	0.000	46.417	Woods, Good	1S, 3S
0.000	**22.956**	**17.401**	**11.858**	**0.000**	**52.214**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	2P	519.92	519.62	80.0	0.0037	0.013	0.0	30.0	0.0
2	4P	522.29	520.81	440.8	0.0034	0.013	0.0	18.0	0.0

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 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 1S: DA 1 Runoff Area=294,524 sf 18.58% Impervious Runoff Depth=0.93"
Flow Length=1,064' Tc=26.2 min CN=70 Runoff=4.01 cfs 0.523 af

Subcatchment 3S: DA 2 Runoff Area=1,979,932 sf 0.29% Impervious Runoff Depth=0.73"
Tc=22.6 min CN=66 Runoff=20.84 cfs 2.768 af

Pond 2P: 30" RCP Peak Elev=521.10' Inflow=6.62 cfs 3.262 af
30.0" Round Culvert n=0.013 L=80.0' S=0.0037 '/' Outflow=6.62 cfs 3.262 af

Pond 4P: Pond Peak Elev=523.56' Storage=0.939 af Inflow=20.84 cfs 2.768 af
Primary=4.54 cfs 2.739 af Secondary=0.00 cfs 0.000 af Outflow=4.54 cfs 2.739 af

Total Runoff Area = 52.214 ac Runoff Volume = 3.291 af Average Runoff Depth = 0.76"
97.34% Pervious = 50.825 ac 2.66% Impervious = 1.389 ac

Summary for Subcatchment 1S: DA 1

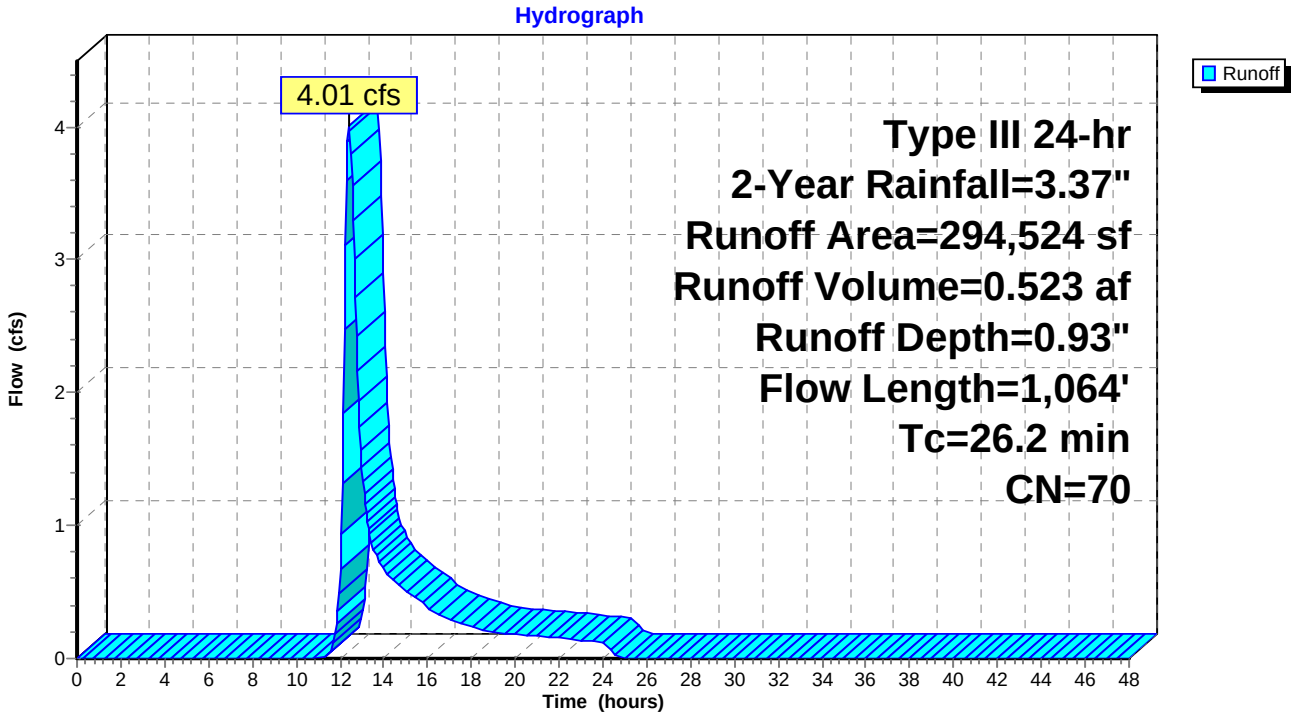
Runoff = 4.01 cfs @ 12.41 hrs, Volume= 0.523 af, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.37"

Area (sf)	CN	Description
10,077	74	>75% Grass cover, Good, HSG C
1,575	98	Paved parking, HSG C
411	70	Woods, Good, HSG C
2,001	96	Gravel surface, HSG C
1,499	98	Unconnected roofs, HSG B
1,111	98	Unconnected roofs, HSG B
1,273	96	Gravel surface, HSG B
1,214	98	Unconnected roofs, HSG B
42,571	98	Paved parking, HSG B
1,694	96	Gravel surface, HSG B
4,509	98	Unconnected roofs, HSG C
113	98	Unconnected roofs, HSG C
2,133	98	Unconnected roofs, HSG C
12,266	96	Gravel surface, HSG C
2,876	70	Woods, Good, HSG C
1,206	70	Woods, Good, HSG C
677	70	Woods, Good, HSG C
650	70	Woods, Good, HSG C
3,876	70	Woods, Good, HSG C
641	70	Woods, Good, HSG C
4,468	55	Woods, Good, HSG B
99,615	55	Woods, Good, HSG B
62,431	61	>75% Grass cover, Good, HSG B
35,637	74	>75% Grass cover, Good, HSG C
294,524	70	Weighted Average
239,799		81.42% Pervious Area
54,725		18.58% Impervious Area
10,579		19.33% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.1300	0.17		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
5.3	343	0.0466	1.08		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
10.3	434	0.0100	0.70		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.3	40	0.0183	2.18		**Shallow Concentrated Flow, Gravel** Unpaved Kv= 16.1 fps
0.4	147	0.0360	6.04	40.29	**Parabolic Channel, Channel** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.035 Earth, dense weeds
26.2	1,064	Total			

Subcatchment 1S: DA 1



Summary for Subcatchment 3S: DA 2

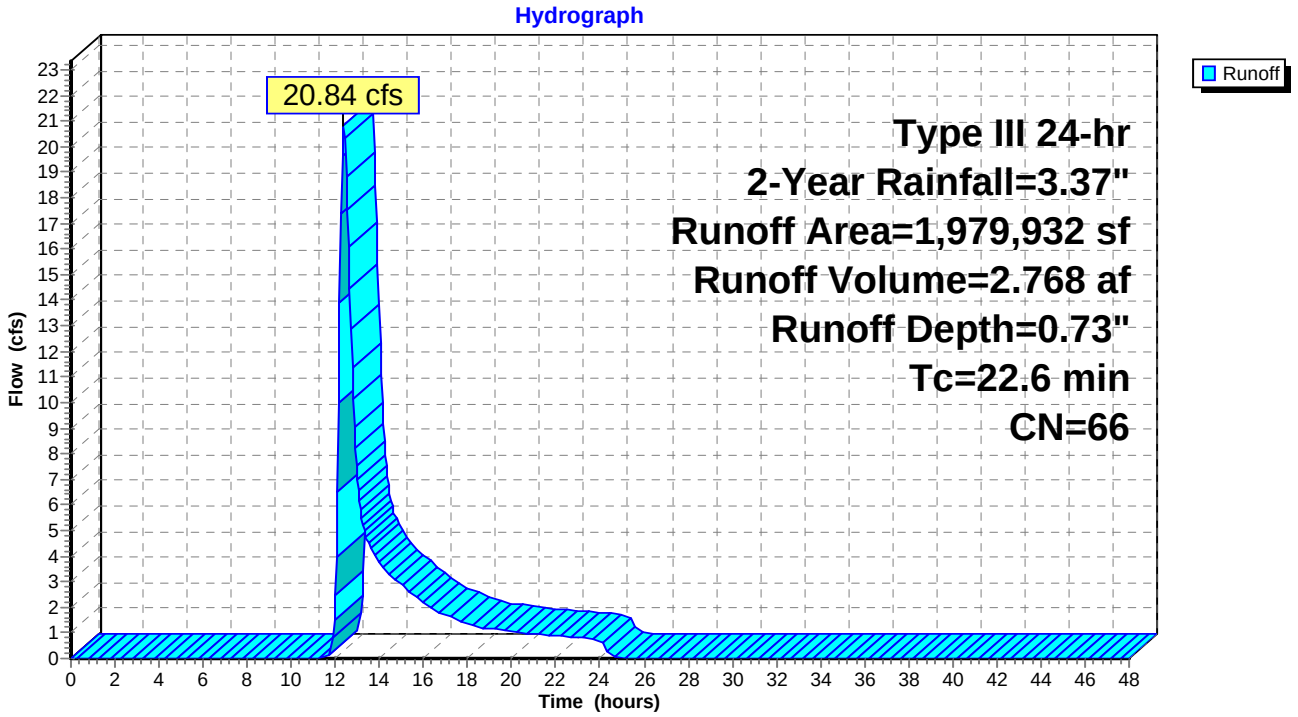
Runoff = 20.84 cfs @ 12.37 hrs, Volume= 2.768 af, Depth= 0.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.37"

Area (sf)	CN	Description
473,802	77	Woods, Good, HSG D
36,547	98	Water Surface, 0% imp, HSG D
3,920	80	>75% Grass cover, Good, HSG D
12,284	61	>75% Grass cover, Good, HSG B
5,184	98	Unconnected roofs, HSG B
766,264	55	Woods, Good, HSG B
663,462	70	Woods, Good, HSG C
2,265	77	Woods, Good, HSG D
1,699	70	Woods, Good, HSG C
174	96	Gravel surface, HSG C
348	96	Gravel surface, HSG B
610	98	Paved parking, HSG C
13,373	74	>75% Grass cover, Good, HSG C
1,979,932	66	Weighted Average
1,974,138		99.71% Pervious Area
5,794		0.29% Impervious Area
5,184		89.47% Unconnected

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

Subcatchment 3S: DA 2



Summary for Pond 2P: 30" RCP

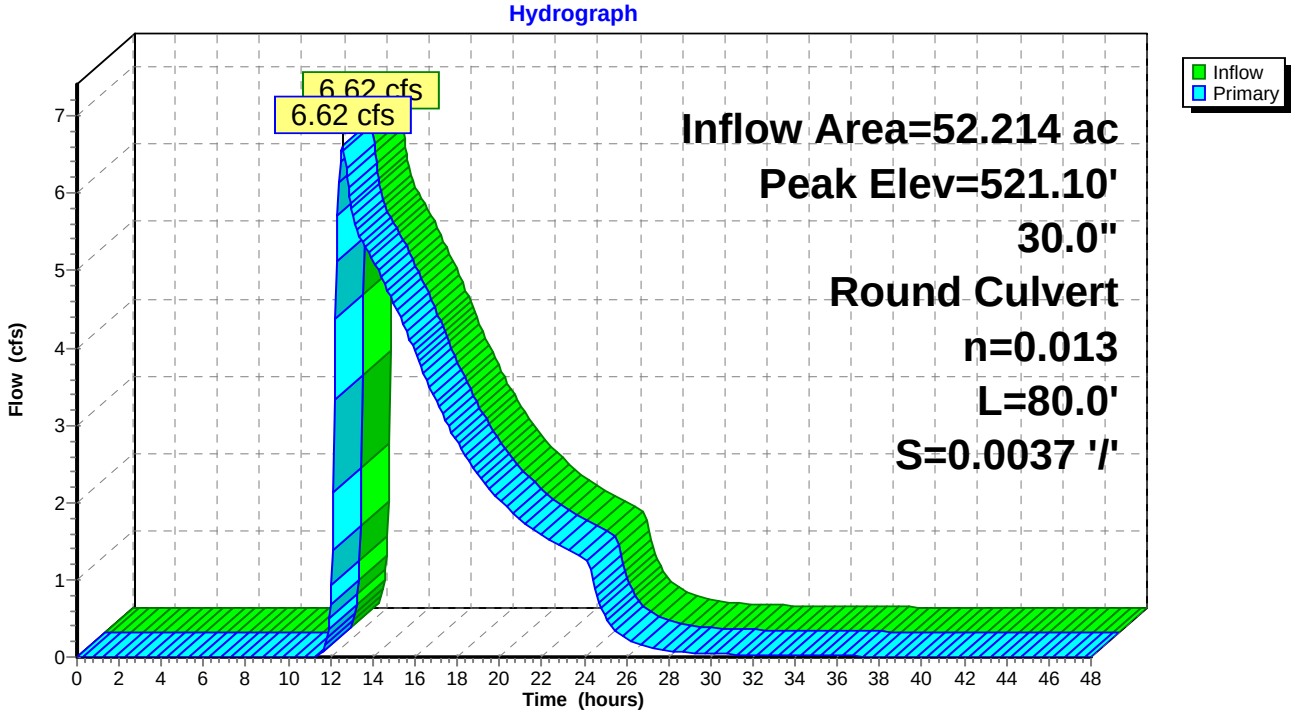
Inflow Area =	52.214 ac,	2.66% Impervious,	Inflow Depth >	0.75"	for 2-Year event
Inflow =	6.62 cfs @	12.57 hrs,	Volume=	3.262 af	
Outflow =	6.62 cfs @	12.57 hrs,	Volume=	3.262 af,	Atten= 0%, Lag= 0.0 min
Primary =	6.62 cfs @	12.57 hrs,	Volume=	3.262 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 521.10' @ 12.57 hrs
Flood Elev= 527.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	519.92'	**30.0" Round 30" RC** L= 80.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 519.92' / 519.62' S= 0.0037 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 4.91 sf

Primary OutFlow Max=6.61 cfs @ 12.57 hrs HW=521.10' (Free Discharge)
└**1=30" RC** (Barrel Controls 6.61 cfs @ 4.24 fps)

Pond 2P: 30" RCP



Summary for Pond 4P: Pond

Inflow Area = 45.453 ac, 0.29% Impervious, Inflow Depth = 0.73" for 2-Year event
Inflow = 20.84 cfs @ 12.37 hrs, Volume= 2.768 af
Outflow = 4.54 cfs @ 13.46 hrs, Volume= 2.739 af, Atten= 78%, Lag= 65.2 min
Primary = 4.54 cfs @ 13.46 hrs, Volume= 2.739 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 523.56' @ 13.46 hrs Surf.Area= 1.304 ac Storage= 0.939 af

Plug-Flow detention time= 144.0 min calculated for 2.739 af (99% of inflow)
Center-of-Mass det. time= 138.3 min (1,040.1 - 901.8)

Volume	Invert	Avail.Storage	Storage Description
#1	522.20'	10.783 af	**Pond Storage (Irregular)**Listed below

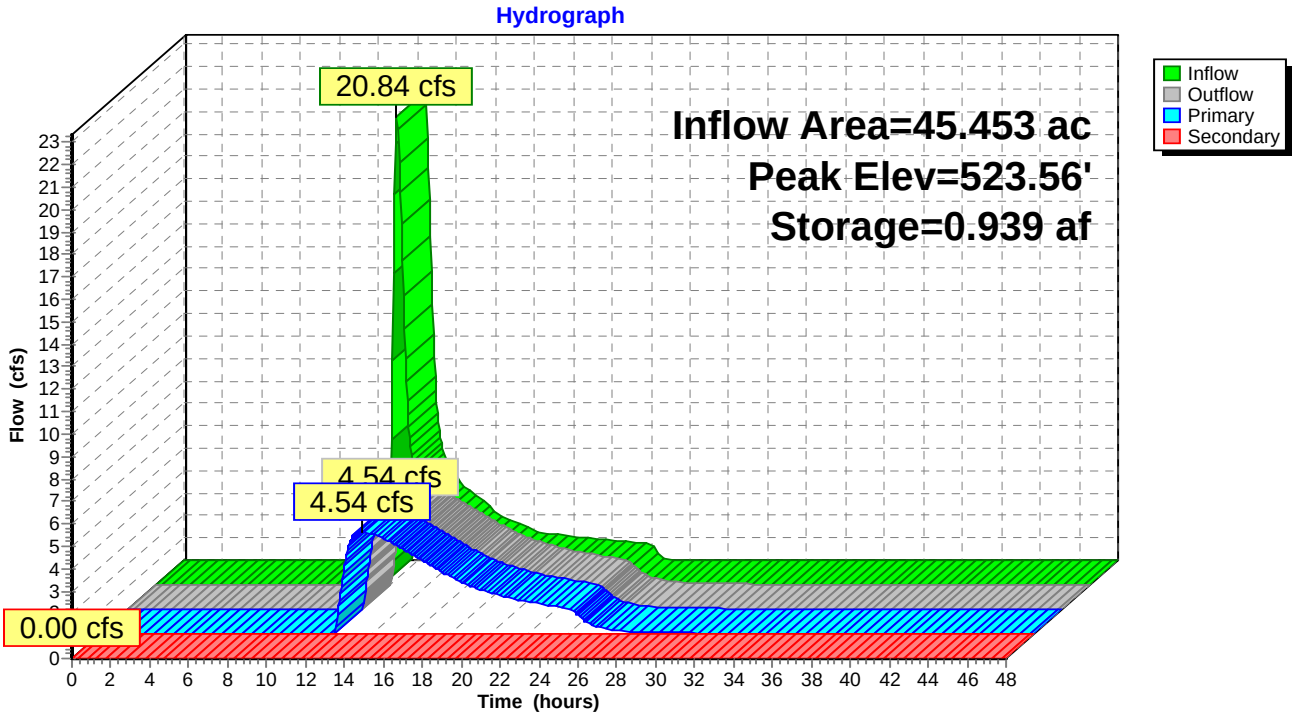
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
522.20	0.002	10.0	0.000	0.000	0.002
522.87	0.636	1,389.1	0.150	0.150	3.527
524.00	1.723	1,270.7	1.283	1.433	4.103
526.00	2.359	1,494.7	4.065	5.499	5.237
528.00	2.936	1,638.1	5.284	10.783	6.061

Device	Routing	Invert	Outlet Devices
#1	Primary	522.29'	**18.0" Round 18" RCP** L= 440.8' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 522.29' / 520.81' S= 0.0034 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf
#2	Secondary	526.90'	**83.0' long x 15.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=4.54 cfs @ 13.46 hrs HW=523.56' TW=520.98' (Dynamic Tailwater)
└─**1=18" RCP** (Barrel Controls 4.54 cfs @ 3.82 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=522.20' TW=519.92' (Dynamic Tailwater)
└─**2=Overflow** (Controls 0.00 cfs)

Pond 4P: Pond


Hydrograph
20.84 cfs
4.54 cfs
4.54 cfs
0.00 cfs
Inflow Area=45.453 ac
Peak Elev=523.56'
Storage=0.939 af
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 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 1S: DA 1 Runoff Area=294,524 sf 18.58% Impervious Runoff Depth=2.17"
Flow Length=1,064' Tc=26.2 min CN=70 Runoff=10.12 cfs 1.223 af

Subcatchment 3S: DA 2 Runoff Area=1,979,932 sf 0.29% Impervious Runoff Depth=1.85"
Tc=22.6 min CN=66 Runoff=60.43 cfs 7.013 af

Pond 2P: 30" RCP Peak Elev=521.93' Inflow=16.88 cfs 8.206 af
30.0" Round Culvert n=0.013 L=80.0' S=0.0037 '/' Outflow=16.88 cfs 8.206 af

Pond 4P: Pond Peak Elev=524.88' Storage=3.229 af Inflow=60.43 cfs 7.013 af
Primary=7.48 cfs 6.983 af Secondary=0.00 cfs 0.000 af Outflow=7.48 cfs 6.983 af

Total Runoff Area = 52.214 ac Runoff Volume = 8.236 af Average Runoff Depth = 1.89"
97.34% Pervious = 50.825 ac 2.66% Impervious = 1.389 ac

Summary for Subcatchment 1S: DA 1

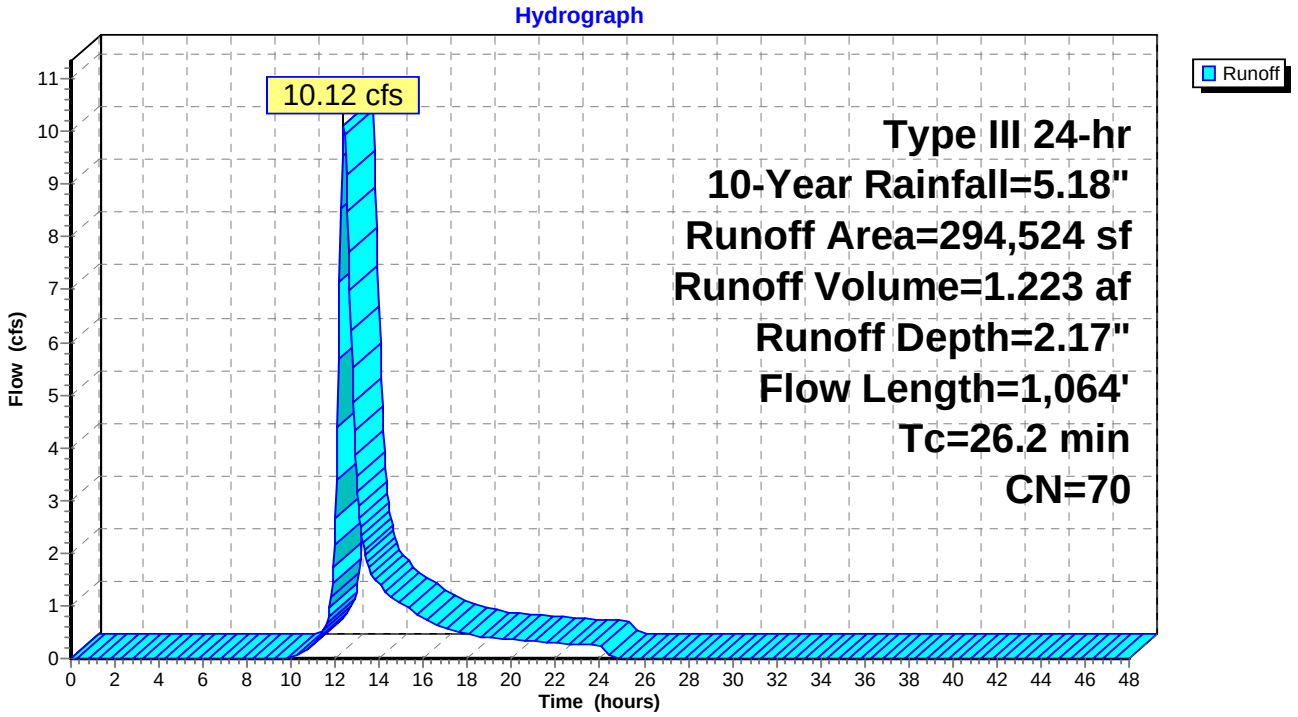
Runoff = 10.12 cfs @ 12.38 hrs, Volume= 1.223 af, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.18"

Area (sf)	CN	Description
10,077	74	>75% Grass cover, Good, HSG C
1,575	98	Paved parking, HSG C
411	70	Woods, Good, HSG C
2,001	96	Gravel surface, HSG C
1,499	98	Unconnected roofs, HSG B
1,111	98	Unconnected roofs, HSG B
1,273	96	Gravel surface, HSG B
1,214	98	Unconnected roofs, HSG B
42,571	98	Paved parking, HSG B
1,694	96	Gravel surface, HSG B
4,509	98	Unconnected roofs, HSG C
113	98	Unconnected roofs, HSG C
2,133	98	Unconnected roofs, HSG C
12,266	96	Gravel surface, HSG C
2,876	70	Woods, Good, HSG C
1,206	70	Woods, Good, HSG C
677	70	Woods, Good, HSG C
650	70	Woods, Good, HSG C
3,876	70	Woods, Good, HSG C
641	70	Woods, Good, HSG C
4,468	55	Woods, Good, HSG B
99,615	55	Woods, Good, HSG B
62,431	61	>75% Grass cover, Good, HSG B
35,637	74	>75% Grass cover, Good, HSG C
294,524	70	Weighted Average
239,799		81.42% Pervious Area
54,725		18.58% Impervious Area
10,579		19.33% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.1300	0.17		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
5.3	343	0.0466	1.08		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
10.3	434	0.0100	0.70		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.3	40	0.0183	2.18		**Shallow Concentrated Flow, Gravel** Unpaved Kv= 16.1 fps
0.4	147	0.0360	6.04	40.29	**Parabolic Channel, Channel** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.035 Earth, dense weeds
26.2	1,064	Total			

Subcatchment 1S: DA 1



Summary for Subcatchment 3S: DA 2

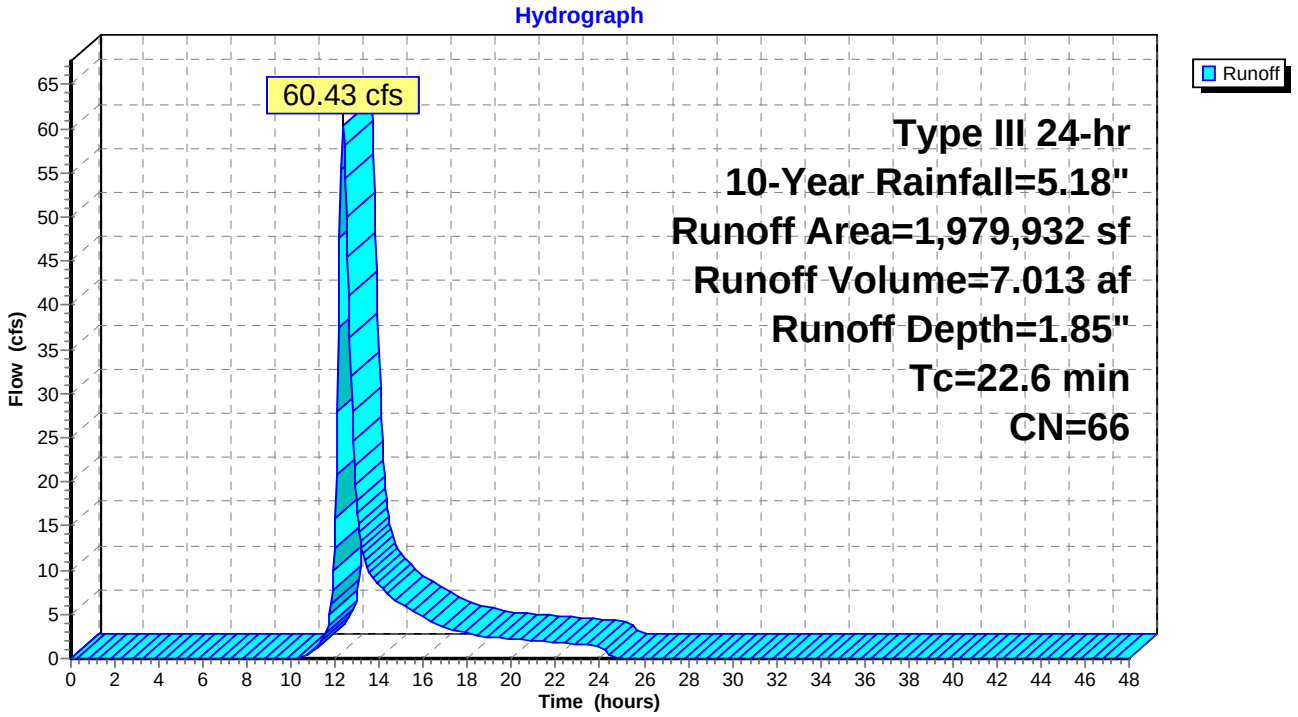
Runoff = 60.43 cfs @ 12.34 hrs, Volume= 7.013 af, Depth= 1.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.18"

Area (sf)	CN	Description
473,802	77	Woods, Good, HSG D
36,547	98	Water Surface, 0% imp, HSG D
3,920	80	>75% Grass cover, Good, HSG D
12,284	61	>75% Grass cover, Good, HSG B
5,184	98	Unconnected roofs, HSG B
766,264	55	Woods, Good, HSG B
663,462	70	Woods, Good, HSG C
2,265	77	Woods, Good, HSG D
1,699	70	Woods, Good, HSG C
174	96	Gravel surface, HSG C
348	96	Gravel surface, HSG B
610	98	Paved parking, HSG C
13,373	74	>75% Grass cover, Good, HSG C
1,979,932	66	Weighted Average
1,974,138		99.71% Pervious Area
5,794		0.29% Impervious Area
5,184		89.47% Unconnected

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

Subcatchment 3S: DA 2



Summary for Pond 2P: 30" RCP

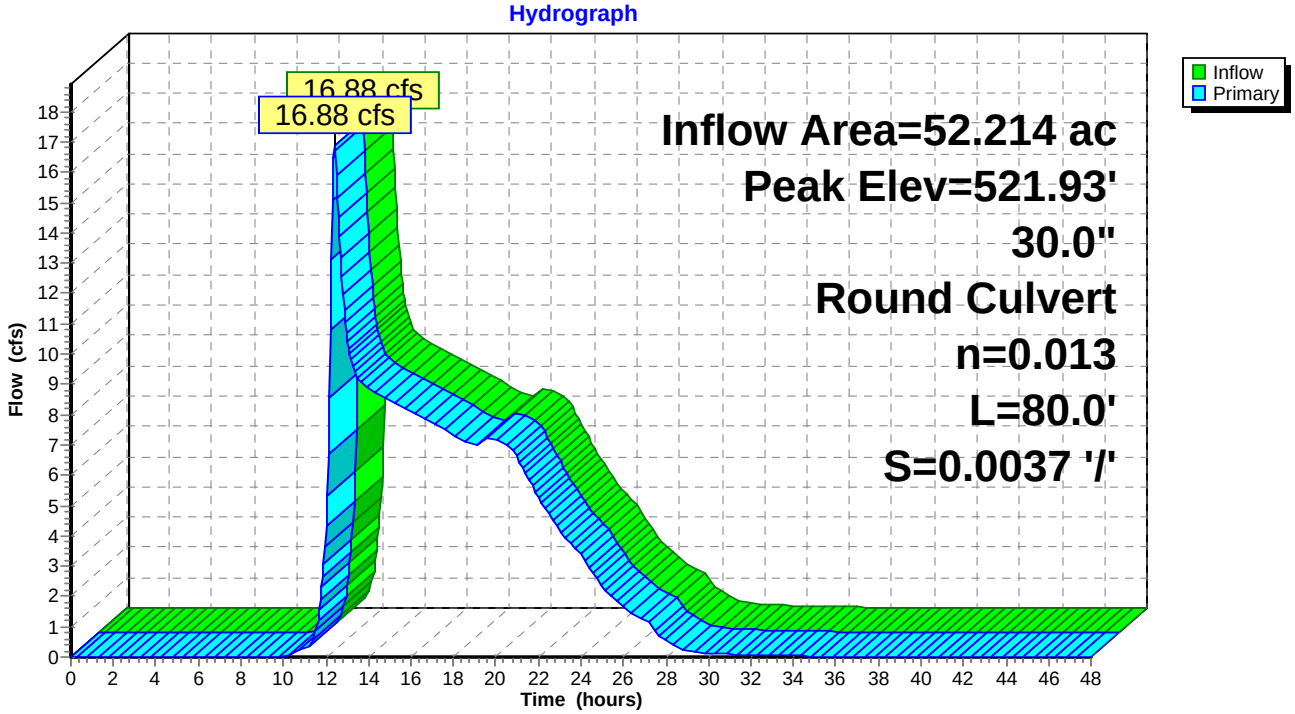
Inflow Area = 52.214 ac, 2.66% Impervious, Inflow Depth > 1.89" for 10-Year event
Inflow = 16.88 cfs @ 12.41 hrs, Volume= 8.206 af
Outflow = 16.88 cfs @ 12.41 hrs, Volume= 8.206 af, Atten= 0%, Lag= 0.0 min
Primary = 16.88 cfs @ 12.41 hrs, Volume= 8.206 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 521.93' @ 12.41 hrs
Flood Elev= 527.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	519.92'	**30.0" Round 30" RC** L= 80.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 519.92' / 519.62' S= 0.0037 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 4.91 sf

Primary OutFlow Max=16.84 cfs @ 12.41 hrs HW=521.93' (Free Discharge)
└**1=30" RC** (Barrel Controls 16.84 cfs @ 5.45 fps)

Pond 2P: 30" RCP



Summary for Pond 4P: Pond

Inflow Area =	45.453 ac,	0.29% Impervious,	Inflow Depth =	1.85"	for 10-Year event
Inflow =	60.43 cfs @	12.34 hrs,	Volume=	7.013 af	
Outflow =	7.48 cfs @	14.27 hrs,	Volume=	6.983 af,	Atten= 88%, Lag= 116.0 min
Primary =	7.48 cfs @	14.27 hrs,	Volume=	6.983 af	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 524.88' @ 14.27 hrs Surf.Area= 2.004 ac Storage= 3.229 af

Plug-Flow detention time= 230.9 min calculated for 6.983 af (100% of inflow)
Center-of-Mass det. time= 228.3 min (1,099.7 - 871.4)

Volume	Invert	Avail.Storage	Storage Description
#1	522.20'	10.783 af	**Pond Storage (Irregular)**Listed below

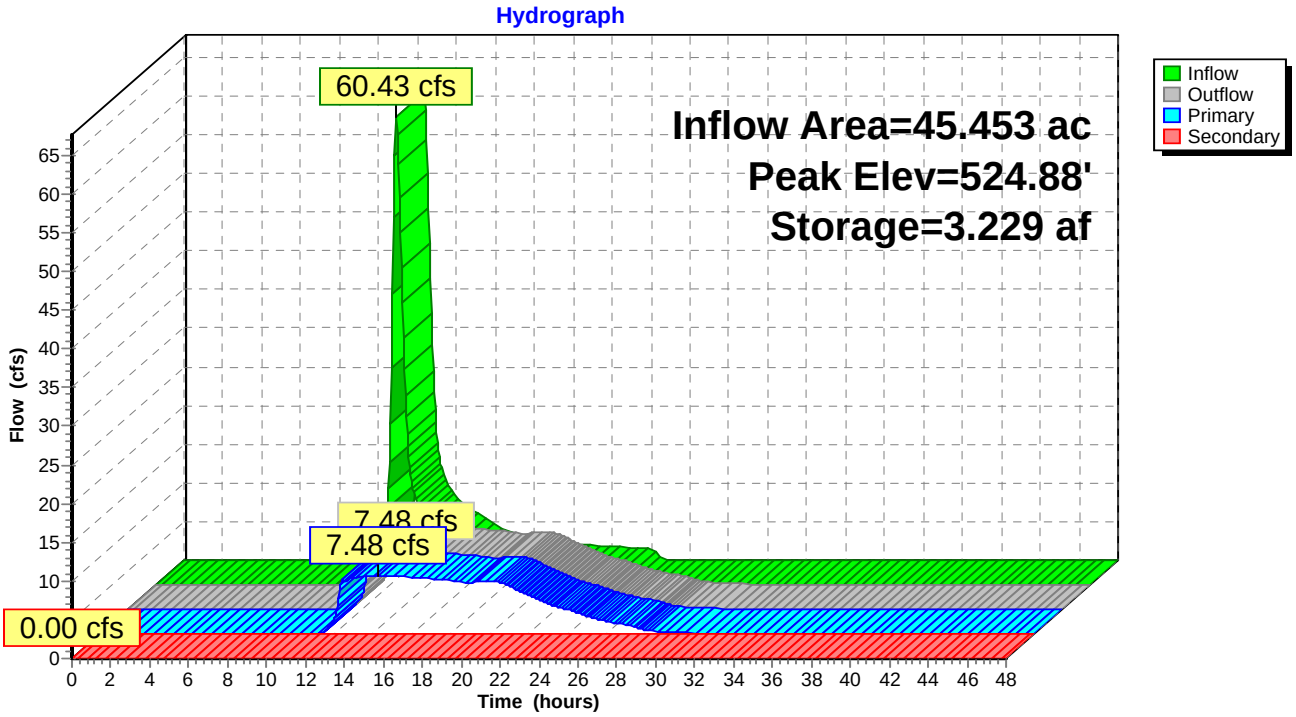
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
522.20	0.002	10.0	0.000	0.000	0.002
522.87	0.636	1,389.1	0.150	0.150	3.527
524.00	1.723	1,270.7	1.283	1.433	4.103
526.00	2.359	1,494.7	4.065	5.499	5.237
528.00	2.936	1,638.1	5.284	10.783	6.061

Device	Routing	Invert	Outlet Devices
#1	Primary	522.29'	**18.0" Round 18" RCP** L= 440.8' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 522.29' / 520.81' S= 0.0034 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf
#2	Secondary	526.90'	**83.0' long x 15.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=7.48 cfs @ 14.27 hrs HW=524.88' TW=521.30' (Dynamic Tailwater)
└─**1=18" RCP** (Barrel Controls 7.48 cfs @ 4.23 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=522.20' TW=519.92' (Dynamic Tailwater)
└─**2=Overflow** (Controls 0.00 cfs)

Pond 4P: Pond


Hydrograph
60.43 cfs
7.48 cfs
7.48 cfs
0.00 cfs
Inflow Area=45.453 ac
Peak Elev=524.88'
Storage=3.229 af
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 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 1S: DA 1 Runoff Area=294,524 sf 18.58% Impervious Runoff Depth=3.05"
Flow Length=1,064' Tc=26.2 min CN=70 Runoff=14.40 cfs 1.716 af

Subcatchment 3S: DA 2 Runoff Area=1,979,932 sf 0.29% Impervious Runoff Depth=2.66"
Tc=22.6 min CN=66 Runoff=89.03 cfs 10.093 af

Pond 2P: 30" RCP Peak Elev=522.26' Inflow=21.32 cfs 11.778 af
30.0" Round Culvert n=0.013 L=80.0' S=0.0037 '/' Outflow=21.32 cfs 11.778 af

Pond 4P: Pond Peak Elev=525.84' Storage=5.181 af Inflow=89.03 cfs 10.093 af
Primary=8.76 cfs 10.062 af Secondary=0.00 cfs 0.000 af Outflow=8.76 cfs 10.062 af

Total Runoff Area = 52.214 ac Runoff Volume = 11.809 af Average Runoff Depth = 2.71"
97.34% Pervious = 50.825 ac 2.66% Impervious = 1.389 ac

Summary for Subcatchment 1S: DA 1

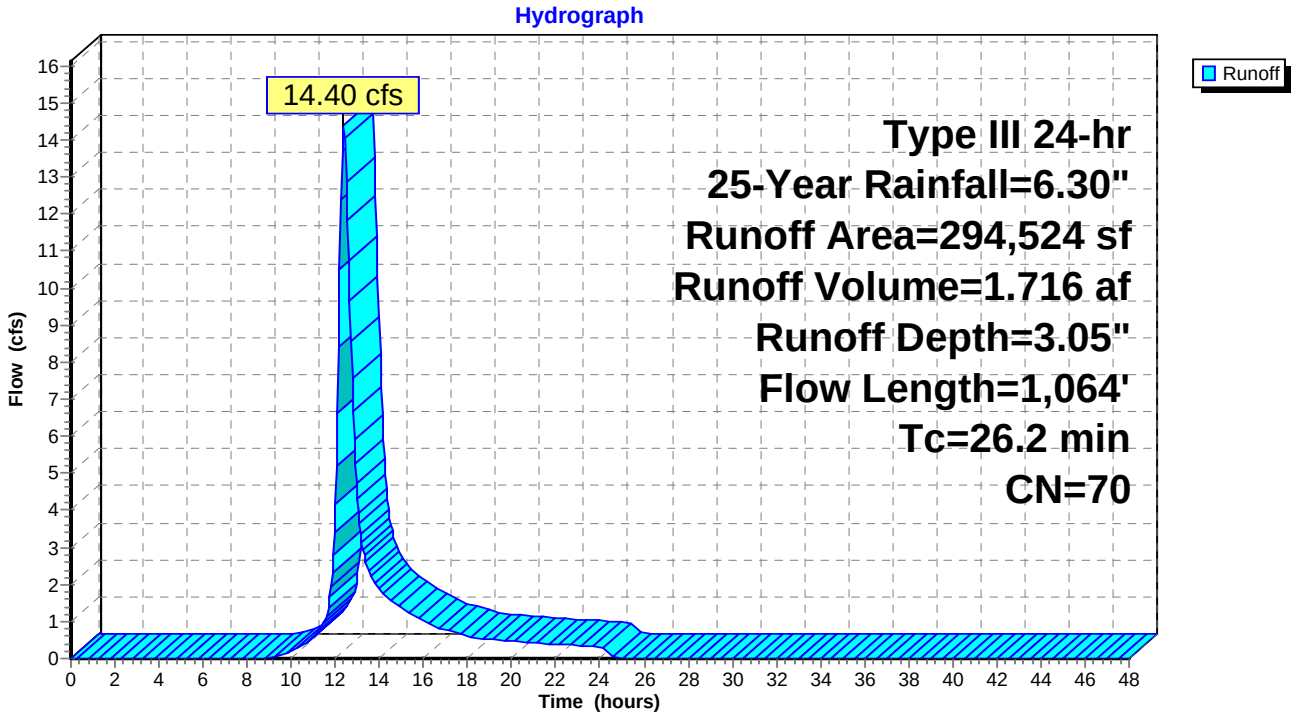
Runoff = 14.40 cfs @ 12.37 hrs, Volume= 1.716 af, Depth= 3.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.30"

Area (sf)	CN	Description
10,077	74	>75% Grass cover, Good, HSG C
1,575	98	Paved parking, HSG C
411	70	Woods, Good, HSG C
2,001	96	Gravel surface, HSG C
1,499	98	Unconnected roofs, HSG B
1,111	98	Unconnected roofs, HSG B
1,273	96	Gravel surface, HSG B
1,214	98	Unconnected roofs, HSG B
42,571	98	Paved parking, HSG B
1,694	96	Gravel surface, HSG B
4,509	98	Unconnected roofs, HSG C
113	98	Unconnected roofs, HSG C
2,133	98	Unconnected roofs, HSG C
12,266	96	Gravel surface, HSG C
2,876	70	Woods, Good, HSG C
1,206	70	Woods, Good, HSG C
677	70	Woods, Good, HSG C
650	70	Woods, Good, HSG C
3,876	70	Woods, Good, HSG C
641	70	Woods, Good, HSG C
4,468	55	Woods, Good, HSG B
99,615	55	Woods, Good, HSG B
62,431	61	>75% Grass cover, Good, HSG B
35,637	74	>75% Grass cover, Good, HSG C
294,524	70	Weighted Average
239,799		81.42% Pervious Area
54,725		18.58% Impervious Area
10,579		19.33% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.1300	0.17		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
5.3	343	0.0466	1.08		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
10.3	434	0.0100	0.70		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.3	40	0.0183	2.18		**Shallow Concentrated Flow, Gravel** Unpaved Kv= 16.1 fps
0.4	147	0.0360	6.04	40.29	**Parabolic Channel, Channel** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.035 Earth, dense weeds
26.2	1,064	Total			

Subcatchment 1S: DA 1



Summary for Subcatchment 3S: DA 2

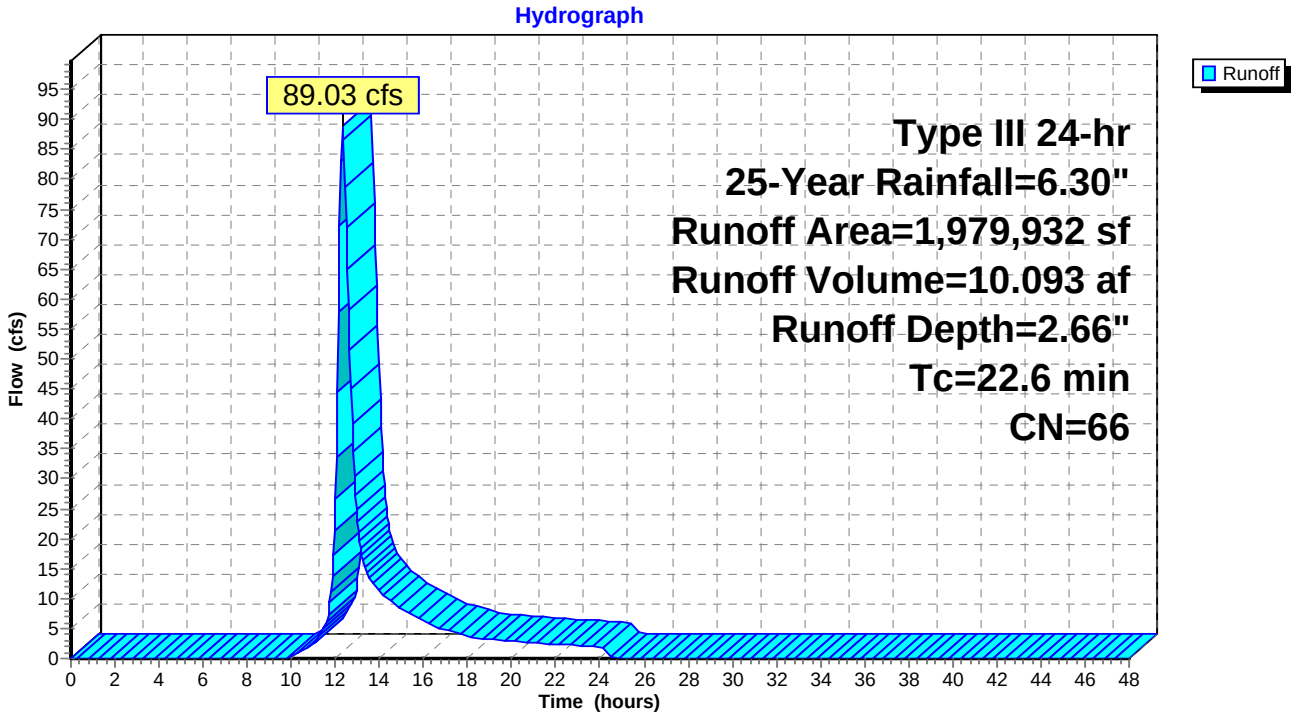
Runoff = 89.03 cfs @ 12.33 hrs, Volume= 10.093 af, Depth= 2.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.30"

Area (sf)	CN	Description
473,802	77	Woods, Good, HSG D
36,547	98	Water Surface, 0% imp, HSG D
3,920	80	>75% Grass cover, Good, HSG D
12,284	61	>75% Grass cover, Good, HSG B
5,184	98	Unconnected roofs, HSG B
766,264	55	Woods, Good, HSG B
663,462	70	Woods, Good, HSG C
2,265	77	Woods, Good, HSG D
1,699	70	Woods, Good, HSG C
174	96	Gravel surface, HSG C
348	96	Gravel surface, HSG B
610	98	Paved parking, HSG C
13,373	74	>75% Grass cover, Good, HSG C
1,979,932	66	Weighted Average
1,974,138		99.71% Pervious Area
5,794		0.29% Impervious Area
5,184		89.47% Unconnected

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

Subcatchment 3S: DA 2



Summary for Pond 2P: 30" RCP

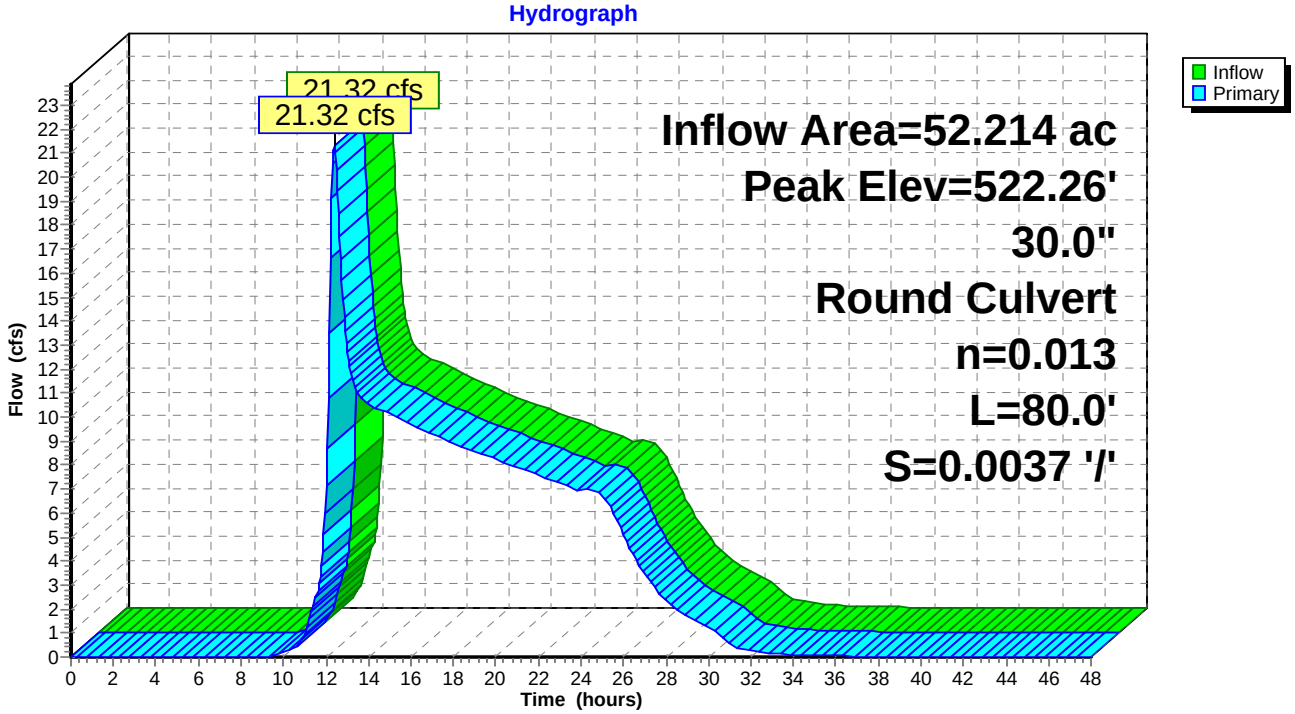
Inflow Area = 52.214 ac, 2.66% Impervious, Inflow Depth > 2.71" for 25-Year event
Inflow = 21.32 cfs @ 12.40 hrs, Volume= 11.778 af
Outflow = 21.32 cfs @ 12.40 hrs, Volume= 11.778 af, Atten= 0%, Lag= 0.0 min
Primary = 21.32 cfs @ 12.40 hrs, Volume= 11.778 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 522.26' @ 12.40 hrs
Flood Elev= 527.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	519.92'	**30.0" Round 30" RC** L= 80.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 519.92' / 519.62' S= 0.0037 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 4.91 sf

Primary OutFlow Max=21.30 cfs @ 12.40 hrs HW=522.25' (Free Discharge)
└**1=30" RC** (Barrel Controls 21.30 cfs @ 5.80 fps)

Pond 2P: 30" RCP



Summary for Pond 4P: Pond

Inflow Area = 45.453 ac, 0.29% Impervious, Inflow Depth = 2.66" for 25-Year event
Inflow = 89.03 cfs @ 12.33 hrs, Volume= 10.093 af
Outflow = 8.76 cfs @ 14.83 hrs, Volume= 10.062 af, Atten= 90%, Lag= 150.2 min
Primary = 8.76 cfs @ 14.83 hrs, Volume= 10.062 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 525.84' @ 14.83 hrs Surf.Area= 2.309 ac Storage= 5.181 af

Plug-Flow detention time= 315.4 min calculated for 10.062 af (100% of inflow)
Center-of-Mass det. time= 313.5 min (1,174.0 - 860.5)

Volume	Invert	Avail.Storage	Storage Description
#1	522.20'	10.783 af	**Pond Storage (Irregular)**Listed below

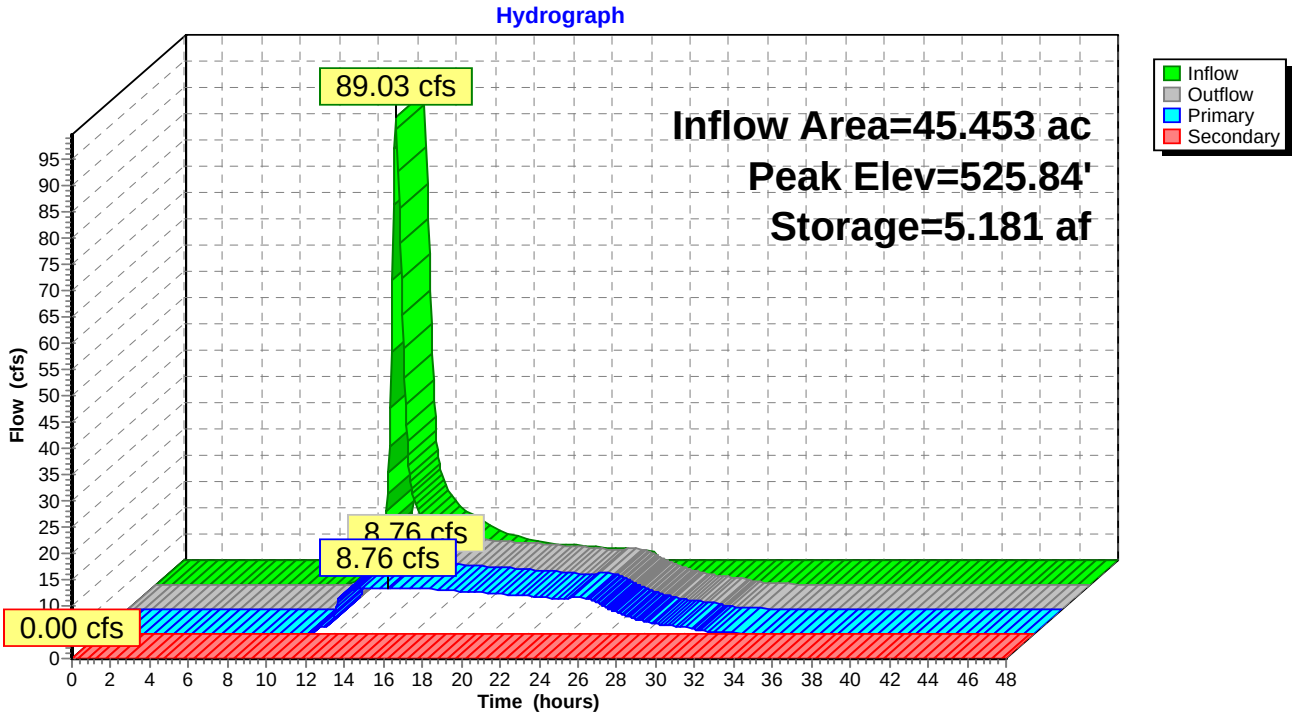
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
522.20	0.002	10.0	0.000	0.000	0.002
522.87	0.636	1,389.1	0.150	0.150	3.527
524.00	1.723	1,270.7	1.283	1.433	4.103
526.00	2.359	1,494.7	4.065	5.499	5.237
528.00	2.936	1,638.1	5.284	10.783	6.061

Device	Routing	Invert	Outlet Devices
#1	Primary	522.29'	**18.0" Round 18" RCP** L= 440.8' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 522.29' / 520.81' S= 0.0034 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf
#2	Secondary	526.90'	**83.0' long x 15.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=8.76 cfs @ 14.83 hrs HW=525.84' TW=521.42' (Dynamic Tailwater)
└**1=18" RCP** (Barrel Controls 8.76 cfs @ 4.96 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=522.20' TW=519.92' (Dynamic Tailwater)
└**2=Overflow** (Controls 0.00 cfs)

Pond 4P: Pond


Hydrograph
89.03 cfs
8.76 cfs
8.76 cfs
0.00 cfs
Inflow Area=45.453 ac
Peak Elev=525.84'
Storage=5.181 af
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 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 1S: DA 1 Runoff Area=294,524 sf 18.58% Impervious Runoff Depth=3.74"
Flow Length=1,064' Tc=26.2 min CN=70 Runoff=17.73 cfs 2.105 af

Subcatchment 3S: DA 2 Runoff Area=1,979,932 sf 0.29% Impervious Runoff Depth=3.31"
Tc=22.6 min CN=66 Runoff=111.95 cfs 12.556 af

Pond 2P: 30" RCP Peak Elev=522.53' Inflow=24.93 cfs 14.628 af
30.0" Round Culvert n=0.013 L=80.0' S=0.0037 '/' Outflow=24.93 cfs 14.628 af

Pond 4P: Pond Peak Elev=526.51' Storage=6.834 af Inflow=111.95 cfs 12.556 af
Primary=9.54 cfs 12.523 af Secondary=0.00 cfs 0.000 af Outflow=9.54 cfs 12.523 af

Total Runoff Area = 52.214 ac Runoff Volume = 14.660 af Average Runoff Depth = 3.37"
97.34% Pervious = 50.825 ac 2.66% Impervious = 1.389 ac

Summary for Subcatchment 1S: DA 1

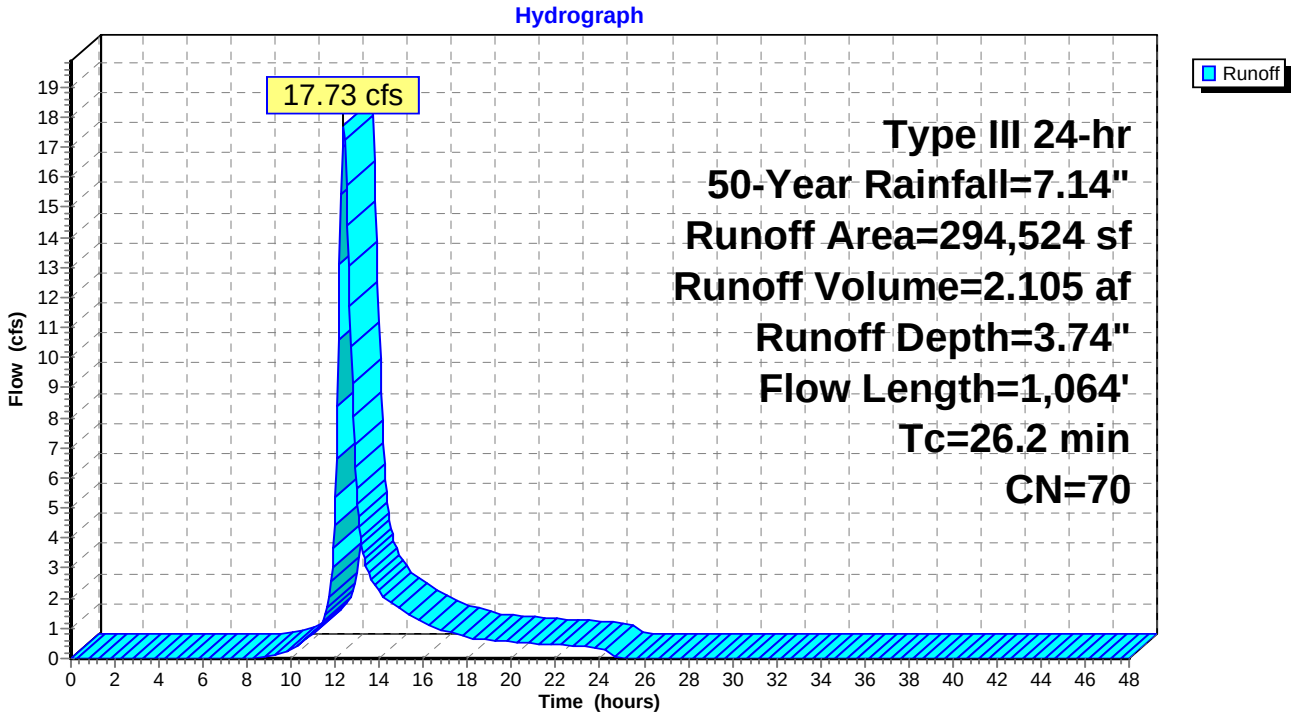
Runoff = 17.73 cfs @ 12.37 hrs, Volume= 2.105 af, Depth= 3.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=7.14"

Area (sf)	CN	Description
10,077	74	>75% Grass cover, Good, HSG C
1,575	98	Paved parking, HSG C
411	70	Woods, Good, HSG C
2,001	96	Gravel surface, HSG C
1,499	98	Unconnected roofs, HSG B
1,111	98	Unconnected roofs, HSG B
1,273	96	Gravel surface, HSG B
1,214	98	Unconnected roofs, HSG B
42,571	98	Paved parking, HSG B
1,694	96	Gravel surface, HSG B
4,509	98	Unconnected roofs, HSG C
113	98	Unconnected roofs, HSG C
2,133	98	Unconnected roofs, HSG C
12,266	96	Gravel surface, HSG C
2,876	70	Woods, Good, HSG C
1,206	70	Woods, Good, HSG C
677	70	Woods, Good, HSG C
650	70	Woods, Good, HSG C
3,876	70	Woods, Good, HSG C
641	70	Woods, Good, HSG C
4,468	55	Woods, Good, HSG B
99,615	55	Woods, Good, HSG B
62,431	61	>75% Grass cover, Good, HSG B
35,637	74	>75% Grass cover, Good, HSG C
294,524	70	Weighted Average
239,799		81.42% Pervious Area
54,725		18.58% Impervious Area
10,579		19.33% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.1300	0.17		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
5.3	343	0.0466	1.08		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
10.3	434	0.0100	0.70		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.3	40	0.0183	2.18		**Shallow Concentrated Flow, Gravel** Unpaved Kv= 16.1 fps
0.4	147	0.0360	6.04	40.29	**Parabolic Channel, Channel** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.035 Earth, dense weeds
26.2	1,064	Total			

Subcatchment 1S: DA 1



Summary for Subcatchment 3S: DA 2

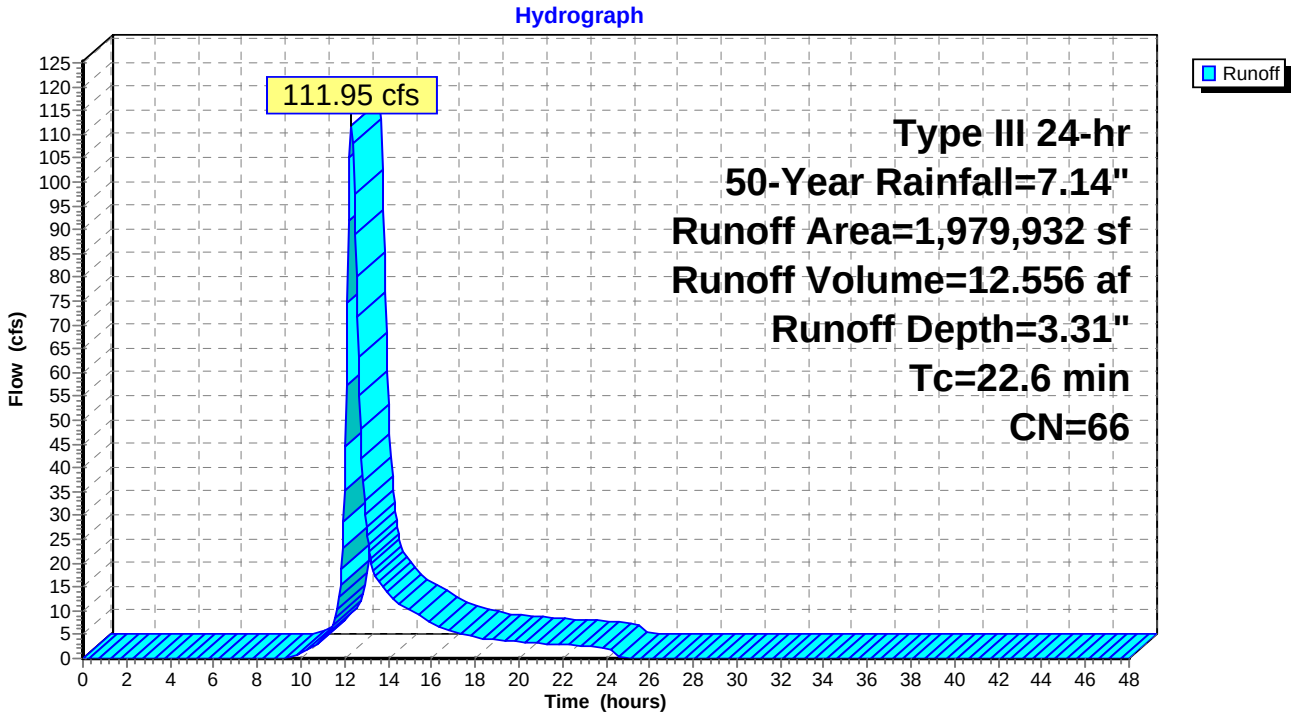
Runoff = 111.95 cfs @ 12.32 hrs, Volume= 12.556 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=7.14"

Area (sf)	CN	Description
473,802	77	Woods, Good, HSG D
36,547	98	Water Surface, 0% imp, HSG D
3,920	80	>75% Grass cover, Good, HSG D
12,284	61	>75% Grass cover, Good, HSG B
5,184	98	Unconnected roofs, HSG B
766,264	55	Woods, Good, HSG B
663,462	70	Woods, Good, HSG C
2,265	77	Woods, Good, HSG D
1,699	70	Woods, Good, HSG C
174	96	Gravel surface, HSG C
348	96	Gravel surface, HSG B
610	98	Paved parking, HSG C
13,373	74	>75% Grass cover, Good, HSG C
1,979,932	66	Weighted Average
1,974,138		99.71% Pervious Area
5,794		0.29% Impervious Area
5,184		89.47% Unconnected

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

Subcatchment 3S: DA 2



Summary for Pond 2P: 30" RCP

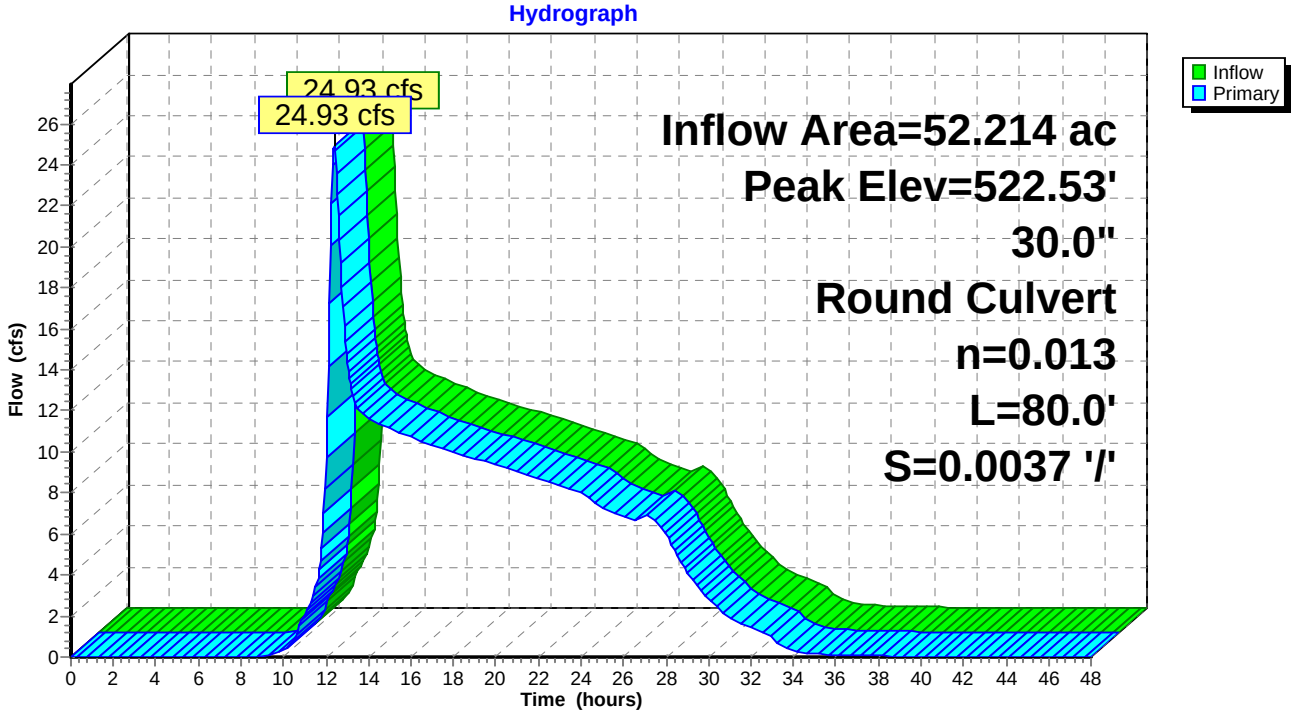
Inflow Area = 52.214 ac, 2.66% Impervious, Inflow Depth > 3.36" for 50-Year event
Inflow = 24.93 cfs @ 12.39 hrs, Volume= 14.628 af
Outflow = 24.93 cfs @ 12.39 hrs, Volume= 14.628 af, Atten= 0%, Lag= 0.0 min
Primary = 24.93 cfs @ 12.39 hrs, Volume= 14.628 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 522.53' @ 12.39 hrs
Flood Elev= 527.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	519.92'	**30.0" Round 30" RC** L= 80.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 519.92' / 519.62' S= 0.0037 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 4.91 sf

Primary OutFlow Max=24.87 cfs @ 12.39 hrs HW=522.52' (Free Discharge)
└**1=30" RC** (Barrel Controls 24.87 cfs @ 6.05 fps)

Pond 2P: 30" RCP



Summary for Pond 4P: Pond

Inflow Area = 45.453 ac, 0.29% Impervious, Inflow Depth = 3.31" for 50-Year event
Inflow = 111.95 cfs @ 12.32 hrs, Volume= 12.556 af
Outflow = 9.54 cfs @ 15.20 hrs, Volume= 12.523 af, Atten= 91%, Lag= 172.7 min
Primary = 9.54 cfs @ 15.20 hrs, Volume= 12.523 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 526.51' @ 15.20 hrs Surf.Area= 2.505 ac Storage= 6.834 af

Plug-Flow detention time= 375.7 min calculated for 12.510 af (100% of inflow)
Center-of-Mass det. time= 374.9 min (1,229.0 - 854.1)

Volume	Invert	Avail.Storage	Storage Description
#1	522.20'	10.783 af	**Pond Storage (Irregular)**Listed below

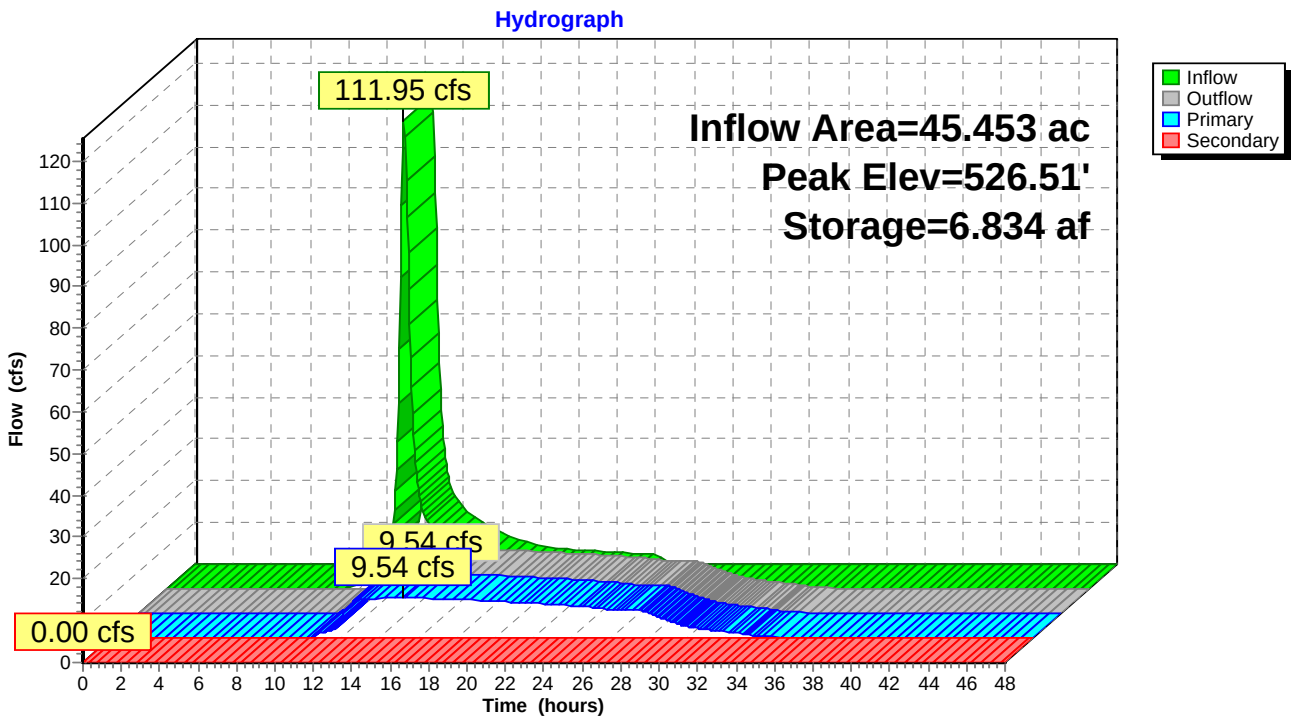
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
522.20	0.002	10.0	0.000	0.000	0.002
522.87	0.636	1,389.1	0.150	0.150	3.527
524.00	1.723	1,270.7	1.283	1.433	4.103
526.00	2.359	1,494.7	4.065	5.499	5.237
528.00	2.936	1,638.1	5.284	10.783	6.061

Device	Routing	Invert	Outlet Devices
#1	Primary	522.29'	**18.0" Round 18" RCP** L= 440.8' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 522.29' / 520.81' S= 0.0034 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf
#2	Secondary	526.90'	**83.0' long x 15.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=9.54 cfs @ 15.20 hrs HW=526.51' TW=521.49' (Dynamic Tailwater)
└─**1=18" RCP** (Barrel Controls 9.54 cfs @ 5.40 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=522.20' TW=519.92' (Dynamic Tailwater)
└─**2=Overflow** (Controls 0.00 cfs)

Pond 4P: Pond


Hydrograph
111.95 cfs
Inflow Area=45.453 ac
Peak Elev=526.51'
Storage=6.834 af
9.54 cfs
9.54 cfs
0.00 cfs
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 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 1S: DA 1 Runoff Area=294,524 sf 18.58% Impervious Runoff Depth=4.50"
Flow Length=1,064' Tc=26.2 min CN=70 Runoff=21.39 cfs 2.535 af

Subcatchment 3S: DA 2 Runoff Area=1,979,932 sf 0.29% Impervious Runoff Depth=4.04"
Tc=22.6 min CN=66 Runoff=137.19 cfs 15.304 af

Pond 2P: 30" RCP Peak Elev=522.85' Inflow=28.78 cfs 17.805 af
30.0" Round Culvert n=0.013 L=80.0' S=0.0037 '/' Outflow=28.78 cfs 17.805 af

Pond 4P: Pond Peak Elev=527.00' Storage=8.135 af Inflow=137.19 cfs 15.304 af
Primary=10.09 cfs 14.422 af Secondary=6.81 cfs 0.848 af Outflow=16.90 cfs 15.270 af

Total Runoff Area = 52.214 ac Runoff Volume = 17.839 af Average Runoff Depth = 4.10"
97.34% Pervious = 50.825 ac 2.66% Impervious = 1.389 ac

Summary for Subcatchment 1S: DA 1

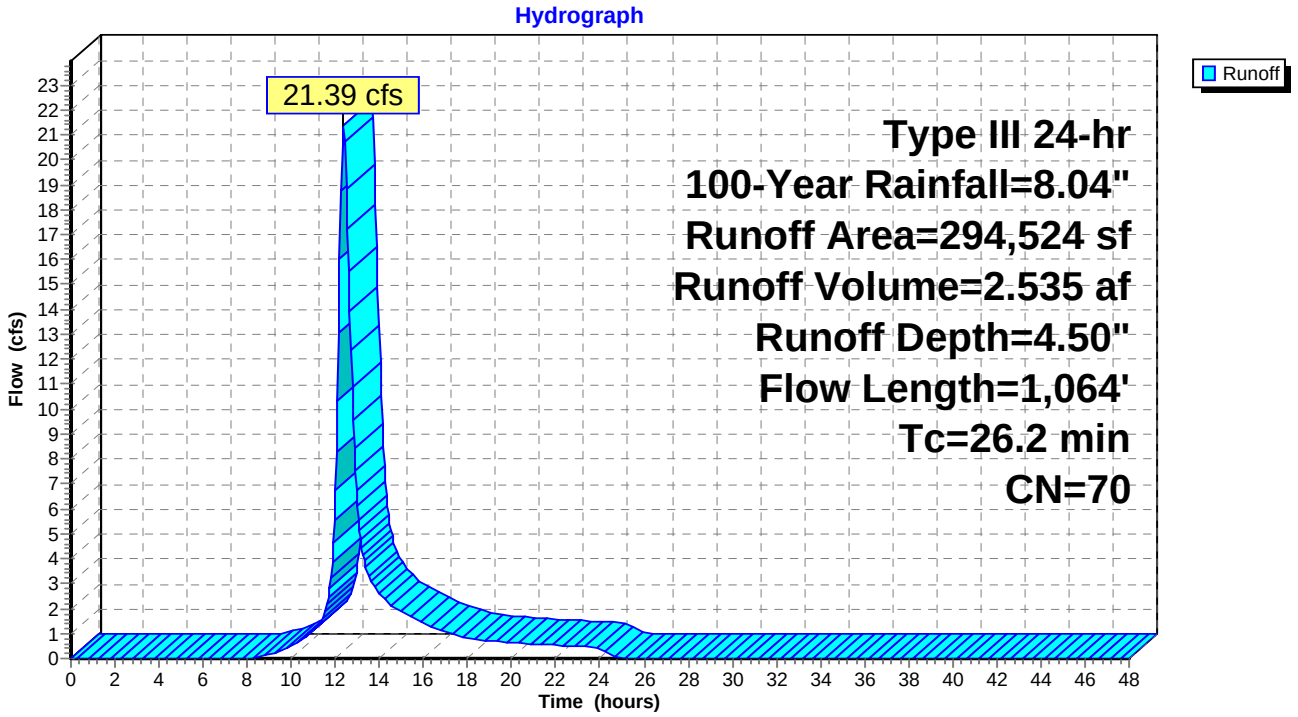
Runoff = 21.39 cfs @ 12.37 hrs, Volume= 2.535 af, Depth= 4.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.04"

Area (sf)	CN	Description
10,077	74	>75% Grass cover, Good, HSG C
1,575	98	Paved parking, HSG C
411	70	Woods, Good, HSG C
2,001	96	Gravel surface, HSG C
1,499	98	Unconnected roofs, HSG B
1,111	98	Unconnected roofs, HSG B
1,273	96	Gravel surface, HSG B
1,214	98	Unconnected roofs, HSG B
42,571	98	Paved parking, HSG B
1,694	96	Gravel surface, HSG B
4,509	98	Unconnected roofs, HSG C
113	98	Unconnected roofs, HSG C
2,133	98	Unconnected roofs, HSG C
12,266	96	Gravel surface, HSG C
2,876	70	Woods, Good, HSG C
1,206	70	Woods, Good, HSG C
677	70	Woods, Good, HSG C
650	70	Woods, Good, HSG C
3,876	70	Woods, Good, HSG C
641	70	Woods, Good, HSG C
4,468	55	Woods, Good, HSG B
99,615	55	Woods, Good, HSG B
62,431	61	>75% Grass cover, Good, HSG B
35,637	74	>75% Grass cover, Good, HSG C
294,524	70	Weighted Average
239,799		81.42% Pervious Area
54,725		18.58% Impervious Area
10,579		19.33% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.1300	0.17		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
5.3	343	0.0466	1.08		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
10.3	434	0.0100	0.70		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.3	40	0.0183	2.18		**Shallow Concentrated Flow, Gravel** Unpaved Kv= 16.1 fps
0.4	147	0.0360	6.04	40.29	**Parabolic Channel, Channel** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.035 Earth, dense weeds
26.2	1,064	Total			

Subcatchment 1S: DA 1



Summary for Subcatchment 3S: DA 2

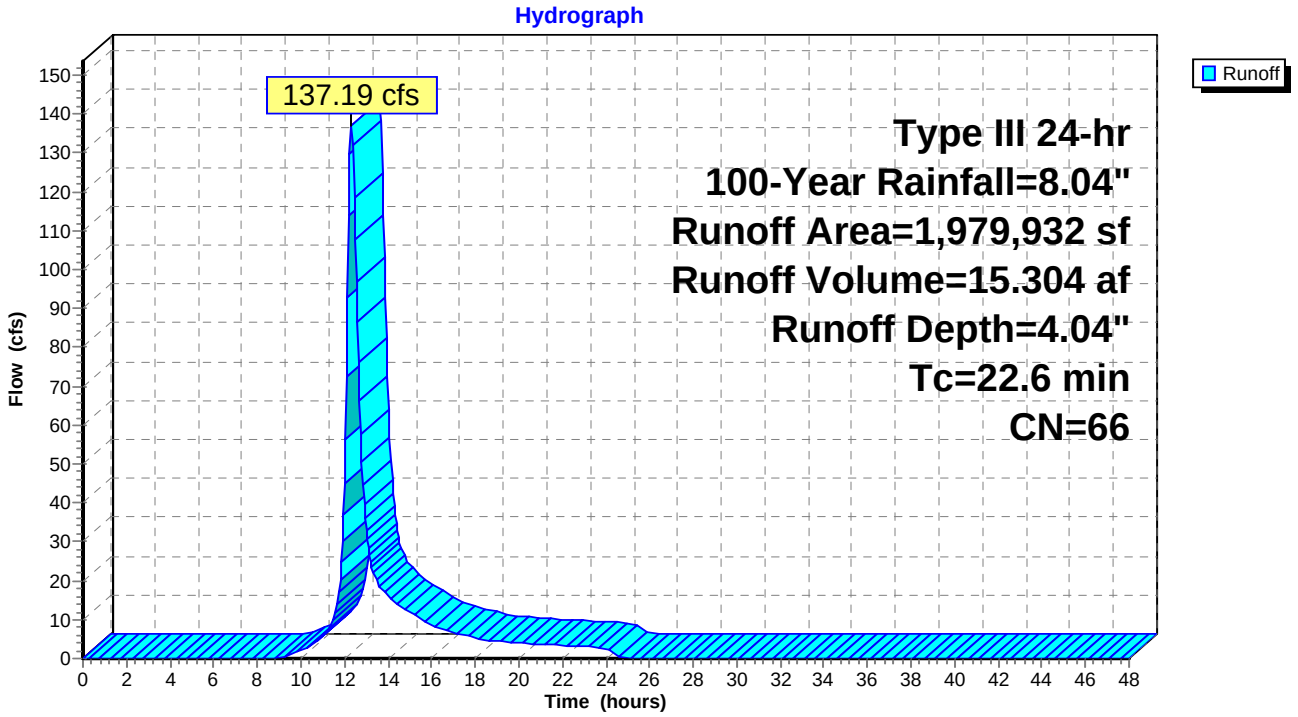
Runoff = 137.19 cfs @ 12.32 hrs, Volume= 15.304 af, Depth= 4.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.04"

Area (sf)	CN	Description
473,802	77	Woods, Good, HSG D
36,547	98	Water Surface, 0% imp, HSG D
3,920	80	>75% Grass cover, Good, HSG D
12,284	61	>75% Grass cover, Good, HSG B
5,184	98	Unconnected roofs, HSG B
766,264	55	Woods, Good, HSG B
663,462	70	Woods, Good, HSG C
2,265	77	Woods, Good, HSG D
1,699	70	Woods, Good, HSG C
174	96	Gravel surface, HSG C
348	96	Gravel surface, HSG B
610	98	Paved parking, HSG C
13,373	74	>75% Grass cover, Good, HSG C
1,979,932	66	Weighted Average
1,974,138		99.71% Pervious Area
5,794		0.29% Impervious Area
5,184		89.47% Unconnected

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

Subcatchment 3S: DA 2



Summary for Pond 2P: 30" RCP

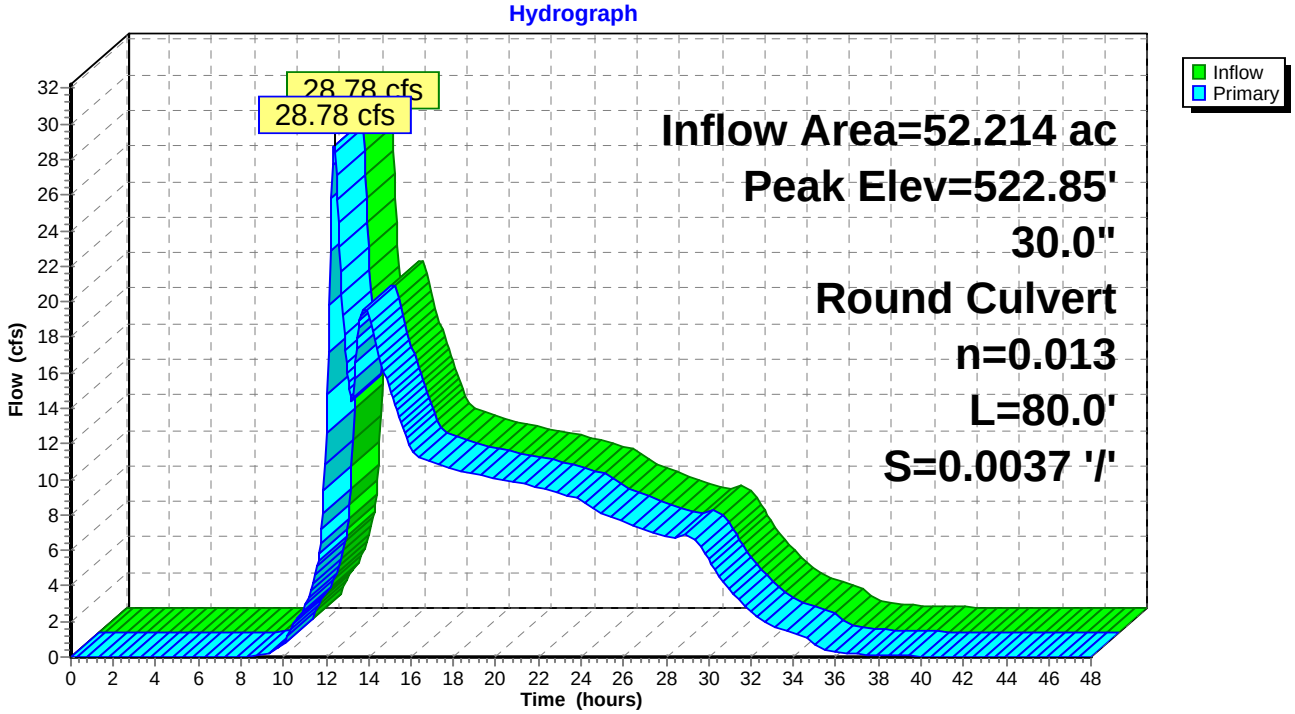
Inflow Area = 52.214 ac, 2.66% Impervious, Inflow Depth > 4.09" for 100-Year event
Inflow = 28.78 cfs @ 12.38 hrs, Volume= 17.805 af
Outflow = 28.78 cfs @ 12.38 hrs, Volume= 17.805 af, Atten= 0%, Lag= 0.0 min
Primary = 28.78 cfs @ 12.38 hrs, Volume= 17.805 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 522.85' @ 12.38 hrs
Flood Elev= 527.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	519.92'	**30.0" Round 30" RC** L= 80.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 519.92' / 519.62' S= 0.0037 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 4.91 sf

Primary OutFlow Max=28.70 cfs @ 12.38 hrs HW=522.84' (Free Discharge)
└**1=30" RC** (Barrel Controls 28.70 cfs @ 6.29 fps)

Pond 2P: 30" RCP



Summary for Pond 4P: Pond

Inflow Area = 45.453 ac, 0.29% Impervious, Inflow Depth = 4.04" for 100-Year event
Inflow = 137.19 cfs @ 12.32 hrs, Volume= 15.304 af
Outflow = 16.90 cfs @ 13.87 hrs, Volume= 15.270 af, Atten= 88%, Lag= 93.0 min
Primary = 10.09 cfs @ 13.87 hrs, Volume= 14.422 af
Secondary = 6.81 cfs @ 13.87 hrs, Volume= 0.848 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 527.00' @ 13.87 hrs Surf.Area= 2.647 ac Storage= 8.135 af

Plug-Flow detention time= 396.8 min calculated for 15.270 af (100% of inflow)
Center-of-Mass det. time= 395.4 min (1,243.8 - 848.4)

Volume	Invert	Avail.Storage	Storage Description
#1	522.20'	10.783 af	**Pond Storage (Irregular)**Listed below

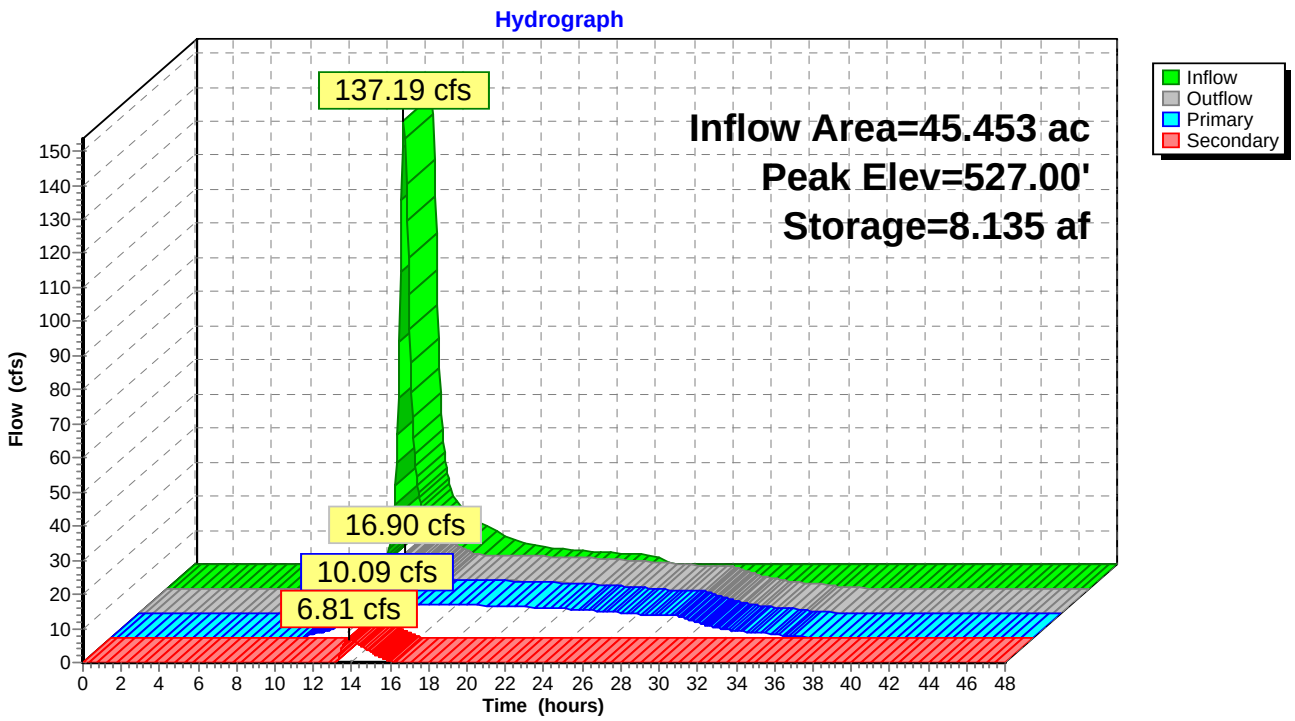
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
522.20	0.002	10.0	0.000	0.000	0.002
522.87	0.636	1,389.1	0.150	0.150	3.527
524.00	1.723	1,270.7	1.283	1.433	4.103
526.00	2.359	1,494.7	4.065	5.499	5.237
528.00	2.936	1,638.1	5.284	10.783	6.061

Device	Routing	Invert	Outlet Devices
#1	Primary	522.29'	**18.0" Round 18" RCP** L= 440.8' RCP, groove end projecting, Ke= 0.200 Inlet / Outlet Invert= 522.29' / 520.81' S= 0.0034 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 1.77 sf
#2	Secondary	526.90'	**83.0' long x 15.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=10.09 cfs @ 13.87 hrs HW=527.00' TW=522.13' (Dynamic Tailwater)
└**1=18" RCP** (Barrel Controls 10.09 cfs @ 5.71 fps)

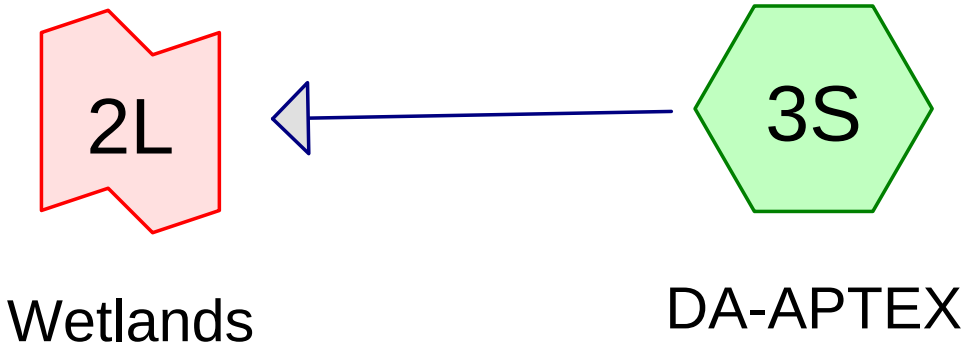
Secondary OutFlow Max=6.80 cfs @ 13.87 hrs HW=527.00' TW=522.13' (Dynamic Tailwater)
└**2=Overflow** (Weir Controls 6.80 cfs @ 0.84 fps)

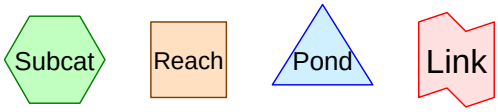
Pond 4P: Pond


Hydrograph
137.19 cfs
16.90 cfs
10.09 cfs
6.81 cfs
Inflow Area=45.453 ac
Peak Elev=527.00'
Storage=8.135 af
Inflow
Outflow
Primary
Secondary
Flow (cfs)
Time (hours)

Pre-Development Conditions HydroCAD Results

Apartment Project Area Only





Routing Diagram for Existing Apartments Only
Prepared by {enter your company name here}, Printed 12/14/2020
HydroCAD® 10.10-4b s/n 04031 © 2020 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type III 24-hr		Default	24.00	1	3.37	2
2	10-Year	Type III 24-hr		Default	24.00	1	5.18	2
3	25-Year	Type III 24-hr		Default	24.00	1	6.30	2
4	50-Year	Type III 24-hr		Default	24.00	1	7.14	2
5	100-Year	Type III 24-hr		Default	24.00	1	8.04	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
8.686	70	Woods, Good, HSG C (3S)
0.556	77	Woods, Good, HSG D (3S)
9.242	**70**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
8.686	HSG C	3S
0.556	HSG D	3S
0.000	Other	
9.242		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	8.686	0.556	0.000	9.242	Woods, Good	3S
0.000	**0.000**	**8.686**	**0.556**	**0.000**	**9.242**	**TOTAL AREA**	

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 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 3S: DA-APTEX Runoff Area=402,581 sf 0.00% Impervious Runoff Depth=0.93"
Flow Length=758' Tc=15.3 min CN=70 Runoff=6.77 cfs 0.715 af

Link 2L: Wetlands Inflow=6.77 cfs 0.715 af
Primary=6.77 cfs 0.715 af

Total Runoff Area = 9.242 ac Runoff Volume = 0.715 af Average Runoff Depth = 0.93"
100.00% Pervious = 9.242 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 3S: DA-APTEX

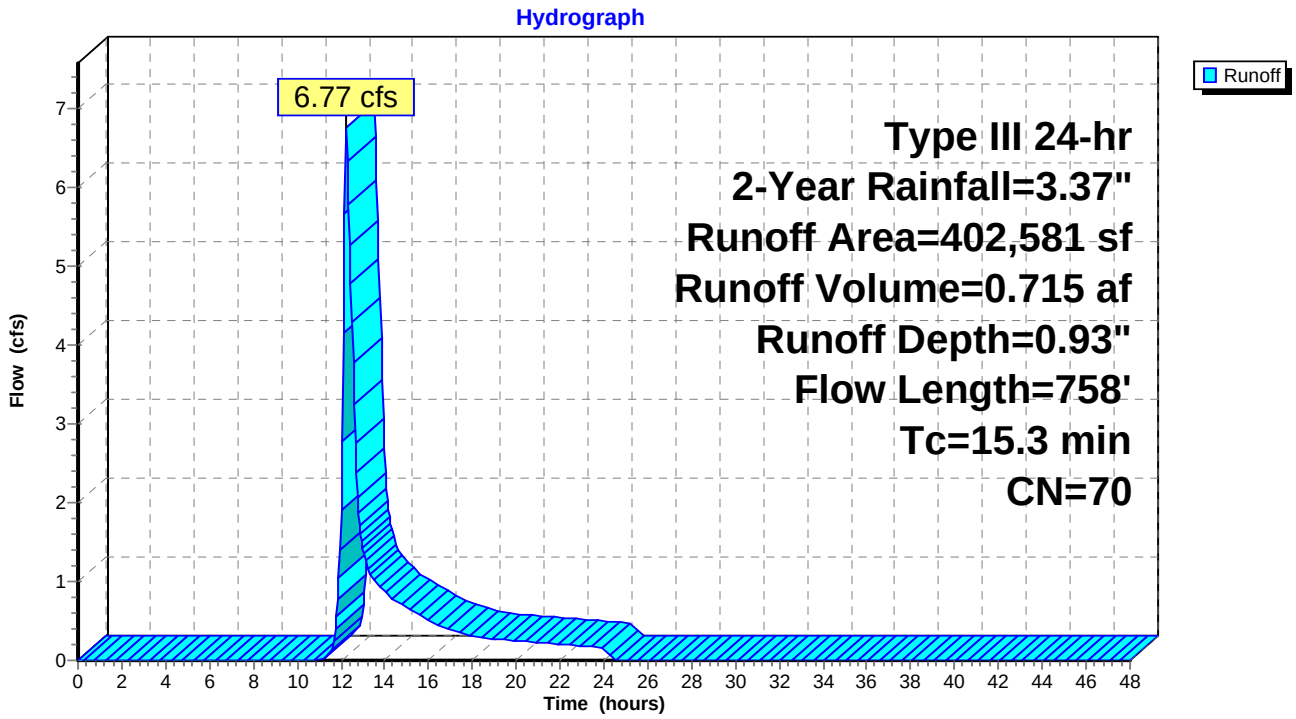
Runoff = 6.77 cfs @ 12.24 hrs, Volume= 0.715 af, Depth= 0.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.37"

Area (sf)	CN	Description
378,362	70	Woods, Good, HSG C
24,219	77	Woods, Good, HSG D
402,581	70	Weighted Average
402,581		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	50	0.0400	0.09		**Sheet Flow, Grass** Woods: Light underbrush n= 0.400 P2= 3.37"
6.2	708	0.1427	1.89		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
15.3	758	Total			

Subcatchment 3S: DA-APTEX

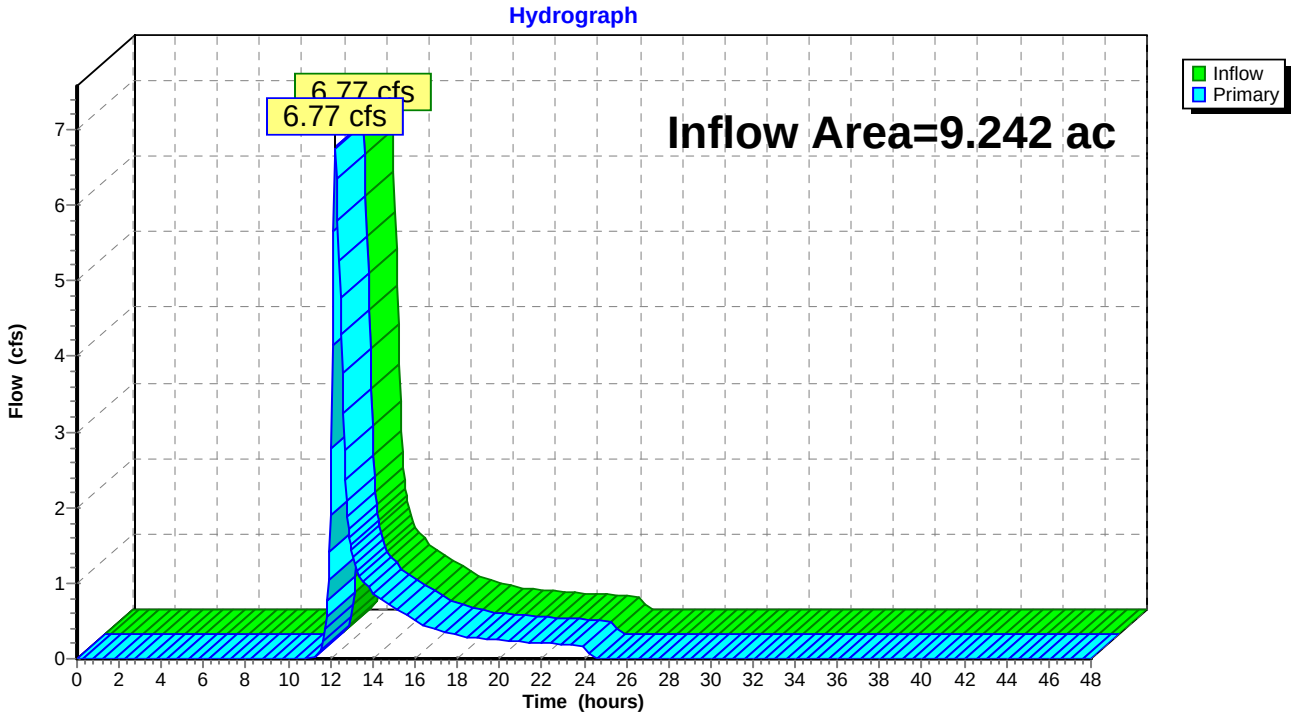


Summary for Link 2L: Wetlands

Inflow Area = 9.242 ac, 0.00% Impervious, Inflow Depth = 0.93" for 2-Year event
Inflow = 6.77 cfs @ 12.24 hrs, Volume= 0.715 af
Primary = 6.77 cfs @ 12.24 hrs, Volume= 0.715 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link 2L: Wetlands



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 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 3S: DA-APTEX Runoff Area=402,581 sf 0.00% Impervious Runoff Depth=2.17"
Flow Length=758' Tc=15.3 min CN=70 Runoff=17.27 cfs 1.672 af

Link 2L: Wetlands Inflow=17.27 cfs 1.672 af
Primary=17.27 cfs 1.672 af

Total Runoff Area = 9.242 ac Runoff Volume = 1.672 af Average Runoff Depth = 2.17"
100.00% Pervious = 9.242 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 3S: DA-APTEX

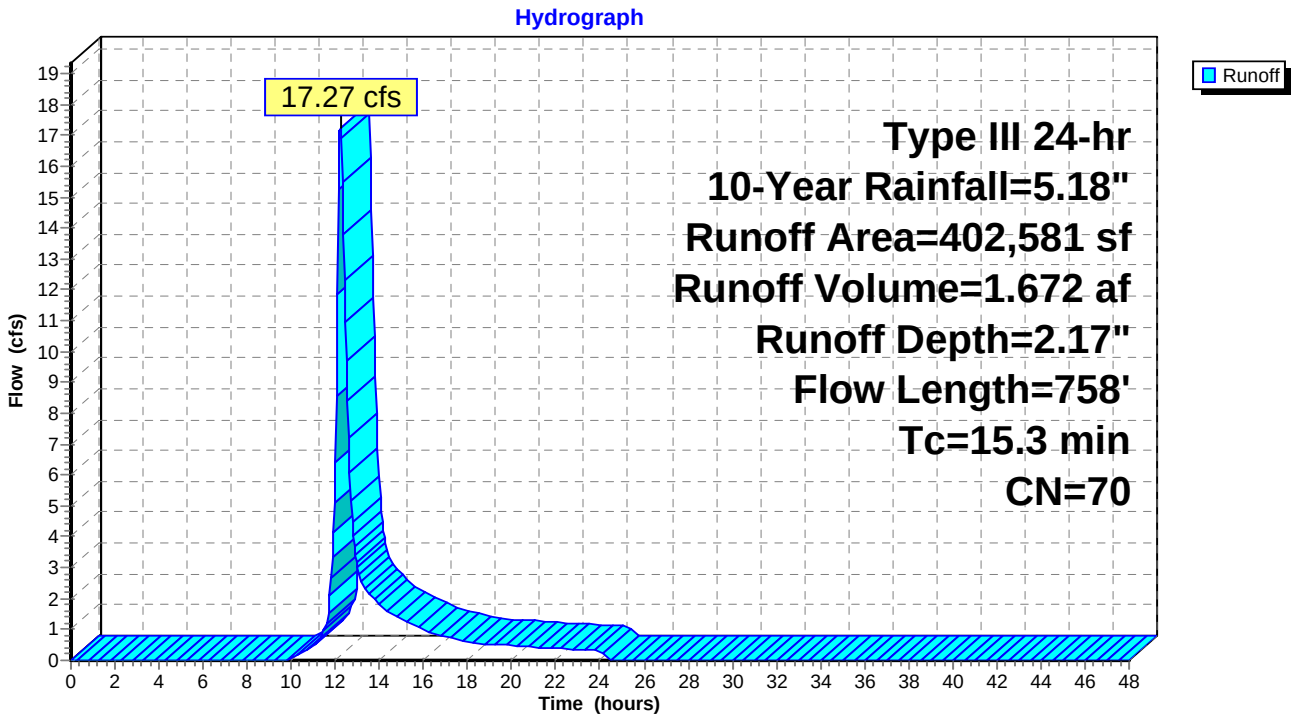
Runoff = 17.27 cfs @ 12.22 hrs, Volume= 1.672 af, Depth= 2.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.18"

Area (sf)	CN	Description
378,362	70	Woods, Good, HSG C
24,219	77	Woods, Good, HSG D
402,581	70	Weighted Average
402,581		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	50	0.0400	0.09		**Sheet Flow, Grass** Woods: Light underbrush n= 0.400 P2= 3.37"
6.2	708	0.1427	1.89		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
15.3	758	Total			

Subcatchment 3S: DA-APTEX

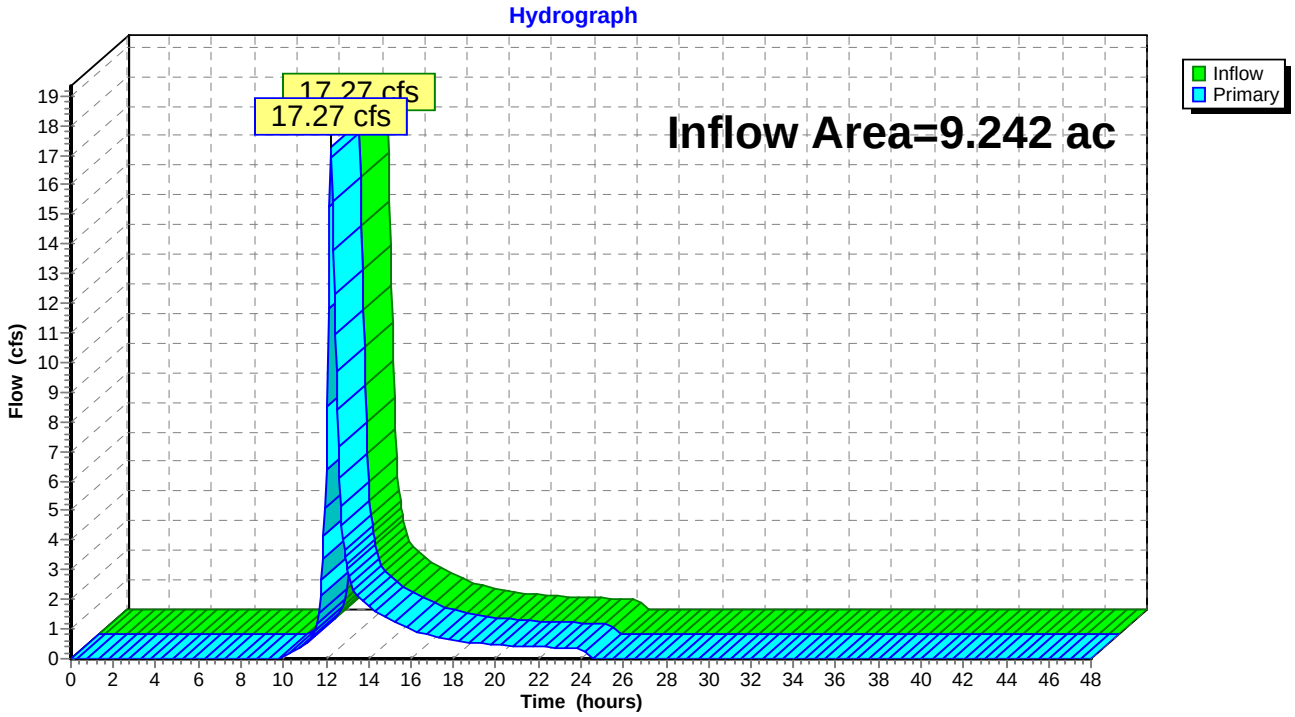


Summary for Link 2L: Wetlands

Inflow Area = 9.242 ac, 0.00% Impervious, Inflow Depth = 2.17" for 10-Year event
Inflow = 17.27 cfs @ 12.22 hrs, Volume= 1.672 af
Primary = 17.27 cfs @ 12.22 hrs, Volume= 1.672 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link 2L: Wetlands



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 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 3S: DA-APTEX Runoff Area=402,581 sf 0.00% Impervious Runoff Depth=3.05"
Flow Length=758' Tc=15.3 min CN=70 Runoff=24.55 cfs 2.345 af

Link 2L: Wetlands Inflow=24.55 cfs 2.345 af
Primary=24.55 cfs 2.345 af

Total Runoff Area = 9.242 ac Runoff Volume = 2.345 af Average Runoff Depth = 3.05"
100.00% Pervious = 9.242 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 3S: DA-APTEX

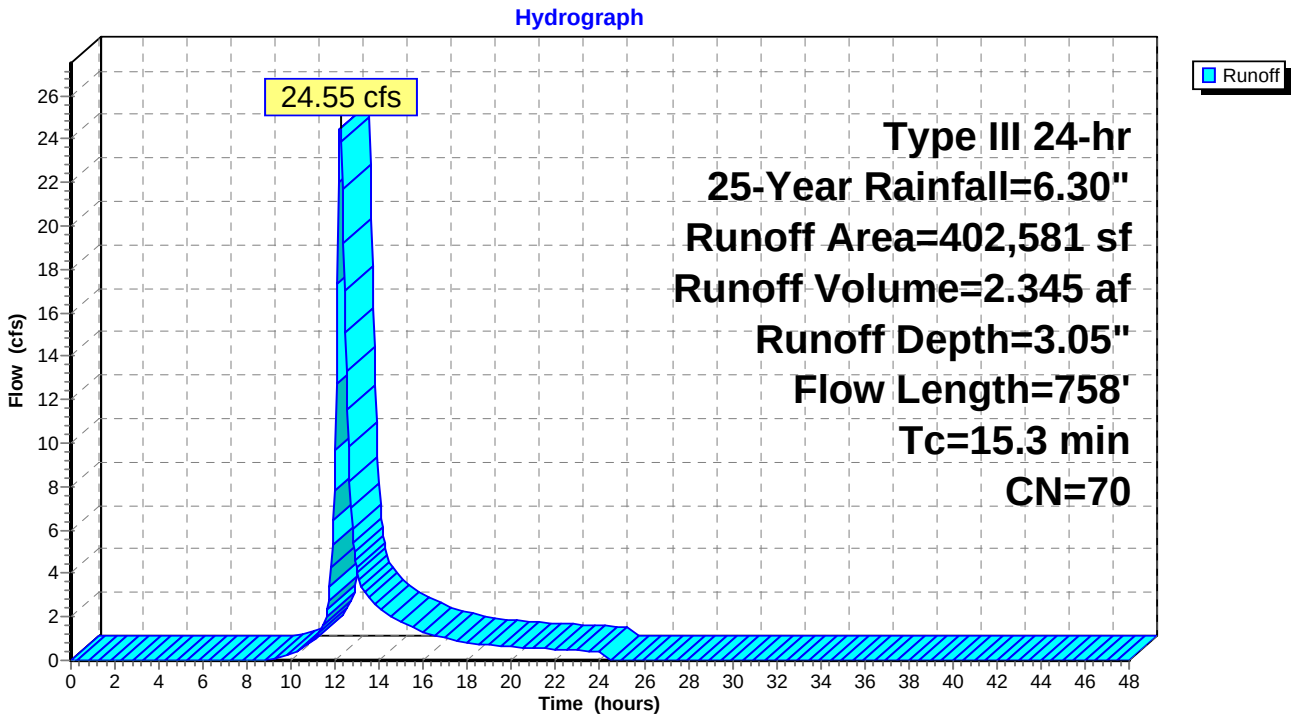
Runoff = 24.55 cfs @ 12.22 hrs, Volume= 2.345 af, Depth= 3.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.30"

Area (sf)	CN	Description
378,362	70	Woods, Good, HSG C
24,219	77	Woods, Good, HSG D
402,581	70	Weighted Average
402,581		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	50	0.0400	0.09		**Sheet Flow, Grass** Woods: Light underbrush n= 0.400 P2= 3.37"
6.2	708	0.1427	1.89		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
15.3	758	Total			

Subcatchment 3S: DA-APTEX

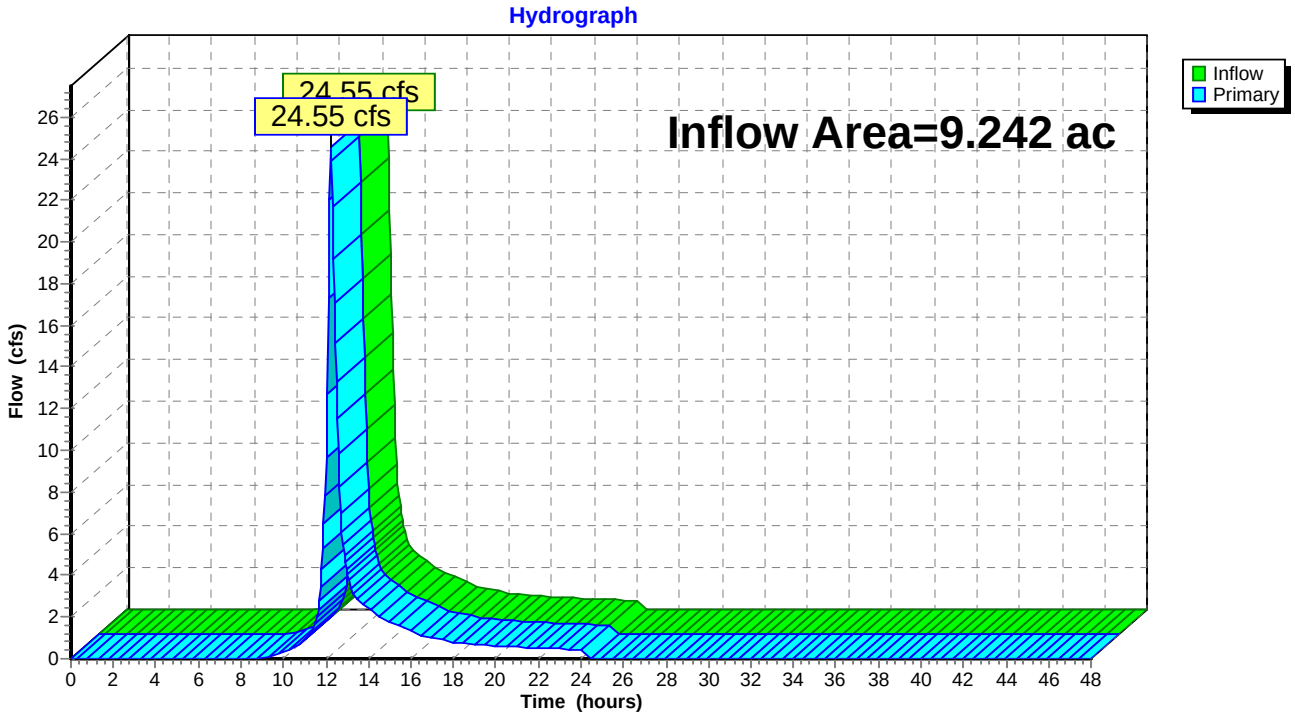


Summary for Link 2L: Wetlands

Inflow Area = 9.242 ac, 0.00% Impervious, Inflow Depth = 3.05" for 25-Year event
Inflow = 24.55 cfs @ 12.22 hrs, Volume= 2.345 af
Primary = 24.55 cfs @ 12.22 hrs, Volume= 2.345 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link 2L: Wetlands



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 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 3S: DA-APTEX Runoff Area=402,581 sf 0.00% Impervious Runoff Depth=3.74"
Flow Length=758' Tc=15.3 min CN=70 Runoff=30.24 cfs 2.877 af

Link 2L: Wetlands Inflow=30.24 cfs 2.877 af
Primary=30.24 cfs 2.877 af

Total Runoff Area = 9.242 ac Runoff Volume = 2.877 af Average Runoff Depth = 3.74"
100.00% Pervious = 9.242 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 3S: DA-APTEX

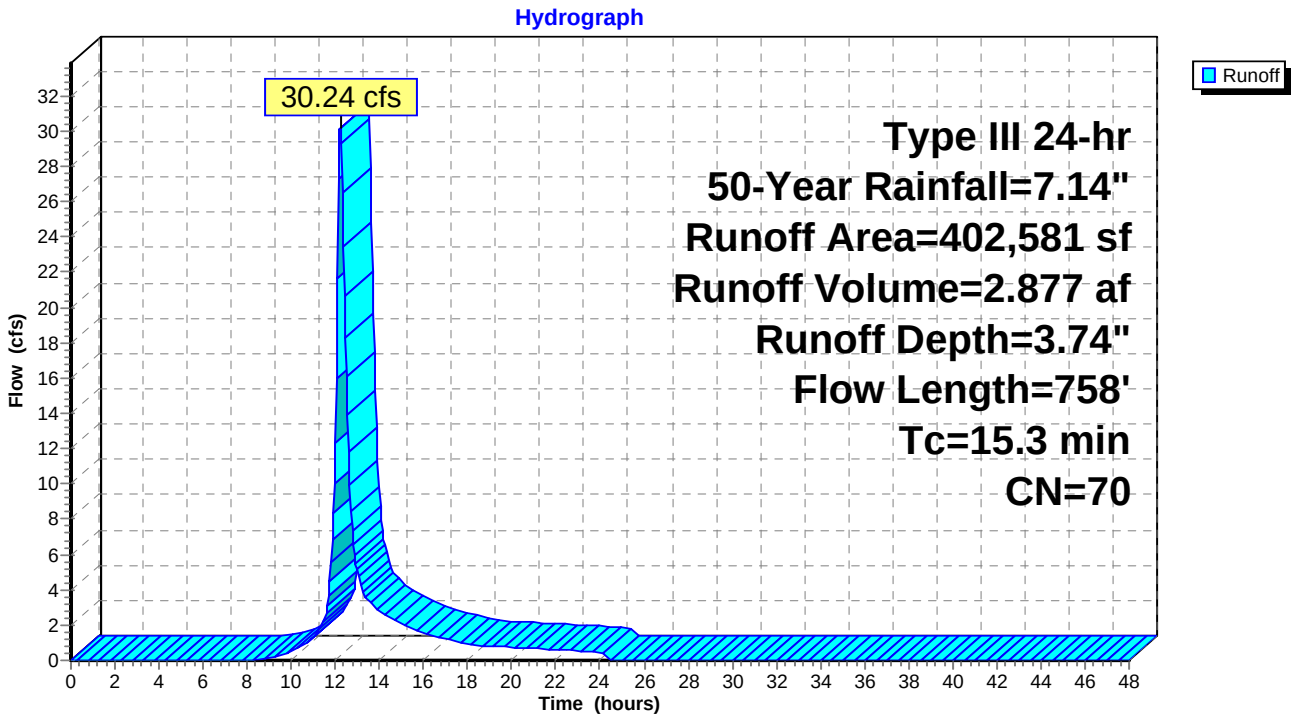
Runoff = 30.24 cfs @ 12.21 hrs, Volume= 2.877 af, Depth= 3.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=7.14"

Area (sf)	CN	Description
378,362	70	Woods, Good, HSG C
24,219	77	Woods, Good, HSG D
402,581	70	Weighted Average
402,581		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	50	0.0400	0.09		**Sheet Flow, Grass** Woods: Light underbrush n= 0.400 P2= 3.37"
6.2	708	0.1427	1.89		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
15.3	758	Total			

Subcatchment 3S: DA-APTEX

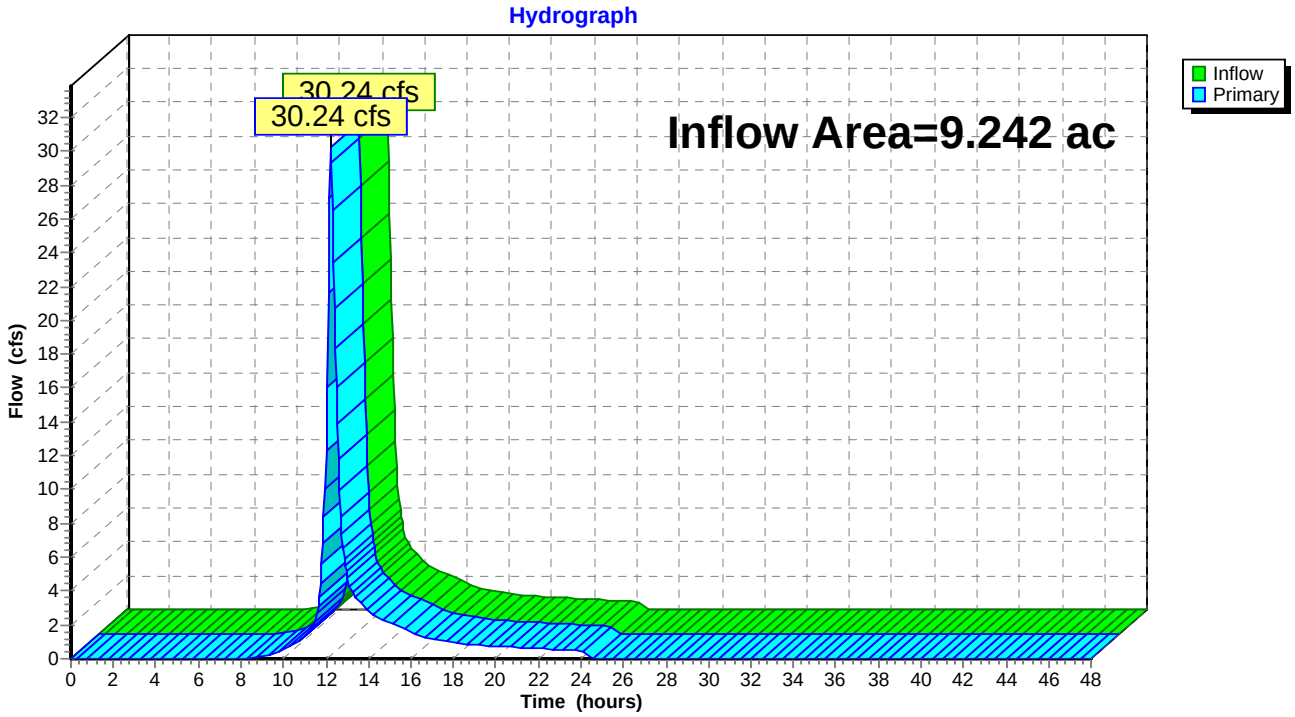


Summary for Link 2L: Wetlands

Inflow Area = 9.242 ac, 0.00% Impervious, Inflow Depth = 3.74" for 50-Year event
Inflow = 30.24 cfs @ 12.21 hrs, Volume= 2.877 af
Primary = 30.24 cfs @ 12.21 hrs, Volume= 2.877 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link 2L: Wetlands



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 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 3S: DA-APTEX Runoff Area=402,581 sf 0.00% Impervious Runoff Depth=4.50"
Flow Length=758' Tc=15.3 min CN=70 Runoff=36.47 cfs 3.465 af

Link 2L: Wetlands Inflow=36.47 cfs 3.465 af
Primary=36.47 cfs 3.465 af

Total Runoff Area = 9.242 ac Runoff Volume = 3.465 af Average Runoff Depth = 4.50"
100.00% Pervious = 9.242 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 3S: DA-APTEX

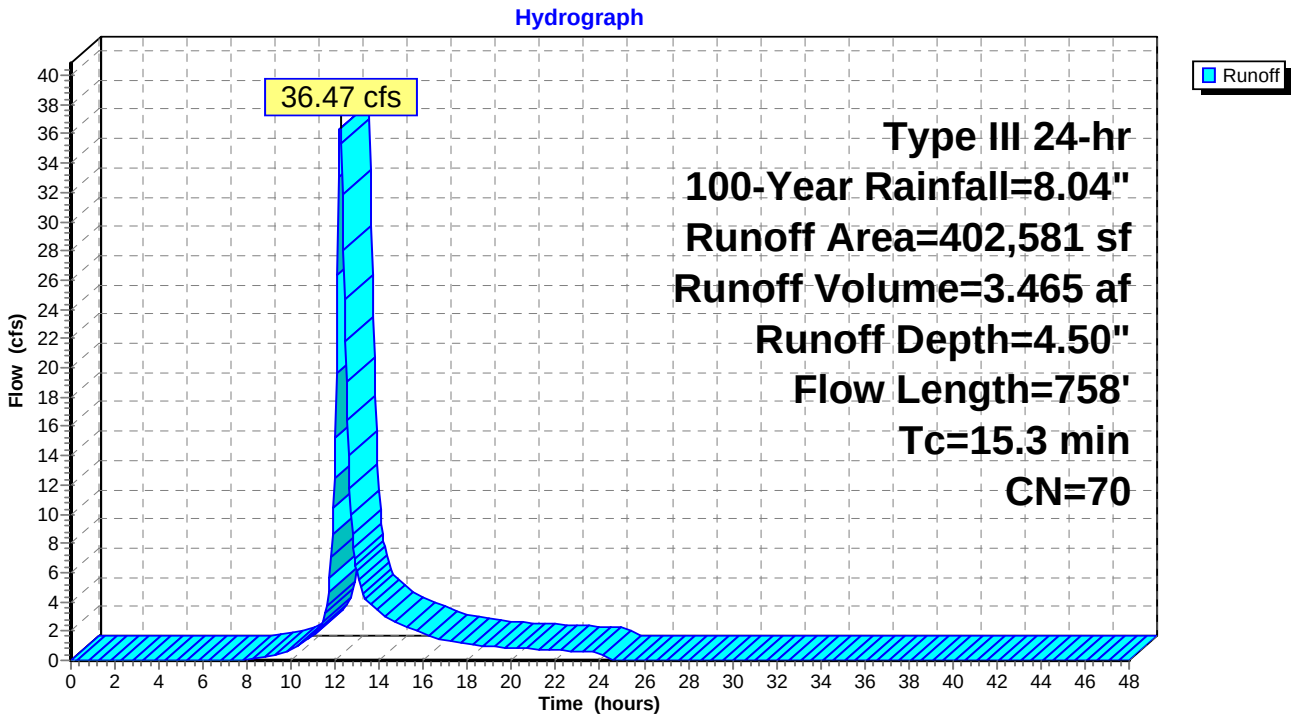
Runoff = 36.47 cfs @ 12.21 hrs, Volume= 3.465 af, Depth= 4.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.04"

Area (sf)	CN	Description
378,362	70	Woods, Good, HSG C
24,219	77	Woods, Good, HSG D
402,581	70	Weighted Average
402,581		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.1	50	0.0400	0.09		**Sheet Flow, Grass** Woods: Light underbrush n= 0.400 P2= 3.37"
6.2	708	0.1427	1.89		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
15.3	758	Total			

Subcatchment 3S: DA-APTEX

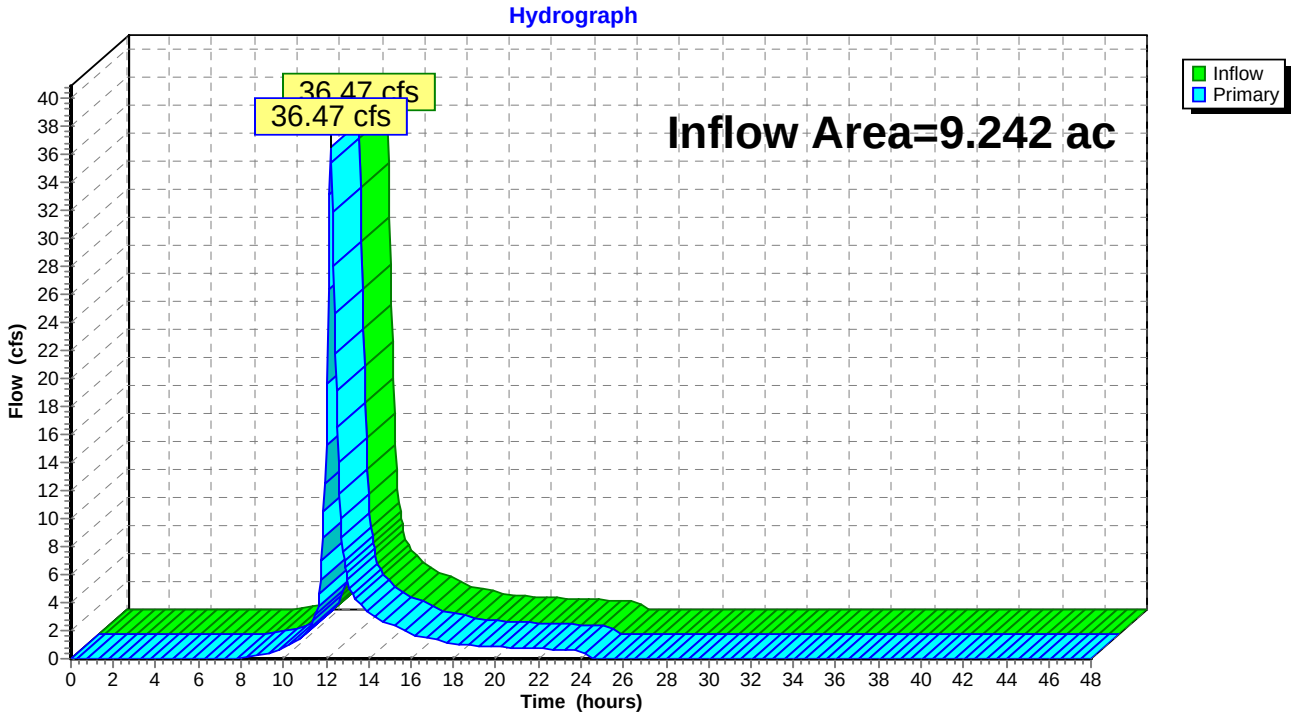


Summary for Link 2L: Wetlands

Inflow Area = 9.242 ac, 0.00% Impervious, Inflow Depth = 4.50" for 100-Year event
Inflow = 36.47 cfs @ 12.21 hrs, Volume= 3.465 af
Primary = 36.47 cfs @ 12.21 hrs, Volume= 3.465 af, Atten= 0%, Lag= 0.0 min

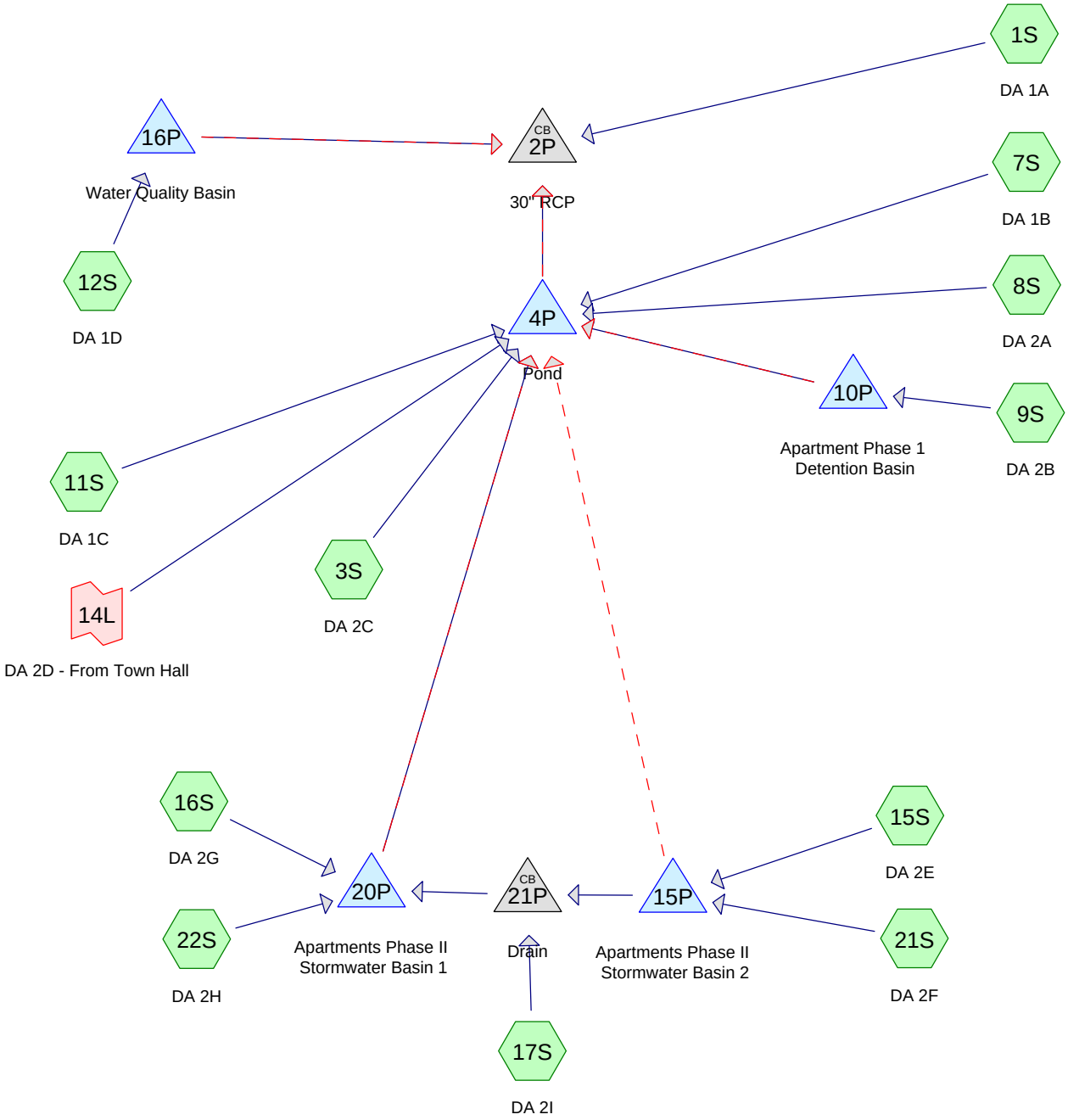
Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link 2L: Wetlands



Post-Development Conditions

HydroCAD Results



Subcat Reach Pond Link

Routing Diagram for Market Square and Existing Development to RT 66

Prepared by {enter your company name here}, Printed 12/14/2020

HydroCAD® 10.10-4b s/n 04031 © 2020 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type III 24-hr		Default	24.00	1	3.37	2
2	10-Year	Type III 24-hr		Default	24.00	1	5.18	2
3	25-Year	Type III 24-hr		Default	24.00	1	6.30	2
4	50-Year	Type III 24-hr		Default	24.00	1	7.14	2
5	100-Year	Type III 24-hr		Default	24.00	1	8.04	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
3.126	61	>75% Grass cover, Good, HSG B (1S, 3S, 7S, 8S, 9S)
2.592	74	>75% Grass cover, Good, HSG C (1S, 3S, 11S, 12S, 15S, 16S, 21S, 22S)
0.505	74	>75% Grass cover, Good, HSG C, North (17S, 22S)
0.811	74	>75% Grass cover, Good, HSG C, South (15S, 22S)
0.429	80	>75% Grass cover, Good, HSG D (3S, 16S)
0.010	80	>75% Grass cover, Good, HSG D, North (22S)
0.271	86	Newly graded area, HSG B (7S)
5.700	98	Paved parking, HSG B (1S, 3S, 7S, 8S, 9S)
2.354	98	Paved parking, HSG C (1S, 3S, 11S, 12S)
0.775	98	Paved parking, HSG C, North (17S, 22S)
1.535	98	Paved parking, HSG C, South (15S, 22S)
0.152	98	Roofs, HSG B (8S)
0.110	98	Roofs, HSG C (3S)
0.184	98	Unconnected Roofs (3S)
0.870	98	Unconnected roofs, HSG B (3S)
0.076	98	Water Surface, 0% imp, HSG B (9S)
0.294	98	Water Surface, 0% imp, HSG C (12S, 16S, 21S)
0.839	98	Water Surface, 0% imp, HSG D (3S)
14.726	55	Woods, Good, HSG B (3S, 8S, 9S)
4.351	70	Woods, Good, HSG C (3S, 15S, 22S)
9.778	77	Woods, Good, HSG D (3S)
49.488	**74**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
24.921	HSG B	1S, 3S, 7S, 8S, 9S
13.327	HSG C	1S, 3S, 11S, 12S, 15S, 16S, 17S, 21S, 22S
11.056	HSG D	3S, 16S, 22S
0.184	Other	3S
49.488		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	3.126	3.908	0.439	0.000	7.473	>75% Grass cover, Good	1S, 3S, 7S, 8S, 9S, 11S, 12S, 15S, 16S, 17S, 21S, 22S
0.000	0.271	0.000	0.000	0.000	0.271	Newly graded area	7S
0.000	5.700	4.664	0.000	0.000	10.364	Paved parking	1S, 3S, 7S, 8S, 9S, 11S, 12S, 15S, 17S, 22S
0.000	0.152	0.110	0.000	0.000	0.262	Roofs	3S, 8S
0.000	0.000	0.000	0.000	0.184	0.184	Unconnected Roofs	3S
0.000	0.870	0.000	0.000	0.000	0.870	Unconnected roofs	3S
0.000	0.076	0.294	0.839	0.000	1.209	Water Surface, 0% imp	3S, 9S, 12S, 16S, 21S
0.000	14.726	4.351	9.778	0.000	28.855	Woods, Good	3S, 8S, 9S, 15S, 22S
0.000	**24.921**	**13.327**	**11.056**	**0.184**	**49.488**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	1S	0.00	0.00	253.0	0.0200	0.013	0.0	18.0	0.0
2	7S	0.00	0.00	167.0	0.0200	0.013	0.0	18.0	0.0
3	8S	0.00	0.00	82.0	0.0500	0.013	0.0	15.0	0.0
4	9S	0.00	0.00	108.0	0.0200	0.013	0.0	15.0	0.0
5	2P	519.92	519.62	80.0	0.0037	0.013	0.0	30.0	0.0
6	4P	520.91	520.64	110.8	0.0024	0.013	0.0	30.0	0.0
7	4P	521.46	520.91	86.8	0.0063	0.013	0.0	30.0	0.0
8	4P	521.41	521.40	157.1	0.0001	0.013	0.0	24.0	0.0
9	4P	523.45	521.82	117.9	0.0138	0.013	0.0	18.0	0.0
10	10P	536.00	534.50	75.0	0.0200	0.013	0.0	12.0	0.0
11	15P	562.00	561.60	68.0	0.0059	0.013	0.0	18.0	0.0
12	16P	522.75	521.75	75.0	0.0133	0.013	0.0	24.0	0.0
13	20P	551.00	549.00	152.0	0.0132	0.013	0.0	18.0	0.0
14	21P	561.40	559.50	260.0	0.0073	0.013	0.0	24.0	0.0

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 2
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 1S: DA 1A Runoff Area=2.061 ac 80.93% Impervious Runoff Depth=2.42"
Flow Length=532' Tc=11.0 min CN=91 Runoff=4.83 cfs 0.415 af

Subcatchment 3S: DA 2C Runoff Area=30.199 ac 4.93% Impervious Runoff Depth=0.78"
Flow Length=2,588' Tc=22.6 min UI Adjusted CN=67 Runoff=15.09 cfs 1.958 af

Subcatchment 7S: DA 1B Runoff Area=94,000 sf 75.97% Impervious Runoff Depth=2.51"
Flow Length=669' Tc=6.0 min CN=92 Runoff=6.05 cfs 0.452 af

Subcatchment 8S: DA 2A Runoff Area=3.613 ac 61.86% Impervious Runoff Depth=1.83"
Flow Length=740' Tc=12.1 min CN=84 Runoff=6.30 cfs 0.550 af

Subcatchment 9S: DA 2B Runoff Area=2.152 ac 30.72% Impervious Runoff Depth=1.04"
Flow Length=735' Tc=19.6 min CN=72 Runoff=1.65 cfs 0.186 af

Subcatchment 11S: DA 1C Runoff Area=14,897 sf 83.63% Impervious Runoff Depth=2.71"
Tc=6.0 min CN=94 Runoff=1.01 cfs 0.077 af

Subcatchment 12S: DA 1D Runoff Area=85,452 sf 71.00% Impervious Runoff Depth=2.61"
Tc=6.0 min CN=93 Runoff=5.66 cfs 0.427 af

Subcatchment 15S: DA 2E Runoff Area=3.136 ac 31.41% Impervious Runoff Depth=1.53"
Flow Length=671' Tc=12.0 min CN=80 Runoff=4.56 cfs 0.401 af

Subcatchment 16S: DA 2G Runoff Area=0.444 ac 0.00% Impervious Runoff Depth=1.60"
Flow Length=110' Tc=6.0 min CN=81 Runoff=0.82 cfs 0.059 af

Subcatchment 17S: DA 2I Runoff Area=0.536 ac 64.18% Impervious Runoff Depth=2.24"
Flow Length=230' Slope=0.0200 '/' Tc=11.0 min CN=89 Runoff=1.17 cfs 0.100 af

Subcatchment 21S: DA 2F Runoff Area=0.141 ac 0.00% Impervious Runoff Depth=1.75"
Flow Length=107' Tc=6.0 min CN=83 Runoff=0.28 cfs 0.021 af

Subcatchment 22S: DA 2H Runoff Area=2.744 ac 35.75% Impervious Runoff Depth=1.68"
Flow Length=676' Tc=10.0 min CN=82 Runoff=4.64 cfs 0.383 af

Pond 2P: 30" RCP Peak Elev=521.10' Inflow=6.62 cfs 5.343 af
Primary=6.62 cfs 5.343 af Secondary=0.00 cfs 0.000 af Outflow=6.62 cfs 5.343 af

Pond 4P: Pond Peak Elev=524.66' Storage=1.961 af Inflow=28.26 cfs 4.611 af
Primary=5.71 cfs 4.501 af Secondary=0.00 cfs 0.000 af Outflow=5.71 cfs 4.501 af

Pond 10P: Apartment Phase 1 Detention Basin Peak Elev=536.68' Storage=228 cf Inflow=1.65 cfs 0.186 af
Primary=1.61 cfs 0.186 af Secondary=0.00 cfs 0.000 af Outflow=1.61 cfs 0.186 af

Pond 15P: Apartments Phase II Stormwater Peak Elev=567.57' Storage=4,537 cf Inflow=4.77 cfs 0.421 af
Primary=4.00 cfs 0.342 af Secondary=0.00 cfs 0.000 af Outflow=4.00 cfs 0.342 af

Pond 16P: Water Quality Basin Peak Elev=526.92' Storage=7,712 cf Inflow=5.66 cfs 0.427 af
Outflow=0.57 cfs 0.427 af

Pond 20P: Apartments Phase II Stormwater Peak Elev=557.00' Storage=15,826 cf Inflow=9.31 cfs 0.885 af
Primary=2.12 cfs 0.695 af Secondary=0.00 cfs 0.000 af Outflow=2.12 cfs 0.695 af

Pond 21P: Drain Peak Elev=562.36' Inflow=4.88 cfs 0.442 af
24.0" Round Culvert n=0.013 L=260.0' S=0.0073 '/' Outflow=4.88 cfs 0.442 af

2-Year **Link** Primary Outflow Imported from Proposed Conditions - Town Hall Site~Link EAST.hce Inflow=5.26 cfs 0.693 af
Area= 6.431 ac 40.57% Imperv. Primary=5.26 cfs 0.693 af

Total Runoff Area = 49.488 ac Runoff Volume = 5.029 af Average Runoff Depth = 1.22"
76.40% Pervious = 37.808 ac 23.60% Impervious = 11.680 ac

Summary for Subcatchment 1S: DA 1A

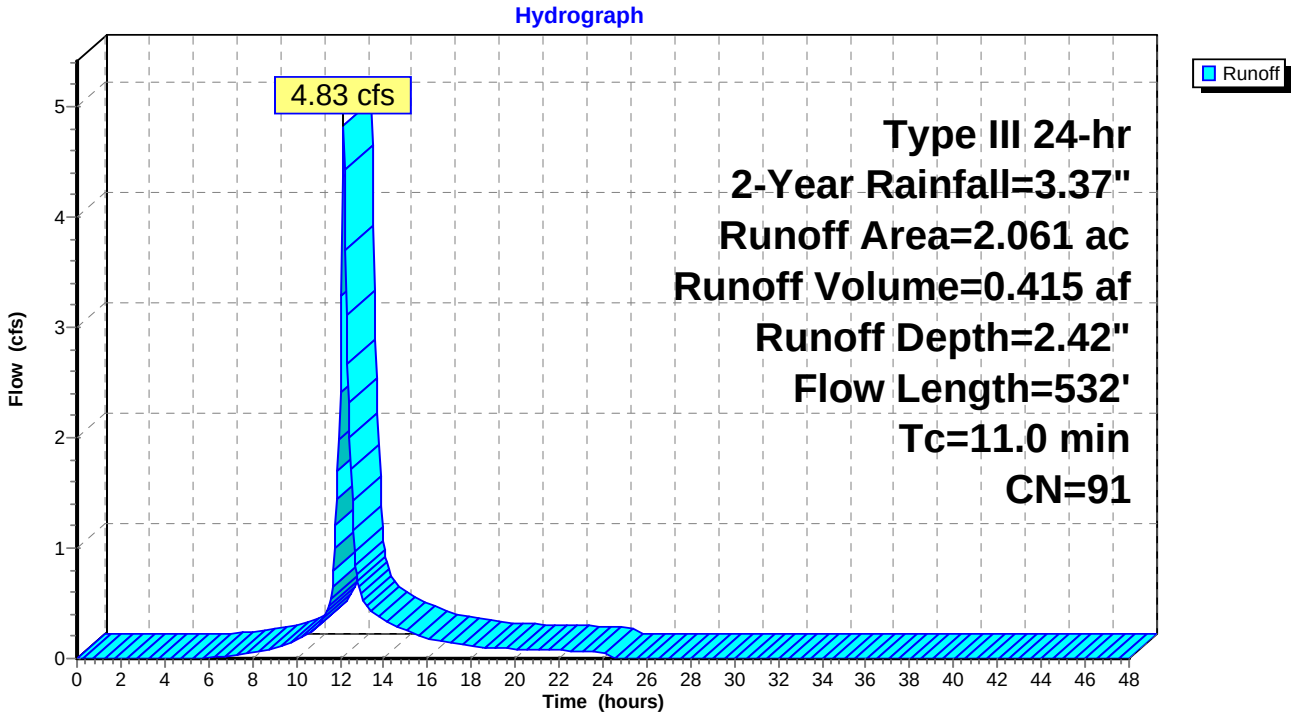
Runoff = 4.83 cfs @ 12.15 hrs, Volume= 0.415 af, Depth= 2.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.37"

Area (ac)	CN	Description
0.201	98	Paved parking, HSG C
1.260	98	Paved parking, HSG B
0.207	98	Paved parking, HSG C
0.074	74	>75% Grass cover, Good, HSG C
0.319	61	>75% Grass cover, Good, HSG B
2.061	91	Weighted Average
0.393		19.07% Pervious Area
1.668		80.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	40	0.0100	0.08		**Sheet Flow, Lawn** Grass: Dense n= 0.240 P2= 3.37"
1.7	239	0.0126	2.28		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
0.5	253	0.0200	8.41	14.86	**Pipe Channel, HDPE Drain** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
11.0	532	Total			

Subcatchment 1S: DA 1A



Summary for Subcatchment 3S: DA 2C

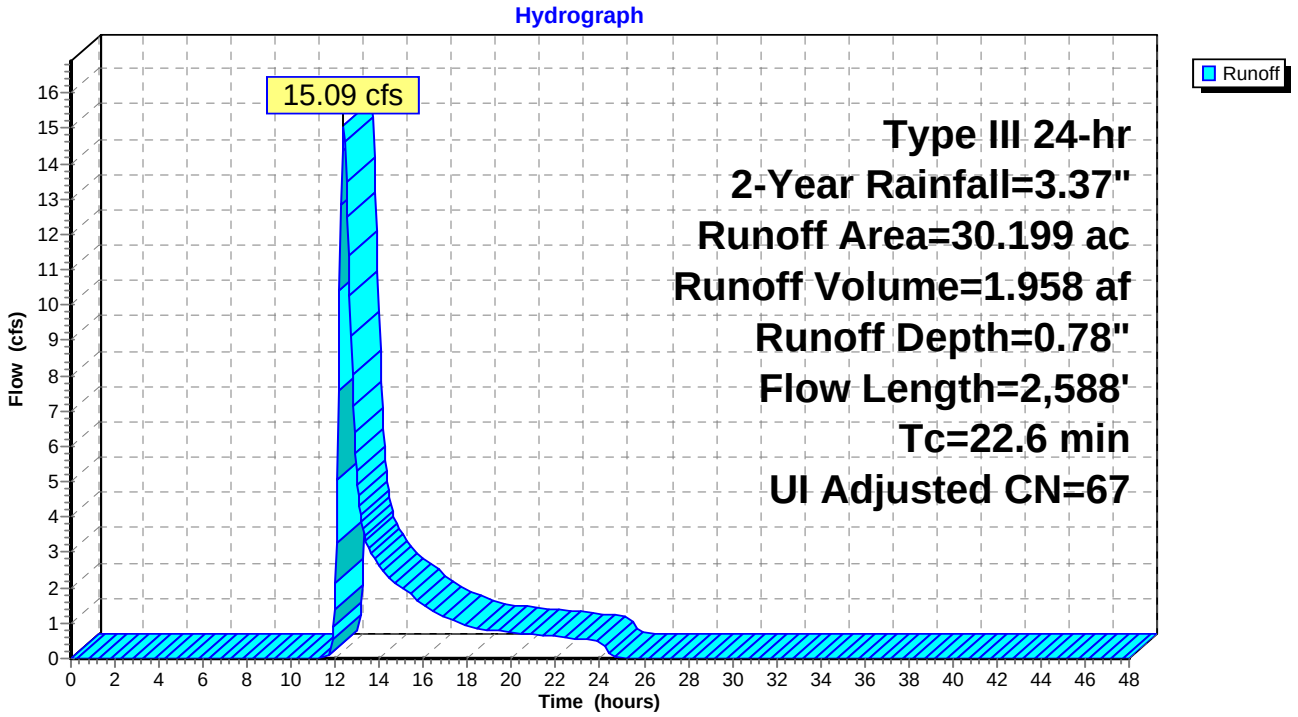
Runoff = 15.09 cfs @ 12.37 hrs, Volume= 1.958 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.37"

	Area (ac)	CN	Adj	Description
	9.778	77		Woods, Good, HSG D
	0.839	98		Water Surface, 0% imp, HSG D
	13.926	55		Woods, Good, HSG B
	2.515	70		Woods, Good, HSG C
	0.066	98		Paved parking, HSG C
	0.110	98		Roofs, HSG C
	0.057	98		Paved parking, HSG B
	0.566	61		>75% Grass cover, Good, HSG B
	0.870	98		Unconnected roofs, HSG B
	0.333	80		>75% Grass cover, Good, HSG D
	0.061	98		Paved parking, HSG C
	0.032	74		>75% Grass cover, Good, HSG C
	0.140	98		Paved parking, HSG C
	0.664	74		>75% Grass cover, Good, HSG C
	0.058	70		Woods, Good, HSG C
*	0.184	98		Unconnected Roofs
	30.199	68	67	Weighted Average, UI Adjusted
	28.711			95.07% Pervious Area
	1.488			4.93% Impervious Area
	1.054			70.83% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	100	0.0850	0.14		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
5.1	598	0.1539	1.96		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
5.2	1,600	0.0262	5.16	34.37	**Parabolic Channel, Channel** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.035 Earth, dense weeds
0.6	290		8.02		**Lake or Reservoir, Pond** Mean Depth= 2.00'
22.6	2,588	Total			

Subcatchment 3S: DA 2C



Summary for Subcatchment 7S: DA 1B

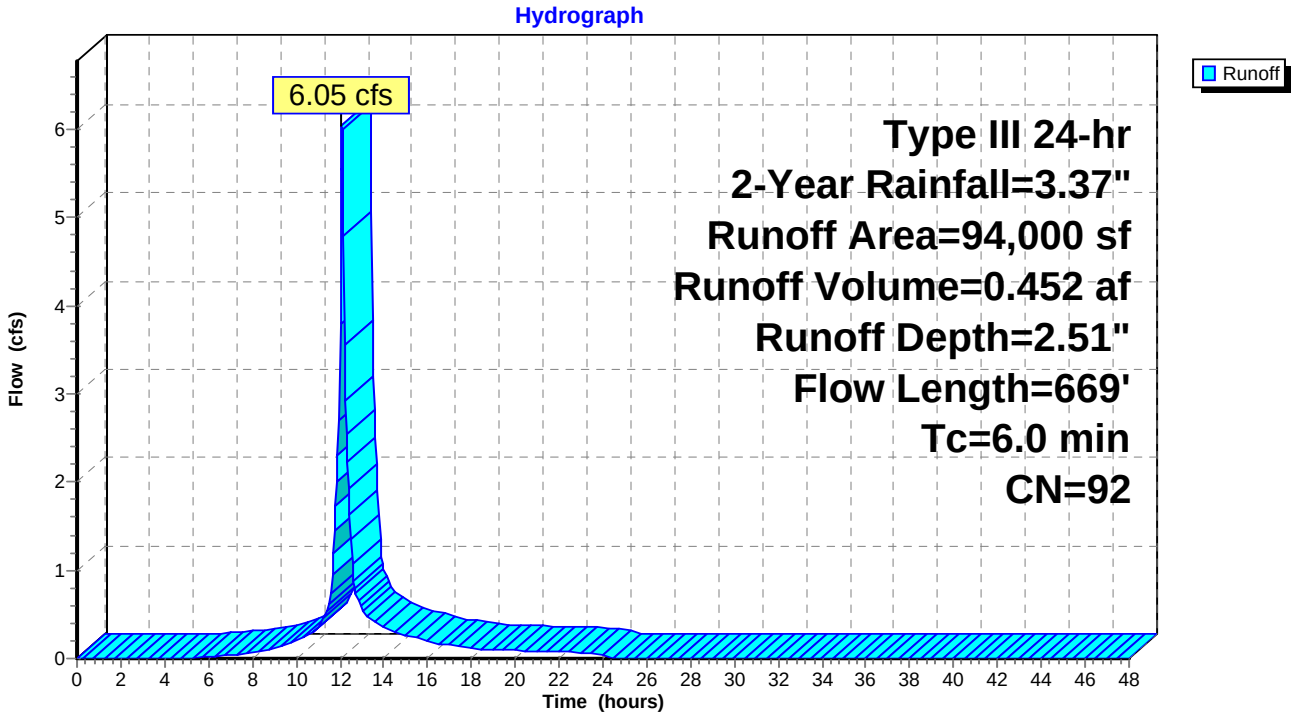
Runoff = 6.05 cfs @ 12.09 hrs, Volume= 0.452 af, Depth= 2.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.37"

Area (sf)	CN	Description
71,413	98	Paved parking, HSG B
11,784	86	Newly graded area, HSG B
10,803	61	>75% Grass cover, Good, HSG B
94,000	92	Weighted Average
22,587		24.03% Pervious Area
71,413		75.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.41		**Sheet Flow, Play areas** Smooth surfaces n= 0.011 P2= 3.37"
0.1	40	0.1500	6.24		**Shallow Concentrated Flow, Play areas** Unpaved Kv= 16.1 fps
2.2	362	0.0175	2.69		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
0.3	167	0.0200	8.41	14.86	**Pipe Channel, HDPE** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
3.8	669	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 7S: DA 1B



Summary for Subcatchment 8S: DA 2A

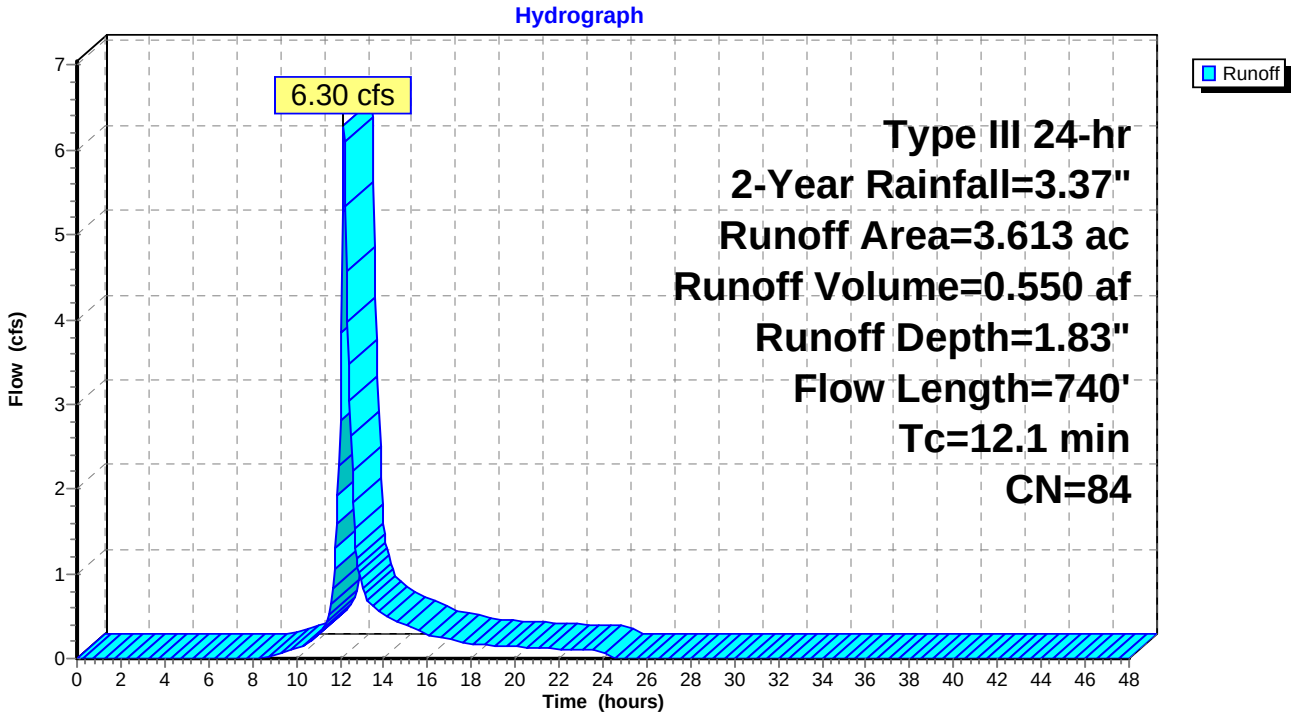
Runoff = 6.30 cfs @ 12.17 hrs, Volume= 0.550 af, Depth= 1.83"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.37"

Area (ac)	CN	Description
1.953	98	Paved parking, HSG B
0.152	98	Roofs, HSG B
0.394	61	>75% Grass cover, Good, HSG B
0.054	55	Woods, Good, HSG B
0.930	61	>75% Grass cover, Good, HSG B
0.130	98	Paved parking, HSG B
3.613	84	Weighted Average
1.378		38.14% Pervious Area
2.235		61.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0650	0.19		**Sheet Flow, Lawn** Grass: Dense n= 0.240 P2= 3.37"
3.3	558	0.0191	2.81		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
0.1	82	0.0500	11.77	14.44	**Pipe Channel, Discharge** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
12.1	740	Total			

Subcatchment 8S: DA 2A



Summary for Subcatchment 9S: DA 2B

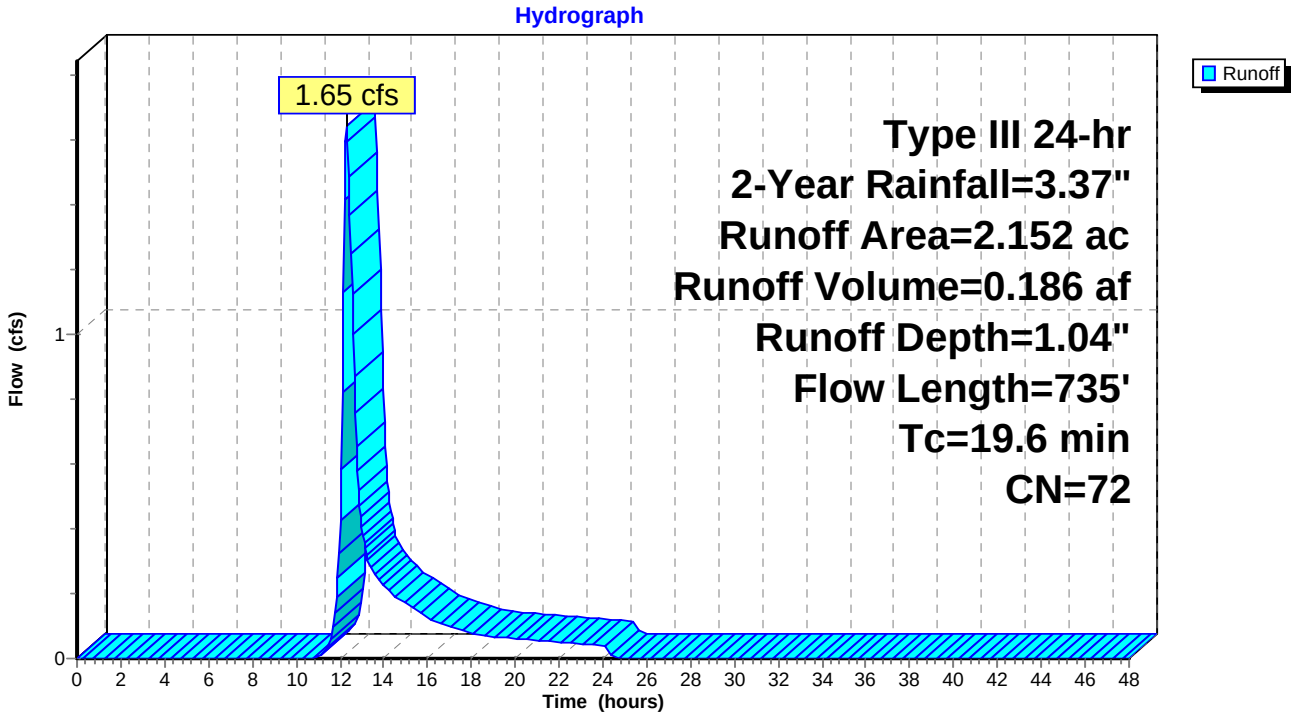
Runoff = 1.65 cfs @ 12.30 hrs, Volume= 0.186 af, Depth= 1.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.37"

Area (ac)	CN	Description
0.661	98	Paved parking, HSG B
0.746	55	Woods, Good, HSG B
0.669	61	>75% Grass cover, Good, HSG B
0.076	98	Water Surface, 0% imp, HSG B
2.152	72	Weighted Average
1.491		69.28% Pervious Area
0.661		30.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	100	0.0450	0.11		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
2.1	100	0.0250	0.79		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.2	38	0.3333	4.04		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
1.8	314	0.0200	2.87		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
0.2	108	0.0200	7.44	9.14	**Pipe Channel, Pipe** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.2	75		5.67		**Lake or Reservoir,** Mean Depth= 1.00'
19.6	735	Total			

Subcatchment 9S: DA 2B



Summary for Subcatchment 11S: DA 1C

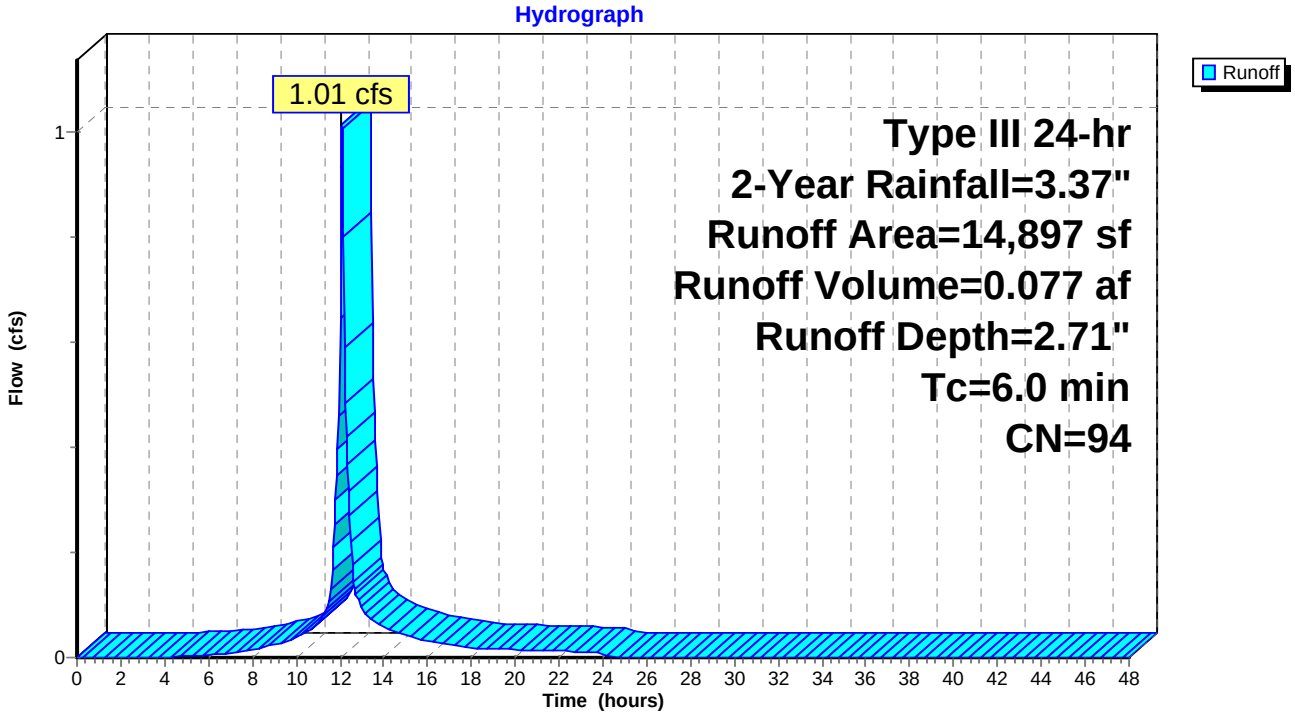
Runoff = 1.01 cfs @ 12.09 hrs, Volume= 0.077 af, Depth= 2.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.37"

Area (sf)	CN	Description
12,458	98	Paved parking, HSG C
2,439	74	>75% Grass cover, Good, HSG C
14,897	94	Weighted Average
2,439		16.37% Pervious Area
12,458		83.63% Impervious Area

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

Subcatchment 11S: DA 1C



Summary for Subcatchment 12S: DA 1D

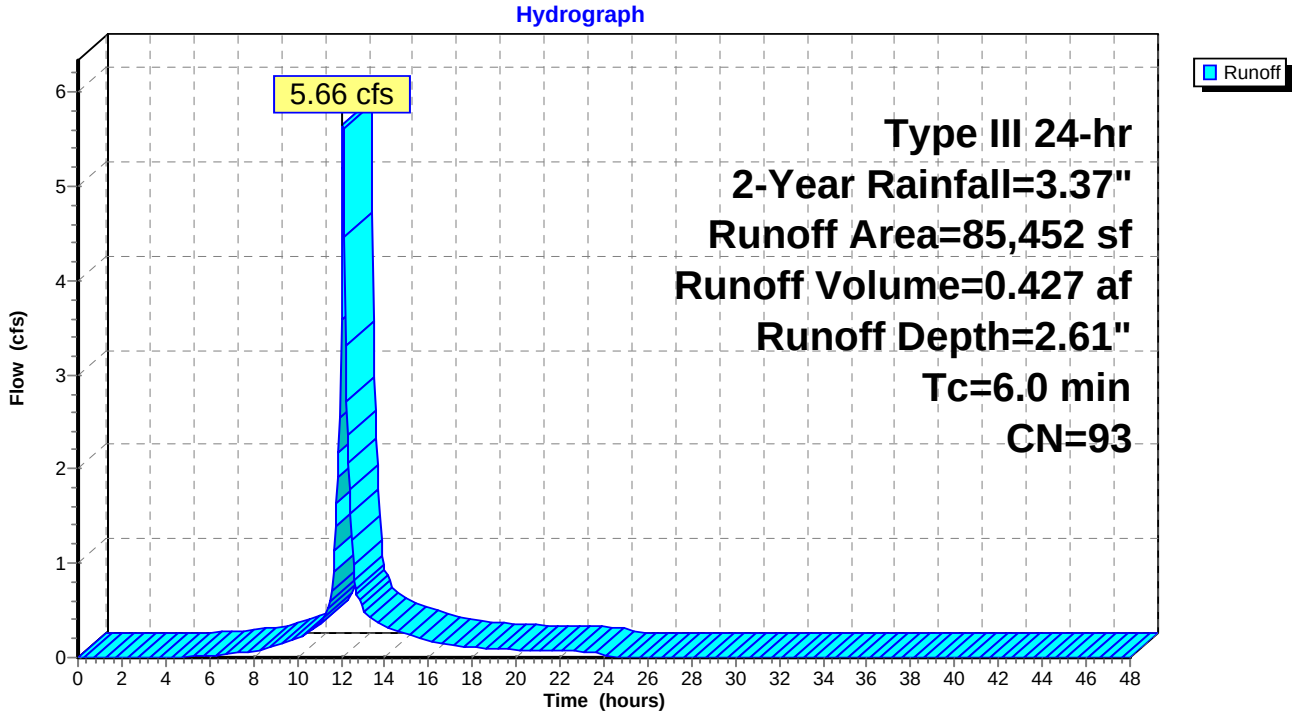
Runoff = 5.66 cfs @ 12.09 hrs, Volume= 0.427 af, Depth= 2.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.37"

Area (sf)	CN	Description
55,278	98	Paved parking, HSG C
6,098	98	Water Surface, 0% imp, HSG C
18,687	74	>75% Grass cover, Good, HSG C
5,389	98	Paved parking, HSG C
85,452	93	Weighted Average
24,785		29.00% Pervious Area
60,667		71.00% Impervious Area

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

Subcatchment 12S: DA 1D



Summary for Subcatchment 15S: DA 2E

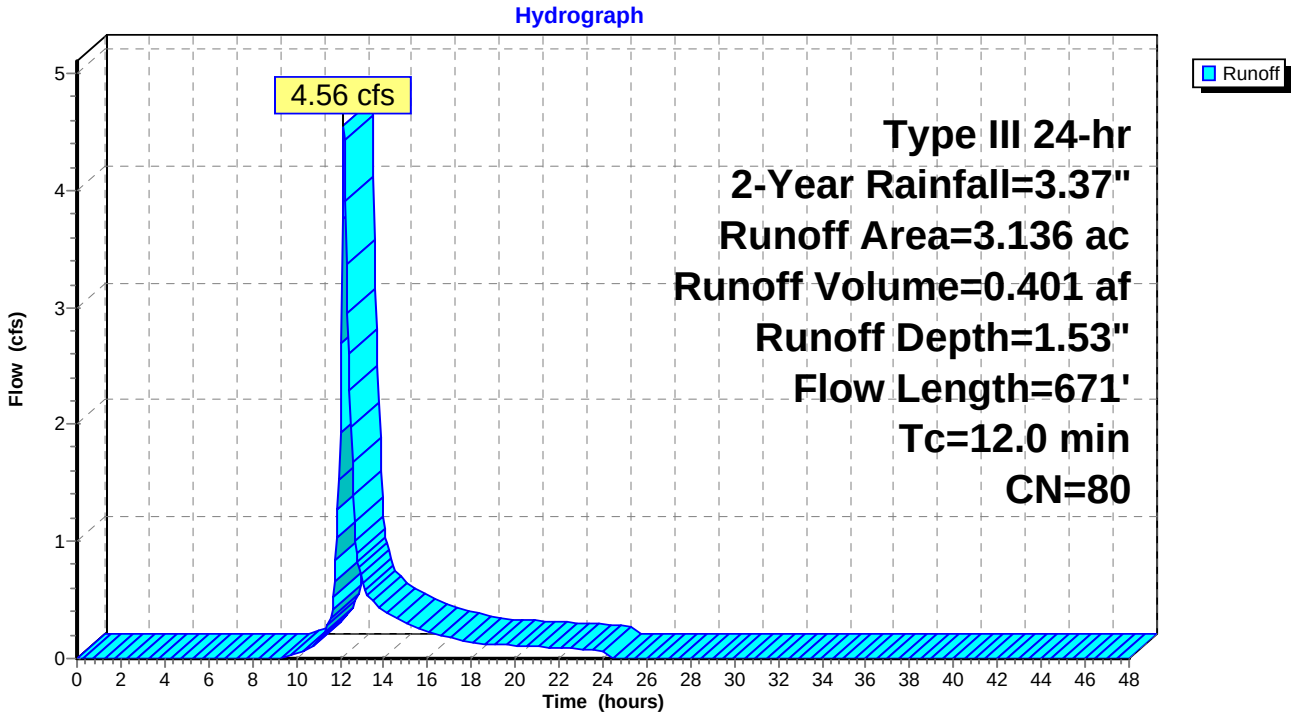
Runoff = 4.56 cfs @ 12.17 hrs, Volume= 0.401 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.985	98	Paved parking, HSG C, South
*	0.455	74	>75% Grass cover, Good, HSG C, South
	1.030	70	Woods, Good, HSG C
	0.666	74	>75% Grass cover, Good, HSG C
	3.136	80	Weighted Average
	2.151		68.59% Pervious Area
	0.985		31.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0600	0.11		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
3.3	417	0.1799	2.12		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.3	40	0.1000	2.21		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.7	164	0.0421	4.17		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
12.0	671	Total			

Subcatchment 15S: DA 2E



Summary for Subcatchment 16S: DA 2G

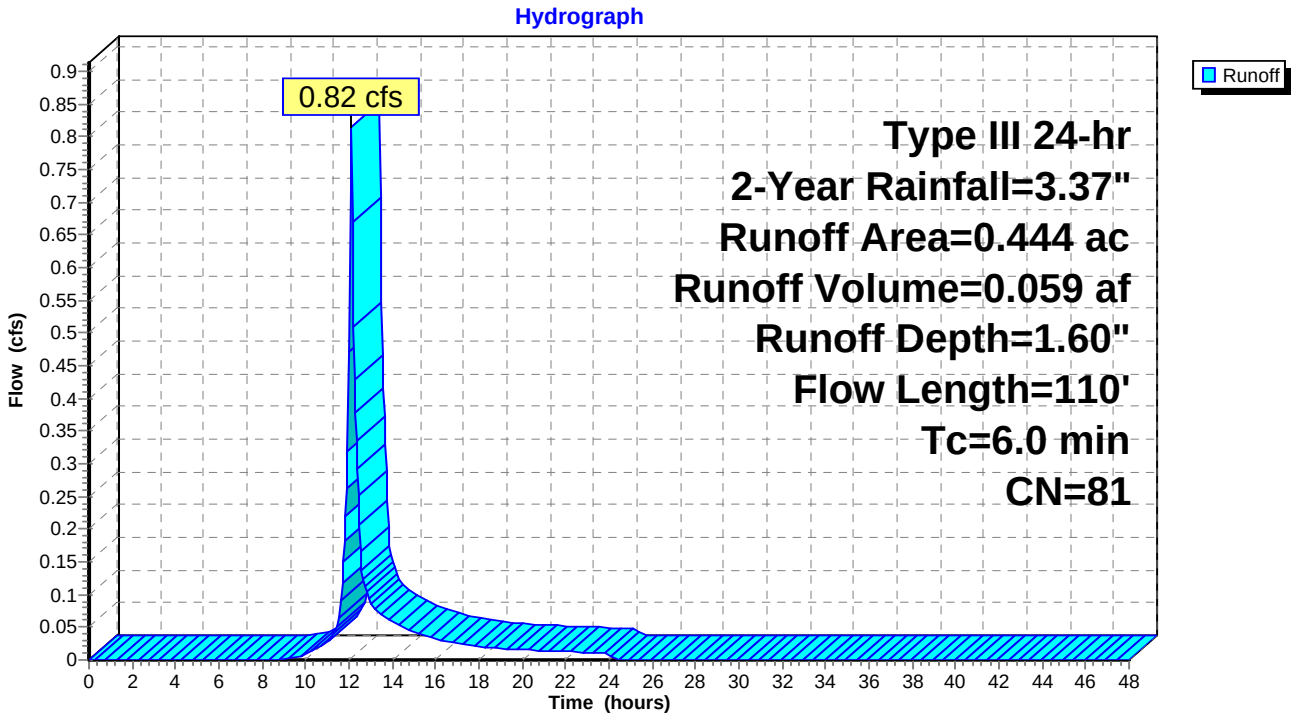
Runoff = 0.82 cfs @ 12.09 hrs, Volume= 0.059 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.37"

Area (ac)	CN	Description
0.103	98	Water Surface, 0% imp, HSG C
0.017	80	>75% Grass cover, Good, HSG D
0.229	74	>75% Grass cover, Good, HSG C
0.079	80	>75% Grass cover, Good, HSG D
0.016	74	>75% Grass cover, Good, HSG C
0.444	81	Weighted Average
0.444		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	50	0.0500	0.15		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.2	60	0.3500	4.14		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
5.7	110	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 16S: DA 2G



Summary for Subcatchment 17S: DA 2I

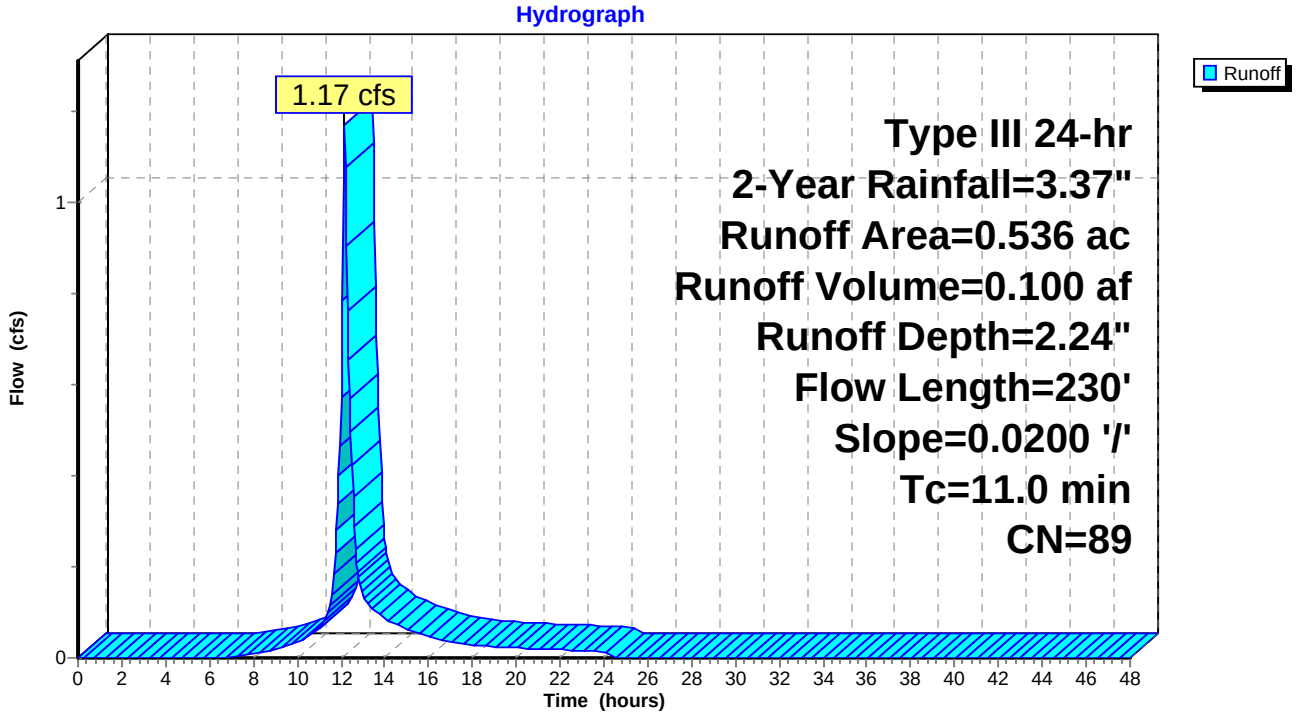
Runoff = 1.17 cfs @ 12.15 hrs, Volume= 0.100 af, Depth= 2.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.344	98	Paved parking, HSG C, North
*	0.192	74	>75% Grass cover, Good, HSG C, North
	0.536	89	Weighted Average
	0.192		35.82% Pervious Area
	0.344		64.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0200	0.10		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
3.0	180	0.0200	0.99		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
11.0	230	Total			

Subcatchment 17S: DA 2I



Summary for Subcatchment 21S: DA 2F

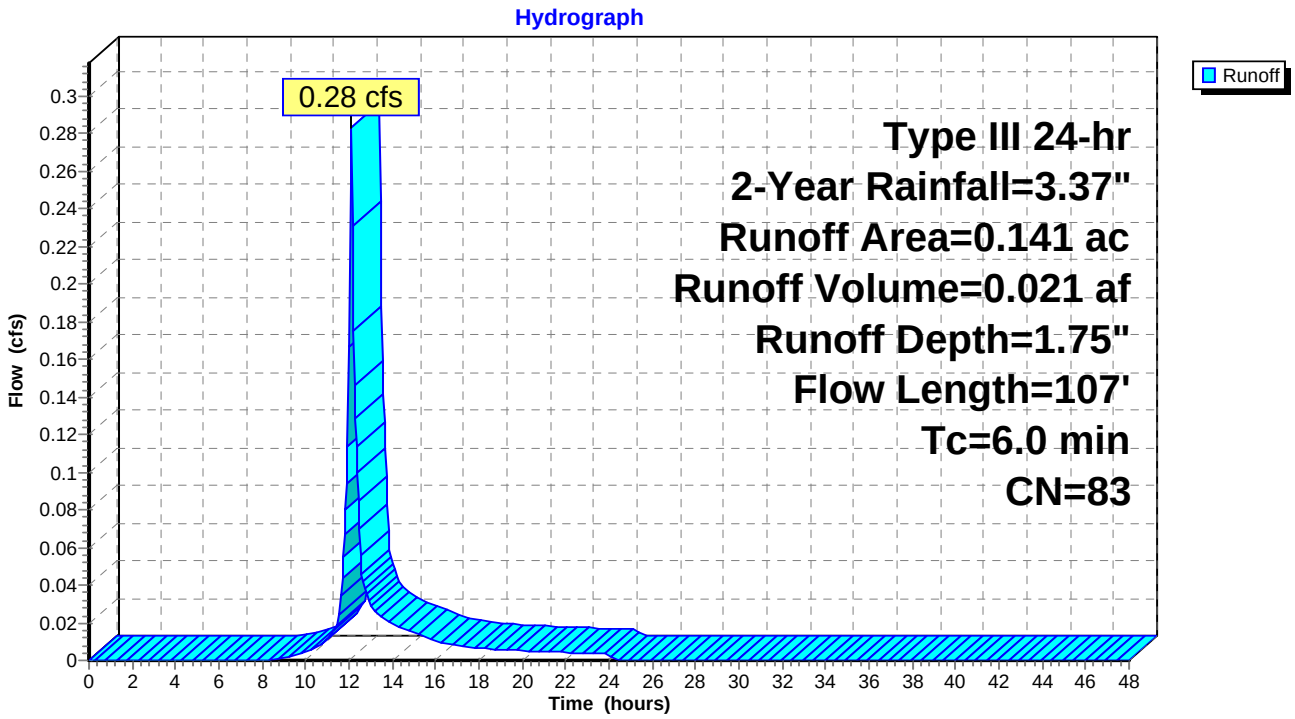
Runoff = 0.28 cfs @ 12.09 hrs, Volume= 0.021 af, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.37"

Area (ac)	CN	Description
0.051	98	Water Surface, 0% imp, HSG C
0.090	74	>75% Grass cover, Good, HSG C
0.141	83	Weighted Average
0.141		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.3	57	0.1754	2.93		**Shallow Concentrated Flow, Woods** Short Grass Pasture Kv= 7.0 fps
4.5	107	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 21S: DA 2F



Summary for Subcatchment 22S: DA 2H

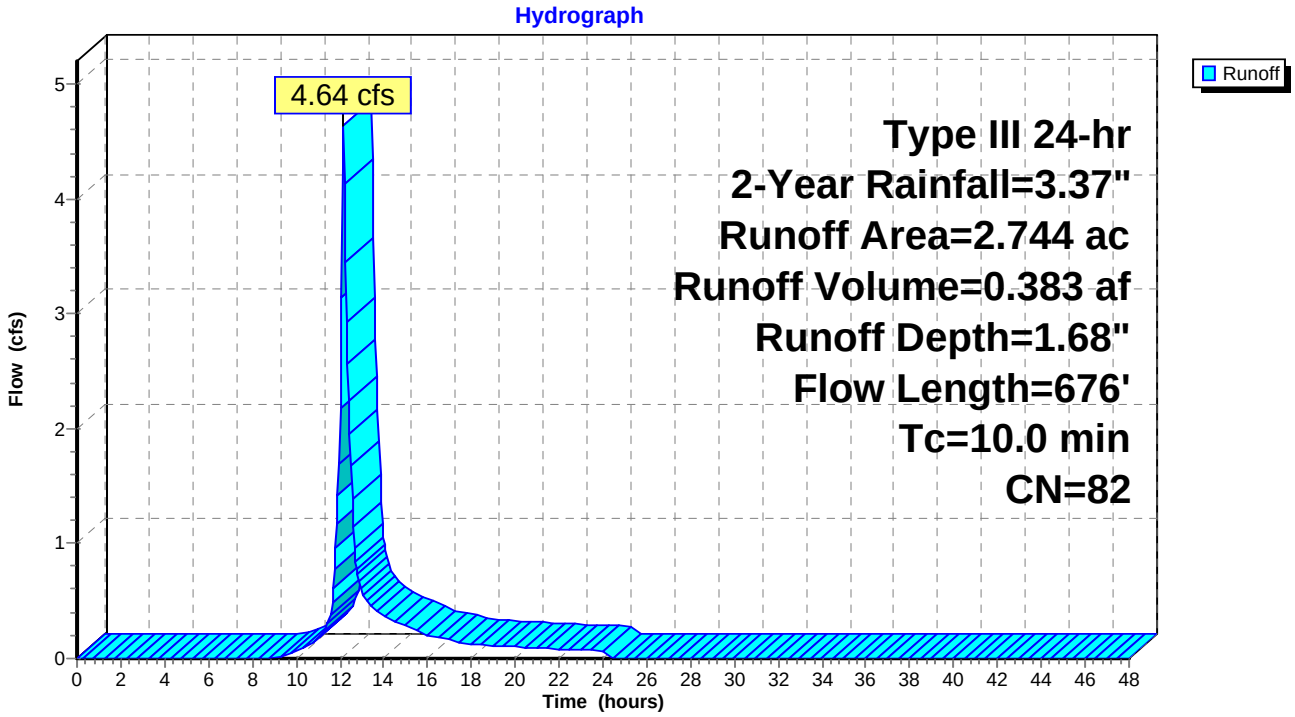
Runoff = 4.64 cfs @ 12.15 hrs, Volume= 0.383 af, Depth= 1.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.431	98	Paved parking, HSG C, North
*	0.010	80	>75% Grass cover, Good, HSG D, North
*	0.313	74	>75% Grass cover, Good, HSG C, North
*	0.550	98	Paved parking, HSG C, South
*	0.356	74	>75% Grass cover, Good, HSG C, South
	0.748	70	Woods, Good, HSG C
	0.336	74	>75% Grass cover, Good, HSG C
	2.744	82	Weighted Average
	1.763		64.25% Pervious Area
	0.981		35.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	50	0.1000	0.13		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
1.7	190	0.1316	1.81		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.3	81	0.3333	4.04		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
1.7	355	0.0310	3.57		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
10.0	676	Total			

Subcatchment 22S: DA 2H



Summary for Pond 2P: 30" RCP

Inflow Area =	55.918 ac,	25.55% Impervious,	Inflow Depth >	1.15"	for 2-Year event
Inflow =	6.62 cfs @	12.17 hrs,	Volume=	5.343 af	
Outflow =	6.62 cfs @	12.17 hrs,	Volume=	5.343 af,	Atten= 0%, Lag= 0.0 min
Primary =	6.62 cfs @	12.17 hrs,	Volume=	5.343 af	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

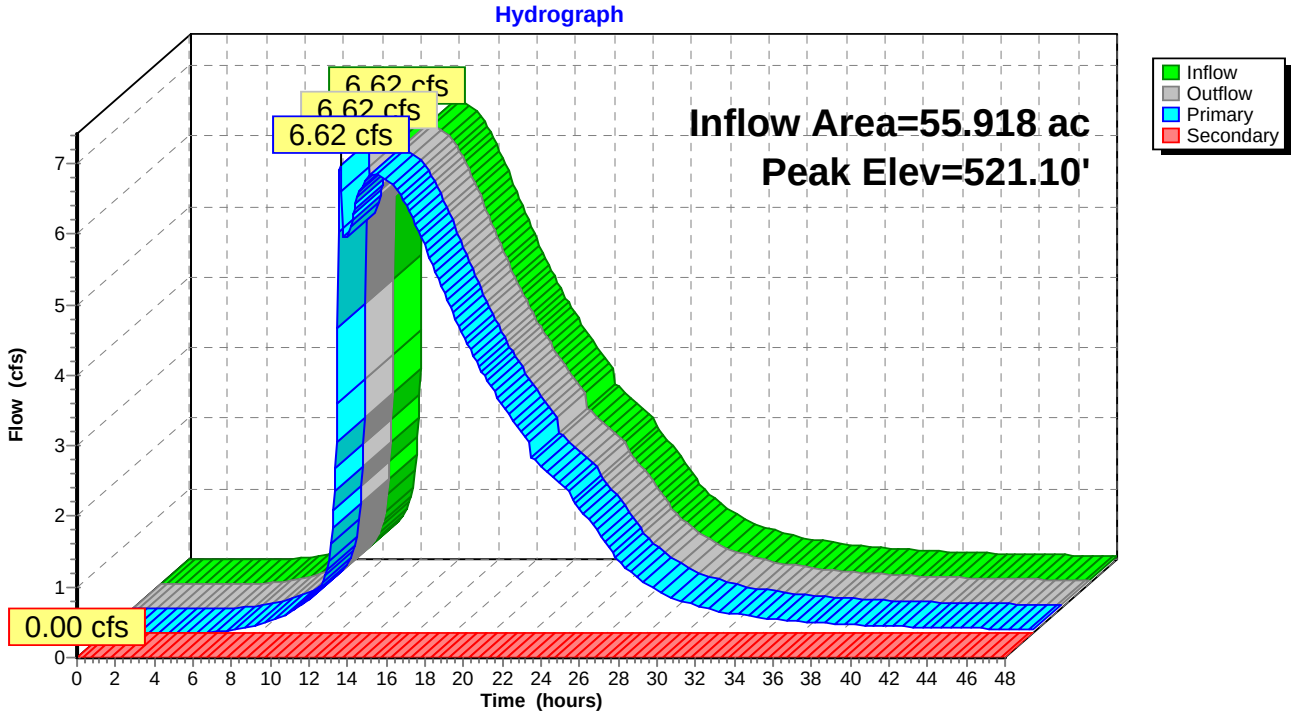
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 521.10' @ 12.17 hrs
Flood Elev= 527.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	519.92'	**30.0" Round 30" RC** L= 80.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 519.92' / 519.62' S= 0.0037 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 4.91 sf
#2	Secondary	527.20'	**30.0' long x 10.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=6.51 cfs @ 12.17 hrs HW=521.09' (Free Discharge)
└**1=30" RC** (Barrel Controls 6.51 cfs @ 4.23 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=519.92' (Free Discharge)
└**2=Overflow** (Controls 0.00 cfs)

Pond 2P: 30" RCP



Summary for Pond 4P: Pond

Inflow Area = 51.896 ac, 21.64% Impervious, Inflow Depth = 1.07" for 2-Year event
Inflow = 28.26 cfs @ 12.32 hrs, Volume= 4.611 af
Outflow = 5.71 cfs @ 14.34 hrs, Volume= 4.501 af, Atten= 80%, Lag= 121.3 min
Primary = 5.71 cfs @ 14.34 hrs, Volume= 4.501 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 524.66' @ 14.34 hrs Surf.Area= 1.932 ac Storage= 1.961 af

Plug-Flow detention time= 275.7 min calculated for 4.501 af (98% of inflow)
Center-of-Mass det. time= 261.2 min (1,142.9 - 881.7)

Volume	Invert	Avail.Storage	Storage Description
#1	523.45'	16.273 af	**Pond Storage (Irregular)**Listed below

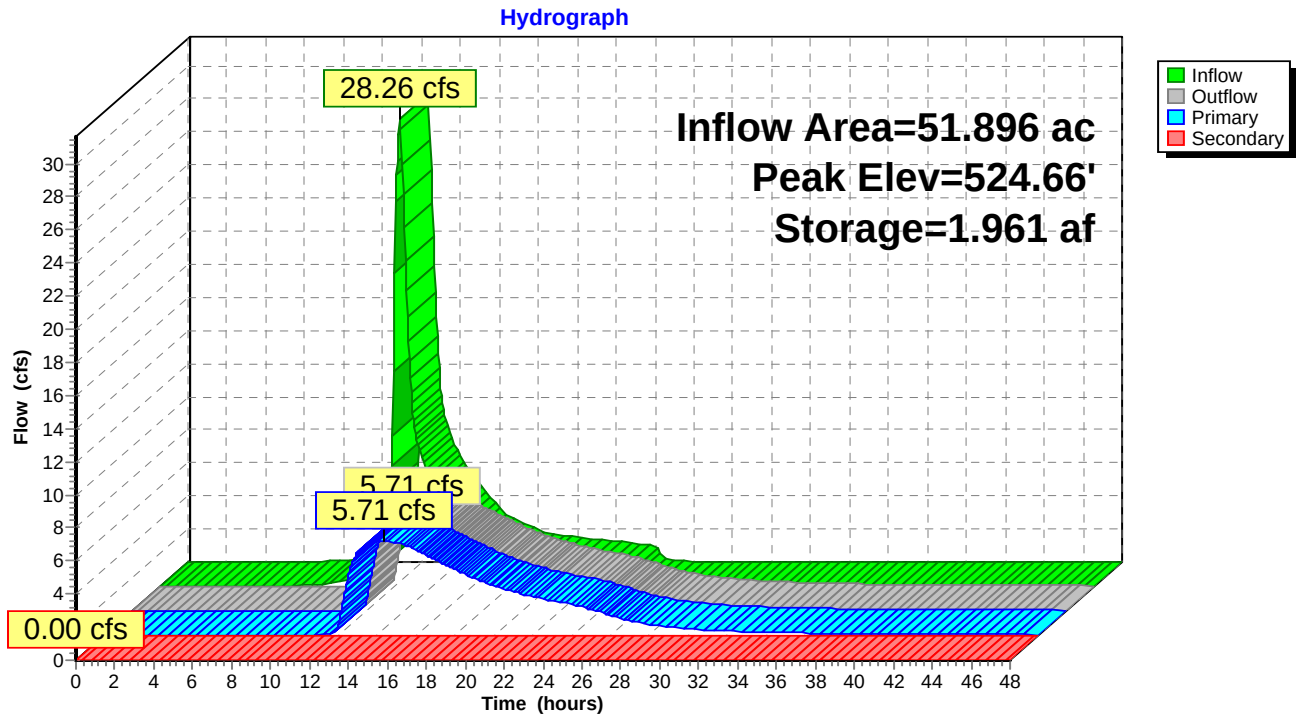
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
523.45	0.636	1,389.1	0.000	0.000	0.636
524.00	1.723	1,270.7	0.624	0.624	1.212
526.00	2.359	1,494.7	4.065	4.690	2.345
528.00	2.936	1,638.1	5.284	9.974	3.169
530.00	3.368	1,700.4	6.299	16.273	3.556

Device	Routing	Invert	Outlet Devices
#1	Primary	520.91'	**30.0" Round 30" HDPE** L= 110.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 520.91' / 520.64' S= 0.0024 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Device 1	521.46'	**30.0" Round 30" HDPE** L= 86.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 521.46' / 520.91' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#3	Device 2	521.41'	**24.0" Round 24" HDPE** L= 157.1' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 521.41' / 521.40' S= 0.0001 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#4	Device 3	523.45'	**18.0" Round 18" HDPE** L= 117.9' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 523.45' / 521.82' S= 0.0138 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#5	Secondary	529.90'	**50.0' long x 25.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=5.71 cfs @ 14.34 hrs HW=524.66' TW=521.09' (Dynamic Tailwater)
└─**1=30" HDPE** (Passes 5.71 cfs of 30.54 cfs potential flow)
└─**2=30" HDPE** (Passes 5.71 cfs of 30.56 cfs potential flow)
└─**3=24" HDPE** (Passes 5.71 cfs of 15.20 cfs potential flow)
└─**4=18" HDPE** (Inlet Controls 5.71 cfs @ 3.74 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=523.45' TW=519.92' (Dynamic Tailwater)
└─**5=Overflow** (Controls 0.00 cfs)

Pond 4P: Pond



Summary for Pond 10P: Apartment Phase 1 Detention Basin

Inflow Area = 2.152 ac, 30.72% Impervious, Inflow Depth = 1.04" for 2-Year event
Inflow = 1.65 cfs @ 12.30 hrs, Volume= 0.186 af
Outflow = 1.61 cfs @ 12.35 hrs, Volume= 0.186 af, Atten= 2%, Lag= 2.8 min
Primary = 1.61 cfs @ 12.35 hrs, Volume= 0.186 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 536.68' @ 12.35 hrs Surf.Area= 604 sf Storage= 228 cf

Plug-Flow detention time= 2.9 min calculated for 0.186 af (100% of inflow)
Center-of-Mass det. time= 3.0 min (880.9 - 877.9)

Volume	Invert	Avail.Storage	Storage Description
#1	536.00'	7,026 cf	**Detention Basin (Irregular)**Listed below (Recalc)

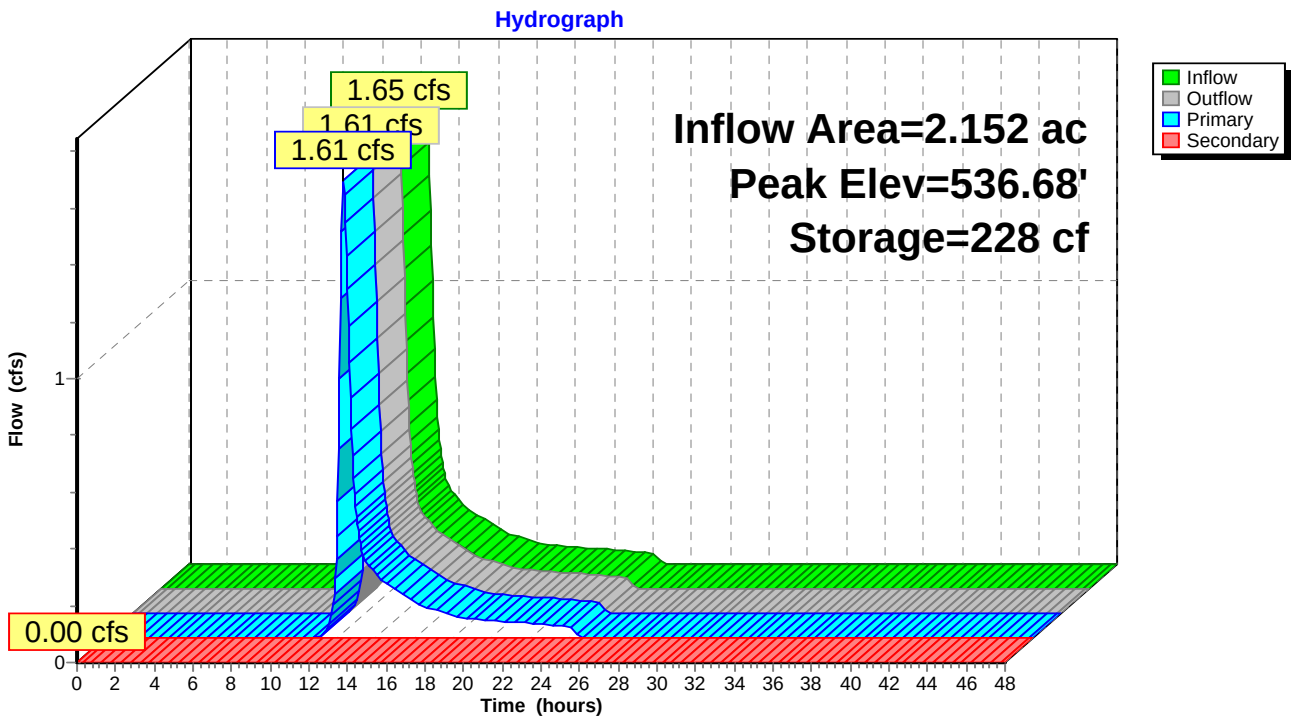
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
536.00	100	40.0	0	0	100
536.50	467	110.5	131	131	945
537.60	1,559	173.6	1,056	1,186	2,380
540.00	3,429	242.5	5,840	7,026	4,716

Device	Routing	Invert	Outlet Devices
#1	Primary	536.00'	**12.0" Round Culvert** L= 75.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 536.00' / 534.50' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	539.50'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.61 cfs @ 12.35 hrs HW=536.68' TW=524.18' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 1.61 cfs @ 2.81 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=536.00' TW=523.45' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10P: Apartment Phase 1 Detention Basin



Summary for Pond 15P: Apartments Phase II Stormwater Basin 2

Inflow Area = 3.277 ac, 30.06% Impervious, Inflow Depth = 1.54" for 2-Year event
Inflow = 4.77 cfs @ 12.17 hrs, Volume= 0.421 af
Outflow = 4.00 cfs @ 12.27 hrs, Volume= 0.342 af, Atten= 16%, Lag= 5.8 min
Primary = 4.00 cfs @ 12.27 hrs, Volume= 0.342 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 567.57' @ 12.26 hrs Surf.Area= 2,143 sf Storage= 4,537 cf

Plug-Flow detention time= 119.1 min calculated for 0.342 af (81% of inflow)
Center-of-Mass det. time= 42.4 min (887.3 - 845.0)

Volume	Invert	Avail.Storage	Storage Description
#1	562.00'	6 cf	**3.00'W x 8.00'L x 2.50'H Sand Underdrain** 60 cf Overall x 10.0% Voids
#2	564.50'	10,719 cf	**Stormwater Basin (Irregular)**Listed below
		10,725 cf	Total Available Storage

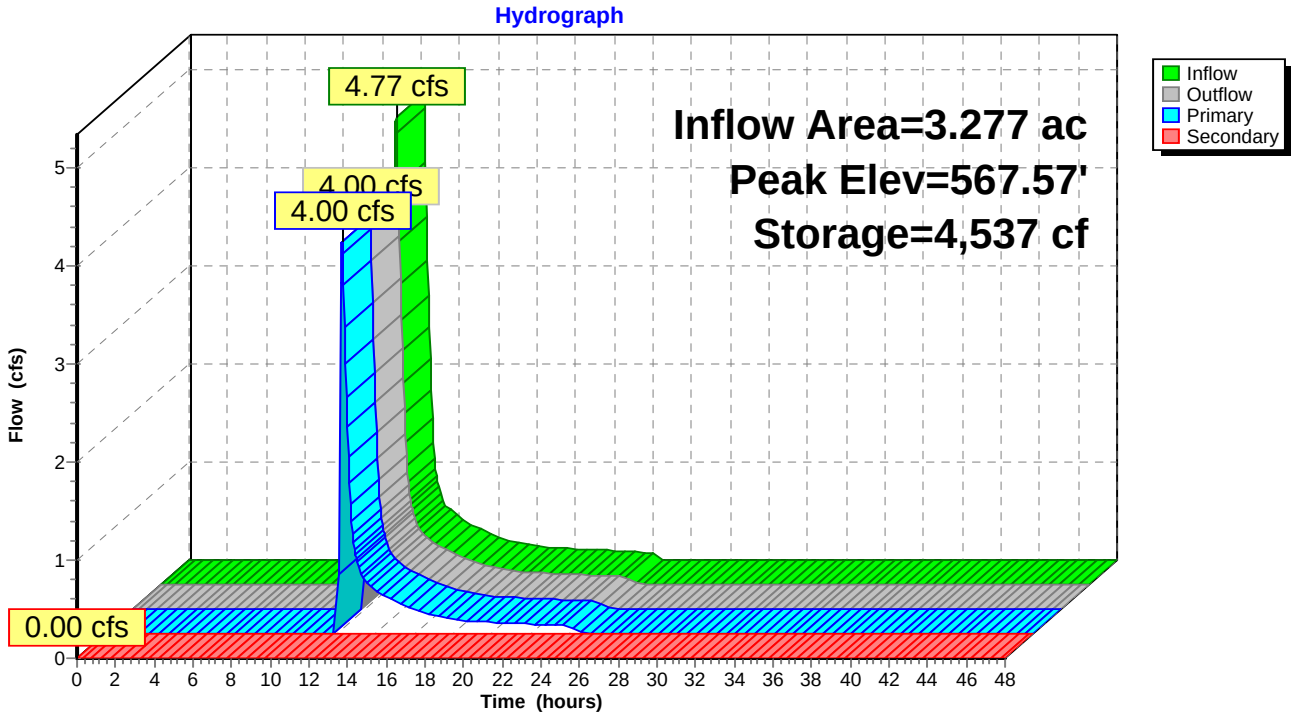
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
564.50	4	8.2	0	0	4
564.75	257	68.5	24	24	372
565.00	1,193	160.0	167	191	2,036
566.00	1,533	172.5	1,359	1,551	2,406
568.00	2,277	197.6	3,786	5,336	3,233
570.00	3,128	222.7	5,383	10,719	4,172

Device	Routing	Invert	Outlet Devices
#1	Primary	562.00'	**18.0" Round 18" HDPE** L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 562.00' / 561.60' S= 0.0059 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	567.00'	**36.0" W x 6.0" H Vert. 36" x 6" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	568.00'	**1.0" x 3.7" Horiz. Top of Frame X 39.00 columns** X 9 rows C= 0.600 in 48.0" x 36.0" Grate (75% open area) Limited to weir flow at low heads
#4	Secondary	569.00'	**8.0' long x 8.0' breadth Rip Rap Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#5	Device 1	562.00'	**0.500 in/hr Sand Underdrain over Horizontal area from 562.00' - 564.50'** Excluded Horizontal area = 24 sf Phase-In= 0.01'

Primary OutFlow Max=3.95 cfs @ 12.27 hrs HW=567.57' TW=562.35' (Dynamic Tailwater)
- **1=18" HDPE** (Passes 3.95 cfs of 18.10 cfs potential flow)
  - **2=36" x 6" Orifice** (Orifice Controls 3.95 cfs @ 2.63 fps)
  - **3=Top of Frame** (Controls 0.00 cfs)
  - **5=Sand Underdrain** (Exfiltration Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=562.00' TW=523.45' (Dynamic Tailwater)
- **4=Rip Rap Spillway** (Controls 0.00 cfs)

Pond 15P: Apartments Phase II Stormwater Basin 2



Summary for Pond 16P: Water Quality Basin

[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=6)

Inflow Area = 1.962 ac, 71.00% Impervious, Inflow Depth = 2.61" for 2-Year event
Inflow = 5.66 cfs @ 12.09 hrs, Volume= 0.427 af
Outflow = 0.57 cfs @ 12.89 hrs, Volume= 0.427 af, Atten= 90%, Lag= 48.3 min
Primary = 0.57 cfs @ 12.89 hrs, Volume= 0.427 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 526.92' @ 12.89 hrs Surf.Area= 5,060 sf Storage= 7,712 cf

Plug-Flow detention time= 143.5 min calculated for 0.426 af (100% of inflow)
Center-of-Mass det. time= 143.2 min (934.1 - 790.9)

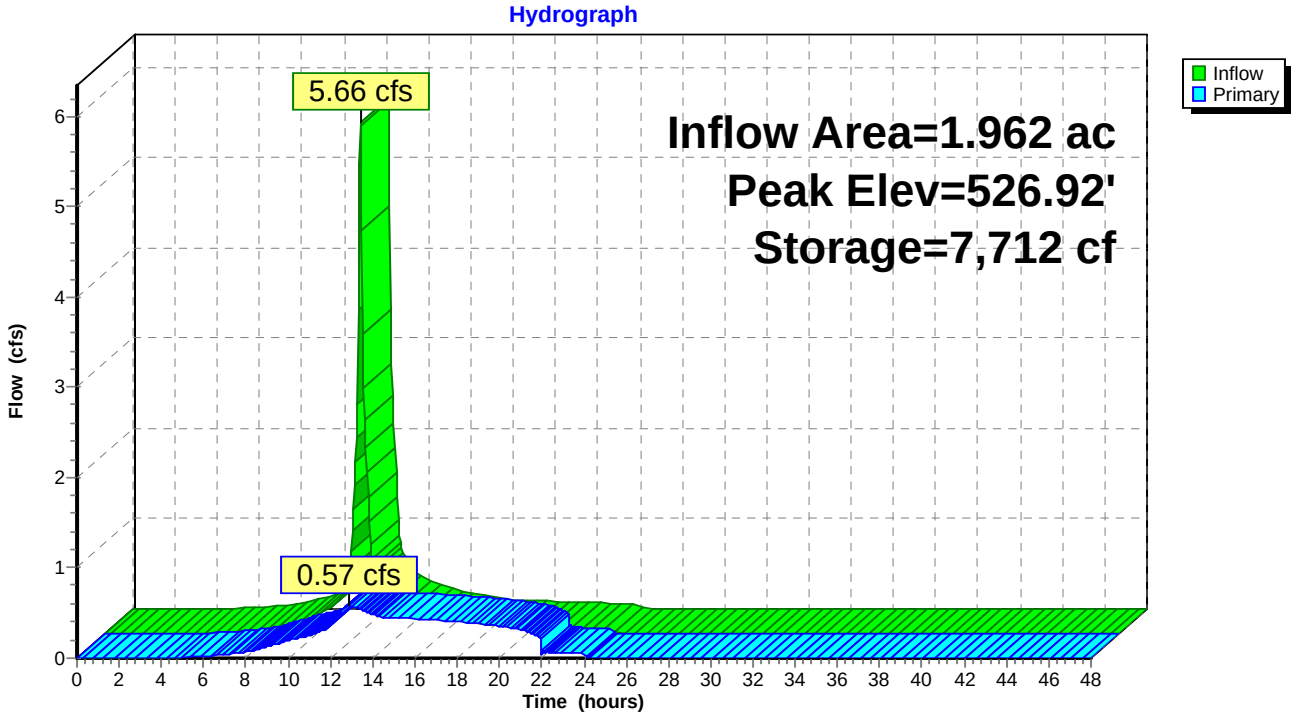
Volume	Invert	Avail.Storage	Storage Description
#1	523.75'	26,415 cf	**Water Quality swale (Irregular)**Listed below (Recalc)
#2	522.25'	5 cf	**3.00'W x 3.00'L x 1.50'H Underdrain** 14 cf Overall x 40.0% Voids
		26,420 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
523.75	9	12.0	0	0	9
524.00	258	63.2	26	26	316
524.25	528	108.8	96	123	940
524.50	766	159.7	161	283	2,028
524.75	1,105	211.6	233	516	3,562
525.00	1,523	263.2	327	843	5,513
525.25	2,026	316.2	442	1,285	7,958
525.50	2,529	368.0	568	1,853	10,779
525.75	3,267	420.8	723	2,576	14,095
526.00	4,119	481.0	921	3,497	18,417
528.00	6,268	535.7	10,312	13,809	22,957
529.75	8,181	557.7	12,606	26,415	25,097

Device	Routing	Invert	Outlet Devices
#1	Primary	522.75'	**24.0" Round 24" HDPE** L= 75.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 522.75' / 521.75' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	523.00'	**3.0" Vert. Underdrain** C= 0.600 Limited to weir flow at low heads
#3	Device 1	526.75'	**6.0" W x 6.0" H Vert. 6" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	527.25'	**18.0" W x 6.0" H Vert. 18x6 Orifice** C= 0.600 Limited to weir flow at low heads
#5	Device 1	528.50'	**20.0' long x 0.5' breadth Top of Frame** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=0.57 cfs @ 12.89 hrs HW=526.92' TW=521.04' (Dynamic Tailwater)
- **1=24" HDPE** (Passes 0.57 cfs of 26.93 cfs potential flow)
  - **2=Underdrain** (Orifice Controls 0.46 cfs @ 9.38 fps)
  - **3=6" Orifice** (Orifice Controls 0.11 cfs @ 1.32 fps)
  - **4=18x6 Orifice** (Controls 0.00 cfs)
  - **5=Top of Frame** (Controls 0.00 cfs)

Pond 16P: Water Quality Basin



Summary for Pond 20P: Apartments Phase II Stormwater Basin 1

Inflow Area =	7.001 ac, 33.00% Impervious, Inflow Depth = 1.52" for 2-Year event				
Inflow =	9.31 cfs @	12.21 hrs,	Volume=	0.885 af	
Outflow =	2.12 cfs @	12.78 hrs,	Volume=	0.695 af,	Atten= 77%, Lag= 34.3 min
Primary =	2.12 cfs @	12.78 hrs,	Volume=	0.695 af	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 557.00' @ 12.78 hrs Surf.Area= 5,514 sf Storage= 15,826 cf

Plug-Flow detention time= 180.5 min calculated for 0.694 af (78% of inflow)
Center-of-Mass det. time= 97.6 min (951.6 - 854.0)

Volume	Invert	Avail.Storage	Storage Description
#1	551.00'	4 cf	**3.00'W x 8.00'L x 1.75'H Sand Underdrain** 42 cf Overall x 10.0% Voids
#2	552.75'	40,883 cf	**Stormwater Basin (Irregular)**Listed below (Recalc)
#3	556.00'	424 cf	**36.0" Round Pipe Storage**-Impervious L= 60.0' S= 0.0083 '/'
		41,312 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
552.75	120	43.3	0	0	120
553.00	865	110.3	109	109	939
553.25	1,552	155.7	298	407	1,901
553.50	2,135	207.8	459	866	3,409
553.75	2,928	261.6	630	1,496	5,419
554.00	3,512	310.5	804	2,300	7,646
555.00	4,145	323.0	3,824	6,124	8,352
556.00	4,804	335.6	4,470	10,595	9,090
557.00	5,490	348.1	5,143	15,738	9,851
558.00	6,569	422.7	6,021	21,759	14,443
559.00	7,426	435.3	6,993	28,752	15,404
560.00	8,310	447.8	7,864	36,616	16,387
560.50	8,761	454.1	4,267	40,883	16,893

Device	Routing	Invert	Outlet Devices
#1	Primary	551.00'	**18.0" Round 18" HDPE** L= 152.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 551.00' / 549.00' S= 0.0132 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	555.50'	**6.0" Vert. 6" Orifices (2) X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	557.30'	**48.0" W x 7.0" H Vert. 48" x 7" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	558.75'	**1.0" x 3.7" Horiz. Top of Frame X 39.00 columns** X 9 rows C= 0.600 in 48.0" x 36.0" Grate (75% open area) Limited to weir flow at low heads
#5	Secondary	559.75'	**8.0' long x 8.0' breadth Rip Rap Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

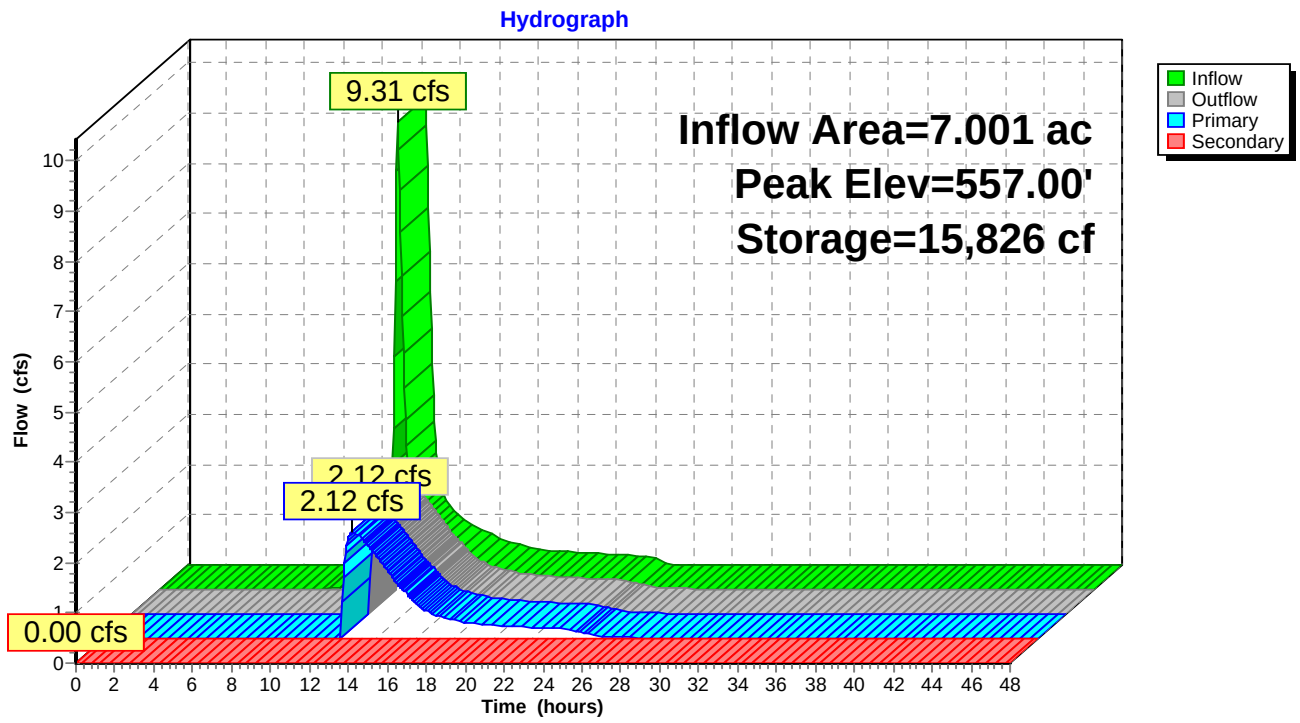
2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64
2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

#6 Device 1 551.00' **0.500 in/hr Sand Underdrain over Horizontal area from 551.00' - 552.75'**
Excluded Horizontal area = 24 sf Phase-In= 0.01'

Primary OutFlow Max=2.11 cfs @ 12.78 hrs HW=557.00' TW=524.49' (Dynamic Tailwater)
└─**1=18" HDPE** (Passes 2.11 cfs of 17.48 cfs potential flow)
  ├─**2=6" Orifices (2)** (Orifice Controls 2.11 cfs @ 5.38 fps)
  ├─**3=48" x 7" Orifice** (Controls 0.00 cfs)
  ├─**4=Top of Frame** (Controls 0.00 cfs)
  └─**6=Sand Underdrain** (Exfiltration Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=551.00' TW=523.45' (Dynamic Tailwater)
└─**5=Rip Rap Spillway** (Controls 0.00 cfs)

Pond 20P: Apartments Phase II Stormwater Basin 1



Summary for Pond 21P: Drain

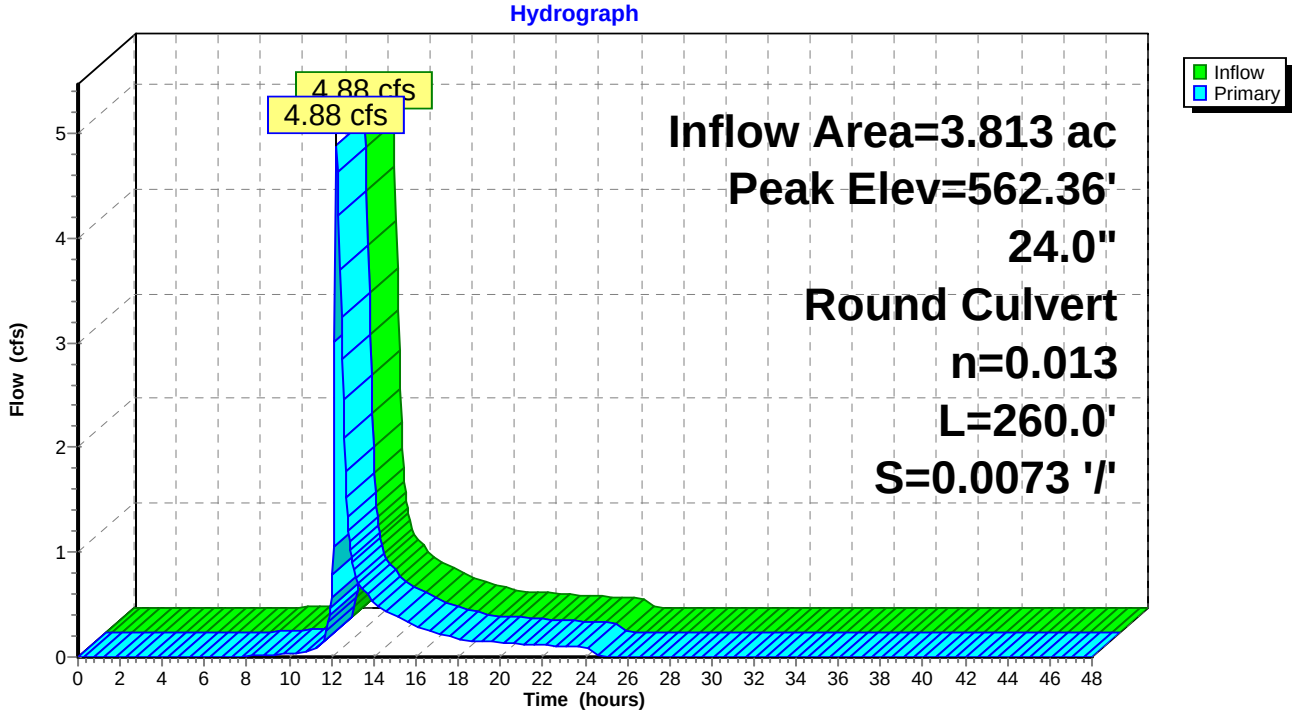
Inflow Area = 3.813 ac, 34.85% Impervious, Inflow Depth = 1.39" for 2-Year event
Inflow = 4.88 cfs @ 12.25 hrs, Volume= 0.442 af
Outflow = 4.88 cfs @ 12.25 hrs, Volume= 0.442 af, Atten= 0%, Lag= 0.0 min
Primary = 4.88 cfs @ 12.25 hrs, Volume= 0.442 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 562.36' @ 12.25 hrs
Flood Elev= 565.37'

Device	Routing	Invert	Outlet Devices
#1	Primary	561.40'	**24.0" Round Culvert** L= 260.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 561.40' / 559.50' S= 0.0073 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=4.88 cfs @ 12.25 hrs HW=562.36' TW=555.89' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 4.88 cfs @ 4.81 fps)

Pond 21P: Drain



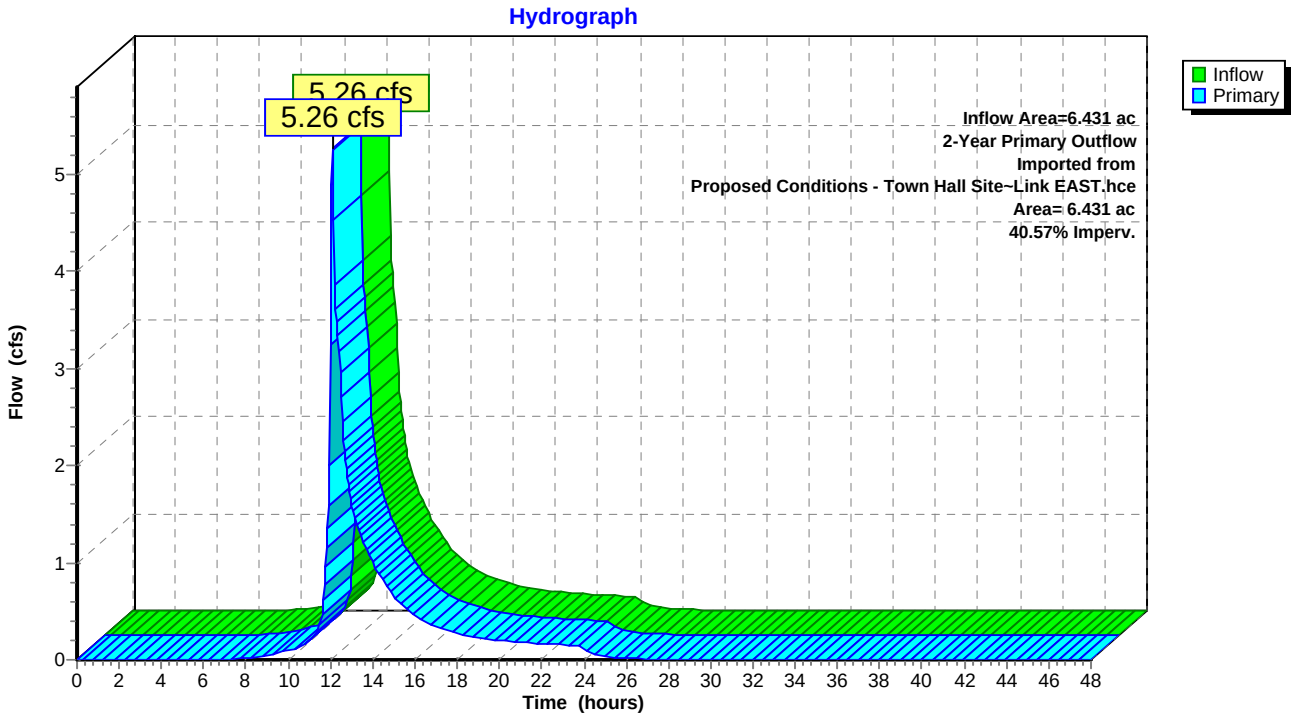
Summary for Link 14L: DA 2D - From Town Hall

Inflow Area = 6.431 ac, 40.57% Impervious, Inflow Depth = 1.29" for 2-Year event
Inflow = 5.26 cfs @ 12.09 hrs, Volume= 0.693 af
Primary = 5.26 cfs @ 12.09 hrs, Volume= 0.693 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

2-Year Primary Outflow Imported from Proposed Conditions - Town Hall Site~Link EAST.hce

Link 14L: DA 2D - From Town Hall



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 2
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 1S: DA 1A Runoff Area=2.061 ac 80.93% Impervious Runoff Depth=4.16"
Flow Length=532' Tc=11.0 min CN=91 Runoff=8.09 cfs 0.714 af

Subcatchment 3S: DA 2C Runoff Area=30.199 ac 4.93% Impervious Runoff Depth=1.93"
Flow Length=2,588' Tc=22.6 min UI Adjusted CN=67 Runoff=42.12 cfs 4.856 af

Subcatchment 7S: DA 1B Runoff Area=94,000 sf 75.97% Impervious Runoff Depth=4.27"
Flow Length=669' Tc=6.0 min CN=92 Runoff=9.98 cfs 0.767 af

Subcatchment 8S: DA 2A Runoff Area=3.613 ac 61.86% Impervious Runoff Depth=3.44"
Flow Length=740' Tc=12.1 min CN=84 Runoff=11.77 cfs 1.034 af

Subcatchment 9S: DA 2B Runoff Area=2.152 ac 30.72% Impervious Runoff Depth=2.34"
Flow Length=735' Tc=19.6 min CN=72 Runoff=3.94 cfs 0.419 af

Subcatchment 11S: DA 1C Runoff Area=14,897 sf 83.63% Impervious Runoff Depth=4.49"
Tc=6.0 min CN=94 Runoff=1.63 cfs 0.128 af

Subcatchment 12S: DA 1D Runoff Area=85,452 sf 71.00% Impervious Runoff Depth=4.37"
Tc=6.0 min CN=93 Runoff=9.22 cfs 0.715 af

Subcatchment 15S: DA 2E Runoff Area=3.136 ac 31.41% Impervious Runoff Depth=3.05"
Flow Length=671' Tc=12.0 min CN=80 Runoff=9.16 cfs 0.797 af

Subcatchment 16S: DA 2G Runoff Area=0.444 ac 0.00% Impervious Runoff Depth=3.14"
Flow Length=110' Tc=6.0 min CN=81 Runoff=1.60 cfs 0.116 af

Subcatchment 17S: DA 2I Runoff Area=0.536 ac 64.18% Impervious Runoff Depth=3.94"
Flow Length=230' Slope=0.0200 '/' Tc=11.0 min CN=89 Runoff=2.02 cfs 0.176 af

Subcatchment 21S: DA 2F Runoff Area=0.141 ac 0.00% Impervious Runoff Depth=3.34"
Flow Length=107' Tc=6.0 min CN=83 Runoff=0.54 cfs 0.039 af

Subcatchment 22S: DA 2H Runoff Area=2.744 ac 35.75% Impervious Runoff Depth=3.24"
Flow Length=676' Tc=10.0 min CN=82 Runoff=8.97 cfs 0.741 af

Pond 2P: 30" RCP Peak Elev=521.77' Inflow=14.64 cfs 11.587 af
Primary=14.64 cfs 11.587 af Secondary=0.00 cfs 0.000 af Outflow=14.64 cfs 11.587 af

Pond 4P: Pond Peak Elev=526.06' Storage=4.839 af Inflow=77.66 cfs 10.281 af
Primary=11.59 cfs 10.158 af Secondary=0.00 cfs 0.000 af Outflow=11.59 cfs 10.158 af

Pond 10P: Apartment Phase 1 Detention Basin Peak Elev=537.36' Storage=846 cf Inflow=3.94 cfs 0.419 af
Primary=3.50 cfs 0.419 af Secondary=0.00 cfs 0.000 af Outflow=3.50 cfs 0.419 af

Pond 15P: Apartments Phase II Stormwater Peak Elev=568.14' Storage=5,727 cf Inflow=9.55 cfs 0.836 af
Primary=9.25 cfs 0.757 af Secondary=0.00 cfs 0.000 af Outflow=9.25 cfs 0.757 af

Pond 16P: Water Quality Basin Peak Elev=527.64' Storage=11,639 cf Inflow=9.22 cfs 0.715 af
Outflow=2.64 cfs 0.715 af

Pond 20P: Apartments Phase II Peak Elev=558.31' Storage=24,123 cf Inflow=20.08 cfs 1.791 af
Primary=12.45 cfs 1.601 af Secondary=0.00 cfs 0.000 af Outflow=12.45 cfs 1.601 af

Pond 21P: Drain Peak Elev=562.96' Inflow=11.05 cfs 0.933 af
24.0" Round Culvert n=0.013 L=260.0' S=0.0073 '/' Outflow=11.05 cfs 0.933 af

10-Year Primary Outflow Imported from Proposed Conditions - Town Hall Site~Link EAST.hce Inflow=10.41 cfs 1.476 af
Link Area= 6.431 ac 40.57% Imperv. Primary=10.41 cfs 1.476 af

Total Runoff Area = 49.488 ac Runoff Volume = 10.503 af Average Runoff Depth = 2.55"
76.40% Pervious = 37.808 ac 23.60% Impervious = 11.680 ac

Summary for Subcatchment 1S: DA 1A

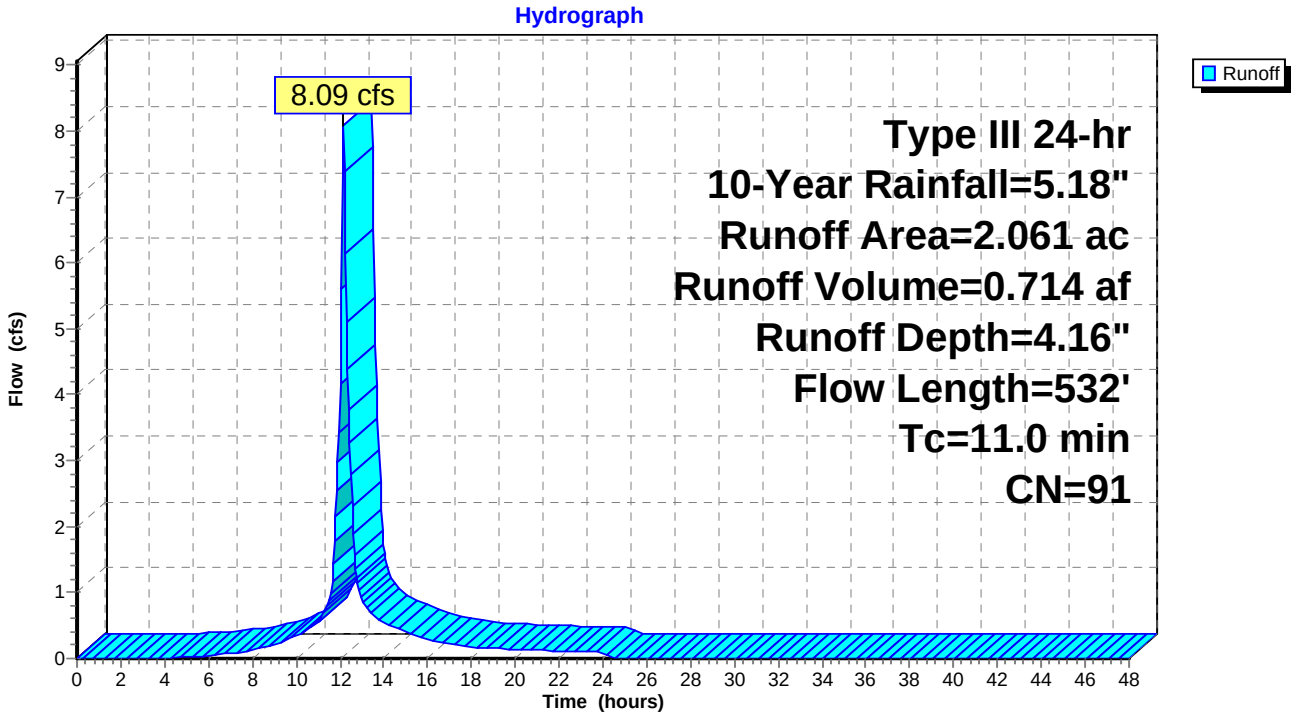
Runoff = 8.09 cfs @ 12.15 hrs, Volume= 0.714 af, Depth= 4.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.18"

Area (ac)	CN	Description
0.201	98	Paved parking, HSG C
1.260	98	Paved parking, HSG B
0.207	98	Paved parking, HSG C
0.074	74	>75% Grass cover, Good, HSG C
0.319	61	>75% Grass cover, Good, HSG B
2.061	91	Weighted Average
0.393		19.07% Pervious Area
1.668		80.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	40	0.0100	0.08		**Sheet Flow, Lawn** Grass: Dense n= 0.240 P2= 3.37"
1.7	239	0.0126	2.28		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
0.5	253	0.0200	8.41	14.86	**Pipe Channel, HDPE Drain** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
11.0	532	Total			

Subcatchment 1S: DA 1A



Summary for Subcatchment 3S: DA 2C

[47] Hint: Peak is 123% of capacity of segment #3

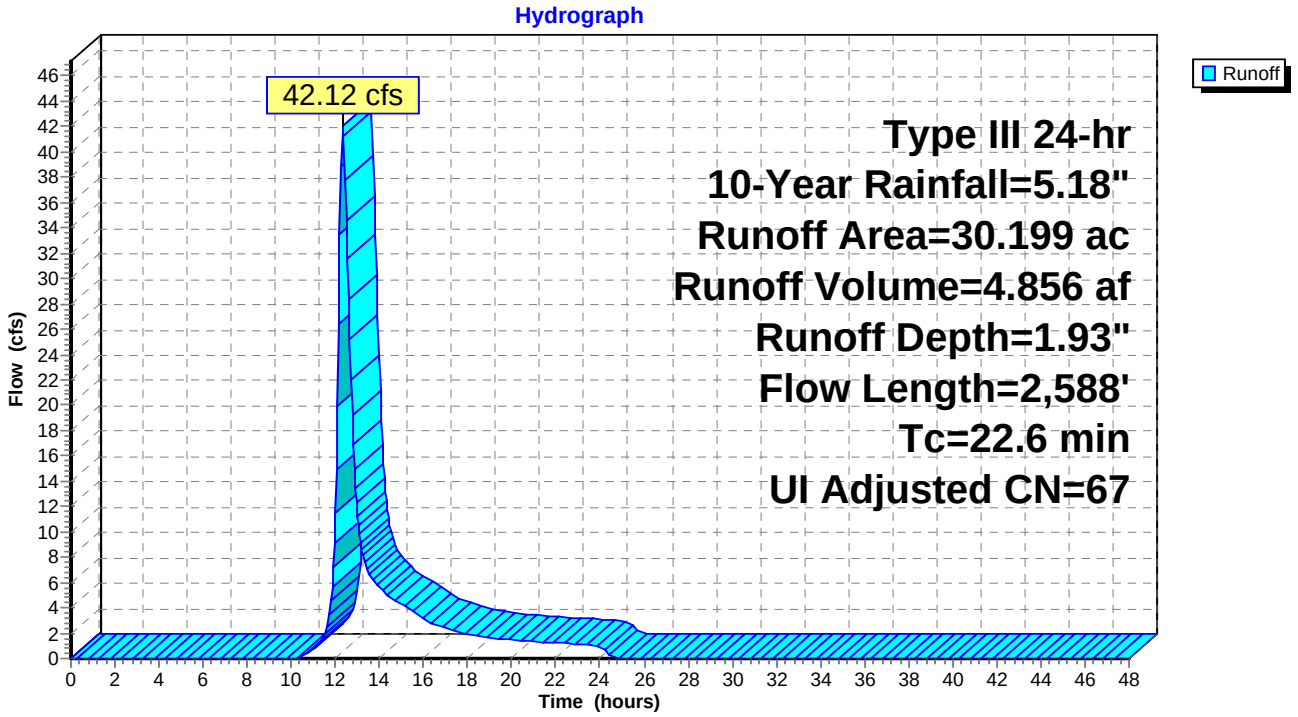
Runoff = 42.12 cfs @ 12.33 hrs, Volume= 4.856 af, Depth= 1.93"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.18"

	Area (ac)	CN	Adj	Description
	9.778	77		Woods, Good, HSG D
	0.839	98		Water Surface, 0% imp, HSG D
	13.926	55		Woods, Good, HSG B
	2.515	70		Woods, Good, HSG C
	0.066	98		Paved parking, HSG C
	0.110	98		Roofs, HSG C
	0.057	98		Paved parking, HSG B
	0.566	61		>75% Grass cover, Good, HSG B
	0.870	98		Unconnected roofs, HSG B
	0.333	80		>75% Grass cover, Good, HSG D
	0.061	98		Paved parking, HSG C
	0.032	74		>75% Grass cover, Good, HSG C
	0.140	98		Paved parking, HSG C
	0.664	74		>75% Grass cover, Good, HSG C
	0.058	70		Woods, Good, HSG C
*	0.184	98		Unconnected Roofs
	30.199	68	67	Weighted Average, UI Adjusted
	28.711			95.07% Pervious Area
	1.488			4.93% Impervious Area
	1.054			70.83% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	100	0.0850	0.14		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
5.1	598	0.1539	1.96		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
5.2	1,600	0.0262	5.16	34.37	**Parabolic Channel, Channel** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.035 Earth, dense weeds
0.6	290		8.02		**Lake or Reservoir, Pond** Mean Depth= 2.00'
22.6	2,588	Total			

Subcatchment 3S: DA 2C



Summary for Subcatchment 7S: DA 1B

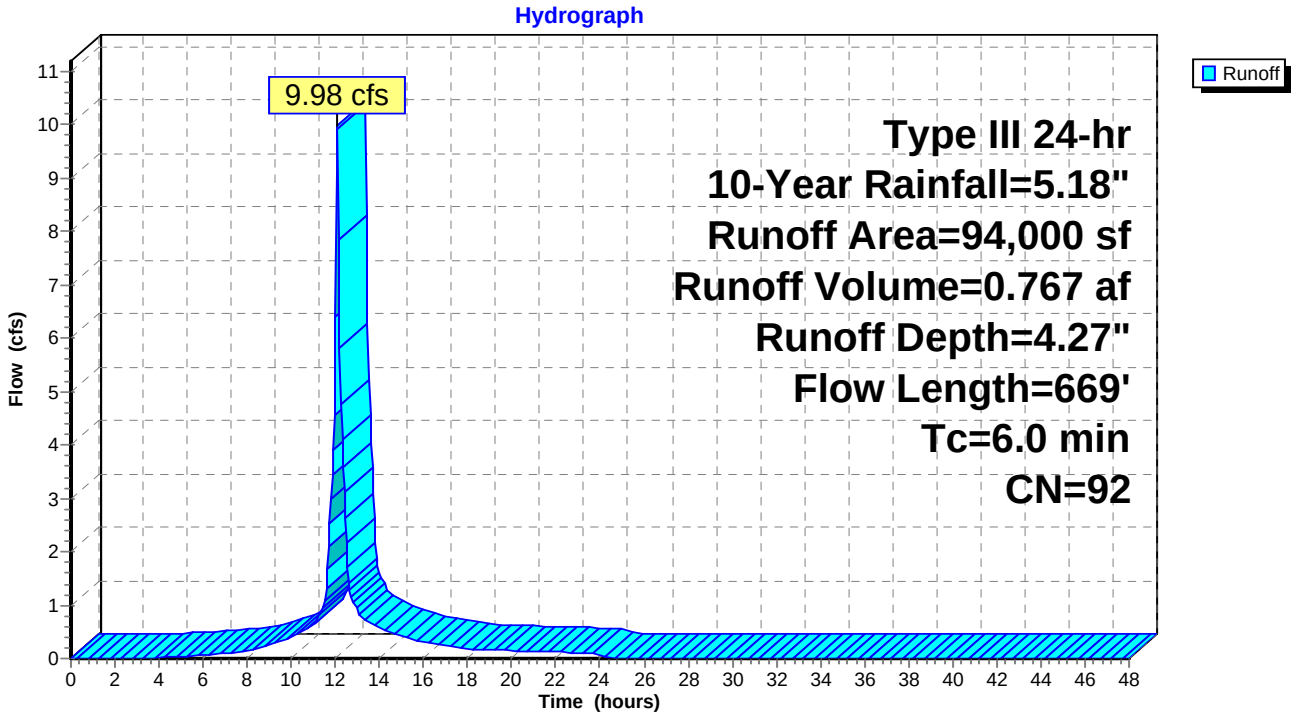
Runoff = 9.98 cfs @ 12.09 hrs, Volume= 0.767 af, Depth= 4.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.18"

Area (sf)	CN	Description
71,413	98	Paved parking, HSG B
11,784	86	Newly graded area, HSG B
10,803	61	>75% Grass cover, Good, HSG B
94,000	92	Weighted Average
22,587		24.03% Pervious Area
71,413		75.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.41		**Sheet Flow, Play areas** Smooth surfaces n= 0.011 P2= 3.37"
0.1	40	0.1500	6.24		**Shallow Concentrated Flow, Play areas** Unpaved Kv= 16.1 fps
2.2	362	0.0175	2.69		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
0.3	167	0.0200	8.41	14.86	**Pipe Channel, HDPE** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
3.8	669	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 7S: DA 1B



Summary for Subcatchment 8S: DA 2A

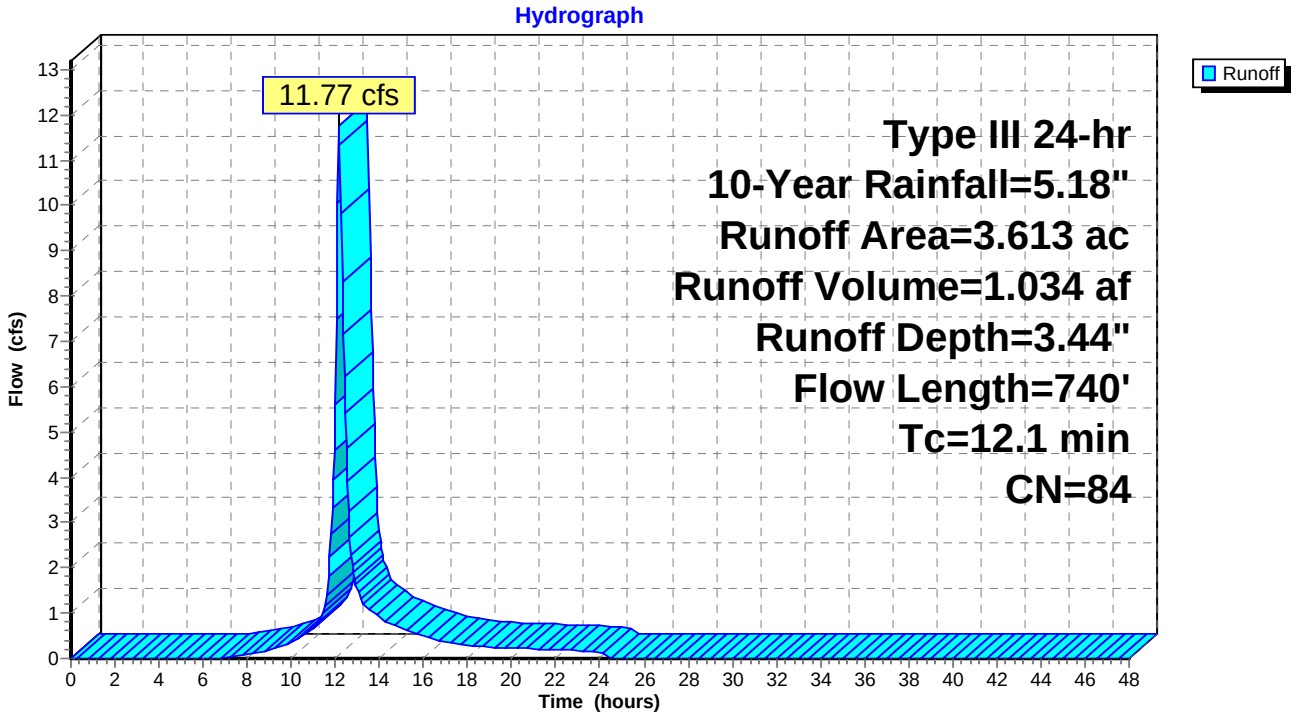
Runoff = 11.77 cfs @ 12.17 hrs, Volume= 1.034 af, Depth= 3.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.18"

Area (ac)	CN	Description
1.953	98	Paved parking, HSG B
0.152	98	Roofs, HSG B
0.394	61	>75% Grass cover, Good, HSG B
0.054	55	Woods, Good, HSG B
0.930	61	>75% Grass cover, Good, HSG B
0.130	98	Paved parking, HSG B
3.613	84	Weighted Average
1.378		38.14% Pervious Area
2.235		61.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0650	0.19		**Sheet Flow, Lawn** Grass: Dense n= 0.240 P2= 3.37"
3.3	558	0.0191	2.81		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
0.1	82	0.0500	11.77	14.44	**Pipe Channel, Discharge** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
12.1	740	Total			

Subcatchment 8S: DA 2A



Summary for Subcatchment 9S: DA 2B

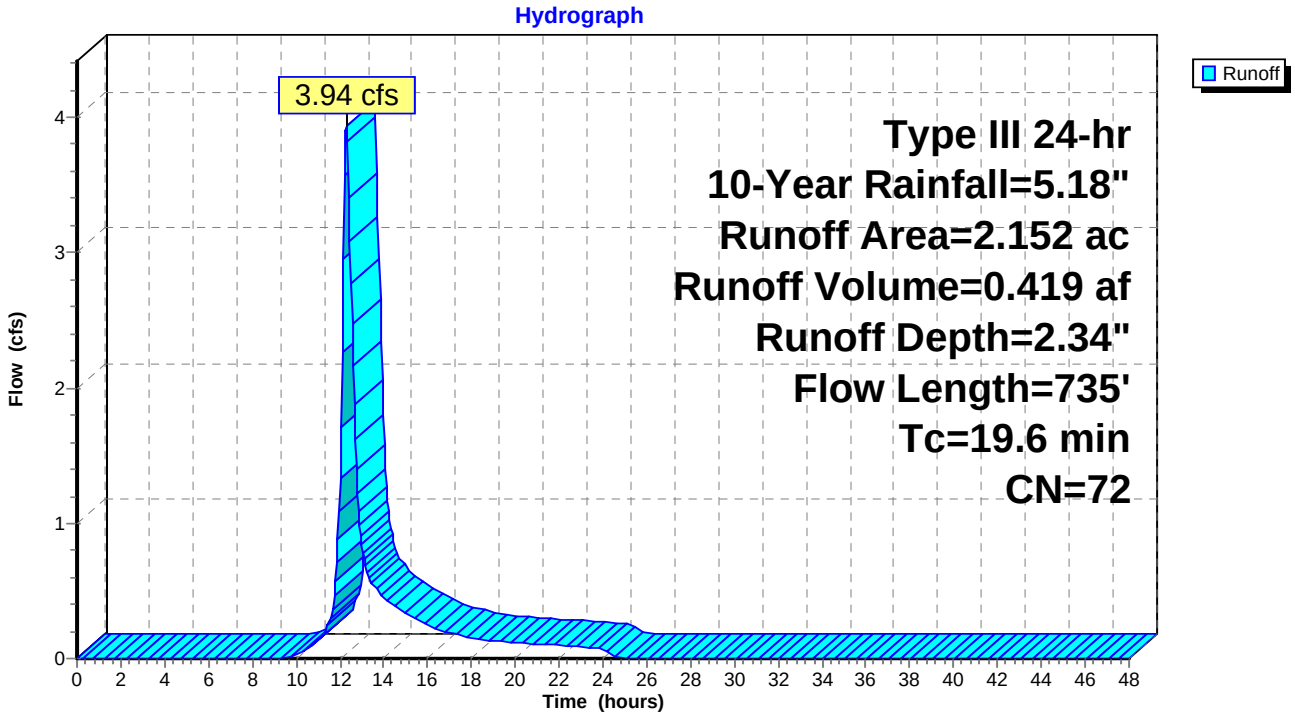
Runoff = 3.94 cfs @ 12.28 hrs, Volume= 0.419 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.18"

Area (ac)	CN	Description
0.661	98	Paved parking, HSG B
0.746	55	Woods, Good, HSG B
0.669	61	>75% Grass cover, Good, HSG B
0.076	98	Water Surface, 0% imp, HSG B
2.152	72	Weighted Average
1.491		69.28% Pervious Area
0.661		30.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	100	0.0450	0.11		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
2.1	100	0.0250	0.79		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.2	38	0.3333	4.04		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
1.8	314	0.0200	2.87		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
0.2	108	0.0200	7.44	9.14	**Pipe Channel, Pipe** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.2	75		5.67		**Lake or Reservoir,** Mean Depth= 1.00'
19.6	735	Total			

Subcatchment 9S: DA 2B



Summary for Subcatchment 11S: DA 1C

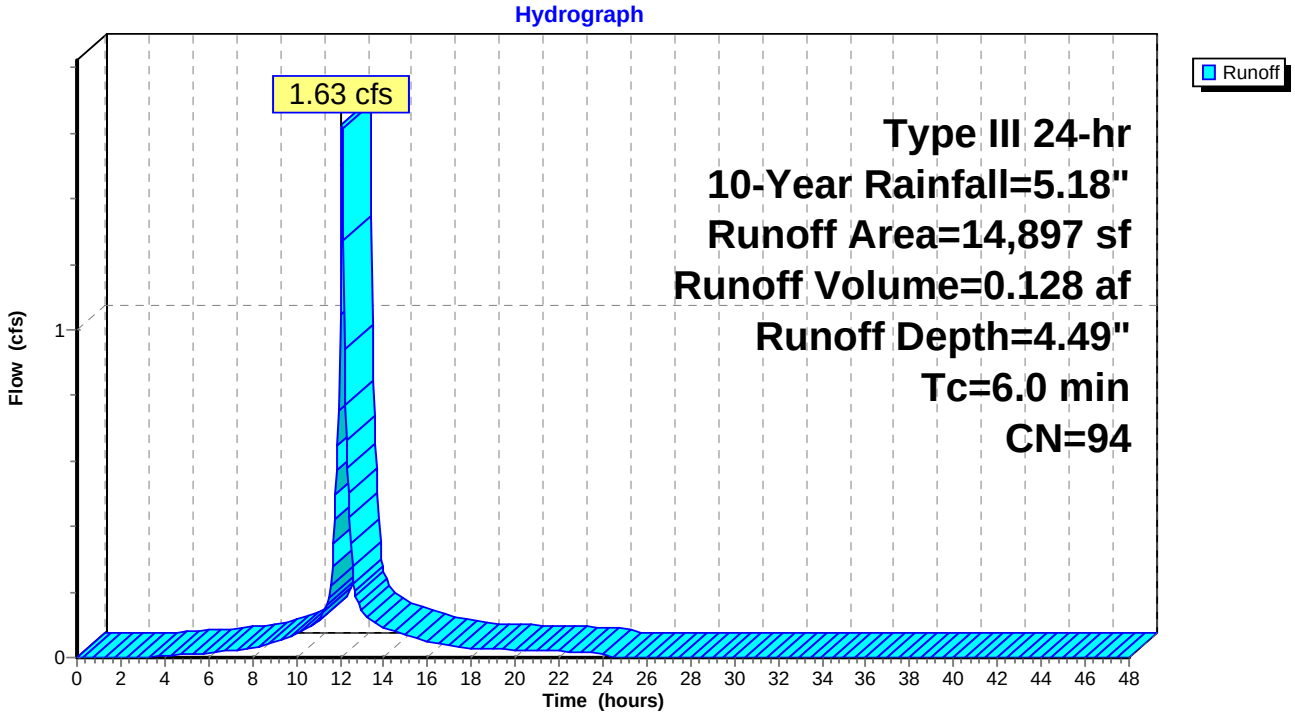
Runoff = 1.63 cfs @ 12.09 hrs, Volume= 0.128 af, Depth= 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.18"

Area (sf)	CN	Description
12,458	98	Paved parking, HSG C
2,439	74	>75% Grass cover, Good, HSG C
14,897	94	Weighted Average
2,439		16.37% Pervious Area
12,458		83.63% Impervious Area

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

Subcatchment 11S: DA 1C



Summary for Subcatchment 12S: DA 1D

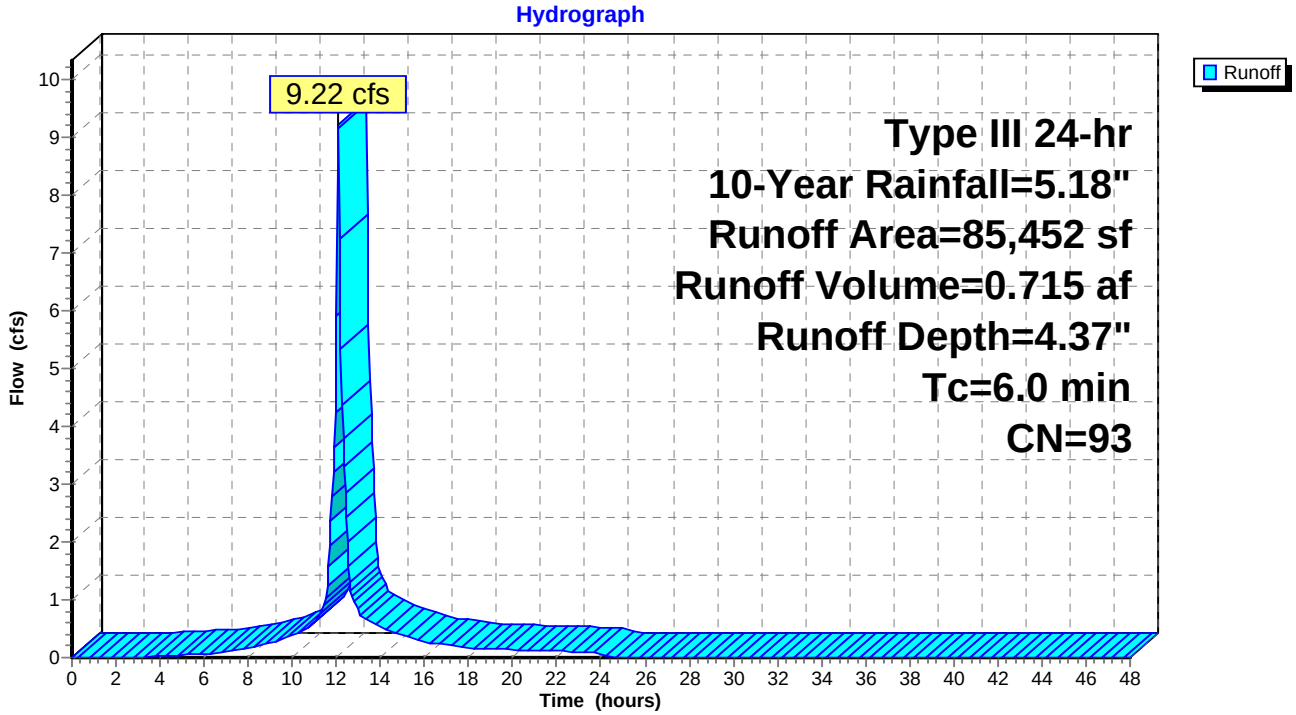
Runoff = 9.22 cfs @ 12.09 hrs, Volume= 0.715 af, Depth= 4.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.18"

Area (sf)	CN	Description
55,278	98	Paved parking, HSG C
6,098	98	Water Surface, 0% imp, HSG C
18,687	74	>75% Grass cover, Good, HSG C
5,389	98	Paved parking, HSG C
85,452	93	Weighted Average
24,785		29.00% Pervious Area
60,667		71.00% Impervious Area

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

Subcatchment 12S: DA 1D



Summary for Subcatchment 15S: DA 2E

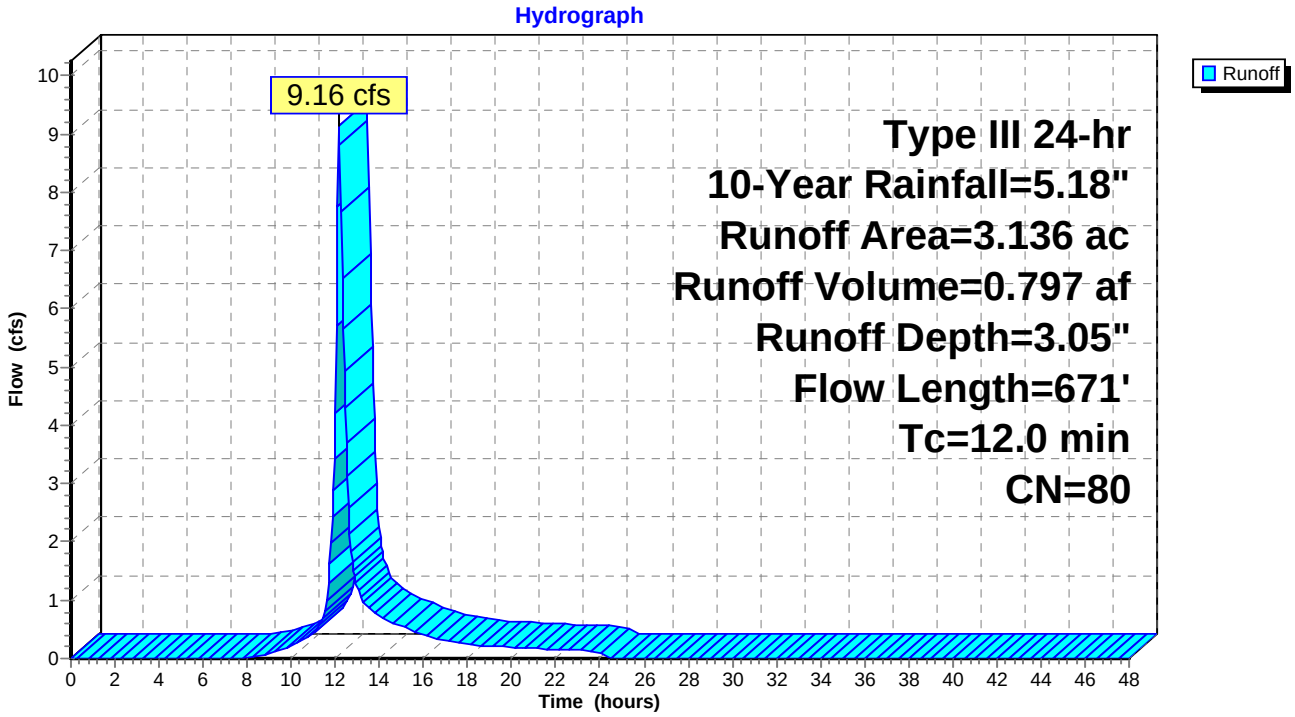
Runoff = 9.16 cfs @ 12.17 hrs, Volume= 0.797 af, Depth= 3.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.18"

	Area (ac)	CN	Description
*	0.985	98	Paved parking, HSG C, South
*	0.455	74	>75% Grass cover, Good, HSG C, South
	1.030	70	Woods, Good, HSG C
	0.666	74	>75% Grass cover, Good, HSG C
	3.136	80	Weighted Average
	2.151		68.59% Pervious Area
	0.985		31.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0600	0.11		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
3.3	417	0.1799	2.12		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.3	40	0.1000	2.21		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.7	164	0.0421	4.17		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
12.0	671	Total			

Subcatchment 15S: DA 2E



Summary for Subcatchment 16S: DA 2G

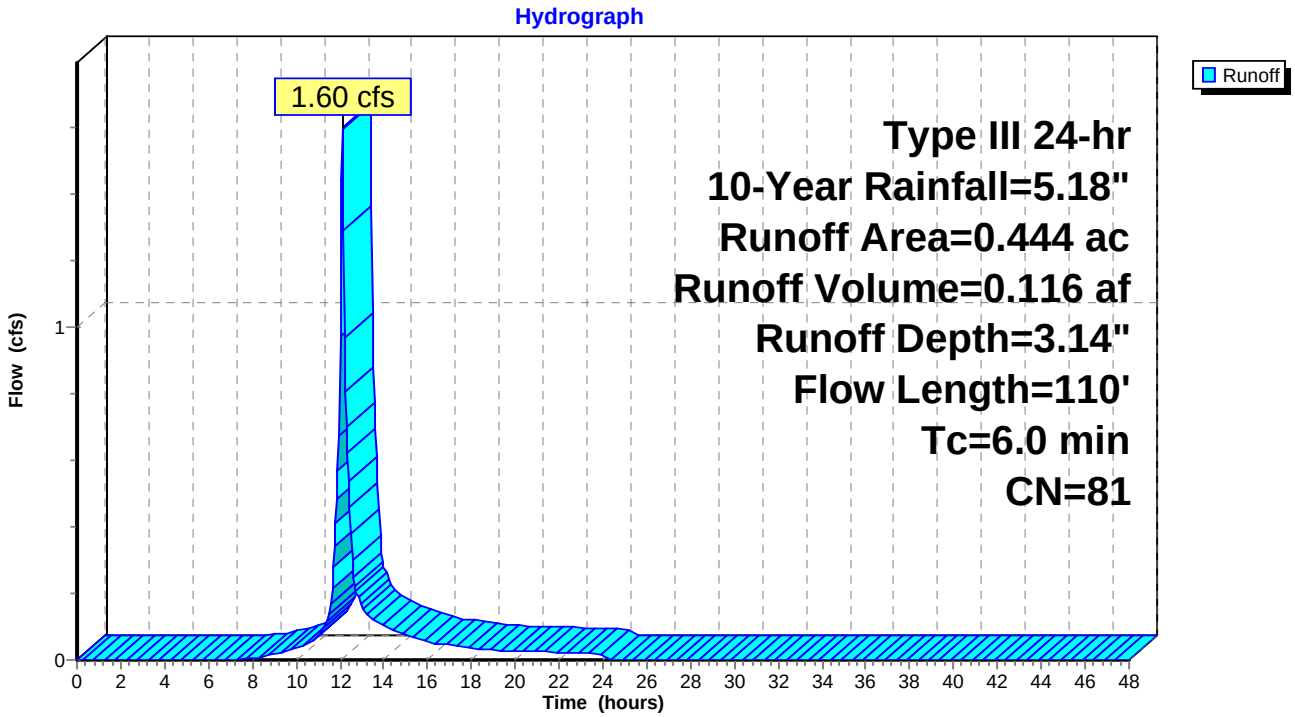
Runoff = 1.60 cfs @ 12.09 hrs, Volume= 0.116 af, Depth= 3.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.18"

Area (ac)	CN	Description
0.103	98	Water Surface, 0% imp, HSG C
0.017	80	>75% Grass cover, Good, HSG D
0.229	74	>75% Grass cover, Good, HSG C
0.079	80	>75% Grass cover, Good, HSG D
0.016	74	>75% Grass cover, Good, HSG C
0.444	81	Weighted Average
0.444		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	50	0.0500	0.15		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.2	60	0.3500	4.14		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
5.7	110	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 16S: DA 2G



Summary for Subcatchment 17S: DA 2I

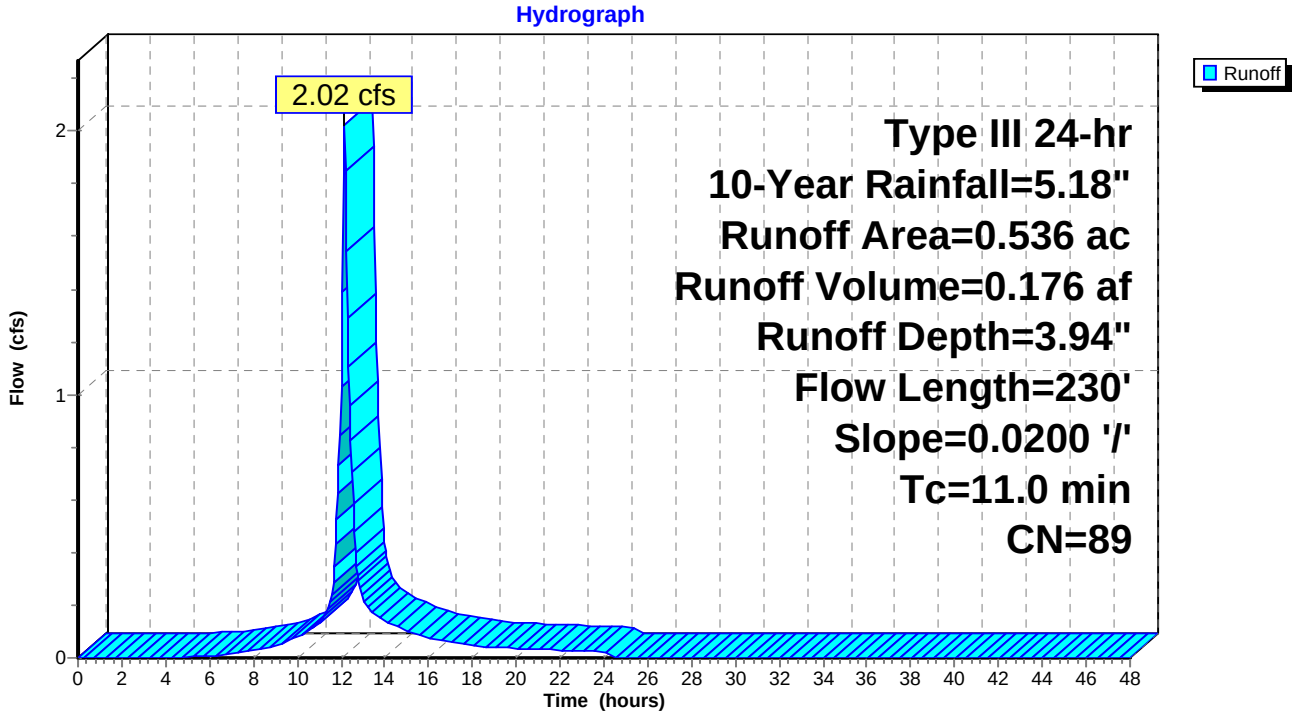
Runoff = 2.02 cfs @ 12.15 hrs, Volume= 0.176 af, Depth= 3.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.18"

	Area (ac)	CN	Description
*	0.344	98	Paved parking, HSG C, North
*	0.192	74	>75% Grass cover, Good, HSG C, North
	0.536	89	Weighted Average
	0.192		35.82% Pervious Area
	0.344		64.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0200	0.10		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
3.0	180	0.0200	0.99		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
11.0	230	Total			

Subcatchment 17S: DA 2I



Summary for Subcatchment 21S: DA 2F

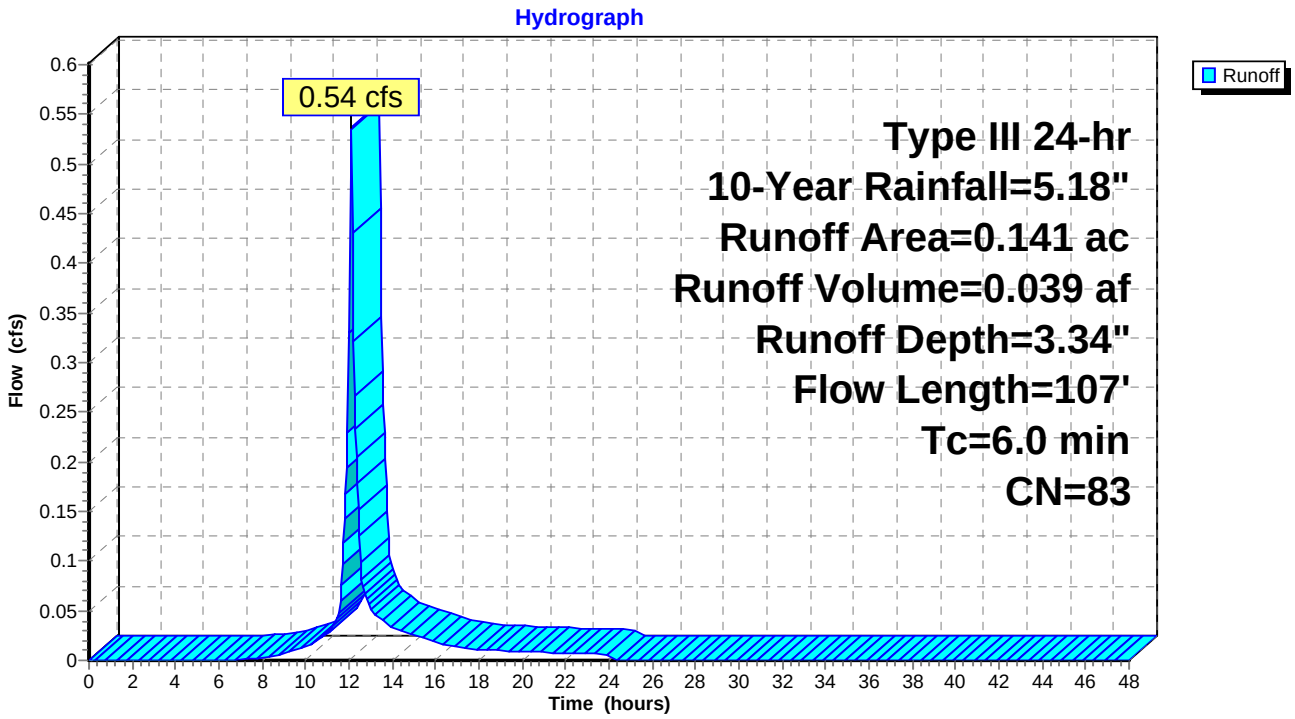
Runoff = 0.54 cfs @ 12.09 hrs, Volume= 0.039 af, Depth= 3.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.18"

Area (ac)	CN	Description
0.051	98	Water Surface, 0% imp, HSG C
0.090	74	>75% Grass cover, Good, HSG C
0.141	83	Weighted Average
0.141		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.3	57	0.1754	2.93		**Shallow Concentrated Flow, Woods** Short Grass Pasture Kv= 7.0 fps
4.5	107	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 21S: DA 2F



Summary for Subcatchment 22S: DA 2H

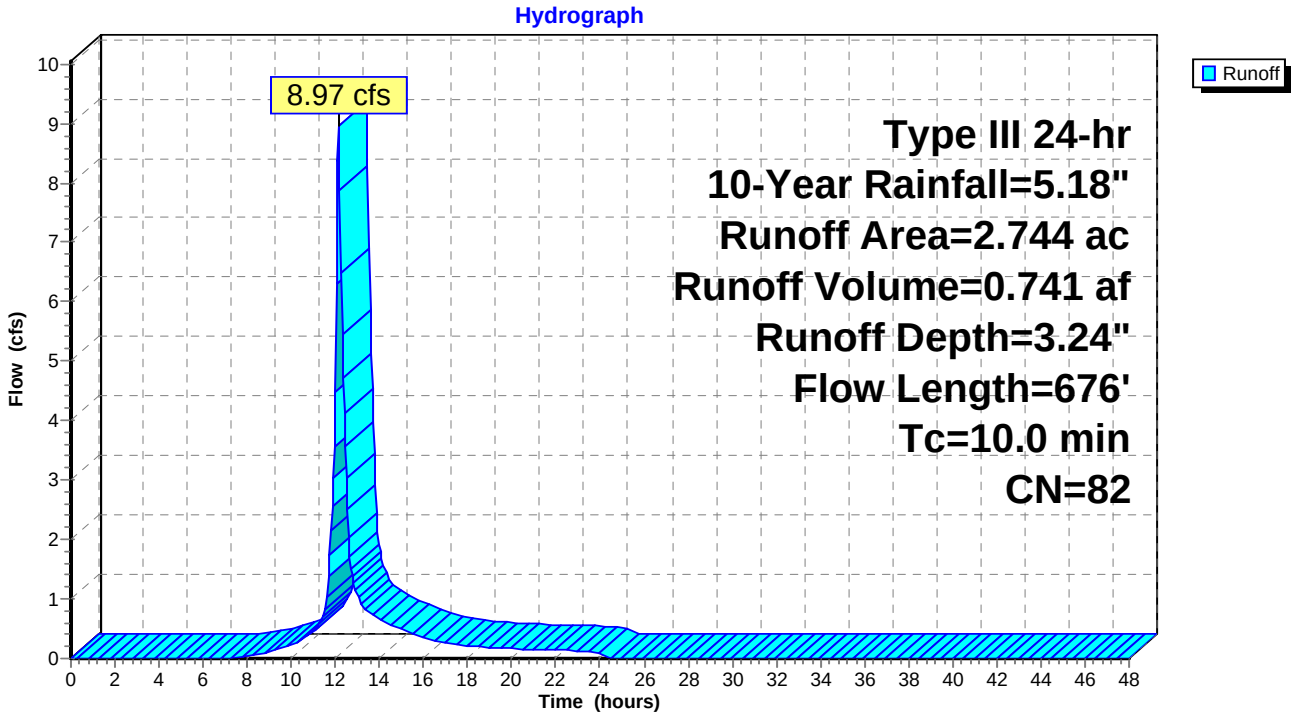
Runoff = 8.97 cfs @ 12.14 hrs, Volume= 0.741 af, Depth= 3.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.18"

	Area (ac)	CN	Description
*	0.431	98	Paved parking, HSG C, North
*	0.010	80	>75% Grass cover, Good, HSG D, North
*	0.313	74	>75% Grass cover, Good, HSG C, North
*	0.550	98	Paved parking, HSG C, South
*	0.356	74	>75% Grass cover, Good, HSG C, South
	0.748	70	Woods, Good, HSG C
	0.336	74	>75% Grass cover, Good, HSG C
	2.744	82	Weighted Average
	1.763		64.25% Pervious Area
	0.981		35.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	50	0.1000	0.13		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
1.7	190	0.1316	1.81		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.3	81	0.3333	4.04		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
1.7	355	0.0310	3.57		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
10.0	676	Total			

Subcatchment 22S: DA 2H



Summary for Pond 2P: 30" RCP

Inflow Area =	55.918 ac,	25.55% Impervious,	Inflow Depth >	2.49"	for 10-Year event
Inflow =	14.64 cfs @	12.44 hrs,	Volume=	11.587 af	
Outflow =	14.64 cfs @	12.44 hrs,	Volume=	11.587 af,	Atten= 0%, Lag= 0.0 min
Primary =	14.64 cfs @	12.44 hrs,	Volume=	11.587 af	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

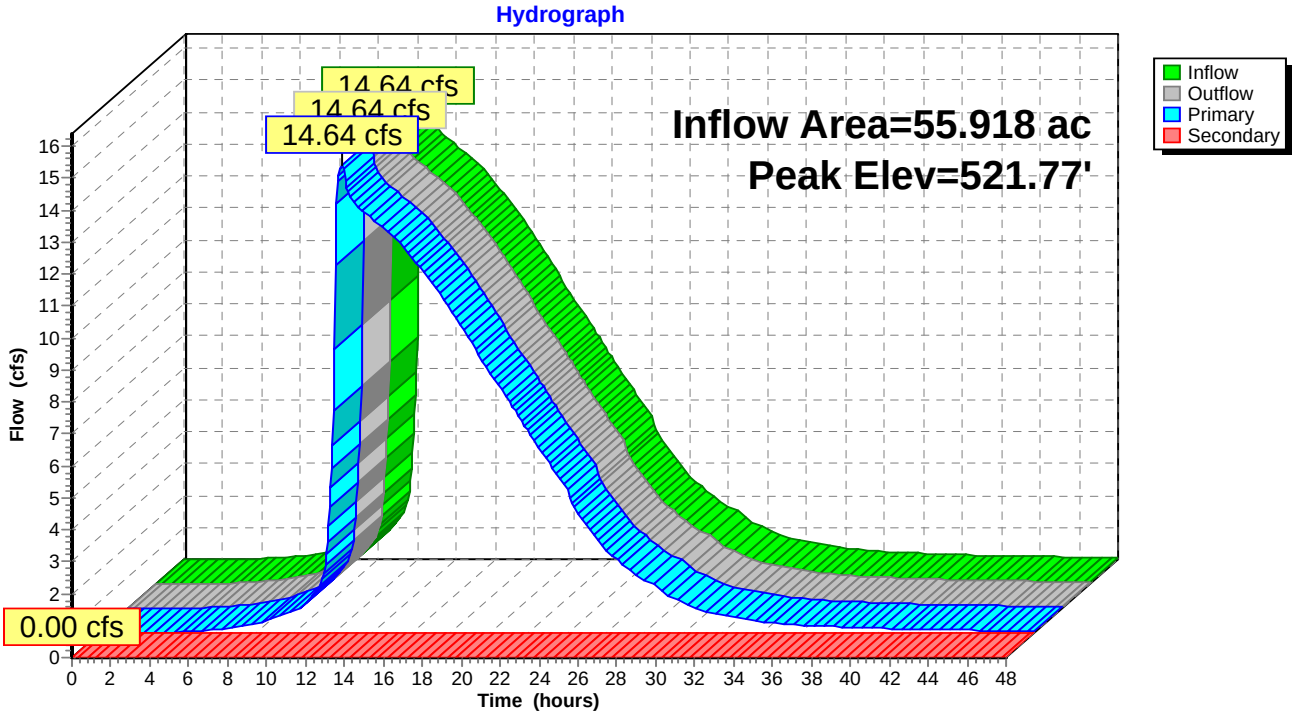
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 521.77' @ 12.44 hrs
Flood Elev= 527.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	519.92'	**30.0" Round 30" RC** L= 80.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 519.92' / 519.62' S= 0.0037 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 4.91 sf
#2	Secondary	527.20'	**30.0' long x 10.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=14.63 cfs @ 12.44 hrs HW=521.77' (Free Discharge)
└**1=30" RC** (Barrel Controls 14.63 cfs @ 5.25 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=519.92' (Free Discharge)
└**2=Overflow** (Controls 0.00 cfs)

Pond 2P: 30" RCP



Summary for Pond 4P: Pond

Inflow Area = 51.896 ac, 21.64% Impervious, Inflow Depth = 2.38" for 10-Year event
Inflow = 77.66 cfs @ 12.30 hrs, Volume= 10.281 af
Outflow = 11.59 cfs @ 14.06 hrs, Volume= 10.158 af, Atten= 85%, Lag= 105.4 min
Primary = 11.59 cfs @ 14.06 hrs, Volume= 10.158 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 526.06' @ 14.06 hrs Surf.Area= 2.375 ac Storage= 4.839 af

Plug-Flow detention time= 277.8 min calculated for 10.147 af (99% of inflow)
Center-of-Mass det. time= 271.4 min (1,129.3 - 857.9)

Volume	Invert	Avail.Storage	Storage Description
#1	523.45'	16.273 af	**Pond Storage (Irregular)**Listed below

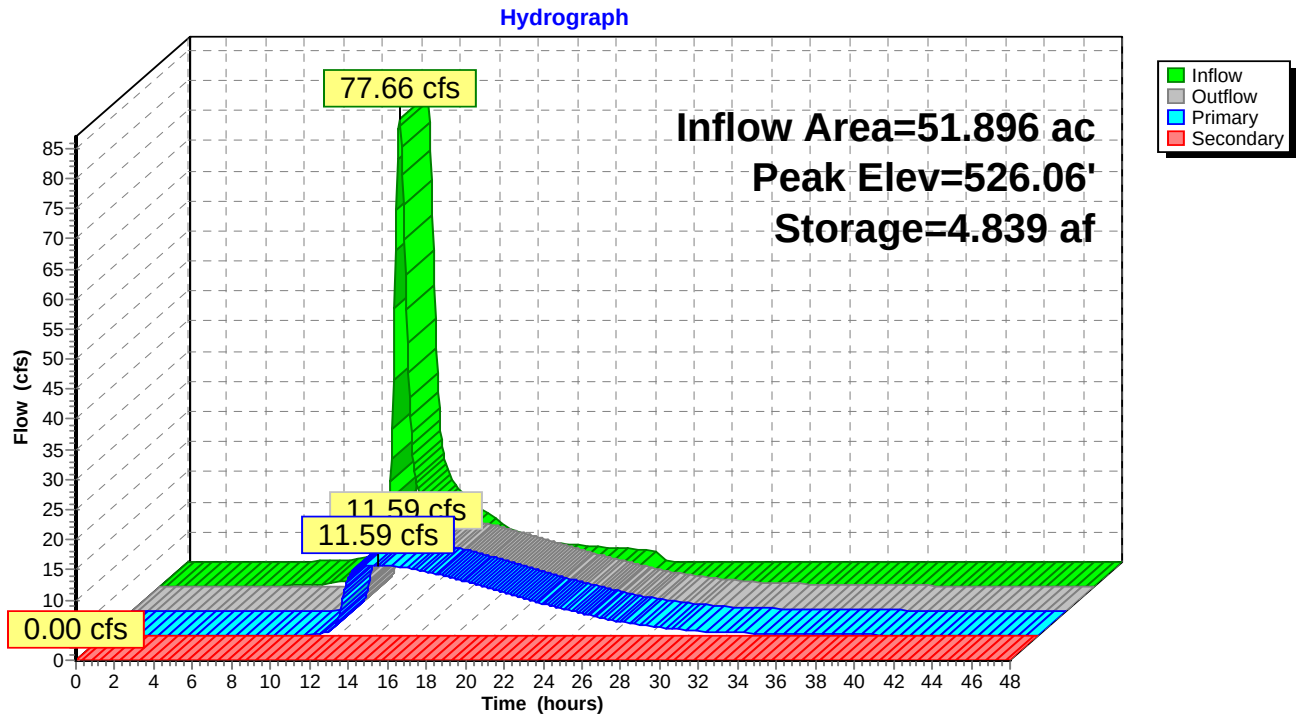
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
523.45	0.636	1,389.1	0.000	0.000	0.636
524.00	1.723	1,270.7	0.624	0.624	1.212
526.00	2.359	1,494.7	4.065	4.690	2.345
528.00	2.936	1,638.1	5.284	9.974	3.169
530.00	3.368	1,700.4	6.299	16.273	3.556

Device	Routing	Invert	Outlet Devices
#1	Primary	520.91'	**30.0" Round 30" HDPE** L= 110.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 520.91' / 520.64' S= 0.0024 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Device 1	521.46'	**30.0" Round 30" HDPE** L= 86.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 521.46' / 520.91' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#3	Device 2	521.41'	**24.0" Round 24" HDPE** L= 157.1' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 521.41' / 521.40' S= 0.0001 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#4	Device 3	523.45'	**18.0" Round 18" HDPE** L= 117.9' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 523.45' / 521.82' S= 0.0138 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#5	Secondary	529.90'	**50.0' long x 25.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=11.59 cfs @ 14.06 hrs HW=526.06' TW=521.64' (Dynamic Tailwater)
└─**1=30" HDPE** (Passes 11.59 cfs of 42.33 cfs potential flow)
└─**2=30" HDPE** (Passes 11.59 cfs of 42.22 cfs potential flow)
└─**3=24" HDPE** (Passes 11.59 cfs of 22.10 cfs potential flow)
└─**4=18" HDPE** (Inlet Controls 11.59 cfs @ 6.56 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=523.45' TW=519.92' (Dynamic Tailwater)
└─**5=Overflow** (Controls 0.00 cfs)

Pond 4P: Pond



Summary for Pond 10P: Apartment Phase 1 Detention Basin

Inflow Area = 2.152 ac, 30.72% Impervious, Inflow Depth = 2.34" for 10-Year event
Inflow = 3.94 cfs @ 12.28 hrs, Volume= 0.419 af
Outflow = 3.50 cfs @ 12.39 hrs, Volume= 0.419 af, Atten= 11%, Lag= 6.4 min
Primary = 3.50 cfs @ 12.39 hrs, Volume= 0.419 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 537.36' @ 12.39 hrs Surf.Area= 1,265 sf Storage= 846 cf

Plug-Flow detention time= 3.7 min calculated for 0.419 af (100% of inflow)
Center-of-Mass det. time= 3.0 min (856.3 - 853.3)

Volume	Invert	Avail.Storage	Storage Description
#1	536.00'	7,026 cf	**Detention Basin (Irregular)**Listed below (Recalc)

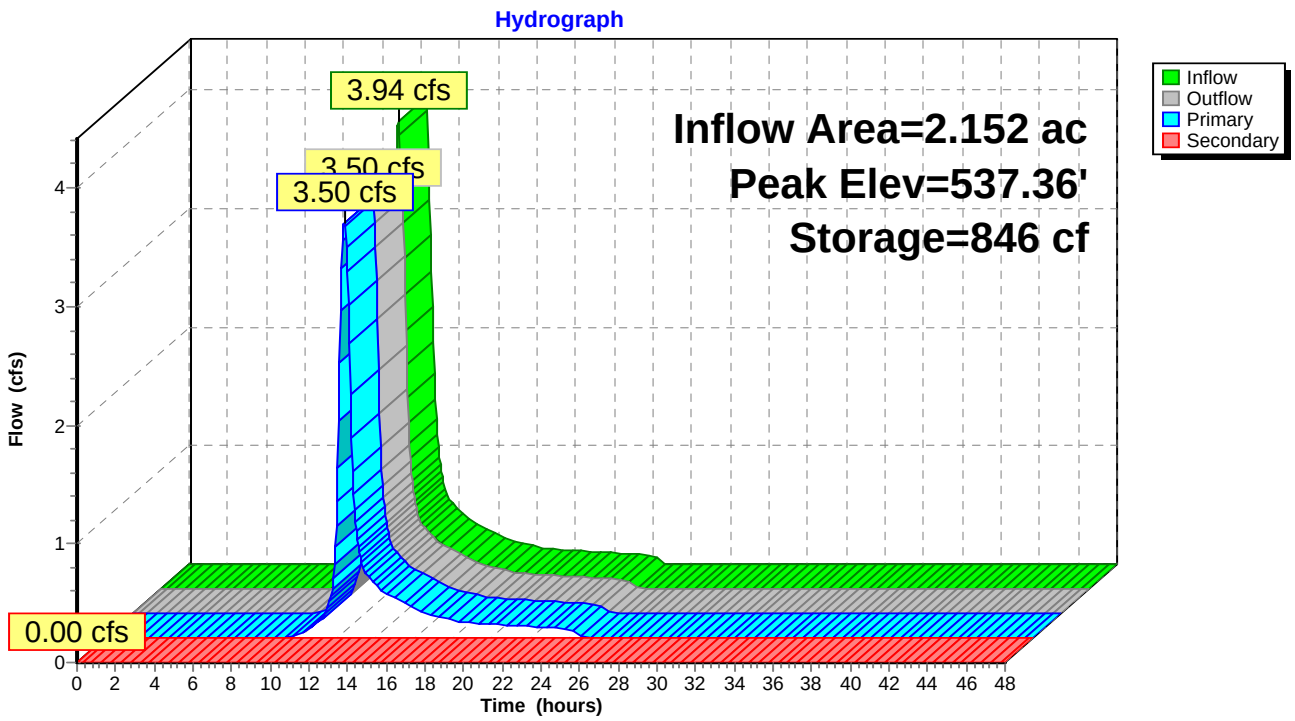
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
536.00	100	40.0	0	0	100
536.50	467	110.5	131	131	945
537.60	1,559	173.6	1,056	1,186	2,380
540.00	3,429	242.5	5,840	7,026	4,716

Device	Routing	Invert	Outlet Devices
#1	Primary	536.00'	**12.0" Round Culvert** L= 75.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 536.00' / 534.50' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	539.50'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=3.50 cfs @ 12.39 hrs HW=537.35' TW=525.09' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 3.50 cfs @ 4.45 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=536.00' TW=523.45' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10P: Apartment Phase 1 Detention Basin



Summary for Pond 15P: Apartments Phase II Stormwater Basin 2

Inflow Area = 3.277 ac, 30.06% Impervious, Inflow Depth = 3.06" for 10-Year event
Inflow = 9.55 cfs @ 12.16 hrs, Volume= 0.836 af
Outflow = 9.25 cfs @ 12.21 hrs, Volume= 0.757 af, Atten= 3%, Lag= 2.9 min
Primary = 9.25 cfs @ 12.21 hrs, Volume= 0.757 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 568.14' @ 12.21 hrs Surf.Area= 2,362 sf Storage= 5,727 cf

Plug-Flow detention time= 72.9 min calculated for 0.756 af (90% of inflow)
Center-of-Mass det. time= 26.9 min (852.0 - 825.2)

Volume	Invert	Avail.Storage	Storage Description
#1	562.00'	6 cf	**3.00'W x 8.00'L x 2.50'H Sand Underdrain** 60 cf Overall x 10.0% Voids
#2	564.50'	10,719 cf	**Stormwater Basin (Irregular)**Listed below
		10,725 cf	Total Available Storage

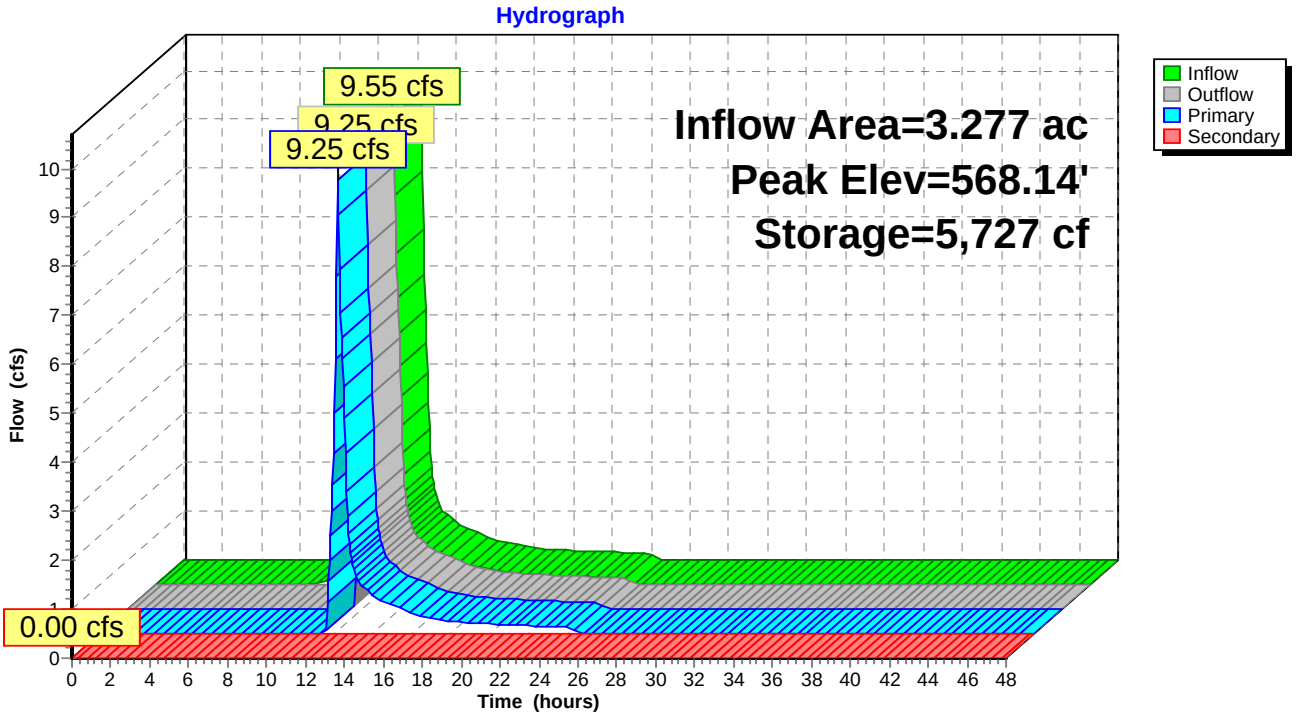
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
564.50	4	8.2	0	0	4
564.75	257	68.5	24	24	372
565.00	1,193	160.0	167	191	2,036
566.00	1,533	172.5	1,359	1,551	2,406
568.00	2,277	197.6	3,786	5,336	3,233
570.00	3,128	222.7	5,383	10,719	4,172

Device	Routing	Invert	Outlet Devices
#1	Primary	562.00'	**18.0" Round 18" HDPE** L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 562.00' / 561.60' S= 0.0059 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	567.00'	**36.0" W x 6.0" H Vert. 36" x 6" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	568.00'	**1.0" x 3.7" Horiz. Top of Frame X 39.00 columns** X 9 rows C= 0.600 in 48.0" x 36.0" Grate (75% open area) Limited to weir flow at low heads
#4	Secondary	569.00'	**8.0' long x 8.0' breadth Rip Rap Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#5	Device 1	562.00'	**0.500 in/hr Sand Underdrain over Horizontal area from 562.00' - 564.50'** Excluded Horizontal area = 24 sf Phase-In= 0.01'

Primary OutFlow Max=9.01 cfs @ 12.21 hrs HW=568.13' TW=562.93' (Dynamic Tailwater)
- **1=18" HDPE** (Passes 9.01 cfs of 19.21 cfs potential flow)
  - **2=36" x 6" Orifice** (Orifice Controls 6.77 cfs @ 4.51 fps)
  - **3=Top of Frame** (Weir Controls 2.25 cfs @ 1.20 fps)
  - **5=Sand Underdrain** (Exfiltration Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=562.00' TW=523.45' (Dynamic Tailwater)
- **4=Rip Rap Spillway** (Controls 0.00 cfs)

Pond 15P: Apartments Phase II Stormwater Basin 2



Summary for Pond 16P: Water Quality Basin

Inflow Area = 1.962 ac, 71.00% Impervious, Inflow Depth = 4.37" for 10-Year event
Inflow = 9.22 cfs @ 12.09 hrs, Volume= 0.715 af
Outflow = 2.64 cfs @ 12.43 hrs, Volume= 0.715 af, Atten= 71%, Lag= 20.3 min
Primary = 2.64 cfs @ 12.43 hrs, Volume= 0.715 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 527.64' @ 12.43 hrs Surf.Area= 5,858 sf Storage= 11,639 cf

Plug-Flow detention time= 128.5 min calculated for 0.714 af (100% of inflow)
Center-of-Mass det. time= 128.4 min (905.6 - 777.2)

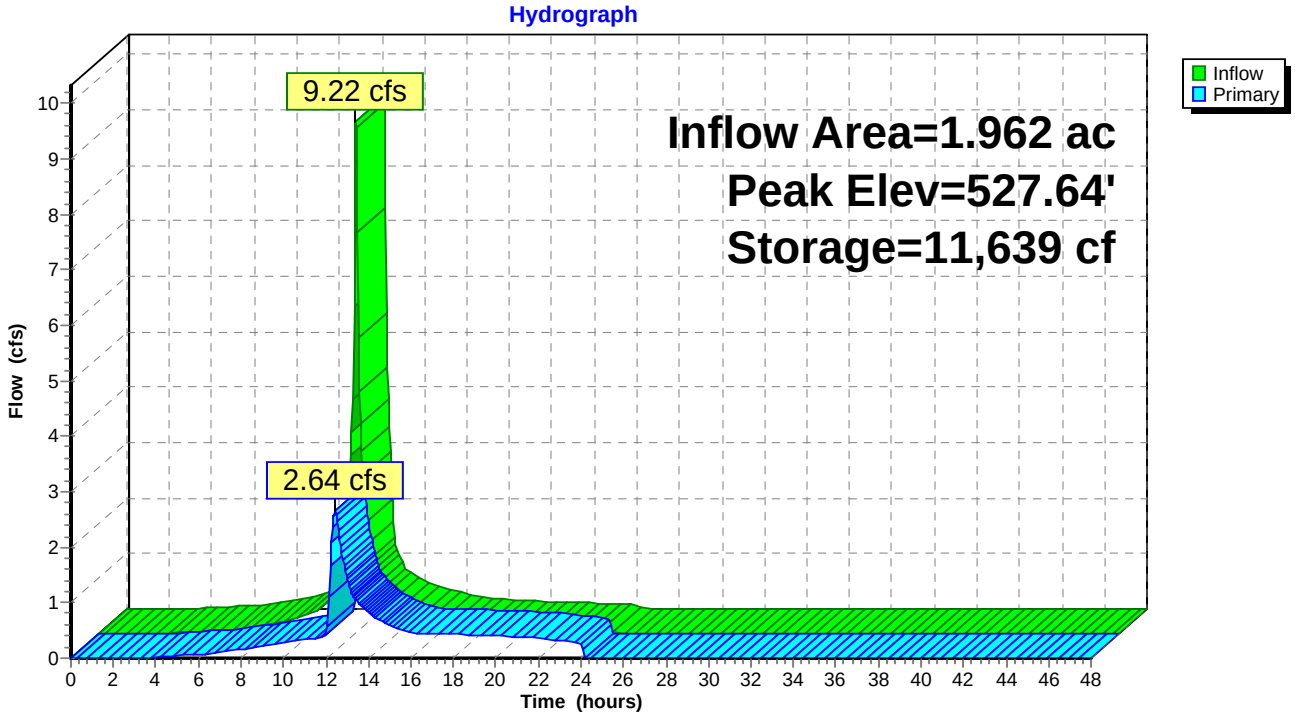
Volume	Invert	Avail.Storage	Storage Description
#1	523.75'	26,415 cf	**Water Quality swale (Irregular)**Listed below (Recalc)
#2	522.25'	5 cf	**3.00'W x 3.00'L x 1.50'H Underdrain** 14 cf Overall x 40.0% Voids
		26,420 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
523.75	9	12.0	0	0	9
524.00	258	63.2	26	26	316
524.25	528	108.8	96	123	940
524.50	766	159.7	161	283	2,028
524.75	1,105	211.6	233	516	3,562
525.00	1,523	263.2	327	843	5,513
525.25	2,026	316.2	442	1,285	7,958
525.50	2,529	368.0	568	1,853	10,779
525.75	3,267	420.8	723	2,576	14,095
526.00	4,119	481.0	921	3,497	18,417
528.00	6,268	535.7	10,312	13,809	22,957
529.75	8,181	557.7	12,606	26,415	25,097

Device	Routing	Invert	Outlet Devices
#1	Primary	522.75'	**24.0" Round 24" HDPE** L= 75.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 522.75' / 521.75' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	523.00'	**3.0" Vert. Underdrain** C= 0.600 Limited to weir flow at low heads
#3	Device 1	526.75'	**6.0" W x 6.0" H Vert. 6" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	527.25'	**18.0" W x 6.0" H Vert. 18x6 Orifice** C= 0.600 Limited to weir flow at low heads
#5	Device 1	528.50'	**20.0' long x 0.5' breadth Top of Frame** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=2.63 cfs @ 12.43 hrs HW=527.64' TW=521.76' (Dynamic Tailwater)
- **1=24" HDPE** (Passes 2.63 cfs of 29.83 cfs potential flow)
  - **2=Underdrain** (Orifice Controls 0.50 cfs @ 10.23 fps)
  - **3=6" Orifice** (Orifice Controls 0.96 cfs @ 3.82 fps)
  - **4=18x6 Orifice** (Orifice Controls 1.17 cfs @ 2.00 fps)
  - **5=Top of Frame** (Controls 0.00 cfs)

Pond 16P: Water Quality Basin



Summary for Pond 20P: Apartments Phase II Stormwater Basin 1

Inflow Area = 7.001 ac, 33.00% Impervious, Inflow Depth = 3.07" for 10-Year event
Inflow = 20.08 cfs @ 12.18 hrs, Volume= 1.791 af
Outflow = 12.45 cfs @ 12.37 hrs, Volume= 1.601 af, Atten= 38%, Lag= 11.5 min
Primary = 12.45 cfs @ 12.37 hrs, Volume= 1.601 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 558.31' @ 12.37 hrs Surf.Area= 6,850 sf Storage= 24,123 cf

Plug-Flow detention time= 116.2 min calculated for 1.601 af (89% of inflow)
Center-of-Mass det. time= 65.2 min (895.8 - 830.6)

Volume	Invert	Avail.Storage	Storage Description
#1	551.00'	4 cf	**3.00'W x 8.00'L x 1.75'H Sand Underdrain** 42 cf Overall x 10.0% Voids
#2	552.75'	40,883 cf	**Stormwater Basin (Irregular)**Listed below (Recalc)
#3	556.00'	424 cf	**36.0" Round Pipe Storage**-Impervious L= 60.0' S= 0.0083 '/'
		41,312 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
552.75	120	43.3	0	0	120
553.00	865	110.3	109	109	939
553.25	1,552	155.7	298	407	1,901
553.50	2,135	207.8	459	866	3,409
553.75	2,928	261.6	630	1,496	5,419
554.00	3,512	310.5	804	2,300	7,646
555.00	4,145	323.0	3,824	6,124	8,352
556.00	4,804	335.6	4,470	10,595	9,090
557.00	5,490	348.1	5,143	15,738	9,851
558.00	6,569	422.7	6,021	21,759	14,443
559.00	7,426	435.3	6,993	28,752	15,404
560.00	8,310	447.8	7,864	36,616	16,387
560.50	8,761	454.1	4,267	40,883	16,893

Device	Routing	Invert	Outlet Devices
#1	Primary	551.00'	**18.0" Round 18" HDPE** L= 152.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 551.00' / 549.00' S= 0.0132 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	555.50'	**6.0" Vert. 6" Orifices (2) X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	557.30'	**48.0" W x 7.0" H Vert. 48" x 7" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	558.75'	**1.0" x 3.7" Horiz. Top of Frame X 39.00 columns** X 9 rows C= 0.600 in 48.0" x 36.0" Grate (75% open area) Limited to weir flow at low heads
#5	Secondary	559.75'	**8.0' long x 8.0' breadth Rip Rap Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

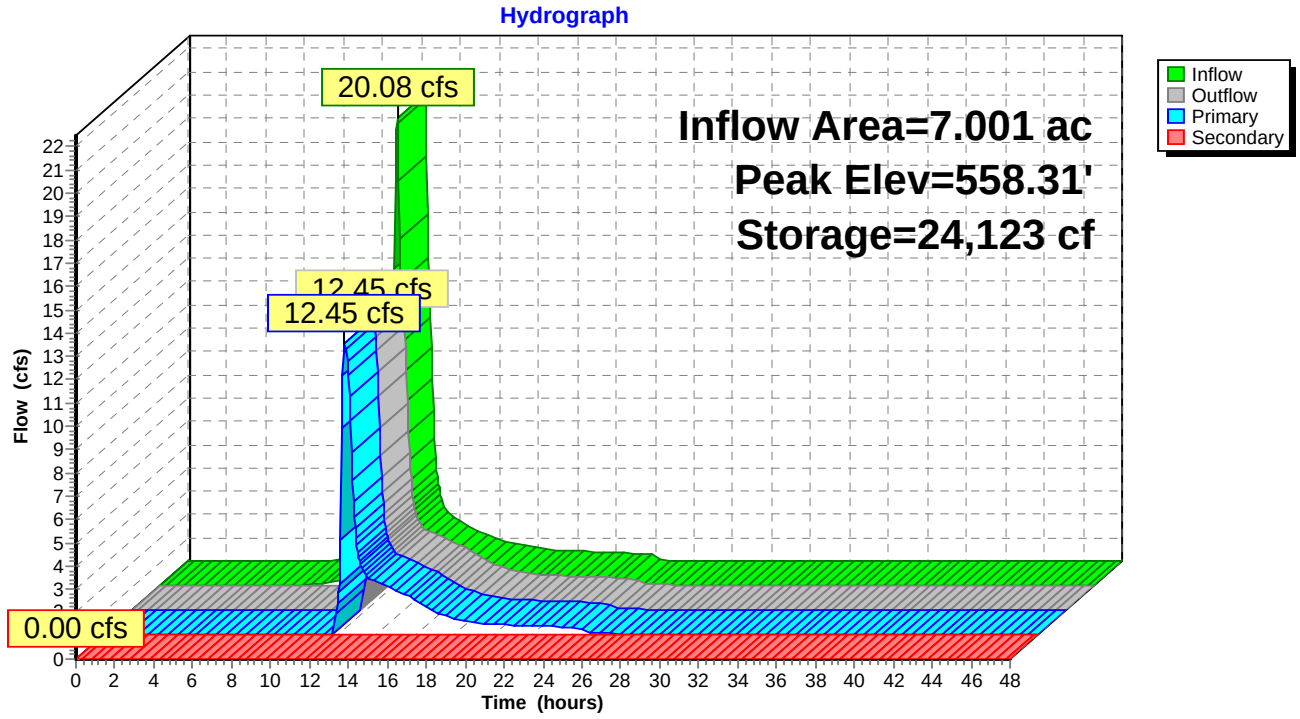
2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64
2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

#6 Device 1 551.00' **0.500 in/hr Sand Underdrain over Horizontal area from 551.00' - 552.75'**
Excluded Horizontal area = 24 sf Phase-In= 0.01'

Primary OutFlow Max=12.41 cfs @ 12.37 hrs HW=558.30' TW=525.05' (Dynamic Tailwater)
└─**1=18" HDPE** (Passes 12.41 cfs of 19.15 cfs potential flow)
  ├─**2=6" Orifices (2)** (Orifice Controls 3.02 cfs @ 7.69 fps)
  ├─**3=48" x 7" Orifice** (Orifice Controls 9.39 cfs @ 4.02 fps)
  ├─**4=Top of Frame** (Controls 0.00 cfs)
  └─**6=Sand Underdrain** (Exfiltration Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=551.00' TW=523.45' (Dynamic Tailwater)
└─**5=Rip Rap Spillway** (Controls 0.00 cfs)

Pond 20P: Apartments Phase II Stormwater Basin 1



Summary for Pond 21P: Drain

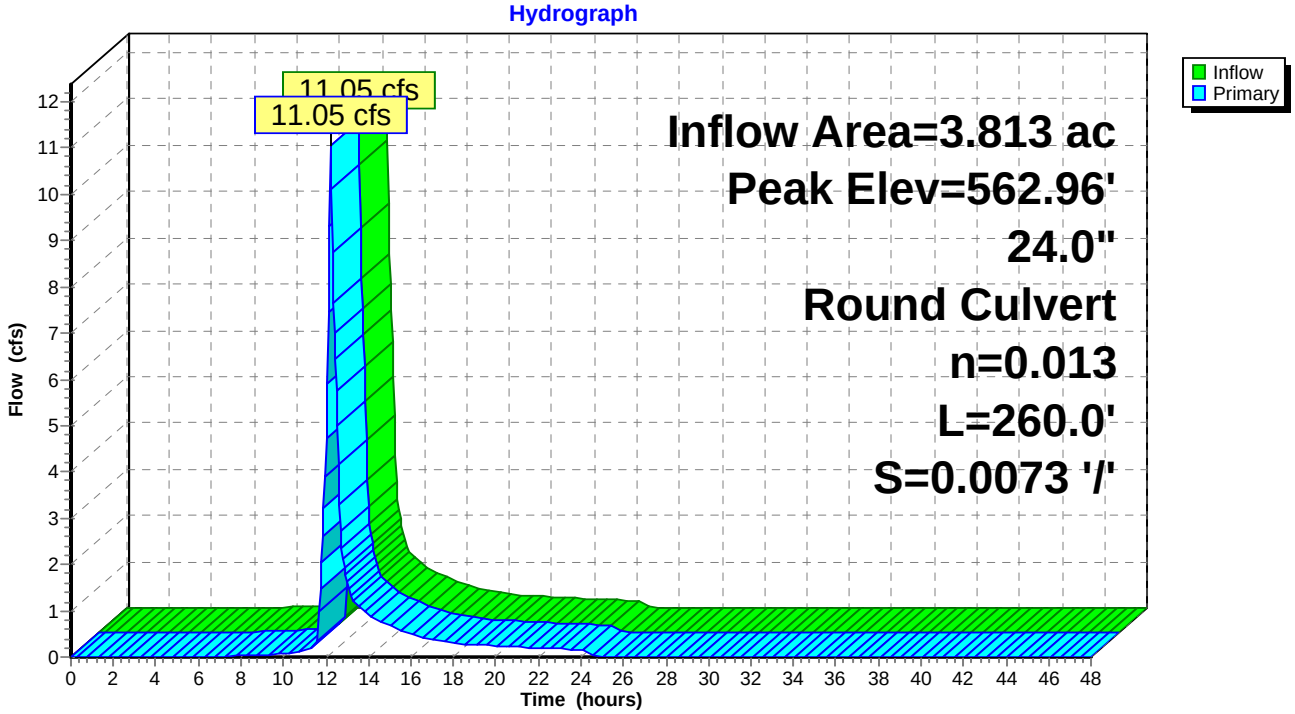
Inflow Area = 3.813 ac, 34.85% Impervious, Inflow Depth = 2.94" for 10-Year event
Inflow = 11.05 cfs @ 12.21 hrs, Volume= 0.933 af
Outflow = 11.05 cfs @ 12.21 hrs, Volume= 0.933 af, Atten= 0%, Lag= 0.0 min
Primary = 11.05 cfs @ 12.21 hrs, Volume= 0.933 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 562.96' @ 12.21 hrs
Flood Elev= 565.37'

Device	Routing	Invert	Outlet Devices
#1	Primary	561.40'	**24.0" Round Culvert** L= 260.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 561.40' / 559.50' S= 0.0073 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=10.89 cfs @ 12.21 hrs HW=562.94' TW=557.94' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 10.89 cfs @ 5.79 fps)

Pond 21P: Drain



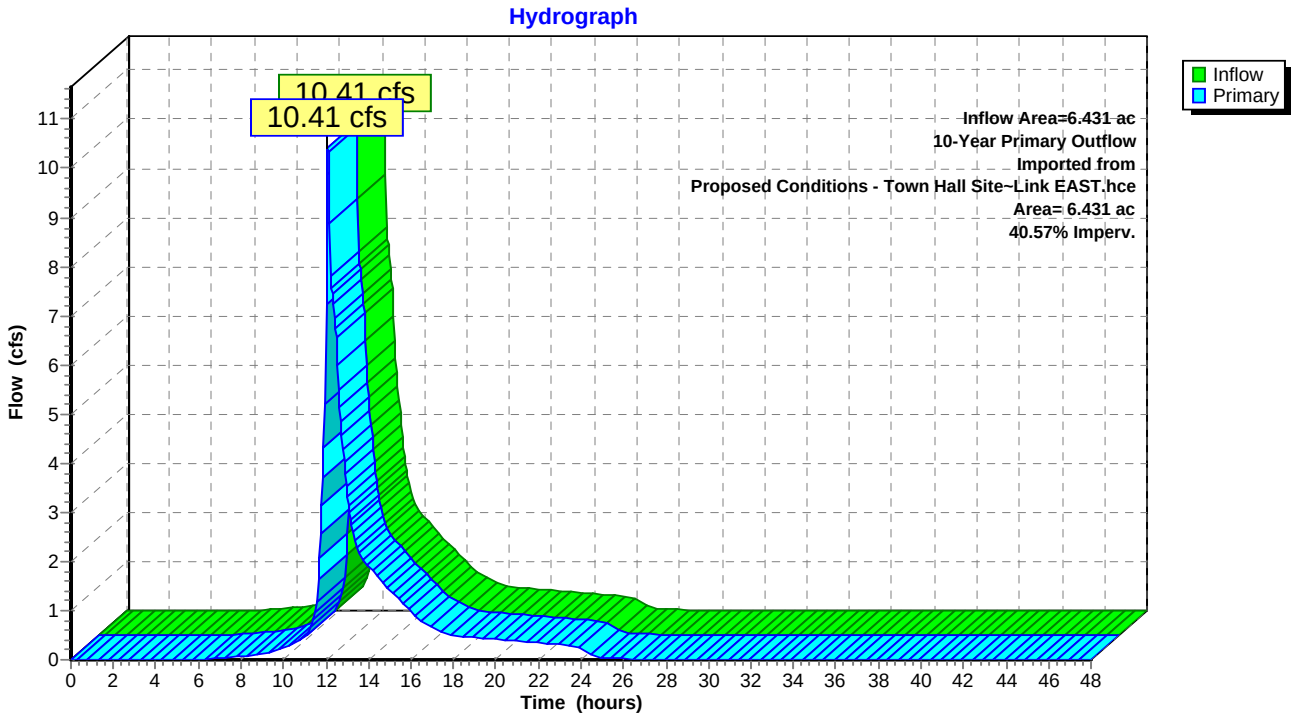
Summary for Link 14L: DA 2D - From Town Hall

Inflow Area = 6.431 ac, 40.57% Impervious, Inflow Depth = 2.75" for 10-Year event
Inflow = 10.41 cfs @ 12.09 hrs, Volume= 1.476 af
Primary = 10.41 cfs @ 12.09 hrs, Volume= 1.476 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

10-Year Primary Outflow Imported from Proposed Conditions - Town Hall Site~Link EAST.hce

Link 14L: DA 2D - From Town Hall



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 2
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 1S: DA 1A Runoff Area=2.061 ac 80.93% Impervious Runoff Depth=5.25"
Flow Length=532' Tc=11.0 min CN=91 Runoff=10.09 cfs 0.902 af

Subcatchment 3S: DA 2C Runoff Area=30.199 ac 4.93% Impervious Runoff Depth=2.76"
Flow Length=2,588' Tc=22.6 min UI Adjusted CN=67 Runoff=61.57 cfs 6.942 af

Subcatchment 7S: DA 1B Runoff Area=94,000 sf 75.97% Impervious Runoff Depth=5.36"
Flow Length=669' Tc=6.0 min CN=92 Runoff=12.39 cfs 0.965 af

Subcatchment 8S: DA 2A Runoff Area=3.613 ac 61.86% Impervious Runoff Depth=4.48"
Flow Length=740' Tc=12.1 min CN=84 Runoff=15.22 cfs 1.348 af

Subcatchment 9S: DA 2B Runoff Area=2.152 ac 30.72% Impervious Runoff Depth=3.24"
Flow Length=735' Tc=19.6 min CN=72 Runoff=5.53 cfs 0.581 af

Subcatchment 11S: DA 1C Runoff Area=14,897 sf 83.63% Impervious Runoff Depth=5.59"
Tc=6.0 min CN=94 Runoff=2.01 cfs 0.159 af

Subcatchment 12S: DA 1D Runoff Area=85,452 sf 71.00% Impervious Runoff Depth=5.48"
Tc=6.0 min CN=93 Runoff=11.39 cfs 0.896 af

Subcatchment 15S: DA 2E Runoff Area=3.136 ac 31.41% Impervious Runoff Depth=4.05"
Flow Length=671' Tc=12.0 min CN=80 Runoff=12.12 cfs 1.059 af

Subcatchment 16S: DA 2G Runoff Area=0.444 ac 0.00% Impervious Runoff Depth=4.16"
Flow Length=110' Tc=6.0 min CN=81 Runoff=2.10 cfs 0.154 af

Subcatchment 17S: DA 2I Runoff Area=0.536 ac 64.18% Impervious Runoff Depth=5.03"
Flow Length=230' Slope=0.0200 '/' Tc=11.0 min CN=89 Runoff=2.55 cfs 0.225 af

Subcatchment 21S: DA 2F Runoff Area=0.141 ac 0.00% Impervious Runoff Depth=4.37"
Flow Length=107' Tc=6.0 min CN=83 Runoff=0.70 cfs 0.051 af

Subcatchment 22S: DA 2H Runoff Area=2.744 ac 35.75% Impervious Runoff Depth=4.26"
Flow Length=676' Tc=10.0 min CN=82 Runoff=11.72 cfs 0.975 af

Pond 2P: 30" RCP Peak Elev=522.21' Inflow=20.72 cfs 15.879 af
Primary=20.72 cfs 15.879 af Secondary=0.00 cfs 0.000 af Outflow=20.72 cfs 15.879 af

Pond 4P: Pond Peak Elev=526.94' Storage=7.173 af Inflow=113.18 cfs 14.214 af
Primary=14.08 cfs 14.081 af Secondary=0.00 cfs 0.000 af Outflow=14.08 cfs 14.081 af

Pond 10P: Apartment Phase 1 Detention Peak Elev=537.89' Storage=1,673 cf Inflow=5.53 cfs 0.581 af
Primary=4.47 cfs 0.581 af Secondary=0.00 cfs 0.000 af Outflow=4.47 cfs 0.581 af

Pond 15P: Apartments Phase II Stormwater Peak Elev=568.24' Storage=5,977 cf Inflow=12.63 cfs 1.111 af
Primary=12.39 cfs 1.031 af Secondary=0.00 cfs 0.000 af Outflow=12.39 cfs 1.031 af

Pond 16P: Water Quality Basin Peak Elev=527.97' Storage=13,599 cf Inflow=11.39 cfs 0.896 af
Outflow=4.13 cfs 0.896 af

Pond 20P: Apartments Phase II Peak Elev=558.93' Storage=28,628 cf Inflow=27.96 cfs 2.385 af
Primary=19.80 cfs 2.195 af Secondary=0.00 cfs 0.000 af Outflow=19.80 cfs 2.195 af

Pond 21P: Drain Peak Elev=563.34' Inflow=14.81 cfs 1.256 af
24.0" Round Culvert n=0.013 L=260.0' S=0.0073 '/' Outflow=14.81 cfs 1.256 af

Link 25-Year Primary Outflow Imported from Proposed Conditions - Town Hall Site~Link EAST.hce Inflow=13.46 cfs 2.024 af
Area= 6.431 ac 40.57% Imperv. Primary=13.46 cfs 2.024 af

Total Runoff Area = 49.488 ac Runoff Volume = 14.257 af Average Runoff Depth = 3.46"
76.40% Pervious = 37.808 ac 23.60% Impervious = 11.680 ac

Summary for Subcatchment 1S: DA 1A

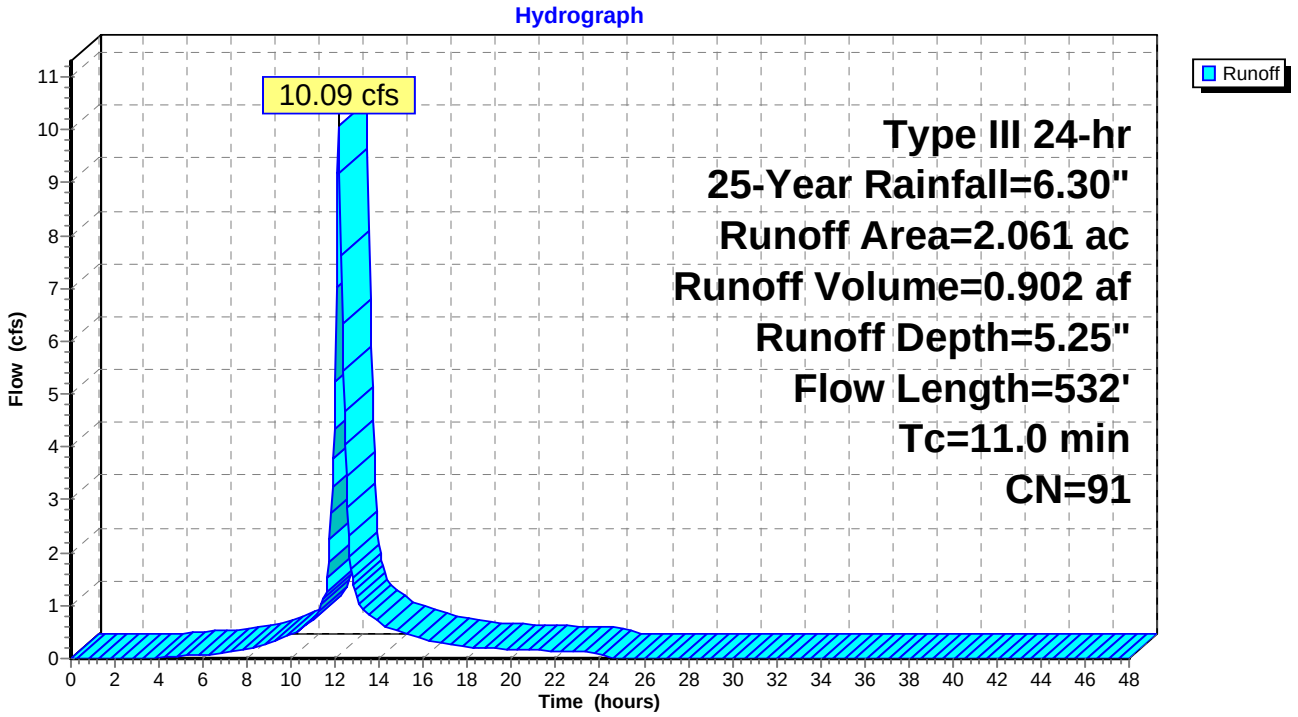
Runoff = 10.09 cfs @ 12.15 hrs, Volume= 0.902 af, Depth= 5.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.30"

Area (ac)	CN	Description
0.201	98	Paved parking, HSG C
1.260	98	Paved parking, HSG B
0.207	98	Paved parking, HSG C
0.074	74	>75% Grass cover, Good, HSG C
0.319	61	>75% Grass cover, Good, HSG B
2.061	91	Weighted Average
0.393		19.07% Pervious Area
1.668		80.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	40	0.0100	0.08		**Sheet Flow, Lawn** Grass: Dense n= 0.240 P2= 3.37"
1.7	239	0.0126	2.28		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
0.5	253	0.0200	8.41	14.86	**Pipe Channel, HDPE Drain** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
11.0	532	Total			

Subcatchment 1S: DA 1A



Summary for Subcatchment 3S: DA 2C

[47] Hint: Peak is 179% of capacity of segment #3

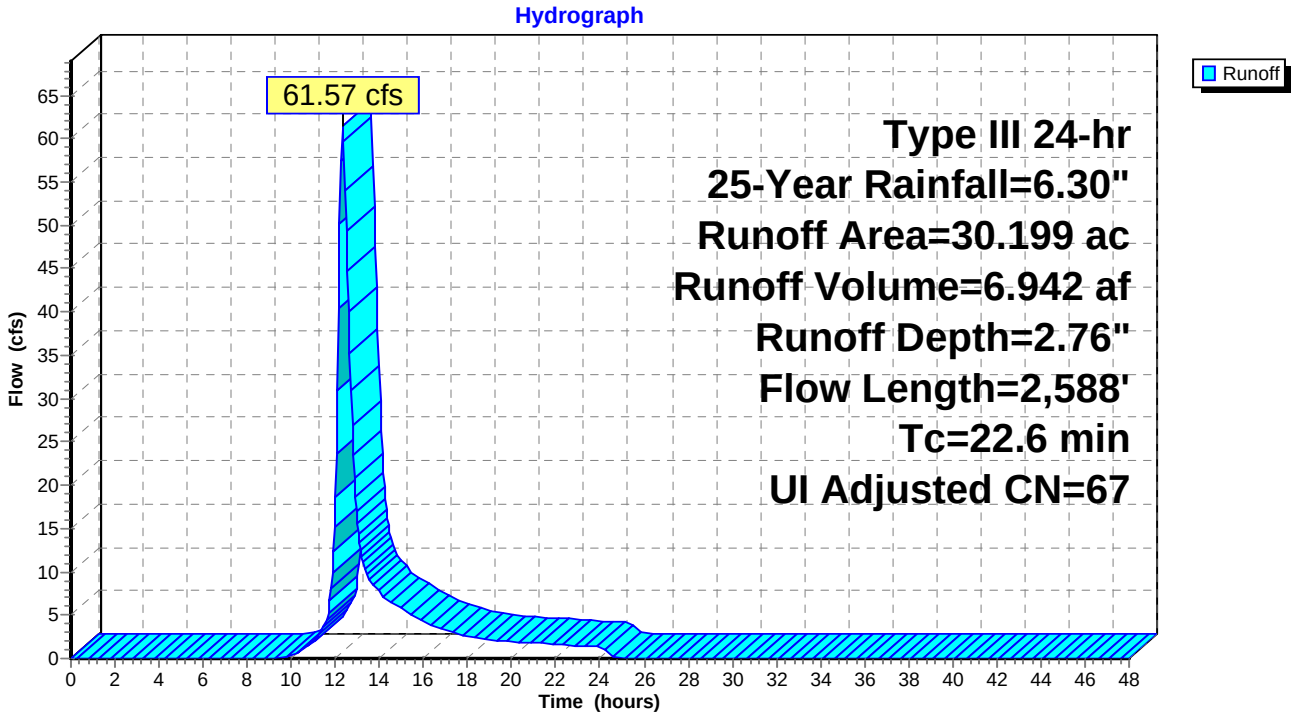
Runoff = 61.57 cfs @ 12.32 hrs, Volume= 6.942 af, Depth= 2.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.30"

	Area (ac)	CN	Adj	Description
	9.778	77		Woods, Good, HSG D
	0.839	98		Water Surface, 0% imp, HSG D
	13.926	55		Woods, Good, HSG B
	2.515	70		Woods, Good, HSG C
	0.066	98		Paved parking, HSG C
	0.110	98		Roofs, HSG C
	0.057	98		Paved parking, HSG B
	0.566	61		>75% Grass cover, Good, HSG B
	0.870	98		Unconnected roofs, HSG B
	0.333	80		>75% Grass cover, Good, HSG D
	0.061	98		Paved parking, HSG C
	0.032	74		>75% Grass cover, Good, HSG C
	0.140	98		Paved parking, HSG C
	0.664	74		>75% Grass cover, Good, HSG C
	0.058	70		Woods, Good, HSG C
*	0.184	98		Unconnected Roofs
	30.199	68	67	Weighted Average, UI Adjusted
	28.711			95.07% Pervious Area
	1.488			4.93% Impervious Area
	1.054			70.83% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	100	0.0850	0.14		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
5.1	598	0.1539	1.96		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
5.2	1,600	0.0262	5.16	34.37	**Parabolic Channel, Channel** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.035 Earth, dense weeds
0.6	290		8.02		**Lake or Reservoir, Pond** Mean Depth= 2.00'
22.6	2,588	Total			

Subcatchment 3S: DA 2C



Summary for Subcatchment 7S: DA 1B

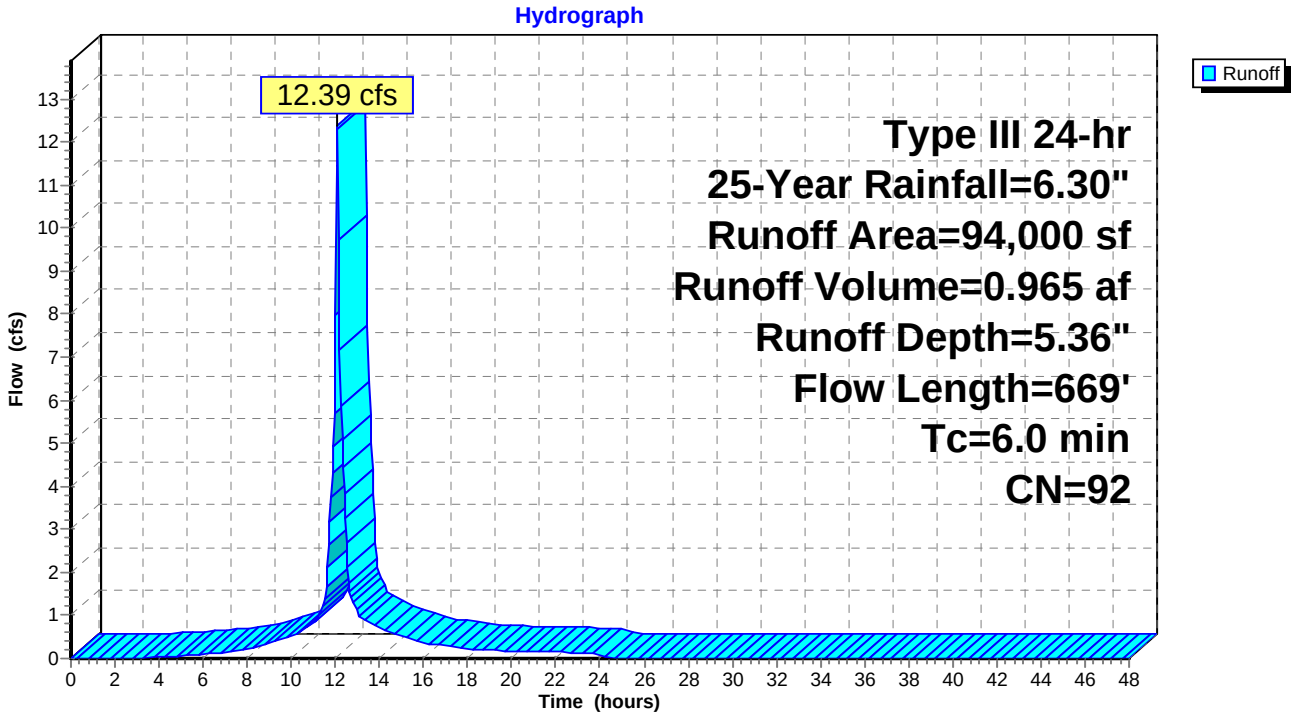
Runoff = 12.39 cfs @ 12.09 hrs, Volume= 0.965 af, Depth= 5.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.30"

Area (sf)	CN	Description
71,413	98	Paved parking, HSG B
11,784	86	Newly graded area, HSG B
10,803	61	>75% Grass cover, Good, HSG B
94,000	92	Weighted Average
22,587		24.03% Pervious Area
71,413		75.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.41		**Sheet Flow, Play areas** Smooth surfaces n= 0.011 P2= 3.37"
0.1	40	0.1500	6.24		**Shallow Concentrated Flow, Play areas** Unpaved Kv= 16.1 fps
2.2	362	0.0175	2.69		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
0.3	167	0.0200	8.41	14.86	**Pipe Channel, HDPE** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
3.8	669	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 7S: DA 1B



Summary for Subcatchment 8S: DA 2A

[47] Hint: Peak is 105% of capacity of segment #3

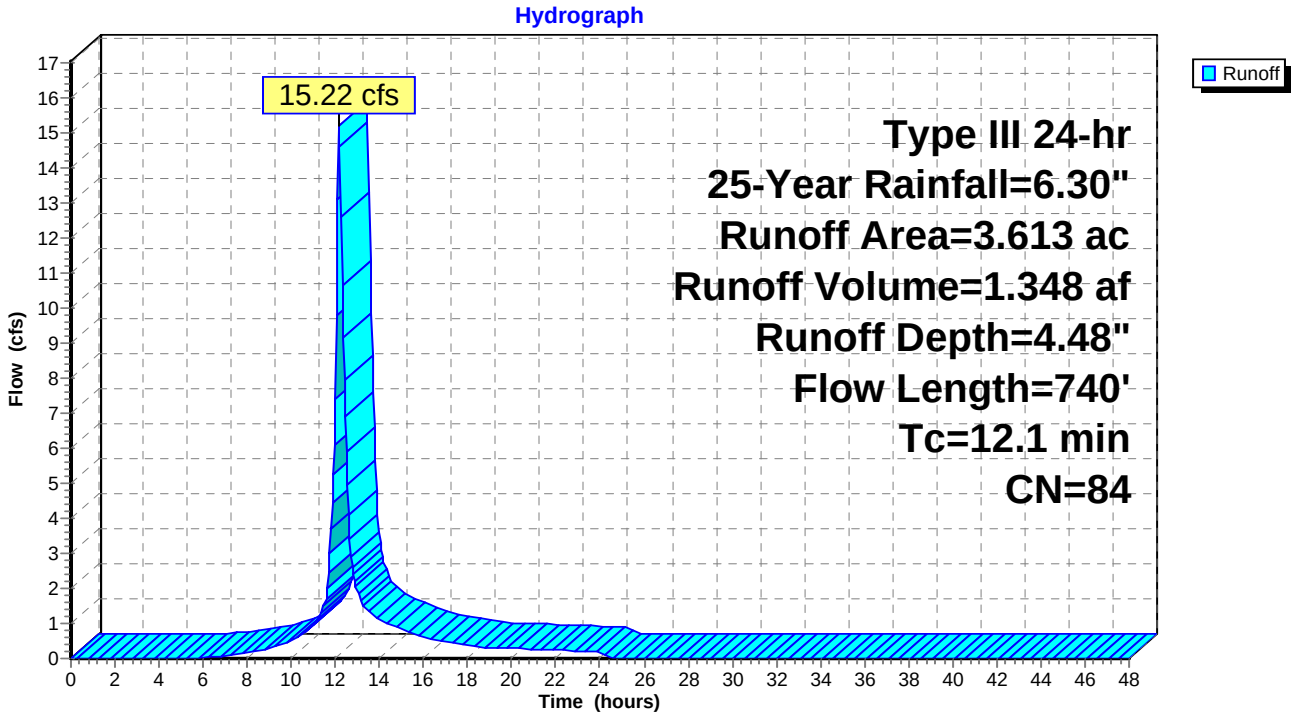
Runoff = 15.22 cfs @ 12.16 hrs, Volume= 1.348 af, Depth= 4.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.30"

Area (ac)	CN	Description
1.953	98	Paved parking, HSG B
0.152	98	Roofs, HSG B
0.394	61	>75% Grass cover, Good, HSG B
0.054	55	Woods, Good, HSG B
0.930	61	>75% Grass cover, Good, HSG B
0.130	98	Paved parking, HSG B
3.613	84	Weighted Average
1.378		38.14% Pervious Area
2.235		61.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0650	0.19		**Sheet Flow, Lawn** Grass: Dense n= 0.240 P2= 3.37"
3.3	558	0.0191	2.81		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
0.1	82	0.0500	11.77	14.44	**Pipe Channel, Discharge** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
12.1	740	Total			

Subcatchment 8S: DA 2A



Summary for Subcatchment 9S: DA 2B

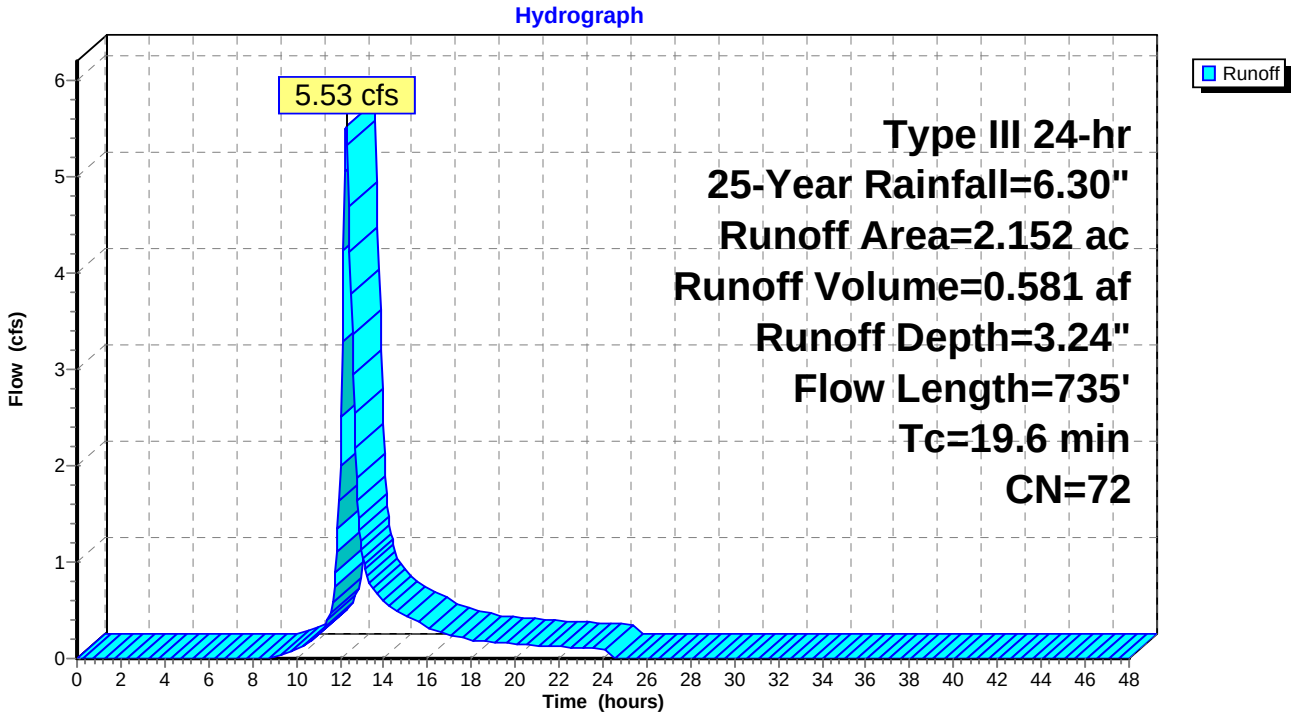
Runoff = 5.53 cfs @ 12.27 hrs, Volume= 0.581 af, Depth= 3.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.30"

Area (ac)	CN	Description
0.661	98	Paved parking, HSG B
0.746	55	Woods, Good, HSG B
0.669	61	>75% Grass cover, Good, HSG B
0.076	98	Water Surface, 0% imp, HSG B
2.152	72	Weighted Average
1.491		69.28% Pervious Area
0.661		30.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	100	0.0450	0.11		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
2.1	100	0.0250	0.79		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.2	38	0.3333	4.04		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
1.8	314	0.0200	2.87		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
0.2	108	0.0200	7.44	9.14	**Pipe Channel, Pipe** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.2	75		5.67		**Lake or Reservoir,** Mean Depth= 1.00'
19.6	735	Total			

Subcatchment 9S: DA 2B



Summary for Subcatchment 11S: DA 1C

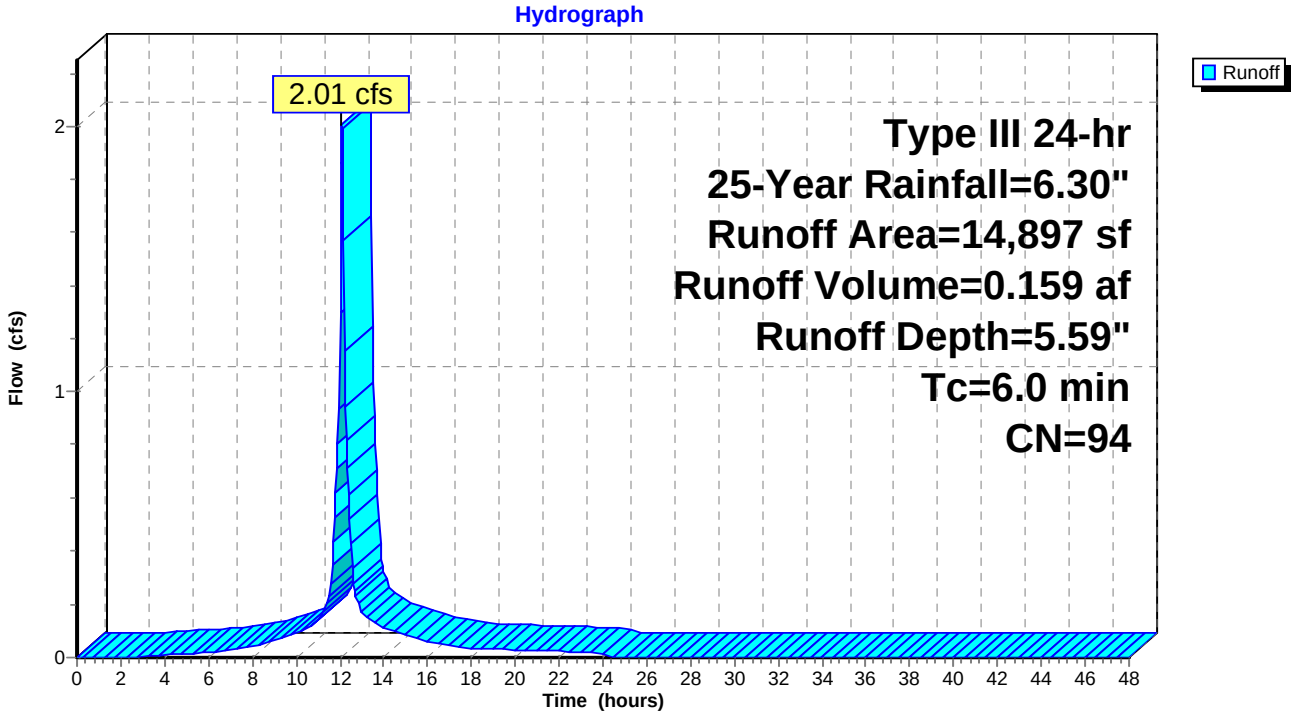
Runoff = 2.01 cfs @ 12.09 hrs, Volume= 0.159 af, Depth= 5.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.30"

Area (sf)	CN	Description
12,458	98	Paved parking, HSG C
2,439	74	>75% Grass cover, Good, HSG C
14,897	94	Weighted Average
2,439		16.37% Pervious Area
12,458		83.63% Impervious Area

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

Subcatchment 11S: DA 1C



Summary for Subcatchment 12S: DA 1D

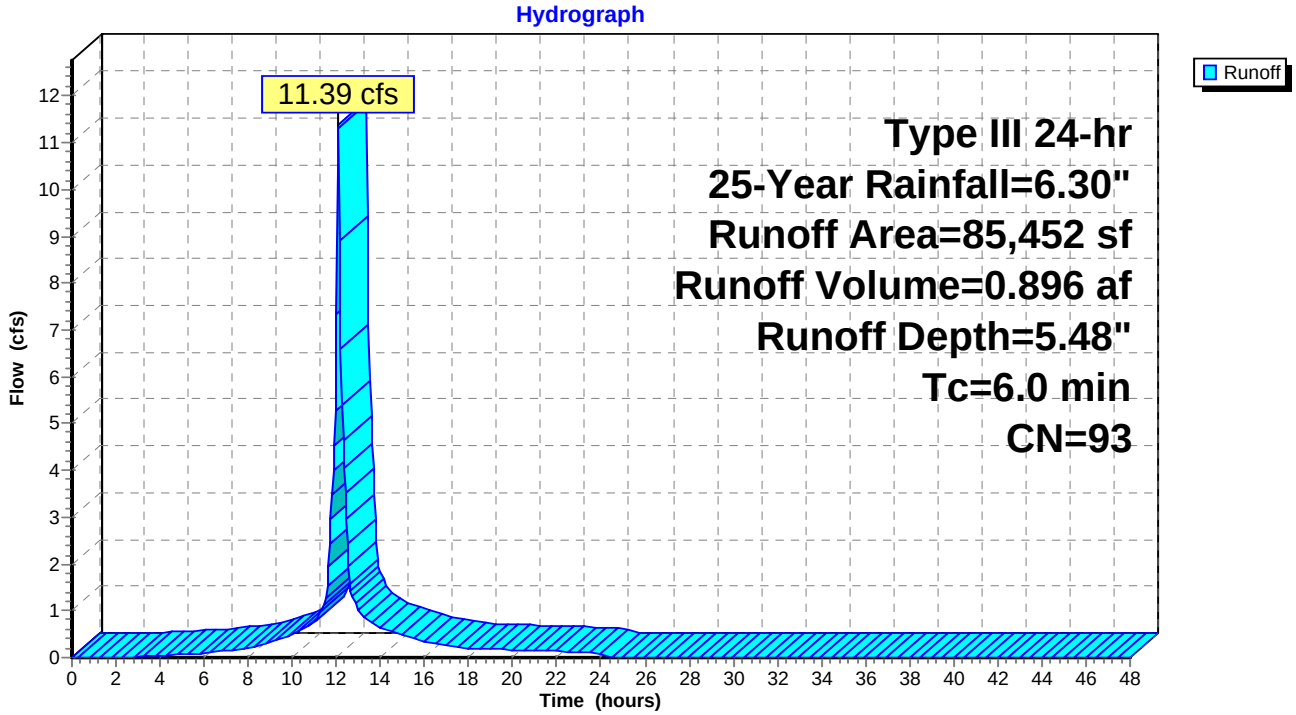
Runoff = 11.39 cfs @ 12.09 hrs, Volume= 0.896 af, Depth= 5.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.30"

Area (sf)	CN	Description
55,278	98	Paved parking, HSG C
6,098	98	Water Surface, 0% imp, HSG C
18,687	74	>75% Grass cover, Good, HSG C
5,389	98	Paved parking, HSG C
85,452	93	Weighted Average
24,785		29.00% Pervious Area
60,667		71.00% Impervious Area

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

Subcatchment 12S: DA 1D



Summary for Subcatchment 15S: DA 2E

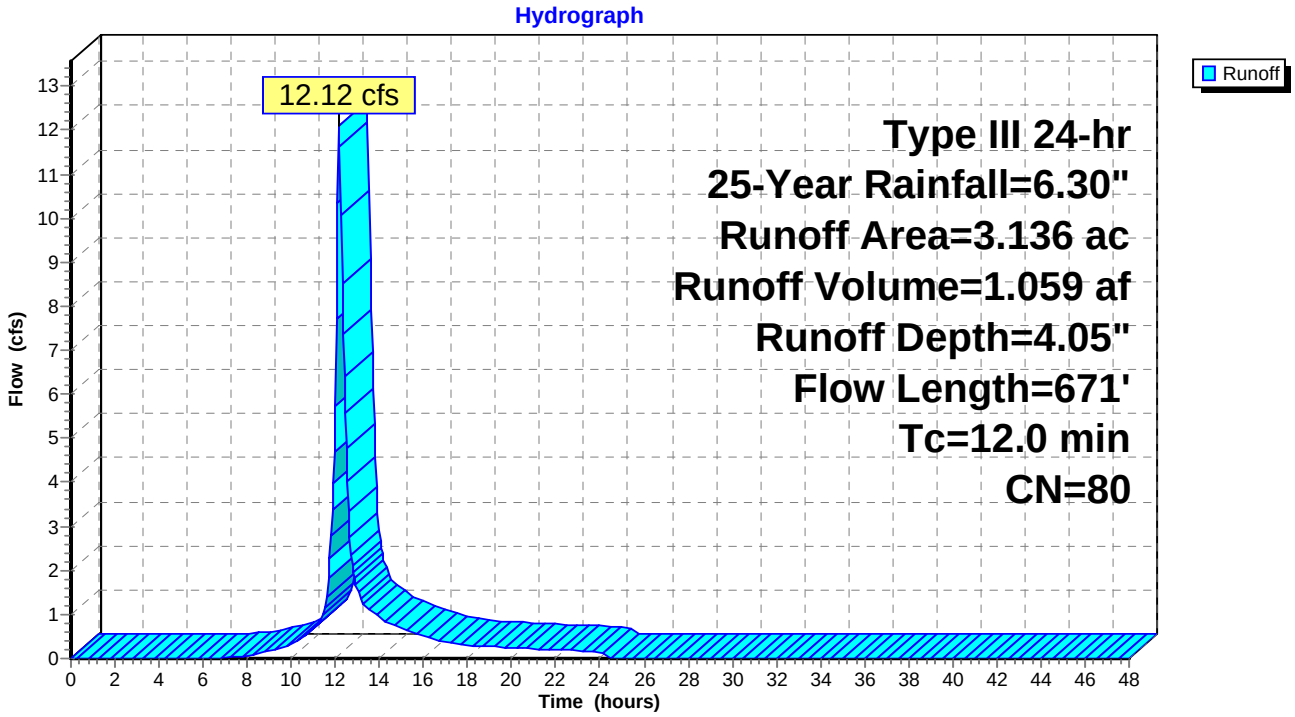
Runoff = 12.12 cfs @ 12.17 hrs, Volume= 1.059 af, Depth= 4.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.30"

	Area (ac)	CN	Description
*	0.985	98	Paved parking, HSG C, South
*	0.455	74	>75% Grass cover, Good, HSG C, South
	1.030	70	Woods, Good, HSG C
	0.666	74	>75% Grass cover, Good, HSG C
	3.136	80	Weighted Average
	2.151		68.59% Pervious Area
	0.985		31.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0600	0.11		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
3.3	417	0.1799	2.12		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.3	40	0.1000	2.21		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.7	164	0.0421	4.17		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
12.0	671	Total			

Subcatchment 15S: DA 2E



Summary for Subcatchment 16S: DA 2G

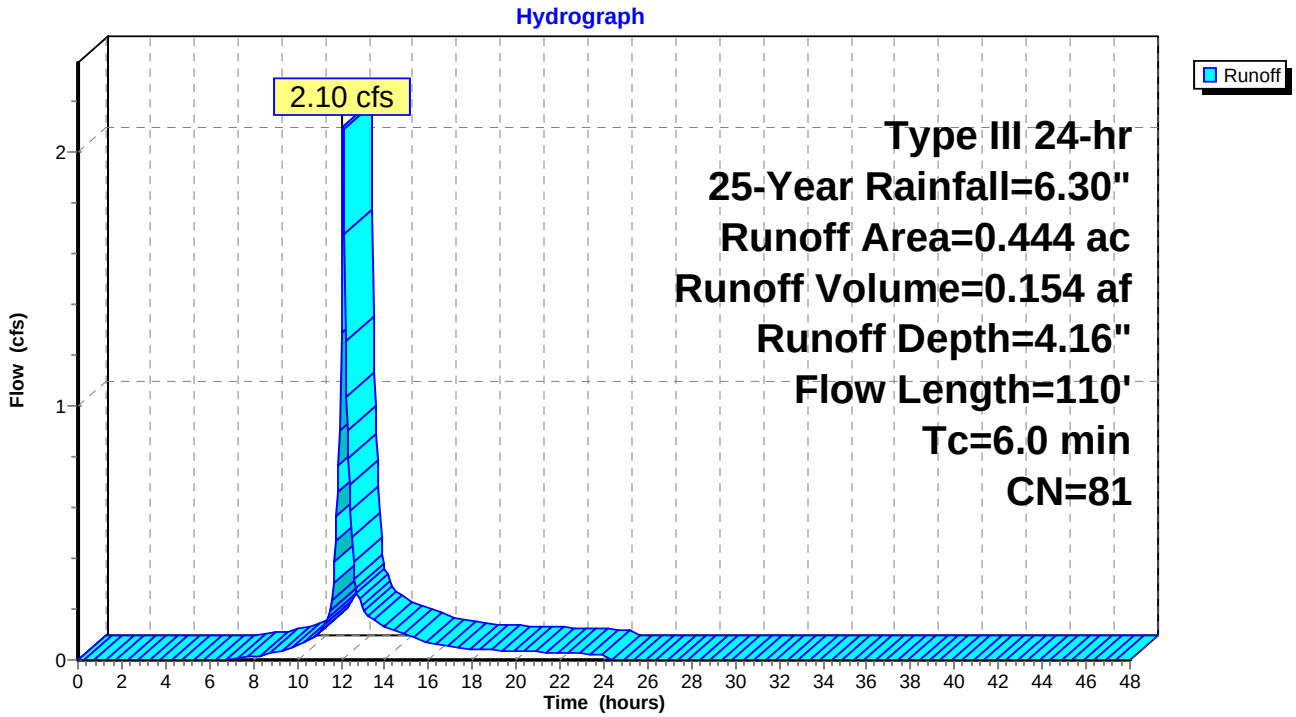
Runoff = 2.10 cfs @ 12.09 hrs, Volume= 0.154 af, Depth= 4.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.30"

Area (ac)	CN	Description
0.103	98	Water Surface, 0% imp, HSG C
0.017	80	>75% Grass cover, Good, HSG D
0.229	74	>75% Grass cover, Good, HSG C
0.079	80	>75% Grass cover, Good, HSG D
0.016	74	>75% Grass cover, Good, HSG C
0.444	81	Weighted Average
0.444		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	50	0.0500	0.15		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.2	60	0.3500	4.14		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
5.7	110	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 16S: DA 2G



Summary for Subcatchment 17S: DA 2I

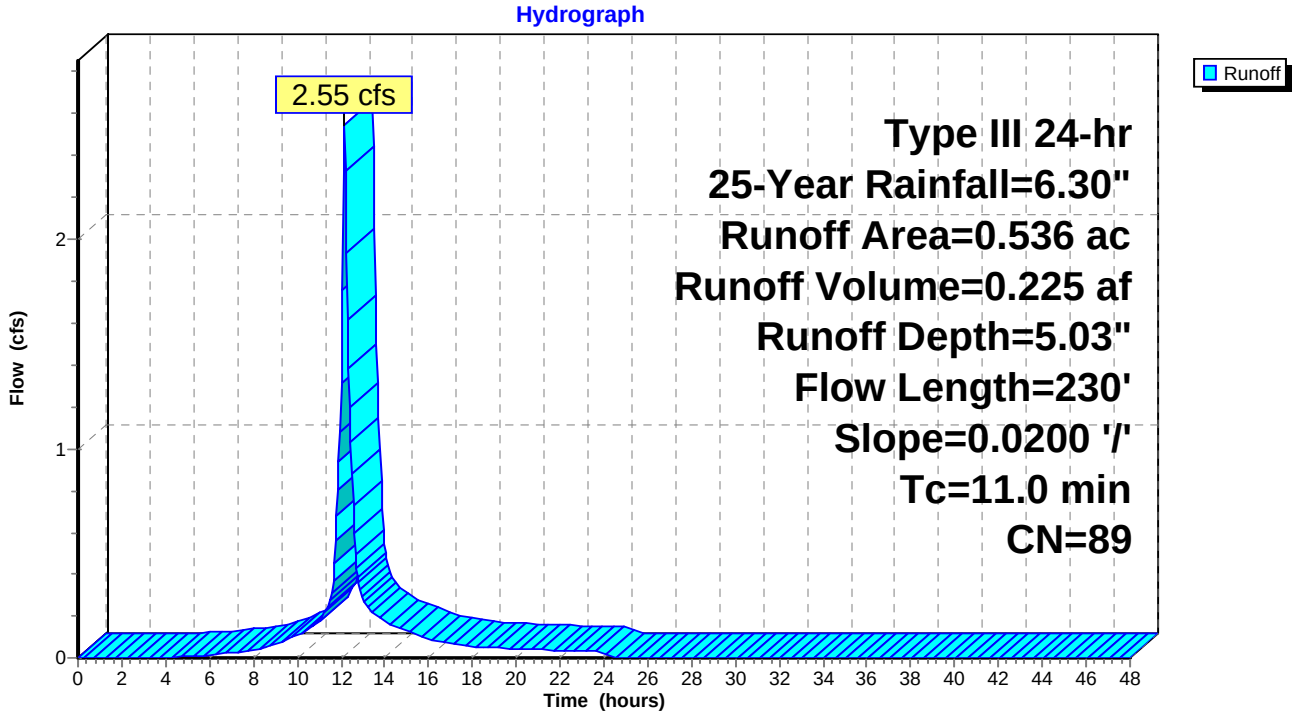
Runoff = 2.55 cfs @ 12.15 hrs, Volume= 0.225 af, Depth= 5.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.30"

	Area (ac)	CN	Description
*	0.344	98	Paved parking, HSG C, North
*	0.192	74	>75% Grass cover, Good, HSG C, North
	0.536	89	Weighted Average
	0.192		35.82% Pervious Area
	0.344		64.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0200	0.10		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
3.0	180	0.0200	0.99		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
11.0	230	Total			

Subcatchment 17S: DA 2I



Summary for Subcatchment 21S: DA 2F

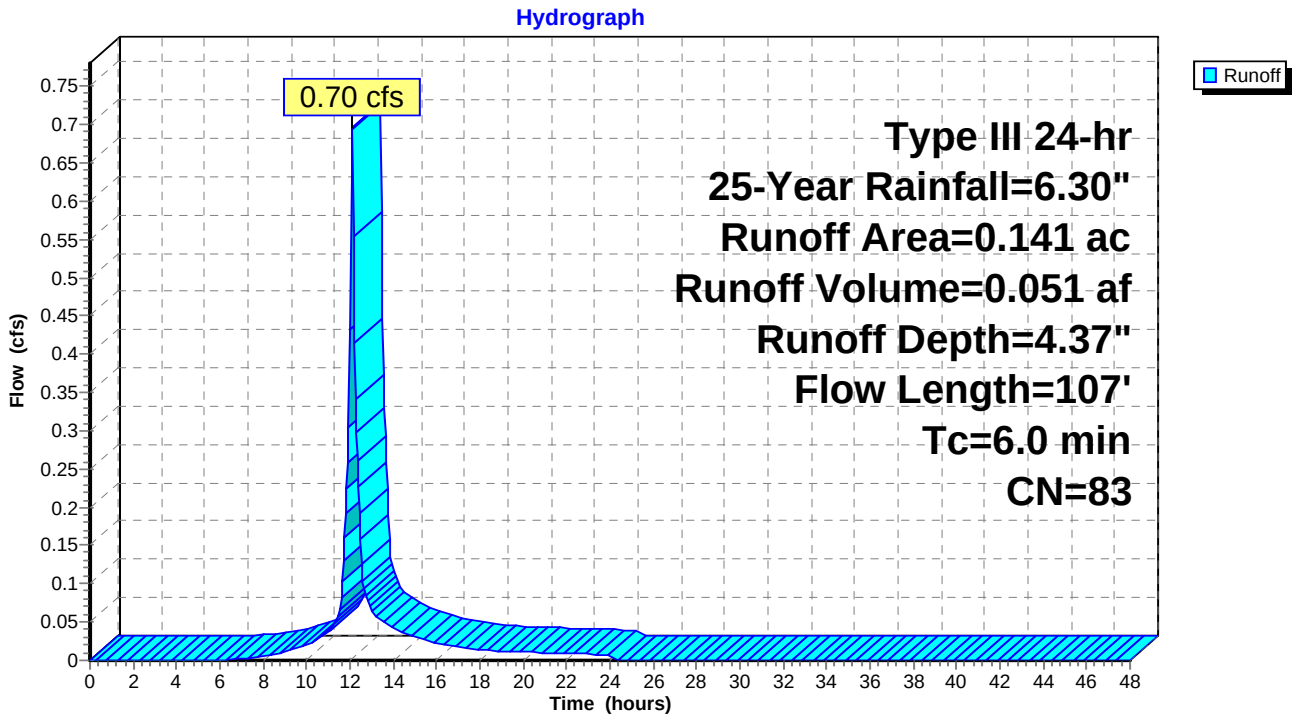
Runoff = 0.70 cfs @ 12.09 hrs, Volume= 0.051 af, Depth= 4.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.30"

Area (ac)	CN	Description
0.051	98	Water Surface, 0% imp, HSG C
0.090	74	>75% Grass cover, Good, HSG C
0.141	83	Weighted Average
0.141		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.3	57	0.1754	2.93		**Shallow Concentrated Flow, Woods** Short Grass Pasture Kv= 7.0 fps
4.5	107	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 21S: DA 2F



Summary for Subcatchment 22S: DA 2H

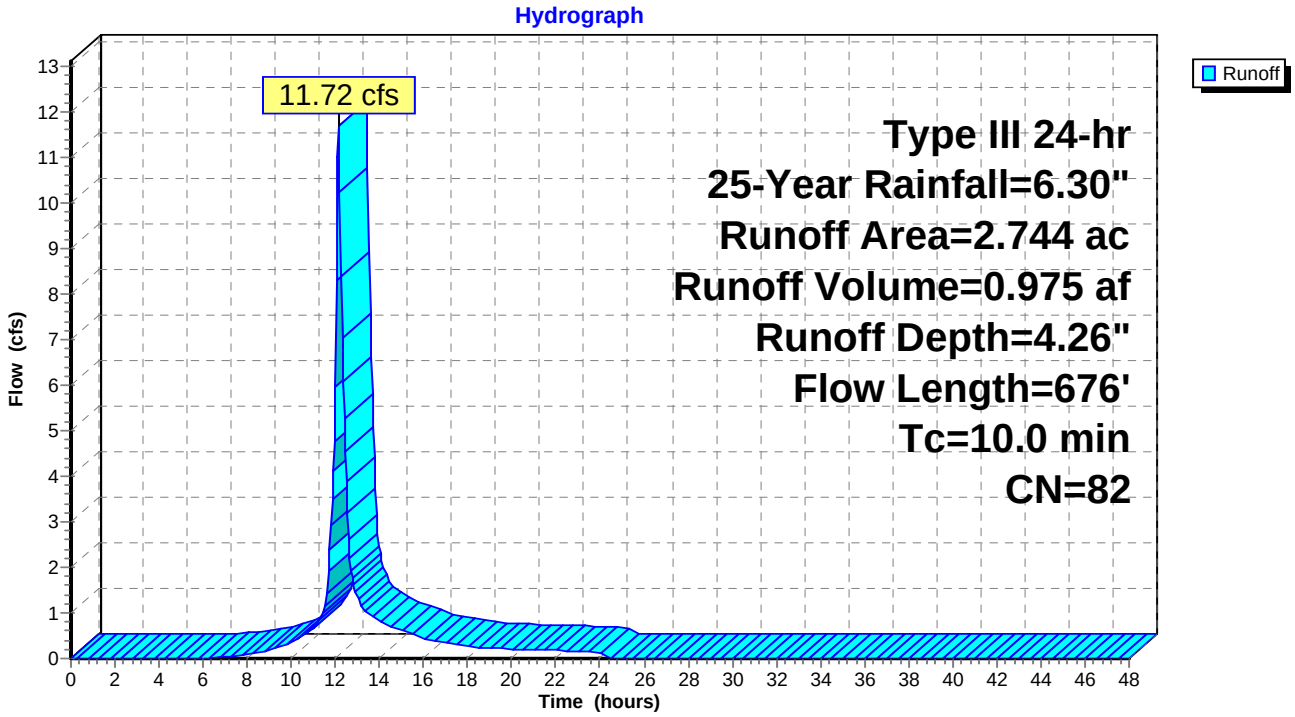
Runoff = 11.72 cfs @ 12.14 hrs, Volume= 0.975 af, Depth= 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.30"

	Area (ac)	CN	Description
*	0.431	98	Paved parking, HSG C, North
*	0.010	80	>75% Grass cover, Good, HSG D, North
*	0.313	74	>75% Grass cover, Good, HSG C, North
*	0.550	98	Paved parking, HSG C, South
*	0.356	74	>75% Grass cover, Good, HSG C, South
	0.748	70	Woods, Good, HSG C
	0.336	74	>75% Grass cover, Good, HSG C
	2.744	82	Weighted Average
	1.763		64.25% Pervious Area
	0.981		35.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	50	0.1000	0.13		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
1.7	190	0.1316	1.81		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.3	81	0.3333	4.04		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
1.7	355	0.0310	3.57		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
10.0	676	Total			

Subcatchment 22S: DA 2H



Summary for Pond 2P: 30" RCP

Inflow Area =	55.918 ac,	25.55% Impervious,	Inflow Depth >	3.41"	for 25-Year event
Inflow =	20.72 cfs @	12.20 hrs,	Volume=	15.879 af	
Outflow =	20.72 cfs @	12.20 hrs,	Volume=	15.879 af,	Atten= 0%, Lag= 0.0 min
Primary =	20.72 cfs @	12.20 hrs,	Volume=	15.879 af	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

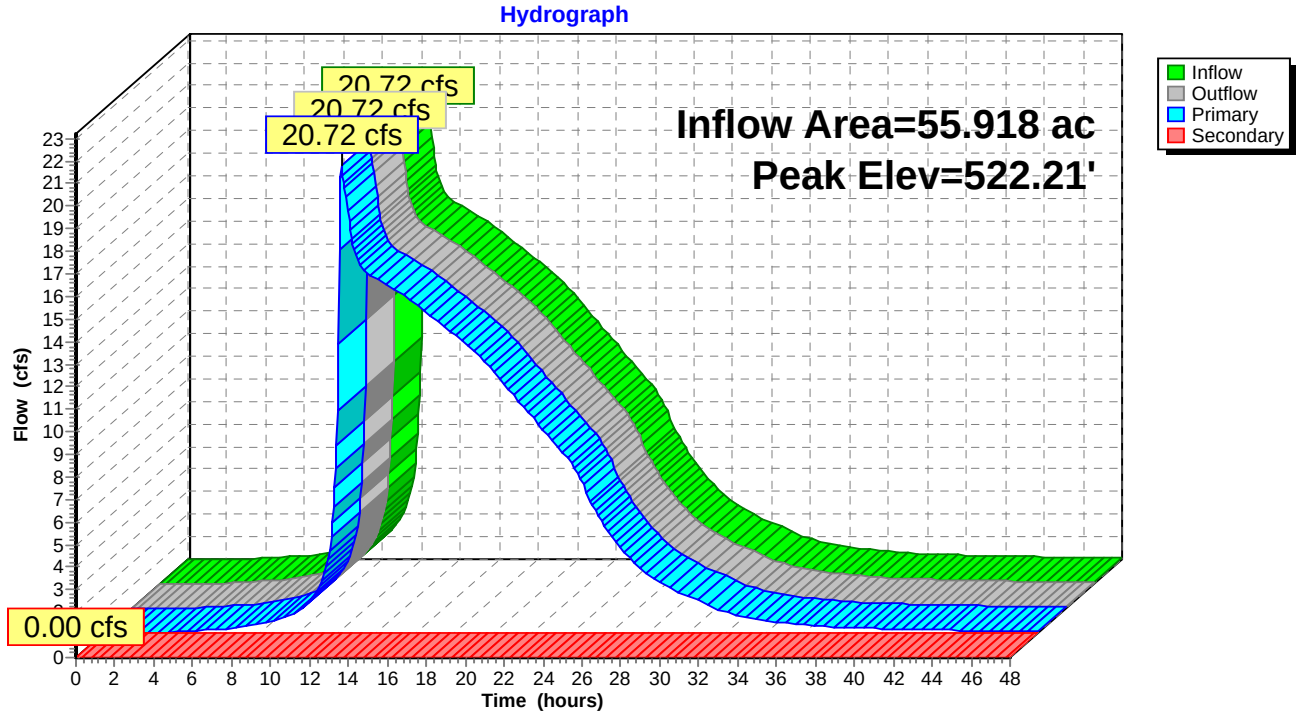
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 522.21' @ 12.20 hrs
Flood Elev= 527.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	519.92'	**30.0" Round 30" RC** L= 80.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 519.92' / 519.62' S= 0.0037 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 4.91 sf
#2	Secondary	527.20'	**30.0' long x 10.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=20.70 cfs @ 12.20 hrs HW=522.21' (Free Discharge)
└**1=30" RC** (Barrel Controls 20.70 cfs @ 5.76 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=519.92' (Free Discharge)
└**2=Overflow** (Controls 0.00 cfs)

Pond 2P: 30" RCP



Summary for Pond 4P: Pond

Inflow Area = 51.896 ac, 21.64% Impervious, Inflow Depth = 3.29" for 25-Year event
Inflow = 113.18 cfs @ 12.29 hrs, Volume= 14.214 af
Outflow = 14.08 cfs @ 14.19 hrs, Volume= 14.081 af, Atten= 88%, Lag= 113.9 min
Primary = 14.08 cfs @ 14.19 hrs, Volume= 14.081 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 526.94' @ 14.19 hrs Surf.Area= 2.630 ac Storage= 7.173 af

Plug-Flow detention time= 312.6 min calculated for 14.081 af (99% of inflow)
Center-of-Mass det. time= 306.6 min (1,154.9 - 848.3)

Volume	Invert	Avail.Storage	Storage Description
#1	523.45'	16.273 af	**Pond Storage (Irregular)**Listed below

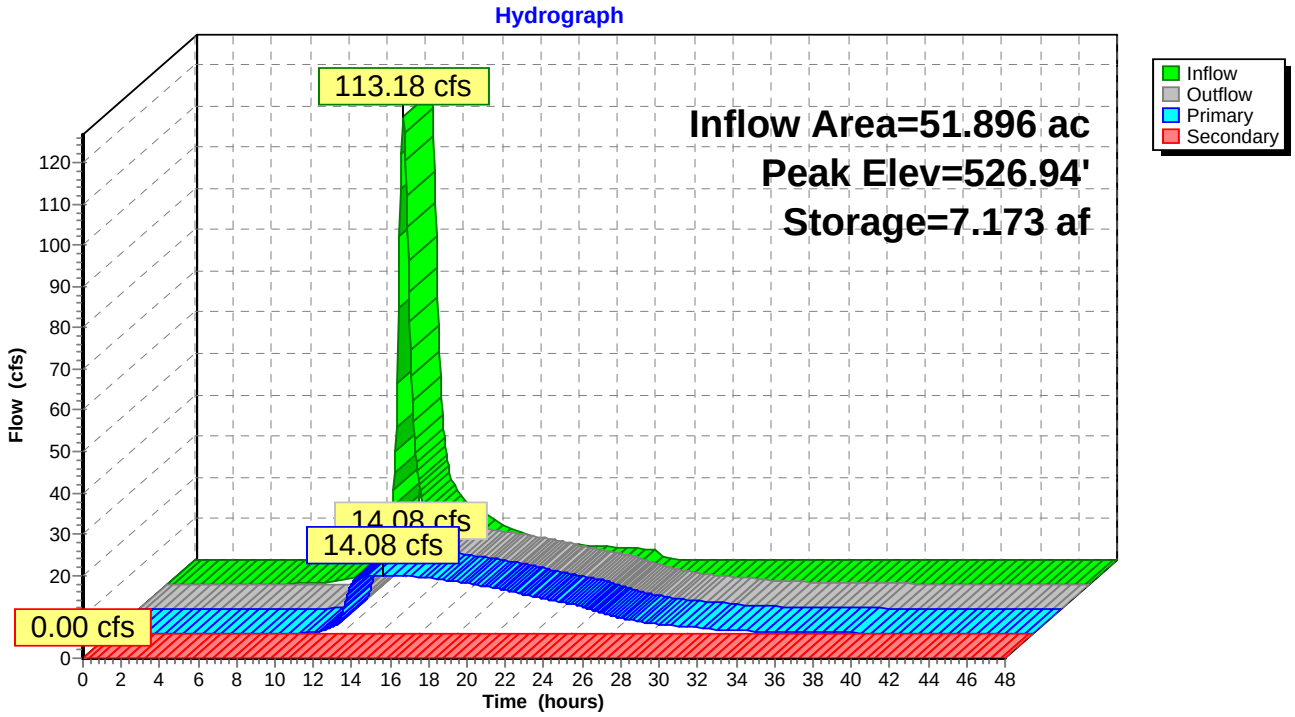
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
523.45	0.636	1,389.1	0.000	0.000	0.636
524.00	1.723	1,270.7	0.624	0.624	1.212
526.00	2.359	1,494.7	4.065	4.690	2.345
528.00	2.936	1,638.1	5.284	9.974	3.169
530.00	3.368	1,700.4	6.299	16.273	3.556

Device	Routing	Invert	Outlet Devices
#1	Primary	520.91'	**30.0" Round 30" HDPE** L= 110.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 520.91' / 520.64' S= 0.0024 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Device 1	521.46'	**30.0" Round 30" HDPE** L= 86.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 521.46' / 520.91' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#3	Device 2	521.41'	**24.0" Round 24" HDPE** L= 157.1' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 521.41' / 521.40' S= 0.0001 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#4	Device 3	523.45'	**18.0" Round 18" HDPE** L= 117.9' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 523.45' / 521.82' S= 0.0138 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#5	Secondary	529.90'	**50.0' long x 25.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=14.08 cfs @ 14.19 hrs HW=526.94' TW=521.84' (Dynamic Tailwater)
└─**1=30" HDPE** (Passes 14.08 cfs of 48.32 cfs potential flow)
└─**2=30" HDPE** (Passes 14.08 cfs of 48.61 cfs potential flow)
└─**3=24" HDPE** (Passes 14.08 cfs of 25.51 cfs potential flow)
└─**4=18" HDPE** (Inlet Controls 14.08 cfs @ 7.97 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=523.45' TW=519.92' (Dynamic Tailwater)
└─**5=Overflow** (Controls 0.00 cfs)

Pond 4P: Pond



Summary for Pond 10P: Apartment Phase 1 Detention Basin

Inflow Area =	2.152 ac, 30.72% Impervious, Inflow Depth = 3.24" for 25-Year event				
Inflow =	5.53 cfs @	12.27 hrs,	Volume=	0.581 af	
Outflow =	4.47 cfs @	12.43 hrs,	Volume=	0.581 af,	Atten= 19%, Lag= 9.1 min
Primary =	4.47 cfs @	12.43 hrs,	Volume=	0.581 af	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 537.89' @ 12.43 hrs Surf.Area= 1,749 sf Storage= 1,673 cf

Plug-Flow detention time= 4.3 min calculated for 0.581 af (100% of inflow)
Center-of-Mass det. time= 3.6 min (847.4 - 843.8)

Volume	Invert	Avail.Storage	Storage Description
#1	536.00'	7,026 cf	**Detention Basin (Irregular)**Listed below (Recalc)

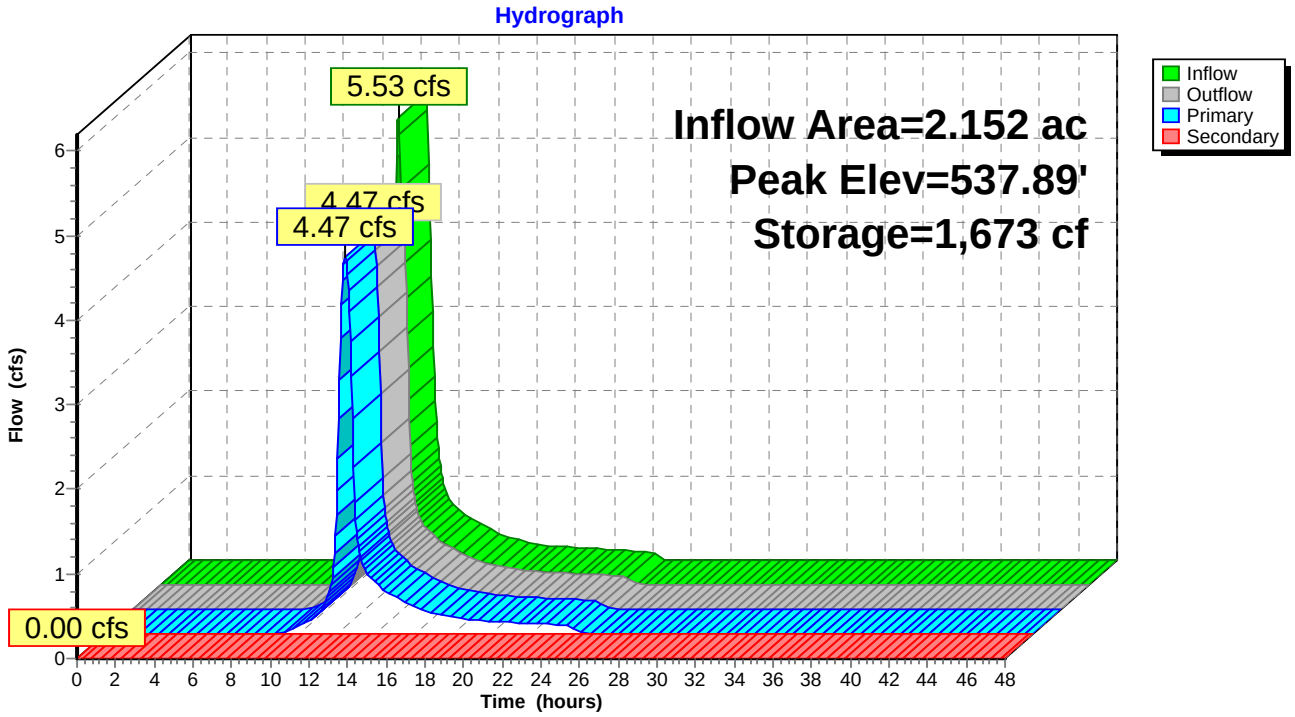
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
536.00	100	40.0	0	0	100
536.50	467	110.5	131	131	945
537.60	1,559	173.6	1,056	1,186	2,380
540.00	3,429	242.5	5,840	7,026	4,716

Device	Routing	Invert	Outlet Devices
#1	Primary	536.00'	**12.0" Round Culvert** L= 75.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 536.00' / 534.50' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	539.50'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=4.46 cfs @ 12.43 hrs HW=537.89' TW=525.93' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 4.46 cfs @ 5.67 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=536.00' TW=523.45' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10P: Apartment Phase 1 Detention Basin



Summary for Pond 15P: Apartments Phase II Stormwater Basin 2

Inflow Area = 3.277 ac, 30.06% Impervious, Inflow Depth = 4.07" for 25-Year event
Inflow = 12.63 cfs @ 12.16 hrs, Volume= 1.111 af
Outflow = 12.39 cfs @ 12.19 hrs, Volume= 1.031 af, Atten= 2%, Lag= 1.6 min
Primary = 12.39 cfs @ 12.19 hrs, Volume= 1.031 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 568.24' @ 12.19 hrs Surf.Area= 2,401 sf Storage= 5,977 cf

Plug-Flow detention time= 61.4 min calculated for 1.031 af (93% of inflow)
Center-of-Mass det. time= 23.6 min (840.7 - 817.1)

Volume	Invert	Avail.Storage	Storage Description
#1	562.00'	6 cf	**3.00'W x 8.00'L x 2.50'H Sand Underdrain** 60 cf Overall x 10.0% Voids
#2	564.50'	10,719 cf	**Stormwater Basin (Irregular)**Listed below
		10,725 cf	Total Available Storage

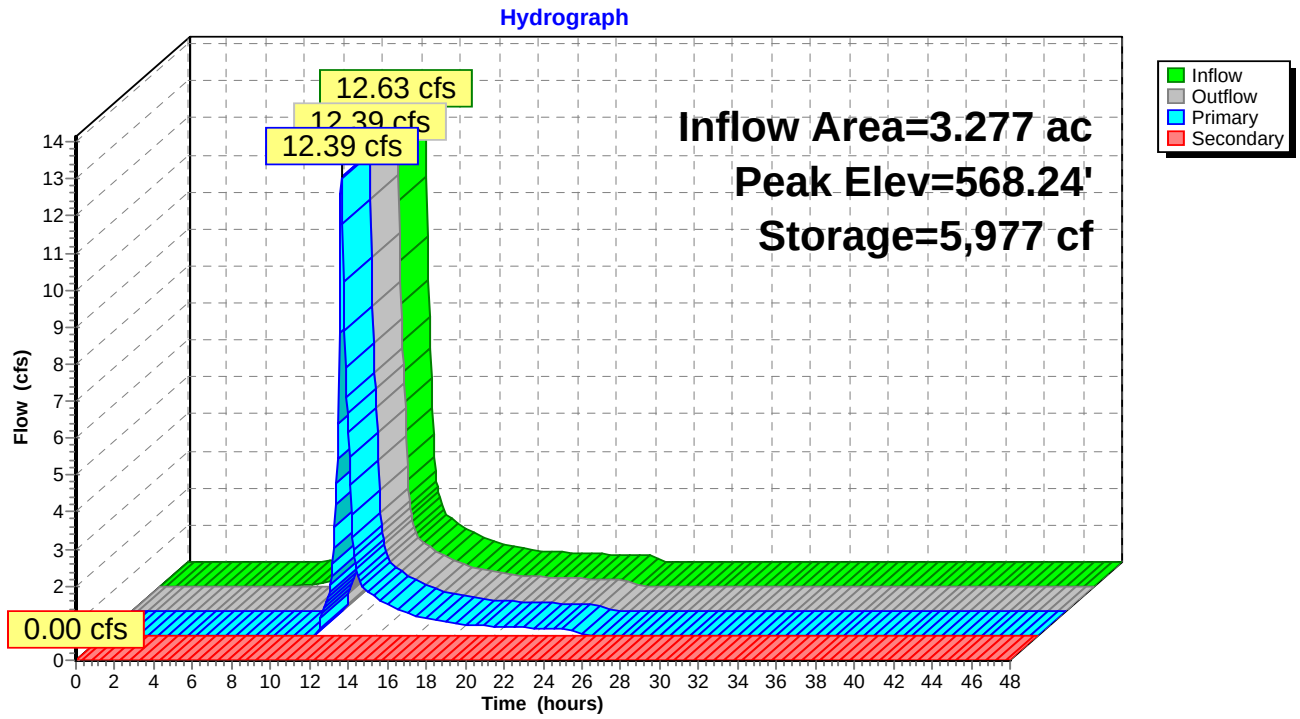
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
564.50	4	8.2	0	0	4
564.75	257	68.5	24	24	372
565.00	1,193	160.0	167	191	2,036
566.00	1,533	172.5	1,359	1,551	2,406
568.00	2,277	197.6	3,786	5,336	3,233
570.00	3,128	222.7	5,383	10,719	4,172

Device	Routing	Invert	Outlet Devices
#1	Primary	562.00'	**18.0" Round 18" HDPE** L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 562.00' / 561.60' S= 0.0059 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	567.00'	**36.0" W x 6.0" H Vert. 36" x 6" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	568.00'	**1.0" x 3.7" Horiz. Top of Frame X 39.00 columns** X 9 rows C= 0.600 in 48.0" x 36.0" Grate (75% open area) Limited to weir flow at low heads
#4	Secondary	569.00'	**8.0' long x 8.0' breadth Rip Rap Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#5	Device 1	562.00'	**0.500 in/hr Sand Underdrain over Horizontal area from 562.00' - 564.50'** Excluded Horizontal area = 24 sf Phase-In= 0.01'

Primary OutFlow Max=12.24 cfs @ 12.19 hrs HW=568.23' TW=563.32' (Dynamic Tailwater)
- **1=18" HDPE** (Passes 12.24 cfs of 18.86 cfs potential flow)
  - **2=36" x 6" Orifice** (Orifice Controls 7.14 cfs @ 4.76 fps)
  - **3=Top of Frame** (Weir Controls 5.11 cfs @ 1.57 fps)
  - **5=Sand Underdrain** (Exfiltration Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=562.00' TW=523.45' (Dynamic Tailwater)
- **4=Rip Rap Spillway** (Controls 0.00 cfs)

Pond 15P: Apartments Phase II Stormwater Basin 2



Summary for Pond 16P: Water Quality Basin

Inflow Area = 1.962 ac, 71.00% Impervious, Inflow Depth = 5.48" for 25-Year event
Inflow = 11.39 cfs @ 12.09 hrs, Volume= 0.896 af
Outflow = 4.13 cfs @ 12.35 hrs, Volume= 0.896 af, Atten= 64%, Lag= 15.5 min
Primary = 4.13 cfs @ 12.35 hrs, Volume= 0.896 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 527.97' @ 12.35 hrs Surf.Area= 6,236 sf Storage= 13,599 cf

Plug-Flow detention time= 118.9 min calculated for 0.895 af (100% of inflow)
Center-of-Mass det. time= 118.9 min (890.6 - 771.6)

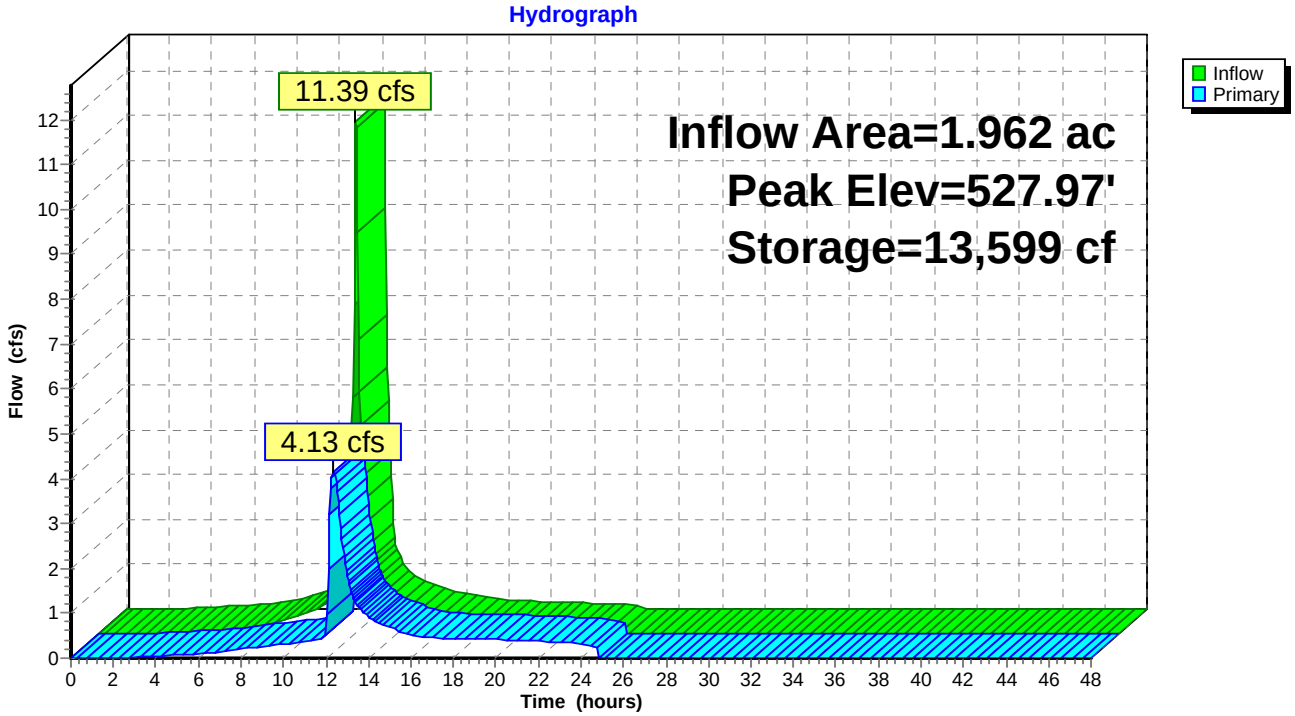
Volume	Invert	Avail.Storage	Storage Description
#1	523.75'	26,415 cf	**Water Quality swale (Irregular)**Listed below (Recalc)
#2	522.25'	5 cf	**3.00'W x 3.00'L x 1.50'H Underdrain** 14 cf Overall x 40.0% Voids
		26,420 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
523.75	9	12.0	0	0	9
524.00	258	63.2	26	26	316
524.25	528	108.8	96	123	940
524.50	766	159.7	161	283	2,028
524.75	1,105	211.6	233	516	3,562
525.00	1,523	263.2	327	843	5,513
525.25	2,026	316.2	442	1,285	7,958
525.50	2,529	368.0	568	1,853	10,779
525.75	3,267	420.8	723	2,576	14,095
526.00	4,119	481.0	921	3,497	18,417
528.00	6,268	535.7	10,312	13,809	22,957
529.75	8,181	557.7	12,606	26,415	25,097

Device	Routing	Invert	Outlet Devices
#1	Primary	522.75'	**24.0" Round 24" HDPE** L= 75.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 522.75' / 521.75' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	523.00'	**3.0" Vert. Underdrain** C= 0.600 Limited to weir flow at low heads
#3	Device 1	526.75'	**6.0" W x 6.0" H Vert. 6" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	527.25'	**18.0" W x 6.0" H Vert. 18x6 Orifice** C= 0.600 Limited to weir flow at low heads
#5	Device 1	528.50'	**20.0' long x 0.5' breadth Top of Frame** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=4.13 cfs @ 12.35 hrs HW=527.96' TW=522.15' (Dynamic Tailwater)
- **1=24" HDPE** (Passes 4.13 cfs of 31.06 cfs potential flow)
  - **2=Underdrain** (Orifice Controls 0.52 cfs @ 10.59 fps)
  - **3=6" Orifice** (Orifice Controls 1.18 cfs @ 4.72 fps)
  - **4=18x6 Orifice** (Orifice Controls 2.43 cfs @ 3.24 fps)
  - **5=Top of Frame** (Controls 0.00 cfs)

Pond 16P: Water Quality Basin



Summary for Pond 20P: Apartments Phase II Stormwater Basin 1

Inflow Area = 7.001 ac, 33.00% Impervious, Inflow Depth = 4.09" for 25-Year event
Inflow = 27.96 cfs @ 12.16 hrs, Volume= 2.385 af
Outflow = 19.80 cfs @ 12.30 hrs, Volume= 2.195 af, Atten= 29%, Lag= 8.5 min
Primary = 19.80 cfs @ 12.30 hrs, Volume= 2.195 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 558.93' @ 12.30 hrs Surf.Area= 7,387 sf Storage= 28,628 cf

Plug-Flow detention time= 98.5 min calculated for 2.195 af (92% of inflow)
Center-of-Mass det. time= 57.6 min (879.4 - 821.8)

Volume	Invert	Avail.Storage	Storage Description
#1	551.00'	4 cf	**3.00'W x 8.00'L x 1.75'H Sand Underdrain** 42 cf Overall x 10.0% Voids
#2	552.75'	40,883 cf	**Stormwater Basin (Irregular)**Listed below (Recalc)
#3	556.00'	424 cf	**36.0" Round Pipe Storage**-Impervious L= 60.0' S= 0.0083 '/'
		41,312 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
552.75	120	43.3	0	0	120
553.00	865	110.3	109	109	939
553.25	1,552	155.7	298	407	1,901
553.50	2,135	207.8	459	866	3,409
553.75	2,928	261.6	630	1,496	5,419
554.00	3,512	310.5	804	2,300	7,646
555.00	4,145	323.0	3,824	6,124	8,352
556.00	4,804	335.6	4,470	10,595	9,090
557.00	5,490	348.1	5,143	15,738	9,851
558.00	6,569	422.7	6,021	21,759	14,443
559.00	7,426	435.3	6,993	28,752	15,404
560.00	8,310	447.8	7,864	36,616	16,387
560.50	8,761	454.1	4,267	40,883	16,893

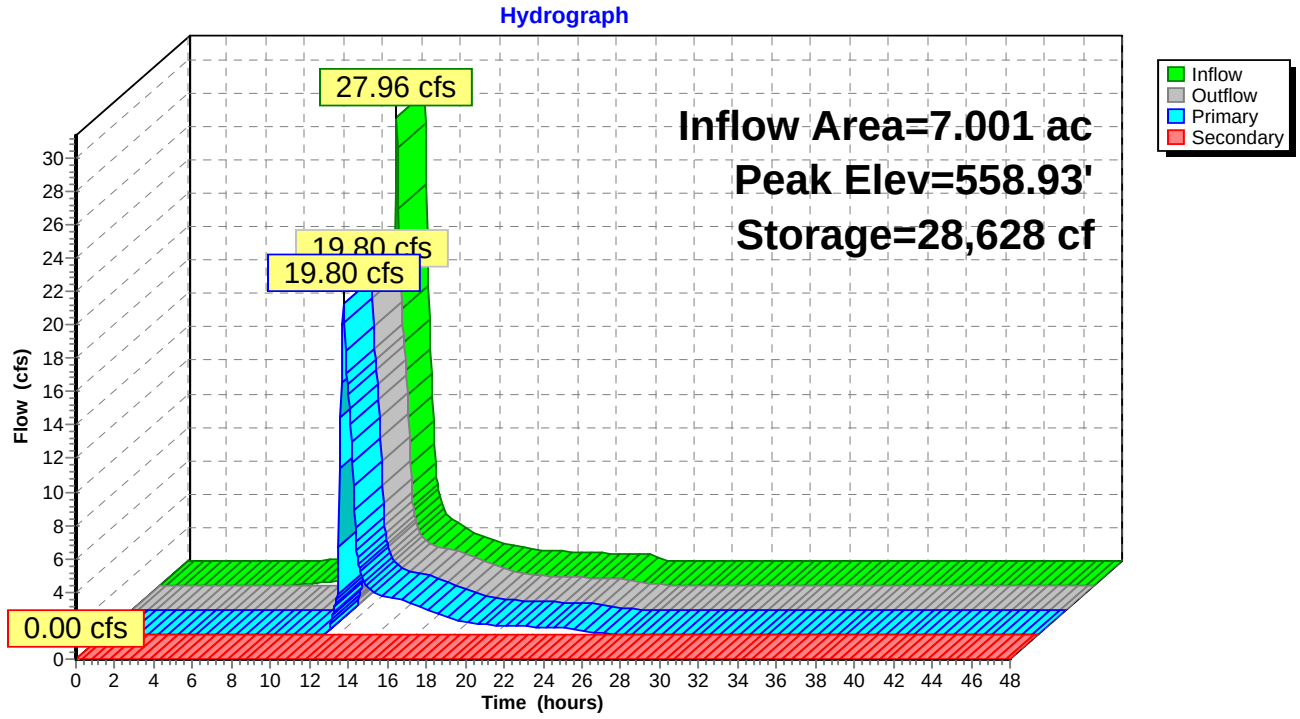
Device	Routing	Invert	Outlet Devices
#1	Primary	551.00'	**18.0" Round 18" HDPE** L= 152.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 551.00' / 549.00' S= 0.0132 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	555.50'	**6.0" Vert. 6" Orifices (2) X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	557.30'	**48.0" W x 7.0" H Vert. 48" x 7" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	558.75'	**1.0" x 3.7" Horiz. Top of Frame X 39.00 columns** X 9 rows C= 0.600 in 48.0" x 36.0" Grate (75% open area) Limited to weir flow at low heads
#5	Secondary	559.75'	**8.0' long x 8.0' breadth Rip Rap Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64
			2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#6	Device 1	551.00'	**0.500 in/hr Sand Underdrain over Horizontal area from 551.00' - 552.75'**
			Excluded Horizontal area = 24 sf Phase-In= 0.01'

Primary OutFlow Max=19.76 cfs @ 12.30 hrs HW=558.93' TW=525.45' (Dynamic Tailwater)
└─**1=18" HDPE** (Passes 19.76 cfs of 19.90 cfs potential flow)
  ├─**2=6" Orifices (2)** (Orifice Controls 3.37 cfs @ 8.58 fps)
  ├─**3=48" x 7" Orifice** (Orifice Controls 12.96 cfs @ 5.55 fps)
  ├─**4=Top of Frame** (Weir Controls 3.43 cfs @ 1.38 fps)
  └─**6=Sand Underdrain** (Exfiltration Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=551.00' TW=523.45' (Dynamic Tailwater)
└─**5=Rip Rap Spillway** (Controls 0.00 cfs)

Pond 20P: Apartments Phase II Stormwater Basin 1



Summary for Pond 21P: Drain

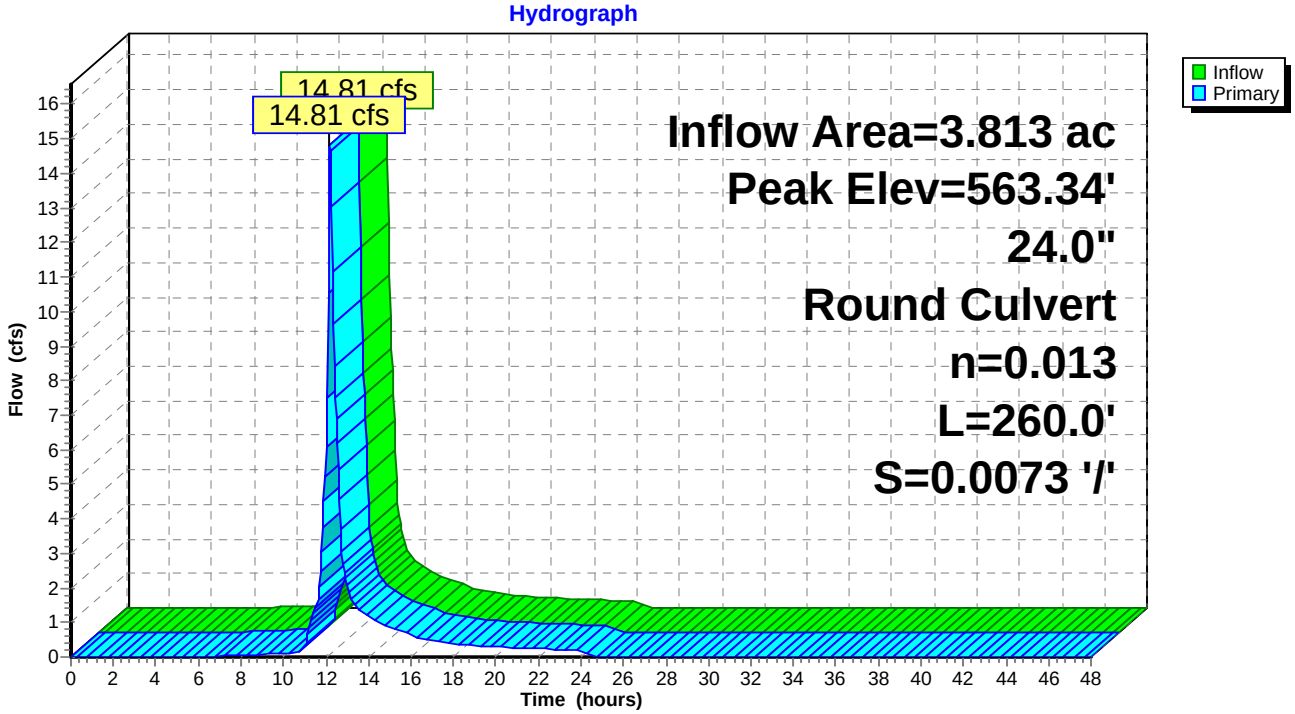
Inflow Area = 3.813 ac, 34.85% Impervious, Inflow Depth = 3.95" for 25-Year event
Inflow = 14.81 cfs @ 12.18 hrs, Volume= 1.256 af
Outflow = 14.81 cfs @ 12.18 hrs, Volume= 1.256 af, Atten= 0%, Lag= 0.0 min
Primary = 14.81 cfs @ 12.18 hrs, Volume= 1.256 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 563.34' @ 12.18 hrs
Flood Elev= 565.37'

Device	Routing	Invert	Outlet Devices
#1	Primary	561.40'	**24.0" Round Culvert** L= 260.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 561.40' / 559.50' S= 0.0073 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=14.59 cfs @ 12.18 hrs HW=563.32' TW=558.58' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 14.59 cfs @ 4.71 fps)

Pond 21P: Drain



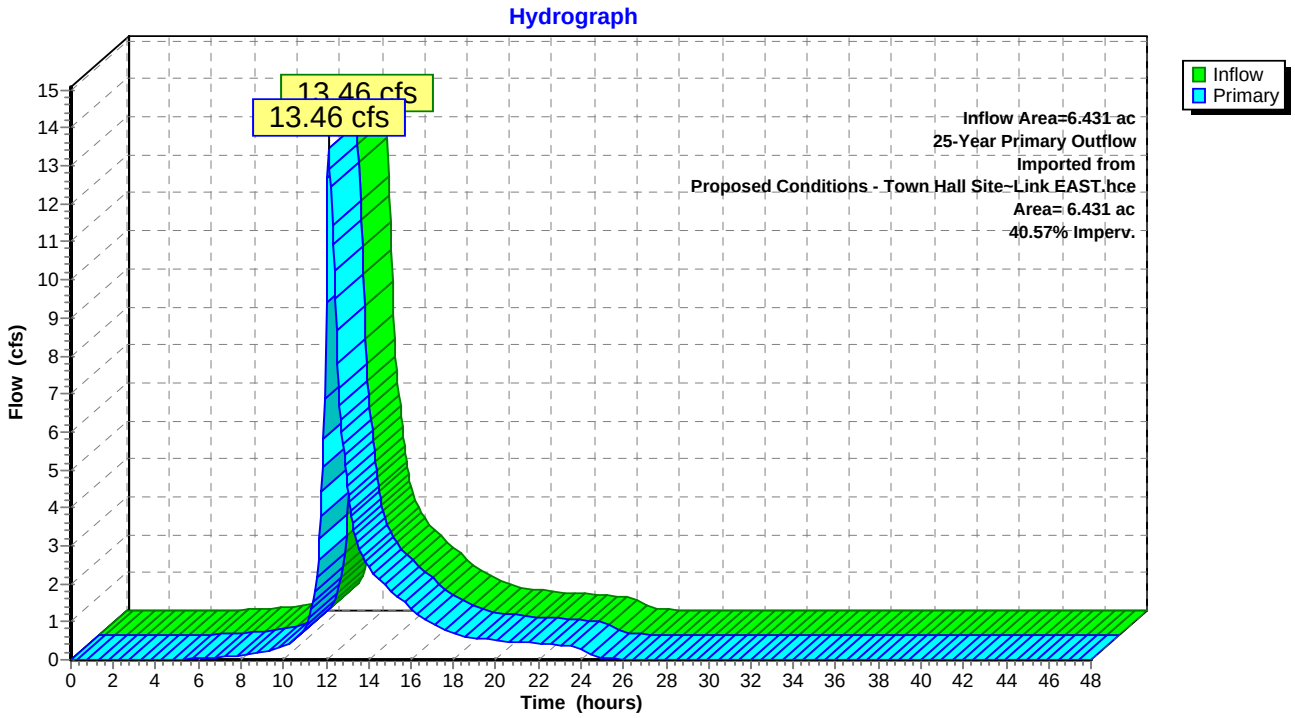
Summary for Link 14L: DA 2D - From Town Hall

Inflow Area = 6.431 ac, 40.57% Impervious, Inflow Depth = 3.78" for 25-Year event
Inflow = 13.46 cfs @ 12.10 hrs, Volume= 2.024 af
Primary = 13.46 cfs @ 12.10 hrs, Volume= 2.024 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

25-Year Primary Outflow Imported from Proposed Conditions - Town Hall Site~Link EAST.hce

Link 14L: DA 2D - From Town Hall



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 2
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 1S: DA 1A Runoff Area=2.061 ac 80.93% Impervious Runoff Depth=6.08"
Flow Length=532' Tc=11.0 min CN=91 Runoff=11.58 cfs 1.044 af

Subcatchment 3S: DA 2C Runoff Area=30.199 ac 4.93% Impervious Runoff Depth=3.42"
Flow Length=2,588' Tc=22.6 min UI Adjusted CN=67 Runoff=76.90 cfs 8.604 af

Subcatchment 7S: DA 1B Runoff Area=94,000 sf 75.97% Impervious Runoff Depth=6.19"
Flow Length=669' Tc=6.0 min CN=92 Runoff=14.19 cfs 1.114 af

Subcatchment 8S: DA 2A Runoff Area=3.613 ac 61.86% Impervious Runoff Depth=5.27"
Flow Length=740' Tc=12.1 min CN=84 Runoff=17.81 cfs 1.588 af

Subcatchment 9S: DA 2B Runoff Area=2.152 ac 30.72% Impervious Runoff Depth=3.95"
Flow Length=735' Tc=19.6 min CN=72 Runoff=6.76 cfs 0.708 af

Subcatchment 11S: DA 1C Runoff Area=14,897 sf 83.63% Impervious Runoff Depth=6.43"
Tc=6.0 min CN=94 Runoff=2.29 cfs 0.183 af

Subcatchment 12S: DA 1D Runoff Area=85,452 sf 71.00% Impervious Runoff Depth=6.31"
Tc=6.0 min CN=93 Runoff=13.02 cfs 1.032 af

Subcatchment 15S: DA 2E Runoff Area=3.136 ac 31.41% Impervious Runoff Depth=4.82"
Flow Length=671' Tc=12.0 min CN=80 Runoff=14.36 cfs 1.261 af

Subcatchment 16S: DA 2G Runoff Area=0.444 ac 0.00% Impervious Runoff Depth=4.94"
Flow Length=110' Tc=6.0 min CN=81 Runoff=2.48 cfs 0.183 af

Subcatchment 17S: DA 2I Runoff Area=0.536 ac 64.18% Impervious Runoff Depth=5.84"
Flow Length=230' Slope=0.0200 '/' Tc=11.0 min CN=89 Runoff=2.94 cfs 0.261 af

Subcatchment 21S: DA 2F Runoff Area=0.141 ac 0.00% Impervious Runoff Depth=5.16"
Flow Length=107' Tc=6.0 min CN=83 Runoff=0.82 cfs 0.061 af

Subcatchment 22S: DA 2H Runoff Area=2.744 ac 35.75% Impervious Runoff Depth=5.05"
Flow Length=676' Tc=10.0 min CN=82 Runoff=13.80 cfs 1.154 af

Pond 2P: 30" RCP Peak Elev=522.51' Inflow=24.69 cfs 19.219 af
Primary=24.69 cfs 19.219 af Secondary=0.00 cfs 0.000 af Outflow=24.69 cfs 19.219 af

Pond 4P: Pond Peak Elev=527.68' Storage=9.121 af Inflow=134.72 cfs 17.288 af
Primary=15.48 cfs 17.144 af Secondary=0.00 cfs 0.000 af Outflow=15.48 cfs 17.144 af

Pond 10P: Apartment Phase 1 Detention Peak Elev=538.33' Storage=2,500 cf Inflow=6.76 cfs 0.708 af
Primary=5.12 cfs 0.708 af Secondary=0.00 cfs 0.000 af Outflow=5.12 cfs 0.708 af

Pond 15P: Apartments Phase II Stormwater Peak Elev=568.30' Storage=6,138 cf Inflow=14.97 cfs 1.321 af
Primary=14.72 cfs 1.242 af Secondary=0.00 cfs 0.000 af Outflow=14.72 cfs 1.242 af

Pond 16P: Water Quality Basin Peak Elev=528.24' Storage=15,322 cf Inflow=13.02 cfs 1.032 af
Outflow=4.95 cfs 1.031 af

Pond 20P: Apartments Phase II Peak Elev=559.44' Storage=32,519 cf Inflow=33.02 cfs 2.840 af
Primary=20.49 cfs 2.650 af Secondary=0.00 cfs 0.000 af Outflow=20.49 cfs 2.650 af

Pond 21P: Drain Peak Elev=563.74' Inflow=17.53 cfs 1.503 af
24.0" Round Culvert n=0.013 L=260.0' S=0.0073 '/' Outflow=17.53 cfs 1.503 af

Link 50-Year Primary Outflow Imported from Proposed Conditions - Town Hall Site~Link EAST.hce Inflow=18.23 cfs 2.441 af
Area= 6.431 ac 40.57% Imperv. Primary=18.23 cfs 2.441 af

Total Runoff Area = 49.488 ac Runoff Volume = 17.191 af Average Runoff Depth = 4.17"
76.40% Pervious = 37.808 ac 23.60% Impervious = 11.680 ac

Summary for Subcatchment 1S: DA 1A

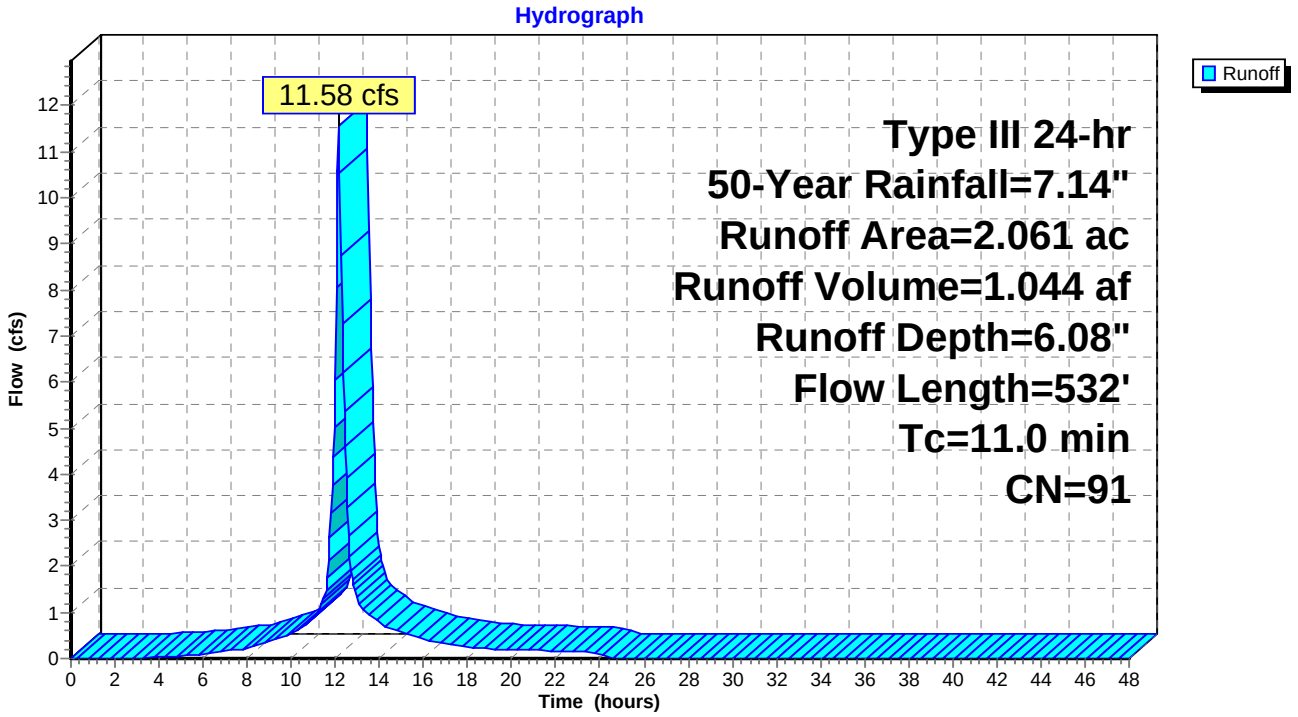
Runoff = 11.58 cfs @ 12.15 hrs, Volume= 1.044 af, Depth= 6.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=7.14"

Area (ac)	CN	Description
0.201	98	Paved parking, HSG C
1.260	98	Paved parking, HSG B
0.207	98	Paved parking, HSG C
0.074	74	>75% Grass cover, Good, HSG C
0.319	61	>75% Grass cover, Good, HSG B
2.061	91	Weighted Average
0.393		19.07% Pervious Area
1.668		80.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	40	0.0100	0.08		**Sheet Flow, Lawn** Grass: Dense n= 0.240 P2= 3.37"
1.7	239	0.0126	2.28		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
0.5	253	0.0200	8.41	14.86	**Pipe Channel, HDPE Drain** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
11.0	532	Total			

Subcatchment 1S: DA 1A



Summary for Subcatchment 3S: DA 2C

[47] Hint: Peak is 224% of capacity of segment #3

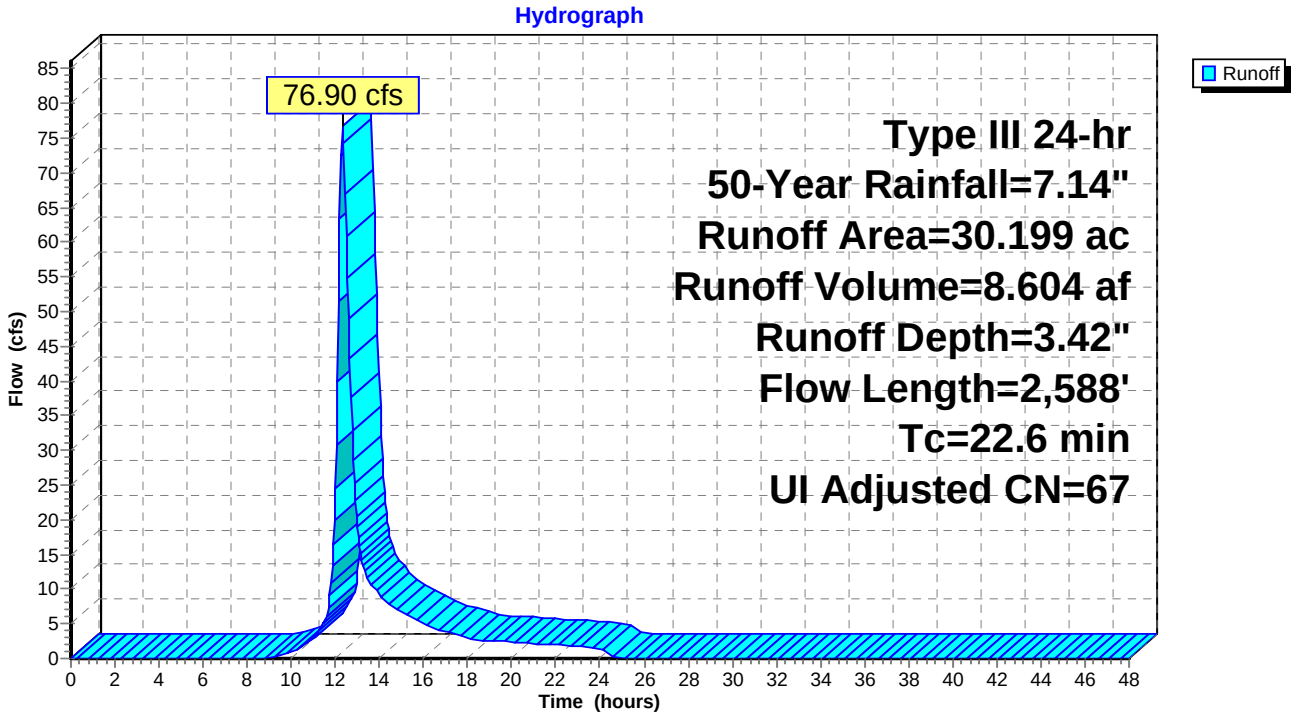
Runoff = 76.90 cfs @ 12.32 hrs, Volume= 8.604 af, Depth= 3.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=7.14"

	Area (ac)	CN	Adj	Description
	9.778	77		Woods, Good, HSG D
	0.839	98		Water Surface, 0% imp, HSG D
	13.926	55		Woods, Good, HSG B
	2.515	70		Woods, Good, HSG C
	0.066	98		Paved parking, HSG C
	0.110	98		Roofs, HSG C
	0.057	98		Paved parking, HSG B
	0.566	61		>75% Grass cover, Good, HSG B
	0.870	98		Unconnected roofs, HSG B
	0.333	80		>75% Grass cover, Good, HSG D
	0.061	98		Paved parking, HSG C
	0.032	74		>75% Grass cover, Good, HSG C
	0.140	98		Paved parking, HSG C
	0.664	74		>75% Grass cover, Good, HSG C
	0.058	70		Woods, Good, HSG C
*	0.184	98		Unconnected Roofs
	30.199	68	67	Weighted Average, UI Adjusted
	28.711			95.07% Pervious Area
	1.488			4.93% Impervious Area
	1.054			70.83% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	100	0.0850	0.14		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
5.1	598	0.1539	1.96		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
5.2	1,600	0.0262	5.16	34.37	**Parabolic Channel, Channel** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.035 Earth, dense weeds
0.6	290		8.02		**Lake or Reservoir, Pond** Mean Depth= 2.00'
22.6	2,588	Total			

Subcatchment 3S: DA 2C



Summary for Subcatchment 7S: DA 1B

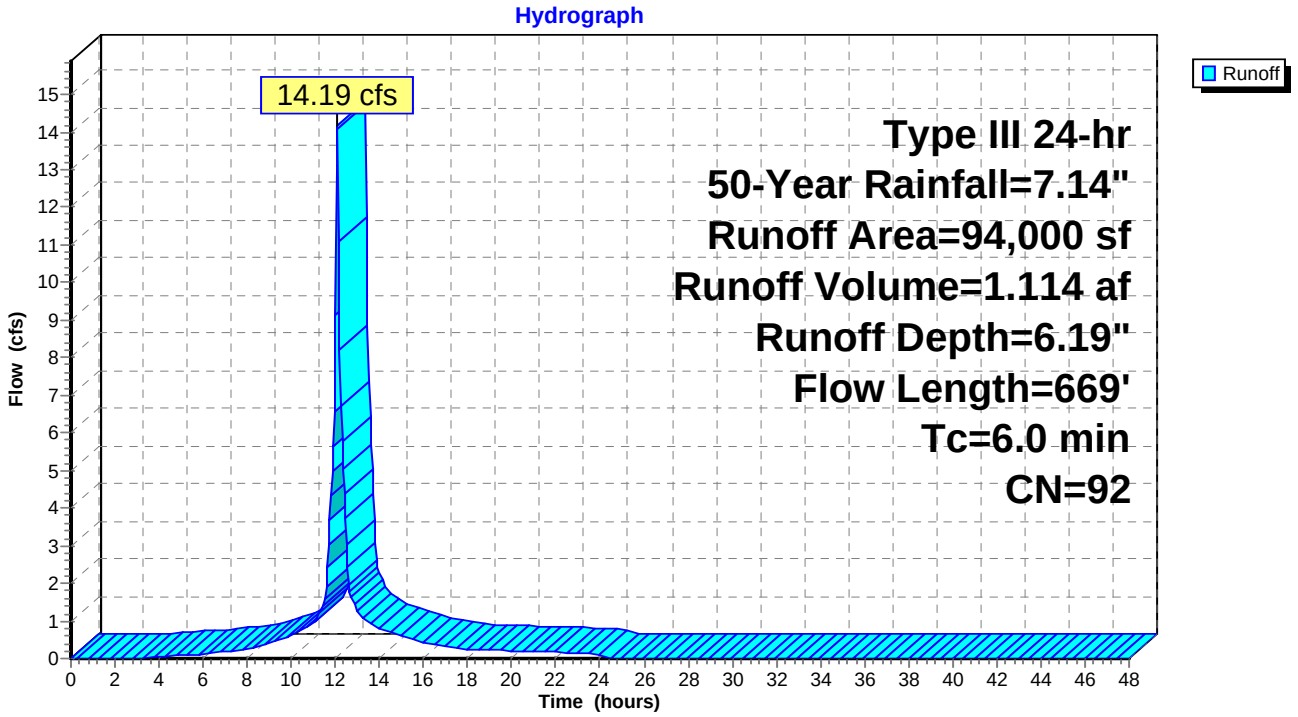
Runoff = 14.19 cfs @ 12.09 hrs, Volume= 1.114 af, Depth= 6.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=7.14"

Area (sf)	CN	Description
71,413	98	Paved parking, HSG B
11,784	86	Newly graded area, HSG B
10,803	61	>75% Grass cover, Good, HSG B
94,000	92	Weighted Average
22,587		24.03% Pervious Area
71,413		75.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.41		**Sheet Flow, Play areas** Smooth surfaces n= 0.011 P2= 3.37"
0.1	40	0.1500	6.24		**Shallow Concentrated Flow, Play areas** Unpaved Kv= 16.1 fps
2.2	362	0.0175	2.69		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
0.3	167	0.0200	8.41	14.86	**Pipe Channel, HDPE** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
3.8	669	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 7S: DA 1B



Summary for Subcatchment 8S: DA 2A

[47] Hint: Peak is 123% of capacity of segment #3

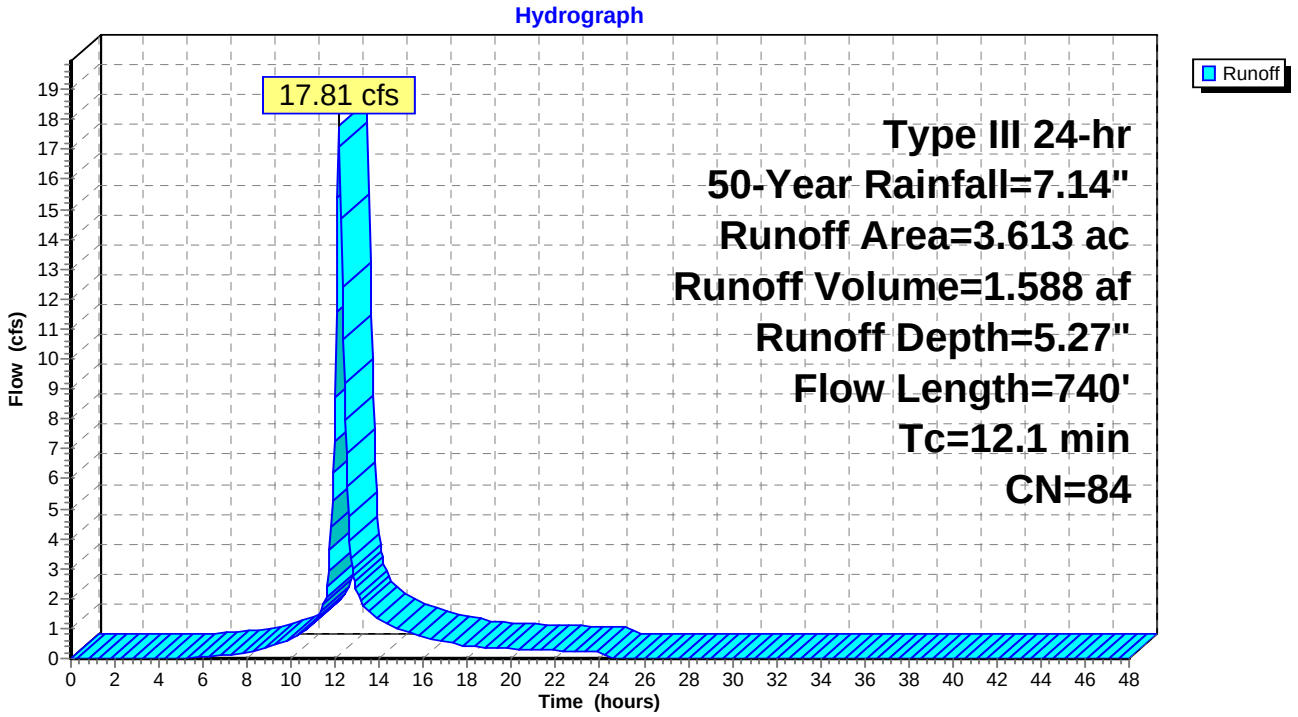
Runoff = 17.81 cfs @ 12.16 hrs, Volume= 1.588 af, Depth= 5.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=7.14"

Area (ac)	CN	Description
1.953	98	Paved parking, HSG B
0.152	98	Roofs, HSG B
0.394	61	>75% Grass cover, Good, HSG B
0.054	55	Woods, Good, HSG B
0.930	61	>75% Grass cover, Good, HSG B
0.130	98	Paved parking, HSG B
3.613	84	Weighted Average
1.378		38.14% Pervious Area
2.235		61.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0650	0.19		**Sheet Flow, Lawn** Grass: Dense n= 0.240 P2= 3.37"
3.3	558	0.0191	2.81		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
0.1	82	0.0500	11.77	14.44	**Pipe Channel, Discharge** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
12.1	740	Total			

Subcatchment 8S: DA 2A



Summary for Subcatchment 9S: DA 2B

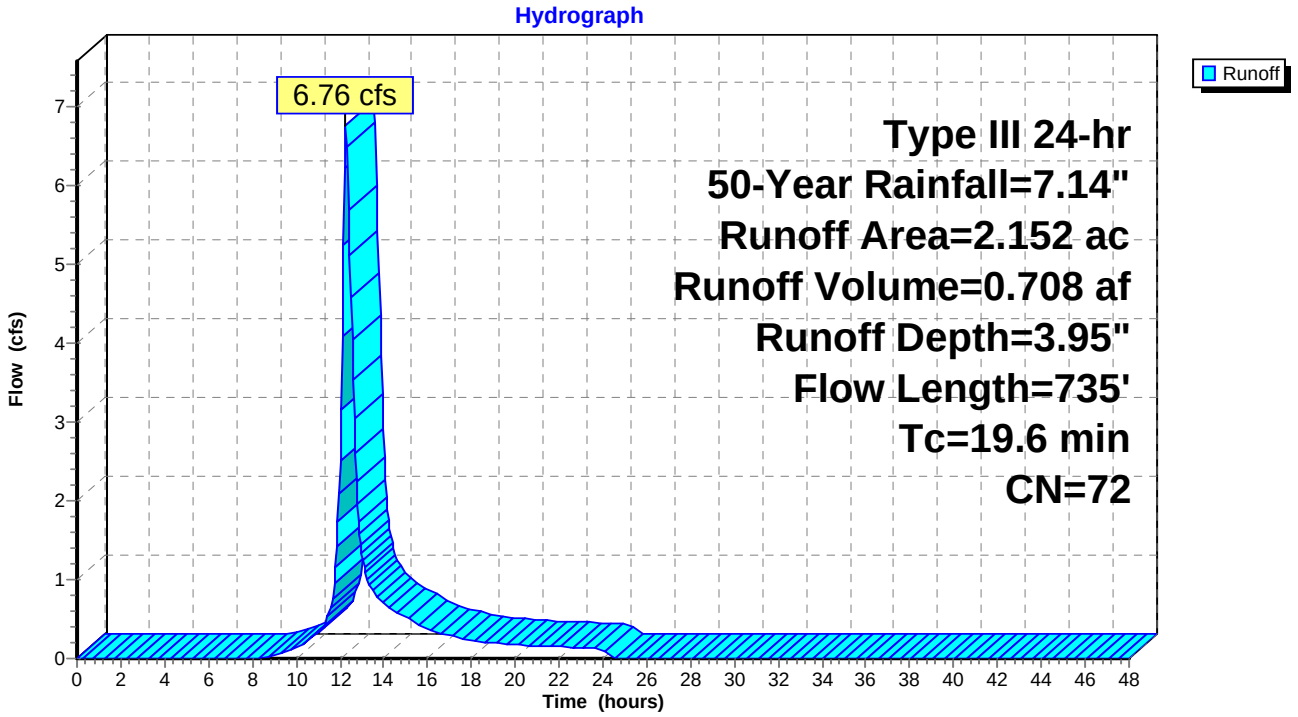
Runoff = 6.76 cfs @ 12.27 hrs, Volume= 0.708 af, Depth= 3.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=7.14"

Area (ac)	CN	Description
0.661	98	Paved parking, HSG B
0.746	55	Woods, Good, HSG B
0.669	61	>75% Grass cover, Good, HSG B
0.076	98	Water Surface, 0% imp, HSG B
2.152	72	Weighted Average
1.491		69.28% Pervious Area
0.661		30.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	100	0.0450	0.11		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
2.1	100	0.0250	0.79		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.2	38	0.3333	4.04		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
1.8	314	0.0200	2.87		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
0.2	108	0.0200	7.44	9.14	**Pipe Channel, Pipe** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.2	75		5.67		**Lake or Reservoir,** Mean Depth= 1.00'
19.6	735	Total			

Subcatchment 9S: DA 2B



Summary for Subcatchment 11S: DA 1C

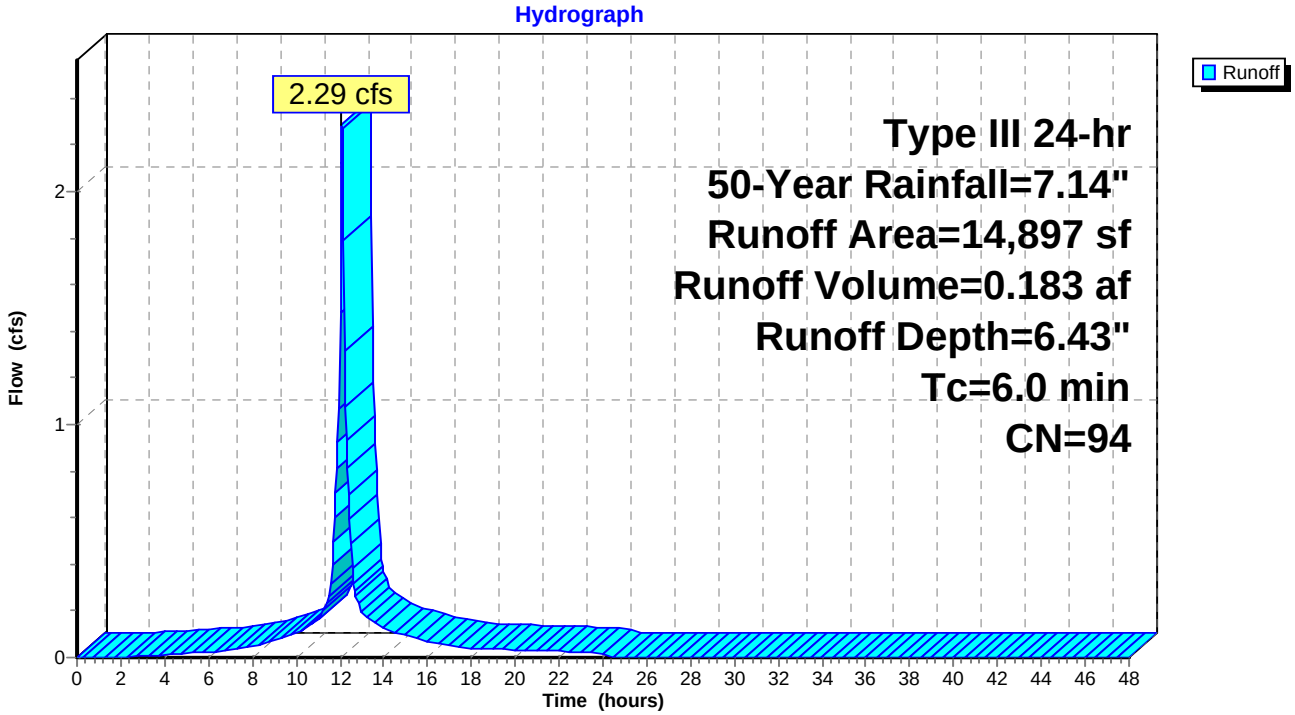
Runoff = 2.29 cfs @ 12.09 hrs, Volume= 0.183 af, Depth= 6.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=7.14"

Area (sf)	CN	Description
12,458	98	Paved parking, HSG C
2,439	74	>75% Grass cover, Good, HSG C
14,897	94	Weighted Average
2,439		16.37% Pervious Area
12,458		83.63% Impervious Area

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

Subcatchment 11S: DA 1C



Summary for Subcatchment 12S: DA 1D

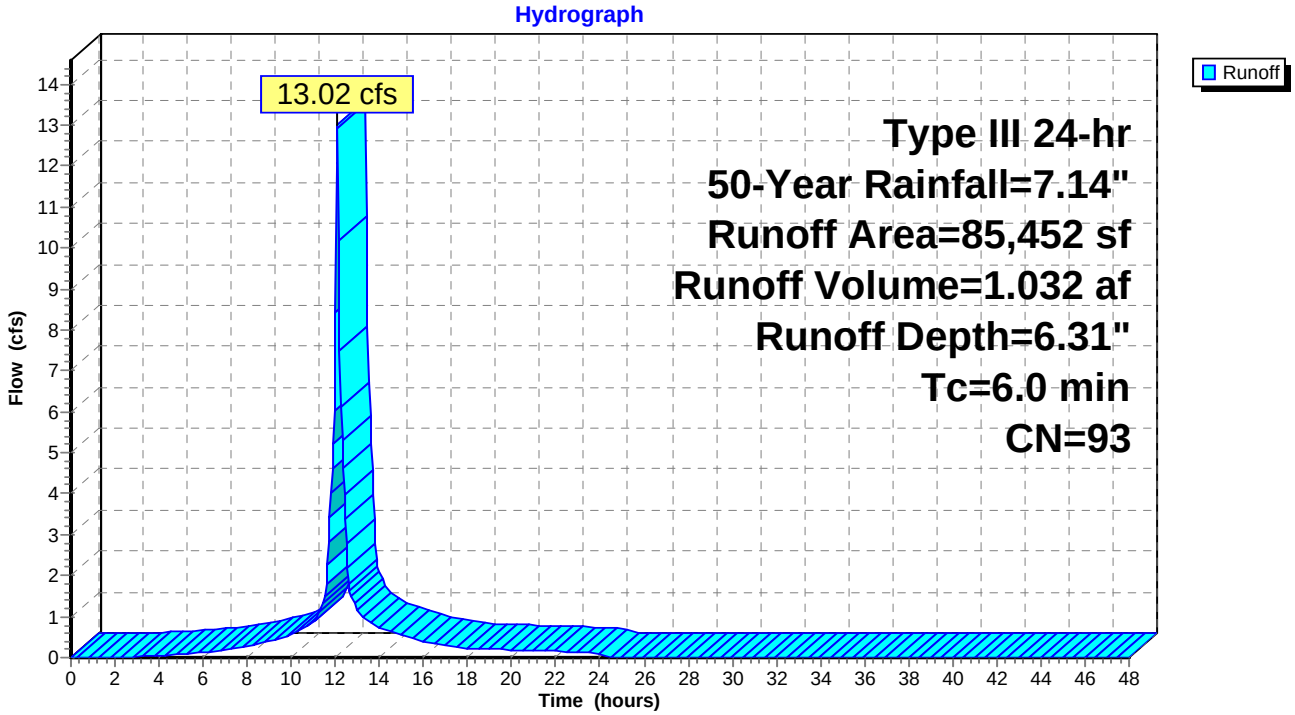
Runoff = 13.02 cfs @ 12.09 hrs, Volume= 1.032 af, Depth= 6.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=7.14"

Area (sf)	CN	Description
55,278	98	Paved parking, HSG C
6,098	98	Water Surface, 0% imp, HSG C
18,687	74	>75% Grass cover, Good, HSG C
5,389	98	Paved parking, HSG C
85,452	93	Weighted Average
24,785		29.00% Pervious Area
60,667		71.00% Impervious Area

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

Subcatchment 12S: DA 1D



Summary for Subcatchment 15S: DA 2E

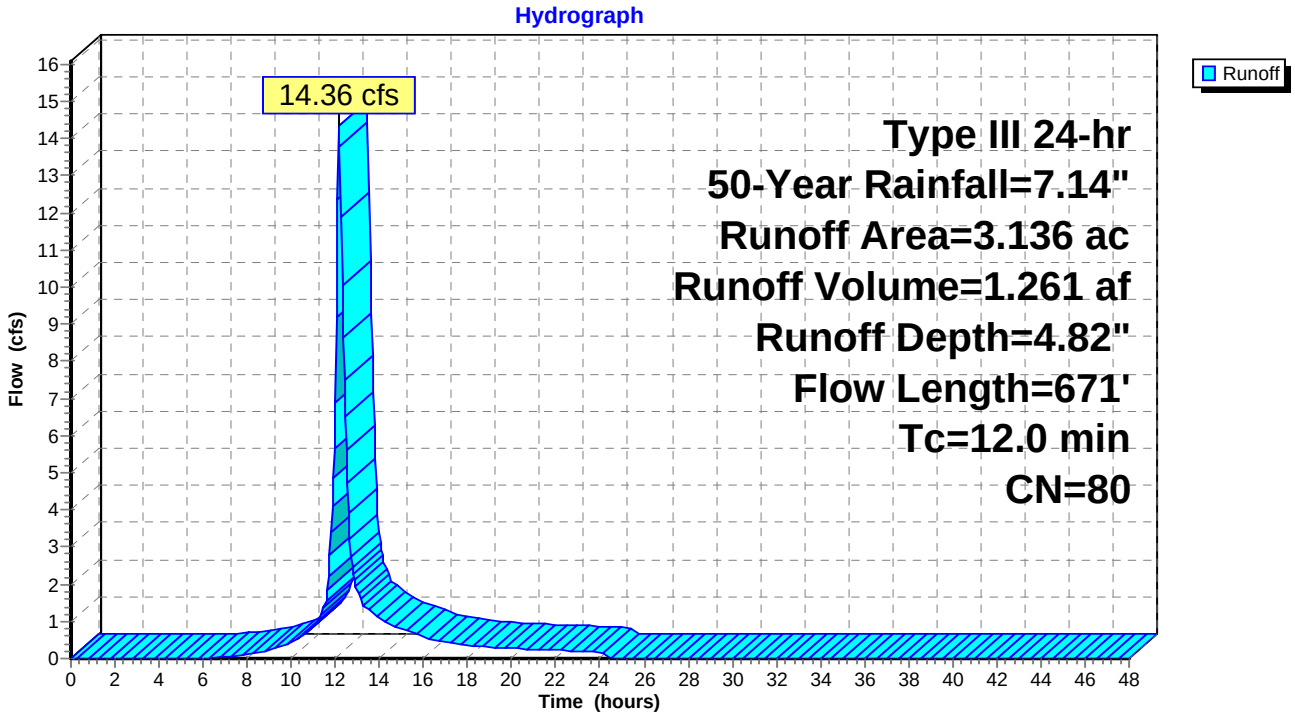
Runoff = 14.36 cfs @ 12.16 hrs, Volume= 1.261 af, Depth= 4.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=7.14"

	Area (ac)	CN	Description
*	0.985	98	Paved parking, HSG C, South
*	0.455	74	>75% Grass cover, Good, HSG C, South
	1.030	70	Woods, Good, HSG C
	0.666	74	>75% Grass cover, Good, HSG C
	3.136	80	Weighted Average
	2.151		68.59% Pervious Area
	0.985		31.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0600	0.11		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
3.3	417	0.1799	2.12		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.3	40	0.1000	2.21		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.7	164	0.0421	4.17		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
12.0	671	Total			

Subcatchment 15S: DA 2E



Summary for Subcatchment 16S: DA 2G

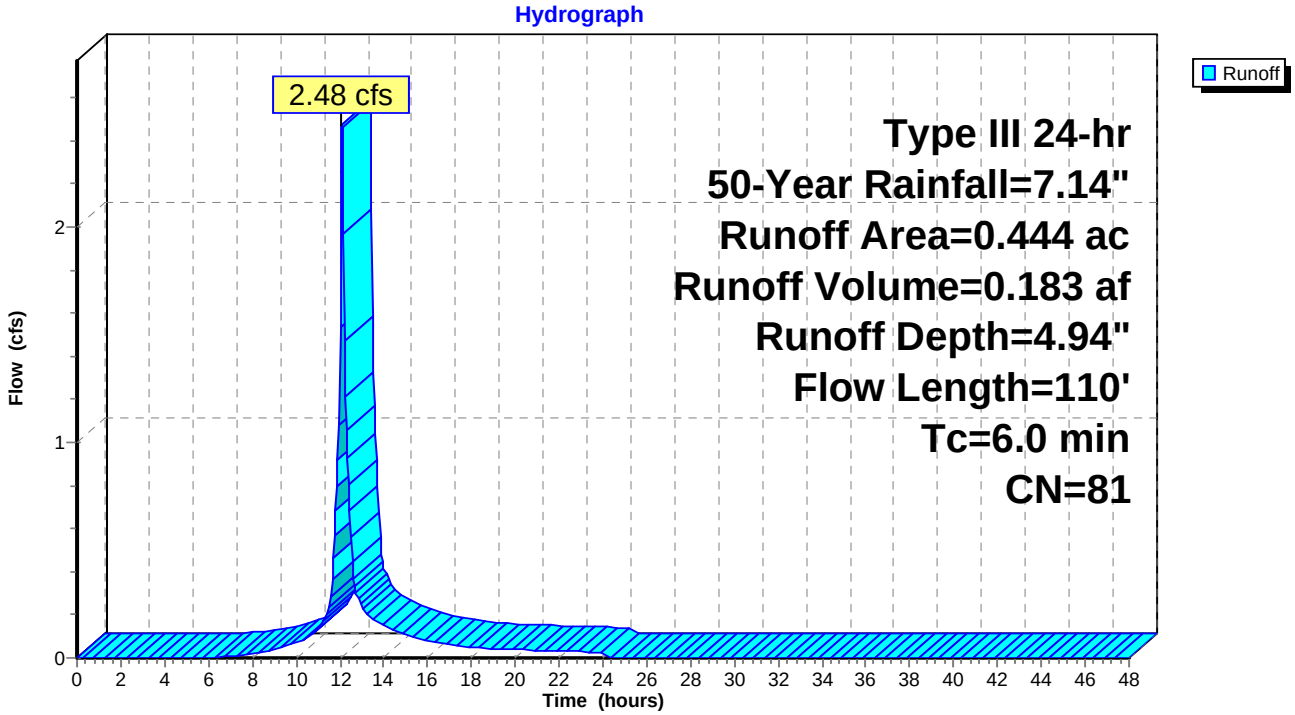
Runoff = 2.48 cfs @ 12.09 hrs, Volume= 0.183 af, Depth= 4.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=7.14"

Area (ac)	CN	Description
0.103	98	Water Surface, 0% imp, HSG C
0.017	80	>75% Grass cover, Good, HSG D
0.229	74	>75% Grass cover, Good, HSG C
0.079	80	>75% Grass cover, Good, HSG D
0.016	74	>75% Grass cover, Good, HSG C
0.444	81	Weighted Average
0.444		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	50	0.0500	0.15		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.2	60	0.3500	4.14		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
5.7	110	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 16S: DA 2G



Summary for Subcatchment 17S: DA 2I

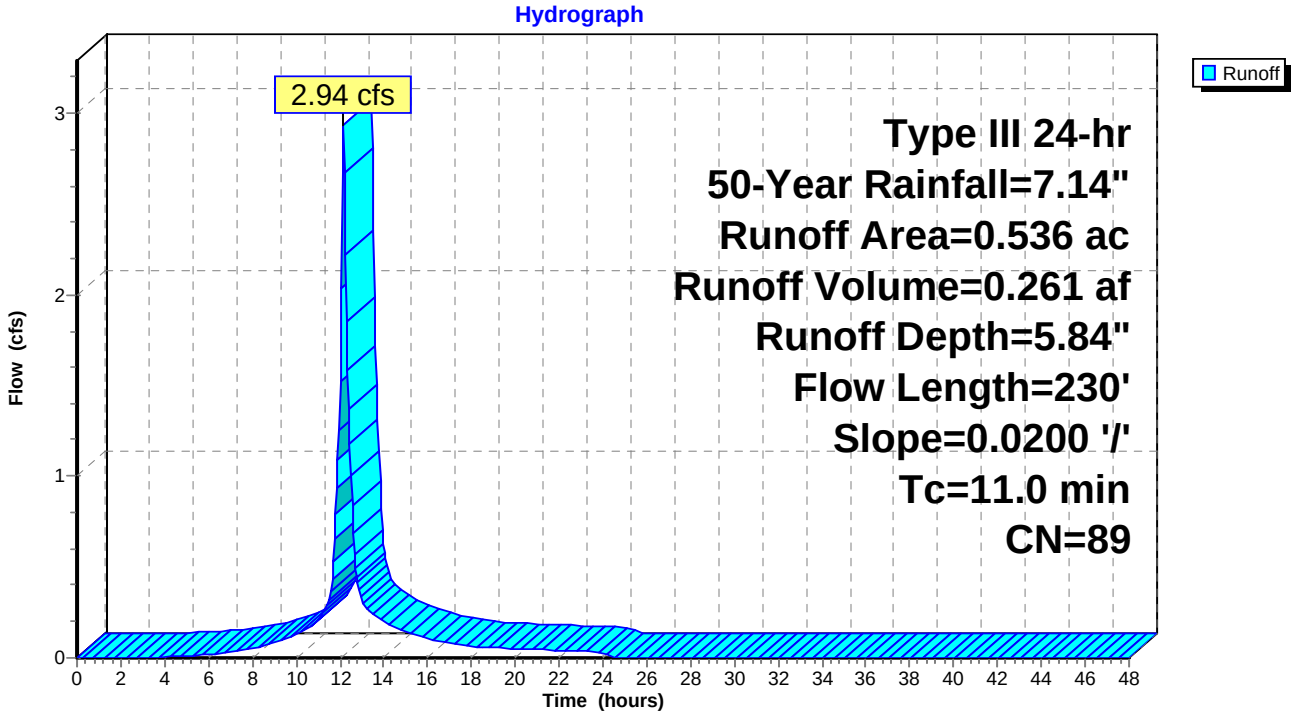
Runoff = 2.94 cfs @ 12.15 hrs, Volume= 0.261 af, Depth= 5.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=7.14"

	Area (ac)	CN	Description
*	0.344	98	Paved parking, HSG C, North
*	0.192	74	>75% Grass cover, Good, HSG C, North
	0.536	89	Weighted Average
	0.192		35.82% Pervious Area
	0.344		64.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0200	0.10		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
3.0	180	0.0200	0.99		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
11.0	230	Total			

Subcatchment 17S: DA 2I



Summary for Subcatchment 21S: DA 2F

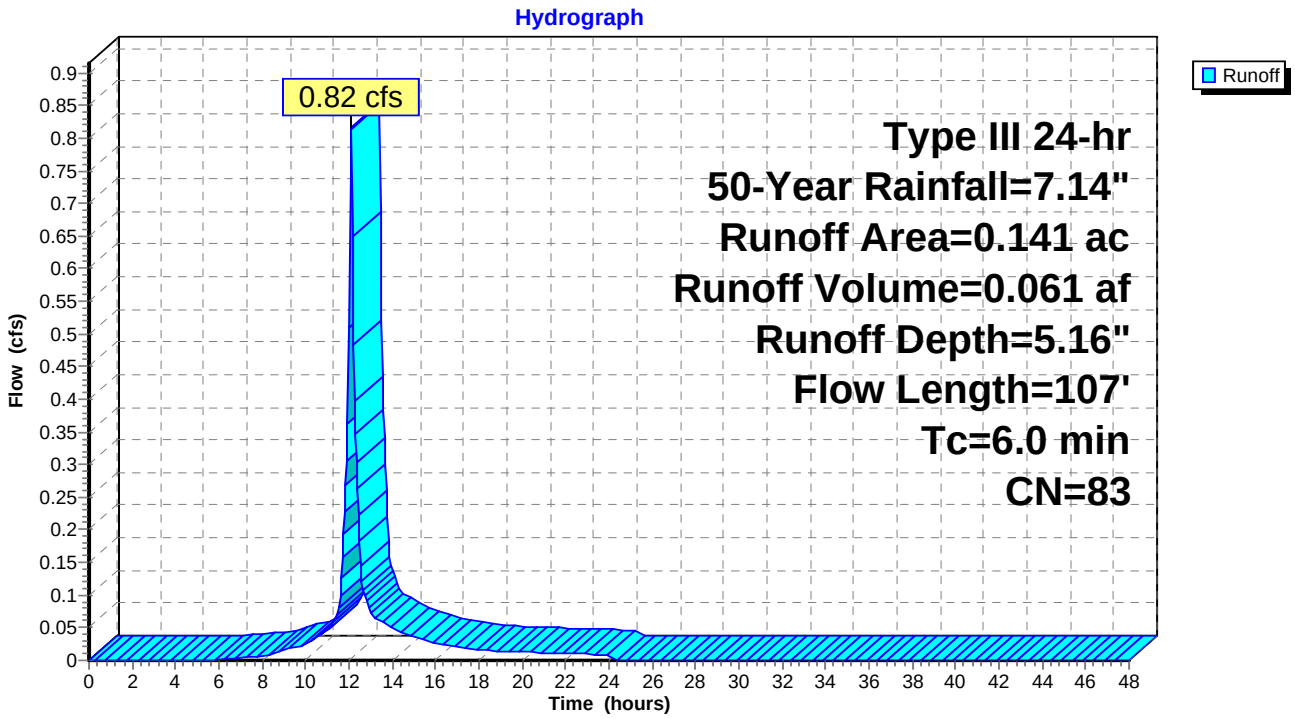
Runoff = 0.82 cfs @ 12.09 hrs, Volume= 0.061 af, Depth= 5.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=7.14"

Area (ac)	CN	Description
0.051	98	Water Surface, 0% imp, HSG C
0.090	74	>75% Grass cover, Good, HSG C
0.141	83	Weighted Average
0.141		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.3	57	0.1754	2.93		**Shallow Concentrated Flow, Woods** Short Grass Pasture Kv= 7.0 fps
4.5	107	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 21S: DA 2F



Summary for Subcatchment 22S: DA 2H

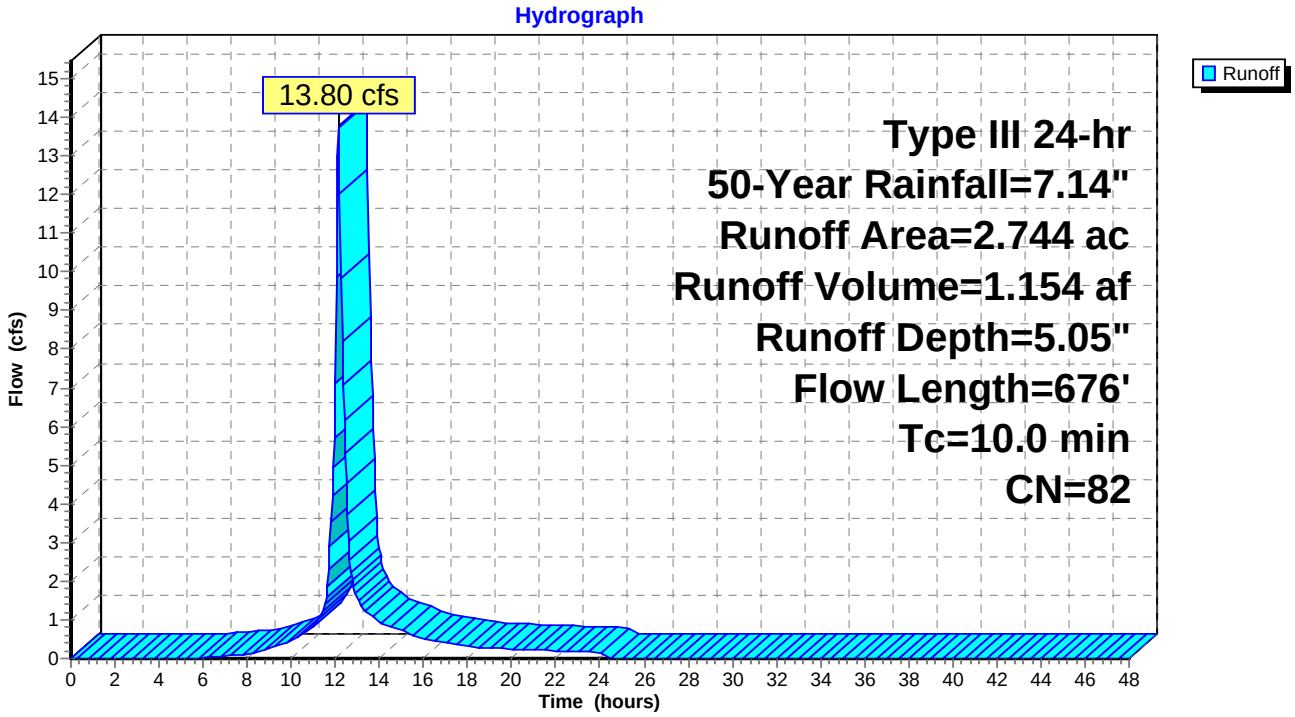
Runoff = 13.80 cfs @ 12.14 hrs, Volume= 1.154 af, Depth= 5.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=7.14"

	Area (ac)	CN	Description
*	0.431	98	Paved parking, HSG C, North
*	0.010	80	>75% Grass cover, Good, HSG D, North
*	0.313	74	>75% Grass cover, Good, HSG C, North
*	0.550	98	Paved parking, HSG C, South
*	0.356	74	>75% Grass cover, Good, HSG C, South
	0.748	70	Woods, Good, HSG C
	0.336	74	>75% Grass cover, Good, HSG C
	2.744	82	Weighted Average
	1.763		64.25% Pervious Area
	0.981		35.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	50	0.1000	0.13		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
1.7	190	0.1316	1.81		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.3	81	0.3333	4.04		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
1.7	355	0.0310	3.57		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
10.0	676	Total			

Subcatchment 22S: DA 2H



Summary for Pond 2P: 30" RCP

Inflow Area =	55.918 ac,	25.55% Impervious,	Inflow Depth >	4.12"	for 50-Year event
Inflow =	24.69 cfs @	12.19 hrs,	Volume=	19.219 af	
Outflow =	24.69 cfs @	12.19 hrs,	Volume=	19.219 af,	Atten= 0%, Lag= 0.0 min
Primary =	24.69 cfs @	12.19 hrs,	Volume=	19.219 af	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

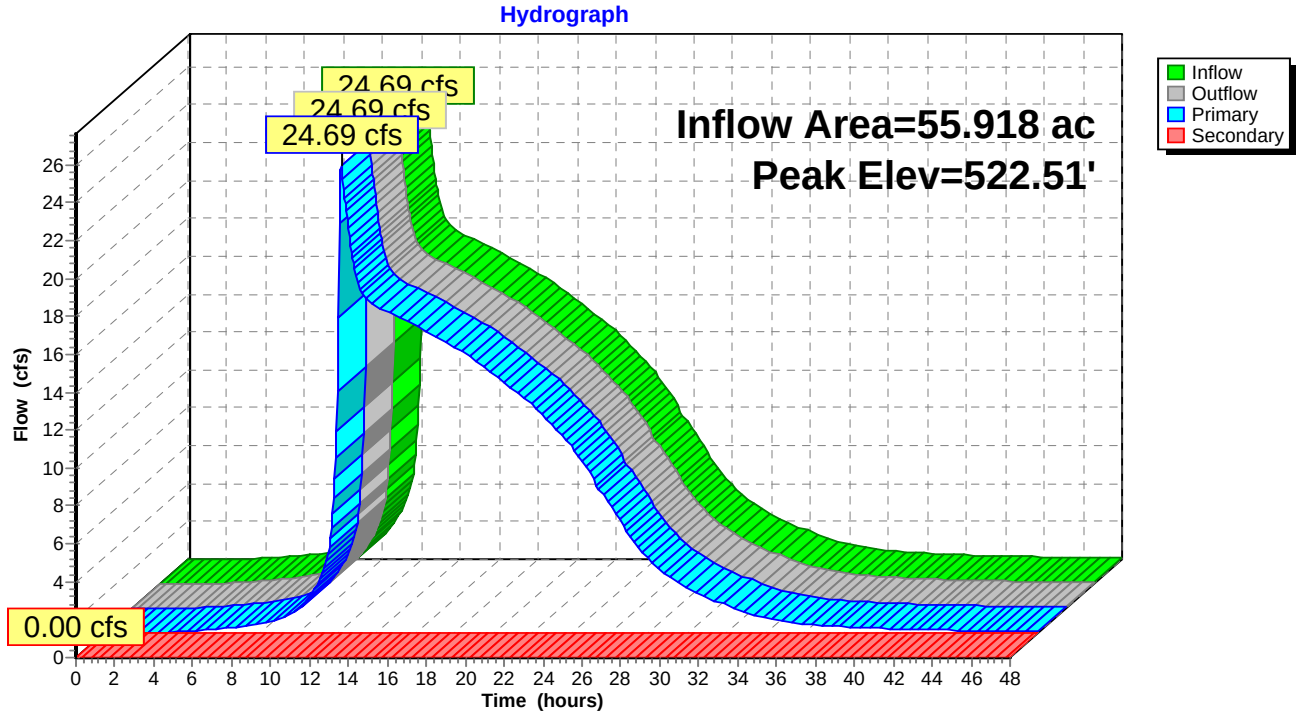
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 522.51' @ 12.19 hrs
Flood Elev= 527.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	519.92'	**30.0" Round 30" RC** L= 80.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 519.92' / 519.62' S= 0.0037 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 4.91 sf
#2	Secondary	527.20'	**30.0' long x 10.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=24.60 cfs @ 12.19 hrs HW=522.50' (Free Discharge)
└**1=30" RC** (Barrel Controls 24.60 cfs @ 6.03 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=519.92' (Free Discharge)
└**2=Overflow** (Controls 0.00 cfs)

Pond 2P: 30" RCP



Summary for Pond 4P: Pond

Inflow Area = 51.896 ac, 21.64% Impervious, Inflow Depth = 4.00" for 50-Year event
Inflow = 134.72 cfs @ 12.28 hrs, Volume= 17.288 af
Outflow = 15.48 cfs @ 14.36 hrs, Volume= 17.144 af, Atten= 89%, Lag= 124.7 min
Primary = 15.48 cfs @ 14.36 hrs, Volume= 17.144 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 527.68' @ 14.36 hrs Surf.Area= 2.843 ac Storage= 9.121 af

Plug-Flow detention time= 344.6 min calculated for 17.144 af (99% of inflow)
Center-of-Mass det. time= 339.3 min (1,181.7 - 842.4)

Volume	Invert	Avail.Storage	Storage Description
#1	523.45'	16.273 af	**Pond Storage (Irregular)**Listed below

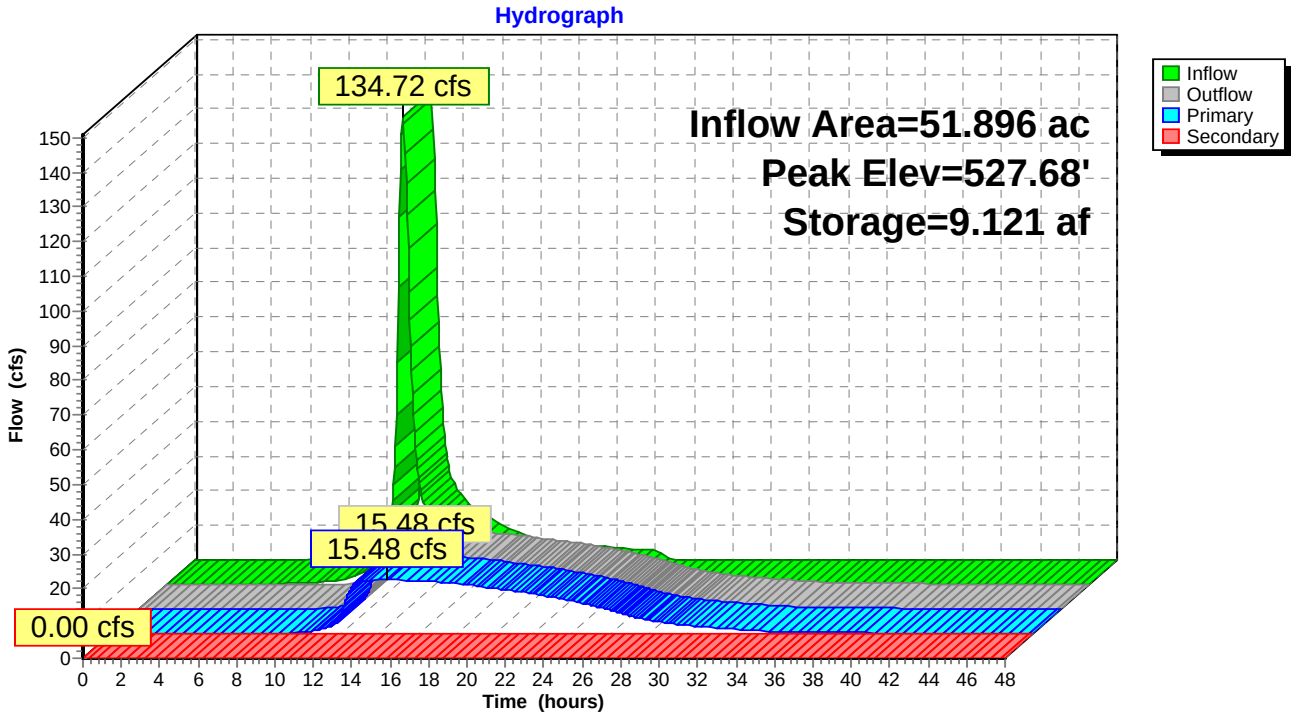
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
523.45	0.636	1,389.1	0.000	0.000	0.636
524.00	1.723	1,270.7	0.624	0.624	1.212
526.00	2.359	1,494.7	4.065	4.690	2.345
528.00	2.936	1,638.1	5.284	9.974	3.169
530.00	3.368	1,700.4	6.299	16.273	3.556

Device	Routing	Invert	Outlet Devices
#1	Primary	520.91'	**30.0" Round 30" HDPE** L= 110.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 520.91' / 520.64' S= 0.0024 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Device 1	521.46'	**30.0" Round 30" HDPE** L= 86.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 521.46' / 520.91' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#3	Device 2	521.41'	**24.0" Round 24" HDPE** L= 157.1' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 521.41' / 521.40' S= 0.0001 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#4	Device 3	523.45'	**18.0" Round 18" HDPE** L= 117.9' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 523.45' / 521.82' S= 0.0138 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#5	Secondary	529.90'	**50.0' long x 25.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=15.48 cfs @ 14.36 hrs HW=527.68' TW=521.95' (Dynamic Tailwater)
└─**1=30" HDPE** (Passes 15.48 cfs of 52.80 cfs potential flow)
└─**2=30" HDPE** (Passes 15.48 cfs of 52.68 cfs potential flow)
└─**3=24" HDPE** (Passes 15.48 cfs of 28.04 cfs potential flow)
└─**4=18" HDPE** (Barrel Controls 15.48 cfs @ 8.76 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=523.45' TW=519.92' (Dynamic Tailwater)
└─**5=Overflow** (Controls 0.00 cfs)

Pond 4P: Pond



Summary for Pond 10P: Apartment Phase 1 Detention Basin

Inflow Area =	2.152 ac, 30.72% Impervious, Inflow Depth = 3.95" for 50-Year event				
Inflow =	6.76 cfs @	12.27 hrs,	Volume=	0.708 af	
Outflow =	5.12 cfs @	12.45 hrs,	Volume=	0.708 af,	Atten= 24%, Lag= 10.8 min
Primary =	5.12 cfs @	12.45 hrs,	Volume=	0.708 af	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 538.33' @ 12.45 hrs Surf.Area= 2,051 sf Storage= 2,500 cf

Plug-Flow detention time= 4.8 min calculated for 0.708 af (100% of inflow)
Center-of-Mass det. time= 4.1 min (842.3 - 838.2)

Volume	Invert	Avail.Storage	Storage Description
#1	536.00'	7,026 cf	**Detention Basin (Irregular)**Listed below (Recalc)

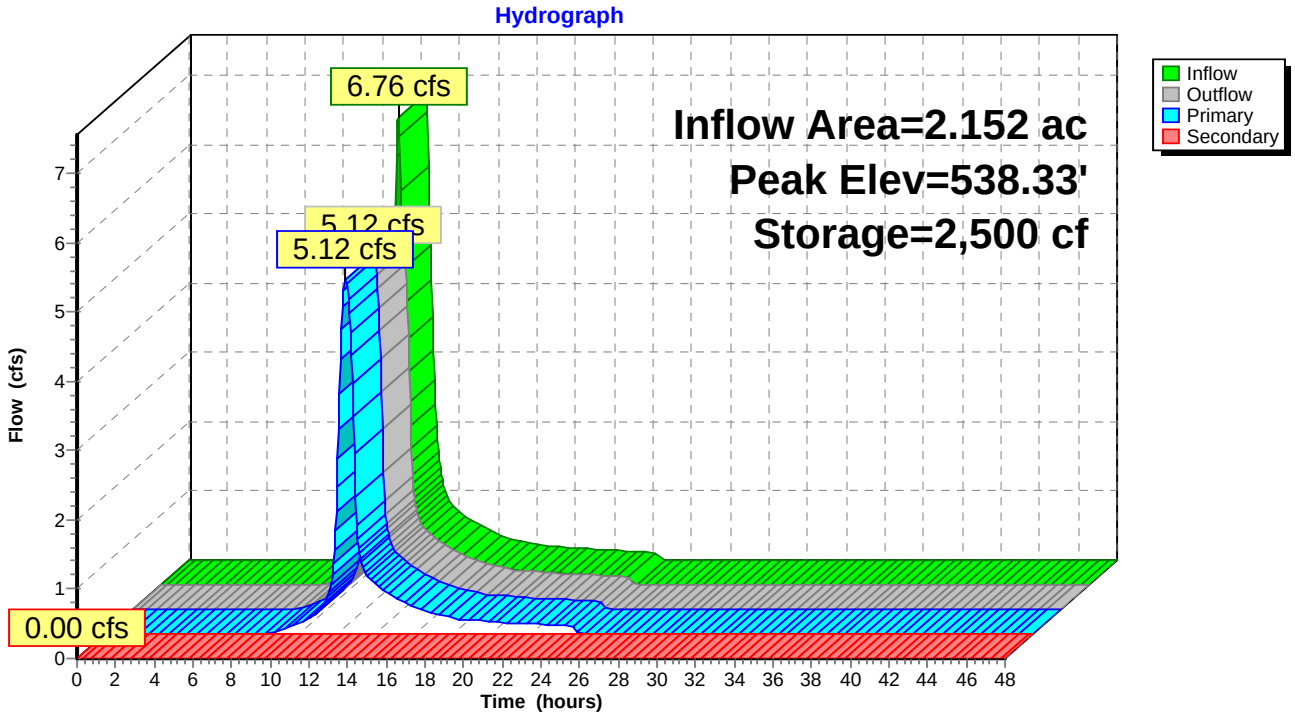
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
536.00	100	40.0	0	0	100
536.50	467	110.5	131	131	945
537.60	1,559	173.6	1,056	1,186	2,380
540.00	3,429	242.5	5,840	7,026	4,716

Device	Routing	Invert	Outlet Devices
#1	Primary	536.00'	**12.0" Round Culvert** L= 75.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 536.00' / 534.50' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	539.50'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=5.11 cfs @ 12.45 hrs HW=538.33' TW=526.48' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 5.11 cfs @ 6.51 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=536.00' TW=523.45' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10P: Apartment Phase 1 Detention Basin



Summary for Pond 15P: Apartments Phase II Stormwater Basin 2

Inflow Area = 3.277 ac, 30.06% Impervious, Inflow Depth = 4.84" for 50-Year event
Inflow = 14.97 cfs @ 12.16 hrs, Volume= 1.321 af
Outflow = 14.72 cfs @ 12.18 hrs, Volume= 1.242 af, Atten= 2%, Lag= 1.3 min
Primary = 14.72 cfs @ 12.18 hrs, Volume= 1.242 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 568.30' @ 12.18 hrs Surf.Area= 2,427 sf Storage= 6,138 cf

Plug-Flow detention time= 53.8 min calculated for 1.241 af (94% of inflow)
Center-of-Mass det. time= 21.9 min (834.1 - 812.2)

Volume	Invert	Avail.Storage	Storage Description
#1	562.00'	6 cf	**3.00'W x 8.00'L x 2.50'H Sand Underdrain** 60 cf Overall x 10.0% Voids
#2	564.50'	10,719 cf	**Stormwater Basin (Irregular)**Listed below
		10,725 cf	Total Available Storage

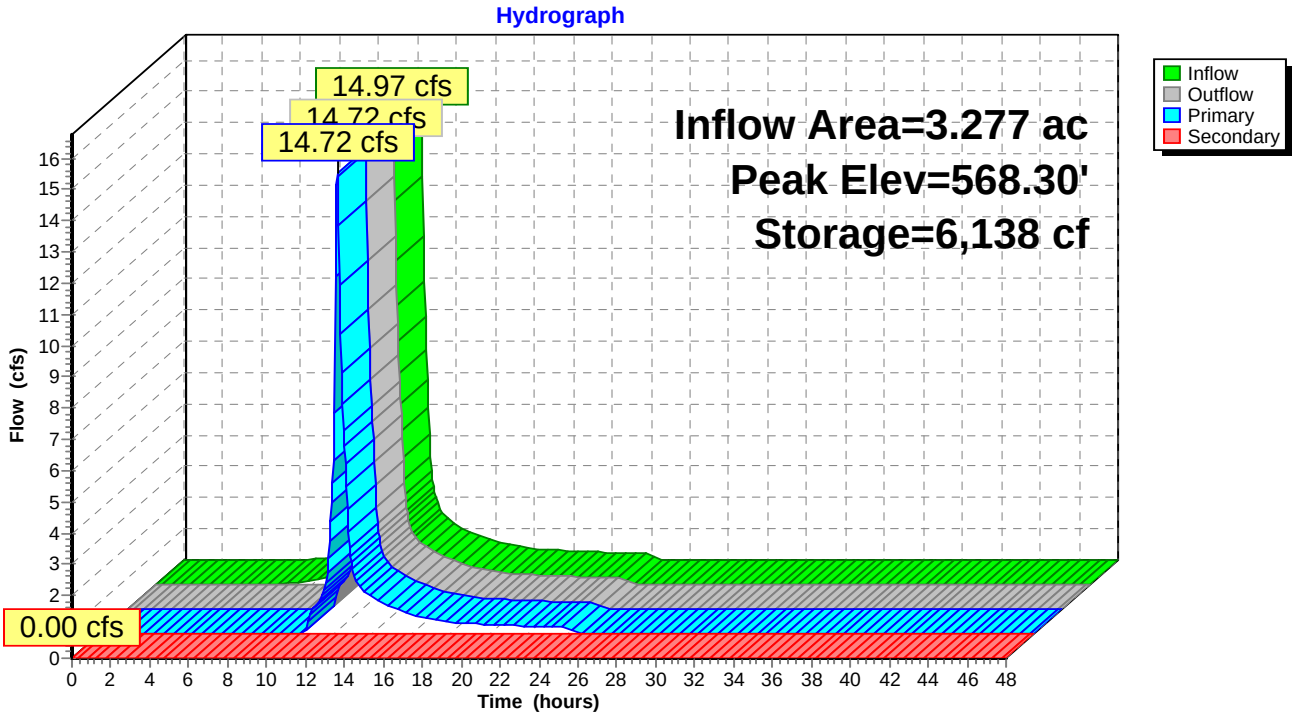
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
564.50	4	8.2	0	0	4
564.75	257	68.5	24	24	372
565.00	1,193	160.0	167	191	2,036
566.00	1,533	172.5	1,359	1,551	2,406
568.00	2,277	197.6	3,786	5,336	3,233
570.00	3,128	222.7	5,383	10,719	4,172

Device	Routing	Invert	Outlet Devices
#1	Primary	562.00'	**18.0" Round 18" HDPE** L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 562.00' / 561.60' S= 0.0059 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	567.00'	**36.0" W x 6.0" H Vert. 36" x 6" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	568.00'	**1.0" x 3.7" Horiz. Top of Frame X 39.00 columns** X 9 rows C= 0.600 in 48.0" x 36.0" Grate (75% open area) Limited to weir flow at low heads
#4	Secondary	569.00'	**8.0' long x 8.0' breadth Rip Rap Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#5	Device 1	562.00'	**0.500 in/hr Sand Underdrain over Horizontal area from 562.00' - 564.50'** Excluded Horizontal area = 24 sf Phase-In= 0.01'

Primary OutFlow Max=14.51 cfs @ 12.18 hrs HW=568.29' TW=563.70' (Dynamic Tailwater)
- **1=18" HDPE** (Passes 14.51 cfs of 18.22 cfs potential flow)
  - **2=36" x 6" Orifice** (Orifice Controls 7.35 cfs @ 4.90 fps)
  - **3=Top of Frame** (Weir Controls 7.16 cfs @ 1.76 fps)
  - **5=Sand Underdrain** (Exfiltration Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=562.00' TW=523.45' (Dynamic Tailwater)
- **4=Rip Rap Spillway** (Controls 0.00 cfs)

Pond 15P: Apartments Phase II Stormwater Basin 2



Summary for Pond 16P: Water Quality Basin

Inflow Area = 1.962 ac, 71.00% Impervious, Inflow Depth = 6.31" for 50-Year event
Inflow = 13.02 cfs @ 12.09 hrs, Volume= 1.032 af
Outflow = 4.95 cfs @ 12.33 hrs, Volume= 1.031 af, Atten= 62%, Lag= 14.3 min
Primary = 4.95 cfs @ 12.33 hrs, Volume= 1.031 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 528.24' @ 12.33 hrs Surf.Area= 6,520 sf Storage= 15,322 cf

Plug-Flow detention time= 114.0 min calculated for 1.031 af (100% of inflow)
Center-of-Mass det. time= 113.9 min (882.2 - 768.3)

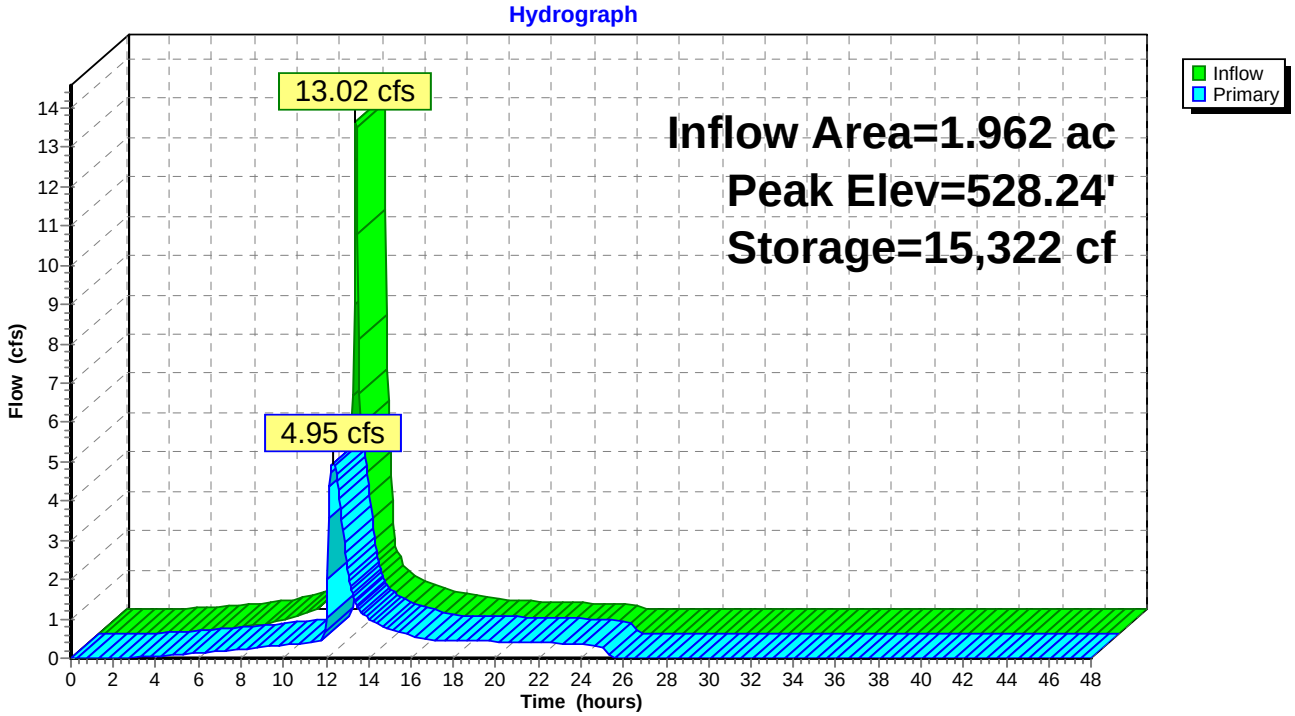
Volume	Invert	Avail.Storage	Storage Description
#1	523.75'	26,415 cf	**Water Quality swale (Irregular)**Listed below (Recalc)
#2	522.25'	5 cf	**3.00'W x 3.00'L x 1.50'H Underdrain** 14 cf Overall x 40.0% Voids
		26,420 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
523.75	9	12.0	0	0	9
524.00	258	63.2	26	26	316
524.25	528	108.8	96	123	940
524.50	766	159.7	161	283	2,028
524.75	1,105	211.6	233	516	3,562
525.00	1,523	263.2	327	843	5,513
525.25	2,026	316.2	442	1,285	7,958
525.50	2,529	368.0	568	1,853	10,779
525.75	3,267	420.8	723	2,576	14,095
526.00	4,119	481.0	921	3,497	18,417
528.00	6,268	535.7	10,312	13,809	22,957
529.75	8,181	557.7	12,606	26,415	25,097

Device	Routing	Invert	Outlet Devices
#1	Primary	522.75'	**24.0" Round 24" HDPE** L= 75.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 522.75' / 521.75' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	523.00'	**3.0" Vert. Underdrain** C= 0.600 Limited to weir flow at low heads
#3	Device 1	526.75'	**6.0" W x 6.0" H Vert. 6" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	527.25'	**18.0" W x 6.0" H Vert. 18x6 Orifice** C= 0.600 Limited to weir flow at low heads
#5	Device 1	528.50'	**20.0' long x 0.5' breadth Top of Frame** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=4.95 cfs @ 12.33 hrs HW=528.23' TW=522.39' (Dynamic Tailwater)
- **1=24" HDPE** (Passes 4.95 cfs of 32.03 cfs potential flow)
  - **2=Underdrain** (Orifice Controls 0.53 cfs @ 10.88 fps)
  - **3=6" Orifice** (Orifice Controls 1.33 cfs @ 5.34 fps)
  - **4=18x6 Orifice** (Orifice Controls 3.08 cfs @ 4.10 fps)
  - **5=Top of Frame** (Controls 0.00 cfs)

Pond 16P: Water Quality Basin



Summary for Pond 20P: Apartments Phase II Stormwater Basin 1

Inflow Area = 7.001 ac, 33.00% Impervious, Inflow Depth = 4.87" for 50-Year event
Inflow = 33.02 cfs @ 12.16 hrs, Volume= 2.840 af
Outflow = 20.49 cfs @ 12.33 hrs, Volume= 2.650 af, Atten= 38%, Lag= 10.5 min
Primary = 20.49 cfs @ 12.33 hrs, Volume= 2.650 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 559.44' @ 12.33 hrs Surf.Area= 7,831 sf Storage= 32,519 cf

Plug-Flow detention time= 88.6 min calculated for 2.647 af (93% of inflow)
Center-of-Mass det. time= 54.2 min (870.7 - 816.5)

Volume	Invert	Avail.Storage	Storage Description
#1	551.00'	4 cf	**3.00'W x 8.00'L x 1.75'H Sand Underdrain** 42 cf Overall x 10.0% Voids
#2	552.75'	40,883 cf	**Stormwater Basin (Irregular)**Listed below (Recalc)
#3	556.00'	424 cf	**36.0" Round Pipe Storage**-Impervious L= 60.0' S= 0.0083 '/'
		41,312 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
552.75	120	43.3	0	0	120
553.00	865	110.3	109	109	939
553.25	1,552	155.7	298	407	1,901
553.50	2,135	207.8	459	866	3,409
553.75	2,928	261.6	630	1,496	5,419
554.00	3,512	310.5	804	2,300	7,646
555.00	4,145	323.0	3,824	6,124	8,352
556.00	4,804	335.6	4,470	10,595	9,090
557.00	5,490	348.1	5,143	15,738	9,851
558.00	6,569	422.7	6,021	21,759	14,443
559.00	7,426	435.3	6,993	28,752	15,404
560.00	8,310	447.8	7,864	36,616	16,387
560.50	8,761	454.1	4,267	40,883	16,893

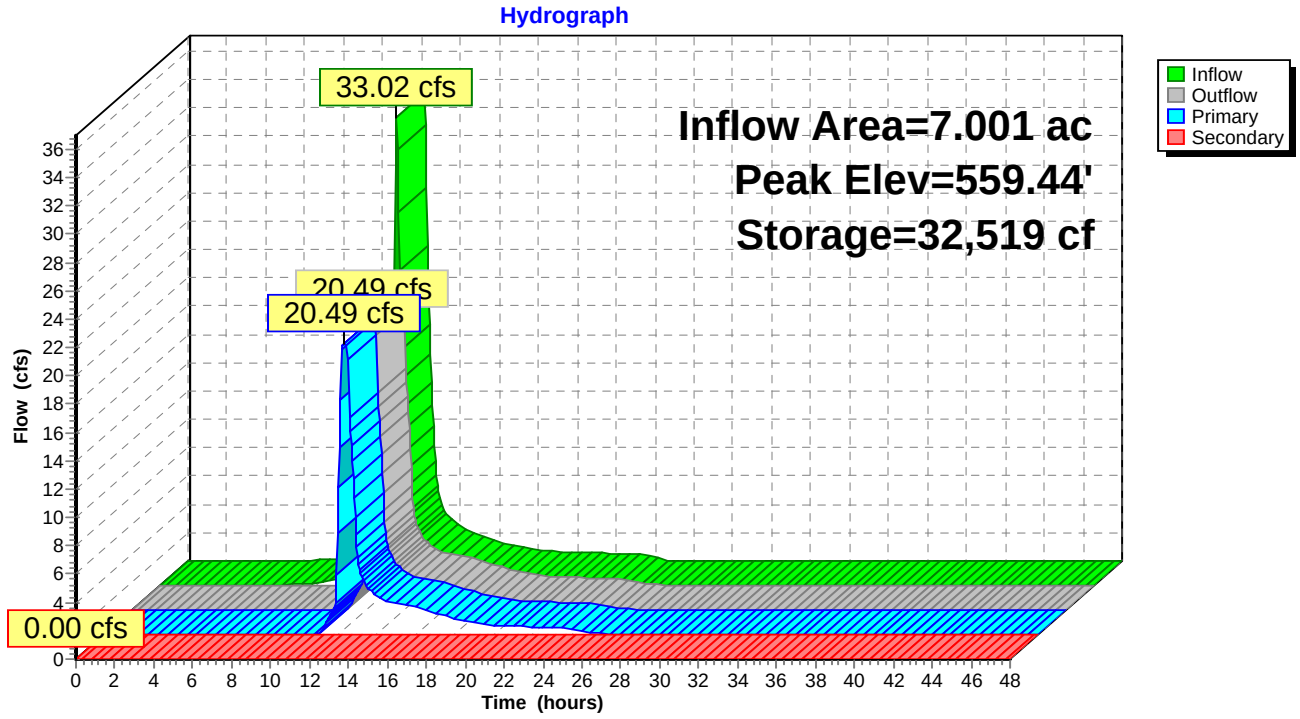
Device	Routing	Invert	Outlet Devices
#1	Primary	551.00'	**18.0" Round 18" HDPE** L= 152.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 551.00' / 549.00' S= 0.0132 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	555.50'	**6.0" Vert. 6" Orifices (2) X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	557.30'	**48.0" W x 7.0" H Vert. 48" x 7" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	558.75'	**1.0" x 3.7" Horiz. Top of Frame X 39.00 columns** X 9 rows C= 0.600 in 48.0" x 36.0" Grate (75% open area) Limited to weir flow at low heads
#5	Secondary	559.75'	**8.0' long x 8.0' breadth Rip Rap Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64
			2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#6	Device 1	551.00'	**0.500 in/hr Sand Underdrain over Horizontal area from 551.00' - 552.75'**
			Excluded Horizontal area = 24 sf Phase-In= 0.01'

Primary OutFlow Max=20.49 cfs @ 12.33 hrs HW=559.43' TW=526.04' (Dynamic Tailwater)
- **1=18" HDPE** (Barrel Controls 20.49 cfs @ 11.59 fps)
  - **2=6" Orifices (2)** (Passes < 3.63 cfs potential flow)
  - **3=48" x 7" Orifice** (Passes < 15.22 cfs potential flow)
  - **4=Top of Frame** (Passes < 25.71 cfs potential flow)
  - **6=Sand Underdrain** (Passes < 0.00 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=551.00' TW=523.45' (Dynamic Tailwater)
- **5=Rip Rap Spillway** (Controls 0.00 cfs)

Pond 20P: Apartments Phase II Stormwater Basin 1



Summary for Pond 21P: Drain

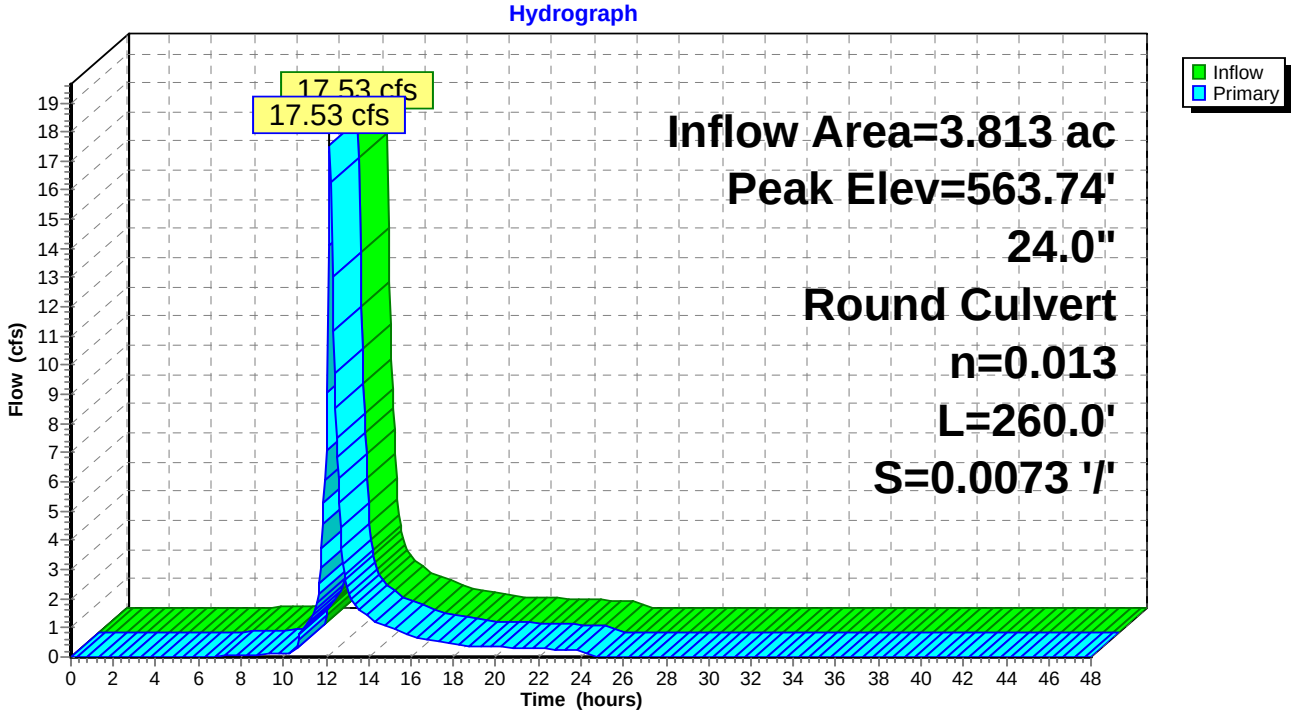
Inflow Area = 3.813 ac, 34.85% Impervious, Inflow Depth = 4.73" for 50-Year event
Inflow = 17.53 cfs @ 12.18 hrs, Volume= 1.503 af
Outflow = 17.53 cfs @ 12.18 hrs, Volume= 1.503 af, Atten= 0%, Lag= 0.0 min
Primary = 17.53 cfs @ 12.18 hrs, Volume= 1.503 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 563.74' @ 12.18 hrs
Flood Elev= 565.37'

Device	Routing	Invert	Outlet Devices
#1	Primary	561.40'	**24.0" Round Culvert** L= 260.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 561.40' / 559.50' S= 0.0073 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=17.28 cfs @ 12.18 hrs HW=563.70' TW=558.98' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 17.28 cfs @ 5.50 fps)

Pond 21P: Drain



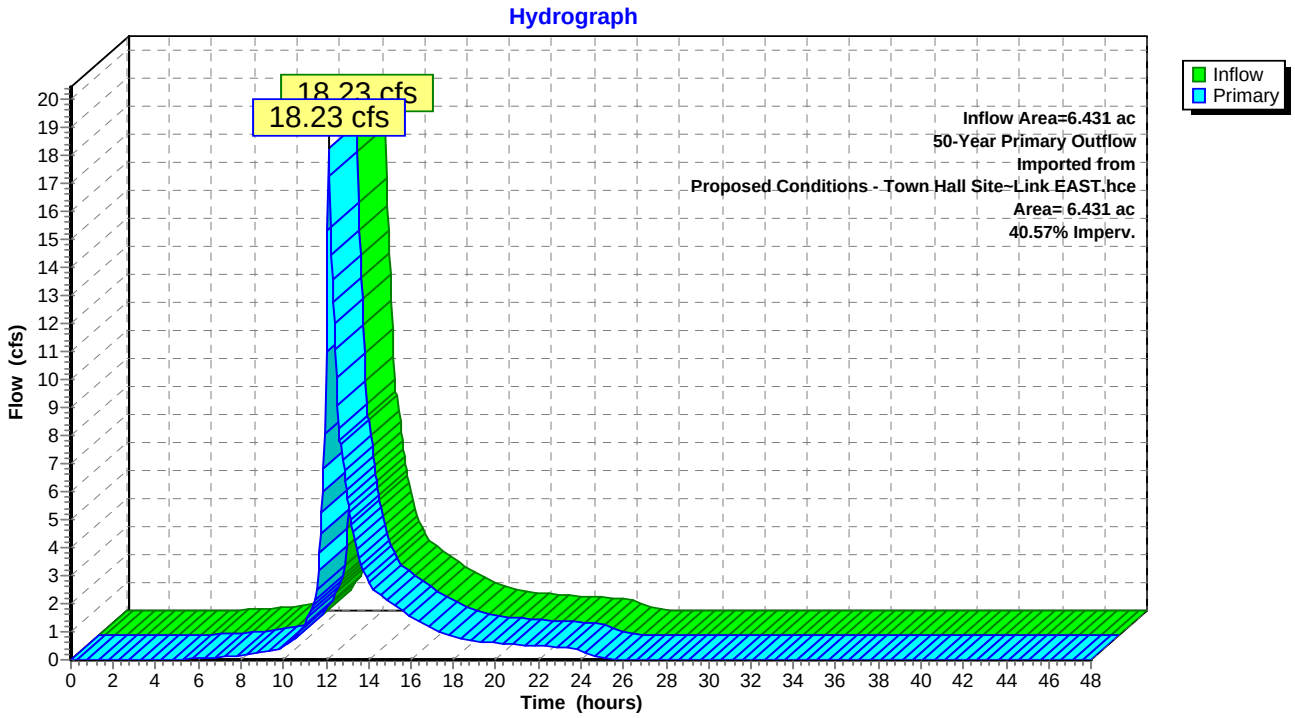
Summary for Link 14L: DA 2D - From Town Hall

Inflow Area = 6.431 ac, 40.57% Impervious, Inflow Depth = 4.55" for 50-Year event
Inflow = 18.23 cfs @ 12.11 hrs, Volume= 2.441 af
Primary = 18.23 cfs @ 12.11 hrs, Volume= 2.441 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

50-Year Primary Outflow Imported from Proposed Conditions - Town Hall Site~Link EAST.hce

Link 14L: DA 2D - From Town Hall



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 2
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 1S: DA 1A Runoff Area=2.061 ac 80.93% Impervious Runoff Depth=6.96"
Flow Length=532' Tc=11.0 min CN=91 Runoff=13.17 cfs 1.196 af

Subcatchment 3S: DA 2C Runoff Area=30.199 ac 4.93% Impervious Runoff Depth=4.15"
Flow Length=2,588' Tc=22.6 min UI Adjusted CN=67 Runoff=93.85 cfs 10.455 af

Subcatchment 7S: DA 1B Runoff Area=94,000 sf 75.97% Impervious Runoff Depth=7.08"
Flow Length=669' Tc=6.0 min CN=92 Runoff=16.10 cfs 1.274 af

Subcatchment 8S: DA 2A Runoff Area=3.613 ac 61.86% Impervious Runoff Depth=6.13"
Flow Length=740' Tc=12.1 min CN=84 Runoff=20.57 cfs 1.847 af

Subcatchment 9S: DA 2B Runoff Area=2.152 ac 30.72% Impervious Runoff Depth=4.73"
Flow Length=735' Tc=19.6 min CN=72 Runoff=8.10 cfs 0.848 af

Subcatchment 11S: DA 1C Runoff Area=14,897 sf 83.63% Impervious Runoff Depth=7.32"
Tc=6.0 min CN=94 Runoff=2.59 cfs 0.209 af

Subcatchment 12S: DA 1D Runoff Area=85,452 sf 71.00% Impervious Runoff Depth=7.20"
Tc=6.0 min CN=93 Runoff=14.75 cfs 1.177 af

Subcatchment 15S: DA 2E Runoff Area=3.136 ac 31.41% Impervious Runoff Depth=5.66"
Flow Length=671' Tc=12.0 min CN=80 Runoff=16.77 cfs 1.480 af

Subcatchment 16S: DA 2G Runoff Area=0.444 ac 0.00% Impervious Runoff Depth=5.78"
Flow Length=110' Tc=6.0 min CN=81 Runoff=2.89 cfs 0.214 af

Subcatchment 17S: DA 2I Runoff Area=0.536 ac 64.18% Impervious Runoff Depth=6.73"
Flow Length=230' Slope=0.0200 '/' Tc=11.0 min CN=89 Runoff=3.36 cfs 0.300 af

Subcatchment 21S: DA 2F Runoff Area=0.141 ac 0.00% Impervious Runoff Depth=6.02"
Flow Length=107' Tc=6.0 min CN=83 Runoff=0.95 cfs 0.071 af

Subcatchment 22S: DA 2H Runoff Area=2.744 ac 35.75% Impervious Runoff Depth=5.90"
Flow Length=676' Tc=10.0 min CN=82 Runoff=16.02 cfs 1.349 af

Pond 2P: 30" RCP Peak Elev=522.83' Inflow=28.54 cfs 22.886 af
Primary=28.54 cfs 22.886 af Secondary=0.00 cfs 0.000 af Outflow=28.54 cfs 22.886 af

Pond 4P: Pond Peak Elev=528.43' Storage=11.338 af Inflow=160.05 cfs 20.670 af
Primary=16.77 cfs 20.513 af Secondary=0.00 cfs 0.000 af Outflow=16.77 cfs 20.513 af

Pond 10P: Apartment Phase 1 Detention Peak Elev=538.80' Storage=3,557 cf Inflow=8.10 cfs 0.848 af
Primary=5.74 cfs 0.848 af Secondary=0.00 cfs 0.000 af Outflow=5.74 cfs 0.848 af

Pond 15P: Apartments Phase II Stormwater Peak Elev=568.37' Storage=6,342 cf Inflow=17.47 cfs 1.550 af
Primary=16.96 cfs 1.471 af Secondary=0.00 cfs 0.000 af Outflow=16.96 cfs 1.471 af

Pond 16P: Water Quality Basin Peak Elev=528.52' Storage=17,229 cf Inflow=14.75 cfs 1.177 af
Outflow=5.85 cfs 1.177 af

Pond 20P: Apartments Phase II Peak Elev=560.00' Storage=37,060 cf Inflow=38.23 cfs 3.334 af
Primary=21.13 cfs 3.112 af Secondary=2.48 cfs 0.032 af Outflow=23.61 cfs 3.144 af

Pond 21P: Drain Peak Elev=564.57' Inflow=20.33 cfs 1.772 af
24.0" Round Culvert n=0.013 L=260.0' S=0.0073 '/' Outflow=20.33 cfs 1.772 af

Lnk 100-Year Primary Outflow Imported from Proposed Conditions - Town Hall Site~Link EAST.hce Inflow=22.23 cfs 2.893 af
Area= 6.431 ac 40.57% Imperv. Primary=22.23 cfs 2.893 af

Total Runoff Area = 49.488 ac Runoff Volume = 20.419 af Average Runoff Depth = 4.95"
76.40% Pervious = 37.808 ac 23.60% Impervious = 11.680 ac

Summary for Subcatchment 1S: DA 1A

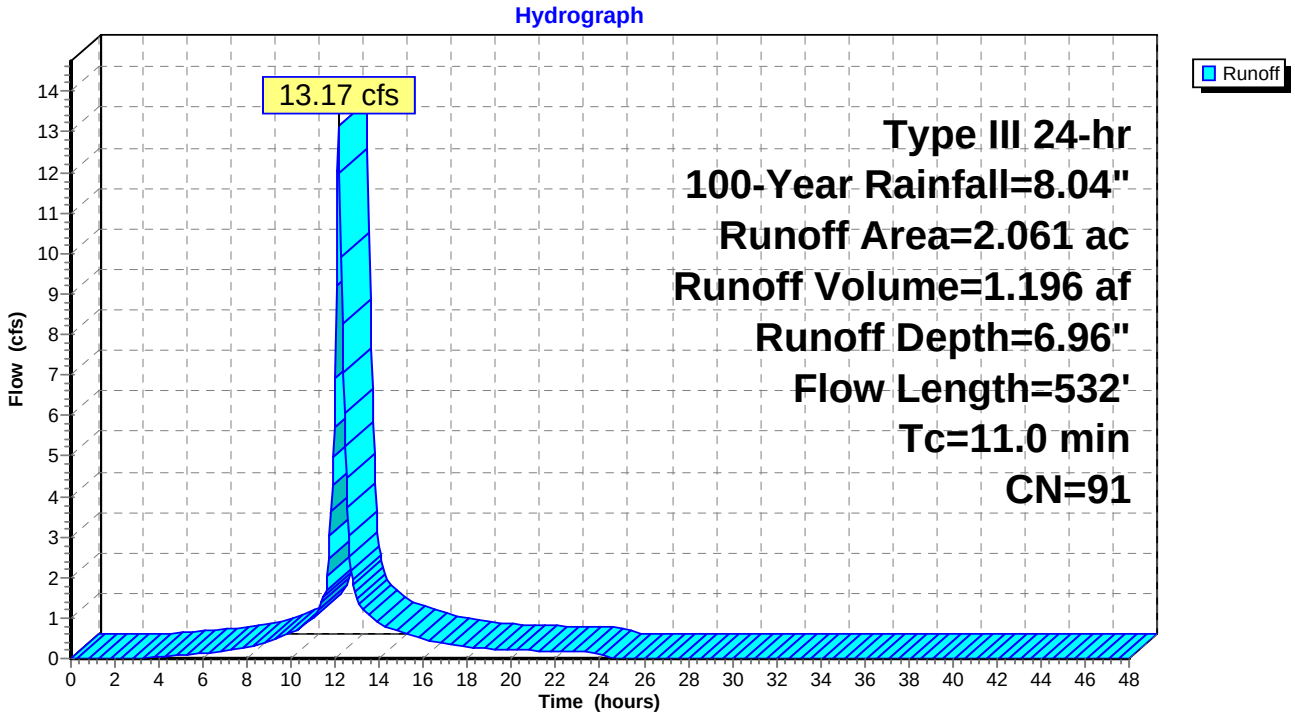
Runoff = 13.17 cfs @ 12.15 hrs, Volume= 1.196 af, Depth= 6.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.04"

Area (ac)	CN	Description
0.201	98	Paved parking, HSG C
1.260	98	Paved parking, HSG B
0.207	98	Paved parking, HSG C
0.074	74	>75% Grass cover, Good, HSG C
0.319	61	>75% Grass cover, Good, HSG B
2.061	91	Weighted Average
0.393		19.07% Pervious Area
1.668		80.93% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	40	0.0100	0.08		**Sheet Flow, Lawn** Grass: Dense n= 0.240 P2= 3.37"
1.7	239	0.0126	2.28		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
0.5	253	0.0200	8.41	14.86	**Pipe Channel, HDPE Drain** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
11.0	532	Total			

Subcatchment 1S: DA 1A



Summary for Subcatchment 3S: DA 2C

[47] Hint: Peak is 273% of capacity of segment #3

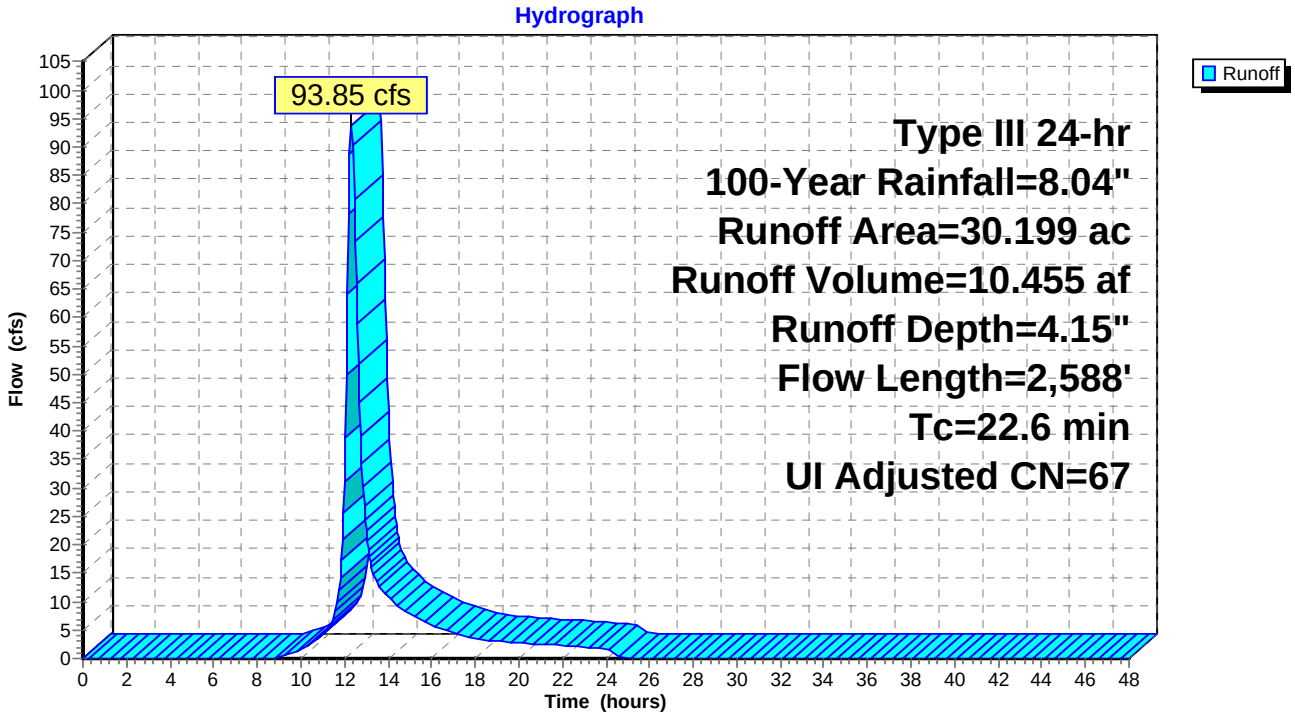
Runoff = 93.85 cfs @ 12.32 hrs, Volume= 10.455 af, Depth= 4.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.04"

	Area (ac)	CN	Adj	Description
	9.778	77		Woods, Good, HSG D
	0.839	98		Water Surface, 0% imp, HSG D
	13.926	55		Woods, Good, HSG B
	2.515	70		Woods, Good, HSG C
	0.066	98		Paved parking, HSG C
	0.110	98		Roofs, HSG C
	0.057	98		Paved parking, HSG B
	0.566	61		>75% Grass cover, Good, HSG B
	0.870	98		Unconnected roofs, HSG B
	0.333	80		>75% Grass cover, Good, HSG D
	0.061	98		Paved parking, HSG C
	0.032	74		>75% Grass cover, Good, HSG C
	0.140	98		Paved parking, HSG C
	0.664	74		>75% Grass cover, Good, HSG C
	0.058	70		Woods, Good, HSG C
*	0.184	98		Unconnected Roofs
	30.199	68	67	Weighted Average, UI Adjusted
	28.711			95.07% Pervious Area
	1.488			4.93% Impervious Area
	1.054			70.83% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.7	100	0.0850	0.14		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
5.1	598	0.1539	1.96		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
5.2	1,600	0.0262	5.16	34.37	**Parabolic Channel, Channel** W=10.00' D=1.00' Area=6.7 sf Perim=10.3' n= 0.035 Earth, dense weeds
0.6	290		8.02		**Lake or Reservoir, Pond** Mean Depth= 2.00'
22.6	2,588	Total			

Subcatchment 3S: DA 2C



Summary for Subcatchment 7S: DA 1B

[47] Hint: Peak is 108% of capacity of segment #4

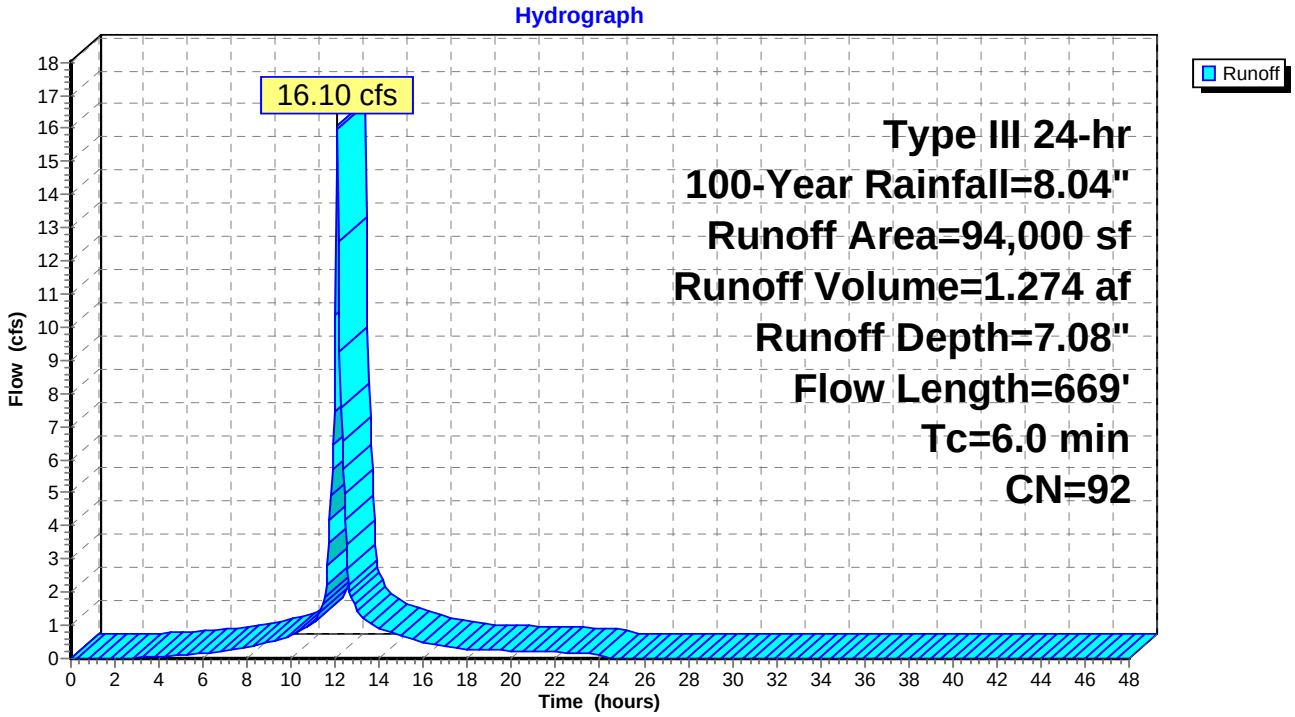
Runoff = 16.10 cfs @ 12.09 hrs, Volume= 1.274 af, Depth= 7.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.04"

Area (sf)	CN	Description
71,413	98	Paved parking, HSG B
11,784	86	Newly graded area, HSG B
10,803	61	>75% Grass cover, Good, HSG B
94,000	92	Weighted Average
22,587		24.03% Pervious Area
71,413		75.97% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	100	0.0200	1.41		**Sheet Flow, Play areas** Smooth surfaces n= 0.011 P2= 3.37"
0.1	40	0.1500	6.24		**Shallow Concentrated Flow, Play areas** Unpaved Kv= 16.1 fps
2.2	362	0.0175	2.69		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
0.3	167	0.0200	8.41	14.86	**Pipe Channel, HDPE** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013 Corrugated PE, smooth interior
3.8	669	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 7S: DA 1B



Summary for Subcatchment 8S: DA 2A

[47] Hint: Peak is 142% of capacity of segment #3

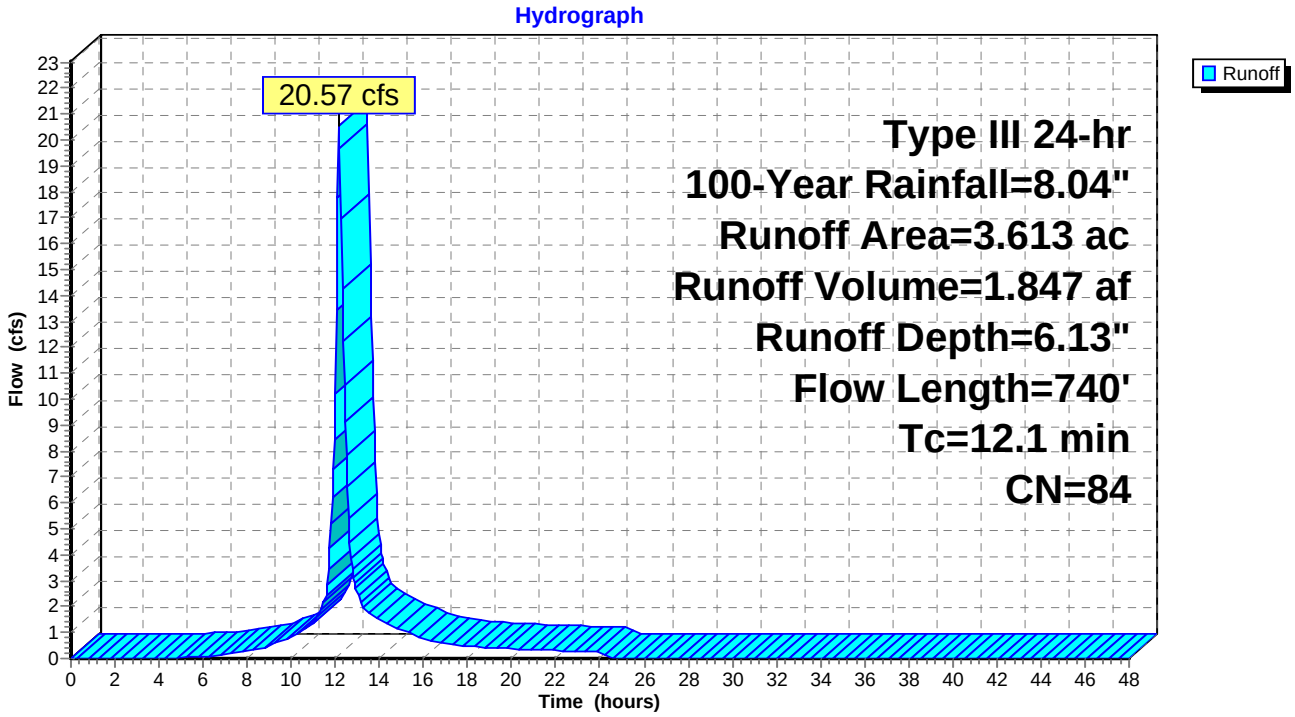
Runoff = 20.57 cfs @ 12.16 hrs, Volume= 1.847 af, Depth= 6.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.04"

Area (ac)	CN	Description
1.953	98	Paved parking, HSG B
0.152	98	Roofs, HSG B
0.394	61	>75% Grass cover, Good, HSG B
0.054	55	Woods, Good, HSG B
0.930	61	>75% Grass cover, Good, HSG B
0.130	98	Paved parking, HSG B
3.613	84	Weighted Average
1.378		38.14% Pervious Area
2.235		61.86% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0650	0.19		**Sheet Flow, Lawn** Grass: Dense n= 0.240 P2= 3.37"
3.3	558	0.0191	2.81		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
0.1	82	0.0500	11.77	14.44	**Pipe Channel, Discharge** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
12.1	740	Total			

Subcatchment 8S: DA 2A



Summary for Subcatchment 9S: DA 2B

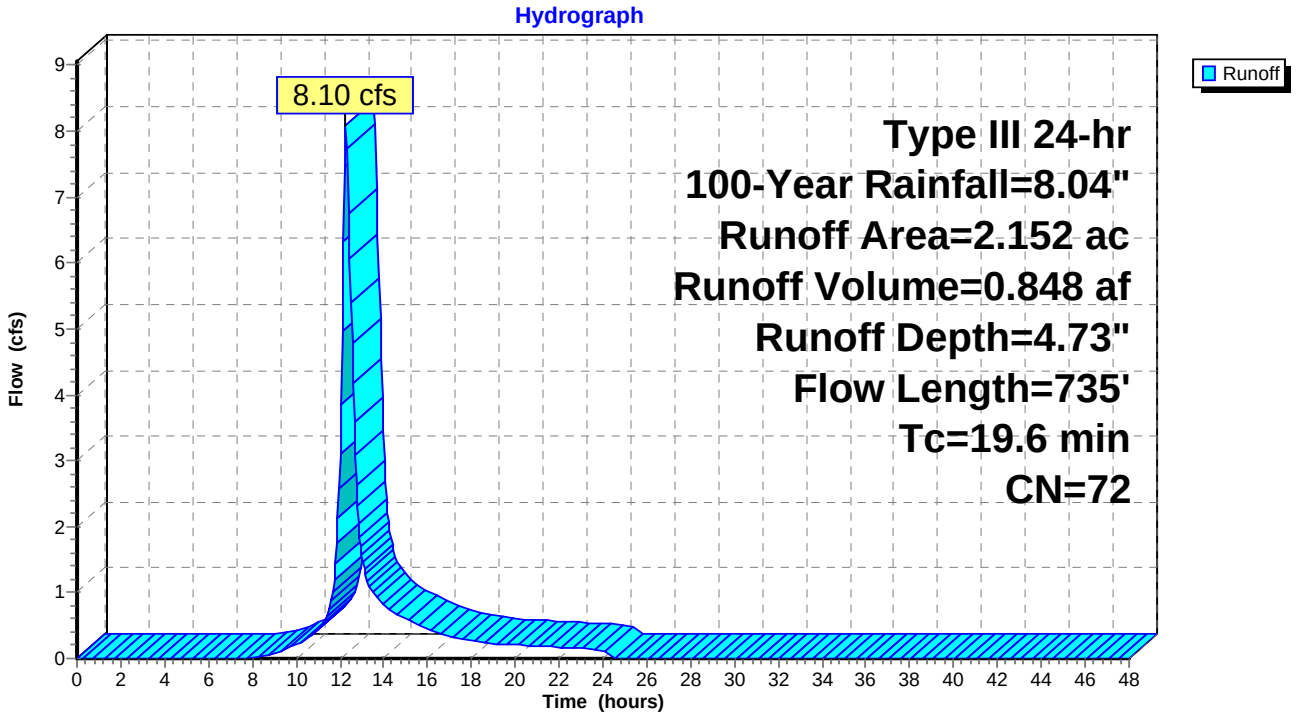
Runoff = 8.10 cfs @ 12.27 hrs, Volume= 0.848 af, Depth= 4.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.04"

Area (ac)	CN	Description
0.661	98	Paved parking, HSG B
0.746	55	Woods, Good, HSG B
0.669	61	>75% Grass cover, Good, HSG B
0.076	98	Water Surface, 0% imp, HSG B
2.152	72	Weighted Average
1.491		69.28% Pervious Area
0.661		30.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.1	100	0.0450	0.11		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
2.1	100	0.0250	0.79		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.2	38	0.3333	4.04		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
1.8	314	0.0200	2.87		**Shallow Concentrated Flow, Gutter** Paved Kv= 20.3 fps
0.2	108	0.0200	7.44	9.14	**Pipe Channel, Pipe** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013 Corrugated PE, smooth interior
0.2	75		5.67		**Lake or Reservoir,** Mean Depth= 1.00'
19.6	735	Total			

Subcatchment 9S: DA 2B



Summary for Subcatchment 11S: DA 1C

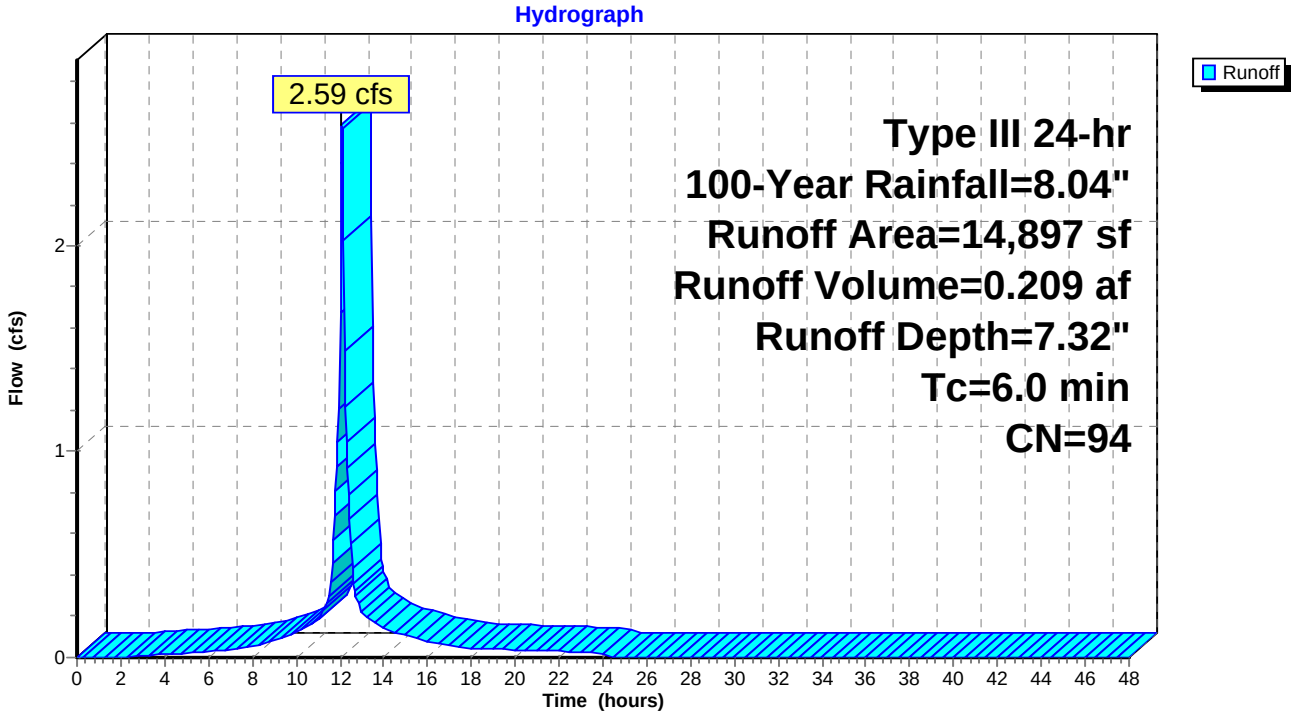
Runoff = 2.59 cfs @ 12.09 hrs, Volume= 0.209 af, Depth= 7.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.04"

Area (sf)	CN	Description
12,458	98	Paved parking, HSG C
2,439	74	>75% Grass cover, Good, HSG C
14,897	94	Weighted Average
2,439		16.37% Pervious Area
12,458		83.63% Impervious Area

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

Subcatchment 11S: DA 1C



Summary for Subcatchment 12S: DA 1D

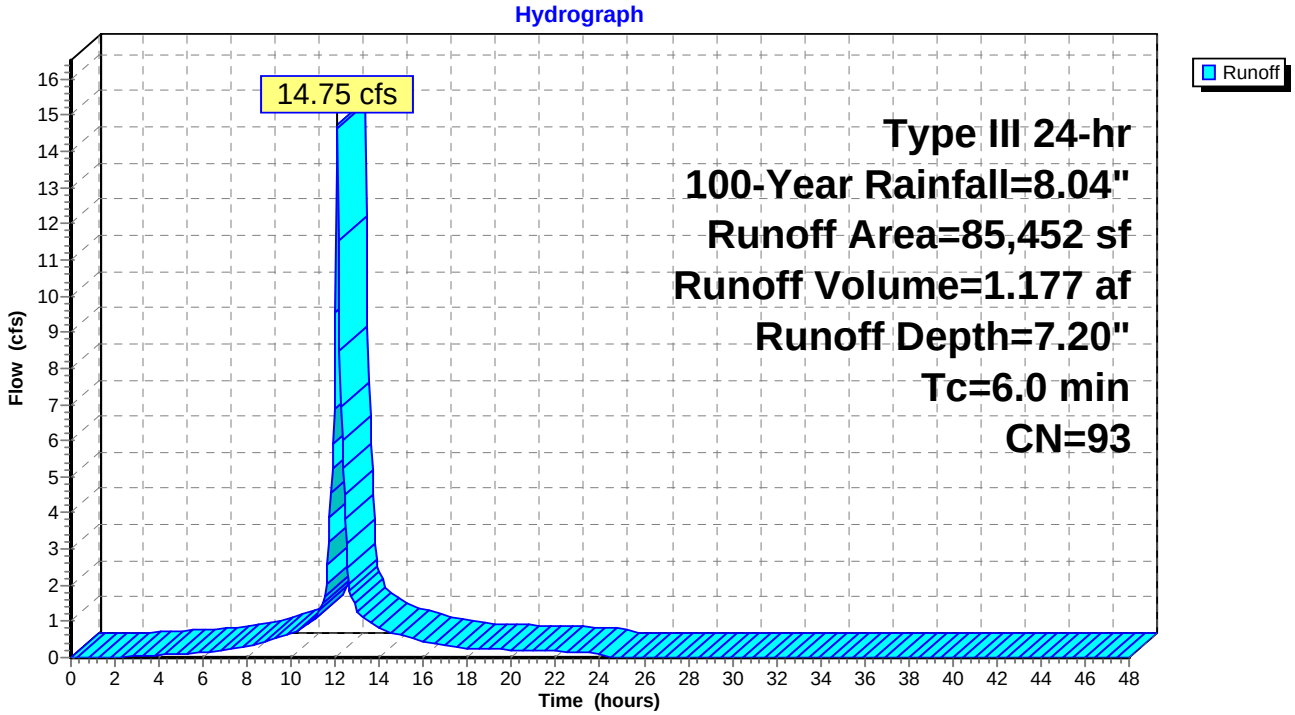
Runoff = 14.75 cfs @ 12.09 hrs, Volume= 1.177 af, Depth= 7.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.04"

Area (sf)	CN	Description
55,278	98	Paved parking, HSG C
6,098	98	Water Surface, 0% imp, HSG C
18,687	74	>75% Grass cover, Good, HSG C
5,389	98	Paved parking, HSG C
85,452	93	Weighted Average
24,785		29.00% Pervious Area
60,667		71.00% Impervious Area

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

Subcatchment 12S: DA 1D



Summary for Subcatchment 15S: DA 2E

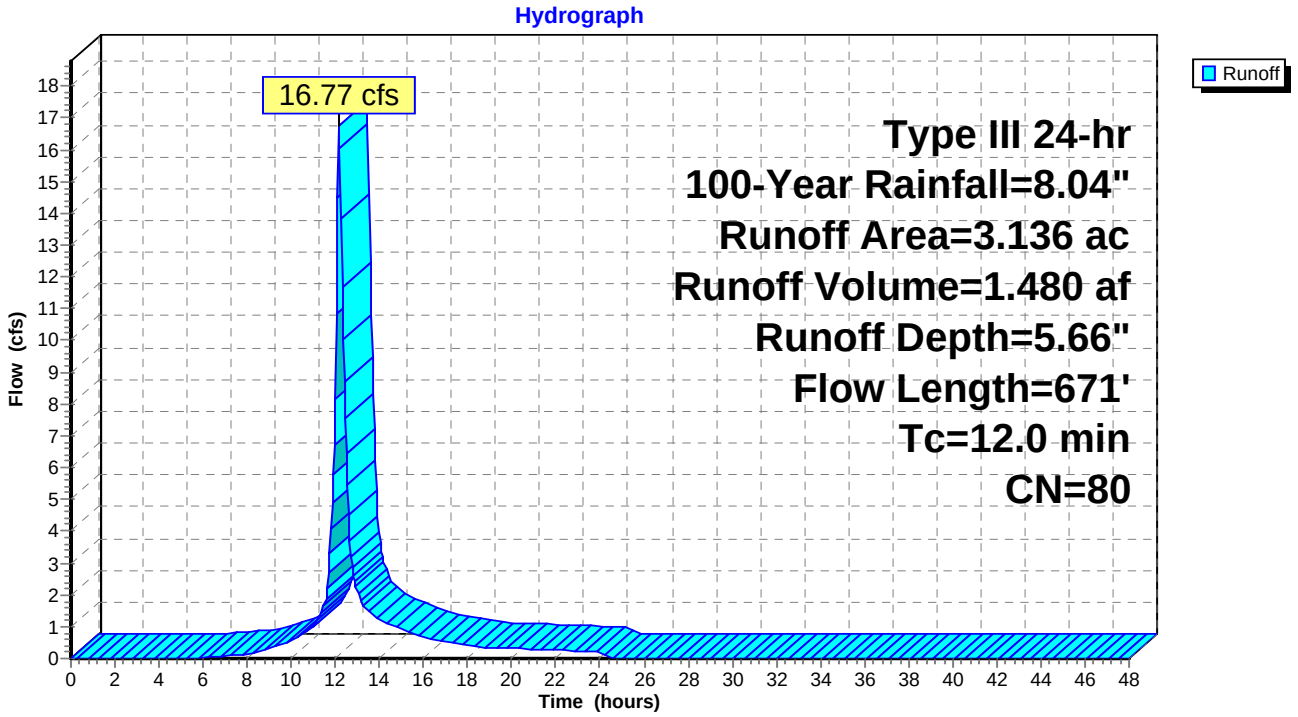
Runoff = 16.77 cfs @ 12.16 hrs, Volume= 1.480 af, Depth= 5.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.04"

	Area (ac)	CN	Description
*	0.985	98	Paved parking, HSG C, South
*	0.455	74	>75% Grass cover, Good, HSG C, South
	1.030	70	Woods, Good, HSG C
	0.666	74	>75% Grass cover, Good, HSG C
	3.136	80	Weighted Average
	2.151		68.59% Pervious Area
	0.985		31.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0600	0.11		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
3.3	417	0.1799	2.12		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.3	40	0.1000	2.21		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.7	164	0.0421	4.17		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
12.0	671	Total			

Subcatchment 15S: DA 2E



Summary for Subcatchment 16S: DA 2G

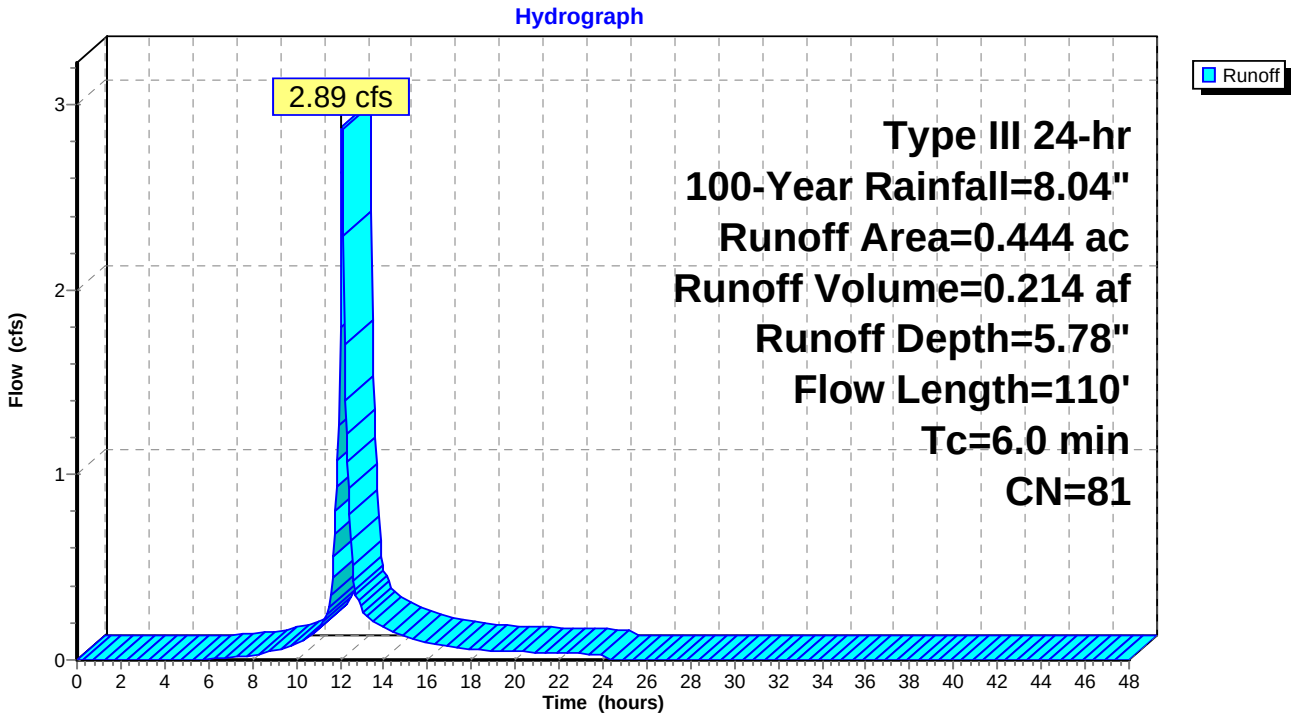
Runoff = 2.89 cfs @ 12.09 hrs, Volume= 0.214 af, Depth= 5.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.04"

Area (ac)	CN	Description
0.103	98	Water Surface, 0% imp, HSG C
0.017	80	>75% Grass cover, Good, HSG D
0.229	74	>75% Grass cover, Good, HSG C
0.079	80	>75% Grass cover, Good, HSG D
0.016	74	>75% Grass cover, Good, HSG C
0.444	81	Weighted Average
0.444		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	50	0.0500	0.15		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.2	60	0.3500	4.14		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
5.7	110	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 16S: DA 2G



Summary for Subcatchment 17S: DA 2I

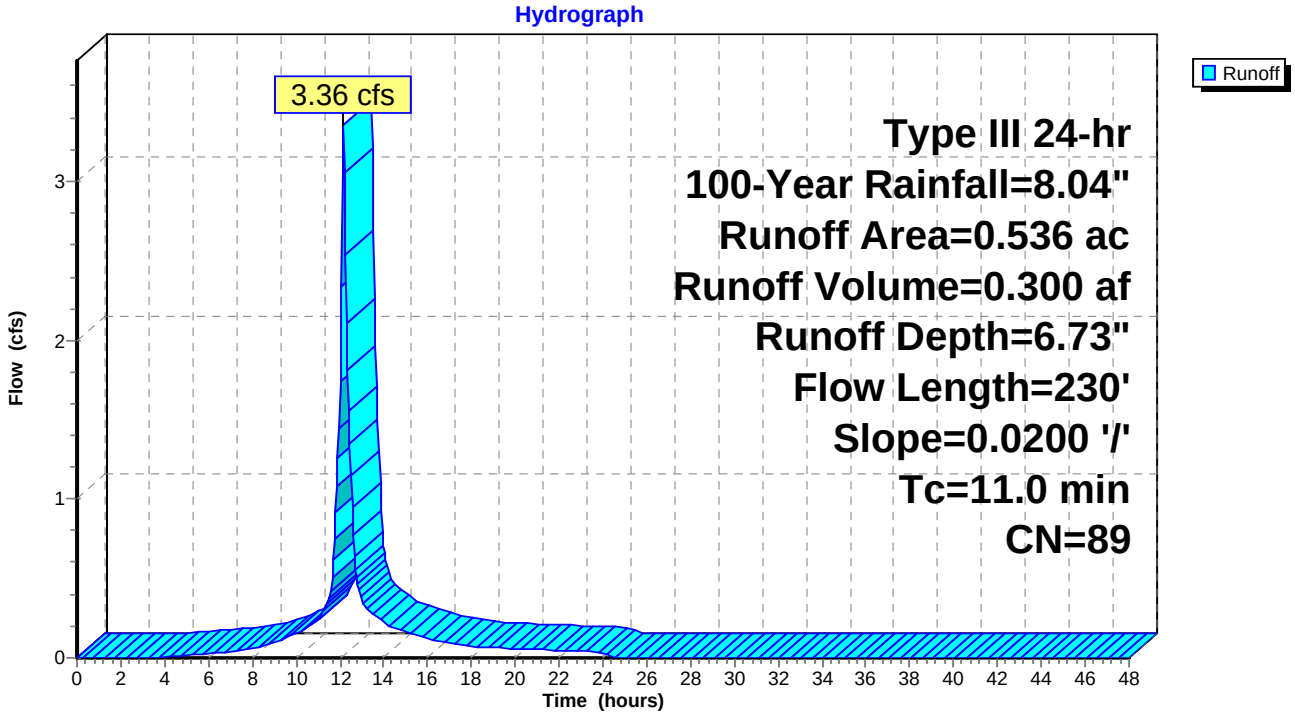
Runoff = 3.36 cfs @ 12.15 hrs, Volume= 0.300 af, Depth= 6.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.04"

	Area (ac)	CN	Description
*	0.344	98	Paved parking, HSG C, North
*	0.192	74	>75% Grass cover, Good, HSG C, North
	0.536	89	Weighted Average
	0.192		35.82% Pervious Area
	0.344		64.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0200	0.10		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
3.0	180	0.0200	0.99		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
11.0	230	Total			

Subcatchment 17S: DA 2I



Summary for Subcatchment 21S: DA 2F

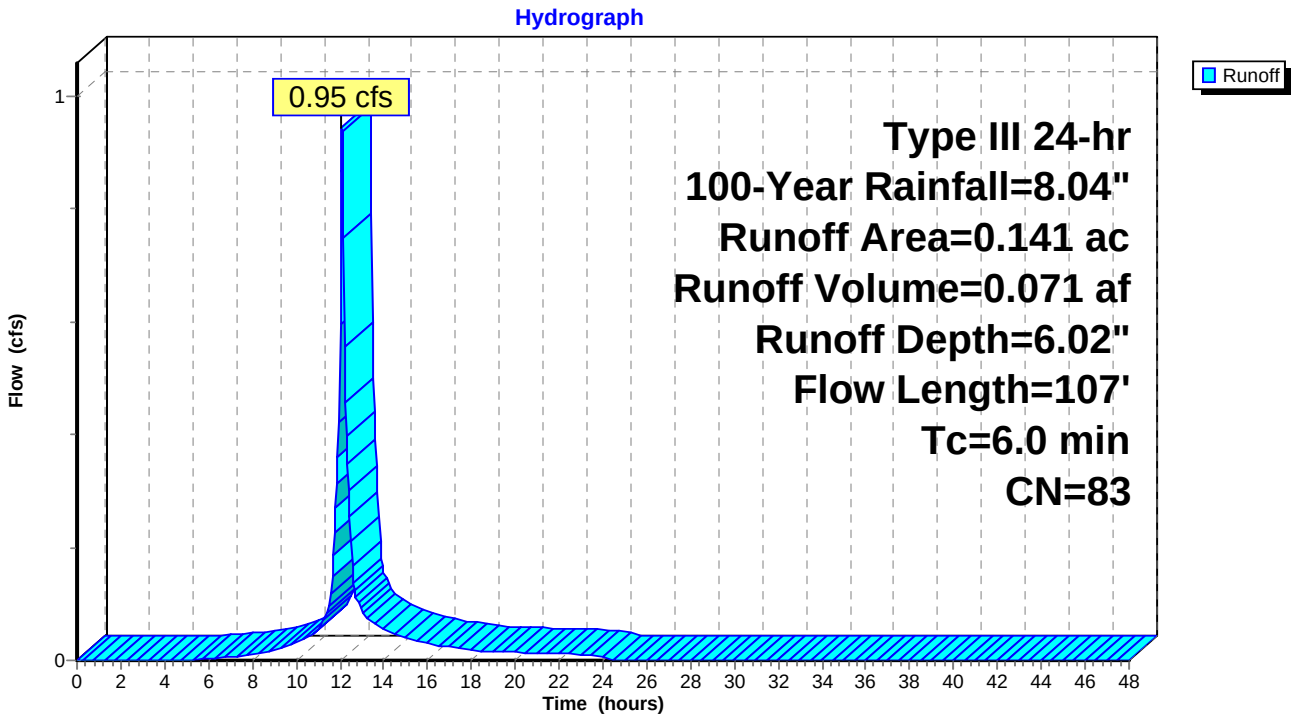
Runoff = 0.95 cfs @ 12.09 hrs, Volume= 0.071 af, Depth= 6.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.04"

Area (ac)	CN	Description
0.051	98	Water Surface, 0% imp, HSG C
0.090	74	>75% Grass cover, Good, HSG C
0.141	83	Weighted Average
0.141		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.3	57	0.1754	2.93		**Shallow Concentrated Flow, Woods** Short Grass Pasture Kv= 7.0 fps
4.5	107	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 21S: DA 2F



Summary for Subcatchment 22S: DA 2H

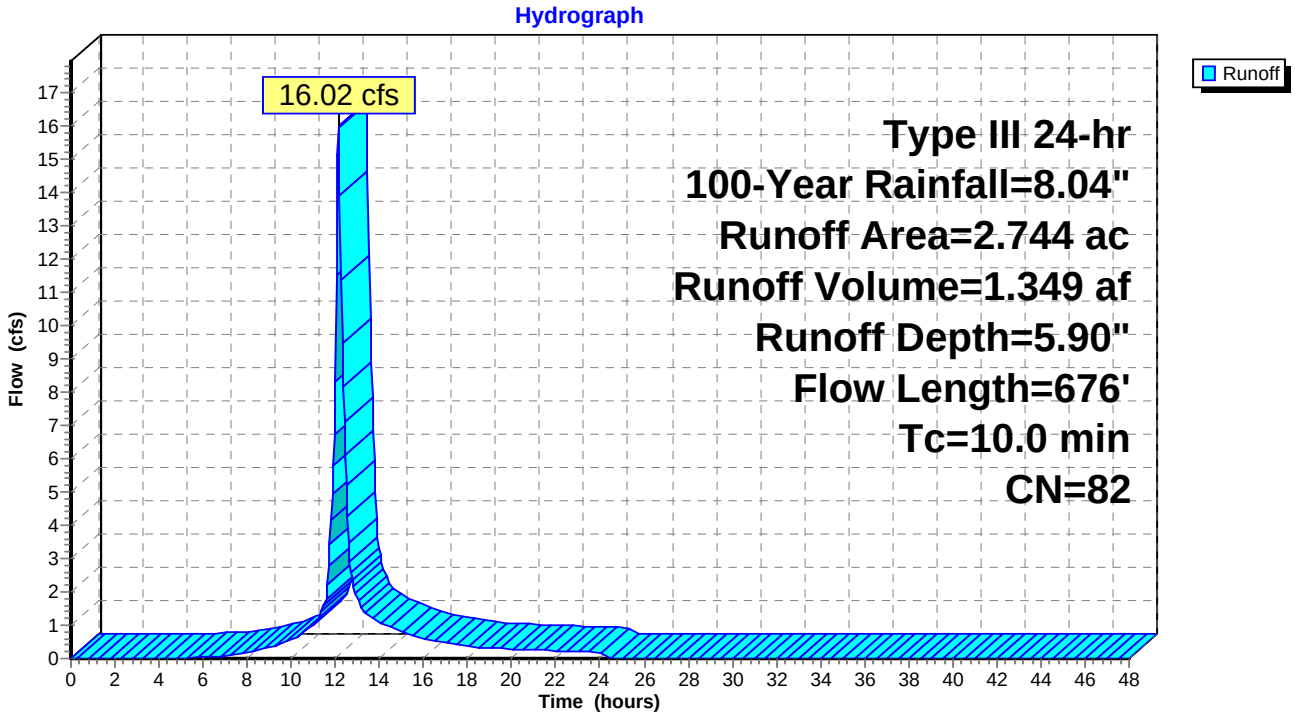
Runoff = 16.02 cfs @ 12.14 hrs, Volume= 1.349 af, Depth= 5.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.04"

	Area (ac)	CN	Description
*	0.431	98	Paved parking, HSG C, North
*	0.010	80	>75% Grass cover, Good, HSG D, North
*	0.313	74	>75% Grass cover, Good, HSG C, North
*	0.550	98	Paved parking, HSG C, South
*	0.356	74	>75% Grass cover, Good, HSG C, South
	0.748	70	Woods, Good, HSG C
	0.336	74	>75% Grass cover, Good, HSG C
	2.744	82	Weighted Average
	1.763		64.25% Pervious Area
	0.981		35.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	50	0.1000	0.13		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
1.7	190	0.1316	1.81		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.3	81	0.3333	4.04		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
1.7	355	0.0310	3.57		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
10.0	676	Total			

Subcatchment 22S: DA 2H



Summary for Pond 2P: 30" RCP

Inflow Area =	55.918 ac,	25.55% Impervious,	Inflow Depth >	4.91"	for 100-Year event
Inflow =	28.54 cfs @	12.18 hrs,	Volume=	22.886 af	
Outflow =	28.54 cfs @	12.18 hrs,	Volume=	22.886 af,	Atten= 0%, Lag= 0.0 min
Primary =	28.54 cfs @	12.18 hrs,	Volume=	22.886 af	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

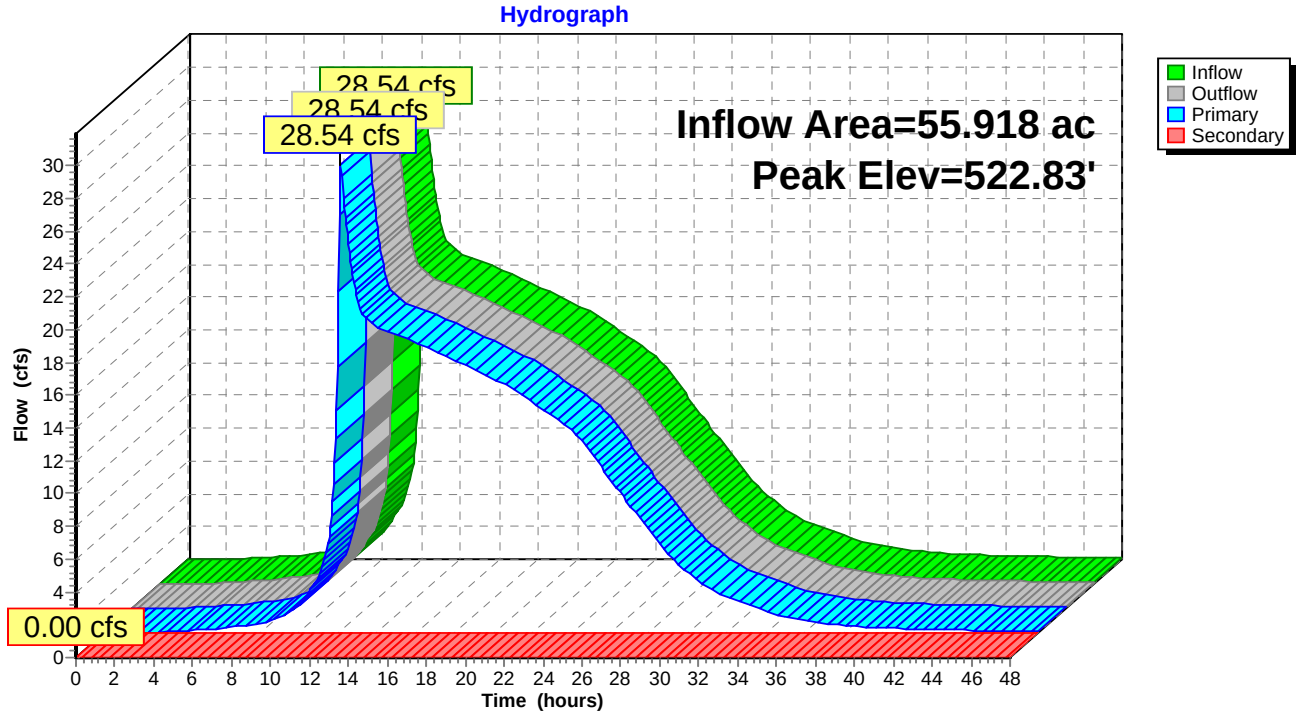
Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 522.83' @ 12.18 hrs
Flood Elev= 527.20'

Device	Routing	Invert	Outlet Devices
#1	Primary	519.92'	**30.0" Round 30" RC** L= 80.0' RCP, rounded edge headwall, Ke= 0.100 Inlet / Outlet Invert= 519.92' / 519.62' S= 0.0037 '/' Cc= 0.900 n= 0.013 Concrete pipe, bends & connections, Flow Area= 4.91 sf
#2	Secondary	527.20'	**30.0' long x 10.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=28.39 cfs @ 12.18 hrs HW=522.81' (Free Discharge)
└**1=30" RC** (Barrel Controls 28.39 cfs @ 6.27 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=519.92' (Free Discharge)
└**2=Overflow** (Controls 0.00 cfs)

Pond 2P: 30" RCP



Summary for Pond 4P: Pond

Inflow Area = 51.896 ac, 21.64% Impervious, Inflow Depth = 4.78" for 100-Year event
Inflow = 160.05 cfs @ 12.29 hrs, Volume= 20.670 af
Outflow = 16.77 cfs @ 14.59 hrs, Volume= 20.513 af, Atten= 90%, Lag= 137.8 min
Primary = 16.77 cfs @ 14.59 hrs, Volume= 20.513 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 528.43' @ 14.59 hrs Surf.Area= 3.030 ac Storage= 11.338 af

Plug-Flow detention time= 380.6 min calculated for 20.492 af (99% of inflow)
Center-of-Mass det. time= 376.8 min (1,214.1 - 837.3)

Volume	Invert	Avail.Storage	Storage Description
#1	523.45'	16.273 af	**Pond Storage (Irregular)**Listed below

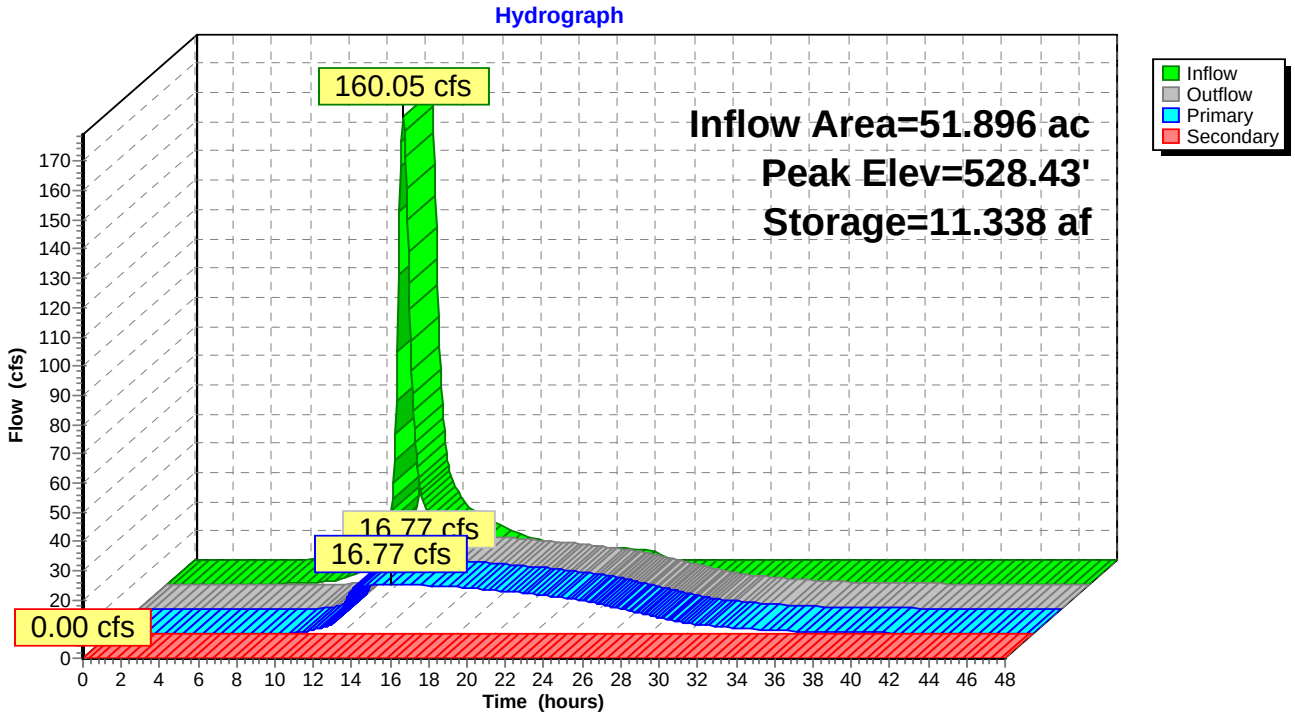
Elevation (feet)	Surf.Area (acres)	Perim. (feet)	Inc.Store (acre-feet)	Cum.Store (acre-feet)	Wet.Area (acres)
523.45	0.636	1,389.1	0.000	0.000	0.636
524.00	1.723	1,270.7	0.624	0.624	1.212
526.00	2.359	1,494.7	4.065	4.690	2.345
528.00	2.936	1,638.1	5.284	9.974	3.169
530.00	3.368	1,700.4	6.299	16.273	3.556

Device	Routing	Invert	Outlet Devices
#1	Primary	520.91'	**30.0" Round 30" HDPE** L= 110.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 520.91' / 520.64' S= 0.0024 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#2	Device 1	521.46'	**30.0" Round 30" HDPE** L= 86.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 521.46' / 520.91' S= 0.0063 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 4.91 sf
#3	Device 2	521.41'	**24.0" Round 24" HDPE** L= 157.1' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 521.41' / 521.40' S= 0.0001 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#4	Device 3	523.45'	**18.0" Round 18" HDPE** L= 117.9' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 523.45' / 521.82' S= 0.0138 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#5	Secondary	529.90'	**50.0' long x 25.0' breadth Overflow** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=16.77 cfs @ 14.59 hrs HW=528.43' TW=522.04' (Dynamic Tailwater)
└─**1=30" HDPE** (Passes 16.77 cfs of 57.03 cfs potential flow)
└─**2=30" HDPE** (Passes 16.77 cfs of 56.54 cfs potential flow)
└─**3=24" HDPE** (Passes 16.77 cfs of 30.42 cfs potential flow)
└─**4=18" HDPE** (Barrel Controls 16.77 cfs @ 9.49 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=523.45' TW=519.92' (Dynamic Tailwater)
└─**5=Overflow** (Controls 0.00 cfs)

Pond 4P: Pond



Summary for Pond 10P: Apartment Phase 1 Detention Basin

Inflow Area =	2.152 ac, 30.72% Impervious, Inflow Depth = 4.73" for 100-Year event				
Inflow =	8.10 cfs @	12.27 hrs,	Volume=	0.848 af	
Outflow =	5.74 cfs @	12.47 hrs,	Volume=	0.848 af,	Atten= 29%, Lag= 12.3 min
Primary =	5.74 cfs @	12.47 hrs,	Volume=	0.848 af	
Secondary =	0.00 cfs @	0.00 hrs,	Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 538.80' @ 12.47 hrs Surf.Area= 2,407 sf Storage= 3,557 cf

Plug-Flow detention time= 4.8 min calculated for 0.847 af (100% of inflow)
Center-of-Mass det. time= 4.9 min (837.8 - 833.0)

Volume	Invert	Avail.Storage	Storage Description
#1	536.00'	7,026 cf	**Detention Basin (Irregular)**Listed below (Recalc)

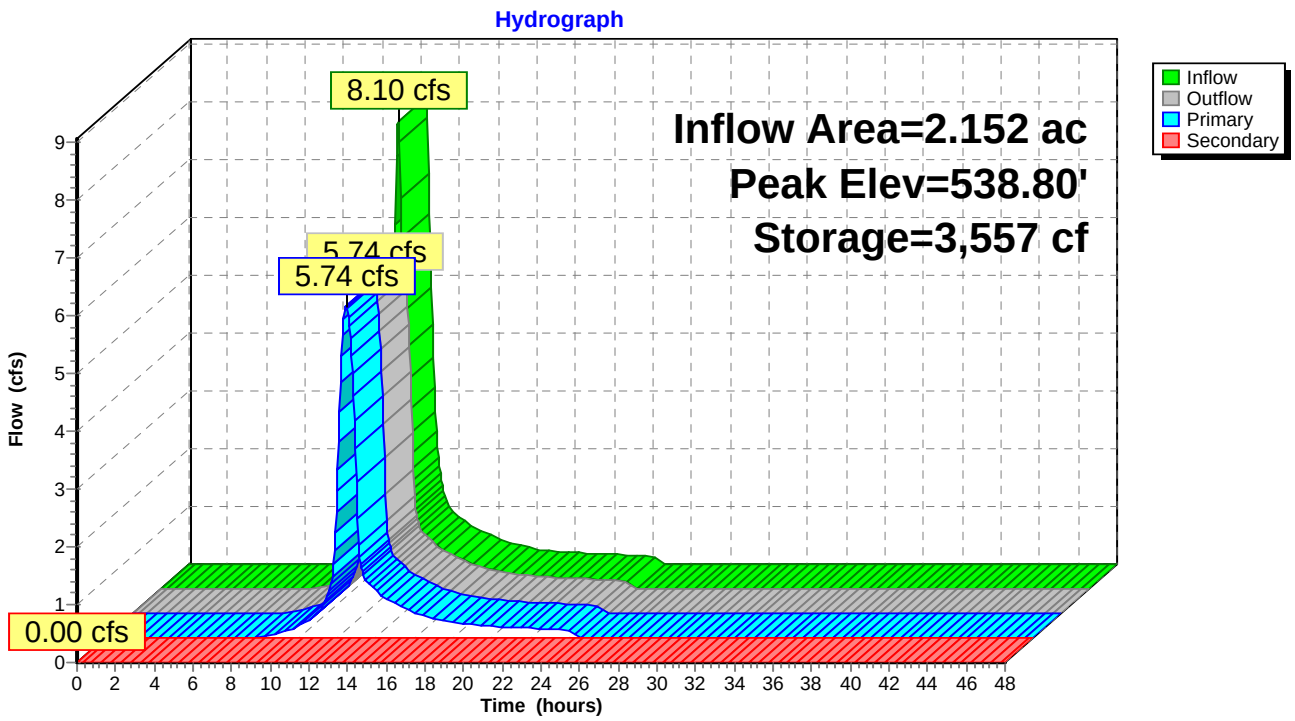
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
536.00	100	40.0	0	0	100
536.50	467	110.5	131	131	945
537.60	1,559	173.6	1,056	1,186	2,380
540.00	3,429	242.5	5,840	7,026	4,716

Device	Routing	Invert	Outlet Devices
#1	Primary	536.00'	**12.0" Round Culvert** L= 75.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 536.00' / 534.50' S= 0.0200 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.79 sf
#2	Secondary	539.50'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=5.73 cfs @ 12.47 hrs HW=538.80' TW=527.08' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 5.73 cfs @ 7.30 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=536.00' TW=523.45' (Dynamic Tailwater)
└─**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 10P: Apartment Phase 1 Detention Basin



Summary for Pond 15P: Apartments Phase II Stormwater Basin 2

Inflow Area = 3.277 ac, 30.06% Impervious, Inflow Depth = 5.68" for 100-Year event
Inflow = 17.47 cfs @ 12.16 hrs, Volume= 1.550 af
Outflow = 16.96 cfs @ 12.18 hrs, Volume= 1.471 af, Atten= 3%, Lag= 1.4 min
Primary = 16.96 cfs @ 12.18 hrs, Volume= 1.471 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 568.37' @ 12.19 hrs Surf.Area= 2,459 sf Storage= 6,342 cf

Plug-Flow detention time= 48.3 min calculated for 1.470 af (95% of inflow)
Center-of-Mass det. time= 20.4 min (828.1 - 807.7)

Volume	Invert	Avail.Storage	Storage Description
#1	562.00'	6 cf	**3.00'W x 8.00'L x 2.50'H Sand Underdrain** 60 cf Overall x 10.0% Voids
#2	564.50'	10,719 cf	**Stormwater Basin (Irregular)**Listed below
		10,725 cf	Total Available Storage

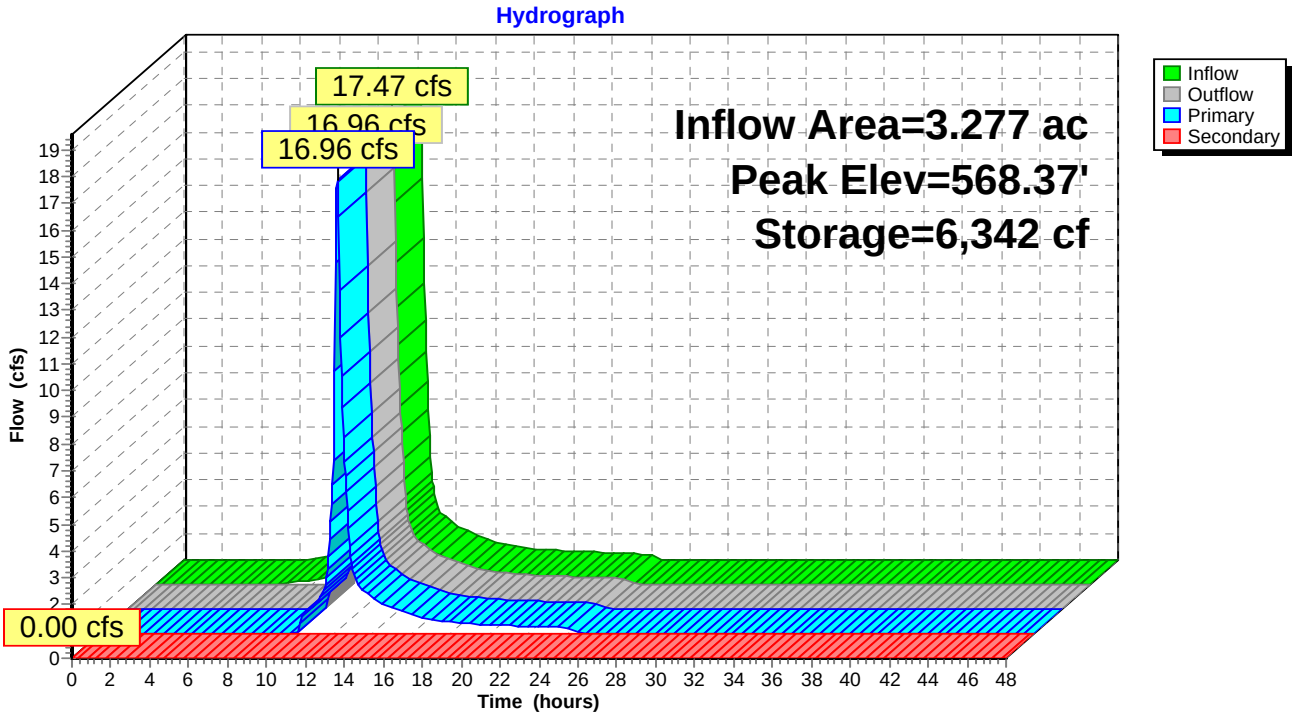
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
564.50	4	8.2	0	0	4
564.75	257	68.5	24	24	372
565.00	1,193	160.0	167	191	2,036
566.00	1,533	172.5	1,359	1,551	2,406
568.00	2,277	197.6	3,786	5,336	3,233
570.00	3,128	222.7	5,383	10,719	4,172

Device	Routing	Invert	Outlet Devices
#1	Primary	562.00'	**18.0" Round 18" HDPE** L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 562.00' / 561.60' S= 0.0059 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	567.00'	**36.0" W x 6.0" H Vert. 36" x 6" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	568.00'	**1.0" x 3.7" Horiz. Top of Frame X 39.00 columns** X 9 rows C= 0.600 in 48.0" x 36.0" Grate (75% open area) Limited to weir flow at low heads
#4	Secondary	569.00'	**8.0' long x 8.0' breadth Rip Rap Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#5	Device 1	562.00'	**0.500 in/hr Sand Underdrain over Horizontal area from 562.00' - 564.50'** Excluded Horizontal area = 24 sf Phase-In= 0.01'

Primary OutFlow Max=16.80 cfs @ 12.18 hrs HW=568.36' TW=564.47' (Dynamic Tailwater)
- **1=18" HDPE** (Inlet Controls 16.80 cfs @ 9.51 fps)
  - **2=36" x 6" Orifice** (Passes < 7.60 cfs potential flow)
  - **3=Top of Frame** (Passes < 10.03 cfs potential flow)
  - **5=Sand Underdrain** (Passes < 0.00 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=562.00' TW=523.45' (Dynamic Tailwater)
- **4=Rip Rap Spillway** (Controls 0.00 cfs)

Pond 15P: Apartments Phase II Stormwater Basin 2



Summary for Pond 16P: Water Quality Basin

Inflow Area = 1.962 ac, 71.00% Impervious, Inflow Depth = 7.20" for 100-Year event
Inflow = 14.75 cfs @ 12.09 hrs, Volume= 1.177 af
Outflow = 5.85 cfs @ 12.31 hrs, Volume= 1.177 af, Atten= 60%, Lag= 13.5 min
Primary = 5.85 cfs @ 12.31 hrs, Volume= 1.177 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 528.52' @ 12.31 hrs Surf.Area= 6,821 sf Storage= 17,229 cf

Plug-Flow detention time= 110.1 min calculated for 1.176 af (100% of inflow)
Center-of-Mass det. time= 110.1 min (875.3 - 765.2)

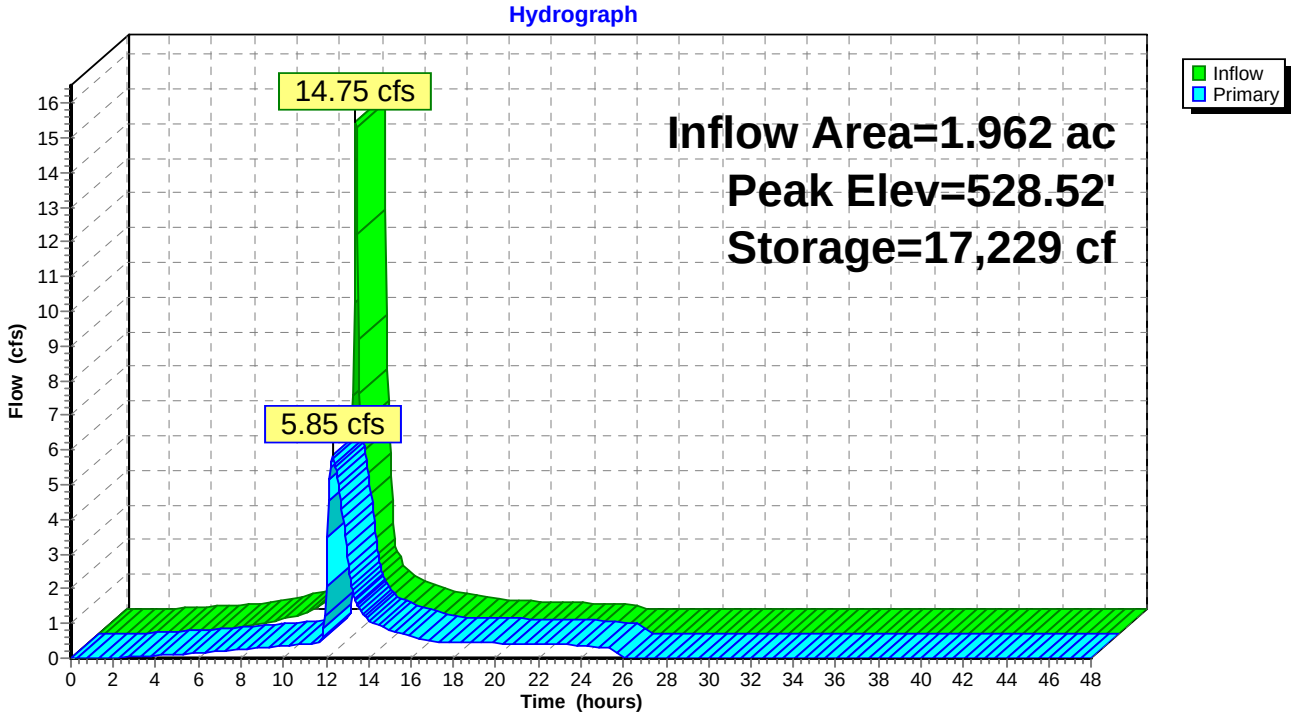
Volume	Invert	Avail.Storage	Storage Description
#1	523.75'	26,415 cf	**Water Quality swale (Irregular)**Listed below (Recalc)
#2	522.25'	5 cf	**3.00'W x 3.00'L x 1.50'H Underdrain** 14 cf Overall x 40.0% Voids
		26,420 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
523.75	9	12.0	0	0	9
524.00	258	63.2	26	26	316
524.25	528	108.8	96	123	940
524.50	766	159.7	161	283	2,028
524.75	1,105	211.6	233	516	3,562
525.00	1,523	263.2	327	843	5,513
525.25	2,026	316.2	442	1,285	7,958
525.50	2,529	368.0	568	1,853	10,779
525.75	3,267	420.8	723	2,576	14,095
526.00	4,119	481.0	921	3,497	18,417
528.00	6,268	535.7	10,312	13,809	22,957
529.75	8,181	557.7	12,606	26,415	25,097

Device	Routing	Invert	Outlet Devices
#1	Primary	522.75'	**24.0" Round 24" HDPE** L= 75.0' CPP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 522.75' / 521.75' S= 0.0133 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf
#2	Device 1	523.00'	**3.0" Vert. Underdrain** C= 0.600 Limited to weir flow at low heads
#3	Device 1	526.75'	**6.0" W x 6.0" H Vert. 6" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	527.25'	**18.0" W x 6.0" H Vert. 18x6 Orifice** C= 0.600 Limited to weir flow at low heads
#5	Device 1	528.50'	**20.0' long x 0.5' breadth Top of Frame** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Primary OutFlow Max=5.83 cfs @ 12.31 hrs HW=528.52' TW=522.64' (Dynamic Tailwater)
- **1=24" HDPE** (Passes 5.83 cfs of 33.04 cfs potential flow)
  - **2=Underdrain** (Orifice Controls 0.55 cfs @ 11.18 fps)
  - **3=6" Orifice** (Orifice Controls 1.48 cfs @ 5.93 fps)
  - **4=18x6 Orifice** (Orifice Controls 3.64 cfs @ 4.85 fps)
  - **5=Top of Frame** (Weir Controls 0.16 cfs @ 0.40 fps)

Pond 16P: Water Quality Basin



Summary for Pond 20P: Apartments Phase II Stormwater Basin 1

Inflow Area = 7.001 ac, 33.00% Impervious, Inflow Depth = 5.72" for 100-Year event
Inflow = 38.23 cfs @ 12.15 hrs, Volume= 3.334 af
Outflow = 23.61 cfs @ 12.33 hrs, Volume= 3.144 af, Atten= 38%, Lag= 10.8 min
Primary = 21.13 cfs @ 12.33 hrs, Volume= 3.112 af
Secondary = 2.48 cfs @ 12.33 hrs, Volume= 0.032 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 560.00' @ 12.33 hrs Surf.Area= 8,336 sf Storage= 37,060 cf

Plug-Flow detention time= 82.0 min calculated for 3.141 af (94% of inflow)
Center-of-Mass det. time= 51.9 min (863.5 - 811.6)

Volume	Invert	Avail.Storage	Storage Description
#1	551.00'	4 cf	**3.00'W x 8.00'L x 1.75'H Sand Underdrain** 42 cf Overall x 10.0% Voids
#2	552.75'	40,883 cf	**Stormwater Basin (Irregular)**Listed below (Recalc)
#3	556.00'	424 cf	**36.0" Round Pipe Storage**-Impervious L= 60.0' S= 0.0083 '/'
		41,312 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
552.75	120	43.3	0	0	120
553.00	865	110.3	109	109	939
553.25	1,552	155.7	298	407	1,901
553.50	2,135	207.8	459	866	3,409
553.75	2,928	261.6	630	1,496	5,419
554.00	3,512	310.5	804	2,300	7,646
555.00	4,145	323.0	3,824	6,124	8,352
556.00	4,804	335.6	4,470	10,595	9,090
557.00	5,490	348.1	5,143	15,738	9,851
558.00	6,569	422.7	6,021	21,759	14,443
559.00	7,426	435.3	6,993	28,752	15,404
560.00	8,310	447.8	7,864	36,616	16,387
560.50	8,761	454.1	4,267	40,883	16,893

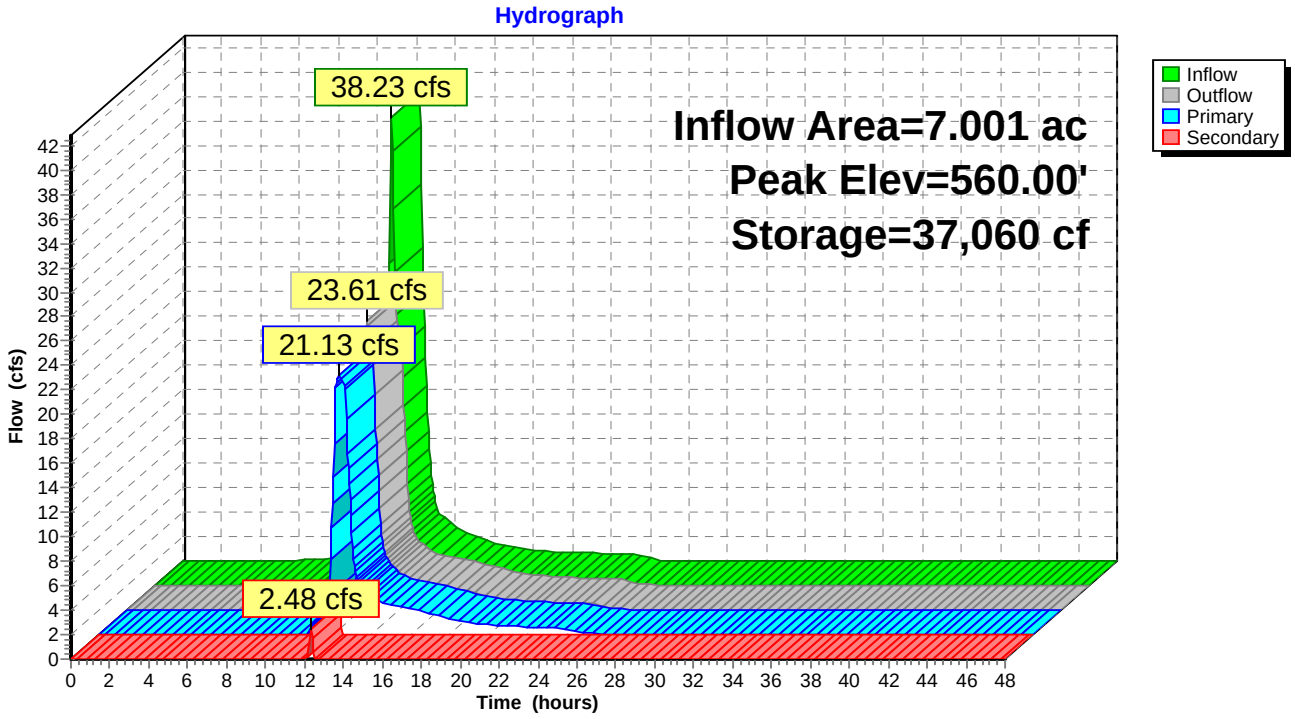
Device	Routing	Invert	Outlet Devices
#1	Primary	551.00'	**18.0" Round 18" HDPE** L= 152.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 551.00' / 549.00' S= 0.0132 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	555.50'	**6.0" Vert. 6" Orifices (2) X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	557.30'	**48.0" W x 7.0" H Vert. 48" x 7" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	558.75'	**1.0" x 3.7" Horiz. Top of Frame X 39.00 columns** X 9 rows C= 0.600 in 48.0" x 36.0" Grate (75% open area) Limited to weir flow at low heads
#5	Secondary	559.75'	**8.0' long x 8.0' breadth Rip Rap Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64
			2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#6	Device 1	551.00'	**0.500 in/hr Sand Underdrain over Horizontal area from 551.00' - 552.75'**
			Excluded Horizontal area = 24 sf Phase-In= 0.01'

Primary OutFlow Max=21.12 cfs @ 12.33 hrs HW=559.99' TW=526.49' (Dynamic Tailwater)
└─**1=18" HDPE** (Barrel Controls 21.12 cfs @ 11.95 fps)
  ├─**2=6" Orifices (2)** (Passes < 3.90 cfs potential flow)
  ├─**3=48" x 7" Orifice** (Passes < 17.41 cfs potential flow)
  ├─**4=Top of Frame** (Passes < 48.45 cfs potential flow)
  └─**6=Sand Underdrain** (Passes < 0.00 cfs potential flow)

Secondary OutFlow Max=2.38 cfs @ 12.33 hrs HW=559.99' TW=526.49' (Dynamic Tailwater)
└─**5=Rip Rap Spillway** (Weir Controls 2.38 cfs @ 1.21 fps)

Pond 20P: Apartments Phase II Stormwater Basin 1



Summary for Pond 21P: Drain

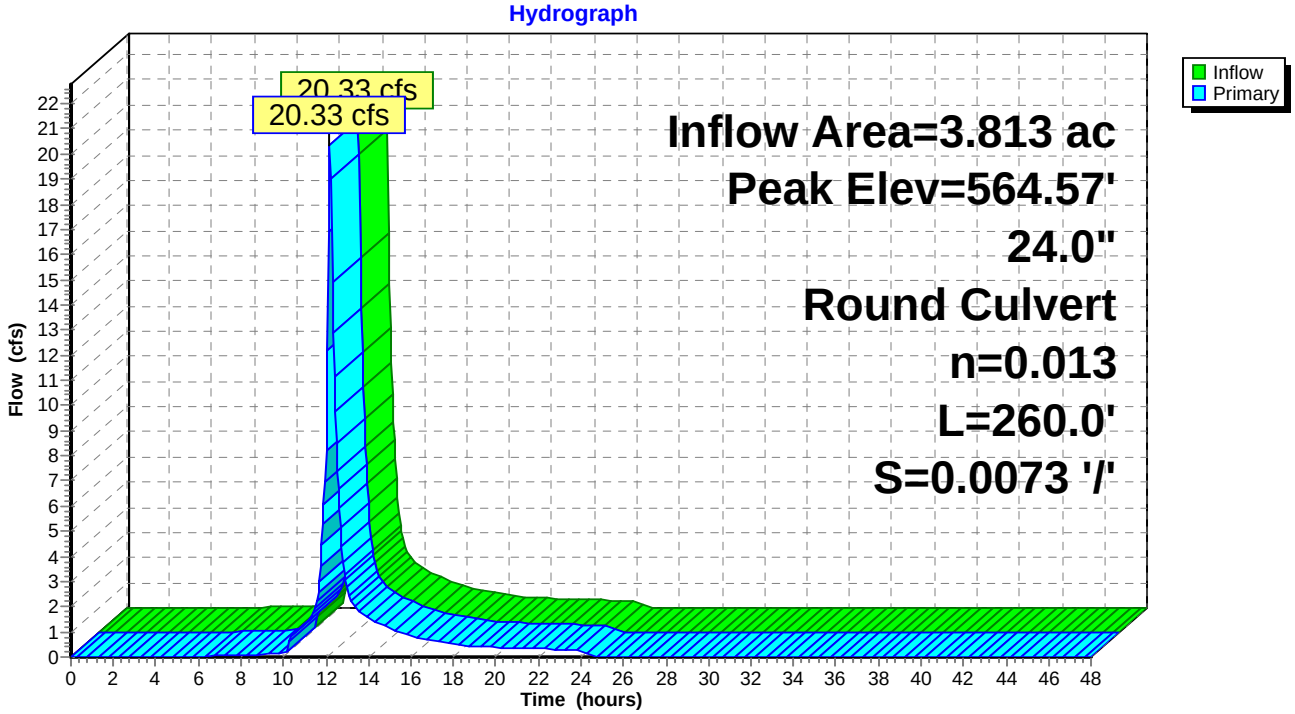
Inflow Area = 3.813 ac, 34.85% Impervious, Inflow Depth = 5.58" for 100-Year event
Inflow = 20.33 cfs @ 12.17 hrs, Volume= 1.772 af
Outflow = 20.33 cfs @ 12.17 hrs, Volume= 1.772 af, Atten= 0%, Lag= 0.0 min
Primary = 20.33 cfs @ 12.17 hrs, Volume= 1.772 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 564.57' @ 12.17 hrs
Flood Elev= 565.37'

Device	Routing	Invert	Outlet Devices
#1	Primary	561.40'	**24.0" Round Culvert** L= 260.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 561.40' / 559.50' S= 0.0073 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=19.95 cfs @ 12.17 hrs HW=564.47' TW=559.40' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 19.95 cfs @ 6.35 fps)

Pond 21P: Drain



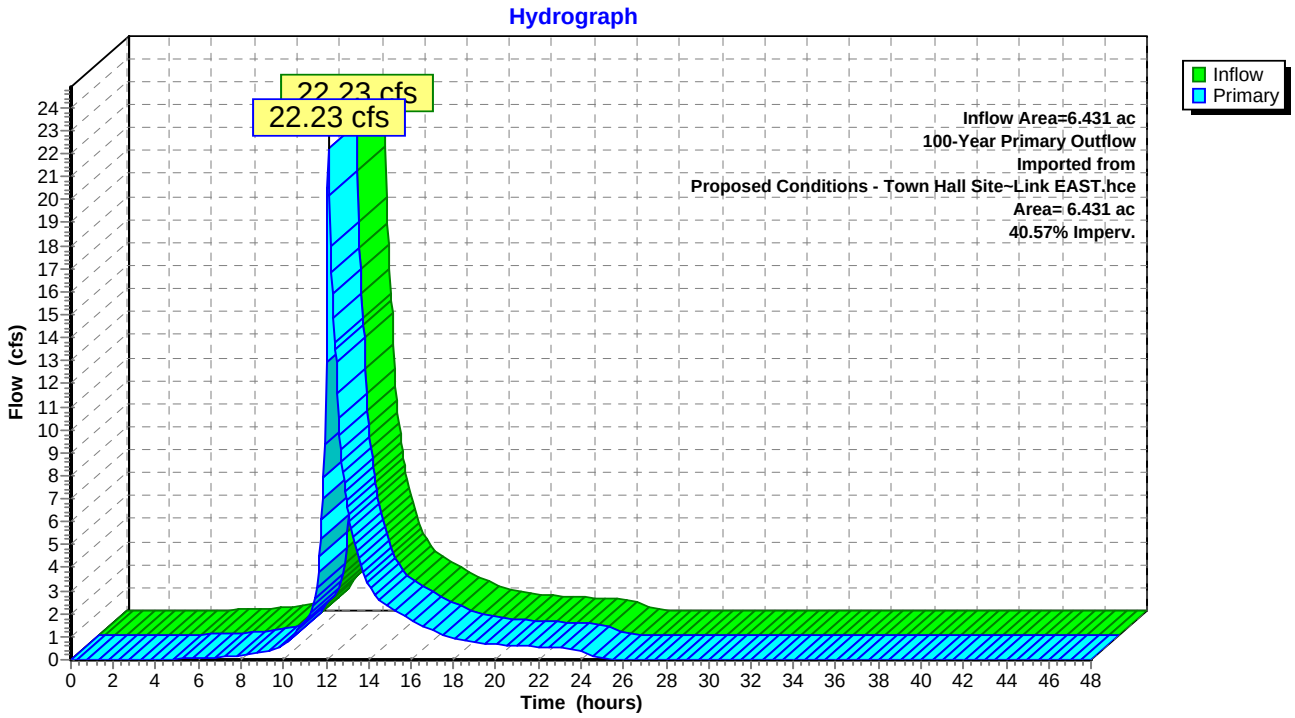
Summary for Link 14L: DA 2D - From Town Hall

Inflow Area = 6.431 ac, 40.57% Impervious, Inflow Depth = 5.40" for 100-Year event
Inflow = 22.23 cfs @ 12.10 hrs, Volume= 2.893 af
Primary = 22.23 cfs @ 12.10 hrs, Volume= 2.893 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

100-Year Primary Outflow Imported from Proposed Conditions - Town Hall Site~Link EAST.hce

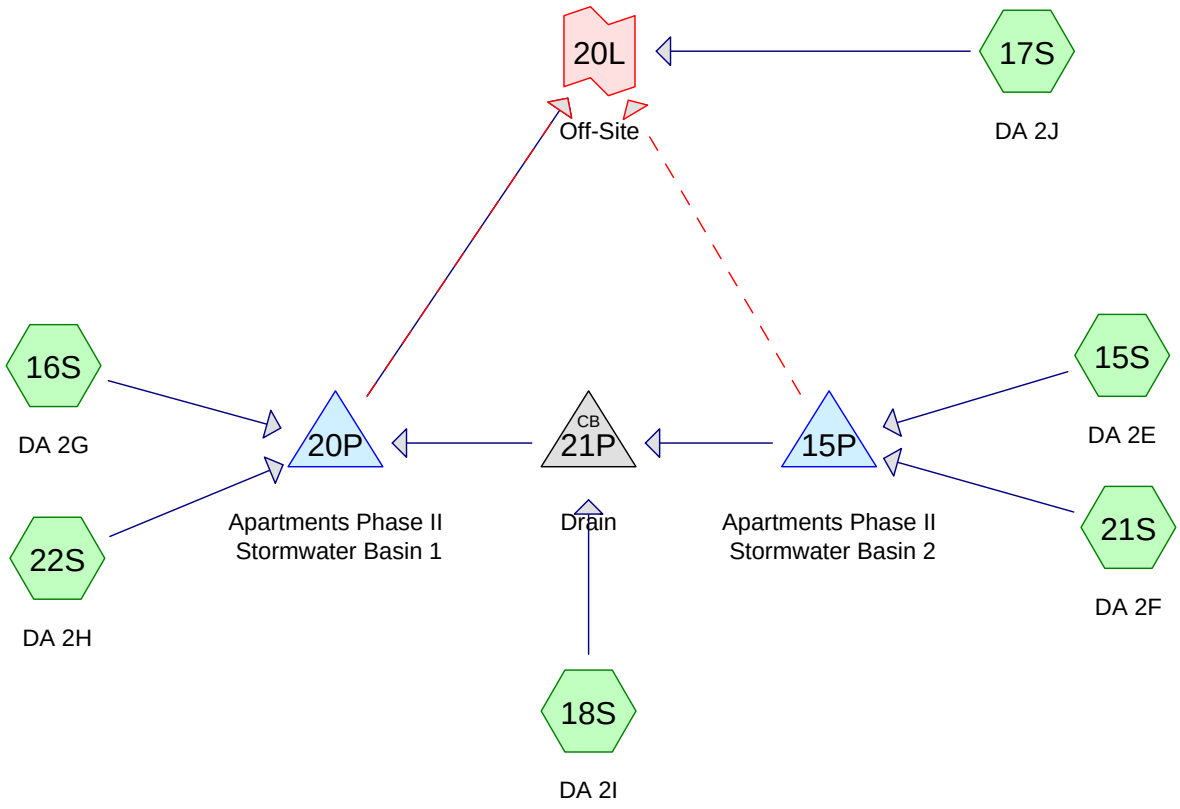
Link 14L: DA 2D - From Town Hall

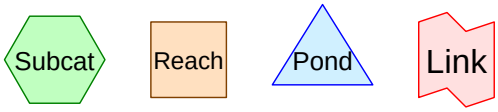


Post-Development Conditions

HydroCAD Results

Apartment Project Area Only





Routing Diagram for Proposed - Apartments Only
Prepared by {enter your company name here}, Printed 12/14/2020
HydroCAD® 10.10-4b s/n 04031 © 2020 HydroCAD Software Solutions LLC

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	2-Year	Type III 24-hr		Default	24.00	1	3.37	2
2	10-Year	Type III 24-hr		Default	24.00	1	5.18	2
3	25-Year	Type III 24-hr		Default	24.00	1	6.30	2
4	50-Year	Type III 24-hr		Default	24.00	1	7.14	2
5	100-Year	Type III 24-hr		Default	24.00	1	8.04	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.078	74	>75% Grass cover, Good, HSG C (15S, 16S, 17S, 21S, 22S)
0.505	74	>75% Grass cover, Good, HSG C, North (18S, 22S)
0.811	74	>75% Grass cover, Good, HSG C, South (15S, 22S)
0.508	80	>75% Grass cover, Good, HSG D (16S, 17S)
0.010	80	>75% Grass cover, Good, HSG D, North (22S)
0.384	98	Paved parking, HSG C (17S)
0.775	98	Paved parking, HSG C, North (18S, 22S)
1.535	98	Paved parking, HSG C, South (15S, 22S)
0.184	98	Two single Family Houses and Paved Driveways (17S)
0.154	98	Water Surface, 0% imp, HSG C (16S, 21S)
2.355	70	Woods, Good, HSG C (15S, 17S, 22S)
9.299	**81**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
8.597	HSG C	15S, 16S, 17S, 18S, 21S, 22S
0.518	HSG D	16S, 17S, 22S
0.184	Other	17S
9.299		**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover
0.000	0.000	3.394	0.518	0.000	3.912	>75% Grass cover, Good
0.000	0.000	2.694	0.000	0.000	2.694	Paved parking
0.000	0.000	0.000	0.000	0.184	0.184	Two single Family Houses and Paved Driveways
0.000	0.000	0.154	0.000	0.000	0.154	Water Surface, 0% imp
0.000	0.000	2.355	0.000	0.000	2.355	Woods, Good
0.000	**0.000**	**8.597**	**0.518**	**0.184**	**9.299**	**TOTAL AREA**

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)
1	15P	562.00	561.60	68.0	0.0059	0.013	0.0	18.0	0.0
2	20P	551.00	549.00	152.0	0.0132	0.013	0.0	18.0	0.0
3	21P	561.40	559.50	260.0	0.0073	0.013	0.0	24.0	0.0

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 2
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 15S: DA 2E Runoff Area=3.136 ac 31.41% Impervious Runoff Depth=1.53"
Flow Length=671' Tc=12.0 min CN=80 Runoff=4.56 cfs 0.401 af

Subcatchment 16S: DA 2G Runoff Area=0.444 ac 0.00% Impervious Runoff Depth=1.60"
Flow Length=110' Tc=6.0 min CN=81 Runoff=0.82 cfs 0.059 af

Subcatchment 17S: DA 2J Runoff Area=2.298 ac 24.72% Impervious Runoff Depth=1.53"
Flow Length=240' Tc=6.0 min CN=80 Runoff=4.03 cfs 0.294 af

Subcatchment 18S: DA 2I Runoff Area=0.536 ac 64.18% Impervious Runoff Depth=2.24"
Flow Length=230' Slope=0.0200 '/' Tc=11.0 min CN=89 Runoff=1.17 cfs 0.100 af

Subcatchment 21S: DA 2F Runoff Area=0.141 ac 0.00% Impervious Runoff Depth=1.75"
Flow Length=107' Tc=6.0 min CN=83 Runoff=0.28 cfs 0.021 af

Subcatchment 22S: DA 2H Runoff Area=2.744 ac 35.75% Impervious Runoff Depth=1.68"
Flow Length=676' Tc=10.0 min CN=82 Runoff=4.64 cfs 0.383 af

Pond 15P: Apartments Phase II Stormwater Peak Elev=567.57' Storage=4,537 cf Inflow=4.77 cfs 0.421 af
Primary=4.00 cfs 0.342 af Secondary=0.00 cfs 0.000 af Outflow=4.00 cfs 0.342 af

Pond 20P: Apartments Phase II Stormwater Peak Elev=557.00' Storage=15,826 cf Inflow=9.31 cfs 0.885 af
Primary=2.12 cfs 0.695 af Secondary=0.00 cfs 0.000 af Outflow=2.12 cfs 0.695 af

Pond 21P: Drain Peak Elev=562.36' Inflow=4.88 cfs 0.442 af
24.0" Round Culvert n=0.013 L=260.0' S=0.0073 '/' Outflow=4.88 cfs 0.442 af

Link 20L: Off-Site Inflow=4.03 cfs 0.989 af
Primary=4.03 cfs 0.989 af

Total Runoff Area = 9.299 ac Runoff Volume = 1.258 af Average Runoff Depth = 1.62"
69.05% Pervious = 6.421 ac 30.95% Impervious = 2.878 ac

Summary for Subcatchment 15S: DA 2E

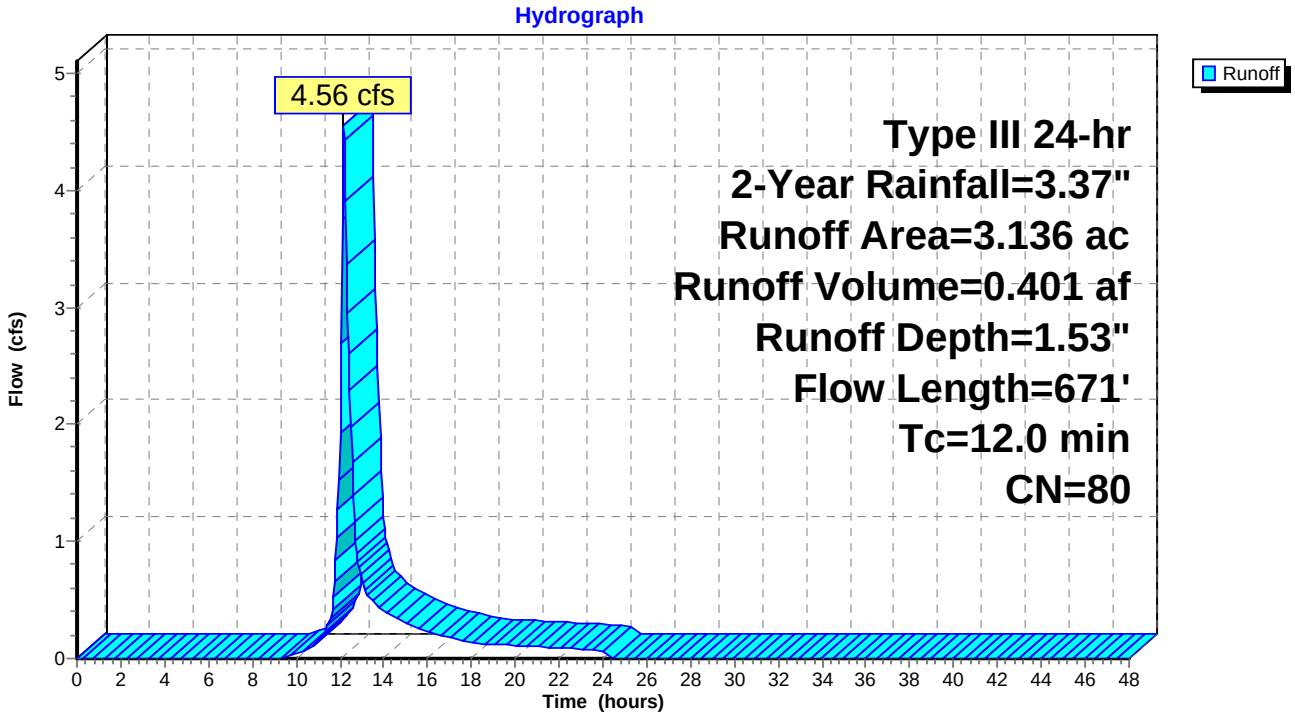
Runoff = 4.56 cfs @ 12.17 hrs, Volume= 0.401 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.985	98	Paved parking, HSG C, South
*	0.455	74	>75% Grass cover, Good, HSG C, South
	1.030	70	Woods, Good, HSG C
	0.666	74	>75% Grass cover, Good, HSG C
	3.136	80	Weighted Average
	2.151		68.59% Pervious Area
	0.985		31.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0600	0.11		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
3.3	417	0.1799	2.12		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.3	40	0.1000	2.21		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.7	164	0.0421	4.17		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
12.0	671	Total			

Subcatchment 15S: DA 2E



Summary for Subcatchment 16S: DA 2G

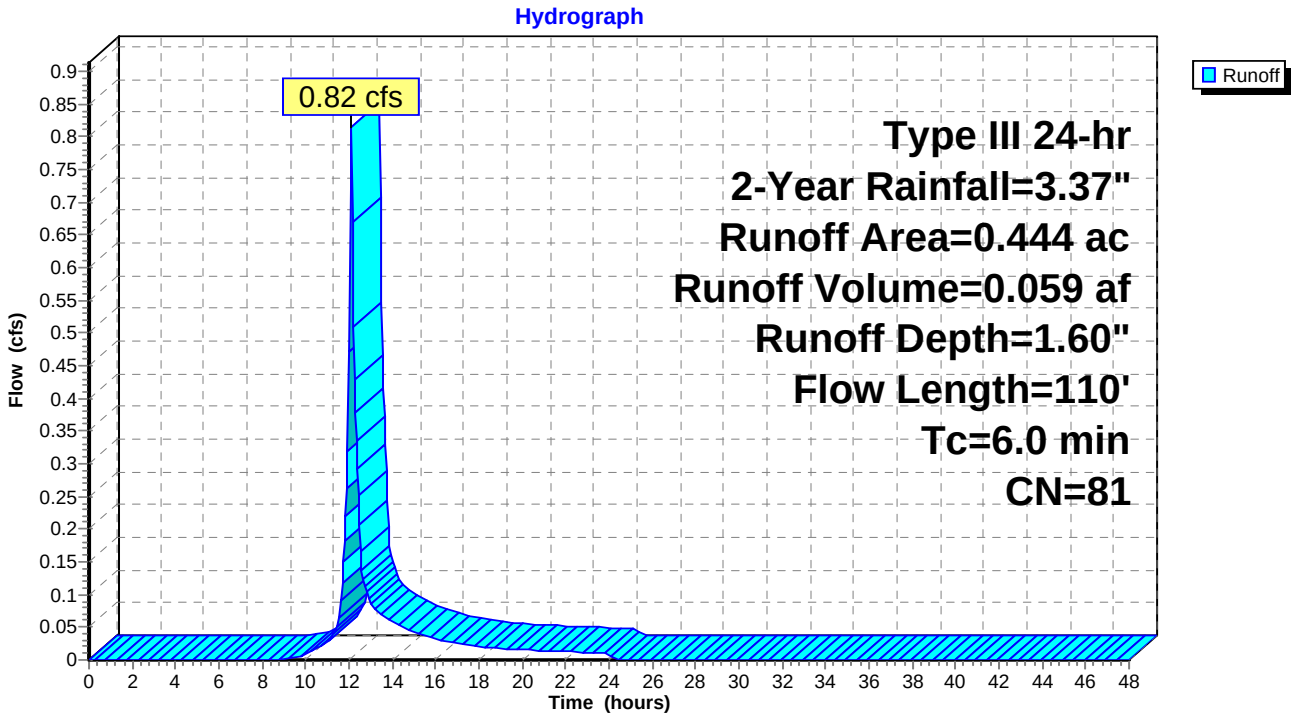
Runoff = 0.82 cfs @ 12.09 hrs, Volume= 0.059 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.37"

Area (ac)	CN	Description
0.103	98	Water Surface, 0% imp, HSG C
0.017	80	>75% Grass cover, Good, HSG D
0.229	74	>75% Grass cover, Good, HSG C
0.079	80	>75% Grass cover, Good, HSG D
0.016	74	>75% Grass cover, Good, HSG C
0.444	81	Weighted Average
0.444		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	50	0.0500	0.15		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.2	60	0.3500	4.14		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
5.7	110	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 16S: DA 2G



Summary for Subcatchment 17S: DA 2J

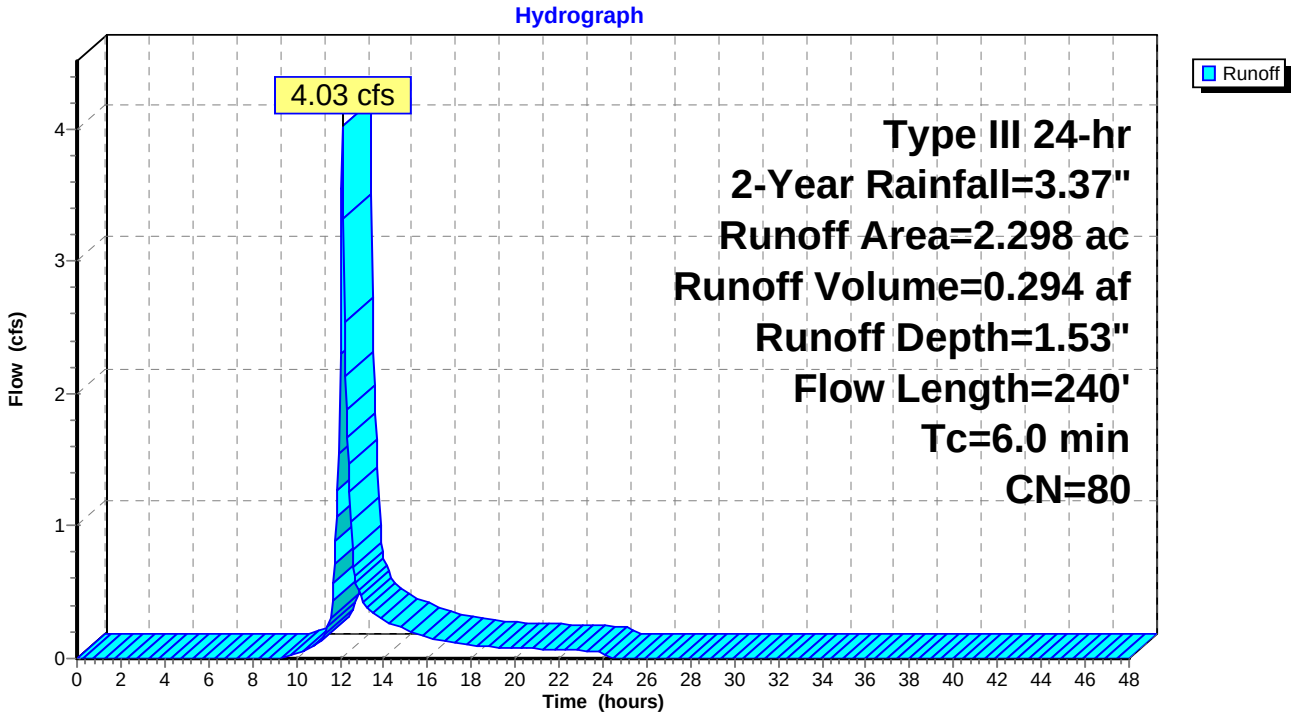
Runoff = 4.03 cfs @ 12.10 hrs, Volume= 0.294 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.37"

	Area (ac)	CN	Description
	0.412	80	>75% Grass cover, Good, HSG D
	0.061	98	Paved parking, HSG C
	0.032	74	>75% Grass cover, Good, HSG C
	0.140	98	Paved parking, HSG C
	0.680	74	>75% Grass cover, Good, HSG C
*	0.184	98	Two single Family Houses and Paved Driveways
	0.183	98	Paved parking, HSG C
	0.577	70	Woods, Good, HSG C
	0.029	74	>75% Grass cover, Good, HSG C
	2.298	80	Weighted Average
	1.730		75.28% Pervious Area
	0.568		24.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	24	0.1000	0.17		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.3	26	0.0500	1.56		**Sheet Flow, Paved/Gravel** Smooth surfaces n= 0.011 P2= 3.37"
0.3	85	0.0824	4.62		**Shallow Concentrated Flow, Gravel** Unpaved Kv= 16.1 fps
0.7	105	0.1333	2.56		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
3.6	240	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 17S: DA 2J



Summary for Subcatchment 18S: DA 2I

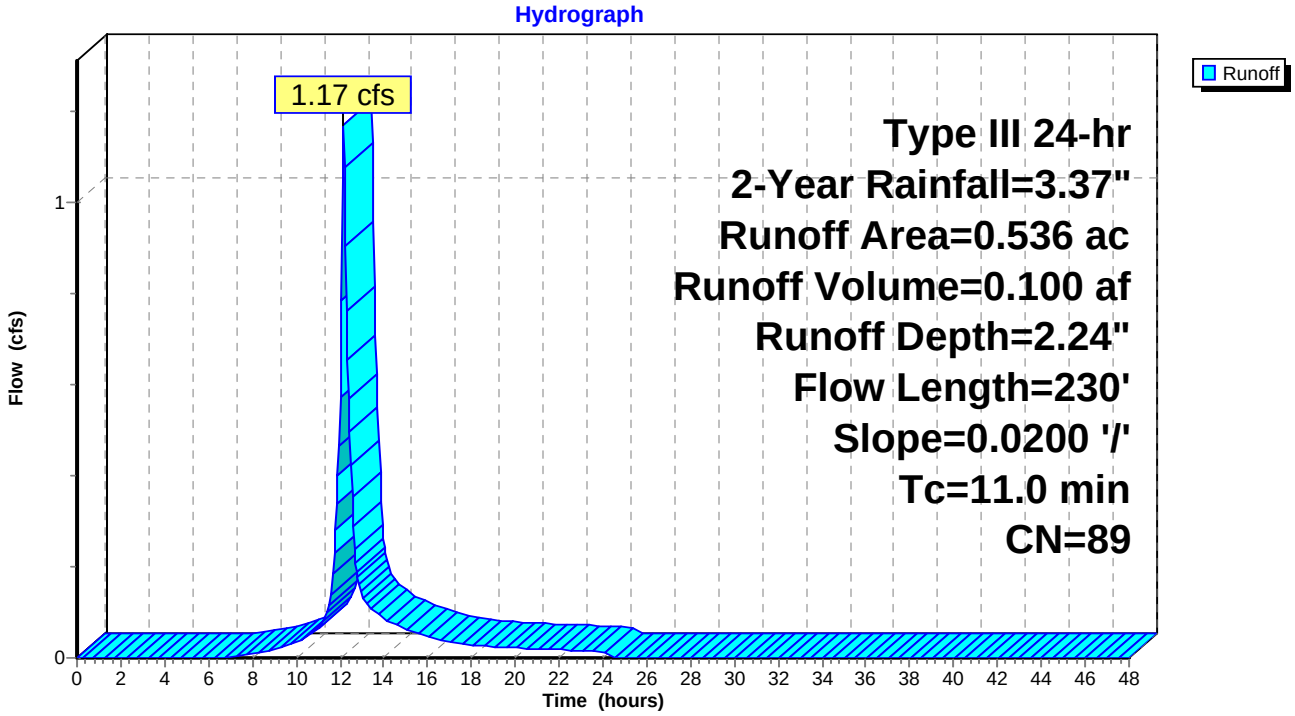
Runoff = 1.17 cfs @ 12.15 hrs, Volume= 0.100 af, Depth= 2.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.344	98	Paved parking, HSG C, North
*	0.192	74	>75% Grass cover, Good, HSG C, North
	0.536	89	Weighted Average
	0.192		35.82% Pervious Area
	0.344		64.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0200	0.10		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
3.0	180	0.0200	0.99		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
11.0	230	Total			

Subcatchment 18S: DA 2I



Summary for Subcatchment 21S: DA 2F

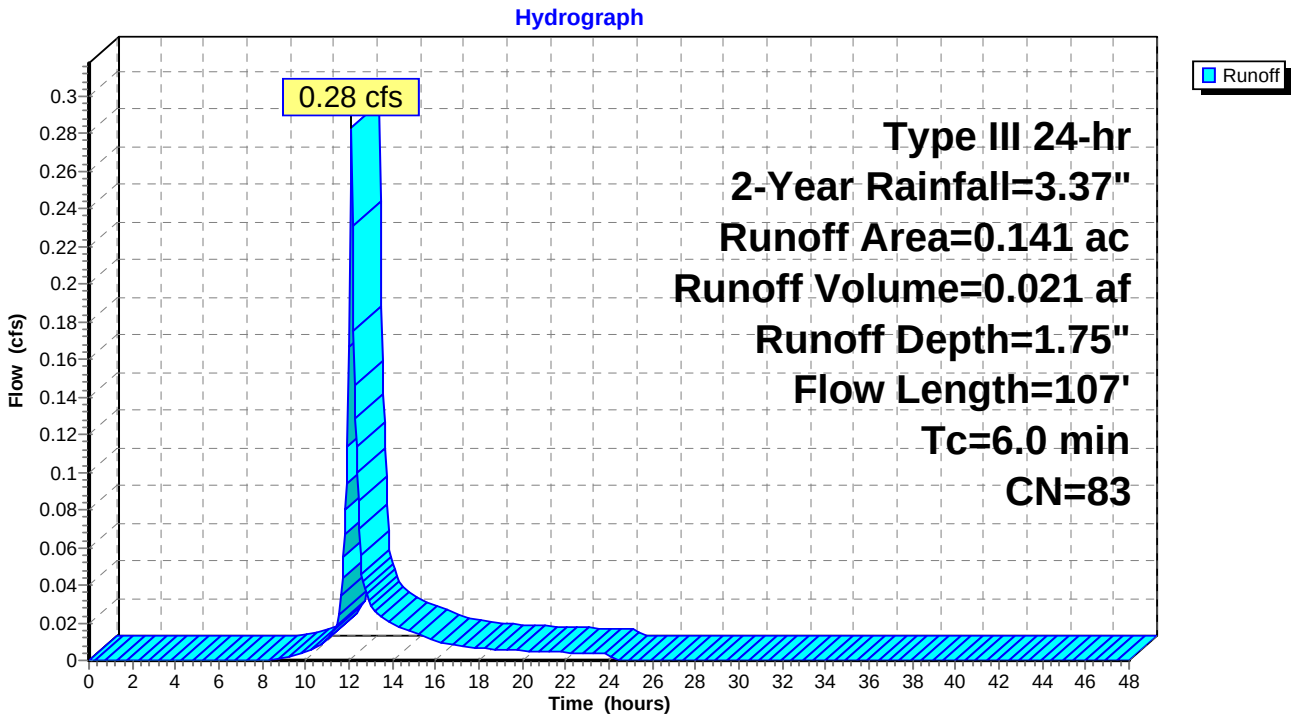
Runoff = 0.28 cfs @ 12.09 hrs, Volume= 0.021 af, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.37"

Area (ac)	CN	Description
0.051	98	Water Surface, 0% imp, HSG C
0.090	74	>75% Grass cover, Good, HSG C
0.141	83	Weighted Average
0.141		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.3	57	0.1754	2.93		**Shallow Concentrated Flow, Woods** Short Grass Pasture Kv= 7.0 fps
4.5	107	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 21S: DA 2F



Summary for Subcatchment 22S: DA 2H

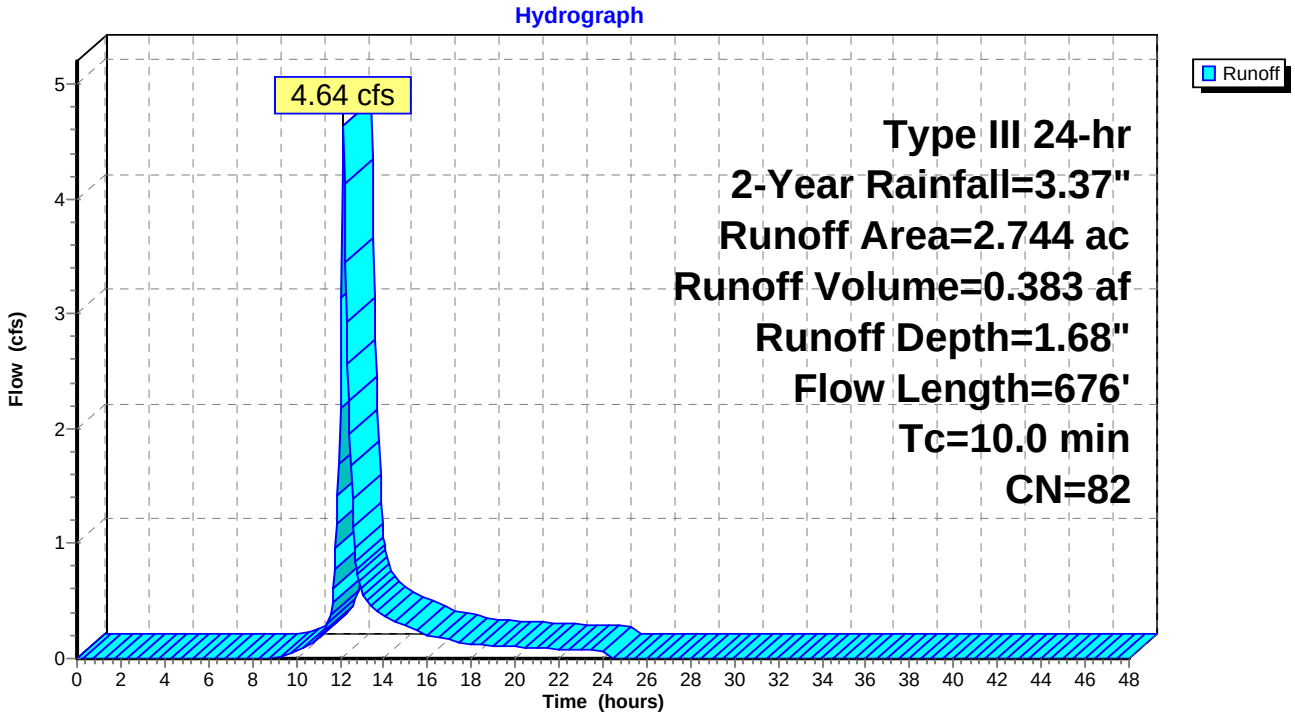
Runoff = 4.64 cfs @ 12.15 hrs, Volume= 0.383 af, Depth= 1.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-Year Rainfall=3.37"

	Area (ac)	CN	Description
*	0.431	98	Paved parking, HSG C, North
*	0.010	80	>75% Grass cover, Good, HSG D, North
*	0.313	74	>75% Grass cover, Good, HSG C, North
*	0.550	98	Paved parking, HSG C, South
*	0.356	74	>75% Grass cover, Good, HSG C, South
	0.748	70	Woods, Good, HSG C
	0.336	74	>75% Grass cover, Good, HSG C
	2.744	82	Weighted Average
	1.763		64.25% Pervious Area
	0.981		35.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	50	0.1000	0.13		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
1.7	190	0.1316	1.81		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.3	81	0.3333	4.04		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
1.7	355	0.0310	3.57		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
10.0	676	Total			

Subcatchment 22S: DA 2H



Summary for Pond 15P: Apartments Phase II Stormwater Basin 2

Inflow Area = 3.277 ac, 30.06% Impervious, Inflow Depth = 1.54" for 2-Year event
Inflow = 4.77 cfs @ 12.17 hrs, Volume= 0.421 af
Outflow = 4.00 cfs @ 12.27 hrs, Volume= 0.342 af, Atten= 16%, Lag= 5.8 min
Primary = 4.00 cfs @ 12.27 hrs, Volume= 0.342 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 567.57' @ 12.26 hrs Surf.Area= 2,143 sf Storage= 4,537 cf

Plug-Flow detention time= 119.1 min calculated for 0.342 af (81% of inflow)
Center-of-Mass det. time= 42.4 min (887.3 - 845.0)

Volume	Invert	Avail.Storage	Storage Description
#1	562.00'	6 cf	**3.00'W x 8.00'L x 2.50'H Sand Underdrain** 60 cf Overall x 10.0% Voids
#2	564.50'	10,719 cf	**Stormwater Basin (Irregular)**Listed below
		10,725 cf	Total Available Storage

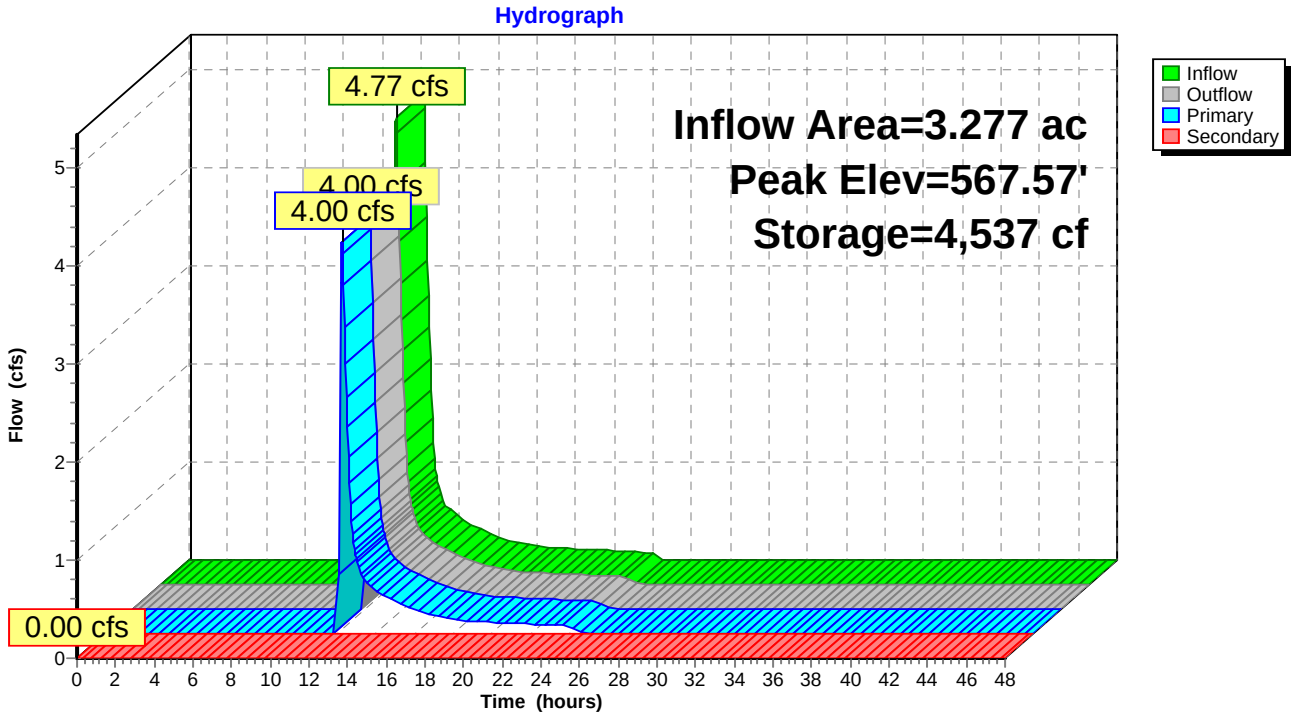
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
564.50	4	8.2	0	0	4
564.75	257	68.5	24	24	372
565.00	1,193	160.0	167	191	2,036
566.00	1,533	172.5	1,359	1,551	2,406
568.00	2,277	197.6	3,786	5,336	3,233
570.00	3,128	222.7	5,383	10,719	4,172

Device	Routing	Invert	Outlet Devices
#1	Primary	562.00'	**18.0" Round 18" HDPE** L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 562.00' / 561.60' S= 0.0059 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	567.00'	**36.0" W x 6.0" H Vert. 36" x 6" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	568.00'	**1.0" x 3.7" Horiz. Top of Frame X 39.00 columns** X 9 rows C= 0.600 in 48.0" x 36.0" Grate (75% open area) Limited to weir flow at low heads
#4	Secondary	569.00'	**8.0' long x 8.0' breadth Rip Rap Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#5	Device 1	562.00'	**0.500 in/hr Sand Underdrain over Horizontal area from 562.00' - 564.50'** Excluded Horizontal area = 24 sf Phase-In= 0.01'

Primary OutFlow Max=3.95 cfs @ 12.27 hrs HW=567.57' TW=562.35' (Dynamic Tailwater)
- **1=18" HDPE** (Passes 3.95 cfs of 18.10 cfs potential flow)
  - **2=36" x 6" Orifice** (Orifice Controls 3.95 cfs @ 2.63 fps)
  - **3=Top of Frame** (Controls 0.00 cfs)
  - **5=Sand Underdrain** (Exfiltration Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=562.00' TW=0.00' (Dynamic Tailwater)
- **4=Rip Rap Spillway** (Controls 0.00 cfs)

Pond 15P: Apartments Phase II Stormwater Basin 2



Summary for Pond 20P: Apartments Phase II Stormwater Basin 1

Inflow Area = 7.001 ac, 33.00% Impervious, Inflow Depth = 1.52" for 2-Year event
Inflow = 9.31 cfs @ 12.21 hrs, Volume= 0.885 af
Outflow = 2.12 cfs @ 12.78 hrs, Volume= 0.695 af, Atten= 77%, Lag= 34.3 min
Primary = 2.12 cfs @ 12.78 hrs, Volume= 0.695 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 557.00' @ 12.78 hrs Surf.Area= 5,514 sf Storage= 15,826 cf

Plug-Flow detention time= 180.5 min calculated for 0.694 af (78% of inflow)
Center-of-Mass det. time= 97.6 min (951.6 - 854.0)

Volume	Invert	Avail.Storage	Storage Description
#1	551.00'	4 cf	**3.00'W x 8.00'L x 1.75'H Sand Underdrain** 42 cf Overall x 10.0% Voids
#2	552.75'	40,883 cf	**Stormwater Basin (Irregular)**Listed below (Recalc)
#3	556.00'	424 cf	**36.0" Round Pipe Storage**-Impervious L= 60.0' S= 0.0083 '/'
		41,312 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
552.75	120	43.3	0	0	120
553.00	865	110.3	109	109	939
553.25	1,552	155.7	298	407	1,901
553.50	2,135	207.8	459	866	3,409
553.75	2,928	261.6	630	1,496	5,419
554.00	3,512	310.5	804	2,300	7,646
555.00	4,145	323.0	3,824	6,124	8,352
556.00	4,804	335.6	4,470	10,595	9,090
557.00	5,490	348.1	5,143	15,738	9,851
558.00	6,569	422.7	6,021	21,759	14,443
559.00	7,426	435.3	6,993	28,752	15,404
560.00	8,310	447.8	7,864	36,616	16,387
560.50	8,761	454.1	4,267	40,883	16,893

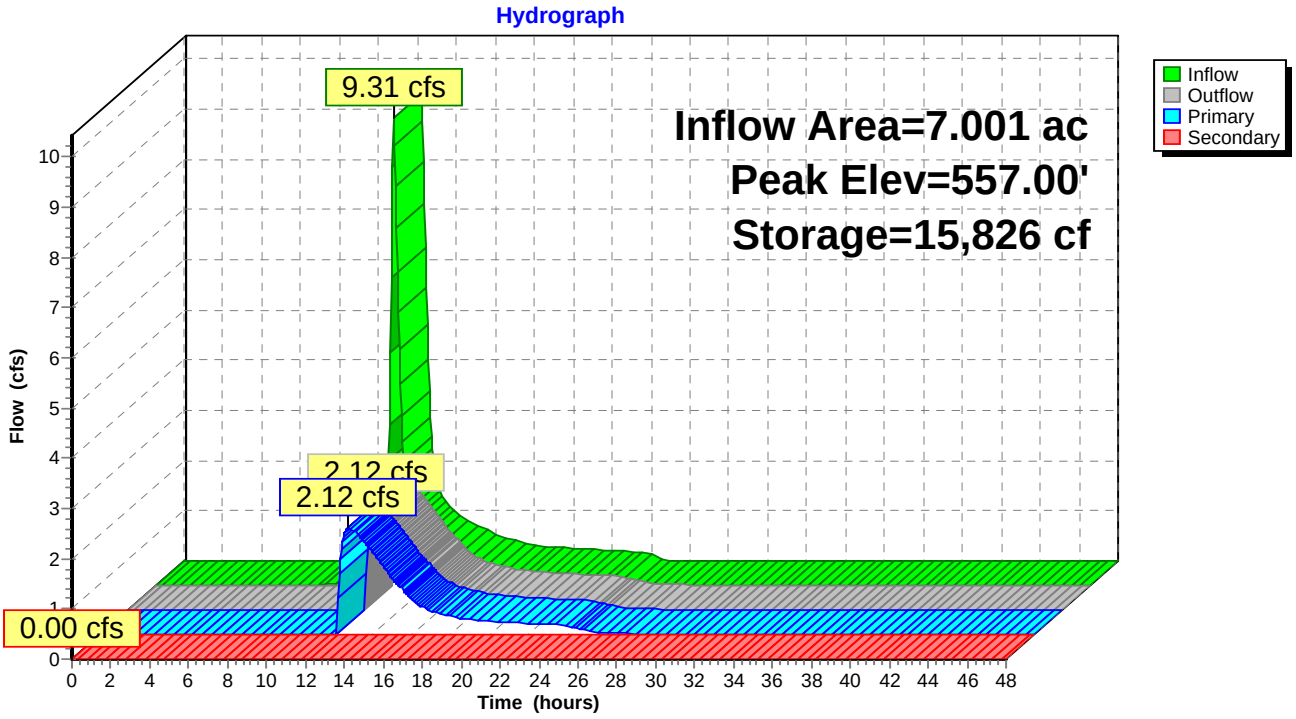
Device	Routing	Invert	Outlet Devices
#1	Primary	551.00'	**18.0" Round 18" HDPE** L= 152.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 551.00' / 549.00' S= 0.0132 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	555.50'	**6.0" Vert. 6" Orifices (2) X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	557.30'	**48.0" W x 7.0" H Vert. 48" x 7" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	558.75'	**1.0" x 3.7" Horiz. Top of Frame X 39.00 columns** X 9 rows C= 0.600 in 48.0" x 36.0" Grate (75% open area) Limited to weir flow at low heads
#5	Secondary	559.75'	**8.0' long x 8.0' breadth Rip Rap Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64
			2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#6	Device 1	551.00'	**0.500 in/hr Sand Underdrain over Horizontal area from 551.00' - 552.75'**
			Excluded Horizontal area = 24 sf Phase-In= 0.01'

Primary OutFlow Max=2.11 cfs @ 12.78 hrs HW=557.00' TW=0.00' (Dynamic Tailwater)
└─**1=18" HDPE** (Passes 2.11 cfs of 17.48 cfs potential flow)
  ├─**2=6" Orifices (2)** (Orifice Controls 2.11 cfs @ 5.38 fps)
  ├─**3=48" x 7" Orifice** (Controls 0.00 cfs)
  ├─**4=Top of Frame** (Controls 0.00 cfs)
  └─**6=Sand Underdrain** (Exfiltration Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=551.00' TW=0.00' (Dynamic Tailwater)
└─**5=Rip Rap Spillway** (Controls 0.00 cfs)

Pond 20P: Apartments Phase II Stormwater Basin 1



Summary for Pond 21P: Drain

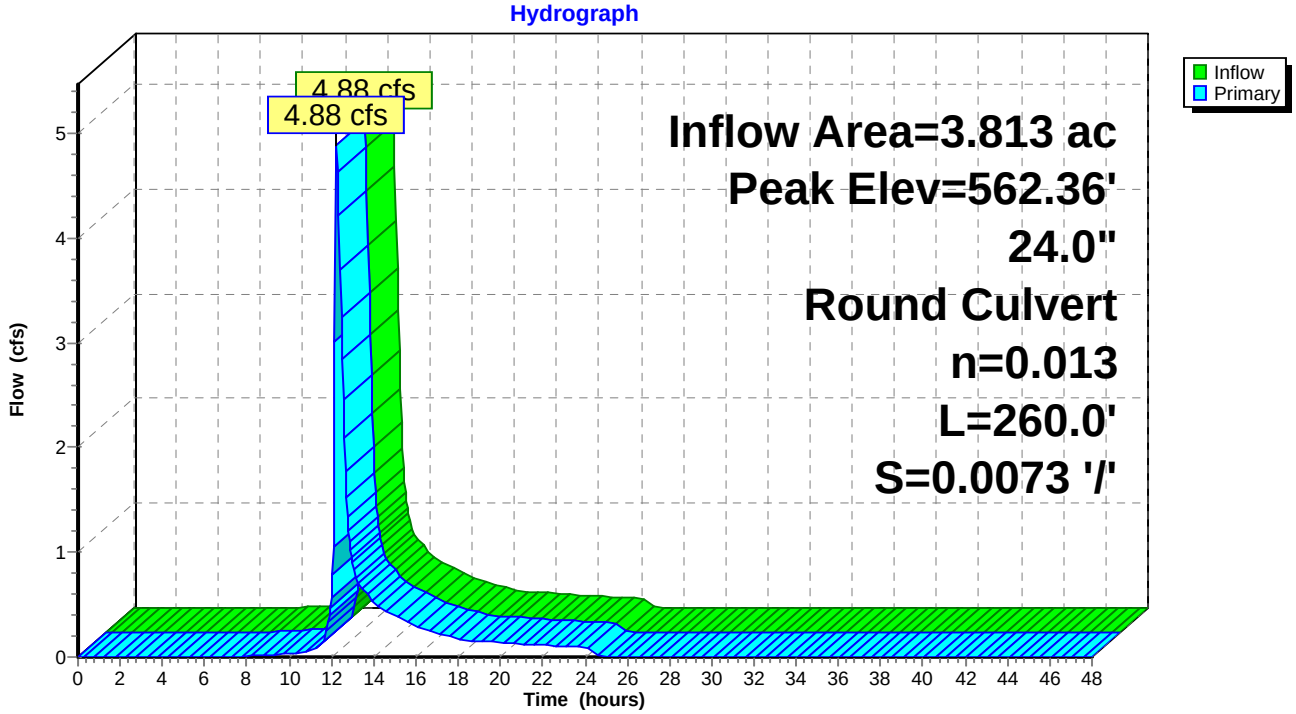
Inflow Area = 3.813 ac, 34.85% Impervious, Inflow Depth = 1.39" for 2-Year event
Inflow = 4.88 cfs @ 12.25 hrs, Volume= 0.442 af
Outflow = 4.88 cfs @ 12.25 hrs, Volume= 0.442 af, Atten= 0%, Lag= 0.0 min
Primary = 4.88 cfs @ 12.25 hrs, Volume= 0.442 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 562.36' @ 12.25 hrs
Flood Elev= 565.37'

Device	Routing	Invert	Outlet Devices
#1	Primary	561.40'	**24.0" Round Culvert** L= 260.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 561.40' / 559.50' S= 0.0073 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=4.88 cfs @ 12.25 hrs HW=562.36' TW=555.89' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 4.88 cfs @ 4.81 fps)

Pond 21P: Drain

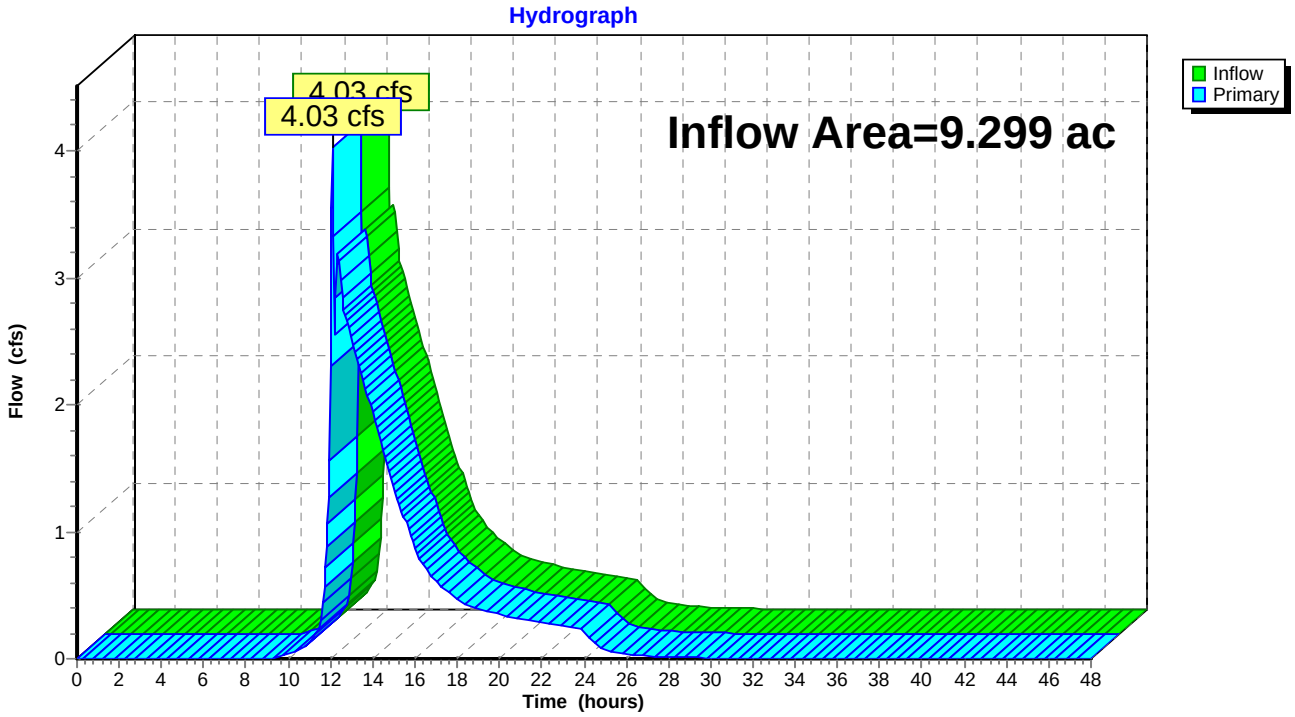


Summary for Link 20L: Off-Site

Inflow Area = 9.299 ac, 30.95% Impervious, Inflow Depth > 1.28" for 2-Year event
Inflow = 4.03 cfs @ 12.10 hrs, Volume= 0.989 af
Primary = 4.03 cfs @ 12.10 hrs, Volume= 0.989 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link 20L: Off-Site



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 2
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 15S: DA 2E Runoff Area=3.136 ac 31.41% Impervious Runoff Depth=3.05"
Flow Length=671' Tc=12.0 min CN=80 Runoff=9.16 cfs 0.797 af

Subcatchment 16S: DA 2G Runoff Area=0.444 ac 0.00% Impervious Runoff Depth=3.14"
Flow Length=110' Tc=6.0 min CN=81 Runoff=1.60 cfs 0.116 af

Subcatchment 17S: DA 2J Runoff Area=2.298 ac 24.72% Impervious Runoff Depth=3.05"
Flow Length=240' Tc=6.0 min CN=80 Runoff=8.05 cfs 0.584 af

Subcatchment 18S: DA 2I Runoff Area=0.536 ac 64.18% Impervious Runoff Depth=3.94"
Flow Length=230' Slope=0.0200 '/' Tc=11.0 min CN=89 Runoff=2.02 cfs 0.176 af

Subcatchment 21S: DA 2F Runoff Area=0.141 ac 0.00% Impervious Runoff Depth=3.34"
Flow Length=107' Tc=6.0 min CN=83 Runoff=0.54 cfs 0.039 af

Subcatchment 22S: DA 2H Runoff Area=2.744 ac 35.75% Impervious Runoff Depth=3.24"
Flow Length=676' Tc=10.0 min CN=82 Runoff=8.97 cfs 0.741 af

Pond 15P: Apartments Phase II Stormwater Peak Elev=568.14' Storage=5,727 cf Inflow=9.55 cfs 0.836 af
Primary=9.25 cfs 0.757 af Secondary=0.00 cfs 0.000 af Outflow=9.25 cfs 0.757 af

Pond 20P: Apartments Phase II Peak Elev=558.31' Storage=24,123 cf Inflow=20.08 cfs 1.791 af
Primary=12.45 cfs 1.601 af Secondary=0.00 cfs 0.000 af Outflow=12.45 cfs 1.601 af

Pond 21P: Drain Peak Elev=562.96' Inflow=11.05 cfs 0.933 af
24.0" Round Culvert n=0.013 L=260.0' S=0.0073 '/' Outflow=11.05 cfs 0.933 af

Link 20L: Off-Site Inflow=15.67 cfs 2.185 af
Primary=15.67 cfs 2.185 af

Total Runoff Area = 9.299 ac Runoff Volume = 2.454 af Average Runoff Depth = 3.17"
69.05% Pervious = 6.421 ac 30.95% Impervious = 2.878 ac

Summary for Subcatchment 15S: DA 2E

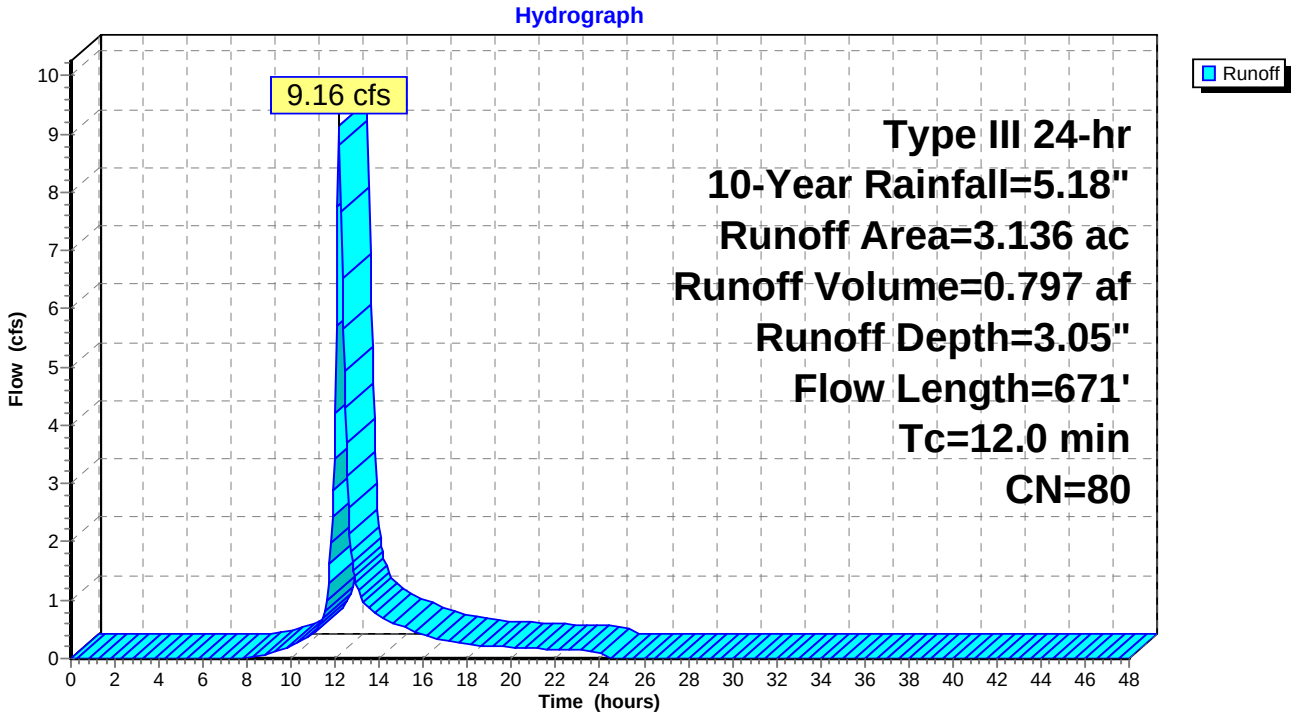
Runoff = 9.16 cfs @ 12.17 hrs, Volume= 0.797 af, Depth= 3.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.18"

	Area (ac)	CN	Description
*	0.985	98	Paved parking, HSG C, South
*	0.455	74	>75% Grass cover, Good, HSG C, South
	1.030	70	Woods, Good, HSG C
	0.666	74	>75% Grass cover, Good, HSG C
	3.136	80	Weighted Average
	2.151		68.59% Pervious Area
	0.985		31.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0600	0.11		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
3.3	417	0.1799	2.12		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.3	40	0.1000	2.21		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.7	164	0.0421	4.17		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
12.0	671	Total			

Subcatchment 15S: DA 2E



Summary for Subcatchment 16S: DA 2G

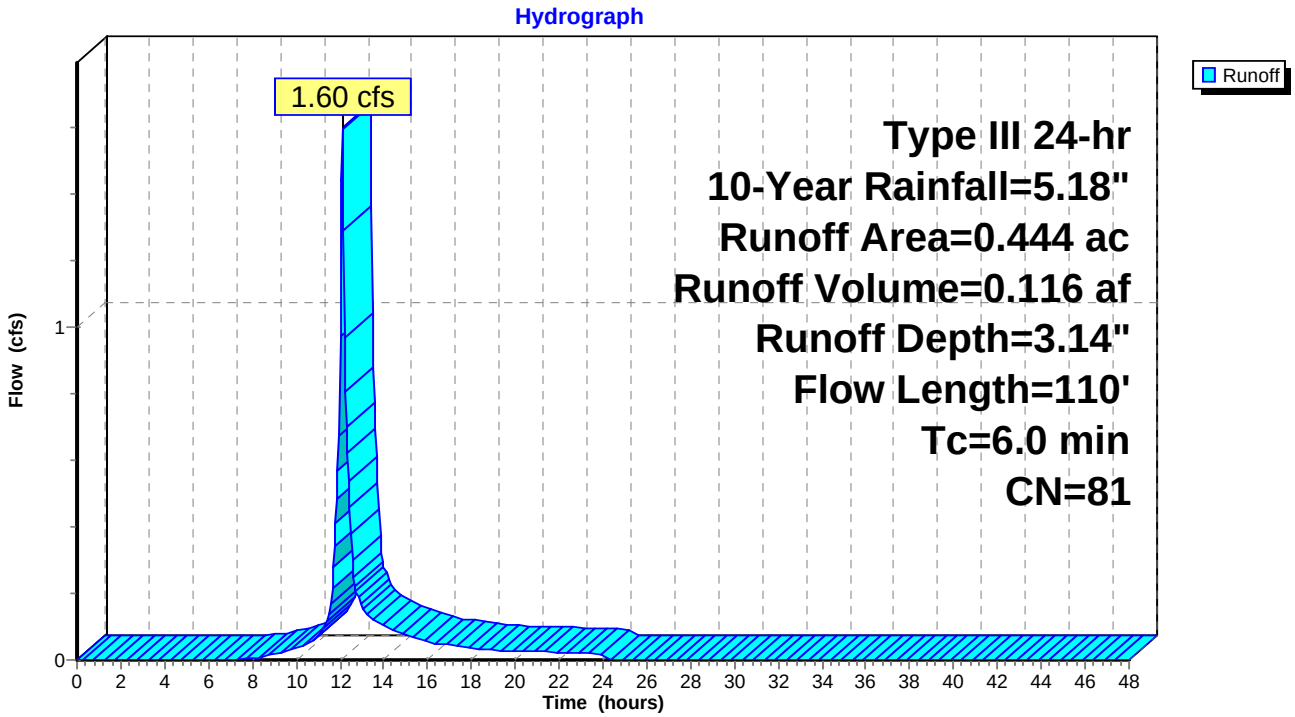
Runoff = 1.60 cfs @ 12.09 hrs, Volume= 0.116 af, Depth= 3.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.18"

Area (ac)	CN	Description
0.103	98	Water Surface, 0% imp, HSG C
0.017	80	>75% Grass cover, Good, HSG D
0.229	74	>75% Grass cover, Good, HSG C
0.079	80	>75% Grass cover, Good, HSG D
0.016	74	>75% Grass cover, Good, HSG C
0.444	81	Weighted Average
0.444		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	50	0.0500	0.15		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.2	60	0.3500	4.14		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
5.7	110	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 16S: DA 2G



Summary for Subcatchment 17S: DA 2J

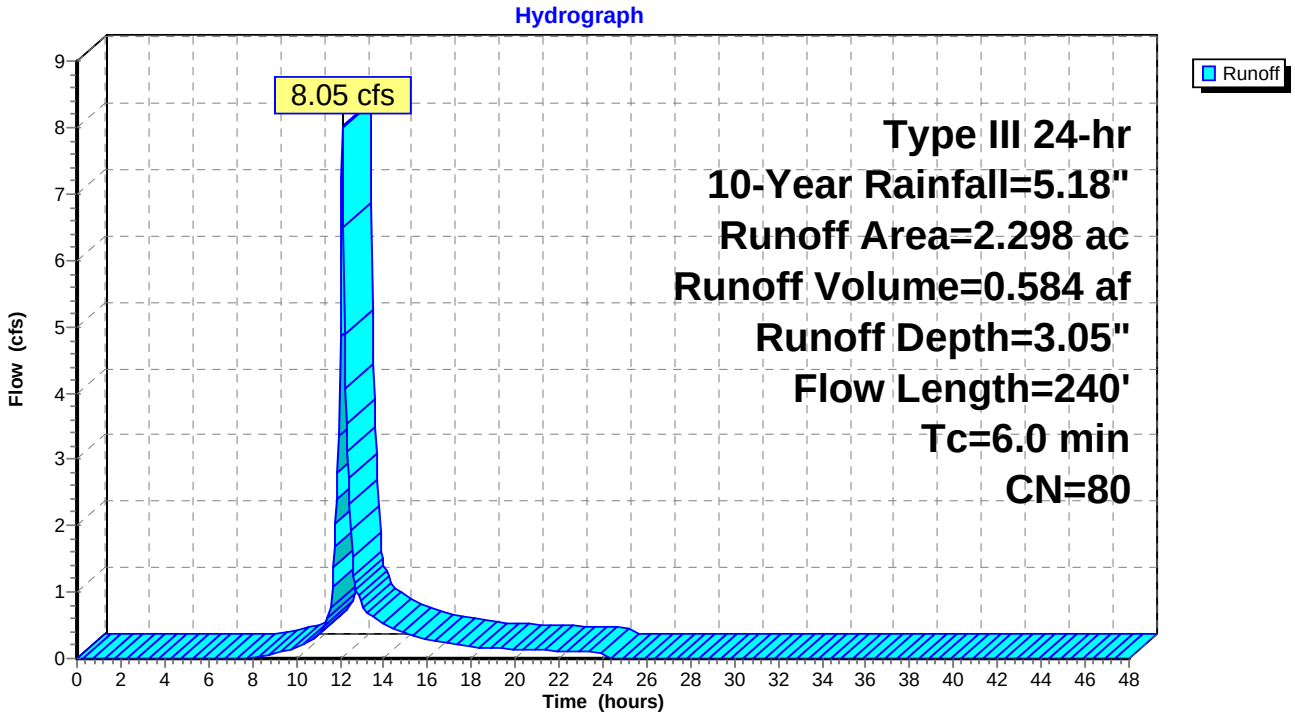
Runoff = 8.05 cfs @ 12.09 hrs, Volume= 0.584 af, Depth= 3.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.18"

	Area (ac)	CN	Description
	0.412	80	>75% Grass cover, Good, HSG D
	0.061	98	Paved parking, HSG C
	0.032	74	>75% Grass cover, Good, HSG C
	0.140	98	Paved parking, HSG C
	0.680	74	>75% Grass cover, Good, HSG C
*	0.184	98	Two single Family Houses and Paved Driveways
	0.183	98	Paved parking, HSG C
	0.577	70	Woods, Good, HSG C
	0.029	74	>75% Grass cover, Good, HSG C
	2.298	80	Weighted Average
	1.730		75.28% Pervious Area
	0.568		24.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	24	0.1000	0.17		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.3	26	0.0500	1.56		**Sheet Flow, Paved/Gravel** Smooth surfaces n= 0.011 P2= 3.37"
0.3	85	0.0824	4.62		**Shallow Concentrated Flow, Gravel** Unpaved Kv= 16.1 fps
0.7	105	0.1333	2.56		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
3.6	240	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 17S: DA 2J



Summary for Subcatchment 18S: DA 2I

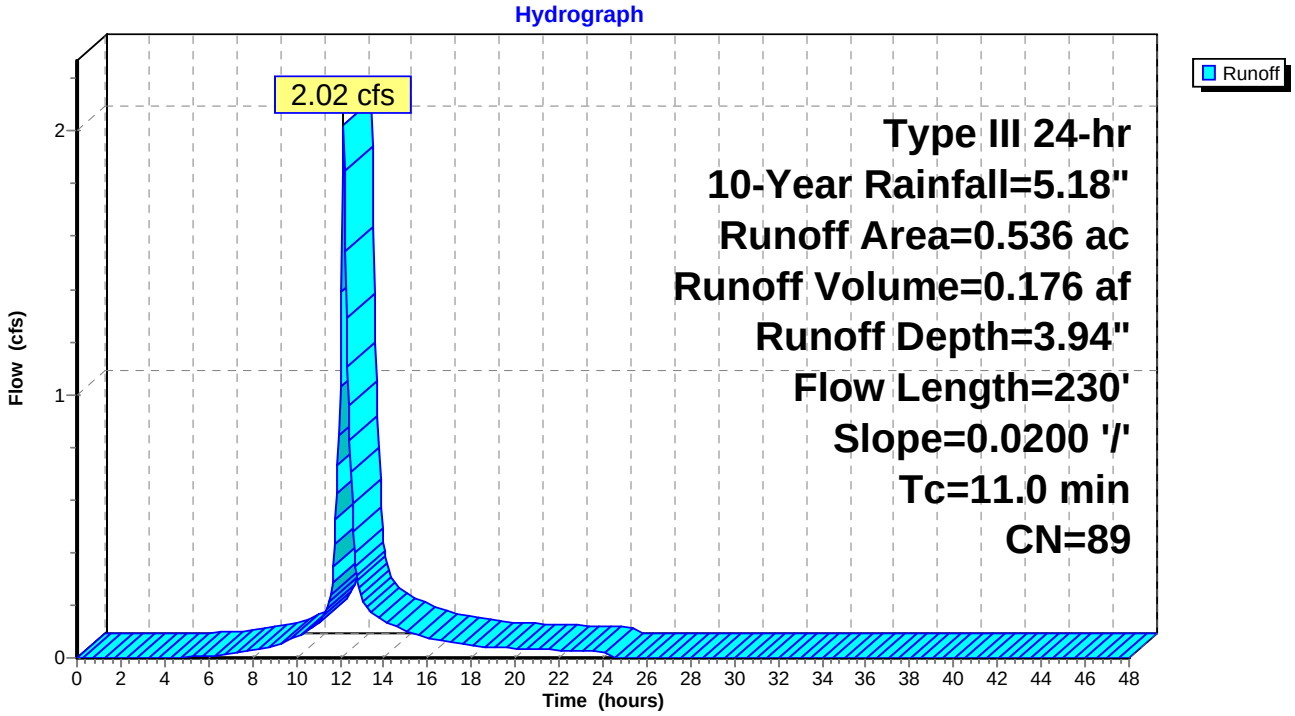
Runoff = 2.02 cfs @ 12.15 hrs, Volume= 0.176 af, Depth= 3.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.18"

	Area (ac)	CN	Description
*	0.344	98	Paved parking, HSG C, North
*	0.192	74	>75% Grass cover, Good, HSG C, North
	0.536	89	Weighted Average
	0.192		35.82% Pervious Area
	0.344		64.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0200	0.10		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
3.0	180	0.0200	0.99		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
11.0	230	Total			

Subcatchment 18S: DA 2I



Summary for Subcatchment 21S: DA 2F

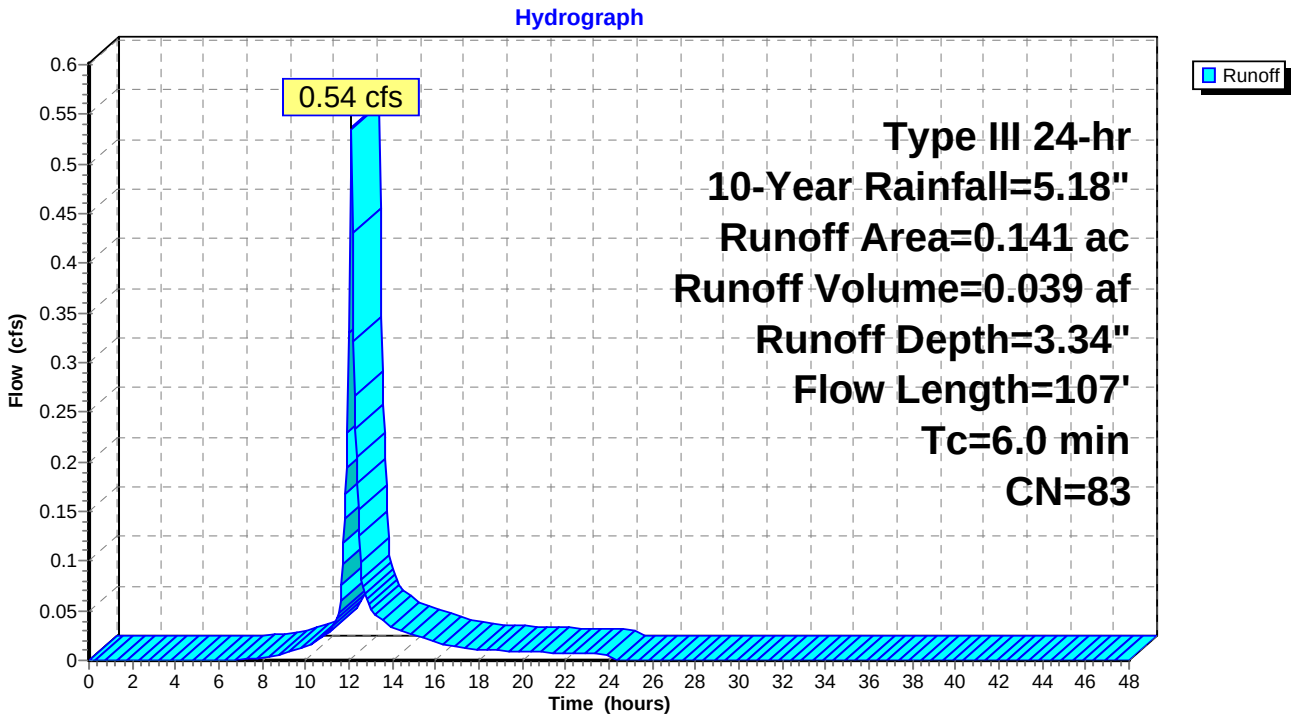
Runoff = 0.54 cfs @ 12.09 hrs, Volume= 0.039 af, Depth= 3.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.18"

Area (ac)	CN	Description
0.051	98	Water Surface, 0% imp, HSG C
0.090	74	>75% Grass cover, Good, HSG C
0.141	83	Weighted Average
0.141		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.3	57	0.1754	2.93		**Shallow Concentrated Flow, Woods** Short Grass Pasture Kv= 7.0 fps
4.5	107	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 21S: DA 2F



Summary for Subcatchment 22S: DA 2H

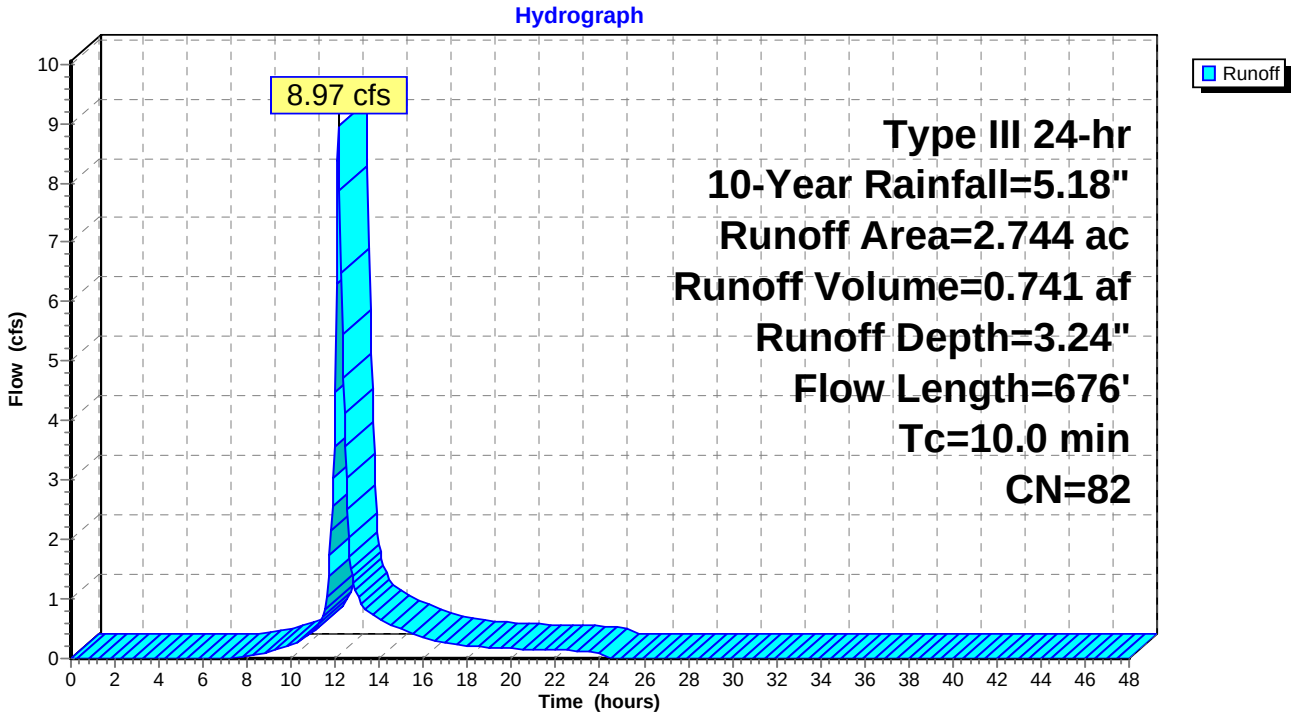
Runoff = 8.97 cfs @ 12.14 hrs, Volume= 0.741 af, Depth= 3.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=5.18"

	Area (ac)	CN	Description
*	0.431	98	Paved parking, HSG C, North
*	0.010	80	>75% Grass cover, Good, HSG D, North
*	0.313	74	>75% Grass cover, Good, HSG C, North
*	0.550	98	Paved parking, HSG C, South
*	0.356	74	>75% Grass cover, Good, HSG C, South
	0.748	70	Woods, Good, HSG C
	0.336	74	>75% Grass cover, Good, HSG C
	2.744	82	Weighted Average
	1.763		64.25% Pervious Area
	0.981		35.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	50	0.1000	0.13		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
1.7	190	0.1316	1.81		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.3	81	0.3333	4.04		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
1.7	355	0.0310	3.57		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
10.0	676	Total			

Subcatchment 22S: DA 2H



Summary for Pond 15P: Apartments Phase II Stormwater Basin 2

Inflow Area = 3.277 ac, 30.06% Impervious, Inflow Depth = 3.06" for 10-Year event
Inflow = 9.55 cfs @ 12.16 hrs, Volume= 0.836 af
Outflow = 9.25 cfs @ 12.21 hrs, Volume= 0.757 af, Atten= 3%, Lag= 2.9 min
Primary = 9.25 cfs @ 12.21 hrs, Volume= 0.757 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 568.14' @ 12.21 hrs Surf.Area= 2,362 sf Storage= 5,727 cf

Plug-Flow detention time= 72.9 min calculated for 0.756 af (90% of inflow)
Center-of-Mass det. time= 26.9 min (852.0 - 825.2)

Volume	Invert	Avail.Storage	Storage Description
#1	562.00'	6 cf	**3.00'W x 8.00'L x 2.50'H Sand Underdrain** 60 cf Overall x 10.0% Voids
#2	564.50'	10,719 cf	**Stormwater Basin (Irregular)**Listed below
		10,725 cf	Total Available Storage

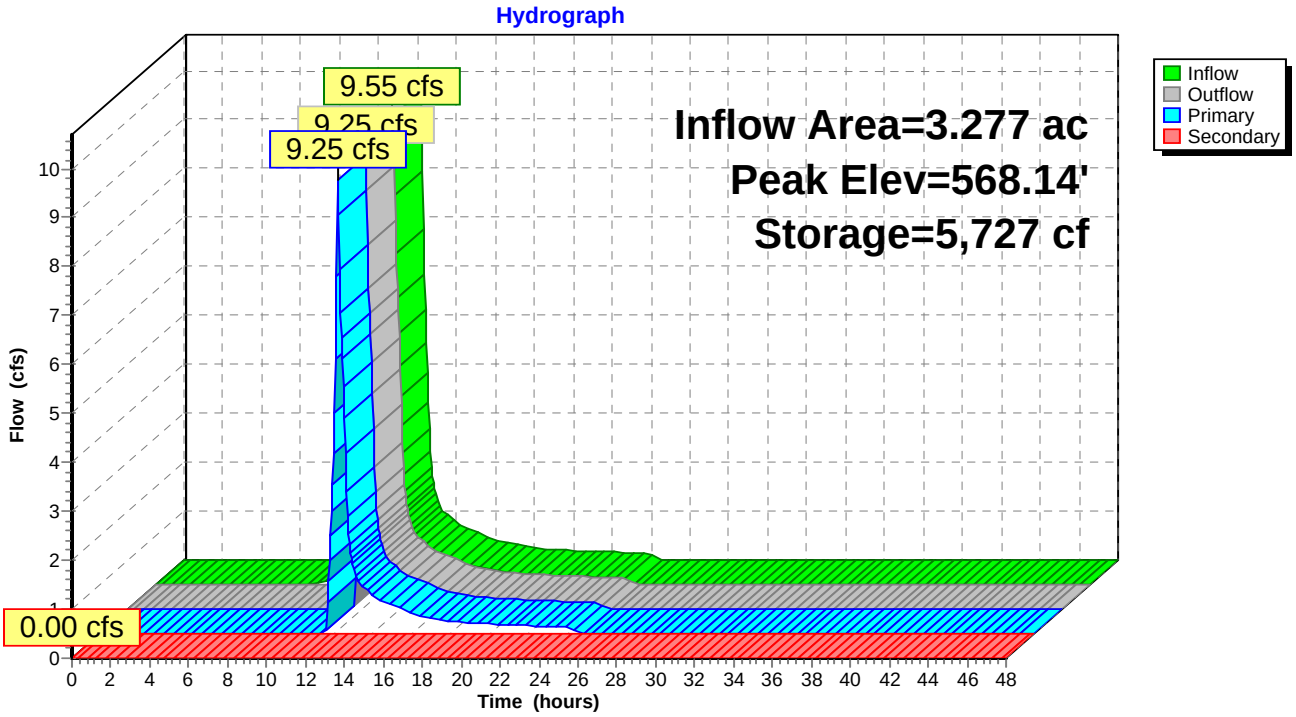
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
564.50	4	8.2	0	0	4
564.75	257	68.5	24	24	372
565.00	1,193	160.0	167	191	2,036
566.00	1,533	172.5	1,359	1,551	2,406
568.00	2,277	197.6	3,786	5,336	3,233
570.00	3,128	222.7	5,383	10,719	4,172

Device	Routing	Invert	Outlet Devices
#1	Primary	562.00'	**18.0" Round 18" HDPE** L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 562.00' / 561.60' S= 0.0059 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	567.00'	**36.0" W x 6.0" H Vert. 36" x 6" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	568.00'	**1.0" x 3.7" Horiz. Top of Frame X 39.00 columns** X 9 rows C= 0.600 in 48.0" x 36.0" Grate (75% open area) Limited to weir flow at low heads
#4	Secondary	569.00'	**8.0' long x 8.0' breadth Rip Rap Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#5	Device 1	562.00'	**0.500 in/hr Sand Underdrain over Horizontal area from 562.00' - 564.50'** Excluded Horizontal area = 24 sf Phase-In= 0.01'

Primary OutFlow Max=9.01 cfs @ 12.21 hrs HW=568.13' TW=562.93' (Dynamic Tailwater)
└─**1=18" HDPE** (Passes 9.01 cfs of 19.21 cfs potential flow)
  ├─**2=36" x 6" Orifice** (Orifice Controls 6.77 cfs @ 4.51 fps)
  ├─**3=Top of Frame** (Weir Controls 2.25 cfs @ 1.20 fps)
  └─**5=Sand Underdrain** (Exfiltration Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=562.00' TW=0.00' (Dynamic Tailwater)
└─**4=Rip Rap Spillway** (Controls 0.00 cfs)

Pond 15P: Apartments Phase II Stormwater Basin 2



Summary for Pond 20P: Apartments Phase II Stormwater Basin 1

Inflow Area = 7.001 ac, 33.00% Impervious, Inflow Depth = 3.07" for 10-Year event
Inflow = 20.08 cfs @ 12.18 hrs, Volume= 1.791 af
Outflow = 12.45 cfs @ 12.37 hrs, Volume= 1.601 af, Atten= 38%, Lag= 11.5 min
Primary = 12.45 cfs @ 12.37 hrs, Volume= 1.601 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 558.31' @ 12.37 hrs Surf.Area= 6,850 sf Storage= 24,123 cf

Plug-Flow detention time= 116.2 min calculated for 1.601 af (89% of inflow)
Center-of-Mass det. time= 65.2 min (895.8 - 830.6)

Volume	Invert	Avail.Storage	Storage Description
#1	551.00'	4 cf	**3.00'W x 8.00'L x 1.75'H Sand Underdrain** 42 cf Overall x 10.0% Voids
#2	552.75'	40,883 cf	**Stormwater Basin (Irregular)**Listed below (Recalc)
#3	556.00'	424 cf	**36.0" Round Pipe Storage**-Impervious L= 60.0' S= 0.0083 '/'
		41,312 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
552.75	120	43.3	0	0	120
553.00	865	110.3	109	109	939
553.25	1,552	155.7	298	407	1,901
553.50	2,135	207.8	459	866	3,409
553.75	2,928	261.6	630	1,496	5,419
554.00	3,512	310.5	804	2,300	7,646
555.00	4,145	323.0	3,824	6,124	8,352
556.00	4,804	335.6	4,470	10,595	9,090
557.00	5,490	348.1	5,143	15,738	9,851
558.00	6,569	422.7	6,021	21,759	14,443
559.00	7,426	435.3	6,993	28,752	15,404
560.00	8,310	447.8	7,864	36,616	16,387
560.50	8,761	454.1	4,267	40,883	16,893

Device	Routing	Invert	Outlet Devices
#1	Primary	551.00'	**18.0" Round 18" HDPE** L= 152.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 551.00' / 549.00' S= 0.0132 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	555.50'	**6.0" Vert. 6" Orifices (2) X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	557.30'	**48.0" W x 7.0" H Vert. 48" x 7" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	558.75'	**1.0" x 3.7" Horiz. Top of Frame X 39.00 columns** X 9 rows C= 0.600 in 48.0" x 36.0" Grate (75% open area) Limited to weir flow at low heads
#5	Secondary	559.75'	**8.0' long x 8.0' breadth Rip Rap Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

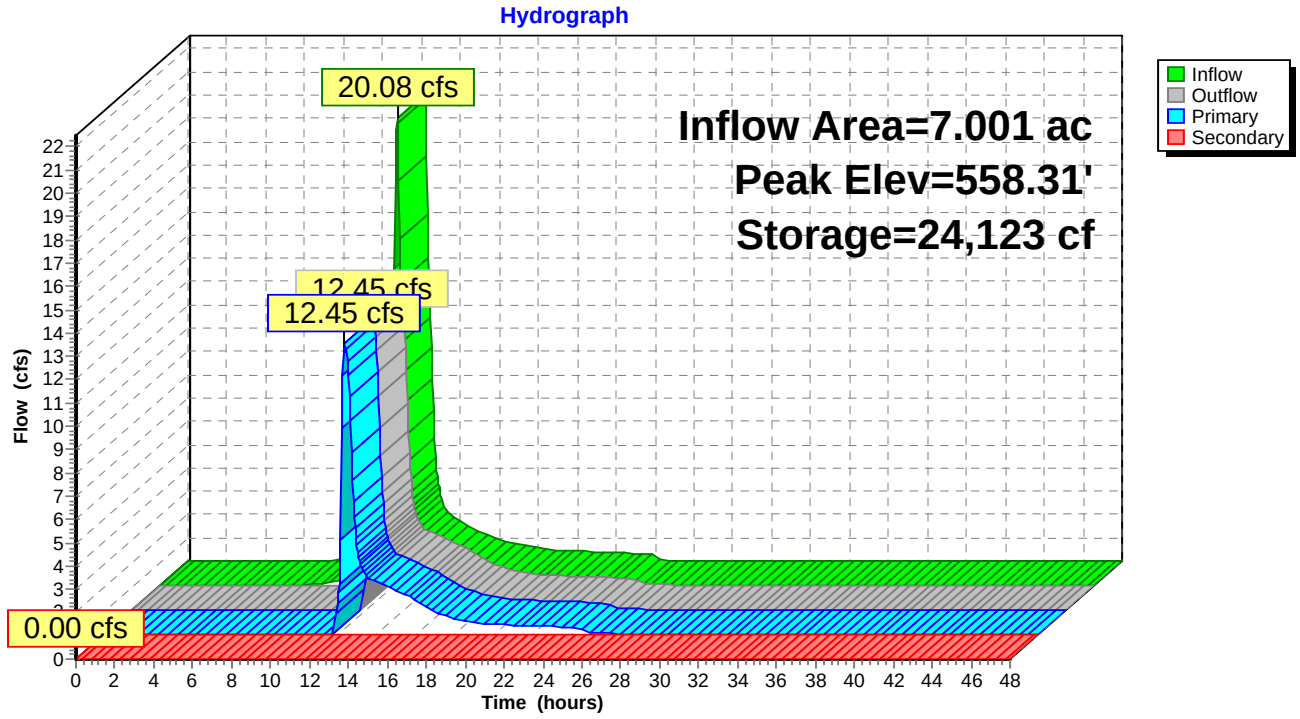
2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64
2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

#6 Device 1 551.00' **0.500 in/hr Sand Underdrain over Horizontal area from 551.00' - 552.75'**
Excluded Horizontal area = 24 sf Phase-In= 0.01'

Primary OutFlow Max=12.41 cfs @ 12.37 hrs HW=558.30' TW=0.00' (Dynamic Tailwater)
- **1=18" HDPE** (Passes 12.41 cfs of 19.15 cfs potential flow)
  - **2=6" Orifices (2)** (Orifice Controls 3.02 cfs @ 7.69 fps)
  - **3=48" x 7" Orifice** (Orifice Controls 9.39 cfs @ 4.02 fps)
  - **4=Top of Frame** (Controls 0.00 cfs)
  - **6=Sand Underdrain** (Exfiltration Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=551.00' TW=0.00' (Dynamic Tailwater)
- **5=Rip Rap Spillway** (Controls 0.00 cfs)

Pond 20P: Apartments Phase II Stormwater Basin 1



Summary for Pond 21P: Drain

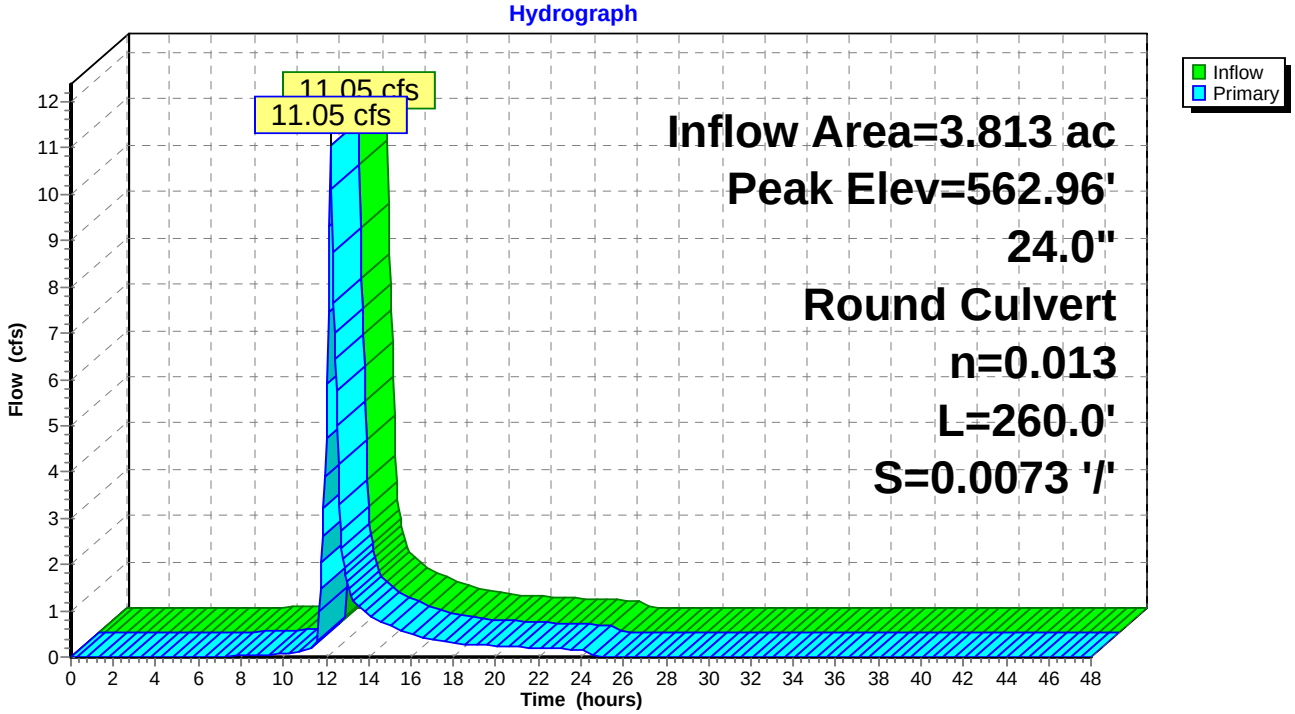
Inflow Area = 3.813 ac, 34.85% Impervious, Inflow Depth = 2.94" for 10-Year event
Inflow = 11.05 cfs @ 12.21 hrs, Volume= 0.933 af
Outflow = 11.05 cfs @ 12.21 hrs, Volume= 0.933 af, Atten= 0%, Lag= 0.0 min
Primary = 11.05 cfs @ 12.21 hrs, Volume= 0.933 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 562.96' @ 12.21 hrs
Flood Elev= 565.37'

Device	Routing	Invert	Outlet Devices
#1	Primary	561.40'	**24.0" Round Culvert** L= 260.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 561.40' / 559.50' S= 0.0073 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=10.89 cfs @ 12.21 hrs HW=562.94' TW=557.94' (Dynamic Tailwater)
└**1=Culvert** (Barrel Controls 10.89 cfs @ 5.79 fps)

Pond 21P: Drain

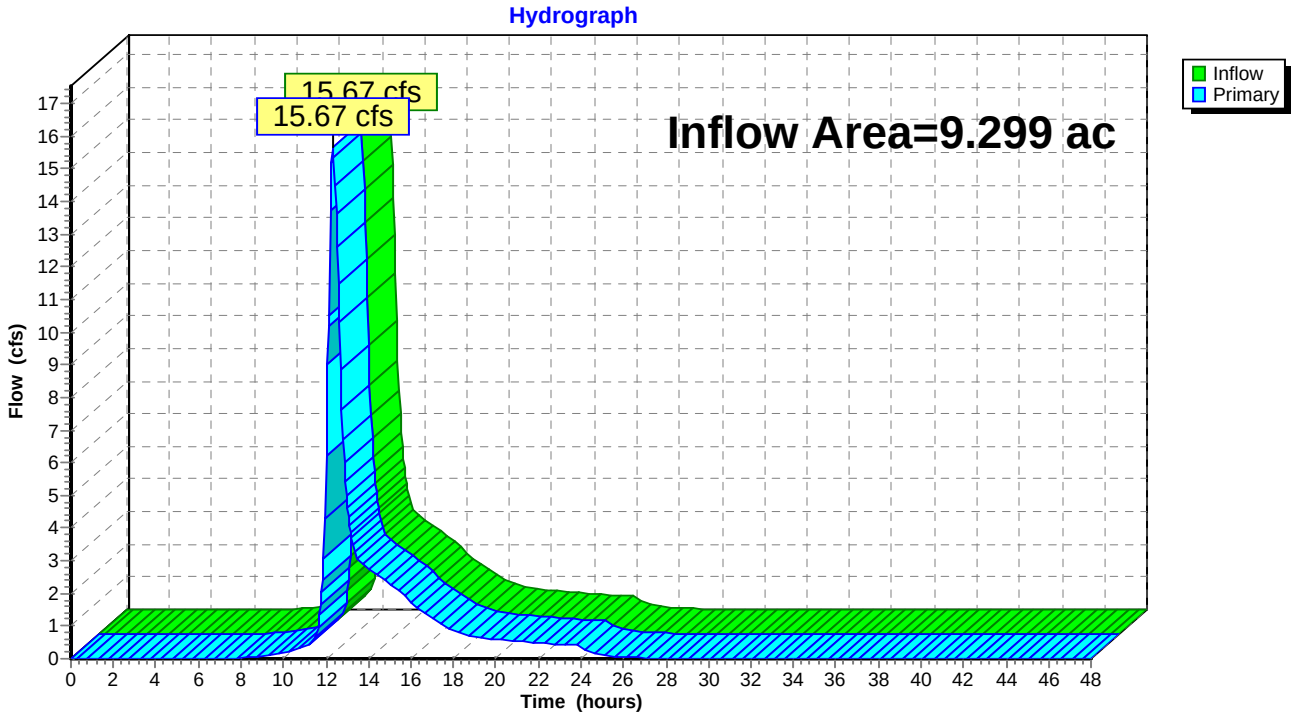


Summary for Link 20L: Off-Site

Inflow Area = 9.299 ac, 30.95% Impervious, Inflow Depth = 2.82" for 10-Year event
Inflow = 15.67 cfs @ 12.32 hrs, Volume= 2.185 af
Primary = 15.67 cfs @ 12.32 hrs, Volume= 2.185 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link 20L: Off-Site



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 2
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 15S: DA 2E Runoff Area=3.136 ac 31.41% Impervious Runoff Depth=4.05"
Flow Length=671' Tc=12.0 min CN=80 Runoff=12.12 cfs 1.059 af

Subcatchment 16S: DA 2G Runoff Area=0.444 ac 0.00% Impervious Runoff Depth=4.16"
Flow Length=110' Tc=6.0 min CN=81 Runoff=2.10 cfs 0.154 af

Subcatchment 17S: DA 2J Runoff Area=2.298 ac 24.72% Impervious Runoff Depth=4.05"
Flow Length=240' Tc=6.0 min CN=80 Runoff=10.63 cfs 0.776 af

Subcatchment 18S: DA 2I Runoff Area=0.536 ac 64.18% Impervious Runoff Depth=5.03"
Flow Length=230' Slope=0.0200 '/' Tc=11.0 min CN=89 Runoff=2.55 cfs 0.225 af

Subcatchment 21S: DA 2F Runoff Area=0.141 ac 0.00% Impervious Runoff Depth=4.37"
Flow Length=107' Tc=6.0 min CN=83 Runoff=0.70 cfs 0.051 af

Subcatchment 22S: DA 2H Runoff Area=2.744 ac 35.75% Impervious Runoff Depth=4.26"
Flow Length=676' Tc=10.0 min CN=82 Runoff=11.72 cfs 0.975 af

Pond 15P: Apartments Phase II Stormwater Peak Elev=568.24' Storage=5,977 cf Inflow=12.63 cfs 1.111 af
Primary=12.39 cfs 1.031 af Secondary=0.00 cfs 0.000 af Outflow=12.39 cfs 1.031 af

Pond 20P: Apartments Phase II Peak Elev=558.93' Storage=28,628 cf Inflow=27.96 cfs 2.385 af
Primary=19.80 cfs 2.195 af Secondary=0.00 cfs 0.000 af Outflow=19.80 cfs 2.195 af

Pond 21P: Drain Peak Elev=563.34' Inflow=14.81 cfs 1.256 af
24.0" Round Culvert n=0.013 L=260.0' S=0.0073 '/' Outflow=14.81 cfs 1.256 af

Link 20L: Off-Site Inflow=24.46 cfs 2.971 af
Primary=24.46 cfs 2.971 af

Total Runoff Area = 9.299 ac Runoff Volume = 3.240 af Average Runoff Depth = 4.18"
69.05% Pervious = 6.421 ac 30.95% Impervious = 2.878 ac

Summary for Subcatchment 15S: DA 2E

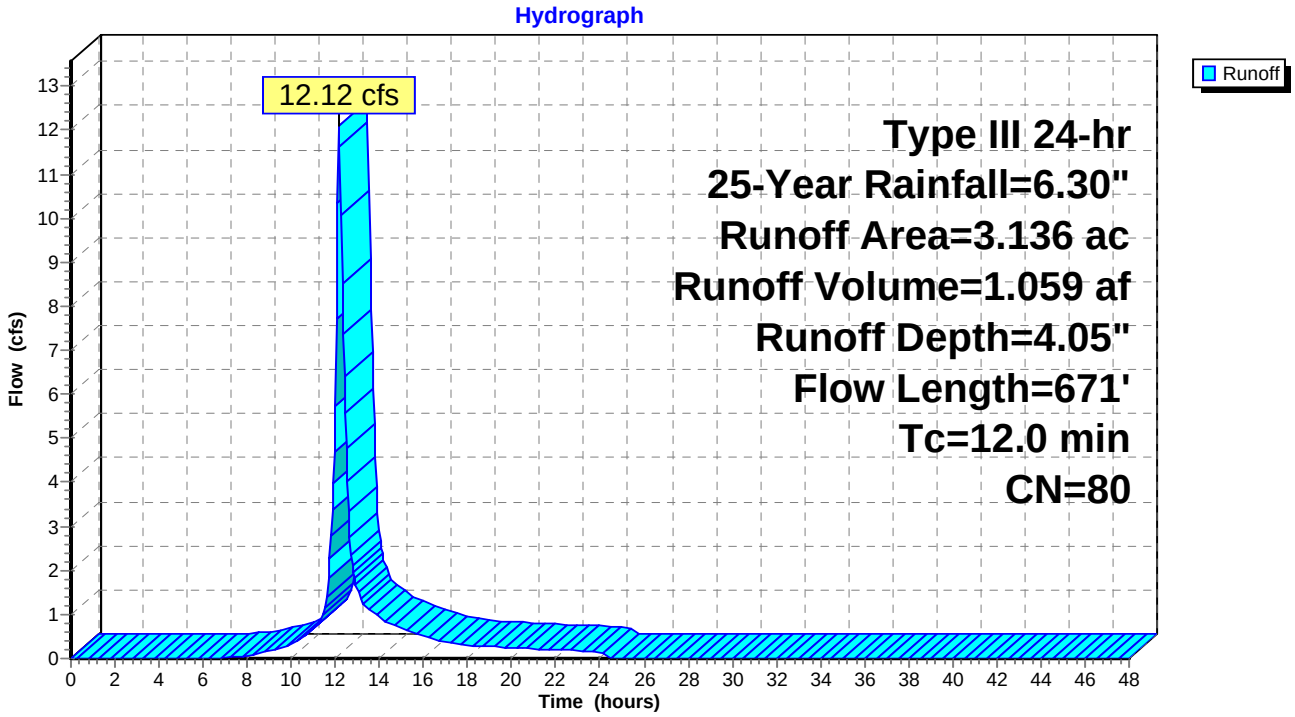
Runoff = 12.12 cfs @ 12.17 hrs, Volume= 1.059 af, Depth= 4.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.30"

	Area (ac)	CN	Description
*	0.985	98	Paved parking, HSG C, South
*	0.455	74	>75% Grass cover, Good, HSG C, South
	1.030	70	Woods, Good, HSG C
	0.666	74	>75% Grass cover, Good, HSG C
	3.136	80	Weighted Average
	2.151		68.59% Pervious Area
	0.985		31.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0600	0.11		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
3.3	417	0.1799	2.12		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.3	40	0.1000	2.21		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.7	164	0.0421	4.17		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
12.0	671	Total			

Subcatchment 15S: DA 2E



Summary for Subcatchment 16S: DA 2G

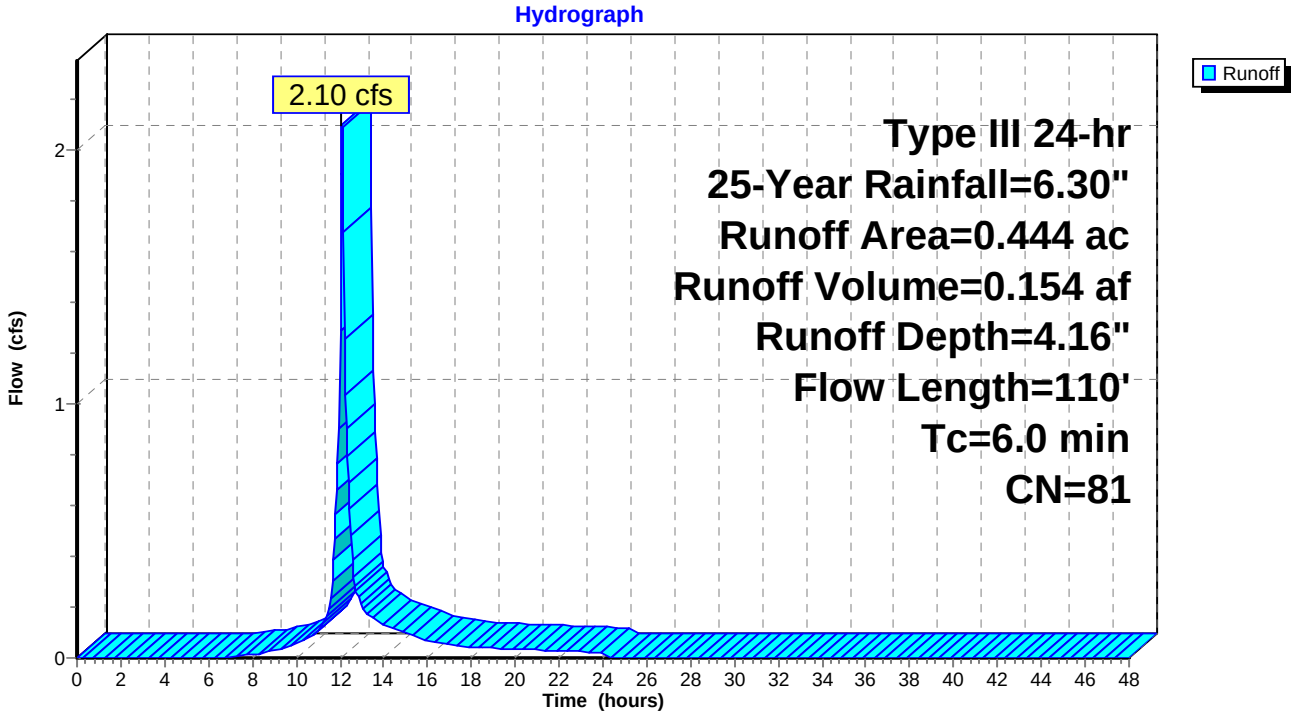
Runoff = 2.10 cfs @ 12.09 hrs, Volume= 0.154 af, Depth= 4.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.30"

Area (ac)	CN	Description
0.103	98	Water Surface, 0% imp, HSG C
0.017	80	>75% Grass cover, Good, HSG D
0.229	74	>75% Grass cover, Good, HSG C
0.079	80	>75% Grass cover, Good, HSG D
0.016	74	>75% Grass cover, Good, HSG C
0.444	81	Weighted Average
0.444		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	50	0.0500	0.15		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.2	60	0.3500	4.14		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
5.7	110	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 16S: DA 2G



Summary for Subcatchment 17S: DA 2J

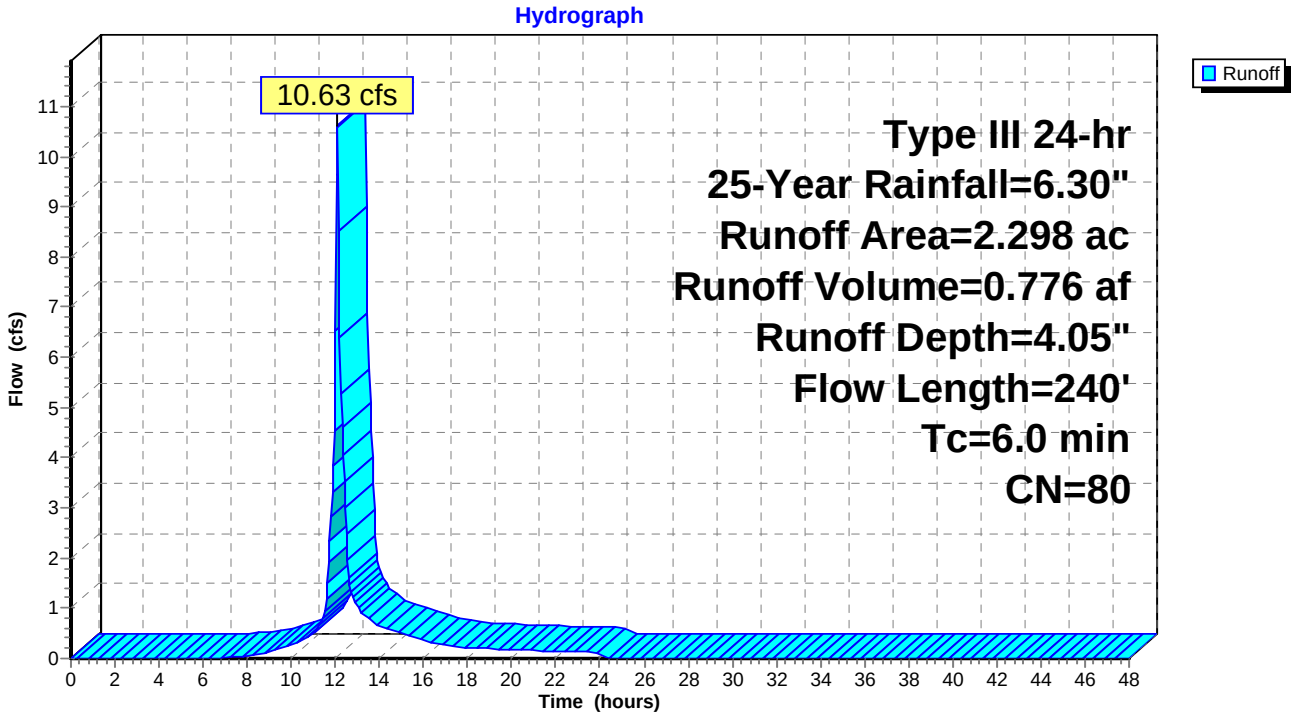
Runoff = 10.63 cfs @ 12.09 hrs, Volume= 0.776 af, Depth= 4.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.30"

	Area (ac)	CN	Description
	0.412	80	>75% Grass cover, Good, HSG D
	0.061	98	Paved parking, HSG C
	0.032	74	>75% Grass cover, Good, HSG C
	0.140	98	Paved parking, HSG C
	0.680	74	>75% Grass cover, Good, HSG C
*	0.184	98	Two single Family Houses and Paved Driveways
	0.183	98	Paved parking, HSG C
	0.577	70	Woods, Good, HSG C
	0.029	74	>75% Grass cover, Good, HSG C
	2.298	80	Weighted Average
	1.730		75.28% Pervious Area
	0.568		24.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	24	0.1000	0.17		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.3	26	0.0500	1.56		**Sheet Flow, Paved/Gravel** Smooth surfaces n= 0.011 P2= 3.37"
0.3	85	0.0824	4.62		**Shallow Concentrated Flow, Gravel** Unpaved Kv= 16.1 fps
0.7	105	0.1333	2.56		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
3.6	240	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 17S: DA 2J



Summary for Subcatchment 18S: DA 2I

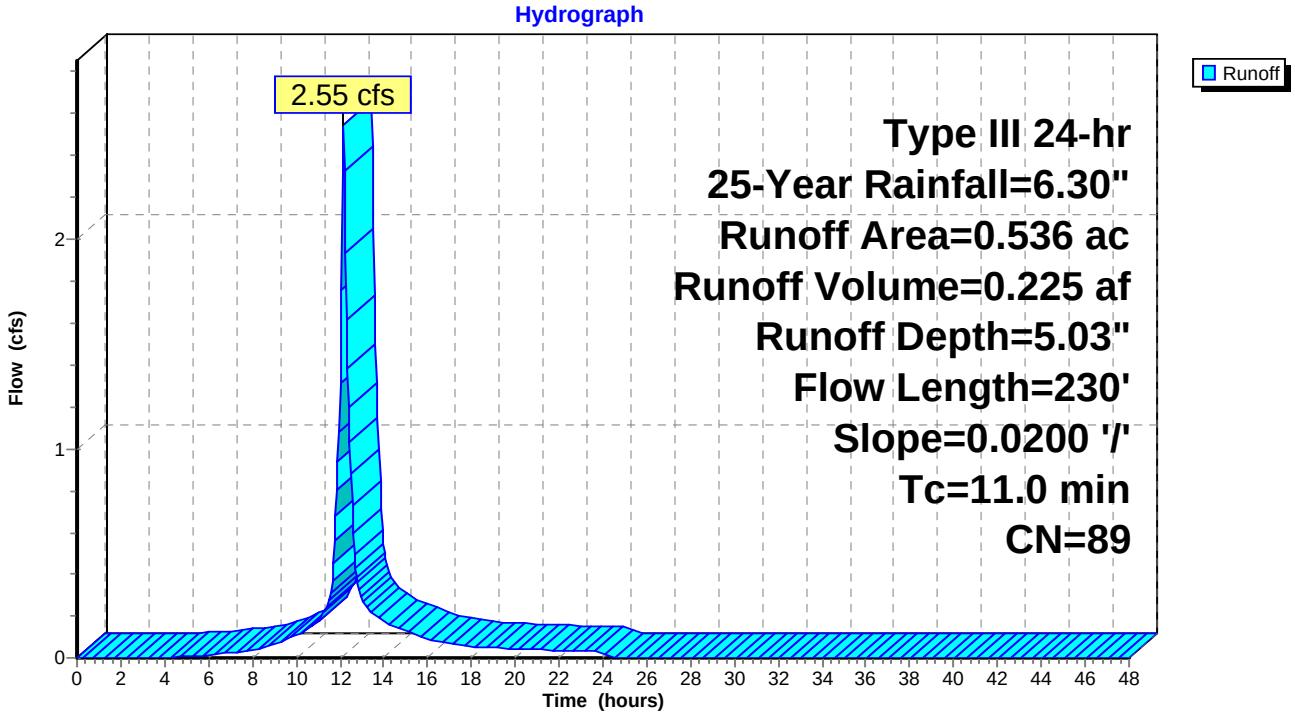
Runoff = 2.55 cfs @ 12.15 hrs, Volume= 0.225 af, Depth= 5.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.30"

	Area (ac)	CN	Description
*	0.344	98	Paved parking, HSG C, North
*	0.192	74	>75% Grass cover, Good, HSG C, North
	0.536	89	Weighted Average
	0.192		35.82% Pervious Area
	0.344		64.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0200	0.10		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
3.0	180	0.0200	0.99		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
11.0	230	Total			

Subcatchment 18S: DA 2I



Summary for Subcatchment 21S: DA 2F

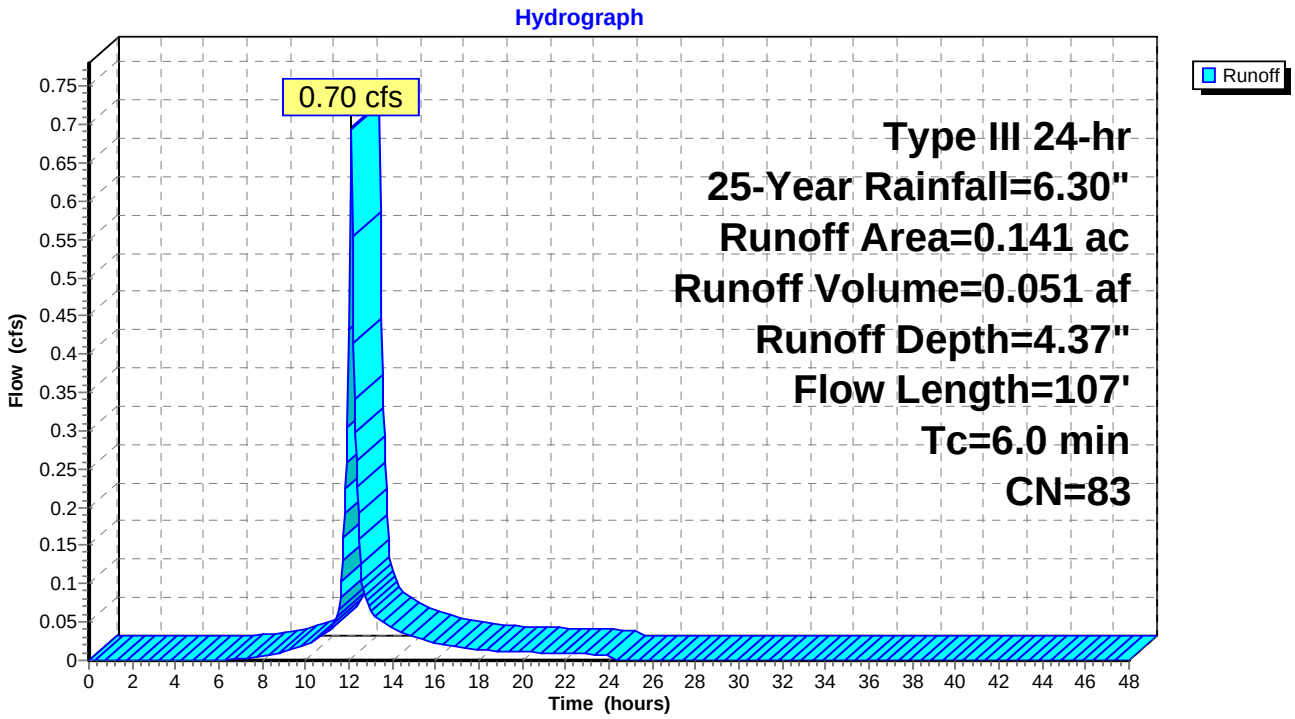
Runoff = 0.70 cfs @ 12.09 hrs, Volume= 0.051 af, Depth= 4.37"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.30"

Area (ac)	CN	Description
0.051	98	Water Surface, 0% imp, HSG C
0.090	74	>75% Grass cover, Good, HSG C
0.141	83	Weighted Average
0.141		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.3	57	0.1754	2.93		**Shallow Concentrated Flow, Woods** Short Grass Pasture Kv= 7.0 fps
4.5	107	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 21S: DA 2F



Summary for Subcatchment 22S: DA 2H

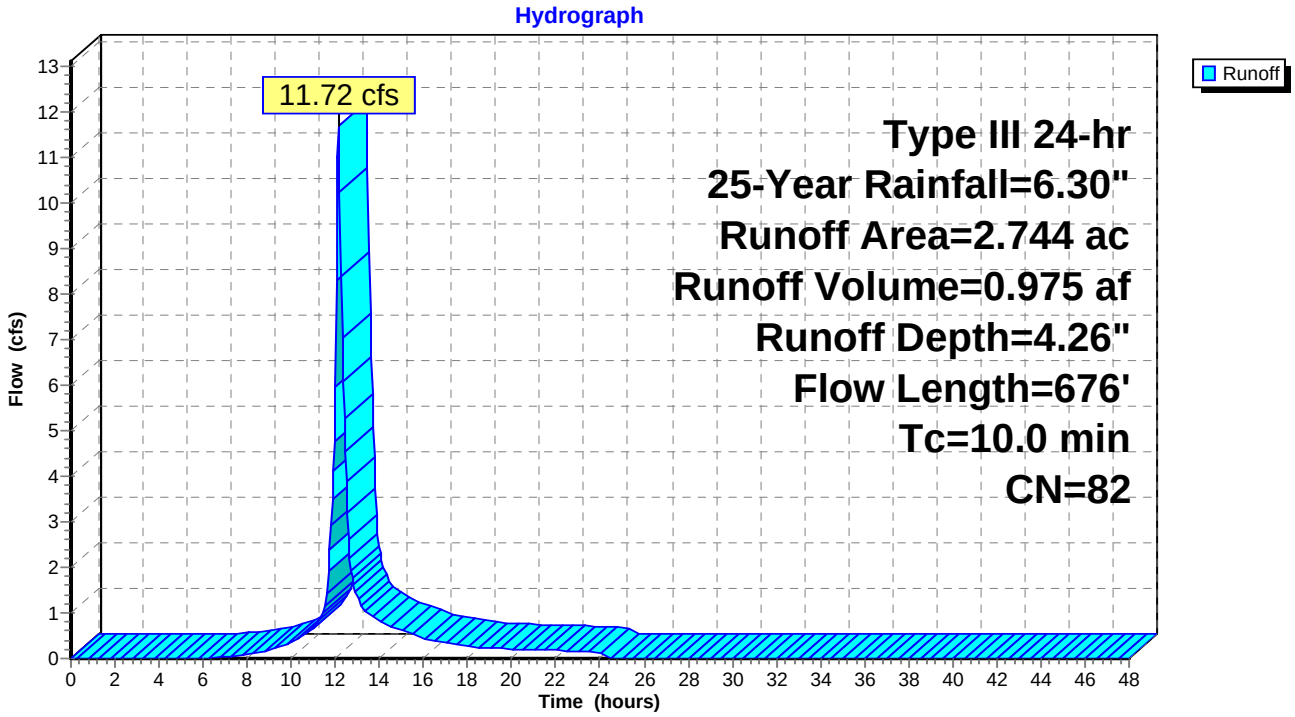
Runoff = 11.72 cfs @ 12.14 hrs, Volume= 0.975 af, Depth= 4.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=6.30"

	Area (ac)	CN	Description
*	0.431	98	Paved parking, HSG C, North
*	0.010	80	>75% Grass cover, Good, HSG D, North
*	0.313	74	>75% Grass cover, Good, HSG C, North
*	0.550	98	Paved parking, HSG C, South
*	0.356	74	>75% Grass cover, Good, HSG C, South
	0.748	70	Woods, Good, HSG C
	0.336	74	>75% Grass cover, Good, HSG C
	2.744	82	Weighted Average
	1.763		64.25% Pervious Area
	0.981		35.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	50	0.1000	0.13		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
1.7	190	0.1316	1.81		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.3	81	0.3333	4.04		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
1.7	355	0.0310	3.57		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
10.0	676	Total			

Subcatchment 22S: DA 2H



Summary for Pond 15P: Apartments Phase II Stormwater Basin 2

Inflow Area = 3.277 ac, 30.06% Impervious, Inflow Depth = 4.07" for 25-Year event
Inflow = 12.63 cfs @ 12.16 hrs, Volume= 1.111 af
Outflow = 12.39 cfs @ 12.19 hrs, Volume= 1.031 af, Atten= 2%, Lag= 1.6 min
Primary = 12.39 cfs @ 12.19 hrs, Volume= 1.031 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 568.24' @ 12.19 hrs Surf.Area= 2,401 sf Storage= 5,977 cf

Plug-Flow detention time= 61.4 min calculated for 1.031 af (93% of inflow)
Center-of-Mass det. time= 23.6 min (840.7 - 817.1)

Volume	Invert	Avail.Storage	Storage Description
#1	562.00'	6 cf	**3.00'W x 8.00'L x 2.50'H Sand Underdrain** 60 cf Overall x 10.0% Voids
#2	564.50'	10,719 cf	**Stormwater Basin (Irregular)**Listed below
		10,725 cf	Total Available Storage

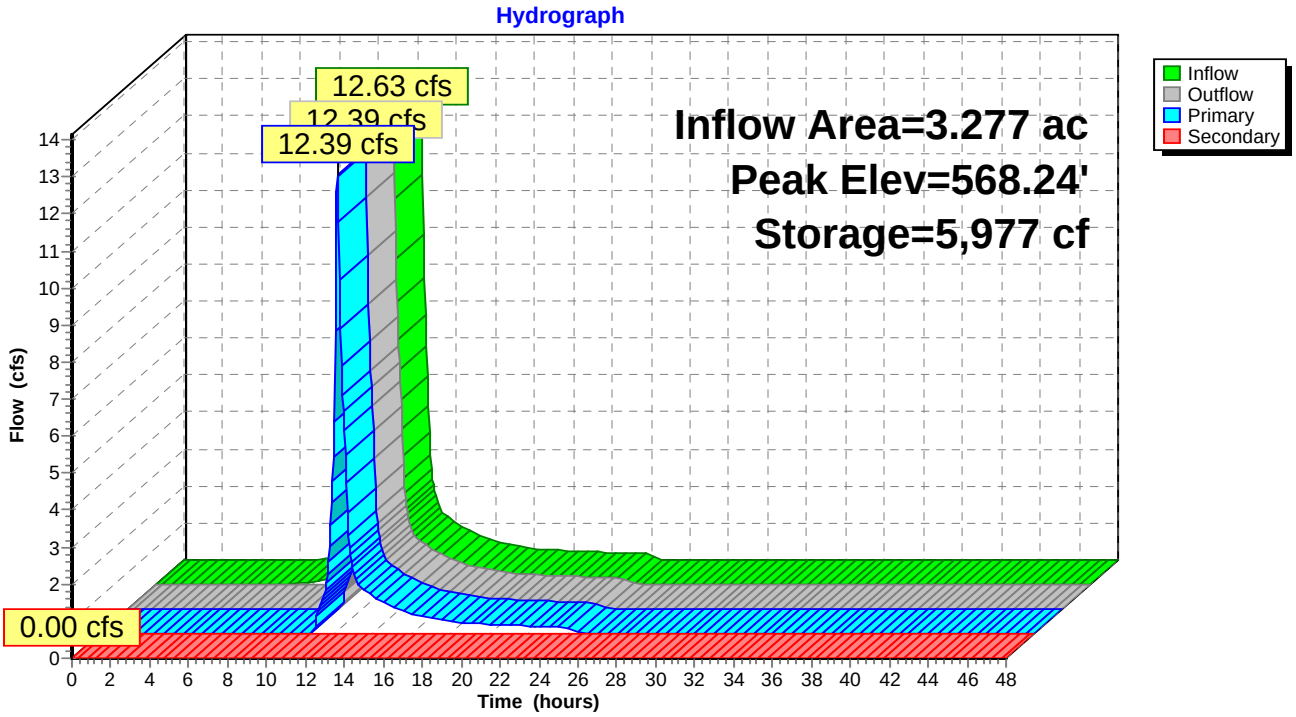
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
564.50	4	8.2	0	0	4
564.75	257	68.5	24	24	372
565.00	1,193	160.0	167	191	2,036
566.00	1,533	172.5	1,359	1,551	2,406
568.00	2,277	197.6	3,786	5,336	3,233
570.00	3,128	222.7	5,383	10,719	4,172

Device	Routing	Invert	Outlet Devices
#1	Primary	562.00'	**18.0" Round 18" HDPE** L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 562.00' / 561.60' S= 0.0059 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	567.00'	**36.0" W x 6.0" H Vert. 36" x 6" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	568.00'	**1.0" x 3.7" Horiz. Top of Frame X 39.00 columns** X 9 rows C= 0.600 in 48.0" x 36.0" Grate (75% open area) Limited to weir flow at low heads
#4	Secondary	569.00'	**8.0' long x 8.0' breadth Rip Rap Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#5	Device 1	562.00'	**0.500 in/hr Sand Underdrain over Horizontal area from 562.00' - 564.50'** Excluded Horizontal area = 24 sf Phase-In= 0.01'

Primary OutFlow Max=12.24 cfs @ 12.19 hrs HW=568.23' TW=563.32' (Dynamic Tailwater)
└─**1=18" HDPE** (Passes 12.24 cfs of 18.86 cfs potential flow)
  ├─**2=36" x 6" Orifice** (Orifice Controls 7.14 cfs @ 4.76 fps)
  ├─**3=Top of Frame** (Weir Controls 5.11 cfs @ 1.57 fps)
  └─**5=Sand Underdrain** (Exfiltration Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=562.00' TW=0.00' (Dynamic Tailwater)
└─**4=Rip Rap Spillway** (Controls 0.00 cfs)

Pond 15P: Apartments Phase II Stormwater Basin 2



Summary for Pond 20P: Apartments Phase II Stormwater Basin 1

Inflow Area = 7.001 ac, 33.00% Impervious, Inflow Depth = 4.09" for 25-Year event
Inflow = 27.96 cfs @ 12.16 hrs, Volume= 2.385 af
Outflow = 19.80 cfs @ 12.30 hrs, Volume= 2.195 af, Atten= 29%, Lag= 8.5 min
Primary = 19.80 cfs @ 12.30 hrs, Volume= 2.195 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 558.93' @ 12.30 hrs Surf.Area= 7,387 sf Storage= 28,628 cf

Plug-Flow detention time= 98.5 min calculated for 2.195 af (92% of inflow)
Center-of-Mass det. time= 57.6 min (879.4 - 821.8)

Volume	Invert	Avail.Storage	Storage Description
#1	551.00'	4 cf	**3.00'W x 8.00'L x 1.75'H Sand Underdrain** 42 cf Overall x 10.0% Voids
#2	552.75'	40,883 cf	**Stormwater Basin (Irregular)**Listed below (Recalc)
#3	556.00'	424 cf	**36.0" Round Pipe Storage**-Impervious L= 60.0' S= 0.0083 '/'
		41,312 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
552.75	120	43.3	0	0	120
553.00	865	110.3	109	109	939
553.25	1,552	155.7	298	407	1,901
553.50	2,135	207.8	459	866	3,409
553.75	2,928	261.6	630	1,496	5,419
554.00	3,512	310.5	804	2,300	7,646
555.00	4,145	323.0	3,824	6,124	8,352
556.00	4,804	335.6	4,470	10,595	9,090
557.00	5,490	348.1	5,143	15,738	9,851
558.00	6,569	422.7	6,021	21,759	14,443
559.00	7,426	435.3	6,993	28,752	15,404
560.00	8,310	447.8	7,864	36,616	16,387
560.50	8,761	454.1	4,267	40,883	16,893

Device	Routing	Invert	Outlet Devices
#1	Primary	551.00'	**18.0" Round 18" HDPE** L= 152.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 551.00' / 549.00' S= 0.0132 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	555.50'	**6.0" Vert. 6" Orifices (2) X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	557.30'	**48.0" W x 7.0" H Vert. 48" x 7" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	558.75'	**1.0" x 3.7" Horiz. Top of Frame X 39.00 columns** X 9 rows C= 0.600 in 48.0" x 36.0" Grate (75% open area) Limited to weir flow at low heads
#5	Secondary	559.75'	**8.0' long x 8.0' breadth Rip Rap Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

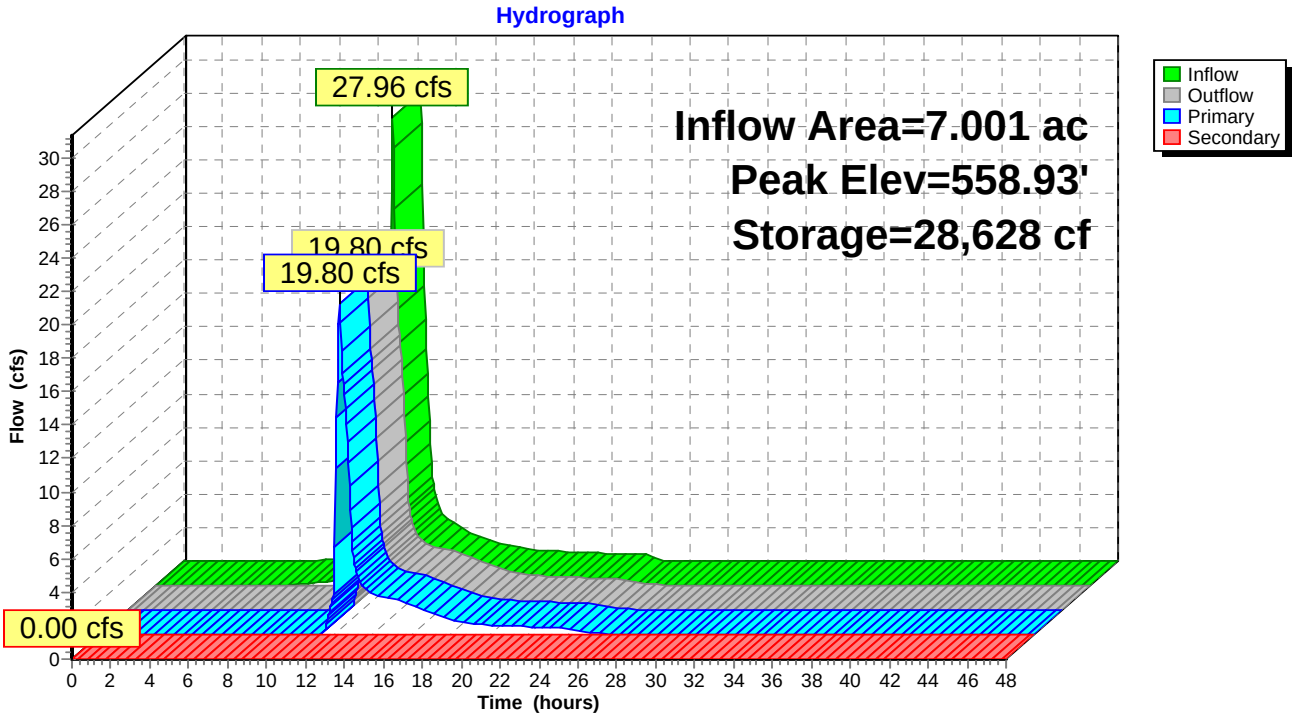
2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64
2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

#6 Device 1 551.00' **0.500 in/hr Sand Underdrain over Horizontal area from 551.00' - 552.75'**
Excluded Horizontal area = 24 sf Phase-In= 0.01'

Primary OutFlow Max=19.76 cfs @ 12.30 hrs HW=558.93' TW=0.00' (Dynamic Tailwater)
└─**1=18" HDPE** (Passes 19.76 cfs of 19.90 cfs potential flow)
  ├─**2=6" Orifices (2)** (Orifice Controls 3.37 cfs @ 8.58 fps)
  ├─**3=48" x 7" Orifice** (Orifice Controls 12.96 cfs @ 5.55 fps)
  ├─**4=Top of Frame** (Weir Controls 3.43 cfs @ 1.38 fps)
  └─**6=Sand Underdrain** (Exfiltration Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=551.00' TW=0.00' (Dynamic Tailwater)
└─**5=Rip Rap Spillway** (Controls 0.00 cfs)

Pond 20P: Apartments Phase II Stormwater Basin 1



Summary for Pond 21P: Drain

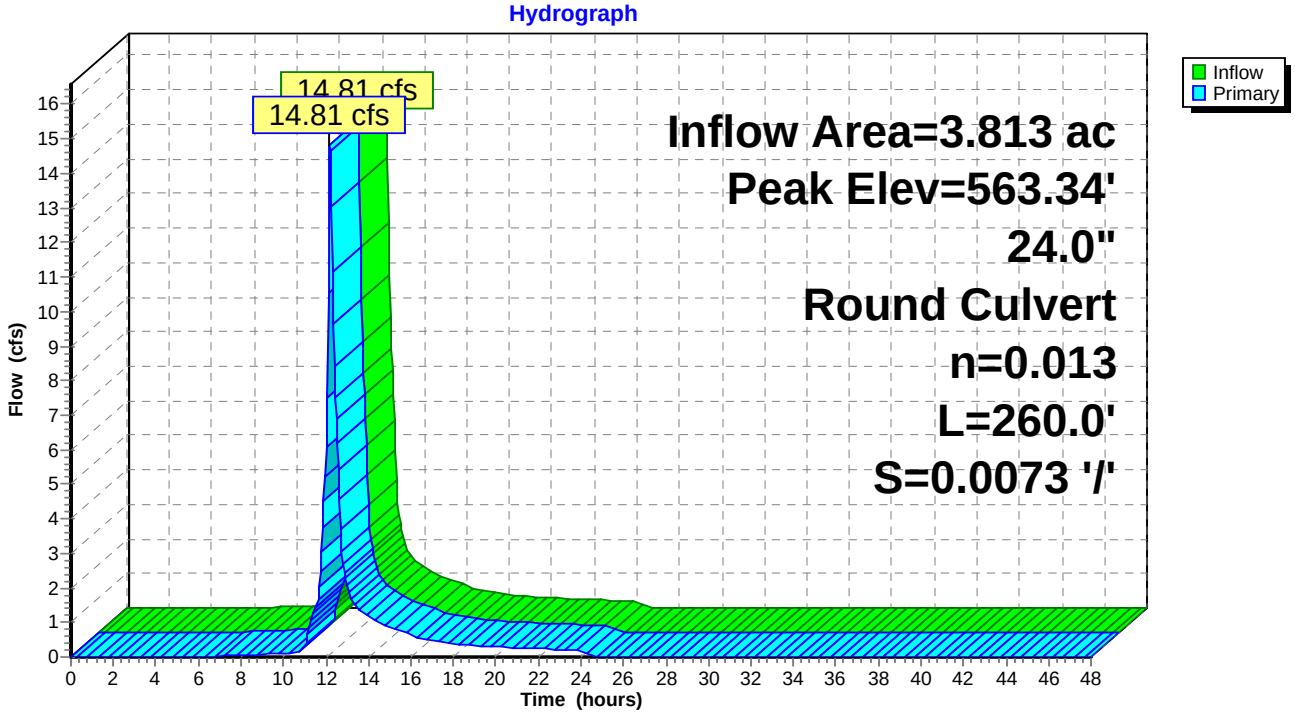
Inflow Area = 3.813 ac, 34.85% Impervious, Inflow Depth = 3.95" for 25-Year event
Inflow = 14.81 cfs @ 12.18 hrs, Volume= 1.256 af
Outflow = 14.81 cfs @ 12.18 hrs, Volume= 1.256 af, Atten= 0%, Lag= 0.0 min
Primary = 14.81 cfs @ 12.18 hrs, Volume= 1.256 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 563.34' @ 12.18 hrs
Flood Elev= 565.37'

Device	Routing	Invert	Outlet Devices
#1	Primary	561.40'	**24.0" Round Culvert** L= 260.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 561.40' / 559.50' S= 0.0073 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=14.59 cfs @ 12.18 hrs HW=563.32' TW=558.58' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 14.59 cfs @ 4.71 fps)

Pond 21P: Drain

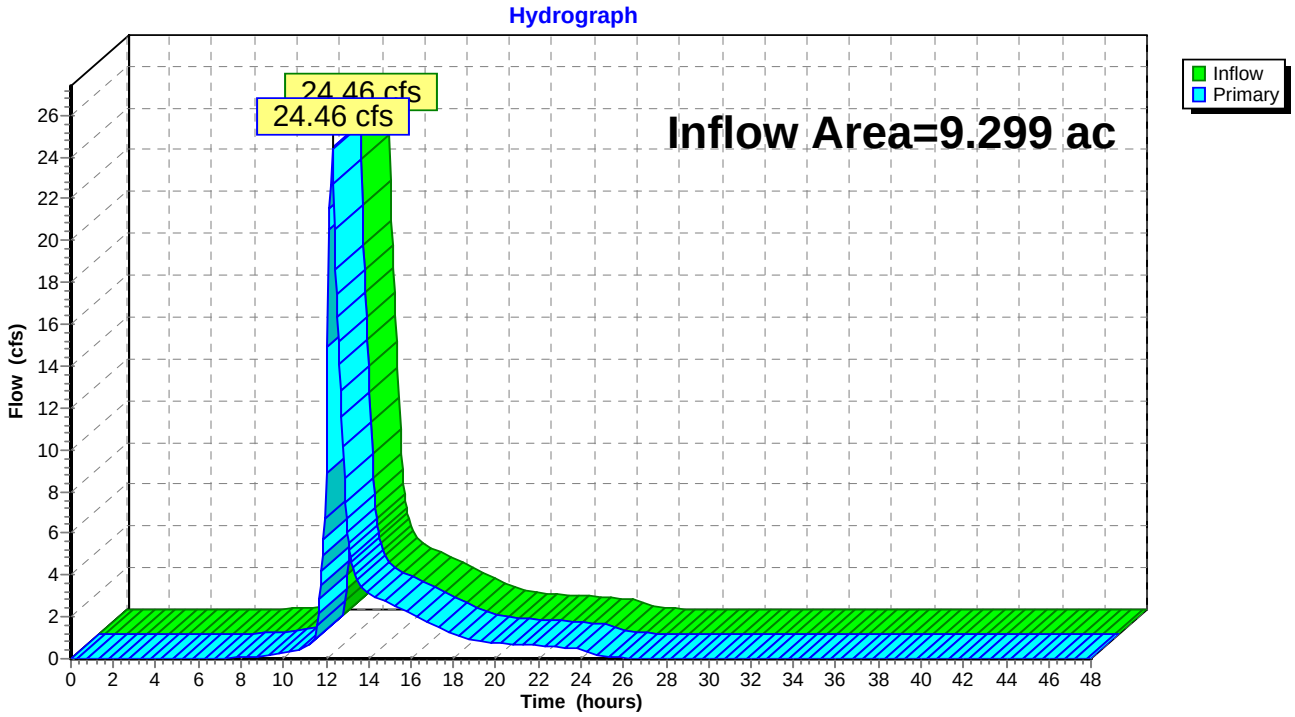


Summary for Link 20L: Off-Site

Inflow Area = 9.299 ac, 30.95% Impervious, Inflow Depth = 3.83" for 25-Year event
Inflow = 24.46 cfs @ 12.29 hrs, Volume= 2.971 af
Primary = 24.46 cfs @ 12.29 hrs, Volume= 2.971 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link 20L: Off-Site



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 2
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 15S: DA 2E Runoff Area=3.136 ac 31.41% Impervious Runoff Depth=4.82"
Flow Length=671' Tc=12.0 min CN=80 Runoff=14.36 cfs 1.261 af

Subcatchment 16S: DA 2G Runoff Area=0.444 ac 0.00% Impervious Runoff Depth=4.94"
Flow Length=110' Tc=6.0 min CN=81 Runoff=2.48 cfs 0.183 af

Subcatchment 17S: DA 2J Runoff Area=2.298 ac 24.72% Impervious Runoff Depth=4.82"
Flow Length=240' Tc=6.0 min CN=80 Runoff=12.58 cfs 0.924 af

Subcatchment 18S: DA 2I Runoff Area=0.536 ac 64.18% Impervious Runoff Depth=5.84"
Flow Length=230' Slope=0.0200 '/' Tc=11.0 min CN=89 Runoff=2.94 cfs 0.261 af

Subcatchment 21S: DA 2F Runoff Area=0.141 ac 0.00% Impervious Runoff Depth=5.16"
Flow Length=107' Tc=6.0 min CN=83 Runoff=0.82 cfs 0.061 af

Subcatchment 22S: DA 2H Runoff Area=2.744 ac 35.75% Impervious Runoff Depth=5.05"
Flow Length=676' Tc=10.0 min CN=82 Runoff=13.80 cfs 1.154 af

Pond 15P: Apartments Phase II Stormwater Peak Elev=568.30' Storage=6,138 cf Inflow=14.97 cfs 1.321 af
Primary=14.72 cfs 1.242 af Secondary=0.00 cfs 0.000 af Outflow=14.72 cfs 1.242 af

Pond 20P: Apartments Phase II Peak Elev=559.44' Storage=32,519 cf Inflow=33.02 cfs 2.840 af
Primary=20.49 cfs 2.650 af Secondary=0.00 cfs 0.000 af Outflow=20.49 cfs 2.650 af

Pond 21P: Drain Peak Elev=563.74' Inflow=17.53 cfs 1.503 af
24.0" Round Culvert n=0.013 L=260.0' S=0.0073 '/' Outflow=17.53 cfs 1.503 af

Link 20L: Off-Site Inflow=27.65 cfs 3.574 af
Primary=27.65 cfs 3.574 af

Total Runoff Area = 9.299 ac Runoff Volume = 3.843 af Average Runoff Depth = 4.96"
69.05% Pervious = 6.421 ac 30.95% Impervious = 2.878 ac

Summary for Subcatchment 15S: DA 2E

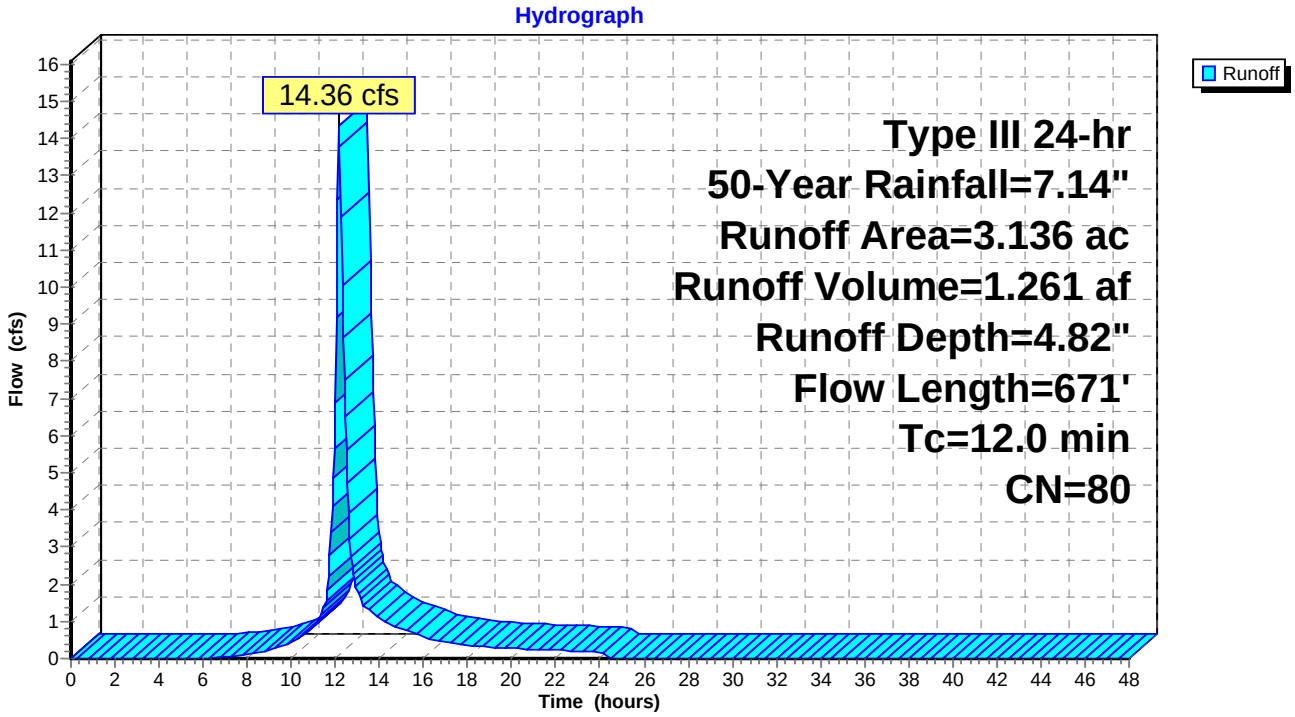
Runoff = 14.36 cfs @ 12.16 hrs, Volume= 1.261 af, Depth= 4.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=7.14"

	Area (ac)	CN	Description
*	0.985	98	Paved parking, HSG C, South
*	0.455	74	>75% Grass cover, Good, HSG C, South
	1.030	70	Woods, Good, HSG C
	0.666	74	>75% Grass cover, Good, HSG C
	3.136	80	Weighted Average
	2.151		68.59% Pervious Area
	0.985		31.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0600	0.11		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
3.3	417	0.1799	2.12		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.3	40	0.1000	2.21		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.7	164	0.0421	4.17		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
12.0	671	Total			

Subcatchment 15S: DA 2E



Summary for Subcatchment 16S: DA 2G

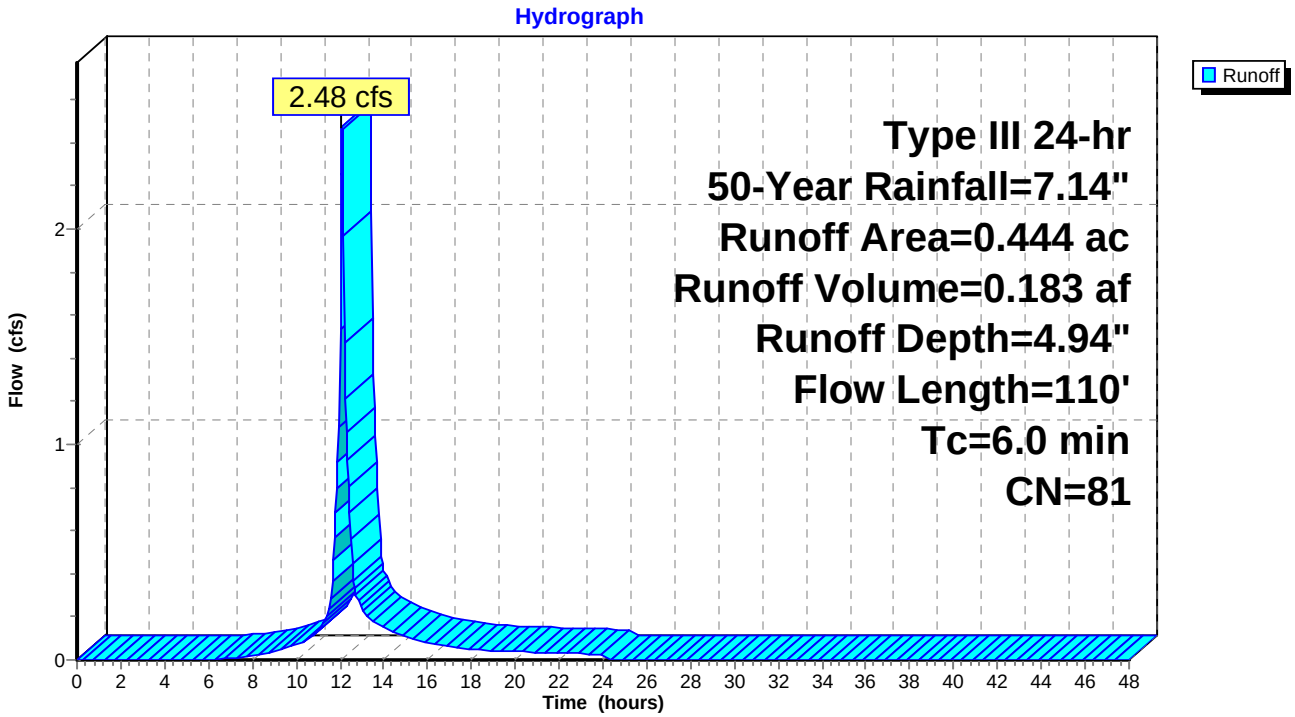
Runoff = 2.48 cfs @ 12.09 hrs, Volume= 0.183 af, Depth= 4.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=7.14"

Area (ac)	CN	Description
0.103	98	Water Surface, 0% imp, HSG C
0.017	80	>75% Grass cover, Good, HSG D
0.229	74	>75% Grass cover, Good, HSG C
0.079	80	>75% Grass cover, Good, HSG D
0.016	74	>75% Grass cover, Good, HSG C
0.444	81	Weighted Average
0.444		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	50	0.0500	0.15		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.2	60	0.3500	4.14		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
5.7	110	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 16S: DA 2G



Summary for Subcatchment 17S: DA 2J

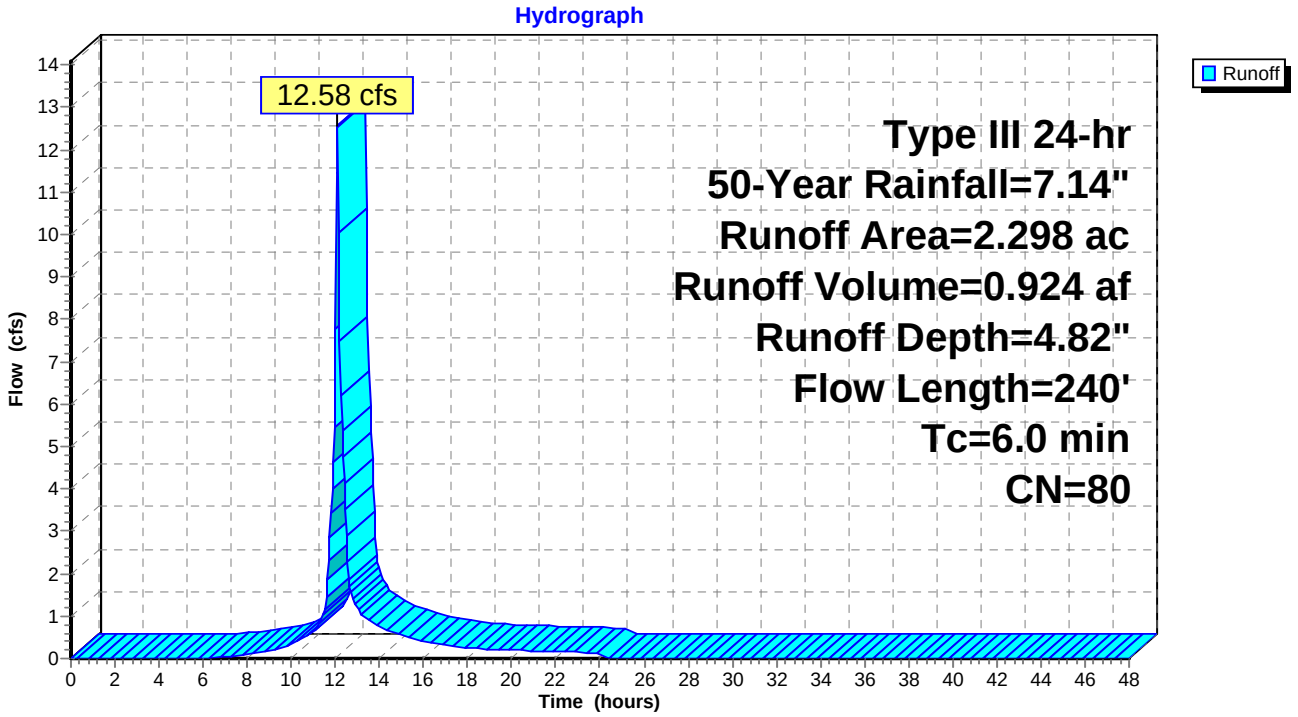
Runoff = 12.58 cfs @ 12.09 hrs, Volume= 0.924 af, Depth= 4.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=7.14"

	Area (ac)	CN	Description
	0.412	80	>75% Grass cover, Good, HSG D
	0.061	98	Paved parking, HSG C
	0.032	74	>75% Grass cover, Good, HSG C
	0.140	98	Paved parking, HSG C
	0.680	74	>75% Grass cover, Good, HSG C
*	0.184	98	Two single Family Houses and Paved Driveways
	0.183	98	Paved parking, HSG C
	0.577	70	Woods, Good, HSG C
	0.029	74	>75% Grass cover, Good, HSG C
	2.298	80	Weighted Average
	1.730		75.28% Pervious Area
	0.568		24.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	24	0.1000	0.17		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.3	26	0.0500	1.56		**Sheet Flow, Paved/Gravel** Smooth surfaces n= 0.011 P2= 3.37"
0.3	85	0.0824	4.62		**Shallow Concentrated Flow, Gravel** Unpaved Kv= 16.1 fps
0.7	105	0.1333	2.56		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
3.6	240	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 17S: DA 2J



Summary for Subcatchment 18S: DA 2I

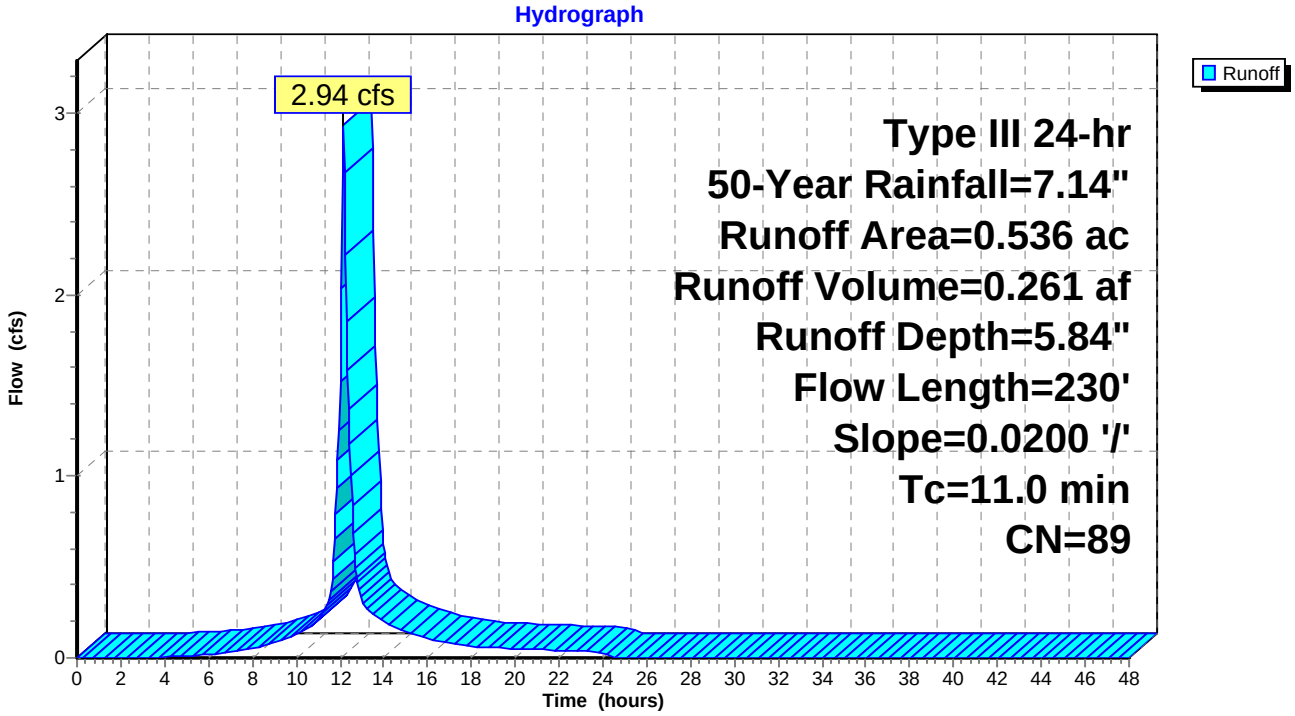
Runoff = 2.94 cfs @ 12.15 hrs, Volume= 0.261 af, Depth= 5.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=7.14"

	Area (ac)	CN	Description
*	0.344	98	Paved parking, HSG C, North
*	0.192	74	>75% Grass cover, Good, HSG C, North
	0.536	89	Weighted Average
	0.192		35.82% Pervious Area
	0.344		64.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0200	0.10		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
3.0	180	0.0200	0.99		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
11.0	230	Total			

Subcatchment 18S: DA 2I



Summary for Subcatchment 21S: DA 2F

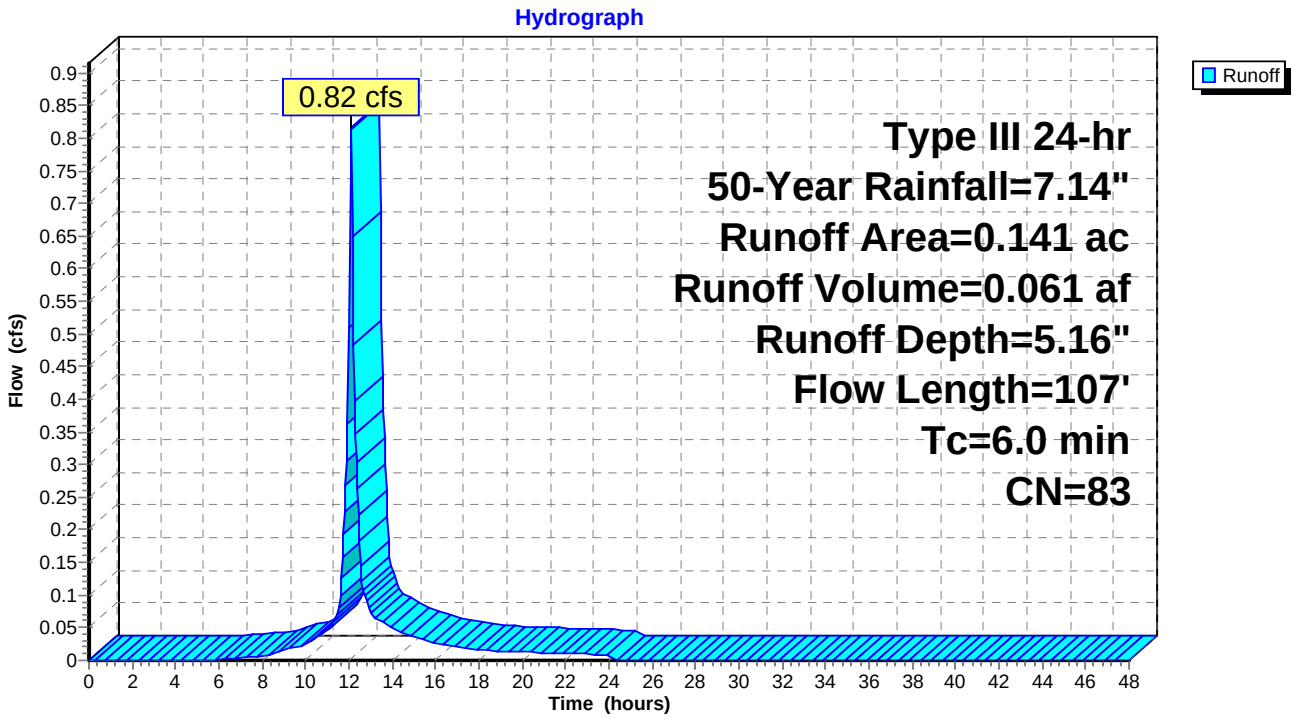
Runoff = 0.82 cfs @ 12.09 hrs, Volume= 0.061 af, Depth= 5.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=7.14"

Area (ac)	CN	Description
0.051	98	Water Surface, 0% imp, HSG C
0.090	74	>75% Grass cover, Good, HSG C
0.141	83	Weighted Average
0.141		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.3	57	0.1754	2.93		**Shallow Concentrated Flow, Woods** Short Grass Pasture Kv= 7.0 fps
4.5	107	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 21S: DA 2F



Summary for Subcatchment 22S: DA 2H

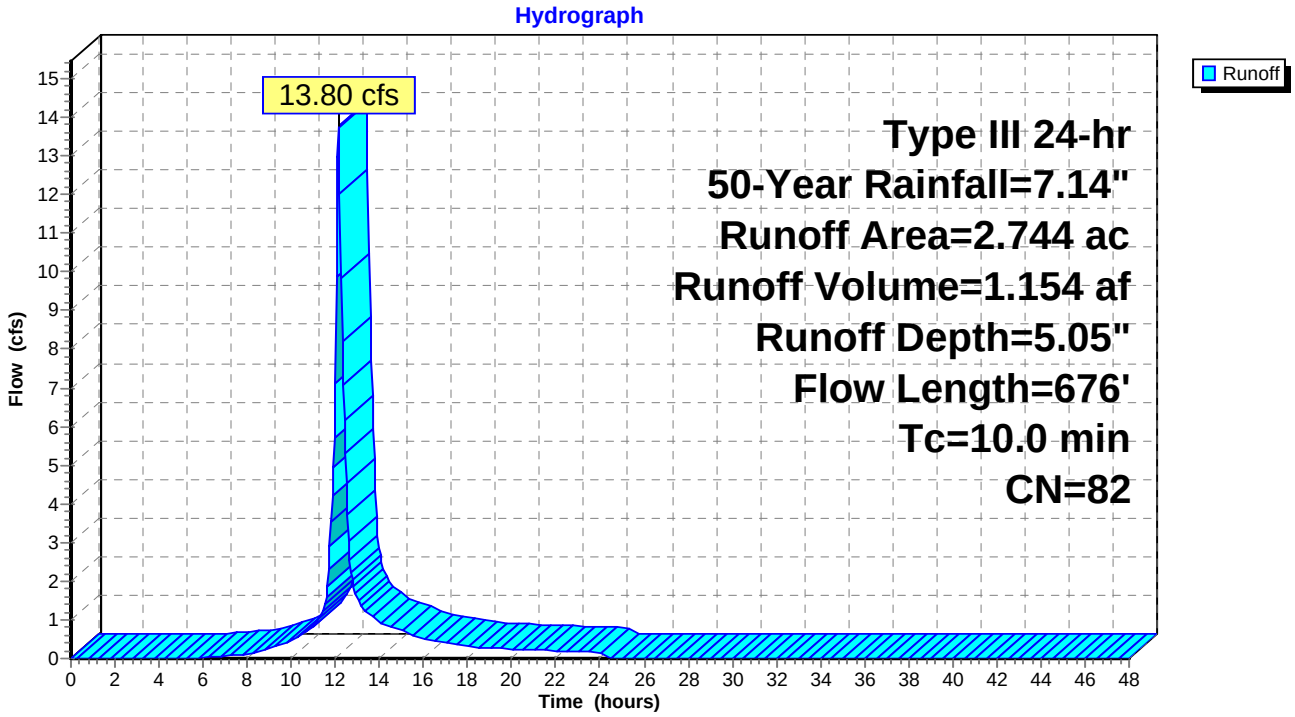
Runoff = 13.80 cfs @ 12.14 hrs, Volume= 1.154 af, Depth= 5.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 50-Year Rainfall=7.14"

	Area (ac)	CN	Description
*	0.431	98	Paved parking, HSG C, North
*	0.010	80	>75% Grass cover, Good, HSG D, North
*	0.313	74	>75% Grass cover, Good, HSG C, North
*	0.550	98	Paved parking, HSG C, South
*	0.356	74	>75% Grass cover, Good, HSG C, South
	0.748	70	Woods, Good, HSG C
	0.336	74	>75% Grass cover, Good, HSG C
	2.744	82	Weighted Average
	1.763		64.25% Pervious Area
	0.981		35.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	50	0.1000	0.13		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
1.7	190	0.1316	1.81		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.3	81	0.3333	4.04		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
1.7	355	0.0310	3.57		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
10.0	676	Total			

Subcatchment 22S: DA 2H



Summary for Pond 15P: Apartments Phase II Stormwater Basin 2

Inflow Area = 3.277 ac, 30.06% Impervious, Inflow Depth = 4.84" for 50-Year event
Inflow = 14.97 cfs @ 12.16 hrs, Volume= 1.321 af
Outflow = 14.72 cfs @ 12.18 hrs, Volume= 1.242 af, Atten= 2%, Lag= 1.3 min
Primary = 14.72 cfs @ 12.18 hrs, Volume= 1.242 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 568.30' @ 12.18 hrs Surf.Area= 2,427 sf Storage= 6,138 cf

Plug-Flow detention time= 53.8 min calculated for 1.241 af (94% of inflow)
Center-of-Mass det. time= 21.9 min (834.1 - 812.2)

Volume	Invert	Avail.Storage	Storage Description
#1	562.00'	6 cf	**3.00'W x 8.00'L x 2.50'H Sand Underdrain** 60 cf Overall x 10.0% Voids
#2	564.50'	10,719 cf	**Stormwater Basin (Irregular)**Listed below
		10,725 cf	Total Available Storage

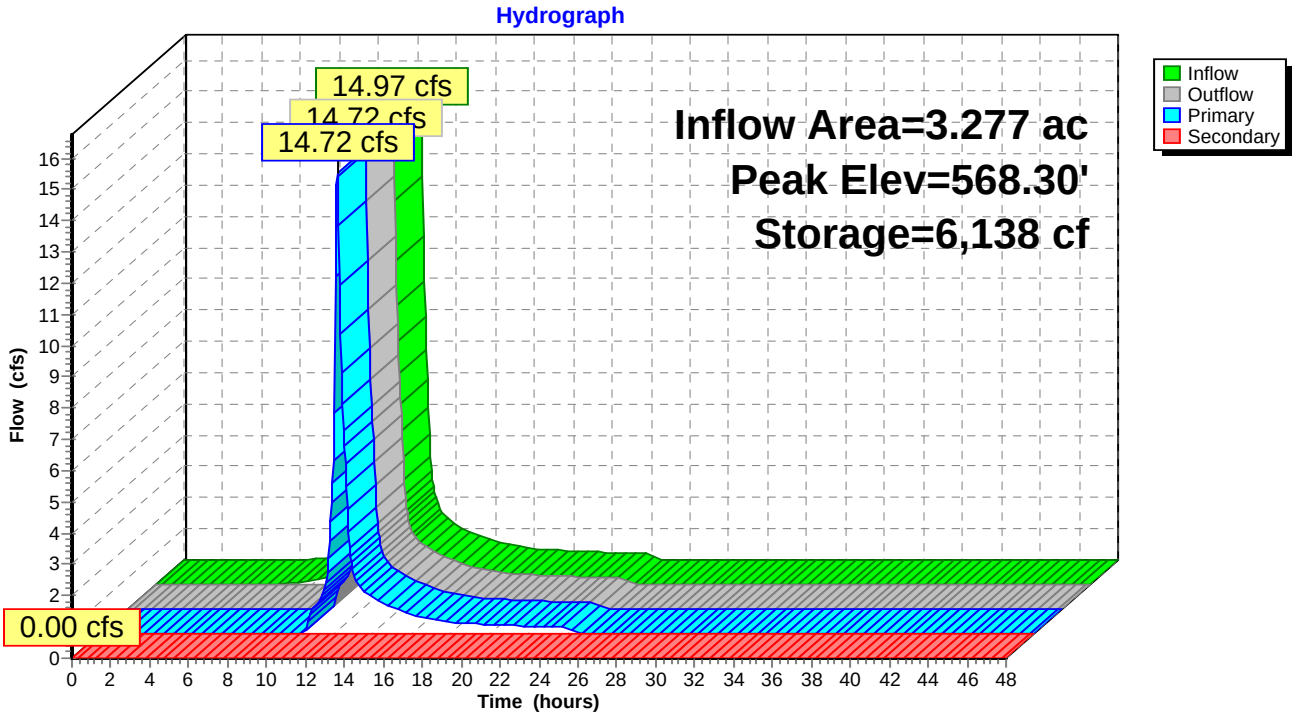
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
564.50	4	8.2	0	0	4
564.75	257	68.5	24	24	372
565.00	1,193	160.0	167	191	2,036
566.00	1,533	172.5	1,359	1,551	2,406
568.00	2,277	197.6	3,786	5,336	3,233
570.00	3,128	222.7	5,383	10,719	4,172

Device	Routing	Invert	Outlet Devices
#1	Primary	562.00'	**18.0" Round 18" HDPE** L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 562.00' / 561.60' S= 0.0059 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	567.00'	**36.0" W x 6.0" H Vert. 36" x 6" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	568.00'	**1.0" x 3.7" Horiz. Top of Frame X 39.00 columns** X 9 rows C= 0.600 in 48.0" x 36.0" Grate (75% open area) Limited to weir flow at low heads
#4	Secondary	569.00'	**8.0' long x 8.0' breadth Rip Rap Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#5	Device 1	562.00'	**0.500 in/hr Sand Underdrain over Horizontal area from 562.00' - 564.50'** Excluded Horizontal area = 24 sf Phase-In= 0.01'

Primary OutFlow Max=14.51 cfs @ 12.18 hrs HW=568.29' TW=563.70' (Dynamic Tailwater)
└─**1=18" HDPE** (Passes 14.51 cfs of 18.22 cfs potential flow)
  ├─**2=36" x 6" Orifice** (Orifice Controls 7.35 cfs @ 4.90 fps)
  ├─**3=Top of Frame** (Weir Controls 7.16 cfs @ 1.76 fps)
  └─**5=Sand Underdrain** (Exfiltration Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=562.00' TW=0.00' (Dynamic Tailwater)
└─**4=Rip Rap Spillway** (Controls 0.00 cfs)

Pond 15P: Apartments Phase II Stormwater Basin 2



Summary for Pond 20P: Apartments Phase II Stormwater Basin 1

Inflow Area = 7.001 ac, 33.00% Impervious, Inflow Depth = 4.87" for 50-Year event
Inflow = 33.02 cfs @ 12.16 hrs, Volume= 2.840 af
Outflow = 20.49 cfs @ 12.33 hrs, Volume= 2.650 af, Atten= 38%, Lag= 10.5 min
Primary = 20.49 cfs @ 12.33 hrs, Volume= 2.650 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 559.44' @ 12.33 hrs Surf.Area= 7,831 sf Storage= 32,519 cf

Plug-Flow detention time= 88.6 min calculated for 2.647 af (93% of inflow)
Center-of-Mass det. time= 54.2 min (870.7 - 816.5)

Volume	Invert	Avail.Storage	Storage Description
#1	551.00'	4 cf	**3.00'W x 8.00'L x 1.75'H Sand Underdrain** 42 cf Overall x 10.0% Voids
#2	552.75'	40,883 cf	**Stormwater Basin (Irregular)**Listed below (Recalc)
#3	556.00'	424 cf	**36.0" Round Pipe Storage**-Impervious L= 60.0' S= 0.0083 '/'
		41,312 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
552.75	120	43.3	0	0	120
553.00	865	110.3	109	109	939
553.25	1,552	155.7	298	407	1,901
553.50	2,135	207.8	459	866	3,409
553.75	2,928	261.6	630	1,496	5,419
554.00	3,512	310.5	804	2,300	7,646
555.00	4,145	323.0	3,824	6,124	8,352
556.00	4,804	335.6	4,470	10,595	9,090
557.00	5,490	348.1	5,143	15,738	9,851
558.00	6,569	422.7	6,021	21,759	14,443
559.00	7,426	435.3	6,993	28,752	15,404
560.00	8,310	447.8	7,864	36,616	16,387
560.50	8,761	454.1	4,267	40,883	16,893

Device	Routing	Invert	Outlet Devices
#1	Primary	551.00'	**18.0" Round 18" HDPE** L= 152.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 551.00' / 549.00' S= 0.0132 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	555.50'	**6.0" Vert. 6" Orifices (2) X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	557.30'	**48.0" W x 7.0" H Vert. 48" x 7" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	558.75'	**1.0" x 3.7" Horiz. Top of Frame X 39.00 columns** X 9 rows C= 0.600 in 48.0" x 36.0" Grate (75% open area) Limited to weir flow at low heads
#5	Secondary	559.75'	**8.0' long x 8.0' breadth Rip Rap Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

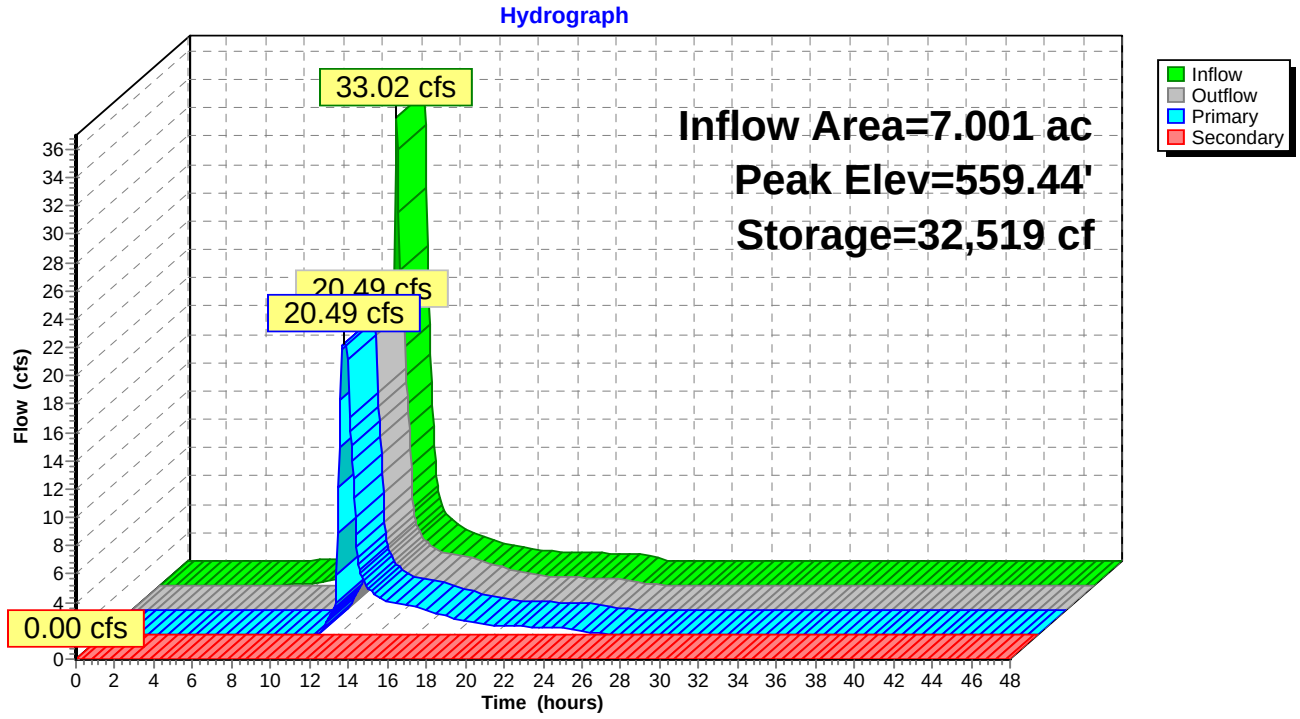
2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64
2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

#6 Device 1 551.00' **0.500 in/hr Sand Underdrain over Horizontal area from 551.00' - 552.75'**
Excluded Horizontal area = 24 sf Phase-In= 0.01'

Primary OutFlow Max=20.49 cfs @ 12.33 hrs HW=559.43' TW=0.00' (Dynamic Tailwater)
└─**1=18" HDPE** (Barrel Controls 20.49 cfs @ 11.59 fps)
  ├─**2=6" Orifices (2)** (Passes < 3.63 cfs potential flow)
  ├─**3=48" x 7" Orifice** (Passes < 15.22 cfs potential flow)
  ├─**4=Top of Frame** (Passes < 25.71 cfs potential flow)
  └─**6=Sand Underdrain** (Passes < 0.00 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=551.00' TW=0.00' (Dynamic Tailwater)
└─**5=Rip Rap Spillway** (Controls 0.00 cfs)

Pond 20P: Apartments Phase II Stormwater Basin 1



Summary for Pond 21P: Drain

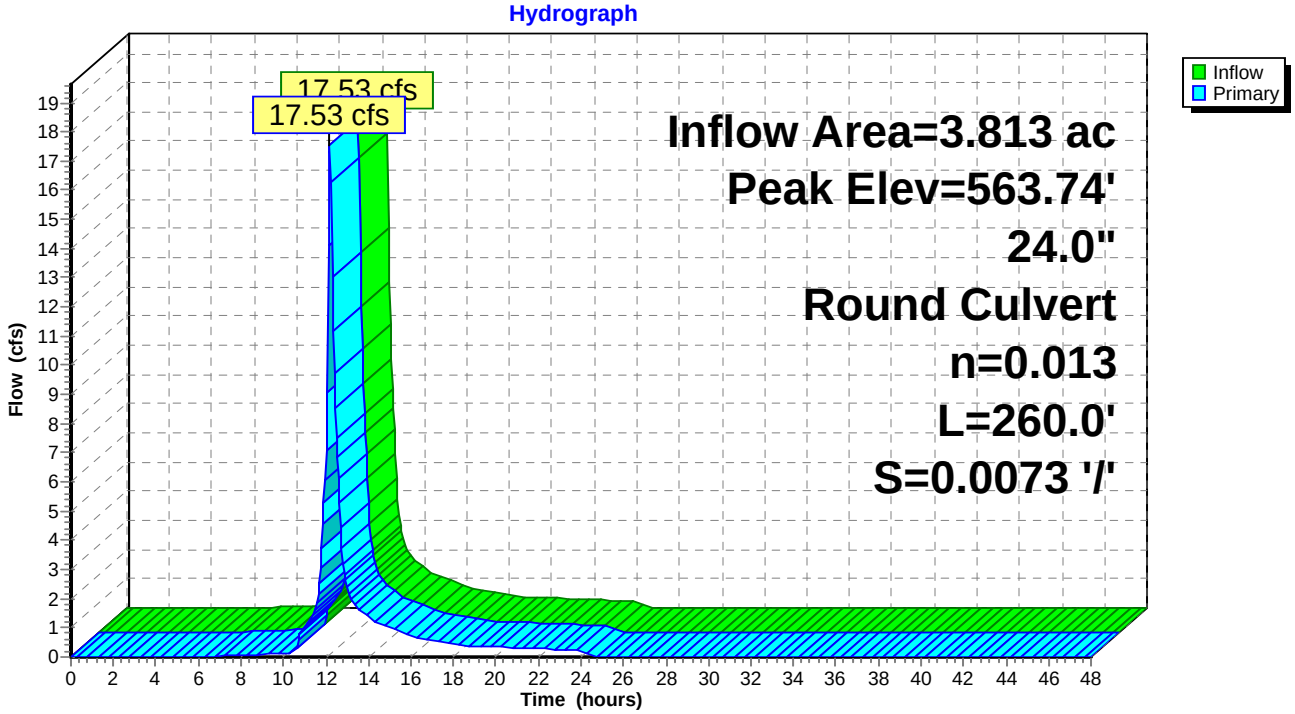
Inflow Area = 3.813 ac, 34.85% Impervious, Inflow Depth = 4.73" for 50-Year event
Inflow = 17.53 cfs @ 12.18 hrs, Volume= 1.503 af
Outflow = 17.53 cfs @ 12.18 hrs, Volume= 1.503 af, Atten= 0%, Lag= 0.0 min
Primary = 17.53 cfs @ 12.18 hrs, Volume= 1.503 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 563.74' @ 12.18 hrs
Flood Elev= 565.37'

Device	Routing	Invert	Outlet Devices
#1	Primary	561.40'	**24.0" Round Culvert** L= 260.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 561.40' / 559.50' S= 0.0073 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=17.28 cfs @ 12.18 hrs HW=563.70' TW=558.98' (Dynamic Tailwater)
└─**1=Culvert** (Inlet Controls 17.28 cfs @ 5.50 fps)

Pond 21P: Drain

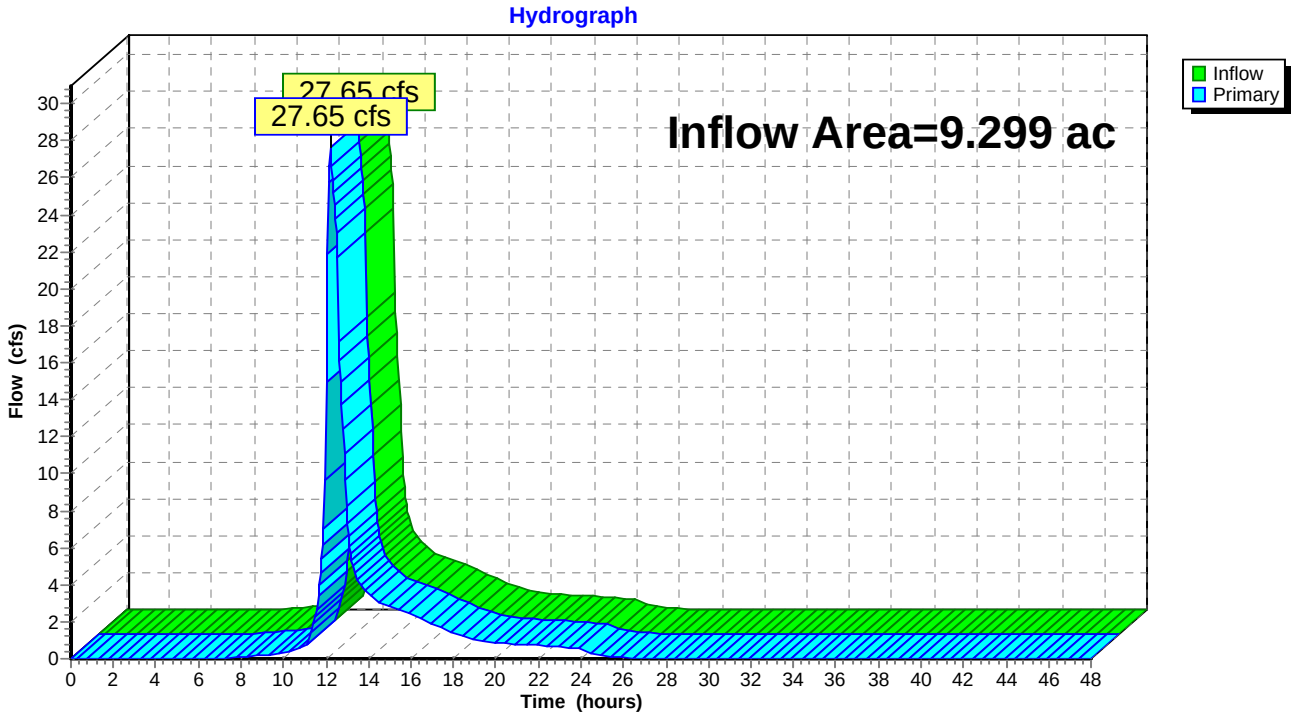


Summary for Link 20L: Off-Site

Inflow Area = 9.299 ac, 30.95% Impervious, Inflow Depth = 4.61" for 50-Year event
Inflow = 27.65 cfs @ 12.20 hrs, Volume= 3.574 af
Primary = 27.65 cfs @ 12.20 hrs, Volume= 3.574 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link 20L: Off-Site



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points x 2
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 15S: DA 2E Runoff Area=3.136 ac 31.41% Impervious Runoff Depth=5.66"
Flow Length=671' Tc=12.0 min CN=80 Runoff=16.77 cfs 1.480 af

Subcatchment 16S: DA 2G Runoff Area=0.444 ac 0.00% Impervious Runoff Depth=5.78"
Flow Length=110' Tc=6.0 min CN=81 Runoff=2.89 cfs 0.214 af

Subcatchment 17S: DA 2J Runoff Area=2.298 ac 24.72% Impervious Runoff Depth=5.66"
Flow Length=240' Tc=6.0 min CN=80 Runoff=14.68 cfs 1.084 af

Subcatchment 18S: DA 2I Runoff Area=0.536 ac 64.18% Impervious Runoff Depth=6.73"
Flow Length=230' Slope=0.0200 '/' Tc=11.0 min CN=89 Runoff=3.36 cfs 0.300 af

Subcatchment 21S: DA 2F Runoff Area=0.141 ac 0.00% Impervious Runoff Depth=6.02"
Flow Length=107' Tc=6.0 min CN=83 Runoff=0.95 cfs 0.071 af

Subcatchment 22S: DA 2H Runoff Area=2.744 ac 35.75% Impervious Runoff Depth=5.90"
Flow Length=676' Tc=10.0 min CN=82 Runoff=16.02 cfs 1.349 af

Pond 15P: Apartments Phase II Stormwater Peak Elev=568.37' Storage=6,342 cf Inflow=17.47 cfs 1.550 af
Primary=16.96 cfs 1.471 af Secondary=0.00 cfs 0.000 af Outflow=16.96 cfs 1.471 af

Pond 20P: Apartments Phase II Peak Elev=560.00' Storage=37,060 cf Inflow=38.23 cfs 3.334 af
Primary=21.13 cfs 3.112 af Secondary=2.48 cfs 0.032 af Outflow=23.61 cfs 3.144 af

Pond 21P: Drain Peak Elev=564.57' Inflow=20.33 cfs 1.772 af
24.0" Round Culvert n=0.013 L=260.0' S=0.0073 '/' Outflow=20.33 cfs 1.772 af

Link 20L: Off-Site Inflow=31.94 cfs 4.229 af
Primary=31.94 cfs 4.229 af

Total Runoff Area = 9.299 ac Runoff Volume = 4.498 af Average Runoff Depth = 5.80"
69.05% Pervious = 6.421 ac 30.95% Impervious = 2.878 ac

Summary for Subcatchment 15S: DA 2E

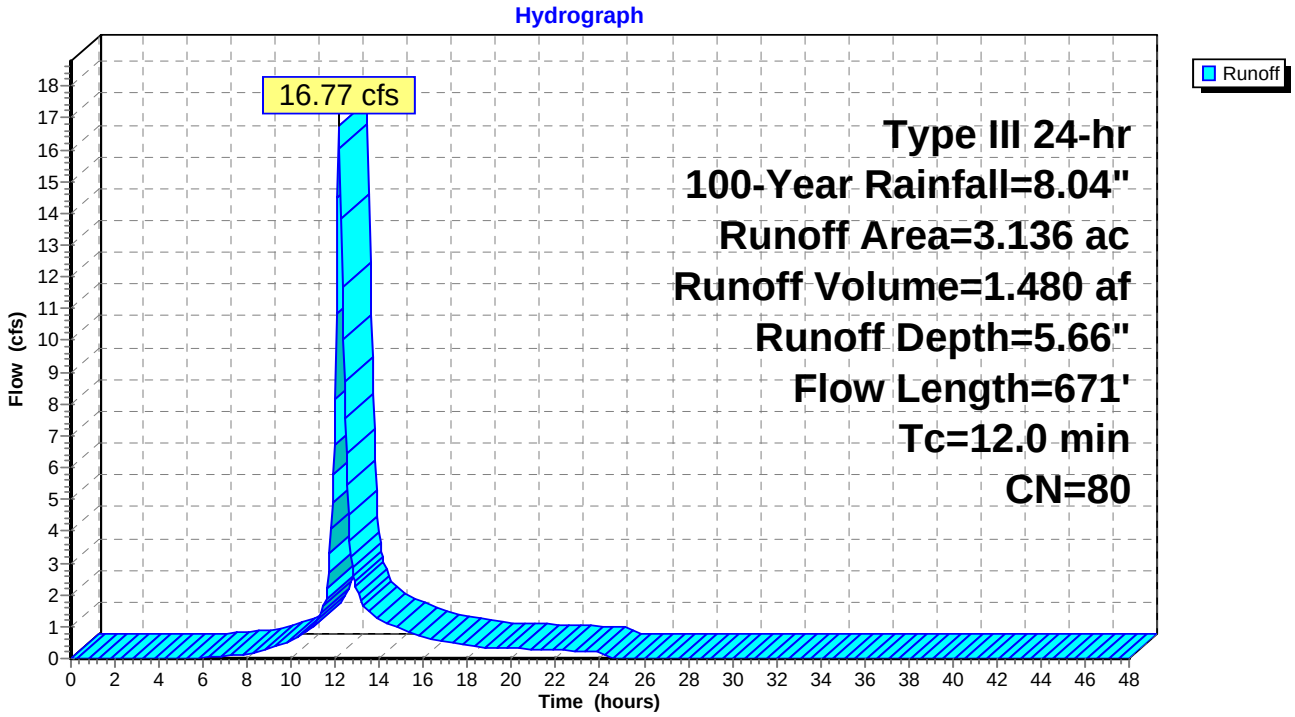
Runoff = 16.77 cfs @ 12.16 hrs, Volume= 1.480 af, Depth= 5.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.04"

	Area (ac)	CN	Description
*	0.985	98	Paved parking, HSG C, South
*	0.455	74	>75% Grass cover, Good, HSG C, South
	1.030	70	Woods, Good, HSG C
	0.666	74	>75% Grass cover, Good, HSG C
	3.136	80	Weighted Average
	2.151		68.59% Pervious Area
	0.985		31.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	50	0.0600	0.11		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
3.3	417	0.1799	2.12		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.3	40	0.1000	2.21		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
0.7	164	0.0421	4.17		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
12.0	671	Total			

Subcatchment 15S: DA 2E



Summary for Subcatchment 16S: DA 2G

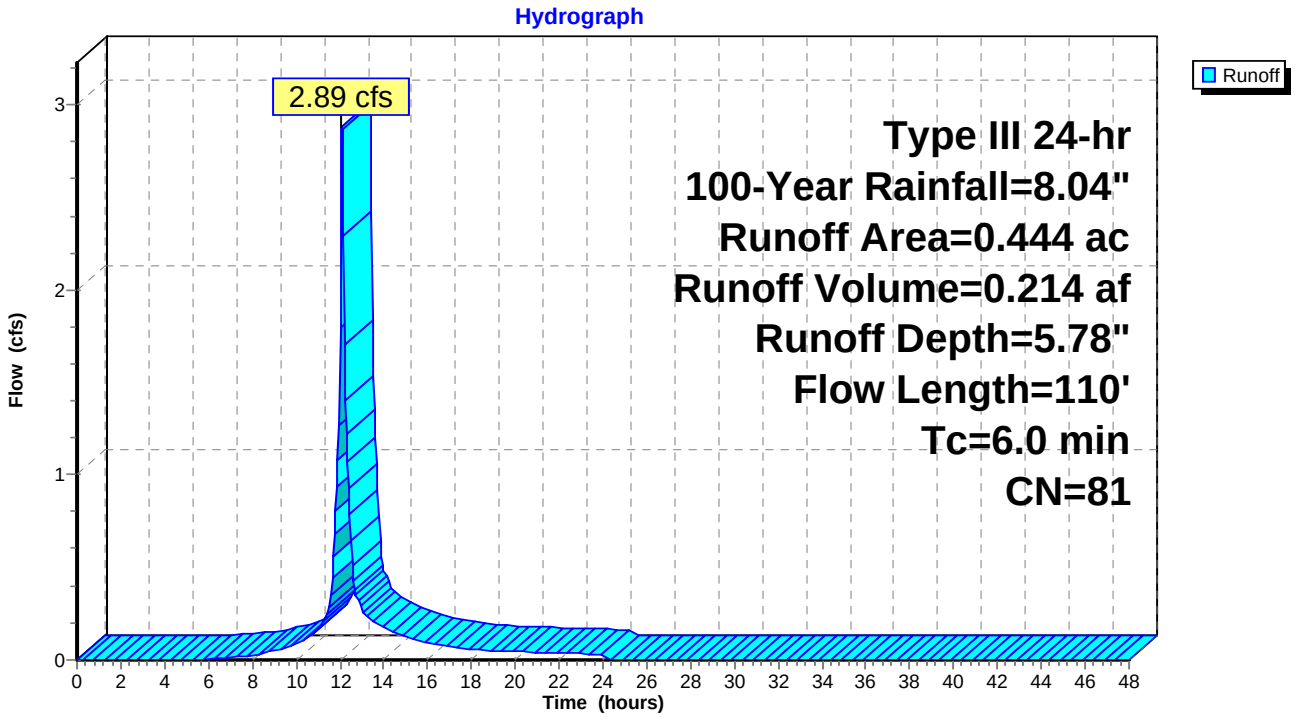
Runoff = 2.89 cfs @ 12.09 hrs, Volume= 0.214 af, Depth= 5.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.04"

Area (ac)	CN	Description
0.103	98	Water Surface, 0% imp, HSG C
0.017	80	>75% Grass cover, Good, HSG D
0.229	74	>75% Grass cover, Good, HSG C
0.079	80	>75% Grass cover, Good, HSG D
0.016	74	>75% Grass cover, Good, HSG C
0.444	81	Weighted Average
0.444		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	50	0.0500	0.15		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.2	60	0.3500	4.14		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
5.7	110	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 16S: DA 2G



Summary for Subcatchment 17S: DA 2J

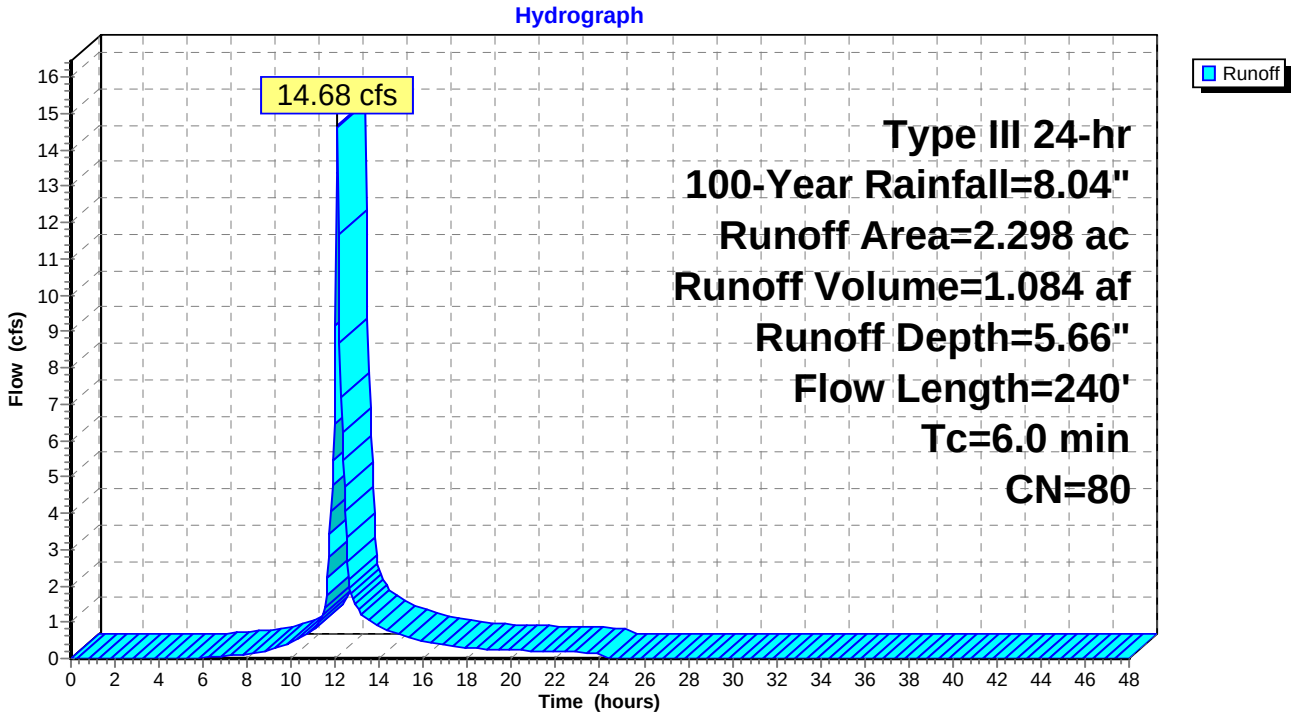
Runoff = 14.68 cfs @ 12.09 hrs, Volume= 1.084 af, Depth= 5.66"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.04"

	Area (ac)	CN	Description
	0.412	80	>75% Grass cover, Good, HSG D
	0.061	98	Paved parking, HSG C
	0.032	74	>75% Grass cover, Good, HSG C
	0.140	98	Paved parking, HSG C
	0.680	74	>75% Grass cover, Good, HSG C
*	0.184	98	Two single Family Houses and Paved Driveways
	0.183	98	Paved parking, HSG C
	0.577	70	Woods, Good, HSG C
	0.029	74	>75% Grass cover, Good, HSG C
	2.298	80	Weighted Average
	1.730		75.28% Pervious Area
	0.568		24.72% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	24	0.1000	0.17		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.3	26	0.0500	1.56		**Sheet Flow, Paved/Gravel** Smooth surfaces n= 0.011 P2= 3.37"
0.3	85	0.0824	4.62		**Shallow Concentrated Flow, Gravel** Unpaved Kv= 16.1 fps
0.7	105	0.1333	2.56		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
3.6	240	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 17S: DA 2J



Summary for Subcatchment 18S: DA 2I

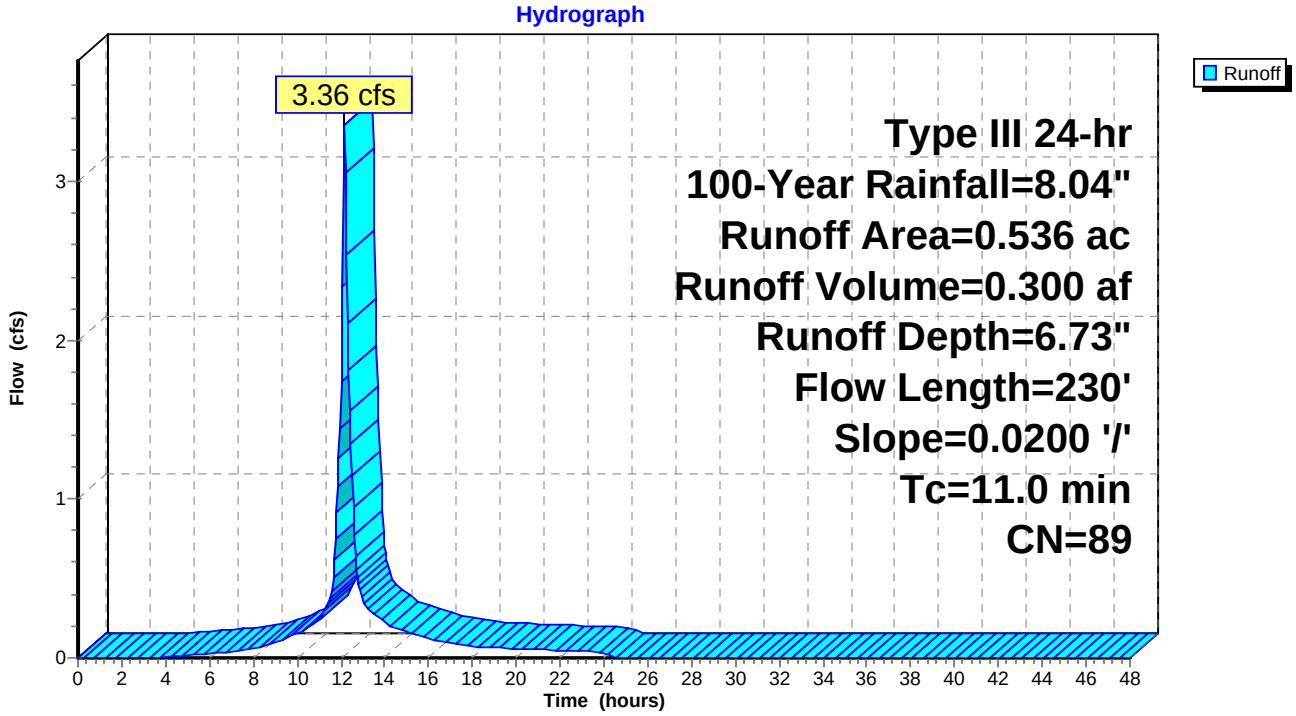
Runoff = 3.36 cfs @ 12.15 hrs, Volume= 0.300 af, Depth= 6.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.04"

	Area (ac)	CN	Description
*	0.344	98	Paved parking, HSG C, North
*	0.192	74	>75% Grass cover, Good, HSG C, North
	0.536	89	Weighted Average
	0.192		35.82% Pervious Area
	0.344		64.18% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	50	0.0200	0.10		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
3.0	180	0.0200	0.99		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
11.0	230	Total			

Subcatchment 18S: DA 2I



Summary for Subcatchment 21S: DA 2F

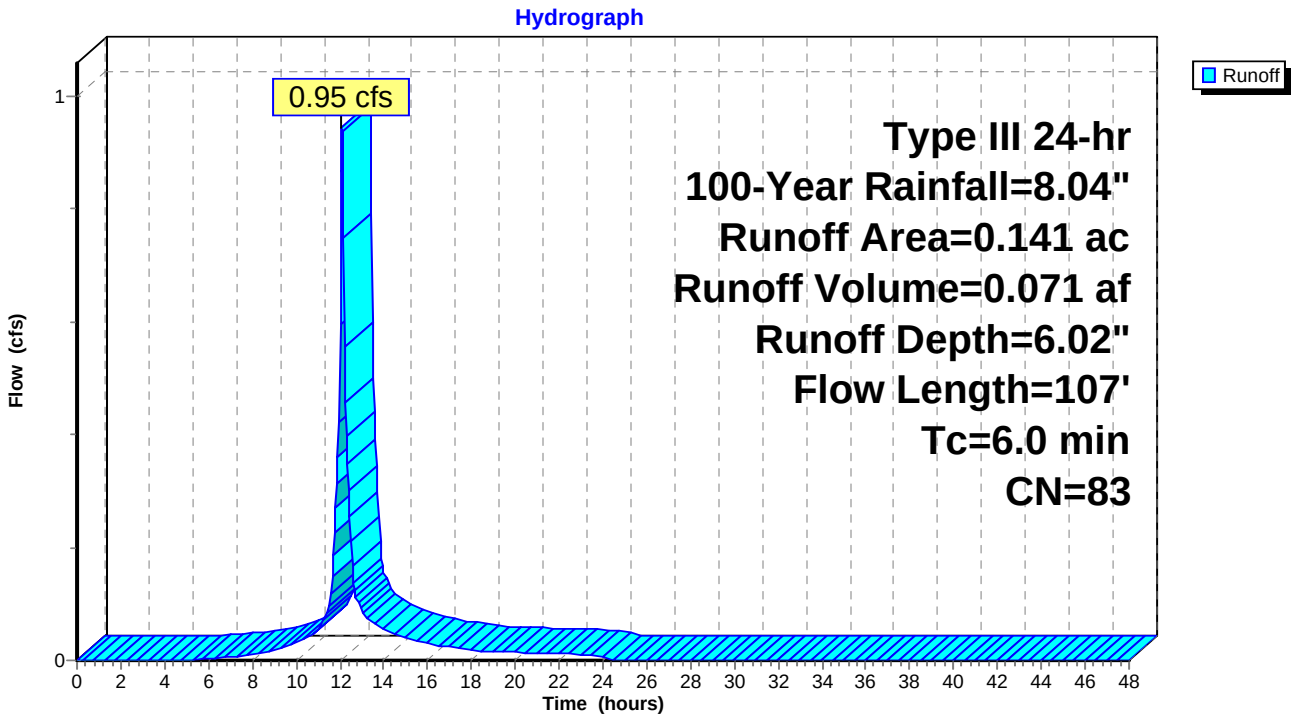
Runoff = 0.95 cfs @ 12.09 hrs, Volume= 0.071 af, Depth= 6.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.04"

Area (ac)	CN	Description
0.051	98	Water Surface, 0% imp, HSG C
0.090	74	>75% Grass cover, Good, HSG C
0.141	83	Weighted Average
0.141		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.1000	0.20		**Sheet Flow, Grass** Grass: Dense n= 0.240 P2= 3.37"
0.3	57	0.1754	2.93		**Shallow Concentrated Flow, Woods** Short Grass Pasture Kv= 7.0 fps
4.5	107	Total, Increased to minimum Tc = 6.0 min			

Subcatchment 21S: DA 2F



Summary for Subcatchment 22S: DA 2H

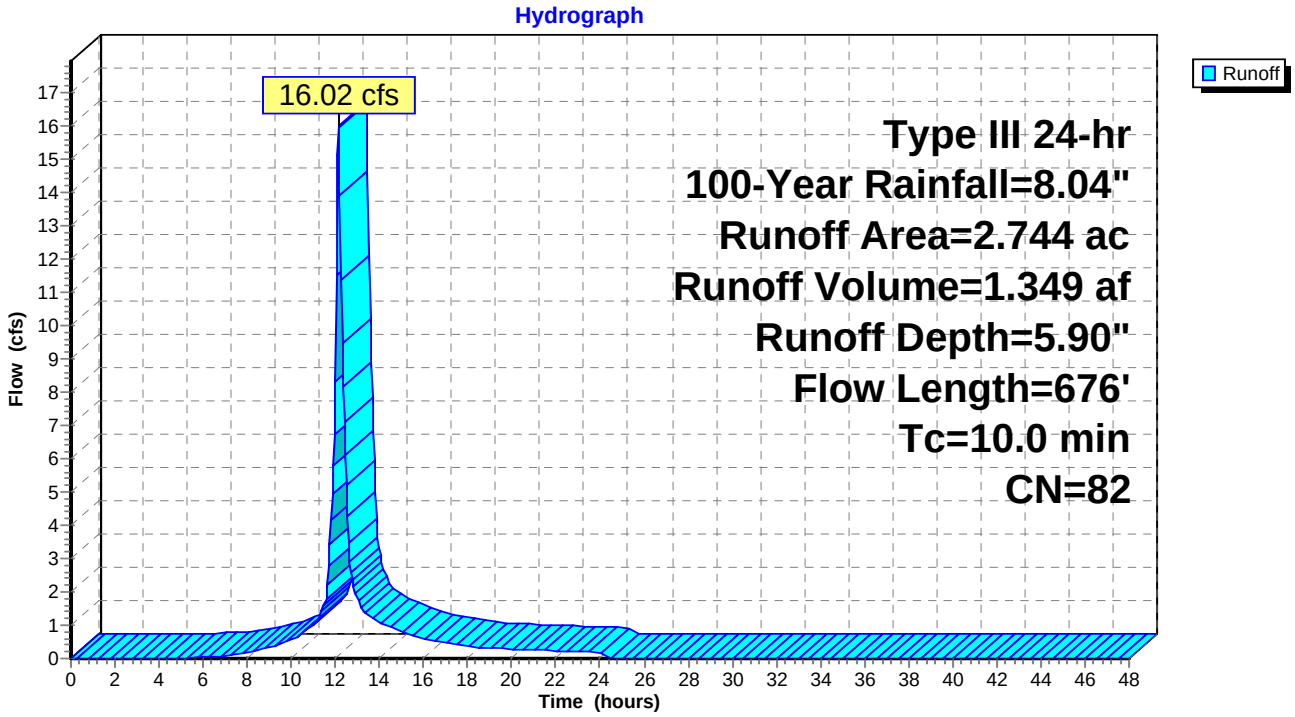
Runoff = 16.02 cfs @ 12.14 hrs, Volume= 1.349 af, Depth= 5.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.04"

	Area (ac)	CN	Description
*	0.431	98	Paved parking, HSG C, North
*	0.010	80	>75% Grass cover, Good, HSG D, North
*	0.313	74	>75% Grass cover, Good, HSG C, North
*	0.550	98	Paved parking, HSG C, South
*	0.356	74	>75% Grass cover, Good, HSG C, South
	0.748	70	Woods, Good, HSG C
	0.336	74	>75% Grass cover, Good, HSG C
	2.744	82	Weighted Average
	1.763		64.25% Pervious Area
	0.981		35.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	50	0.1000	0.13		**Sheet Flow, Woods** Woods: Light underbrush n= 0.400 P2= 3.37"
1.7	190	0.1316	1.81		**Shallow Concentrated Flow, Woods** Woodland Kv= 5.0 fps
0.3	81	0.3333	4.04		**Shallow Concentrated Flow, Grass** Short Grass Pasture Kv= 7.0 fps
1.7	355	0.0310	3.57		**Shallow Concentrated Flow, Paved** Paved Kv= 20.3 fps
10.0	676	Total			

Subcatchment 22S: DA 2H



Summary for Pond 15P: Apartments Phase II Stormwater Basin 2

Inflow Area = 3.277 ac, 30.06% Impervious, Inflow Depth = 5.68" for 100-Year event
Inflow = 17.47 cfs @ 12.16 hrs, Volume= 1.550 af
Outflow = 16.96 cfs @ 12.18 hrs, Volume= 1.471 af, Atten= 3%, Lag= 1.4 min
Primary = 16.96 cfs @ 12.18 hrs, Volume= 1.471 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 568.37' @ 12.19 hrs Surf.Area= 2,459 sf Storage= 6,342 cf

Plug-Flow detention time= 48.3 min calculated for 1.470 af (95% of inflow)
Center-of-Mass det. time= 20.4 min (828.1 - 807.7)

Volume	Invert	Avail.Storage	Storage Description
#1	562.00'	6 cf	**3.00'W x 8.00'L x 2.50'H Sand Underdrain** 60 cf Overall x 10.0% Voids
#2	564.50'	10,719 cf	**Stormwater Basin (Irregular)**Listed below
		10,725 cf	Total Available Storage

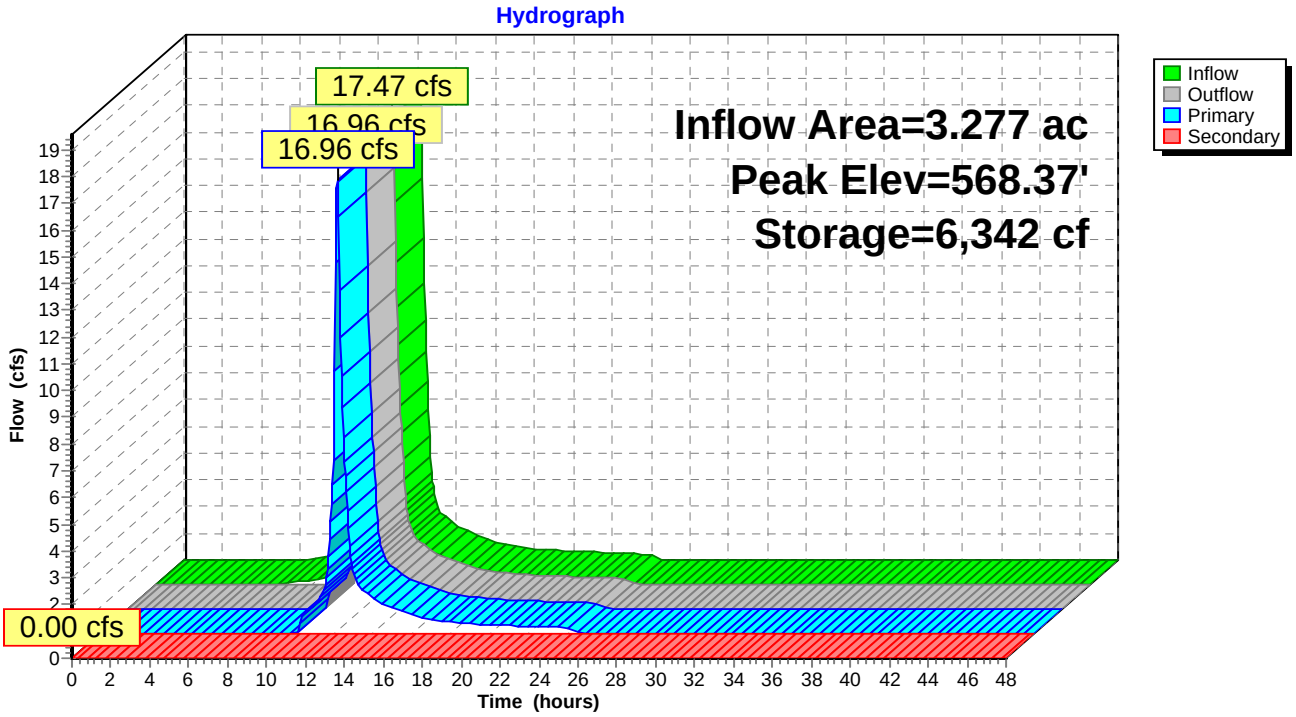
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
564.50	4	8.2	0	0	4
564.75	257	68.5	24	24	372
565.00	1,193	160.0	167	191	2,036
566.00	1,533	172.5	1,359	1,551	2,406
568.00	2,277	197.6	3,786	5,336	3,233
570.00	3,128	222.7	5,383	10,719	4,172

Device	Routing	Invert	Outlet Devices
#1	Primary	562.00'	**18.0" Round 18" HDPE** L= 68.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 562.00' / 561.60' S= 0.0059 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	567.00'	**36.0" W x 6.0" H Vert. 36" x 6" Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	568.00'	**1.0" x 3.7" Horiz. Top of Frame X 39.00 columns** X 9 rows C= 0.600 in 48.0" x 36.0" Grate (75% open area) Limited to weir flow at low heads
#4	Secondary	569.00'	**8.0' long x 8.0' breadth Rip Rap Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#5	Device 1	562.00'	**0.500 in/hr Sand Underdrain over Horizontal area from 562.00' - 564.50'** Excluded Horizontal area = 24 sf Phase-In= 0.01'

Primary OutFlow Max=16.80 cfs @ 12.18 hrs HW=568.36' TW=564.47' (Dynamic Tailwater)
- **1=18" HDPE** (Inlet Controls 16.80 cfs @ 9.51 fps)
  - **2=36" x 6" Orifice** (Passes < 7.60 cfs potential flow)
  - **3=Top of Frame** (Passes < 10.03 cfs potential flow)
  - **5=Sand Underdrain** (Passes < 0.00 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=562.00' TW=0.00' (Dynamic Tailwater)
- **4=Rip Rap Spillway** (Controls 0.00 cfs)

Pond 15P: Apartments Phase II Stormwater Basin 2



Summary for Pond 20P: Apartments Phase II Stormwater Basin 1

Inflow Area = 7.001 ac, 33.00% Impervious, Inflow Depth = 5.72" for 100-Year event
Inflow = 38.23 cfs @ 12.15 hrs, Volume= 3.334 af
Outflow = 23.61 cfs @ 12.33 hrs, Volume= 3.144 af, Atten= 38%, Lag= 10.8 min
Primary = 21.13 cfs @ 12.33 hrs, Volume= 3.112 af
Secondary = 2.48 cfs @ 12.33 hrs, Volume= 0.032 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 560.00' @ 12.33 hrs Surf.Area= 8,336 sf Storage= 37,060 cf

Plug-Flow detention time= 82.0 min calculated for 3.141 af (94% of inflow)
Center-of-Mass det. time= 51.9 min (863.5 - 811.6)

Volume	Invert	Avail.Storage	Storage Description
#1	551.00'	4 cf	**3.00'W x 8.00'L x 1.75'H Sand Underdrain** 42 cf Overall x 10.0% Voids
#2	552.75'	40,883 cf	**Stormwater Basin (Irregular)**Listed below (Recalc)
#3	556.00'	424 cf	**36.0" Round Pipe Storage**-Impervious L= 60.0' S= 0.0083 '/'
		41,312 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
552.75	120	43.3	0	0	120
553.00	865	110.3	109	109	939
553.25	1,552	155.7	298	407	1,901
553.50	2,135	207.8	459	866	3,409
553.75	2,928	261.6	630	1,496	5,419
554.00	3,512	310.5	804	2,300	7,646
555.00	4,145	323.0	3,824	6,124	8,352
556.00	4,804	335.6	4,470	10,595	9,090
557.00	5,490	348.1	5,143	15,738	9,851
558.00	6,569	422.7	6,021	21,759	14,443
559.00	7,426	435.3	6,993	28,752	15,404
560.00	8,310	447.8	7,864	36,616	16,387
560.50	8,761	454.1	4,267	40,883	16,893

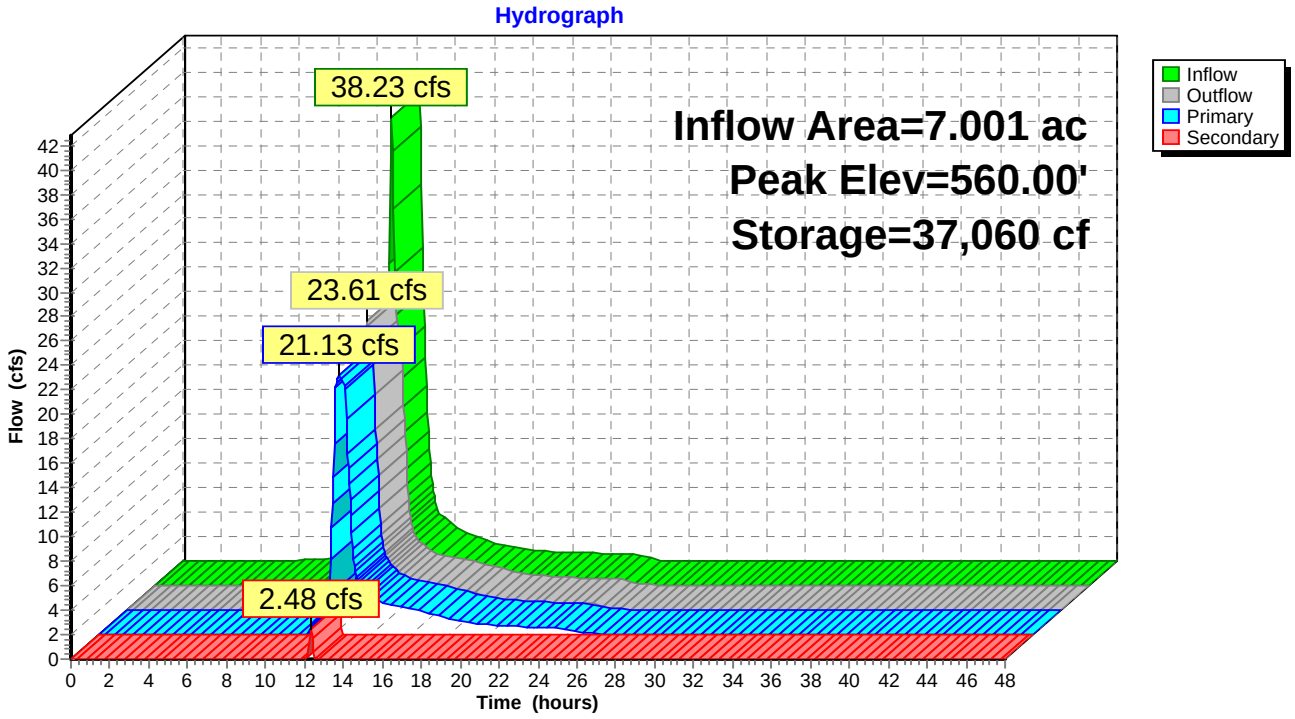
Device	Routing	Invert	Outlet Devices
#1	Primary	551.00'	**18.0" Round 18" HDPE** L= 152.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 551.00' / 549.00' S= 0.0132 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	555.50'	**6.0" Vert. 6" Orifices (2) X 2.00** C= 0.600 Limited to weir flow at low heads
#3	Device 1	557.30'	**48.0" W x 7.0" H Vert. 48" x 7" Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	558.75'	**1.0" x 3.7" Horiz. Top of Frame X 39.00 columns** X 9 rows C= 0.600 in 48.0" x 36.0" Grate (75% open area) Limited to weir flow at low heads
#5	Secondary	559.75'	**8.0' long x 8.0' breadth Rip Rap Spillway** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

			2.50 3.00 3.50 4.00 4.50 5.00 5.50
			Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64
			2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#6	Device 1	551.00'	**0.500 in/hr Sand Underdrain over Horizontal area from 551.00' - 552.75'**
			Excluded Horizontal area = 24 sf Phase-In= 0.01'

Primary OutFlow Max=21.12 cfs @ 12.33 hrs HW=559.99' TW=0.00' (Dynamic Tailwater)
- **1=18" HDPE** (Barrel Controls 21.12 cfs @ 11.95 fps)
  - **2=6" Orifices (2)** (Passes < 3.90 cfs potential flow)
  - **3=48" x 7" Orifice** (Passes < 17.41 cfs potential flow)
  - **4=Top of Frame** (Passes < 48.45 cfs potential flow)
  - **6=Sand Underdrain** (Passes < 0.00 cfs potential flow)

Secondary OutFlow Max=2.38 cfs @ 12.33 hrs HW=559.99' TW=0.00' (Dynamic Tailwater)
- **5=Rip Rap Spillway** (Weir Controls 2.38 cfs @ 1.21 fps)

Pond 20P: Apartments Phase II Stormwater Basin 1



Summary for Pond 21P: Drain

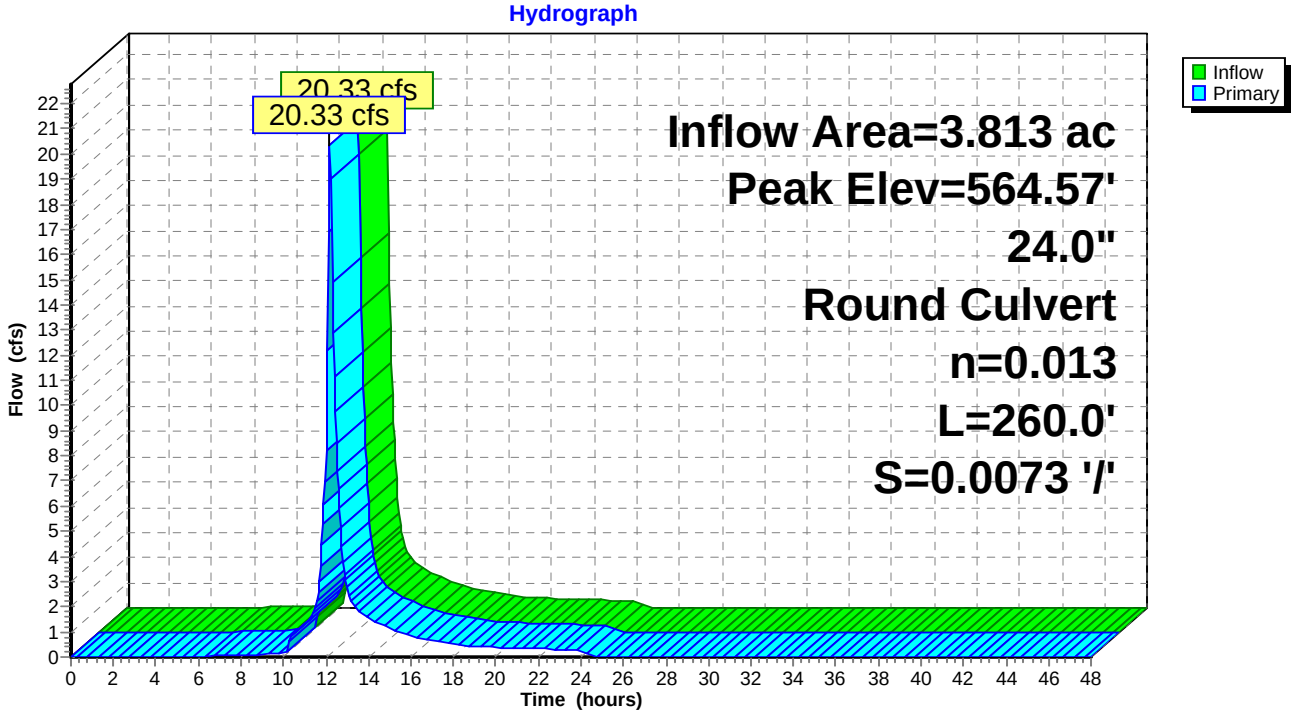
Inflow Area = 3.813 ac, 34.85% Impervious, Inflow Depth = 5.58" for 100-Year event
Inflow = 20.33 cfs @ 12.17 hrs, Volume= 1.772 af
Outflow = 20.33 cfs @ 12.17 hrs, Volume= 1.772 af, Atten= 0%, Lag= 0.0 min
Primary = 20.33 cfs @ 12.17 hrs, Volume= 1.772 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 564.57' @ 12.17 hrs
Flood Elev= 565.37'

Device	Routing	Invert	Outlet Devices
#1	Primary	561.40'	**24.0" Round Culvert** L= 260.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 561.40' / 559.50' S= 0.0073 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 3.14 sf

Primary OutFlow Max=19.95 cfs @ 12.17 hrs HW=564.47' TW=559.40' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 19.95 cfs @ 6.35 fps)

Pond 21P: Drain

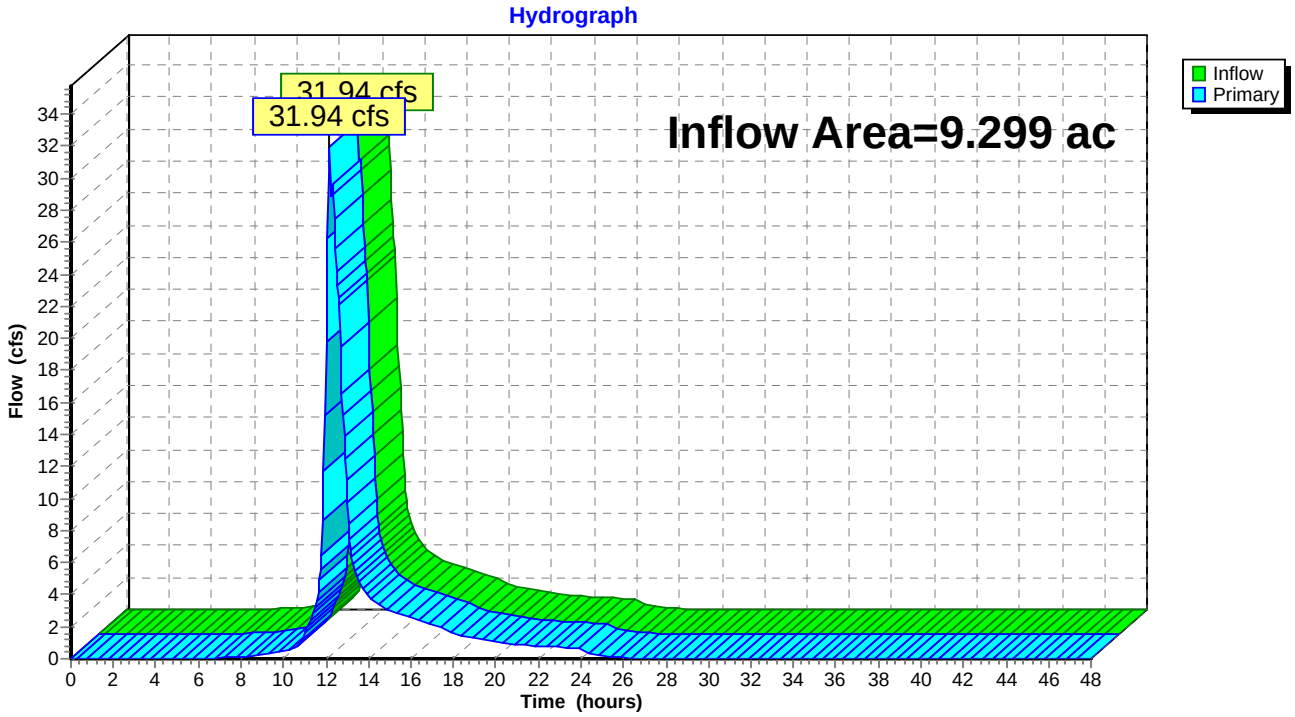


Summary for Link 20L: Off-Site

Inflow Area = 9.299 ac, 30.95% Impervious, Inflow Depth = 5.46" for 100-Year event
Inflow = 31.94 cfs @ 12.15 hrs, Volume= 4.229 af
Primary = 31.94 cfs @ 12.15 hrs, Volume= 4.229 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs

Link 20L: Off-Site



Appendix C
Supporting Stormwater Calculations

Appendix C

Pipe Sizing Calculations

Manning's Equation for Open Channel Flow

$$Q = \frac{1.49}{n} A R^{2/3} S^{1/2}$$

Maximum pipe capacities for the trunk line drains are presented below as compared to the peak flow rates calculated using the Rational Method for the contributing watersheds or the HydroCAD modeling results as applicable. Pipes are sized with capacity for the 10-year design storm minimum in accordance with the recommendations of the CT DOT Drainage Manual for curb and gutter systems.

DMH 6 to DMH 2 (18-inch HDPE at S=0.015)

Q=	**12.90**	**CFS**	Flow Rate
n=	0.013		Roughness Coefficient
A=	1.77	SF	Area of Pipe
R=	0.375	FT	Hydraulic Radius = A/P
S=	0.015	FT/FT	Pipe Slope
r=	0.75	FT	Pipe Radius
P=	4.71	FT	Pipe Perimeter

Design Flow Rate

Q= 8.97 CFS

(10-year flow from DA 2H)

CAPACITY FOR 10-YEAR EVENT (MIN)

DMH 7 to DMH-6 (18-inch HDPE at S=0.015)

Q=	**12.90**	**CFS**	Flow Rate
n=	0.013		Roughness Coefficient
A=	1.77	SF	Area of Pipe
R=	0.375	FT	Hydraulic Radius = A/P
S=	0.015	FT/FT	Pipe Slope
r=	0.75	FT	Pipe Radius
P=	4.71	FT	Pipe Perimeter

Design Flow Rate

Q= 8.97 CFS

(10-year flow from DA 2H)

CAPACITY FOR 10-YEAR EVENT (MIN)

CB 1 to DMH 7 (15-inch HDPE at S = 0.060)

Q=	**15.87**	**CFS**	Flow Rate
n=	0.013		Roughness Coefficient
A=	1.23	SF	Area of Pipe
R=	0.3125	FT	Hydraulic Radius = A/P
S=	0.06	FT/FT	Pipe Slope
r=	0.625	FT	Pipe Radius
P=	3.93	FT	Pipe Perimeter

Design Flow Rate

Q= 8.97 CFS

(10-year flow from DA 2H)

CAPACITY FOR 10-YEAR EVENT (MIN)

CB 2 to CB 1 (15-inch HDPE at S = 0.072)

Q=	**17.38**	**CFS**	Flow Rate
n=	0.013		Roughness Coefficient
A=	1.23	SF	Area of Pipe
R=	0.3125	FT	Hydraulic Radius = A/P
S=	0.072	FT/FT	Pipe Slope
r=	0.625	FT	Pipe Radius
P=	3.93	FT	Pipe Perimeter

Design Flow Rate

Q= 8.97 CFS

(10-year flow from DA 2H)

CAPACITY FOR 10-YEAR EVENT (MIN)

CB 3 to CB 2 (15-inch HDPE at S = 0.061)

Q=	**16.00**	**CFS**	Flow Rate
n=	0.013		Roughness Coefficient
A=	1.23	SF	Area of Pipe
R=	0.3125	FT	Hydraulic Radius = A/P
S=	0.061	FT/FT	Pipe Slope
r=	0.625	FT	Pipe Radius
P=	3.93	FT	Pipe Perimeter

Design Flow Rate

Q= 9.42 CFS

(10-year flow from DA 2H)

CAPACITY FOR 10-YEAR EVENT (MIN)

CB 4 to CB 3 (15-inch HDPE at S = 0.013)

Q=	**7.39**	**CFS**	Flow Rate
n=	0.013		Roughness Coefficient
A=	1.23	SF	Area of Pipe
R=	0.3125	FT	Hydraulic Radius = A/P
S=	0.013	FT/FT	Pipe Slope
r=	0.625	FT	Pipe Radius
P=	3.93	FT	Pipe Perimeter

Design Flow Rate

C_f=	1	
C=	0.95	
I=	5.42	in/hour
A=	0.16	acre
Q=	**0.8**	**CFS**

CAPACITY FOR 10-YEAR EVENT (MIN)

CB 5 to CB 3 (15-inch HDPE at S = 0.059)

Q=	**15.73**	**CFS**	Flow Rate
n=	0.013		Roughness Coefficient
A=	1.23	SF	Area of Pipe
R=	0.3125	FT	Hydraulic Radius = A/P
S=	0.059	FT/FT	Pipe Slope
r=	0.625	FT	Pipe Radius
P=	3.93	FT	Pipe Perimeter

Design Flow Rate

Q= 9.42 CFS

(10-year flow from DA 2H)

CAPACITY FOR 10-YEAR EVENT (MIN)

CB 6 to CB 5 (15-inch HDPE at S = 0.025)

Q=	**10.24**	**CFS**	Flow Rate
n=	0.013		Roughness Coefficient
A=	1.23	SF	Area of Pipe
R=	0.3125	FT	Hydraulic Radius = A/P
S=	0.025	FT/FT	Pipe Slope
r=	0.625	FT	Pipe Radius
P=	3.93	FT	Pipe Perimeter

Design Flow Rate

Q= 9.42 CFS

(10-year flow from DA 2H)

CAPACITY FOR 10-YEAR EVENT (MIN)

CB 7 to CB 6 (15-inch HDPE at S = 0.037)

Q=	**12.46**	**CFS**	Flow Rate
n=	0.013		Roughness Coefficient
A=	1.23	SF	Area of Pipe
R=	0.3125	FT	Hydraulic Radius = A/P
S=	0.037	FT/FT	Pipe Slope
r=	0.625	FT	Pipe Radius
P=	3.93	FT	Pipe Perimeter

Design Flow Rate

Q= 9.42 CFS

(10-year flow from DA 2H)

CAPACITY FOR 10-YEAR EVENT (MIN)

CB 8 to DMH 5 (15-inch HDPE at S = 0.074)

Q=	**17.62**	**CFS**	Flow Rate
n=	0.013		Roughness Coefficient
A=	1.23	SF	Area of Pipe
R=	0.3125	FT	Hydraulic Radius = A/P
S=	0.074	FT/FT	Pipe Slope
r=	0.625	FT	Pipe Radius
P=	3.93	FT	Pipe Perimeter

Design Flow Rate
Q= 2.02 CFS
(10-year flow from DA 2I)
CAPACITY FOR 10-YEAR EVENT (MIN)

CB 9 to CB 8 (15-inch HDPE at S = 0.020)

Q=	**9.16**	**CFS**	Flow Rate
n=	0.013		Roughness Coefficient
A=	1.23	SF	Area of Pipe
R=	0.3125	FT	Hydraulic Radius = A/P
S=	0.02	FT/FT	Pipe Slope
r=	0.625	FT	Pipe Radius
P=	3.93	FT	Pipe Perimeter

Design Flow Rate
Q= 2.02 CFS
(10-year flow from DA 2I)
CAPACITY FOR 10-YEAR EVENT (MIN)

DMH 8 to Outlet (18-inch HDPE at S = 0.010)

Q=	**10.53**	**CFS**	Flow Rate
n=	0.013		Roughness Coefficient
A=	1.77	SF	Area of Pipe
R=	0.375	FT	Hydraulic Radius = A/P
S=	0.01	FT/FT	Pipe Slope
r=	0.75	FT	Pipe Radius
P=	4.71	FT	Pipe Perimeter

Design Flow Rate
Q= 9.16 CFS
(10-year flow from DA 2E)
CAPACITY FOR 10-YEAR EVENT (MIN)

CB 10 to DMH 8 (18-inch HDPE at S = 0.010)

Q=	**10.53**	**CFS**	Flow Rate
n=	0.013		Roughness Coefficient
A=	1.77	SF	Area of Pipe
R=	0.375	FT	Hydraulic Radius = A/P
S=	0.01	FT/FT	Pipe Slope
r=	0.75	FT	Pipe Radius
P=	4.71	FT	Pipe Perimeter

Design Flow Rate
Q= 9.16 CFS
(10-year flow from DA 2E)
CAPACITY FOR 10-YEAR EVENT (MIN)

CB 11 to CB 10 (18-inch HDPE at S = 0.010)

Q=	**10.53**	**CFS**	Flow Rate
n=	0.013		Roughness Coefficient
A=	1.77	SF	Area of Pipe
R=	0.375	FT	Hydraulic Radius = A/P
S=	0.01	FT/FT	Pipe Slope
r=	0.75	FT	Pipe Radius
P=	4.71	FT	Pipe Perimeter

Design Flow Rate
Q= 9.16 CFS
(10-year flow from DA 2E)
CAPACITY FOR 10-YEAR EVENT (MIN)

Appendix C

Pipe Sizing Calculations

CB 12 to CB 11 (18-inch HDPE at S = 0.010)

Q=	**10.53**	**CFS**	Flow Rate
n=	0.013		Roughness Coefficient
A=	1.77	SF	Area of Pipe
R=	0.375	FT	Hydraulic Radius = A/P
S=	0.01	FT/FT	Pipe Slope
r=	0.75	FT	Pipe Radius
P=	4.71	FT	Pipe Perimeter

Design Flow Rate

Q= 9.16 CFS

(10-year flow from DA 2E)

CAPACITY FOR 10-YEAR EVENT (MIN)

CB 13 to CB 12 (15-inch HDPE at S = 0.014)

Q=	**7.66**	**CFS**	Flow Rate
n=	0.013		Roughness Coefficient
A=	1.23	SF	Area of Pipe
R=	0.3125	FT	Hydraulic Radius = A/P
S=	0.014	FT/FT	Pipe Slope
r=	0.625	FT	Pipe Radius
P=	3.93	FT	Pipe Perimeter

Design Flow Rate

C_f=	1	
C=	0.95	
I=	5.42	in/hour
A=	0.44	acre
Q=	**2.3**	**CFS**

CAPACITY FOR 10-YEAR EVENT (MIN)

CB 14 to CB 13 (15-inch HDPE at S = 0.009)

Q=	**6.14**	**CFS**	Flow Rate
n=	0.013		Roughness Coefficient
A=	1.23	SF	Area of Pipe
R=	0.3125	FT	Hydraulic Radius = A/P
S=	0.009	FT/FT	Pipe Slope
r=	0.625	FT	Pipe Radius
P=	3.93	FT	Pipe Perimeter

Design Flow Rate

C_f=	1	
C=	0.95	
I=	5.42	in/hour
A=	0.44	acre
Q=	**2.3**	**CFS**

CAPACITY FOR 10-YEAR EVENT (MIN)

DMH 3 to DMH 2 (24-inch HDPE at S = 0.006)

Q=	**17.57**	**CFS**	Flow Rate
n=	0.013		Roughness Coefficient
A=	3.14	SF	Area of Pipe
R=	0.5	FT	Hydraulic Radius = A/P
S=	0.006	FT/FT	Pipe Slope
r=	1	FT	Pipe Radius
P=	6.28	FT	Pipe Perimeter

Design Flow Rate

Q= 11.05 CFS

(10-year flow from DA 2I and Stormwater Basin 2

CAPACITY FOR 10-YEAR EVENT (MIN)

DMH 4 to DMH 3 24-inch HDPE at S = 0.007)

Q=	**18.98**	**CFS**	Flow Rate
n=	0.013		Roughness Coefficient
A=	3.14	SF	Area of Pipe
R=	0.5	FT	Hydraulic Radius = A/P
S=	0.007	FT/FT	Pipe Slope
r=	1	FT	Pipe Radius
P=	6.28	FT	Pipe Perimeter

Design Flow Rate

Q= 11.05 CFS

(10-year flow from DA 2I and Stormwater Basin 2

CAPACITY FOR 10-YEAR EVENT (MIN)

Appendix C

Pipe Sizing Calculations

DMH 5 to DMH 4 (24-inch HDPE at S = 0.008)

Q=	**20.29**	**CFS**	Flow Rate
n=	0.013		Roughness Coefficient
A=	3.14	SF	Area of Pipe
R=	0.5	FT	Hydraulic Radius = A/P
S=	0.008	FT/FT	Pipe Slope
r=	1	FT	Pipe Radius
P=	6.28	FT	Pipe Perimeter

Design Flow Rate

Q= 11.05 CFS

(10-year flow from DA 2I and Stormwater Basin 2

CAPACITY FOR 10-YEAR EVENT (MIN)

Roof Drainage* (8-inch PVC at S = 0.02 minimum)

Q=	**1.97**	**CFS**	Flow Rate
n=	0.011		Roughness Coefficient
A=	0.34	SF	Area of Pipe
R=	0.165	FT	Hydraulic Radius = A/P
S=	0.02	FT/FT	Pipe Slope
r=	0.33	FT	Pipe Radius
P=	2.07	FT	Pipe Perimeter

Design Flow Rate

C_f=	1	
C=	0.95	
I=	5.42	in/hour
A=	0.318	acre
Q=	**1.6**	**CFS**

CAPACITY FOR 10-YEAR EVENT (MIN)

FOR TWO BUILDINGS

Roof Drainage* (8-inch PVC at S = 0.01 minimum)

Q=	**1.39**	**CFS**	Flow Rate
n=	0.011		Roughness Coefficient
A=	0.34	SF	Area of Pipe
R=	0.165	FT	Hydraulic Radius = A/P
S=	0.01	FT/FT	Pipe Slope
r=	0.33	FT	Pipe Radius
P=	2.07	FT	Pipe Perimeter

Design Flow Rate

C_f=	1	
C=	0.95	
I=	5.42	in/hour
A=	0.159	acre
Q=	**0.8**	**CFS**

CAPACITY FOR 10-YEAR EVENT (MIN)

FOR ONE BUILDING

**2015 International Plumbing Code specifies a rainfall intensity of 2.75 inches/hour for roof drain sizing. Proposed sizing is conservative.*

Appendix C

Preformed Scour Hole Sizing Calculations

Empirical Preformed Scour Hole Equations:

Type 1: Scour Hole Depression = one-half pipe rise, m (ft)

$$d_{50} = (0.0276\ R_p^2 / TW)\ (Q/R_p^{2.5})^{1.333} \qquad (\ d_{50} = (0.0125 R_p^2/TW)\ (Q/R_p^{2.5})^{1.333}\ ) \qquad \textbf{(11.35)}$$

Type 1 and 2 preformed scour hole dimensions (See Figure 11-15)

$C = 3S_p + 6F$	Basin Length m (ft)	
$B = 2S_p + 6F$	Basin Inlet and Outlet Width m (ft)	**(11.37)**
$F = 0.5R_p$ (Type 1) or R_p (Type 2)	Basin Depression m (ft)	

Table 11-14 solves the above set of equations for Type 1 and 2 preformed scour holes for various pipe sizes.

The type of riprap required is as follows:

Modified	$d_{50} < 0.13$m (0.42 ft)
Intermediate	0.13m (0.42 ft) $< d_{50} <$ 0.20m (0.67 ft)
Standard	0.20m (0.67 ft) $< d_{50} <$ 0.38m (1.25 ft)
Special Design	0.38m (1.25 ft) $< d_{50}$

L_a = length of apron, m (ft)
S_p = inside diameter for circular sections or maximum inside pipe span for non-circular sections, m (ft)
Q = pipe (design) discharge, cms (cfs)
TW = tailwater depth, m (ft)
R_p = maximum inside pipe rise, m (ft)
Note: $S_p = R_p$ = inside diameter for circular sections

Stormwater Basin 1 Inlet

S_P=	36	Inches	Pipe Diameter
Q=	20.3	CFS	100-year flow
d_{50}=	0.16	FT	Equation 11.35, Use Modified Riprap
F=	1.50	FT	Equation 11.37
C=	18.0	FT	Equation 11.37
B=	15	FT	Equation 11.37

Stormwater Basin 1 Outlet

S_P=	18	Inches	Pipe Diameter
Q=	21.1	CFS	100-year flow
d_{50}=	0.44	FT	Equation 11.35, Use Intermediate Riprap
F=	0.75	FT	Equation 11.37
C=	9.0	FT	Equation 11.37
B=	7.5	FT	Equation 11.37

Stormwater Basin 2 Inlet

S_P=	18	Inches	Pipe Diameter
Q=	17.5	CFS	100-year flow
d_{50}=	0.34	FT	Equation 11.35, Use Modified Riprap
F=	0.75	FT	Equation 11.37
C=	9.0	FT	Equation 11.37
B=	7.5	FT	Equation 11.37

Appendix C

Water Quality Volume Calculations

Water Quality Volume - Apartments Phase 2

WQV = (1")(R)(A)/12

WQV = Water Quality Volume (acre-feet)

R = Runoff Co-Efficient = 0.005 + 0.009(I)

I = Impervious Area (%)

A = Site Area (acres)

Water Quality Volume for Contributing Area to Stormwater Basin 1 (DA 2E, DA 2F, DA 2G, 2H, DA 2I)

IA=	2.31	acres
I =	33.00	%
R =	0.30	
A =	7.00	acres

WQV =	0.18	acre-feet
=	**7,673.84**	**cubic feet**

8,281 cubic feet of storage between bottom of basin and lowest outlet. Due to high groundwater conditions and poor soils (HSG C) a sand filter underdrain will be installed to drain the retained Water Quality Volume from the stormwater basin to prevent extended periods of ponding.

Water Quality Volume for Contributing Area to Stormwater Basin 2 (DA 2E and DA 2F)

IA=	0.99	acres
I =	30.03	%
R =	0.28	
A =	3.28	acres

WQV =	0.08	acre-feet
=	**3,277.53**	**cubic feet**

3,450 cubic feet of storage between bottom of basin and lowest outlet. Due to high groundwater conditions and poor soils (HSG C) a sand filter underdrain will be installed to drain the retained Water Quality Volume from the stormwater basin to prevent extended periods of ponding.

Appendix C

Sediment Forebay Sizing

Stormwater Basin 1

Sediment forebay sized for 10% of the water quality volume. Sediment forebay is 3-feet deep.

Water Quality Volume for Stormwater Basin 1 =	7,674	cubic feet
Required Sediment Forebay Volume =	767	cubic feet
Sediment Forebay Volume Provided =	933	cubic feet

Stormwater Basin 2

Sediment forebay sized for 10% of the water quality volume. Sediment forebay is 1.5 feet deep.

Water Quality Volume for Stormwater Basin 2 =	3,278	cubic feet
Required Sediment Forebay Volume =	328	cubic feet
Sediment Forebay Volume Provided =	358	cubic feet

Appendix C

Underdrain Sizing Calculations

Time to Drain through Underdrain Filter

$$A_f = \frac{(WQV)(d)}{[(k)(t)(h+d)]}$$

where:
- A_f = filter bed surface area (ft2)
- WQV = water quality volume (ft3)
- d = filter bed depth (ft)
- k = hydraulic conductivity of filter media (ft/day)
- t = time for the water quality volume to drain from the system (24 hours)
- h = average height of water above filter bed during water quality design storm

<u>Stormwater Basin 1</u>

Af=	95.844907	sf	(required filter surface area)
WQV=	8,281.00	cf	(use retained volume)
d=	2.5	ft	
k=	1	ft/day	
t=	72	hours	
h=	0.5	ft	

Filter Surface Area Provided = 99 square feet (33 feet long x 3.0 feet wide)

<u>Stormwater Basin 2</u>

Af=	39.930556	sf	(required filter surface area)
WQV=	3,450.00	cf	(use retained volume)
d=	2.5	ft	
k=	1	ft/day	
t=	72	hours	
h=	0.5	ft	

Filter Surface Area Provided = 42 square feet (13 feet long x 3.0 feet wide)

Appendix C

Groundwater Recharge Volume Calculations

Groundwater Recharge Volume - Apartments Phase 2

GRV = (D)(A)(I)/12

GRV = Groundwater Recharge Volume (acre-feet)

D = Depth of runoff to be rechared (inches)

A = Site Area (acres)

I = Post-development site imperviousness

D=	0.10	inches	HSG C (Table 7-4 of the DEEP Water Quality Manual)
A =	7.00	acres	
IA =	2.55	acres	
I =	0.36		
GRV =	0.02	acre-feet	
=	**925.65**	cubic feet	
		Groundwater recharge provided via infiltration of roof runoff in Stormtech infiltration chambers	
=	**1,040.60**	cubic feet of on-site storage provided with five 8' diameter dry wells surrounded with 12" of crushed stone (1 dry well per building)	

Drywell Volume

Inside Diameter =	7.33333	feet
Outside Diameter =	8	feet
Surrounding Stone =	10	feet
Structure Storage per Foot =	42.23693	cubic feet
Stone Storage per Foot =	11.30973	cubic feet
Stone Storage Below =	31.41593	cubic feet
Total Storage per Foot of Structure =	53.54666	cubic feet
Depth from Invert to Bottom of Structure =	3.3	feet
Total Storage per Structure Plus Stone =	208.1199	cubic feet

Appendix C

Temporary Sediment Trap Sizing Calculations

Temporary Sediment Traps sized for 134 cubic yards of storage per acre of contributing area.

Temporary Sediment Trap 1

Contributing area =	2.4	acres
Required storage =	322	cubic yards
	8,683	cubic feet
Bottom of excavation =	549.00	
Emergency spillway =	553.00	
Storage provided =	**8,994**	**cubic feet**
	138.80	**cubic yards per acre**

Temporary Sediment Trap 2

Contributing area =	3.34	acres
Required storage =	448	cubic yards
	12,084	cubic feet
Bottom of excavation =	558.00	
Emergency spillway =	562.00	
Storage provided =	**13,280**	**cubic feet**
	147.26	**cubic yards per acre**

Temporary Sediment Trap 3

Contributing area =	0.25	acres
Required storage =	34	cubic yards
	905	cubic feet
Bottom of excavation =	558.00	
Emergency spillway =	561.00	
Storage provided =	**1,037**	**cubic feet**
	153.63	**cubic yards per acre**

Appendix D
Proposed Site Development Plans