TOWN OF NEWBURGH
PLANNING BOARD

PROJECT NAME:	**UNITY PLACE WAREHOUSE**
PROJECT NO.:	**21-29**
PROJECT LOCATION:	**NORTHWEST CORNER OF OLD LITTLE BRITAIN RD. & UNITY WAY**
	SECTION 97, BLOCK 2, LOT 14.1, 19.12, 37.2
REVIEW DATE:	**14 JULY 2023**
MEETING DATE:	**20 JULY 2023**
PROJECT REPRESENTATIVE:	**BROOKER ENGINEERING**

1. A revised SWPPP is under review by this office.
2. The applicants have provided a Narrative Response to comments received at the Public Hearing.
3. The provisions for on-site hydrants in response to Code Enforcement questions require Health Department approval of the watermain with hydrants.
4. A response regarding tree heights on Unity Place requires further review and evaluation of the landscaping along Unity Place.
5. A plan depicting NYSDOT improvements should be submitted with the plan sets. NYSDOT improvements should be incorporated by reference in any Approval Resolution.
6. A City of Newburgh Flow Acceptance letter has been received.

Respectfully submitted,

MHE Engineering, D.P.C.

Patrick J. Hines
Principal
PJH/kbw

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Unity Place Warehouse Application for Site Plan Approval
Response Narrative to May 12, 2023 Review Comments prepared by Karen Arent
prepared for Town of Newburgh Planning Board
July 5, 2023
BE #21202

Following are Brooker Engineering's responses to the May 12, 2023 Review Comments prepared by Karn Arent

1. *COMMENT: The tree preservation plan is difficult to interpret, and we expect contractors will agree. Adjust graphics so it is easier to tell what trees will remain and which will be removed without having to look back and forth between symbols and the inventory chart.*

   Response: The Clearing Limit Line indicated on the Tree Preservation Plan represents the boundary between trees to be removed and trees to remain.

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   Response: We concur that the subject evaluation was performed and that the criteria has been satisfied for requiring trees to be removed.

3. *COMMENT: Soil specifications must be included in the plan set. It is imperative that excellent soil, rather than construction spoils, be used for planting areas so that the proposed plants will thrive.*

   Response: Please refer to Planting Note #8 on the Lighting and Planting Plan for proposed soil specifications.

4. *COMMENT: Trees are shown too far apart. Street trees closest to the road where screening of the building is not imperative could be shown 40' on center. Where screening trees are needed, trees must be closer together, 20' or so, to recreate the density of trees in nearby woodland communities.*

   Response: Street tree spacing has been increased except where:

   a) This comment had been overrode by a more site-specific comment below.
   b) Where an existing or proposed utility location would conflict with a plant centerline location. (Note: The revised attached planting plan was issued with the existing and proposed utilities appearing on the plan; this is somewhat unconventional however for this drawing issue we thought it may be helpful for the reviewer to have the benefit of seeing where the potential conflicts exist.)

5. *COMMENT: Silver Linden is not a native tree species, nor will it thrive as a parking lot tree. Instead propose a native shade tree such as Pin Oak, Red Maple, a disease resistant cultivar of American Elm, etc.*

   Response: As suggested where previously proposed Silver Linden locations remain applicable, they have been replaced by Pin Oaks and Red Maples.

6. *COMMENT: Colorado Spruces no longer thrive in this area. Within ten years many succumb to Cytospora canker.*

   Response: As suggested where previously proposed Colorado Spruce locations remain applicable, they have been replaced by deciduous trees and/or White Spruce.

7. *COMMENT: Mountain Laurel rarely grows when planted or transplanted. It is very finicky. A suitable replacement must be found.*

   Response: As suggested Mountain Laurel have been replaced by suggested plants as discussed below.

8. *COMMENT: Evergreens should not be planted as street or parking lot trees. Along Unity Place, rather than evergreens, show street trees that will tolerate shade such as Red Maple, Tulip Trees, or American Beach (a few since they grow slowly) which tolerate shade from the building. Show the street trees 10 from the edge of the road and space them 40' on center. For the length of the road, just behind the shade trees, on the edge of the proposed swale, show a staggered line of shade-tolerant understory trees close together, 15' apart or so, such as Shadblow Serviceberry, Witch Hazel, American Hornbeam. Some of the more shade tolerant species such as American Hornbeam could be a replacement for the Mountain Laurel along the building.*

   Response:

   a) Evergreens are no longer proposed as street or parking lot trees.
   b) The following suggestions have been incorporated along Unity Place:
      - Street Trees now consist of Red Maple, Tulip Trees, or American Beach planted 40 feet O.C. They are located 15 feet from the EOP to prevent conflicts with existing gas, electric, telephone and CATV utilities. (Note: The attached planting plan was issued with the existing and proposed utilities appearing on the plan for handy viewing of where potential conflicts exist.)
      - A line of shade-tolerant understory trees including Shadblow Serviceberry and American Hornbeam are specified close together, located behind the street trees and adjacent to the proposed swale. These same shade-tolerant understory trees are also proposed as a replacement for the Mountain Laurel along the building. The understory trees are proposed wherever space allows and where they will not conflict with utilities and the drainage swale.

9. *COMMENT: Move the Bayberry from in front of the 3' height proposed stone wall to the area between the stormwater basin and the large unit retaining wall. It appears there is about five feet between the two and this area should be filled with a double staggered, thick planting of Bayberry. The beautiful stone wall, characteristic of the Newburgh sense of place and the large unit retaining wall will be softened.*

   Response: The Bayberry have been relocated as suggested.

10. *COMMENT: Show a tight row of trees such as Shadblow Serviceberry, American Hophornbeam or Nyssa sylvatica (Black Tupelo) between the proposed stone wall and the stormwater basin along Old Little Britain Road to provide a layered, rich screen planting from Old Little Britain Road.*

    Response: A tight row of Shadblow Serviceberry and Black Tupelo have been placed between the fieldstone wall and bioretention basin as suggested.

11. *COMMENT: The south entrance to the site is sparsely planted. There is a lot of open space between the proposed stormwater basin and the driveway. That whole corner should be filled with deciduous and possibly evergreen trees. A mixture, often found in nature on sunny, newly disturbed areas, is River Birches and White Pines. These trees could be planted 10' or so on center and could be a couple different sizes for a natural look. In the corner closest to the parking lot where one Red Maple is shown, show a tight cluster of 3 placed 20 feet on center.*

    Response: Planting at the south entrance and in between the driveway and the bioretention basin has been supplemented with Shadblow Serviceberry, Pin Oak, and Red Maple to complement the White Spruce.

12. *COMMENT: The under drains in the stormwater management area resulted in a very sparsely planted arrangement of trees. To thicken the planting, show a cluster of three or so trees, spaced 15' apart or so. Trees often grow better when grown in groups. More trees planted close together to avoid the underdrains in the stormwater management area will help screen the 10 foot height retaining wall along Old Little Britain Road. Additionally, planting as requested in aforementioned comments will help provide the multi-layered landscape for screening.*

    Response: Three clusters of groups of three trees each have been carefully positioned around the underdrain manifold as suggested.

13. *COMMENT: Something must be done about the large 230-foot-long gap in any trees or screening on the east side of the property. A stormwater facility is shown here and there is a huge view of the building that will be clearly seen by cars driving west on Old Little Britain Road and on Unity Place. It is unacceptable.*

    Response: The stormwater management facility must be situated at the current location because of several factors including a pre-existing condition whereby runoff from the Jehovah's site is currently being conveyed onto the subject property at this vicinity. Stormwater treatment at this location is required because of gravity and soils considerations. This limited location is one of two exceptions where significant plantings are not proposed. Review of the Planting Plan as a whole indicates a robust landscaping treatment of the site that includes 512 trees and bushes as well as 3036 bioretention plants.

14. *COMMENT: Along the north end of the property where the site abuts the two residences, it appears that the ground is flat. The retaining wall cuts off the natural drainage pattern and the minimal slope will cause this area to be wet. The project engineer should confirm this. If so, trees and shrubs tolerant of wet soils must be proposed between the property line and the wall. Trees such as River Birch, Nyssa sylvatica, Red Maple, Swamp White Oak, and/or Pin Oak will help provide screening of the wall and building. These trees should be shown densely planted, about 20 feet on center. Water-loving understory trees and shrubs such as Shadblow serviceberry, Sparkleberry Holly, and Shamrock Inkberry should also be specified to create a layered landscape. This screening is particularly important near the Old Little Britain Road entrance where there will be direct views into the site.*

    Response: We confirm that the area along the west property line has relatively moist soils under existing conditions. Accordingly, the following suggestions have been incorporated along the west property line:

    - Densely planted Black Tupelo and Pin Oak have been incorporated for screening. Understory trees and bushes consisting of Shadblow Serviceberry, American Hornbeam, Sparkleberry Holly, and Shamrock Inkberry are specified in front of the screening trees and adjacent to the proposed swale. The understory trees and bushes are proposed wherever space allows and where they will not conflict with utilities and the drainage swale.

15. *COMMENT: Emerald Green Arborvitae are deer candy, too thin to provide sufficient large-scale screening, and easily fall apart and are not acceptable. See above comment for suggestions of replacement shrubs and trees.*

    Response: The suggested Black Tupelo, Pin Oak, Shadblow Serviceberry, American Hornbeam, Sparkleberry Holly, and Shamrock Inkberry trees and shrubs have been utilized as replacements for the Emerald Green Arborvitae.

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    Response: A significant portion of the area located just south of the Unity Place driveway is within the "sight triangle" for preserving drivers safe sight distance exiting the site onto Unity Place. This driveway location was carefully situated and coordinated with the Planning Board to serve traffic safety and roadway loading restrictions. However, the following mitigation strategies have been implemented at this vicinity:

    a) A solid 8-foot-high cedar fence will screen trucks.
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    In addition, the landscaped berm has been regraded as suggested to create a flatter, lower earth form.

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July 5, 2023

Hon. John E. Ewasutyn and Planning Board Members
Town of Newburgh Planning Board
308 Gardnertown Road
Newburgh, New York 12550

Re: **Unity Place Warehouse**
Unity Place and Old Little Britain Road, Tax Lots: 97-2-14.1, 19.12, & 37.2
Planning Board Project No. 2021-29
BE #21202

Dear Chair Ewasutyn and Planning Board Members:

Based upon input received from the Planning Board and their Consultants at the May 18, 2023 Meeting we are submitting revised Site Plans dated 06-16-2023 for your review and approval. At the May 18th Meeting we presented a revised site plan that incorporated an additional 2.1-acre parcel (Tax Lot 97-2-37.2) that featured a relocated driveway to Unity Place to allow all truck traffic to exclusively use Unity Place for access. Attached to this letter please find (2) Narrative Responses dated 2023-07-05 in response to Pat Hines and Karen Arent memos dated May 16, 2023 and May 12, 2023, respectively.

Accordingly, this full site plan submission incorporates the following revisions:

1) The employee parking driveway on the north side of the building has been widened and extended to provide as much fire aerial apparatus access as possible, short of the sight distance line. Further justification is described in the response to written public comments below.
2) The Planting Plan and Tree Preservation Plan has been revised in response to review comments from Karen Arent, LSA, dated May 12, 2023.
3) A 'Clearance Bar Apparatus' was considered along the Old Little Britain driveway to prevent trucks from egressing at that location, as suggested at the May 18, 2023 Planning Board meeting. After coordination with the Code Compliance Department, it was requested that fire access be maintained along Old Little Britain. The clearance bar apparatus could restrict access to a fire truck in the event of an emergency. In lieu of this, we are proposing additional signage near the egress point. We also welcome introducing a condition in the resolution to something of the following nature:

   "The applicant will execute a letter and/or agreement authorizing Town and NYS Law and Zoning Enforcement Officers to issue tickets to the driver and tenant occupying the facility, for any trucks, other than trucks with a gross vehicle weight of 10,000 pounds or less, that enter or exit the facility from Old Little Britain Road."

4) The Stormwater Pollution Prevention Plan (SWPPP) has been revised to incorporate minor adjustments to the northern employee parking lot described in bullet 1.

Eleven sets of applicable revised site plan sheets (Sheets 2 – Layout, 3 – Grading, Drainage, & Utility, 5 – Lighting and Planting, 9 – Tree Preservation Plan, TM – Truck Maneuver), Rev 6 dated June 16, 2023 and architectural plans dated June 23, 2023 are attached as well as a flash drive with pdfs of all documents. Attached to this letter is a list of documents included on the flash drive and a breakdown of the documents distributed directly to Town Consultants and the Design Team/Ownership. We request that this Application will be placed on the July 20, 2023 Agenda.

In response to specific written public comments received, please note the following responses below:

Lou Cirillo, 26 Lakeview Drive, Written Public Comments - May 23, 2023

1. *COMMENT: Layout Plan - At the North Entrance/Exit, how will the project insure that trucks do not turn right and egress onto Old Little Britain Road? Currently the Plan does not show directional arrows and no overhead height limitation bar to keep trucks from going south, back to Old Little Britain Road. No overhead height limitation bar is shown at the car-only South Entrance.*

   Response: At the northern driveway, a "NO RIGHT TURN FOR TRUCKS" sign is proposed at the exit. A 'clearance bar apparatus' is now provided at the southern driveway to prohibit trucks from egressing directly onto Old Little Britain Road as indicated on Sheet 2 of the Site Plan (Layout Plan).

2. *COMMENT: Grading, Drainage & Utility Plan - Where does the existing Electrical Power Utility Line connect to the the new building? It is not shown or not shown clearly [i couldn't find it].*

   Response: Two electric connections are proposed along Unity Place frontage as indicated on Sheet 3 of the Site Plan (Grading, Drainage, & Utility Plan). Designated as linetype with 'E' symbol.

3. *COMMENT: Grading, Drainage & Utility Plan - What is the Electrical Power load of the new building and does the existing Electrical Power Grid support the proposed load? Will this project be installing a new Electrical transformer?*

   Response: The electrical power load is anticipated to be *3,000 Amp, 3 Phase, 277-480V which will be supported by the Electrical Power Grid. A new transformer will be installed.*

4. *COMMENT: Grading, Drainage & Utility Plan - Where does the new facilities Sanitary Waste Line connect to the City of Newburgh Sanitary Waste Service Main?*

   Response: Sanitary sewer connects to the gravity sanitary main on Unity Place near the highpoint of the road via a 1.5" diameter force main that runs through the subject property.

5. *COMMENT: How come out of all of the documents submitted for the design & analysis there are none that analyze the air quality due to all of the increased truck traffic? When I posed this question in the last two public hearings, the designer stated they would respond to all questions but I do not see any responses to the concern about air quality.*

   Response: Regarding air quality, heating blocks and other efforts will be enforced to prevent excessive idling of engines to comply with OSHA standards. Additionally, the traffic movements analyzed in the Traffic Study will not result in any significant impacts on traffic that would result in prolonged idling from diesel fuel vehicles or other vehicle related air quality

impacts. Some of the improvements that NYSDOT is requiring the Applicant to undertake as part of the Highway Work Permit should actually reduce some overall vehicle delays, which should improve overall traffic conditions at certain key intersection and the project will therefore not impact overall air quality.

6. *COMMENT: Is it possible for the public to see the SEQR that determined there was no adverse impacts from this project? NYS DEC states that the determination must be based off of engineering & calculations & analysis and not just opinion. Also the NYS DEC states the SEQR must be available for public comment, reference, & use.*

   Response: The Planning Board adopted a Negative declaration on November 17, 2022, after review the EAF and supporting materials submitted by the applicant and reviewed by the planning board consultants and other outside agencies having approval jurisdiction over portions of this project. In response to comments raised at the public hearing the applicant revised the plan and submitted additional information to the planning board and its consultants which the Planning Board will use to make any final determination and determine what conditions that may need to be placed on any approval, if grant by the Board. The Environmental assessment form and all accompanying information, plans, and reports submitted from the time of original submission to date are and have been available at Town Hall and via the planning board website as described at the May ___ planning board meeting.

7. *COMMENT: Since Amazon is laying off 30,000 employees due to a lowering of Amazon sales in 2023, and it was mentioned at the last Public Hearing that this project is the result of increased online sales in 2021 [that required increased truck traffic], shouldn't this project now be of a smaller foot print since there has been a reduction in online sales in 2023?*

   Response: The applicant is an experienced developer who is aware of the market in the area for warehouse space of this size. There is still a great demand for warehouse space in the Hudson Valley given its proximity to so many major cities in the Northeast at the crossroads of the NYS Thruway for north to south traffic and I-84 for east to west. The Orange County Partnership is actively seeking approved warehouse project to direct the many companies seeking to locate such facilities in Orange County. In fact, while, at least according to the commentor, Amazon may be laying off people they are preparing to begin construction on another large warehouse to commission the building of a 960,000 square foot warehouse in the western part of Orange County in addition to the approx. 1,000,000 sq. ft. facility that recently commenced operations in the Town of Montgomery.

8. *COMMENT: As per the Site Map, it seems this project is not just adjacent to a residential area to the east, but it is also just as closely adjacent to a residential area to the west..*

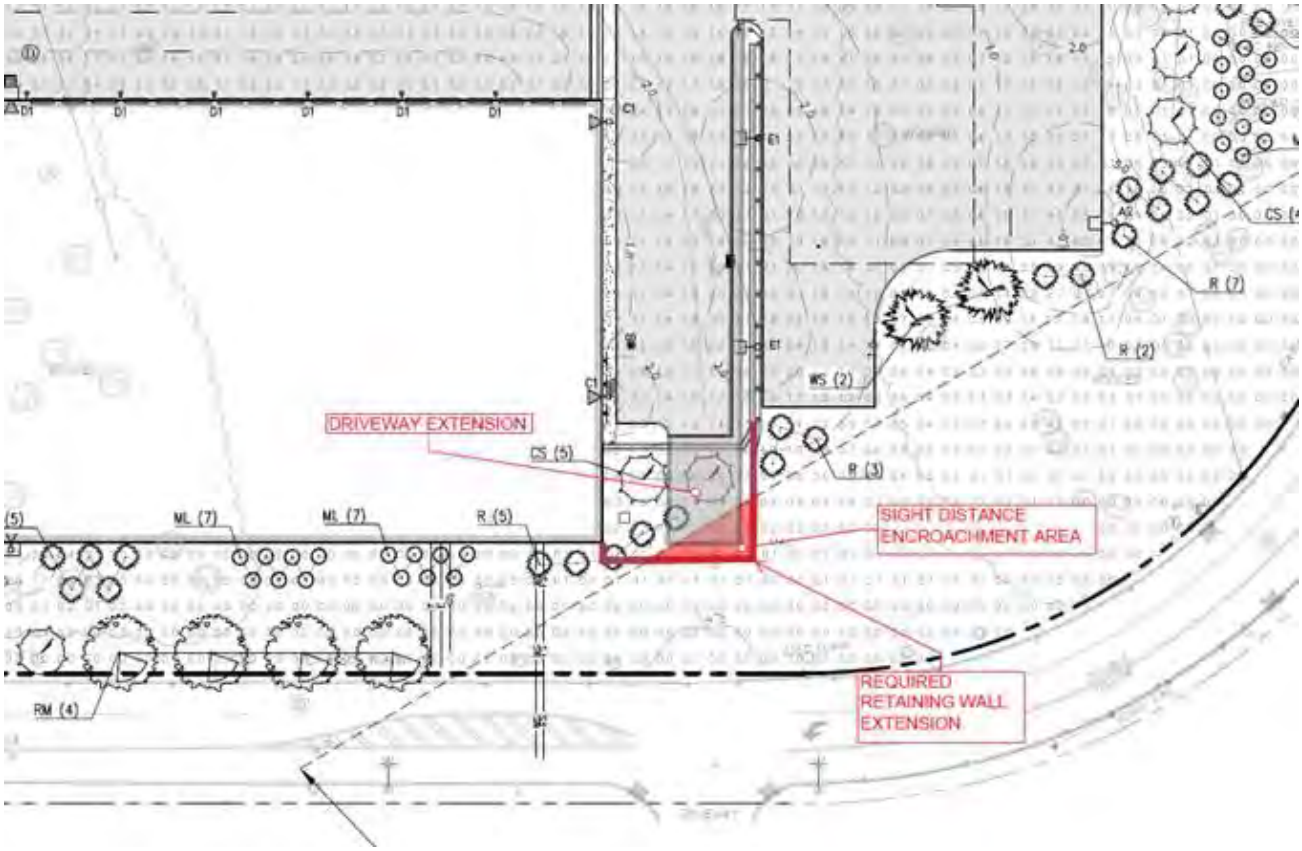
   Response: Surrounding properties are identified on the Site Plan.

9. *COMMENT: The Code Compliance Engineer for the Town Planning Board mentioned there was a possible issue with Fire Service Vehicle Access [possibly there is not enough distance on one side of the building]. Is this still a concern or has it been resolved?*

   Response: Our office has reached out to the Code Compliance Department for discussion. Our office has investigated the possibility of providing an additional fire aerial apparatus access at the northerly side of the building and along the front yard of Unity Place.

   <u>Regarding the northerly employee access:</u>

   Extending the width to 26 feet is no issue. Extending the access road and retaining wall/fencing the entire length of the building would cause a conflict with the sight distance line required from the northerly entrance. Please find markup of this scenario attached/below.



Regarding access along Unity Place

The reason why a pull-off along Unity is not feasible is because of the grading. As you'll note on the grading plan of the Site Plan, we're sloping fast to the building's uniform FF elevation of 315.58 utilizing maximum 3:1 slopes from Unity Place. We would not be able to design a pull off road with adequate slopes or cross pitch in this area without extensive retaining walls along the entire frontage and drainage redesign.

The plausible option in our opinion is to focus on the areas where we're already providing pavement. Although we may technically meet the code requirement for an aerial fire apparatus access road on the south side of the building, we do agree that it is a long thin building. That being said, we are hopeful that providing the additional fire apparatus access road on the north end, albeit just short of the full length of the north side of the building, would be a way to mitigate this and go beyond the code minimums. Such a configuration is demonstrated on the revised Site Plan. Fortunately, in the event of an emergency, access to all four sides of the building should generally be relatively accessible.

On 06/21/2023, Jim Campbell provided additional feedback:

a. *COMMENET: Onsite hydrants are any being proposed? Would like to see them on the west side of the property*
   Response: (2) onsite hydrants have been added to the Site Plan along the west side of the lot.
b. *COMMENET: Type of gate to limit truck traffic to Old Little Britain. Concern if it would limit fire truck access?*

Response: Because of the concern of limiting fire truck access, we have removed the height restriction bar and added additional signage and welcoming enforcement language be included in the resolution as noted in narrative above.

c. *COMMENET: Possibility of a fire rated stairwell within the building for access and roof top standpipes of the property*
Response: This building is currently designed as a single-story structure with 10-inch concrete exterior bearing walls and steel superstructure. Currently, there are no stairwells within the building that could extend to the roof. Although roof-top standpipes are not required by code, we can identify two locations where these can be included as part of the building permit set of drawings.

d. *COMMENET: FDC locations?*
Response: (2) FDC locations are proposed at the NW and SW corners of the building which will be reflected in building permit drawings.

e. *COMMENET: Proposed tree heights along Unity Place, between building and roadway, in the event they were to use an aerial from the roadway. Would it hinder operations?*
Response: Proposed street trees will have mature heights of 50 feet and potentially more. We are open to proposing gaps where we specify trees with mature heights of 40 feet or less, or we could propose all of the smaller 40 foot height. We defer to code compliance / fire department on what kind of height restrictions are necessary to allow for adequate fire access? We suggest this be discussed further at the next Planning Board as it will require coordination on fire safety and landscaping.

10. *COMMENT: Since there is an Endangered Species in the area of the project, a permit is required for the removal of any species listed as "endangered" or "threatened", which can include removal of habitat. Has the permit been filed by the designer? At the last public hearing the designer did not mention any permit will be filed. Also on the submitted drawings it does not direct the contractor to submit any permit [I mention this because the drawings do direct the contractor to reach out and coordinate with other agencies & organizations].*
Response: As detailed in section 3.5.1 of the SWPPP, we noted the NYSDEC Environmental Resource Mapper triggers that the project site may be within the vicinity of the endangered Indiana Bat. A search on the U.S. Fish & Wildlife Service IPaC database confirmed that our project site does not overlap the critical habitat for the Indiana Bat or the Northern Long-eared Bat. As a precaution, tree clearing will be conducted only during the hibernation period of November 1 through March 31 when bats are not expected to be present. This is noted in the construction sequence in section 2.3 of the SWPPP and Sheet 4 of the Site Plan.

Please let us know if you require any additional information.

Very truly yours,

BROOKER ENGINEERING, P.L.L.C.
Matthew Trainor, P.E.

P:\BBE\21\21202_UnityPlaceWarehouse\Submissions\2023-07-05_PB\2023-07-05_Ewasutyn.docx

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NJ OFFICE
22 Paris Avenue, Suite 105 201.750.3527 Tel
Rockleigh, NJ 07647

Unity Place Warehouse
Planning Board Application for Site Plan Approval
Unity Place and Old Little Britain Road, Tax Lots: 97-2-14.1, 19.12, & 37.2, Planning Board Project No. 2021-29
July 5, 2023 Submission Distribution Summary

	Planning Board Cover Letter	**Site Plans & Survey**	**Architectural Plans & Renderings**	**Engineering Documents**	**Response to Planting Comments**
Pat Hines	HC & pdf	HC & pdf	pdf	HC & pdf	HC & pdf
Dominick Cordisco	pdf	pdf	pdf		pdf
Ken Wersted	pdf	pdf	pdf		
Karen Arent	pdf	pdf	pdf		pdf
Eliot Spitzer	pdf	pdf	pdf	pdf 7-5-2023 Hines Response Letter only	pdf
Akiva Bomzer	pdf	pdf	pdf	pdf 7-5-2023 Hines Response Letter only	pdf
John Cappello	pdf	pdf	pdf	pdf 7-5-2023 Hines Response Letter only	pdf
Jason Anderson	pdf	pdf	pdf	pdf 7-5-2023 Hines Response Letter only	pdf
Philip Grealy	pdf	pdf	pdf	pdf 7-5-2023 Hines Response Letter only	pdf

HC = hard copy
pdfs transmitted by email

Engineering Documents:
a) 07-05-2023 Hines Response Letter
b) 06-23-2023 SWPPP
c) MS4 Acceptance Form

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NJ OFFICE
22 Paris Avenue, Suite 105 201.750.3527 Tel
Rockleigh, NJ 07647

July 5, 2023

MHE Engineering
33 Airport Drive, Suite 202
New Windsor, NY 12553

Attn: Patrick J. Hines, MHE Engineering

Re: **Unity Place Warehouse**
Unity Place and Old Little Britain Road, Tax Lots: 97-2-19.12 & 14.1
Town of Newburgh Planning Board Project No. 2021-29
BE # 21202

Dear Mr. Hines,

Based upon input received from MHE Engineering and Planning Board discussions we are submitting herewith:

1) Full Revised Site Plan Set (Sheets 2 – Layout, 3 – Grading, Drainage, & Utility, 5 – Lighting and Planting, 9 – Tree Preservation Plan, TM – Truck Maneuver), Rev 6, prepared by Brooker Engineering, PLLC, dated 06/16/23.
2) Revised SWPPP Report, prepared by Brooker Engineering, PLLC, last revised June 23, 2023.
3) MS4 Acceptance Form for execution by MHE Engineering / MS4 representative.

The revised site plan incorporates changes to the Unity Place entrance as discussed at the May 18, 2023 Planning Boad meeting. Should MHE Engineering find our latest SWPPP report and responses sufficient, we'd also request execution of the MS4 Acceptance Form at this time. Following is a response to the MHE comments with the revisions associated with this submission.

Patrick J. Hines, MHE Engineering, Technical Review Comments of May 16, 2023

1. *COMMENT: The NOI question 34 should be revised to be the sum of the values in 30 and 33a.*

   Response: Question 34 of NOI (Appendix C) has been updated as requested.

2. *COMMENT: It should be specified why only 2.72 acres of impervious are considered for the RRv calculation, as opposed to the total 8.78 acres utilized in the WQv calculation.*

   Response: As shown on page 15 of the drainage report, the 2.72 value is the total impervious coverage (8.78) multiplied by the specific reduction factor (0.31) which is consistent with the minimum runoff reduction value calculation.

3. *COMMENT: The WQv/Runoff Reduction Summary shows the WQv treated by infiltration as 26,740 ft3, and the WQv reduced by infiltration as 25,496 ft3. The volume reduced should be 90% of the WQv volume treated, or 24,066 ft3.*

   Response: The summary table on page 23 of the drainage report was completed incorrectly in the previous submission. Please find revised report attached. As shown on the infiltration sizing sheets on pages 16 & 17 of the drainage report, RRv for infiltration practices counts for full WQv or 90% of infiltration volume whichever is less. Calculations on these pages demonstrate that the respective WQv for the system is the lesser value, thus the WQv associated with those infiltration systems (26,740 CF) is fully treated and reduced.

4. *COMMENT: For areas with a time of concentration below 6 minutes, the time calculation should be shown, with an additional line to increase it to 6 minutes so the calculation can be verified.*

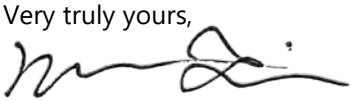
   Response: Times of concentration calculations have been clarified in the HydroCAD models as observed in the appendices of the Drainage Report. Each subarea that had a 6-minute time of concentrations now elaborates on their respective sheet flow / concentrated flow / pipe flow and adds additional time to reach the minimum of 6 minutes.

5. *COMMENT: The grate in the existing pond is shown as being higher than the emergency secondary overflow berm. It should be confirmed that this is accurate to the existing pond.*

   Response: Confirmed as per previously submitted topographic surveys. Note that the 100-year storm event does not reach either the pond berm or grate so it does not appear to be an issue as it relates to our design.

Please let us know if you require any additional information.

Very truly yours,



BROOKER ENGINEERING, P.L.L.C.
Matthew Trainor, P.E.

cc: Hon. John E. Ewasutyn & Planning Board (hard copy of Site Plan – digital copy of SWPPP)
Eliot Spitzer (via email)
Akiva Bomzer (via email)
John C. Cappello, Esq. (via email)

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UNITY PLACE WAREHOUSE

TOWN OF NEWBURGH
ORANGE COUNTRY, NEW YORK

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...
...

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22 Paris Avenue, Suite 105
Rockleigh, NJ 07647
(201) 684-1221

CIVIL:

SCOPE OF WORK:

...

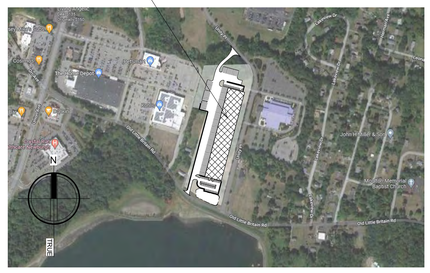
LEGEND:

- EXISTING CONSTRUCTION TO REMAIN
- EXISTING CONSTRUCTION TO BE REMOVED
- NEW WALL
- EXISTING DOOR TO REMAIN
- NEW DOOR
- EXISTING DOOR TO BE REMOVED
- DOOR TAG (101)
- ROOM DESIGNATION TAG (Room name, 101, 150 SF)
- WALL TYPE TAG (H)
- WINDOW TAG (A)
- FINISH TAG (?)
- KEY NOTE (?)
- ELEVATION TAG (1 Ref, A101, Ref)
- WALL/BUILDING SECTION CUT (5IM, A101)
- DETAIL TAG (1, A101, 5IM)

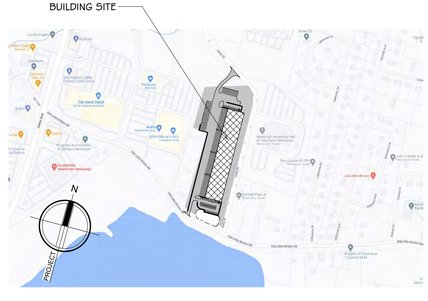
ABBREVIATIONS:

AB.	ANCHOR BOLT	MAT.	MATERIAL
A.C.T.	ACOUSTICAL CEILING TILE	MAX.	MAXIMUM
A.F.F.	ABOVE FINISH FLOOR	MECH.	MECHANICAL
APPX.	APPROXIMATE	MIN.	MINIMUM
ARCH.	ARCHITECT	MIR.	MIRROR
BSMT.	BASEMENT	MISC.	MISCELLANEOUS
BM	BEAM	MTL	METAL
BD	BOARD	NOM.	NOMINAL
BOT.	BOTTOM	N.T.S	NOT TO SCALE
BLDG.	BUILDING	O.C.	ON CENTER
CAB.	CABINET	O.H.	OVERHEAD
CLG.	CEILING	PTD.	PAINTED
C.T.	CERAMIC TILE	P. LAM.	PLASTIC LAMINATE
CIR.	CIRCLE	PL.	PLATE
COL	COLUMN	P.S.F.	POUNDS PER SQ. FOOT
C.J.	CONTROL JOINT	P.S.I.	POUNDS PER SQ. INCH.
CORR.	CORRIDOR	PREFAB	PREFABRICATED
D.L.	DEAD LOAD	P.T.	PRESSURE TREATED (WOOD)
DTL.	DETAIL	RAD.	RADIUS
DIAM.	DIAMETER	RLG.	RAILING
DIM.	DIMENSION	REF.	REFRIGERATOR
D.W.	DISHWASHER	REINF.	REINFORCE(ED), (ING)
D.H.	DOUBLE HUNG	REV.	REVIS(ION), (E), (ED)
D.S.	DOWNSPOUT	R.	RISER
DWG.	DRAWING	RFG.	ROOFING
ELEC.	ELECTRICAL	RM.	ROOM
ELEV.	ELEVATION	SEC.	SECTION
EQ.	EQUAL	SHTHG.	SHEATHING
EXIST.	EXISTING	SHT.	SHEET
EXT.	EXTERIOR	SIM	SIMILAR
E.I.F.S	EXTERIOR INSULATED FINISH SYSTEM	S.C.	SOLID CORE
FIN.	FINISH	SPEC.	SPECIFICATION
F.P.	FIREPLACE	SQ.	SQUARE
FLR	FLOOR	STD.	STANDARD
F.D.	FLOOR DRAIN	STO.	STORAGE
FTG.	FOOTING	STRL.	STRUCTURAL
FND.	FOUNDATION	THK	THICKNESS
FUR.	FURRED	THR.	THRESHOLD
G.C.	GENERAL CONTRACTOR	T&G	TONGUE AND GROOVE
GL.	GLASS, GLAZING	T.O.C.	TOP OF CONCRETE
GYP.BD	GYPSUM BOARD	T.O.B.	TOP OF BEAM
HDW.	HARDWARE	T.O.F.	TOP OF FOUNDATION
HDR.	HEADER	T.O.P.	TOP OF PLATE
HTG.	HEATING	TR	TREAD
HVAC	HEATING/VENTILATION/AIR CONDITIONING	TYP.	TYPICAL
HGT.	HEIGHT	UNF.	UNFINISHED
HORZ.	HORIZONTAL	U.O.N.	UNLESS OTHERWISE NOTED
HB.	HOSE BIBB	V.B.	VAPOR BARRIER
INS.	INSULAT(ED), (ION)	VERT.	VERTICAL
JT.	JOINT	V.I.F.	VERIFY
JST.	JOIST	W.C.	WATER CLOSET
KIT	KITCHEN	W.P.	WATER PROOFING
LAV.	LAVATORY	W.R.	WATER RESISTANT
LT.	LIGHT	WWF.	WELDED WIRE FABRIC
L.L.	LIVE LOAD	WN.	WINDOW
MFR.	MANUFACTURE(R)	W/O	WITHOUT
MAS.	MASONRY	WD.	WOOD

BUILDING LOCATION AERIAL



BUILDING LOCATION

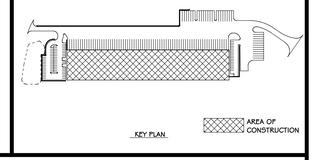


SHEET LIST TABLE

SHT.	SHEET TITLE	DRAWING DATE	PLANNING BOARD SUBMISSION	REVISION HISTORY 1 08/03/22	2 06/23/23	3 MM/DD/20	4 MM/DD/20	5 MM/DD/20	6 MM/DD/20	7 MM/DD/20	8 MM/DD/20	9 MM/DD/20	10 MM/DD/20	CURRENT REVISION Rev. #	DATE	DESCRIPTION	ISSUED (Y/N)
ARCHITECTURAL																	
A-001-PB	TITLE SHEET	05/16/23	100%	.	.									2	06/23/2023	REVISIONS IN RESPONSE TO PLANNING BOARD COMMENTS	No
A-201-PB	OVERALL FIRST FLOOR PLAN	05/16/23	100%	.	.									2	06/23/2023	REVISIONS IN RESPONSE TO PLANNING BOARD COMMENTS	No
A-300-PB	EXTERIOR ELEVATIONS	05/16/23	100%	.	.									2	06/23/2023	REVISIONS IN RESPONSE TO PLANNING BOARD COMMENTS	No
A-900-PB	SITE MAPS	05/16/23	100%	.	.									2	06/23/2023	REVISIONS IN RESPONSE TO PLANNING BOARD COMMENTS	No
A-901-PB	EXTERIOR RENDERING_OLD LITTLE BRITAIN ROAD	05/16/23	100%	.	.									2	06/23/2023	REVISIONS IN RESPONSE TO PLANNING BOARD COMMENTS	No
A-902-PB	EXTERIOR RENDERING_OLD LITTLE BRITAIN & UNITY PLACE CROSSING	08/03/22	100%	.	.									2	06/23/2023	REVISIONS IN RESPONSE TO PLANNING BOARD COMMENTS	No
A-903-PB	EXTERIOR RENDERING_UNITY PLACE ROAD	08/03/22	100%	.	.									2	06/23/2023	REVISIONS IN RESPONSE TO PLANNING BOARD COMMENTS	No
A-904-PB	EXTERIOR RENDERING_UNITY PLACE ROAD	05/16/23	100%		.									2	06/23/2023	REVISIONS IN RESPONSE TO PLANNING BOARD COMMENTS	No
VP-1	VIEWSHED RENDERINGS_OLD LITTLE BRITAIN ROAD	08/03/22	100%	.	.									2	06/23/2023	REVISIONS IN RESPONSE TO PLANNING BOARD COMMENTS	No
VP-2	VIEWSHED RENDERINGS_UNITY PLACE ROAD CROSSING	08/03/22	100%	.	.									2	06/23/2023	REVISIONS IN RESPONSE TO PLANNING BOARD COMMENTS	No
VP-3	VIEWSHED RENDERINGS_UNITY PLACE ROAD	08/03/22	100%	.	.									2	06/23/2023	REVISIONS IN RESPONSE TO PLANNING BOARD COMMENTS	No
VP-4	VIEWSHED RENDERINGS_UNITY PLACE ROAD	05/16/23	100%		.									2	06/23/2023	REVISIONS IN RESPONSE TO PLANNING BOARD COMMENTS	No
VP-5	VIEWSHED RENDERINGS_UNITY PLACE ROAD	05/16/23	100%		.									2	06/23/2023	REVISIONS IN RESPONSE TO PLANNING BOARD COMMENTS	No

PROJECT

N O R T H



100% PLANNING BOARD SUBMISSION

REVISIONS:

NUM.	DATE	DESCRIPTION
1	08/03/2022	VIEWSHED REFINEMENTS
2	06/23/2023	REVISIONS IN RESPONSE TO PLANNING BOARD COMMENTS

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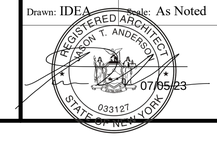
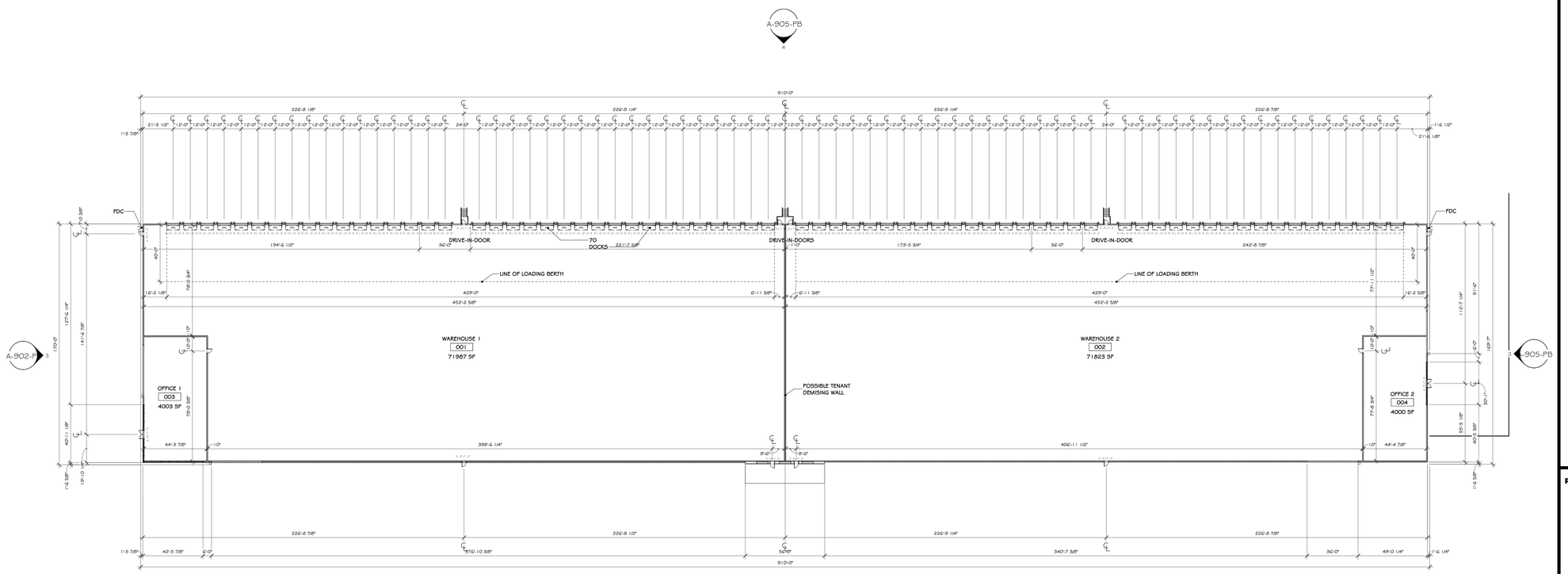
Project: UNITY PLACE WAREHOUSE
TOWN OF NEWBURGH

Drawing Name: TITLE SHEET

Drawn: IDEA | Scale: As Noted | Project: 21124 | Date: 05/16/23



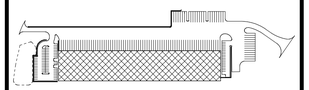
Drawing Number: A-001-PB



1 OVERALL FIRST FLOOR PLAN
1" = 40'-0"

PROJECT

NORTH



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Project: UNITY PLACE WAREHOUSE
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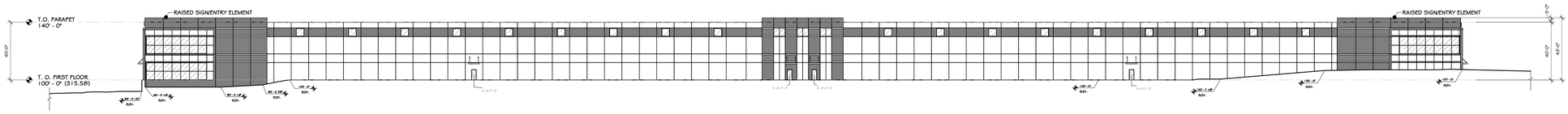
Drawing Name: OVERALL FIRST FLOOR PLAN

Drawn: IDEA | Scale: As Noted | Project: 21124 | Date: 05/16/23

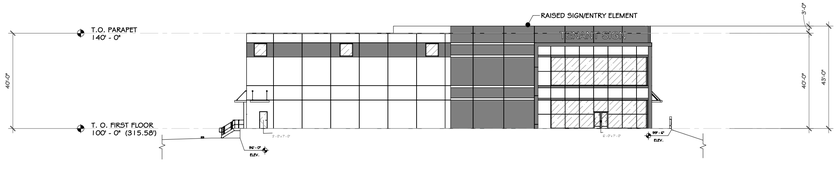
REGISTERED ARCHITECT JASON T. ANDERSON 033127 STATE OF NEW YORK 07/05/23

Drawing Number: A-201-PB

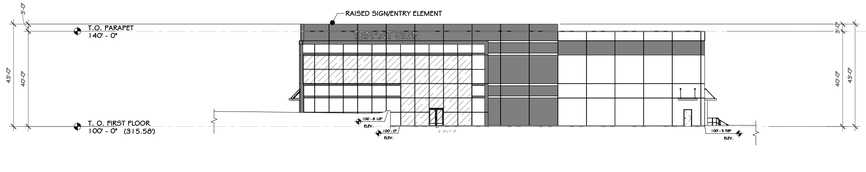


1 EAST ELEVATION
1" = 40'-0"

2 WEST ELEVATION
1" = 40'-0"

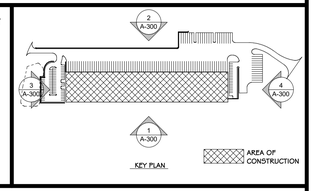


3 SOUTH ELEVATION
1" = 30'-0"



4 NORTH ELEVATION
1" = 30'-0"

PROJECT NORTH



100% PLANNING BOARD SUBMISSION

REVISIONS:

NUM.	DATE	DESCRIPTION
1	08/03/2022	VIEWSHED REFINEMENTS
2	06/23/2023	REVISIONS IN RESPONSE TO PLANNING BOARD COMMENTS

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Project: UNITY PLACE WAREHOUSE
TOWN OF NEWBURGH

Drawing Name: EXTERIOR ELEVATIONS

Drawn: IDEA | Scale: As Noted | Project: 21124 | Date: 05/16/23

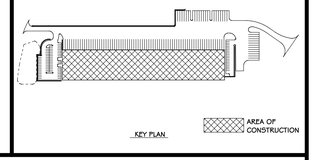
REGISTERED ARCHITECT JASON T. ANDERSON 031127 STATE OF NEW YORK
07/05/23

Drawing Number: A-300-PB

1 UNITY PLACE WAREHOUSE SITE MAP

PROJECT

NORTH



100% PLANNING BOARD SUBMISSION

REVISIONS:

NUM.	DATE	DESCRIPTION
1	08/03/2022	VIEWSHED REFINEMENTS
2	06/23/2023	REVISIONS IN RESPONSE TO PLANNING BOARD COMMENTS

ANDERSON DESIGN GROUP

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Project: UNITY PLACE WAREHOUSE
TOWN OF NEWBURGH

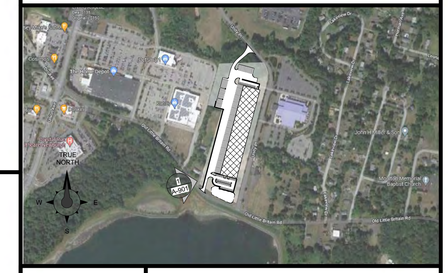
Drawing Name: SITE MAPS

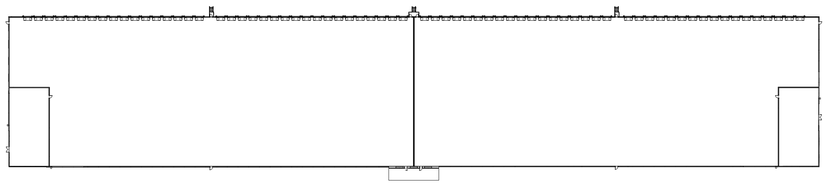
Drawn: IDEA | Scale: As Noted | Project: 21124 | Date: 05/16/23

REGISTERED ARCHITECT
JASON T. ANDERSON
033127
STATE OF NEW YORK
07/05/23

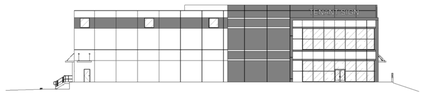
Drawing Number:
A-900-PB

1 VIEW FROM OLD LITTLE BRITAIN ROAD
EXTERIOR RENDERING 1





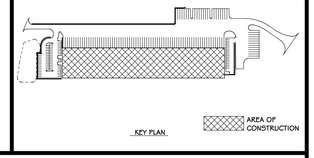
2 BUILDING REFERENCE 1
1" = 80'-0"



3 SOUTH ELEVATION REFERENCE 1
1" = 40'-0"

4 WEST ELEVATION REFERENCE 1
1" = 40'-0"

PROJECT NORTH



100% PLANNING BOARD SUBMISSION

REVISIONS:

NUM.	DATE	DESCRIPTION
1	08/03/2022	VIEWSHED REFINEMENTS
2	06/23/2023	REVISIONS IN RESPONSE TO PLANNING BOARD COMMENTS

ANDERSON DESIGN GROUP
ARCHITECTURE
PLANNING
INTERIORS
25 WALLKILL AVE • MONTGOMERY • NY 12549
O. 845.294.2724 | F.888.305.6442
WWW.ADGARCHITECT.COM
CONTACT@ADGARCHITECT.COM

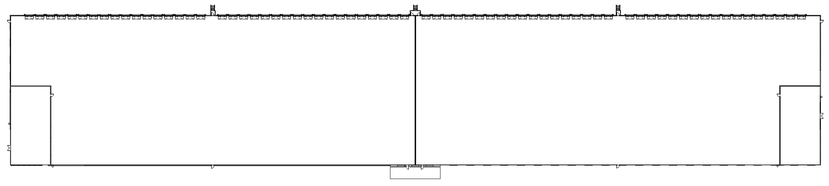
Project: UNITY PLACE WAREHOUSE
TOWN OF NEWBURGH

Drawing Name: EXTERIOR RENDERING_OLD LITTLE BRITAIN ROAD

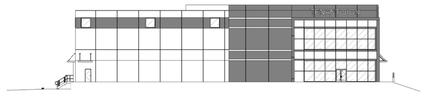
Drawn: IDEA | Scale: As Noted | Project: 21124 | Date: 05/16/23

Drawing Number: A-901-PB

1 VIEW FROM OLD LITTLE BRITAIN & UNITY PLACE ROAD CROSSING
EXTERIOR RENDERING 2

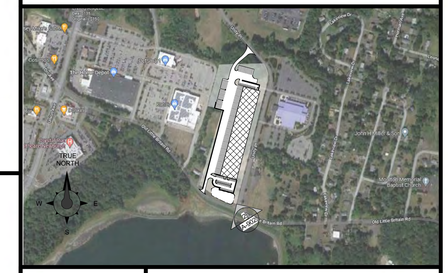


2 BUILDING REFERENCE 2
1" = 80'-0"



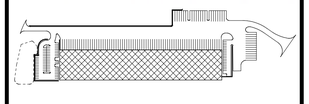
3 SOUTH ELEVATION REFERENCE 2
1" = 40'-0"

4 EAST ELEVATION REFERENCE 1
1" = 40'-0"



PROJECT

NORTH



100% PLANNING BOARD SUBMISSION

REVISIONS:

NUM.	DATE	DESCRIPTION
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CONTACT@ADGARCHITECT.COM

Project: UNITY PLACE WAREHOUSE
TOWN OF NEWBURGH

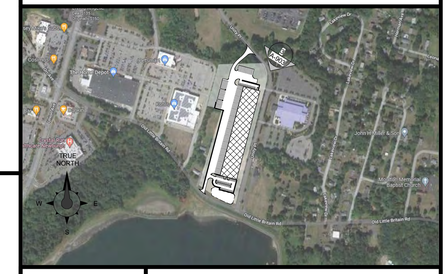
Drawing Name: EXTERIOR RENDERING_OLD LITTLE BRITAIN & UNITY PLACE CROSSING

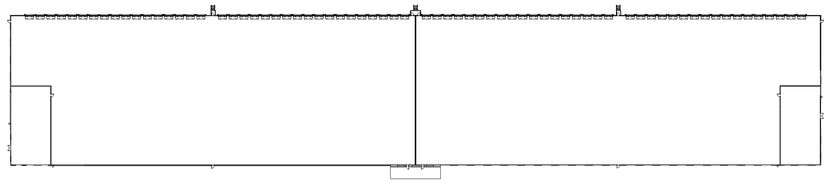
Drawn: IDEA | Scale: As Noted | Project: 21124 | Date: 08/03/22

REGISTERED ARCHITECT JASON T. ANDERSON 033127 STATE OF NEW YORK
07/05/23

Drawing Number:
A-902-PB

1 VIEW FROM UNITY PLACE ROAD
EXTERIOR RENDERING 3



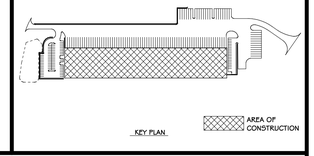


2 BUILDING REFERENCE 3
1" = 80'-0"

3 NORTH ELEVATION REFERENCE 1
1" = 40'-0"

4 EAST ELEVATION REFERENCE 2
1" = 40'-0"

PROJECT NORTH



100% PLANNING BOARD SUBMISSION

REVISIONS:

NUM.	DATE	DESCRIPTION
1	08/03/2022	VIEWSHED REFINEMENTS
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ANDERSON DESIGN GROUP
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Project: UNITY PLACE WAREHOUSE
TOWN OF NEWBURGH

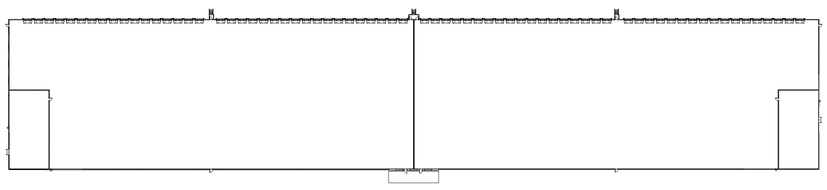
Drawing Name: EXTERIOR RENDERING_UNITY PLACE ROAD

Drawn: IDEA | Scale: As Noted | Project: 21124 | Date: 09/08/22

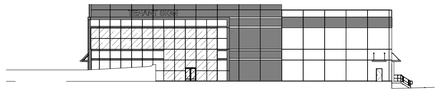
REGISTERED ARCHITECT JASON T. ANDERSON 033127 STATE OF NEW YORK 07/05/23

Drawing Number: A-903-PB

1 VIEW FROM UNITY PLACE ROAD
EXTERIOR RENDERING 4

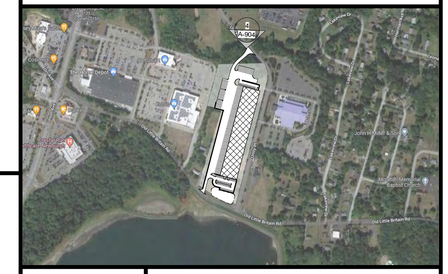


2 BUILDING REFERENCE 4
1" = 80'-0"



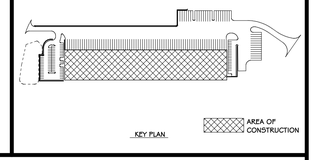
3 NORTH ELEVATION REFERENCE 2
1" = 40'-0"

4 WEST ELEVATION REFERENCE 2
1" = 40'-0"



PROJECT

NORTH



100% PLANNING BOARD SUBMISSION

REVISIONS:

NUM.	DATE	DESCRIPTION
2	06/23/2023	REVISIONS IN RESPONSE TO PLANNING BOARD COMMENTS

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CONTACT@ADGARCHITECT.COM

Project: UNITY PLACE WAREHOUSE
TOWN OF NEWBURGH

Drawing Name: EXTERIOR RENDERING_UNITY PLACE ROAD

Drawn: Author | Scale: As Noted | Project: 21124 | Date: 05/18/23

REGISTERED ARCHITECT
JASON T. ANDERSON
033127
STATE OF NEW YORK
07/05/23

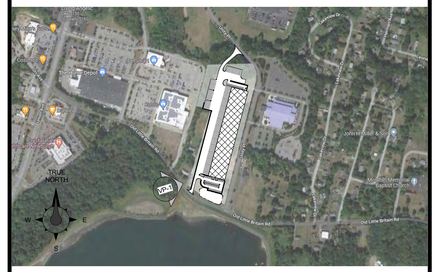
Drawing Number:
A-904-PB

2 VIEW FROM OLD LITTLE BRITAIN ROAD (LANDSCAPING AT YEAR 1)
VANTAGE POINT 1

1 VIEW FROM OLD LITTLE BRITAIN ROAD
EXISTING VIEW 1

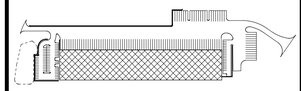
3 VIEW FROM OLD LITTLE BRITAIN ROAD (LANDSCAPING AT YEAR 5)
VANTAGE POINT 1

4 VIEW FROM OLD LITTLE BRITAIN ROAD (LANDSCAPING AT YEAR 10)
VANTAGE POINT 1



PROJECT

NORTH



100% PLANNING BOARD SUBMISSION

REVISIONS:

NUM.	DATE	DESCRIPTION
1	08/03/2022	VIEWSHED REFINEMENTS
2	06/23/2023	REVISIONS IN RESPONSE TO PLANNING BOARD COMMENTS

ANDERSON
DESIGN
GROUP

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INTERIORS

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CONTACT@ADGARCHITECT.COM

Project: UNITY PLACE WAREHOUSE
TOWN OF NEWBURGH

Drawing Name: VIEWSHED RENDERINGS_OLD LITTLE BRITAIN ROAD

Drawn: IDEA | Scale: As Noted | Project: 21124 | Date: 08/03/22

REGISTERED ARCHITECT
JASON T. ANDERSON
031127
STATE OF NEW YORK
07/05/23

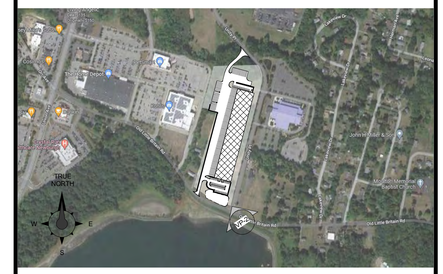
Drawing Number: VP-1

2 VIEW FROM OLD LITTLE BRITAIN & UNITY PLACE ROAD CROSSING (LANDSCAPING AT YEAR 1)
VANTAGE POINT 2

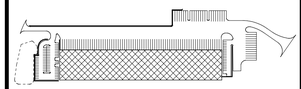
1 VIEW FROM OLD LITTLE BRITAIN & UNITY PLACE ROAD CROSSING
EXISTING VIEW 2

3 VIEW FROM OLD LITTLE BRITAIN & UNITY PLACE ROAD CROSSING (LANDSCAPING AT YEAR 5)
VANTAGE POINT 2

4 VIEW FROM OLD LITTLE BRITAIN & UNITY PLACE ROAD CROSSING (LANDSCAPING AT YEAR 10)
VANTAGE POINT 2



PROJECT NORTH



100% PLANNING BOARD SUBMISSION

REVISIONS:

NUM.	DATE	DESCRIPTION
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ANDERSON DESIGN GROUP
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WWW.ADGARCHITECT.COM
CONTACT@ADGARCHITECT.COM

Project: UNITY PLACE WAREHOUSE
TOWN OF NEWBURGH

Drawing Name: VIEWSHED RENDERINGS_UNITY PLACE ROAD CROSSING

Drawn: IDEA | Scale: As Noted | Project: 21124 | Date: 08/03/22

REGISTERED ARCHITECT JASON T. ANDERSON 033127 STATE OF NEW YORK 07/05/23

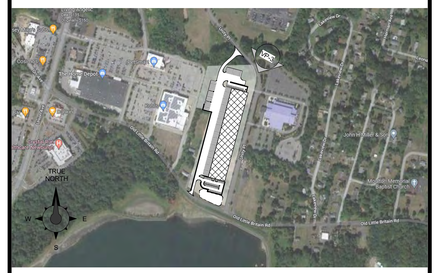
Drawing Number: VP-2

2 VIEW FROM UNITY PLACE ROAD (LANDSCAPING AT YEAR 1)
VANTAGE POINT 3

1 VIEW FROM UNITY PLACE ROAD
EXISTING VIEW 3

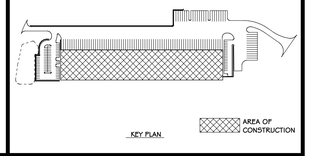
3 VIEW FROM UNITY PLACE ROAD (LANDSCAPING AT YEAR 5)
VANTAGE POINT 3

4 VIEW FROM UNITY PLACE ROAD (LANDSCAPING AT YEAR 10)
VANTAGE POINT 3



PROJECT

NORTH



100% PLANNING BOARD SUBMISSION

REVISIONS:

NUM.	DATE	DESCRIPTION
1	08/03/2022	VIEWSHED REFINEMENTS
2	06/23/2023	REVISIONS IN RESPONSE TO PLANNING BOARD COMMENTS

ANDERSON DESIGN GROUP
ARCHITECTURE
PLANNING
INTERIORS
25 WALLKILL AVE • MONTGOMERY • NY 12549
O. 845.294.2724 | F.888.305.6442
WWW.ADGARCHITECT.COM
CONTACT@ADGARCHITECT.COM

Project: UNITY PLACE WAREHOUSE
TOWN OF NEWBURGH

Drawing Name: VIEWSHED RENDERINGS_UNITY PLACE ROAD

Drawn: IDEA | Scale: As Noted | Project: 21124 | Date: 08/03/22

REGISTERED ARCHITECT JASON T. ANDERSON 033127 STATE OF NEW YORK
07/05/23

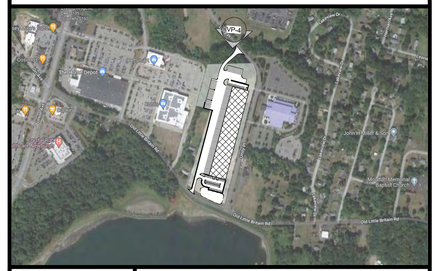
Drawing Number: VP-3

2 VIEW FROM UNITY PLACE ROAD (LANDSCAPING AT YEAR 1)
VANTAGE POINT 4

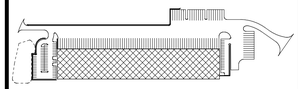
1 VIEW FROM UNITY PLACE ROAD
EXISTING VIEW 4

3 VIEW FROM UNITY PLACE ROAD (LANDSCAPING AT YEAR 5)
VANTAGE POINT 4

4 VIEW FROM UNITY PLACE ROAD (LANDSCAPING AT YEAR 10)
VANTAGE POINT 4



PROJECT NORTH



KEY PLAN

100% PLANNING BOARD SUBMISSION

REVISIONS:

NUM.	DATE	DESCRIPTION
2	06/23/2023	REVISIONS IN RESPONSE TO PLANNING BOARD COMMENTS

ANDERSON DESIGN GROUP
ARCHITECTURE
PLANNING
INTERIORS
25 WALLKILL AVE • MONTGOMERY • NY 12549
O. 845.294.2724 | F.888.305.6442
WWW.ADGARCHITECT.COM
CONTACT@ADGARCHITECT.COM

Project: UNITY PLACE WAREHOUSE
TOWN OF NEWBURGH

Drawing Name: VIEWSHED RENDERINGS_UNITY PLACE ROAD

Drawn: IDEA | Scale: As Noted | Project: 21124 | Date: 05/18/23

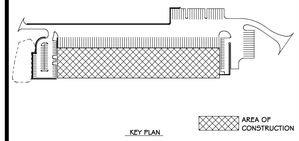
REGISTERED ARCHITECT JASON T. ANDERSON 033127 STATE OF NEW YORK 07/05/23

Drawing Number: VP-4

1 VIEW FROM UNITY PLACE ROAD
EXISTING VIEW 3

2 VIEW FROM UNITY PLACE ROAD (LANDSCAPING AT YEAR 10)
VANTAGE POINT 5

PROJECT NORTH



100% PLANNING BOARD SUBMISSION

REVISIONS:

NUM.	DATE	DESCRIPTION
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ANDERSON DESIGN GROUP
ARCHITECTURE
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WWW.ADGARCHITECT.COM
CONTACT@ADGARCHITECT.COM

Project: UNITY PLACE WAREHOUSE
TOWN OF NEWBURGH

Drawing Name: VIEWSHED RENDERINGS_UNITY PLACE ROAD

Drawn: IDEA | Scale: As Noted | Project: 21124 | Date: 05/18/23

REGISTERED ARCHITECT JASON T. ANDERSON 033127 STATE OF NEW YORK 07/05/23

Drawing Number: VP-5

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

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

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

I. Project Owner/Operator Information	
1. Owner/Operator Name:	Unity Place Newburgh LLC
2. Contact Person:	Akiva Bomzer
3. Street Address:	95 Chestnut Ridge Road
4. City/State/Zip:	Montvale, NJ 07645
II. Project Site Information	
5. Project/Site Name:	Unity Place Warehouse
6. Street Address:	7 Unity Place
7. City/State/Zip:	Newburgh, NY 12550
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information	
8. SWPPP Reviewed by:	
9. Title/Position:	
10. Date Final SWPPP Reviewed and Accepted:	
IV. Regulated MS4 Information	
11. Name of MS4:	
12. MS4 SPDES Permit Identification Number: NYR20A	
13. Contact Person:	
14. Street Address:	
15. City/State/Zip:	
16. Telephone Number:	

MS4 SWPPP Acceptance Form - continued

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

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

Printed Name:

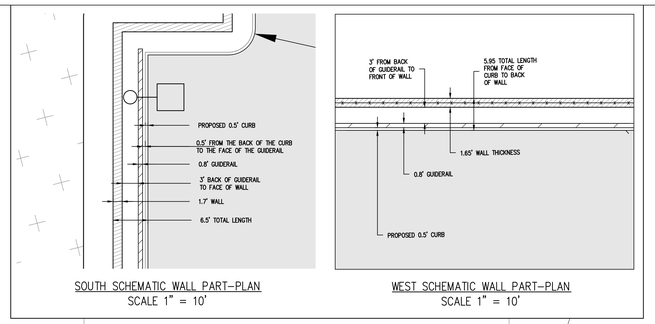
Title/Position:

Signature:

Date:

VI. Additional Information

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



SOUTH SCHEMATIC WALL PART–PLAN
SCALE 1" = 10'

WEST SCHEMATIC WALL PART–PLAN
SCALE 1" = 10'

PARKING CALCULATION:
A) AS PER ZONING CODE § 185-13:
1 EMPLOYEE/1,500 SF
154,700 SF/1,500 SF = 104 EMPLOYEES
REQUIRED 2 SPACES/3 EMPLOYEES = 104 EMPLOYEES = 70 SPACES
B) AS PER ZONING CODE ATTACHMENT 2, CHART
1 PARKING GENERATION RATES:
REQUIRED: 0.50 SPACES/1,000 SF GROSS BUILDING AREA (154,700 SF) = 78 SPACES
PROVIDED: 84 SPACES (>70 & >78:OK)

REQUIRED ADA PARKING: 4
PROVIDED ADA PARKING: 4

DEVELOPMENT SUMMARY:
BUILDING AREA: 162,800 SF
PARKING AREA RESERVATION REQUIRED: 154,700 S.F.
PARKING AREA RESERVATION PROPOSED: 236,570 S.F.
TOTAL LOADING DOCKS: 72 DOCKS
TOTAL TRAILER STORAGE SPACES: 36 SPACES

SITE PLAN NOTES:

1. TAX LOTS 97-2-14.1, 97-2-19.12 & 97-2-37.2
2. AREA OF TRACT: 648,630 SF ± (14.891 AC ±)
3. ZONE: IB
4. USE: WAREHOUSE, STORAGE AND TRANSPORTATION FACILITIES INCLUDING TRUCK AND BUS TERMINALS.
5. PLANNING BOARD SITE PLAN REVIEW USE GROUP: 9
6. RECORD OWNERS:
   1) TAX LOT 97-2-19.12
   LAKE VIEW REALTY HOLDING LLC
   RONALD K. BARTON
   C/O BARTON CHEVROLET, INC.
   800 AUTO PART PLACE
   NEWBURGH, NEW YORK, 12550
   2) TAX LOT 97-2-14.1
   UNITY PLACE PROPERTIES LLC
   RONALD K. BARTON
   C/O BARTON CHEVROLET, INC.
   800 AUTO PART PLACE
   NEWBURGH, NEW YORK, 12550
   3) TAX LOT 97-2-37.2
   NEWBURGH AUTO PARK, LLC
   RONALD K. BARTON
   C/O BARTON CHEVROLET, INC.
   800 AUTO PART PLACE
   NEWBURGH, NEW YORK, 12550
7. APPLICANT: UNITY PLACE NEWBURGH LLC
   95 CHESTNUT RIDGE ROAD,
   MONTVALE, NJ, 07645
   (212) 796 5449

SIGN SCHEDULE

SYMBOL	SIGN PANEL	QUANTITY
A	STOP SIGN MUTCD R1-1 (30"X30")	4
B	"NO RIGHT TURN FOR TRUCKS"	1
C1	"ALL TRUCKS" ONE WAY SIGN R6-1R (36"X12")	4
D	ADA PARKING MUTCD R7-8	4
E	NO PARKING ANYTIME MUTCD R7-1	2
F	NO RIGHT TURN MUTCD R3-1	1
G	EXIT	1
H	"TRUCKS NO EXIT"	1

NOTE: REFER TO SIGN DETAILS SHEET #6

NOTES:

ALL PAVEMENT STRIPING REMOVAL AND NEW PAVEMENT MARKINGS SHALL CONFORM WITH THE NYSDOT STANDARD SPECIFICATIONS AS FOLLOW:

PAVING STRIPING REMOVAL SCHEDULE:

ITEM 635.0103 – CLEANING AND PREPARATION OF PAVEMENT SURFACE – LINES
ITEM 635.0203 – CLEANING AND PREPARATION OF PAVEMENT SURFACE – LETTERS
ITEM 635.0303 – CLEANING AND PREPARATION OF PAVEMENT SURFACE – SYMBOLS

NEW PAVEMENT MARKING SCHEDULE:

ITEM 685.11 – WHITE EPOXY REFLECTORIZED PAVEMENT STRIPING – 20 MILS
ITEM 685.11 – YELLOW EPOXY REFLECTORIZED PAVEMENT STRIPING – 20 MILS
ITEM 685.11 – WHITE EPOXY REFLECTORIZED PAVEMENT STRIPING – LETTERS
ITEM 685.11 – WHITE EPOXY REFLECTORIZED PAVEMENT STRIPING – SYMBOLS

LEGEND (PROPOSED)
PROPERTY LINE
YARD LINE
CURB
BUILDING
PAVEMENT
SIDEWALK
ADA DROP CURB
PARKING AISLE NUMBER OF SPOTS
LUMINARE
MAN DOOR
LOADING DOCK
RETAINING WALL
FIELDSTONE PARAPET WALL
GUIDERAIL
SOLID WOOD FENCE
PARKING AREA RESERVATION

BULK TABLE
ZONE: IB DISTRICT
USE SUBJECT TO SITE PLAN REVIEW BY THE PLANNING BOARD: WAREHOUSE, STORAGE AND TRANSPORTATION FACILITIES INCLUDING TRUCK AND BUS TERMINALS.
USE GROUP: #9

	MIN. LOT AREA (SF)	MIN. LOT WIDTH (FEET)	MIN. LOT DEPTH (FEET)	MIN. FRONT YARD (FEET)	MIN. REAR YARD (FEET)	MIN. 1 SIDE YARD (FEET)	MIN. BOTH SIDE YARD (FEET)	MAX. PERMITTED LOT BUILDING COVERAGE (%)	MAX. PERMITTED LOT BUILDING HEIGHT (FEET)	MAX. PERMITTED LOT SURFACE COVERAGE (%)
REQUIRED	40,000	150	150	50	60	30	80	40	40	80
PROPOSED	648,630	1,725	360.3	50	140.29	196.9	N/A	23.8	40	59

LOT BUILDING COVERAGE
BUILDING AREA = 154,700 SF
LOT AREA = 648,630 SF
= (154,700)/(648,630) = 0.238 X 100 = 23.8%

MAX. PERMITTED LOT SURFACE COVERAGE
PAVEMENT AREA = 227,339 SF
BUILDING AREA = 154,700 SF
SIDEWALK AREA = 1,418 SF
TOTAL IMPERVIOUS AREA = 383,457 SF
SURFACE COVERAGE = (383,457/648,630) = 0.59x100 = 59%

REV	DESCRIPTION	BY	DATE
6	AS PER REVIEW COMMENTS	AP	06/16/23
5	GENERAL REVISIONS	XC	05/04/23
1	AS PER 6/16/2022 PLANNING BOARD COMMENTS	JO	07/11/2022

DISCLAIMER:
UNAUTHORIZED ALTERATION OR ADDITIONS TO THESE PLANS IS A VIOLATION OF THE N.Y.S. EDUCATION LAW, ARTICLE 145, SECTION 7209, SUBSECTION 2.

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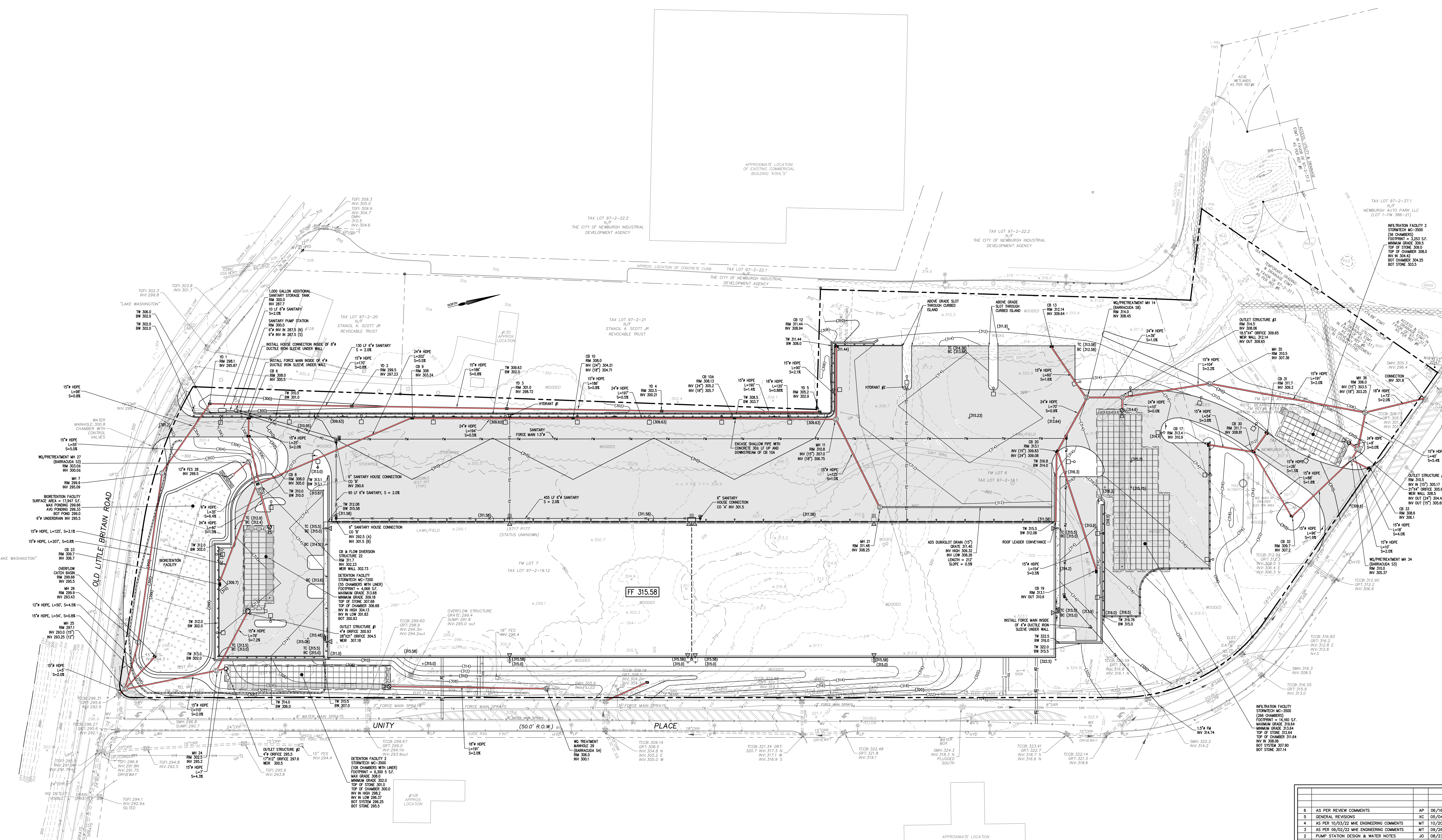
PROJECT:
UNITY PLACE WAREHOUSE
TOWN OF NEWBURGH
ORANGE COUNTY
NEW YORK

TITLE:
LAYOUT PLAN

PROJECT NO:	DRAWN:	CHECKED:
21202	JO	DR

SCALE: 1" = 40'
GRAPHIC SCALE: 0 40' 80'
DATE: 05/27/2022
DRAWING NO: 2



CONSTRUCTION NOTES:

1. CONTRACTOR SHALL FIELD LOCATE ALL EXISTING UTILITIES AND VERIFY ALL LOCATIONS, ELEVATIONS, INVERTS, ETC. PRIOR TO ANY CONSTRUCTION AND NOTIFY THE DESIGN ENGINEER OF ANY DISCREPANCIES ON THIS PLAN.
2. CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES AND HAVE ALL UTILITIES FIELD LOCATED BY RESPECTIVE UTILITY COMPANY AND SHALL ASSUME FULL RESPONSIBILITY AND SHALL BE SOLELY RESPONSIBLE FOR MAINTAINING CONTINUOUS UTILITY SERVICE AND REPAIRS TO ANY DAMAGE.
3. PROJECT SAFETY AND TRAFFIC MAINTENANCE ARE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
4. CONTRACTOR TO COORDINATE WITH ALL COMPANIES TO ASSURE ADEQUATE SUPPLY AND SCHEDULING OF NEW SERVICE, WHERE REQUIRED, TO FIT THE CONSTRUCTION SCHEDULING AND SEQUENCE TO ASSURE NO DAMAGE OR DISTURBANCE TO EXISTING SERVICES. IF THE CONTRACTOR DAMAGES ANY MATERIALS WHICH ARE TO REMAIN IN PLACE, THE DAMAGED MATERIALS SHALL BE REPAIRED OR REPLACED IN A MANNER SATISFACTORY TO THE ENGINEER AT THE EXPENSE OF THE CONTRACTOR.
5. THE CONTRACTOR IS RESPONSIBLE TO NOTIFY THE OWNER AND ENGINEER OF ANY UNANTICIPATED UTILITIES ENCOUNTERED AND MAINTAIN THE UTILITIES IN WORKING ORDER UNTIL THEIR DISPOSITION IS RESOLVED.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE RELOCATION, PROTECTION AND/OR TEMPORARY SUPPORT OF ANY UTILITIES ENCOUNTERED WITHIN THE WORK AREA.
7. THE CONTRACTOR SHALL COORDINATE DIRECTLY WITH EACH AFFECTED UTILITY COMPANY, SHALL APPLY FOR AND OBTAIN THE NECESSARY PERMITS AND APPROVALS, AND SHALL INITIATE AND COORDINATE ALL INSPECTIONS NECESSARY FOR FINAL APPROVAL AND ACCEPTANCE BY THE SUBJECT UTILITY COMPANY.
8. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING CONTINUOUS SERVICE OF ALL EXISTING UTILITIES WITHIN THE WORK AREA AT ALL TIMES. CONTRACTOR SHALL COORDINATE ANY REPAIR, RELOCATION OR REMOVAL OF EXISTING UTILITIES WITH EACH RESPECTIVE UTILITY COMPANY AND PROVISIONS MUST BE PROVIDED FOR TEMPORARY SERVICE OF ANY RESPECTIVE UTILITY SERVICE AFFECTED BY THE CONSTRUCTION IN THE EVENT OF ANY DISRUPTION TO THE EXISTING UTILITY. SHUT-DOWNS SHALL BE AT THE DISCRETION OF THE RESPECTIVE UTILITY COMPANIES AND COORDINATED WITH THE MUNICIPALITY AND THE ENGINEER FOR PUBLIC NOTICE IF NECESSARY. TEMPORARY SERVICE SHALL BE PROVIDED AND MAINTAINED AT NO ADDITIONAL COST.
9. ALL STORM DRAINAGE PIPE TO BE HIGH DENSITY POLYETHYLENE PIPE (HDPE) WITH SMOOTH INTERIOR UNLESS OTHERWISE SPECIFIED.
10. ALL ROOF LEADERS ARE TO BE CONNECTED TO THE ON-SITE STORMWATER SYSTEM. ROOF DOWNSPOUTS AND RECEIVING LEADER SIZES SHALL BE SPECIFIED BY THE BUILDING MECHANICAL ENGINEER. FINAL LOCATIONS OF ROOF LEADERS ARE TO BE FINALIZED BY CONTRACTOR. ROOF LEADER PIPES SHALL BE SDR-35 PVC.
11. WATER SERVICE LINE AND SEWER CONNECTION SHALL BE PLACED IN SEPARATE TRENCHES WITH A MINIMUM HORIZONTAL DISTANCE OF TEN FEET BETWEEN THEM.
12. SANITARY SEWER PIPE SHALL BE SDR-35 PVC.

WATER MAIN PIPE, VALVES, FITTINGS, THRUST RESTRAINT, TAPPING SLEEVES, HYDRANTS, ETC SHALL CONFORM WITH TOWN OF NEWBURGH STANDARDS

13. ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE NEW YORK STATE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
14. ALL DIMENSIONS ARE MEASURED TO THE ROUGH UNLESS OTHERWISE NOTED. ELEVATIONS AND DIMENSIONS SHOWN ARE FOR GENERAL REFERENCE ONLY. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, CONDITIONS, AND ELEVATIONS IN THE FIELD PRIOR TO THE USE OF SUCH INFORMATION IN BIDDING OR CONSTRUCTION. THE CONTRACTOR SHALL TAKE ALL FIELD MEASUREMENTS NECESSARY TO ASSURE PROPER FIT OF FINISHED WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY. NOTIFY THE ENGINEER IMMEDIATELY OF ANY DIMENSIONAL DISCREPANCIES.
15. THE CONTRACTOR SHALL PERFORM ALL WORK WITH CARE SO THAT ANY MATERIALS WHICH ARE TO REMAIN IN PLACE WILL NOT BE DAMAGED. IF THE CONTRACTOR DAMAGES ANY MATERIALS WHICH ARE TO REMAIN IN PLACE, THE DAMAGED MATERIALS SHALL BE REPAIRED OR REPLACED IN A MANNER SATISFACTORY TO THE ENGINEER AT THE EXPENSE OF THE CONTRACTOR.
16. THE SITE SHALL BE KEPT CLEAN AT ALL TIMES. UPON COMPLETION OF WORK, ALL EXCESS MATERIAL, DEBRIS, ETC. SHALL BE REMOVED AND PROPERLY DISPOSED OF AND THE WORK AREA SHALL BE LEFT CLEAN TO THE OWNER'S SATISFACTION.
17. WHENEVER ITEMS IN THE CONTRACT REQUIRE MATERIALS TO BE REMOVED AND DISPOSED OF, THE COST OF SUPPLYING A DISPOSAL AREA AND TRANSPORTATION TO THAT AREA SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

TOWN OF NEWBURGH WATER SYSTEM NOTES FOR SITE PLANS

1. CONSTRUCTION OF POTABLE WATER UTILITIES AND CONNECTION TO THE TOWN OF NEWBURGH WATER SYSTEM REQUIRES A PERMIT FROM THE TOWN OF NEWBURGH WATER DEPARTMENT. ALL WORK AND MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF THE NYSDOH AND THE TOWN OF NEWBURGH."
2. ALL WATER SERVICE LINES FOUR (4) INCHES AND LARGER IN DIAMETER SHALL BE CEMENT LINED CLASS 52 DUCTILE IRON PIPE CONFORMING TO ANSI\AWWA C151\A21.51 FOR DUCTILE IRON PIPE, LATEST REVISION. JOINTS SHALL BE EITHER PUSH-ON OR MECHANICAL JOINT AS REQUIRED.
3. THRUST RESTRAINT OF THE PIPE SHALL BE THROUGH THE USE OF JOINT RESTRAINT. THRUST BLOCKS ARE NOT ACCEPTABLE. JOINT RESTRAINT SHALL BE THROUGH THE USE OF MECHANICAL JOINT PIPE WITH RETAINER GLANDS. ALL FITTINGS AND VALVES SHALL ALSO BE INSTALLED WITH RETAINER GLANDS FOR JOINT RESTRAINT. RETAINER GLANDS SHALL BE EBBA IRON MEGALUG SERIES 1100 OR APPROVED EQUAL. THE USE OF A MANUFACTURED RESTRAINED JOINT PIPE IS ACCEPTABLE WITH PRIOR APPROVAL OF THE WATER DEPARTMENT.
4. ALL FITTINGS SHALL BE CAST IRON OR DUCTILE IRON, MECHANICAL JOINT, CLASS 250 AND CONFORM TO ANSI\AWWA C110\A21.10 FOR DUCTILE AND GRAY IRON FITTINGS OR ANSI\AWWA C153\A21.53 FOR DUCTILE IRON COMPACT FITTINGS, LATEST REVISION.
5. ALL VALVES 4 TO 12 INCHES SHALL BE RESILIENT WEDGE GATE VALVES CONFORMING TO ANSI\AWWA C509 SUCH AS MUELLER MODEL A-2360-23 OR APPROVED EQUAL. ALL GATE VALVES SHALL OPEN LEFT (COUNTERCLOCKWISE).
6. TAPPING SLEEVE SHALL BE MECHANICAL JOINT SUCH AS MUELLER H-615 OR EQUAL. TAPPING VALVES 4 TO 12 INCHES SHALL BE RESILIENT WEDGE GATE VALVES CONFORMING TO ANSI\AWWA C509 SUCH AS MUELLER MODEL T-2360-19 OR APPROVED EQUAL. ALL TAPPING SLEEVES AND VALVES SHALL BE TESTED TO 150 PSI MINIMUM; TESTING OF THE TAPPING SLEEVE AND VALVE MUST BE WITNESSED AND ACCEPTED BY THE TOWN OF NEWBURGH WATER DEPARTMENT PRIOR TO CUTTING INTO THE PIPE.
7. ALL HYDRANTS SHALL BE CLOW-EDDY F-2640 CONFORMING TO AWWA STANDARD C- 502, LATEST REVISION. ALL HYDRANTS SHALL INCLUDE A 5 ¼ INCH MAIN VALVE OPENING, TWO 2 ½ INCH DIAMETER NPT HOSE NOZZLES, ONE 4 INCH NPT STEAMER NOZZLE, A 6 INCH DIAMETER INLET CONNECTION AND A 1 ½ INCH PENTAGON OPERATING NUT. ALL HYDRANTS SHALL OPEN LEFT (COUNTER-CLOCKWISE). HYDRANTS ON MAINS TO BE DEDICATED TO THE TOWN SHALL BE EQUIPMENT YELLOW. HYDRANTS LOCATED ON PRIVATE PROPERTY SHALL BE RED.
8. ALL WATER SERVICE LINES TWO (2) INCHES IN DIAMETER AND SMALLER SHALL BE TYPE K COPPER TUBING. CORPORATION STOPS SHALL BE MUELLER H-15020N FOR ¾ AND 1 INCH, MUELLER H-15000N OR B-25000N FOR 1 ½ AND 2 INCH SIZES. CURB VALVES SHALL BE MUELLER H-1502-2N FOR ¾ AND 1 INCH AND MUELLER B-25204N FOR 1 ½ AND 2 INCH SIZES. CURB BOXES SHALL BE MUELLER H-10314N FOR ¾ AND 1 INCH AND MUELLER H-10310N FOR 1 ½ AND 2 INCH SIZES.
9. ALL PIPE INSTALLATION SHALL BE SUBJECT TO INSPECTION BY THE TOWN OF NEWBURGH WATER DEPARTMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL INSPECTIONS AS REQUIRED WITH THE TOWN OF NEWBURGH WATER DEPARTMENT.
10. THE WATER MAIN SHALL BE TESTED, DISINFECTED AND FLUSHED IN ACCORDANCE WITH THE TOWN OF NEWBURGH REQUIREMENTS. ALL TESTING, DISINFECTION AND FLUSHING SHALL BE COORDINATED WITH THE TOWN OF NEWBURGH WATER DEPARTMENT. PRIOR TO PUTTING THE WATER MAIN IN SERVICE SATISFACTORY SANITARY RESULTS FROM A CERTIFIED LAB MUST BE SUBMITTED TO THE TOWN OF NEWBURGH WATER DEPARTMENT. THE TEST SAMPLES MUST BE COLLECTED BY A REPRESENTATIVE OF THE TESTING LABORATORY AND WITNESSED BY THE WATER DEPARTMENT.
11. THE FINAL LAYOUT OF THE PROPOSED WATER AND/OR SEWER CONNECTION, INCLUDING ALL MATERIALS, SIZE AND LOCATION OF SERVICE AND ALL APPURTENANCES, IS SUBJECT TO THE REVIEW AND APPROVAL OF THE TOWN OF NEWBURGH WATER AND/OR SEWER DEPARTMENT. NO PERMITS SHALL BE ISSUED FOR A WATER AND/OR SEWER CONNECTION UNTIL A FINAL LAYOUT IS APPROVED BY THE RESPECTIVE DEPARTMENT.

TOWN OF NEWBURGH SEWER SYSTEM NOTES FOR SITE PLANS:

1. CONSTRUCTION OF SANITARY SEWER FACILITIES AND CONNECTION TO THE TOWN OF NEWBURGH SANITARY SEWER SYSTEM REQUIRES A PERMIT FROM THE TOWN OF NEWBURGH SEWER DEPARTMENT. ALL CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE NYSDEC AND THE TOWN OF NEWBURGH.
2. ALL SEWER PIPE INSTALLATION SHALL BE SUBJECT TO INSPECTION BY THE TOWN OF NEWBURGH SEWER DEPARTMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL INSPECTIONS AS REQUIRED WITH THE TOWN OF NEWBURGH SEWER DEPARTMENT.
3. ALL GRAVITY SANITARY SEWER SERVICE LINES SHALL BE 4 INCHES IN DIAMETER OR LARGER AND SHALL BE SDR-35 PVC PIPE CONFORMING TO ASTM D-3034-89. JOINTS SHALL BE PUSH-ON WITH ELASTOMERIC RING GASKET CONFORMING ASTM D-3212. FITTINGS SHALL BE AS MANUFACTURED BY THE PIPE SUPPLIER OR EQUAL AND SHALL HAVE A BELL AND SPIGOT CONFIGURATION COMPATIBLE WITH THE PIPE.
4. THE SEWER MAIN SHALL BE TESTED IN ACCORDANCE WITH TOWN OF NEWBURGH REQUIREMENTS. ALL TESTING SHALL BE COORDINATED WITH THE TOWN OF NEWBURGH SEWER DEPARTMENT.
5. THE FINAL LAYOUT OF THE PROPOSED WATER AND/OR SEWER CONNECTION, INCLUDING ALL MATERIALS, SIZE AND LOCATION OF SERVICE AND ALL APPURTENANCES, IS SUBJECT TO THE REVIEW AND APPROVAL OF THE TOWN OF NEWBURGH WATER AND/OR SEWER DEPARTMENT. NO PERMITS SHALL BE ISSUED FOR A WATER AND/OR SEWER CONNECTION UNTIL A FINAL LAYOUT IS APPROVED BY THE RESPECTIVE DEPARTMENT.

LEGEND (EXISTING)

Item	Symbol
DRAINAGE INLET W/PIPES	
DRAIN MANHOLE/ WITH PIPES	DMH
TOP CURB @ CATCH BASIN	TCCB
TOP GRATE FIELD INLET	TGFI
REINFORCED CONCRETE PIPE	RCP
CORRUGATED PLASTIC PIPE	CPP
UTILITY POLE	UP
UTILITY POLE WITH LIGHT	
WATER VALVE	WV
HYDRANT	HYD
GAS VALVE	GV
SIGN WITH ITEM	'STOP'
OVERHEAD WIRES	OHW
GAS LINE	G
GAS, ELEC, TEL	TEC
WATER LINE	W
ELECTRIC LINE	E
TELEPHONE LINE	T
FORCE MAIN	FM
SANITARY LINE	SAN
CONTOUR LINE	322

LEGEND (PROPOSED)

Item	Symbol
CLEAN OUT	CO
SANITARY SEWER MANHOLE	S
CATCH BASIN	
OUTLET STRUCTURE	
DRAINAGE MANHOLE	
FLARE END SECTION	
HEAD WALL	
SIGN	
SPOT ELEVATION	(100.0)
BUILDING DOOR LOCATION	
LOADING DOCK LOCATION	
DRAINAGE PIPE	
GAS SERVICE	GS
HOUSE CONNECTION	HC
WATER SERVICE (FIRE)	FS
WATER SERVICE (DOMESTIC)	WS
TELEPHONE	T
PROPERTY LINE	
YARD LINE	
CURB	
BUILDING	
GUIDE RAIL	
RETAINING WALL	
FIELDSTONE PARAPET WALL	
PAVEMENT	
SIDEWALK	

REV	DESCRIPTION	BY	DATE
6	AS PER REVIEW COMMENTS	AP	06/16/23
5	GENERAL REVISIONS	XC	05/04/23
4	AS PER 10/03/22 MHE ENGINEERING COMMENTS	MT	10/20/22
3	AS PER 09/02/22 MHE ENGINEERING COMMENTS	MT	09/26/22
2	PUMP STATION DESIGN & WATER NOTES	JO	08/23/22
1	AS PER 6/16/2022 PLANNING BOARD COMMENTS	JO	07/11/2022

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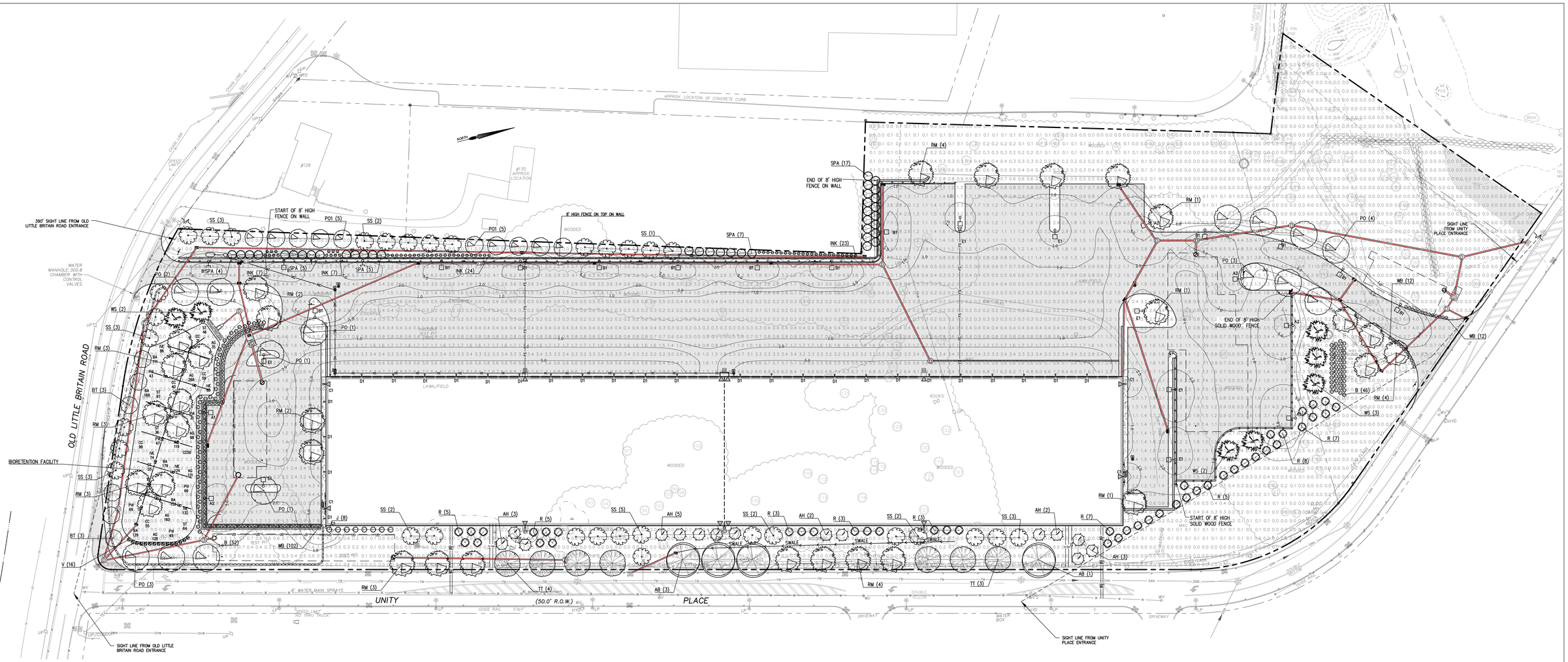
PROJECT:
UNITY PLACE WAREHOUSE
TOWN OF NEWBURGH
ORANGE COUNTY
NEW YORK

TITLE:
GRADING, DRAINAGE & UTILITY PLAN

PROJECT NO:	DRAWN:	CHECKED:
21202	JO	DR

SCALE: 1' = 40'
GRAPHIC SCALE: 0 40' 80'
DATE: 05/27/2022
DRAWING NO: 3

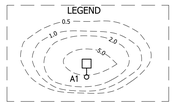


LUMINAIRE SCHEDULE								
SYMBOL	TAG	QUANTITY	LABEL	DESCRIPTION	ARRANGEMENT	MANUFACTURER	COLOR TEMP.	MOUNTED HEIGHT (FEET)
	A1	1	DSX2 LED Area Luminaire	DSX2 LED P2 30K T4M MVOLT	SINGLE	LITHONIA LIGHTING	3000K	20
	A2	5	DSX2 LED Area Luminaire	DSX2 LED P2 30K T4M MVOLT HS	SINGLE	LITHONIA LIGHTING	3000K	20
	B1	15	DSX2 LED Area Luminaire	DSX2 LED P1 30K BLC MVOLT	SINGLE	LITHONIA LIGHTING	3000K	20
	C1	8	WPX1 LED WALLPACK	WPX1 LED P2 30K MVOLT	WALL MONTED	LITHONIA LIGHTING	3000K	9
	D1	28	WPX3 LED WALLPACK	WPX3 LED 30K MVOLT	WALL MOUNTED	LITHONIA LIGHTING	3000K	20
	E1	7	DSX2 LED Area Luminaire	DSX2 LED P1 30K T5W MVOLT	SINGLE	LITHONIA LIGHTING	3000K	20

NOTES:

1. CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF POLE MOUNTING BASE FOR APPROVAL OF OWNER. MOUNTING HEIGHT IS FROM FINISHED GRADE AND NOT FROM TOP OF BASE PEDESTAL.
2. ALL LIGHTING SHOWN IN THIS PLAN SHALL BE DIRECTED AN/OR SHIELDED SO AS TO PRECLUDE OBJECTIONABLE GLARE OBSERVABLE FROM ADJOINING STREETS AND PROPERTIES.
3. POWER SUPPLY TO BE DESIGNED BY BUILDING ELECTRICAL ENGINEER.
4. LIGHTING CONTROLS TO BE SELECTED BY OWNER.

LEGEND



ILLUMINATION IN FOOTCANDLES

PLANTING TABLE

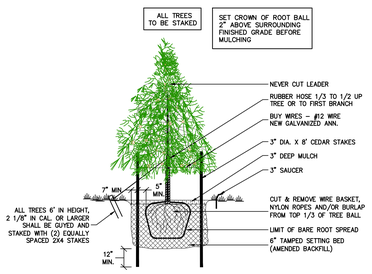
SYMBOL	SCIENTIFIC NAME	COMMON NAME	SIZE	QUANTITY	TOTAL TREE INCHES PLANTED
PO	QUERCUS PALUSTRIS	PIN OAK	3"-3½" CAL.	15	45
PO1	QUERCUS PALUSTRIS	PIN OAK	2"-2½" CAL.	10	20
B	MYRICA PENSYLVANICA	NORTHERN BAYBERRY	2 GAL.	98	
V	VIBURNUM DENTATUM	ARROWWOOD VIBURNUM	3 GAL.	15	
SPA	ILEX "SPARKLEBERRY"	SPARKLEBERRY HOLLY	2 GAL.	46	
INK	ILEX "GLABRA" SHAMROCK	SHAMROCK INKBERRY	2 GAL.	61	
R	RHODODENDRON MAXIMUM "ROSEUM"	PINK ROSEBAY RHODODENDRON	30"-36" B&B	46	
BT	NYSSA SYLVATICA	BLACK TUPELO	2½"-3" CAL.	6	15
RM	ACER RUBRUM	RED MAPLE	3"-3½" CAL.	22	66
SS	AMELANCHIER CANADENSIS	SHADBLOW SERVICEBERRY	2"-2½" CAL.	33	66
WS	PICEA GLAUCA	WHITE SPRUCE	8 FEET HIGH	7	21
AH	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2"-2½" CAL.	15	30
WB	BUXUS MICROPHYLLA	WINTER GREEN BOXWOOD	3 GAL	127	
AB	FAGUS GRANDIFOLIA	AMERICAN BEECH	3"-3½" CAL.	4	12
TT	LIRIODENDRON TULIPIFERA	TULIP TREE	3"-3½" CAL.	7	21
BIORETENTION PLANTS					
IVE	IRIS VERSICOLOR	BLUE FLAG IRIS	DP-50	603	
BA	SAGITARIA LATIFOLIA	BROADLEAF ARROWHEAD	TUBERS	741	
AG	ANDROPOGON GERARDII	BIG BLUE STEM	PL/72	810	
CC	CALAMAGROSTIS CANADENSIS	BLUEJOINT GRASS	PL/72	284	
PVI	PANICUM VIRGATUM	SWITCHGRASS	DP-50	291	
ST	SCHOENOPLECTUS TABERNAEMONTANI (SORUS VALIDUS)	SOFTSTEM BULRUSH	DP-50	298	
RM	ACER RUBRUM	RED MAPLE	3"-3½" CAL.	9	27
			TOTAL:		323

PLANTING NOTES:

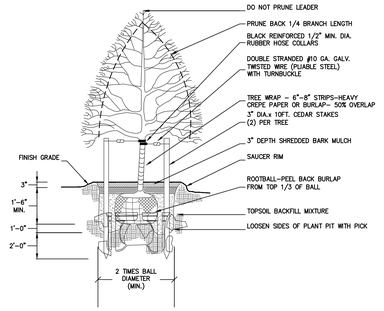
1. "ALL VEGETATION SHOWN ON THIS PLAN SHALL BE MAINTAINED IN A HEALTHY AND VIGOROUS GROWING CONDITION THROUGHOUT THE DURATION OF THE PROPOSED USE OF THE SITE. ALL VEGETATION NOT SO MAINTAINED SHALL BE REPLACED WITH NEW COMPARABLE VEGETATION AT THE BEGINNING OF THE NEXT GROWING SEASON".
2. UTILITY MARKOUT SHALL BE PERFORMED PRIOR TO PLANTING PLANT LOCATIONS SHALL BE ADJUSTED AS REQUIRED TO PRECLUDE ANY DISTURBANCE TO EXISTING UTILITIES.
3. STAKE ALL TREES WITH 2 CEDAR STAKES, RUBBER HOSE AROUND TREE (6'-0" ABOVE GRADE) AND TWISTED #10 GAUGE GALVANIZED WIRE.
4. GUARANTEE ALL PLANTS AND WORKMANSHIP FOR TWO PLANTING SEASONS.
5. ALL PLANTING SHALL BE PLACED UNDER DIRECTION OF AN APPROPRIATE LICENSED DESIGN PROFESSIONAL. NOTIFY 48 HOURS PRIOR TO PLANTING.
6. ALL PLANT MATERIAL SHALL BE NURSERY GROWN AND SHALL CONFORM TO THE AMERICAN ASSOCIATION OF NURSERY MEN'S STANDARDS.
7. PLACE 4" OF TOPSOIL ON ALL DISTURBED LAWN AREAS AND ALL AREA NOT PAVED OR BUILT UPON.
8. PLANT PITS SHALL BE 36" WIDER FOR TREES (MINIMUM OF TWO TIMES ROOT BALL DIAMETER) AND 24" WIDER FOR SHRUBS AND 6" DEEPER THAN THE ROOT BALL. SET PLANTS AT SAME LEVEL AS ORIGINALLY GROWN ON BASE OF UNDISTURBED SOIL. THE TRUNK FLARE AND ROOT COLLAR SHALL BE VISIBLE AT THE TOP OF THE PLANT BED AT THE TIME OF FINAL INSPECTION. REMOVE ALL EXISTING SOIL FROM PLANT PIT AND BACKFILL WITH A MIXTURE OF ONE PART PEAT HUMUS; ONE PART DEHYDRATED COW MANURE; AND FOUR PART TOPSOIL. FERTILIZE ALL PLANTS WITH 2 TO 3 OZ. PER FOOT OF SHRUB HEIGHT AND 2 TO 3LBS. PER INCH OF TREE TRUNK OF 5-10-5 FERTILIZER. FOR EVERGREEN PLANTING, ADD 1 LB. PER 100 SQUARE FEET OF PLANT BED EACH OF AMMONIUM SULFATE AND SUPERPHOSPHATE.
9. MULCH ALL PLANTS AND PLANTED AREAS WITH A 4" DEPTH OF SHREDDED PINE, OAK BARK OR OTHER SHREDDED BARK. DO NOT PLACE MULCH AGAINST TREE OR SHRUB TRUNK. THE TRUNK FLARE AND ROOT COLLAR SHALL BE VISIBLE AT THE TOP OF THE PLANT BED WITH NO MULCH AGAINST TRUNK. DO NOT CREATE MOUND OF MULCH AROUND TREE. FINISH GRADE TO BE SAME AS ORIGINALLY GROWN.
10. FERTILIZE AREAS BEFORE SEEDING OR SODDING WITH 15 LBS. PER 1000 SQUARE FEET OF 10-20-10 FERTILIZER OR APPROVED EQUIVALENT. REPEAT AFTER 8 WEEKS. LAWN AREAS SHALL BE SEEDED AT 5 LBS. PER 1000 SF. WITH THE FOLLOWING SEED MIX: 40% JAMESTOWN CHEWINGS FESCUE, 40% BARON KENTUCKY BLUEGRASS, AND 20 % YORKTOWN PERENNIAL RYE OR APPROVED EQUIVALENT. MULCH NEWLY SEEDED LAWN AT 90 LBS. PER 1000 SQUARE FEET WITH HAY OR STRAW MULCH.
11. THE CONTRACTOR IS RESPONSIBLE TO PLANT THE TOTAL QUANTITIES OF ALL PLANTS SHOWN ON THE PLANTING PLAN. CHANGES TO THE SITE PLAN FROM THAT SHOWN ON THE PLANTING PLAN THAT CAUSE DIFFERENT SITE AREAS AVAILABLE FOR PLANTING SHALL HAVE PLANTING ADJUSTED ON SITE BY THE DESIGN PROFESSIONAL.
12. CONTRACTOR SHALL CONTACT ALL UTILITY COMPANIES AND HAVE ALL UTILITIES FIELD LOCATED BY RESPECTIVE UTILITY COMPANY AND SHALL ASSUME FULL RESPONSIBILITY AND SHALL BE SOLELY RESPONSIBLE FOR MAINTAINING CONTINUOUS UTILITY SERVICE AND REPAIRS TO ANY DAMAGE.

BIORETENTION PLANTING SOIL BED CHARACTERISTICS:

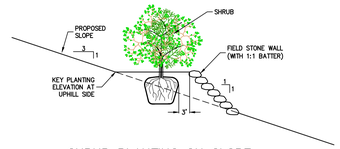
1. THE SOIL SHOULD BE FREE OF STONES, STUMPS, ROOTS, OR OTHER WOODY MATERIAL OVER 1" IN DIAMETER, BRUSH OF SEEDS FROM NOXIOUS WEEDS. PLACEMENT OF THE PLANTING SOIL IN LIFTS OF 12 TO 18", LOOSELY COMPACTED (TAMPED LIGHTLY WITH A DOZER OR BACKHOE BUCKET).
2. PLANTING SOIL MIX (2.5 FEET DEEP)
   AS PER MOST RECENT NYSDEC RECOMMENDATIONS, THE PLANTING SOIL MIX SHALL BE AS FOLLOWS:
   85% – 88% COARSE/ MEDIUM SAND
   8% –12% SOIL FINES
   3%–5% ORGANIC MATTER
3. BIORETENTION AREA SHALL BE CAPPED WITH 3" MULCH



EVERGREEN TREE PLANTING
N.T.S.

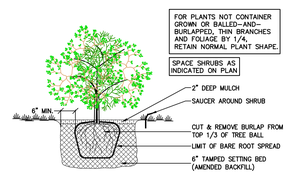


DECIDUOUS TREE PLANTING
N.T.S.



SHRUB PLANTING ON SLOPE
N.T.S.

NOTES:
1. USE FOR PROPOSED RHODODENDRON AND MOUNTAIN LAUREL ON SLOPE.
2. REFER TO GRADING PLAN FOR LOCATIONS.
3. UTILIZE FIELDSTONE RETAINING WALL DETAIL WITH 1:1 BATTER.



SHRUB PLANTING
N.T.S.

TOWN OF NEWBURGH PLANTING NOTES:

1. WARRANTY: CONTRACTOR SHALL WARRANTEE ALL PLANT MATERIAL TO REMAIN ALIVE AND BE IN HEALTHY, VIGOROUS CONDITION FOR A PERIOD OF TWO YEARS AFTER FINAL ACCEPTANCE OF PLANTING WORK. EACH GROWING PERIOD, CONTRACTOR SHALL REPLACE ALL PLANTS THAT ARE MORE THAN 25% DEAD OR, AS DETERMINED BY LANDSCAPE ARCHITECT'S INSPECTION MEMO, ARE IN AN UNHEALTHY CONDITION. CONTRACTOR SHALL BEAR THE COST OF THE COMPLETE REPLACEMENT(S). REPLACEMENTS SHALL BE THE SAME SIZE AND SPECIES AS SPECIFIED OF THE PLANTING LIST. PLANTS WILL BE INSPECTED UPON COMPLETION OF INSTALLATION ONCE A REQUEST FOR INSPECTION HAS BEEN SUBMITTED BY THE CONTRACTOR AND INSPECTED AGAIN THE FOLLOWING FOUR GROWING SEASONS.
2. A PARTIAL RELEASE OF THE LANDSCAPE BOND CAN BE REQUESTED AFTER ONE YEAR, AND WILL BE RECOMMENDED FOR APPROVAL, IF MORE THAN NINETY PERCENT OF PLANTS, INCLUDING GROUND COVERS, ARE IN GOOD HEALTH AT THE TIME OF INSPECTION. IF MORE THAN 10 PERCENT OF PLANTS ARE NOT IN GOOD HEALTH AT THE TIME OF INSPECTION, A FULL RELEASE OF THE BOND AFTER TWO YEARS WILL BE RECOMMENDED FOR APPROVAL IF NINETY PERCENT OF PLANTS ARE IN GOOD HEALTH AT THE TIME OF INSPECTION. IF MORE THAN 10 PERCENT OF PLANTS ARE NOT IN GOOD HEALTH, RECOMMENDATION FOR RELEASE OF THE BOND CANNOT BE MADE. PLANTS WILL NEED TO BE REPLACED AND MUST LIVE FOR ANOTHER YEAR BEFORE THE BOND CAN BE RECOMMENDED FOR RELEASE. THE CONTRACTOR MUST INSTALL SOIL AS DEFINED ON THE DRAWINGS (AND PLANTS MUST BE APPROPRIATELY WATERED)FOR THE LANDSCAPE TO MEET REQUIREMENTS FOR RELEASE OF THE LANDSCAPE BOND TO BE RECOMMENDED.

REV	DESCRIPTION	BY	DATE
6	AS PER REVIEW COMMENTS	AP	06/16/23
5	GENERAL REVISIONS	XC	05/04/23
1	AS PER 6/16/2022 PLANNING BOARD COMMENTS	JO	07/11/2022

DISCLAIMER:
UNAUTHORIZED ALTERATION OR ADDITIONS TO THESE PLANS IS A VIOLATION OF THE N.Y.S. EDUCATION LAW, ARTICLE 145, SECTION 7209, SUBSECTION 2.

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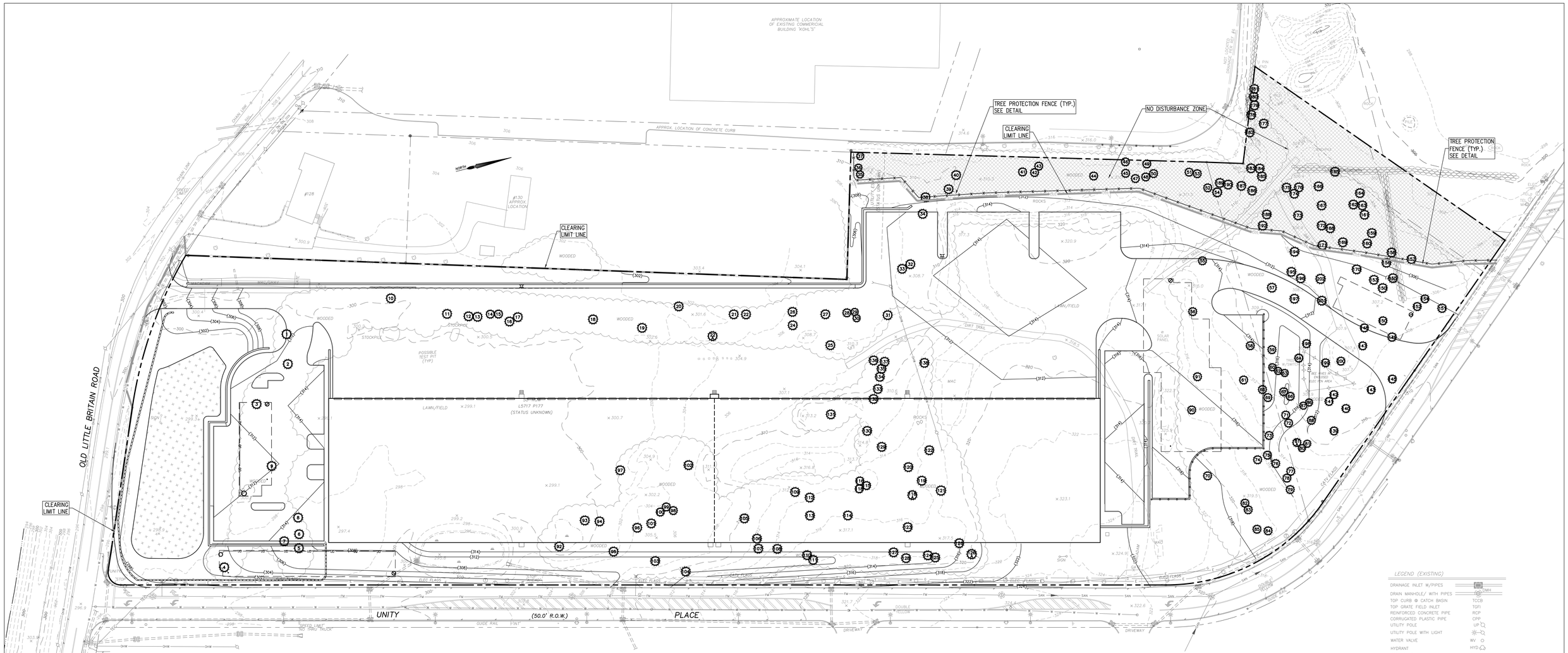
PROJECT:
UNITY PLACE WAREHOUSE
TOWN OF NEWBURGH
ORANGE COUNTY
NEW YORK

TITLE:
LIGHTING AND PLANTING PLAN

PROJECT NO:	DRAWN:	CHECKED:
21202	AP	DR

SCALE: 1" = 40'
GRAPHIC SCALE: 0, 40', 80'
DATE: 05/27/2022
DRAWING NO: 5



TREE SURVEY LEGEND

NUMBER	SIZE	TYPE	CATEGORY	CONDITION	TREES TO BE REMOVED (TBR)	TREES TO REMAIN (TR)
1	TWN 22"	WILLOW – SALIX SP.	A	POOR		
2	19"	WILLOW – SALIX SP.	A	POOR		
3	TRIPLE 22",20",18"	WILLOW – SALIX SP.	A	FAIR	TBR	
4	33"	WILLOW – SALIX SP.	A	FAIR	TBR	
5	17"	RED MAPLE – ACER RUBRUM	A	GOOD	TBR	
6	18"	RED MAPLE – ACER RUBRUM	A	FAIR	TBR	
7	TRIPLE 22",20",20"	RED MAPLE – ACER RUBRUM	A	FAIR	TBR	
8	TRIPLE 16",12",10"	RED MAPLE – ACER RUBRUM	A	FAIR	TBR	
9	14"	ASH	A	POOR		
10	15"	RED MAPLE – ACER RUBRUM	A	GOOD	TBR	
11	26"	TILIA – LINDEN	A	FAIR	TBR	
12	24"	WILLOW – SALIX SP.	A	POOR		
13	18"	WILLOW – SALIX SP.	A	POOR		
14	16"	WILLOW – SALIX SP.	A	POOR		
15	35"	WILLOW – SALIX SP.	A	FAIR	TBR	
16	16"	SWAMP WHITE OAK – QUERCUS BICOLOR	A	GOOD	TBR	
17	14"	RED MAPLE – ACER RUBRUM	A	GOOD	TBR	
18	21"	WILLOW – SALIX SP.	A	GOOD	TBR	
19	TWN 14",8"	EASTERN RED CEDAR–JUNIPERUS VIRGINIANA	A	GOOD	TBR	
20	12"	EASTERN RED CEDAR–JUNIPERUS VIRGINIANA	A	POOR		
21	10"	EASTERN RED CEDAR–JUNIPERUS VIRGINIANA	A	GOOD	TBR	
22A	13"	EASTERN RED CEDAR–JUNIPERUS VIRGINIANA	A	GOOD	TBR	
22B	15"	PIN OAK – QUERCUS PALUSTRIS	A	GOOD	TBR	
24	18"	ASPEN – POPULUS GRANDIDENTATA	A	GOOD	TBR	
25	18"	ASPEN–POPULUS GRANDIDENTATA	A	FAIR	TBR	
26	15"	RED MAPLE–ACER RUBRUM	A	GOOD	TBR	
27	14"	PIN OAK–QUERCUS PALUSTRIS	A	FAIR	TBR	
28	15"	RED MAPLE–ACER RUBRUM	A	GOOD	TBR	
29	18"	PIN OAK–QUERCUS PALUSTRIS	A	GOOD	TBR	
30	20"	PIN OAK–QUERCUS PALUSTRIS	B	GOOD	TBR	
31	17"	SHAGBARK HICKORY–CARYA OVATA	A	GOOD	TBR	
32	15"	ASPEN–POPULUS GRANDIDENTATA	A	FAIR	TBR	
33	15"	RED MAPLE–ACER RUBRUM	A	FAIR	TBR	
34	29"	WHITE OAK–QUERCUS ALBA	B	GOOD	TBR	
35	19"	SUGAR MAPLE–ACER SACCHARUM	A	FAIR		TR
36	16"	SUGAR MAPLE–ACER SACCHARUM	A	GOOD		TR
37	19"	SUGAR MAPLE–ACER SACCHARUM	A	GOOD		TR
38	16"	WHITE OAK–QUERCUS ALBA	A	GOOD	TBR	
39	15"	SCARLET OAK–QUERCUS COCCINEA	A	FAIR		TR
40	19"	ASPEN–POPULUS GRANDIDENTATA	A	GOOD		TR

TREE SURVEY LEGEND

NUMBER	SIZE	TYPE	CATEGORY	CONDITION	TREES TO BE REMOVED (TBR)	TREES TO REMAIN (TR)
41	TWN 16",19"	RED MAPLE–ACER RUBRUM	A	FAIR		TR
42	16"	PIGNUT HICKORY – CARYA GLABRA	A	FAIR		TR
43	19"	WHITE OAK–QUERCUS ALBA	A	GOOD		TR
44	18"	RED OAK–QUERCUS RUBRA	A	FAIR		TR
45	14"	WHITE OAK–QUERCUS ALBA	A	FAIR		TR
46	20"	WHITE OAK–QUERCUS ALBA	A	FAIR		TR
47	19"	RED OAK– QUERCUS RUBRA	A	GOOD		TR
48	24"	RED OAK–QUERCUS RUBRA	B	GOOD		TR
49	17"	RED OAK–QUERCUS RUBRA	A	POOR		
50	15"	RED OAK–QUERCUS RUBRA	A	GOOD		TR
51	24"	WHITE OAK–QUERCUS ALBA	B	GOOD		TR
52	33"	WHITE OAK–QUERCUS ALBA	B	FAIR		TR
53	16"	PIGNUT HICKORY– CARYA GLABRA	A	GOOD		TR
54	19"	RED OAK– QUERCUS RUBRA	A	FAIR		TR
55	18"	RED OAK– QUERCUS RUBRA	A	GOOD	TBR	
56	TWN 20"	PIGNUT HICKORY –CARYA GLABRA	A	GOOD	TBR	
57	20"	PIN OAK–QUERCUS PALUSTRIS	B	GOOD	TBR	
58	14"	ASPEN–POPULUS GRANDIDENTATA	A	GOOD	TBR	
59	21"	TULIP TREE–LIRIODENDRON TULIPIFERA	A	FAIR	TBR	
60	21"	TULIP TREE–LIRIODENDRON TULIPIFERA	A	FAIR	TBR	
61	16"	PIN OAK–QUERCUS PALUSTRIS	A	POOR		
62	14"	ASPEN–POPULUS GRANDIDENTATA	A	POOR		
63	19"	TULIP TREE–LIRIODENDRON TULIPIFERA	A	FAIR	TBR	
64	39"	TULIP TREE–LIRIODENDRON TULIPIFERA	A	FAIR	TBR	
65	15"	ASPEN (NOT FOUND)	A	GOOD	TBR	
66	18"	ASPEN–POPULUS GRANDIDENTATA				
67	17"	PIN OAK–QUERCUS PALUSTRIS	A	FAIR	TBR	
68	16"	PIN OAK–QUERCUS PALUSTRIS	A	FAIR	TBR	
69	25"	TULIP TREE–LIRIODENDRON TULIPIFERA	A	POOR		
70	11"	TULIP TREE				
71	23"	TULIP TREE–LIRIODENDRON TULIPIFERA	A	FAIR	TBR	
72	21"	TULIP TREE–LIRIODENDRON TULIPIFERA	A	FAIR	TBR	
73	14"	BLACK CHERRY–PRUNUS SEROTINA	A	POOR		
74	20"	PIN OAK–QUERCUS PALUSTRIS	B	GOOD	TBR	
75	20"	TULIP TREE–LIRIODENDRON TULIPIFERA	B	GOOD	TBR	
76	21"	TULIP TREE–LIRIODENDRON TULIPIFERA	B	GOOD	TBR	
77	20"	TULIP TREE–LIRIODENDRON TULIPIFERA	B	GOOD	TBR	
78	22"	TULIP TREE–LIRIODENDRON TULIPIFERA	B	GOOD	TBR	
79	14"	TULIP TREE–LIRIODENDRON TULIPIFERA	A	FAIR	TBR	
80	15"	TULIP TREE–LIRIODENDRON TULIPIFERA	A	GOOD	TBR	
81	21"	TULIP TREE–LIRIODENDRON TULIPIFERA	B	GOOD	TBR	
81A	17"	TULIP TREE–LIRIODENDRON TULIPIFERA	A	POOR		
82	14"	PIN OAK–QUERCUS PALUSTRIS	A	GOOD	TBR	

TREE SURVEY LEGEND

NUMBER	SIZE	TYPE	CATEGORY	CONDITION	TREES TO BE REMOVED (TBR)	TREES TO REMAIN (TR)
83	14"	PIN OAK–QUERCUS PALUSTRIS	A	GOOD	TBR	
84	16"	RED MAPLE–ACER RUBRUM	A	POOR		
85	16"	RED OAK–QUERCUS RUBRA	A	GOOD	TBR	
86	18"	TULIP TREE–LIRIODENDRON TULIPIFERA	A	GOOD	TBR	
87	20"	TULIP TREE–LIRIODENDRON TULIPIFERA	A	FAIR	TBR	
88	17"	TULIP TREE–LIRIODENDRON TULIPIFERA	A	POOR		
89	14"	ASPEN–POPULUS GRANDIDENTATA	A	GOOD	TBR	
90	16"	ASPEN–POPULUS GRANDIDENTATA	A	POOR		
91	16"	PIN OAK–QUERCUS PALUSTRIS	A	FAIR	TBR	
92	31"	ASPEN–POPULUS GRANDIDENTATA	B	GOOD	TBR	
93	TWN 16",19"	RED MAPLE–ACER RUBRUM	A	FAIR	TBR	
94	CLUMP 19"	RED MAPLE – ACER RUBRUM	A	POOR		
95	20"	BLACK CHERRY–PRUNUS SEROTINA	A	POOR		
96	14"	BLACK CHERRY–PRUNUS SEROTINA	A	POOR		
97	14"	ASPEN–POPULUS GRANDIDENTATA	A	POOR		
98	15"	RED MAPLE ACER RUBRUM	A	POOR		
99	TWN 23",20"	RED MAPLE–ACER RUBRUM	A	POOR		
100	TWN 19",18"	RED MAPLE –ACER RUBRUM	A	POOR		
101	TWN 18"	RED MAPLE–ACER RUBRUM	A	POOR		
102	14"	ASPEN–POPULUS GRANDIDENTATA	A	FAIR	TBR	
103	23"	RED MAPLE–ACER RUBRUM	A	POOR		
104	14"	ASPEN–POPULUS GRANDIDENTATA	A	FAIR	TBR	
105	16"	BLACK BIRCH	A	GOOD	TBR	
106	14"	RED OAK–QUERCUS RUBRA	A	FAIR	TBR	
107	CLUMP 19"	RED MAPLE–ACER RUBRUM	A	POOR		
108	18"	OAK QUERCUS SP	A	FAIR	TBR	
109	16"	PIGNUT HICKORY – CARYA GLABRA	A	FAIR	TBR	
110	18"	PIN OAK–QUERCUS PALUSTRIS	A	GOOD	TBR	
111	20"	PIN OAK–QUERCUS PALUSTRIS	B	GOOD	TBR	
112	20"	WHITE OAK–QUERCUS ALBA	B	GOOD	TBR	
113	14"	SHAGBARK HICKORY–CARYA OVATA	A	GOOD	TBR	
114	TWN 12",14"	RED MAPLE ACER RUBRUM	A	POOR		
115	18"	PIGNUT HICKORY–CARYA GLABRA	A	GOOD	TBR	
116	15"	RED OAK–QUERCUS RUBRA	A	FAIR	TBR	
118A	TWN 8",14"	RED MAPLE–ACER RUBRUM	A	POOR		
118B	14"	RED MAPLE–ACER RUBRUM	A	POOR		
119	22"	ASPEN–POPULUS GRANDIDENTATA	A	FAIR	TBR	
120	18"	ASPEN–POPULUS GRANDIDENTATA	A	FAIR	TBR	
121	15"	ASPEN–POPULUS GRANDIDENTATA	A	FAIR	TBR	
122	16"	ASPEN–POPULUS GRANDIDENTATA	A	GOOD	TBR	
123	TRIPLE 12",10",16"	RED MAPLE–ACER RUBRUM	A	POOR		
124	20"	PIN OAK–QUERCUS PALUSTRIS	B	GOOD	TBR	

TREE SURVEY LEGEND

NUMBER	SIZE	TYPE	CATEGORY	CONDITION	TREES TO BE REMOVED (TBR)	TREES TO REMAIN (TR)
125	18"	SUGAR MAPLE–ACER SACCHARUM	A	POOR		
126	17"	RED MAPLE–ACER RUBRUM	A	FAIR	TBR	
126A	14"	ASPEN–POPULUS GRANDIDENTATA	A	FAIR	TBR	
127	16"	OAK QUERCUS SP	A	POOR		
128	15"	RED MAPLE–ACER RUBRUM	A	FAIR	TBR	
129	22"	WHITE OAK –QUERCUS ALBA	A	POOR		
130	20"	BLACK CHERRY–PRUNUS SEROTINA	A	POOR		
131	16"	PRINCESS TREE–PAULOWNIA TOMENTOSA	A	POOR		
132	20"	BLACK CHERRY–PRUNUS SEROTINA	A	POOR		
133	14"	BLACK CHERRY–PRUNUS SEROTINA	A	FAIR	TBR	
134	14"	BLACK CHERRY–PRUNUS SEROTINA	A	FAIR	TBR	
135	20"	PIGNUT HICKORY–CARYA GLABRA	A	FAIR	TBR	
136	16"	BLACK CHERRY–PRUNUS SEROTINA	A	POOR		
137	19"	TREE–OF–HEAVEN – AILANTHUS ALTISSIMA	A	GOOD	TBR	
138	16"	TREE–OF–HEAVEN – AILANTHUS ALTISSIMA	A	FAIR	TBR	
139	26"	RED OAK – QUERCUS RUBRA	B	GOOD	TBR	
140	29"	RED OAK – QUERCUS RUBRA	B	GOOD	TBR	
141	17"	PIGNUT HICKORY – CARYA GLABRA	A	FAIR	TBR	
142	15"	PIGNUT HICKORY – CARYA GLABRA	A	GOOD	TBR	
143	21"	PIGNUT HICKORY – CARYA GLABRA	B	GOOD	TBR	
144	17"	RED MAPLE – (NOT FOUND)				
145	22"	OAK QUERCUS SP	A	FAIR	TBR	
146		SUGAR MAPLE – (NOT FOUND)				
147	27"	TULIP TREE – LIRIODENDRON TULIPIFERA	B	GOOD	TBR	
148	23"	WHITE OAK – QUERCUS ALBA	B	GOOD	TBR	
149	15"	RED MAPLE – ACER RUBRUM	A	GOOD	TBR	
150	26"	WHITE OAK – QUERCUS ALBA	B	GOOD	TBR	
151	22"	RED OAK – QUERCUS RUBRA	B	GOOD	TBR	
152	15"	BLACK CHERRY – PRUNUS SEROTINA	A	FAIR	TBR	
153	25"	SHAGBARK HICKORY – CARYA OVATA	A	FAIR	TBR	
154	14"	PIGNUT HICKORY – CARYA GLABRA	A	GOOD	TBR	
155	14"	SUGAR MAPLE – ACER SACCHARUM	A	GOOD	TBR	
156	20"	PIGNUT HICKORY – CARYA GLABRA	B	GOOD	TBR	
157	22"	PIGNUT HICKORY – CARYA GLABRA	B	GOOD		TR
158	19"	RED MAPLE – ACER RUBRUM	A	GOOD		TR
159	21"	WHITE OAK – QUERCUS ALBA	B	GOOD		TR
160	21"	WHITE OAK – QUERCUS ALBA	B	GOOD		TR
161	15"	SUGAR MAPLE – ACER SACCHARUM	A	GOOD		TR
162	31"	RED OAK – QUERCUS RUBRA	B	GOOD		TR
163	20"	RED OAK – QUERCUS RUBRA	B	GOOD		TR
164	24"	RED OAK – QUERCUS RUBRA	A	FAIR		TR
165	36"	WHITE OAK – QUERCUS ALBA	B	GOOD		TR
166	26"	OAK QUERCUS SP	B	GOOD		TR

TREE SURVEY LEGEND

NUMBER	SIZE	TYPE	CATEGORY	CONDITION	TREES TO BE REMOVED (TBR)	TREES TO REMAIN (TR)
167	16"	RED OAK – QUERCUS RUBRA	B	GOOD		TR
168	14"	RED MAPLE – ACER RUBRUM	A	GOOD		TR
169	22"	SUGAR MAPLE – ACER SACCHARUM	A	POOR		
170	29"	RED OAK – QUERCUS RUBRA	B	GOOD		TR
171	17"	SUGAR MAPLE – ACER SACCHARUM	A	POOR		
172	25"	SUGAR MAPLE – ACER SACCHARUM	B	GOOD		TR
173	21"	SUGAR MAPLE – ACER SACCHARUM	B	FAIR		TR
174	26"	RED OAK – QUERCUS RUBRA	B	GOOD		TR
175	25"	RED OAK – QUERCUS RUBRA	B	GOOD		TR
176	16"	RED OAK – QUERCUS RUBRA	A	FAIR		TR
177	17",14"	PIGNUT HICKORY – CARYA GLABRA	A	POOR		
178	21"	PIGNUT HICKORY – CARYA GLABRA	A	POOR		
179	20"	PIGNUT HICKORY – CARYA GLABRA	A	FAIR		TR
180	15"	PIGNUT HICKORY – CARYA GLABRA	A	GOOD		TR
181	22"	PIGNUT HICKORY – CARYA GLABRA	A	FAIR		TR
182	15"	RED MAPLE – ACER RUBRUM	A	POOR		
183	18"	PIGNUT HICKORY – CARYA GLABRA	A	POOR		
184	20"	PIGNUT HICKORY – CARYA GLABRA	B	GOOD		TR
185	14"	PIGNUT HICKORY – CARYA GLABRA	A	POOR		
186	28"	RED OAK – QUERCUS RUBRA	B	GOOD		TR
187	38"	RED OAK – QUERCUS RUBRA	B	GOOD		TR
188	14"	RED MAPLE – ACER RUBRUM	A	GOOD		TR
189	15"	RED MAPLE – ACER RUBRUM	A	GOOD		TR
190	28"	RED OAK – QUERCUS RUBRA	A	POOR		
191		OMITTED				
192	29"	RED MAPLE – ACER RUBRUM	A	FAIR		TR
193		OMITTED				
194	17"	RED MAPLE – ACER RUBRUM	A	GOOD	TBR	
195	38"	TULIP TREE – LIRIODENDRON TULIPIFERA	B	GOOD	TBR	
196	16"	RED MAPLE – ACER RUBRUM	A	FAIR	TBR	
197	30"	TULIP TREE – LIRIODENDRON TULIPIFERA	A	FAIR	TBR	
198	18"	SHAGBARK HICKORY – CARYA OVATA	A	GOOD	TBR	
199	31"	OAK QUERCUS SP		V POOR		
200	22"	PIGNUT HICKORY – CARYA GLABRA	B	GOOD	TBR	
201	31"	RED OAK – QUERCUS RUBRA	B	GOOD	TBR	
202	18"	RED MAPLE – ACER RUBRUM	A	POOR		

TREE SURVEY LEGEND

100 = TAGGED TREE NUMBER

NOTES:

1. CRITICAL ROOT ZONE. THE CIRCULAR AREA MEASURED OUTWARD FROM THE TREE TRUNK ONE (1) FOOT OF RADIUS FOR EACH ONE (1) INCH OF DIAMETER OF THE TREE MEASURED FOUR AND ON HALF (4 ½) FEET ABOVE THE EXISTING GRADE AT THE BASE OF THE TREE.
2. DRIP LINE. AN IMAGINARY VERTICAL LINE FROM THE OUTERMOST BRANCH TIPS OF THE TREE DOWN TO THE GROUND.
3. NO EXCAVATION OR OTHER ACTIVITY SHALL OCCUR WITHIN THE CRITICAL ROOT ZONE OR WITHIN THE DRIP LINE, WHICHEVER IS GREATER, OF ANY TREE THAT IS TO BE PRESERVED.

NOTE: TREES FLAGGED BY RONALD HAELEN, L.A. ON 1/10/23, 3/26/23 AND 4/26/23

CATEGORY LEGEND – AS PER TREE PRESERVATION AND PROTECTION LAW CHAPTER 172

A. "SIGNIFICANT TREES" – ANY HEALTHY TREE, THAT IS NOT AN INVASIVE SPECIES, MEASURING FOURTEEN (14) INCHES OR LARGER IN DIAMETER AT DBH AND THAT DEVELOPS A CANOPY FOR DECIDUOUS TREES AND MEASURING TEN (10) INCHES OR LARGER IN DIAMETER AT DBH FOR ALL OTHER TREES.

B. "SPECIMEN TREES" – ANY TREE WITH A TRUNK DIAMETER THAT EQUALS OR EXCEEDS TWENTY (20) INCHES AT DBH WITH A SOUND TRUNK SHOWING NO EXTENSIVE DECAY OR HOLLOW, WITH LESS THAN 20 PERCENT RADIAL TRUNK DIEBACK AND NO MAJOR INSECT OR PATHOLOGICAL PROBLEM OF SUCH SPECIES AS ACHIEVES A CANOPY SPREAD OF FORTY OR MORE FEET IN DIAMETER UPON MATURITY.

C. "PROTECTED TREES" – ANY TREE HAVING A SIZE (CIRCUMFERENCE, HEIGHT AND SPREAD) EQUAL TO OR GREATER THAN FIFTY PERCENT (50%) OF THE SIZE IDENTIFIED ON THE NEW YORK BIG TREE CHAMPIONS LIST FOR SUCH TREE SPECIES

TREE REMOVAL THRESHOLD CALCULATION:

75% MAXIMUM TREE REMOVAL THRESHOLD

A. SIGNIFICANT TREES:

TOTAL DIAMETER "A" IN GOOD CONDITION = 2,116 INCHES
TOTAL DIAMETER "A" IN GOOD CONDITION TO BE REMOVED = 1,631 INCHES
PERCENT OF "A" (SIGNIFICANT TREES) TO BE REMOVED (1,631 INCHES / 2,116 INCHES) x 100% = 77.08%

REQUIRED SIGNIFICANT TREE RESTORATION:

77.08% – 75% = 2.08%
2.08% x 2,116 INCHES = 44 INCHES
44 INCHES x 1.25 = 55 INCHES

B. SPECIMEN TREES:

TOTAL DIAMETER "B" IN GOOD CONDITION = 1,055 INCHES
TOTAL DIAMETER "B" IN GOOD CONDITION TO BE REMOVED = 511 INCHES
PERCENT OF "B" (SIGNIFICANT TREES) TO BE REMOVED (511 INCHES / 1,055 INCHES) X 100% = 48.44%

REQUIRED SPECIMEN TREE RESTORATION:

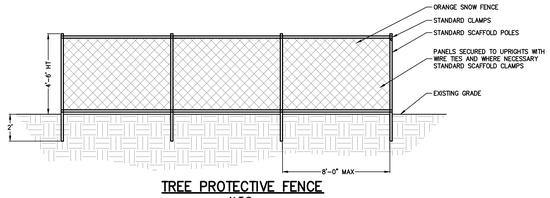
48.44% – 75% = –26.56%
(TREE REMOVAL DOES NOT EXCEED THE MAXIMUM REMOVAL THRESHOLD, NO RESTORATION REQUIRED FOR SPECIMEN TREES)

C. GROSS REQUIRED TREE RESTORATION:

55 INCHES

PROPOSED TREE PLANTING (REFER TO PLANTING PLAN TABLE) = 323 INCHES

NET REQUIRED TREE RESTORATION = 55 INCHES – 323 INCHES = –268 INCHES
(PROPOSED TREE PLANTING EXCEEDS GROSS REQUIRED RESTORATION, NO ADDITIONAL RESTORATION OR RESTITUTION REQUIRED)



TREE PROTECTIVE FENCE
N.T.S.

REV	DESCRIPTION	BY	DATE
6	RELOCATE CLL AND TREE FENCE	AP	06/16/23

DISCLAIMER:
UNAUTHORIZED ALTERATION OR ADDITIONS TO THESE PLANS IS A VIOLATION OF THE N.Y.S. EDUCATION LAW, ARTICLE 145, SECTION 7209, SUBSECTION 2.

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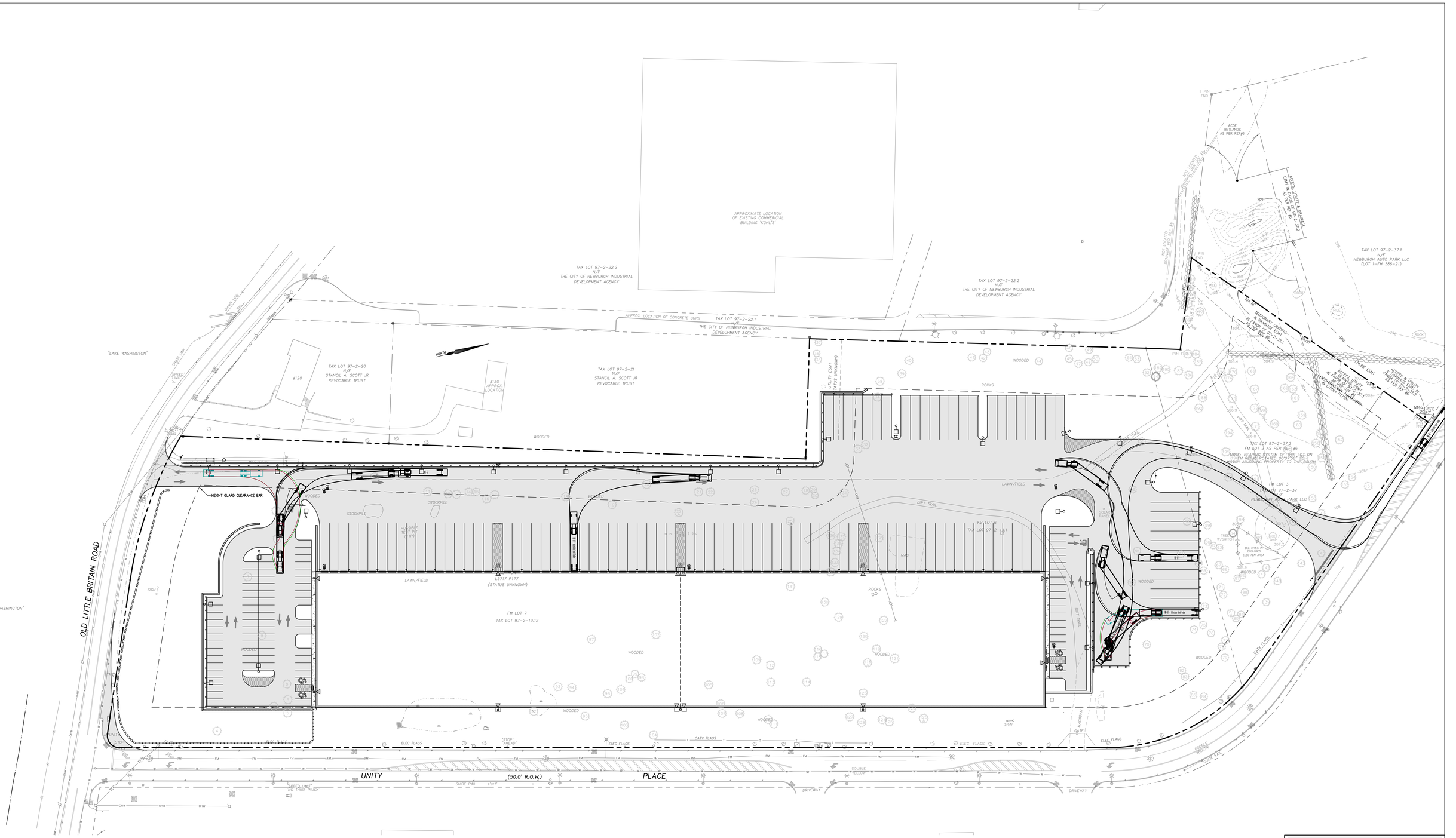
22 Paris Avenue, Suite 105, Rockleigh, NJ 07647, (201) 684–1221

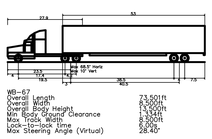
PROJECT:
UNITY PLACE WAREHOUSE
TOWN OF NEWBURGH
ORANGE COUNTY
NEW YORK

TITLE:
TREE PRESERVATION PLAN

PROJECT NO:	DRAWN:	CHECKED:
21202	AP	DR

SCALE: 1" = 40'
GRAPHIC SCALE: 0 40' 80'
DATE: 05/04/2023
DRAWING NO: 9





REV	DESCRIPTION	BY	DATE
6	AS PER REVIEW COMMENTS	AP	6/16/2023
5	GENERAL REVISIONS	XC	05/04/2023
1	AS PER 6/16/2022 PLANNING BOARD COMMENTS	JO	07/11/2022

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PROJECT:
UNITY PLACE WAREHOUSE
TOWN OF NEWBURGH
ORANGE COUNTY
NEW YORK

TITLE:
TRUCK MANEUVER PLAN INFORMATION DRAWING

PROJECT NO:	DRAWN:	CHECKED:
21202	JO	DR

SCALE: 1" = 40'
GRAPHIC SCALE: 0 40' 80'
DATE: 05/27/2022
DRAWING NO: TM

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STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

Prepared for:

Unity Place Warehouse

Town of Newburgh
Orange County, New York

September 23, 2022
REV 1: October 20, 2022
REV 2: May 4, 2023
REV 3: June 23, 2023

Prepared by:

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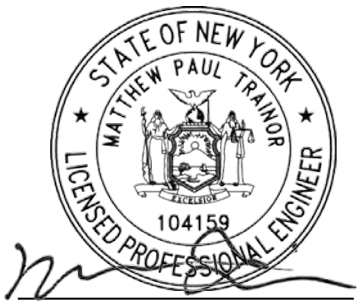

Matthew Paul Trainor, P.E.
N.Y. Lic. No. 104159

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1.0 INTRODUCTION

1.1 Background

In 1972 Congress passed the Federal Water Pollution Control Act (FWPCA), also known as the Clean Water Act (CWA), to restore and maintain the quality of the nation's waterways. The ultimate goal was to make sure that rivers and streams were fishable, swimmable and drinkable. In 1987, the Water Quality Act (WQA) added provisions to the CWA that allowed the EPA to govern storm water discharges from construction sites. In 1998, the EPA published the final notice for General Permits for Storm Water Discharges from Construction Activities Disturbing 5 Acres of Greater (63 Federal Register 7898, February 14, 1998). The general permit includes provisions for development of a Storm Water Pollution Prevention Plan (SWPPP) to maximize the potential benefits of pollution prevention and sediment and erosion control measures at construction sites.

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater discharges from certain construction activities are unlawful unless they are authorized by a NPDES (National Pollutant Discharge Elimination System) permit or by a state permit program. New York State's SPDES (State Pollutant Discharge Elimination System) is a NPDES-approved program with permits issued in accordance with the Environmental Conservation Law ("ECL").

The New York State Department of Environmental Conservation (NYSDEC) issued SPDES General Permit for Stormwater Discharges from Construction Activity (GP-0-20-001) in January, 2020. An owner or operator of a construction activity that is eligible for coverage under the SPDES General Permit (GP-0-20-001) must obtain coverage under the permit prior to the commencement of construction activity.

Development, implementation, and maintenance of a Stormwater Pollution Prevention Plan (SWPPP) will provide the framework for reducing soil erosion and minimizing pollutants in storm water during construction of the project. The SWPPP will:

- Define the characteristics of the site and the type of construction which will be occurring.
- Describe the site plan for the facility to be constructed.
- Describe the practices that will be implemented to control erosion and the release of pollutants in storm water.
- Create an implementation schedule to ensure that the practices described in this SWPPP are in fact implemented and to evaluate the plan's effectiveness in reducing erosion, sediment, and pollutant levels in storm water discharged from the site.
- Describe the final stabilization/termination design to minimize erosion and prevent storm water impacts after construction is complete.

1.2 SWPPP Content

This SWPPP includes the following:

- Background information about the scope, location, type and size of project.
- A site map and construction drawings for the project.
- Description of the soils present at the site.
- Construction phasing plan and sequence of operations.

- Description of the minimum erosion and sediment control practices to be installed or implemented for each construction activity that will result in soil disturbance.
- A temporary and permanent soil stabilization plan.
- Construction drawings showing the specific location and size of each erosion and sediment control practice.
- The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices.
- Maintenance inspection schedules.
- Measures that will be used to control litter, construction chemicals and construction debris from becoming a pollutant source in stormwater discharges.
- Description and location of any stormwater discharges associated with industrial activity other than construction at the site.
- Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.
- Identification of all post-construction stormwater management practices to be constructed as part of the project.
- Construction drawings showing the location and size of each post-construction stormwater management practice.
- A Stormwater Modeling and Analysis Report.
- Soil testing results and locations, including infiltration test results, when required.
- An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice.

1.3 Owner/Operator and Duties

The Owner/Operator for the facility is:

Name: Unity Place Newburgh LLC
Address: 95 Chestnut Ride Road, Montvale, NJ 07645
Phone: (212) 796-5449

The owner or operator must keep the SWPPP current so that it accurately documents the erosion and sediment control practices that are being used, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the owner or operator shall amend the SWPPP, including construction drawings:

a. whenever the current provisions prove to be ineffective in minimizing pollutants in stormwater discharges from the site;
b. whenever there is a change in design, construction, or operation at the construction site that has or could have an effect on the discharge of pollutants;
c. to address issues or deficiencies identified during an inspection by the qualified inspector, the Department or other regulatory authority; and
d. to document the final construction conditions

The owner/operator has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications. The owner/operator shall be responsible to hire and/or retain trained contractors and qualified inspectors to implement the SWPPP plan. The duties of the trained contractors and/or qualified inspectors include the following:

- Provide oversight of maintenance practices identified as BMPs in the SWPPP for both during construction and post construction.
- Implement and oversee employees training.
- Conduct or provide for inspection and monitoring activities.
- Identify other potential pollutant sources and make sure they are added to the plan.
- Identify any deficiencies in the SWPPP and make sure they are corrected.
- Ensure that any changes in the construction plans are addressed in the SWPPP.

2.0 SITE DESCRIPTION

Project Name & Location:	Unity Place Warehouse Tax Lots 97-2-14.1, 97-2-19.12, & 97-2-37.2 7 Unity Place (estimated address) Newburgh, New York 10952 Orange County, New York
Applicant Name and Address:	Unity Place Newburgh LLC 95 Chestnut Ridge Road Montvale, NJ 07645 (212) 796-5449
General Contractor:	TBD Contact Person: _____ _____ _____ _____

Description:

Unity Place Warehouse is a Site Plan Application for a 154,700 square foot warehouse with associated parking, loading, and driveway areas to be constructed on a 14.89-acre site. The property is comprised of Tax Lots 97-2-14.1, 97-2-19.12, & 97-2-37.2 in the Town of Newburgh. The property is situated at the northwest corner of the Old Little Britain Road and Unity Place intersection. The existing site is unimproved but a significant portion has been cleared and has a grass ground cover with the remaining land covered with trees. An onsite detention system is also existing to accommodate runoff from Unity Place and portion of the adjacent Jehovah Witness property.

The existing site has two points of interest to the North and the South. The northern end of the site drains toward the northerly property line, eventually drainage to the Brookside Pond/Quassaic Creek. The southerly subarea generally flows south and is eventually captured in the existing conveyance system along Unity Place & Old Great Britain Road before discharging to Lockwood Basin, the water body below Washington Lake. A large shallow

depression near the center of the southerly subarea was observed as was modeled as a pond. No portion of the subject property's drainage area is within the Washington Lake watershed.

The southerly and northerly points of interest will be maintained between pre- and post-development conditions as seen on the drainage maps on pages 5 & 6. Therefore, a direct comparison between hydrologic models can take place at their respective points of interest. A large portion of the surface area from the southerly subarea is being redirected to the north via the proposed warehouse roof area. This was implemented due to the successful infiltration rates observed in the field within the northerly subarea in order to reduce as much runoff as possible and direct as much runoff as feasible from Lockwood Basin in response to the City of Newburgh's concerns.

To offset the increased runoff associated with the new impervious surfaces, various stormwater facilities are proposed throughout the site. To the North, (2) offline underground infiltration systems are proposed. The first consists of (266) MC-3500 ADS Stormtech Chambers to take portion of the pavement area to the north and 100% of the warehouse roof runoff. A second infiltration facility was added to mitigate the revised driveway entrance indicated on the latest set of site plans. This facility consists of (56) MC-3500 ADS Stormtech Chambers. Infiltration was considered at these locations due to the favorable infiltration rates observed during testing. An outlet structure has been designed as part of the infiltration system to optimize the provided storage and provide zero net increase in peak runoff rates for the proposed development. It is noted that the Town of Newburgh considers the proposed warehousing use as a stormwater 'hotspot.' A 'treatment train,' or series of pre-treatment facilities, will be provided as per guidance from the New York State Stormwater Management Design Manual (NYSSMDM) for consideration of infiltration facilities in a 'hotspot' area. The ADS Barracuda Max, a proprietary water quality manhole structure will be followed by the ADS Stormtech Isolator Row Plus to adequately remove the required 80% TSS and 40% TP.

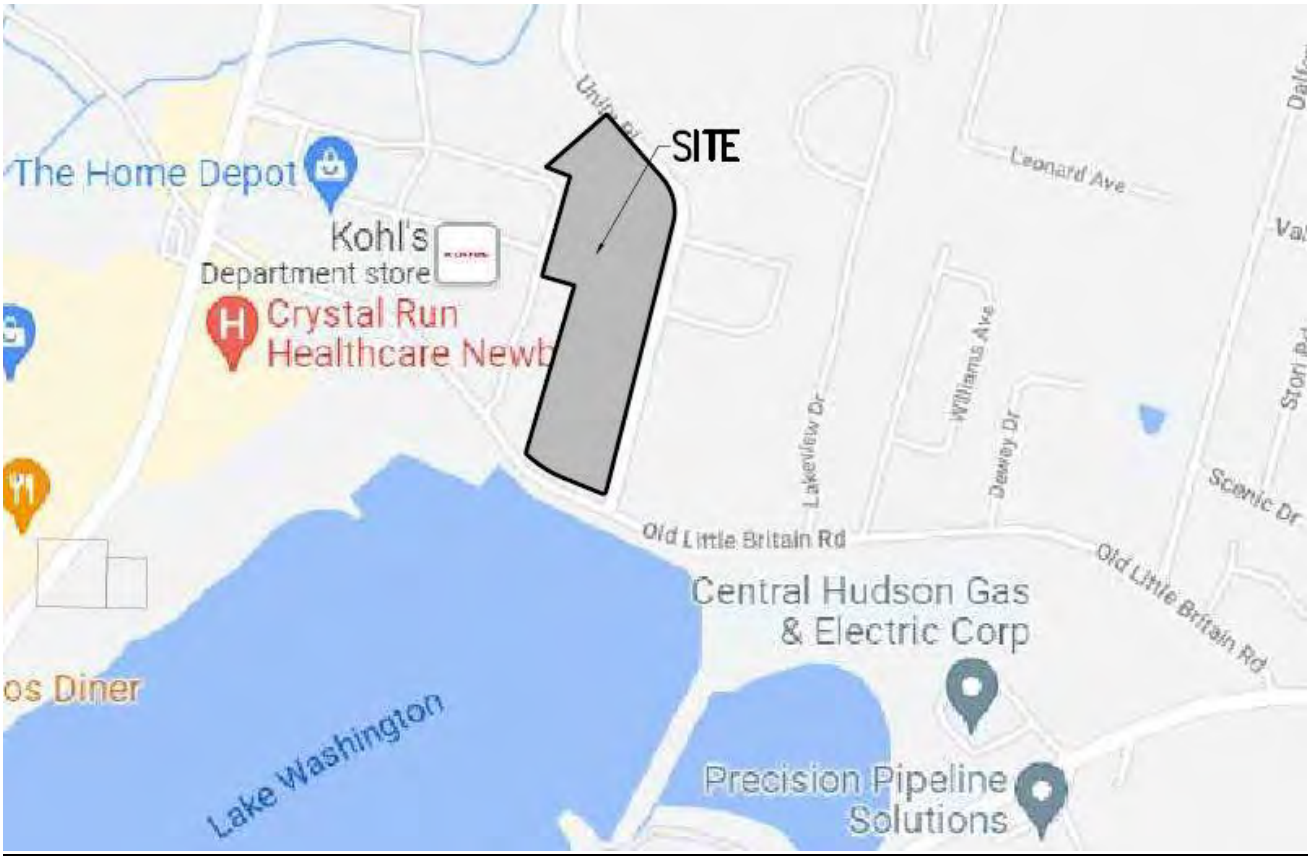
To the South, soil testing confirmed that the soils present exhibited high groundwater and no infiltration rate, making the location unsuitable for infiltration facilities. In order to provide a suitable treatment facility and provide sufficient retention volume, a combination of bioretention and a detention facility are proposed. The bioretention facility will have a minimum surface area of 17,947 square feet. The bioretention is sized to only treat the water quality volume of the subarea draining to the South. In order to accommodate the larger storms, a supplementary detention system made up of (55) MC-7200 ADS Stormtech Chambers is proposed to receive water being diverted from a flow splitter located upstream from the bioretention facility. An overflow structure is proposed for the bioretention facility and an outlet structure is provided for the detention facility. Similarly, to the infiltration practice, pretreatment for bioretention will be provided in the form of a proprietary water quality manhole treatment device.

Lastly, to the Southeast, a detention facility made up of (108) MC-3500 ADS chambers are proposed. This facility is required to offset the storage volume provided in existing conditions that receives water from Unity Place and the adjacent Jehovah Witness facility across the street. Contributory drainage area was estimated from existing topography of the road and the most recent amended grading plan of the Jehovah Site, entitled "Amended Site Development Plans JWCAH Educational Center," dated June 2, 2008. A small amount of on-site grass area will also be introduced to this facility, so additional storage was required. A revised outlet structure was designed. A proprietary treatment device train, similar to the infiltration system, will be installed upstream of the detention system to provide equal or greater treatment functionality that was exhibited in the existing stormwater pond.

Note that there are minor discrepancies to the number and models of ADS Chambers between the Site Plan and the HydroCAD report. This is due to the varying ability of detail allowed when comparing HydroCAD and the ADS Design Tool. HydroCAD does not allow for a shape outside of a rectangle or the consideration of inlet/outlet manifold volumes or stone around the manifold. Let it also be noted that ADS recently updated the MC-4500 chamber to the MC-7200 chamber. The chamber size is identical, although the length of the individual chambers are longer for easier installation. This results in a fewer number of chambers indicated on the site plan, although the volume is sufficient. Actual proposed volumes shown on the Site Plan are equal or greater to the volumes modeled in HydroCAD.

Runoff from a very small portion of proposed impervious area will not be routed through the water quality treatment system and will discharge directly to Old Little Britain Road and Unity Place due to its downslope location that cannot be captured and treated at the proposed drainage system. This area is 2,439 and 1,308 square feet in size and consists of paved driveway providing access to Old Little Britain Road and Unity Place, respectively. The site has been graded to minimize the drainage area, particularly impervious area, that will bypass the proposed treatment facilities.

2.1 Site Map



2.2 Sequence of Major Activities

The maximum time limit for any soil exposure shall be 14 days where construction activity has temporarily or permanently ceased. The construction will not occur in phases and is anticipated to take 24 to 30 months to complete.

2.3 Construction Sequence:

The general sequence of major construction activities will be as follows:

1. A pre-construction meeting shall be organized with the Town's engineer, Town representative, and the contractor to resolve any outstanding questions prior to the start of construction.
2. Notify all involved agencies of proposed construction schedule.
3. Construct snow fencing around trees, structures, or other features identified by the owner to be protected during construction.
4. Construct stabilized construction entrances.
5. Install silt fence barriers at the base of all proposed slopes as designated on this plan.
6. Construct temporary sediment traps at the locations of concentrated storm water runoff, including swales and berms as needed to direct storm water runoff to the traps.
7. Prior to the start of grading operations, the contractor shall demonstrate, to the satisfaction of the owner's representative, that the areas designated to remain protected or undisturbed are protected by the uninterrupted system of silt fence barriers, basins, berms, and/or swales.
8. Clear and grub vegetation in areas to be graded. Tree clearing to be performed November 1 through March 31 to mitigate potential impacts to the endangered Indiana Bat habitat.
9. Strip topsoil and stockpile in approved locations, as designated on the plan.
10. Stabilize topsoil stockpile areas and install silt fence.
11. Install temporary diversion measures. During construction, hay bale inlet protection shall be provided at all inlets, but shall be removed from roadways and driveways once the road sub-base course has been installed.
12. Perform necessary grading for retaining walls, buildings, parking lots and utilities. Soil materials shall be stockpiled only in approved areas, and shall be protected by silt fence barriers. Throughout the construction period, temporary berms and swales shall be maintained, altered, or re-located as necessary to direct runoff from disturbed areas to the sediment traps. Additional silt fence barriers or other erosion and sediment control measures shall be provided by the contractor as needed to prevent excessive erosion or sedimentation of downstream areas.
13. Install sanitary sewer, storm drainage and utilities.
14. Install curbs and base course for the roads.
15. Restore any existing site features disturbed during construction that were not part of the original scope.
16. The construction shall maintain all sediment and erosion control measures in proper condition throughout the construction period:
17. All control measures shall be inspected at least once every seven (7) calendar days. If a repair is necessary, it shall be implemented within 24 hours of report.
18. Built-up sediment shall be removed from silt fence when it has reached one-third the height of the fence.
19. Silt fence shall be inspected for depth of sediment, tears, to see if the fabric is securely attached to the fence posts, and to see that the fence posts are firmly in the ground.
20. Temporary and permanent seeding plantings shall be inspected for bare spots, washout, and healthy growth.

21. Sediment shall be removed from sediment traps once it has accumulated to one-half the design depth of the basin. Removed sediment shall be deposited in a suitable area in a manner such that it will not erode.
22. As construction proceeds, all disturbed areas shall be planted or seeded in a timely manner to prevent unnecessary erosion. Once disturbed uphill areas have been properly stabilized, temporary berms, temporary swales, temporary sediment traps, silt fence barriers, hay bales, crushed stone filter outlets, etc. Shall be removed.
23. Perform final grading, soil restoration, and soil de-compaction. Soil restoration and de-compaction shall be performed for all areas that were cut, filled or subject to heavy vehicle traffic. Soil restoration and de-compaction shall be completed in conformance with the nysdec publication “deep ripping and de-compaction, 2008.”
24. Upon completion of the construction activities, remove soil erosion and sediment control measures.
25. Prepare as-built and post construction measures and procedures in accordance with all applicable federal, state and local requirements.

3.0 CONTROLS

3.1 Erosion and Sediment Controls

3.1.1 Description of Work

Provide all means necessary to install, inspect, maintain, and remove temporary erosion and sediment control measures as shown on the drawings and as required to minimize the erosion and unspecified transport of soil from the site.

3.1.2 Quality Assurance

A. General
   i. Install in accordance with the project drawings or the New York Standards and Specifications for Erosion and Sediment Control (November 2016 edition), whichever is stricter.
   ii. Grade and maintain site at all times such that all storm water runoff from disturbed areas is diverted to soil erosion and sedimentation control facilities.
   iii. No changes to the soil erosion and Sedimentation Control Plan shall be made without approval of the Owner’s Representative.
   iv. The Contractor shall comply with applicable Federal, State, and local regulations relating to the prevention and abatement of pollution.
   v. The municipal Engineer may require additional erosion and sediment control measures to mitigate unforeseen siltation.

B. Product Stockpiling: Stockpiles of stabilization measures such as hay bales and mulch shall be maintained at site for use in stabilizing disturbed areas in advance of severe weather conditions.

3.1.3 Work Schedule

A. General: Install and remove measures as noted in the “Construction Sequence” narrative and plans. The measures shall be maintained until permanent protection of the contributing watershed is approved by the Municipal Representative. All storm drainage outlets will be stabilized, as required, before the discharge points become operational.
B. Inspections: Inspect measures at least twice every seven (7) calendar days. Stabilized areas shall be inspected monthly until the entire site is stabilized.

C. Maintenance: Complete maintenance within seven calendar days determining its need, as determined by the Municipal Engineer.
D. Stabilization/Planting: Temporarily or permanently stabilize within 24 hours after the end of construction activities in an area unless there is snow cover or construction activities will resume within 14 days.

3.1.4 Products and Execution

The following are temporary erosion and sediment control measures that may be utilized on the construction site. Specific measures to be implemented are as shown on the project drawings. Those measures may be modified, and additional measures may be implemented, as required to address field conditions that might arise during the course of construction.

A. Sediment Traps:
- Sediment traps are temporary devices formed by excavating and/or constructing an embankment to intercept sediment laden runoff and trap sediment to protect drainage ways from sedimentation.
- Sediment traps shall be designed to provide a minimum capacity of 1,800 cubic feet of storage per acre of drainage area contributing to the trap.
- Sediment traps should be located so that they can be installed prior to grading or filling. They should also be installed to benefit from the terrain and to be easily accessible for maintenance and disposal of the trapped sediment.
- Outlets shall discharge to stabilized ground, into a watercourse, or into a storm a storm drainage system.

B. Earth Dikes:
- Earth dikes are constructed by excavating a trench on the upslope toe across a slope to capture sediment laden runoff from small disturbed areas.
- The maximum height of an earth dike shall be 2 feet. Top width shall be a minimum of 2 feet with 2:1 side slopes.
- The dike shall be seeded and mulched to prevent erosion.

C. Stabilized Construction Entrance:
- A stabilized construction access is defined by a point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles.
- A stabilized pad of aggregate underlain with geotextile fabric.
- The geotextile fabric shall be Mirafi 600X or equal.
- Aggregate shall be a mix of 1” to 4” stone or recycled concrete equivalent.
- Minimum width shall be 12 feet; minimum thickness shall be 6 inches.
- The contractor shall keep the roadways within the project clear of soil and debris and is responsible for any street cleaning necessary during the duration of construction.

D. Sediment Basins:
- Sediment basins are temporary basins formed by excavating and/or constructing an embankment so that sediment laden runoff is temporarily detained under slow-moving or inactive conditions, allowing sediment to settle out before the runoff is discharged.
- Sediment basins shall be designed to provide a minimum capacity of 3,600 cubic feet of storage per acre of drainage area contributing to the basin.
- Locate the basin so that it is accessible for maintenance.

- When possible, temporary sediment basins shall be located where permanent, post-construction detention basins will be constructed, except when the post-construction basin is an infiltration basin.
- Outflow structures and emergency spillways must be provided.
- When possible, the outflow structure can consist of the permanent outflow structure, provided that the low flow orifice is sufficiently blocked so as to be watertight and non-functional.
- The outflow shall be provided with outlet protection to prevent scouring and erosion of the embankment and channel.

E. Silt Fence:
- A silt fence is a temporary linear sediment barrier of permeable fabric designed to intercept and slow the flow of sediment-laden sheet flow runoff. Silt fences allow sediment to settle from runoff before water leaves the construction site.
- Silt fences will be placed below the toe of exposed and erodible slopes; down-slope of exposed soil areas; around temporary stockpiles; along streams and channels; along the perimeter of a project.
- Silt fence fabric shall be Mirafi 100X or equal.
- Wood posts shall be of sound quality hardwood, a minimum 36 inches long and two inches square.
- Metal posts shall be standard T and U section weighing not less than one pound per linear foot.
- Wire fence backing shall be a minimum 14-1/2 gage with a maximum six-inch mesh opening and securely attached to fence posts.
- Posts shall extend a minimum of 16 inches into the ground.

F. Hay Bale Barriers:
- A hay bale barrier is a temporary linear sediment barrier consisting of straw bales, designed to intercept and slow sediment-laden sheet flow runoff. Straw bale barriers allow sediment to settle from runoff before water leaves the construction site.
- This BMP will be implemented on a project site as determined by the Engineer.
- The hay bales will be placed along the perimeter of the site; along streams and channels; below the toe of exposed and erodible slopes; down slope of exposed soil areas; around stockpiles; across minor swales or ditches with small catchments; around above grade type temporary concrete washouts; parallel to a roadway to keep sediment off paved areas.

G. Modified Control Structure: All pipe connections and the barrel connection to the control structure shall be watertight.

H. Check Dams:
- Check dams are small barriers or dams constructed of stone, bagged sand, gravel or other durable materials across a drainage channel to reduce erosion by reducing the velocity of flow in the channel.
- The maximum height of a check dam shall be 2 feet.
- For stone check dams, use a well graded matrix of stones 2 to 9 inches in size.
- The filter fabric used shall be Mirafi 600X or equal.

I. Temporary Stabilization:
- Establishment of Temporary Grass Cover: Prepare seed bed, scarify if compacted, remove debris and obstacles such as rocks and stumps, and seed within 24 hours. Amend soil, lime soil to pH of 6.0 and fertilize at a rate of 1/2 lbs. per 1,000 square feet with a 5-10-10 or equivalent fertilizer. Work amendments a minimum of four inches into soil. If seeding in

October/November seed shall be Certified Aroostook winter rye at 100 lbs. per acre, otherwise seed shall be ryegrass (annual).
- Mulch: Small grain straw mulch as specified on the drawings. Straw much shall be applied at a rate of two tons (100 to 120 bales) per acre.

J. Riprap: Provide permanent section of rock protection placed at the outlet end of culverts, conduits, or channels to reduce the depth, velocity and energy of water, such that the flow will not erode the receiving downstream reach. See erosion control plan for details (if required).
K. Anchored Stabilization Matting:
- Anchored stabilization mats are protective covering placed on a prepared, seeded planting area that is anchored in place by staples or other means to aid in controlling erosion and promote seed establishment on steep slopes.
- Anchored stabilization mats are required on earth slopes steeper than 3:1; in vegetated channels where the design flow velocity exceeds 5 feet/sec; and on streambanks where moving water is likely to cause erosion.

L. Dust Control:
- Treat all disturbed areas within 500 feet of an inhabited dwelling as necessary to provide dust control.
- Treat all disturbed soil surface areas where air movement of dust may cause off-site damage, health hazards, and traffic safety problems.
- For disturbed areas not subject to traffic, vegetation or mulching provide the most practical method of dust control.
- For driving areas and access roads, sprinkling should be used to spray the disturbance area with water until the surface is wet.
- Conform to all local and state regulations governing these activities.

M. Rock Removal: Rock ripping shall be used wherever possible in place of blasting. Observations made during test blasting shall be used in the development of a controlled rock removal program.
N. Temporary Soil and Rock Stockpiling:
- Stockpile management procedures and practices are designed to reduce or eliminate storm water pollution from stockpiles of soil, and paving materials such as Portland cement concrete (PCC) rubble, asphalt concrete (AC), asphalt concrete rubble, aggregate base, aggregate sub-base or pre-mixed aggregate, asphalt binder (“cold mix” asphalt) and pressure treated wood.
- Materials shall not be stockpiled on steep slopes, drainage swales, wetland areas, or wetland setback arrears. Stockpiles shall be surrounded with silt fence and re-vegetated following completion of construction activities.

O. Inlet Protection:
- Used at storm drain inlets that are subject to runoff from construction activities to detain and/or filter sediment-laden runoff to allow sediment to settle and/or to filter sediment prior to discharge into storm drainage systems or watercourses.
- Where ponding will not encroach into highway traffic; where sediment laden surface runoff may enter an inlet; where disturbed drainage areas have not yet been permanently stabilized; where drainage area is 1 acre or less; appropriate during wet and snow-melt seasons.

P. Soil Restoration and De-compaction:
- Soil restoration is applied in the cleanup, restoration, and landscaping phase of construction, and is followed by the permanent establishment of an appropriate, deep-rooted groundcover.

- All soil restoration and de-compaction activities shall be conducted in accordance with the NYSDEC publication “Deep Ripping and De-compaction, 2008.”

- Grade disturbed subsoil to rough final grade and apply the following soil restoration steps:
    1. Apply 3 inches of compost over subsoil
    2. Till compost into subsoil to a depth of at least 12 inches using a cat-mounted ripper, tractor-mounted disc, or tiller.
    3. Mix and circulate air and compost into subsoil.
    4. Rock-pick until uplifted stone/rock materials of four inches and larger size are cleaned off the site
    5. Apply topsoil to a depth of 6 inches.
    6. Vegetate as required by approved plan
    7. Permanent seeding and plantings to take place between April and November.
    8. Permanent seeding rates are provided as Notes 13 and 14 on the Sediment and Erosion Control Plan (Sheet 6) of the Site Plan.

Q. Concrete Truck Washout:

- A temporary excavated or above ground lined constructed pit where concrete trucks, mixers and equipment can be washed after loads have been discharged.
- Used to prevent highly alkaline runoff from entering storm drainage systems or leaching into soil.
- Washout facilities shall be provided for any project where concrete will be poured or otherwise formed on the site. The facility will receive highly alkaline wash water from the cleaning of chutes, mixers, hoppers, vibrators, placing equipment, trowels, and screeds. Under no circumstances will wash water from these operations be allowed to enter surface waters.
- The washout facility should be sized to contain solids, wash water, and rainfall. Wash water is estimated at 7 gallons per chute and 50 gallons per hopper of the concrete pump truck and/or discharging drum. Minimum size shall be 8 feet by 8 feet at the bottom and 2 feet deep. If excavated, side slopes shall be 2h to 1v.
- Locate the facility a minimum of 100 feet from drainage swales, storm drain inlets, wetlands, streams and other surface waters. Prevent surface water from entering the structure except for the access road. Provide appropriate access with a gravel access road sloped down to the structure. Signs shall be placed to direct drivers to the facility after their load is discharged.
- All washout facilities will be lined to prevent leaching of liquids into the ground. The liner shall be plastic sheeting with a minimum thickness of 10 mils with no holes or tears, and anchored beyond the top of the pit with an earthen berm, sand bags, stone, or other structural appurtenance except at the access point.

3.1.5 Maintenance

A. Repair or replace all damaged erosion and sediment control measures.
B. Sediment Traps:
   - Sediment shall be removed and the trap restored to the original dimensions when the sediment has accumulated to ½ of the design depth of the trap.
   - Sediment removed from the trap shall be deposited in a protected area and in such a manner that it will not erode.
C. Inlet Protection:
   - Inspect fabric barriers after every rain event and repair as needed.
   - Straw bales shall be kept tight, with bottom edge adhering to the ground.
   - Only clean stone or gravel shall be used.
   - Remove accumulated sediment as necessary and dispose on site.
D. Stabilized Construction Entrance:
   - Inspect routinely for damage and assess effectiveness of the BMP. Remove aggregate, separate and dispose of sediment if construction entrance/exit is clogged with sediment.
   - Keep all temporary roadway ditches clear
   - Inspect for damage and repair as needed.
E. Sediment Basins:
   - Inspect before and after rainfall events and weekly during rainy season.
   - Examine banks for seepage and structural soundness.
   - Check inlets and outlet structure for damage or obstructions; repair damage and remove obstructions as needed.
   - Remove accumulated sediment when its volume reaches one-third of the volume of the sediment storage.
F. Silt Fence:
   - Repair undercut silt fences
   - Repair or replace split, torn, slumping, or weathered fabric
   - Inspect silt fence when rain is forecast. Perform necessary maintenance, or maintenance as required by the Resident Engineer (RE)
   - Inspect silt fence following rainfall events. Perform maintenance as necessary, or as required by the RE.
   - Maintain silt fences to provide adequate sediment holding capacity. Sediment shall be removed when the sediment accumulation reaches 1/3 of the barrier height. Removed sediment shall be incorporated in the project at locations designated by the RE or disposed of outside the right-of-way in conformance with the Standard Specifications.
   - Silt fences that are damaged and become unsuitable for the intended purpose, as determined by the RE, shall be removed from the site of work, disposed of in conformance with the Standard Specifications, and replaced with new silt fence.
   - Holes, depressions or other ground disturbance caused by the removal of the temporary silt fences shall be backfilled and repaired in conformance with the Standard Specifications.
   - Remove silt fence when no longer needed or as required by the RE. Fill and compact holes and anchorage trench, remove sediment accumulation, and grade fence alignment to blend with adjacent ground.

G. Hay Bale Barriers:
- Inspect straw bale barriers before and after each rainfall event, and weekly throughout the rainy season.
- Inspect straw bale barriers for sediment accumulations and remove sediment when depth reaches 1/3 the barrier height. Removed sediment shall be incorporated in the project at locations designated by the RE or disposed of outside the highway right-of-way in conformance with the Standard Specifications.
- Replace or repair damaged bales as needed or as directed by the RE
- Repair washouts or other damages as needed or as directed by the RE
- Remove hay bales when no longer needed. Remove sediment accumulation, and clean, re-grade, and stabilize the area.

H. Construction Vehicles:
- Procedures and practices to minimize or eliminate the discharge of pollutants to the storm drain systems or to watercourses from vehicle and equipment maintenance procedures.
- These maintenance procedures will be applied to all construction projects where the storage and maintenance of heavy equipment and vehicles is necessary.
- Maintain waste fluid containers in leak proof condition.
- Vehicle and equipment maintenance areas shall be inspected regularly
- Vehicles and equipment shall be inspected on each day of use. Leaks shall be repaired immediately or the problem vehicles(s) or equipment shall be removed from the project site.
- Inspect equipment for damaged hoses and leaky gaskets routinely. Repair or replace as needed.

I. Temporary Soil and Rock Stockpiling:
- Repair and/or replace perimeter controls and covers as needed, or as directed by the RE, to keep them functioning properly. Sediment shall be removed when sediment accumulation reached 1/3 of the barrier height.

J. Concrete Truck Washout:
- Concrete washout facilities shall be inspected daily. Damaged or leaking facilities shall be deactivated and repaired or replaced immediately.
- Inspect the project site frequently to ensure that no concrete discharges are taking place in non-designated areas.
- Excess rainwater that has accumulated over hardened concrete should be pumped to a stabilized area.
- Accumulated hardened material shall be removed when 75% of the storage capacity of the facility is filled. Dispose of the hardened material off-site in a
- construction/demolition landfill.
- The plastic liner shall be replaced with each cleaning of the washout facility.

3.2 STORM WATER MANAGEMENT CONTROL

3.2.1 Peak Flow Attenuation

The proposed project will increase the impervious surfaces on the property by adding a building, roads, and parking lots. To offset the increased runoff associated with the increase in impervious surfaces, underground stormwater infiltration, detention systems, and a bioretention pond will be constructed. The selected systems were designed to treat the required WQv, RRv, and reduced the peak runoff rate.

The systems have been configured and sized to provide zero net increase in runoff rate and volume leaving the site for rainfall events having recurrence intervals ranging from 1 to 100 years. The points of interest for this analysis are POI 'North' and 'South', located respectively at each end of the site. The pre-development and post-development phases share the same point of interest, so direct comparisons between the hydrologic models can take place at this location.

The proposed stormwater management facilities have been designed in accordance with the requirements outlined in the *New York State Stormwater Management Design Manual*. The use of the selected stormwater management systems were selected in consideration of several physical factors that included the contributing drainage area, slope, geometry, soils, groundwater table elevation, and available head. In consideration of these factors, the proposed stormwater management systems were determined to be appropriate practices for this site.

PEAK DISCHARGE SUMMARY TABLES

POI NORTH
PEAK DISCHARGE (CFS)

FREQUENCY	EXISTING CONDITIONS	PROPOSED CONDITIONS	DIFFERENCE
1 YEAR	0.39	0.37	-0.02
10 YEAR	4.17	2.29	-1.88
25 YEAR	7.34	6.70	-0.64
100 YEAR	14.85	14.52	-0.33

POI SOUTH
PEAK DISCHARGE (CFS)

FREQUENCY	EXISTING CONDITIONS	PROPOSED CONDITIONS	DIFFERENCE
1 YEAR	4.65	4.34	-0.31
10 YEAR	22.08	19.64	-2.44
25 YEAR	34.53	32.80	-1.73
100 YEAR	59.81	54.93	-4.88

3.2.2 Water Quality

The stormwater management system has also been designed to provide water quality and quantity controls as required by the New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit for Stormwater Discharges from Construction. The design incorporates sizing for Water Quality Volume Control (WQv), Runoff Reduction Volume (RRv), Channel Protection Storage Volume (CPv), Overbank Flood Control (Qp) and Extreme Storm Flood Control (Qf). These five components of the water quality sizing criteria are further described as follows:

- The Water Quality Volume (WQv) is designed to improve water quality by capturing and treating 90% of the average annual stormwater runoff volume. The WQv is directly related to the amount of impervious cover on a project site. On this project the water quality volume will be treated by the use of the underground infiltration facilities, bioretention, and proprietary treatment structures.
- The Runoff Reduction Volume (RRv) is designed to control post-development water quality volumes to replicate pre-development hydrology by maintaining pre-construction infiltration, peak runoff flow, and discharge volume as well as minimizing concentrated flow. Runoff Reduction is achieved by infiltration, groundwater recharge, reuse and recycling by incorporating green infrastructure techniques and standard stormwater management practices with runoff reducing capacity. On this project the water quality volume will be treated by the use of the underground infiltration facilities and bioretention.
- The Channel Protection Storage Volume (Cpv) is designed to protect stream channels from erosion. The CPv is accomplished by providing 24 hour extended detention of the one-year, 24-hour storm event.
- The purpose of Overbank Flood Control (Qp) is to prevent an increase in the frequency and magnitude of out-of-bank flooding generated by urban development. Overbank Flood Control is accomplished by attenuating the post development 10-year, 24-hour peak discharge rate from the site to the pre-development rate.

- The purpose of Extreme Flood Control (Qf) is to prevent an increased risk of flood damage from large storm events, to maintain the boundaries of the pre-development 100-year floodplain, and to protect the physical integrity of stormwater management practices. Extreme Flood Control is accomplished by attenuating the post development 100-year, 24-hour peak discharge rate from the site to the pre-development rate.

The required Water Quality Volume and Channel Protection Storage Volume were calculated in accordance with the procedure outlined in the *New York State Stormwater Management Design Manual*. The Overbank Flood Control and Extreme Storm Flood Control are provided by controlling the peak discharge from the project site for the 10 year and 100-year storms to pre-development rates.

The minimum pretreatment volume of 100% of the water quality volume must be provided prior to entry to an infiltration facility for underlying soils with an infiltration rate of 5 inches per hour or more. This requirement will be met by providing proprietary flow-through devices that all stormwater entering the infiltration and bioretention basin will pass through for pretreatment.

3.2.3 Water Quantity

As noted in the previous sections, our stormwater mitigation practices successfully reduce the peak discharge rates leaving the site when compared to existing conditions. As detailed in the City of Newburgh's letter dated January 5, 2023, the City has requested further analysis for the additional stormwater runoff volume being discharged to the Lockwood Basin waterbody as a result of the proposed warehouse facility.

A runoff volume summary for POI South is provided below. Refer to Appendix H for full analysis, methodology, and its impact on the overall Lockwood Basin Watershed.

POI SOUTH
Volume Summary (Acre-feet)

FREQUENCY	EXISTING CONDITIONS	PROPOSED CONDITIONS	DIFFERENCE
1 YEAR	0.804	1.419	+0.615
10 YEAR	2.751	3.233	+0.482
25 YEAR	4.040	4.344	+0.304
100 YEAR	6.863	6.684	-0.179

3.2.3 Runoff Reduction Volume

According to the NYSDEC Stormwater Management Design Manual, Runoff Reduction Volume (RRv) is a reduction of the total Water Quality Volume (WQv) by application of green infrastructure techniques and Standard Stormwater Management Practices (SMPs) to replicate pre-development hydrology. This concept is intended to improve the mitigation of the negative effects of stormwater runoff from development by incorporating the design and layout of stormwater management features into the site planning process. The three primary components that mitigate the negative effects of stormwater runoff are:

1. Avoiding Impacts – Avoid or minimize disturbance by preserving natural features and using conservation design techniques.
2. Reducing Impacts – Reducing the impacts of development by reducing impervious cover.
3. Managing Impacts – Manage the impacts by using natural features and runoff reduction practices to slow down the runoff, promote infiltration and minimize the need for structural “end-of-pipe” practices.

The RRv requirement can be accomplished by application of on-site green infrastructure techniques, standard stormwater management practices with runoff reduction capacity, and good operation and maintenance. The NYSDEC Stormwater Management Design Manual requires planners and designers to address this approach in an iterative site planning and design process. The iterative process is a five-step process that combines site planning with the use of various green infrastructure techniques and standard stormwater management practices until the RRv requirement is met. The iterative five-step process is as follows:

1. Site planning to preserve natural features and reduce impervious cover;
2. Calculation of the water quality volume for the site;
3. Incorporation of green infrastructure techniques and standard SMPs with RRv capacity;
4. Use of standard SMPs, where applicable; and
5. Design of volume and peak rate control practices where required.

If by using these techniques the calculated RRv is greater than the required WQv, the RRv requirement is met. If the RRv is less than the required WQv then the design must, at a minimum, reduce a percentage of the runoff from impervious areas to be constructed on the site. The percent reduction is based on the Hydrologic Soil Group of the site, and is determined by the Specific Reduction Factor (S). The Specific Reduction Factor (S) for this project is 0.31, based on the weighted average of ‘B’ and ‘D’ soils present.

The runoff reduction technique selected for this project is infiltration. Infiltration was determined to be suitable for the proposed project in consideration of factors including site topography, slopes, soil properties, project layout, and maintenance requirements.

The runoff reduction techniques that have been selected have been determined to be suitable for the proposed project in consideration of factors including site topography, slopes, soil properties, project layout, and maintenance requirements. The selected techniques include the following:

- Infiltration (North)
- Bioretention (South)

3.2.4 Maintenance

The maintenance of the stormwater management facilities is the self-responsibility of the property owner, and a legally binding maintenance agreement will be filed in the Office of the Orange County Clerk. The maintenance agreement includes provisions for any necessary easements. This mechanism will protect the practices from neglect, adverse alteration and/or unauthorized removal.

The stormwater management system will be maintained in accordance with standard procedures and guidelines as contained in the latest edition of the New York State Stormwater Management Design Manual. An Operation and Maintenance (O&M) plan for the post-construction stormwater management practices is included in Section 12 of this SWPPP.

3.3 Other Controls

Waste Materials:

All waste materials will be collected and stored in securely lidded metal dumpsters to be rented from licensed solid waste management company located in Orange County. The dumpsters will meet all Town, County, and New York State solid waste management regulations. All trash and construction debris from the site will be deposited in the dumpsters. The dumpsters will be emptied as necessary, and the trash will be hauled off-site. No construction waste materials will be buried on site.

Hazardous Waste:

All hazardous waste materials will be disposed of in the manner specified by local or State regulation or by the manufacturer. Site personnel will be instructed in these practices and the individual, who manages day-to-day site operations, will be responsible for seeing that these practices are followed.

Sanitary Waste:

All sanitary waste will be collected from the portable units by a licensed sanitary waste management contractor.

Offsite Vehicle Tracking:

A Stabilized construction entrance will be provided to help reduce vehicle tracking of sediments. Existing paved roadways located adjacent to the construction site entrances will be swept daily to remove any excess mud, dirt or rock tracked from the site. Dump trucks hauling material from the construction site will be covered with a tarpaulin.

3.4 Timing of Controls/Measures

As indicated in the Sequence of Major Activities, the stabilized construction entrances and other sediment and erosion controls will be constructed prior to earthwork activities on any part of the site. Areas where construction activity temporarily ceases for at least 21 days will be stabilized with a temporary seed and mulch within 14 days of the last disturbance. Once construction activity ceases permanently in an area, that area will be stabilized with permanent seed and mulch. After the entire site is stabilized, accumulated sediments will be removed from the sediment and erosion control structures and the controls will be removed. When more than 5 acres are disturbed the owner or operator shall have a qualified inspector conduct at least two site inspections per week. Additionally, in areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within 7 days from the date the current soil disturbance activity ceased.

3.5 Certification of Compliance with Federal, State & Local Regulations

The storm water pollution plan reflects New York State Department of Environmental Conservation requirements for storm water management and erosion and sediment control, as established in Article 17, Titles 7, 8 and Article 70 of the Environmental Conservation Law. To ensure compliance, this plan was prepared in accordance with guidelines issued with the SPDES General Permit for Storm Water Discharges from Construction Activities that are classified as "Associated with Construction Activity," published by the New York State Department of Environmental Conservation.

3.5.1 Endangered & Threatened Species, Historic Places or Archeological Resources

According to the NYSDEC Environmental Resource Mapper, the proposed project is not within the vicinity of sensitive archeological and/or historic resources listed in or eligible for the New York State and National Registers of Historic Places.

According to the NYSDEC Environmental Resource Mapper, the project site is located in the vicinity of the endangered Indiana Bat. A search on the U.S. Fish & Wildlife Service IPaC database confirmed that our project site does not overlap the critical habitat for the Indiana Bat. As a precaution, voluntary tree clearing will be conducted only during the hibernation period of November 1 through March 31 when bats are not expected to be present.

3.5.2 Stormwater **"Hot Spot" Uses**

It is noted that the Town of Newburgh considers the proposed warehousing use as a stormwater 'hotspot.' A 'treatment train,' or series of pre-treatment facilities, will be provided as per guidance from the New York State Stormwater Management Design Manual (NYSSMDM) for consideration of infiltration facilities in a 'hotspot' area. The ADS Barracuda Max, a proprietary water quality manhole structure will be followed by the ADS Stormtech Isolator Row Plus to adequately remove the required 80% TSS and 40% TP.

4.0 MAINTENANCE/INSPECTION PROCEDURES

4.1 Sediment & Erosion Control Inspection and Maintenance Practices

The owner or operator must ensure that all erosion and sediment control practices and all post-construction stormwater management practices are maintained in effective operating condition at all times. All measures will be maintained in good working order. If a repair is necessary, it will be initiated within 24 hours of report.

A qualified inspector shall conduct site inspections for all construction activities in accordance with the following practices and procedures:

- Where soil disturbance activities are on-going, the inspector shall conduct a site inspection at least once every seven (7) calendar days while less than 5 acres is disturbed and at least twice every seven (7) calendar days while more than 5 acres is disturbed.
- For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the owner or operator can stop conducting the maintenance

inspections. Maintenance inspections shall be resumed as soon as soil disturbance activities resume.
- The inspector shall inspect all erosion and sediment control practices to ensure integrity and effectiveness.
- All measures will be maintained in good working order. If a repair is necessary. It will be initiated within 24 hours of report.
- Built-up sediment will be removed from silt fence when it has reached 1/3 the height of the fence.
- Silt fence will be inspected for depth of sediment, tears, to see if the fabric is securely attached to the fence posts, and to see that the fence posts are firmly in the ground.
- Temporary and permanent seeding and planting will be inspected for bare spots, washouts, and healthy growth.
- All post-construction stormwater management practices under construction shall be inspected to ensure that they are constructed in conformance with the SWPPP and the supporting construction plans and specifications.
- Inspections shall be made at all areas of disturbance that have not achieved final stabilization; at all points of discharge to natural surface water bodies located within, or immediately adjacent to, the property boundaries of the construction site; and at all points of discharge from the construction site.

An Inspection and Maintenance Report shall be prepared after each inspection. The report, at a minimum, must include the following and is to be placed in the SWPPP box on the site as well as emailed to the Town of Newburgh MS4 compliance officer.
- Name of inspector
- Date and time of inspection
- Description of weather and soil conditions
- Description of the condition of the runoff at all points of discharge the site
- Description of condition of natural surface water bodies located on or adjacent to the site
- Identification of all erosion control practices that need repair or maintenance
- Identification of practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced
- Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized since the last inspection
- Current state of construction of post-construction stormwater practices and identification of construction not in conformance with technical standards
- Corrective action that must be taken to install, repair, replace or maintain erosion control practices, or to correct deficiencies in the construction of the post-construction stormwater management practices
- Digital photographs showing the condition of all practices that have been identified as needing corrective actions.

5.0 NON-STORM WATER DISCHARGES

It is expected that the following non-storm water discharges will occur from the site during the construction period:

- Water from water line flushing.
- Waste water from power washing.
- Pavement wash waters (where no spills or leaks of toxic or hazardous materials have occurred).

6.0 INVENTORY FOR POLLUTION PREVENTION PLAN

The materials or substances listed below are expected to be present on the site during construction:

Concrete and Mortar	Fertilizers
Detergents	Petroleum Based Products
Paints (enamel and latex)	Cleaning Solvents
Metal Pipe	Wood (treated and untreated)
Concrete	Masonry

7.0 SPILL CONTROL & PREVENTION

7.1 Material Management Practices

The following are the material management practices that will be used to reduce the risk of spills or other accidental exposure of materials and substances to storm water runoff.

Good Housekeeping:

The following good housekeeping practices will be followed during the construction project:

- An effort will be made to store only enough product required to do the job.
- Designate trash and bulk waste-collection areas on-site. Locate waste-collection areas away from streets, watercourses, and storm drains. Dumpsters shall be located near construction site entrances to minimize traffic on disturbed soils.
- Recycle materials whenever possible (e.g., paper, wood, concrete, oil)
- Clean up litter and debris from the construction site daily.
- All materials stored on site will be stored in a neat, orderly manner in their appropriate containers and, if possible, under a roof or other enclosure
- Products will be kept in their original containers with the original manufacturer's label.
- Substances will not be mixed with one another unless recommended by the manufacturer.
- Whenever possible, all of a product will be used up before disposing of the container.
- Manufacturer's recommendations for proper use and disposal will be followed.
- Job Supervisor to inspect daily to ensure proper use and disposal of materials on site.

Hazardous Products:

The following practices will be used to reduce the risks associated with hazardous materials:

- Products will be kept in original containers unless they are not re-sealable.
- Original labels and material safety data will be retained; they contain important product information.
- If surplus product must be disposed of, manufacturers' or local and State recommended methods for proper disposal will be followed.

7.2 Product Specific Practices

The following product specific practices will be followed on site.

Concrete Trucks:
Concrete trucks will not be allowed to wash out or discharge surplus concrete or drum wash on the site.

Petroleum Products:
All onsite vehicles will be monitored for leaks and receive regular preventive maintenance to reduce the chance of leakage. Petroleum products will be stored in tightly sealed containers which are clearly labeled. Any asphalt substances used on site will be applied according to the manufacturer's recommendations.

Fertilizers:
Fertilizers used will be applied only in the minimum amounts recommended by the manufacturer or specified. Once applied fertilizer will be worked into the soil to limit exposure to storm water. Storage will be in a covered shed. The contents of any partially used bags of fertilizer will be transferred to a sealable plastic bin to avoid spills.
Paints:
All containers will be tightly sealed and stored when not required for use. Excess paint will not be discharged to the storm drainage system, but will be properly disposed of according to manufacturers' instructions or State and local regulations.

Detergents and Cleaning Solvents:
Detergents and cleaning solvents will only be utilized on site when needed for immediate maintenance of construction equipment. Detergents and cleaning solvents will be stored in sealed containers, and will not be disposed of on the site or discharged to the storm drainage system. Environmentally friendly solvents and cleaners will be utilized when available.

8.0 SPILL CONTROL AND PREVENTION LOG

Date of Spill	Material Spilled	Spill Location	Cause

Cleanup	Agency Reported (Toxic/Hazardous)	Reoccurrence Prevention Measure

8.1 Spill Control Practices

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and cleanups:

- Manufacturer's recommended methods for spill cleanup will be clearly posted and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area on site. Equipment and materials will include, but not be limited to, brooms, dust pans, mops, rags, gloves, goggles, kitty litter, sand, sawdust, and plastic and metal trash containers specifically for this purpose.
- All spills will be cleaned up immediately after discovery.
- The spill area will be kept well ventilated, and personnel will wear appropriate protective clothing to prevent injury from contact with hazardous substance.
- Spills of toxic or hazardous material will be reported to the appropriate State or local government agency, regardless of the size of the spill.
- The spill prevention plan will be adjusted to include measures to prevent this type of spill from re-occurring and how to clean up the spill if there is another one. A description of the spill, what caused it, and the cleanup measures will also be included.

The Job Supervisor responsible for the day-to-day site operations will be the spill prevention and cleanup coordinator. He will designate at least three other site personnel who will receive spill prevention and cleanup training. These individuals will each become responsible for a particular phase or prevention and cleanup. The names of responsible spill personnel will be posted in the material storage area and in the office trailer on site.

9.0 SUPPORTING PLANS & ANALYSES

- Site Plans for "Unity Place Warehouse," prepared by Brooker Engineering, P.L.L.C., dated 06/16/2023 or revision thereafter
- Drainage Analysis, prepared by Brooker Engineering, P.L.L.C., dated 06/23/2023 or revision thereafter
- Stormwater Runoff Volume Summary & Lockwood Basin Watershed Analysis prepared by Brooker Engineering, P.L.L.C., dated 04/25/2023 or revision thereafter

10.0 POLLUTION PREVENTION PLAN CERTIFICATIONS

SWPPP Preparer:

I hereby certify that the Stormwater Pollution Prevention Plan (SWPPP) for this project has been prepared in accordance with the terms and conditions of the GP-0-20-001. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of this permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Signed: _____

Date: _____

Qualified Inspector:

I certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project, and that I have agreed to perform the inspections for the this project for compliance with the erosion and sediment controls described in the SWPPP. Within one business day of the completion of an inspection, I agree toll notify the owner or operator and appropriate contractor or subcontractor identified in Part III.A.6. of the permit of any corrective actions that need to be taken. The contractor or subcontractor shall be instructed to begin implementing the corrective actions within one business day of this notification, and shall complete the corrective actions in a reasonable time frame.

_____	_____
(Signature)	(Company)
_____	_____
(Name)	(Street)
_____	_____
(Title)	(City, State, Zip)

Owner

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

(Signature)	(Printed Name)
(Owner Name)	(Title)
(Date)	(Phone Number)

11.0 Contractor's Certification

"I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that the owner or operator must comply with the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I am aware that there are significant penalties for submitting false information that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

Site Work Contractor:

(Signature)	(Company)
(Name)	(Street)
(Title)	(City, State, Zip)
(Date)	(Phone Number)

General Contractor:

(Signature)	(Company)
(Name)	(Street)
(Title)	(City, State, Zip)
(Date)	(Phone Number)

11.1 Erosion Control Inspection Notes

12.0 Post Construction Controls

The long-term maintenance of the stormwater management systems will be the responsibility of the property owner, and a legally binding maintenance agreement will be filed in the Office of the Orange County Clerk. The maintenance agreement includes provisions for any necessary easements. This mechanism will protect the practices from neglect, adverse alteration and/or unauthorized removal.

The Operation and Maintenance (O&M) plan for the post-construction stormwater management practices shall include the following:

1. The owner(s) of the stormwater management systems shall erect or post, in the immediate vicinity of the facility, a conspicuous and legible sign of not less than 18 inches by 24 inches bearing the following information:

   STORMWATER MANAGEMENT PRACTICE
   (STORMWATER INFILTRATION SYSTEM, DETENTION SYSTEM, OR BIORETENTION SYSTEM)
   Project Identification - (*SPDES Construction Permit #)*
   This facility must be maintained in accordance with O&M Plan
   DO NOT REMOVE OR ALTER

2. The owner of the property shall be responsible for the operation and maintenance of the post-construction stormwater management practices. As of the date of the preparation of this SWPPP, the owner is identified as:

   Unity Place Newburgh LLC
   95 Chestnut Ridge Road
   Montvale, NJ 07645

3. The long-term operation and maintenance of the stormwater management practices shall be ensured by a legally binding maintenance agreement that is to be filed in the Office of the Orange County Clerk. The maintenance agreement shall include provisions for any necessary easements.

4. A Soil Erosion and Sediment Control Plan is part of the Site Plans entitled “Unity Place Warehouse” prepared by Brooker Engineering, P.L.L.C. The Site Plans are considered a part of this SWPPP, and include schematics, measurements and specifications for the stormwater management practices on the site.

5. Soil Restoration Maintenance
   - First Year:
     - Initial inspections for the first six months (once after each storm greater than half- inch)
     - Reseeding to repair bare or eroding areas to assure grass stabilization
     - Water once every three days for first month, and then provide a half inch of water per week during first year. Irrigation plan may be adjusted according to the rain event.
     - Fertilization may be needed in the fall after the first growing season to increase plant vigor.
   - Ongoing Maintenance:
     - Planting the appropriate ground cover with deep roots to maintain the soil structure

- Keeping the site free of vehicular and foot traffic or other weight loads. Consider pedestrian footpaths. (Sometimes it may be necessary to de-thatch the turf every few years).

6. StormTech Units

Step 1) Inspect isolator row for sediment

A. Inspection ports (if present)
A.1. Remove/open lid on nyloplast inline drain
A.2. Remove and clean flexstorm filter if installed
A.3. Using a flashlight and stadia rod, measure depth of sediment and record on maintenance log
A.4. Lower a camera into isolator row for visual inspection of sediment levels (optional)
A.5. If sediment is at, or above, 3" (80 mm) proceed to step 2. If not, proceed to step 3
B. All isolator rows
B.1. Remove cover from structure at upstream end of isolator row
B.2. Using a flashlight, inspect down the isolator row through outlet pipe
I) mirrors on poles or cameras may be used to avoid a confined space entry
II) follow OSHA regulations for confined space entry if entering manhole
B.3. If sediment is at, or above, 3" (80 mm) proceed to step 2. If not, proceed to step 3

Step 2) Clean out isolator row using the jetvac process

A. A fixed culvert cleaning nozzle with rear facing spread of 45" (1.1 m) or more is preferred
B. Apply multiple passes of jetvac until backflush water is clean
C. Vacuum structure sump as required

Step 3) Replace all covers, grates, filters, and lids; record observations and actions.

Step 4) Inspect and clean basins and manholes upstream of the stormtech system.

Notes

- Inspect every 6 months during the first year of operation. Adjust the inspection interval based on previous observations of sediment accumulation and high water elevations.
- Conduct jetting and vactoring annually or when inspection shows that maintenance is necessary.

7. Catch basin maintenance measures shall include the following:
   - Catch basins shall be visually inspected annually at the start of spring (or prior to significant snow melt or rain conditions).
   - The inspection should include documentation of debris build up in each structure, as well as noting any structural defects that have surfaced, including defects to castings, frames, covers, grates and concrete cracking or spalling.
   - Catch basins shall be cleaned of all debris at a frequency of no less than one fiscal year or in the event that sediment buildup exceeds six inches.
   - Trash and debris shall be removed regardless of buildup depth.
   - Debris or sediment removal shall be done as soon as reasonably possible to avoid impacts to receiving system, and no later than one month after the inspection report.
   - Cosmetic deficiencies shall be corrected based on the severity of the deficiency. Any deficiency that notes structural imperfections that may cause potential failure shall be corrected immediately and without delay.

8. Bioretention Facility:
   - Inspect and repair/replace treatment area components. Dead or diseased plant material shall be replaced.
   - Silt/sediment shall be removed from the filter bed when the accumulation exceeds one inch. When the filtering capacity of the filter diminishes substantially (i.e., when water ponds on the surface of the filter bed for more than 48 hours), the top few inches of discolored material shall be removed and shall be replaced with fresh material. The removed sediments shall be disposed in an acceptable manner (i.e., landfill).
   - A stone drop (pea gravel diaphragm) of at least six inches shall be provided at the inlet of bioretention facilities. Areas devoid of mulch shall be re-mulched on an annual basis.

9. ADS Barracuda Max Units:
   - Periodic inspection is needed to determine the need for and frequency of maintenance. You should begin inspecting as soon as construction is complete and thereafter on an annual basis. Typically, the system needs to be cleaned every 1-3 years. Excessive oils, fuels or sediments may reduce the maintenance cycle. Periodic inspection is important.
   - To determine the sediment depth, the maintenance contractor should lower a stadia rod into the manhole until it contacts the top of the captured sediment and mark that spot on the rod. Then push the probe through to the bottom of the sump and mark that spot to determine sediment depth. Maintenance should occur when the sediment has reached the levels indicated in the Storage Capacity Chart:

Model	Manhole Diameter	Treatment Chamber Capacity	Standard Sediment Capacity (20" depth)	NJDEP Sediment Capacity (50% of standard depth)
S3	36"	212 gallons	0.44 cubic yards	0.22 cubic yards
S4	48"	564 gallons	0.78 cubic yards	0.39 cubic yards
S5	60"	881 gallons	1.21 cubic yards	0.61 cubic yards
S6	72"	1269 gallons	1.75 cubic yards	0.88 cubic yards
S8	96"	3835 gallons	3.10 cubic yards	1.55 cubic yards
S10	120"	7496 gallons	4.85 cubic yards	2.43 cubic yards

   - Maintenance Instructions:
     - Remove the manhole cover to provide access to the pollutant storage. Pollutants are stored in the sump, below the bowl assembly visible from the surface. You'll access this area through the 10" diameter access cylinder.
     - Use a vacuum truck or other similar equipment to remove all water, debris, oils and sediment.
     - Use a high pressure hose to clean the manhole of all the remaining sediment and debris. Then, use the vacuum truck to remove the water.
     - Fill the cleaned manhole with water until the level reaches the invert of the outlet pipe.
     - Replace the manhole cover.
     - Dispose of the polluted water, oils, sediment and trash at an approved facility:

- Local regulations prohibit the discharge of solid material into the sanitary system. Check with the local sewer authority for authority to discharge the liquid.
- Some localities treat the pollutants as leachate. Check with local regulators about disposal requirements.
- Additional local regulations may apply to the maintenance procedure.

12.1 Post Construction Controls Reporting

The maintenance and inspection records for each fiscal year shall be dutifully retained by the owner as well as submitted to the Town of Newburgh, which is the acting enforcement agent for the MS4 program.

The report shall be entitled:

"20___ Unity Place Warehouse, Town of Newburgh, Orange County, New York"
"Annual Maintenance and Inspection Report"

The report cover shall also include the following information:

- Name of company who prepared or assisted in compiling information and inspections
- Date
- Name, address, and phone number of current owner

The required inspections and reports are to be performed by a New York State licensed Professional Engineer. The reports shall include photographs of each structure and additional photos of any corrective work that is undergone for that fiscal year. If corrective work is conducted, work logs and inventory of materials shall be documented and included within the report.

Appendix A

Erosion and Sediment Control Practices Matrix
(Excerpt from New York State Standards and
Specifications for Erosion and Sediment Control)

Table 2.1
Erosion and Sediment Control Practices Matrix
Site Planning, Preparation and Management

Practice	Primary Purpose	Site Characteristics	Construction Activity*	Associated Practices
Concrete Truck Washout	Collect Waste	Concrete construction	All	Stabilized Access
Construction Road Stabilization	Control sediment	All construction routes	A11	Dust control, temporary swales, temporary or permanent seeding
Dust Control	Stabilize soil	Access points, construction roads	1a,1b,2,3,4,6	Stabilized construction access, construction road stabilization
Protecting Vegetation During Construction	Preserve existing vegetation	Site specific	All	Recreational area improvement
Site Pollution Prevention	Manage waste	Site logistics	All	Those in this section
Stabilized Construction Access	Control sediment	Access points	All	Filter fence, construction road stabilization
Temporary Access Waterway Crossing	Prevent sediment	Streams and banks	All	Construction road stabilization, streambank protection
Winter Stabilization	Soil stabilization	Disturbed areas	All	Seeding, mulching, buffer strips
* See Erosion and Sediment Control Practice Matrix Construction Activity Key on page 2.15				

Table 2.2
Erosion and Sediment Control Practices Matrix
Erosion Control Part 1 - Runoff Control (See Section 3)

Practice	Primary Purpose	Site Characteristics	Construc-tion Activity	Associated Practices
Check Dam	Control runoff	Drainage area ≤ 2 Ac.	All	Lined waterway, rock outlet protection
Construction Ditch	Divert runoff	Drainage area ≤ 10 Ac.	All	Sediment traps, storm drain inlet protection, sediment basin, level spreader
Dewatering Sump Pit	Control sediment	Site specific	All	Sediment trap, sediment basin
Diversion	Intercept and divert run-off	Minimum 10 year de-sign Q	1a,2b,3b,4,5,6	Permanent seeding, rock outlet protection, flow spreader, sedi-ment basin
Earth Dike	Control runoff	Drainage area ≤ 10 ac.	1a,1b,1c,2,3,4 ,5,6,	Sediment trap, rock outlet pro-tection, sediment basin
Flow Diffuser	Control runoff	Minimum design Q = 10 yr. 24 hr.	1a,1b,1c,5,6	Seeding, sodding, land grading, diversion
Flow Spreader	Control runoff	Minimum design Q = 10 yr. 24 hr.	1a,1b,1c,5,6	Diversion, grassed waterway, construction ditch
Grade Stabilization Structure	Prevent erosion	Minimum design Q = 10 yr. 24 hr.	1d,1e,5,6	Permanent seeding, rock slope protection, structural stream-bank protection
Grassed Waterway	Convey runoff	Minimum 10 year de-sign Q	2a,3b,5,6	Rock outlet protection, vegetat-ed waterways, sediment basin, flow spreader
Lined Waterway (rock materials)	Convey runoff	Minimum design Q = 10 yr. 24 hr.	1a-c,2,3,4,5,6	Rock outlet protection, subsur-face drain
Paved Flume	Convey runoff	Minimum design Q = 10 yr. 24 hr.	1a,3,4,6	Rock outlet protection
Perimeter Dike/Swale	Divert runoff	Drainage area ≤ 5 Ac.	1a-c,2a,3a,5,6	Sediment trap, flow spreader, check dam, temporary seeding
Pipe Slope Drain	Convey runoff down slope	Drainage area ≤ 3.5 Ac.	1a,1d,5,6	Rock outlet protection
Rock Outlet Protection	Prevent erosion	Rock varies with pipe discharge	All	Diversion, grassed waterway, sediment basin, sediment traps
Storm Drain Diversion	Divert runoff	On-site drainage area > 50% total drainage area	1a,2,3,4,6	Sediment trap/basin
Subsurface Drain	Intercept and convey drainage water	1” Drainage Coefficient	1a,2,3,4,6	Rock outlet protection, land grading, retaining wall
Water Bars	Divert runoff	Slope areas < 100 ft. width	1b,1c,5	Rock outlet protection, flow spreader

* See Erosion and Sediment Control Practice Matrix Construction Activity Key on page 2.15

Table 2.3
Erosion and Sediment Control Practices Matrix
Erosion Control Part 2 - Soil Stabilization (See Section 4)

Practice	Primary Purpose	Site Characteristics	Construction Activity	Associated Practices
Anchored Stabilization Matting	Stabilize soil	Site specific	All, steep slopes	Seeding, topsoiling
Armored Slope and Channel Stabilization	Prevent erosion	Minimum design Q= 10 yr. 24 hr., velocity > 6 feet per second	1d,1e,1f	Live facines, live stakes, retaining walls
Branch Packing	Stabilize soil	Maximum 1.5:1 slopes	1d,5,6	Diversion, subsurface drain, temporary swale
Brush Layer	Stabilize soil	Site specific slopes	1d,1e,3,4,5,6	Rock slope protection, armored streambank protection
Brush Mattress	Stabilize soil	Stream bank slopes	1a, 6	Rock slope protection
Establishing Trees, Shrubs, and Vines	Stabilize soil	Site specific	All	Topsoiling, seeding, fertilizer application
Fertilizer Application	Promote seeding	Site specific	All	Seeding, mulching, topsoiling, land grading
Fiber Roll	Provide growth medium	Site specific	1d,1e,5	Live facines, live stakes
Land Grading	Stabilize soil	Site specific shaping	All	Topsoiling, subsurface drain, seeding
Lime Application	Stabilize soil	Site specific	All	Topsoiling, seeding
Live Crib Wall	Stabilize soil	Site specific	All	Retaining walls
Live Fascines	Stabilize soil	Max. 1.5:1 slope	1a,1d,1e,5,6	Diversion, seeding
Live Stakes	Stabilize soil	Site specific	1d,1e,4,5,6	Armored streambank protection, fiber roll
Loose Stabilization Blankets	Stabilize soil	Site Specific	All	Permanent and temporary seeding, Recreation area
Mulching	Stabilize soil	Site specific	All	Permanent and temporary seeding, Recreation area
Permanent Seeding for Construction Areas	Stabilize soil	Site specific	All	Surface roughening, top soiling, sodding
Recreation Area Seeding	Protect areas/soils	Site specific	All	Permanent seeding, mulching, topsoiling
Retaining Walls	Stabilize soil	Site specific constraints	1a,2,3,4,6	Rock slope protection, permanent seeding, subsurface drain

* See Erosion and Sediment Control Practice Matrix Construction Activity Key on page 2.15

Table 2.3 (Continued)
Erosion and Sediment Control Practices Matrix
Erosion Control Part 2 - Soil Stabilization (See Section 4)

Practice	Primary Purpose	Site Characteristics	Construction Activity	Associated Practices
Soil Restoration	Stabilize soil, promote infiltration	Compacted areas	All	Topsoiling, seeding
Stabilization of Sand and Gravel Pits	Stabilize soil	Site specific	1a,1c,3,4,5,6	Topsoiling, seeding
Stabilization With Sod	Stabilize soil	Need quick cover, aesthetics	2,3,4	Inlet protection, top soiling, permanent seeding
Surface Roughening	Stabilize soil	Construction slopes	All	Temporary seeding, permanent seeding, mulching
Temporary Seeding for Construction Areas	Stabilize soil	Site specific	All	Surface roughening, top soiling, sodding
Topsoiling and Amendments	Enhance growing conditions	Poor site soil characteristics	All	Surface roughening, temporary seeding, permanent seeding
Tree Revetment	Stabilize soil	Site specific	1d,1e	Armored streambank protection
Vegetated Gabions	Stabilize soil	Site specific	1a-e,2,3,4,5,6	Live cribwall, retaining wall
Vegetating Sand Dunes and Tidal Banks	Stabilize sand dunes	Sand dune reinforcement	1e, 2,3,4,5,6	Sediment trap, rock outlet, storm drain inlet protection
Vegetating Waterways	Stabilize soil	Site specific	2a,3b,5,6	Grassed waterways, permanent seeding

* See Erosion and Sediment Control Practice Matrix Construction Activity Key on page 2.15

Table 2.4
Erosion and Sediment Control Practices Matrix
Sediment Control (See Section 5)

Practice	Primary Purpose	Site Characteristics	Construction Activity	Associated Practices
Buffer Filter Strip	Filter sediment	Turbid sheet flow	All	Storm drain inlets, water conveyances
Compost Filter Sock	Filter sediment	Turbid sheet flow	All	Storm drain inlets, water conveyances
Dewatering Device	Discharge clean water	Turbidity in sediment basin	All	Sediment basins, sediment traps
Geotextitle Filter Bag	Filter sediment	Small areas, pumped	All	Subsurface drain, dewatering sump pit, buffer filter strip
Portable Sediment Tank	Retain sediment	16 times pump discharge	2a,3a,4	Sediment trap, sediment basin
Rock Dam	Trap sediment	Drainage area ≤ 50 Ac.	1a,1b,1c,2b3b,4,5,6	Rock outlet protection
Sediment Basin	Capture sediment	Drainage area ≤ 50 Ac.	1a,2b,3b,4,5,6	Rock outlet protection, temporary seeding
Sediment Dike	Capture sediment	Small disturbed areas	2a,2b,3a	Buffer filter strip, filter bag
Sediment Trap - Compost Sock	Trap sediment	Drainage area ≤ 5 Ac.	All	Seeding, sodding
Sediment Trap - Pipe Outlet	Trap sediment	Drainage area ≤ 5 Ac.	All	Sediment basin, rock outlet protection
Sediment Trap - Stone Outlet	Trap sediment	Drainage area ≤ 5 Ac.	All	Rock outlet protection
Silt Fence	Control sediment	2:1 slopes maximum, 50 ft. spacing	All	Straw bale dike
Storm Drain Inlet Protection - Excavated	Trap sediment	Drainage area ≤ 1 Ac.	1a,2,3,4,6	Sediment traps, storm drain diversion
Storm Drain Inlet Protection - Fabric	Trap sediment	Drainage area ≤ 1 Ac.	1a,2,3,4,6	Sediment traps, storm drain diversion
Storm Drain Inlet Protection - Inserts	Trap sediment	Drainage area ≤ 1 Ac.	1a,2,3,4,6	Sediment traps, storm drain diversion
Storm Drain Inlet Protection - Paved Surface	Trap sediment	Drainage area ≤ 1 Ac.	1a	Sediment traps, storm drain diversion
Storm Drain Inlet Protection - Stone and Block	Trap sediment	Drainage area ≤ 1 Ac.	2,3,4,6	Sediment traps, storm drain diversion
Straw Bale Dike	Control sediment	2:1 slopes maximum, 25 ft. spacing	All	Silt fence

* See Erosion and Sediment Control Practice Matrix Construction Activity Key on page 2.15

Table 2.4 (Continued)
Erosion and Sediment Control Practices Matrix
Sediment Control (See Section 5)

Practice	Primary Purpose	Site Characteristics	Construction Activity	Associated Practices
Turbidity Curtain	Control sediment	Calm water	1b,1d,1e,1f,5	Sediment traps, basins, seeding, mulching
Water structures/barriers	Control sediment	Large area for placement	1d,1e,1f,5	Armored streambank protection, retaining walls
* See Erosion and Sediment Control Practice Matrix Construction Activity Key on page 2.15				

Appendix B

Details and Specifications for
Various Erosion Control Measures

STANDARD AND SPECIFICATIONS FOR CONSTRUCTION ROAD STABILIZATION

Definition & Scope

The stabilization of temporary construction access routes, on-site vehicle transportation routes, and construction parking areas to control erosion on temporary construction routes and parking areas.

Conditions Where Practice Applies

All traffic routes and parking areas for temporary use by construction traffic.

Design Criteria

Construction roads should be located to reduce erosion potential, minimize impact on existing site resources, and maintain operations in a safe manner. Highly erosive soils, wet or rocky areas, and steep slopes should be avoided. Roads should be routed where seasonal water tables are deeper than 18 inches. Surface runoff and control should be in accordance with other standards.

Road Grade – A maximum grade of 12% is recommended, although grades up to 15% are possible for short distances.

Road Width – 12 foot minimum for one-way traffic or 24 foot minimum for two-way traffic.

Side Slope of Road Embankment – 2:1 or flatter.

Ditch Capacity – On-site roadside ditch and culvert capacities shall be the 10 yr. peak runoff.

Composition – Use a 6-inch layer of NYS DOT sub-base Types 1,2,3, 4 or equivalent as specified in NYSDOT Standard Specifications.

Construction Specifications

1. Clear and strip roadbed and parking areas of all vegetation, roots, and other objectionable material.

2. Locate parking areas on naturally flat areas as available. Keep grades sufficient for drainage, but not more than 2 to 3 percent.

3. Provide surface drainage and divert excess runoff to stabilized areas.

4. Maintain cut and fill slopes to 2:1 or flatter and stabilized with vegetation as soon as grading is accomplished.

5. Spread 6-inch layer of sub-base material evenly over the full width of the road and smooth to avoid depressions.

6. Provide appropriate sediment control measures to prevent offsite sedimentation.

Maintenance

Inspect construction roads and parking areas periodically for condition of surface. Top dress with new gravel as needed. Check ditches for erosion and sedimentation after rainfall events. Maintain vegetation in a healthy, vigorous condition. Areas producing sediment should be treated immediately.

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STANDARD AND SPECIFICATIONS FOR CONCRETE TRUCK WASHOUT

Definition & Scope

A temporary excavated or above ground lined constructed pit where concrete truck mixers and equipment can be washed after their loads have been discharged, to prevent highly alkaline runoff from entering storm drainage systems or leaching into soil.

Conditions Where Practice Applies

Washout facilities shall be provided for every project where concrete will be poured or otherwise formed on the site. This facility will receive highly alkaline wash water from the cleaning of chutes, mixers, hoppers, vibrators, placing equipment, trowels, and screeds. Under no circumstances will wash water from these operations be allowed to infiltrate into the soil or enter surface waters.

Design Criteria

Capacity: The washout facility should be sized to contain solids, wash water, and rainfall and sized to allow for the evaporation of the wash water and rainfall. Wash water shall be estimated at 7 gallons per chute and 50 gallons per hopper of the concrete pump truck and/or discharging drum. The minimum size shall be 8 feet by 8 feet at the bottom and 2 feet deep. If excavated, the side slopes shall be 2 horizontal to 1 vertical.

Location: Locate the facility a minimum of 100 feet from drainage swales, storm drain inlets, wetlands, streams and other surface waters. Prevent surface water from entering the structure except for the access road. Provide appropriate access with a gravel access road sloped down to the structure. Signs shall be placed to direct drivers to the facility after their load is discharged.

Liner: All washout facilities will be lined to prevent leaching of liquids into the ground. The liner shall be plastic sheeting with a minimum thickness of 10 mils with no holes or tears, and anchored beyond the top of the pit with an earthen berm, sand bags, stone, or other structural appurtenance except at the access point.

If pre-fabricated washouts are used they must ensure the capture and containment of the concrete wash and be sized based on the expected frequency of concrete pours. They shall be sited as noted in the location criteria.

Maintenance

- All concrete washout facilities shall be inspected daily. Damaged or leaking facilities shall be deactivated and repaired or replaced immediately. Excess rainwater that has accumulated over hardened concrete should be pumped to a stabilized area, such as a grass filter strip.
- Accumulated hardened material shall be removed when 75% of the storage capacity of the structure is filled. Any excess wash water shall be pumped into a containment vessel and properly disposed of off site.
- Dispose of the hardened material off-site in a construction/demolition landfill. On-site disposal may be allowed if this has been approved and accepted as part of the projects SWPPP. In that case, the material should be recycled as specified, or buried and covered with a minimum of 2 feet of clean compacted earthfill that is permanently stabilized to prevent erosion.
- The plastic liner shall be replaced with each cleaning of the washout facility.
- Inspect the project site frequently to ensure that no concrete discharges are taking place in non-designated areas.

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STANDARD AND SPECIFICATIONS FOR DUST CONTROL

Definition & Scope

The control of dust resulting from land-disturbing activities, to prevent surface and air movement of dust from disturbed soil surfaces that may cause off-site damage, health hazards, and traffic safety problems.

Conditions Where Practice Applies

On construction roads, access points, and other disturbed areas subject to surface dust movement and dust blowing where off-site damage may occur if dust is not controlled.

Design Criteria

Construction operations should be scheduled to minimize the amount of area disturbed at one time. Buffer areas of vegetation should be left where practical. Temporary or permanent stabilization measures shall be installed. No specific design criteria is given; see construction specifications below for common methods of dust control.

Water quality must be considered when materials are selected for dust control. Where there is a potential for the material to wash off to a stream, ingredient information must be provided to the NYSDEC.

No polymer application shall take place without written approval from the NYSDEC.

Construction Specifications

A. **Non-driving Areas** – These areas use products and materials applied or placed on soil surfaces to prevent airborne migration of soil particles.

Vegetative Cover – For disturbed areas not subject to traffic, vegetation provides the most practical method of dust control (see Section 3).

Mulch (including gravel mulch) – Mulch offers a fast effective means of controlling dust. This can also include rolled erosion control blankets.

Spray adhesives – These are products generally composed of polymers in a liquid or solid form that are mixed with water to form an emulsion that is sprayed on the soil surface with typical hydroseeding equipment. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations for the specific soils on the site. In no case should the application of these adhesives be made on wet soils or if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators and others working with the material.

B. **Driving Areas** – These areas utilize water, polymer emulsions, and barriers to prevent dust movement from the traffic surface into the air.

Sprinkling – The site may be sprayed with water until the surface is wet. This is especially effective on haul roads and access route to provide short term limited dust control.

Polymer Additives – These polymers are mixed with water and applied to the driving surface by a water truck with a gravity feed drip bar, spray bar or automated distributor truck. The mixing ratios and application rates will be in accordance with the manufacturer's recommendations. Incorporation of the emulsion into the soil will be done to the appropriate depth based on expected traffic. Compaction after incorporation will be by vibratory roller to a minimum of 95%. The prepared surface shall be moist and no application of the polymer will be made if there is a probability of precipitation within 48 hours of its proposed use. Material Safety Data Sheets will be provided to all applicators working with the material.

Barriers – Woven geo-textiles can be placed on the driving surface to effectively reduce dust throw and particle migration on haul roads. Stone can also be used for construction roads for effective dust control.

Windbreak – A silt fence or similar barrier can control air currents at intervals equal to ten times the barrier height. Preserve existing wind barrier vegetation as much as practical.

Maintenance

Maintain dust control measures through dry weather periods until all disturbed areas are stabilized.

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STANDARD AND SPECIFICATIONS FOR STABILIZED CONSTRUCTION ACCESS

Definition & Scope

A stabilized pad of aggregate underlain with geotextile located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way, street, alley, sidewalk, or parking area. The purpose of stabilized construction access is to reduce or eliminate the tracking of sediment onto public rights-of-way or streets.

Conditions Where Practice Applies

A stabilized construction access shall be used at all points of construction ingress and egress.

Design Criteria

See Figure 2.1 on page 2.31 for details.

Aggregate Size: Use a matrix of 1-4 inch stone, or reclaimed or recycled concrete equivalent.

Thickness: Not less than six (6) inches.

Width: 12-foot minimum but not less than the full width of points where ingress or egress occurs. 24-foot minimum if there is only one access to the site.

Length: As required, but not less than 50 feet (except on a single residence lot where a 30 foot minimum would apply).

Geotextile: To be placed over the entire area to be covered with aggregate. Filter cloth will not be required on a single-family residence lot. Piping of surface water under entrance shall be provided as required. If piping is impossible, a mountable berm with 5:1 slopes will be permitted.

Criteria for Geotextile: The geotextile shall be woven or nonwoven fabric consisting only of continuous chain polymeric filaments or yarns of polyester. The fabric shall be inert to commonly encountered chemicals, hydro-carbons, mildew, rot resistant, and conform to the fabric properties as shown:

Fabric Properties[3]	Light Duty[1] Roads Grade Subgrade	Heavy Duty[2] Haul Roads Rough Graded	Test Method
Grab Tensile Strength (lbs)	200	220	ASTM D1682
Elongation at Failure (%)	50	60	ASTM D1682
Mullen Burst Strength (lbs)	190	430	ASTM D3786
Puncture Strength (lbs)	40	125	ASTM D751 Modified
Equivalent	40-80	40-80	US Std Sieve
Opening Size			CW-02215
Aggregate Depth	6	10	-

[1]Light Duty Road: Area sites that have been graded to subgrade and where most travel would be single axle vehicles and an occasional multi-axle truck. Acceptable materials are Trevira Spunbond 1115, Mirafi 100X, Typar 3401, or equivalent.

[2]Heavy Duty Road: Area sites with only rough grading, and where most travel would be multi-axle vehicles. Acceptable materials are Trevira Spunbond 1135, Mirafi 600X, or equivalent.

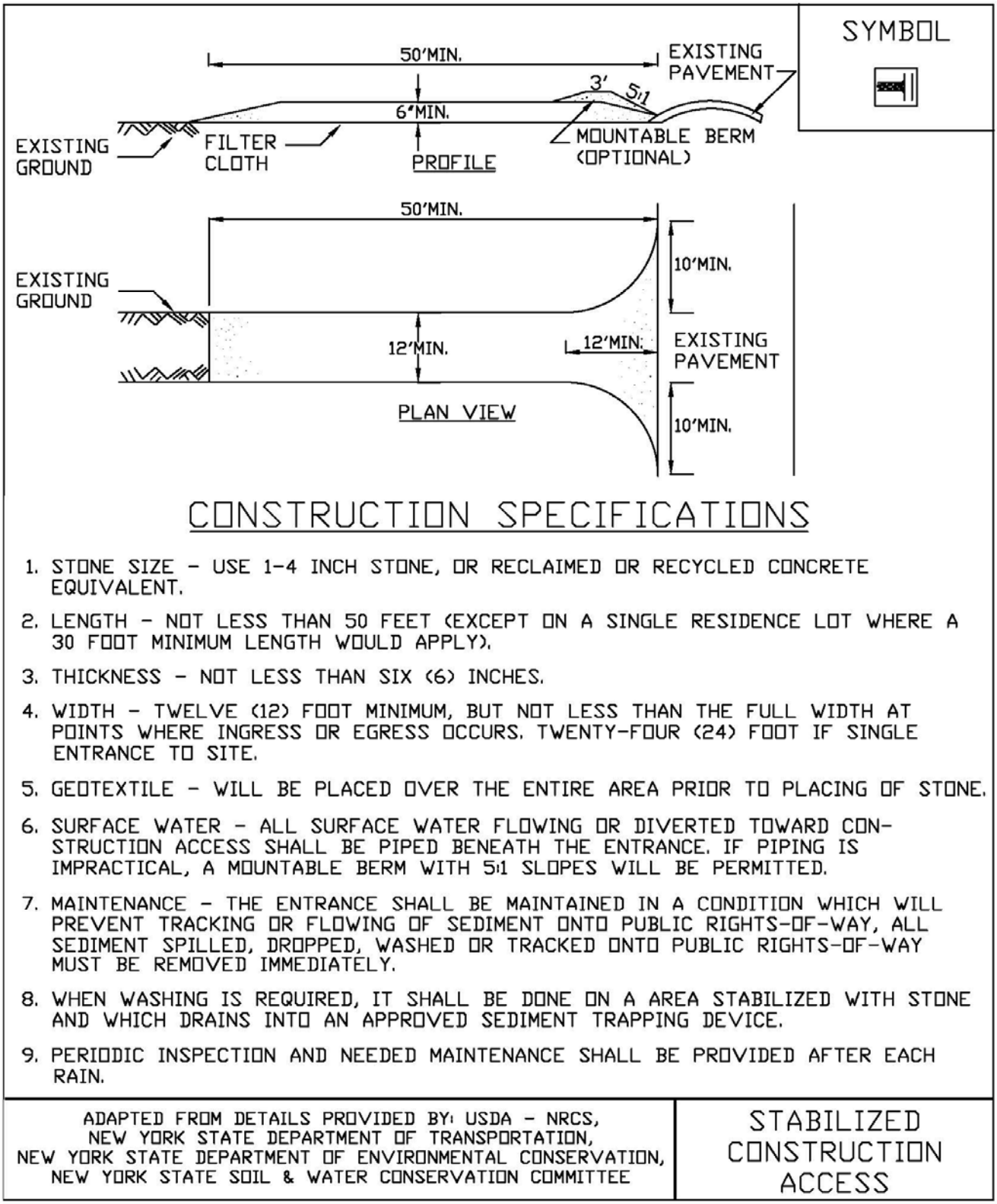
[3]Fabrics not meeting these specifications may be used only when design procedure and supporting documentation are supplied to determine aggregate depth and fabric strength.

Maintenance

The access shall be maintained in a condition which will prevent tracking of sediment onto public rights-of-way or streets. This may require periodic top dressing with additional aggregate. All sediment spilled, dropped, or washed onto public rights-of-way must be removed immediately.

When necessary, wheels must be cleaned to remove sediment prior to entrance onto public rights-of-way. When washing is required, it shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device. All sediment shall be prevented from entering storm drains, ditches, or watercourses.

Figure 2.1
Stabilized Construction Access



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE - USE 1-4 INCH STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ACCESS SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

STABILIZED CONSTRUCTION ACCESS

STANDARD AND SPECIFICATIONS FOR WINTER STABILIZATION

Definition & Scope

A temporary site specific, enhanced erosion and sediment control plan to manage runoff and sediment at the site during construction activities in the winter months to protect off-site water resources.

Conditions Where Practice Applies

This standard applies to all construction activities involved with ongoing land disturbance and exposure between November 15th to the following April 1st.

Design Criteria

1. Prepare a snow management plan with adequate storage for snow and control of melt water, requiring cleared snow to be stored in a manner not affecting ongoing construction activities.

2. Enlarge and stabilize access points to provide for snow management and stockpiling. Snow management activities must not destroy or degrade installed erosion and sediment control practices.

3. A minimum 25 foot buffer shall be maintained from all perimeter controls such as silt fence. Mark silt fence with tall stakes that are visible above the snow pack.

4. Edges of disturbed areas that drain to a waterbody within 100 feet will have 2 rows of silt fence, 5 feet apart, installed on the contour.

5. Drainage structures must be kept open and free of snow and ice dams. All debris, ice dams, or debris from plowing operations, that restrict the flow of runoff and meltwater, shall be removed.

6. Sediment barriers must be installed at all appropriate perimeter and sensitive locations. Silt fence and other practices requiring earth disturbance must be installed before the ground freezes.

7. Soil stockpiles must be protected by the use of established vegetation, anchored straw mulch, rolled stabilization matting, or other durable covering. A barrier must be installed at least 15 feet from the toe of the stockpile to prevent soil migration and to capture loose soil.

8. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures should be initiated by the end of the next business day and completed within three (3) days. Rolled erosion control blankets must be used on all slopes 3 horizontal to 1 vertical or steeper.

9. If straw mulch alone is used for temporary stabilization, it shall be applied at double the standard rate of 2 tons per acre, making the application rate 4 tons per acre. Other manufactured mulches should be applied at double the manufacturer's recommended rate.

10. To ensure adequate stabilization of disturbed soil in advance of a melt event, areas of disturbed soil should be stabilized at the end of each work day unless:

    a. work will resume within 24 hours in the same area and no precipitation is forecast or;

    b. the work is in disturbed areas that collect and retain runoff, such as open utility trenches, foundation excavations, or water management areas.

11. Use stone paths to stabilize access perimeters of buildings under construction and areas where construction vehicle traffic is anticipated. Stone paths should be a minimum 10 feet in width but wider as necessary to accommodate equipment.

Maintenance

The site shall be inspected frequently to ensure that the erosion and sediment control plan is performing its winter stabilization function. If the site will not have earth disturbing activities ongoing during the "winter season", **all** bare exposed soil must be stabilized by established vegetation, straw or other acceptable mulch, matting, rock, or other approved material such as rolled erosion control products. Seeding of areas with mulch cover is preferred but seeding alone is not acceptable for proper stabilization.

Compliance inspections must be performed and reports filed properly in accordance with the SWPPP for all sites under a winter shutdown.

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STANDARD AND SPECIFICATIONS FOR CHECK DAM

Definition & Scope

Small barriers or dams constructed of stone, bagged sand or gravel, or other durable materials across a drainageway to reduce erosion in a drainage channel by reducing the velocity of flow in the channel.

Conditions Where Practice Applies

This practice is used as a **temporary** and, in some cases, a **permanent** measure to limit erosion by reducing velocities in open channels that are degrading or subject to erosion or where permanent stabilization is impractical due to short period of usefulness and time constraints of construction.

Design Criteria

Drainage Area: Maximum drainage area above the check dam shall not exceed two (2) acres.

Height: Not greater than 2 feet. Center shall be maintained 9 inches lower than abutments at natural ground elevation.

Side Slopes: Shall be 2:1 or flatter.

Spacing: The check dams shall be spaced as necessary in the channel so that the crest of the downstream dam is at the elevation of the toe of the upstream dam. This spacing is equal to the height of the check dam divided by the channel slope.

Therefore: $$S = \frac{h}{s}$$

Where: S = spacing interval (ft.)
h = height of check dam (ft.)
s = channel slope (ft./ft.)

Example:

For a channel with a 4% slope and 2 ft. high stone check dams, they are spaced as follows: $$S = \frac{2\ \text{ft}}{0.04\ \frac{\text{ft}}{\text{ft}}} = 50\ \text{ft}$$

For stone check dams: Use a well graded stone matrix 2 to 9 inches in size (NYS – DOT Light Stone Fill meets these requirements).

The overflow of the check dams will be stabilized to resist erosion that might be caused by the check dam. See Figure 3.1 on page 3.3 for details.

Check dams should be anchored in the channel by a cutoff trench 1.5 ft. wide and 0.5 ft. deep and lined with filter fabric to prevent soil migration.

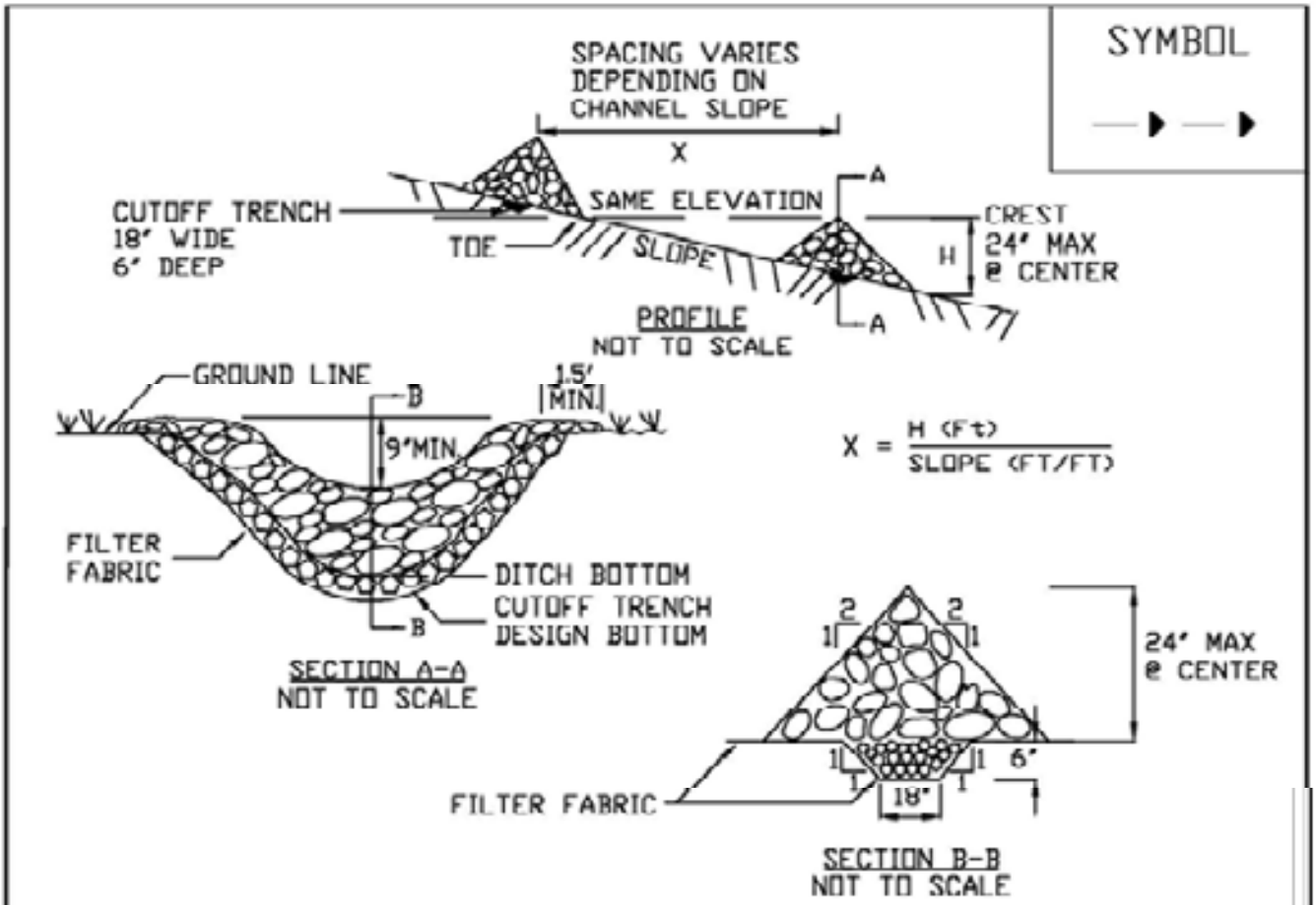
For filter sock or fiber roll check dams: The check dams will be anchored by staking the dam to the earth contact surface. The dam will extend to the top of the bank. The check dam will have a splash apron of NYS DOT #2 crushed stone extending a minimum 3 feet downstream from the dam and 1 foot up the sides of the channel. The compost and materials for a filter sock check dam shall meet the requirements shown in the standard for Compost Filter Sock on page 5.7.

Maintenance

The check dams should be inspected after each runoff event. Correct all damage immediately. If significant erosion has occurred between structures, a liner of stone or other suitable material should be installed in that portion of the channel or additional check dams added.

Remove sediment accumulated behind the dam as needed to allow channel to drain through the stone check dam and prevent large flows from carrying sediment over the dam.

Figure 3.1
Stone Check Dam Detail



CONSTRUCTION SPECIFICATIONS

1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADES AND LOCATIONS SHOWN IN THE PLAN.
2. SET SPACING OF CHECK DAMS TO ASSUME THAT THE ELEVATIONS OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION OF THE TOE OF THE UPSTREAM DAM.
3. EXTEND THE STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
4. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
5. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.

MAXIMUM DRAINAGE AREA 2 ACRES.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

STONE CHECK DAM

STANDARD AND SPECIFICATIONS FOR CONSTRUCTION DITCH

Definition & Scope

A **temporary** excavated drainage way to intercept sediment laden water and divert it to a sediment trapping device or to prevent runoff from entering disturbed areas by intercepting and diverting it to a stabilized outlet.

Conditions Where Practice Applies

Construction ditches are constructed:

1. to divert flows from entering a disturbed area.
2. intermittently across disturbed areas to shorten overland flow distances.
3. to direct sediment laden water along the base of slopes to a trapping device.
4. to transport offsite flows across disturbed areas such as rights-of-way.

Ditches collecting runoff from disturbed areas shall remain in place until the disturbed areas are permanently stabilized.

Design Criteria

See Figure 3.2 on page 3.6 for details.

General

	Ditch A	Ditch B
Drainage Area	<5 Ac	5-10 Ac
Bottom Width of Flow Channel	4 ft.	6 ft.
Depth of Flow Channel	1 ft.	1 ft.
Side Slopes	2:1 or flatter	2:1 or flatter
Grade	0.5% Min. 10% Max.	0.5% Min. 10% Max.

For drainage areas larger than 10 acres, refer to the Standard and Specification for Grassed Waterways on page 3.23 and 3.24.

Stabilization

Stabilization of the ditch shall be completed within 2 days of installation in accordance with the appropriate standard and specifications for vegetative stabilization or stabilization with mulch as determined by the time of year. The flow channel shall be stabilized as per the following criteria:

The seeding for vegetative stabilization shall be in accordance with the standard on Page 4.78. The seeded area will be mulched in accordance with the standard on Page 4.39.

Type of Treatment	Channel Grade[1]	Flow Channel	
		A (<5 Ac.)	B (5-10 Ac.)
1	0.5-3.0%	Seed & Straw Mulch	Seed & Straw Mulch
2	3.1-5.0%	Seed & Straw Mulch	Seed and cover with RECP[2], Sod, or lined with plastic or 2" stone
3	5.1-8.0%	Seed and cover with RECP[2], Sod, or line with plastic or 2 in. stone	Line with 4-8 in. rip-rap or, geotextile
4	8.1-10%	Line with 4-8 in. rip-rap or geotextile	Site Specific Design

1 In highly erodible soils, as defined by the local approving agency, refer to the next higher slope grade for type of stabilization.
2 Rolled Erosion Control Product.

Outlet

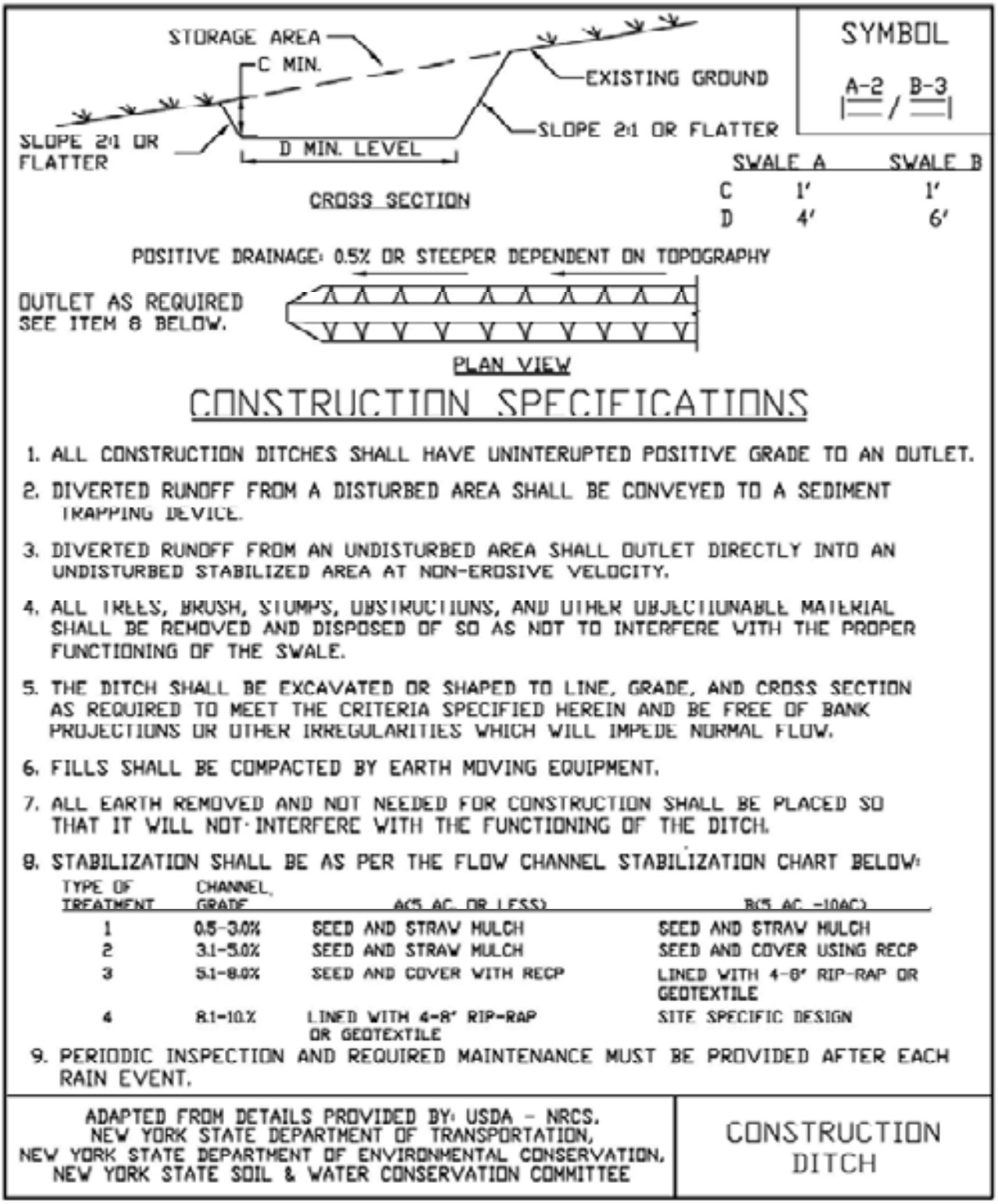
Ditch shall have an outlet that functions with a minimum of erosion, and dissipates runoff velocity prior to discharge off the site.

Runoff shall be conveyed to a sediment trapping device such as a sediment trap or sediment basin until the drainage area above the ditch is adequately stabilized.

The on-site location may need to be adusted to meet field conditions in order to utilize the most suitable outlet condition.

If a ditch is used to divert clean water flows from entering a disturbed area, a sediment trapping device may not be needed.

Figure 3.2
Construction Ditch Detail



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STANDARD AND SPECIFICATIONS FOR DEWATERING SUMP PIT

Discharge of turbid water pumped from the standpipe should be to a sediment trap, sediment basin, filter bag or stabilized area, such as a filter strip. If water from the sump pit will be pumped directly to a storm drain system, filter cloth with an equivalent sieve size between 40-80 should be wrapped around the standpipe to ensure clean water discharge. It is recommended that ¼ to ½ inch hardware cloth be wrapped around and secured to the standpipe prior to attaching the filter cloth. This will increase the rate of water seepage into the standpipe.

Definition & Scope

A **temporary** pit which is constructed using pipe and stone for pumping excessive water from excavations to a suitable discharge area.

Conditions Where Practice Applies

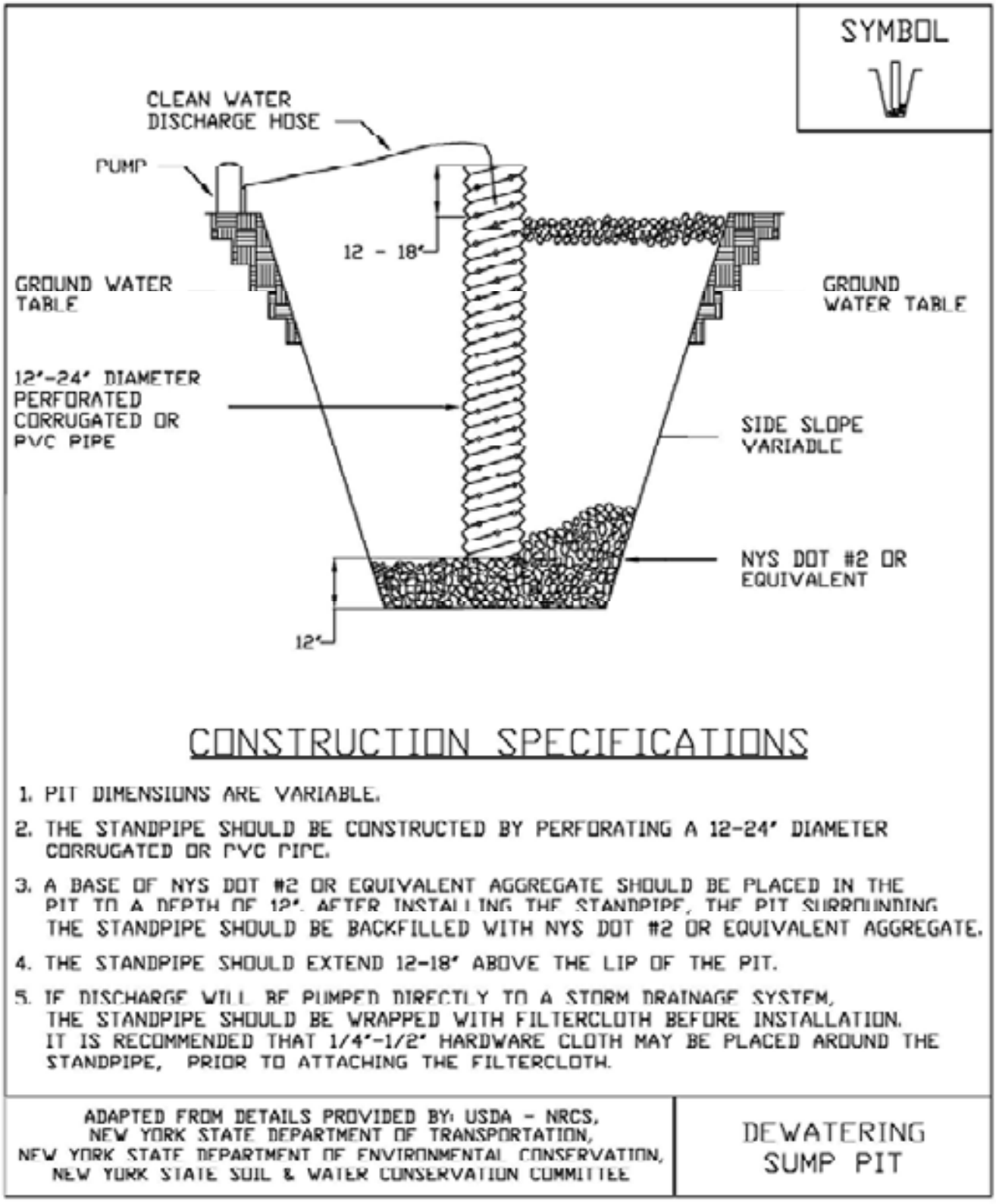
Sump pits are constructed when water collects during the excavation phase of construction. This practice is particularly useful in urban areas during excavation for building foundations. It may also be necessary during construction activities that encounter high ground water tables in floodplain locations.

Design Criteria

The number of sump pits and their locations shall be determined by the contractor/engineer. A design is not required, but construction should conform to the general criteria outlined on Figure 3.3 on page 3.8.

A perforated vertical standpipe is placed in the center of the pit and surrounded with a stone screening material to collect filtered water. Water is then pumped from the center of the pipe to a suitable discharge area.

Figure 3.3
Dewatering Sump Pit Detail



STANDARD AND SPECIFICATIONS FOR DIVERSION

Definition & Scope

A drainage way of parabolic or trapezoidal cross-section with a supporting ridge on the lower side that is constructed across the slope to intercept and convey runoff to stable outlets at non-erosive velocities.

Conditions Where Practice Applies

Diversions are used where:

1. Runoff from higher areas has potential for damaging properties, causing erosion, or interfering with, or preventing the establishment of, vegetation on lower areas.

2. Surface and/or shallow subsurface flow is damaging sloping upland.

3. The length of slopes needs to be reduced so that soil loss will be kept to a minimum.

Diversions are only applicable below stabilized or protected areas. Avoid establishment on slopes greater than fifteen percent. Diversions should be used with caution on soils subject to slippage. Construction of diversions shall be in compliance with state and local drainage and water laws.

Design Criteria

Location

Diversion location shall be determined by considering outlet conditions, topography, land use, soil type, length of slope, seep planes (when seepage is a problem), and the development layout.

Capacity

Peak rates of runoff values used in determining the capacity requirements shall be calculated using the most current hydrologic data from the Northeast Regional Climate Center in an appropriate model.

The constructed diversion shall have capacity to carry, as a minimum, the peak discharge from a 10 year frequency rainfall event with freeboard of not less than 0.3 feet.

Diversions designed to protect homes, schools, industrial buildings, roads, parking lots, and comparable high-risk areas, and those designed to function in connection with other structures, shall have sufficient capacity to carry peak runoff expected from a storm frequency consistent with the hazard involved.

Cross Section

The diversion channel shall be parabolic or trapezoidal in shape. Parabolic Diversion design charts are provided in Tables 3.2, 3.3 and 3.4 on pages 3.10, 3.12 and 3.13**.** The diversion shall be designed to have stable side slopes. The side slopes shall not be steeper than 2:1 and shall be flat enough to ensure ease of maintenance of the diversion and its protective vegetative cover.

The ridge shall have a minimum width of four feet at the design water elevation; a minimum of 0.3 feet freeboard and a reasonable settlement factor shall be provided.

Velocity and Grade

The permissible velocity for the specified method of stabilization will determine the maximum grade. Maximum permissible velocities of flow for the stated conditions of stabilization shall be as shown in Table 3.1 on page 3.10 of this standard.

Diversions are not usually applicable below high sediment producing areas unless land treatment practices or structural measures, designed to prevent damaging accumulations of sediment in the channels, are installed with, or before, the diversions.

Outlets

Each diversion must have an adequate outlet. The outlet may be a grassed waterway, vegetated or paved area, grade stabilization structure, flow spreader, flow diffuser, stable watercourse, or subsurface drain outlet. In all cases, the outlet must convey runoff to a point where outflow will not cause damage. Vegetated outlets shall be installed before diversion construction, if needed, to ensure establishment of

vegetative cover in the outlet channel.

The design elevation of the water surface in the diversion shall not be lower than the design elevation of the water surface in the outlet at their junction when both are operating at design flow.

Stabilization

Vegetated diversions shall be stabilized in accordance with the following tables.

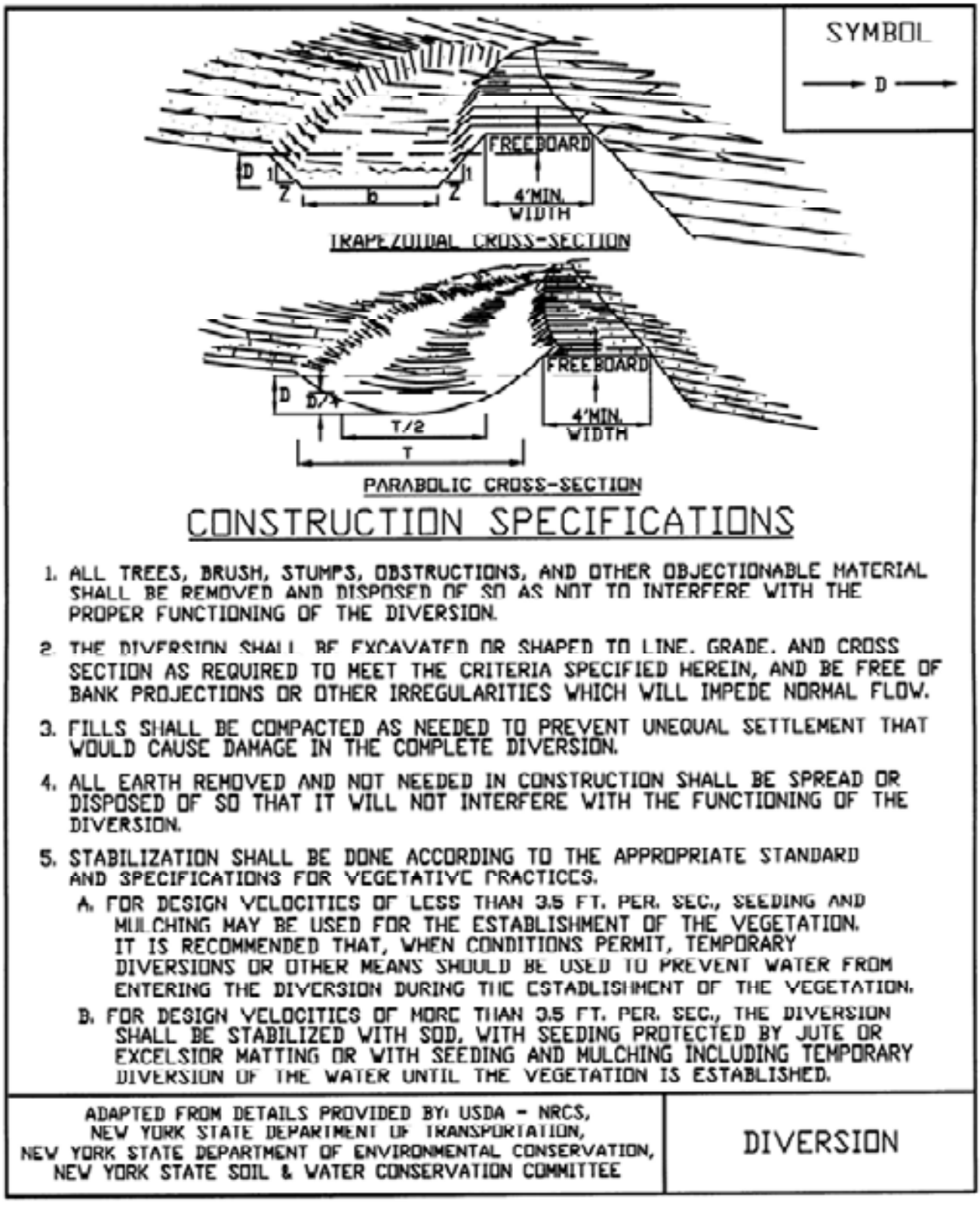
Table 3.1
Diversion Maximum Permissible Design Velocities Table

Soil Texture	Retardance and Cover	Permissible Velocity (ft / second) for Selected Channel Vegetation
Sand, Silt, Sandy loam, silty loam, loamy sand (ML, SM, SP, SW)	C-Kentucky 31 tall fescue and Kentucky bluegrass	3.0
	D-Annuals[1] Small grain (rye, oats, barley, millet) Ryegrass	2.5
Silty clay loam, Sandy clay loam (ML-CL, SC)	C-Kentucky 31 tall fescue and Kentucky bluegrass	4.0
	D-Annuals[1] Small grain (rye, oats, barley, millet) Ryegrass	3.5
Clay (CL)	C-Kentucky 31 tall fescue and Kentucky bluegrass	5.0
	D-Annuals[1] Small grain (rye, oats, barley, millet) Ryegrass	4.0
[1] Annuals—Use only as temporary protection until permanent vegetation is established.		

Table 3.2 - Retardance Factors for Various Grasses and Legumes Table

Retardance	Cover	Condition
A	Reed canarygrass	Excellent stand, tall (average 36 inches)
B	Smooth bromegrass	Good stand, mowed (average 12 to 15 inches)
	Tall fescue	Good stand, unmowed (average 18 inches)
	Grass-legume mixture—Timothy, smooth bromegrass, or Orchard grass with birdsfoot trefoil	Good stand, uncut (average 20 inches)
	Reed canarygrass	Good stand, mowed (average 12 to 15 inches)
	Tall fescue, with birdsfoot trefoil or ladino clover	Good stand, uncut (average 18 inches)
C	Redtop	Good stand, headed (15 to 20 inches)
	Grass-legume mixture—summer (Orchard grass, redtop, Annual ryegrass, and ladino or white clover)	Good stand, uncut (6 to 8 inches)
	Kentucky bluegrass	Good stand, headed (6 to 12 inches)
D	Red fescue	Good stand, headed (12 to 18 inches)
	Grass-legume mixture—fall, spring (Orchard grass, redtop, Annual ryegrass, and white or ladino clover)	Good stand, uncut (4 to 5 inches)

Figure 3.4
Diversion Detail



CONSTRUCTION SPECIFICATIONS

1. ALL TREES, BRUSH, STUMPS, OBSTRUCTIONS, AND OTHER OBJECTIONABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF SO AS NOT TO INTERFERE WITH THE PROPER FUNCTIONING OF THE DIVERSION.
2. THE DIVERSION SHALL BE EXCAVATED OR SHAPED TO LINE, GRADE, AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED HEREIN, AND BE FREE OF BANK PROJECTIONS OR OTHER IRREGULARITIES WHICH WILL IMPEDE NORMAL FLOW.
3. FILLS SHALL BE COMPACTED AS NEEDED TO PREVENT UNEQUAL SETTLEMENT THAT WOULD CAUSE DAMAGE IN THE COMPLETE DIVERSION.
4. ALL EARTH REMOVED AND NOT NEEDED IN CONSTRUCTION SHALL BE SPREAD OR DISPOSED OF SO THAT IT WILL NOT INTERFERE WITH THE FUNCTIONING OF THE DIVERSION.
5. STABILIZATION SHALL BE DONE ACCORDING TO THE APPROPRIATE STANDARD AND SPECIFICATIONS FOR VEGETATIVE PRACTICES.
   A. FOR DESIGN VELOCITIES OF LESS THAN 3.5 FT. PER. SEC., SEEDING AND MULCHING MAY BE USED FOR THE ESTABLISHMENT OF THE VEGETATION. IT IS RECOMMENDED THAT, WHEN CONDITIONS PERMIT, TEMPORARY DIVERSIONS OR OTHER MEANS SHOULD BE USED TO PREVENT WATER FROM ENTERING THE DIVERSION DURING THE ESTABLISHMENT OF THE VEGETATION.
   B. FOR DESIGN VELOCITIES OF MORE THAN 3.5 FT. PER. SEC., THE DIVERSION SHALL BE STABILIZED WITH SOD, WITH SEEDING PROTECTED BY JUTE OR EXCELSIOR MATTING OR WITH SEEDING AND MULCHING INCLUDING TEMPORARY DIVERSION OF THE WATER UNTIL THE VEGETATION IS ESTABLISHED.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
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DIVERSION

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STANDARD AND SPECIFICATIONS FOR EARTH DIKE

Definition & Scope

A **temporary** berm or ridge of compacted soil, located in such a manner as to channel water to a desired location. Its purpose is to direct runoff to a sediment trapping device, thereby reducing the potential for erosion and off site sedimentation. Earth dikes can also be used for diverting clean water away from disturbed areas.

Conditions Where Practice Applies

Earth dikes are often constructed across disturbed areas and around construction sites such as graded parking lots and subdivisions. The dikes shall remain in place until the disturbed areas are permanently stabilized.

Design Criteria

See Figure 3.5 on page 3.15 for details.

General

	Dike A	Dike B
Drainage Area	<5 Ac	5-10 Ac
Dike Height	18 in.	36 in.
Dike Width	24 in.	36 in.
Flow Width	4 ft.	6 ft.
Flow Depth in Channel	8 in.	15 in.
Side Slopes	2:1 or flatter	2:1 or flatter
Grade	0.5% Min. 10% Max.	0.5% Min. 10% Max.

For drainage areas larger than 10 acres, refer to the Standard and Specifications for Diversion on page 3.9.

Stabilization

Stabilization of the dike shall be completed within 2 days of installation in accordance with the standard and specifications for seed and straw mulch or straw mulch only if not in seeding season. The flow channel shall be stabilized as per the following criteria:

Type of Treatment	Channel Grade[1]	Flow Channel	
		A (<5 Ac.)	B (5-10 Ac.)
1	0.5-3.0%	Seed & Straw Mulch	Seed & Straw Mulch
2	3.1-5.0%	Seed & Straw Mulch	Seed and cover with RECP, sod, or lined with plastic or 2" stone
3	5.1-8.0%	Seed and cover with RECP, Sod, or line with plastic or 2 in. stone	Line with 4-8 in. rip-rap or, geotextile
4	8.1-10%	Line with 4-8 in. rip-rap or geotextile	Site Specific Design

1 In highly erodible soils, as defined by the local approving agency, refer to the next higher slope grade for type of stabilization.

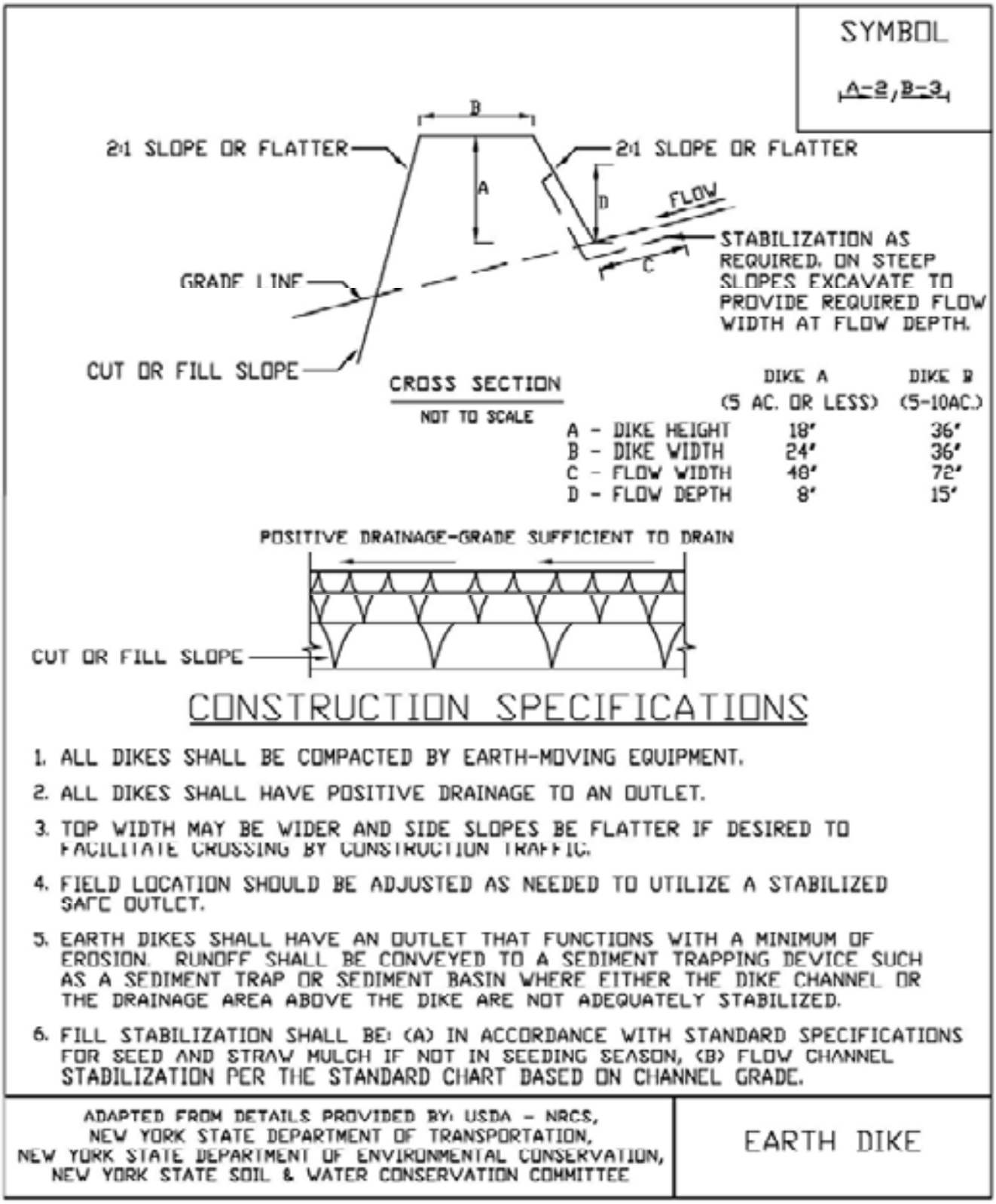
Outlet

Earth dikes shall have an outlet that functions with a minimum of erosion.

Runoff shall be conveyed to a sediment trapping device until the drainage area above the dike is adequately stabilized.

The on-site location may need to be adjusted to meet field conditions in order to utilize the most suitable outlet.

Figure 3.5
Earth Dike Detail



STANDARD AND SPECIFICATIONS FOR FLOW DIFFUSER

Definition & Scope

A permanent non-erosive outlet for concentrated runoff constructed to diffuse flow uniformly through a stone matrix onto a stablilized area in the form of shallow, low velocity, sheet flow.

Conditions Where Practice Applies

Where sediment-free stormwater runoff can be released in low velocity sheet flow down stabilized areas without causing erosion; where the ground slope at the outlet of the diffuser is less than 30% and the runoff will not re-concentrate after release; and where construction of a flow spreader is not practicable.

Design Criteria

1. **Drainage area:** The maximum drainage area to the diffuser may not exceed 0.10 acre per foot length of the flow diffuser. The drainage area served by the diffuser discharging directly cannot be 10-20% more than half the size of the receiving buffer area.

2. **Discharge from diffuser onto receiving area:** The peak stormwater flow rate from a flow diffuser onto a receiving area from a 10-year 24-hour storm must be less than 0.25 cubic feet per second (0.25 cfs) per linear foot of weir crest length.

3. **Receiving area of buffer:** Each flow diffuser shall have a vegetated receiving area with a minimum continuous length of 150 feet and the capacity to pass the flow without erosion. The receiving area shall be stable prior to the construction of the flow diffuser. The receiving area shall have topography regular enough to prevent undue flow concentration before entering a stable watercourse but it shall have a slope that is less than 30%. If the receiving area is not presently stable, then the receiving area shall be stabilized prior to construction of the flow diffuser. The receiving area below the flow diffuser shall be protected from harm during construction. Sodding and/or turf reinforcement mat (TRM) in combination with vegetative measures shall stabilize disturbed areas. The receiving area shall not be used by the flow diffuser until stabilization has been accomplished. A temporary diversion may be necessary in this case.

4. **Cross-section:** The minimum stone diffuser cross-section shall be trapezoidal with a height of 1 foot above natural ground; top width equal to 2 foot and side slope equal to 1 horizontal to 1 vertical. The storage area behind the diffuser shall be excavated to a depth of 1 foot and overall width of storage area equal to 6 feet minimum.

5. **Sizing the diffuser:** The length of the stone diffuser is governed by the size of the stone in the structure, the height of the diffuser, and the flow length through it. The following equation is used to establish the design of the diffuser:

$$Q_d = \frac{h^{3/2} W}{[(\frac{L}{D}) + 2.5 + L^2]^{0.5}}$$

Where:

Q_d = Outflow through the stone diffuser (cfs)
h = Ponding depth behind the diffuser (ft.)
W = Linear length of the diffuser along centerline (ft.)
L = Average horizontal flow length through the diffuser perpendicular to the centerline (ft.)
D = Average stone diameter (d_{50}) in the structure (ft.)

The maximum d_{50} size shall be 9" or 0.75'.

The designer shall calculate the length of diffuser needed depending on the geometry of the cross-section and rock size to be used recognizing that the maximum allowable discharge through the diffuser shall be 0.25 cfs per foot of length.

Once the discharge is calculated for the 10 year storm for the drainage area to the diffuser (Q_{10}) it can be divided by the design discharge of the diffuser to determine the diffuser length as follows:

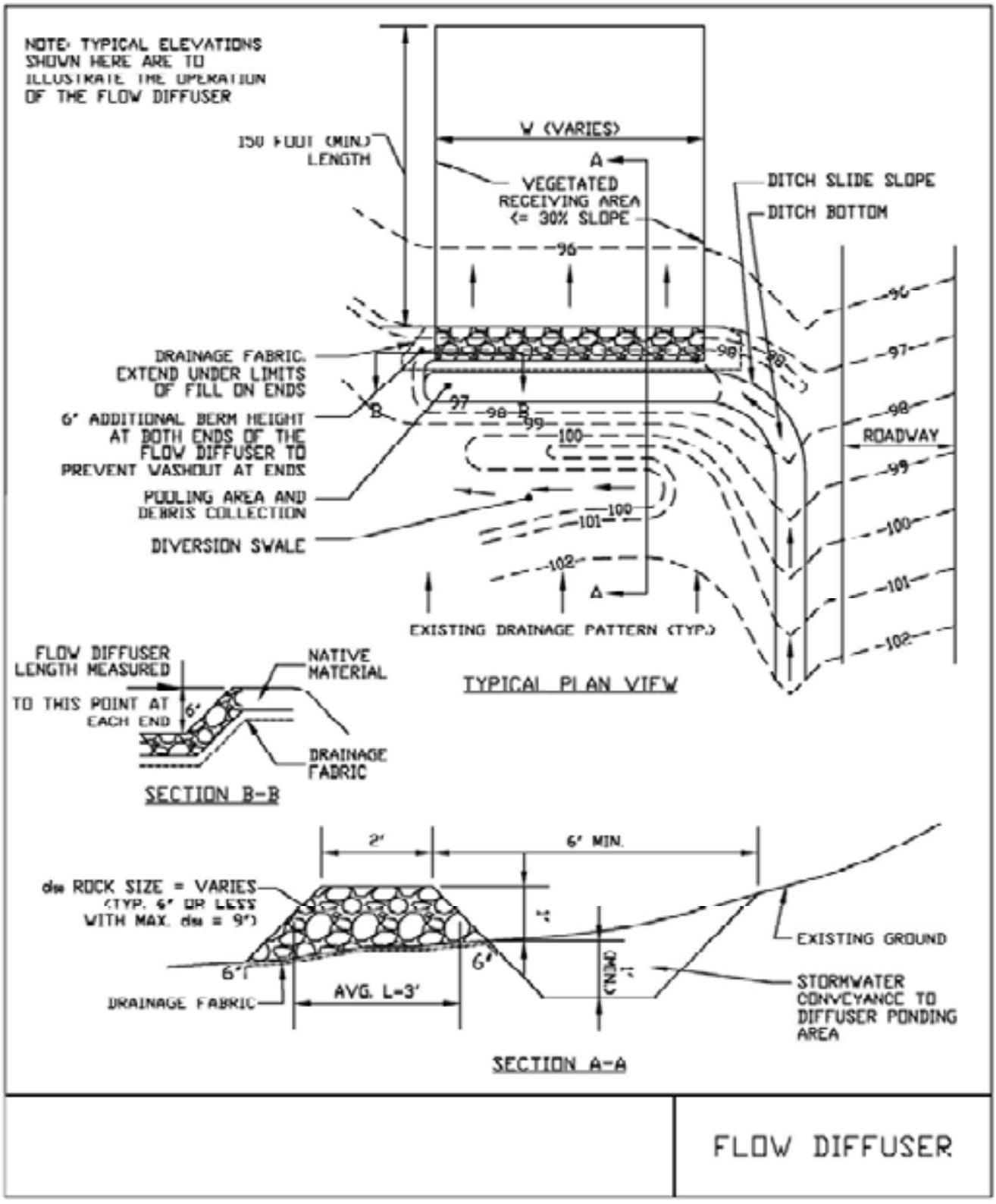
$$W = \frac{Q_{10}}{Q_d}$$

Where:

Q_d = Outflow through the stone diffuser (cfs/ft)
Q_{10} = Discharge rate for the 10 year storm (cfs)
W = Linear length of the diffuser along centerline (ft.)

Design examples are shown in Appendix B.

Figure 3.6
Flow Diffuser Detail



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STANDARD AND SPECIFICATIONS FOR FLOW SPREADER

Definition & Scope

A **permanent or temporary,** non-erosive outlet for concentrated runoff, constructed to disperse concentrated flow uniformly over a hardened weir into a stabilized area as shallow, low velocity, sheet flow.

Conditions Where Practice Applies

Where sediment-free storm runoff can be released in sheet flow down a stabilized slope without causing erosion; where a hardened level weir can be constructed without filling; where the area below the weir is uniform with a slope of 10% or less and the runoff will not re-concentrate after release; and where no traffic will disturb the flow spreader.

Design Criteria

1. **Drainage area:** The maximum drainage area to the spreader may not exceed 5 acres.

2. **Discharge to a flow spreader:** The peak stormwater flow rate to a flow spreader due to runoff from a 10-year 24-hour storm must be less than 0.5 cubic feet per second (0.5 cfs) per foot length of flow spreader lip.

3. **Length of flow spreader:** The flow spreader length may not be more than 30 feet if flow is entering from one end of the spreader. Longer lengths require flow to split evenly from the center of the spreader.

4. **Receiving area of buffer:** Each flow spreader shall have a vegetated receiving area with the capacity to pass the flow without erosion. The receiving area shall be stable prior to the construction of the flow spreader. The receiving area shall have topography regular enough to prevent undue flow concentration before entering a stable watercourse but it shall have a slope that is less than 10%. If the receiving area is not presently stable, then the receiving area shall be stabilized prior to construction of the flow spreader. The receiving area below the flow spreader shall be protected from harm during construction. Sodding and/or turf reinforced mat in combination with vegetative measures shall stabilize disturbed areas. The receiving area shall not be used by the flow spreader until stabilization has been accomplished. A temporary diversion may be necessary in this case.

5. **Weir:** The weir of the flow spreader should consist of a pressure treated 2"x12" timber plank laid on edge and set at level elevation perpendicular to flow. Alternate hardened weir structures may be used as long as a hard, durable, continuous weir is maintained.

6. **Channel:** The flow spreader entrance channel shall be a minimum of 1 foot deep with a minimum 2 foot bottom width to trap sediment and reduce lateral flow velocities. Side slopes shall be 2:1 or flatter. The channel shall be constructed with a 0% grade to ensure uniform flow distribution. Velocity entering the channel shall be reduced to ensure non-erosive low approach velocity in the weir.

7. **Maintenance:** Long term maintenance of the flow spreader is essential to ensure its continued effectiveness. The following provisions should be followed. In the first year the flow spreader should be inspected semi annually and following major storm events for any signs of channelization and should be immediately repaired. After the first year, annual inspection should be sufficient. Spreaders constructed of wood, asphalt, stone or concrete curbing require periodic inspection to check for damage and to be repaired as needed.

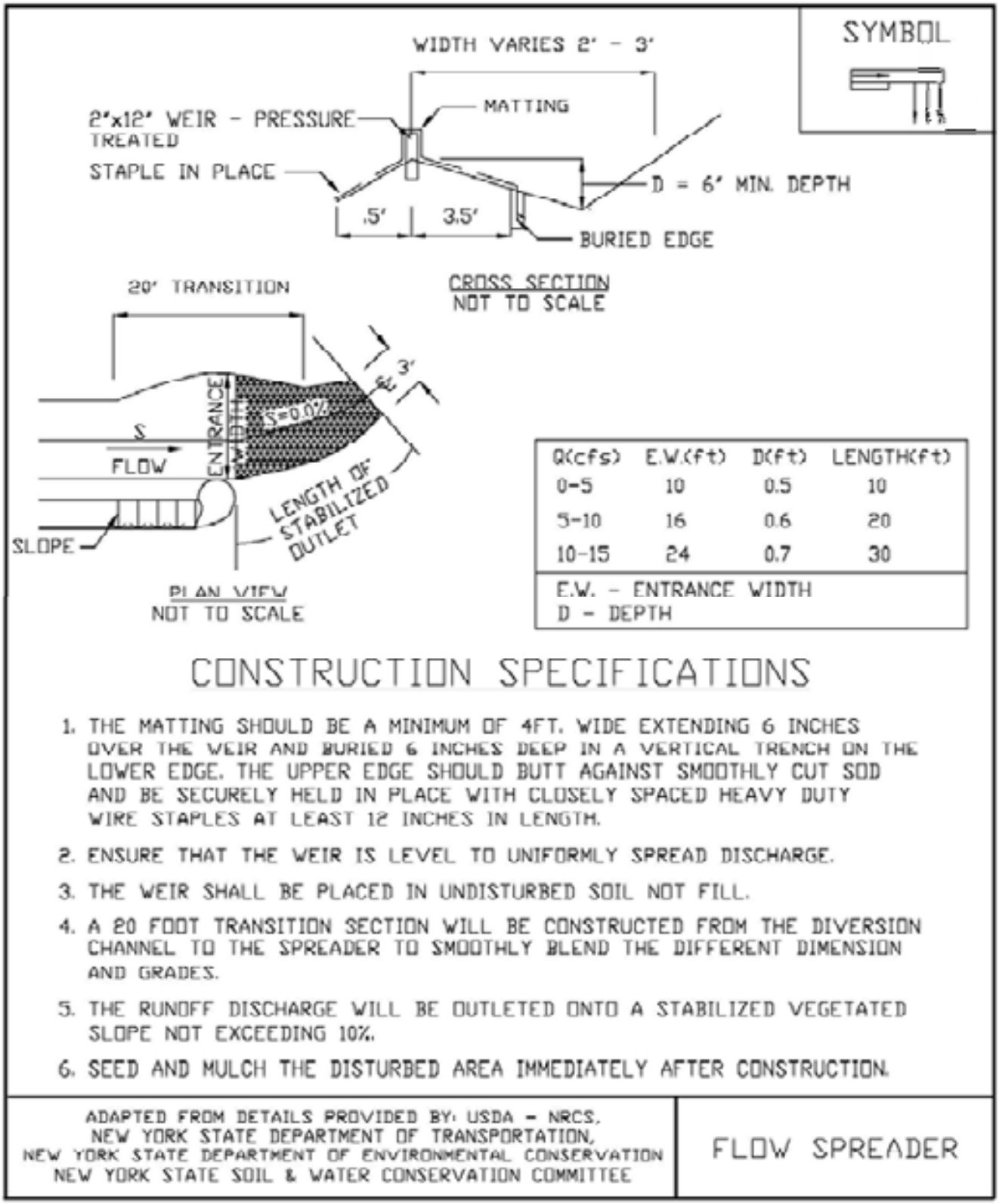
   A. **Inspections:** At least once a year, the spreader pool should be inspected for sand accumulation and debris that may reduce capacity.

   B. **Maintenance Access:** Flow spreaders should be sited to provide easy access for removal of accumulated sediment and rehabilitation of the berm.

   C. **Debris Removal:** Debris buildup within the channel should be removed when it has accumulated to approximately 10 to 20% of design volume or channel capacity. Remove debris such as leaf litter, branches, tree growth and any sediment build-up from the spreader and dispose of appropriately.

   D. **Mowing:** Vegetated spreaders may require

Figure 3.7
Flow Spreader Detail



Q(cfs)	E.W.(ft)	D(ft)	LENGTH(ft)
0-5	10	0.5	10
5-10	16	0.6	20
10-15	24	0.7	30

E.W. - ENTRANCE WIDTH
D - DEPTH

CONSTRUCTION SPECIFICATIONS

1. THE MATTING SHOULD BE A MINIMUM OF 4FT. WIDE EXTENDING 6 INCHES OVER THE WEIR AND BURIED 6 INCHES DEEP IN A VERTICAL TRENCH ON THE LOWER EDGE. THE UPPER EDGE SHOULD BUTT AGAINST SMOOTHLY CUT SOD AND BE SECURELY HELD IN PLACE WITH CLOSELY SPACED HEAVY DUTY WIRE STAPLES AT LEAST 12 INCHES IN LENGTH.
2. ENSURE THAT THE WEIR IS LEVEL TO UNIFORMLY SPREAD DISCHARGE.
3. THE WEIR SHALL BE PLACED IN UNDISTURBED SOIL NOT FILL.
4. A 20 FOOT TRANSITION SECTION WILL BE CONSTRUCTED FROM THE DIVERSION CHANNEL TO THE SPREADER TO SMOOTHLY BLEND THE DIFFERENT DIMENSION AND GRADES.
5. THE RUNOFF DISCHARGE WILL BE OUTLETED ONTO A STABILIZED VEGETATED SLOPE NOT EXCEEDING 10%.
6. SEED AND MULCH THE DISTURBED AREA IMMEDIATELY AFTER CONSTRUCTION.

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NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
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FLOW SPREADER

STANDARD AND SPECIFICATIONS FOR PERIMETER DIKE/SWALE

Definition & Scope

A **temporary** ridge of soil formed by excavating an adjoining swale located along the perimeter of the site or disturbed area. Its purpose is to prevent off site storm run-on from entering a disturbed area and to prevent sediment laden storm runoff from leaving the construction site or disturbed area.

Conditions Where Practice Applies

Perimeter dike/swale is constructed to divert flows from entering a disturbed area, or along tops of slopes to prevent flows from eroding the slope, or along base of slopes to direct sediment laden flows to a trapping device.

The perimeter dike/swale shall remain in place until the disturbed areas are permanently stabilized.

Design Criteria

See Figure 3.14 on page 3.36 for details.

The perimeter dike/swale shall not be constructed outside property lines or setbacks without obtaining legal easements from affected adjacent property owners. A design is not required for perimeter dike/swale. The following criteria shall be used:

Drainage area – Less than 2 acres (for drainage areas larger than 2 acres but less than 10 acres, see earth dike or construction ditch; for drainage areas larger than 10 acres, see standard and specifications for diversion).

Height – 18 inches minimum from bottom of swale to top of dike evenly divided between dike height and swale depth.

Bottom width of dike – 2 feet minimum.

Width of swale – 2 feet minimum.

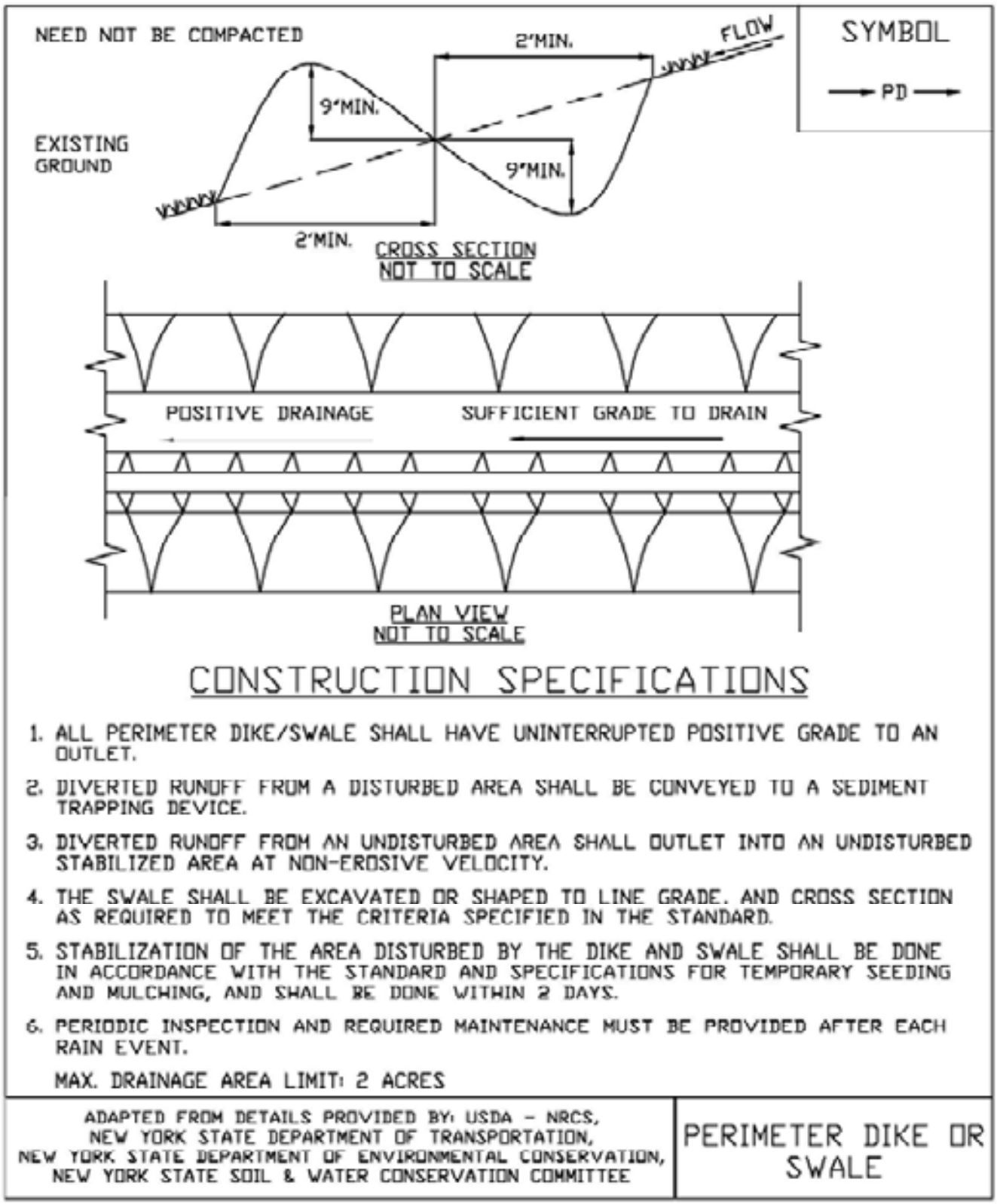
Grade – Dependent upon topography, but shall have positive drainage (sufficient grade to drain) to an adequate outlet. Maximum allowable grade not to exceed 8 percent.

Stabilization – The disturbed area of the dike and swale shall be stabilized within 2 days of installation, in accordance with the standard and specifications for construction ditch (page 3.4).

Outlet

1. Perimeter dike/swale shall have a stabilized outlet.
2. Diverted runoff from a protected or stabilized upland area shall outlet directly onto an undisturbed stabilized area.
3. Diverted runoff from a disturbed or exposed upland area shall be conveyed to a sediment trapping device such as a sediment trap, sediment basin, or to an area protected by any of these practices.
4. The on-site location may need to be adjusted to meet field conditions in order to utilize the most suitable outlet.

Figure 3.14
Perimeter Dike/Swale Detail



CONSTRUCTION SPECIFICATIONS

1. ALL PERIMETER DIKE/SWALE SHALL HAVE UNINTERRUPTED POSITIVE GRADE TO AN OUTLET.
2. DIVERTED RUNOFF FROM A DISTURBED AREA SHALL BE CONVEYED TO A SEDIMENT TRAPPING DEVICE.
3. DIVERTED RUNOFF FROM AN UNDISTURBED AREA SHALL OUTLET INTO AN UNDISTURBED STABILIZED AREA AT NON-EROSIVE VELOCITY.
4. THE SWALE SHALL BE EXCAVATED OR SHAPED TO LINE GRADE, AND CROSS SECTION AS REQUIRED TO MEET THE CRITERIA SPECIFIED IN THE STANDARD.
5. STABILIZATION OF THE AREA DISTURBED BY THE DIKE AND SWALE SHALL BE DONE IN ACCORDANCE WITH THE STANDARD AND SPECIFICATIONS FOR TEMPORARY SEEDING AND MULCHING, AND SHALL BE DONE WITHIN 2 DAYS.
6. PERIODIC INSPECTION AND REQUIRED MAINTENANCE MUST BE PROVIDED AFTER EACH RAIN EVENT.

MAX. DRAINAGE AREA LIMIT: 2 ACRES

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PERIMETER DIKE OR SWALE

STANDARD AND SPECIFICATIONS FOR PIPE SLOPE DRAIN

Definition & Scope

A **temporary** structure placed from the top of a slope to the bottom of a slope to convey surface runoff down slopes without causing erosion.

Conditions Where Practice Applies

Pipe slope drains are used where concentrated flow of surface runoff must be conveyed down a slope in order to prevent erosion. The maximum allowable drainage area shall be 3.5 acres.

Design Criteria

See Figure 3.15 on page 3.38 for details.

General

Size	Pipe/Tubing Diameter (in.)	Maximum Drainage Area (Ac.)
PSD-12	12	0.5
PSD-18	18	1.5
PSD-21	21	2.5
PSD-24	24	3.5

Inlet

The minimum height of the containment dike at the entrance to the pipe slope drain shall be the diameter of the pipe (D) plus 12 inches.

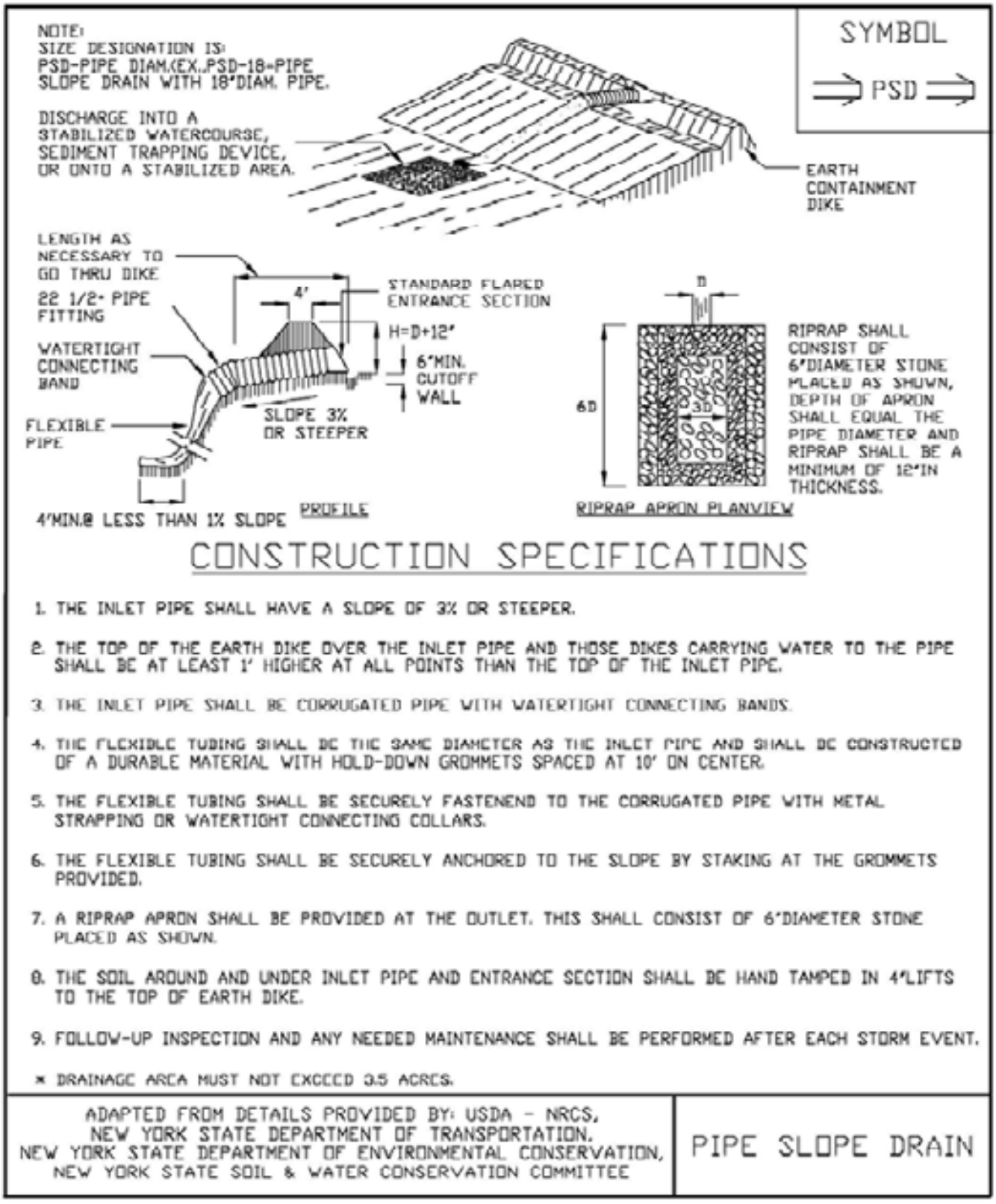
Outlet

The pipe slope drain shall outlet into a sediment trapping device when the drainage area is disturbed. A riprap apron shall be installed at all pipe outlet locations where water is being discharged.

Construction Specifications

1. The pipe slope drain shall have a slope of 3 percent or steeper.
2. The top of the containment dike over the inlet pipe, and those dikes carrying water to the pipe, shall be at least one (1) foot higher at all points than the top of the inlet pipe.
3. Corrugated plastic pipe or equivalent shall be used with watertight connecting bands.
4. A flared end section shall be attached to the inlet end of pipe with a watertight connection.
5. The soil around and under the pipe and end section shall be hand tamped in 4 in. lifts to the top of the earth dike.
6. Where flexible tubing is used, it shall be the same diameter as the inlet pipe and shall be constructed of a durable material with hold down grommets spaced 10 ft. on centers.
7. The flexible tubing shall be securely fastened to the corrugated plastic pipe with metal strapping or watertight connecting collars.
8. The flexible tubing shall be securely anchored to the slope by staking at the grommets provided.
9. Where a pipe slope drain outlets into a sediment trapping device, it shall discharge at the riser crest or weir elevation.
10. A riprap apron shall be used at all pipe outlet locations. See Figure 3.15 on page 3.38 .
11. Inspection and any needed maintenance shall be performed after each storm event.

Figure 3.15
Pipe Slope Drain Detail



STANDARD AND SPECIFICATIONS FOR STORM DRAIN DIVERSION

Definition & Scope

The **temporary** redirection of a storm drain line or outfall channel so that it may discharge into a sediment trapping device in order to prevent sediment laden water from entering a watercourse, public or private property through a storm drain system. This could either be above ground or an underground conveyance system to convey sediment laden water to a sediment trapping device.

Conditions Where Practice Applies

One of the following practices or procedures shall be used whenever the off-site drainage area is less than 50 percent of the on-site drainage area to that system. A special exception may be given, at the discretion of the local plan approval agency, where site conditions make this procedure impossible.

Method of Temporary Diversion

1. Construction of a sediment trap or basin below a permanent storm drain outfall. Temporarily diverts storm flow into the basin or trap constructed below permanent outfall channel.

2. In-line diversion of storm drain at an inlet or manhole, achieved by installing a pipe stub in the side of a manhole or inlet and temporarily blocking the permanent outfall pipe from that structure. A temporary outfall ditch or pipe may be used to convey storm flow from the stub to a sediment trap or basin. This method may be used just above a permanent outfall or prior to connecting into an existing storm drain system.

3. Delay completion of the permanent storm drain outfall and temporarily divert storm flow into a sediment basin or trap. Earth dike, swale or design diversion is used, depending on the drainage area, to direct flow into a sediment basin or trap. The basin or trap should be constructed to one side of the proposed permanent storm drain location whenever possible.

4. Installation of a stormwater management basin early in the construction sequence. Install temporary measures to allow use of this site as a sediment basin. Since these structures are designed to receive storm drain outfalls, diversion should not be necessary.

Completion and Disposition

When the areas contributing sediment to the system have been stabilized, procedures can be taken to restore the system to its planned use.

The following removal and restoration procedure is recommended:

1. Flush the storm drain system to remove any accumulated sediment.

2. Remove the sediment control devices, such as traps, basins, dikes, swales, etc.

3. For sites where an inlet was modified, brick and grout shut the temporary pipe stub and open the permanent outfall pipe.

4. Establish permanent stabilized outfall channel as noted on the plans.

5. Restore the area to grades shown on the plan and stabilize with vegetative measures.

6. For basins that will be incorporated into stormwater management facilities, remove the accumulated sediment, construct the stormwater facility as designed, and seed all disturbed areas to permanent vegetation.

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STANDARD AND SPECIFICATIONS FOR SUBSURFACE DRAIN

Definition & Scope

A **permanent** conduit, such as tile, pipe, or tubing, installed beneath the ground surface, which intercepts, collects, and/or conveys drainage water to serve one or more of the following purposes:

1. Improve the environment for vegetative growth by regulating the water table and groundwater flow.
2. Intercept and prevent water movement into a wet area.
3. Relieve artesian pressures.
4. Remove surface runoff.
5. Provide internal drainage of slopes to improve their stability and reduce erosion.
6. Provide internal drainage behind bulkheads, retaining walls, etc.
7. Replace existing subsurface drains that are interrupted or destroyed by construction operations.
8. Provide subsurface drainage for dry storm water management structures.
9. Improve dewatering of sediment in sediment basins. (See Standard and Specification for Sediment Basins in Section 5).

Conditions Where Practice Applies

Subsurface drains are used in areas having a high water table or where subsurface drainage is required. The soil shall have enough depth and permeability to permit installation of an effective system. This standard does not apply to storm drainage systems or foundation drains. Regulatory restrictions may apply if wetlands are present.

An outlet for the drainage system shall be available, either by gravity flow or by pumping. The outlet shall be adequate for the quantity of water to be discharged without causing damage above or below the point of discharge and shall comply with all state and local laws.

Design Criteria

The design and installation shall be based on adequate surveys and on-site soils investigations.

Required Capacity of Drains

The required capacity shall be determined by one or more of the following:

1. Where sub-surface drainage is to be uniform over an area through a systematic pattern of drains, a drainage coefficient of 1 inch to be removed in 24 hours shall be used; see Drain Chart, Figure 3.21 on page 3.51.
2. Where sub-surface drainage is to be by a random interceptor system, a minimum inflow rate of 0.5 cfs per 1,000 feet of line shall be used to determine the required capacity. If actual field tests and measurements of flow amounts are available, they may be used for determining capacity.

   For interceptor subsurface drains on sloping land, increase the inflow rate as follows:

Land Slope	Increase Inflow Rate By
2-5 percent	10 percent
5-12 percent	20 percent
Over 12 percent	30 percent

3. Additional design capacity must be provided if surface water is allowed to enter the system.

Size of Subsurface Drain

The size of subsurface drains shall be determined from the drain chart found on Figures 3.21 on page 3.51. All subsurface drains shall have a nominal diameter, which equals or exceeds four (4) inches.

Depth and Spacing

The minimum depth of cover of subsurface drains shall be 24 inches where possible. The minimum depth of cover may be reduced to 15 inches where it is not possible to attain the 24 inch depth and where the drain is not subject to equipment loading or frost action. Roots from some types of vegetation can plug drains, as the drains get closer to the surface.

The spacing of drain laterals will be dependent on the permeability of the soil, the depth of installation of the drains and degree of drainage required. Generally, drains installed 36 inches deep and spaced 50 feet center-to-center will be adequate. For more specific information, see the New York Drainage Guide (USDA-NRCS).

Minimum Velocity and Grade

The minimum grade for subsurface drains shall be 0.10 percent. Where surface water enters the system a velocity of not less than 2 feet per second shall be used to establish the minimum grades. Provisions shall be made for preventing debris or sediment from entering the system by means of filters or collection and periodic removal of sediment from installed traps.

Materials for Subsurface Drains

Acceptable subsurface drain materials include perforated, continuous closed joint conduits of polyethylene plastic, concrete, corrugated metal, polyvinyl chloride, and clay tile.

The conduit shall meet strength and durability requirements of the site.

Loading

The allowable loads on subsurface drain conduits shall be based on the trench and bedding conditions specified for the job. A factor of safety of not less than 1.5 shall be used in computing the maximum allowable depth of cover for a particular type of conduit.

Envelopes and Envelope Materials

Envelopes shall be used around subsurface drains for proper bedding and to provide better flow into the conduit. Not less than three inches of envelope material shall be used for sand/gravel envelopes. Where necessary to improve the characteristics of flow of groundwater into the conduit, more envelope material may be required.

Where county regulations do not allow sand/gravel envelopes, but require a special type and size of envelope material, they shall be followed.
Envelope material shall be placed to the height of the uppermost seepage strata. Behind bulkheads and retaining walls, it shall go to within twelve inches of the top of the structure. This standard does not cover the design of filter materials where needed.

Materials used for envelopes shall not contain materials which will cause an accumulation of sediment in the conduit or render the envelope unsuitable for bedding of the conduit. Envelope materials shall consist of either filter cloth or sand/gravel material, which shall pass a 1 ½ inch sieve, 90 to 100 percent shall pass a ¾ inch sieve, and not more than 10 percent shall pass a No. 60 sieve.

Filter cloth envelope can be either woven or non-woven monofilament yarns and shall have a sieve opening ranging from 40 to 80. The envelope shall be placed in such a manner that once the conduit is installed, it shall completely encase the conduit.

The conduit shall be placed and bedded in a sand/gravel envelope. A minimum of three inches depth of envelope materials shall be placed on the bottom of a conventional trench. The conduit shall be placed on this and the trench completely filled with envelope material to minimum depth of 3 inches above the conduit.

Soft or yielding soils under the drain shall be stabilized where required and lines protected from settlement by adding gravel or other suitable material to the trench, by placing the conduit on plank or other rigid support, or by using long sections of perforated or watertight pipe with adequate strength to ensure satisfactory subsurface drain performance.

Use of Heavy Duty Corrugated Plastic Drainage Tubing

Heavy duty corrugated drainage tubing shall be specified where rocky or gravelly soils are expected to be encountered during installation operations. The quality of tubing will also be specified when cover over this tubing is expected to exceed 24 inches for 4, 5, 6, or 8 inch tubing. Larger size tubing designs will be handled on an individual job basis.

Auxiliary Structure and Subsurface Drain Protection

The outlet shall be protected against erosion and undermining of the conduit, against damaging periods of submergence, and against entry of rodents or other animals into the subsurface drain. An animal guard shall be installed on the outlet end of the pipe. A swinging animal guard shall be used if surface water enters the pipe.

A continuous 10-foot section of corrugated metal, cast iron, polyvinyl chloride, or steel pipe without perforations shall be used at the outlet end of the line and shall outlet 1.0 foot above the normal elevation of low flow in the outlet ditch or

above mean high tide in tidal areas. No envelope material shall be used around the 10-foot section of pipe. Two-thirds of the pipe shall be buried in the ditch bank and the cantilevered section shall extend to a point above the toe of the ditch side slope. If not possible, the side slope shall be protected from erosion.

Conduits under roadways and embankments shall be water-tight and designed to exclude debris and prevent sediment from entering the conduit. Lines flowing under pressure shall be designed to withstand the resulting pressures and velocity of flow. Surface waterways shall be used where feasible.

The upper end of each subsurface drain line shall be capped with a tight fitting cap of the same material as the conduit or other durable material unless connected to a structure.

Construction Specifications

1. Deformed, warped, or otherwise damaged pipe or tubing shall not be used.

2. All subsurface drains shall be laid to a uniform line and covered with envelope material. The pipe or tubing shall be laid with the perforations down and oriented symmetrically about the vertical centerline. Connections will be made with manufactured appurtenances comparable in strength with the specified pipe or tubing unless otherwise specified. The method of placement and bedding shall be as specified on the drawing.

3. Envelope material shall consist of filter cloth or a sand/gravel (which shall pass the 1 ½ inch sieve, 90 to 100 percent shall pass ¾ inch sieve, and not more than 10 percent shall pass the No. 60 sieve).

4. The upper end of each subsurface drain line shall be capped with a tight fittings cap of the same material as the conduit or other durable material unless connected to a structure.

5. A continuous 10-foot section of corrugated metal, cast iron, polyvinyl chloride, or steel pipe without perforations shall be used at the outlet end of the line. No envelope material shall be used around the 10-foot section of the pipe. An animal guard shall be installed on the outlet end of the pipe.

6. Earth backfill material shall be placed in the trench in such a manner that displacement of the drain will not occur.

7. Where surface water is entering the system, the pipe outlet section of the system shall contain a swing type trash and animal guard.

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STANDARD AND SPECIFICATIONS FOR WATER BAR

Definition & Scope

A **permanent** or **temporary** ridge, ridge and channel, a structural channel, or flow deflector, constructed diagonally across a sloping road or utility right-of-way that is subject to erosion to limit the accumulation of erosive velocity of water by diverting surface runoff at pre-designed intervals.

Conditions Where Practice Applies

Where runoff protection is needed to prevent erosion from increased concentrated flow on narrow, steep access roads, driveways, and entrance ways to lot parcels as well as utility access right-of-ways generally up to 100 feet in width

Design Criteria

Design computations are not required.

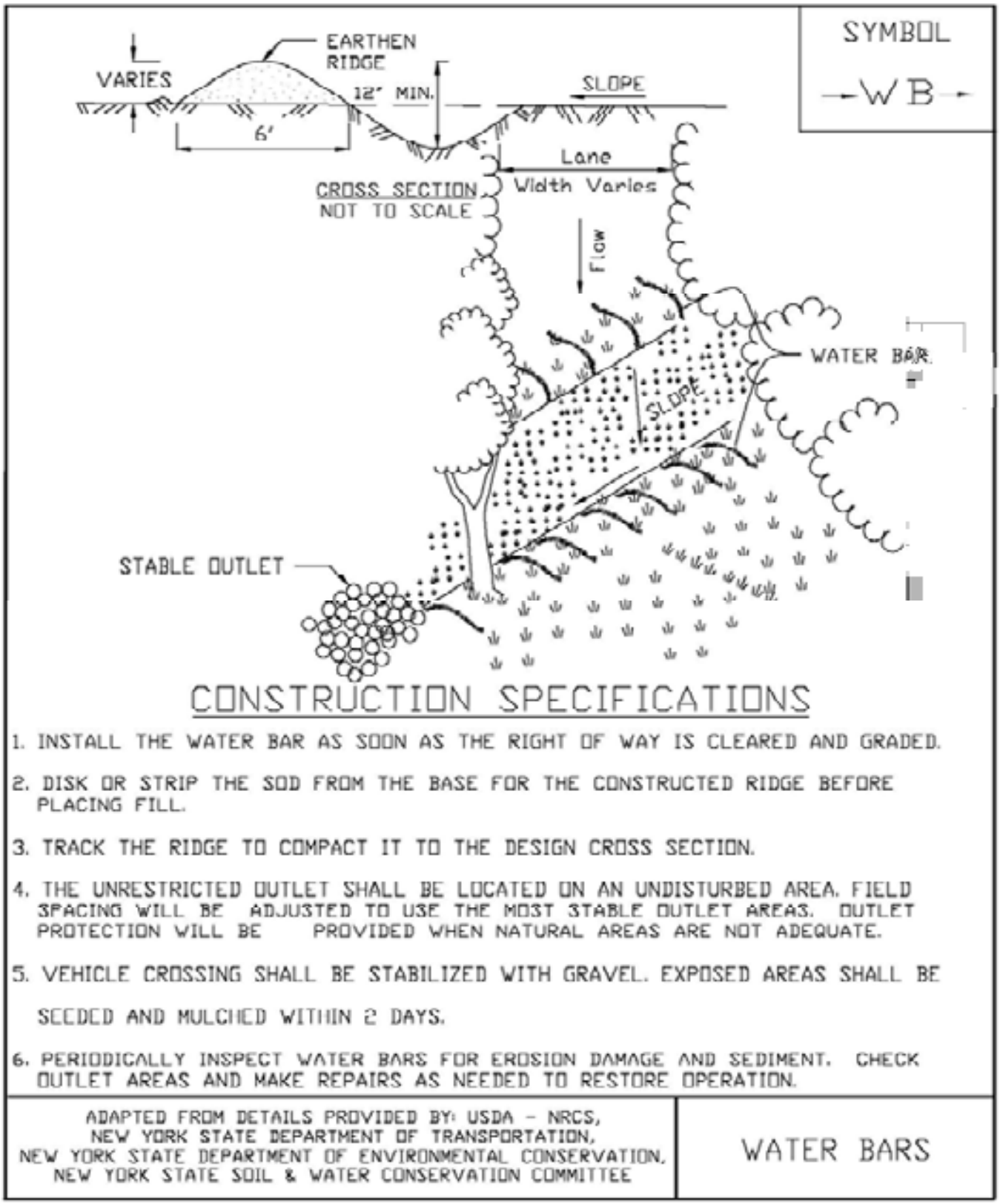
1. The design height shall be minimum of 12 inches measured from channel bottom to ridge top.
2. The side slopes shall be 2:1 or flatter, a minimum of 4:1 where vehicles cross.
3. The base width of the ridge shall be six feet minimum.
4. The spacing of the water bars shall be as follows (Site spacing may need to be adjusted for field conditions to use the most suitable areas for water disposal):

Slope (%)	Spacing (ft.)
<5	125
5 TO 10	100
10 TO 20	75
20 TO 35	50
>35	25

5. The positive grade of the water bar shall not exceed 2%. A crossing angle of approximately 60 degrees is preferred.
6. Once diverted, water must be conveyed to a stable system (i.e. vegetated swale or storm sewer system). Water bars should have stable, unrestricted outlets, either natural or constructed.

See Figure 3.22 on page 3.53 for details.

Figure 3.22
Water Bar Detail



CONSTRUCTION SPECIFICATIONS

1. INSTALL THE WATER BAR AS SOON AS THE RIGHT OF WAY IS CLEARED AND GRADED.
2. DISK OR STRIP THE SOD FROM THE BASE FOR THE CONSTRUCTED RIDGE BEFORE PLACING FILL.
3. TRACK THE RIDGE TO COMPACT IT TO THE DESIGN CROSS SECTION.
4. THE UNRESTRICTED OUTLET SHALL BE LOCATED ON AN UNDISTURBED AREA. FIELD SPACING WILL BE ADJUSTED TO USE THE MOST STABLE OUTLET AREAS. OUTLET PROTECTION WILL BE PROVIDED WHEN NATURAL AREAS ARE NOT ADEQUATE.
5. VEHICLE CROSSING SHALL BE STABILIZED WITH GRAVEL. EXPOSED AREAS SHALL BE SEEDED AND MULCHED WITHIN 2 DAYS.
6. PERIODICALLY INSPECT WATER BARS FOR EROSION DAMAGE AND SEDIMENT. CHECK OUTLET AREAS AND MAKE REPAIRS AS NEEDED TO RESTORE OPERATION.

ADAPTED FROM DETAILS PROVIDED BY: USDA – NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

WATER BARS

STANDARD AND SPECIFICATIONS FOR ANCHORED STABILIZATION MATTING

Definition and Scope

A **temporary** or **permanent** protective covering placed on a prepared, seeded planting area that is anchored in place by staples or other means to aid in controlling erosion by absorbing rain splash energy and withstand overland flow as well as provide a microclimate to protect and promote seed establishment.

Conditions Where Practice Applies

Anchored stabilization mats are required for seeded earthen slopes steeper than 3 horizontal to 1 vertical; in vegetated channels where the velocity of the design flow exceeds the allowable velocity for vegetation alone (usually greater than 5 feet per second); on streambanks and shorelines where moving water is likely to erode newly seeded or planted areas; and in areas where wind prevents standard mulching with straw. This standard does not apply to slopes stabilized with sod, rock riprap or hard armor material.

Design Criteria

Slope Applications - Anchored stabilization mats for use on slopes are primarily used as mulch blankets where the mesh material is within the blanket or as a netting over previously placed mulch. These stabilization mats are NOT effective in preventing slope failures.

1. Required on all slopes steeper than 3:1
2. Matting will be designed for proper longevity need and strength based on intended use.
3. All installation details and directions will be included on the site erosion and sediment control plan and will follow manufactures specifications.

Channel Applications - Anchored stabilization mats, for use in supporting vegetation in flow channels, are generally a non-degradable, three dimensional plastic structure which can be filled with soil prior to planting. This structure provides a medium for root growth where the matting and roots become intertwined forming a continuous anchor for the vegetated lining.

1. Channel stabilization shall be based on the tractive force method.
2. For maximum design shear stresses less than 2 pounds per square foot, a temporary or bio-degradable mat may be used.
3. The design of the final matting shall be based on the mats ability to resist the tractive shear stress at bank full flow.
4. The installation details and procedures shall be included on the site erosion and sediment control plan and will follow manufacturers specifications.

Construction Specifications

1. Prepare soil before installing matting by smoothing the surface, removing debris and large stone, and applying lime, fertilizer and seed. Refer to manufacturers installation details.
2. Begin at the top of the slope by anchoring the mat in a 6” deep x 6” wide trench. Backfill and compact the trench after stapling.
3. In channels or swales, begin at the downslope end, anchoring the mat at the bottom and top ends of the blanket. When another roll is needed, the upslope roll

should overlay the lower layer, shingle style, so that channel flows do not peel back the material.

4. Roll the mats down a slope with a minimum 4" overlap. Roll center mat in a channel in direction of water flow on bottom of the channel. Do not stretch blankets. Blankets shall have good continuous contact with the underlying soil throughout its entire length.

5. Place mats end over end (shingle style) with a 6" overlap, use a double row of staggered staples 4" apart to secure mats.

6. Full length edge of mats at top of side slopes must be anchored in 6" deep x 6" wide trench; backfill and compact the trench after stapling.

7. Mats on side slopes of a channel must be overlapped 4" over the center mat and stapled.

8. In high flow channel applications, a staple check slot is recommended at 30 to 40 foot intervals. Use a row of staples 4" apart over entire width of the channel. Place a second row 4" below the first row in a staggered pattern.

9. The terminal end of the mats must be anchored in a 6"x6" wide trench. Backfill and compact the trench after stapling.

10. Stapling and anchoring of blanket shall be done in accordance with the manufactures recommendations.

Maintenance

Blanketed areas shall be inspected weekly and after each runoff event until perennial vegetation is established to a minimum uniform 80% coverage throughout the blanketed area. Damaged or displaced blankets shall be restored or replaced within 2 calendar days.

STANDARD AND SPECIFICATIONS FOR FIBER ROLL

Definition & Scope

A fiber roll is a coir (coconut fiber), straw, or excelsior roll encased in netting of jute, nylon, or burlap to dissipate energy along streambanks, channels, and bodies of water and to reduce sheet flow on slopes.

Conditions Where Practice Applies

Fiber rolls are used where the water surface levels are relatively constant. Artificially controlled streams for hydropower are not good candidates for this technique. The rolls provide a good medium for the introduction of herbaceous vegetation. Planting in the fiber roll is appropriate where the roll will remain continuously wet.

Design Criteria

1. The roll is placed in a shallow trench dug below baseflow or in a 4 inch trench on the slope contour and anchored by 2" x 2", 3-foot long posts driven on each side of the roll (see Figure 4.8).

2. The roll is contained by a 9-gauge non-galvanized wire placed over the roll from post to post. Braided nylon rope (1/8" thick) may be used.

3. The anchor posts shall be spaced laterally 4 feet on center on both sides of the roll and driven down to the top of the roll.

4. Soil is placed behind the roll and planted with suitable herbaceous or woody vegetation. If the roll will be continuously saturated, wetland plants may be planted into voids created in the upper surface of the roll.

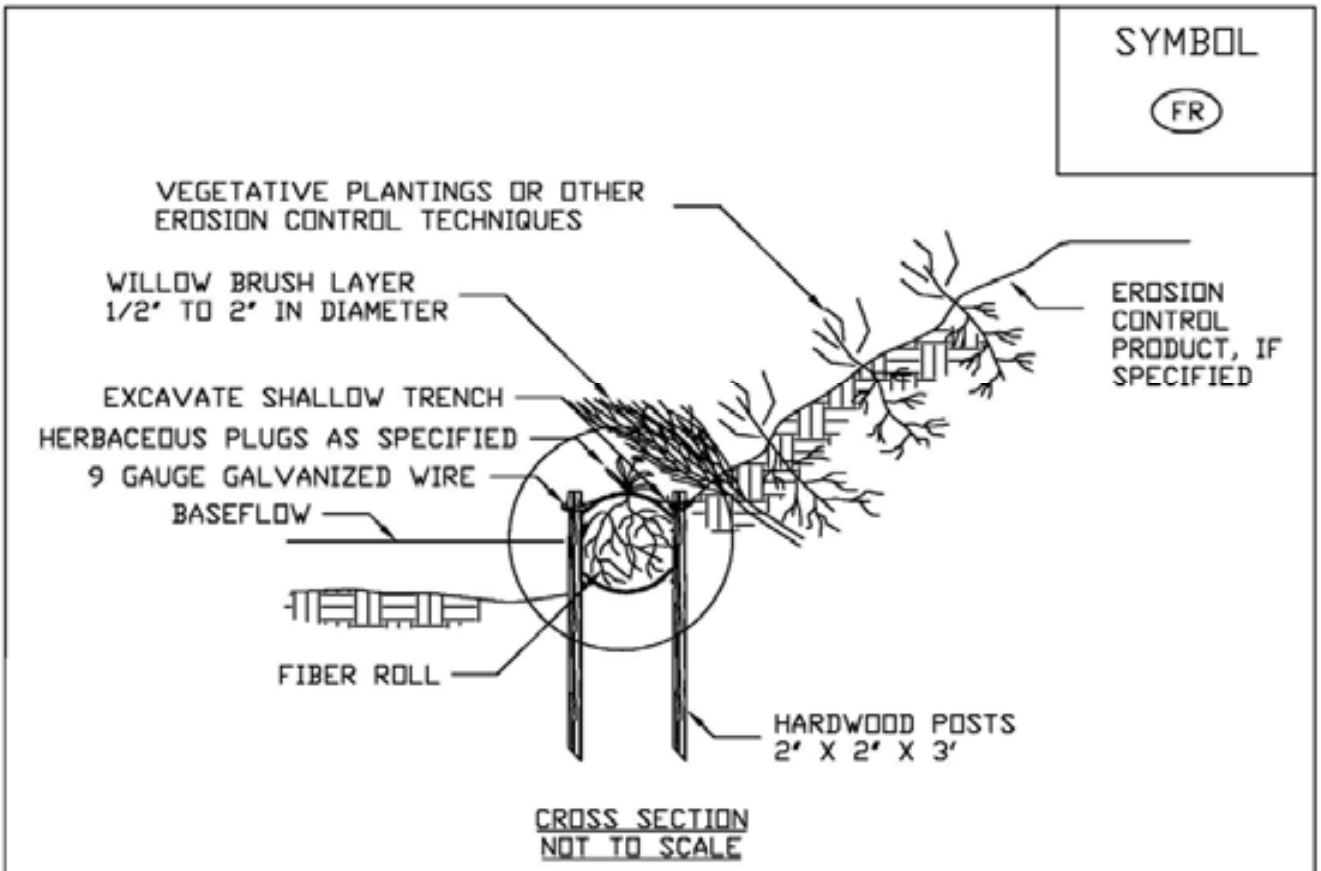
5. Where water levels may fall below the bottom edge of the roll, a brush layer of willow should be installed so as to lay across the top edge of the roll.

6. Where fiber rolls are used to reduce sheet flow on slopes they should be at least 12" in diameter and spaced according to the straw bale dike standard for sediment control.

Maintenance

Due to the susceptibility of plant materials to the physical constraints of the site, climate conditions, and animal populations, it is necessary to inspect installations frequently. This is especially important during the first year or two of establishment. Plant materials missing or damaged should be replaced as soon as possible. Sloughs or breaks in drainage pattern should be reestablished for the site as quickly as possible to maintain stability.

Figure 4.8
Fiber Roll



CONSTRUCTION SPECIFICATIONS

1. EXCAVATE A SHALLOW TRENCH SLIGHTLY BELOW BASEFLOW OR A 4" TRENCH ON SLOPE CONTOURS.
2. PLACE THE ROLL IN THE TRENCH AND ANCHOR WITH 2" x 2" POSTS PLACED ON BOTH SIDES OF THE ROLL AND SPACED LATERALLY ON 2' TO 4' CENTERS. TRIM THE TOP OF THE POSTS EVEN WITH THE EDGE OF THE ROLL, IF NECESSARY.
3. NOTCH THE POSTS AND TIE TOGETHER, ACROSS THE ROLL, WITH 9 GAUGE GALVANIZED WIRE OR 1/8" DIAMETER BRAIDED NYLON ROPE..
4. PLACE SOIL EXCAVATED FROM THE TRENCH BEHIND THE ROLL AND HAND TAMP. PLANT WITH SUITABLE HERBACEOUS OR WOODY VEGETATION AS SPECIFIED ELSEWHERE IN THE CONTRACT DOCUMENTS. VEGETATION SHALL BE PLACED IMMEDIATELY ADJACENT TO THE ROLL TO PROMOTE ROOT GROWTH INTO THE FIBER. HERBACEOUS VEGETATION, IF SPECIFIED, SHALL BE PLANTED INTO THE FIBER ROLL.

ADAPTED FROM DETAILS PROVIDED BY: USDA - NRCS, NEW YORK STATE DEPARTMENT OF TRANSPORTATION, NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION, NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

FIBER ROLL

STANDARD AND SPECIFICATIONS FOR MULCHING

Definition and Scope

Applying coarse plant residue or chips, or other suitable materials, to cover the soil surface to provide initial erosion control while a seeding or shrub planting is establishing. Mulch will conserve moisture and modify the surface soil temperature and reduce fluctuation of both. Mulch will prevent soil surface crusting and aid in weed control. Mulch can also be used alone for temporary stabilization in non-growing months. Use of stone as a mulch could be more permanent and should not be limited to non-growing months.

Conditions Where Practice Applies

On soils subject to erosion and on new seedings and shrub plantings. Mulch is useful on soils with low infiltration rates by retarding runoff.

Criteria

Site preparation prior to mulching requires the installation of necessary erosion control or water management practices and drainage systems.

Slope, grade and smooth the site to fit needs of selected mulch products.

Remove all undesirable stones and other debris to meet the needs of the anticipated land use and maintenance required.

Apply mulch after soil amendments and planting is accomplished or simultaneously if hydroseeding is used.

Select appropriate mulch material and application rate or material needs. Hay mulch shall not be used in wetlands or in areas of permanent seeding. Clean straw mulch is preferred alternative in wetland application. Determine local availability.

Select appropriate mulch anchoring material.

NOTE: The best combination for grass/legume establishment is straw (cereal grain) mulch applied at 2 ton/ acre (90 lbs./1000sq.ft.) and anchored with wood fiber mulch (hydromulch) at 500 – 750 lbs./acre (11 – 17 lbs./1000 sq. ft.). The wood fiber mulch must be applied through a hydroseeder immediately after mulching.

Table 4.2
Guide to Mulch Materials, Rates, and Uses

Mulch Material	Quality Standards	per 1000 Sq. Ft.	per Acre	Depth of Application	Remarks
Wood chips or shavings	Air-dried. Free of objectionable coarse material	500-900 lbs.	10-20 tons	2-7”	Used primarily around shrub and tree plantings and recreation trails to inhibit weed competition. Resistant to wind blowing. Decomposes slowly.
Wood fiber cellulose (partly digested wood fibers)	Made from natural wood usually with green dye and dispersing agent	50 lbs.	2,000 lbs.	—	Apply with hydromulcher. No tie down required. Less erosion control provided than 2 tons of hay or straw.
Gravel, Crushed Stone or Slag	Washed; Size 2B or 3A—1 1/2”	9 cu. yds.	405 cu. yds.	3”	Excellent mulch for short slopes and around plants and ornamentals. Use 2B where subject to traffic. (Approximately 2,000 lbs./cu. yd.). Frequently used over filter fabric for better weed control.
Hay or Straw	Air-dried; free of undesirable seeds & coarse materials	90-100 lbs. 2-3 bales	2 tons (100-120 bales)	cover about 90% surface	Use small grain straw where mulch is maintained for more than three months. Subject to wind blowing unless anchored. Most commonly used mulching material. Provides the best micro-environment for germinating seeds.
Jute twisted yarn	Undyed, unbleached plain weave. Warp 78 ends/yd., Weft 41 ends/ yd. 60-90 lbs./roll	48” x 50 yds. or 48” x 75 yds.	—	—	Use without additional mulch. Tie down as per manufacturers specifications. Good for center line of concentrated water flow.
Excelsior wood fiber mats	Interlocking web of excelsior fibers with photodegradable plastic netting	4’ x 112.5’ or 8’ x 112.5’.	—	—	Use without additional mulch. Excellent for seeding establishment. Anchor as per manufacturers specifications. Approximately 72 lbs./roll for excelsior with plastic on both sides. Use two sided plastic for centerline of waterways.
Straw or coconut fiber, or combination	Photodegradable plastic net on one or two sides	Most are 6.5 ft. x 3.5 ft.	81 rolls	—	Designed to tolerate higher velocity water flow, centerlines of waterways, 60 sq. yds. per roll.

Table 4.3
Mulch Anchoring Guide

Anchoring Method or Material	Kind of Mulch to be Anchored	How to Apply
1. Peg and Twine	Hay or straw	After mulching, divide areas into blocks approximately 1 sq. yd. in size. Drive 4-6 pegs per block to within 2" to 3" of soil surface. Secure mulch to surface by stretching twine between pegs in criss-cross pattern on each block. Secure twine around each peg with 2 or more tight turns. Drive pegs flush with soil. Driving stakes into ground tightens the twine.
2. Mulch netting	Hay or straw	Staple the light-weight paper, jute, wood fiber, or plastic nettings to soil surface according to manufacturer's recommendations. Should be biodegradable. Most products are not suitable for foot traffic.
3. Wood cellulose fiber	Hay or straw	Apply with hydroseeder immediately after mulching. Use 500 lbs. wood fiber per acre. Some products contain an adhesive material ("tackifier"), possibly advantageous.
4. Mulch anchoring tool	Hay or straw	Apply mulch and pull a mulch anchoring tool (blunt, straight discs) over mulch as near to the contour as possible. Mulch material should be "tucked" into soil surface about 3".
5. Tackifier	Hay or straw	Mix and apply polymeric and gum tackifiers according to manufacturer's instructions. Avoid application during rain. A 24-hour curing period and a soil temperature higher than 45^0 Fahrenheit are required.

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STANDARD AND SPECIFICATIONS FOR SOIL RESTORATION

Definition & Scope

The decompaction of areas of a development site or construction project where soils have been disturbed to recover the original properties and porosity of the soil; thus providing a sustainable growth medium for vegetation, reduction of runoff and filtering of pollutants from stormwater runoff.

Conditions Where Practice Applies

Soil restoration is to be applied to areas whose heavy construction traffic is done and final stabilization is to begin. This is generally applied in the cleanup, site restoration, and landscaping phase of construction followed by the permanent establishment of an appropriate ground cover to maintain the soil structure. Soil restoration measures should be applied over and adjacent to any runoff reduction practices to achieve design performance.

Design Criteria

1. Soil restoration areas will be designated on the plan views of areas to be disturbed.
2. Soil restoration will be completed in accordance with Table 4.6 on page 4.53.

Specification for Full Soil Restoration

During periods of relatively low to moderate subsoil moisture, the disturbed subsoils are returned to rough grade and the following Soil Restoration steps applied:

1. Apply 3 inches of compost over subsoil. The compost shall be well decomposed (matured at least 3 months), weed-free, organic matter. It shall be aerobically composted, possess no objectionable odors, and contain less than 1%, by dry weight, of man-made foreign matter. The physical parameters of the compost shall meet the standards listed in Table 5.2 - Compost Standards Table. **Note: All biosolids compost produced in New York State (or approved for importation) must meet NYS DEC's 6 NYCRR Part 360 (Solid Waste Management Facilities) requirements. The Part 360 requirements are equal to or more stringent than 40 CFR Part 503 which ensure safe standards for pathogen reduction and heavy metals content.**

2. Till compost into subsoil to a depth of at least 12 inches using a cat-mounted ripper, tractor mounted disc, or tiller, to mix and circulate air and compost into the subsoil.
3. Rock-pick until uplifted stone/rock materials of four inches and larger size are cleaned off the site.
4. Apply topsoil to a depth of 6 inches.
5. Vegetate as required by the seeding plan. Use appropriate ground cover with deep roots to maintain the soil structure.
6. Topsoil may be manufactured as a mixture or a mineral component and organic material such as compost.

At the end of the project an inspector should be able to push a 3/8" metal bar 12 inches into the soil just with body weight. This should not be performed within the drip line of any existing trees or over utility installations that are within 24 inches of the surface.

Maintenance

Keep the site free of vehicular and foot traffic or other weight loads. Consider pedestrian footpaths.

Table 4.6
Soil Restoration Requirements

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

* Aeration includes the use of machines such as tractor-drawn implements with coulters making a narrow slit in the soil, a roller with many spikes making indentations in the soil, or prongs which function like a mini-subsoiler.
** Per "Deep Ripping and De-compaction, DEC 2008".

STANDARD AND SPECIFICATIONS FOR TEMPORARY CONSTRUCTION AREA SEEDING

Definition & Scope

Providing temporary erosion control protection to disturbed areas and/or localized critical areas for an interim period by covering all bare ground that exists as a result of construction activities or a natural event. Critical areas may include but are not limited to steep excavated cut or fill slopes and any disturbed, denuded natural slopes subject to erosion.

Conditions Where Practice Applies

Temporary seedings may be necessary on construction sites to protect an area, or section, where final grading is complete, when preparing for winter work shutdown, or to provide cover when permanent seedings are likely to fail due to mid-summer heat and drought. The intent is to provide temporary protective cover during temporary shutdown of construction and/or while waiting for optimal planting time.

Criteria

Water management practices must be installed as appropriate for site conditions. The area must be rough graded and slopes physically stable. Large debris and rocks are usually removed. Seedbed must be seeded within 24 hours of disturbance or scarification of the soil surface will be necessary prior to seeding.

Fertilizer or lime are not typically used for temporary seedings.

IF: Spring or summer or early fall, then seed the area with ryegrass (annual or perennial) at 30 lbs. per acre (Approximately 0.7 lb./1000 sq. ft. or use 1 lb./1000 sq. ft.).

IF: Late fall or early winter, then seed Certified 'Aroostook' winter rye (cereal rye) at 100 lbs. per acre (2.5 lbs./1000 sq. ft.).

Any seeding method may be used that will provide uniform application of seed to the area and result in relatively good soil to seed contact.

Mulch the area with hay or straw at 2 tons/acre (approx. 90 lbs./1000 sq. ft. or 2 bales). Quality of hay or straw mulch allowable will be determined based on long term use and visual concerns. Mulch anchoring will be required where wind or areas of concentrated water are of concern. Wood fiber hydromulch or other sprayable products approved for erosion control (nylon web or mesh) may be used if applied according to manufacturers' specification. Caution is advised when using nylon or other synthetic products. They may be difficult to remove prior to final seeding and can be a hazard to young wildlife species.

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STANDARD AND SPECIFICATIONS FOR TOPSOILING

Definition & Scope

Spreading a specified quality and quantity of topsoil materials on graded or constructed subsoil areas to provide acceptable plant cover growing conditions, thereby reducing erosion; to reduce irrigation water needs; and to reduce the need for nitrogen fertilizer application.

Conditions Where Practice Applies

Topsoil is applied to subsoils that are droughty (low available moisture for plants), stony, slowly permeable, salty or extremely acid. It is also used to backfill around shrub and tree transplants. This standard does not apply to wetland soils.

Design Criteria

1. Preserve existing topsoil in place where possible, thereby reducing the need for added topsoil.

2. Conserve by stockpiling topsoil and friable fine textured subsoils that must be stripped from the excavated site and applied after final grading where vegetation will be established. Topsoil stockpiles must be stabilized. Stockpile surfaces can be stabilized by vegetation, geotextile or plastic covers. This can be aided by orientating the stockpile lengthwise into prevailing winds.

3. Refer to USDA Natural Resource Conservation Service soil surveys or soil interpretation record sheets for further soil texture information for selecting appropriate design topsoil depths.

Site Preparation

1. As needed, install erosion and sediment control practices such as diversions, channels, sediment traps, and stabilizing measures, or maintain if already installed.

2. Complete rough grading and final grade, allowing for depth of topsoil to be added.

3. Scarify all compact, slowly permeable, medium and fine textured subsoil areas. Scarify at approximately right angles to the slope direction in soil areas that are steeper than 5 percent. Areas that have been overly compacted shall be decompacted in accordance with the Soil Restoration Standard.

4. Remove refuse, woody plant parts, stones over 3 inches in diameter, and other litter.

Topsoil Materials

1. Topsoil shall have at least 6 percent by weight of fine textured stable organic material, and no greater than 20 percent. Muck soil shall not be considered topsoil.

2. Topsoil shall have not less than 20 percent fine textured material (passing the NO. 200 sieve) and not more than 15 percent clay.

3. Topsoil treated with soil sterilants or herbicides shall be so identified to the purchaser.

4. Topsoil shall be relatively free of stones over 1 1/2 inches in diameter, trash, noxious weeds such as nut sedge and quackgrass, and will have less than 10 percent gravel.

5. Topsoil containing soluble salts greater than 500 parts per million shall not be used.

6. Topsoil may be manufactured as a mixture of a mineral component and organic material such as compost.

Application and Grading

1. Topsoil shall be distributed to a uniform depth over the area. It shall not be placed when it is partly frozen, muddy, or on frozen slopes or over ice, snow, or standing water puddles.

2. Topsoil placed and graded on slopes steeper than 5 percent shall be promptly fertilized, seeded, mulched, and stabilized by “tracking” with suitable equipment.

3. Apply topsoil in the amounts shown in Table 4.7 below:

Table 4.7 - Topsoil Application Depth		
Site Conditions	**Intended Use**	**Minimum Topsoil Depth**
1. Deep sand or loamy sand	Mowed lawn	6 in.
	Tall legumes, unmowed	2 in.
	Tall grass, unmowed	1 in.
2. Deep sandy loam	Mowed lawn	5 in.
	Tall legumes, unmowed	2 in.
	Tall grass, unmowed	none
3. Six inches or more: silt loam, clay loam, loam, or silt	Mowed lawn	4 in.
	Tall legumes, unmowed	1 in.
	Tall grass, unmowed	1 in.

STANDARD AND SPECIFICATIONS FOR GEOTEXTILE FILTER BAG

Definition & Scope

A **temporary** portable device through which sediment laden water is pumped to trap and retain sediment prior to its discharge to drainageways or off-site.

Condition Where Practice Applies

On sites where space is limited such as urban construction or linear projects (e.g. roads and utility work) where rights-of-way are limited and larger de-silting practices are impractical.

Design Criteria

1. Location - The portable filter bag should be located to minimize interference with construction activities and pedestrian traffic. It should also be placed in a location that is vegetated, relatively level, and provides for ease of access by heavy equipment, cleanout, disposal of trapped sediment, and proper release of filtered water.

   The filter bag shall also be placed at least 50 feet from all wetlands, streams or other surface waters.

2. Size - Geotextile filter bag shall be sized in accordance with the manufacturers recommendations based on the pump discharge rate.

Materials and Installation

1. The geotextile material will have the following attributes:

Minimum Grab Tensile Strength	200 lbs.
Minimum Grab Tensile Elongation	50 %
Minimum Trapezoid Tear Strength	80 lbs.
Mullen Burst Strength	380 psi
Minimum Puncture Strength	130 lbs
Apparent Opening Size	40 - 80 US sieve
Minimum UV Resistance	70%
Minimum Flow Thru Rate	70 gpm/sq ft

2. The bag shall be sewn with a double needle machine using high strength thread, double stitched “Joe” type capable of minimum roll strength of 100 lbs/inch (ASTM D4884).

3. The geotextile filter bag shall have an opening large enough to accommodate a 4 inch diameter discharge hose with an attached strap to tie off the bag to the hose to prevent back flow.

4. The geotextile shall be placed on a gravel bed 2 inches thick, a straw mat 4 inches thick, or a vegetated filter strip to allow water to flow out of the bag in all directions.

Maintenance

1. The geotextile filter bag is considered full when remaining bag flow area has been reduced by 75%. At this point, it should be replaced with a new bag.

2. Disposal may be accomplished by removing the bag to an appropriate designated upland area, cut open, remove the geotextile for disposal, and spread sediment contents and seeded and mulched according to the vegetative plan.

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STANDARD AND SPECIFICATIONS FOR ROCK DAM

Definition & Scope

A rock embankment located to capture and retain sediment on the construction site and prevent sedimentation in offsite water bodies.

Conditions Where Practice Applies

The rock dam may be used instead of the standard sediment basin with barrel and riser. The rock dam is preferred when it is difficult to construct a stable, earthen embankment and rock materials are readily available. The site should be accessible for periodic sediment removal. This rock dam shall not be located in a perennial stream. The top of the dam will serve as the overflow outlet. The inside of the dam will be faced with smaller stone to reduce the rate of seepage so a sediment pool forms during runoff events.

Design Criteria

Drainage Area: The drainage area for this off stream structure is limited to 50 acres.

Location: The location of the dam should:

- provide a large area to trap sediment
- intercept runoff from disturbed areas
- be accessible to remove sediment
- not interfere with construction activities

Storage Volume: The storage volume behind the dam shall be at least 3,600 cubic feet per acre of drainage area to the dam. This volume is measured one foot below the crest of the dam.

Dam Section:

Top Width	5 feet minimum @ crest
Side Slopes	2:1 upstream slope 3:1 downstream slope
Height	6' max to spillway crest

Length of Crest: The crest length should be designed to carry the 10 yr. peak runoff with a maximum flow depth of 1 foot and 1 foot of freeboard.

Rock at the abutments should extend at least 2 feet above the spillway and be at least 2 feet thick. These rock abutments should extend at least one foot above the downstream slope to prevent abutment scour. A rock apron at least 1.5 feet thick should extend downstream from the toe of the dam a distance equal to the height of the dam to protect the outlet area from scour.

Rock Fill: The rock fill should be well graded, hard, erosion resistant stone with a minimum d_{50} size of 9 inches. A "key trench" lined with geotextile filter fabric should be installed in the soil foundation under the rock fill. The filter fabric must extend from the key trench to the downstream edge of the apron and abutments to prevent soil movement and piping under the dam.

The upstream face of the dam should be covered with a fine washed gravel (NYS-DOT #1 or #1A gravel, crushed stone or equal) a minimum 3 feet thick to reduce the drainage rate.

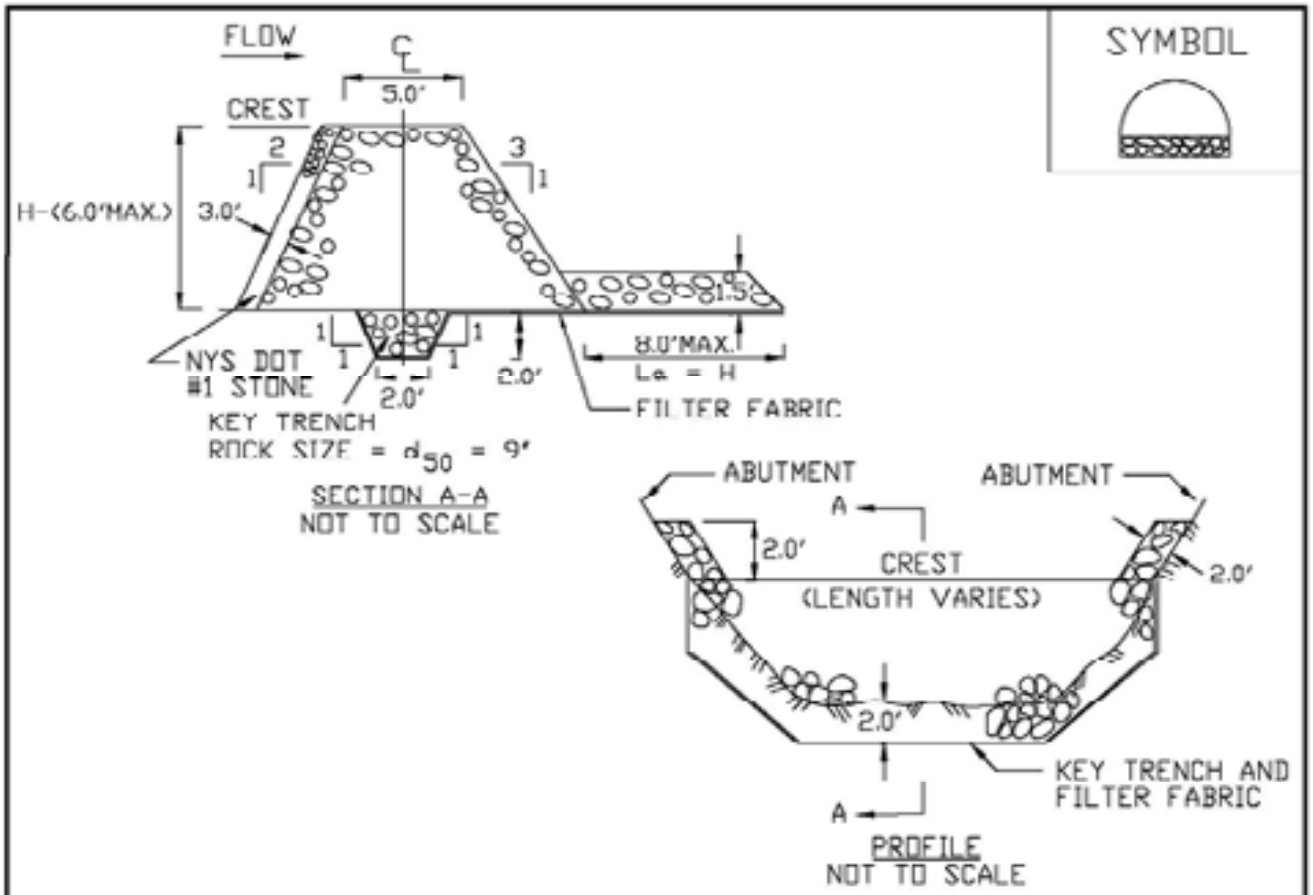
Trapping Efficiency: To obtain maximum trapping efficiency, design for a long detention period. Usually a minimum of eight (8) hours before the basin is completely drained. Maximize the length of travel of sediment laden water from the inlet to the drain for a minimum length to width ratio of 2 to 1 or greater. Achieve a surface area equal to 0.01 acres per cfs (inflow) based on the 10-year storm. See Figure 5.7 on page 5.18 for details.

Maintenance

Check the basin area after each rainfall event. Remove sediment and restore original volume when sediment accumulates to one-half the design volume. Check the structure for erosion, piping, and rock displacement after each significant event and replace immediately.

Remove the structure and any sediment immediately after the construction area has been permanently stabilized. All water should be removed from the basin prior to the removal of the rock dam. Sediment should be placed in designated disposal areas and not allowed to flow into streams or drainage ways during structure removal.

Figure 5.7
Rock Dam



CONSTRUCTION SPECIFICATIONS

1. THE AREA UNDER THE ROCK DAM SHALL BE CLEARED AND STRIPPED OF ROOTS AND OTHER OBJECTIONABLE MATERIAL. THE RESERVOIR SHALL BE CLEARED AS NEEDED TO FACILITATE SEDIMENT REMOVAL.
2. DIMENSIONS SHOWN ARE MINIMUM. TRENCH SHALL BE EXCAVATED FROM ABUTMENT TO ABUTMENT ON THE DAM CENTERLINE. FILTER FABRIC SHALL BE PLACED FROM UPSTREAM EDGE OF KEYTRENCH TO DOWNSTREAM EDGE OF APRON. JOINTS WILL LAP A MINIMUM OF 1 FT. WITH UPSTREAM STRIP ON TOP.
3. CONSTRUCT THE ROCK EMBANKMENT TO THE DIMENSIONS SHOWN ON THE DRAWING. ROCK ABUTMENTS SHALL BE MAINTAINED 2 FT. ABOVE THE CREST.
4. THE ROCK DAM SHALL BE CONSTRUCTED PRIOR TO CLEARING THE BASIN AREA. STABILIZE ALL DISTURBED AREAS, EXCEPT THE BASIN AREA, WITH TEMPORARY SEEDING.
5. FENCES AND WARNING SIGNS SHOULD BE PLACED AS APPROPRIATE.

MAXIMUM DRAINAGE AREA: 50 ACRES

ADAPTED FROM DETAILS PROVIDED BY: USDA – NRCS,
NEW YORK STATE DEPARTMENT OF TRANSPORTATION,
NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION,
NEW YORK STATE SOIL & WATER CONSERVATION COMMITTEE

ROCK DAM

STANDARD AND SPECIFICATIONS FOR SEDIMENT DIKE

Definition & Scope

A **temporary** earth dike with an excavated trench on the upslope toe placed across a slope to capture sediment laden flow from small disturbed drainage areas and allowing sediment to settle out by ponding.

Condition Where Practice Applies

This practice can be used on slopes and in areas where it is difficult to place and maintain silt fence. This practice acts as a smaller sediment trap for linear type applications. This practice will handle sheet and rill erosion for small tributary areas.

Design Criteria

1. The earth dike will be a maximum of 2 feet high with a 2 foot top width and 2:1 side slopes.

2. All earth fill will be placed on a stripped foundation, contain no stumps or woody material, and be compacted with the weight of the excavator bucket.

3. The interior capture trench will be a minimum 1.5 feet deep, 2 feet wide, with 1:1 side slopes and with a near level bottom. In areas where linear slopes exceed 4% the sediment dike system shall be segmented to maintain capture volume and ponding.

4. The system shall be used with a minimum 5 foot vegetated buffer on the down slope toe of the dike or an artificial buffer of erosion control matting.

5. The maximum ponding depth behind the dike shall be 1/2 the height of the constructed dike at its lowest elevation.

6. The ends of the dike system shall terminate with a 90º return of NYS DOT #1A crushed stone to filter any excess flow.

7. The maximum drainage area tributary to this practice shall not exceed 0.5 acres per 100 feet of dike, for slopes less than 10%. For slopes greater than 10%, the drainage area shall be 0.25 acres per 100 feet of dike.

8. The earthen dike shall be seeded and mulched to prevent erosion using an annual rye grass mixture at a rate of 1 lb. per 1, 000 square feet.

Maintenance

1. No traffic will be allowed on the dike.

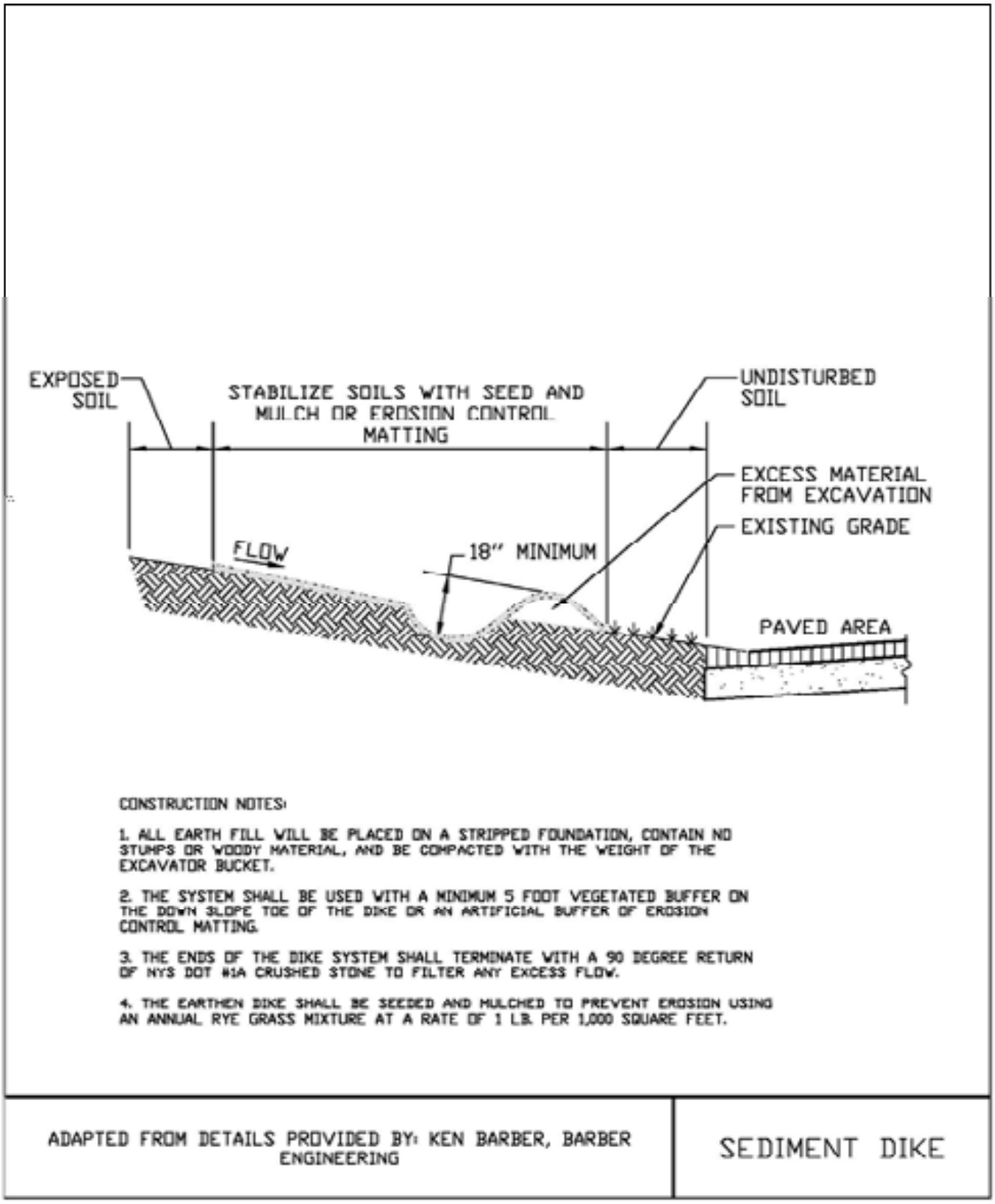
2. Dike system will be inspected weekly and after each runoff event.

3. Sediment in the system will be removed when the interior trench has filled to 75% capacity.

4. Sediment will be disposed of on-site as specified in the Erosion and Sediment Control Plan.

5. Upon stabilization of the tributary drainage area, the trench will be filled, excess dike fill removed, and the area graded and stabilized in accordance with the Erosion and Sediment Control Plan.

Figure 5.23
Sediment Dike



STANDARD AND SPECIFICATIONS FOR SILT FENCE

Definition & Scope

A **temporary** barrier of geotextile fabric installed on the contours across a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil by temporarily ponding the sediment laden runoff allowing settling to occur. The maximum period of use is limited by the ultraviolet stability of the fabric (approximately one year).

Conditions Where Practice Applies

A silt fence may be used subject to the following conditions:

1. Maximum allowable slope length and fence length will not exceed the limits shown in the Design Criteria for the specific type of silt fence used ; and
2. Maximum ponding depth of 1.5 feet behind the fence; and
3. Erosion would occur in the form of sheet erosion; and
4. There is no concentration of water flowing to the barrier; and
5. Soil conditions allow for proper keying of fabric, or other anchorage, to prevent blowouts.

Design Criteria

1. Design computations are not required for installations of 1 month or less. Longer installation periods should be designed for expected runoff.
2. All silt fences shall be placed as close to the disturbed area as possible, but at least 10 feet from the toe of a slope steeper than 3H:1V, to allow for maintenance and roll down. The area beyond the fence must be undisturbed or stabilized.
3. The type of silt fence specified for each location on the plan shall not exceed the maximum slope length and maximum fence length requirements shown in the following table:

		Slope Length/Fence Length (ft.)		
Slope	Steepness	Standard	Reinforced	Super
<2%	< 50:1	300/1500	N/A	N/A
2-10%	50:1 to 10:1	125/1000	250/2000	300/2500
10-20%	10:1 to 5:1	100/750	150/1000	200/1000
20-33%	5:1 to 3:1	60/500	80/750	100/1000
33-50%	3:1 to 2:1	40/250	70/350	100/500
>50%	> 2:1	20/125	30/175	50/250

Standard Silt Fence (SF) is fabric rolls stapled to wooden stakes driven 16 inches in the ground.
Reinforced Silt Fence (RSF) is fabric placed against welded wire fabric with anchored steel posts driven 16 inches in the ground.
Super Silt Fence (SSF) is fabric placed against chain link fence as support backing with posts driven 3 feet in the ground.

4. Silt fence shall be removed as soon as the disturbed area has achieved final stabilization.

The silt fence shall be installed in accordance with the appropriate details. Where ends of filter cloth come together, they shall be overlapped, folded and stapled to prevent sediment bypass. Butt joints are not acceptable. A detail of the silt fence shall be shown on the plan. See Figure 5.30 on page 5.56 for Reinforced Silt Fence as an example of details to be provided.

Criteria for Silt Fence Materials

1. Silt Fence Fabric: The fabric shall meet the following specifications unless otherwise approved by the appropriate erosion and sediment control plan approval authority. Such approval shall not constitute statewide acceptance.

Fabric Properties	Minimum Acceptable Value	Test Method
Grab Tensile Strength (lbs)	110	ASTM D 4632
Elongation at Failure (%)	20	ASTM D 4632
Mullen Burst Strength (PSI)	300	ASTM D 3786
Puncture Strength (lbs)	60	ASTM D 4833
Minimum Trapezoidal Tear Strength (lbs)	50	ASTM D 4533
Flow Through Rate (gal/ min/sf)	25	ASTM D 4491
Equivalent Opening Size	40-80	US Std Sieve ASTM D 4751
Minimum UV Residual (%)	70	ASTM D 4355

2. Fence Posts (for fabricated units): The length shall be a minimum of 36 inches long. Wood posts will be of sound quality hardwood with a minimum cross sectional area of 3.5 square inches. Steel posts will be standard T and U section weighing not less than 1.00 pound per linear foot. Posts for super silt fence shall be standard chain link fence posts.

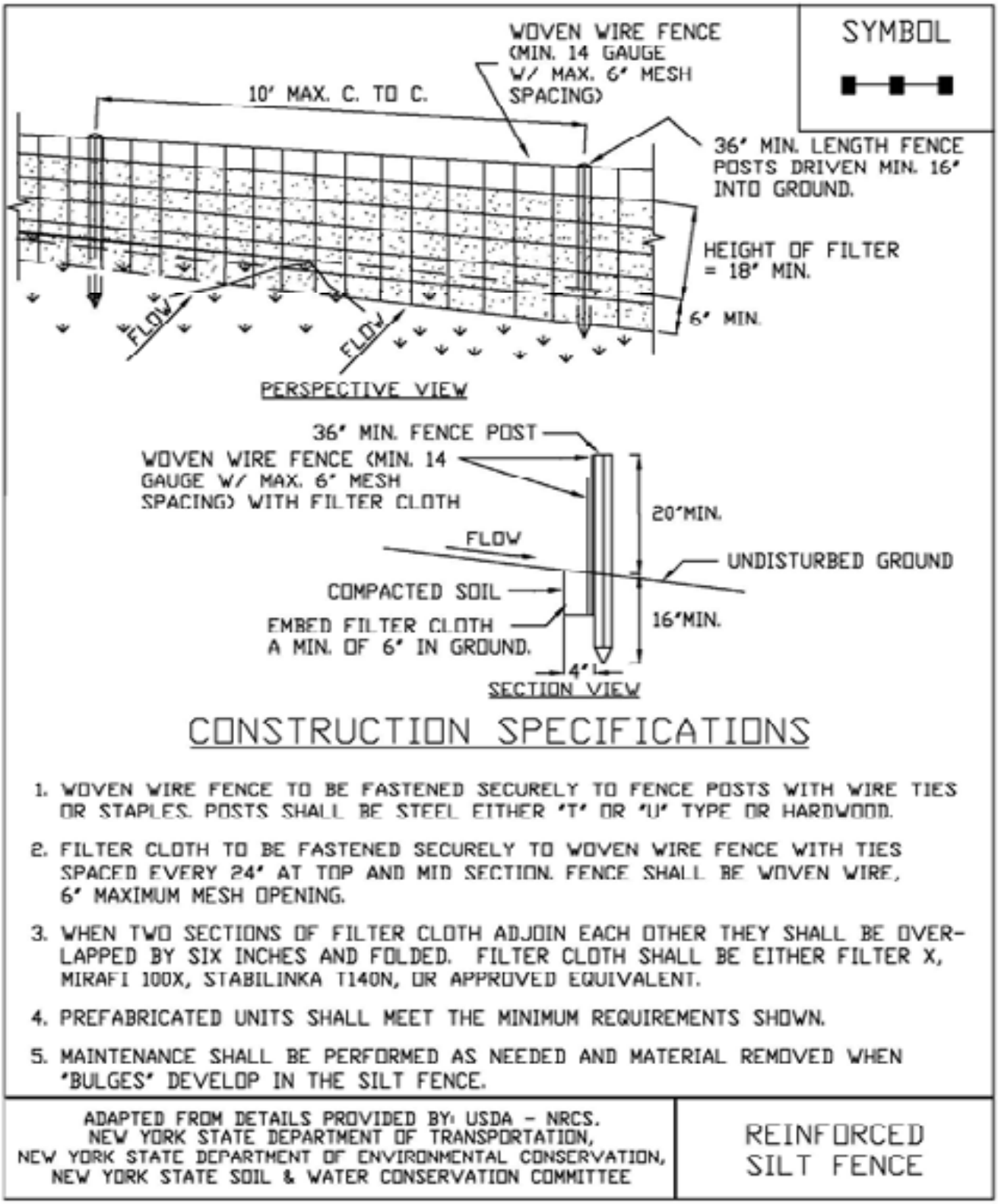
3. Wire Fence for reinforced silt fence: Wire fencing shall be a minimum 14 gage with a maximum 6 in. mesh opening, or as approved.

4. Prefabricated silt fence is acceptable as long as all material specifications are met.

Reinforced Silt Fence

Super Silt Fence

Figure 5.30
Reinforced Silt Fence



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STANDARD AND SPECIFICATIONS FOR STORM DRAIN INLET PROTECTION

Definition & Scope

A **temporary** barrier with low permeability, installed around inlets in the form of a fence, berm or excavation around an opening, detaining water and thereby reducing the sediment content of sediment laden water by settling thus preventing heavily sediment laden water from entering a storm drain system.

Conditions Where Practice Applies

This practice shall be used where the drainage area to an inlet is disturbed, it is not possible to temporarily divert the storm drain outfall into a trapping device, and watertight blocking of inlets is not advisable. **It is not to be used in place of sediment trapping devices.** This practice shall be used with an upstream buffer strip if placed at a storm drain inlet on a paved surface. It may be used in conjunction with storm drain diversion to help prevent siltation of pipes installed with low slope angle.

Types of Storm Drain Inlet Practices

There are five (5) specific types of storm drain inlet protection practices that vary according to their function, location, drainage area, and availability of materials:

I. Excavated Drop Inlet Protection
II. Fabric Drop Inlet Protection
III. Stone & Block Drop Inlet Protection
IV. Paved Surface Inlet Protection
V. Manufactured Insert Inlet Protection

Design Criteria

Drainage Area – The drainage area for storm drain inlets shall not exceed one acre. Erosion control/temporary stabilization measures must be implemented on the disturbed drainage area tributary to the inlet. The crest elevations of these practices shall provide storage and minimize bypass flow.

Type I – Excavated Drop Inlet Protection

This practice is generally used during initial overlot grading after the storm drain trunk line is installed.

Limit the drainage area to the inlet device to 1 acre. Excavated side slopes shall be no steeper than 2:1. The minimum depth shall be 1 foot and the maximum depth 2 feet as measured from the crest of the inlet structure. Shape the excavated basin to fit conditions with the longest dimension oriented toward the longest inflow area to provide maximum trap efficiency. The capacity of the excavated basin should be established to contain 900 cubic feet per acre of disturbed area. Weep holes, protected by fabric and stone, should be provided for draining the temporary pool.

Inspect and clean the excavated basin after every storm. Sediment should be removed when 50 percent of the storage volume is achieved This material should be incorporated into the site in a stabilized manner.

Type II – Fabric Drop Inlet Protection

This practice is generally used during final elevation grading phases after the storm drain system is completed.

Limit the drainage area to 1 acre per inlet device. Land area slope immediately surrounding this device should not exceed 1 percent. The maximum height of the fabric above the inlet crest shall not exceed 1.5 feet unless reinforced.

The top of the barrier should be maintained to allow overflow to drop into the drop inlet and not bypass the inlet to

unprotected lower areas. Support stakes for fabric shall be a minimum of 3 feet long, spaced a maximum 3 feet apart. They should be driven close to the inlet so any overflow drops into the inlet and not on the unprotected soil. Improved performance and sediment storage volume can be obtained by excavating the area.

Inspect the fabric barrier after each rain event and make repairs as needed. Remove sediment from the pool area as necessary with care not to undercut or damage the filter fabric. Upon stabilization of the drainage area, remove all materials and unstable sediment and dispose of properly. Bring the adjacent area of the drop inlet to grade, smooth and compact and stabilize in the appropriate manner to the site.

Type III – Stone and Block Drop Inlet Protection

This practice is generally used during the initial and intermediate overlot grading of a construction site.

Limit the drainage area to 1 acre at the drop inlet. The stone barrier should have a minimum height of 1 foot and a maximum height of 2 feet. Do not use mortar. The height should be limited to prevent excess ponding and bypass flow.

Recess the first course of blocks at least 2 inches below the crest opening of the storm drain for lateral support. Subsequent courses can be supported laterally if needed by placing a 2x4 inch wood stud through the block openings perpendicular to the course. The bottom row should have a few blocks oriented so flow can drain through the block to dewater the basin area.

The stone should be placed just below the top of the blocks on slopes of 2:1 or flatter. Place hardware cloth of wire mesh with ½ inch openings over all block openings to hold stone in place.

As an optional design, the concrete blocks may be omitted and the entire structure constructed of stone, ringing the outlet ("doughnut"). The stone should be kept at a 3:1 slope toward the inlet to keep it from being washed into the inlet. A level area 1 foot wide and four inches below the crest will further prevent wash. Stone on the slope toward the inlet should be at least 3 inches in size for stability and 1 inch or smaller away from the inlet to control flow rate. The elevation of the top of the stone crest must be maintained 6 inches lower than the ground elevation down slope from the inlet to ensure that all storm flows pass over the stone into the storm drain and not past the structure. Temporary diking should be used as necessary to prevent bypass flow.

The barrier should be inspected after each rain event and repairs made where needed. Remove sediment as necessary to provide for accurate storage volume for subsequent rains. Upon stabilization of contributing drainage area, remove all materials and any unstable soil and dispose of properly.

Bring the disturbed area to proper grade, smooth, compact and stabilize in a manner appropriate to the site.

Type IV – Paved Surface Inlet Protection

This practice is generally used after pavement construction has been done while final grading and soil stabilization is occurring. These practices should be used with upstream buffer strips in linear construction applications, and with temporary surface stabilization for overlot areas, to reduce the sediment load at the practice. This practice includes sand bags, compost filter socks, geo-tubes filled with ballast, and manufactured surface barriers. Pea gravel can also be used in conjunction with these practices to improve performance. When the inlet is not at a low point, and is offset from the pavement or gutter line, protection should be selected and installed so that flows are not diverted around the inlet.

The drainage area should be limited to 1 acre at the drain inlet. All practices will be placed at the inlet perimeter or beyond to maximize the flow capacity of the inlet. Practices shall be weighted, braced, tied, or otherwise anchored to prevent movement or shifting of location on paved surfaces. Traffic safety shall be integrated with the use of this practice. All practices should be marked with traffic safety cones as appropriate. Structure height shall not cause flooding or by-pass flow that would cause additional erosion.

The structure should be inspected after every storm event. Any sediment should be removed and disposed of on the site. Any broken or damaged components should be replaced. Check all materials for proper anchorage and secure as necessary.

Type V - Manufactured Insert Inlet Protection

The drainage area shall be limited to 1 acre at the drain inlet. All inserts will be installed and anchored in accordance with the manufacturers recommendations and design details. The fabric portion of the structure will equal or exceed the performance standard for the silt fence fabric. The inserts will be installed to preserve a minimum of 50 percent of the open, unobstructed design flow area of the storm drain inlet opening to maintain capacity for storm events.

Figure 5.31
Excavated Drop Inlet Protection

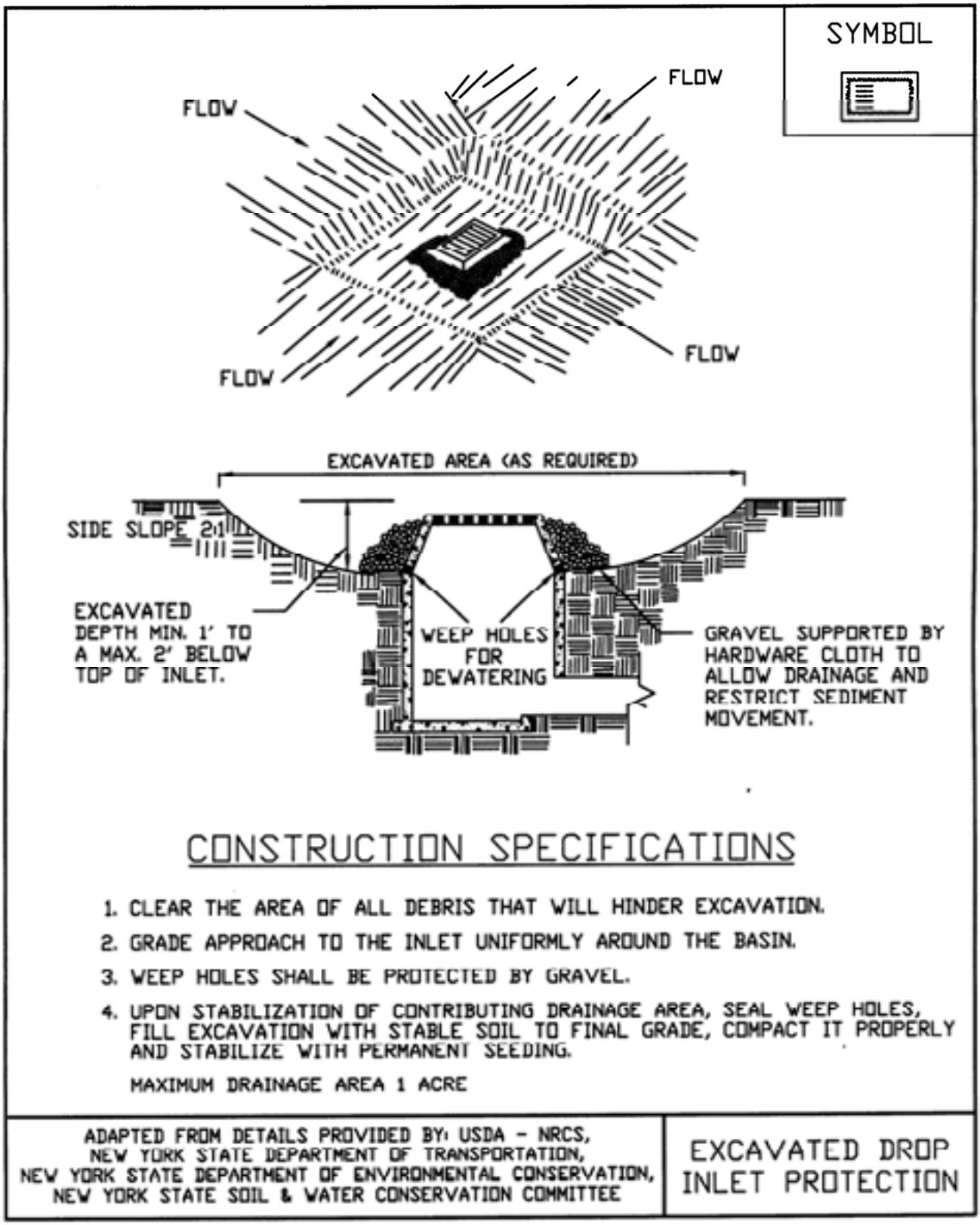


Figure 5.32
Fabric Drop Inlet Protection

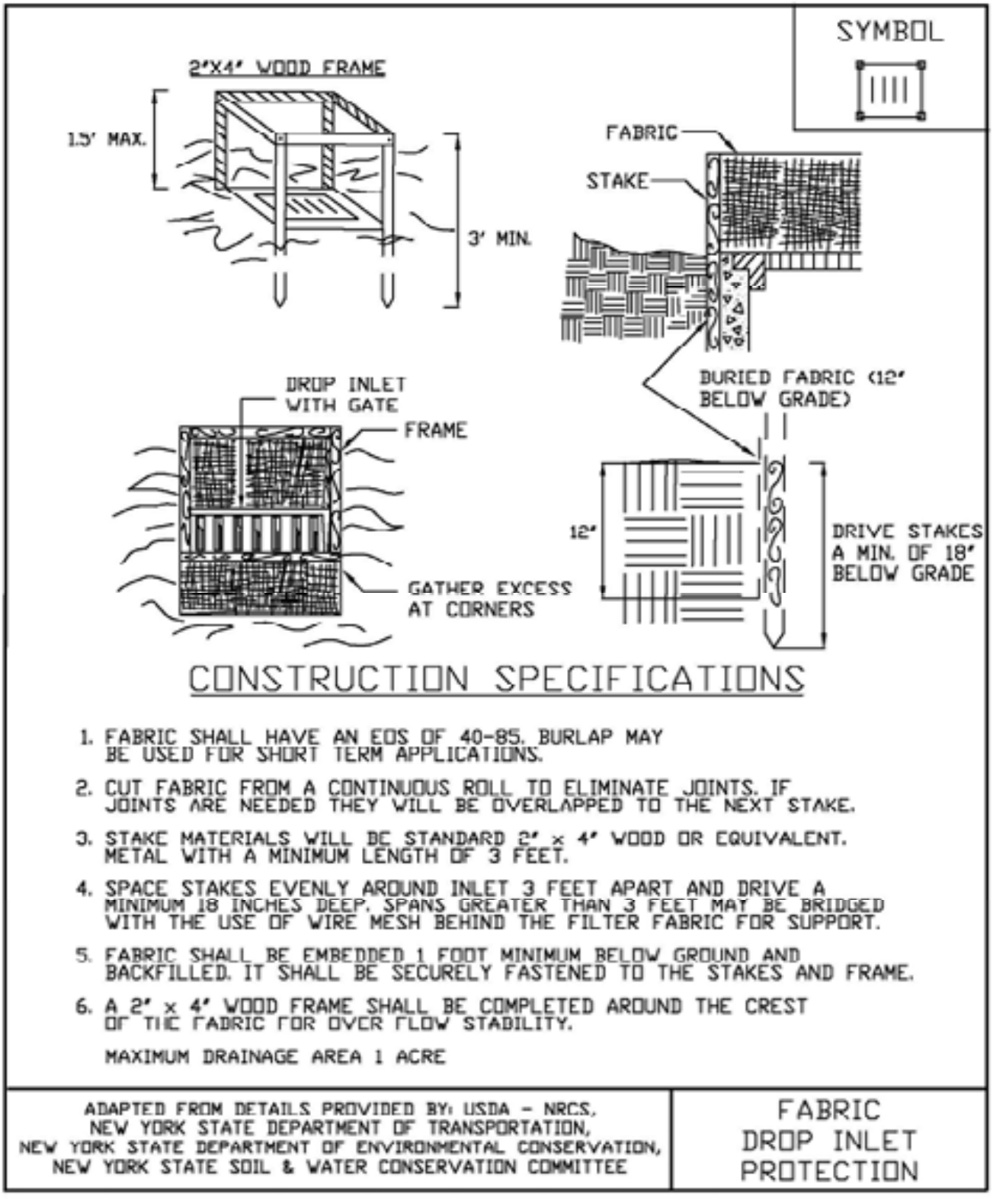
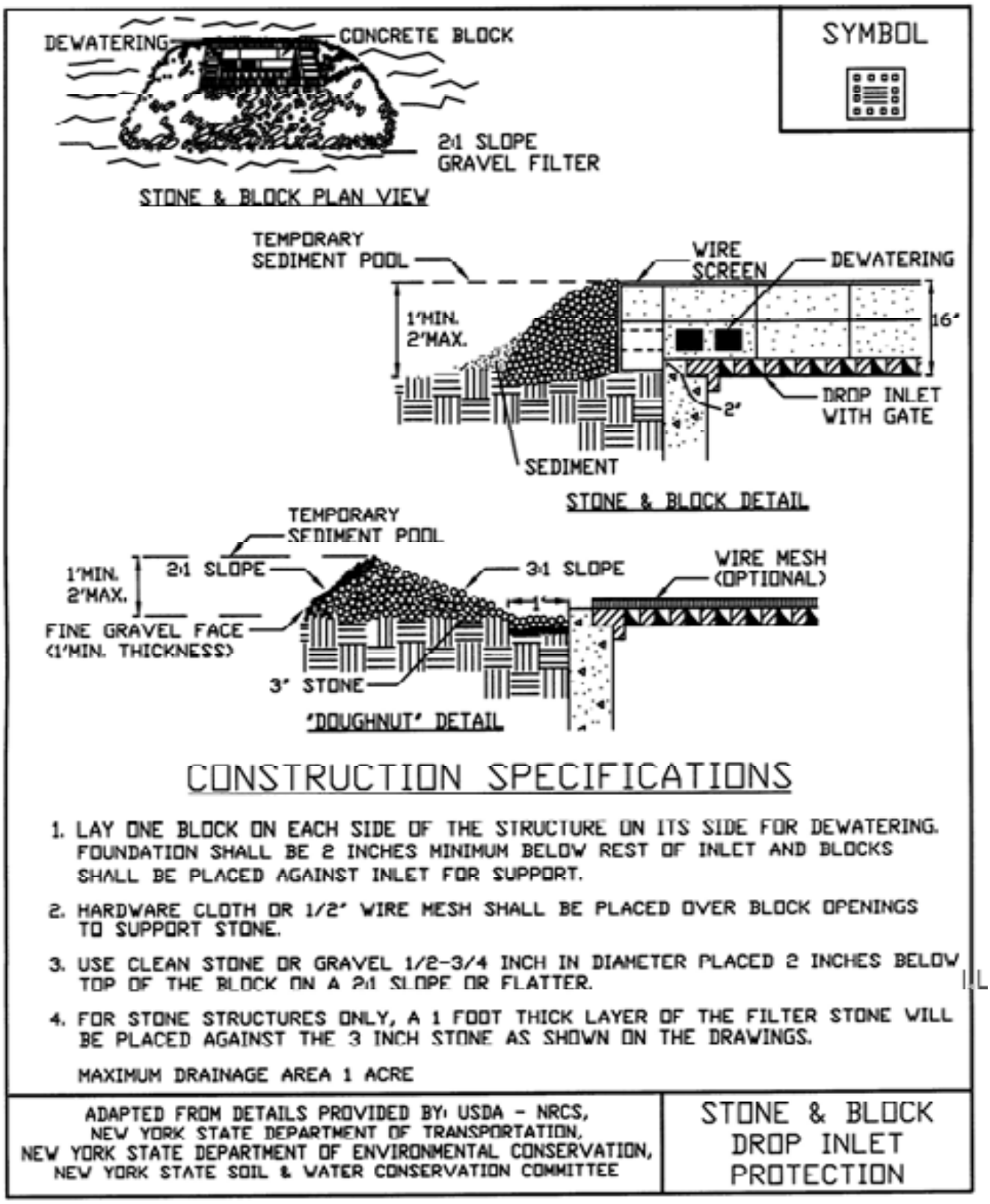


Figure 5.33
Stone & Block Drop Inlet Protection



STANDARD AND SPECIFICATIONS FOR STRAW BALE DIKE

Definition & Scope

A **temporary** barrier of straw, or similar material, used to intercept sediment laden runoff from small drainage areas of disturbed soil to reduce runoff velocity and effect deposition of the transported sediment load. Straw bale dikes have an estimated design life of three (3) months.

Condition Where Practice Applies

The straw bale dike is used where:

1. No other practice is feasible.
2. There is no concentration of water in a channel or other drainageway above the barrier.
3. Erosion would occur in the form of sheet erosion.
4. Length of slope above the straw bale dike does not exceed the following limits with the bale placed 10 feet from the toe of the slope:

Constructed Slope	Percent Slope	Slope Length (ft.)
2:1	50	25
3:1	33	50
4:1	25	75

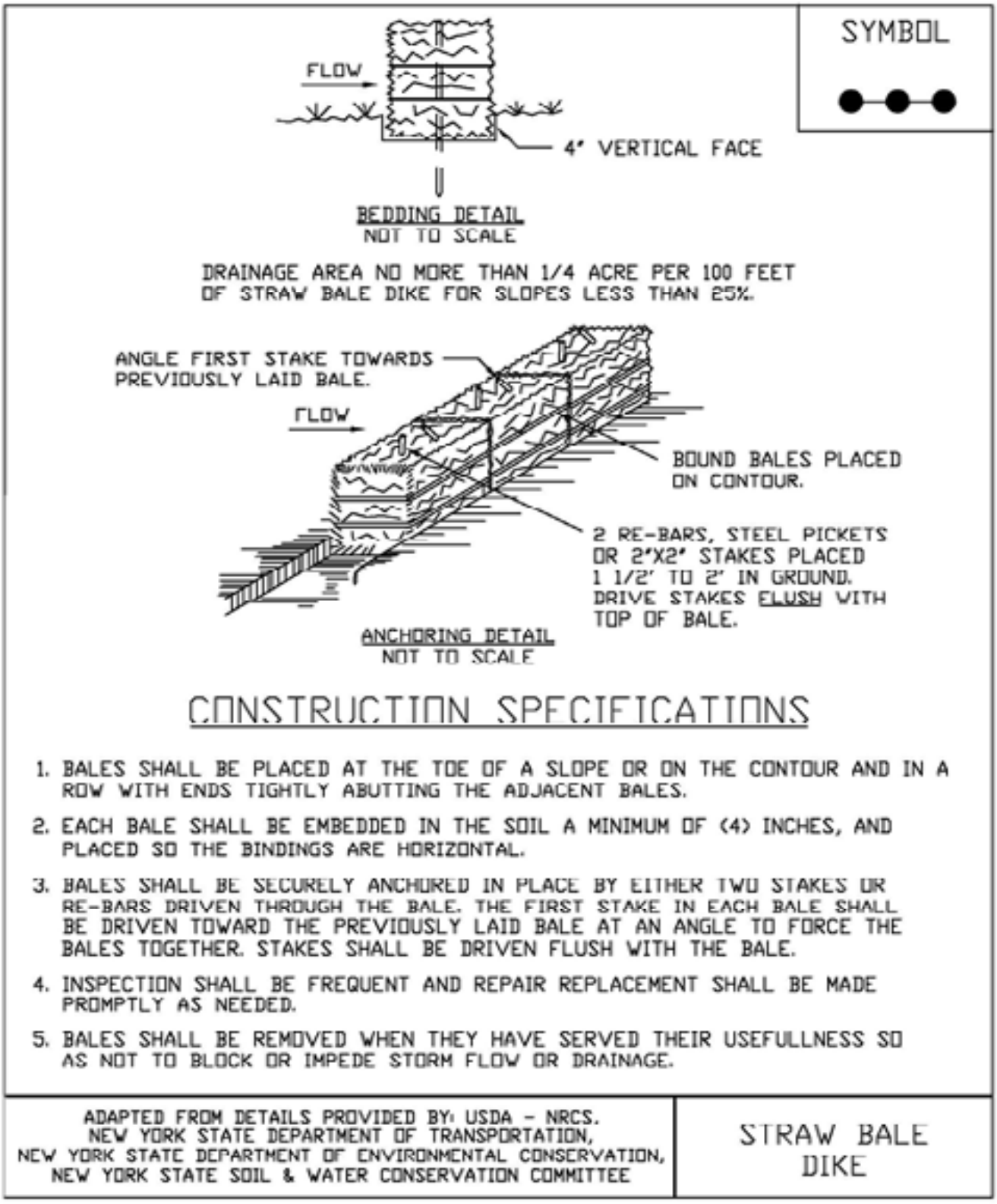
Where slope gradient changes through the drainage area, steepness refers to the steepest slope section contributing to the straw bale dike.

The practice may also be used for a single family lot if the slope is less than 15 percent. The contributing drainage areas in this instance shall be less than one quarter of an acre per 100 feet of dike and the length of slope above the dike shall be less than 100 feet.

Design Criteria

The above table is adequate, in general, for a one-inch rainfall event. Larger storms could cause failure of this practice. Use of this practice in sensitive areas for longer than one month should be specifically designed to store expected runoff. All bales shall be placed on the contour with cut edge of bale adhering to the ground. See Figure 5.34 on page 5.64 for details.

Figure 5.34
Straw Bale Dike



STANDARD AND SPECIFICATIONS FOR TURBIDITY CURTAIN

Definition & Scope

A **temporary** flexible, impenetrable barrier used to trap sediment in water bodies. This curtain is weighted at the bottom to achieve closure while supported at the top through a flotation system and used to prevent the migration of silt from a work site in a water environment into the larger body of water. Top bar float has to support weight of curtain material. Bottom anchor has to be flexible so that it will lie along the contour of the water body bottom.

Condition Where Practice Applies

A turbidity curtain is generally used when construction activity occurs within a waterbody or along its shoreline and is of short duration, generally less than one month. Curtains are used in calm water surfaces and not in areas of flowing water. **Turbidity curtains are not to be used across flowing watercourses.**

Design Criteria

The turbidity curtain shall be located beyond the lateral limits of the construction site and firmly anchored in place. The alignment should be set as close to the work area as possible but not so close as to be disturbed by applicable construction equipment. The height of the curtain shall be 20 percent greater than the depth of the water to allow for water level fluctuations. The area that the turbidity curtain protects shall not contain large culverts or drainage areas that if flows occur behind the curtain would cause a breach or lost contact at the bottom surface.

If water depths at the design alignment are minimal, the toe can be anchored in place by staking.

See Figure 5.35 on page 5.66.

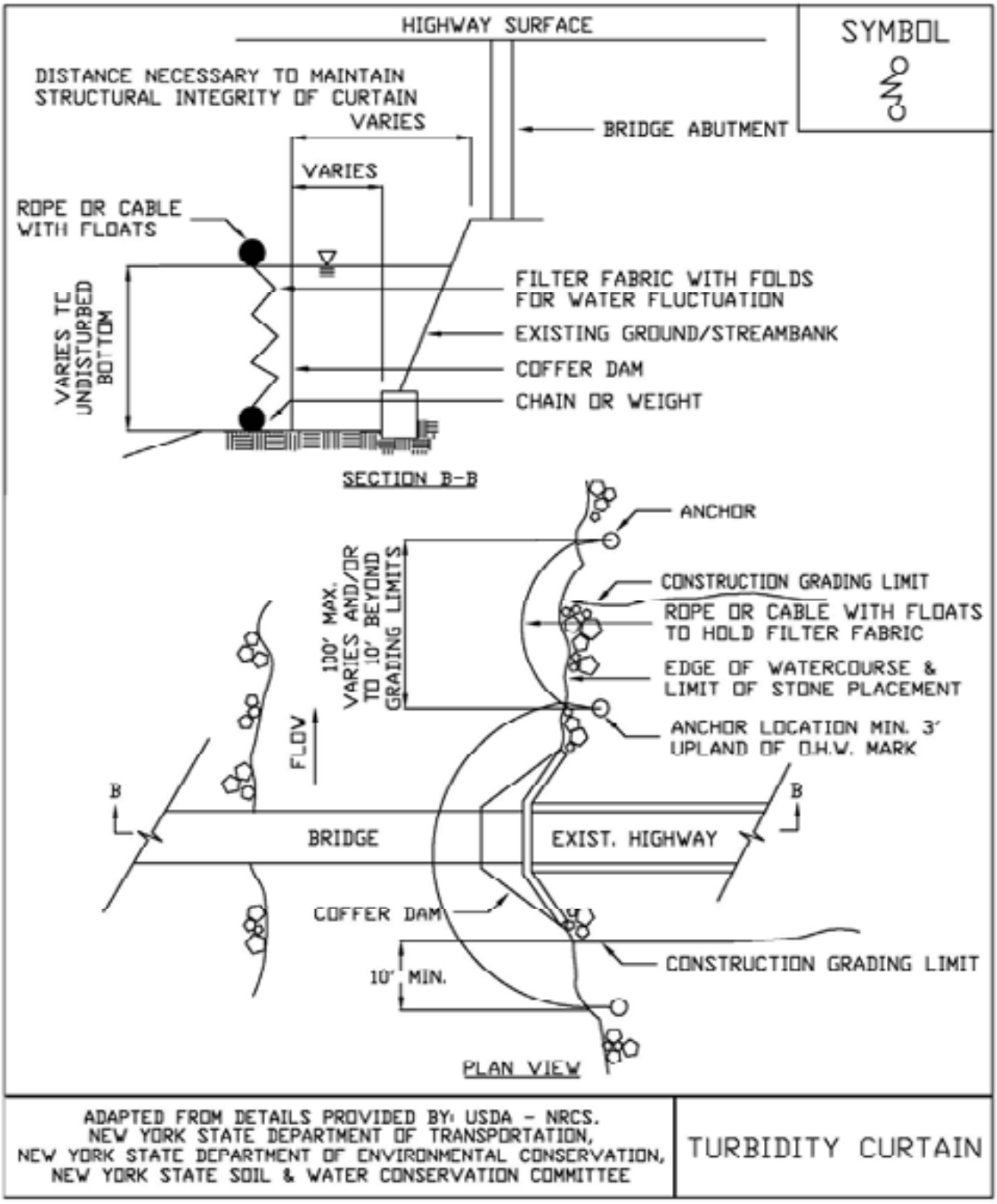
Construction Specifications

The area of proposed installation of the curtain shall be inspected for obstacles and impediments that could damage the curtain or impair its effectiveness to retain sediment. All materials shall be removed so they cannot enter the waterbody. Shallow installations can be made by securing the curtain by staking rather than using a flotation system. Supplemental anchors of the turbidity curtain toe shall be used, as needed, depending on water surface disturbances such as boats and wave action by winds.

Maintenance

The turbidity curtain shall be inspected daily and repaired or replaced immediately. It is not normally necessary to remove sediment deposited behind the curtain; but, when necessary, removal is usually done by hand prior to removal of the barrier. All removed silt is stabilized away from the waterbody. The barrier shall be removed by carefully pulling it toward the construction site to minimize the release of attached sediment. Any floating construction or natural debris shall be immediately removed to prevent damage to the curtain. If the curtain is oriented in a manner that faces the prevailing winds, frequent checks of the anchorage shall be made.

Figure 5.35
Turbidity Curtain



Appendix C

Notice of Intent for Coverage under GP-0-20-001

MS4 Acceptance Form

Notice of Termination

NOI for coverage under Stormwater General Permit for Construction Activity

version 1.35

(Submission #: HPM-XJT2-DGNXR, version 1)

Details

Originally Started By	Matthew Trainor
Alternate Identifier	Unity Place Warehouse
Submission ID	HPM-XJT2-DGNXR
Submission Reason	New
Status	Draft

Form Input

Owner/Operator Information

Owner/Operator Name (Company/Private Owner/Municipality/Agency/Institution, etc.)
Unity Place Newburgh LLC

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Bomzer

Owner/Operator Contact Person First Name
Akiva

Owner/Operator Mailing Address
95 Chestnut Ridge Road

City
Montvale

State
NJ

Zip
07645

Phone
(212) 796-5449

Email
akiva@acginfo.com

Federal Tax ID
NONE PROVIDED

Project Location

Project/Site Name
Unity Place Warehouse

Street Address (Not P.O. Box)
7 Unity Place

Side of Street
West

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Town of Newburgh

State
NY

Zip
12550

DEC Region
3

County
ORANGE

Name of Nearest Cross Street
Old Little Britain Road

Distance to Nearest Cross Street (Feet)
0

Project In Relation to Cross Street
North

Tax Map Numbers Section-Block-Parcel
97-2-14.1, 19.12 & 37.2

Tax Map Numbers
97

1. Coordinates

Provide the Geographic Coordinates for the project site. The two methods are:
- Navigate to the project location on the map (below) and click to place a marker and obtain the XY coordinates.
- The "Find Me" button will provide the lat/long for the person filling out this form. Then pan the map to the correct location and click the map to place a marker and obtain the XY coordinates.

Navigate to your location and click on the map to get the X,Y coordinates
41.49807395886589,-74.06483377608625

Project Details

2. What is the nature of this project?
New Construction

3. Select the predominant land use for both pre and post development conditions.

Pre-Development Existing Landuse
Other: Mix of open land/forest. Portion previously disturbed

Post-Development Future Land Use
Commercial

3a. If Single Family Subdivision was selected in question 3, enter the number of subdivision lots.
NONE PROVIDED

---

4. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area.

*** ROUND TO THE NEAREST TENTH OF AN ACRE. ***

Total Site Area (acres)
14.89

Total Area to be Disturbed (acres)
14.89

Existing Impervious Area to be Disturbed (acres)
0.1

Future Impervious Area Within Disturbed Area (acres)
8.78

5. Do you plan to disturb more than 5 acres of soil at any one time?
Yes

---

6. Indicate the percentage (%) of each Hydrologic Soil Group(HSG) at the site.

A (%)
0

B (%)
54.5

C (%)
0

D (%)
45.5

7. Is this a phased project?
No

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

Start Date
12/01/2023

End Date
06/01/2026

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.
Federal wetlands to the north and south

9a. Type of waterbody identified in question 9?
Wetland/Federal Jurisdiction Off Site
Stream/Creek Off Site
Lake Off Site

Other Waterbody Type Off Site Description
Brookside Pond/Quassaic Creek (North) - Lockwood Basin (South)

9b. If "wetland" was selected in 9A, how was the wetland identified?
Regulatory Map

10. Has the surface waterbody(ies in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001?
No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001?
No

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters?
No

If No, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as D (provided the map unit name is inclusive of slopes greater than 25%), E or F on the USDA Soil Survey?
NONE PROVIDED

If Yes, what is the acreage to be disturbed?
NONE PROVIDED

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

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)?
Yes

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

17. Does any runoff from the site enter a sewer classified as a Combined Sewer?
No

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law?
No

19. Is this property owned by a state authority, state agency, federal government or local government?
No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.)
No

Required SWPPP Components

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)?
Yes

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)?
Yes

If you answered No in question 22, skip question 23 and the Post-construction Criteria and Post-construction SMP Identification sections.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual?
Yes

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:
Professional Engineer (P.E.)

SWPPP Preparer
Brooker Engineering, PLLC

Contact Name (Last, Space, First)
Trainor, Matthew

Mailing Address
74 Lafayette Avenue, Suite 501

City
Suffern

State
New York

Zip
10901

Phone
845-357-4411

Email
mtrainor@brookerengineering.com

Download SWPPP Preparer Certification Form
Please take the following steps to prepare and upload your preparer certification form:

1) Click on the link below to download a blank certification form
2) The certified SWPPP preparer should sign this form
3) Scan the signed form
4) Upload the scanned document
Download SWPPP Preparer Certification Form

Please upload the SWPPP Preparer Certification
> NONE PROVIDED
> **Comment**
> NONE PROVIDED

Erosion & Sediment Control Criteria

25. Has a construction sequence schedule for the planned management practices been prepared?
Yes

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

Temporary Structural
Dust Control
Level Spreader
Silt Fence
Stabilized Construction Entrance
Sediment Traps
Storm Drain Inlet Protection
Perimeter Dike/Swale

Biotechnical
None

Vegetative Measures
Mulching
Seeding
Topsoiling

Permanent Structural
Retaining Wall
Rock Outlet Protection
Land Grading

Other
NONE PROVIDED

Post-Construction Criteria

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

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

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).
All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout). (Acre-feet)
1.081

29. Post-construction SMP Identification
Use the Post-construction SMP Identification section to identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity that were used to reduce the Total WQv Required (#28).

Identify the SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use the Post-Construction SMP Identification section to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29. (acre-feet)
0.801

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28)?
No

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

32. Provide the Minimum RRv required based on HSG. [Minimum RRv Required = (P) (0.95) (Ai) / 12, Ai=(s) (Aic)] (acre-feet)
0.322

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

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. SMPs
Use the Post-construction SMP Identification section to identify the Standard SMPs and, if applicable, the Alternative SMPs to be used to treat the remaining total WQv (=Total WQv Required in #28 - Total RRv Provided in #30).

Also, provide the total impervious area that contributes runoff to each practice selected.

NOTE: Use the Post-construction SMP Identification section to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question #29. (acre-feet)
1.081

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a).
1.882

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)?
Yes

If Yes, go to question 36.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

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

CPv Required (acre-feet)
0.324

CPv Provided (acre-feet)
1.34

36a. The need to provide channel protection has been waived because:
NONE PROVIDED

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

Overbank Flood Control Criteria (Qp)

Pre-Development (CFS)
26.25

Post-Development (CFS)
21.93

Total Extreme Flood Control Criteria (Qf)

Pre-Development (CFS)
74.66

Post-Development (CFS)
69.45

37a. The need to meet the Qp and Qf criteria has been waived because:
NONE PROVIDED

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed?
Yes

If Yes, Identify the entity responsible for the long term Operation and Maintenance
Unity Place Newburgh LLC

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). (See question #32a) This space can also be used for other pertinent project information.
Site specific limitations include no soil infiltration rates and high groundwater on the south end of the site as detailed in our Soil Testing Results located in the Appendix of the SWPPP. These limitations did not allow us to reduce the full Water Quality Volume of the southern drainage area, although we were still able to receive credit for reduction of about 2.4 times the minimum overall required runoff reduction volume via bioretention to the south and infiltration to the north. Building footprint was reduced to fit bioretention facilities and meet minimum runoff reduction criteria for the southern subarea.

Post-Construction SMP Identification

Runoff Reduction (RR) Techniques, Standard Stormwater Management Practices (SMPs) and Alternative SMPs
Identify the Post-construction SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

RR Techniques (Area Reduction)

Round to the nearest tenth

Total Contributing Acres for Conservation of Natural Area (RR-1)
NONE PROVIDED

Total Contributing Impervious Acres for Conservation of Natural Area (RR-1)
NONE PROVIDED

Total Contributing Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
NONE PROVIDED

Total Contributing Impervious Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
NONE PROVIDED

Total Contributing Acres for Tree Planting/Tree Pit (RR-3)
NONE PROVIDED

Total Contributing Impervious Acres for Tree Planting/Tree Pit (RR-3)
NONE PROVIDED

Total Contributing Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

RR Techniques (Volume Reduction)

Total Contributing Impervious Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

Total Contributing Impervious Acres for Vegetated Swale (RR-5)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Garden (RR-6)
NONE PROVIDED

Total Contributing Impervious Acres for Stormwater Planter (RR-7)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Barrel/Cistern (RR-8)
NONE PROVIDED

Total Contributing Impervious Acres for Porous Pavement (RR-9)
NONE PROVIDED

Total Contributing Impervious Acres for Green Roof (RR-10)
NONE PROVIDED

Standard SMPs with RRv Capacity

Total Contributing Impervious Acres for Infiltration Trench (I-1)
NONE PROVIDED

Total Contributing Impervious Acres for Infiltration Basin (I-2)
NONE PROVIDED

Total Contributing Impervious Acres for Dry Well (I-3)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Infiltration System (I-4)

Total Contributing Impervious Acres for Bioretention (F-5)
3.78

Total Contributing Impervious Acres for Dry Swale (O-1)
NONE PROVIDED

Standard SMPs

Total Contributing Impervious Acres for Micropool Extended Detention (P-1)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Pond (P-2)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Extended Detention (P-3)
NONE PROVIDED

Total Contributing Impervious Acres for Multiple Pond System (P-4)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Pond (P-5)
NONE PROVIDED

Total Contributing Impervious Acres for Surface Sand Filter (F-1)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Sand Filter (F-2)
NONE PROVIDED

Total Contributing Impervious Acres for Perimeter Sand Filter (F-3)
NONE PROVIDED

Total Contributing Impervious Acres for Organic Filter (F-4)
NONE PROVIDED

Total Contributing Impervious Acres for Shallow Wetland (W-1)
NONE PROVIDED

Total Contributing Impervious Acres for Extended Detention Wetland (W-2)
NONE PROVIDED

Total Contributing Impervious Acres for Pond/Wetland System (W-3)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Wetland (W-4)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Swale (O-2)
NONE PROVIDED

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

Total Contributing Impervious Area for Hydrodynamic
NONE PROVIDED

Total Contributing Impervious Area for Wet Vault
NONE PROVIDED

Total Contributing Impervious Area for Media Filter
NONE PROVIDED

"Other" Alternative SMP?
NONE PROVIDED

Total Contributing Impervious Area for "Other"
NONE PROVIDED

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

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

Manufacturer of Alternative SMP
NONE PROVIDED

Name of Alternative SMP
NONE PROVIDED

Other Permits

40. Identify other DEC permits, existing and new, that are required for this project/facility.
None

If SPDES Multi-Sector GP, then give permit ID
NONE PROVIDED

If Other, then identify
NONE PROVIDED

41. Does this project require a US Army Corps of Engineers Wetland Permit?
No

If "Yes," then indicate Size of Impact, in acres, to the nearest tenth
NONE PROVIDED

42. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned.
NONE PROVIDED

MS4 SWPPP Acceptance

43. Is this project subject to the requirements of a regulated, traditional land use control MS4?
Yes - Please attach the MS4 Acceptance form below

If No, skip question 44

44. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI?
Yes

MS4 SWPPP Acceptance Form Download
Download form from the link below. Complete, sign, and upload.
MS4 SWPPP Acceptance Form

MS4 Acceptance Form Upload
> NONE PROVIDED
> **Comment**
> NONE PROVIDED

Owner/Operator Certification

Owner/Operator Certification Form Download
Download the certification form by clicking the link below. Complete, sign, scan, and upload the form.
Owner/Operator Certification Form (PDF, 45KB)

Upload Owner/Operator Certification Form
> NONE PROVIDED
> **Comment**
> NONE PROVIDED

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

MS4 Stormwater Pollution Prevention Plan (SWPPP) Acceptance Form

for

Construction Activities Seeking Authorization Under SPDES General Permit

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

I. Project Owner/Operator Information	
1. Owner/Operator Name:	Unity Place Newburgh LLC
2. Contact Person:	Akiva Bomzer
3. Street Address:	95 Chestnut Ridge Road
4. City/State/Zip:	Montvale, NJ 07645
II. Project Site Information	
5. Project/Site Name:	Unity Place Warehouse
6. Street Address:	7 Unity Place
7. City/State/Zip:	Newburgh, NY 12550
III. Stormwater Pollution Prevention Plan (SWPPP) Review and Acceptance Information	
8. SWPPP Reviewed by:	
9. Title/Position:	
10. Date Final SWPPP Reviewed and Accepted:	
IV. Regulated MS4 Information	
11. Name of MS4:	
12. MS4 SPDES Permit Identification Number: NYR20A	
13. Contact Person:	
14. Street Address:	
15. City/State/Zip:	
16. Telephone Number:	

MS4 SWPPP Acceptance Form - continued

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

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

Printed Name:

Title/Position:

Signature:

Date:

VI. Additional Information

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

New York State Department of Environmental Conservation
Division of Water
625 Broadway, 4th Floor
Albany, New York 12233-3505
(NOTE: Submit completed form to address above)

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity

Please indicate your permit identification number: NYR ___ ___ ___ ___ ___ ___

I. Owner or Operator Information

1. Owner/Operator Name:

2. Street Address:

3. City/State/Zip:

4. Contact Person: | 4a.Telephone:

4b. Contact Person E-Mail:

II. Project Site Information

5. Project/Site Name:

6. Street Address:

7. City/Zip:

8. County:

III. Reason for Termination

9a. □ All disturbed areas have achieved final stabilization in accordance with the general permit and SWPPP. ***Date final stabilization completed** (month/year): _____

9b. □ Permit coverage has been transferred to new owner/operator. Indicate new owner/operator's permit identification number: NYR ___ ___ ___ ___ ___ ___
(Note: Permit coverage can not be terminated by owner identified in I.1. above until new owner/operator obtains coverage under the general permit)

9c. □ Other (Explain on Page 2)

IV. Final Site Information:

10a. Did this construction activity require the development of a SWPPP that includes post-construction stormwater management practices? □ yes □ no (If no, go to question 10f.)

10b. Have all post-construction stormwater management practices included in the final SWPPP been constructed? □ yes □ no (If no, explain on Page 2)

10c. Identify the entity responsible for long-term operation and maintenance of practice(s)?

_____

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

10d. Has the entity responsible for long-term operation and maintenance been given a copy of the operation and maintenance plan required by the general permit? □ yes □ no

10e. Indicate the method used to ensure long-term operation and maintenance of the post-construction stormwater management practice(s):

□ Post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain practice(s) have been deeded to the municipality.

□ Executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s).

□ For post-construction stormwater management practices that are privately owned, a mechanism is in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the owner or operator's deed of record.

□ For post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university or hospital), government agency or authority, or public utility; policy and procedures are in place that ensures operation and maintenance of the practice(s) in accordance with the operation and maintenance plan.

10f. Provide the total area of impervious surface (i.e. roof, pavement, concrete, gravel, etc.) constructed within the disturbance area? _____ (acres)

11. Is this project subject to the requirements of a regulated, traditional land use control MS4? □ yes □ no

(If Yes, complete section VI - "MS4 Acceptance" statement

V. Additional Information/Explanation:

(Use this section to answer questions 9c. and 10b., if applicable)

VI. MS4 Acceptance - MS4 Official (principal executive officer or ranking elected official) or Duly Authorized Representative (Note: Not required when 9b. is checked -transfer of coverage)

I have determined that it is acceptable for the owner or operator of the construction project identified in question 5 to submit the Notice of Termination at this time.

Printed Name:	
Title/Position:	
Signature:	Date:

NOTICE OF TERMINATION for Storm Water Discharges Authorized under the SPDES General Permit for Construction Activity - continued

VII. Qualified Inspector Certification - Final Stabilization:

I hereby certify that all disturbed areas have achieved final stabilization as defined in the current version of the general permit, and that all temporary, structural erosion and sediment control measures have been removed. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

VIII. Qualified Inspector Certification - Post-construction Stormwater Management Practice(s):

I hereby certify that all post-construction stormwater management practices have been constructed in conformance with the SWPPP. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

IX. Owner or Operator Certification

I hereby certify that this document was prepared by me or under my direction or supervision. My determination, based upon my inquiry of the person(s) who managed the construction activity, or those persons directly responsible for gathering the information, is that the information provided in this document is true, accurate and complete. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of the State of New York and could subject me to criminal, civil and/or administrative proceedings.

Printed Name:	
Title/Position:	
Signature:	Date:

(NYS DEC Notice of Termination - January 2015)

Appendix D

NYSDEC General Permit GP-0-20-001

NEW YORK STATE OF OPPORTUNITY | Department of Environmental Conservation

NEW YORK STATE
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES GENERAL PERMIT
FOR STORMWATER DISCHARGES

From

CONSTRUCTION ACTIVITY

Permit No. GP- 0-20-001

Issued Pursuant to Article 17, Titles 7, 8 and Article 70

of the Environmental Conservation Law

Effective Date: January 29, 2020

Expiration Date: January 28, 2025

John J. Ferguson

Chief Permit Administrator

1-23-20

Authorized Signature

Date

Address: NYS DEC
Division of Environmental Permits
625 Broadway, 4th Floor
Albany, N.Y. 12233-1750

PREFACE

Pursuant to Section 402 of the Clean Water Act ("CWA"), stormwater *discharges* from certain *construction activities* are unlawful unless they are authorized by a *National Pollutant Discharge Elimination System ("NPDES")* permit or by a state permit program. New York administers the approved State Pollutant Discharge Elimination System (SPDES) program with permits issued in accordance with the New York State Environmental Conservation Law (ECL) Article 17, Titles 7, 8 and Article 70.

An *owner or operator* of a *construction activity* that is eligible for coverage under this permit must obtain coverage prior to the *commencement of construction activity*. Activities that fit the definition of "*construction activity*", as defined under 40 CFR 122.26(b)(14)(x), (15)(i), and (15)(ii), constitute construction of a *point source* and therefore, pursuant to ECL section 17-0505 and 17-0701, the *owner or operator* must have coverage under a SPDES permit prior to *commencing construction activity*. The *owner or operator* cannot wait until there is an actual *discharge* from the *construction site* to obtain permit coverage.

***Note: The italicized words/phrases within this permit are defined in Appendix A.**

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SPDES GENERAL PERMIT FOR STORMWATER DISCHARGES FROM CONSTRUCTION ACTIVITIES

Table of Contents

Part 1. PERMIT COVERAGE AND LIMITATIONS

A. Permit Application

This permit authorizes stormwater *discharges* to *surface waters of the State* from the following *construction activities* identified within 40 CFR Parts 122.26(b)(14)(x), 122.26(b)(15)(i) and 122.26(b)(15)(ii), provided all of the eligibility provisions of this permit are met:

1. *Construction activities* involving soil disturbances of one (1) or more acres; including disturbances of less than one acre that are part of a *larger common plan of development or sale* that will ultimately disturb one or more acres of land; excluding *routine maintenance activity* that is performed to maintain the original line and grade, hydraulic capacity or original purpose of a facility;

2. *Construction activities* involving soil disturbances of less than one (1) acre where the Department has determined that a *SPDES* permit is required for stormwater *discharges* based on the potential for contribution to a violation of a *water quality standard* or for significant contribution of *pollutants* to *surface waters of the State.*

3. *Construction activities* located in the watershed(s) identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

B. Effluent Limitations Applicable to Discharges from Construction Activities

*Discharge*s authorized by this permit must achieve, at a minimum, the effluent limitations in Part I.B.1. (a) – (f) of this permit. These limitations represent the degree of effluent reduction attainable by the application of best practicable technology currently available.

1. Erosion and Sediment Control Requirements - The *owner or operator* must select, design, install, implement and maintain control measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. The selection, design, installation, implementation, and maintenance of these control measures must meet the non-numeric effluent limitations in Part I.B.1.(a) – (f) of this permit and be in accordance with the New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, using sound engineering judgment. Where control measures are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must include in the *Stormwater Pollution Prevention Plan* (“SWPPP”) the reason(s) for the

deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

a. **Erosion and Sediment Controls.** Design, install and maintain effective erosion and sediment controls to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such controls must be designed, installed and maintained to:

   (i) *Minimize* soil erosion through application of runoff control and soil stabilization control measure to *minimize pollutant discharge*s;

   (ii) Control stormwater *discharge*s, including both peak flowrates and total stormwater volume, to *minimize* channel and *streambank* erosion and scour in the immediate vicinity of the *discharge* points;

   (iii) *Minimize* the amount of soil exposed during *construction activity*;

   (iv) *Minimize* the disturbance of *steep slopes*;

   (v) *Minimize* sediment *discharge*s from the site;

   (vi) Provide and maintain *natural buffer*s around surface waters, direct stormwater to vegetated areas and maximize stormwater infiltration to reduce *pollutant discharge*s, unless *infeasible*;

   (vii) *Minimize* soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates that it be compacted;

   (viii) Unless *infeasible*, preserve a sufficient amount of topsoil to complete soil restoration and establish a uniform, dense vegetative cover; and

   (ix) *Minimize* dust. On areas of exposed soil, *minimize* dust through the appropriate application of water or other dust suppression techniques to control the generation of pollutants that could be discharged from the site.

b. **Soil Stabilization**. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within fourteen (14) days from the date the current soil disturbance activity ceased. For construction sites that *directly discharge* to one of the 303(d) segments

listed in Appendix E or is located in one of the watersheds listed in Appendix C, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. See Appendix A for definition of *Temporarily Ceased*.

c. **Dewatering**. *Discharge*s from *dewatering* activities, including *discharge*s from *dewatering* of trenches and excavations, must be managed by appropriate control measures.

d. **Pollution Prevention Measures**. Design, install, implement, and maintain effective pollution prevention measures to *minimize* the *discharge* of *pollutants* and prevent a violation of the *water quality standards*. At a minimum, such measures must be designed, installed, implemented and maintained to:

(i) *Minimize* the *discharge* of *pollutants* from equipment and vehicle washing, wheel wash water, and other wash waters. This applies to washing operations that use clean water only. Soaps, detergents and solvents cannot be used;

(ii) *Minimize* the exposure of building materials, building products, construction wastes, trash, landscape materials, fertilizers, pesticides, herbicides, detergents, sanitary waste, hazardous and toxic waste, and other materials present on the site to precipitation and to stormwater. Minimization of exposure is not required in cases where the exposure to precipitation and to stormwater will not result in a *discharge* of *pollutants*, or where exposure of a specific material or product poses little risk of stormwater contamination (such as final products and materials intended for outdoor use) ; and

(iii) Prevent the *discharge* of *pollutants* from spills and leaks and implement chemical spill and leak prevention and response procedures.

e. **Prohibited *Discharge*s.** The following *discharge*s are prohibited:

(i) Wastewater from washout of concrete;

(ii) Wastewater from washout and cleanout of stucco, paint, form release oils, curing compounds and other construction materials;

(iii) Fuels, oils, or other *pollutants* used in vehicle and equipment operation and maintenance;

(iv) Soaps or solvents used in vehicle and equipment washing; and

(v) Toxic or hazardous substances from a spill or other release.

f. Surface Outlets. When discharging from basins and impoundments, the outlets shall be designed, constructed and maintained in such a manner that sediment does not leave the basin or impoundment and that erosion at or below the outlet does not occur.

C. Post-construction Stormwater Management Practice Requirements

1. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must select, design, install, and maintain the practices to meet the *performance criteria* in the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015, using sound engineering judgment. Where post-construction stormwater management practices ("SMPs") are not designed in conformance with the *performance criteria* in the Design Manual, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. The *owner or operator* of a *construction activity* that requires post-construction stormwater management practices pursuant to Part III.C. of this permit must design the practices to meet the applicable *sizing criteria* in Part I.C.2.a., b., c. or d. of this permit.

a. Sizing Criteria for New Development

(i) Runoff Reduction Volume ("RRv"): Reduce the total Water Quality Volume ("WQv") by application of RR techniques and standard SMPs with RRv capacity. The total WQv shall be calculated in accordance with the criteria in Section 4.2 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: Construction activities that cannot meet the criteria in Part I.C.2.a.(i) of this permit due to site limitations shall direct runoff from all newly constructed impervious areas to a RR technique or standard SMP with RRv capacity unless infeasible. The specific site limitations that prevent the reduction of 100% of the WQv shall be documented in the SWPPP.

For each impervious area that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered infeasible.

In no case shall the runoff reduction achieved from the newly constructed impervious areas be less than the Minimum RRv as calculated using the criteria in Section 4.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume ("Cpv"): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site discharges directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria ("Qp"): Requires storage to attenuate the post-development 10-year, 24-hour peak discharge rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria ("Qf"): Requires storage to attenuate the post-development 100-year, 24-hour peak discharge rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site discharges directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

b. *Sizing Criteria* for *New Development* in Enhanced Phosphorus Removal Watershed

(i) Runoff Reduction Volume (RRv): Reduce the total Water Quality Volume (WQv) by application of RR techniques and standard SMPs with RRv capacity. The total WQv is the runoff volume from the 1-year, 24 hour design storm over the post-developed watershed and shall be

calculated in accordance with the criteria in Section 10.3 of the Design Manual.

(ii) Minimum RRv and Treatment of Remaining Total WQv: *Construction activities* that cannot meet the criteria in Part I.C.2.b.(i) of this permit due to *site limitations* shall direct runoff from all newly constructed *impervious areas* to a RR technique or standard SMP with RRv capacity unless *infeasible*. The specific *site limitations* that prevent the reduction of 100% of the WQv shall be documented in the SWPPP. For each *impervious area* that is not directed to a RR technique or standard SMP with RRv capacity, the SWPPP must include documentation which demonstrates that all options were considered and for each option explains why it is considered *infeasible.*

In no case shall the runoff reduction achieved from the newly constructed *impervious areas* be less than the Minimum RRv as calculated using the criteria in Section 10.3 of the Design Manual. The remaining portion of the total WQv that cannot be reduced shall be treated by application of standard SMPs.

(iii) Channel Protection Volume (Cpv): Provide 24 hour extended detention of the post-developed 1-year, 24-hour storm event; remaining after runoff reduction. The Cpv requirement does not apply when:
(1) Reduction of the entire Cpv is achieved by application of runoff reduction techniques or infiltration systems, or
(2) The site *discharge*s directly to tidal waters, or fifth order or larger streams.

(iv) *Overbank* Flood Control Criteria (Qp): Requires storage to attenuate the post-development 10-year, 24-hour peak *discharge* rate (Qp) to predevelopment rates. The Qp requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

(v) Extreme Flood Control Criteria (Qf): Requires storage to attenuate the post-development 100-year, 24-hour peak *discharge* rate (Qf) to predevelopment rates. The Qf requirement does not apply when:
(1) the site *discharge*s directly to tidal waters or fifth order or larger streams, or
(2) A downstream analysis reveals that *overbank* control is not required.

c. Sizing Criteria for Redevelopment Activity

(i) Water Quality Volume (WQv): The WQv treatment objective for *redevelopment activity* shall be addressed by one of the following options. *Redevelopment activities* located in an Enhanced Phosphorus Removal Watershed (see Part III.B.3. and Appendix C of this permit) shall calculate the WQv in accordance with Section 10.3 of the Design Manual. All other *redevelopment activities* shall calculate the WQv in accordance with Section 4.2 of the Design Manual.

(1) Reduce the existing *impervious cover* by a minimum of 25% of the total disturbed, *impervious area*. The Soil Restoration criteria in Section 5.1.6 of the Design Manual must be applied to all newly created pervious areas, or

(2) Capture and treat a minimum of 25% of the WQv from the disturbed, *impervious area* by the application of standard SMPs; or reduce 25% of the WQv from the disturbed, *impervious area* by the application of RR techniques or standard SMPs with RRv capacity., or

(3) Capture and treat a minimum of 75% of the WQv from the disturbed, *impervious area* as well as any additional runoff from tributary areas by application of the alternative practices discussed in Sections 9.3 and 9.4 of the Design Manual., or

(4) Application of a combination of 1, 2 and 3 above that provide a weighted average of at least two of the above methods. Application of this method shall be in accordance with the criteria in Section 9.2.1(B) (IV) of the Design Manual.

If there is an existing post-construction stormwater management practice located on the site that captures and treats runoff from the *impervious area* that is being disturbed, the WQv treatment option selected must, at a minimum, provide treatment equal to the treatment that was being provided by the existing practice(s) if that treatment is greater than the treatment required by options 1 – 4 above.

(ii) Channel Protection Volume (Cpv): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iii) *Overbank* Flood Control Criteria (Qp): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site.

(iv) Extreme Flood Control Criteria (Qf): Not required if there are no changes to hydrology that increase the *discharge* rate from the project site

d. Sizing Criteria for Combination of Redevelopment Activity and New Development

Construction projects that include both New Development and Redevelopment Activity shall provide post-construction stormwater management controls that meet the sizing criteria calculated as an aggregate of the Sizing Criteria in Part I.C.2.a. or b. of this permit for the New Development portion of the project and Part I.C.2.c of this permit for Redevelopment Activity portion of the project.

D. Maintaining Water Quality

The Department expects that compliance with the conditions of this permit will control *discharge*s necessary to meet applicable *water quality standards*. It shall be a violation of the *ECL* for any discharge to either cause or contribute to a violation of *water quality standards* as contained in Parts 700 through 705 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, such as:

1. There shall be no increase in turbidity that will cause a substantial visible contrast to natural conditions;

2. There shall be no increase in suspended, colloidal or settleable solids that will cause deposition or impair the waters for their best usages; and

3. There shall be no residue from oil and floating substances, nor visible oil film, nor globules of grease.

If there is evidence indicating that the stormwater *discharge*s authorized by this permit are causing, have the reasonable potential to cause, or are contributing to a violation of the *water quality standards*; the *owner or operator* must take appropriate corrective action in accordance with Part IV.C.5. of this general permit and document in accordance with Part IV.C.4. of this general permit. To address the *water quality standard* violation the *owner or operator* may need to provide additional information, include and implement appropriate controls in the SWPPP to correct the problem, or obtain an individual SPDES permit.

If there is evidence indicating that despite compliance with the terms and conditions of this general permit it is demonstrated that the stormwater *discharge*s authorized by this permit are causing or contributing to a violation of *water quality standards*, or if the Department determines that a modification of the permit is necessary to prevent a violation of *water quality standards*, the authorized *discharge*s will no longer be eligible for coverage under this permit. The Department may require the *owner or operator* to obtain an individual SPDES permit to continue discharging.

E. Eligibility Under This General Permit

1. This permit may authorize all *discharges* of stormwater from *construction activity* to *surface waters of the State* and *groundwaters* except for ineligible *discharges* identified under subparagraph F. of this Part.

2. Except for non-stormwater *discharges* explicitly listed in the next paragraph, this permit only authorizes stormwater *discharge*s; including stormwater runoff, snowmelt runoff, and surface runoff and drainage, from *construction activities*.

3. Notwithstanding paragraphs E.1 and E.2 above, the following non-stormwater discharges are authorized by this permit: those listed in 6 NYCRR 750-1.2(a)(29)(vi), with the following exception: "Discharges from firefighting activities are authorized only when the firefighting activities are emergencies/unplanned"; waters to which other components have not been added that are used to control dust in accordance with the SWPPP; and uncontaminated *discharge*s from *construction site* de-watering operations. All non-stormwater discharges must be identified in the SWPPP. Under all circumstances, the *owner or operator* must still comply with *water quality standards* in Part I.D of this permit.

4. The *owner or operator* must maintain permit eligibility to *discharge* under this permit. Any *discharges* that are not compliant with the eligibility conditions of this permit are not authorized by the permit and the *owner or operator* must either apply for a separate permit to cover those ineligible *discharges* or take steps necessary to make the *discharge* eligible for coverage.

F. Activities Which Are Ineligible for Coverage Under This General Permit

All of the following are **not** authorized by this permit:

1. *Discharge*s after *construction activities* have been completed and the site has undergone *final stabilization*;

2. *Discharge*s that are mixed with sources of non-stormwater other than those expressly authorized under subsection E.3. of this Part and identified in the SWPPP required by this permit;

3. *Discharges* that are required to obtain an individual SPDES permit or another SPDES general permit pursuant to Part VII.K. of this permit;

4. *Construction activities* or *discharges* from *construction activities* that may adversely affect an *endangered or threatened species* unless the *owner or*

operator has obtained a permit issued pursuant to 6 NYCRR Part 182 for the project or the Department has issued a letter of non-jurisdiction for the project. All documentation necessary to demonstrate eligibility shall be maintained on site in accordance with Part II.D.2 of this permit;

5. *Discharges* which either cause or contribute to a violation of *water quality standards* adopted pursuant to the *ECL* and its accompanying regulations;

6. *Construction activities* for residential, commercial and institutional projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb one (1) or more acres of land designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

7. *Construction activities* for linear transportation projects and linear utility projects:

   a. Where the *discharge*s from the *construction activities* are tributary to waters of the state classified as AA or AA-s; and

   b. Which are undertaken on land with no existing *impervious cover*; and

   c. Which disturb two (2) or more acres of land designated on the current USDA Soil Survey as Soil Slope Phase "D" (provided the map unit name is inclusive of slopes greater than 25%), or Soil Slope Phase "E" or "F" (regardless of the map unit name), or a combination of the three designations.

8. *Construction activities* that have the potential to affect an *historic property*, unless there is documentation that such impacts have been resolved. The following documentation necessary to demonstrate eligibility with this requirement shall be maintained on site in accordance with Part II.D.2 of this permit and made available to the Department in accordance with Part VII.F of this permit:

   a. Documentation that the *construction activity* is not within an archeologically sensitive area indicated on the sensitivity map, and that the *construction activity* is not located on or immediately adjacent to a property listed or determined to be eligible for listing on the National or State Registers of Historic Places, and that there is no new permanent building on the *construction site* within the following distances from a building, structure, or object that is more than 50 years old, or if there is such a new permanent building on the *construction site* within those parameters that NYS Office of Parks, Recreation and Historic Preservation (OPRHP), a Historic Preservation Commission of a Certified Local Government, or a qualified preservation professional has determined that the building, structure, or object more than 50 years old is not historically/archeologically significant.

      - 1-5 acres of disturbance - 20 feet
      - 5-20 acres of disturbance - 50 feet
      - 20+ acres of disturbance - 100 feet, or

   b. DEC consultation form sent to OPRHP, and copied to the NYS DEC Agency Historic Preservation Officer (APO), and
      (i) the State Environmental Quality Review (SEQR) Environmental Assessment Form (EAF) with a negative declaration or the Findings Statement, with documentation of OPRHP's agreement with the resolution; or
      (ii) documentation from OPRHP that the *construction activity* will result in No Impact; or
      (iii) documentation from OPRHP providing a determination of No Adverse Impact; or
      (iv) a Letter of Resolution signed by the owner/operator, OPRHP and the DEC APO which allows for this *construction activity* to be eligible for coverage under the general permit in terms of the State Historic Preservation Act (SHPA); or

   c. Documentation of satisfactory compliance with Section 106 of the National Historic Preservation Act for a coterminous project area:

(i) No Affect
(ii) No Adverse Affect
(iii) Executed Memorandum of Agreement, or

d. Documentation that:

(i) SHPA Section 14.09 has been completed by NYS DEC or another state agency.

9. *Discharge*s from *construction activities* that are subject to an existing SPDES individual or general permit where a SPDES permit for *construction activity* has been terminated or denied; or where the *owner or operator* has failed to renew an expired individual permit.

Part II. PERMIT COVERAGE

A. How to Obtain Coverage

1. An *owner or operator* of a *construction activity* that is not subject to the requirements of a regulated, traditional land use control MS4 must first prepare a SWPPP in accordance with all applicable requirements of this permit and then submit a completed Notice of Intent (NOI) to the Department to be authorized to discharge under this permit.

2. An *owner or operator* of a *construction activity* that is subject to the requirements of a *regulated, traditional land use control MS4* must first prepare a SWPPP in accordance with all applicable requirements of this permit and then have the SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department. The *owner or operator* shall have the “MS4 SWPPP Acceptance” form signed in accordance with Part VII.H., and then submit that form along with a completed NOI to the Department.

3. The requirement for an *owner or operator* to have its SWPPP reviewed and accepted by the *regulated, traditional land use control MS4* prior to submitting the NOI to the Department does not apply to an *owner or operator* that is obtaining permit coverage in accordance with the requirements in Part II.F. (Change of *Owner or Operator*) or where the *owner or operator* of the *construction activity* is the *regulated, traditional land use control MS4* . This exemption does not apply to *construction activities* subject to the New York City Administrative Code.

B. Notice of Intent (NOI) Submittal

1. Prior to December 21, 2020, an owner or operator shall use either the electronic (eNOI) or paper version of the NOI that the Department prepared. Both versions of the NOI are located on the Department's website (http://www.dec.ny.gov/). The paper version of the NOI shall be signed in accordance with Part VII.H. of this permit and submitted to the following address:

   NOTICE OF INTENT
   NYS DEC, Bureau of Water Permits
   625 Broadway, 4th Floor
   Albany, New York 12233-3505

2. Beginning December 21, 2020 and in accordance with EPA's 2015 NPDES Electronic Reporting Rule (40 CFR Part 127), the *owner or operator* must submit the NOI electronically using the *Department's* online NOI.

3. The *owner or operator* shall have the SWPPP preparer sign the "SWPPP Preparer Certification" statement on the NOI prior to submitting the form to the Department.

4. As of the date the NOI is submitted to the Department, the *owner or operator* shall make the NOI and SWPPP available for review and copying in accordance with the requirements in Part VII.F. of this permit.

C. Permit Authorization

1. An *owner or operator* shall not *commence construction activity* until their authorization to *discharge* under this permit goes into effect.

2. Authorization to *discharge* under this permit will be effective when the *owner or operator* has satisfied all of the following criteria:

   a. project review pursuant to the State Environmental Quality Review Act ("SEQRA") have been satisfied, when SEQRA is applicable. See the Department's website (http://www.dec.ny.gov/) for more information,

   b. where required, all necessary Department permits subject to the *Uniform Procedures Act ("UPA")* (see 6 NYCRR Part 621), or the equivalent from another New York State agency, have been obtained, unless otherwise notified by the Department pursuant to 6 NYCRR 621.3(a)(4). *Owners or operators* of *construction activities* that are required to obtain *UPA* permits

must submit a preliminary SWPPP to the appropriate DEC Permit Administrator at the Regional Office listed in Appendix F at the time all other necessary *UPA* permit applications are submitted. The preliminary SWPPP must include sufficient information to demonstrate that the *construction activity* qualifies for authorization under this permit,

c. the final SWPPP has been prepared, and

d. a complete NOI has been submitted to the Department in accordance with the requirements of this permit.

3. An *owner or operator* that has satisfied the requirements of Part II.C.2 above will be authorized to *discharge* stormwater from their *construction activity* in accordance with the following schedule:

   a. For *construction activities* that are not subject to the requirements of a *regulated, traditional land use control MS4*:

      (i) Five (5) business days from the date the Department receives a complete electronic version of the NOI (eNOI) for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.; or

      (ii) Sixty (60) business days from the date the Department receives a complete NOI (electronic or paper version) for *construction activities* with a SWPPP that has not been prepared in conformance with the design criteria in technical standard referenced in Part III.B.1. or, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C., the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, or;

      (iii) Ten (10) business days from the date the Department receives a complete paper version of the NOI for *construction activities* with a SWPPP that has been prepared in conformance with the design criteria in the technical standard referenced in Part III.B.1 and the *performance criteria* in the technical standard referenced in Parts III.B., 2 or 3, for *construction activities* that require post-construction stormwater management practices pursuant to Part III.C.

b. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*:

(i) Five (5) business days from the date the Department receives both a complete electronic version of the NOI (eNOI) and signed "*MS4* SWPPP Acceptance" form, or

(ii) Ten (10) business days from the date the Department receives both a complete paper version of the NOI and signed "MS4 SWPPP Acceptance" form.

4. Coverage under this permit authorizes stormwater *discharges* from only those areas of disturbance that are identified in the NOI. If an *owner or operator* wishes to have stormwater *discharges* from future or additional areas of disturbance authorized, they must submit a new NOI that addresses that phase of the development, unless otherwise notified by the Department. The *owner or operator* shall not *commence construction activity* on the future or additional areas until their authorization to *discharge* under this permit goes into effect in accordance with Part II.C. of this permit.

D. General Requirements For Owners or Operators With Permit Coverage

1. The *owner or operator* shall ensure that the provisions of the SWPPP are implemented from the *commencement of construction activity* until all areas of disturbance have achieved *final stabilization* and the Notice of Termination ("NOT") has been submitted to the Department in accordance with Part V. of this permit. This includes any changes made to the SWPPP pursuant to Part III.A.4. of this permit.

2. The *owner or operator* shall maintain a copy of the General Permit (GP-0-20-001), NOI, *NOI Acknowledgment Letter*, SWPPP, MS4 SWPPP Acceptance form, inspection reports, responsible contractor's or subcontractor's certification statement (see Part III.A.6.), and all documentation necessary to demonstrate eligibility with this permit at the *construction site* until all disturbed areas have achieved *final stabilization* and the NOT has been submitted to the Department. The documents must be maintained in a secure location, such as a job trailer, on-site construction office, or mailbox with lock. The secure location must be accessible during normal business hours to an individual performing a compliance inspection.

3. The *owner or operator* of a *construction activity* shall not disturb greater than five (5) acres of soil at any one time without prior written authorization from the Department or, in areas under the jurisdiction of a *regulated, traditional land*

use control MS4, the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*). At a minimum, the *owner or operator* must comply with the following requirements in order to be authorized to disturb greater than five (5) acres of soil at any one time:

a. The *owner or operator* shall have a *qualified inspector* conduct **at least** two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

b. In areas where soil disturbance activity has temporarily or permanently ceased, the application of soil stabilization measures must be initiated by the end of the next business day and completed within seven (7) days from the date the current soil disturbance activity ceased. The soil stabilization measures selected shall be in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016.

c. The *owner or operator* shall prepare a phasing plan that defines maximum disturbed area per phase and shows required cuts and fills.

d. The *owner or operator* shall install any additional site-specific practices needed to protect water quality.

e. The *owner or operator* shall include the requirements above in their SWPPP.

4. In accordance with statute, regulations, and the terms and conditions of this permit, the Department may suspend or revoke an *owner's or operator's* coverage under this permit at any time if the Department determines that the SWPPP does not meet the permit requirements or consistent with Part VII.K..

5. Upon a finding of significant non-compliance with the practices described in the SWPPP or violation of this permit, the Department may order an immediate stop to all activity at the site until the non-compliance is remedied. The stop work order shall be in writing, describe the non-compliance in detail, and be sent to the *owner or operator*.

6. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4*, the *owner or operator* shall notify the

regulated, traditional land use control MS4 in writing of any planned amendments or modifications to the post-construction stormwater management practice component of the SWPPP required by Part III.A. 4. and 5. of this permit. Unless otherwise notified by the *regulated, traditional land use control MS4*, the *owner or operator* shall have the SWPPP amendments or modifications reviewed and accepted by the *regulated, traditional land use control MS4* prior to commencing construction of the post-construction stormwater management practice.

E. Permit Coverage for Discharges Authorized Under GP-0-15-002

1. Upon renewal of SPDES General Permit for Stormwater Discharges from *Construction Activity* (Permit No. GP-0-15-002), an *owner or operator* of *a construction activity* with coverage under GP-0-15-002, as of the effective date of GP- 0-20-001, shall be authorized to *discharge* in accordance with GP- 0-20-001, unless otherwise notified by the Department.

   An *owner or operator* may continue to implement the technical/design components of the post-construction stormwater management controls provided that such design was done in conformance with the technical standards in place at the time of initial project authorization. However, they must comply with the other, non-design provisions of GP-0-20-001.

F. Change of Owner or Operator

1. When property ownership changes or when there is a change in operational control over the construction plans and specifications, the original *owner or operator* must notify the new *owner or operator*, in writing, of the requirement to obtain permit coverage by submitting a NOI with the Department. For *construction activities* subject to the requirements of a *regulated, traditional land use control MS4,* the original *owner or operator* must also notify the MS4, in writing, of the change in ownership at least 30 calendar days prior to the change in ownership.

2. Once the new *owner or operator* obtains permit coverage, the original *owner or operator* shall then submit a completed NOT with the name and permit identification number of the new *owner or operator* to the Department at the address in Part II.B.1. of this permit. If the original *owner or operator* maintains ownership of a portion of the *construction activity* and will disturb soil, they must maintain their coverage under the permit.

3. Permit coverage for the new *owner or operator* will be effective as of the date the Department receives a complete NOI, provided the original *owner or*

operator was not subject to a sixty (60) business day authorization period that has not expired as of the date the Department receives the NOI from the new *owner or operator*.

Part III. STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A. General SWPPP Requirements

1. A SWPPP shall be prepared and implemented by the *owner or operator* of each *construction activity* covered by this permit. The SWPPP must document the selection, design, installation, implementation and maintenance of the control measures and practices that will be used to meet the effluent limitations in Part I.B. of this permit and where applicable, the post-construction stormwater management practice requirements in Part I.C. of this permit. The SWPPP shall be prepared prior to the submittal of the NOI. The NOI shall be submitted to the Department prior to the *commencement of construction activity*. A copy of the completed, final NOI shall be included in the SWPPP.

2. The SWPPP shall describe the erosion and sediment control practices and where required, post-construction stormwater management practices that will be used and/or constructed to reduce the *pollutants* in stormwater *discharges* and to assure compliance with the terms and conditions of this permit. In addition, the SWPPP shall identify potential sources of pollution which may reasonably be expected to affect the quality of stormwater *discharges*.

3. All SWPPPs that require the post-construction stormwater management practice component shall be prepared by a *qualified professional* that is knowledgeable in the principles and practices of stormwater management and treatment.

4. The *owner or operator* must keep the SWPPP current so that it at all times accurately documents the erosion and sediment controls practices that are being used or will be used during construction, and all post-construction stormwater management practices that will be constructed on the site. At a minimum, the *owner or operator* shall amend the SWPPP, including construction drawings:

    a. whenever the current provisions prove to be ineffective in minimizing *pollutants* in stormwater *discharges* from the site;

b. whenever there is a change in design, construction, or operation at the *construction site* that has or could have an effect on the *discharge* of *pollutants*;

c. to address issues or deficiencies identified during an inspection by the *qualified inspector,* the Department or other regulatory authority; and

d. to document the final construction conditions.

5. The Department may notify the *owner or operator* at any time that the SWPPP does not meet one or more of the minimum requirements of this permit. The notification shall be in writing and identify the provisions of the SWPPP that require modification. Within fourteen (14) calendar days of such notification, or as otherwise indicated by the Department, the *owner or operator* shall make the required changes to the SWPPP and submit written notification to the Department that the changes have been made. If the *owner or operator* does not respond to the Department's comments in the specified time frame, the Department may suspend the *owner's or operator's* coverage under this permit or require the *owner or operator* to obtain coverage under an individual SPDES permit in accordance with Part II.D.4. of this permit.

6. Prior to the *commencement of construction activity*, the *owner or operator* must identify the contractor(s) and subcontractor(s) that will be responsible for installing, constructing, repairing, replacing, inspecting and maintaining the erosion and sediment control practices included in the SWPPP; and the contractor(s) and subcontractor(s) that will be responsible for constructing the post-construction stormwater management practices included in the SWPPP. The *owner or operator* shall have each of the contractors and subcontractors identify at least one person from their company that will be responsible for implementation of the SWPPP. This person shall be known as the *trained contractor.* The *owner or operator* shall ensure that at least one *trained contractor* is on site on a daily basis when soil disturbance activities are being performed.

   The *owner or operator* shall have each of the contractors and subcontractors identified above sign a copy of the following certification statement below before they commence any *construction activity*:

   "I hereby certify under penalty of law that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with

the terms and conditions of the most current version of the New York State Pollutant Discharge Elimination System ("SPDES") general permit for stormwater *discharge*s from *construction activities* and that it is unlawful for any person to cause or contribute to a violation of *water quality standards*. Furthermore, I am aware that there are significant penalties for submitting false information, that I do not believe to be true, including the possibility of fine and imprisonment for knowing violations"

In addition to providing the certification statement above, the certification page must also identify the specific elements of the SWPPP that each contractor and subcontractor will be responsible for and include the name and title of the person providing the signature; the name and title of the *trained contractor* responsible for SWPPP implementation; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification statement is signed. The *owner or operator* shall attach the certification statement(s) to the copy of the SWPPP that is maintained at the *construction site*. If new or additional contractors are hired to implement measures identified in the SWPPP after construction has commenced, they must also sign the certification statement and provide the information listed above.

7. For projects where the Department requests a copy of the SWPPP or inspection reports, the *owner or operator* shall submit the documents in both electronic (PDF only) and paper format within five (5) business days, unless otherwise notified by the Department.

B. Required SWPPP Contents

1. Erosion and sediment control component - All SWPPPs prepared pursuant to this permit shall include erosion and sediment control practices designed in conformance with the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Where erosion and sediment control practices are not designed in conformance with the design criteria included in the technical standard, the *owner or operator* must demonstrate *equivalence* to the technical standard. At a minimum, the erosion and sediment control component of the SWPPP shall include the following:

    a. Background information about the scope of the project, including the location, type and size of project

b. A site map/construction drawing(s) for the project, including a general location map. At a minimum, the site map shall show the total site area; all improvements; areas of disturbance; areas that will not be disturbed; existing vegetation; on-site and adjacent off-site surface water(s); floodplain/floodway boundaries; wetlands and drainage patterns that could be affected by the *construction activity*; existing and final contours ; locations of different soil types with boundaries; material, waste, borrow or equipment storage areas located on adjacent properties; and location(s) of the stormwater *discharge*(s);

c. A description of the soil(s) present at the site, including an identification of the Hydrologic Soil Group (HSG);

d. A construction phasing plan and sequence of operations describing the intended order of *construction activities*, including clearing and grubbing, excavation and grading, utility and infrastructure installation and any other activity at the site that results in soil disturbance;

e. A description of the minimum erosion and sediment control practices to be installed or implemented for each *construction activity* that will result in soil disturbance. Include a schedule that identifies the timing of initial placement or implementation of each erosion and sediment control practice and the minimum time frames that each practice should remain in place or be implemented;

f. A temporary and permanent soil stabilization plan that meets the requirements of this general permit and the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016, for each stage of the project, including initial land clearing and grubbing to project completion and achievement of *final stabilization*;

g. A site map/construction drawing(s) showing the specific location(s), size(s), and length(s) of each erosion and sediment control practice;

h. The dimensions, material specifications, installation details, and operation and maintenance requirements for all erosion and sediment control practices. Include the location and sizing of any temporary sediment basins and structural practices that will be used to divert flows from exposed soils;

i. A maintenance inspection schedule for the contractor(s) identified in Part III.A.6. of this permit, to ensure continuous and effective operation of the erosion and sediment control practices. The maintenance inspection

schedule shall be in accordance with the requirements in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016;

j. A description of the pollution prevention measures that will be used to control litter, construction chemicals and construction debris from becoming a *pollutant* source in the stormwater *discharges*;

k. A description and location of any stormwater *discharges* associated with industrial activity other than construction at the site, including, but not limited to, stormwater *discharges* from asphalt plants and concrete plants located on the *construction site*; and

l. Identification of any elements of the design that are not in conformance with the design criteria in the technical standard, New York State Standards and Specifications for Erosion and Sediment Control, dated November 2016. Include the reason for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

2. Post-construction stormwater management practice component – The *owner or operator* of any construction project identified in Table 2 of Appendix B as needing post-construction stormwater management practices shall prepare a SWPPP that includes practices designed in conformance with the applicable *sizing criteria* in Part I.C.2.a., c. or d. of this permit and the *performance criteria* in the technical standard, New York State Stormwater Management Design Manual dated January 2015

   Where post-construction stormwater management practices are not designed in conformance with the *performance criteria* in the technical standard, the *owner or operator* must include in the SWPPP the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the technical standard.

   The post-construction stormwater management practice component of the SWPPP shall include the following:

   a. Identification of all post-construction stormwater management practices to be constructed as part of the project. Include the dimensions, material specifications and installation details for each post-construction stormwater management practice;

b. A site map/construction drawing(s) showing the specific location and size of each post-construction stormwater management practice;

c. A Stormwater Modeling and Analysis Report that includes:
   (i) Map(s) showing pre-development conditions, including watershed/subcatchments boundaries, flow paths/routing, and design points;

   (ii) Map(s) showing post-development conditions, including watershed/subcatchments boundaries, flow paths/routing, design points and post-construction stormwater management practices;

   (iii) Results of stormwater modeling (i.e. hydrology and hydraulic analysis) for the required storm events. Include supporting calculations (model runs), methodology, and a summary table that compares pre and post-development runoff rates and volumes for the different storm events;

   (iv) Summary table, with supporting calculations, which demonstrates that each post-construction stormwater management practice has been designed in conformance with the *sizing criteria* included in the Design Manual;

   (v) Identification of any *sizing criteria* that is not required based on the requirements included in Part I.C. of this permit; and

   (vi) Identification of any elements of the design that are not in conformance with the *performance criteria* in the Design Manual. Include the reason(s) for the deviation or alternative design and provide information which demonstrates that the deviation or alternative design is *equivalent* to the Design Manual;

d. Soil testing results and locations (test pits, borings);

e. Infiltration test results, when required; and

f. An operations and maintenance plan that includes inspection and maintenance schedules and actions to ensure continuous and effective operation of each post-construction stormwater management practice. The plan shall identify the entity that will be responsible for the long term operation and maintenance of each practice.

3. Enhanced Phosphorus Removal Standards - All construction projects identified in Table 2 of Appendix B that are located in the watersheds identified in Appendix C shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the applicable *sizing criteria* in Part I.C.2. b., c. or d. of this permit and the *performance criteria,* Enhanced Phosphorus Removal Standards included in the Design Manual. At a minimum, the post-construction stormwater management practice component of the SWPPP shall include items 2.a - 2.f. above.

C. Required SWPPP Components by Project Type

Unless otherwise notified by the Department, *owners or operators* of *construction activities* identified in Table 1 of Appendix B are required to prepare a SWPPP that only includes erosion and sediment control practices designed in conformance with Part III.B.1 of this permit. *Owners or operators* of the *construction activities* identified in Table 2 of Appendix B shall prepare a SWPPP that also includes post-construction stormwater management practices designed in conformance with Part III.B.2 or 3 of this permit.

Part IV. INSPECTION AND MAINTENANCE REQUIREMENTS

A. General Construction Site Inspection and Maintenance Requirements

1. The *owner or operator* must ensure that all erosion and sediment control practices (including pollution prevention measures) and all post-construction stormwater management practices identified in the SWPPP are inspected and maintained in accordance with Part IV.B. and C. of this permit.

2. The terms of this permit shall not be construed to prohibit the State of New York from exercising any authority pursuant to the ECL, common law or federal law, or prohibit New York State from taking any measures, whether civil or criminal, to prevent violations of the laws of the State of New York or protect the public health and safety and/or the environment.

B. Contractor Maintenance Inspection Requirements

1. The *owner or operator* of each *construction activity* identified in Tables 1 and 2 of Appendix B shall have a *trained contractor* inspect the erosion and sediment control practices and pollution prevention measures being implemented within the active work area daily to ensure that they are being maintained in effective operating condition at all times. If deficiencies are identified, the contractor shall

begin implementing corrective actions within one business day and shall complete the corrective actions in a reasonable time frame.

2. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *trained contractor* can stop conducting the maintenance inspections. The *trained contractor* shall begin conducting the maintenance inspections in accordance with Part IV.B.1. of this permit as soon as soil disturbance activities resume.

3. For construction sites where soil disturbance activities have been shut down with partial project completion, the *trained contractor* can stop conducting the maintenance inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational.

C. Qualified Inspector Inspection Requirements

The *owner or operator* shall have a *qualified inspector* conduct site inspections in conformance with the following requirements:

[Note: The *trained contractor* identified in Part III.A.6. and IV.B. of this permit **cannot** conduct the *qualified inspector* site inspections unless they meet the *qualified inspector* qualifications included in Appendix A. In order to perform these inspections, the *trained contractor* would have to be a:

- licensed Professional Engineer,
- Certified Professional in Erosion and Sediment Control (CPESC),
- New York State Erosion and Sediment Control Certificate Program holder
- Registered Landscape Architect, or
- someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity].

1. A *qualified inspector* shall conduct site inspections for all *construction activities* identified in Tables 1 and 2 of Appendix B, with the exception of:

   a. the construction of a single family residential subdivision with 25% or less *impervious cover* at total site build-out that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located

in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

b. the construction of a single family home that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres and is not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E;

c. construction on agricultural property that involves a soil disturbance of one (1) or more acres of land but less than five (5) acres; and

d. *construction activities* located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

2. Unless otherwise notified by the Department, the *qualified inspector* shall conduct site inspections in accordance with the following timetable:

a. For construction sites where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.

b. For construction sites where soil disturbance activities are on-going and the *owner or operator* has received authorization in accordance with Part II.D.3 to disturb greater than five (5) acres of soil at any one time, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

c. For construction sites where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and *temporary stabilization* measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to reducing the frequency of inspections.

d. For construction sites where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational. The *owner or operator* shall notify the DOW Water (SPDES) Program contact at the Regional Office (see contact information in Appendix F) or, in areas under the jurisdiction of a *regulated, traditional land use control MS4,* the *regulated, traditional land use control MS4* (provided the *regulated, traditional land use control MS4* is not the *owner or operator* of the *construction activity*) in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the *owner or operator* shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization,* and all temporary, structural erosion and sediment control measures have been removed*;* and that all post-construction stormwater management practices have been constructed in conformance with the SWPPP by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice" certification statements on the NOT. The *owner or operator* shall then submit the completed NOT form to the address in Part II.B.1 of this permit.

e. For construction sites that directly *discharge* to one of the 303(d) segments listed in Appendix E or is located in one of the watersheds listed in Appendix C, the *qualified inspector* shall conduct at least two (2) site inspections every seven (7) calendar days. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

3. At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices and pollution prevention measures to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the SWPPP, all areas of disturbance that have not achieved *final stabilization,* all points of *discharge* to natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site*, and all points of *discharge* from the *construction site*.

4. The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

a. Date and time of inspection;

b. Name and title of person(s) performing inspection;

c. A description of the weather and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;

d. A description of the condition of the runoff at all points of *discharge* from the *construction site*. This shall include identification of any *discharges* of sediment from the *construction site*. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;

e. A description of the condition of all natural surface waterbodies located within, or immediately adjacent to, the property boundaries of the *construction site* which receive runoff from disturbed areas. This shall include identification of any *discharges* of sediment to the surface waterbody;

f. Identification of all erosion and sediment control practices and pollution prevention measures that need repair or maintenance;

g. Identification of all erosion and sediment control practices and pollution prevention measures that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;

h. Description and sketch of areas with active soil disturbance activity, areas that have been disturbed but are inactive at the time of the inspection, and areas that have been stabilized (temporary and/or final) since the last inspection;

i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;

j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices and pollution prevention measures; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s);

k. Identification and status of all corrective actions that were required by previous inspection; and

l. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

5. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the *owner or operator* and appropriate contractor or subcontractor identified in Part III.A.6. of this permit of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.

6. All inspection reports shall be signed by the *qualified inspector.* Pursuant to Part II.D.2. of this permit, the inspection reports shall be maintained on site with the SWPPP.

Part V. TERMINATION OF PERMIT COVERAGE

A. Termination of Permit Coverage

1. An *owner or operator* that is eligible to terminate coverage under this permit must submit a completed NOT form to the address in Part II.B.1 of this permit. The NOT form shall be one which is associated with this permit, signed in accordance with Part VII.H of this permit.

2. An *owner or operator* may terminate coverage when one or more the following conditions have been met:

   a. Total project completion - All *construction activity* identified in the SWPPP has been completed; and all areas of disturbance have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices have been constructed in conformance with the SWPPP and are operational;

b. Planned shutdown with partial project completion - All soil disturbance activities have ceased; and all areas disturbed as of the project shutdown date have achieved *final stabilization*; and all temporary, structural erosion and sediment control measures have been removed; and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the SWPPP and are operational;

c. A new *owner or operator* has obtained coverage under this permit in accordance with Part II.F. of this permit.

d. The *owner or operator* obtains coverage under an alternative SPDES general permit or an individual SPDES permit.

3. For *construction activities* meeting subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *qualified inspector* perform a final site inspection prior to submitting the NOT. The *qualified inspector* shall, by signing the "*Final Stabilization*" and "Post-Construction Stormwater Management Practice certification statements on the NOT, certify that all the requirements in Part V.A.2.a. or b. of this permit have been achieved.

4. For *construction activities* that are subject to the requirements of a *regulated, traditional land use control MS4* and meet subdivision 2a. or 2b. of this Part, the *owner or operator* shall have the *regulated, traditional land use control MS4* sign the "MS4 Acceptance" statement on the NOT in accordance with the requirements in Part VII.H. of this permit. The *regulated, traditional land use control MS4* official, by signing this statement, has determined that it is acceptable for the *owner or operator* to submit the NOT in accordance with the requirements of this Part. The *regulated, traditional land use control MS4* can make this determination by performing a final site inspection themselves or by accepting the *qualified inspector*'s final site inspection certification(s) required in Part V.A.3. of this permit.

5. For *construction activities* that require post-construction stormwater management practices and meet subdivision 2a. of this Part, the *owner or operator* must, prior to submitting the NOT, ensure one of the following:

a. the post-construction stormwater management practice(s) and any right-of-way(s) needed to maintain such practice(s) have been deeded to the municipality in which the practice(s) is located,

b. an executed maintenance agreement is in place with the municipality that will maintain the post-construction stormwater management practice(s),

c. for post-construction stormwater management practices that are privately owned, the *owner or operator* has a mechanism in place that requires operation and maintenance of the practice(s) in accordance with the operation and maintenance plan, such as a deed covenant in the *owner or operator's* deed of record,

d. for post-construction stormwater management practices that are owned by a public or private institution (e.g. school, university, hospital), government agency or authority, or public utility; the *owner or operator* has policy and procedures in place that ensures operation and maintenance of the practices in accordance with the operation and maintenance plan.

Part VI. REPORTING AND RETENTION RECORDS

A. Record Retention

The *owner or operator* shall retain a copy of the NOI, NOI Acknowledgment Letter, SWPPP, MS4 SWPPP Acceptance form and any inspection reports that were prepared in conjunction with this permit for a period of at least five (5) years from the date that the Department receives a complete NOT submitted in accordance with Part V. of this general permit.

B. Addresses

With the exception of the NOI, NOT, and MS4 SWPPP Acceptance form (which must be submitted to the address referenced in Part II.B.1 of this permit), all written correspondence requested by the Department, including individual permit applications, shall be sent to the address of the appropriate DOW Water (SPDES) Program contact at the Regional Office listed in Appendix F.

Part VII. STANDARD PERMIT CONDITIONS

A. Duty to Comply

The *owner or operator* must comply with all conditions of this permit. All contractors and subcontractors associated with the project must comply with the terms of the SWPPP. Any non-compliance with this permit constitutes a violation of the Clean Water

Act (CWA) and the ECL and is grounds for an enforcement action against the *owner or operator* and/or the contractor/subcontractor; permit revocation, suspension or modification; or denial of a permit renewal application. Upon a finding of significant non-compliance with this permit or the applicable SWPPP, the Department may order an immediate stop to all *construction activity* at the site until the non-compliance is remedied. The stop work order shall be in writing, shall describe the non-compliance in detail, and shall be sent to the *owner or operator*.

If any human remains or archaeological remains are encountered during excavation, the *owner or operator* must immediately cease, or cause to cease, all *construction activity* in the area of the remains and notify the appropriate Regional Water Engineer (RWE). *Construction activity* shall not resume until written permission to do so has been received from the RWE.

B. Continuation of the Expired General Permit

This permit expires five (5) years from the effective date. If a new general permit is not issued prior to the expiration of this general permit, an *owner or operator* with coverage under this permit may continue to operate and *discharge* in accordance with the terms and conditions of this general permit, if it is extended pursuant to the State Administrative Procedure Act and 6 NYCRR Part 621, until a new general permit is issued.

C. Enforcement

Failure of the *owner or operator,* its contractors, subcontractors, agents and/or assigns to strictly adhere to any of the permit requirements contained herein shall constitute a violation of this permit. There are substantial criminal, civil, and administrative penalties associated with violating the provisions of this permit. Fines of up to $37,500 per day for each violation and imprisonment for up to fifteen (15) years may be assessed depending upon the nature and degree of the offense.

D. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for an *owner or operator* in an enforcement action that it would have been necessary to halt or reduce the *construction activity* in order to maintain compliance with the conditions of this permit.

E. Duty to Mitigate

The *owner or operator* and its contractors and subcontractors shall take all reasonable steps to *minimize* or prevent any *discharge* in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

F. Duty to Provide Information

The *owner or operator* shall furnish to the Department, within a reasonable specified time period of a written request, all documentation necessary to demonstrate eligibility and any information to determine compliance with this permit or to determine whether cause exists for modifying or revoking this permit, or suspending or denying coverage under this permit, in accordance with the terms and conditions of this permit. The NOI, SWPPP and inspection reports required by this permit are public documents that the *owner or operator* must make available for review and copying by any person within five (5) business days of the *owner or operator* receiving a written request by any such person to review these documents. Copying of documents will be done at the requester's expense.

G. Other Information

When the *owner or operator* becomes aware that they failed to submit any relevant facts, or submitted incorrect information in the NOI or in any of the documents required by this permit , or have made substantive revisions to the SWPPP (e.g. the scope of the project changes significantly, the type of post-construction stormwater management practice(s) changes, there is a reduction in the sizing of the post-construction stormwater management practice, or there is an increase in the disturbance area or *impervious area*), which were not reflected in the original NOI submitted to the Department, they shall promptly submit such facts or information to the Department using the contact information in Part II.A. of this permit. Failure of the *owner or operator* to correct or supplement any relevant facts within five (5) business days of becoming aware of the deficiency shall constitute a violation of this permit.

H. Signatory Requirements

1. All NOIs and NOTs shall be signed as follows:

    a. For a corporation these forms shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means:

(i) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(ii) the manager of one or more manufacturing, production or operating facilities, provided the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures;

b. For a partnership or sole proprietorship these forms shall be signed by a general partner or the proprietor, respectively; or

c. For a municipality, State, Federal, or other public agency these forms shall be signed by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:

(i) the chief executive officer of the agency, or

(ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).

2. The SWPPP and other information requested by the Department shall be signed by a person described in Part VII.H.1. of this permit or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Part VII.H.1. of this permit;

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field,

superintendent, position of *equivalent* responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position) and,

c. The written authorization shall include the name, title and signature of the authorized representative and be attached to the SWPPP.

3. All inspection reports shall be signed by the *qualified inspector* that performs the inspection.

4. The MS4 SWPPP Acceptance form shall be signed by the principal executive officer or ranking elected official from the *regulated, traditional land use control MS4,* or by a duly authorized representative of that person.

   It shall constitute a permit violation if an incorrect and/or improper signatory authorizes any required forms, SWPPP and/or inspection reports.

I. Property Rights

The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations. *Owners or operators* must obtain any applicable conveyances, easements, licenses and/or access to real property prior to *commencing construction activity*.

J. Severability

The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.

K. Requirement to Obtain Coverage Under an Alternative Permit

1. The Department may require any owner or operator authorized by this permit to apply for and/or obtain either an individual SPDES permit or another SPDES general permit. When the Department requires any discharger authorized by a general permit to apply for an individual SPDES permit, it shall notify the discharger in writing that a permit application is required. This notice shall

include a brief statement of the reasons for this decision, an application form, a statement setting a time frame for the owner or operator to file the application for an individual SPDES permit, and a deadline, not sooner than 180 days from owner or operator receipt of the notification letter, whereby the authorization to discharge under this general permit shall be terminated. Applications must be submitted to the appropriate Permit Administrator at the Regional Office. The Department may grant additional time upon demonstration, to the satisfaction of the Department, that additional time to apply for an alternative authorization is necessary or where the Department has not provided a permit determination in accordance with Part 621 of this Title.

2. When an individual SPDES permit is issued to a discharger authorized to *discharge* under a general SPDES permit for the same *discharge*(s), the general permit authorization for outfalls authorized under the individual SPDES permit is automatically terminated on the effective date of the individual permit unless termination is earlier in accordance with 6 NYCRR Part 750.

L. Proper Operation and Maintenance

The *owner or operator* shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the *owner or operator* to achieve compliance with the conditions of this permit and with the requirements of the SWPPP.

M. Inspection and Entry

The *owner or operator* shall allow an authorized representative of the Department, EPA, applicable county health department, or, in the case of a *construction site* which *discharges* through an *MS4*, an authorized representative of the *MS4* receiving the discharge, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the owner’s or operator's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this permit;

2. Have access to and copy at reasonable times, any records that must be kept under the conditions of this permit; and

3. Inspect at reasonable times any facilities or equipment (including monitoring and control equipment), practices or operations regulated or required by this permit.

4. Sample or monitor at reasonable times, for purposes of assuring permit compliance or as otherwise authorized by the Act or ECL, any substances or parameters at any location.

N. Permit Actions

This permit may, at any time, be modified, suspended, revoked, or renewed by the Department in accordance with 6 NYCRR Part 621. The filing of a request by the *owner or operator* for a permit modification, revocation and reissuance, termination, a notification of planned changes or anticipated noncompliance does not limit, diminish and/or stay compliance with any terms of this permit.

O. Definitions

Definitions of key terms are included in Appendix A of this permit.

P. Re-Opener Clause

1. If there is evidence indicating potential or realized impacts on water quality due to any stormwater discharge associated with construction activity covered by this permit, the owner or operator of such discharge may be required to obtain an individual permit or alternative general permit in accordance with Part VII.K. of this permit or the permit may be modified to include different limitations and/or requirements.

2. Any Department initiated permit modification, suspension or revocation will be conducted in accordance with 6 NYCRR Part 621, 6 NYCRR 750-1.18, and 6 NYCRR 750-1.20.

Q. Penalties for Falsification of Forms and Reports

In accordance with 6NYCRR Part 750-2.4 and 750-2.5, any person who knowingly makes any false material statement, representation, or certification in any application, record, report or other document filed or required to be maintained under this permit, including reports of compliance or noncompliance shall, upon conviction, be punished in accordance with ECL §71-1933 and or Articles 175 and 210 of the New York State Penal Law.

R. Other Permits

Nothing in this permit relieves the *owner or operator* from a requirement to obtain any other permits required by law.

APPENDIX A – Acronyms and Definitions

Acronyms

APO – Agency Preservation Officer
BMP – Best Management Practice
CPESC – Certified Professional in Erosion and Sediment Control
Cpv – Channel Protection Volume
CWA – Clean Water Act (or the Federal Water Pollution Control Act, 33 U.S.C. §1251 et seq)
DOW – Division of Water
EAF – Environmental Assessment Form
ECL - Environmental Conservation Law
EPA – U. S. Environmental Protection Agency
HSG – Hydrologic Soil Group
MS4 – Municipal Separate Storm Sewer System
NOI – Notice of Intent
NOT – Notice of Termination
NPDES – National Pollutant Discharge Elimination System
OPRHP – Office of Parks, Recreation and Historic Places
Qf – Extreme Flood
Qp – Overbank Flood
RRv – Runoff Reduction Volume
RWE – Regional Water Engineer
SEQR – State Environmental Quality Review
SEQRA - State Environmental Quality Review Act
SHPA – State Historic Preservation Act
SPDES – State Pollutant Discharge Elimination System
SWPPP – Stormwater Pollution Prevention Plan
TMDL – Total Maximum Daily Load
UPA – Uniform Procedures Act
USDA – United States Department of Agriculture
WQv – Water Quality Volume

Definitions

All definitions in this section are solely for the purposes of this permit.

Agricultural Building – a structure designed and constructed to house farm implements, hay, grain, poultry, livestock or other horticultural products; excluding any structure designed, constructed or used, in whole or in part, for human habitation, as a place of employment where agricultural products are processed, treated or packaged, or as a place used by the public.

Agricultural Property –means the land for construction of a barn, *agricultural building*, silo, stockyard, pen or other structural practices identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State" prepared by the Department in cooperation with agencies of New York Nonpoint Source Coordinating Committee (dated June 2007).

Alter Hydrology from Pre to Post-Development Conditions - means the post-development peak flow rate(s) has increased by more than 5% of the pre-developed condition for the design storm of interest (e.g. 10 yr and 100 yr).

Combined Sewer - means a sewer that is designed to collect and convey both "sewage" and "stormwater".

Commence (Commencement of) Construction Activities - means the initial disturbance of soils associated with clearing, grading or excavation activities; or other construction related activities that disturb or expose soils such as demolition, stockpiling of fill material, and the initial installation of erosion and sediment control practices required in the SWPPP. See definition for "*Construction Activity(ies)*" also.

Construction Activity(ies) - means any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility.

Construction Site – means the land area where *construction activity(ies)* will occur. See definition for "*Commence (Commencement of) Construction Activities"* and "*Larger Common Plan of Development or Sale" also.*

Dewatering – means the act of draining rainwater and/or groundwater from building foundations, vaults or excavations/trenches.

Direct Discharge (to a specific surface waterbody) - means that runoff flows from a *construction site* by overland flow and the first point of discharge is the specific surface waterbody, or runoff flows from a *construction site* to a separate storm sewer system

and the first point of discharge from the separate storm sewer system is the specific surface waterbody.

Discharge(s) - means any addition of any pollutant to waters of the State through an outlet or *point source*.

Embankment –means an earthen or rock slope that supports a road/highway.

Endangered or Threatened Species – see 6 NYCRR Part 182 of the Department's rules and regulations for definition of terms and requirements.

Environmental Conservation Law (ECL) - means chapter 43-B of the Consolidated Laws of the State of New York, entitled the Environmental Conservation Law.

Equivalent (Equivalence) – means that the practice or measure meets all the performance, longevity, maintenance, and safety objectives of the technical standard and will provide an equal or greater degree of water quality protection.

Final Stabilization - means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80) percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

General SPDES permit - means a SPDES permit issued pursuant to 6 NYCRR Part 750-1.21 and Section 70-0117 of the ECL authorizing a category of discharges.

Groundwater(s) - means waters in the saturated zone. The saturated zone is a subsurface zone in which all the interstices are filled with water under pressure greater than that of the atmosphere. Although the zone may contain gas-filled interstices or interstices filled with fluids other than water, it is still considered saturated.

Historic Property – means any building, structure, site, object or district that is listed on the State or National Registers of Historic Places or is determined to be eligible for listing on the State or National Registers of Historic Places.

Impervious Area (Cover) - means all impermeable surfaces that cannot effectively infiltrate rainfall. This includes paved, concrete and gravel surfaces (i.e. parking lots, driveways, roads, runways and sidewalks); building rooftops and miscellaneous impermeable structures such as patios, pools, and sheds.

Infeasible – means not technologically possible, or not economically practicable and achievable in light of best industry practices.

Larger Common Plan of Development or Sale - means a contiguous area where multiple separate and distinct *construction activities* are occurring, or will occur, under one plan. The term “plan” in “larger common plan of development or sale” is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, marketing plan, advertisement, drawing, permit application, State Environmental Quality Review Act (SEQRA) environmental assessment form or other documents, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that *construction activities* may occur on a specific plot.

For discrete construction projects that are located within a larger common plan of development or sale that are at least 1/4 mile apart, each project can be treated as a separate plan of development or sale provided any interconnecting road, pipeline or utility project that is part of the same “common plan” is not concurrently being disturbed.

Minimize – means reduce and/or eliminate to the extent achievable using control measures (including best management practices) that are technologically available and economically practicable and achievable in light of best industry practices.

Municipal Separate Storm Sewer (MS4) - a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains):

(i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, stormwater, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to surface waters of the State*;*
(ii) Designed or used for collecting or conveying stormwater;
(iii) Which is not a *combined sewer*; and
(iv) Which is not part of a Publicly Owned Treatment Works (POTW) as defined at 40 CFR 122.2.

National Pollutant Discharge Elimination System (NPDES) - means the national system for the issuance of wastewater and stormwater permits under the Federal Water Pollution Control Act (Clean Water Act).

Natural Buffer –means an undisturbed area with natural cover running along a surface water (e.g. wetland, stream, river, lake, etc.).

New Development – means any land disturbance that does not meet the definition of Redevelopment Activity included in this appendix.

New York State Erosion and Sediment Control Certificate Program – a certificate program that establishes and maintains a process to identify and recognize individuals who are capable of developing, designing, inspecting and maintaining erosion and sediment control plans on projects that disturb soils in New York State. The certificate program is administered by the New York State Conservation District Employees Association.

NOI Acknowledgment Letter - means the letter that the Department sends to an owner or operator to acknowledge the Department's receipt and acceptance of a complete Notice of Intent. This letter documents the owner's or operator's authorization to discharge in accordance with the general permit for stormwater discharges from *construction activity*.

Nonpoint Source - means any source of water pollution or pollutants which is not a discrete conveyance or *point source* permitted pursuant to Title 7 or 8 of Article 17 of the Environmental Conservation Law (see ECL Section 17-1403).

Overbank –means flow events that exceed the capacity of the stream channel and spill out into the adjacent floodplain.

Owner or Operator - means the person, persons or legal entity which owns or leases the property on which the *construction activity* is occurring; an entity that has operational control over the construction plans and specifications, including the ability to make modifications to the plans and specifications; and/or an entity that has day-to-day operational control of those activities at a project that are necessary to ensure compliance with the permit conditions.

Performance Criteria – means the design criteria listed under the "Required Elements" sections in Chapters 5, 6 and 10 of the technical standard, New York State Stormwater Management Design Manual, dated January 2015. It does not include the Sizing Criteria (i.e. WQv, RRv, Cpv, Qp and Qf) in Part I.C.2. of the permit.

Point Source - means any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, vessel or other floating craft, or landfill leachate collection system from which *pollutants* are or may be discharged.

Pollutant - means dredged spoil, filter backwash, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand and industrial, municipal, agricultural waste and ballast discharged into water; which may cause or might reasonably be expected to cause pollution of the waters of the state in contravention of the standards or guidance values adopted as provided in 6 NYCRR Parts 700 et seq .

Qualified Inspector - means a person that is knowledgeable in the principles and practices of erosion and sediment control, such as a licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder or other Department endorsed individual(s).

It can also mean someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided that person has training in the principles and practices of erosion and sediment control. Training in the principles and practices of erosion and sediment control means that the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect has received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the individual working under the direct supervision of the licensed Professional Engineer or Registered Landscape Architect shall receive four (4) hours of training every three (3) years.

It can also mean a person that meets the *Qualified Professional* qualifications in addition to the *Qualified Inspector* qualifications.

Note: Inspections of any post-construction stormwater management practices that include structural components, such as a dam for an impoundment, shall be performed by a licensed Professional Engineer.

Qualified Professional - means a person that is knowledgeable in the principles and practices of stormwater management and treatment, such as a licensed Professional Engineer, Registered Landscape Architect or other Department endorsed individual(s). Individuals preparing SWPPPs that require the post-construction stormwater management practice component must have an understanding of the principles of hydrology, water quality management practice design, water quantity control design, and, in many cases, the principles of hydraulics. All components of the SWPPP that involve the practice of engineering, as defined by the NYS Education Law (see Article 145), shall be prepared by, or under the direct supervision of, a professional engineer licensed to practice in the State of New York.

Redevelopment Activity(ies) – means the disturbance and reconstruction of existing impervious area, including impervious areas that were removed from a project site within five (5) years of preliminary project plan submission to the local government (i.e. site plan, subdivision, etc.).

Regulated, Traditional Land Use Control MS4 - means a city, town or village with land use control authority that is authorized to discharge under New York State DEC's

SPDES General Permit For Stormwater Discharges from Municipal Separate Stormwater Sewer Systems (MS4s) or the City of New York's Individual SPDES Permit for their Municipal Separate Storm Sewer Systems (NY-0287890).

Routine Maintenance Activity - means *construction activity* that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility, including, but not limited to:

- Re-grading of gravel roads or parking lots,
- Cleaning and shaping of existing roadside ditches and culverts that maintains the approximate original line and grade, and hydraulic capacity of the ditch,
- Cleaning and shaping of existing roadside ditches that does not maintain the approximate original grade, hydraulic capacity and purpose of the ditch if the changes to the line and grade, hydraulic capacity or purpose of the ditch are installed to improve water quality and quantity controls (e.g. installing grass lined ditch),
- Placement of aggregate shoulder backing that stabilizes the transition between the road shoulder and the ditch or *embankment*,
- Full depth milling and filling of existing asphalt pavements, replacement of concrete pavement slabs, and similar work that does not expose soil or disturb the bottom six (6) inches of subbase material,
- Long-term use of equipment storage areas at or near highway maintenance facilities,
- Removal of sediment from the edge of the highway to restore a previously existing sheet-flow drainage connection from the highway surface to the highway ditch or *embankment*,
- Existing use of Canal Corp owned upland disposal sites for the canal, and
- Replacement of curbs, gutters, sidewalks and guide rail posts.

Site limitations – means site conditions that prevent the use of an infiltration technique and or infiltration of the total WQv. Typical site limitations include: seasonal high groundwater, shallow depth to bedrock, and soils with an infiltration rate less than 0.5 inches/hour. The existence of site limitations shall be confirmed and documented using actual field testing (i.e. test pits, soil borings, and infiltration test) or using information from the most current United States Department of Agriculture (USDA) Soil Survey for the County where the project is located.

Sizing Criteria – means the criteria included in Part I.C.2 of the permit that are used to size post-construction stormwater management control practices. The criteria include; Water Quality Volume (WQv), Runoff Reduction Volume (RRv), Channel Protection Volume (Cpv), *Overbank* Flood (Qp), and Extreme Flood (Qf).

State Pollutant Discharge Elimination System (SPDES) - means the system established pursuant to Article 17 of the ECL and 6 NYCRR Part 750 for issuance of permits authorizing discharges to the waters of the state.

Steep Slope – means land area designated on the current United States Department of Agriculture ("USDA") Soil Survey as Soil Slope Phase "D", (provided the map unit name is inclusive of slopes greater than 25%) , or Soil Slope Phase E or F, (regardless of the map unit name), or a combination of the three designations.

Streambank – as used in this permit, means the terrain alongside the bed of a creek or stream. The bank consists of the sides of the channel, between which the flow is confined.

Stormwater Pollution Prevention Plan (SWPPP) – means a project specific report, including construction drawings, that among other things: describes the construction activity(ies), identifies the potential sources of pollution at the *construction site*; describes and shows the stormwater controls that will be used to control the pollutants (i.e. erosion and sediment controls; for many projects, includes post-construction stormwater management controls); and identifies procedures the *owner or operator* will implement to comply with the terms and conditions of the permit. See Part III of the permit for a complete description of the information that must be included in the SWPPP.

Surface Waters of the State - shall be construed to include lakes, bays, sounds, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, marshes, inlets, canals, the Atlantic ocean within the territorial seas of the state of New York and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, public or private (except those private waters that do not combine or effect a junction with natural surface waters), which are wholly or partially within or bordering the state or within its jurisdiction. Waters of the state are further defined in 6 NYCRR Parts 800 to 941.

Temporarily Ceased – means that an existing disturbed area will not be disturbed again within 14 calendar days of the previous soil disturbance.

Temporary Stabilization - means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats (e.g. jute twisted yarn, excelsior wood fiber mats).

Total Maximum Daily Loads (TMDLs) - A TMDL is the sum of the allowable loads of a single pollutant from all contributing point and *nonpoint source*s. It is a calculation of the maximum amount of a pollutant that a waterbody can receive on a daily basis and still meet *water quality standards*, and an allocation of that amount to the pollutant's sources. A TMDL stipulates wasteload allocations (WLAs) for *point source* discharges, load allocations (LAs) for *nonpoint source*s, and a margin of safety (MOS).

Trained Contractor - means an employee from the contracting (construction) company, identified in Part III.A.6., that has received four (4) hours of Department endorsed

training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity. After receiving the initial training, the *trained contractor* shall receive four (4) hours of training every three (3) years.

It can also mean an employee from the contracting (construction) company, identified in Part III.A.6., that meets the *qualified inspector* qualifications (e.g. licensed Professional Engineer, Certified Professional in Erosion and Sediment Control (CPESC), Registered Landscape Architect, New York State Erosion and Sediment Control Certificate Program holder, or someone working under the direct supervision of, and at the same company as, the licensed Professional Engineer or Registered Landscape Architect, provided they have received four (4) hours of Department endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other Department endorsed entity).

The *trained contractor* is responsible for the day to day implementation of the SWPPP.

Uniform Procedures Act (UPA) Permit - means a permit required under 6 NYCRR Part 621 of the Environmental Conservation Law (ECL), Article 70.

Water Quality Standard - means such measures of purity or quality for any waters in relation to their reasonable and necessary use as promulgated in 6 NYCRR Part 700 et seq.

APPENDIX B – Required SWPPP Components by Project Type

Table 1
Construction Activities that Require the Preparation of a SWPPP That Only Includes Erosion and Sediment Controls

The following construction activities that involve soil disturbances of one (1) or more acres of land, but less than five (5) acres:

- Single family home not located in one of the watersheds listed in Appendix C or not *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions with 25% or less impervious cover at total site build-out and not located in one of the watersheds listed in Appendix C and not directly discharging to one of the 303(d) segments listed in Appendix E
- Construction of a barn or other *agricultural building*, silo, stock yard or pen.

The following construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land:

All construction activities located in the watersheds identified in Appendix D that involve soil disturbances between five thousand (5,000) square feet and one (1) acre of land.

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Installation of underground, linear utilities; such as gas lines, fiber-optic cable, cable TV, electric, telephone, sewer mains, and water mains
- Environmental enhancement projects, such as wetland mitigation projects, stormwater retrofits and stream restoration projects
- Pond construction
- Linear bike paths running through areas with vegetative cover, including bike paths surfaced with an impervious cover
- Cross-country ski trails and walking/hiking trails
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are not part of residential, commercial or institutional development;
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that include incidental shoulder or curb work along an existing highway to support construction of the sidewalk, bike path or walking path.
- Slope stabilization projects
- Slope flattening that changes the grade of the site, but does not significantly change the runoff characteristics

Table 1 (Continued) CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT ONLY INCLUDES EROSION AND SEDIMENT CONTROLS

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Spoil areas that will be covered with vegetation
- Vegetated open space projects (i.e. recreational parks, lawns, meadows, fields, downhill ski trails) excluding projects that *alter hydrology from pre to post development* conditions,
- Athletic fields (natural grass) that do not include the construction or reconstruction of *impervious area* and do not *alter hydrology from pre to post development* conditions
- Demolition project where vegetation will be established, and no redevelopment is planned
- Overhead electric transmission line project that does not include the construction of permanent access roads or parking areas surfaced with *impervious cover*
- Structural practices as identified in Table II in the "Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State", excluding projects that involve soil disturbances of greater than five acres and construction activities that include the construction or reconstruction of impervious area
- Temporary access roads, median crossovers, detour roads, lanes, or other temporary impervious areas that will be restored to pre-construction conditions once the construction activity is complete

Table 2
CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Single family home located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family home that disturbs five (5) or more acres of land
- Single family residential subdivisions located in one of the watersheds listed in Appendix C or *directly discharging* to one of the 303(d) segments listed in Appendix E
- Single family residential subdivisions that involve soil disturbances of between one (1) and five (5) acres of land with greater than 25% impervious cover at total site build-out
- Single family residential subdivisions that involve soil disturbances of five (5) or more acres of land, and single family residential subdivisions that involve soil disturbances of less than five (5) acres that are part of a larger common plan of development or sale that will ultimately disturb five or more acres of land
- Multi-family residential developments; includes duplexes, townhomes, condominiums, senior housing complexes, apartment complexes, and mobile home parks
- Airports
- Amusement parks
- Breweries, cideries, and wineries, including establishments constructed on agricultural land
- Campgrounds
- Cemeteries that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Commercial developments
- Churches and other places of worship
- Construction of a barn or other *agricultural building* (e.g. silo) and structural practices as identified in Table II in the “Agricultural Management Practices Catalog for Nonpoint Source Pollution in New York State” that include the construction or reconstruction of *impervious area*, excluding projects that involve soil disturbances of less than five acres.
- Golf courses
- Institutional development; includes hospitals, prisons, schools and colleges
- Industrial facilities; includes industrial parks
- Landfills
- Municipal facilities; includes highway garages, transfer stations, office buildings, POTW’s, water treatment plants, and water storage tanks
- Office complexes
- Playgrounds that include the construction or reconstruction of impervious area
- Sports complexes
- Racetracks; includes racetracks with earthen (dirt) surface
- Road construction or reconstruction, including roads constructed as part of the construction activities listed in Table 1

Table 2 (Continued)

CONSTRUCTION ACTIVITIES THAT REQUIRE THE PREPARATION OF A SWPPP THAT INCLUDES POST-CONSTRUCTION STORMWATER MANAGEMENT PRACTICES

The following construction activities that involve soil disturbances of one (1) or more acres of land:

- Parking lot construction or reconstruction, including parking lots constructed as part of the construction activities listed in Table 1
- Athletic fields (natural grass) that include the construction or reconstruction of impervious area (>5% of disturbed area) or *alter the hydrology from pre to post development* conditions
- Athletic fields with artificial turf
- Permanent access roads, parking areas, substations, compressor stations and well drilling pads, surfaced with *impervious cover,* and constructed as part of an over-head electric transmission line project, wind-power project, cell tower project, oil or gas well drilling project, sewer or water main project or other linear utility project
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a residential, commercial or institutional development
- Sidewalk, bike path or walking path projects, surfaced with an impervious cover, that are part of a highway construction or reconstruction project
- All other construction activities that include the construction or reconstruction of *impervious area* or *alter the hydrology from pre to post development* conditions, and are not listed in Table 1

APPENDIX C – Watersheds Requiring Enhanced Phosphorus Removal

Watersheds where *owners or operators* of construction activities identified in Table 2 of Appendix B must prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the Enhanced Phosphorus Removal Standards included in the technical standard, New York State Stormwater Management Design Manual ("Design Manual").

- Entire New York City Watershed located east of the Hudson River - Figure 1
- Onondaga Lake Watershed - Figure 2
- Greenwood Lake Watershed -Figure 3
- Oscawana Lake Watershed – Figure 4
- Kinderhook Lake Watershed – Figure 5

Figure 1 - New York City Watershed East of the Hudson

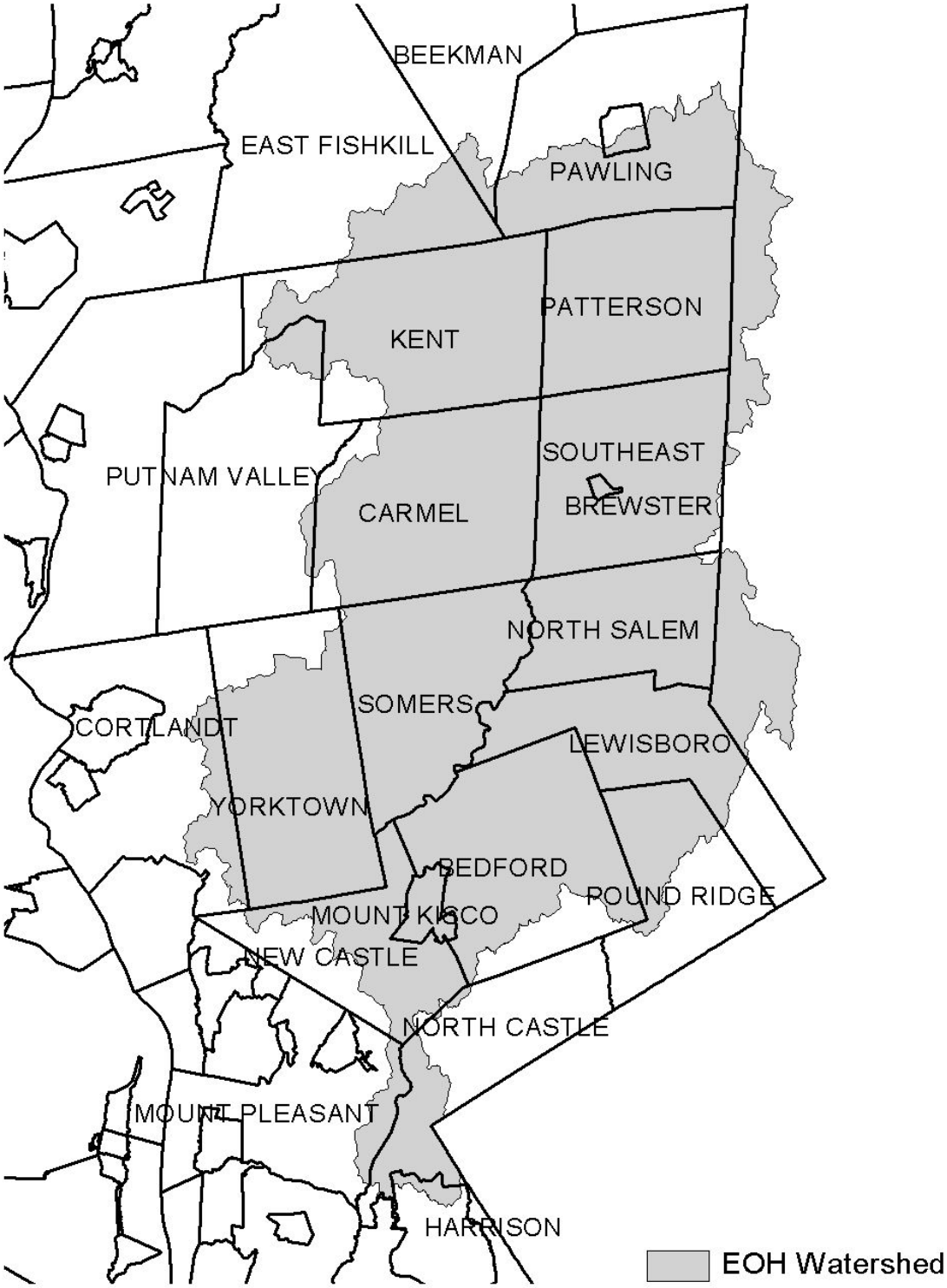


Figure 2 - Onondaga Lake Watershed

Figure 3 - Greenwood Lake Watershed

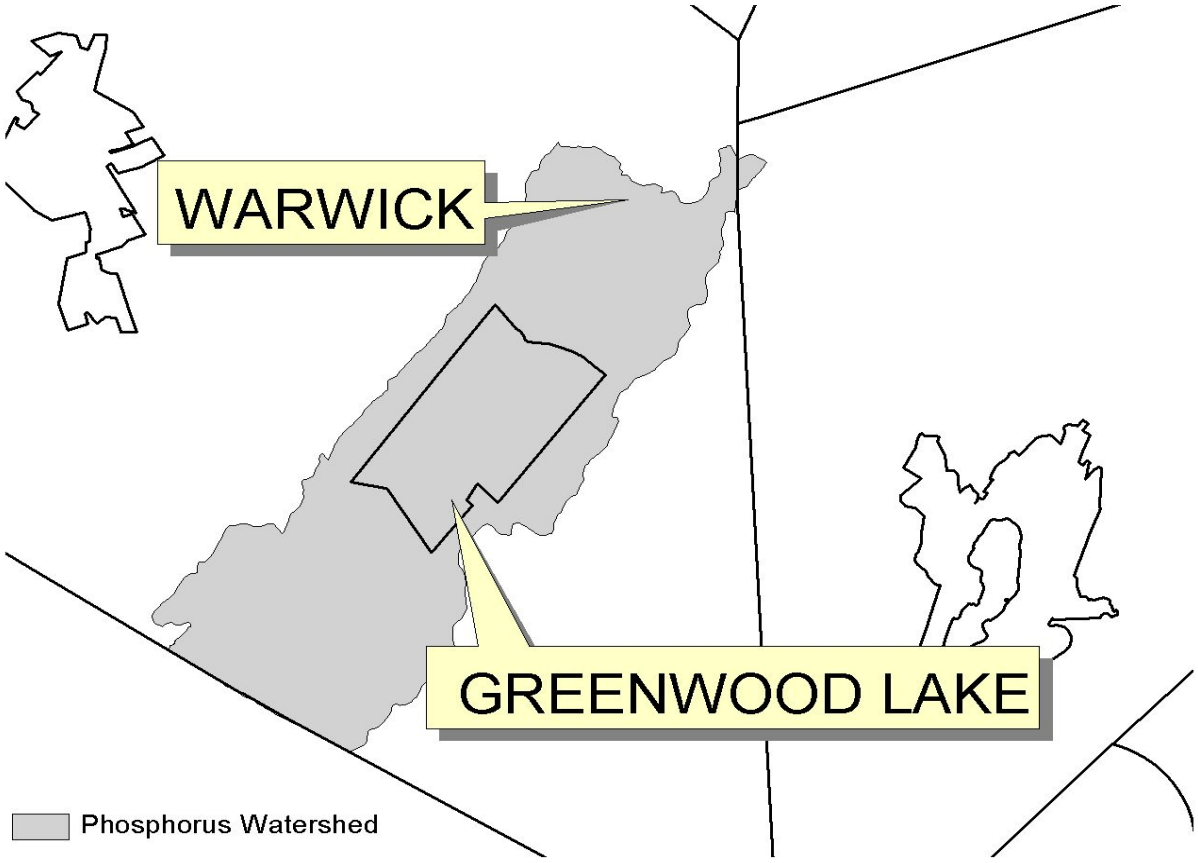


Figure 4 - Oscawana Lake Watershed

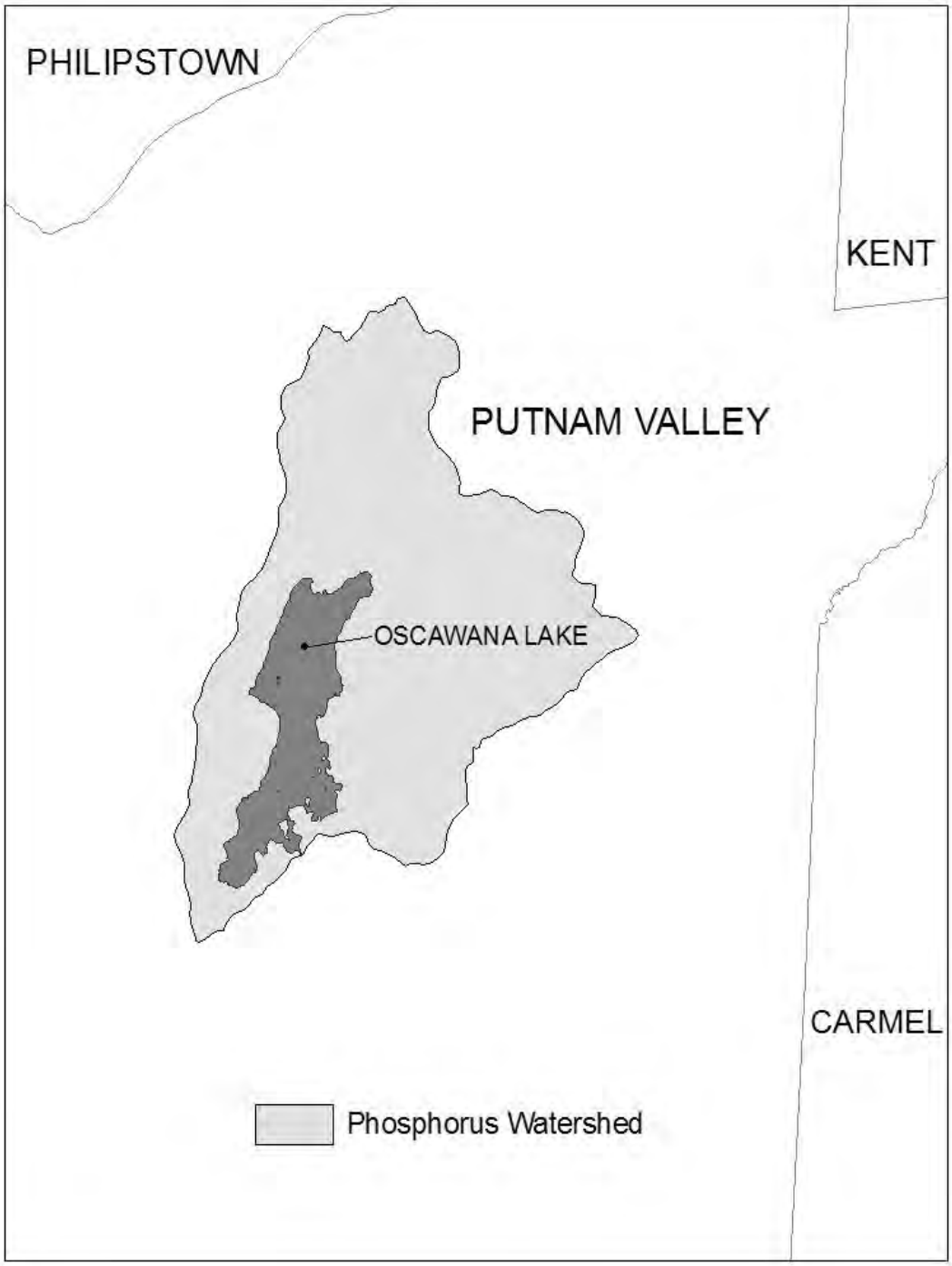
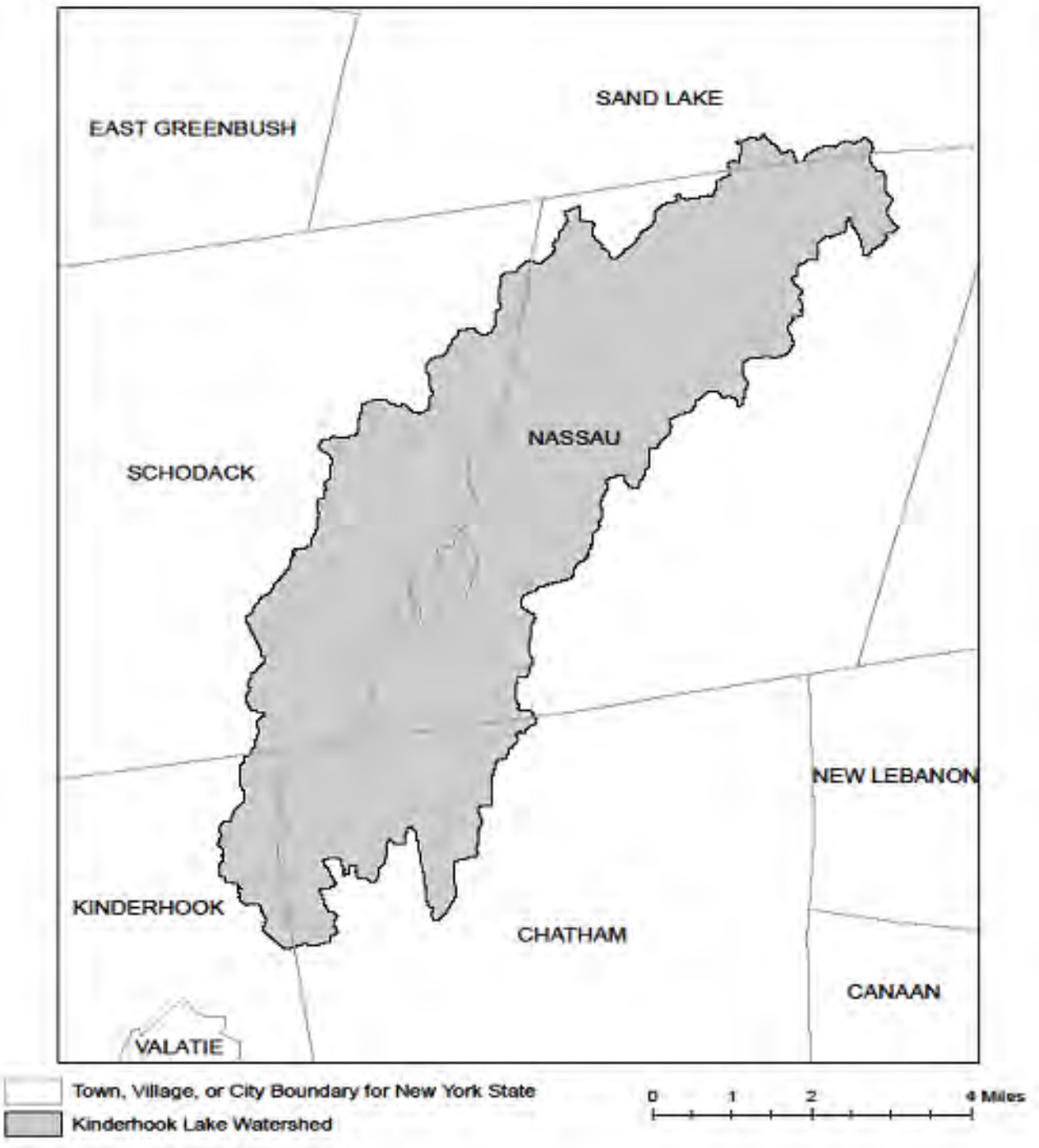


Figure 5 - Kinderhook Lake Watershed



APPENDIX D – Watersheds with Lower Disturbance Threshold

Watersheds where *owners or operators* of construction activities that involve soil disturbances between five thousand (5000) square feet and one (1) acre of land must obtain coverage under this permit.

Entire New York City Watershed that is located east of the Hudson River - See Figure 1 in Appendix C

APPENDIX E – 303(d) Segments Impaired by Construction Related Pollutant(s)

List of 303(d) segments impaired by pollutants related to *construction activity* (e.g. silt, sediment or nutrients). The list was developed using "The Final New York State 2016 Section 303(d) List of Impaired Waters Requiring a TMDL/Other Strategy" dated November 2016. *Owners or operators* of single family home and single family residential subdivisions with 25% or less total impervious cover at total site build-out that involve soil disturbances of one or more acres of land, but less than 5 acres, and *directly discharge* to one of the listed segments below shall prepare a SWPPP that includes post-construction stormwater management practices designed in conformance with the New York State Stormwater Management Design Manual ("Design Manual"), dated January 2015.

COUNTY	WATERBODY	POLLUTANT
Albany	Ann Lee (Shakers) Pond, Stump Pond	Nutrients
Albany	Basic Creek Reservoir	Nutrients
Allegany	Amity Lake, Saunders Pond	Nutrients
Bronx	Long Island Sound, Bronx	Nutrients
Bronx	Van Cortlandt Lake	Nutrients
Broome	Fly Pond, Deer Lake, Sky Lake	Nutrients
Broome	Minor Tribs to Lower Susquehanna (north)	Nutrients
Broome	Whitney Point Lake/Reservoir	Nutrients
Cattaraugus	Allegheny River/Reservoir	Nutrients
Cattaraugus	Beaver (Alma) Lake	Nutrients
Cattaraugus	Case Lake	Nutrients
Cattaraugus	Linlyco/Club Pond	Nutrients
Cayuga	Duck Lake	Nutrients
Cayuga	Little Sodus Bay	Nutrients
Chautauqua	Bear Lake	Nutrients
Chautauqua	Chadakoin River and tribs	Nutrients
Chautauqua	Chautauqua Lake, North	Nutrients
Chautauqua	Chautauqua Lake, South	Nutrients
Chautauqua	Findley Lake	Nutrients
Chautauqua	Hulburt/Clymer Pond	Nutrients
Clinton	Great Chazy River, Lower, Main Stem	Silt/Sediment
Clinton	Lake Champlain, Main Lake, Middle	Nutrients
Clinton	Lake Champlain, Main Lake, North	Nutrients
Columbia	Kinderhook Lake	Nutrients
Columbia	Robinson Pond	Nutrients
Cortland	Dean Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Dutchess	Fall Kill and tribs	Nutrients
Dutchess	Hillside Lake	Nutrients
Dutchess	Wappingers Lake	Nutrients
Dutchess	Wappingers Lake	Silt/Sediment
Erie	Beeman Creek and tribs	Nutrients
Erie	Ellicott Creek, Lower, and tribs	Silt/Sediment
Erie	Ellicott Creek, Lower, and tribs	Nutrients
Erie	Green Lake	Nutrients
Erie	Little Sister Creek, Lower, and tribs	Nutrients
Erie	Murder Creek, Lower, and tribs	Nutrients
Erie	Rush Creek and tribs	Nutrients
Erie	Scajaquada Creek, Lower, and tribs	Nutrients
Erie	Scajaquada Creek, Middle, and tribs	Nutrients
Erie	Scajaquada Creek, Upper, and tribs	Nutrients
Erie	South Branch Smoke Cr, Lower, and tribs	Silt/Sediment
Erie	South Branch Smoke Cr, Lower, and tribs	Nutrients
Essex	Lake Champlain, Main Lake, South	Nutrients
Essex	Lake Champlain, South Lake	Nutrients
Essex	Willsboro Bay	Nutrients
Genesee	Bigelow Creek and tribs	Nutrients
Genesee	Black Creek, Middle, and minor tribs	Nutrients
Genesee	Black Creek, Upper, and minor tribs	Nutrients
Genesee	Bowen Brook and tribs	Nutrients
Genesee	LeRoy Reservoir	Nutrients
Genesee	Oak Orchard Cr, Upper, and tribs	Nutrients
Genesee	Tonawanda Creek, Middle, Main Stem	Nutrients
Greene	Schoharie Reservoir	Silt/Sediment
Greene	Sleepy Hollow Lake	Silt/Sediment
Herkimer	Steele Creek tribs	Silt/Sediment
Herkimer	Steele Creek tribs	Nutrients
Jefferson	Moon Lake	Nutrients
Kings	Hendrix Creek	Nutrients
Kings	Prospect Park Lake	Nutrients
Lewis	Mill Creek/South Branch, and tribs	Nutrients
Livingston	Christie Creek and tribs	Nutrients
Livingston	Conesus Lake	Nutrients
Livingston	Mill Creek and minor tribs	Silt/Sediment
Monroe	Black Creek, Lower, and minor tribs	Nutrients
Monroe	Buck Pond	Nutrients
Monroe	Cranberry Pond	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Monroe	Lake Ontario Shoreline, Western	Nutrients
Monroe	Long Pond	Nutrients
Monroe	Mill Creek and tribs	Nutrients
Monroe	Mill Creek/Blue Pond Outlet and tribs	Nutrients
Monroe	Minor Tribs to Irondequoit Bay	Nutrients
Monroe	Rochester Embayment - East	Nutrients
Monroe	Rochester Embayment - West	Nutrients
Monroe	Shipbuilders Creek and tribs	Nutrients
Monroe	Thomas Creek/White Brook and tribs	Nutrients
Nassau	Beaver Lake	Nutrients
Nassau	Camaans Pond	Nutrients
Nassau	East Meadow Brook, Upper, and tribs	Silt/Sediment
Nassau	East Rockaway Channel	Nutrients
Nassau	Grant Park Pond	Nutrients
Nassau	Hempstead Bay	Nutrients
Nassau	Hempstead Lake	Nutrients
Nassau	Hewlett Bay	Nutrients
Nassau	Hog Island Channel	Nutrients
Nassau	Long Island Sound, Nassau County Waters	Nutrients
Nassau	Massapequa Creek and tribs	Nutrients
Nassau	Milburn/Parsonage Creeks, Upp, and tribs	Nutrients
Nassau	Reynolds Channel, west	Nutrients
Nassau	Tidal Tribs to Hempstead Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Nutrients
Nassau	Tribs (fresh) to East Bay	Silt/Sediment
Nassau	Tribs to Smith/Halls Ponds	Nutrients
Nassau	Woodmere Channel	Nutrients
New York	Harlem Meer	Nutrients
New York	The Lake in Central Park	Nutrients
Niagara	Bergholtz Creek and tribs	Nutrients
Niagara	Hyde Park Lake	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Niagara	Lake Ontario Shoreline, Western	Nutrients
Oneida	Ballou, Nail Creeks and tribs	Nutrients
Onondaga	Harbor Brook, Lower, and tribs	Nutrients
Onondaga	Ley Creek and tribs	Nutrients
Onondaga	Minor Tribs to Onondaga Lake	Nutrients
Onondaga	Ninemile Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Lower, and tribs	Nutrients
Onondaga	Onondaga Creek, Middle, and tribs	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Onondaga	Onondaga Lake, northern end	Nutrients
Onondaga	Onondaga Lake, southern end	Nutrients
Ontario	Great Brook and minor tribs	Silt/Sediment
Ontario	Great Brook and minor tribs	Nutrients
Ontario	Hemlock Lake Outlet and minor tribs	Nutrients
Ontario	Honeoye Lake	Nutrients
Orange	Greenwood Lake	Nutrients
Orange	Monhagen Brook and tribs	Nutrients
Orange	Orange Lake	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Orleans	Lake Ontario Shoreline, Western	Nutrients
Oswego	Lake Neatahwanta	Nutrients
Oswego	Pleasant Lake	Nutrients
Putnam	Bog Brook Reservoir	Nutrients
Putnam	Boyd Corners Reservoir	Nutrients
Putnam	Croton Falls Reservoir	Nutrients
Putnam	Diverting Reservoir	Nutrients
Putnam	East Branch Reservoir	Nutrients
Putnam	Lake Carmel	Nutrients
Putnam	Middle Branch Reservoir	Nutrients
Putnam	Oscawana Lake	Nutrients
Putnam	Palmer Lake	Nutrients
Putnam	West Branch Reservoir	Nutrients
Queens	Bergen Basin	Nutrients
Queens	Flushing Creek/Bay	Nutrients
Queens	Jamaica Bay, Eastern, and tribs (Queens)	Nutrients
Queens	Kissena Lake	Nutrients
Queens	Meadow Lake	Nutrients
Queens	Willow Lake	Nutrients
Rensselaer	Nassau Lake	Nutrients
Rensselaer	Snyders Lake	Nutrients
Richmond	Grasmere Lake/Bradys Pond	Nutrients
Rockland	Congers Lake, Swartout Lake	Nutrients
Rockland	Rockland Lake	Nutrients
Saratoga	Ballston Lake	Nutrients
Saratoga	Dwaas Kill and tribs	Silt/Sediment
Saratoga	Dwaas Kill and tribs	Nutrients
Saratoga	Lake Lonely	Nutrients
Saratoga	Round Lake	Nutrients
Saratoga	Tribs to Lake Lonely	Nutrients

303(d) Segments Impaired by Construction Related Pollutant(s)

Schenectady	Collins Lake	Nutrients
Schenectady	Duane Lake	Nutrients
Schenectady	Mariaville Lake	Nutrients
Schoharie	Engleville Pond	Nutrients
Schoharie	Summit Lake	Nutrients
Seneca	Reeder Creek and tribs	Nutrients
St.Lawrence	Black Lake Outlet/Black Lake	Nutrients
St.Lawrence	Fish Creek and minor tribs	Nutrients
Steuben	Smith Pond	Nutrients
Suffolk	Agawam Lake	Nutrients
Suffolk	Big/Little Fresh Ponds	Nutrients
Suffolk	Canaan Lake	Silt/Sediment
Suffolk	Canaan Lake	Nutrients
Suffolk	Flanders Bay, West/Lower Sawmill Creek	Nutrients
Suffolk	Fresh Pond	Nutrients
Suffolk	Great South Bay, East	Nutrients
Suffolk	Great South Bay, Middle	Nutrients
Suffolk	Great South Bay, West	Nutrients
Suffolk	Lake Ronkonkoma	Nutrients
Suffolk	Long Island Sound, Suffolk County, West	Nutrients
Suffolk	Mattituck (Marratooka) Pond	Nutrients
Suffolk	Meetinghouse/Terrys Creeks and tribs	Nutrients
Suffolk	Mill and Seven Ponds	Nutrients
Suffolk	Millers Pond	Nutrients
Suffolk	Moriches Bay, East	Nutrients
Suffolk	Moriches Bay, West	Nutrients
Suffolk	Peconic River, Lower, and tidal tribs	Nutrients
Suffolk	Quantuck Bay	Nutrients
Suffolk	Shinnecock Bay and Inlet	Nutrients
Suffolk	Tidal tribs to West Moriches Bay	Nutrients
Sullivan	Bodine, Montgomery Lakes	Nutrients
Sullivan	Davies Lake	Nutrients
Sullivan	Evens Lake	Nutrients
Sullivan	Pleasure Lake	Nutrients
Tompkins	Cayuga Lake, Southern End	Nutrients
Tompkins	Cayuga Lake, Southern End	Silt/Sediment
Tompkins	Owasco Inlet, Upper, and tribs	Nutrients
Ulster	Ashokan Reservoir	Silt/Sediment
Ulster	Esopus Creek, Upper, and minor tribs	Silt/Sediment
Warren	Hague Brook and tribs	Silt/Sediment

303(d) Segments Impaired by Construction Related Pollutant(s)

Warren	Huddle/Finkle Brooks and tribs	Silt/Sediment
Warren	Indian Brook and tribs	Silt/Sediment
Warren	Lake George	Silt/Sediment
Warren	Tribs to L.George, Village of L George	Silt/Sediment
Washington	Cossayuna Lake	Nutrients
Washington	Lake Champlain, South Bay	Nutrients
Washington	Tribs to L.George, East Shore	Silt/Sediment
Washington	Wood Cr/Champlain Canal and minor tribs	Nutrients
Wayne	Port Bay	Nutrients
Westchester	Amawalk Reservoir	Nutrients
Westchester	Blind Brook, Upper, and tribs	Silt/Sediment
Westchester	Cross River Reservoir	Nutrients
Westchester	Lake Katonah	Nutrients
Westchester	Lake Lincolndale	Nutrients
Westchester	Lake Meahagh	Nutrients
Westchester	Lake Mohegan	Nutrients
Westchester	Lake Shenorock	Nutrients
Westchester	Long Island Sound, Westchester (East)	Nutrients
Westchester	Mamaroneck River, Lower	Silt/Sediment
Westchester	Mamaroneck River, Upper, and minor tribs	Silt/Sediment
Westchester	Muscoot/Upper New Croton Reservoir	Nutrients
Westchester	New Croton Reservoir	Nutrients
Westchester	Peach Lake	Nutrients
Westchester	Reservoir No.1 (Lake Isle)	Nutrients
Westchester	Saw Mill River, Lower, and tribs	Nutrients
Westchester	Saw Mill River, Middle, and tribs	Nutrients
Westchester	Sheldrake River and tribs	Silt/Sediment
Westchester	Sheldrake River and tribs	Nutrients
Westchester	Silver Lake	Nutrients
Westchester	Teatown Lake	Nutrients
Westchester	Titicus Reservoir	Nutrients
Westchester	Truesdale Lake	Nutrients
Westchester	Wallace Pond	Nutrients
Wyoming	Java Lake	Nutrients
Wyoming	Silver Lake	Nutrients

APPENDIX F – List of NYS DEC Regional Offices

Region	Covering the following counties:	DIVISION OF ENVIRONMENTAL PERMITS (DEP) Permit Administrators	DIVISION OF WATER (DOW) Water (SPDES) Program
1	Nassau and Suffolk	50 Circle Road Stony Brook, NY 11790 Tel. (631) 444-0365	50 Circle Road Stony Brook, NY 11790-3409 Tel. (631) 444-0405
2	Bronx, Kings, New York, Queens and Richmond	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4997	1 Hunters Point Plaza, 47-40 21st St. Long Island City, NY 11101-5407 Tel. (718) 482-4933
3	Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster and Westchester	21 South Putt Corners Road New Paltz, NY 12561-1696 Tel. (845) 256-3059	100 Hillside Avenue, Suite 1W White Plains, NY 10603 Tel. (914) 428 - 2505
4	Albany, Columbia, Delaware, Greene, Montgomery, Otsego, Rensselaer, Schenectady and Schoharie	1150 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2069	1130 North Westcott Road Schenectady, NY 12306-2014 Tel. (518) 357-2045
5	Clinton, Essex, Franklin, Fulton, Hamilton, Saratoga, Warren and Washington	1115 State Route 86, Po Box 296 Ray Brook, NY 12977-0296 Tel. (518) 897-1234	232 Golf Course Road Warrensburg, NY 12885-1172 Tel. (518) 623-1200
6	HERKIMER, JEFFERSON, LEWIS, ONEIDA AND ST. LAWRENCE	STATE OFFICE BUILDING 317 WASHINGTON STREET WATERTOWN, NY 13601-3787 TEL. (315) 785-2245	STATE OFFICE BUILDING 207 GENESEE STREET UTICA, NY 13501-2885 TEL. (315) 793-2554
7	BROOME, CAYUGA, CHENANGO, CORTLAND, MADISON, ONONDAGA, OSWEGO, TIOGA AND TOMPKINS	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7438	615 ERIE BLVD. WEST SYRACUSE, NY 13204-2400 TEL. (315) 426-7500
8	CHEMUNG, GENESEE, LIVINGSTON, MONROE, ONTARIO, ORLEANS, SCHUYLER, SENECA, STEUBEN, WAYNE AND YATES	6274 EAST AVON-LIMA ROADAVON, NY 14414-9519 TEL. (585) 226-2466	6274 EAST AVON-LIMA RD. AVON, NY 14414-9519 TEL. (585) 226-2466
9	ALLEGANY, CATTARAUGUS, CHAUTAUQUA, ERIE, NIAGARA AND WYOMING	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7165	270 MICHIGAN AVENUE BUFFALO, NY 14203-2999 TEL. (716) 851-7070

Appendix E

Sample Inspection Checklists

BROOKER ENGINEERING, PLLC

NY OFFICE
74 Lafayette Avenue
Suite 501
Suffern, New York 10901
Tel: 845.357.4411
Fax: 845.357.1896

NJ OFFICE
65 Ramapo Valley Road
Suite 208
Mahwah, New Jersey 07430
Tel: 201.684.1221
Fax: 845.357-1896

EROSION AND SEDIMENT CONTROL INSPECTION REPORT

Site:	Type:		Permit Number:
Site Address:			
Owner Operator/Contact Person:			Date of Inspection:
Contact Person On-Site:	Phone:	Fax:	Time of Inspection:
Primary Contractor:			Inspection: Walk Drive
Inspector:			
Reason for Inspection: Weekly Monthly		Soil Conditions: Dry Wet Saturated Other:	
Total Site Area:	Area to be Disturbed:	Receiving Water:	

GENERAL	**Y**	**No**	**NA**
Is a copy of the NOI and General Permit on-site?			
Is an executed SWPPP on-site?			
The SWPPP does not need to be updated?			
There are not more than 5 acres disturbed?			

RUNOFF CONTROL PRACTICES AND WATER QUALITY	**Y**	**No**	**NA**
Sediment laden water from work area is being discharged to a silt-trapping device?			
Dikes and Swales installed per plan and in good working order?			
Stone Check Dams are in good working condition?			
Rock Outlet Protection installed per plan?			
All runoff points of discharge from the site are free of sediment and are in good condition? If NO, please explain:			
All water bodies within and immediately adjacent to the site are in good condition and are Free of Sediment discharge? If NO, please explain:			

SEDIMENT CONTROL PRACTICES	**Y**	**No**	**NA**
Stabilized Construction Entrance(s) is installed per standards and is in good working order?			
Silt Fence installed per standards and is in good working order?			
Silt Fence has sediment accumulation less than 30%?			

Temporary Sediment Traps are constructed as per the approved plan and in good working order?			
Temporary Sediment Traps have sediment accumulation less than 50% capacity?			

SOIL STABILIZATION	**Y**	**No**	**NA**
Stockpiles are stabilized with vegetation and/or mulch?			
All slopes and idle areas have been stabilized?			

Other Unlisted Misc.	**Y**	**No**	**NA**

MAINTENANCE COMMENTS/ RECOMMENDATIONS

ITEM	PRIORITY (H/M/L)	Picture/Sketch ID#	COMMENTS/RECOMMENDED IMPROVEMENTS

See additional page for sketches or additional comments/recommendations

ADDITIONAL COMMENTS/ INFORMATION

CERTIFICATION

Copy to: Onsite Binder Owner Operator Project Foreman Project Engineer

"I certify under penalty of law that this document and all the attachments were prepared under my direction or supervision in accordance with the system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or the persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information including the possibility of fines and imprisonment for knowing violations."

Signature of Inspector

_____

Corresponding WORK ORDER # (if applicable) _____

Appendix F

Drainage Analysis

BROOKER ENGINEERING PLLC

NY OFFICE
74 Lafayette Avenue, Suite 501 845.357.4411 Tel
Suffern, NY 10901 845.357.1896 Fax

NJ OFFICE
22 Paris Avenue, Suite 105 201.750.3527 Tel
Rockleigh, NJ 07647

Drainage Analysis

Prepared for:

Unity Place Warehouse

Town of Newburgh
Orange County, New York

May 17, 2022
Rev 1: September 23, 2022
Rev 2: October 20, 2022
Rev 3: May 4, 2023
Rev 4: June 23, 2023

Prepared by:

BROOKER ENGINEERING
74 Lafayette Avenue
Suite 501
Suffern, New York 10901

(845) 357-4411

Matthew Paul Trainor, P.E.
N.Y. Lic. No. 104159

TABLE OF CONTENTS

METHODOLOGY

Brooker Engineering, PLLC has been retained to perform a hydraulic and hydrologic analysis for the Unity Place Warehouse project to provide zero-net increase in peak runoff rates as a result of the proposed development.

Unity Place Warehouse is a Site Plan Application for a 154,700 square foot warehouse with associated parking, loading, and driveway areas to be constructed on a 14.89-acre site. The property is comprised of Tax Lots 97-2-14.1, 97-2-19.12 & 97-2-37.2 in the Town of Newburgh. The property is situated at the northwest corner of the Old Little Britain Road and Unity Place intersection. The existing site is unimproved but a significant portion has been cleared and has a grass ground cover with the remaining land covered with trees. An onsite detention system is also existing to accommodate runoff from Unity Place and portion of the adjacent Jehovah Witness property.

As can be seen on the existing drainage maps on page 5, the existing site has two points of interest to the North and the South. The northern end of the site drains towards the northerly property line, eventually drainage to the Brookside Pond/Quassaic Creek. The southerly subarea generally flows south and is eventually captured in the existing conveyance system along Unity Place & Old Great Britain Road before discharging to Lockwood Basin, the water body below Washington Lake. A large shallow depression near the center of the southerly subarea was observed as was modeled as a pond. No portion of the subject property's drainage area is within the Washington Lake watershed.

The southerly and northerly points of interest will be maintained between pre- and post-development conditions as seen on the drainage maps on pages 5 & 6. Therefore, a direct comparison between hydrologic models can take place at their respective points of interest. A large portion of the surface area from the southerly subarea is being redirected to the north via the proposed warehouse roof area. This was implemented due to the successful infiltration rates observed in the field within the northerly subarea in order to reduce as much runoff as possible and direct as much runoff as feasible from Lockwood Basin in response to the City of Newburgh's concerns.

To offset the increased runoff associated with the new impervious surfaces, various stormwater facilities are proposed throughout the site. To the North, (2) offline underground infiltration systems are proposed. The first consists of (266) MC-3500 ADS Stormtech Chambers to take portion of the pavement area to the north and 100% of the warehouse roof runoff. A second infiltration facility was added to mitigate the revised driveway entrance indicated on the latest set of site plans. This facility consists of (56) MC-3500 ADS Stormtech Chambers. Infiltration was considered at these locations due to the favorable infiltration rates observed during testing. An outlet structure has been designed as part of the infiltration system to optimize the provided storage and provide zero net increase in peak runoff rates for the proposed development. It is noted that the Town of Newburgh considers the proposed warehousing use as a stormwater 'hotspot.' A 'treatment train,' or series of pre-treatment facilities, will be provided as per guidance from the New York State Stormwater Management Design Manual (NYSSMDM) for consideration of infiltration facilities in a 'hotspot' area. The ADS Barracuda Max, a proprietary water quality manhole structure will be followed by the ADS Stormtech Isolator Row Plus to adequately remove the required 80% TSS and 40% TP.

To the South, soil testing confirmed that the soils present exhibited high groundwater and no infiltration rate, making the location unsuitable for infiltration facilities. In order to provide a suitable treatment facility and provide sufficient retention volume, a combination of bioretention and a detention facility are proposed. The bioretention facility will have a minimum surface area of 17,947 square feet. The bioretention is sized to only treat the water quality volume of the subarea draining to the South. In order to accommodate the larger storms, a supplementary detention system made up of (55) MC-7200 ADS Stormtech Chambers is proposed to receive water being diverted from a flow splitter located upstream from the bioretention facility. An overflow structure is proposed for the bioretention facility and an outlet structure is provided for the detention facility. Similarly, to the infiltration practice, pretreatment for bioretention will be provided in the form of a proprietary water quality manhole treatment device.

Lastly, to the Southeast, a detention facility made up of (108) MC-3500 ADS chambers are proposed. This facility is required to offset the storage volume provided in existing conditions that receives water from Unity Place and the adjacent Jehovah Witness facility across the street. Contributory drainage area

was estimated from existing topography of the road and the most recent amended grading plan of the Jehovah Site, entitled “Amended Site Development Plans JWCAH Educational Center,” dated June 2, 2008. A small amount of on-site grass area will also be introduced to this facility, so additional storage was required. A revised outlet structure was designed. A proprietary treatment device train, similar to the infiltration system, will be installed upstream of the detention system to provide equal or greater treatment functionality that was exhibited in the existing stormwater pond.

Note that there are minor discrepancies to the number and models of ADS Chambers between the Site Plan and the HydroCAD report. This is due to the varying ability of detail allowed when comparing HydroCAD and the ADS Design Tool. HydroCAD does not allow for a shape outside of a rectangle or the consideration of inlet/outlet manifold volumes or stone around the manifold. Let it also be noted that ADS recently updated the MC-4500 chamber to the MC-7200 chamber. The chamber size is identical, although the length of the individual chambers are longer for easier installation. This results in a fewer number of chambers indicated on the site plan, although the volume is sufficient. Actual proposed volumes shown on the Site Plan are equal or greater to the volumes modeled in HydroCAD.

Runoff from a very small portion of proposed impervious area will not be routed through the water quality treatment system and will discharge directly to Old Little Britain Road and Unity Place due to its downslope location that cannot be captured and treated at the proposed drainage system. This area is 2,439 and 1,308 square feet in size and consists of paved driveway providing access to Old Little Britain Road and Unity Place, respectively. The site has been graded to minimize the drainage area, particularly impervious area, that will bypass the proposed treatment facilities.

Site specific limitations include no soil infiltration rates and high groundwater on the south end of the site as detailed in our Soil Testing Results located in the Appendix. These limitations did not allow us to reduce the full Water Quality Volume of the southern drainage area, although we were still able to receive credit for reduction of about 2.4 times the minimum overall required runoff reduction volume.

The stormwater infiltration, detention, and bioretention systems have been designed to provide water quality and quantity controls utilizing standard practices in accordance with the requirements of the New York State Department of Environmental Conservation (NYSDEC) SPDES General Permit for Stormwater Discharges from Construction. The design incorporates sizing for Water Quality Volume Control (WQv), Runoff Reduction Volume (RRv), Channel Protection Storage Volume (CPv), Overbank Flood Control (Qp) and Extreme Storm Flood Control (Qf). These five components of the water quality sizing criteria are further described as follows:

- The Water Quality Volume (WQv) is designed to improve water quality by capturing and treating 90% of the average annual stormwater runoff volume. The WQv is directly related to the amount of impervious cover on a project site. On this project the water quality volume will be treated by the use of the underground infiltration facilities, bioretention, and proprietary treatment structures.
- The Runoff Reduction Volume (RRv) is designed to control post-development water quality volumes to replicate pre-development hydrology by maintaining pre-construction infiltration, peak runoff flow, and discharge volume as well as minimizing concentrated flow. Runoff Reduction is achieved by infiltration, groundwater recharge, reuse and recycling by incorporating green infrastructure techniques and standard stormwater management practices with runoff reducing capacity.
- The Channel Protection Storage Volume (Cpv) is designed to protect stream channels from erosion. The CPv is accomplished by providing 24 hour extended detention of the one-year, 24-hour storm event.
- The purpose of Overbank Flood Control (Qp) is to prevent an increase in the frequency and magnitude of out-of-bank flooding generated by urban development. Overbank Flood Control is accomplished by attenuating the post development 10-year, 24-hour peak discharge rate from the site to the pre-development rate.
- The purpose of Extreme Flood Control (Qf) is to prevent an increased risk of flood damage from large storm events, to maintain the boundaries of the pre-development 100-year floodplain, and to protect the physical integrity of stormwater management practices. Extreme Flood Control is accomplished by attenuating the post development 100-year, 24-hour peak discharge rate from the site to the pre-development rate.

The required Water Quality Volume and Channel Protection Storage Volume were calculated in accordance with the procedure outlined in the *New York State Stormwater Management Design Manual*. The Overbank Flood Control and Extreme Storm Flood Control are provided by controlling the peak discharge from the project site for the 10 year and 100-year storms to pre-development rates.
This analysis utilized the HydroCAD Stormwater Modeling program. HydroCAD is a stormwater modeling program that utilizes TR-20 and TR-55 along with hydraulic software to generate accurate hydrologic reports in both small are large watershed areas.

The Soil Conservation Service (SCS), U.S. Department of Agriculture, has developed a soil classification system that relates various drainage characteristics of soil, such as cover type, land use type, and antecedent moisture conditions, to a curve number. Technical Release 55 (TR-55) presents a simplified procedure to calculate storm runoff volume, peak rate of discharge, and hydrographs utilizing the SCS curve numbers. This procedure is applicable in small watersheds, and it is the recommended procedure in the New York State Stormwater Management Design Manual. The HydroCAD Stormwater Modeling computer program incorporates the SCS curve number method outlined in TR-55 as one of the options for calculating runoff hydrographs. Soil restoration and de-compaction shall be performed in accordance with NYSDEC regulations and requirements for all areas that are cut, filled or subject to heavy vehicle traffic.

In this analysis, runoff hydrographs were generated for the 1, 10, 25, and 100-year frequency storms. Times of concentration and composite curve numbers were calculated based upon the methodology contained in the aforementioned SCS publication TR-55, Urban Hydrology for Small Watersheds. A 6-minute minimum time of concentration was used. Since a significant portion of the proposed site and offsite runoff is impervious, most of the runoff will be directed almost immediately to the collection system. There is an extreme difference between the severity of a storm's intensity between a zero and 6-minute time of concentration. The intensity within this range is extreme, but the storm has not produced enough volume to fill the drainage system. The 6-minute minimum provides a reasonable and conservative time of concentration to use for the analysis. Runoff hydrographs were then generated utilizing the SCS curve number method within the HydroCAD computer program, and the SCS Type 3 rainfall distribution.

The attached tables summarize the results of the stormwater detention analysis. Also attached are backup calculations, input data, and HydroCAD computer output.

Vicinity Map

OFFSITE DRAINAGE AREA 3
6,977 SF
IMPERVIOUS: 0 SF
GRASS/LANDSCAPING (HSG B): 2,502 SF
GRASS/LANDSCAPING (HSG D): 4,475 SF
TC = 15.8 MIN

OFFSITE DRAINAGE AREA 2
110,079 SF
IMPERVIOUS: 9,702 SF
GRASS/LANDSCAPING (HSG D): 100,377 SF
TC = 21.1 MIN

DRAINAGE AREA 1
32,821 SF
IMPERVIOUS: 600 SF
GRASS (HSG D): 31,961 SF
WOODS (HSG D): 260 SF
TC = 15.6 MIN

DRAINAGE AREA 2
404,999 SF
IMPERVIOUS: 2,447 SF
GRASS (HSG D): 148,017 SF
WOODS (HSG D): 82,769 SF
GRASS (HSG B): 83,422 SF
WOODS (HSG B): 88,344 SF
TC = 21.1 MIN

DRAINAGE AREA 3
199,876 SF
IMPERVIOUS: 2,471 SF
GRASS (HSG B): 63,897 SF
WOODS (HSG B): 112,976 SF
GRASS (HSG D): 10,735 SF
WOODS (HSG D): 9,797 SF
TC = 13.2 MIN

DRAINAGE AREA 4
10,931 SF
GRASS (HSG D): 10,931 SF
TC = 6 MIN

OFFSITE DRAINAGE AREA 1
123,809 SF
IMPERVIOUS: 71,581 SF
GRASS/LANDSCAPING (HSG B): 52,228 SF
TC = 6 MIN

TC: 15.6 MIN
TC: 21.1 MIN
TC: 15.8 MIN
TC: 6 MIN
TC: 6 MIN

HSG D
HSG B

POI NORTH
POI SOUTH

OLD LITTLE BRITAIN RD
UNITY PLACE (50.0' R.O.W.)

0 100' 200'

DISCLAIMER:
UNAUTHORIZED ALTERATION OR ADDITIONS TO THESE PLANS IS A VIOLATION OF THE N.Y.S. EDUCATION LAW, ARTICLE 145, SECTION 7209, SUBSECTION 2.

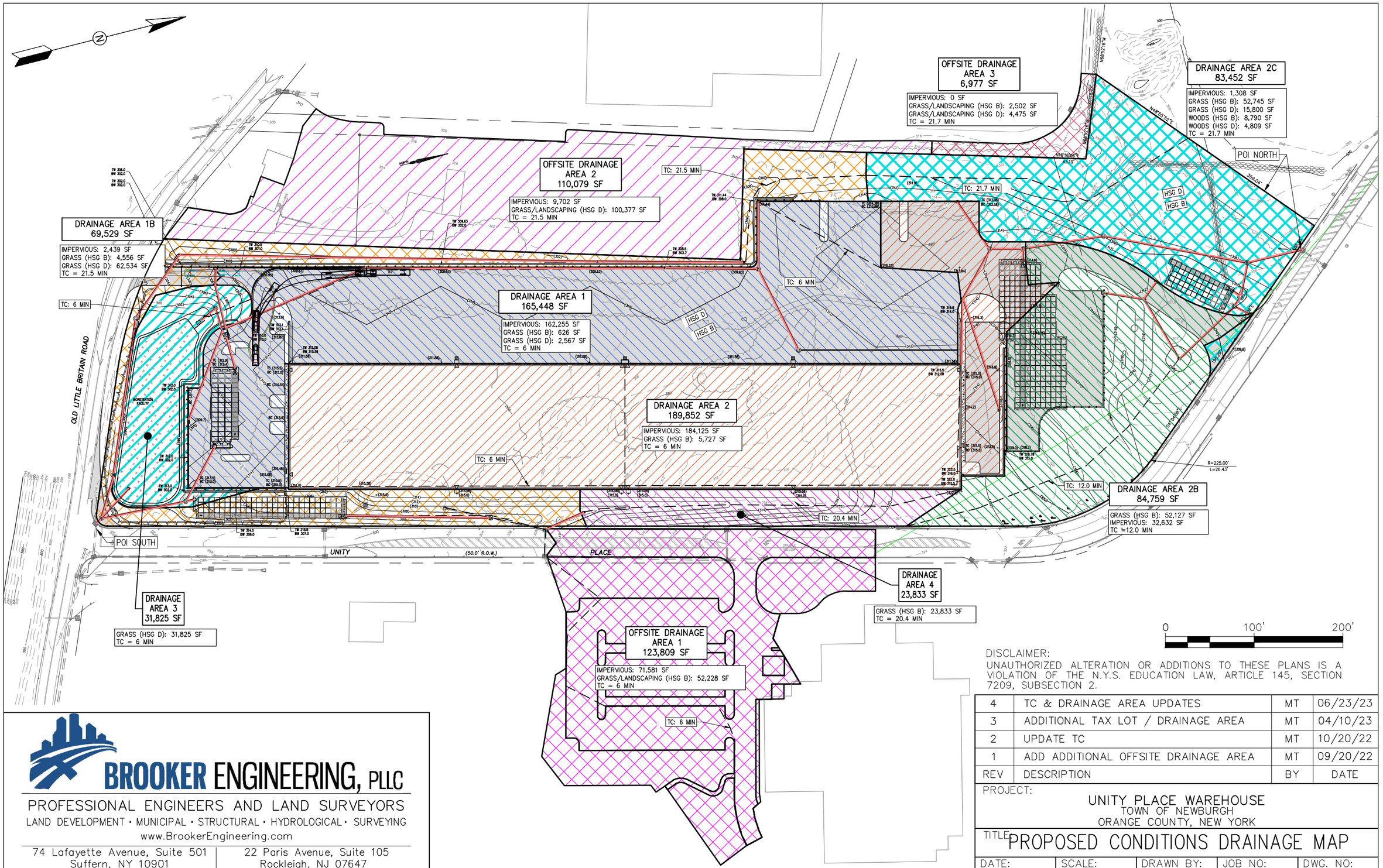
REV	DESCRIPTION	BY	DATE
4	TC & DRAINAGE AREA UPDATES	MT	06/23/23
3	ADDITIONAL TAX LOT / DRAINAGE AREA	MT	04/10/23
2	UPDATE TC	MT	10/20/22
1	ADD ADDITIONAL OFFSITE DRAINAGE AREA	MT	09/20/22

BROOKER ENGINEERING, PLLC
PROFESSIONAL ENGINEERS AND LAND SURVEYORS
LAND DEVELOPMENT · MUNICIPAL · STRUCTURAL · HYDROLOGICAL · SURVEYING
www.BrookerEngineering.com
74 Lafayette Avenue, Suite 501
Suffern, NY 10901
(845) 357-4411
22 Paris Avenue, Suite 105
Rockleigh, NJ 07647
(201) 684-1221

PROJECT:
UNITY PLACE WAREHOUSE
TOWN OF NEWBURGH
ORANGE COUNTY, NEW YORK

TITLE: EXISTING CONDITIONS DRAINAGE MAP

DATE:	SCALE:	DRAWN BY:	JOB NO:	DWG. NO:
05/16/2022	1"=100'	JO	21202	5



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4	TC & DRAINAGE AREA UPDATES	MT	06/23/23
3	ADDITIONAL TAX LOT / DRAINAGE AREA	MT	04/10/23
2	UPDATE TC	MT	10/20/22
1	ADD ADDITIONAL OFFSITE DRAINAGE AREA	MT	09/20/22

PROJECT:
UNITY PLACE WAREHOUSE
TOWN OF NEWBURGH
ORANGE COUNTY, NEW YORK

TITLE: PROPOSED CONDITIONS DRAINAGE MAP

DATE:	SCALE:	DRAWN BY:	JOB NO:	DWG. NO:
05/16/2022	1"=100'	JO	21202	6

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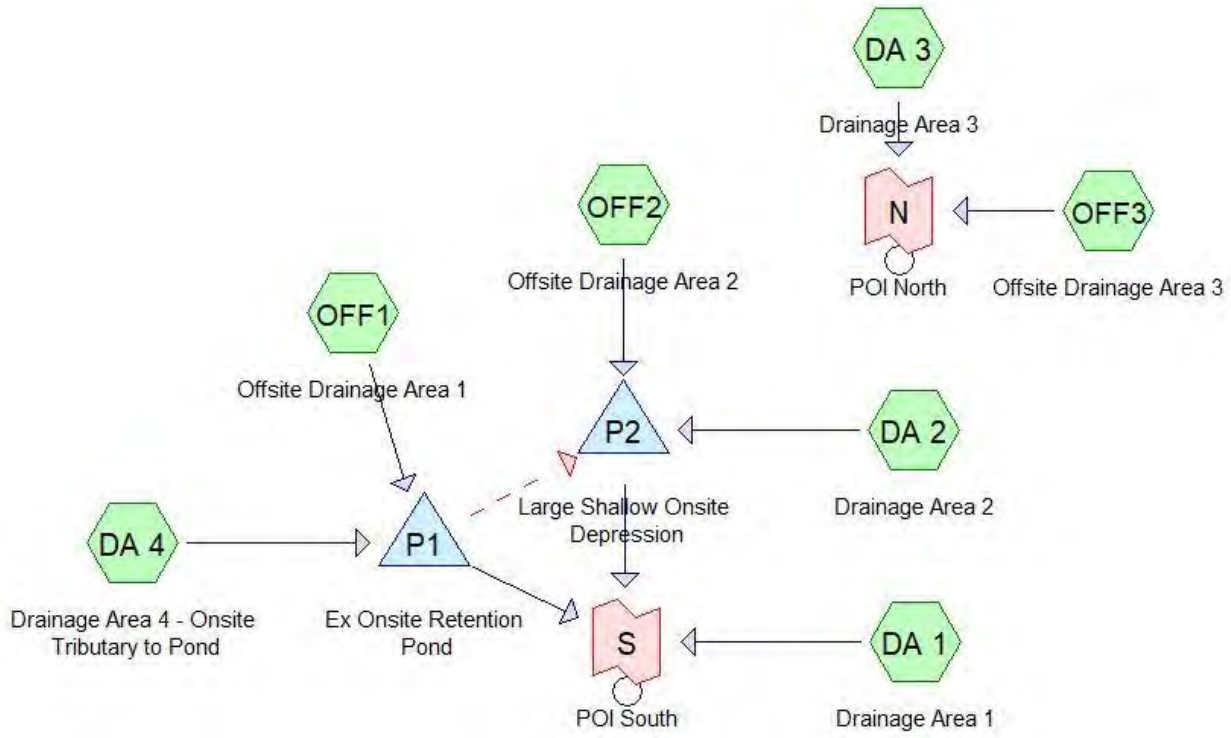
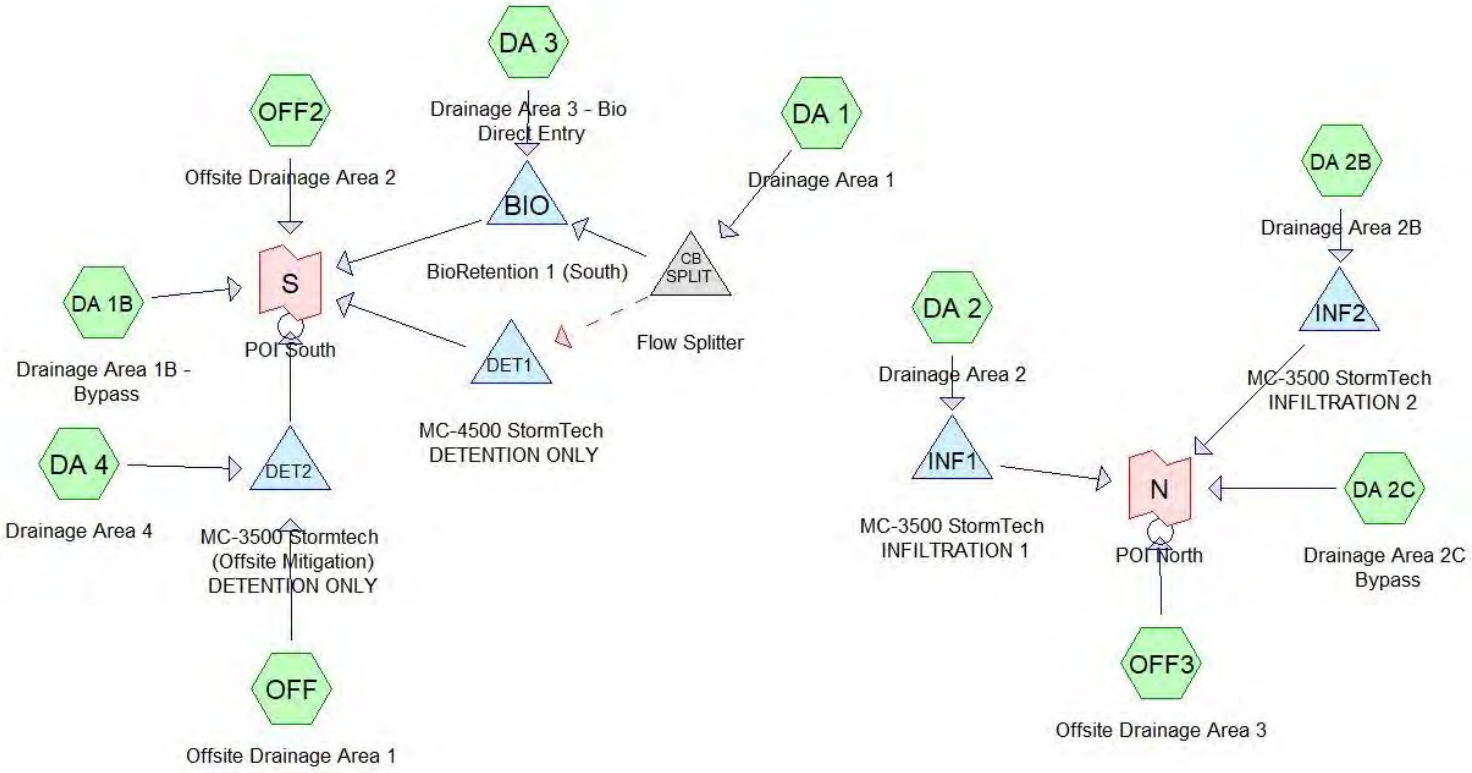
Suffern, NY 10901
(845) 357-4411
22 Paris Avenue, Suite 105
Rockleigh, NJ 07647
(201) 684-1221

Routing Diagrams

EXISTING



PROPOSED



PEAK DISCHARGE SUMMARY TABLES

POI NORTH
PEAK DISCHARGE (CFS)

FREQUENCY	EXISTING CONDITIONS	PROPOSED CONDITIONS	DIFFERENCE
1 YEAR	0.39	0.37	-0.02
10 YEAR	4.17	2.29	-1.88
25 YEAR	7.34	6.70	-0.64
100 YEAR	14.85	14.52	-0.33

POI SOUTH
PEAK DISCHARGE (CFS)

FREQUENCY	EXISTING CONDITIONS	PROPOSED CONDITIONS	DIFFERENCE
1 YEAR	4.65	4.34	-0.31
10 YEAR	22.08	19.64	-2.44
25 YEAR	34.53	32.80	-1.73
100 YEAR	59.81	54.93	-4.88

Summary of Unified Sizing Criteria:

WQv:
Required WQv = 47,080 CF
Provided WQv = 47,080 CF

RRv:
Minimum RRv = 14,037 CF
Runoff Reduction Provided = 34,876 CF

The calculated (proposed) RRv is greater than the minimum required RRv and therefore the RRv requirement is met. Although the entire WQv was not reduced, the provided runoff reduction volume is 2.5 times more than the minimum amount required. Site limitations, as previously discussed, limited our ability to reduce the full WQv.

CPv:
Total Required CPv = 14,093 CF
Total Provided CPv = 58,219 CF

Overbank Flood Control (Qp):
Existing Conditions 10-yr peak runoff rate = 26.25 cfs
Proposed Conditions 10-yr peak runoff rate = 21.93 cfs

Extreme Flood Control (Qf):
Existing Conditions 100-yr peak runoff rate = 74.66 cfs
Proposed Conditions 100-yr peak runoff rate = 69.45 cfs

Hydro-CAD Input Data

Drainage Basins – Pre-Development

DA 1 – Drainage Area 1
Cover Type: Impervious; Woods, Grass
Area = 0.754 acres
Hydrologic Soil Group: D
Composite SCS curve number (CN) =80
Time of Concentration = 15.6 Min

DA 2 – Drainage Area 2
Cover Type: Impervious; Woods, Grass
Area = 9.297 acres
Hydrologic Soil Group: B/D
Composite SCS curve number (CN) =70
Time of Concentration = 21.1 Min

DA 3 – Drainage Area 3
Cover Type: Impervious; Woods, Grass
Area = 4.589 acres
Hydrologic Soil Group: B/D
Composite SCS curve number (CN) =60
Time of Concentration = 15.8 Min

DA 4 – Drainage Area 4 Onsite Tributary to Pond
Cover Type: Grass
Area = 0.251 acres
Hydrologic Soil Group: D
Composite SCS curve number (CN) =80
Time of Concentration = 6.0 Min

OFF 1– Offsite Drainage Area 1
Cover Type: Impervious, Grass
Area = 2.842 acres
Hydrologic Soil Group: B
Composite SCS curve number (CN) =82
Time of Concentration = 6.0 Min

OFF 2– Offsite Drainage Area 2
Cover Type: Impervious, Grass
Area = 2.527 acres
Hydrologic Soil Group: D
Composite SCS curve number (CN) =82
Time of Concentration = 21.1 Min

OFF 3– Offsite Drainage Area 3
Cover Type: Grass
Area = 0.16 acres
Hydrologic Soil Group: B/D
Composite SCS curve number (CN) =73
Time of Concentration = 15.8 Min

Total Area Onsite: 14.89 Acres
Total Area Overall: 20.42 Acres

Drainage Sub-basins – Post-Development

DA 1 – Drainage Area 1
Cover Type: Impervious, Grass
Area = 3.798 acres
Hydrologic Soil Group: B/D
Composite SCS curve number (CN) =98
Time of Concentration = 6.0 Min

DA 1B – Drainage Area 1B - Bypass
Cover Type: Impervious; Grass
Area = 1.597 acres
Hydrologic Soil Group: B/D
Composite SCS curve number (CN) =79
Time of Concentration = 21.5 Min

DA 2 – Drainage Area 2
Cover Type: Impervious; Grass
Area = 4.358 acres
Hydrologic Soil Group: B
Composite SCS curve number (CN) =97
Time of Concentration = 6.0 Min

DA 2B – Drainage Area 2B
Cover Type: Impervious; Grass
Area = 1.946 acres
Hydrologic Soil Group: B
Composite SCS curve number (CN) =75
Time of Concentration = 12.1 Min

DA 2C – Drainage Area 2C - Bypass
Cover Type: Impervious; Grass, Woods
Area = 1.916 acres
Hydrologic Soil Group: B/D
Composite SCS curve number (CN) =65
Time of Concentration = 21.7 Min

DA 3 – Drainage Area 3 – Bio Direct Entry
Cover Type: Grass
Area = 0.731 acres
Hydrologic Soil Group: D
Composite SCS curve number (CN) =80
Time of Concentration = 6.0 Min

DA 4 – Drainage Area 4
Cover Type: Grass
Area = 0.547 acres
Hydrologic Soil Group: B
Composite SCS curve number (CN) =61
Time of Concentration = 20.4 Min

OFF1 – Offsite Drainage Area 1
Cover Type: Impervious, Grass
Area = 2.842 acres

Hydrologic Soil Group: B
Composite SCS curve number (CN) =82
Time of Concentration = 6.0 Min

OFF 2– Offsite Drainage Area 2
Cover Type: Impervious, Grass
Area = 2.527 acres
Hydrologic Soil Group: D
Composite SCS curve number (CN) =82
Time of Concentration = 21.5 Min

OFF 3– Offsite Drainage Area 3
Cover Type: Grass
Area = 0.16 acres
Hydrologic Soil Group: B
Composite SCS curve number (CN) = 73
Time of Concentration = 21.7 Min

Total Area Onsite: 14.89 Acres
Total Area Overall: 20.42 Acres

24 Hour Rainfall Data

Town of Newburgh, NY
Cornell Extreme Precipitation Tables
41.498, -74.064

Frequency	Rainfall (inches)
1 Year	2.60
10 Year	4.71
25 Year	5.92
100 Year	8.39
WQv	1.5

Water Quality Calculations

Utilize the procedure outlined in Chapter 4 of NYSDEC publication *Stormwater Management Design Manual.*

Compute Impervious Cover On-site

Site area = **14.89 acres**

Post-Development Impervious Cover: = 8.78 acres

Impervious Cover (I) = (8.78) / 14.89 acres = **59%**

Compute Runoff Coefficient

Rv = 0.05 + (I)(0.009)
= 0.05 + (59)(0.009) = **0.58**

Compute Water Quality Volume (WQv)

Use 90% Capture Rule

From Figure 4.1 of Stormwater Management Design Manual, 90% Rainfall = 1.5”

WQv = [(P)(Rv)(A)] / 12 = [(1.5”)(0.58)(14.89)] / 12 = 1.0795 acre-feet **= 47,080 ft^3**

The WQv = 47,080 cubic feet represents the required water quality volume for the subject site *before* runoff reduction volume is considered. The WQv can be recalculated and reduced in accordance with the implementation of the Runoff Reduction measures.

Minimum Runoff Reduction Volume

According to the NYSDEC Stormwater Management Design Manual, Runoff Reduction Volume (RRv) is a reduction of the total Water Quality Volume (WQv) by application of green infrastructure techniques and Standard Stormwater Management Practices (SMPs) to replicate pre-development hydrology. This concept is intended to improve the mitigation of the negative effects of stormwater runoff from development by incorporating the design and layout of stormwater management features into the site planning process. The three primary components that mitigate the negative effects of stormwater runoff are:

1. Avoiding Impacts – Avoid or minimize disturbance by preserving natural features and using conservation design techniques.
2. Reducing Impacts – Reducing the impacts of development by reducing impervious cover.
3. Managing Impacts – Manage the impacts by using natural features and runoff reduction practices to slow down the runoff, promote infiltration and minimize the need for structural “end-of-pipe” practices.

The RRv requirement can be accomplished by application of on-site green infrastructure techniques, standard stormwater management practices with runoff reduction capacity, and good operation and maintenance. The NYSDEC Stormwater Management Design Manual requires planners and designers to address this approach in an iterative site planning and design process. The iterative process is a five-step process that combines site planning with the use of various green infrastructure techniques and standard stormwater management practices until the RRv requirement is met. The iterative five-step process is as follows:

1. Site planning to preserve natural features and reduce impervious cover;
2. Calculation of the water quality volume for the site;
3. Incorporation of green infrastructure techniques and standard SMPs with RRv capacity;
4. Use of standard SMPs, where applicable; and
5. Design of volume and peak rate control practices where required.

If by using these techniques the calculated RRv is greater than the required WQv, the RRv requirement is met. If the RRv is less than the required WQv then the design must, at a minimum, reduce a percentage of the runoff from impervious areas to be constructed on the site. The percent reduction is based on the Hydrologic Soil Group of the site, and is determined by the Specific Reduction Factor (S). The Specific Reduction Factor (S) for this project is 0.30187, based on the weighted average of ‘B’ and ‘D’ soils present.

The runoff reduction techniques that have been selected have been determined to be suitable for the proposed project in consideration of factors including site topography, slopes, soil properties, project layout, and maintenance requirements. The selected techniques include the following:

- Infiltration (North)
- Bioretention (South)

Minimum Runoff Reduction Volume Calculation

Utilize the procedure outlined in Chapter 4, Section 4.3 of NYSDEC publication *Stormwater Management Design Manual*

Compute Minimum Runoff Reduction Volume (RRv)

RRv = (P) (Rv*) (Ai) / 12

where: RRv = Runoff Reduction Volume (acre-feet)
P = 90% rainfall event = 1.5"
Rv* = 0.05 + (I) (0.009) where imperviousness (I) =100%
Ai = impervious cover targeted for reduction = (S) x (Aic)
S = Specific Reduction Factor based on HSG
Aic = total area of new impervious cover = 8.78 acres

Step 1: Determine Specific Reduction Factor (S)

Soil Type: Alden silt loam (Ab)
Alden extremely stony soils (AC)
Erie gravelly silt loam, 0 to 3 percent slopes (ErA)
Pittsfield gravelly loam, 3 to 15 percent sloeps (PtB &M PtC)

Hydrologic Soil Group (HSG): "B" (8.12 acres) & "D" (6.77 acres)

Specific Reduction Factor (S) = 0.31 for weighted average of HSG "B" and "D" soils

Step 2: Calculate Impervious Cover Targeted for Reduction (Ai)

Ai = (S) x (Aic) = (0.31) x (8.78) = **2.72**

Step 3: Calculate (Rv*)

Rv* = 0.05 + (I) (0.009) = 0.05 + (100)(0.009) = **0.95**

Step 4: Calculate (RRv)

RRv = (P) (Rv*) (Ai) / 12
= (1.5") (0.95) (2.72 ac) (1 ft / 12") = **0.032 acre-feet = 14,037 cubic feet**

The calculated RRv of 14,037 cubic feet represents the *minimum* required reduction for the subject site. The methods that have been selected for use on this project are infiltration on the North end of the site & Bioretention to the south end.

POI North Proposed Stormwater Management Systems

Due to the high infiltration rates observed in the soils on the North end of the site, (2) underground infiltration systems are proposed to provide 100% water quality treatment and runoff reduction of the Northern drainage area that includes the entire building roof and northern parking lot & driveway.

North Parking Lot (Infiltration 1):
An offline infiltration system comprised of 266 StormTech MC-3500 arched chambers by ADS. The system is designed to provide water quality treatment and peak runoff rate reduction. Stormwater will be routed through a diversion structure designed to divert low flows into the infiltration system and serve as a control structure for high flow storm events in order to reduce post development peak runoff rates to below pre-development levels.

Storage Volume vs. Elevation per HydroCAD Output

Elevation	Storage Volume (cubic-feet)
312.64 (Top of Stone)	48,789
312.14 (Overflow)	45,950
311.64 (Top of Chamber)	43,111
309.66 (Low Orifice)	25,155 (Volume Considered towards WQv)
307.89 (Bottom of Chamber)	4,427
307.14 (Bottom of Stone)	0

Outlets

- Exfiltration @ INV El. 307.14
- 18.5” W x 4” H Orifice @ INV El. 309.65
- Overflow Weir @ INV EL. 312.14

Freeboard

100-yr Peak WSEL = 312.12 (per attached HydroCAD analysis)
Freeboard = 312.14’ – 312.13’ = 0.01’

WQv / RRv

Portion of WQv subcatchment draining to POI North = 22,578 CF

Infiltration volume = 25,155 CF

RRv/WQv for infiltration practices is full WQv or 90% of infiltration volume, whichever is less.

(25,155 * 0.90) = 22,640 > 22,578 CF

→ 22,578 CF is credited for WQv & RRv for POI North

Unity Place Entrance (Infiltration 2):
An offline infiltration system comprised of 56 StormTech MC-3500 arched chambers by ADS. The system is designed to provide water quality treatment and peak runoff rate reduction. Stormwater will be routed through a diversion structure designed to divert low flows into the infiltration system and serve as a control structure for high flow storm events in order to reduce post development peak runoff rates to below pre-development levels.

Storage Volume vs. Elevation per HydroCAD Output

Elevation	Storage Volume (cubic-feet)
309.00 (Top of Stone)	10,918
308.50 (Overflow)	10,272
308.00 (Top of Chamber)	9,626
305.65 (Low Orifice)	4,703 (Volume Considered towards WQv)
304.25 (Bottom of Chamber)	1,005
303.50 (Bottom of Stone)	0

Outlets

- Exfiltration @ INV El. 303.50
- 21” W x 4” H Orifice @ INV El. 305.65
- Overflow Weir @ INV EL. 308.50

Freeboard

100-yr Peak WSEL = 308.45(per attached HydroCAD analysis)
Freeboard = 308.5’ – 308.45’ = 0.05’

WQv / RRv

Portion of WQv subcatchment draining to POI North = 4,162 CF

Infiltration volume = 4,703 CF

RRv/WQv for infiltration practices is full WQv or 90% of infiltration volume, whichever is less.

(4,703 * 0.90) = 4,233 CF > 4,162 CF

→ 4,162 CF is credited for WQv & RRv for POI North

POI South Proposed Stormwater Management Systems

Due to the low infiltration rates and high ground water observed on the south end of the site, a combination of bioretention and detention facilities are proposed. The remainder of the parking lot is conveyed south. Bioretention has runoff reduction capacity but does not have enough storage to retain the more extreme storms. A diversion structure was implemented to divert higher flows to a secondary storage facility.

Lastly, another detention facility is proposed to the East to replace the existing stormwater management basin onsite that receives water from Unity Place and nearby private property.

South Parking Lot Bioretention:
A bioretention system with a minimum bottom footprint of 17,947 ft^2 is designed to provide water quality treatment and receive credit towards runoff reduction. An underdrain system is proposed underneath the soil media, however, the restrictive flow is dictated by the soil media with a design infiltration rate of 0.5 ft/day. An overflow grate structure has been designed bypass extreme storms that make it through the diversion structure.

Storage Volume vs. Elevation per HydroCAD Output

Elevation	Storage Volume (cubic-feet)
300.0 (Top of Bank)	19,296
299.66 (Overflow Grate)	12,436
299.0 (Bot Pond)	0

Outlet Structures

- Exfiltration @ INV El. 299.0 (Not Discarded)
- Horizontal Overflow Grate @ INV EL. 299.66

Freeboard

100-yr Peak WSEL = 299.88’ (per attached HydroCAD analysis)
Top of Bank = 300.0
Freeboard = 300.0 – 299.88 = 0.12’

WQv / RRv

Portion of WQv subcatchment draining to POI South = 20,340 CF

Bioretention achieves 100% of WQv Requirements

Bioretention receives 40% credit of WQv towards RRv: (20,340 *0.40) = 8,136 CF

→ 20,340 CF is credit for WQv for POI South
→ 8,136 CF is credited to RRv for POI South

Bioretention Worksheet

(For use on HSG C or D Soils with underdrains)

Af=WQv*(df)/[k*(hf+df)(tf)]

Af	Required Surface Area (ft2)
WQv	Water Quality Volume (ft3)
df	Depth of the Soil Medium (feet)
hf	Average height of water above the planter bed
tf	Volume Through the Filter Media (days)

k — The hydraulic conductivity [ft/day], can be varied depending on the properties of the soil media. Some reported conductivity values are: ***Sand*** - 3.5 ft/day (City of Austin 1988); ***Peat*** - 2.0 ft/day (Galli 1990); ***Leaf Compost*** - 8.7 ft/day (Claytor and Schueler, 1996); ***Bioretention Soil*** (0.5 ft/day (Claytor &

Design Point:

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
2	6.67	3.78	0.57	0.56	20339.80	1.50	Bioretention
Enter Impervious Area Reduced by Disconnection of Rooftops			57%	0.56	20,340	<<WQv after adjusting for Disconnected Rooftops	
Enter the portion of the WQv that is not reduced for all practices routed to this practice.						*ft^3*	

Soil Information			
Soil Group	D		
Soil Infiltration Rate	0.00	*in/hour*	*Okay*
Using Underdrains?	Yes	*Okay*	

Calculate the Minimum Filter Area				
		Value	Units	Notes
WQv		20,340	*ft^3*	
Enter Depth of Soil Media	*df*	2.5	*ft*	*2.5-4 ft*
Enter Hydraulic Conductivity	*k*	0.5	*ft/day*	
Enter Average Height of Ponding	*hf*	0.333333	*ft*	*6 inches max.*
Enter Filter Time	*tf*	2	*days*	
Required Filter Area	***Af***	**17947**	***ft^2***	

Determine Actual Bio-Retention Area			
Filter Width	67.7245	*ft*	
Filter Length	265	*ft*	
Filter Area	17946.9925	*ft^2*	
Actual Volume Provided	20340	*ft^3*	

Determine Runoff Reduction				
Is the Bioretention contributing flow to another practice?		No	Select Practice	N/A
RRv	8,136			
RRv applied	**8,136**	***ft^3***	***This is 40% of the storage provided or WQv whichever is less.***	
Volume Treated	12,204	*ft^3*	*This is the portion of the WQv that is not reduced in the practice.*	
Volume Directed	0	*ft^3*	This volume is directed another practice	
Sizing √	OK		*Check to be sure Area provided ≥ Af*	

South Parking Lot Detention:
A detention system comprised of 96 StormTech MC-4500 arched chambers by ADS. Let it be noted that ADS recently adjusted their MC-4500 model chambers to MC-7200 chambers that is not currently available on HydroCAD. The only difference is the length of the individual chambers for easier installation. An equivalent system for MC-7200 units is approximately 55 chambers which is what is indicated on the Site Plan. The system is designed to retain stormwater for peak runoff rate reduction. This system is necessary to retain larger storms that the bioretention system does not have capacity for. Larger storms will be received from the upstream diversion structure. An outlet control structure is proposed in order to reduce post development peak runoff rates to below pre-development levels.

Storage Volume vs. Elevation per HydroCAD Output

Elevation	Storage Volume (cubic-feet)
307.68 (Top of Stone)	16,830
306.68 (Top Chamber)	15,268
301.68 (Bot Chamber)	1,220
300.93 (Bot Stone)	0

Outlet Structures
- 4” Dia Orifice @ INV EL. 300.93
- 28” W x 21” H Orifice @ INV El. 304.5
- Overflow Weir @ INV EL. 307.18

Freeboard

100-yr Peak WSEL = 307.13’ (per attached HydroCAD analysis)
Freeboard = 307.18 – 307.13 = 0.05’

Offsite Drainage Area Detention:
A detention system comprised of 108 StormTech MC-3500 arched chambers by ADS. The system is designed to retain stormwater for peak runoff rate reduction. This system is necessary to replace the existing onsite detention system that receives stormwater from Unity Place and the adjacent Jehovah Witness property. An outlet control structure is proposed in order to reduce post development peak runoff rates to below pre-development levels.

Storage Volume vs. Elevation per HydroCAD Output

Elevation	Storage Volume (cubic-feet)
301.00 (Top of Stone)	21,049
300.00 (Top Chamber)	18,578
296.25 (Bot Chamber)	1,924
295.5 (Bot Stone)	0

Outlet Structures
- 4” Dia Orifice @ INV EL. 295.5
- 17” W x 12” H Orifice @ INV El. 297.6
- Overflow Weir @ INV EL. 300.5

Freeboard

100-yr Peak WSEL = 300.47’ (per attached HydroCAD analysis)
Freeboard = 300.5 – 300.47 = 0.03’

Soil Tests

The NRSC Custom Soil Resource Report for the site indicates that soils present on the site are primarily:

Alden silt loam (Ab)
Alden extremely stony soils (AC)
Erie gravelly silt loam, 0 to 3 percent slopes (ErA)
Pittsfield gravelly loam, 3 to 15 percent sloeps (PtB &M PtC)

In-situ soil testing, including infiltration tests and test pits, were conducted on March 3-4, 2022 in accordance with the approved Soil Testing Program located in Appendix D of this report.

To the North, we observed consistent stratums consisting of brown sandy loam with small stones. Infiltration rates ranged from 7 to 8.5 inches per hour. A conservative rate of 5 inches per hour was used in our design. No groundwater or bedrock was encountered during excavation which was performed at least 3 feet below the proposed infiltration system.

To the South, we observed soil stratums with brownish grayish clay layers and an average groundwater depth of about 3 feet. Multiple tests on the south side were omitted due to the similar results discovered. Infiltration was not utilized in our design. Groundwater was observed deeper at about 6-7 feet closer to Old Little Britain Road.

A marked up Soil Testing Map and Test Results are also provided in Appendix D. The amount of infiltration tests provided for the lone infiltration system is consistent with requirements detailed in NYSDEC's 2004 FAQ #32: states "…a minimum of one test pit/boring and one infiltration test for every 5000 square feet of basin area, with no fewer than four test pit/boring and infiltration tests per facility." A minimum of 4 tests is required for our largest system footprint of 17,928 square feet. We conducted 5 tests in that area and believe we have a strong understanding of the soil characteristics of that location. As for the other two smaller Stormtech systems, these are not designed as infiltration structures and will be used strictly for detention so infiltration testing is not applicable. An underdrain is utilized on these two particular systems to ensure the system is drained after each storm event, as indicated on the details and modeled in HydroCAD.

Additional soil testing was performed on April 25, 2023 to confirm suitable soil conditions for an additional infiltration facility needed for the revised driveway entrance location onto Unity Place. Testing procedures were consistent with previous operations. Soil conditions/percolations rates observed were very similar to other successful tests performed on March 3-4, 2022. No groundwater or bedrock was encountered. Infiltration rates observed varied between 5.4 to 15" inches per hour. A rate of 5 inches per hour was utilized in our design which is consistent with the other infiltration system.

Infiltration Calculations

Northern Infiltration System 1:

5"/ hr infiltration rate = (5 in/hr)(ft/12 in)(1 hr/60 min) (1 min/60s) = 0.000115741 ft/s

Area of infiltration = 14,160 ft^2 (horizontal area of the bottom of the infiltration basin)

Infiltration rate of basin = (14,160 sf)(0.000115741 ft/s) = 1.639 ft^3/s

48-hour Infiltration Volume = (1.639 cfs)(86400 sec/day)(2 days) = **283,219 ft^3**

Infiltration Storage Capacity = **25,155 ft^3** (Storage volume below low orifice)

Infiltration Storage Capacity = 25,155 ft^3 < 283,219 ft^3

➔ **48-hour infiltration Volume is met.**

Northern Infiltration System 2:

5"/ hr infiltration rate = (5 in/hr)(ft/12 in)(1 hr/60 min) (1 min/60s) = 0.000115741 ft/s

Area of infiltration = 3,253 ft^2 (horizontal area of the bottom of the infiltration basin)

Infiltration rate of basin = (3,253 sf)(0.000115741 ft/s) = 0.376 ft^3/s

48-hour Infiltration Volume = (0.376 cfs)(86400 sec/day)(2 days) = **64,973 ft^3**

Infiltration Storage Capacity = **4,703 ft^3** (Storage volume below low orifice)

Infiltration Storage Capacity = 4,703 ft^3 < 64,973 ft^3

➔ **48-hour infiltration Volume is met.**

WQv / Runoff Reduction Summary

Technique	Proposed % WQv Treated	Proposed % WQv Reduced
Infiltration	56.8% (26,740 ft^3)	56.8% (26,740 ft^3)
Bioretention	43.2% (20,340 ft^3)	17.3% (8,136 ft^3)
Total	100.0% (47,080 ft^3)	74.1% (34,876 ft^3)

Water Quality Summary

47,080 ft^3 provided Water Quality Volume → 100% WQv requirement achieved.

34,876 ft^3 provided runoff reduction > minimum required RRv of 14,037 ft^3

→The calculated (proposed) RRv is greater than the minimum required RRv and therefore the RRv requirement is met. Although the entire WQv was not reduced, the provided runoff reduction volume is 2.5 times more than the minimum amount required. Site limitations, as previously discussed, limited our ability to reduce the full WQv. We respectfully request relief from this requirement due to the hardships encountered on site.

Runoff Reduction Technique

Following is a summary of runoff reduction techniques that were considered for this project:

1. Conservation of Natural Areas: Majority of the site has already been cleared/filled.
2. Sheet flow to riparian buffer or filter strips: There are no streams running through the project site, so this practice is not applicable.
3. Vegetated Open Swale: Due to the layout of the proposed redevelopment this practice is not applicable.
4. Tree Planting / tree box: Trees are proposed to be planted as part of the landscaping plan, but the quantity does not qualify for a reduction credit.
5. Disconnection of Rooftop Runoff: All proposed rooftops are being discharged to infiltration facilities.
6. Stream Daylighting for Redevelopment Projects: There are no streams running through the project site, so this practice is not applicable.
7. Rain Garden: Low capacity of practice makes it unfeasible for larger projects.
8. Green Roof: All rooftop runoff is being treated by infiltration practices.
9. Stormwater Planter: Low capacity of practice makes it unfeasible for larger projects.
10. Rain tank/ Cistern: Rain tanks/cisterns do not have the capacity to treat the scope of the project.
11. Porous Pavement: Runoff generated from the driveways and parking lots is being directed to other reduction practices and treated. Typically not permitted for a land use 'hot spot'

Channel Protection Volume Calculations

Required Channel Protection Volumes are calculated as per guidance from Appendix B of the New York State Stormwater Management Design Manual. Support variables taken from HydroCAD output located in appendix.

CPv = ((Vs/Vr)(Qd)(A) / 12)

$Vs/Vr = 0.682 – 1.43 (q_o/q_i) + 1.64 (q_o/q_i)^2 – 0.804 (q_o/q_i)^3$

North Infiltration 1

Entire 1-year storm event is infiltrated → Channel Protection is satisfied

North Infiltration 2

Entire 1-year storm event is infiltrated → Channel Protection is satisfied

Bioretention

$q_o/q_i = 0.60 / 1.95 = 0.308$

$Vs/Vr = 0.682 – 1.43 (0.308) + 1.64 (0.308)^2 – 0.804 (0.308)^3 = 0.374$

Qd = 1.33 inches

A = 4.529 acres

CPv = (0.374 * 1.47 * 4.529) / 12 = 0.1877 ac-ft = 8,178 cubic feet

Volume provided as per DEC Bioretention Sizing Calculations = 20,340 cubic feet

20,340 CF > 8,178 CF → **OK**

South Detention

$q_o/q_i = 1.01 / 9.72 = 0.104$

Vs/Vr = 0.55

Qd = 2.37 inches

A = 3.798 acres

CPv = (0.104 * 2.37 * 3.798) / 12 = 0.078 ac-ft = 3,398 cubic feet

Volume provided as per HydroCAD Output = 16,830 cubic feet

16,830 CF > 3,398 CF → **OK**

Offsite Detention

q_o/q_i = 0.95 / 4.31 = 0.22

Vs/Vr = 0.44

Qd = 0.93 inches

A = 3.389 acres

CPv = (0.22 * 0.93 * 3.389) / 12 = 0.0578 ac-ft = 2,517 cubic feet

Volume provided as per HydroCAD Output = 21,049 cubic feet

21,049 CF > 2,517 CF → **OK**

Totals

Total Required CPv = 8,178 + 3,398 + 2,517 = 14,093 CF
Total Provided CPv = 20,340 + 16,830 + 21,049 = 58,219 CF

Water Quality Pretreatment

Section 6.3.3 of the NYSDEC Stormwater Management Design Manual states the following in regard to the required pretreatment for infiltration practices:

If the fc for the underlying soils is greater than 5.00 inches per hour, 100% of the WQv shall be pretreated prior to entry into an.infiltration facility and can be provided in the form of a sedimentation basin, sump pit, grass channel, plunge pool or other measure.

In order to meet this requirement, a 'treatment train' of flow-through devices shall be provided to pretreat 100% of the WQv. The selected pretreatment devices include the combination of the ADS Barracuda Max Treatment Manhole followed by the ADS Stormtech Isolator Row Plus. These proprietary devices satisfy the 80% TSS and 40% Phosphorous removal criteria required by the NYSDEC *Stormwater Management Design Manual.*

Appendix B of the NYSSWMDM discusses a method to estimate the peak WQv, but we found a more conservative peak rate was demonstrated in HydroCAD modeling via the SCS method.

Refer to the SWPPP for inspection, operation, and maintenance for the selected pre-treatment devices.

By-Pass Capacity

Infiltration Facility 1 (North) – Pretreatment MH 14

25-yr peak runoff rate = 25.11 cfs
WQv peak runoff rate = 5.80 cfs

- ➔ Use Barracuda Max Model **S8** with Max Treatment Rate of 6.08 cfs
- ➔ Peak by-pass flow rate was confirmed via ADS online design tool

Infiltration Facility 1 Stormtech manifold maximum flow-through/by-pass capacity = 34.0 cfs

34.09 cfs > 25.11 cfs

MC-3500 Isolator Row Treatment Capacity: 0.40 cfs per chamber
Isolator row max treatment capacity = 0.40 x 27 = 10.8 cfs

10.8 cfs > 5.80 cfs → Isolator Row can handle WQv flows.

Infiltration Facility 2 (North) – Pretreatment MH 34

25-yr peak runoff rate = 6.02 cfs
WQv peak runoff rate = 0.16 cfs

- ➔ Use Barracuda Max Model **S3** with Max Treatment Rate of 0.85 cfs
- ➔ Peak by-pass flow rate was confirmed via ADS online design tool

Infiltration Facility 2 Stormtech manifold maximum flow-through/by-pass capacity = 14.0 cfs

14.0 cfs > 6.02 cfs

MC-3500 Isolator Row Treatment Capacity: 0.40 cfs per chamber

Isolator row max treatment capacity = 0.40 x 12 = 4.8 cfs

4.8 cfs > 0.16 cfs → Isolator Row can handle WQv flows.

Bioretention Facility (South) – Pretreatment MH 27

25-yr peak runoff rate = 1.26 cfs cfs
WQv peak runoff rate = 0.83 cfs

- ➔ Use Barracuda Max Model **S3** with Max Treatment Rate of 0.85 cfs
- ➔ Peak by-pass flow rate was confirmed via ADS online design tool

Detention Facility (Offsite Southeast)

25-yr peak runoff rate = 13.28 cfs
WQv peak runoff rate = 0.99 cfs

- ➔ Use Barracuda Max Model **S4** with Max Treatment Rate of 1.52 cfs
- ➔ Peak by-pass flow rate was confirmed via ADS online design tool

Offsite Detention Stormtech manifold maximum flow-through/by-pass capacity= 16.5 cfs

- ➔ 16.5 cfs > 13.28 cfs

MC-3500 Isolator Row Treatment Capacity: 0.40 cfs per chamber
Isolator row max treatment capacity = 0.40 x 27 = 10.8 cfs

10.8 cfs > 0.99 cfs → Isolator Row can handle WQv flows.

Detention Facility 1 (South) Not Applicable - Water Quality Flow / pretreatment flow sent to bioretention facility.

100% of the WQv is pretreated by the chosen flow-through proprietary practices.

Drainage Report Appendix A

Unity Place Warehouse
USDA Soil Map and Report

United States Department of Agriculture

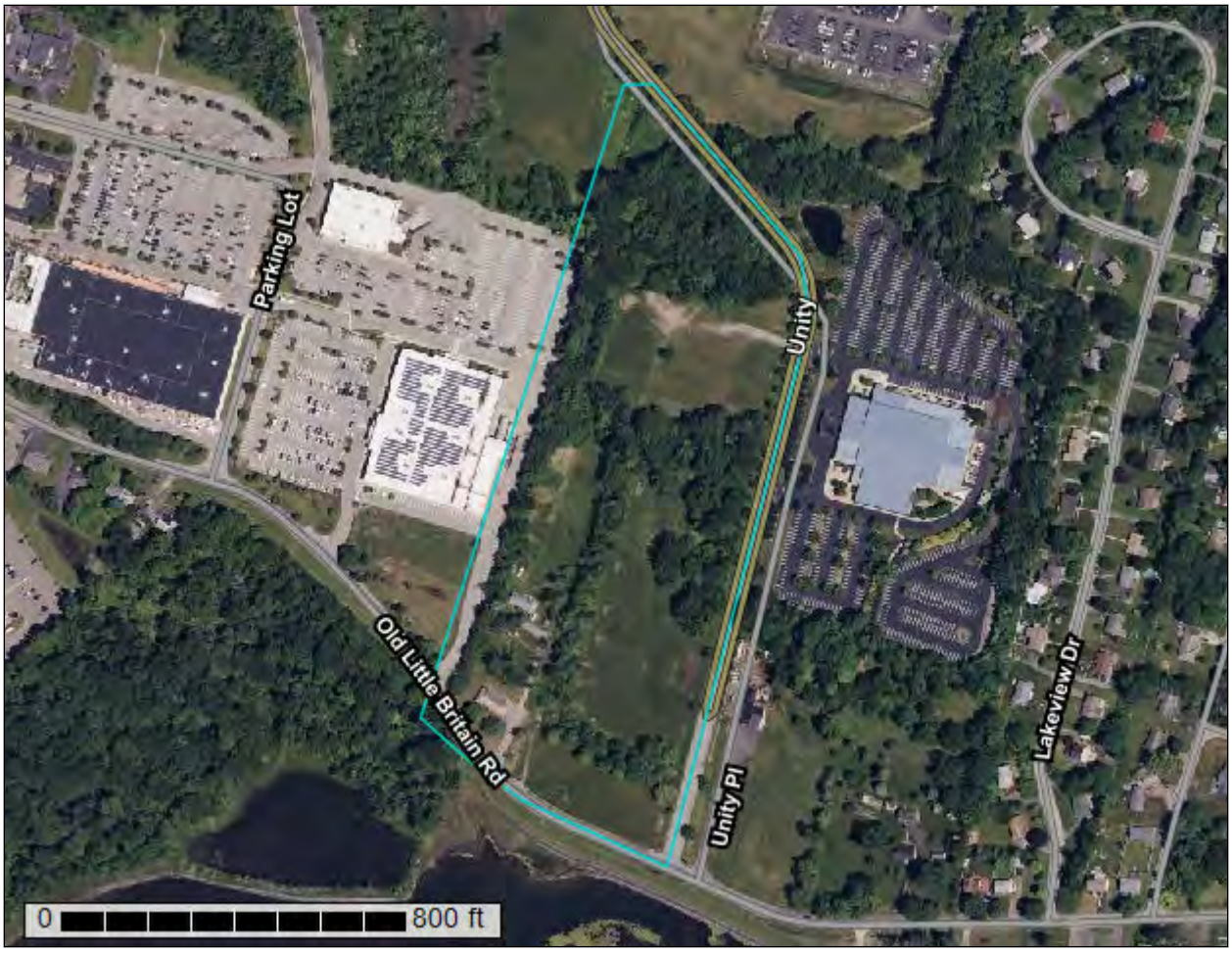
NRCS

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 Orange County, New York

Unity Warehouse



April 10, 2023

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

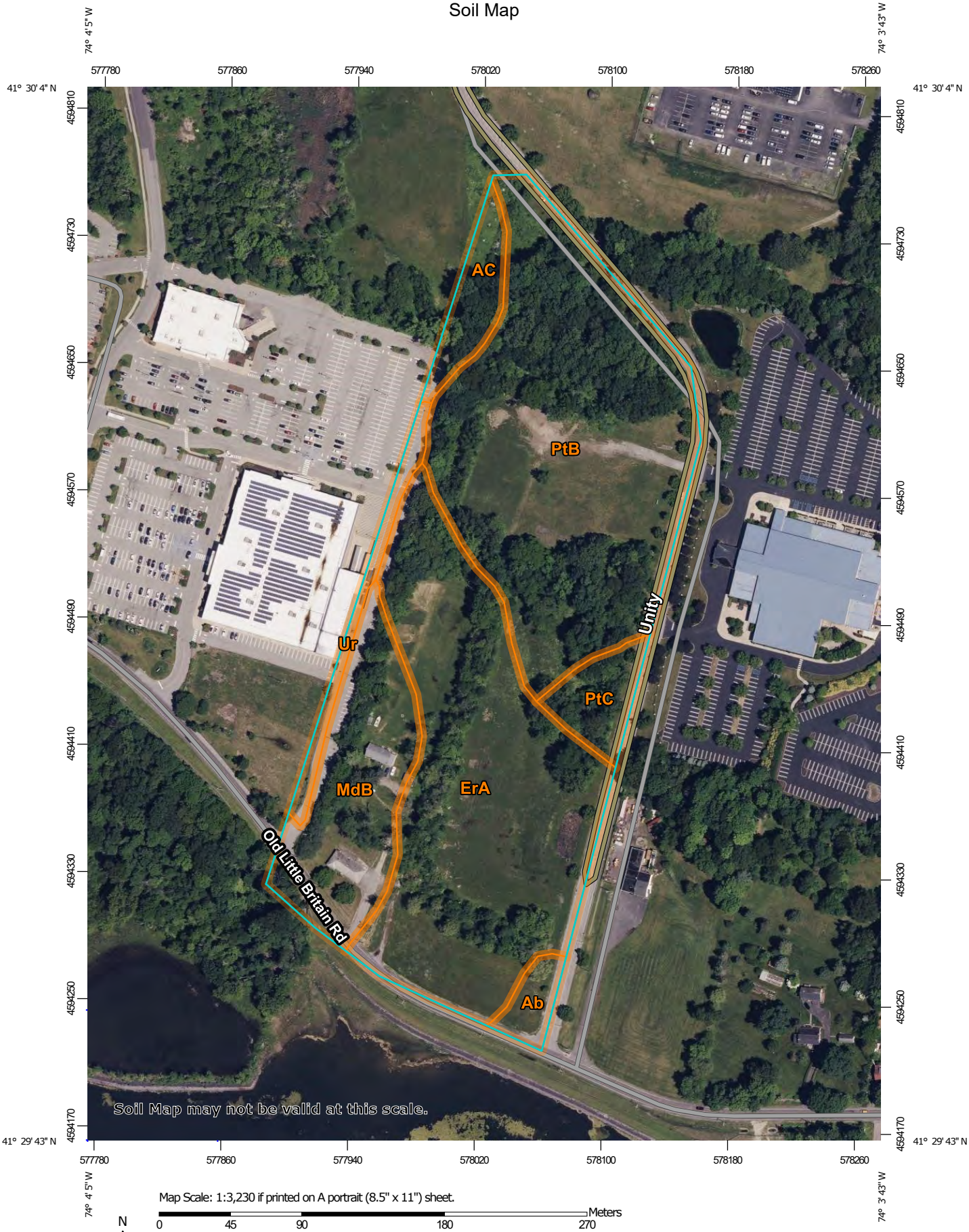
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:3,230 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

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

MAP LEGEND

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

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

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

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

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

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

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

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

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

Soil Survey Area: Orange County, New York
Survey Area Data: Version 23, Sep 10, 2022

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

Date(s) aerial images were photographed: May 31, 2022—Oct 27, 2022

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ab	Alden silt loam	0.4	1.8%
AC	Alden extremely stony soils	0.7	3.4%
ErA	Erie gravelly silt loam, 0 to 3 percent slopes	7.5	35.6%
MdB	Mardin gravelly silt loam, 3 to 8 percent slopes	2.8	13.2%
PtB	Pittsfield gravelly loam, 3 to 8 percent slopes	8.5	40.2%
PtC	Pittsfield gravelly loam, 8 to 15 percent slopes	0.7	3.4%
Ur	Urban land	0.5	2.4%
Totals for Area of Interest		**21.1**	**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 and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Orange County, New York

Ab—Alden silt loam

Map Unit Setting

National map unit symbol: 9vtc
Elevation: 300 to 1,500 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition

Alden and similar soils: 80 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alden

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: A silty mantle of local deposition overlying loamy till

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 36 inches: silt loam
H3 - 36 to 60 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: C/D
Ecological site: F144AY040NY - Semi-Rich Very Wet Till Depressions
Hydric soil rating: Yes

Minor Components

Carlisle

Percent of map unit: 5 percent
Landform: Swamps, marshes

Hydric soil rating: Yes

Canandaigua

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Wayland

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

AC—Alden extremely stony soils

Map Unit Setting

National map unit symbol: 9vtd
Elevation: 130 to 1,480 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition

Alden, extremely stony, and similar soils: 75 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alden, Extremely Stony

Setting

Landform: Depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: A silty mantle of local deposition overlying loamy till

Typical profile

H1 - 0 to 9 inches: silt loam
H2 - 9 to 36 inches: silt loam
H3 - 36 to 60 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Surface area covered with cobbles, stones or boulders: 9.0 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.57 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None

Frequency of ponding: Frequent
Calcium carbonate, maximum content: 1 percent
Available water supply, 0 to 60 inches: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C/D
Ecological site: F144AY040NY - Semi-Rich Very Wet Till Depressions
Hydric soil rating: Yes

Minor Components

Lyons

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Palms

Percent of map unit: 5 percent
Landform: Swamps, marshes
Hydric soil rating: Yes

Canandaigua

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

Wayland

Percent of map unit: 5 percent
Landform: Flood plains
Hydric soil rating: Yes

ErA—Erie gravelly silt loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9vv8
Elevation: 100 to 1,360 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Erie and similar soils: 75 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Erie

Setting

Landform: Drumlinoid ridges, till plains, hills

Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Loamy till derived from siltstone, sandstone, shale, and limestone

Typical profile

H1 - 0 to 10 inches: gravelly silt loam
H2 - 10 to 18 inches: channery silt loam
H3 - 18 to 56 inches: channery silt loam
H4 - 56 to 70 inches: channery silt loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 10 to 21 inches to fragipan
Drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Very low (about 2.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: D
Ecological site: F144AY037MA - Moist Dense Till Uplands
Hydric soil rating: No

Minor Components

Alden

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

MdB—Mardin gravelly silt loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2v30j
Elevation: 330 to 2,460 feet
Mean annual precipitation: 31 to 70 inches
Mean annual air temperature: 39 to 52 degrees F
Frost-free period: 105 to 180 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Mardin and similar soils: 85 percent
Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mardin

Setting

Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Loamy till

Typical profile

Ap - 0 to 8 inches: gravelly silt loam
Bw - 8 to 15 inches: gravelly silt loam
E - 15 to 20 inches: gravelly silt loam
Bx - 20 to 72 inches: gravelly silt loam

Properties and qualities

Slope: 3 to 8 percent
Surface area covered with cobbles, stones or boulders: 0.0 percent
Depth to restrictive feature: 14 to 26 inches to fragipan
Drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 13 to 24 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: D
Ecological site: F144AY008CT - Moist Till Uplands
Hydric soil rating: No

Minor Components

Lordstown

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, shoulder
Landform position (three-dimensional): Mountaintop, interfluve, crest
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Volusia

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve, base slope, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Bath

Percent of map unit: 5 percent
Landform: Mountains, hills
Landform position (two-dimensional): Shoulder, backslope
Landform position (three-dimensional): Interfluve, side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

PtB—Pittsfield gravelly loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9vw8
Elevation: 0 to 1,000 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Pittsfield and similar soils: 75 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pittsfield

Setting

Landform: Drumlinoid ridges, till plains, hills
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous loamy till

Typical profile

H1 - 0 to 10 inches: gravelly loam
H2 - 10 to 34 inches: gravelly loam
H3 - 34 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 8.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Ecological site: F144AY036NY - Semi-Rich Well Drained Till Uplands
Hydric soil rating: No

PtC—Pittsfield gravelly loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9vw9
Elevation: 0 to 1,000 feet
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Pittsfield and similar soils: 75 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pittsfield

Setting

Landform: Drumlinoid ridges, till plains, hills
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Calcareous loamy till

Typical profile

H1 - 0 to 9 inches: gravelly loam
H2 - 9 to 31 inches: gravelly loam
H3 - 31 to 60 inches: gravelly sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B

Ecological site: F144AY036NY - Semi-Rich Well Drained Till Uplands
Hydric soil rating: No

Ur—Urban land

Map Unit Setting

National map unit symbol: 9vxg
Mean annual precipitation: 42 to 52 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 75 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Typical profile

H1 - 0 to 6 inches: variable

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: Unranked

Minor Components

Canandaigua

Percent of map unit: 5 percent
Landform: Depressions
Hydric soil rating: Yes

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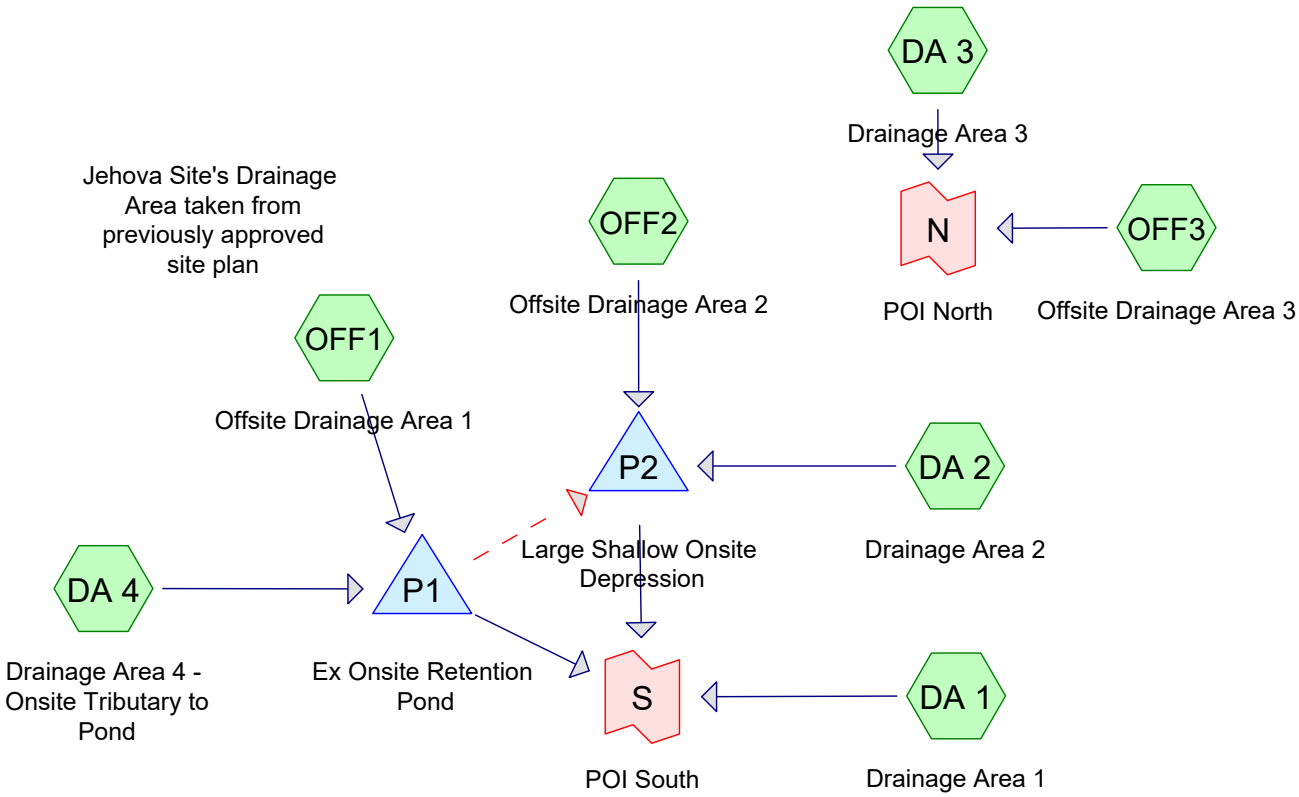
Drainage Report Appendix B

Unity Place Warehouse
Existing Conditions Detailed HydroCAD Output Report



Subcat Reach Pond Link

Routing Diagram for Existing
Prepared by Brooker Engineering, PLLC, Printed 6/7/2023

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	Type III 24-hr		Default	24.00	1	2.60	2
2	10-Year	Type III 24-hr		Default	24.00	1	4.71	2
3	25-Year	Type III 24-hr		Default	24.00	1	5.92	2
4	100-Year	Type III 24-hr		Default	24.00	1	8.39	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.638	61	>75% Grass cover, Good, HSG B (DA 2, DA 3, OFF1, OFF3)
7.036	80	>75% Grass cover, Good, HSG D (DA 1, DA 2, DA 3, DA 4, OFF2, OFF3)
0.057	98	Impervious (DA 3)
1.866	98	Impervious Surfaces (OFF1, OFF2)
0.014	98	Macadam Drive (DA 1)
0.056	98	Misc. Macadam (DA 2)
4.622	55	Woods, Good, HSG B (DA 2, DA 3)
2.131	77	Woods, Good, HSG D (DA 1, DA 2, DA 3)
20.420	**71**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
9.260	HSG B	DA 2, DA 3, OFF1, OFF3
0.000	HSG C	
9.167	HSG D	DA 1, DA 2, DA 3, DA 4, OFF2, OFF3
1.992	Other	DA 1, DA 2, DA 3, OFF1, OFF2
20.420		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	4.638	0.000	7.036	0.000	11.675	>75% Grass cover, Good	DA 1, DA 2, DA 3, DA 4, OFF1, OFF2, OFF3
0.000	0.000	0.000	0.000	0.057	0.057	Impervious	DA 3
0.000	0.000	0.000	0.000	1.866	1.866	Impervious Surfaces	OFF1, OFF2
0.000	0.000	0.000	0.000	0.014	0.014	Macadam Drive	DA 1
0.000	0.000	0.000	0.000	0.056	0.056	Misc. Macadam	DA 2
0.000	4.622	0.000	2.131	0.000	6.753	Woods, Good	DA 1, DA 2, DA 3
0.000	**9.260**	**0.000**	**9.167**	**1.992**	**20.420**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	OFF1	0.00	0.00	471.0	0.0526	0.012	0.0	24.0	0.0	
2	P1	295.00	292.10	409.0	0.0071	0.013	0.0	24.0	0.0	

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA 1: Drainage Area 1 Runoff Area=32,821 sf 1.83% Impervious Runoff Depth>0.96"
Flow Length=344' Tc=15.6 min CN=80 Runoff=0.60 cfs 0.060 af

Subcatchment DA 2: Drainage Area 2 Runoff Area=404,999 sf 0.60% Impervious Runoff Depth>0.50"
Flow Length=878' Tc=21.1 min CN=70 Runoff=2.87 cfs 0.388 af

Subcatchment DA 3: Drainage Area 3 Runoff Area=199,876 sf 1.24% Impervious Runoff Depth>0.20"
Flow Length=665' Tc=15.8 min CN=60 Runoff=0.34 cfs 0.077 af

Subcatchment DA 4: Drainage Area 4 - Runoff Area=10,931 sf 0.00% Impervious Runoff Depth>0.96"
Flow Length=63' Slope=0.1030 '/' Tc=6.0 min CN=80 Runoff=0.27 cfs 0.020 af

Subcatchment OFF1: Offsite Drainage Runoff Area=123,797 sf 57.81% Impervious Runoff Depth>1.07"
Flow Length=816' Tc=6.0 min CN=82 Runoff=3.45 cfs 0.254 af

Subcatchment OFF2: Offsite Drainage Runoff Area=110,079 sf 8.81% Impervious Runoff Depth>1.07"
Tc=21.1 min CN=82 Runoff=2.05 cfs 0.225 af

Subcatchment OFF3: Offsite Drainage Area 3 Runoff Area=6,977 sf 0.00% Impervious Runoff Depth>0.62"
Tc=15.8 min CN=73 Runoff=0.07 cfs 0.008 af

Pond P1: Ex Onsite Retention Pond Peak Elev=296.16' Storage=3,143 cf Inflow=3.72 cfs 0.274 af
Primary=1.48 cfs 0.264 af Secondary=0.00 cfs 0.000 af Outflow=1.48 cfs 0.264 af

Pond P2: Large Shallow Onsite Depression Peak Elev=298.06' Storage=7,590 cf Inflow=4.87 cfs 0.612 af
Outflow=3.11 cfs 0.465 af

Link N: POI North Inflow=0.39 cfs 0.085 af
Primary=0.39 cfs 0.085 af

Link S: POI South Inflow=4.65 cfs 0.788 af
Primary=4.65 cfs 0.788 af

Total Runoff Area = 20.420 ac Runoff Volume = 1.031 af Average Runoff Depth = 0.61"
90.24% Pervious = 18.427 ac 9.76% Impervious = 1.992 ac

Summary for Subcatchment DA 1: Drainage Area 1

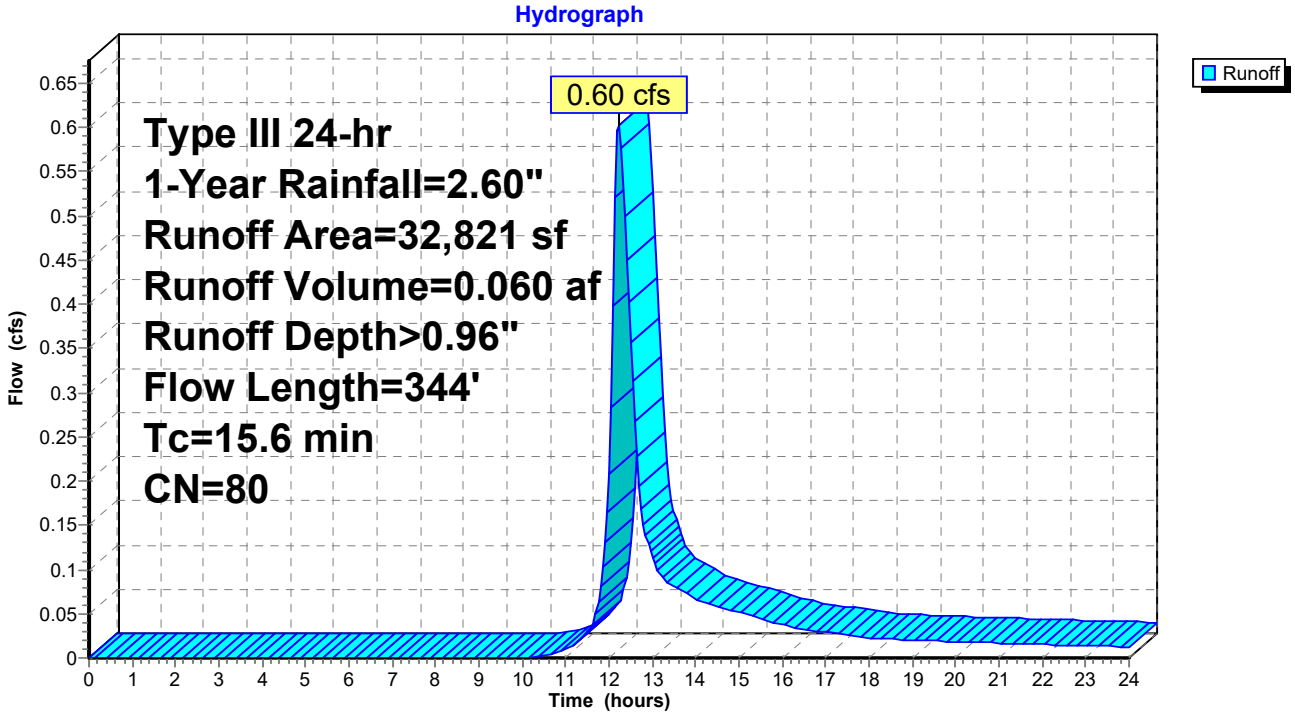
Runoff = 0.60 cfs @ 12.23 hrs, Volume= 0.060 af, Depth> 0.96"
Routed to Link S : POI South

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Year Rainfall=2.60"

	Area (sf)	CN	Description
*	600	98	Macadam Drive
	260	77	Woods, Good, HSG D
	31,961	80	>75% Grass cover, Good, HSG D
	32,821	80	Weighted Average
	32,221		98.17% Pervious Area
	600		1.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0100	0.13		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.11"
2.5	244	0.0120	1.64		**Shallow Concentrated Flow, SCF (Road Swale)** Grassed Waterway Kv= 15.0 fps
15.6	344	Total			

Subcatchment DA 1: Drainage Area 1



Hydrograph for Subcatchment DA 1: Drainage Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.01	0.00	0.00
0.50	0.01	0.00	0.00
0.75	0.02	0.00	0.00
1.00	0.03	0.00	0.00
1.25	0.03	0.00	0.00
1.50	0.04	0.00	0.00
1.75	0.05	0.00	0.00
2.00	0.05	0.00	0.00
2.25	0.06	0.00	0.00
2.50	0.07	0.00	0.00
2.75	0.07	0.00	0.00
3.00	0.08	0.00	0.00
3.25	0.09	0.00	0.00
3.50	0.10	0.00	0.00
3.75	0.10	0.00	0.00
4.00	0.11	0.00	0.00
4.25	0.12	0.00	0.00
4.50	0.13	0.00	0.00
4.75	0.14	0.00	0.00
5.00	0.15	0.00	0.00
5.25	0.16	0.00	0.00
5.50	0.17	0.00	0.00
5.75	0.18	0.00	0.00
6.00	0.19	0.00	0.00
6.25	0.20	0.00	0.00
6.50	0.21	0.00	0.00
6.75	0.22	0.00	0.00
7.00	0.24	0.00	0.00
7.25	0.25	0.00	0.00
7.50	0.26	0.00	0.00
7.75	0.28	0.00	0.00
8.00	0.30	0.00	0.00
8.25	0.31	0.00	0.00
8.50	0.33	0.00	0.00
8.75	0.36	0.00	0.00
9.00	0.38	0.00	0.00
9.25	0.40	0.00	0.00
9.50	0.43	0.00	0.00
9.75	0.46	0.00	0.00
10.00	0.49	0.00	0.00
10.25	0.53	0.00	0.00
10.50	0.56	0.00	0.00
10.75	0.60	0.00	0.01
11.00	0.65	0.01	0.01
11.25	0.70	0.02	0.02
11.50	0.77	0.03	0.03
11.75	0.92	0.06	0.06
12.00	1.30	0.19	0.21
12.25	1.68	0.38	**0.60**
12.50	1.83	0.46	0.36
12.75	1.90	0.50	0.17
13.00	1.95	0.53	0.11
13.25	2.00	0.56	0.09
13.50	2.04	0.59	0.08
13.75	2.07	0.61	0.07
14.00	2.11	0.63	0.07
14.25	2.14	0.65	0.06
14.50	2.17	0.67	0.06
14.75	2.20	0.69	0.05
15.00	2.22	0.70	0.05
15.25	2.24	0.72	0.05
15.50	2.27	0.73	0.04
15.75	2.29	0.74	0.04
16.00	2.30	0.76	0.04
16.25	2.32	0.77	0.03
16.50	2.34	0.78	0.03
16.75	2.35	0.79	0.03
17.00	2.36	0.80	0.03
17.25	2.38	0.81	0.03
17.50	2.39	0.81	0.03
17.75	2.40	0.82	0.02
18.00	2.41	0.83	0.02
18.25	2.42	0.84	0.02
18.50	2.43	0.84	0.02
18.75	2.44	0.85	0.02
19.00	2.45	0.86	0.02
19.25	2.46	0.86	0.02
19.50	2.47	0.87	0.02
19.75	2.48	0.87	0.02
20.00	2.49	0.88	0.02
20.25	2.50	0.89	0.02
20.50	2.50	0.89	0.02
20.75	2.51	0.90	0.02
21.00	2.52	0.90	0.02
21.25	2.53	0.91	0.02
21.50	2.54	0.91	0.02
21.75	2.54	0.92	0.02
22.00	2.55	0.92	0.02
22.25	2.56	0.93	0.01
22.50	2.56	0.93	0.01
22.75	2.57	0.94	0.01
23.00	2.58	0.94	0.01
23.25	2.58	0.95	0.01
23.50	2.59	0.95	0.01
23.75	2.59	0.95	0.01
24.00	**2.60**	**0.96**	0.01

Summary for Subcatchment DA 2: Drainage Area 2

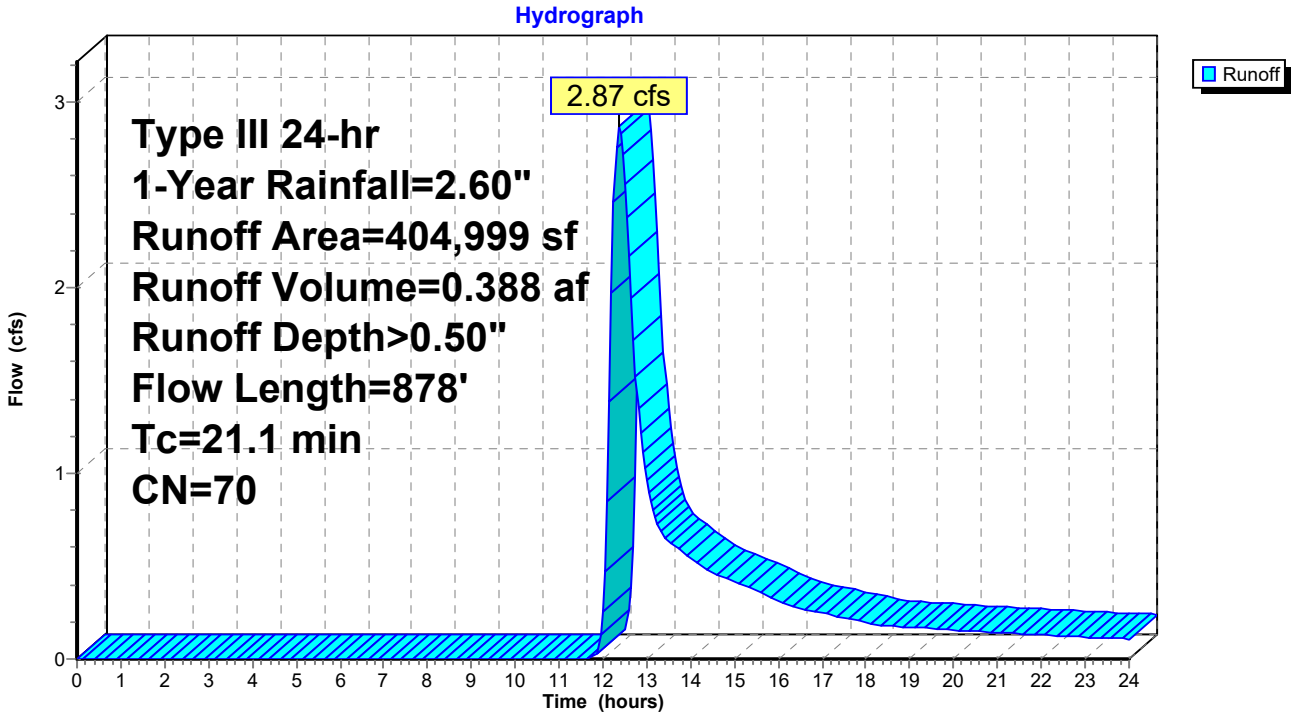
Runoff = 2.87 cfs @ 12.36 hrs, Volume= 0.388 af, Depth> 0.50"
Routed to Pond P2 : Large Shallow Onsite Depression

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Year Rainfall=2.60"

	Area (sf)	CN	Description
*	2,447	98	Misc. Macadam
	82,769	77	Woods, Good, HSG D
	148,017	80	>75% Grass cover, Good, HSG D
	88,344	55	Woods, Good, HSG B
	83,422	61	>75% Grass cover, Good, HSG B
	404,999	70	Weighted Average
	402,552		99.40% Pervious Area
	2,447		0.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	100	0.0180	0.16		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.11"
10.7	778	0.0300	1.21		**Shallow Concentrated Flow, SCF** Short Grass Pasture Kv= 7.0 fps
21.1	878	Total			

Subcatchment DA 2: Drainage Area 2



Hydrograph for Subcatchment DA 2: Drainage Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.01	0.00	0.00
0.50	0.01	0.00	0.00
0.75	0.02	0.00	0.00
1.00	0.03	0.00	0.00
1.25	0.03	0.00	0.00
1.50	0.04	0.00	0.00
1.75	0.05	0.00	0.00
2.00	0.05	0.00	0.00
2.25	0.06	0.00	0.00
2.50	0.07	0.00	0.00
2.75	0.07	0.00	0.00
3.00	0.08	0.00	0.00
3.25	0.09	0.00	0.00
3.50	0.10	0.00	0.00
3.75	0.10	0.00	0.00
4.00	0.11	0.00	0.00
4.25	0.12	0.00	0.00
4.50	0.13	0.00	0.00
4.75	0.14	0.00	0.00
5.00	0.15	0.00	0.00
5.25	0.16	0.00	0.00
5.50	0.17	0.00	0.00
5.75	0.18	0.00	0.00
6.00	0.19	0.00	0.00
6.25	0.20	0.00	0.00
6.50	0.21	0.00	0.00
6.75	0.22	0.00	0.00
7.00	0.24	0.00	0.00
7.25	0.25	0.00	0.00
7.50	0.26	0.00	0.00
7.75	0.28	0.00	0.00
8.00	0.30	0.00	0.00
8.25	0.31	0.00	0.00
8.50	0.33	0.00	0.00
8.75	0.36	0.00	0.00
9.00	0.38	0.00	0.00
9.25	0.40	0.00	0.00
9.50	0.43	0.00	0.00
9.75	0.46	0.00	0.00
10.00	0.49	0.00	0.00
10.25	0.53	0.00	0.00
10.50	0.56	0.00	0.00
10.75	0.60	0.00	0.00
11.00	0.65	0.00	0.00
11.25	0.70	0.00	0.00
11.50	0.77	0.00	0.00
11.75	0.92	0.00	0.00
12.00	1.30	0.04	0.25
12.25	1.68	0.13	**2.46**
12.50	1.83	0.18	**2.56**
12.75	1.90	0.20	1.52
13.00	1.95	0.22	0.96
13.25	2.00	0.24	0.73
13.50	2.04	0.25	0.63
13.75	2.07	0.27	0.59
14.00	2.11	0.28	0.54
14.25	2.14	0.30	0.50
14.50	2.17	0.31	0.47
14.75	2.20	0.32	0.44
15.00	2.22	0.33	0.42
15.25	2.24	0.34	0.40
15.50	2.27	0.35	0.37
15.75	2.29	0.36	0.34
16.00	2.30	0.36	0.32
16.25	2.32	0.37	0.29
16.50	2.34	0.38	0.27
16.75	2.35	0.39	0.26
17.00	2.36	0.39	0.25
17.25	2.38	0.40	0.24
17.50	2.39	0.40	0.22
17.75	2.40	0.41	0.21
18.00	2.41	0.41	0.20
18.25	2.42	0.42	0.19
18.50	2.43	0.42	0.18
18.75	2.44	0.43	0.17
19.00	2.45	0.43	0.17
19.25	2.46	0.44	0.17
19.50	2.47	0.44	0.16
19.75	2.48	0.45	0.16
20.00	2.49	0.45	0.16
20.25	2.50	0.45	0.15
20.50	2.50	0.46	0.15
20.75	2.51	0.46	0.15
21.00	2.52	0.47	0.14
21.25	2.53	0.47	0.14
21.50	2.54	0.47	0.14
21.75	2.54	0.48	0.13
22.00	2.55	0.48	0.13
22.25	2.56	0.48	0.13
22.50	2.56	0.49	0.13
22.75	2.57	0.49	0.12
23.00	2.58	0.49	0.12
23.25	2.58	0.50	0.12
23.50	2.59	0.50	0.11
23.75	2.59	0.50	0.11
24.00	**2.60**	**0.50**	0.11

Summary for Subcatchment DA 3: Drainage Area 3

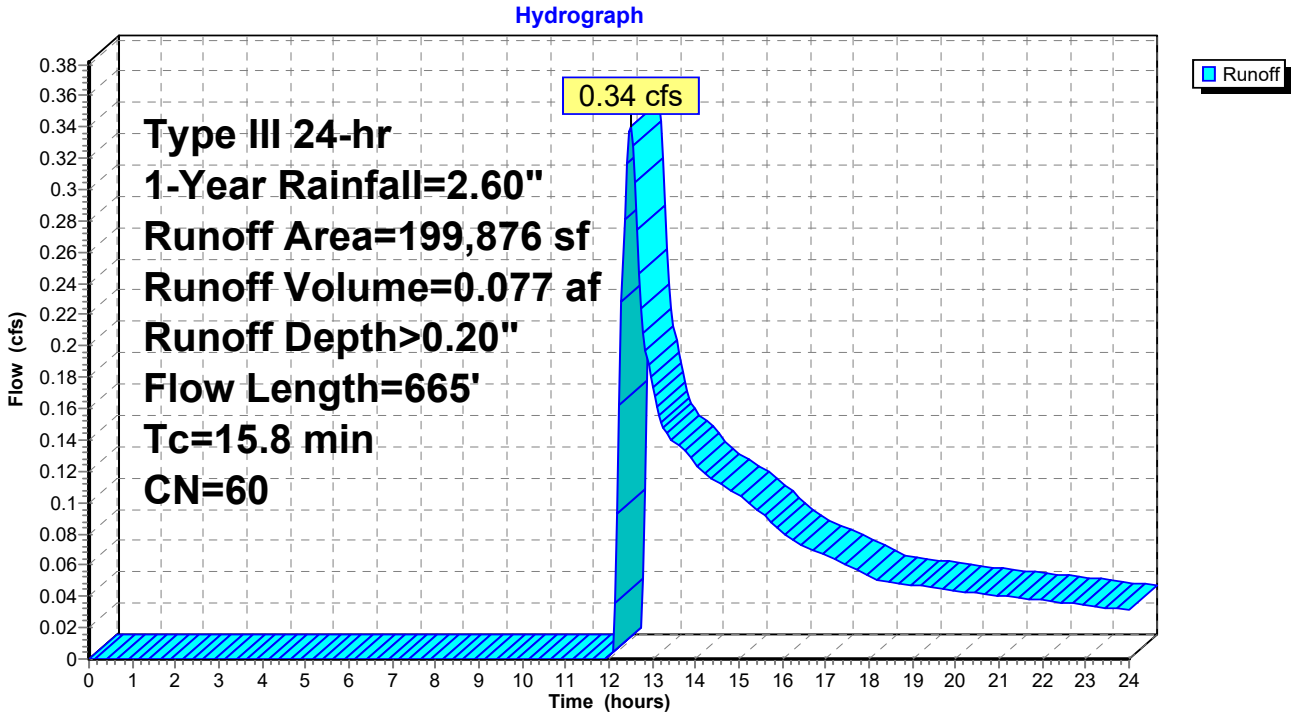
Runoff = 0.34 cfs @ 12.49 hrs, Volume= 0.077 af, Depth> 0.20"
Routed to Link N : POI North

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Year Rainfall=2.60"

	Area (sf)	CN	Description
*	2,471	98	Impervious
	63,897	61	>75% Grass cover, Good, HSG B
	112,976	55	Woods, Good, HSG B
	10,735	80	>75% Grass cover, Good, HSG D
	9,797	77	Woods, Good, HSG D
	199,876	60	Weighted Average
	197,405		98.76% Pervious Area
	2,471		1.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.0240	0.18		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.11"
6.6	565	0.0410	1.42		**Shallow Concentrated Flow, SCF** Short Grass Pasture Kv= 7.0 fps
15.8	665	Total			

Subcatchment DA 3: Drainage Area 3



Hydrograph for Subcatchment DA 3: Drainage Area 3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.01	0.00	0.00
0.50	0.01	0.00	0.00
0.75	0.02	0.00	0.00
1.00	0.03	0.00	0.00
1.25	0.03	0.00	0.00
1.50	0.04	0.00	0.00
1.75	0.05	0.00	0.00
2.00	0.05	0.00	0.00
2.25	0.06	0.00	0.00
2.50	0.07	0.00	0.00
2.75	0.07	0.00	0.00
3.00	0.08	0.00	0.00
3.25	0.09	0.00	0.00
3.50	0.10	0.00	0.00
3.75	0.10	0.00	0.00
4.00	0.11	0.00	0.00
4.25	0.12	0.00	0.00
4.50	0.13	0.00	0.00
4.75	0.14	0.00	0.00
5.00	0.15	0.00	0.00
5.25	0.16	0.00	0.00
5.50	0.17	0.00	0.00
5.75	0.18	0.00	0.00
6.00	0.19	0.00	0.00
6.25	0.20	0.00	0.00
6.50	0.21	0.00	0.00
6.75	0.22	0.00	0.00
7.00	0.24	0.00	0.00
7.25	0.25	0.00	0.00
7.50	0.26	0.00	0.00
7.75	0.28	0.00	0.00
8.00	0.30	0.00	0.00
8.25	0.31	0.00	0.00
8.50	0.33	0.00	0.00
8.75	0.36	0.00	0.00
9.00	0.38	0.00	0.00
9.25	0.40	0.00	0.00
9.50	0.43	0.00	0.00
9.75	0.46	0.00	0.00
10.00	0.49	0.00	0.00
10.25	0.53	0.00	0.00
10.50	0.56	0.00	0.00
10.75	0.60	0.00	0.00
11.00	0.65	0.00	0.00
11.25	0.70	0.00	0.00
11.50	0.77	0.00	0.00
11.75	0.92	0.00	0.00
12.00	1.30	0.00	0.00
12.25	1.68	0.02	0.16
12.50	1.83	0.03	**0.34**
12.75	1.90	0.04	0.22
13.00	1.95	0.05	0.17
13.25	2.00	0.06	0.15
13.50	2.04	0.07	0.14
13.75	2.07	0.07	0.13
14.00	2.11	0.08	0.13
14.25	2.14	0.09	0.12
14.50	2.17	0.09	0.11
14.75	2.20	0.10	0.11
15.00	2.22	0.10	0.10
15.25	2.24	0.11	0.10
15.50	2.27	0.11	0.09
15.75	2.29	0.12	0.09
16.00	2.30	0.12	0.08
16.25	2.32	0.13	0.08
16.50	2.34	0.13	0.07
16.75	2.35	0.13	0.07
17.00	2.36	0.14	0.07
17.25	2.38	0.14	0.06
17.50	2.39	0.14	0.06
17.75	2.40	0.15	0.06
18.00	2.41	0.15	0.05
18.25	2.42	0.15	0.05
18.50	2.43	0.16	0.05
18.75	2.44	0.16	0.05
19.00	2.45	0.16	0.05
19.25	2.46	0.16	0.05
19.50	2.47	0.17	0.05
19.75	2.48	0.17	0.04
20.00	2.49	0.17	0.04
20.25	2.50	0.17	0.04
20.50	2.50	0.18	0.04
20.75	2.51	0.18	0.04
21.00	2.52	0.18	0.04
21.25	2.53	0.18	0.04
21.50	2.54	0.18	0.04
21.75	2.54	0.19	0.04
22.00	2.55	0.19	0.04
22.25	2.56	0.19	0.04
22.50	2.56	0.19	0.04
22.75	2.57	0.19	0.04
23.00	2.58	0.20	0.03
23.25	2.58	0.20	0.03
23.50	2.59	0.20	0.03
23.75	2.59	0.20	0.03
24.00	**2.60**	**0.20**	0.03

Summary for Subcatchment DA 4: Drainage Area 4 - Onsite Tributary to Pond

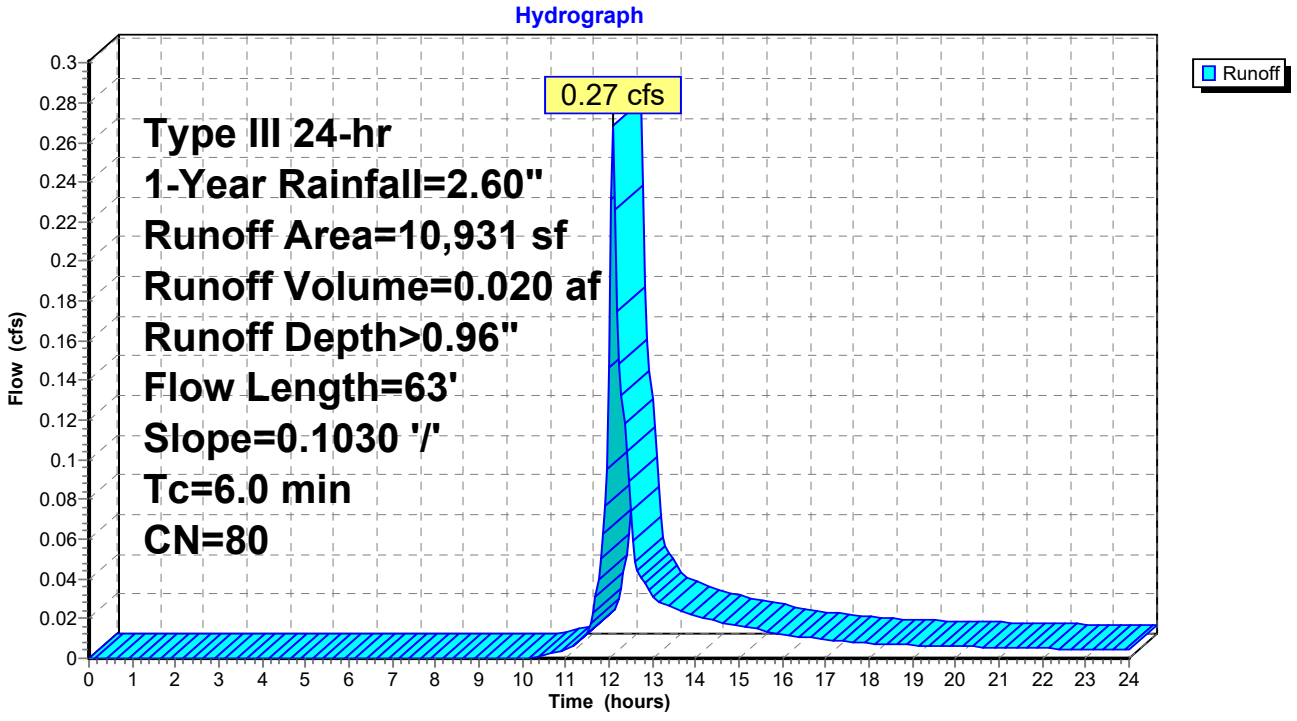
Runoff = 0.27 cfs @ 12.10 hrs, Volume= 0.020 af, Depth> 0.96"
Routed to Pond P1 : Ex Onsite Retention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Year Rainfall=2.60"

Area (sf)	CN	Description
10,931	80	>75% Grass cover, Good, HSG D
10,931		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	63	0.1030	0.29		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.11"
2.4					**Direct Entry, + Entry to Reach Minimum**
6.0	63	Total			

Subcatchment DA 4: Drainage Area 4 - Onsite Tributary to Pond



Hydrograph for Subcatchment DA 4: Drainage Area 4 - Onsite Tributary to Pond

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.01	0.00	0.00
0.50	0.01	0.00	0.00
0.75	0.02	0.00	0.00
1.00	0.03	0.00	0.00
1.25	0.03	0.00	0.00
1.50	0.04	0.00	0.00
1.75	0.05	0.00	0.00
2.00	0.05	0.00	0.00
2.25	0.06	0.00	0.00
2.50	0.07	0.00	0.00
2.75	0.07	0.00	0.00
3.00	0.08	0.00	0.00
3.25	0.09	0.00	0.00
3.50	0.10	0.00	0.00
3.75	0.10	0.00	0.00
4.00	0.11	0.00	0.00
4.25	0.12	0.00	0.00
4.50	0.13	0.00	0.00
4.75	0.14	0.00	0.00
5.00	0.15	0.00	0.00
5.25	0.16	0.00	0.00
5.50	0.17	0.00	0.00
5.75	0.18	0.00	0.00
6.00	0.19	0.00	0.00
6.25	0.20	0.00	0.00
6.50	0.21	0.00	0.00
6.75	0.22	0.00	0.00
7.00	0.24	0.00	0.00
7.25	0.25	0.00	0.00
7.50	0.26	0.00	0.00
7.75	0.28	0.00	0.00
8.00	0.30	0.00	0.00
8.25	0.31	0.00	0.00
8.50	0.33	0.00	0.00
8.75	0.36	0.00	0.00
9.00	0.38	0.00	0.00
9.25	0.40	0.00	0.00
9.50	0.43	0.00	0.00
9.75	0.46	0.00	0.00
10.00	0.49	0.00	0.00
10.25	0.53	0.00	0.00
10.50	0.56	0.00	0.00
10.75	0.60	0.00	0.00
11.00	0.65	0.01	0.00
11.25	0.70	0.02	0.01
11.50	0.77	0.03	0.01
11.75	0.92	0.06	0.04
12.00	1.30	0.19	**0.15**
12.25	1.68	0.38	**0.15**
12.50	1.83	0.46	0.07
12.75	1.90	0.50	0.04
13.00	1.95	0.53	0.03
13.25	2.00	0.56	0.03
13.50	2.04	0.59	0.03
13.75	2.07	0.61	0.02
14.00	2.11	0.63	0.02
14.25	2.14	0.65	0.02
14.50	2.17	0.67	0.02
14.75	2.20	0.69	0.02
15.00	2.22	0.70	0.02
15.25	2.24	0.72	0.02
15.50	2.27	0.73	0.01
15.75	2.29	0.74	0.01
16.00	2.30	0.76	0.01
16.25	2.32	0.77	0.01
16.50	2.34	0.78	0.01
16.75	2.35	0.79	0.01
17.00	2.36	0.80	0.01
17.25	2.38	0.81	0.01
17.50	2.39	0.81	0.01
17.75	2.40	0.82	0.01
18.00	2.41	0.83	0.01
18.25	2.42	0.84	0.01
18.50	2.43	0.84	0.01
18.75	2.44	0.85	0.01
19.00	2.45	0.86	0.01
19.25	2.46	0.86	0.01
19.50	2.47	0.87	0.01
19.75	2.48	0.87	0.01
20.00	2.49	0.88	0.01
20.25	2.50	0.89	0.01
20.50	2.50	0.89	0.01
20.75	2.51	0.90	0.01
21.00	2.52	0.90	0.01
21.25	2.53	0.91	0.01
21.50	2.54	0.91	0.01
21.75	2.54	0.92	0.01
22.00	2.55	0.92	0.00
22.25	2.56	0.93	0.00
22.50	2.56	0.93	0.00
22.75	2.57	0.94	0.00
23.00	2.58	0.94	0.00
23.25	2.58	0.95	0.00
23.50	2.59	0.95	0.00
23.75	2.59	0.95	0.00
24.00	**2.60**	**0.96**	0.00

Summary for Subcatchment OFF1: Offsite Drainage Area 1

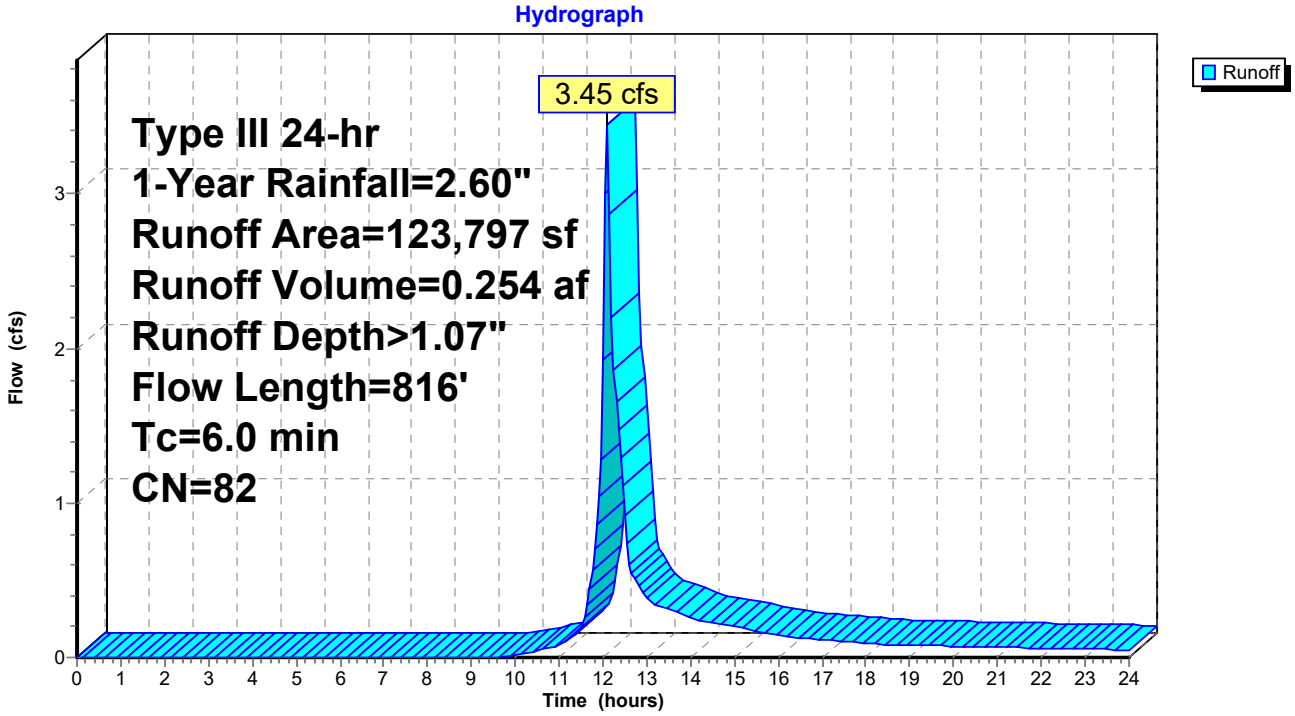
Runoff = 3.45 cfs @ 12.10 hrs, Volume= 0.254 af, Depth> 1.07"
Routed to Pond P1 : Ex Onsite Retention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Year Rainfall=2.60"

	Area (sf)	CN	Description
	52,228	61	>75% Grass cover, Good, HSG B
*	71,569	98	Impervious Surfaces
	123,797	82	Weighted Average
	52,228		42.19% Pervious Area
	71,569		57.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	345	0.0230	3.08		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.4	471	0.0526	17.89	56.21	**Pipe Channel, 24" Pipe from Jehova Site to onsite detention** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
3.7					**Direct Entry, + Entry to Reach Minimum**
6.0	816	Total			

Subcatchment OFF1: Offsite Drainage Area 1



Hydrograph for Subcatchment OFF1: Offsite Drainage Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.01	0.00	0.00
0.50	0.01	0.00	0.00
0.75	0.02	0.00	0.00
1.00	0.03	0.00	0.00
1.25	0.03	0.00	0.00
1.50	0.04	0.00	0.00
1.75	0.05	0.00	0.00
2.00	0.05	0.00	0.00
2.25	0.06	0.00	0.00
2.50	0.07	0.00	0.00
2.75	0.07	0.00	0.00
3.00	0.08	0.00	0.00
3.25	0.09	0.00	0.00
3.50	0.10	0.00	0.00
3.75	0.10	0.00	0.00
4.00	0.11	0.00	0.00
4.25	0.12	0.00	0.00
4.50	0.13	0.00	0.00
4.75	0.14	0.00	0.00
5.00	0.15	0.00	0.00
5.25	0.16	0.00	0.00
5.50	0.17	0.00	0.00
5.75	0.18	0.00	0.00
6.00	0.19	0.00	0.00
6.25	0.20	0.00	0.00
6.50	0.21	0.00	0.00
6.75	0.22	0.00	0.00
7.00	0.24	0.00	0.00
7.25	0.25	0.00	0.00
7.50	0.26	0.00	0.00
7.75	0.28	0.00	0.00
8.00	0.30	0.00	0.00
8.25	0.31	0.00	0.00
8.50	0.33	0.00	0.00
8.75	0.36	0.00	0.00
9.00	0.38	0.00	0.00
9.25	0.40	0.00	0.00
9.50	0.43	0.00	0.00
9.75	0.46	0.00	0.00
10.00	0.49	0.00	0.01
10.25	0.53	0.00	0.03
10.50	0.56	0.01	0.04
10.75	0.60	0.01	0.06
11.00	0.65	0.02	0.08
11.25	0.70	0.03	0.12
11.50	0.77	0.04	0.19
11.75	0.92	0.09	0.57
12.00	1.30	0.24	**1.93**
12.25	1.68	0.45	**1.86**
12.50	1.83	0.54	0.92
12.75	1.90	0.58	0.49
13.00	1.95	0.62	0.39
13.25	2.00	0.65	0.34
13.50	2.04	0.67	0.31
13.75	2.07	0.70	0.29
14.00	2.11	0.72	0.26
14.25	2.14	0.74	0.24
14.50	2.17	0.76	0.23
14.75	2.20	0.78	0.21
15.00	2.22	0.80	0.20
15.25	2.24	0.81	0.19
15.50	2.27	0.83	0.17
15.75	2.29	0.84	0.16
16.00	2.30	0.86	0.14
16.25	2.32	0.87	0.13
16.50	2.34	0.88	0.13
16.75	2.35	0.89	0.12
17.00	2.36	0.90	0.11
17.25	2.38	0.91	0.11
17.50	2.39	0.92	0.10
17.75	2.40	0.93	0.10
18.00	2.41	0.93	0.09
18.25	2.42	0.94	0.08
18.50	2.43	0.95	0.08
18.75	2.44	0.96	0.08
19.00	2.45	0.96	0.08
19.25	2.46	0.97	0.08
19.50	2.47	0.98	0.08
19.75	2.48	0.98	0.07
20.00	2.49	0.99	0.07
20.25	2.50	1.00	0.07
20.50	2.50	1.00	0.07
20.75	2.51	1.01	0.07
21.00	2.52	1.01	0.07
21.25	2.53	1.02	0.06
21.50	2.54	1.02	0.06
21.75	2.54	1.03	0.06
22.00	2.55	1.03	0.06
22.25	2.56	1.04	0.06
22.50	2.56	1.04	0.06
22.75	2.57	1.05	0.06
23.00	2.58	1.05	0.05
23.25	2.58	1.06	0.05
23.50	2.59	1.06	0.05
23.75	2.59	1.07	0.05
24.00	**2.60**	**1.07**	0.05

Summary for Subcatchment OFF2: Offsite Drainage Area 2

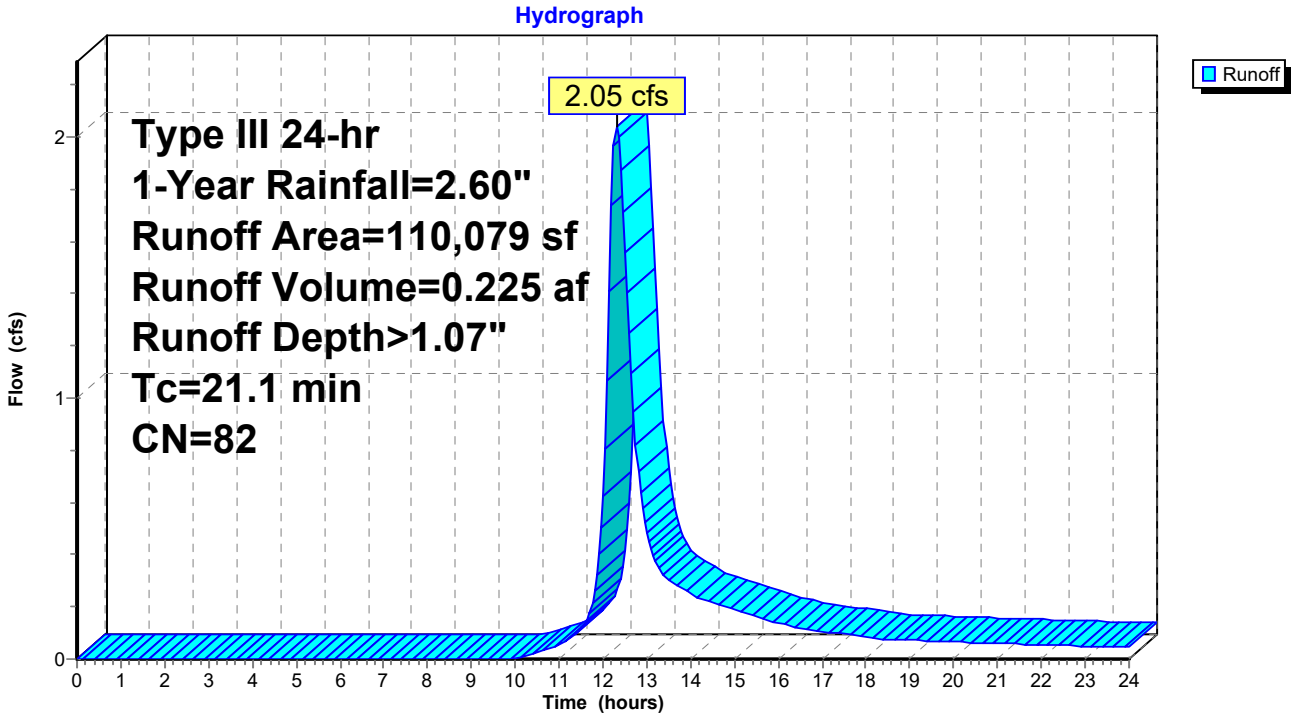
Runoff = 2.05 cfs @ 12.31 hrs, Volume= 0.225 af, Depth> 1.07"
Routed to Pond P2 : Large Shallow Onsite Depression

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Year Rainfall=2.60"

	Area (sf)	CN	Description
	100,377	80	>75% Grass cover, Good, HSG D
*	9,702	98	Impervious Surfaces
	110,079	82	Weighted Average
	100,377		91.19% Pervious Area
	9,702		8.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1					**Direct Entry, Match DA 2 Watershed**

Subcatchment OFF2: Offsite Drainage Area 2



Hydrograph for Subcatchment OFF2: Offsite Drainage Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	2.00	0.65	0.36
0.25	0.01	0.00	0.00	13.50	2.04	0.67	0.30
0.50	0.01	0.00	0.00	13.75	2.07	0.70	0.28
0.75	0.02	0.00	0.00	14.00	2.11	0.72	0.25
1.00	0.03	0.00	0.00	14.25	2.14	0.74	0.23
1.25	0.03	0.00	0.00	14.50	2.17	0.76	0.21
1.50	0.04	0.00	0.00	14.75	2.20	0.78	0.20
1.75	0.05	0.00	0.00	15.00	2.22	0.80	0.19
2.00	0.05	0.00	0.00	15.25	2.24	0.81	0.18
2.25	0.06	0.00	0.00	15.50	2.27	0.83	0.16
2.50	0.07	0.00	0.00	15.75	2.29	0.84	0.15
2.75	0.07	0.00	0.00	16.00	2.30	0.86	0.14
3.00	0.08	0.00	0.00	16.25	2.32	0.87	0.13
3.25	0.09	0.00	0.00	16.50	2.34	0.88	0.12
3.50	0.10	0.00	0.00	16.75	2.35	0.89	0.11
3.75	0.10	0.00	0.00	17.00	2.36	0.90	0.11
4.00	0.11	0.00	0.00	17.25	2.38	0.91	0.10
4.25	0.12	0.00	0.00	17.50	2.39	0.92	0.10
4.50	0.13	0.00	0.00	17.75	2.40	0.93	0.09
4.75	0.14	0.00	0.00	18.00	2.41	0.93	0.08
5.00	0.15	0.00	0.00	18.25	2.42	0.94	0.08
5.25	0.16	0.00	0.00	18.50	2.43	0.95	0.08
5.50	0.17	0.00	0.00	18.75	2.44	0.96	0.07
5.75	0.18	0.00	0.00	19.00	2.45	0.96	0.07
6.00	0.19	0.00	0.00	19.25	2.46	0.97	0.07
6.25	0.20	0.00	0.00	19.50	2.47	0.98	0.07
6.50	0.21	0.00	0.00	19.75	2.48	0.98	0.07
6.75	0.22	0.00	0.00	20.00	2.49	0.99	0.07
7.00	0.24	0.00	0.00	20.25	2.50	1.00	0.06
7.25	0.25	0.00	0.00	20.50	2.50	1.00	0.06
7.50	0.26	0.00	0.00	20.75	2.51	1.01	0.06
7.75	0.28	0.00	0.00	21.00	2.52	1.01	0.06
8.00	0.30	0.00	0.00	21.25	2.53	1.02	0.06
8.25	0.31	0.00	0.00	21.50	2.54	1.02	0.06
8.50	0.33	0.00	0.00	21.75	2.54	1.03	0.06
8.75	0.36	0.00	0.00	22.00	2.55	1.03	0.05
9.00	0.38	0.00	0.00	22.25	2.56	1.04	0.05
9.25	0.40	0.00	0.00	22.50	2.56	1.04	0.05
9.50	0.43	0.00	0.00	22.75	2.57	1.05	0.05
9.75	0.46	0.00	0.00	23.00	2.58	1.05	0.05
10.00	0.49	0.00	0.00	23.25	2.58	1.06	0.05
10.25	0.53	0.00	0.01	23.50	2.59	1.06	0.05
10.50	0.56	0.01	0.02	23.75	2.59	1.07	0.05
10.75	0.60	0.01	0.04	24.00	**2.60**	**1.07**	0.04
11.00	0.65	0.02	0.05				
11.25	0.70	0.03	0.08				
11.50	0.77	0.04	0.12				
11.75	0.92	0.09	0.21				
12.00	1.30	0.24	0.63				
12.25	1.68	0.45	**1.97**				
12.50	1.83	0.54	**1.56**				
12.75	1.90	0.58	0.82				
13.00	1.95	0.62	0.49				

Summary for Subcatchment OFF3: Offsite Drainage Area 3

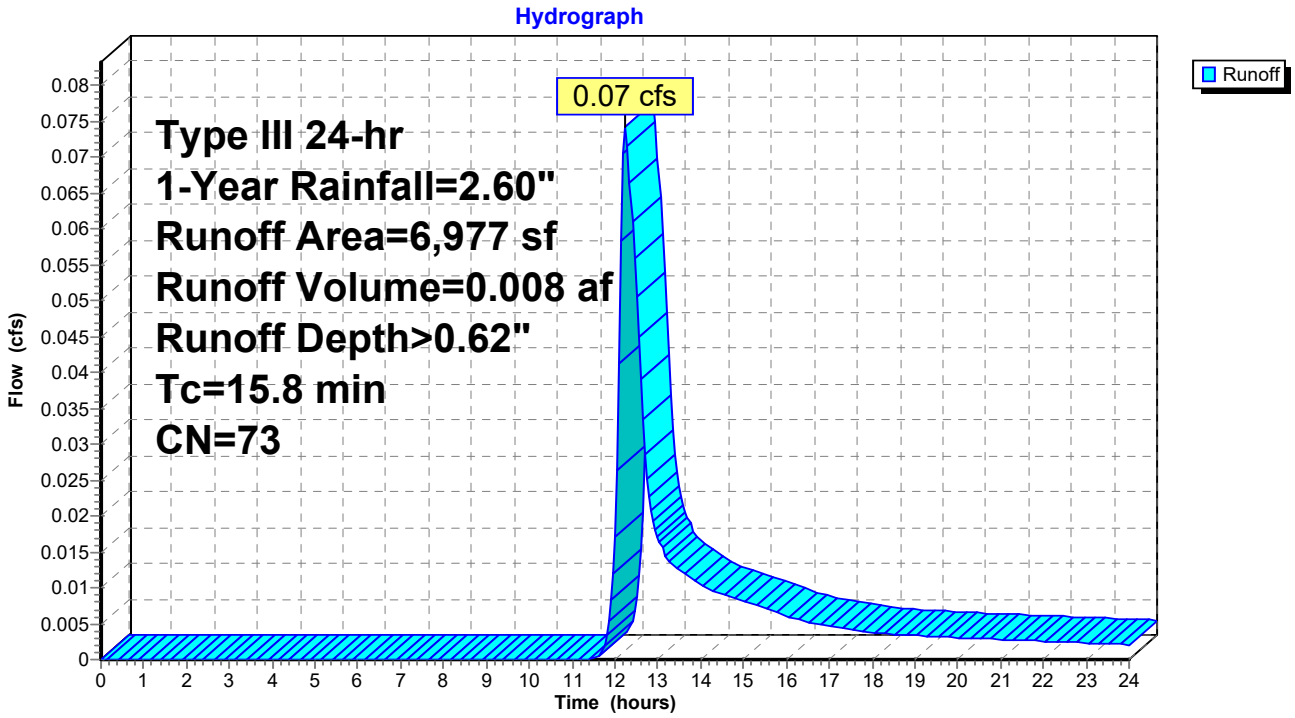
Runoff = 0.07 cfs @ 12.25 hrs, Volume= 0.008 af, Depth> 0.62"
Routed to Link N : POI North

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-Year Rainfall=2.60"

Area (sf)	CN	Description
2,502	61	>75% Grass cover, Good, HSG B
4,475	80	>75% Grass cover, Good, HSG D
6,977	73	Weighted Average
6,977		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.8					**Direct Entry, Match DA 3 Watershed**

Subcatchment OFF3: Offsite Drainage Area 3



Hydrograph for Subcatchment OFF3: Offsite Drainage Area 3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	2.00	0.32	0.01
0.25	0.01	0.00	0.00	13.50	2.04	0.34	0.01
0.50	0.01	0.00	0.00	13.75	2.07	0.35	0.01
0.75	0.02	0.00	0.00	14.00	2.11	0.37	0.01
1.00	0.03	0.00	0.00	14.25	2.14	0.38	0.01
1.25	0.03	0.00	0.00	14.50	2.17	0.40	0.01
1.50	0.04	0.00	0.00	14.75	2.20	0.41	0.01
1.75	0.05	0.00	0.00	15.00	2.22	0.42	0.01
2.00	0.05	0.00	0.00	15.25	2.24	0.44	0.01
2.25	0.06	0.00	0.00	15.50	2.27	0.45	0.01
2.50	0.07	0.00	0.00	15.75	2.29	0.46	0.01
2.75	0.07	0.00	0.00	16.00	2.30	0.46	0.01
3.00	0.08	0.00	0.00	16.25	2.32	0.47	0.01
3.25	0.09	0.00	0.00	16.50	2.34	0.48	0.01
3.50	0.10	0.00	0.00	16.75	2.35	0.49	0.01
3.75	0.10	0.00	0.00	17.00	2.36	0.50	0.00
4.00	0.11	0.00	0.00	17.25	2.38	0.50	0.00
4.25	0.12	0.00	0.00	17.50	2.39	0.51	0.00
4.50	0.13	0.00	0.00	17.75	2.40	0.52	0.00
4.75	0.14	0.00	0.00	18.00	2.41	0.52	0.00
5.00	0.15	0.00	0.00	18.25	2.42	0.53	0.00
5.25	0.16	0.00	0.00	18.50	2.43	0.53	0.00
5.50	0.17	0.00	0.00	18.75	2.44	0.54	0.00
5.75	0.18	0.00	0.00	19.00	2.45	0.54	0.00
6.00	0.19	0.00	0.00	19.25	2.46	0.55	0.00
6.25	0.20	0.00	0.00	19.50	2.47	0.55	0.00
6.50	0.21	0.00	0.00	19.75	2.48	0.56	0.00
6.75	0.22	0.00	0.00	20.00	2.49	0.56	0.00
7.00	0.24	0.00	0.00	20.25	2.50	0.57	0.00
7.25	0.25	0.00	0.00	20.50	2.50	0.57	0.00
7.50	0.26	0.00	0.00	20.75	2.51	0.57	0.00
7.75	0.28	0.00	0.00	21.00	2.52	0.58	0.00
8.00	0.30	0.00	0.00	21.25	2.53	0.58	0.00
8.25	0.31	0.00	0.00	21.50	2.54	0.59	0.00
8.50	0.33	0.00	0.00	21.75	2.54	0.59	0.00
8.75	0.36	0.00	0.00	22.00	2.55	0.59	0.00
9.00	0.38	0.00	0.00	22.25	2.56	0.60	0.00
9.25	0.40	0.00	0.00	22.50	2.56	0.60	0.00
9.50	0.43	0.00	0.00	22.75	2.57	0.61	0.00
9.75	0.46	0.00	0.00	23.00	2.58	0.61	0.00
10.00	0.49	0.00	0.00	23.25	2.58	0.61	0.00
10.25	0.53	0.00	0.00	23.50	2.59	0.62	0.00
10.50	0.56	0.00	0.00	23.75	2.59	0.62	0.00
10.75	0.60	0.00	0.00	24.00	**2.60**	**0.62**	0.00
11.00	0.65	0.00	0.00				
11.25	0.70	0.00	0.00				
11.50	0.77	0.00	0.00				
11.75	0.92	0.01	0.00				
12.00	1.30	0.07	0.02				
12.25	1.68	0.19	**0.07**				
12.50	1.83	0.25	0.05				
12.75	1.90	0.27	0.03				
13.00	1.95	0.30	0.02				

Summary for Pond P1: Ex Onsite Retention Pond

[92] Warning: Device #4 is above defined storage
[92] Warning: Device #5 is above defined storage

Inflow Area = 3.093 ac, 53.12% Impervious, Inflow Depth > 1.06" for 1-Year event
Inflow = 3.72 cfs @ 12.10 hrs, Volume= 0.274 af
Outflow = 1.48 cfs @ 12.38 hrs, Volume= 0.264 af, Atten= 60%, Lag= 16.9 min
Primary = 1.48 cfs @ 12.38 hrs, Volume= 0.264 af
Routed to Link S : POI South
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond P2 : Large Shallow Onsite Depression

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 296.16' @ 12.38 hrs Surf.Area= 3,926 sf Storage= 3,143 cf

Plug-Flow detention time= 55.0 min calculated for 0.263 af (96% of inflow)
Center-of-Mass det. time= 35.3 min (882.0 - 846.7)

Volume	Invert	Avail.Storage	Storage Description
#1	295.30'	18,859 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

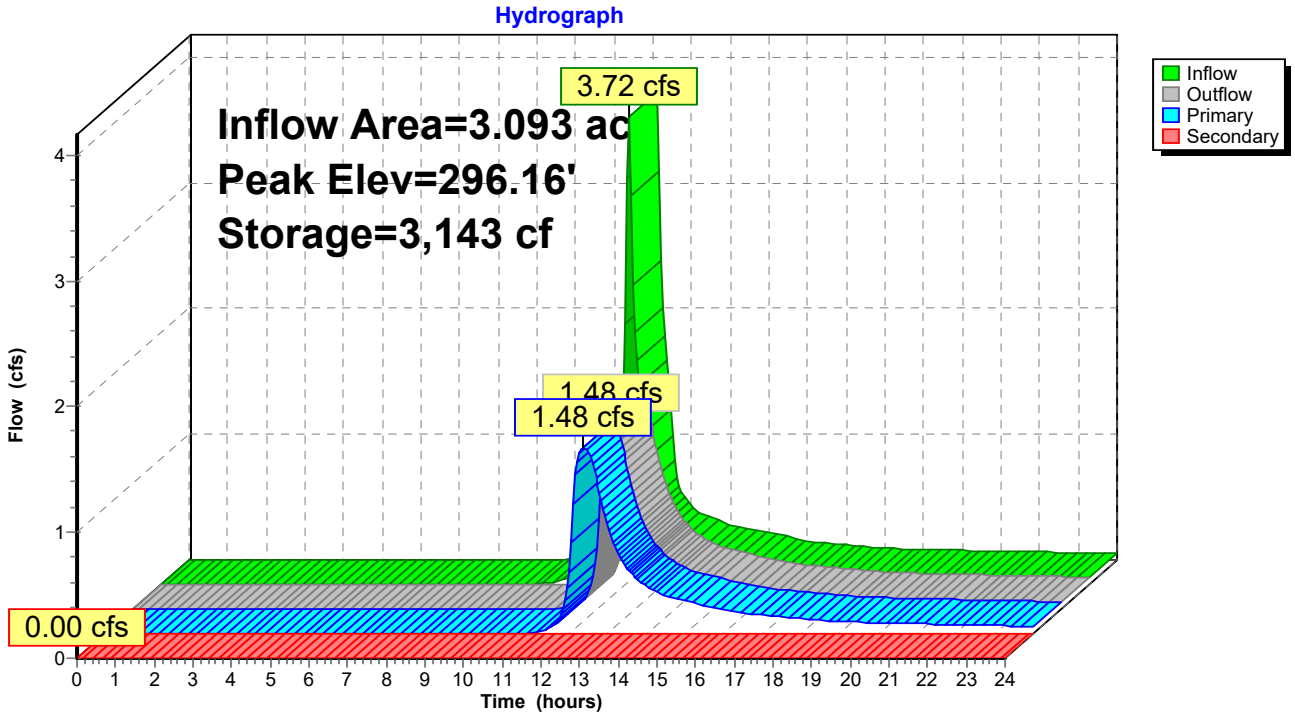
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
295.30	3,441	0	0
296.00	3,790	2,531	2,531
298.00	5,497	9,287	11,818
299.00	6,080	5,789	17,606
299.20	6,450	1,253	18,859

Device	Routing	Invert	Outlet Devices
#1	Primary	295.00'	**24.0" Round Culvert** L= 409.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 295.00' / 292.10' S= 0.0071 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	295.30'	**9.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	297.40'	**41.2 deg x 3.0' long x 1.33' rise Sharp-Crested Vee/Trap Weir** Cv= 2.57 (C= 3.21)
#4	Device 1	299.40'	**48.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	299.20'	**40.0' long x 4.0' breadth Broad-Crested Rectangular Weir** 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

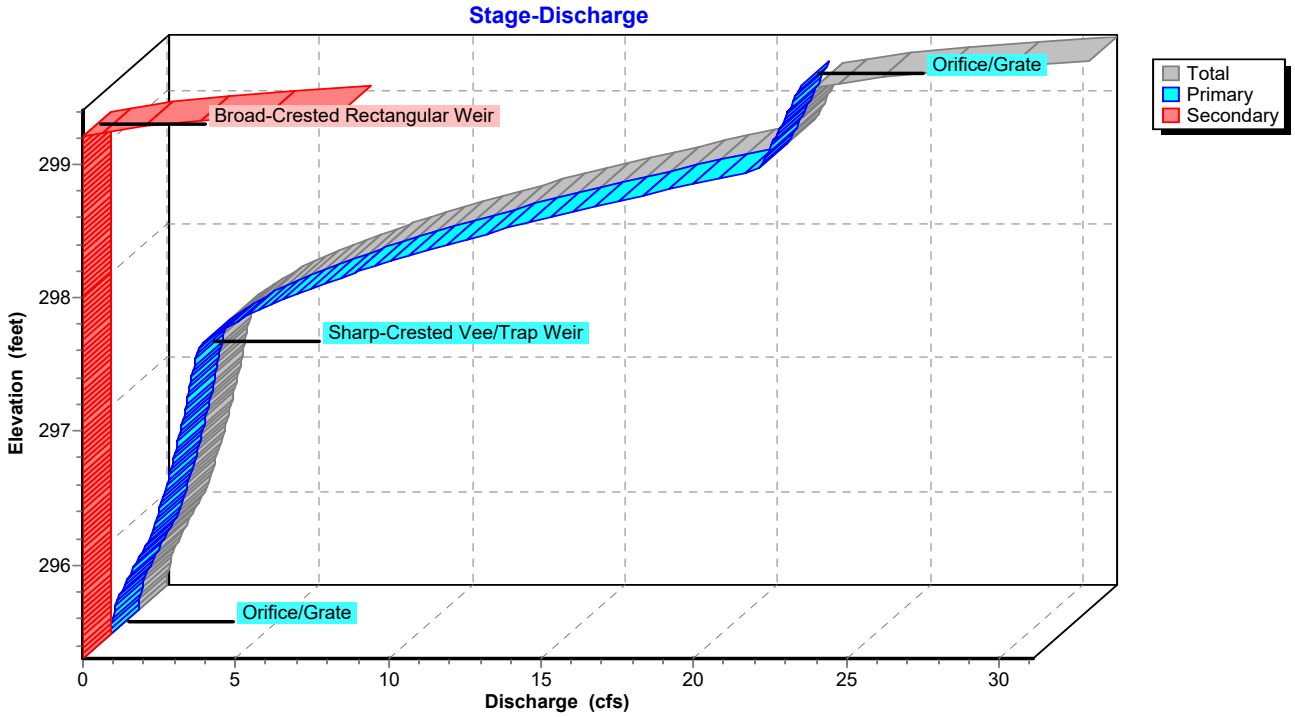
Primary OutFlow Max=1.48 cfs @ 12.38 hrs HW=296.16' (Free Discharge)
└─**1=Culvert** (Passes 1.48 cfs of 6.90 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 1.48 cfs @ 3.35 fps)
  └─**3=Sharp-Crested Vee/Trap Weir** (Controls 0.00 cfs)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=295.30' (Free Discharge)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

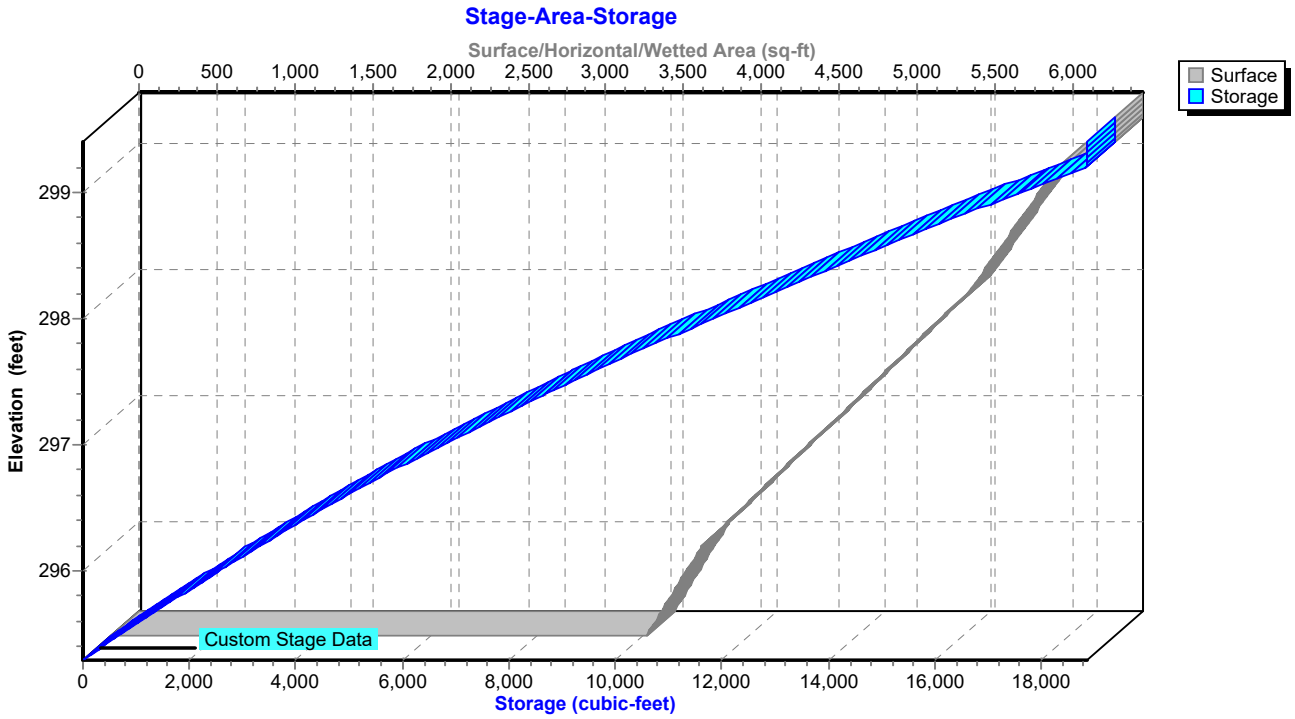
Pond P1: Ex Onsite Retention Pond



Pond P1: Ex Onsite Retention Pond



Pond P1: Ex Onsite Retention Pond



Hydrograph for Pond P1: Ex Onsite Retention Pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	295.30	0.00	0.00	**0.00**
0.50	0.00	0	295.30	0.00	0.00	0.00
1.00	0.00	0	295.30	0.00	0.00	0.00
1.50	0.00	0	295.30	0.00	0.00	0.00
2.00	0.00	0	295.30	0.00	0.00	0.00
2.50	0.00	0	295.30	0.00	0.00	0.00
3.00	0.00	0	295.30	0.00	0.00	0.00
3.50	0.00	0	295.30	0.00	0.00	0.00
4.00	0.00	0	295.30	0.00	0.00	0.00
4.50	0.00	0	295.30	0.00	0.00	0.00
5.00	0.00	0	295.30	0.00	0.00	0.00
5.50	0.00	0	295.30	0.00	0.00	0.00
6.00	0.00	0	295.30	0.00	0.00	0.00
6.50	0.00	0	295.30	0.00	0.00	0.00
7.00	0.00	0	295.30	0.00	0.00	0.00
7.50	0.00	0	295.30	0.00	0.00	0.00
8.00	0.00	0	295.30	0.00	0.00	0.00
8.50	0.00	0	295.30	0.00	0.00	0.00
9.00	0.00	0	295.30	0.00	0.00	0.00
9.50	0.00	0	295.30	0.00	0.00	0.00
10.00	0.01	8	295.30	0.00	0.00	0.00
10.50	0.04	52	295.32	0.00	0.00	0.00
11.00	0.09	158	295.35	0.01	0.01	0.00
11.50	0.20	363	295.40	0.04	0.04	0.00
12.00	**2.08**	**1,378**	**295.69**	**0.49**	**0.49**	0.00
12.50	**0.99**	**3,044**	**296.13**	**1.44**	**1.44**	0.00
13.00	0.42	1,968	295.85	0.88	0.88	0.00
13.50	0.34	1,425	295.70	0.52	0.52	0.00
14.00	0.28	1,185	295.64	0.38	0.38	0.00
14.50	0.24	1,045	295.60	0.30	0.30	0.00
15.00	0.22	957	295.57	0.26	0.26	0.00
15.50	0.19	884	295.55	0.22	0.22	0.00
16.00	0.15	815	295.53	0.19	0.19	0.00
16.50	0.14	753	295.52	0.17	0.17	0.00
17.00	0.12	707	295.50	0.15	0.15	0.00
17.50	0.11	665	295.49	0.13	0.13	0.00
18.00	0.10	625	295.48	0.12	0.12	0.00
18.50	0.09	591	295.47	0.11	0.11	0.00
19.00	0.09	567	295.46	0.10	0.10	0.00
19.50	0.08	548	295.46	0.09	0.09	0.00
20.00	0.08	531	295.45	0.09	0.09	0.00
20.50	0.07	515	295.45	0.08	0.08	0.00
21.00	0.07	502	295.44	0.08	0.08	0.00
21.50	0.07	489	295.44	0.07	0.07	0.00
22.00	0.06	478	295.44	0.07	0.07	0.00
22.50	0.06	466	295.43	0.07	0.07	0.00
23.00	0.06	455	295.43	0.06	0.06	0.00
23.50	0.06	444	295.43	0.06	0.06	0.00
24.00	0.05	432	295.42	0.06	0.06	0.00

Stage-Discharge for Pond P1: Ex Onsite Retention Pond

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
295.30	0.00	0.00	0.00
295.35	0.01	0.01	0.00
295.40	0.04	0.04	0.00
295.45	0.08	0.08	0.00
295.50	0.14	0.14	0.00
295.55	0.22	0.22	0.00
295.60	0.31	0.31	0.00
295.65	0.41	0.41	0.00
295.70	0.52	0.52	0.00
295.75	0.63	0.63	0.00
295.80	0.75	0.75	0.00
295.85	0.88	0.88	0.00
295.90	1.00	1.00	0.00
295.95	1.12	1.12	0.00
296.00	1.22	1.22	0.00
296.05	1.30	1.30	0.00
296.10	1.39	1.39	0.00
296.15	1.47	1.47	0.00
296.20	1.54	1.54	0.00
296.25	1.61	1.61	0.00
296.30	1.68	1.68	0.00
296.35	1.75	1.75	0.00
296.40	1.81	1.81	0.00
296.45	1.87	1.87	0.00
296.50	1.93	1.93	0.00
296.55	1.99	1.99	0.00
296.60	2.05	2.05	0.00
296.65	2.10	2.10	0.00
296.70	2.15	2.15	0.00
296.75	2.21	2.21	0.00
296.80	2.26	2.26	0.00
296.85	2.31	2.31	0.00
296.90	2.35	2.35	0.00
296.95	2.40	2.40	0.00
297.00	2.45	2.45	0.00
297.05	2.49	2.49	0.00
297.10	2.54	2.54	0.00
297.15	2.58	2.58	0.00
297.20	2.63	2.63	0.00
297.25	2.67	2.67	0.00
297.30	2.71	2.71	0.00
297.35	2.75	2.75	0.00
297.40	2.79	2.79	0.00
297.45	2.94	2.94	0.00
297.50	3.18	3.18	0.00
297.55	3.48	3.48	0.00
297.60	3.83	3.83	0.00
297.65	4.22	4.22	0.00
297.70	4.66	4.66	0.00
297.75	5.13	5.13	0.00
297.80	5.64	5.64	0.00
297.85	6.18	6.18	0.00
297.90	6.75	6.75	0.00
297.95	7.36	7.36	0.00
298.00	7.99	7.99	0.00
298.05	8.66	8.66	0.00
298.10	9.35	9.35	0.00
298.15	10.08	10.08	0.00
298.20	10.83	10.83	0.00
298.25	11.61	11.61	0.00
298.30	12.42	12.42	0.00
298.35	13.25	13.25	0.00
298.40	14.11	14.11	0.00
298.45	15.00	15.00	0.00
298.50	15.92	15.92	0.00
298.55	16.86	16.86	0.00
298.60	17.83	17.83	0.00
298.65	18.83	18.83	0.00
298.70	19.85	19.85	0.00
298.75	20.86	20.86	0.00
298.80	21.28	21.28	0.00
298.85	21.39	21.39	0.00
298.90	21.50	21.50	0.00
298.95	21.62	21.62	0.00
299.00	21.73	21.73	0.00
299.05	21.84	21.84	0.00
299.10	21.95	21.95	0.00
299.15	22.06	22.06	0.00
299.20	22.17	22.17	0.00
299.25	23.34	22.27	1.06
299.30	25.39	22.38	3.01
299.35	28.02	22.49	5.53
299.40	**31.11**	**22.60**	**8.51**

Stage-Area-Storage for Pond P1: Ex Onsite Retention Pond

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
295.30	3,441	0
295.35	3,466	173
295.40	3,491	347
295.45	3,516	522
295.50	3,541	698
295.55	3,566	876
295.60	3,591	1,055
295.65	3,616	1,235
295.70	3,640	1,416
295.75	3,665	1,599
295.80	3,690	1,783
295.85	3,715	1,968
295.90	3,740	2,154
295.95	3,765	2,342
296.00	3,790	2,531
296.05	3,833	2,721
296.10	3,875	2,914
296.15	3,918	3,109
296.20	3,961	3,306
296.25	4,003	3,505
296.30	4,046	3,706
296.35	4,089	3,910
296.40	4,131	4,115
296.45	4,174	4,323
296.50	4,217	4,533
296.55	4,259	4,744
296.60	4,302	4,958
296.65	4,345	5,175
296.70	4,387	5,393
296.75	4,430	5,613
296.80	4,473	5,836
296.85	4,515	6,061
296.90	4,558	6,288
296.95	4,601	6,516
297.00	4,644	6,748
297.05	4,686	6,981
297.10	4,729	7,216
297.15	4,772	7,454
297.20	4,814	7,693
297.25	4,857	7,935
297.30	4,900	8,179
297.35	4,942	8,425
297.40	4,985	8,673
297.45	5,028	8,924
297.50	5,070	9,176
297.55	5,113	9,431
297.60	5,156	9,687
297.65	5,198	9,946
297.70	5,241	10,207
297.75	5,284	10,470
297.80	5,326	10,736
297.85	5,369	11,003
297.90	5,412	11,272
297.95	5,454	11,544
298.00	5,497	11,818
298.05	5,526	12,093
298.10	5,555	12,370
298.15	5,584	12,649
298.20	5,614	12,929
298.25	5,643	13,210
298.30	5,672	13,493
298.35	5,701	13,778
298.40	5,730	14,063
298.45	5,759	14,351
298.50	5,789	14,639
298.55	5,818	14,929
298.60	5,847	15,221
298.65	5,876	15,514
298.70	5,905	15,809
298.75	5,934	16,105
298.80	5,963	16,402
298.85	5,993	16,701
298.90	6,022	17,001
298.95	6,051	17,303
299.00	6,080	17,606
299.05	6,173	17,913
299.10	6,265	18,224
299.15	6,358	18,539
299.20	**6,450**	**18,859**
299.25	6,450	18,859
299.30	6,450	18,859
299.35	6,450	18,859
299.40	6,450	18,859

Summary for Pond P2: Large Shallow Onsite Depression

Inflow Area = 11.825 ac, 2.36% Impervious, Inflow Depth > 0.62" for 1-Year event
Inflow = 4.87 cfs @ 12.34 hrs, Volume= 0.612 af
Outflow = 3.11 cfs @ 12.65 hrs, Volume= 0.465 af, Atten= 36%, Lag= 18.6 min
Primary = 3.11 cfs @ 12.65 hrs, Volume= 0.465 af
Routed to Link S : POI South

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 298.06' @ 12.65 hrs Surf.Area= 23,450 sf Storage= 7,590 cf

Plug-Flow detention time= 147.0 min calculated for 0.464 af (76% of inflow)
Center-of-Mass det. time= 55.5 min (942.4 - 886.9)

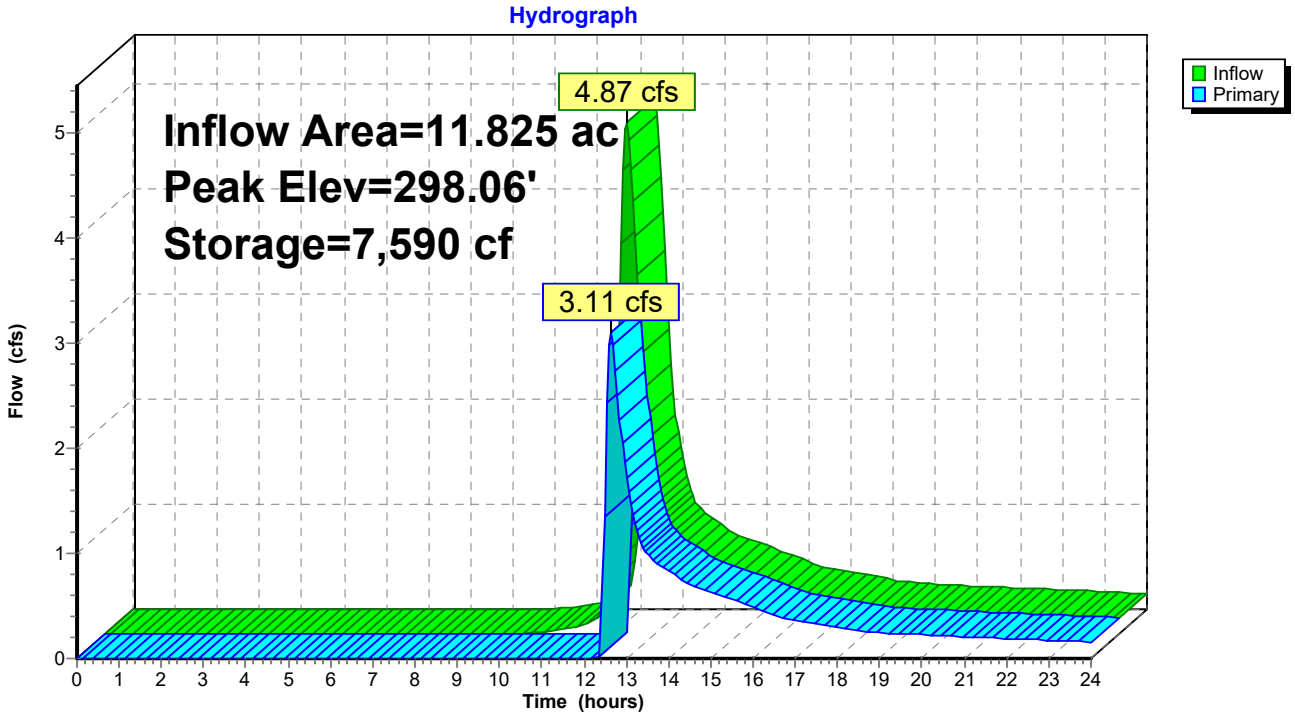
Volume	Invert	Avail.Storage	Storage Description
#1	297.40'	130,870 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
297.40	0	0	0
298.00	21,165	6,350	6,350
300.00	103,355	124,520	130,870

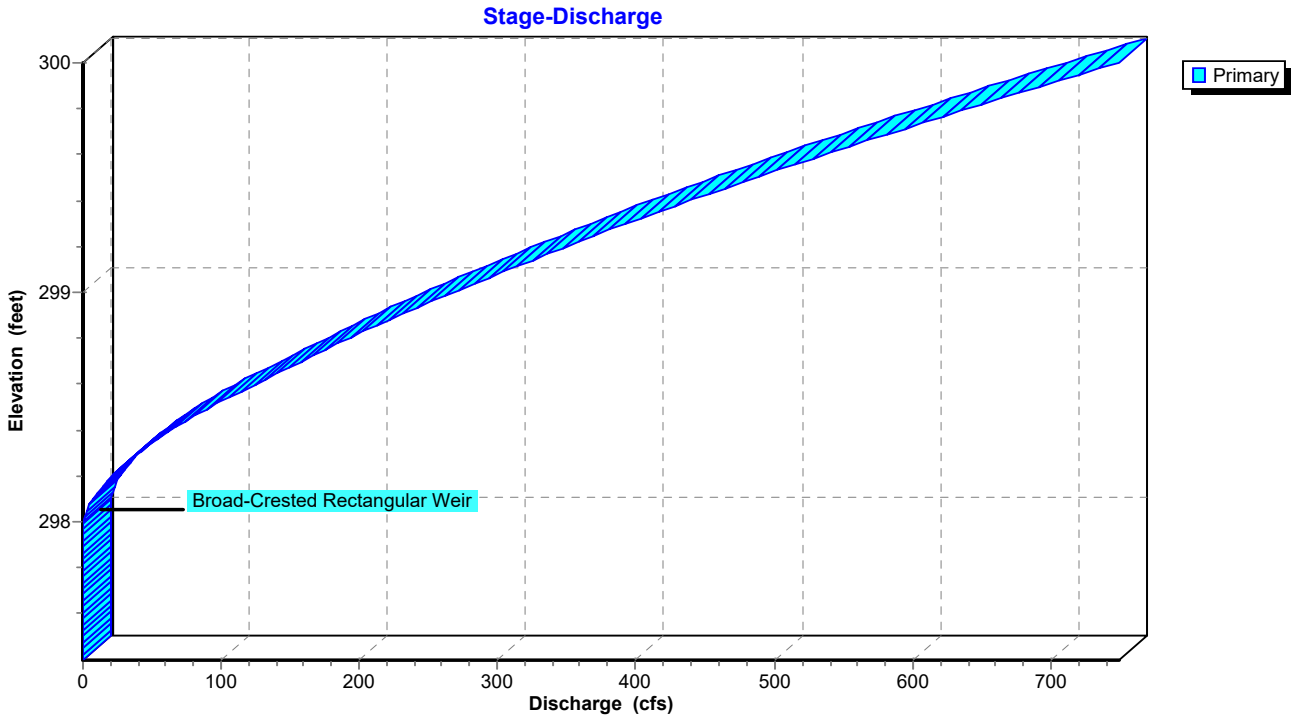
Device	Routing	Invert	Outlet Devices
#1	Primary	298.00'	**100.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=3.07 cfs @ 12.65 hrs HW=298.06' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 3.07 cfs @ 0.55 fps)

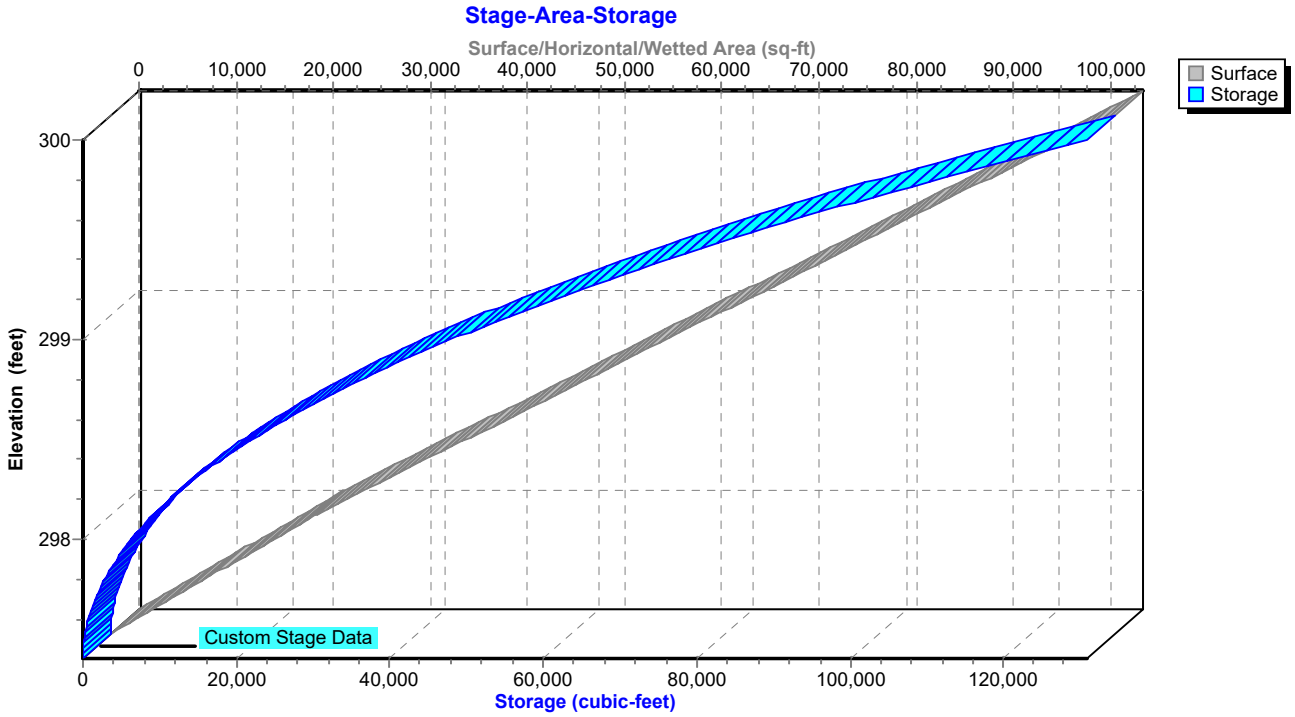
Pond P2: Large Shallow Onsite Depression



Pond P2: Large Shallow Onsite Depression



Pond P2: Large Shallow Onsite Depression



Hydrograph for Pond P2: Large Shallow Onsite Depression

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	297.40	0.00
0.50	0.00	0	297.40	0.00
1.00	0.00	0	297.40	0.00
1.50	0.00	0	297.40	0.00
2.00	0.00	0	297.40	0.00
2.50	0.00	0	297.40	0.00
3.00	0.00	0	297.40	0.00
3.50	0.00	0	297.40	0.00
4.00	0.00	0	297.40	0.00
4.50	0.00	0	297.40	0.00
5.00	0.00	0	297.40	0.00
5.50	0.00	0	297.40	0.00
6.00	0.00	0	297.40	0.00
6.50	0.00	0	297.40	0.00
7.00	0.00	0	297.40	0.00
7.50	0.00	0	297.40	0.00
8.00	0.00	0	297.40	0.00
8.50	0.00	0	297.40	0.00
9.00	0.00	0	297.40	0.00
9.50	0.00	0	297.40	0.00
10.00	0.00	2	297.40	0.00
10.50	0.02	25	297.44	0.00
11.00	0.05	94	297.47	0.00
11.50	0.12	238	297.52	0.00
12.00	**0.88**	782	297.61	0.00
12.50	**4.12**	**7,030**	**298.03**	**1.35**
13.00	1.45	**7,155**	**298.04**	**1.72**
13.50	0.94	6,910	298.03	0.99
14.00	0.79	6,847	298.02	0.83
14.50	0.68	6,774	298.02	0.71
15.00	0.61	6,727	298.02	0.63
15.50	0.53	6,684	298.02	0.56
16.00	0.46	6,637	298.01	0.48
16.50	0.39	6,594	298.01	0.41
17.00	0.35	6,569	298.01	0.37
17.50	0.32	6,547	298.01	0.33
18.00	0.28	6,525	298.01	0.29
18.50	0.25	6,506	298.01	0.26
19.00	0.24	6,497	298.01	0.25
19.50	0.23	6,490	298.01	0.24
20.00	0.22	6,484	298.01	0.22
20.50	0.21	6,477	298.01	0.21
21.00	0.20	6,472	298.01	0.21
21.50	0.19	6,467	298.01	0.20
22.00	0.19	6,462	298.01	0.19
22.50	0.18	6,457	298.00	0.18
23.00	0.17	6,452	298.00	0.17
23.50	0.16	6,447	298.00	0.16
24.00	0.15	6,441	298.00	0.15

Stage-Discharge for Pond P2: Large Shallow Onsite Depression

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
297.40	0.00	298.46	79.87	299.52	496.61
297.42	0.00	298.48	85.80	299.54	506.44
297.44	0.00	298.50	91.92	299.56	516.34
297.46	0.00	298.52	98.24	299.58	526.30
297.48	0.00	298.54	104.76	299.60	536.32
297.50	0.00	298.56	111.47	299.62	546.41
297.52	0.00	298.58	118.38	299.64	556.56
297.54	0.00	298.60	125.48	299.66	566.77
297.56	0.00	298.62	131.71	299.68	577.05
297.58	0.00	298.64	138.04	299.70	587.38
297.60	0.00	298.66	144.45	299.72	597.78
297.62	0.00	298.68	150.95	299.74	608.23
297.64	0.00	298.70	157.54	299.76	618.75
297.66	0.00	298.72	164.22	299.78	629.33
297.68	0.00	298.74	170.98	299.80	639.96
297.70	0.00	298.76	177.83	299.82	650.66
297.72	0.00	298.78	184.76	299.84	661.41
297.74	0.00	298.80	191.77	299.86	672.23
297.76	0.00	298.82	199.00	299.88	683.10
297.78	0.00	298.84	206.33	299.90	694.03
297.80	0.00	298.86	213.74	299.92	705.01
297.82	0.00	298.88	221.24	299.94	716.06
297.84	0.00	298.90	228.82	299.96	727.16
297.86	0.00	298.92	236.49	299.98	738.32
297.88	0.00	298.94	244.25	300.00	**749.53**
297.90	0.00	298.96	252.08		
297.92	0.00	298.98	260.00		
297.94	0.00	299.00	268.00		
297.96	0.00	299.02	275.87		
297.98	0.00	299.04	283.82		
298.00	0.00	299.06	291.82		
298.02	0.66	299.08	299.90		
298.04	1.87	299.10	308.04		
298.06	3.44	299.12	316.24		
298.08	5.29	299.14	324.50		
298.10	7.40	299.16	332.83		
298.12	9.73	299.18	341.22		
298.14	12.26	299.20	349.67		
298.16	14.98	299.22	358.31		
298.18	17.87	299.24	367.02		
298.20	20.93	299.26	375.79		
298.22	24.31	299.28	384.63		
298.24	27.89	299.30	393.53		
298.26	31.66	299.32	402.50		
298.28	35.62	299.34	411.52		
298.30	39.76	299.36	420.61		
298.32	44.10	299.38	429.76		
298.34	48.61	299.40	438.97		
298.36	53.31	299.42	448.41		
298.38	58.19	299.44	457.92		
298.40	63.25	299.46	467.49		
298.42	68.59	299.48	477.13		
298.44	74.13	299.50	486.84		

Stage-Area-Storage for Pond P2: Large Shallow Onsite Depression

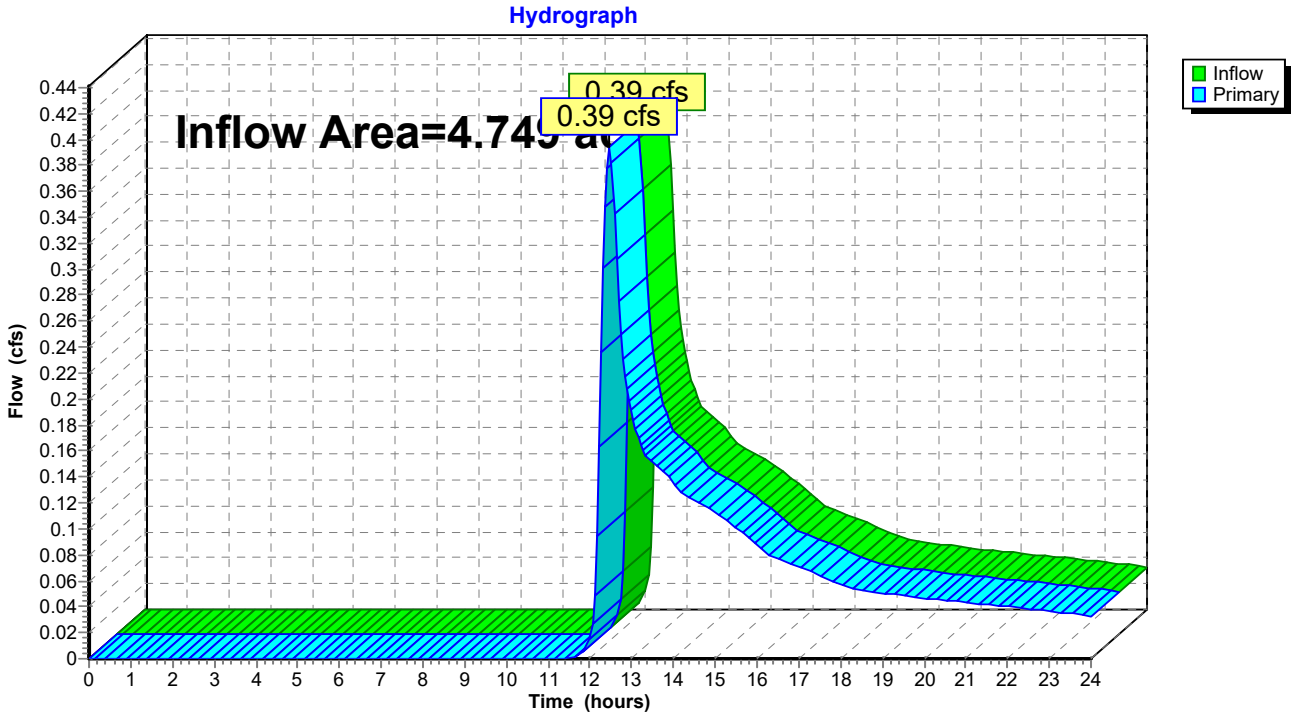
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
297.40	0	0
297.45	1,764	44
297.50	3,528	176
297.55	5,291	397
297.60	7,055	705
297.65	8,819	1,102
297.70	10,583	1,587
297.75	12,346	2,161
297.80	14,110	2,822
297.85	15,874	3,572
297.90	17,637	4,409
297.95	19,401	5,335
298.00	21,165	6,350
298.05	23,220	7,459
298.10	25,274	8,671
298.15	27,329	9,987
298.20	29,384	11,404
298.25	31,439	12,925
298.30	33,493	14,548
298.35	35,548	16,274
298.40	37,603	18,103
298.45	39,658	20,035
298.50	41,713	22,069
298.55	43,767	24,206
298.60	45,822	26,446
298.65	47,877	28,788
298.70	49,931	31,233
298.75	51,986	33,781
298.80	54,041	36,432
298.85	56,096	39,185
298.90	58,150	42,041
298.95	60,205	45,000
299.00	62,260	48,062
299.05	64,315	51,226
299.10	66,369	54,493
299.15	68,424	57,863
299.20	70,479	61,336
299.25	72,534	64,911
299.30	74,588	68,589
299.35	76,643	72,370
299.40	78,698	76,254
299.45	80,753	80,240
299.50	82,808	84,329
299.55	84,862	88,521
299.60	86,917	92,815
299.65	88,972	97,212
299.70	91,026	101,712
299.75	93,081	106,315
299.80	95,136	111,020
299.85	97,191	115,829
299.90	99,245	120,739
299.95	101,300	125,753
300.00	**103,355**	**130,870**

Summary for Link N: POI North

Inflow Area = 4.749 ac, 1.19% Impervious, Inflow Depth > 0.21" for 1-Year event
Inflow = 0.39 cfs @ 12.47 hrs, Volume= 0.085 af
Primary = 0.39 cfs @ 12.47 hrs, Volume= 0.085 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link N: POI North



Hydrograph for Link N: POI North

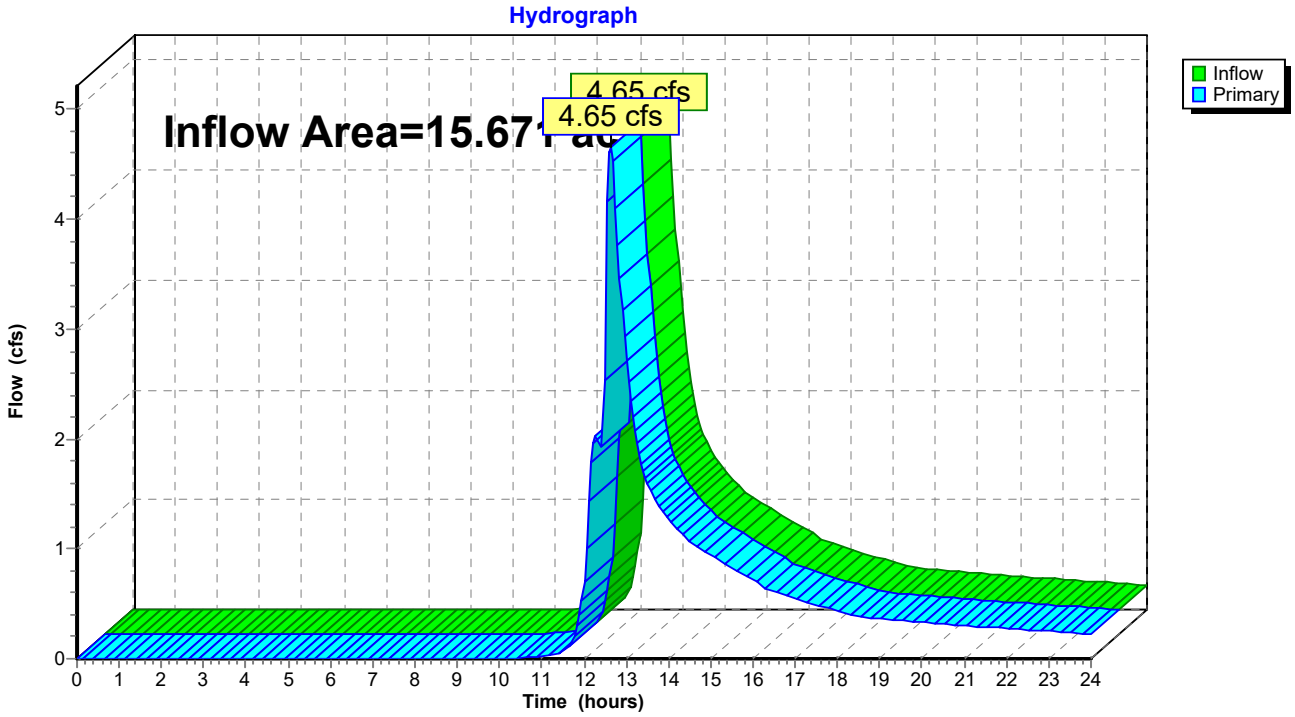
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00
0.25	0.00	0.00	0.00
0.50	0.00	0.00	0.00
0.75	0.00	0.00	0.00
1.00	0.00	0.00	0.00
1.25	0.00	0.00	0.00
1.50	0.00	0.00	0.00
1.75	0.00	0.00	0.00
2.00	0.00	0.00	0.00
2.25	0.00	0.00	0.00
2.50	0.00	0.00	0.00
2.75	0.00	0.00	0.00
3.00	0.00	0.00	0.00
3.25	0.00	0.00	0.00
3.50	0.00	0.00	0.00
3.75	0.00	0.00	0.00
4.00	0.00	0.00	0.00
4.25	0.00	0.00	0.00
4.50	0.00	0.00	0.00
4.75	0.00	0.00	0.00
5.00	0.00	0.00	0.00
5.25	0.00	0.00	0.00
5.50	0.00	0.00	0.00
5.75	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.25	0.00	0.00	0.00
6.50	0.00	0.00	0.00
6.75	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.25	0.00	0.00	0.00
7.50	0.00	0.00	0.00
7.75	0.00	0.00	0.00
8.00	0.00	0.00	0.00
8.25	0.00	0.00	0.00
8.50	0.00	0.00	0.00
8.75	0.00	0.00	0.00
9.00	0.00	0.00	0.00
9.25	0.00	0.00	0.00
9.50	0.00	0.00	0.00
9.75	0.00	0.00	0.00
10.00	0.00	0.00	0.00
10.25	0.00	0.00	0.00
10.50	0.00	0.00	0.00
10.75	0.00	0.00	0.00
11.00	0.00	0.00	0.00
11.25	0.00	0.00	0.00
11.50	0.00	0.00	0.00
11.75	0.00	0.00	0.00
12.00	0.02	0.00	0.02
12.25	**0.24**	0.00	**0.24**
12.50	**0.39**	0.00	**0.39**
12.75	0.25	0.00	0.25
13.00	0.19	0.00	0.19
13.25	0.16	0.00	0.16
13.50	0.15	0.00	0.15
13.75	0.14	0.00	0.14
14.00	0.14	0.00	0.14
14.25	0.13	0.00	0.13
14.50	0.12	0.00	0.12
14.75	0.12	0.00	0.12
15.00	0.11	0.00	0.11
15.25	0.11	0.00	0.11
15.50	0.10	0.00	0.10
15.75	0.09	0.00	0.09
16.00	0.09	0.00	0.09
16.25	0.08	0.00	0.08
16.50	0.08	0.00	0.08
16.75	0.07	0.00	0.07
17.00	0.07	0.00	0.07
17.25	0.07	0.00	0.07
17.50	0.06	0.00	0.06
17.75	0.06	0.00	0.06
18.00	0.06	0.00	0.06
18.25	0.05	0.00	0.05
18.50	0.05	0.00	0.05
18.75	0.05	0.00	0.05
19.00	0.05	0.00	0.05
19.25	0.05	0.00	0.05
19.50	0.05	0.00	0.05
19.75	0.05	0.00	0.05
20.00	0.05	0.00	0.05
20.25	0.05	0.00	0.05
20.50	0.04	0.00	0.04
20.75	0.04	0.00	0.04
21.00	0.04	0.00	0.04
21.25	0.04	0.00	0.04
21.50	0.04	0.00	0.04
21.75	0.04	0.00	0.04
22.00	0.04	0.00	0.04
22.25	0.04	0.00	0.04
22.50	0.04	0.00	0.04
22.75	0.04	0.00	0.04
23.00	0.04	0.00	0.04
23.25	0.04	0.00	0.04
23.50	0.03	0.00	0.03
23.75	0.03	0.00	0.03
24.00	0.03	0.00	0.03

Summary for Link S: POI South

Inflow Area = 15.671 ac, 12.35% Impervious, Inflow Depth > 0.60" for 1-Year event
Inflow = 4.65 cfs @ 12.63 hrs, Volume= 0.788 af
Primary = 4.65 cfs @ 12.63 hrs, Volume= 0.788 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link S: POI South



Hydrograph for Link S: POI South

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	13.25	1.96	0.00	1.96
0.25	0.00	0.00	0.00	13.50	1.59	0.00	1.59
0.50	0.00	0.00	0.00	13.75	1.40	0.00	1.40
0.75	0.00	0.00	0.00	14.00	1.28	0.00	1.28
1.00	0.00	0.00	0.00	14.25	1.17	0.00	1.17
1.25	0.00	0.00	0.00	14.50	1.07	0.00	1.07
1.50	0.00	0.00	0.00	14.75	1.00	0.00	1.00
1.75	0.00	0.00	0.00	15.00	0.94	0.00	0.94
2.00	0.00	0.00	0.00	15.25	0.88	0.00	0.88
2.25	0.00	0.00	0.00	15.50	0.83	0.00	0.83
2.50	0.00	0.00	0.00	15.75	0.77	0.00	0.77
2.75	0.00	0.00	0.00	16.00	0.71	0.00	0.71
3.00	0.00	0.00	0.00	16.25	0.65	0.00	0.65
3.25	0.00	0.00	0.00	16.50	0.61	0.00	0.61
3.50	0.00	0.00	0.00	16.75	0.57	0.00	0.57
3.75	0.00	0.00	0.00	17.00	0.54	0.00	0.54
4.00	0.00	0.00	0.00	17.25	0.52	0.00	0.52
4.25	0.00	0.00	0.00	17.50	0.49	0.00	0.49
4.50	0.00	0.00	0.00	17.75	0.46	0.00	0.46
4.75	0.00	0.00	0.00	18.00	0.43	0.00	0.43
5.00	0.00	0.00	0.00	18.25	0.41	0.00	0.41
5.25	0.00	0.00	0.00	18.50	0.39	0.00	0.39
5.50	0.00	0.00	0.00	18.75	0.37	0.00	0.37
5.75	0.00	0.00	0.00	19.00	0.36	0.00	0.36
6.00	0.00	0.00	0.00	19.25	0.35	0.00	0.35
6.25	0.00	0.00	0.00	19.50	0.35	0.00	0.35
6.50	0.00	0.00	0.00	19.75	0.34	0.00	0.34
6.75	0.00	0.00	0.00	20.00	0.33	0.00	0.33
7.00	0.00	0.00	0.00	20.25	0.32	0.00	0.32
7.25	0.00	0.00	0.00	20.50	0.31	0.00	0.31
7.50	0.00	0.00	0.00	20.75	0.31	0.00	0.31
7.75	0.00	0.00	0.00	21.00	0.30	0.00	0.30
8.00	0.00	0.00	0.00	21.25	0.29	0.00	0.29
8.25	0.00	0.00	0.00	21.50	0.29	0.00	0.29
8.50	0.00	0.00	0.00	21.75	0.28	0.00	0.28
8.75	0.00	0.00	0.00	22.00	0.27	0.00	0.27
9.00	0.00	0.00	0.00	22.25	0.27	0.00	0.27
9.25	0.00	0.00	0.00	22.50	0.26	0.00	0.26
9.50	0.00	0.00	0.00	22.75	0.26	0.00	0.26
9.75	0.00	0.00	0.00	23.00	0.25	0.00	0.25
10.00	0.00	0.00	0.00	23.25	0.24	0.00	0.24
10.25	0.00	0.00	0.00	23.50	0.24	0.00	0.24
10.50	0.00	0.00	0.00	23.75	0.23	0.00	0.23
10.75	0.01	0.00	0.01	24.00	0.22	0.00	0.22
11.00	0.02	0.00	0.02				
11.25	0.04	0.00	0.04				
11.50	0.07	0.00	0.07				
11.75	0.18	0.00	0.18				
12.00	0.70	0.00	0.70				
12.25	2.03	0.00	2.03				
12.50	**3.14**	0.00	**3.14**				
12.75	**4.09**	0.00	**4.09**				
13.00	2.71	0.00	2.71				

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA 1: Drainage Area 1 Runoff Area=32,821 sf 1.83% Impervious Runoff Depth>2.63"
Flow Length=344' Tc=15.6 min CN=80 Runoff=1.73 cfs 0.165 af

Subcatchment DA 2: Drainage Area 2 Runoff Area=404,999 sf 0.60% Impervious Runoff Depth>1.82"
Flow Length=878' Tc=21.1 min CN=70 Runoff=12.70 cfs 1.406 af

Subcatchment DA 3: Drainage Area 3 Runoff Area=199,876 sf 1.24% Impervious Runoff Depth>1.13"
Flow Length=665' Tc=15.8 min CN=60 Runoff=3.89 cfs 0.432 af

Subcatchment DA 4: Drainage Area 4 - Runoff Area=10,931 sf 0.00% Impervious Runoff Depth>2.64"
Flow Length=63' Slope=0.1030 '/' Tc=6.0 min CN=80 Runoff=0.76 cfs 0.055 af

Subcatchment OFF1: Offsite Drainage Runoff Area=123,797 sf 57.81% Impervious Runoff Depth>2.82"
Flow Length=816' Tc=6.0 min CN=82 Runoff=9.20 cfs 0.668 af

Subcatchment OFF2: Offsite Drainage Runoff Area=110,079 sf 8.81% Impervious Runoff Depth>2.81"
Tc=21.1 min CN=82 Runoff=5.49 cfs 0.592 af

Subcatchment OFF3: Offsite Drainage Area 3 Runoff Area=6,977 sf 0.00% Impervious Runoff Depth>2.05"
Tc=15.8 min CN=73 Runoff=0.28 cfs 0.027 af

Pond P1: Ex Onsite Retention Pond Peak Elev=297.52' Storage=9,263 cf Inflow=9.96 cfs 0.723 af
Primary=3.28 cfs 0.708 af Secondary=0.00 cfs 0.000 af Outflow=3.28 cfs 0.708 af

Pond P2: Large Shallow Onsite Peak Elev=298.18' Storage=10,760 cf Inflow=18.18 cfs 1.998 af
Outflow=17.54 cfs 1.847 af

Link N: POI North Inflow=4.17 cfs 0.460 af
Primary=4.17 cfs 0.460 af

Link S: POI South Inflow=22.08 cfs 2.721 af
Primary=22.08 cfs 2.721 af

Total Runoff Area = 20.420 ac Runoff Volume = 3.346 af Average Runoff Depth = 1.97"
90.24% Pervious = 18.427 ac 9.76% Impervious = 1.992 ac

Summary for Subcatchment DA 1: Drainage Area 1

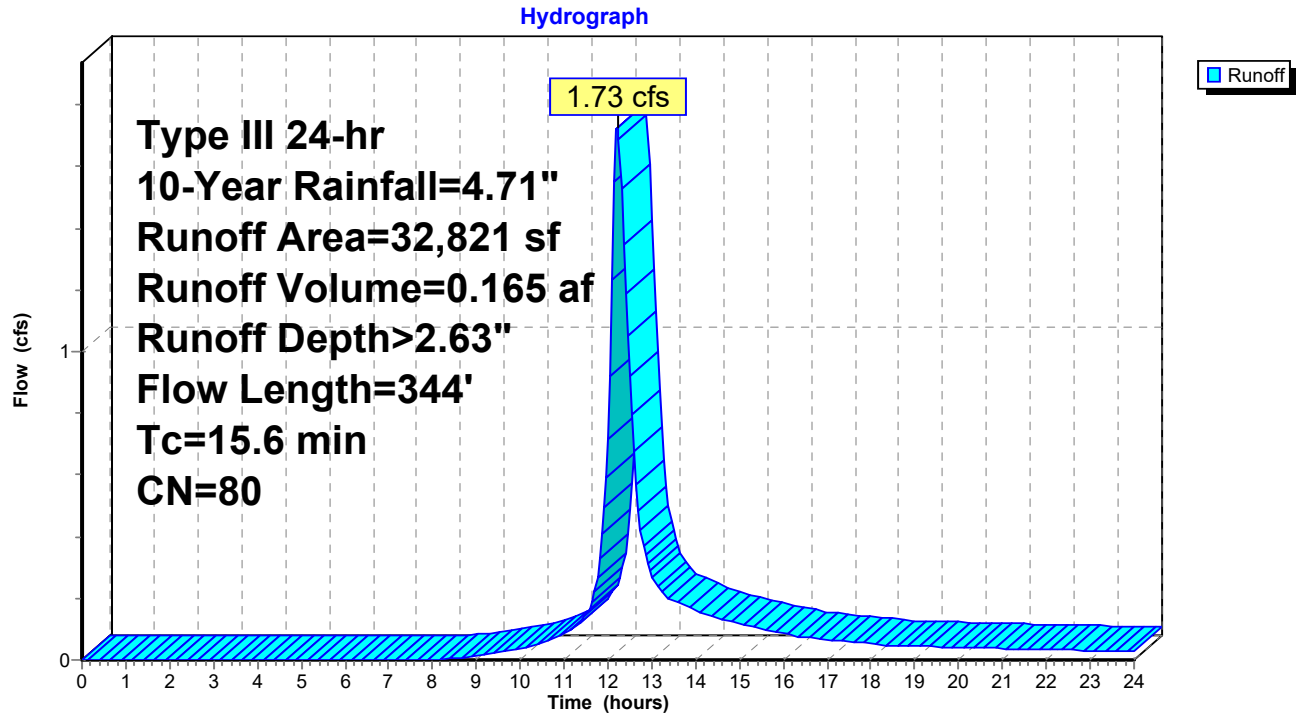
Runoff = 1.73 cfs @ 12.22 hrs, Volume= 0.165 af, Depth> 2.63"
Routed to Link S : POI South

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.71"

	Area (sf)	CN	Description
*	600	98	Macadam Drive
	260	77	Woods, Good, HSG D
	31,961	80	>75% Grass cover, Good, HSG D
	32,821	80	Weighted Average
	32,221		98.17% Pervious Area
	600		1.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0100	0.13		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.11"
2.5	244	0.0120	1.64		**Shallow Concentrated Flow, SCF (Road Swale)** Grassed Waterway Kv= 15.0 fps
15.6	344	Total			

Subcatchment DA 1: Drainage Area 1



Hydrograph for Subcatchment DA 1: Drainage Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.01	0.00	0.00
0.50	0.02	0.00	0.00
0.75	0.04	0.00	0.00
1.00	0.05	0.00	0.00
1.25	0.06	0.00	0.00
1.50	0.07	0.00	0.00
1.75	0.08	0.00	0.00
2.00	0.09	0.00	0.00
2.25	0.11	0.00	0.00
2.50	0.12	0.00	0.00
2.75	0.13	0.00	0.00
3.00	0.14	0.00	0.00
3.25	0.16	0.00	0.00
3.50	0.17	0.00	0.00
3.75	0.19	0.00	0.00
4.00	0.20	0.00	0.00
4.25	0.22	0.00	0.00
4.50	0.23	0.00	0.00
4.75	0.25	0.00	0.00
5.00	0.27	0.00	0.00
5.25	0.28	0.00	0.00
5.50	0.30	0.00	0.00
5.75	0.32	0.00	0.00
6.00	0.34	0.00	0.00
6.25	0.36	0.00	0.00
6.50	0.38	0.00	0.00
6.75	0.40	0.00	0.00
7.00	0.43	0.00	0.00
7.25	0.45	0.00	0.00
7.50	0.48	0.00	0.00
7.75	0.51	0.00	0.00
8.00	0.54	0.00	0.00
8.25	0.57	0.00	0.00
8.50	0.60	0.00	0.01
8.75	0.64	0.01	0.01
9.00	0.69	0.01	0.01
9.25	0.73	0.02	0.02
9.50	0.78	0.03	0.02
9.75	0.83	0.04	0.03
10.00	0.89	0.05	0.04
10.25	0.95	0.07	0.05
10.50	1.02	0.09	0.06
10.75	1.10	0.11	0.07
11.00	1.18	0.14	0.08
11.25	1.28	0.18	0.11
11.50	1.40	0.24	0.15
11.75	1.67	0.37	0.27
12.00	2.35	0.79	**0.72**
12.25	3.04	1.28	**1.69**
12.50	3.31	1.48	0.92
12.75	3.43	1.58	0.42
13.00	3.53	1.66	0.28
13.25	3.61	1.73	0.22
13.50	3.69	1.79	0.19
13.75	3.76	1.84	0.18
14.00	3.82	1.89	0.16
14.25	3.88	1.94	0.14
14.50	3.93	1.98	0.14
14.75	3.98	2.02	0.13
15.00	4.02	2.06	0.12
15.25	4.07	2.10	0.11
15.50	4.11	2.13	0.10
15.75	4.14	2.16	0.09
16.00	4.17	2.19	0.09
16.25	4.20	2.21	0.08
16.50	4.23	2.23	0.07
16.75	4.26	2.26	0.07
17.00	4.28	2.28	0.07
17.25	4.31	2.30	0.06
17.50	4.33	2.32	0.06
17.75	4.35	2.34	0.06
18.00	4.37	2.35	0.05
18.25	4.39	2.37	0.05
18.50	4.41	2.38	0.05
18.75	4.43	2.40	0.05
19.00	4.44	2.41	0.05
19.25	4.46	2.43	0.04
19.50	4.48	2.44	0.04
19.75	4.49	2.45	0.04
20.00	4.51	2.47	0.04
20.25	4.52	2.48	0.04
20.50	4.54	2.49	0.04
20.75	4.55	2.51	0.04
21.00	4.57	2.52	0.04
21.25	4.58	2.53	0.04
21.50	4.59	2.54	0.04
21.75	4.61	2.55	0.03
22.00	4.62	2.56	0.03
22.25	4.63	2.57	0.03
22.50	4.64	2.58	0.03
22.75	4.66	2.59	0.03
23.00	4.67	2.60	0.03
23.25	4.68	2.61	0.03
23.50	4.69	2.62	0.03
23.75	4.70	2.63	0.03
24.00	**4.71**	**2.64**	0.03

Summary for Subcatchment DA 2: Drainage Area 2

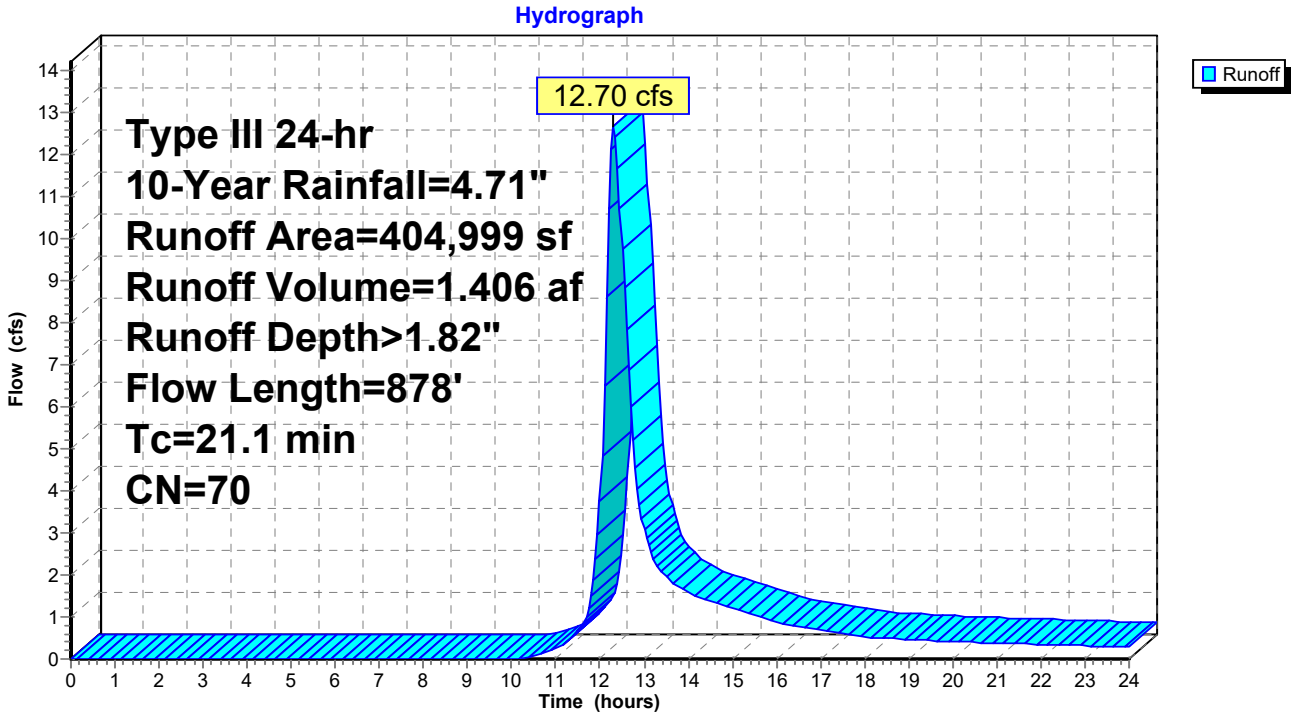
Runoff = 12.70 cfs @ 12.31 hrs, Volume= 1.406 af, Depth> 1.82"
Routed to Pond P2 : Large Shallow Onsite Depression

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.71"

	Area (sf)	CN	Description
*	2,447	98	Misc. Macadam
	82,769	77	Woods, Good, HSG D
	148,017	80	>75% Grass cover, Good, HSG D
	88,344	55	Woods, Good, HSG B
	83,422	61	>75% Grass cover, Good, HSG B
	404,999	70	Weighted Average
	402,552		99.40% Pervious Area
	2,447		0.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	100	0.0180	0.16		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.11"
10.7	778	0.0300	1.21		**Shallow Concentrated Flow, SCF** Short Grass Pasture Kv= 7.0 fps
21.1	878	Total			

Subcatchment DA 2: Drainage Area 2



Hydrograph for Subcatchment DA 2: Drainage Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.01	0.00	0.00
0.50	0.02	0.00	0.00
0.75	0.04	0.00	0.00
1.00	0.05	0.00	0.00
1.25	0.06	0.00	0.00
1.50	0.07	0.00	0.00
1.75	0.08	0.00	0.00
2.00	0.09	0.00	0.00
2.25	0.11	0.00	0.00
2.50	0.12	0.00	0.00
2.75	0.13	0.00	0.00
3.00	0.14	0.00	0.00
3.25	0.16	0.00	0.00
3.50	0.17	0.00	0.00
3.75	0.19	0.00	0.00
4.00	0.20	0.00	0.00
4.25	0.22	0.00	0.00
4.50	0.23	0.00	0.00
4.75	0.25	0.00	0.00
5.00	0.27	0.00	0.00
5.25	0.28	0.00	0.00
5.50	0.30	0.00	0.00
5.75	0.32	0.00	0.00
6.00	0.34	0.00	0.00
6.25	0.36	0.00	0.00
6.50	0.38	0.00	0.00
6.75	0.40	0.00	0.00
7.00	0.43	0.00	0.00
7.25	0.45	0.00	0.00
7.50	0.48	0.00	0.00
7.75	0.51	0.00	0.00
8.00	0.54	0.00	0.00
8.25	0.57	0.00	0.00
8.50	0.60	0.00	0.00
8.75	0.64	0.00	0.00
9.00	0.69	0.00	0.00
9.25	0.73	0.00	0.00
9.50	0.78	0.00	0.00
9.75	0.83	0.00	0.00
10.00	0.89	0.00	0.00
10.25	0.95	0.00	0.02
10.50	1.02	0.01	0.08
10.75	1.10	0.01	0.17
11.00	1.18	0.02	0.27
11.25	1.28	0.04	0.41
11.50	1.40	0.06	0.65
11.75	1.67	0.13	1.22
12.00	2.35	0.39	3.74
12.25	3.04	0.73	**12.15**
12.50	3.31	0.89	**9.78**
12.75	3.43	0.97	5.20
13.00	3.53	1.03	3.09
13.25	3.61	1.08	2.27
13.50	3.69	1.13	1.94
13.75	3.76	1.17	1.77
14.00	3.82	1.21	1.61
14.25	3.88	1.25	1.46
14.50	3.93	1.28	1.36
14.75	3.98	1.31	1.28
15.00	4.02	1.35	1.21
15.25	4.07	1.37	1.13
15.50	4.11	1.40	1.05
15.75	4.14	1.42	0.97
16.00	4.17	1.45	0.89
16.25	4.20	1.47	0.81
16.50	4.23	1.49	0.76
16.75	4.26	1.50	0.72
17.00	4.28	1.52	0.69
17.25	4.31	1.54	0.65
17.50	4.33	1.55	0.62
17.75	4.35	1.57	0.58
18.00	4.37	1.58	0.54
18.25	4.39	1.60	0.51
18.50	4.41	1.61	0.49
18.75	4.43	1.62	0.48
19.00	4.44	1.63	0.46
19.25	4.46	1.65	0.45
19.50	4.48	1.66	0.44
19.75	4.49	1.67	0.43
20.00	4.51	1.68	0.42
20.25	4.52	1.69	0.41
20.50	4.54	1.70	0.40
20.75	4.55	1.71	0.39
21.00	4.57	1.72	0.38
21.25	4.58	1.73	0.38
21.50	4.59	1.74	0.37
21.75	4.61	1.75	0.36
22.00	4.62	1.76	0.35
22.25	4.63	1.77	0.34
22.50	4.64	1.78	0.33
22.75	4.66	1.78	0.33
23.00	4.67	1.79	0.32
23.25	4.68	1.80	0.31
23.50	4.69	1.81	0.30
23.75	4.70	1.82	0.29
24.00	**4.71**	**1.82**	0.28

Summary for Subcatchment DA 3: Drainage Area 3

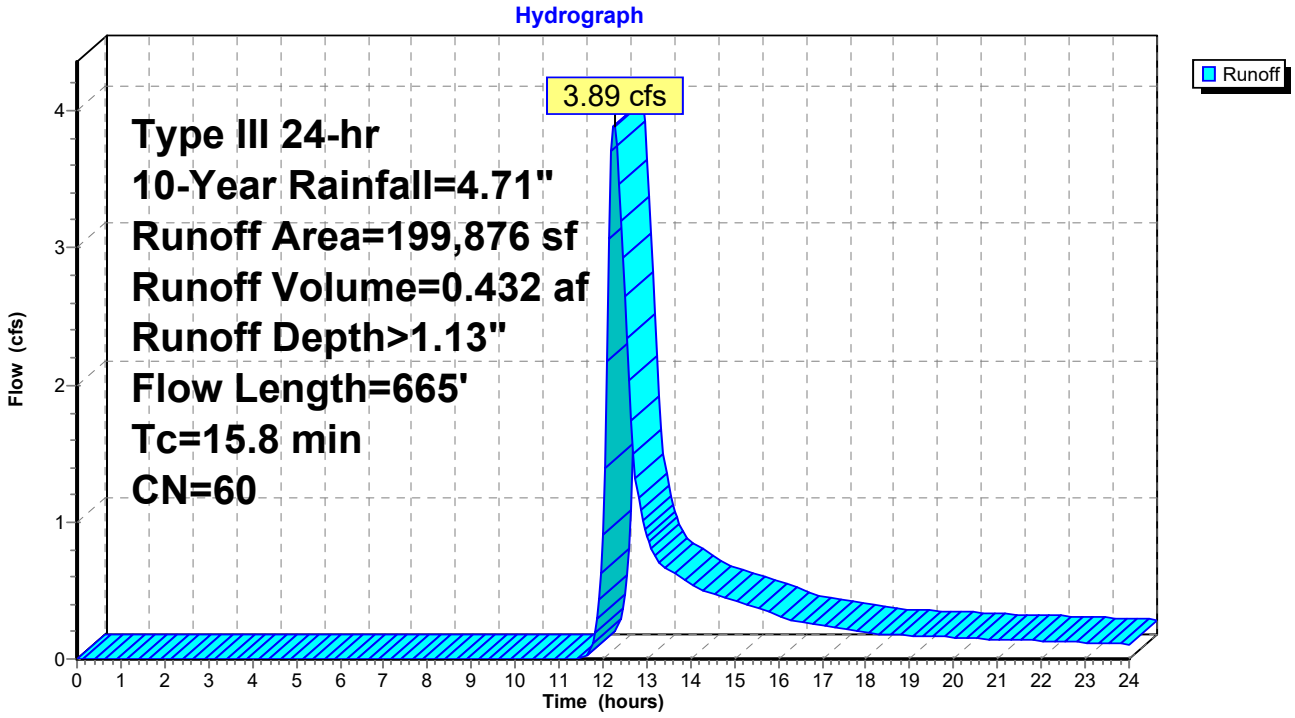
Runoff = 3.89 cfs @ 12.25 hrs, Volume= 0.432 af, Depth> 1.13"
Routed to Link N : POI North

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.71"

	Area (sf)	CN	Description
*	2,471	98	Impervious
	63,897	61	>75% Grass cover, Good, HSG B
	112,976	55	Woods, Good, HSG B
	10,735	80	>75% Grass cover, Good, HSG D
	9,797	77	Woods, Good, HSG D
	199,876	60	Weighted Average
	197,405		98.76% Pervious Area
	2,471		1.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.0240	0.18		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.11"
6.6	565	0.0410	1.42		**Shallow Concentrated Flow, SCF** Short Grass Pasture Kv= 7.0 fps
15.8	665	Total			

Subcatchment DA 3: Drainage Area 3



Hydrograph for Subcatchment DA 3: Drainage Area 3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.01	0.00	0.00
0.50	0.02	0.00	0.00
0.75	0.04	0.00	0.00
1.00	0.05	0.00	0.00
1.25	0.06	0.00	0.00
1.50	0.07	0.00	0.00
1.75	0.08	0.00	0.00
2.00	0.09	0.00	0.00
2.25	0.11	0.00	0.00
2.50	0.12	0.00	0.00
2.75	0.13	0.00	0.00
3.00	0.14	0.00	0.00
3.25	0.16	0.00	0.00
3.50	0.17	0.00	0.00
3.75	0.19	0.00	0.00
4.00	0.20	0.00	0.00
4.25	0.22	0.00	0.00
4.50	0.23	0.00	0.00
4.75	0.25	0.00	0.00
5.00	0.27	0.00	0.00
5.25	0.28	0.00	0.00
5.50	0.30	0.00	0.00
5.75	0.32	0.00	0.00
6.00	0.34	0.00	0.00
6.25	0.36	0.00	0.00
6.50	0.38	0.00	0.00
6.75	0.40	0.00	0.00
7.00	0.43	0.00	0.00
7.25	0.45	0.00	0.00
7.50	0.48	0.00	0.00
7.75	0.51	0.00	0.00
8.00	0.54	0.00	0.00
8.25	0.57	0.00	0.00
8.50	0.60	0.00	0.00
8.75	0.64	0.00	0.00
9.00	0.69	0.00	0.00
9.25	0.73	0.00	0.00
9.50	0.78	0.00	0.00
9.75	0.83	0.00	0.00
10.00	0.89	0.00	0.00
10.25	0.95	0.00	0.00
10.50	1.02	0.00	0.00
10.75	1.10	0.00	0.00
11.00	1.18	0.00	0.00
11.25	1.28	0.00	0.00
11.50	1.40	0.00	0.00
11.75	1.67	0.02	0.11
12.00	2.35	0.14	0.91
12.25	3.04	0.35	**3.89**
12.50	3.31	0.45	2.64
12.75	3.43	0.50	1.31
13.00	3.53	0.55	0.90
13.25	3.61	0.58	0.72
13.50	3.69	0.62	0.65
13.75	3.76	0.65	0.60
14.00	3.82	0.68	0.55
14.25	3.88	0.70	0.51
14.50	3.93	0.73	0.48
14.75	3.98	0.75	0.45
15.00	4.02	0.77	0.43
15.25	4.07	0.79	0.40
15.50	4.11	0.81	0.37
15.75	4.14	0.83	0.35
16.00	4.17	0.85	0.32
16.25	4.20	0.86	0.29
16.50	4.23	0.88	0.28
16.75	4.26	0.89	0.26
17.00	4.28	0.91	0.25
17.25	4.31	0.92	0.24
17.50	4.33	0.93	0.22
17.75	4.35	0.94	0.21
18.00	4.37	0.95	0.20
18.25	4.39	0.96	0.19
18.50	4.41	0.97	0.18
18.75	4.43	0.98	0.18
19.00	4.44	0.99	0.17
19.25	4.46	1.00	0.17
19.50	4.48	1.01	0.17
19.75	4.49	1.02	0.16
20.00	4.51	1.02	0.16
20.25	4.52	1.03	0.15
20.50	4.54	1.04	0.15
20.75	4.55	1.05	0.15
21.00	4.57	1.06	0.14
21.25	4.58	1.06	0.14
21.50	4.59	1.07	0.14
21.75	4.61	1.08	0.14
22.00	4.62	1.08	0.13
22.25	4.63	1.09	0.13
22.50	4.64	1.10	0.13
22.75	4.66	1.11	0.12
23.00	4.67	1.11	0.12
23.25	4.68	1.12	0.12
23.50	4.69	1.12	0.11
23.75	4.70	1.13	0.11
24.00	**4.71**	**1.14**	0.11

Summary for Subcatchment DA 4: Drainage Area 4 - Onsite Tributary to Pond

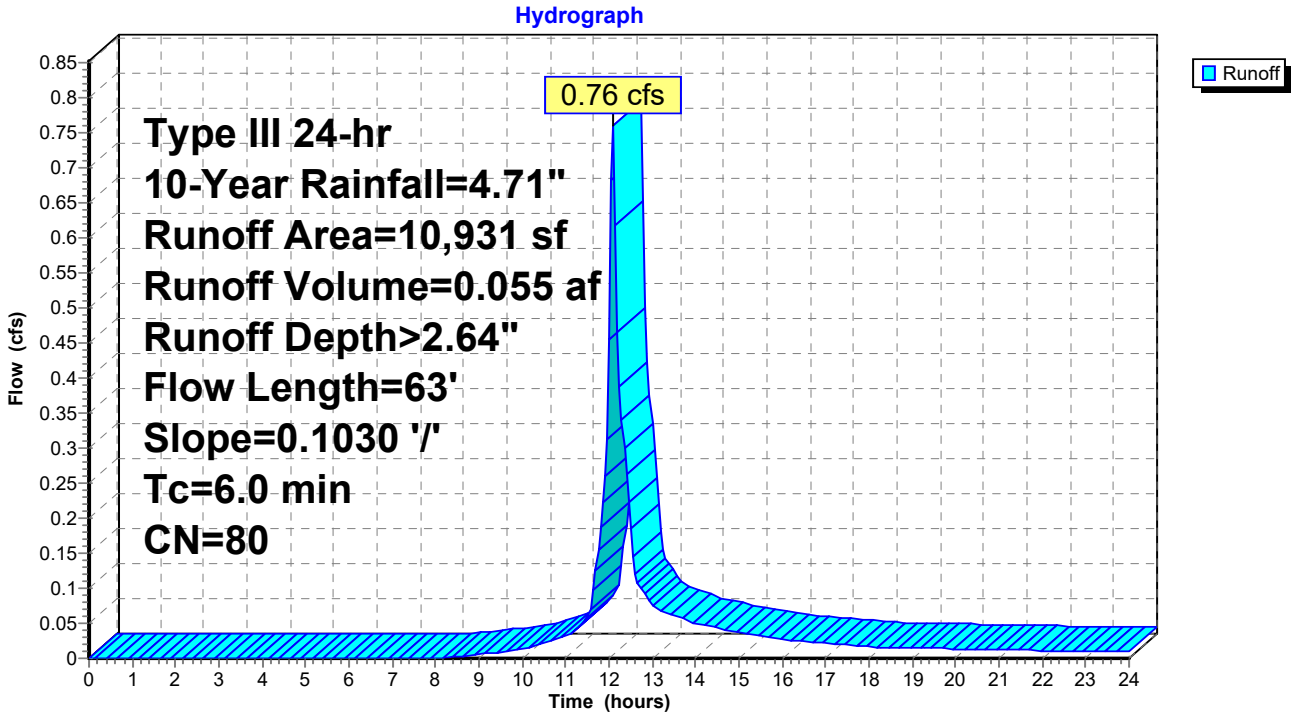
Runoff = 0.76 cfs @ 12.09 hrs, Volume= 0.055 af, Depth> 2.64"
Routed to Pond P1 : Ex Onsite Retention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.71"

Area (sf)	CN	Description
10,931	80	>75% Grass cover, Good, HSG D
10,931		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	63	0.1030	0.29		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.11"
2.4					**Direct Entry, + Entry to Reach Minimum**
6.0	63	Total			

Subcatchment DA 4: Drainage Area 4 - Onsite Tributary to Pond



Hydrograph for Subcatchment DA 4: Drainage Area 4 - Onsite Tributary to Pond

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.01	0.00	0.00
0.50	0.02	0.00	0.00
0.75	0.04	0.00	0.00
1.00	0.05	0.00	0.00
1.25	0.06	0.00	0.00
1.50	0.07	0.00	0.00
1.75	0.08	0.00	0.00
2.00	0.09	0.00	0.00
2.25	0.11	0.00	0.00
2.50	0.12	0.00	0.00
2.75	0.13	0.00	0.00
3.00	0.14	0.00	0.00
3.25	0.16	0.00	0.00
3.50	0.17	0.00	0.00
3.75	0.19	0.00	0.00
4.00	0.20	0.00	0.00
4.25	0.22	0.00	0.00
4.50	0.23	0.00	0.00
4.75	0.25	0.00	0.00
5.00	0.27	0.00	0.00
5.25	0.28	0.00	0.00
5.50	0.30	0.00	0.00
5.75	0.32	0.00	0.00
6.00	0.34	0.00	0.00
6.25	0.36	0.00	0.00
6.50	0.38	0.00	0.00
6.75	0.40	0.00	0.00
7.00	0.43	0.00	0.00
7.25	0.45	0.00	0.00
7.50	0.48	0.00	0.00
7.75	0.51	0.00	0.00
8.00	0.54	0.00	0.00
8.25	0.57	0.00	0.00
8.50	0.60	0.00	0.00
8.75	0.64	0.01	0.00
9.00	0.69	0.01	0.01
9.25	0.73	0.02	0.01
9.50	0.78	0.03	0.01
9.75	0.83	0.04	0.01
10.00	0.89	0.05	0.01
10.25	0.95	0.07	0.02
10.50	1.02	0.09	0.02
10.75	1.10	0.11	0.03
11.00	1.18	0.14	0.03
11.25	1.28	0.18	0.04
11.50	1.40	0.24	0.06
11.75	1.67	0.37	0.16
12.00	2.35	0.79	**0.45**
12.25	3.04	1.28	**0.39**
12.50	3.31	1.48	0.18
12.75	3.43	1.58	0.10
13.00	3.53	1.66	0.08
13.25	3.61	1.73	0.07
13.50	3.69	1.79	0.06
13.75	3.76	1.84	0.06
14.00	3.82	1.89	0.05
14.25	3.88	1.94	0.05
14.50	3.93	1.98	0.04
14.75	3.98	2.02	0.04
15.00	4.02	2.06	0.04
15.25	4.07	2.10	0.04
15.50	4.11	2.13	0.03
15.75	4.14	2.16	0.03
16.00	4.17	2.19	0.03
16.25	4.20	2.21	0.03
16.50	4.23	2.23	0.02
16.75	4.26	2.26	0.02
17.00	4.28	2.28	0.02
17.25	4.31	2.30	0.02
17.50	4.33	2.32	0.02
17.75	4.35	2.34	0.02
18.00	4.37	2.35	0.02
18.25	4.39	2.37	0.02
18.50	4.41	2.38	0.02
18.75	4.43	2.40	0.02
19.00	4.44	2.41	0.01
19.25	4.46	2.43	0.01
19.50	4.48	2.44	0.01
19.75	4.49	2.45	0.01
20.00	4.51	2.47	0.01
20.25	4.52	2.48	0.01
20.50	4.54	2.49	0.01
20.75	4.55	2.51	0.01
21.00	4.57	2.52	0.01
21.25	4.58	2.53	0.01
21.50	4.59	2.54	0.01
21.75	4.61	2.55	0.01
22.00	4.62	2.56	0.01
22.25	4.63	2.57	0.01
22.50	4.64	2.58	0.01
22.75	4.66	2.59	0.01
23.00	4.67	2.60	0.01
23.25	4.68	2.61	0.01
23.50	4.69	2.62	0.01
23.75	4.70	2.63	0.01
24.00	**4.71**	**2.64**	0.01

Summary for Subcatchment OFF1: Offsite Drainage Area 1

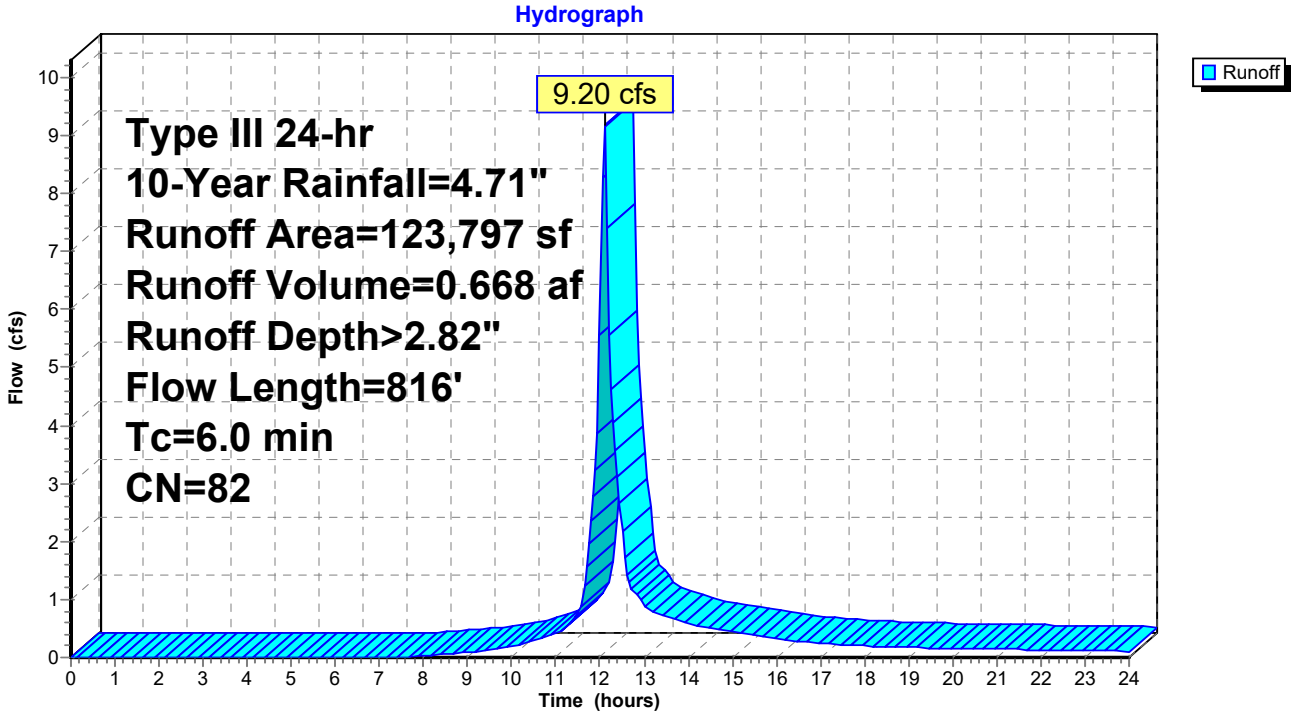
Runoff = 9.20 cfs @ 12.09 hrs, Volume= 0.668 af, Depth> 2.82"
Routed to Pond P1 : Ex Onsite Retention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.71"

	Area (sf)	CN	Description
	52,228	61	>75% Grass cover, Good, HSG B
*	71,569	98	Impervious Surfaces
	123,797	82	Weighted Average
	52,228		42.19% Pervious Area
	71,569		57.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	345	0.0230	3.08		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.4	471	0.0526	17.89	56.21	**Pipe Channel, 24" Pipe from Jehova Site to onsite detention** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
3.7					**Direct Entry, + Entry to Reach Minimum**
6.0	816	Total			

Subcatchment OFF1: Offsite Drainage Area 1



Hydrograph for Subcatchment OFF1: Offsite Drainage Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.01	0.00	0.00
0.50	0.02	0.00	0.00
0.75	0.04	0.00	0.00
1.00	0.05	0.00	0.00
1.25	0.06	0.00	0.00
1.50	0.07	0.00	0.00
1.75	0.08	0.00	0.00
2.00	0.09	0.00	0.00
2.25	0.11	0.00	0.00
2.50	0.12	0.00	0.00
2.75	0.13	0.00	0.00
3.00	0.14	0.00	0.00
3.25	0.16	0.00	0.00
3.50	0.17	0.00	0.00
3.75	0.19	0.00	0.00
4.00	0.20	0.00	0.00
4.25	0.22	0.00	0.00
4.50	0.23	0.00	0.00
4.75	0.25	0.00	0.00
5.00	0.27	0.00	0.00
5.25	0.28	0.00	0.00
5.50	0.30	0.00	0.00
5.75	0.32	0.00	0.00
6.00	0.34	0.00	0.00
6.25	0.36	0.00	0.00
6.50	0.38	0.00	0.00
6.75	0.40	0.00	0.00
7.00	0.43	0.00	0.00
7.25	0.45	0.00	0.00
7.50	0.48	0.00	0.01
7.75	0.51	0.00	0.02
8.00	0.54	0.00	0.03
8.25	0.57	0.01	0.04
8.50	0.60	0.01	0.05
8.75	0.64	0.02	0.07
9.00	0.69	0.03	0.09
9.25	0.73	0.03	0.11
9.50	0.78	0.05	0.14
9.75	0.83	0.06	0.16
10.00	0.89	0.08	0.19
10.25	0.95	0.10	0.24
10.50	1.02	0.12	0.29
10.75	1.10	0.15	0.35
11.00	1.18	0.19	0.41
11.25	1.28	0.23	0.55
11.50	1.40	0.29	0.75
11.75	1.67	0.44	1.95
12.00	2.35	0.89	**5.56**
12.25	3.04	1.41	**4.62**
12.50	3.31	1.62	2.18
12.75	3.43	1.73	1.16
13.00	3.53	1.81	0.91
13.25	3.61	1.88	0.78
13.50	3.69	1.94	0.71
13.75	3.76	2.00	0.65
14.00	3.82	2.05	0.58
14.25	3.88	2.10	0.54
14.50	3.93	2.14	0.51
14.75	3.98	2.18	0.48
15.00	4.02	2.22	0.45
15.25	4.07	2.26	0.41
15.50	4.11	2.29	0.38
15.75	4.14	2.32	0.35
16.00	4.17	2.35	0.32
16.25	4.20	2.38	0.29
16.50	4.23	2.40	0.28
16.75	4.26	2.43	0.27
17.00	4.28	2.45	0.25
17.25	4.31	2.47	0.24
17.50	4.33	2.49	0.22
17.75	4.35	2.51	0.21
18.00	4.37	2.52	0.19
18.25	4.39	2.54	0.19
18.50	4.41	2.56	0.18
18.75	4.43	2.57	0.18
19.00	4.44	2.59	0.17
19.25	4.46	2.60	0.17
19.50	4.48	2.62	0.16
19.75	4.49	2.63	0.16
20.00	4.51	2.64	0.16
20.25	4.52	2.66	0.15
20.50	4.54	2.67	0.15
20.75	4.55	2.68	0.15
21.00	4.57	2.69	0.14
21.25	4.58	2.71	0.14
21.50	4.59	2.72	0.14
21.75	4.61	2.73	0.13
22.00	4.62	2.74	0.13
22.25	4.63	2.75	0.13
22.50	4.64	2.76	0.12
22.75	4.66	2.77	0.12
23.00	4.67	2.78	0.12
23.25	4.68	2.79	0.11
23.50	4.69	2.80	0.11
23.75	4.70	2.81	0.11
24.00	**4.71**	**2.82**	0.10

Summary for Subcatchment OFF2: Offsite Drainage Area 2

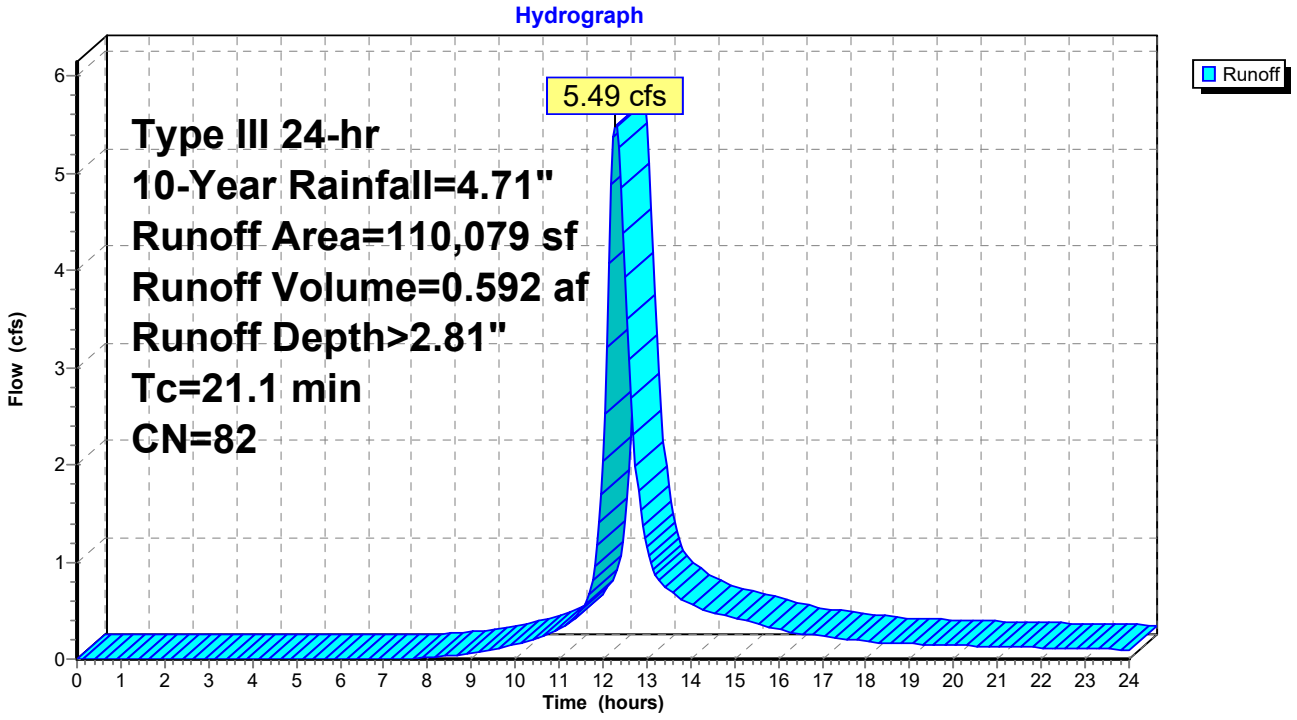
Runoff = 5.49 cfs @ 12.29 hrs, Volume= 0.592 af, Depth> 2.81"
Routed to Pond P2 : Large Shallow Onsite Depression

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.71"

	Area (sf)	CN	Description
	100,377	80	>75% Grass cover, Good, HSG D
*	9,702	98	Impervious Surfaces
	110,079	82	Weighted Average
	100,377		91.19% Pervious Area
	9,702		8.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1					**Direct Entry, Match DA 2 Watershed**

Subcatchment OFF2: Offsite Drainage Area 2



Hydrograph for Subcatchment OFF2: Offsite Drainage Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.01	0.00	0.00
0.50	0.02	0.00	0.00
0.75	0.04	0.00	0.00
1.00	0.05	0.00	0.00
1.25	0.06	0.00	0.00
1.50	0.07	0.00	0.00
1.75	0.08	0.00	0.00
2.00	0.09	0.00	0.00
2.25	0.11	0.00	0.00
2.50	0.12	0.00	0.00
2.75	0.13	0.00	0.00
3.00	0.14	0.00	0.00
3.25	0.16	0.00	0.00
3.50	0.17	0.00	0.00
3.75	0.19	0.00	0.00
4.00	0.20	0.00	0.00
4.25	0.22	0.00	0.00
4.50	0.23	0.00	0.00
4.75	0.25	0.00	0.00
5.00	0.27	0.00	0.00
5.25	0.28	0.00	0.00
5.50	0.30	0.00	0.00
5.75	0.32	0.00	0.00
6.00	0.34	0.00	0.00
6.25	0.36	0.00	0.00
6.50	0.38	0.00	0.00
6.75	0.40	0.00	0.00
7.00	0.43	0.00	0.00
7.25	0.45	0.00	0.00
7.50	0.48	0.00	0.00
7.75	0.51	0.00	0.01
8.00	0.54	0.00	0.02
8.25	0.57	0.01	0.02
8.50	0.60	0.01	0.03
8.75	0.64	0.02	0.05
9.00	0.69	0.03	0.06
9.25	0.73	0.03	0.08
9.50	0.78	0.05	0.10
9.75	0.83	0.06	0.12
10.00	0.89	0.08	0.15
10.25	0.95	0.10	0.18
10.50	1.02	0.12	0.21
10.75	1.10	0.15	0.26
11.00	1.18	0.19	0.31
11.25	1.28	0.23	0.38
11.50	1.40	0.29	0.51
11.75	1.67	0.44	0.81
12.00	2.35	0.89	2.04
12.25	3.04	1.41	**5.38**
12.50	3.31	1.62	**3.94**
12.75	3.43	1.73	1.99
13.00	3.53	1.81	1.15
13.25	3.61	1.88	0.83
13.50	3.69	1.94	0.70
13.75	3.76	2.00	0.63
14.00	3.82	2.05	0.57
14.25	3.88	2.10	0.52
14.50	3.93	2.14	0.48
14.75	3.98	2.18	0.45
15.00	4.02	2.22	0.42
15.25	4.07	2.26	0.39
15.50	4.11	2.29	0.37
15.75	4.14	2.32	0.34
16.00	4.17	2.35	0.31
16.25	4.20	2.38	0.28
16.50	4.23	2.40	0.26
16.75	4.26	2.43	0.25
17.00	4.28	2.45	0.24
17.25	4.31	2.47	0.22
17.50	4.33	2.49	0.21
17.75	4.35	2.51	0.20
18.00	4.37	2.52	0.18
18.25	4.39	2.54	0.17
18.50	4.41	2.56	0.17
18.75	4.43	2.57	0.16
19.00	4.44	2.59	0.16
19.25	4.46	2.60	0.15
19.50	4.48	2.62	0.15
19.75	4.49	2.63	0.15
20.00	4.51	2.64	0.14
20.25	4.52	2.66	0.14
20.50	4.54	2.67	0.13
20.75	4.55	2.68	0.13
21.00	4.57	2.69	0.13
21.25	4.58	2.71	0.13
21.50	4.59	2.72	0.12
21.75	4.61	2.73	0.12
22.00	4.62	2.74	0.12
22.25	4.63	2.75	0.11
22.50	4.64	2.76	0.11
22.75	4.66	2.77	0.11
23.00	4.67	2.78	0.11
23.25	4.68	2.79	0.10
23.50	4.69	2.80	0.10
23.75	4.70	2.81	0.10
24.00	**4.71**	**2.82**	0.09

Summary for Subcatchment OFF3: Offsite Drainage Area 3

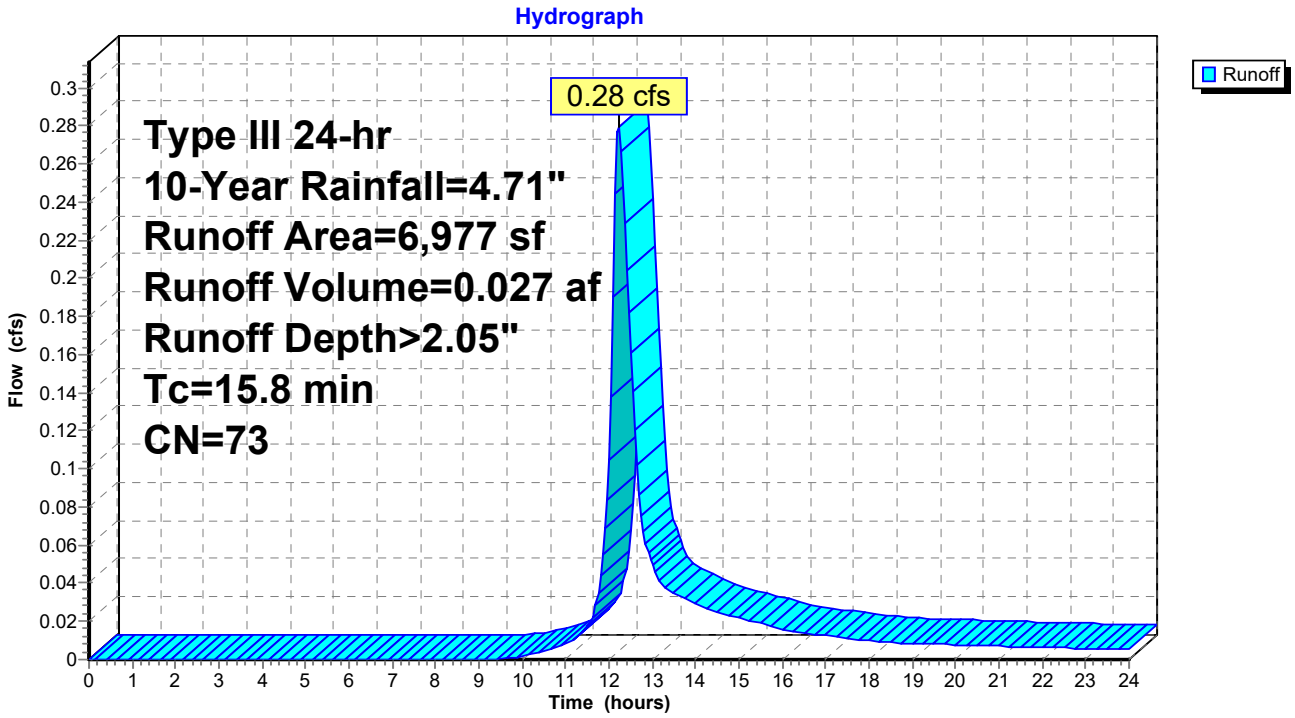
Runoff = 0.28 cfs @ 12.23 hrs, Volume= 0.027 af, Depth> 2.05"
Routed to Link N : POI North

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-Year Rainfall=4.71"

Area (sf)	CN	Description
2,502	61	>75% Grass cover, Good, HSG B
4,475	80	>75% Grass cover, Good, HSG D
6,977	73	Weighted Average
6,977		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.8					**Direct Entry, Match DA 3 Watershed**

Subcatchment OFF3: Offsite Drainage Area 3



Hydrograph for Subcatchment OFF3: Offsite Drainage Area 3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.01	0.00	0.00
0.50	0.02	0.00	0.00
0.75	0.04	0.00	0.00
1.00	0.05	0.00	0.00
1.25	0.06	0.00	0.00
1.50	0.07	0.00	0.00
1.75	0.08	0.00	0.00
2.00	0.09	0.00	0.00
2.25	0.11	0.00	0.00
2.50	0.12	0.00	0.00
2.75	0.13	0.00	0.00
3.00	0.14	0.00	0.00
3.25	0.16	0.00	0.00
3.50	0.17	0.00	0.00
3.75	0.19	0.00	0.00
4.00	0.20	0.00	0.00
4.25	0.22	0.00	0.00
4.50	0.23	0.00	0.00
4.75	0.25	0.00	0.00
5.00	0.27	0.00	0.00
5.25	0.28	0.00	0.00
5.50	0.30	0.00	0.00
5.75	0.32	0.00	0.00
6.00	0.34	0.00	0.00
6.25	0.36	0.00	0.00
6.50	0.38	0.00	0.00
6.75	0.40	0.00	0.00
7.00	0.43	0.00	0.00
7.25	0.45	0.00	0.00
7.50	0.48	0.00	0.00
7.75	0.51	0.00	0.00
8.00	0.54	0.00	0.00
8.25	0.57	0.00	0.00
8.50	0.60	0.00	0.00
8.75	0.64	0.00	0.00
9.00	0.69	0.00	0.00
9.25	0.73	0.00	0.00
9.50	0.78	0.00	0.00
9.75	0.83	0.00	0.00
10.00	0.89	0.01	0.00
10.25	0.95	0.01	0.00
10.50	1.02	0.02	0.00
10.75	1.10	0.03	0.01
11.00	1.18	0.05	0.01
11.25	1.28	0.07	0.01
11.50	1.40	0.10	0.02
11.75	1.67	0.19	0.04
12.00	2.35	0.49	0.10
12.25	3.04	0.88	**0.28**
12.50	3.31	1.05	0.16
12.75	3.43	1.13	0.07
13.00	3.53	1.20	0.05
13.25	3.61	1.26	0.04
13.50	3.69	1.31	0.03
13.75	3.76	1.36	0.03
14.00	3.82	1.40	0.03
14.25	3.88	1.44	0.03
14.50	3.93	1.48	0.02
14.75	3.98	1.51	0.02
15.00	4.02	1.54	0.02
15.25	4.07	1.57	0.02
15.50	4.11	1.60	0.02
15.75	4.14	1.63	0.02
16.00	4.17	1.65	0.02
16.25	4.20	1.67	0.01
16.50	4.23	1.70	0.01
16.75	4.26	1.72	0.01
17.00	4.28	1.73	0.01
17.25	4.31	1.75	0.01
17.50	4.33	1.77	0.01
17.75	4.35	1.78	0.01
18.00	4.37	1.80	0.01
18.25	4.39	1.81	0.01
18.50	4.41	1.83	0.01
18.75	4.43	1.84	0.01
19.00	4.44	1.85	0.01
19.25	4.46	1.87	0.01
19.50	4.48	1.88	0.01
19.75	4.49	1.89	0.01
20.00	4.51	1.90	0.01
20.25	4.52	1.91	0.01
20.50	4.54	1.92	0.01
20.75	4.55	1.93	0.01
21.00	4.57	1.95	0.01
21.25	4.58	1.96	0.01
21.50	4.59	1.97	0.01
21.75	4.61	1.98	0.01
22.00	4.62	1.99	0.01
22.25	4.63	2.00	0.01
22.50	4.64	2.00	0.01
22.75	4.66	2.01	0.01
23.00	4.67	2.02	0.01
23.25	4.68	2.03	0.01
23.50	4.69	2.04	0.01
23.75	4.70	2.05	0.01
24.00	**4.71**	**2.06**	0.01

Summary for Pond P1: Ex Onsite Retention Pond

[92] Warning: Device #4 is above defined storage
[92] Warning: Device #5 is above defined storage

Inflow Area = 3.093 ac, 53.12% Impervious, Inflow Depth > 2.80" for 10-Year event
Inflow = 9.96 cfs @ 12.09 hrs, Volume= 0.723 af
Outflow = 3.28 cfs @ 12.41 hrs, Volume= 0.708 af, Atten= 67%, Lag= 19.1 min
Primary = 3.28 cfs @ 12.41 hrs, Volume= 0.708 af
Routed to Link S : POI South
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond P2 : Large Shallow Onsite Depression

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 297.52' @ 12.41 hrs Surf.Area= 5,085 sf Storage= 9,263 cf

Plug-Flow detention time= 48.5 min calculated for 0.708 af (98% of inflow)
Center-of-Mass det. time= 36.7 min (855.3 - 818.7)

Volume	Invert	Avail.Storage	Storage Description
#1	295.30'	18,859 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

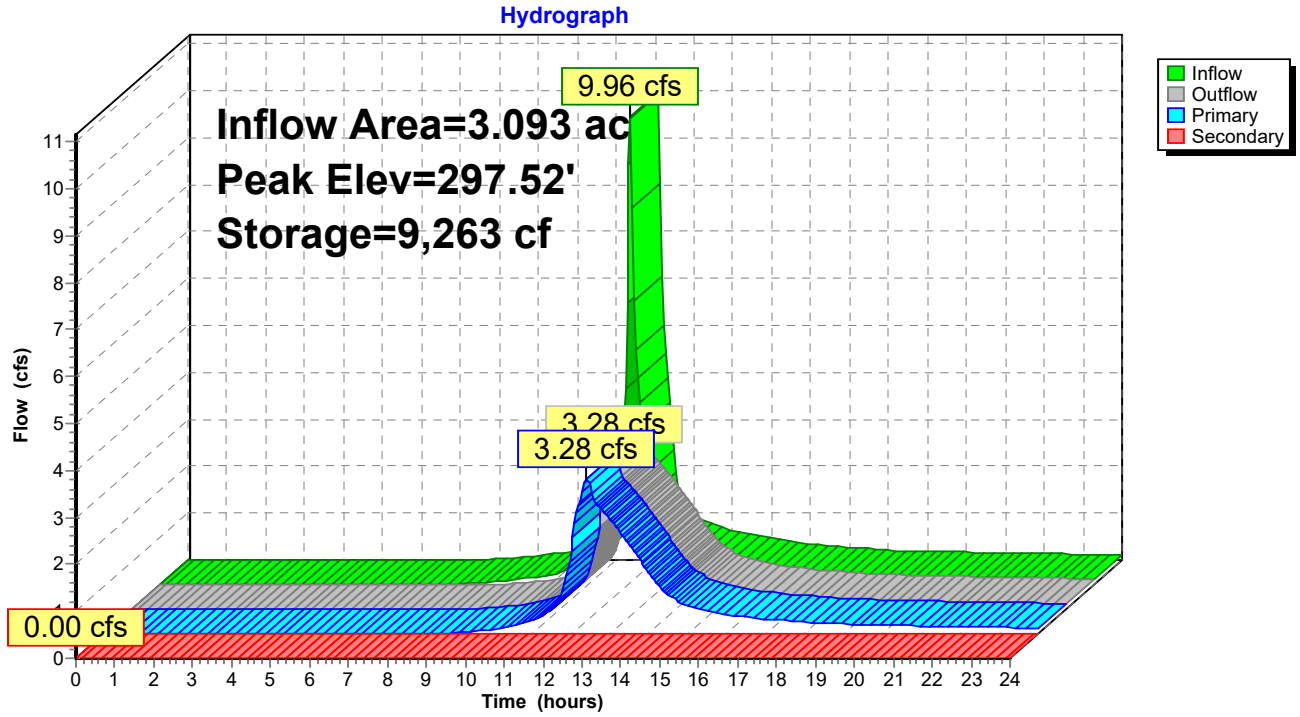
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
295.30	3,441	0	0
296.00	3,790	2,531	2,531
298.00	5,497	9,287	11,818
299.00	6,080	5,789	17,606
299.20	6,450	1,253	18,859

Device	Routing	Invert	Outlet Devices
#1	Primary	295.00'	**24.0" Round Culvert** L= 409.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 295.00' / 292.10' S= 0.0071 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	295.30'	**9.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	297.40'	**41.2 deg x 3.0' long x 1.33' rise Sharp-Crested Vee/Trap Weir** Cv= 2.57 (C= 3.21)
#4	Device 1	299.40'	**48.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	299.20'	**40.0' long x 4.0' breadth Broad-Crested Rectangular Weir** 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

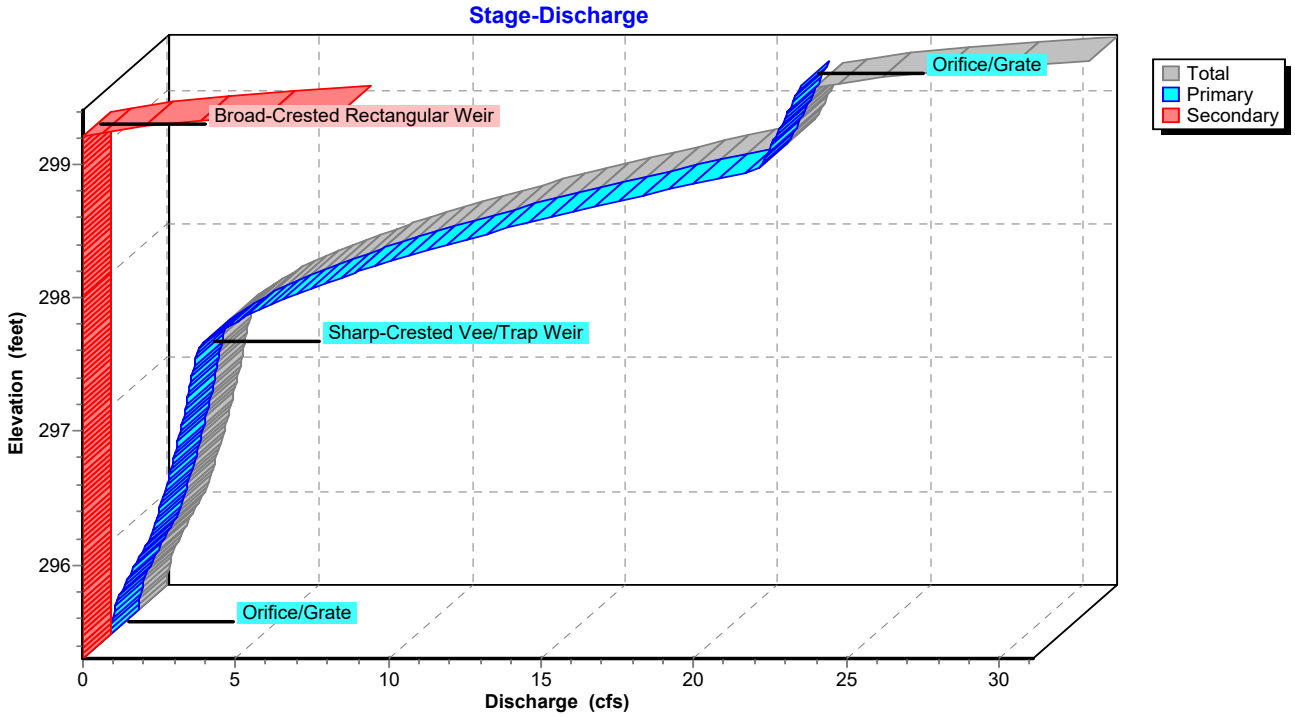
Primary OutFlow Max=3.27 cfs @ 12.41 hrs HW=297.52' (Free Discharge)
└─**1=Culvert** (Passes 3.27 cfs of 18.62 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 2.89 cfs @ 6.53 fps)
  └─**3=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.38 cfs @ 1.09 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=295.30' (Free Discharge)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

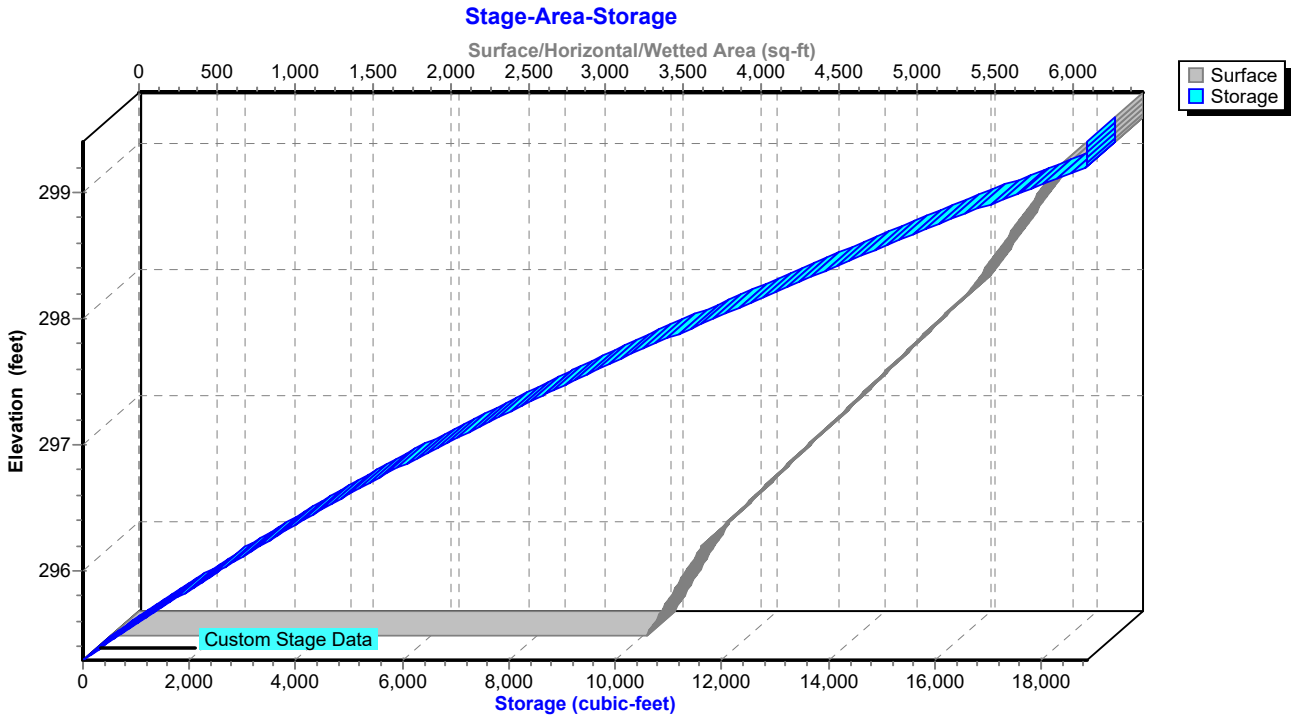
Pond P1: Ex Onsite Retention Pond



Pond P1: Ex Onsite Retention Pond



Pond P1: Ex Onsite Retention Pond



Hydrograph for Pond P1: Ex Onsite Retention Pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	295.30	0.00	0.00	**0.00**
0.50	0.00	0	295.30	0.00	0.00	0.00
1.00	0.00	0	295.30	0.00	0.00	0.00
1.50	0.00	0	295.30	0.00	0.00	0.00
2.00	0.00	0	295.30	0.00	0.00	0.00
2.50	0.00	0	295.30	0.00	0.00	0.00
3.00	0.00	0	295.30	0.00	0.00	0.00
3.50	0.00	0	295.30	0.00	0.00	0.00
4.00	0.00	0	295.30	0.00	0.00	0.00
4.50	0.00	0	295.30	0.00	0.00	0.00
5.00	0.00	0	295.30	0.00	0.00	0.00
5.50	0.00	0	295.30	0.00	0.00	0.00
6.00	0.00	0	295.30	0.00	0.00	0.00
6.50	0.00	0	295.30	0.00	0.00	0.00
7.00	0.00	0	295.30	0.00	0.00	0.00
7.50	0.01	4	295.30	0.00	0.00	0.00
8.00	0.03	33	295.31	0.00	0.00	0.00
8.50	0.05	99	295.33	0.00	0.00	0.00
9.00	0.09	215	295.36	0.02	0.02	0.00
9.50	0.15	378	295.41	0.05	0.05	0.00
10.00	0.21	569	295.46	0.10	0.10	0.00
10.50	0.31	783	295.52	0.18	0.18	0.00
11.00	0.44	1,031	295.59	0.30	0.30	0.00
11.50	0.81	1,411	295.70	0.51	0.51	0.00
12.00	**6.02**	**3,920**	**296.35**	**1.75**	**1.75**	0.00
12.50	**2.37**	**9,131**	**297.49**	**3.14**	**3.14**	0.00
13.00	0.99	6,702	296.99	2.44	2.44	0.00
13.50	0.77	4,343	296.45	1.88	1.88	0.00
14.00	0.63	2,742	296.06	1.31	1.31	0.00
14.50	0.55	1,899	295.83	0.83	0.83	0.00
15.00	0.48	1,563	295.74	0.61	0.61	0.00
15.50	0.41	1,383	295.69	0.50	0.50	0.00
16.00	0.34	1,246	295.65	0.41	0.41	0.00
16.50	0.30	1,137	295.62	0.35	0.35	0.00
17.00	0.27	1,060	295.60	0.31	0.31	0.00
17.50	0.24	995	295.58	0.28	0.28	0.00
18.00	0.21	930	295.57	0.25	0.25	0.00
18.50	0.20	876	295.55	0.22	0.22	0.00
19.00	0.19	841	295.54	0.20	0.20	0.00
19.50	0.18	814	295.53	0.19	0.19	0.00
20.00	0.17	789	295.53	0.18	0.18	0.00
20.50	0.16	767	295.52	0.17	0.17	0.00
21.00	0.15	748	295.51	0.16	0.16	0.00
21.50	0.15	730	295.51	0.16	0.16	0.00
22.00	0.14	713	295.50	0.15	0.15	0.00
22.50	0.13	695	295.50	0.14	0.14	0.00
23.00	0.13	676	295.49	0.14	0.14	0.00
23.50	0.12	657	295.49	0.13	0.13	0.00
24.00	0.11	637	295.48	0.12	0.12	0.00

Stage-Discharge for Pond P1: Ex Onsite Retention Pond

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
295.30	0.00	0.00	0.00
295.35	0.01	0.01	0.00
295.40	0.04	0.04	0.00
295.45	0.08	0.08	0.00
295.50	0.14	0.14	0.00
295.55	0.22	0.22	0.00
295.60	0.31	0.31	0.00
295.65	0.41	0.41	0.00
295.70	0.52	0.52	0.00
295.75	0.63	0.63	0.00
295.80	0.75	0.75	0.00
295.85	0.88	0.88	0.00
295.90	1.00	1.00	0.00
295.95	1.12	1.12	0.00
296.00	1.22	1.22	0.00
296.05	1.30	1.30	0.00
296.10	1.39	1.39	0.00
296.15	1.47	1.47	0.00
296.20	1.54	1.54	0.00
296.25	1.61	1.61	0.00
296.30	1.68	1.68	0.00
296.35	1.75	1.75	0.00
296.40	1.81	1.81	0.00
296.45	1.87	1.87	0.00
296.50	1.93	1.93	0.00
296.55	1.99	1.99	0.00
296.60	2.05	2.05	0.00
296.65	2.10	2.10	0.00
296.70	2.15	2.15	0.00
296.75	2.21	2.21	0.00
296.80	2.26	2.26	0.00
296.85	2.31	2.31	0.00
296.90	2.35	2.35	0.00
296.95	2.40	2.40	0.00
297.00	2.45	2.45	0.00
297.05	2.49	2.49	0.00
297.10	2.54	2.54	0.00
297.15	2.58	2.58	0.00
297.20	2.63	2.63	0.00
297.25	2.67	2.67	0.00
297.30	2.71	2.71	0.00
297.35	2.75	2.75	0.00
297.40	2.79	2.79	0.00
297.45	2.94	2.94	0.00
297.50	3.18	3.18	0.00
297.55	3.48	3.48	0.00
297.60	3.83	3.83	0.00
297.65	4.22	4.22	0.00
297.70	4.66	4.66	0.00
297.75	5.13	5.13	0.00
297.80	5.64	5.64	0.00
297.85	6.18	6.18	0.00
297.90	6.75	6.75	0.00
297.95	7.36	7.36	0.00
298.00	7.99	7.99	0.00
298.05	8.66	8.66	0.00
298.10	9.35	9.35	0.00
298.15	10.08	10.08	0.00
298.20	10.83	10.83	0.00
298.25	11.61	11.61	0.00
298.30	12.42	12.42	0.00
298.35	13.25	13.25	0.00
298.40	14.11	14.11	0.00
298.45	15.00	15.00	0.00
298.50	15.92	15.92	0.00
298.55	16.86	16.86	0.00
298.60	17.83	17.83	0.00
298.65	18.83	18.83	0.00
298.70	19.85	19.85	0.00
298.75	20.86	20.86	0.00
298.80	21.28	21.28	0.00
298.85	21.39	21.39	0.00
298.90	21.50	21.50	0.00
298.95	21.62	21.62	0.00
299.00	21.73	21.73	0.00
299.05	21.84	21.84	0.00
299.10	21.95	21.95	0.00
299.15	22.06	22.06	0.00
299.20	22.17	22.17	0.00
299.25	23.34	22.27	1.06
299.30	25.39	22.38	3.01
299.35	28.02	22.49	5.53
299.40	**31.11**	**22.60**	**8.51**

Stage-Area-Storage for Pond P1: Ex Onsite Retention Pond

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
295.30	3,441	0
295.35	3,466	173
295.40	3,491	347
295.45	3,516	522
295.50	3,541	698
295.55	3,566	876
295.60	3,591	1,055
295.65	3,616	1,235
295.70	3,640	1,416
295.75	3,665	1,599
295.80	3,690	1,783
295.85	3,715	1,968
295.90	3,740	2,154
295.95	3,765	2,342
296.00	3,790	2,531
296.05	3,833	2,721
296.10	3,875	2,914
296.15	3,918	3,109
296.20	3,961	3,306
296.25	4,003	3,505
296.30	4,046	3,706
296.35	4,089	3,910
296.40	4,131	4,115
296.45	4,174	4,323
296.50	4,217	4,533
296.55	4,259	4,744
296.60	4,302	4,958
296.65	4,345	5,175
296.70	4,387	5,393
296.75	4,430	5,613
296.80	4,473	5,836
296.85	4,515	6,061
296.90	4,558	6,288
296.95	4,601	6,516
297.00	4,644	6,748
297.05	4,686	6,981
297.10	4,729	7,216
297.15	4,772	7,454
297.20	4,814	7,693
297.25	4,857	7,935
297.30	4,900	8,179
297.35	4,942	8,425
297.40	4,985	8,673
297.45	5,028	8,924
297.50	5,070	9,176
297.55	5,113	9,431
297.60	5,156	9,687
297.65	5,198	9,946
297.70	5,241	10,207
297.75	5,284	10,470
297.80	5,326	10,736
297.85	5,369	11,003
297.90	5,412	11,272
297.95	5,454	11,544
298.00	5,497	11,818
298.05	5,526	12,093
298.10	5,555	12,370
298.15	5,584	12,649
298.20	5,614	12,929
298.25	5,643	13,210
298.30	5,672	13,493
298.35	5,701	13,778
298.40	5,730	14,063
298.45	5,759	14,351
298.50	5,789	14,639
298.55	5,818	14,929
298.60	5,847	15,221
298.65	5,876	15,514
298.70	5,905	15,809
298.75	5,934	16,105
298.80	5,963	16,402
298.85	5,993	16,701
298.90	6,022	17,001
298.95	6,051	17,303
299.00	6,080	17,606
299.05	6,173	17,913
299.10	6,265	18,224
299.15	6,358	18,539
299.20	**6,450**	**18,859**
299.25	6,450	18,859
299.30	6,450	18,859
299.35	6,450	18,859
299.40	6,450	18,859

Summary for Pond P2: Large Shallow Onsite Depression

Inflow Area = 11.825 ac, 2.36% Impervious, Inflow Depth > 2.03" for 10-Year event
Inflow = 18.18 cfs @ 12.30 hrs, Volume= 1.998 af
Outflow = 17.54 cfs @ 12.36 hrs, Volume= 1.847 af, Atten= 4%, Lag= 3.5 min
Primary = 17.54 cfs @ 12.36 hrs, Volume= 1.847 af
Routed to Link S : POI South

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 298.18' @ 12.36 hrs Surf.Area= 28,468 sf Storage= 10,760 cf

Plug-Flow detention time= 56.7 min calculated for 1.847 af (92% of inflow)
Center-of-Mass det. time= 19.0 min (871.7 - 852.7)

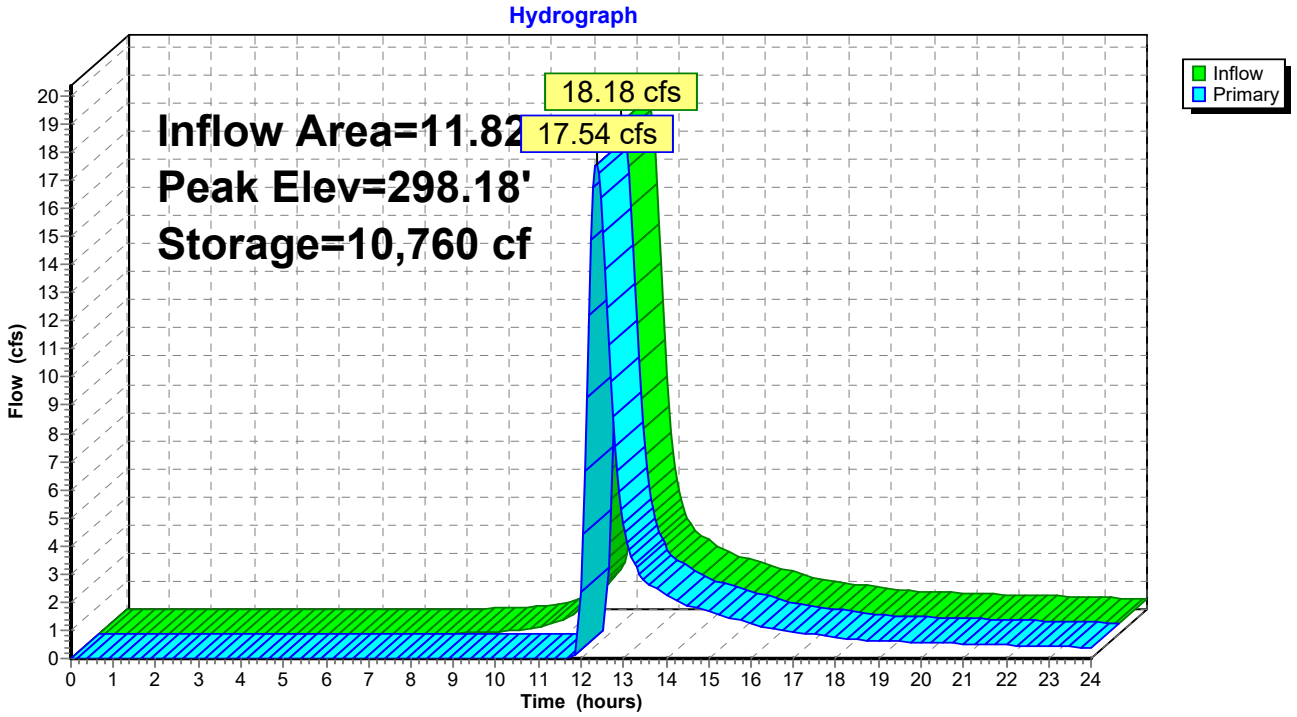
Volume	Invert	Avail.Storage	Storage Description
#1	297.40'	130,870 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
297.40	0	0	0
298.00	21,165	6,350	6,350
300.00	103,355	124,520	130,870

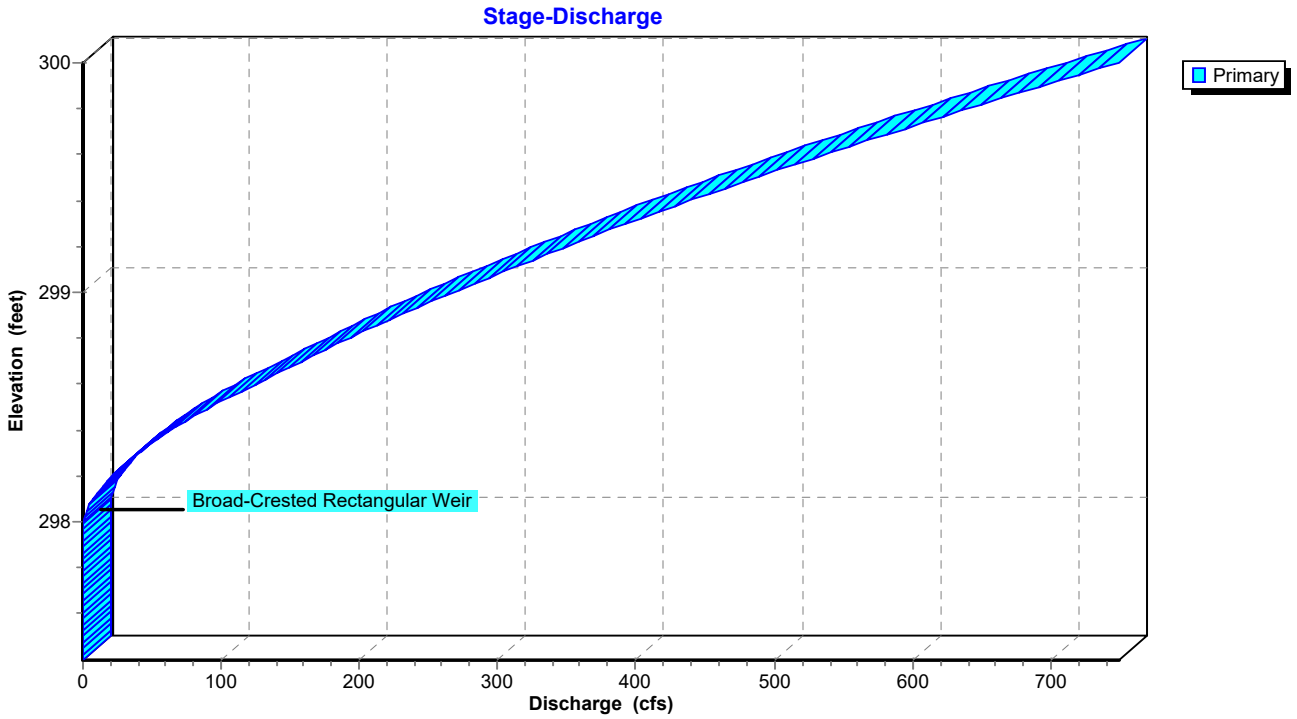
Device	Routing	Invert	Outlet Devices
#1	Primary	298.00'	**100.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=17.43 cfs @ 12.36 hrs HW=298.18' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 17.43 cfs @ 0.98 fps)

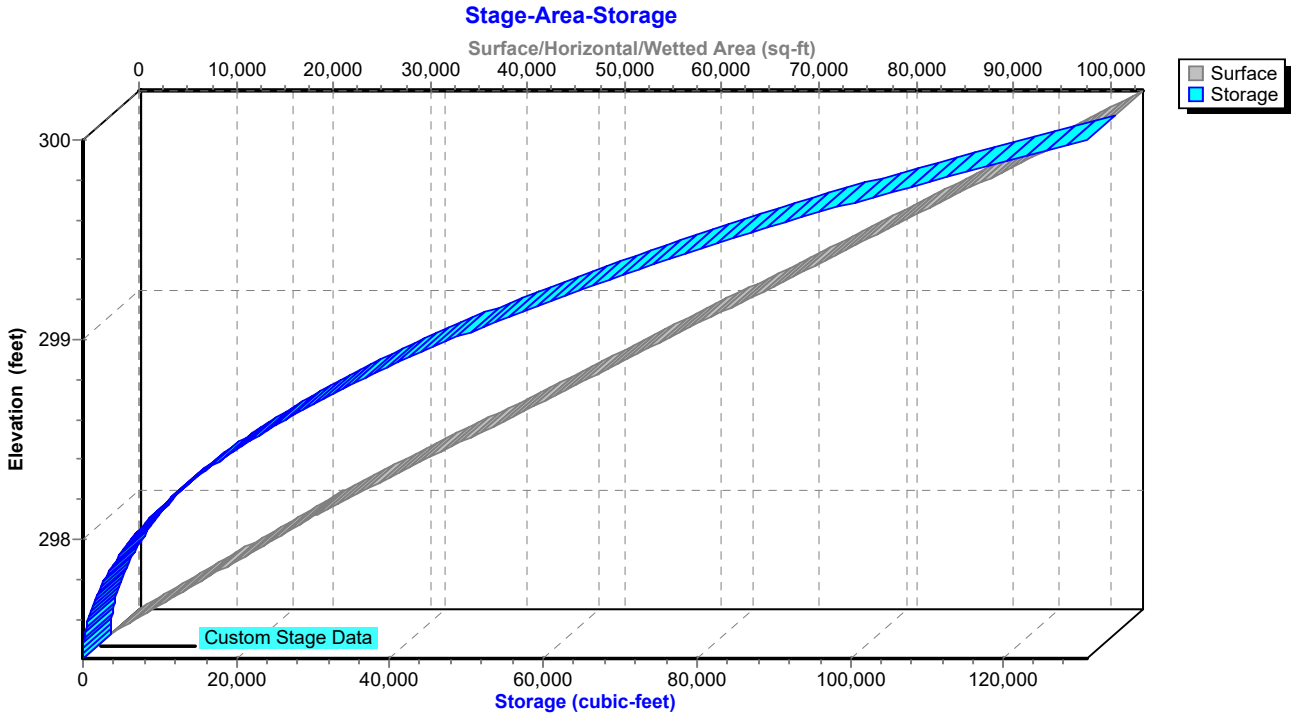
Pond P2: Large Shallow Onsite Depression



Pond P2: Large Shallow Onsite Depression



Pond P2: Large Shallow Onsite Depression



Hydrograph for Pond P2: Large Shallow Onsite Depression

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	297.40	0.00
0.50	0.00	0	297.40	0.00
1.00	0.00	0	297.40	0.00
1.50	0.00	0	297.40	0.00
2.00	0.00	0	297.40	0.00
2.50	0.00	0	297.40	0.00
3.00	0.00	0	297.40	0.00
3.50	0.00	0	297.40	0.00
4.00	0.00	0	297.40	0.00
4.50	0.00	0	297.40	0.00
5.00	0.00	0	297.40	0.00
5.50	0.00	0	297.40	0.00
6.00	0.00	0	297.40	0.00
6.50	0.00	0	297.40	0.00
7.00	0.00	0	297.40	0.00
7.50	0.00	1	297.40	0.00
8.00	0.02	16	297.43	0.00
8.50	0.03	59	297.46	0.00
9.00	0.06	146	297.49	0.00
9.50	0.10	292	297.53	0.00
10.00	0.15	516	297.57	0.00
10.50	0.30	892	297.62	0.00
11.00	0.58	1,671	297.71	0.00
11.50	1.15	3,137	297.82	0.00
12.00	**5.78**	**7,374**	**298.05**	**2.36**
12.50	**13.72**	**10,292**	**298.16**	**15.14**
13.00	4.24	8,055	298.08	4.82
13.50	2.64	7,496	298.05	2.75
14.00	2.18	7,340	298.04	2.26
14.50	1.84	7,215	298.04	1.89
15.00	1.63	7,140	298.04	1.67
15.50	1.42	7,068	298.03	1.46
16.00	1.20	6,994	298.03	1.24
16.50	1.02	6,930	298.03	1.05
17.00	0.92	6,893	298.03	0.94
17.50	0.83	6,858	298.02	0.85
18.00	0.73	6,803	298.02	0.76
18.50	0.65	6,751	298.02	0.67
19.00	0.62	6,727	298.02	0.63
19.50	0.59	6,709	298.02	0.60
20.00	0.56	6,692	298.02	0.57
20.50	0.54	6,675	298.02	0.54
21.00	0.51	6,661	298.01	0.52
21.50	0.49	6,647	298.01	0.50
22.00	0.47	6,634	298.01	0.48
22.50	0.45	6,620	298.01	0.45
23.00	0.42	6,607	298.01	0.43
23.50	0.40	6,593	298.01	0.41
24.00	0.38	6,579	298.01	0.38

Stage-Discharge for Pond P2: Large Shallow Onsite Depression

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
297.40	0.00	298.46	79.87	299.52	496.61
297.42	0.00	298.48	85.80	299.54	506.44
297.44	0.00	298.50	91.92	299.56	516.34
297.46	0.00	298.52	98.24	299.58	526.30
297.48	0.00	298.54	104.76	299.60	536.32
297.50	0.00	298.56	111.47	299.62	546.41
297.52	0.00	298.58	118.38	299.64	556.56
297.54	0.00	298.60	125.48	299.66	566.77
297.56	0.00	298.62	131.71	299.68	577.05
297.58	0.00	298.64	138.04	299.70	587.38
297.60	0.00	298.66	144.45	299.72	597.78
297.62	0.00	298.68	150.95	299.74	608.23
297.64	0.00	298.70	157.54	299.76	618.75
297.66	0.00	298.72	164.22	299.78	629.33
297.68	0.00	298.74	170.98	299.80	639.96
297.70	0.00	298.76	177.83	299.82	650.66
297.72	0.00	298.78	184.76	299.84	661.41
297.74	0.00	298.80	191.77	299.86	672.23
297.76	0.00	298.82	199.00	299.88	683.10
297.78	0.00	298.84	206.33	299.90	694.03
297.80	0.00	298.86	213.74	299.92	705.01
297.82	0.00	298.88	221.24	299.94	716.06
297.84	0.00	298.90	228.82	299.96	727.16
297.86	0.00	298.92	236.49	299.98	738.32
297.88	0.00	298.94	244.25	300.00	**749.53**
297.90	0.00	298.96	252.08		
297.92	0.00	298.98	260.00		
297.94	0.00	299.00	268.00		
297.96	0.00	299.02	275.87		
297.98	0.00	299.04	283.82		
298.00	0.00	299.06	291.82		
298.02	0.66	299.08	299.90		
298.04	1.87	299.10	308.04		
298.06	3.44	299.12	316.24		
298.08	5.29	299.14	324.50		
298.10	7.40	299.16	332.83		
298.12	9.73	299.18	341.22		
298.14	12.26	299.20	349.67		
298.16	14.98	299.22	358.31		
298.18	17.87	299.24	367.02		
298.20	20.93	299.26	375.79		
298.22	24.31	299.28	384.63		
298.24	27.89	299.30	393.53		
298.26	31.66	299.32	402.50		
298.28	35.62	299.34	411.52		
298.30	39.76	299.36	420.61		
298.32	44.10	299.38	429.76		
298.34	48.61	299.40	438.97		
298.36	53.31	299.42	448.41		
298.38	58.19	299.44	457.92		
298.40	63.25	299.46	467.49		
298.42	68.59	299.48	477.13		
298.44	74.13	299.50	486.84		

Stage-Area-Storage for Pond P2: Large Shallow Onsite Depression

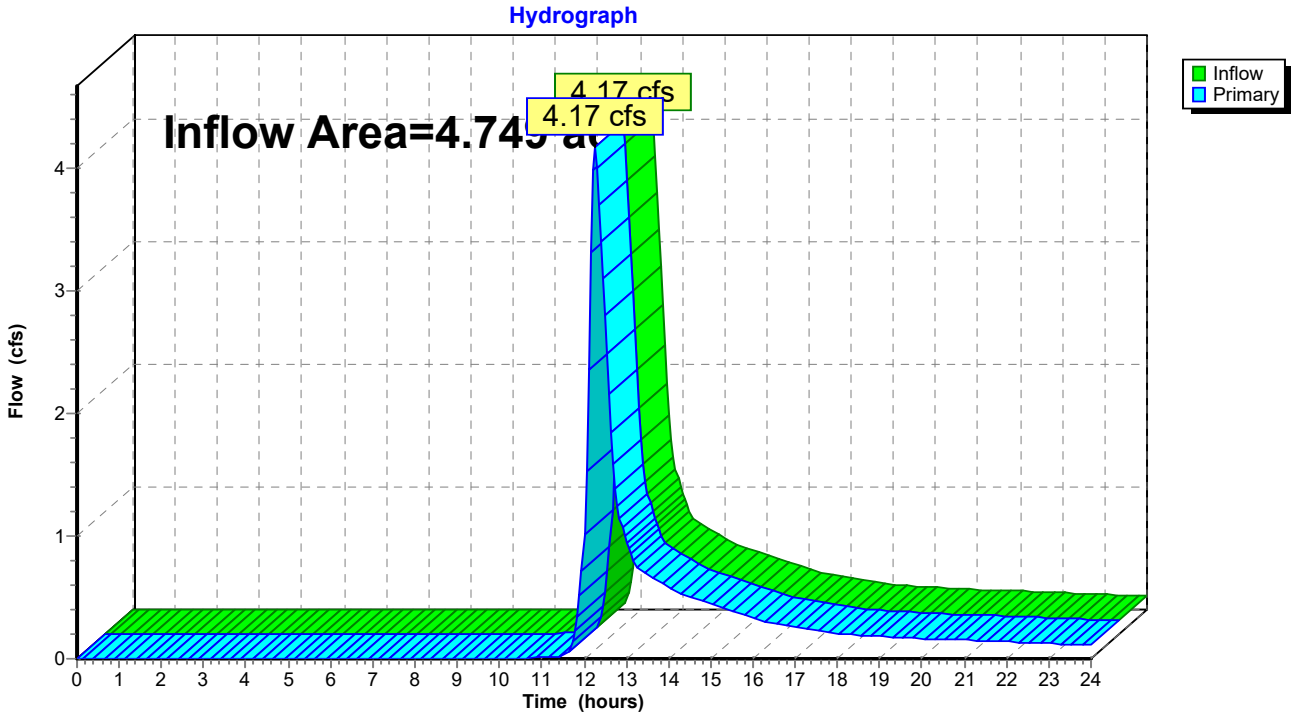
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
297.40	0	0
297.45	1,764	44
297.50	3,528	176
297.55	5,291	397
297.60	7,055	705
297.65	8,819	1,102
297.70	10,583	1,587
297.75	12,346	2,161
297.80	14,110	2,822
297.85	15,874	3,572
297.90	17,637	4,409
297.95	19,401	5,335
298.00	21,165	6,350
298.05	23,220	7,459
298.10	25,274	8,671
298.15	27,329	9,987
298.20	29,384	11,404
298.25	31,439	12,925
298.30	33,493	14,548
298.35	35,548	16,274
298.40	37,603	18,103
298.45	39,658	20,035
298.50	41,713	22,069
298.55	43,767	24,206
298.60	45,822	26,446
298.65	47,877	28,788
298.70	49,931	31,233
298.75	51,986	33,781
298.80	54,041	36,432
298.85	56,096	39,185
298.90	58,150	42,041
298.95	60,205	45,000
299.00	62,260	48,062
299.05	64,315	51,226
299.10	66,369	54,493
299.15	68,424	57,863
299.20	70,479	61,336
299.25	72,534	64,911
299.30	74,588	68,589
299.35	76,643	72,370
299.40	78,698	76,254
299.45	80,753	80,240
299.50	82,808	84,329
299.55	84,862	88,521
299.60	86,917	92,815
299.65	88,972	97,212
299.70	91,026	101,712
299.75	93,081	106,315
299.80	95,136	111,020
299.85	97,191	115,829
299.90	99,245	120,739
299.95	101,300	125,753
300.00	**103,355**	**130,870**

Summary for Link N: POI North

Inflow Area = 4.749 ac, 1.19% Impervious, Inflow Depth > 1.16" for 10-Year event
Inflow = 4.17 cfs @ 12.25 hrs, Volume= 0.460 af
Primary = 4.17 cfs @ 12.25 hrs, Volume= 0.460 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link N: POI North



Hydrograph for Link N: POI North

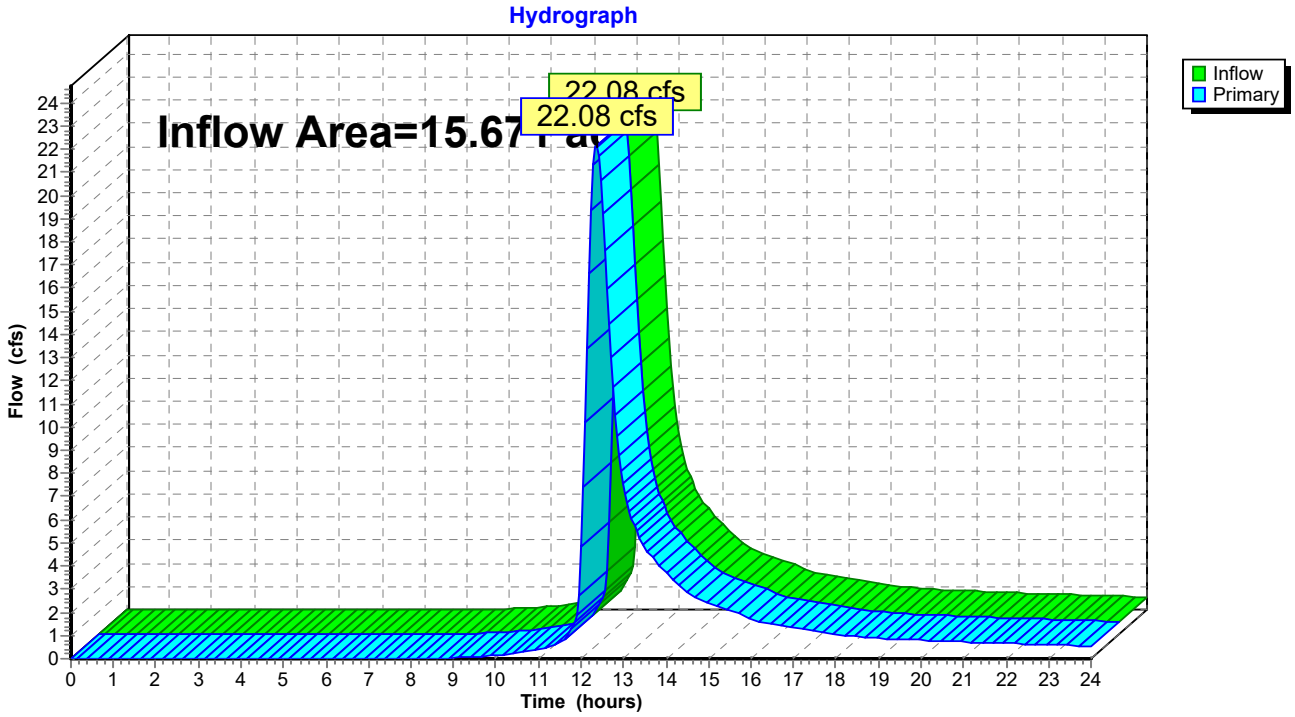
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00
0.25	0.00	0.00	0.00
0.50	0.00	0.00	0.00
0.75	0.00	0.00	0.00
1.00	0.00	0.00	0.00
1.25	0.00	0.00	0.00
1.50	0.00	0.00	0.00
1.75	0.00	0.00	0.00
2.00	0.00	0.00	0.00
2.25	0.00	0.00	0.00
2.50	0.00	0.00	0.00
2.75	0.00	0.00	0.00
3.00	0.00	0.00	0.00
3.25	0.00	0.00	0.00
3.50	0.00	0.00	0.00
3.75	0.00	0.00	0.00
4.00	0.00	0.00	0.00
4.25	0.00	0.00	0.00
4.50	0.00	0.00	0.00
4.75	0.00	0.00	0.00
5.00	0.00	0.00	0.00
5.25	0.00	0.00	0.00
5.50	0.00	0.00	0.00
5.75	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.25	0.00	0.00	0.00
6.50	0.00	0.00	0.00
6.75	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.25	0.00	0.00	0.00
7.50	0.00	0.00	0.00
7.75	0.00	0.00	0.00
8.00	0.00	0.00	0.00
8.25	0.00	0.00	0.00
8.50	0.00	0.00	0.00
8.75	0.00	0.00	0.00
9.00	0.00	0.00	0.00
9.25	0.00	0.00	0.00
9.50	0.00	0.00	0.00
9.75	0.00	0.00	0.00
10.00	0.00	0.00	0.00
10.25	0.00	0.00	0.00
10.50	0.00	0.00	0.00
10.75	0.01	0.00	0.01
11.00	0.01	0.00	0.01
11.25	0.01	0.00	0.01
11.50	0.02	0.00	0.02
11.75	0.15	0.00	0.15
12.00	1.01	0.00	1.01
12.25	**4.17**	0.00	**4.17**
12.50	2.80	0.00	2.80
12.75	1.39	0.00	1.39
13.00	0.95	0.00	0.95
13.25	0.76	0.00	0.76
13.50	0.69	0.00	0.69
13.75	0.63	0.00	0.63
14.00	0.58	0.00	0.58
14.25	0.53	0.00	0.53
14.50	0.50	0.00	0.50
14.75	0.48	0.00	0.48
15.00	0.45	0.00	0.45
15.25	0.42	0.00	0.42
15.50	0.39	0.00	0.39
15.75	0.36	0.00	0.36
16.00	0.33	0.00	0.33
16.25	0.31	0.00	0.31
16.50	0.29	0.00	0.29
16.75	0.28	0.00	0.28
17.00	0.26	0.00	0.26
17.25	0.25	0.00	0.25
17.50	0.24	0.00	0.24
17.75	0.22	0.00	0.22
18.00	0.21	0.00	0.21
18.25	0.19	0.00	0.19
18.50	0.19	0.00	0.19
18.75	0.19	0.00	0.19
19.00	0.18	0.00	0.18
19.25	0.18	0.00	0.18
19.50	0.17	0.00	0.17
19.75	0.17	0.00	0.17
20.00	0.16	0.00	0.16
20.25	0.16	0.00	0.16
20.50	0.16	0.00	0.16
20.75	0.15	0.00	0.15
21.00	0.15	0.00	0.15
21.25	0.15	0.00	0.15
21.50	0.14	0.00	0.14
21.75	0.14	0.00	0.14
22.00	0.14	0.00	0.14
22.25	0.14	0.00	0.14
22.50	0.13	0.00	0.13
22.75	0.13	0.00	0.13
23.00	0.13	0.00	0.13
23.25	0.12	0.00	0.12
23.50	0.12	0.00	0.12
23.75	0.12	0.00	0.12
24.00	0.11	0.00	0.11

Summary for Link S: POI South

Inflow Area = 15.671 ac, 12.35% Impervious, Inflow Depth > 2.08" for 10-Year event
Inflow = 22.08 cfs @ 12.36 hrs, Volume= 2.721 af
Primary = 22.08 cfs @ 12.36 hrs, Volume= 2.721 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link S: POI South



Hydrograph for Link S: POI South

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00
0.25	0.00	0.00	0.00
0.50	0.00	0.00	0.00
0.75	0.00	0.00	0.00
1.00	0.00	0.00	0.00
1.25	0.00	0.00	0.00
1.50	0.00	0.00	0.00
1.75	0.00	0.00	0.00
2.00	0.00	0.00	0.00
2.25	0.00	0.00	0.00
2.50	0.00	0.00	0.00
2.75	0.00	0.00	0.00
3.00	0.00	0.00	0.00
3.25	0.00	0.00	0.00
3.50	0.00	0.00	0.00
3.75	0.00	0.00	0.00
4.00	0.00	0.00	0.00
4.25	0.00	0.00	0.00
4.50	0.00	0.00	0.00
4.75	0.00	0.00	0.00
5.00	0.00	0.00	0.00
5.25	0.00	0.00	0.00
5.50	0.00	0.00	0.00
5.75	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.25	0.00	0.00	0.00
6.50	0.00	0.00	0.00
6.75	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.25	0.00	0.00	0.00
7.50	0.00	0.00	0.00
7.75	0.00	0.00	0.00
8.00	0.00	0.00	0.00
8.25	0.01	0.00	0.01
8.50	0.01	0.00	0.01
8.75	0.02	0.00	0.02
9.00	0.03	0.00	0.03
9.25	0.05	0.00	0.05
9.50	0.07	0.00	0.07
9.75	0.10	0.00	0.10
10.00	0.13	0.00	0.13
10.25	0.18	0.00	0.18
10.50	0.24	0.00	0.24
10.75	0.30	0.00	0.30
11.00	0.38	0.00	0.38
11.25	0.48	0.00	0.48
11.50	0.66	0.00	0.66
11.75	1.15	0.00	1.15
12.00	4.83	0.00	4.83
12.25	**19.38**	0.00	**19.38**
12.50	**19.21**	0.00	**19.21**
12.75	11.71	0.00	11.71
13.00	7.54	0.00	7.54
13.25	5.77	0.00	5.77
13.50	4.82	0.00	4.82
13.75	4.25	0.00	4.25
14.00	3.74	0.00	3.74
14.25	3.24	0.00	3.24
14.50	2.86	0.00	2.86
14.75	2.60	0.00	2.60
15.00	2.40	0.00	2.40
15.25	2.22	0.00	2.22
15.50	2.06	0.00	2.06
15.75	1.90	0.00	1.90
16.00	1.74	0.00	1.74
16.25	1.59	0.00	1.59
16.50	1.47	0.00	1.47
16.75	1.39	0.00	1.39
17.00	1.32	0.00	1.32
17.25	1.25	0.00	1.25
17.50	1.19	0.00	1.19
17.75	1.12	0.00	1.12
18.00	1.06	0.00	1.06
18.25	0.99	0.00	0.99
18.50	0.94	0.00	0.94
18.75	0.91	0.00	0.91
19.00	0.88	0.00	0.88
19.25	0.86	0.00	0.86
19.50	0.84	0.00	0.84
19.75	0.82	0.00	0.82
20.00	0.80	0.00	0.80
20.25	0.77	0.00	0.77
20.50	0.76	0.00	0.76
20.75	0.74	0.00	0.74
21.00	0.72	0.00	0.72
21.25	0.71	0.00	0.71
21.50	0.69	0.00	0.69
21.75	0.68	0.00	0.68
22.00	0.66	0.00	0.66
22.25	0.64	0.00	0.64
22.50	0.63	0.00	0.63
22.75	0.61	0.00	0.61
23.00	0.60	0.00	0.60
23.25	0.58	0.00	0.58
23.50	0.57	0.00	0.57
23.75	0.55	0.00	0.55
24.00	0.53	0.00	0.53

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA 1: Drainage Area 1 Runoff Area=32,821 sf 1.83% Impervious Runoff Depth>3.70"
Flow Length=344' Tc=15.6 min CN=80 Runoff=2.43 cfs 0.232 af

Subcatchment DA 2: Drainage Area 2 Runoff Area=404,999 sf 0.60% Impervious Runoff Depth>2.73"
Flow Length=878' Tc=21.1 min CN=70 Runoff=19.48 cfs 2.115 af

Subcatchment DA 3: Drainage Area 3 Runoff Area=199,876 sf 1.24% Impervious Runoff Depth>1.86"
Flow Length=665' Tc=15.8 min CN=60 Runoff=6.92 cfs 0.712 af

Subcatchment DA 4: Drainage Area 4 - Runoff Area=10,931 sf 0.00% Impervious Runoff Depth>3.71"
Flow Length=63' Slope=0.1030 '/' Tc=6.0 min CN=80 Runoff=1.06 cfs 0.078 af

Subcatchment OFF1: Offsite Drainage Runoff Area=123,797 sf 57.81% Impervious Runoff Depth>3.91"
Flow Length=816' Tc=6.0 min CN=82 Runoff=12.66 cfs 0.926 af

Subcatchment OFF2: Offsite Drainage Runoff Area=110,079 sf 8.81% Impervious Runoff Depth>3.90"
Tc=21.1 min CN=82 Runoff=7.58 cfs 0.821 af

Subcatchment OFF3: Offsite Drainage Area 3 Runoff Area=6,977 sf 0.00% Impervious Runoff Depth>3.01"
Tc=15.8 min CN=73 Runoff=0.42 cfs 0.040 af

Pond P1: Ex Onsite Retention Pond Peak Elev=297.90' Storage=11,276 cf Inflow=13.72 cfs 1.004 af
Primary=6.76 cfs 0.987 af Secondary=0.00 cfs 0.000 af Outflow=6.76 cfs 0.987 af

Pond P2: Large Shallow Onsite Peak Elev=298.23' Storage=12,335 cf Inflow=27.05 cfs 2.936 af
Outflow=26.26 cfs 2.783 af

Link N: POI North Inflow=7.34 cfs 0.752 af
Primary=7.34 cfs 0.752 af

Link S: POI South Inflow=34.53 cfs 4.002 af
Primary=34.53 cfs 4.002 af

Total Runoff Area = 20.420 ac Runoff Volume = 4.924 af Average Runoff Depth = 2.89"
90.24% Pervious = 18.427 ac 9.76% Impervious = 1.992 ac

Summary for Subcatchment DA 1: Drainage Area 1

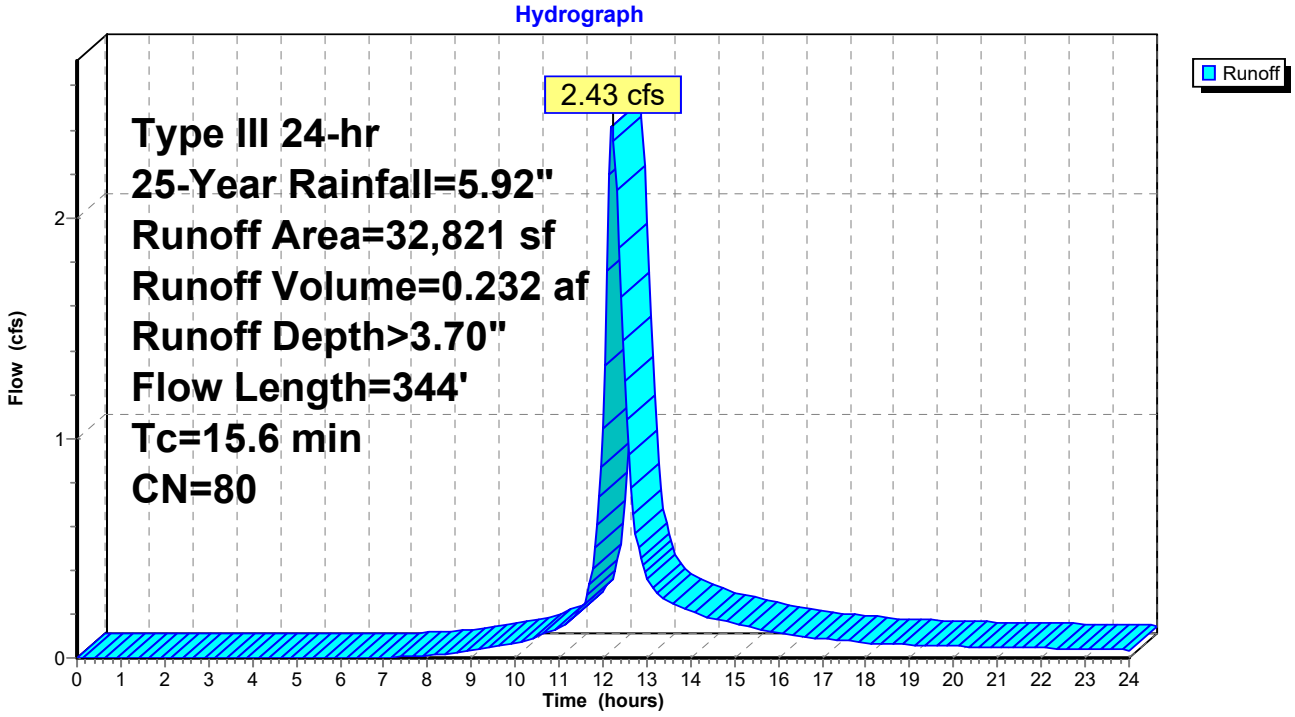
Runoff = 2.43 cfs @ 12.21 hrs, Volume= 0.232 af, Depth> 3.70"
Routed to Link S : POI South

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.92"

	Area (sf)	CN	Description
*	600	98	Macadam Drive
	260	77	Woods, Good, HSG D
	31,961	80	>75% Grass cover, Good, HSG D
	32,821	80	Weighted Average
	32,221		98.17% Pervious Area
	600		1.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0100	0.13		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.11"
2.5	244	0.0120	1.64		**Shallow Concentrated Flow, SCF (Road Swale)** Grassed Waterway Kv= 15.0 fps
15.6	344	Total			

Subcatchment DA 1: Drainage Area 1



Hydrograph for Subcatchment DA 1: Drainage Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	4.54	2.50	0.29
0.25	0.01	0.00	0.00	13.50	4.64	2.58	0.26
0.50	0.03	0.00	0.00	13.75	4.72	2.65	0.23
0.75	0.04	0.00	0.00	14.00	4.80	2.72	0.21
1.00	0.06	0.00	0.00	14.25	4.87	2.78	0.19
1.25	0.07	0.00	0.00	14.50	4.94	2.84	0.18
1.50	0.09	0.00	0.00	14.75	5.00	2.89	0.17
1.75	0.10	0.00	0.00	15.00	5.06	2.94	0.16
2.00	0.12	0.00	0.00	15.25	5.11	2.99	0.15
2.25	0.13	0.00	0.00	15.50	5.16	3.03	0.14
2.50	0.15	0.00	0.00	15.75	5.20	3.07	0.12
2.75	0.17	0.00	0.00	16.00	5.25	3.11	0.11
3.00	0.18	0.00	0.00	16.25	5.28	3.14	0.10
3.25	0.20	0.00	0.00	16.50	5.32	3.17	0.10
3.50	0.22	0.00	0.00	16.75	5.35	3.20	0.09
3.75	0.24	0.00	0.00	17.00	5.38	3.23	0.09
4.00	0.25	0.00	0.00	17.25	5.41	3.26	0.08
4.25	0.27	0.00	0.00	17.50	5.44	3.28	0.08
4.50	0.29	0.00	0.00	17.75	5.47	3.31	0.07
4.75	0.31	0.00	0.00	18.00	5.49	3.33	0.07
5.00	0.34	0.00	0.00	18.25	5.52	3.35	0.06
5.25	0.36	0.00	0.00	18.50	5.54	3.37	0.06
5.50	0.38	0.00	0.00	18.75	5.56	3.39	0.06
5.75	0.40	0.00	0.00	19.00	5.58	3.41	0.06
6.00	0.43	0.00	0.00	19.25	5.61	3.43	0.06
6.25	0.45	0.00	0.00	19.50	5.63	3.45	0.06
6.50	0.48	0.00	0.00	19.75	5.65	3.46	0.06
6.75	0.51	0.00	0.00	20.00	5.67	3.48	0.05
7.00	0.54	0.00	0.00	20.25	5.68	3.50	0.05
7.25	0.57	0.00	0.00	20.50	5.70	3.51	0.05
7.50	0.60	0.00	0.01	20.75	5.72	3.53	0.05
7.75	0.64	0.01	0.01	21.00	5.74	3.55	0.05
8.00	0.67	0.01	0.01	21.25	5.76	3.56	0.05
8.25	0.72	0.02	0.02	21.50	5.77	3.58	0.05
8.50	0.76	0.02	0.02	21.75	5.79	3.59	0.05
8.75	0.81	0.03	0.03	22.00	5.81	3.61	0.04
9.00	0.86	0.05	0.03	22.25	5.82	3.62	0.04
9.25	0.92	0.06	0.04	22.50	5.84	3.63	0.04
9.50	0.98	0.08	0.05	22.75	5.85	3.65	0.04
9.75	1.05	0.10	0.06	23.00	5.87	3.66	0.04
10.00	1.12	0.12	0.07	23.25	5.88	3.67	0.04
10.25	1.20	0.15	0.08	23.50	5.89	3.69	0.04
10.50	1.28	0.19	0.10	23.75	5.91	3.70	0.04
10.75	1.38	0.23	0.12	24.00	**5.92**	**3.71**	0.04
11.00	1.48	0.28	0.14				
11.25	1.61	0.34	0.17				
11.50	1.76	0.42	0.23				
11.75	2.10	0.63	0.41				
12.00	2.96	1.22	**1.05**				
12.25	3.82	1.89	**2.36**				
12.50	4.16	2.17	1.26				
12.75	4.31	2.30	0.57				
13.00	4.44	2.41	0.37				

Summary for Subcatchment DA 2: Drainage Area 2

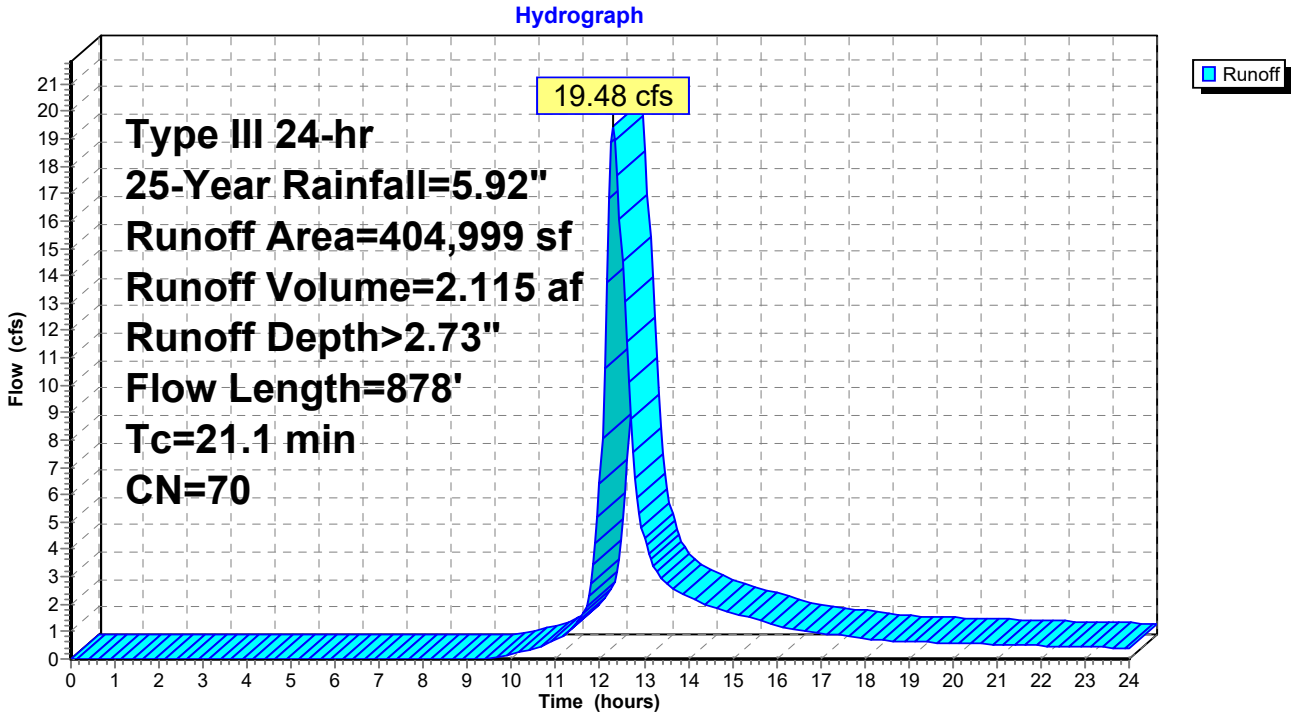
Runoff = 19.48 cfs @ 12.30 hrs, Volume= 2.115 af, Depth> 2.73"
Routed to Pond P2 : Large Shallow Onsite Depression

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.92"

	Area (sf)	CN	Description
*	2,447	98	Misc. Macadam
	82,769	77	Woods, Good, HSG D
	148,017	80	>75% Grass cover, Good, HSG D
	88,344	55	Woods, Good, HSG B
	83,422	61	>75% Grass cover, Good, HSG B
	404,999	70	Weighted Average
	402,552		99.40% Pervious Area
	2,447		0.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	100	0.0180	0.16		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.11"
10.7	778	0.0300	1.21		**Shallow Concentrated Flow, SCF** Short Grass Pasture Kv= 7.0 fps
21.1	878	Total			

Subcatchment DA 2: Drainage Area 2



Hydrograph for Subcatchment DA 2: Drainage Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.01	0.00	0.00
0.50	0.03	0.00	0.00
0.75	0.04	0.00	0.00
1.00	0.06	0.00	0.00
1.25	0.07	0.00	0.00
1.50	0.09	0.00	0.00
1.75	0.10	0.00	0.00
2.00	0.12	0.00	0.00
2.25	0.13	0.00	0.00
2.50	0.15	0.00	0.00
2.75	0.17	0.00	0.00
3.00	0.18	0.00	0.00
3.25	0.20	0.00	0.00
3.50	0.22	0.00	0.00
3.75	0.24	0.00	0.00
4.00	0.25	0.00	0.00
4.25	0.27	0.00	0.00
4.50	0.29	0.00	0.00
4.75	0.31	0.00	0.00
5.00	0.34	0.00	0.00
5.25	0.36	0.00	0.00
5.50	0.38	0.00	0.00
5.75	0.40	0.00	0.00
6.00	0.43	0.00	0.00
6.25	0.45	0.00	0.00
6.50	0.48	0.00	0.00
6.75	0.51	0.00	0.00
7.00	0.54	0.00	0.00
7.25	0.57	0.00	0.00
7.50	0.60	0.00	0.00
7.75	0.64	0.00	0.00
8.00	0.67	0.00	0.00
8.25	0.72	0.00	0.00
8.50	0.76	0.00	0.00
8.75	0.81	0.00	0.00
9.00	0.86	0.00	0.00
9.25	0.92	0.00	0.01
9.50	0.98	0.00	0.05
9.75	1.05	0.01	0.11
10.00	1.12	0.02	0.19
10.25	1.20	0.02	0.28
10.50	1.28	0.04	0.40
10.75	1.38	0.06	0.54
11.00	1.48	0.08	0.71
11.25	1.61	0.11	0.93
11.50	1.76	0.16	1.34
11.75	2.10	0.28	2.29
12.00	2.96	0.69	6.39
12.25	3.82	1.21	**18.85**
12.50	4.16	1.43	**14.55**
12.75	4.31	1.54	7.58
13.00	4.44	1.63	4.45
13.25	4.54	1.70	3.24
13.50	4.64	1.77	2.76
13.75	4.72	1.83	2.50
14.00	4.80	1.89	2.28
14.25	4.87	1.94	2.06
14.50	4.94	1.99	1.92
14.75	5.00	2.04	1.80
15.00	5.06	2.08	1.69
15.25	5.11	2.12	1.58
15.50	5.16	2.16	1.47
15.75	5.20	2.19	1.36
16.00	5.25	2.22	1.24
16.25	5.28	2.25	1.13
16.50	5.32	2.28	1.06
16.75	5.35	2.30	1.01
17.00	5.38	2.33	0.96
17.25	5.41	2.35	0.91
17.50	5.44	2.37	0.85
17.75	5.47	2.39	0.80
18.00	5.49	2.41	0.75
18.25	5.52	2.43	0.70
18.50	5.54	2.45	0.68
18.75	5.56	2.46	0.66
19.00	5.58	2.48	0.64
19.25	5.61	2.50	0.63
19.50	5.63	2.51	0.61
19.75	5.65	2.53	0.60
20.00	5.67	2.54	0.58
20.25	5.68	2.56	0.57
20.50	5.70	2.57	0.55
20.75	5.72	2.59	0.54
21.00	5.74	2.60	0.53
21.25	5.76	2.61	0.52
21.50	5.77	2.63	0.51
21.75	5.79	2.64	0.50
22.00	5.81	2.65	0.48
22.25	5.82	2.66	0.47
22.50	5.84	2.68	0.46
22.75	5.85	2.69	0.45
23.00	5.87	2.70	0.44
23.25	5.88	2.71	0.42
23.50	5.89	2.72	0.41
23.75	5.91	2.73	0.40
24.00	**5.92**	**2.74**	0.39

Summary for Subcatchment DA 3: Drainage Area 3

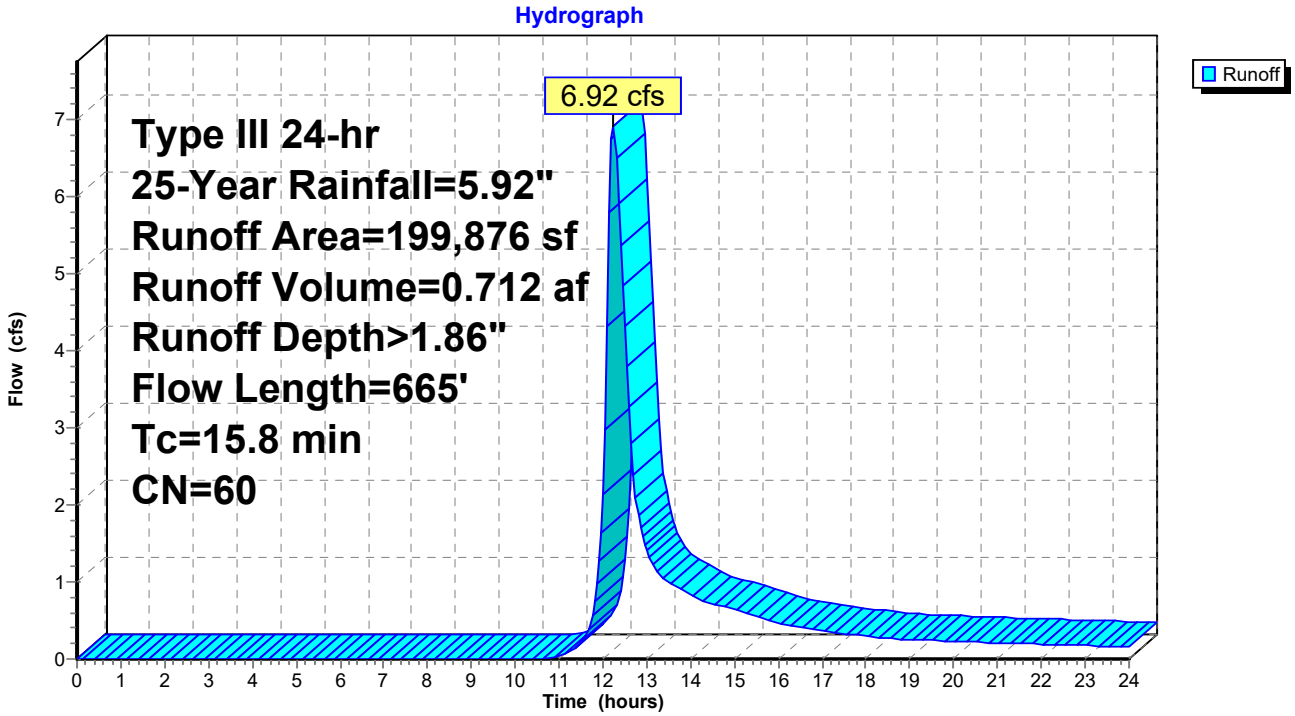
Runoff = 6.92 cfs @ 12.24 hrs, Volume= 0.712 af, Depth> 1.86"
Routed to Link N : POI North

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.92"

	Area (sf)	CN	Description
*	2,471	98	Impervious
	63,897	61	>75% Grass cover, Good, HSG B
	112,976	55	Woods, Good, HSG B
	10,735	80	>75% Grass cover, Good, HSG D
	9,797	77	Woods, Good, HSG D
	199,876	60	Weighted Average
	197,405		98.76% Pervious Area
	2,471		1.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.0240	0.18		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.11"
6.6	565	0.0410	1.42		**Shallow Concentrated Flow, SCF** Short Grass Pasture Kv= 7.0 fps
15.8	665	Total			

Subcatchment DA 3: Drainage Area 3



Hydrograph for Subcatchment DA 3: Drainage Area 3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.01	0.00	0.00
0.50	0.03	0.00	0.00
0.75	0.04	0.00	0.00
1.00	0.06	0.00	0.00
1.25	0.07	0.00	0.00
1.50	0.09	0.00	0.00
1.75	0.10	0.00	0.00
2.00	0.12	0.00	0.00
2.25	0.13	0.00	0.00
2.50	0.15	0.00	0.00
2.75	0.17	0.00	0.00
3.00	0.18	0.00	0.00
3.25	0.20	0.00	0.00
3.50	0.22	0.00	0.00
3.75	0.24	0.00	0.00
4.00	0.25	0.00	0.00
4.25	0.27	0.00	0.00
4.50	0.29	0.00	0.00
4.75	0.31	0.00	0.00
5.00	0.34	0.00	0.00
5.25	0.36	0.00	0.00
5.50	0.38	0.00	0.00
5.75	0.40	0.00	0.00
6.00	0.43	0.00	0.00
6.25	0.45	0.00	0.00
6.50	0.48	0.00	0.00
6.75	0.51	0.00	0.00
7.00	0.54	0.00	0.00
7.25	0.57	0.00	0.00
7.50	0.60	0.00	0.00
7.75	0.64	0.00	0.00
8.00	0.67	0.00	0.00
8.25	0.72	0.00	0.00
8.50	0.76	0.00	0.00
8.75	0.81	0.00	0.00
9.00	0.86	0.00	0.00
9.25	0.92	0.00	0.00
9.50	0.98	0.00	0.00
9.75	1.05	0.00	0.00
10.00	1.12	0.00	0.00
10.25	1.20	0.00	0.00
10.50	1.28	0.00	0.00
10.75	1.38	0.00	0.00
11.00	1.48	0.00	0.03
11.25	1.61	0.01	0.09
11.50	1.76	0.03	0.21
11.75	2.10	0.08	0.56
12.00	2.96	0.32	2.14
12.25	3.82	0.67	**6.91**
12.50	4.16	0.84	4.33
12.75	4.31	0.92	2.08
13.00	4.44	0.99	1.40
13.25	4.54	1.04	1.11
13.50	4.64	1.10	1.00
13.75	4.72	1.14	0.92
14.00	4.80	1.19	0.84
14.25	4.87	1.23	0.77
14.50	4.94	1.26	0.72
14.75	5.00	1.30	0.68
15.00	5.06	1.33	0.64
15.25	5.11	1.37	0.60
15.50	5.16	1.40	0.56
15.75	5.20	1.42	0.52
16.00	5.25	1.45	0.47
16.25	5.28	1.47	0.43
16.50	5.32	1.49	0.41
16.75	5.35	1.51	0.39
17.00	5.38	1.53	0.37
17.25	5.41	1.55	0.35
17.50	5.44	1.57	0.33
17.75	5.47	1.58	0.31
18.00	5.49	1.60	0.29
18.25	5.52	1.61	0.27
18.50	5.54	1.63	0.27
18.75	5.56	1.64	0.26
19.00	5.58	1.66	0.25
19.25	5.61	1.67	0.25
19.50	5.63	1.68	0.24
19.75	5.65	1.69	0.24
20.00	5.67	1.71	0.23
20.25	5.68	1.72	0.23
20.50	5.70	1.73	0.22
20.75	5.72	1.74	0.22
21.00	5.74	1.75	0.21
21.25	5.76	1.76	0.21
21.50	5.77	1.77	0.20
21.75	5.79	1.79	0.20
22.00	5.81	1.80	0.19
22.25	5.82	1.81	0.19
22.50	5.84	1.82	0.18
22.75	5.85	1.83	0.18
23.00	5.87	1.83	0.17
23.25	5.88	1.84	0.17
23.50	5.89	1.85	0.17
23.75	5.91	1.86	0.16
24.00	**5.92**	**1.87**	0.16

Summary for Subcatchment DA 4: Drainage Area 4 - Onsite Tributary to Pond

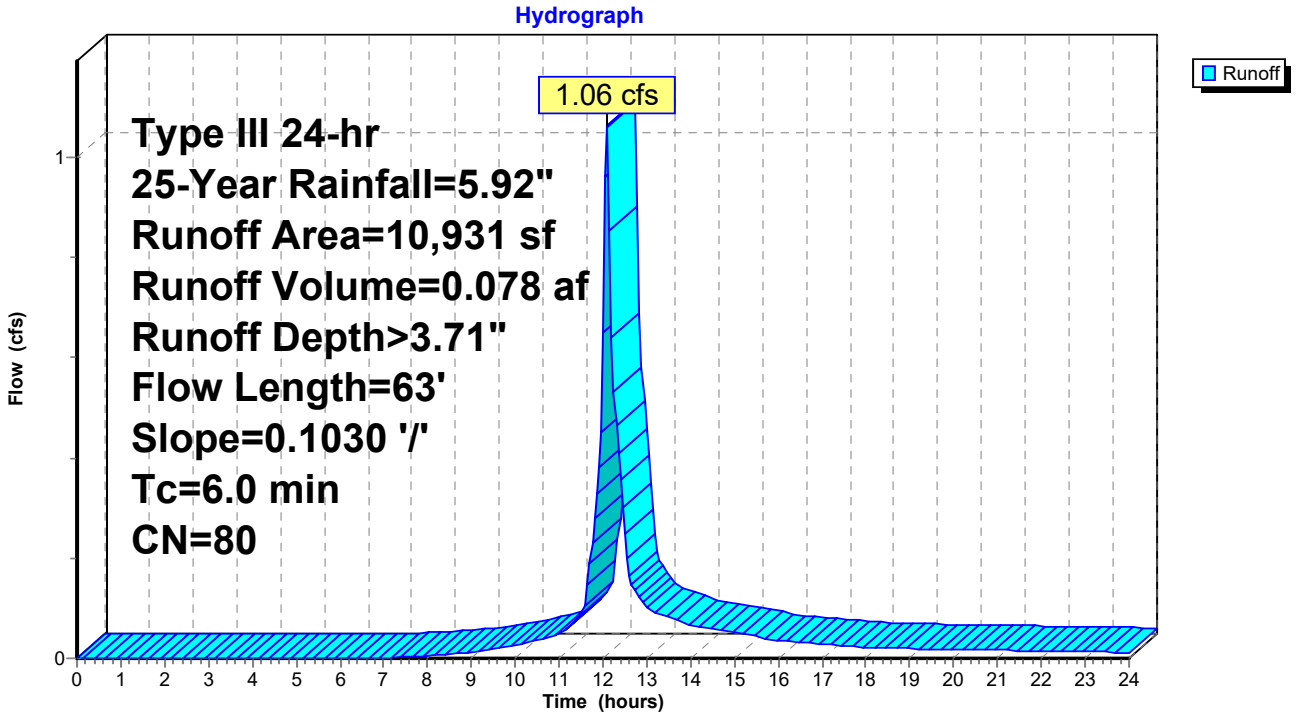
Runoff = 1.06 cfs @ 12.09 hrs, Volume= 0.078 af, Depth> 3.71"
Routed to Pond P1 : Ex Onsite Retention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.92"

Area (sf)	CN	Description
10,931	80	>75% Grass cover, Good, HSG D
10,931		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	63	0.1030	0.29		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.11"
2.4					**Direct Entry, + Entry to Reach Minimum**
6.0	63	Total			

Subcatchment DA 4: Drainage Area 4 - Onsite Tributary to Pond



Hydrograph for Subcatchment DA 4: Drainage Area 4 - Onsite Tributary to Pond

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	4.54	2.50	0.09
0.25	0.01	0.00	0.00	13.50	4.64	2.58	0.08
0.50	0.03	0.00	0.00	13.75	4.72	2.65	0.07
0.75	0.04	0.00	0.00	14.00	4.80	2.72	0.07
1.00	0.06	0.00	0.00	14.25	4.87	2.78	0.06
1.25	0.07	0.00	0.00	14.50	4.94	2.84	0.06
1.50	0.09	0.00	0.00	14.75	5.00	2.89	0.05
1.75	0.10	0.00	0.00	15.00	5.06	2.94	0.05
2.00	0.12	0.00	0.00	15.25	5.11	2.99	0.05
2.25	0.13	0.00	0.00	15.50	5.16	3.03	0.04
2.50	0.15	0.00	0.00	15.75	5.20	3.07	0.04
2.75	0.17	0.00	0.00	16.00	5.25	3.11	0.04
3.00	0.18	0.00	0.00	16.25	5.28	3.14	0.03
3.25	0.20	0.00	0.00	16.50	5.32	3.17	0.03
3.50	0.22	0.00	0.00	16.75	5.35	3.20	0.03
3.75	0.24	0.00	0.00	17.00	5.38	3.23	0.03
4.00	0.25	0.00	0.00	17.25	5.41	3.26	0.03
4.25	0.27	0.00	0.00	17.50	5.44	3.28	0.03
4.50	0.29	0.00	0.00	17.75	5.47	3.31	0.02
4.75	0.31	0.00	0.00	18.00	5.49	3.33	0.02
5.00	0.34	0.00	0.00	18.25	5.52	3.35	0.02
5.25	0.36	0.00	0.00	18.50	5.54	3.37	0.02
5.50	0.38	0.00	0.00	18.75	5.56	3.39	0.02
5.75	0.40	0.00	0.00	19.00	5.58	3.41	0.02
6.00	0.43	0.00	0.00	19.25	5.61	3.43	0.02
6.25	0.45	0.00	0.00	19.50	5.63	3.45	0.02
6.50	0.48	0.00	0.00	19.75	5.65	3.46	0.02
6.75	0.51	0.00	0.00	20.00	5.67	3.48	0.02
7.00	0.54	0.00	0.00	20.25	5.68	3.50	0.02
7.25	0.57	0.00	0.00	20.50	5.70	3.51	0.02
7.50	0.60	0.00	0.00	20.75	5.72	3.53	0.02
7.75	0.64	0.01	0.00	21.00	5.74	3.55	0.02
8.00	0.67	0.01	0.00	21.25	5.76	3.56	0.02
8.25	0.72	0.02	0.01	21.50	5.77	3.58	0.02
8.50	0.76	0.02	0.01	21.75	5.79	3.59	0.01
8.75	0.81	0.03	0.01	22.00	5.81	3.61	0.01
9.00	0.86	0.05	0.01	22.25	5.82	3.62	0.01
9.25	0.92	0.06	0.02	22.50	5.84	3.63	0.01
9.50	0.98	0.08	0.02	22.75	5.85	3.65	0.01
9.75	1.05	0.10	0.02	23.00	5.87	3.66	0.01
10.00	1.12	0.12	0.02	23.25	5.88	3.67	0.01
10.25	1.20	0.15	0.03	23.50	5.89	3.69	0.01
10.50	1.28	0.19	0.04	23.75	5.91	3.70	0.01
10.75	1.38	0.23	0.04	24.00	**5.92**	**3.71**	0.01
11.00	1.48	0.28	0.05				
11.25	1.61	0.34	0.07				
11.50	1.76	0.42	0.09				
11.75	2.10	0.63	0.23				
12.00	2.96	1.22	**0.65**				
12.25	3.82	1.89	**0.53**				
12.50	4.16	2.17	0.25				
12.75	4.31	2.30	0.13				
13.00	4.44	2.41	0.10				

Summary for Subcatchment OFF1: Offsite Drainage Area 1

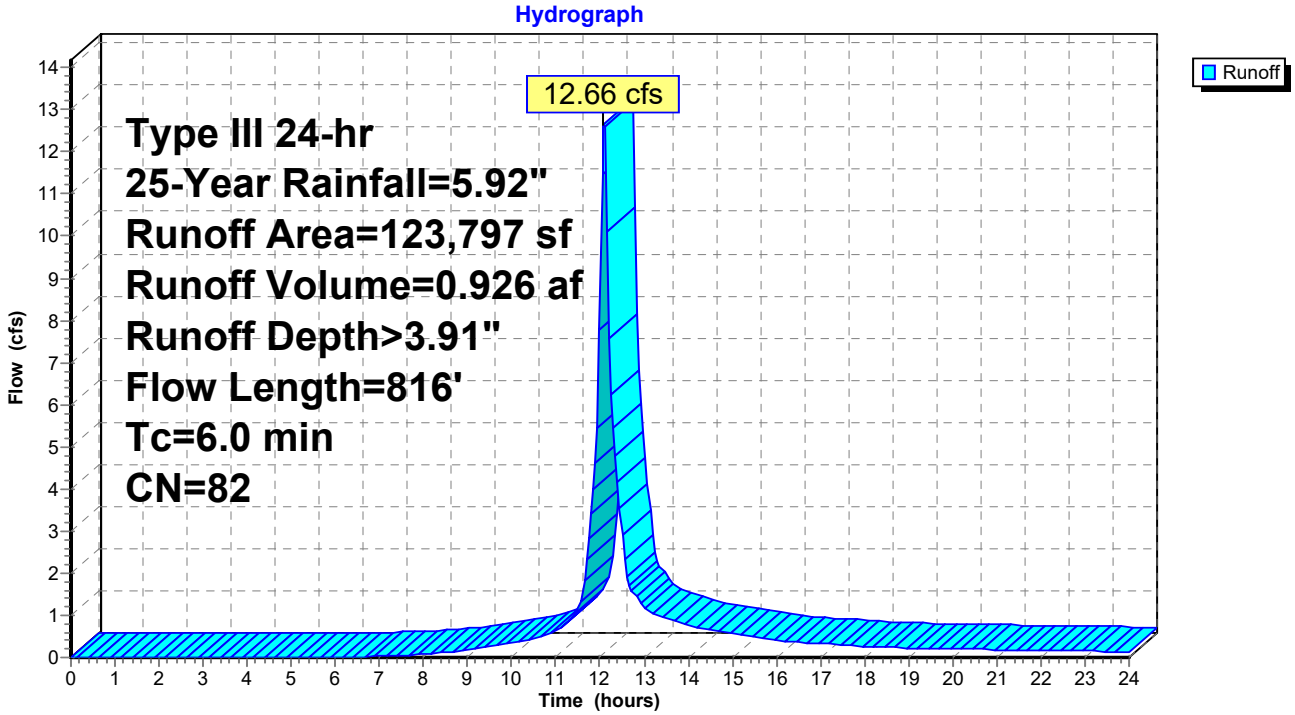
Runoff = 12.66 cfs @ 12.09 hrs, Volume= 0.926 af, Depth> 3.91"
Routed to Pond P1 : Ex Onsite Retention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.92"

	Area (sf)	CN	Description
	52,228	61	>75% Grass cover, Good, HSG B
*	71,569	98	Impervious Surfaces
	123,797	82	Weighted Average
	52,228		42.19% Pervious Area
	71,569		57.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	345	0.0230	3.08		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.4	471	0.0526	17.89	56.21	**Pipe Channel, 24" Pipe from Jehova Site to onsite detention** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
3.7					**Direct Entry, + Entry to Reach Minimum**
6.0	816	Total			

Subcatchment OFF1: Offsite Drainage Area 1



Hydrograph for Subcatchment OFF1: Offsite Drainage Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.01	0.00	0.00
0.50	0.03	0.00	0.00
0.75	0.04	0.00	0.00
1.00	0.06	0.00	0.00
1.25	0.07	0.00	0.00
1.50	0.09	0.00	0.00
1.75	0.10	0.00	0.00
2.00	0.12	0.00	0.00
2.25	0.13	0.00	0.00
2.50	0.15	0.00	0.00
2.75	0.17	0.00	0.00
3.00	0.18	0.00	0.00
3.25	0.20	0.00	0.00
3.50	0.22	0.00	0.00
3.75	0.24	0.00	0.00
4.00	0.25	0.00	0.00
4.25	0.27	0.00	0.00
4.50	0.29	0.00	0.00
4.75	0.31	0.00	0.00
5.00	0.34	0.00	0.00
5.25	0.36	0.00	0.00
5.50	0.38	0.00	0.00
5.75	0.40	0.00	0.00
6.00	0.43	0.00	0.00
6.25	0.45	0.00	0.00
6.50	0.48	0.00	0.01
6.75	0.51	0.00	0.02
7.00	0.54	0.00	0.03
7.25	0.57	0.01	0.04
7.50	0.60	0.01	0.05
7.75	0.64	0.02	0.06
8.00	0.67	0.02	0.08
8.25	0.72	0.03	0.09
8.50	0.76	0.04	0.12
8.75	0.81	0.05	0.15
9.00	0.86	0.07	0.18
9.25	0.92	0.09	0.21
9.50	0.98	0.11	0.25
9.75	1.05	0.13	0.29
10.00	1.12	0.16	0.33
10.25	1.20	0.19	0.39
10.50	1.28	0.23	0.47
10.75	1.38	0.28	0.55
11.00	1.48	0.33	0.63
11.25	1.61	0.40	0.83
11.50	1.76	0.50	1.12
11.75	2.10	0.72	2.84
12.00	2.96	1.35	**7.79**
12.25	3.82	2.05	**6.25**
12.50	4.16	2.34	2.92
12.75	4.31	2.47	1.54
13.00	4.44	2.58	1.21
13.25	4.54	2.67	1.03
13.50	4.64	2.76	0.94
13.75	4.72	2.83	0.86
14.00	4.80	2.90	0.77
14.25	4.87	2.96	0.71
14.50	4.94	3.02	0.67
14.75	5.00	3.08	0.63
15.00	5.06	3.13	0.59
15.25	5.11	3.18	0.54
15.50	5.16	3.22	0.50
15.75	5.20	3.26	0.46
16.00	5.25	3.30	0.41
16.25	5.28	3.33	0.39
16.50	5.32	3.37	0.37
16.75	5.35	3.40	0.35
17.00	5.38	3.42	0.33
17.25	5.41	3.45	0.31
17.50	5.44	3.48	0.29
17.75	5.47	3.50	0.27
18.00	5.49	3.52	0.25
18.25	5.52	3.55	0.24
18.50	5.54	3.57	0.24
18.75	5.56	3.59	0.23
19.00	5.58	3.61	0.23
19.25	5.61	3.63	0.22
19.50	5.63	3.64	0.21
19.75	5.65	3.66	0.21
20.00	5.67	3.68	0.20
20.25	5.68	3.70	0.20
20.50	5.70	3.71	0.19
20.75	5.72	3.73	0.19
21.00	5.74	3.75	0.19
21.25	5.76	3.76	0.18
21.50	5.77	3.78	0.18
21.75	5.79	3.79	0.17
22.00	5.81	3.81	0.17
22.25	5.82	3.82	0.16
22.50	5.84	3.84	0.16
22.75	5.85	3.85	0.16
23.00	5.87	3.86	0.15
23.25	5.88	3.88	0.15
23.50	5.89	3.89	0.14
23.75	5.91	3.90	0.14
24.00	**5.92**	**3.91**	0.13

Summary for Subcatchment OFF2: Offsite Drainage Area 2

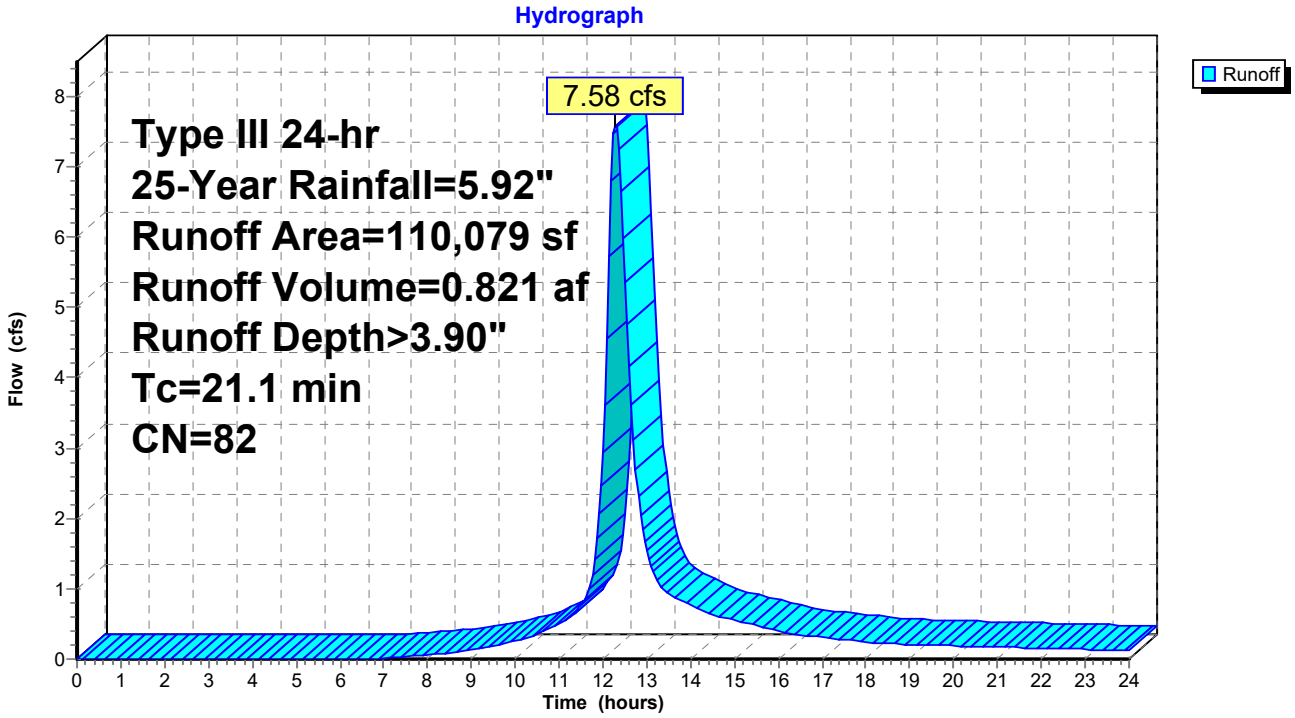
Runoff = 7.58 cfs @ 12.29 hrs, Volume= 0.821 af, Depth> 3.90"
Routed to Pond P2 : Large Shallow Onsite Depression

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.92"

	Area (sf)	CN	Description
	100,377	80	>75% Grass cover, Good, HSG D
*	9,702	98	Impervious Surfaces
	110,079	82	Weighted Average
	100,377		91.19% Pervious Area
	9,702		8.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1					**Direct Entry, Match DA 2 Watershed**

Subcatchment OFF2: Offsite Drainage Area 2



Hydrograph for Subcatchment OFF2: Offsite Drainage Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.01	0.00	0.00
0.50	0.03	0.00	0.00
0.75	0.04	0.00	0.00
1.00	0.06	0.00	0.00
1.25	0.07	0.00	0.00
1.50	0.09	0.00	0.00
1.75	0.10	0.00	0.00
2.00	0.12	0.00	0.00
2.25	0.13	0.00	0.00
2.50	0.15	0.00	0.00
2.75	0.17	0.00	0.00
3.00	0.18	0.00	0.00
3.25	0.20	0.00	0.00
3.50	0.22	0.00	0.00
3.75	0.24	0.00	0.00
4.00	0.25	0.00	0.00
4.25	0.27	0.00	0.00
4.50	0.29	0.00	0.00
4.75	0.31	0.00	0.00
5.00	0.34	0.00	0.00
5.25	0.36	0.00	0.00
5.50	0.38	0.00	0.00
5.75	0.40	0.00	0.00
6.00	0.43	0.00	0.00
6.25	0.45	0.00	0.00
6.50	0.48	0.00	0.00
6.75	0.51	0.00	0.01
7.00	0.54	0.00	0.02
7.25	0.57	0.01	0.02
7.50	0.60	0.01	0.03
7.75	0.64	0.02	0.04
8.00	0.67	0.02	0.06
8.25	0.72	0.03	0.07
8.50	0.76	0.04	0.09
8.75	0.81	0.05	0.11
9.00	0.86	0.07	0.13
9.25	0.92	0.09	0.16
9.50	0.98	0.11	0.19
9.75	1.05	0.13	0.22
10.00	1.12	0.16	0.26
10.25	1.20	0.19	0.30
10.50	1.28	0.23	0.35
10.75	1.38	0.28	0.42
11.00	1.48	0.33	0.49
11.25	1.61	0.40	0.58
11.50	1.76	0.50	0.77
11.75	2.10	0.72	1.20
12.00	2.96	1.35	2.94
12.25	3.82	2.05	**7.46**
12.50	4.16	2.34	**5.35**
12.75	4.31	2.47	2.68
13.00	4.44	2.58	1.53
13.25	4.54	2.67	1.10
13.50	4.64	2.76	0.93
13.75	4.72	2.83	0.84
14.00	4.80	2.90	0.76
14.25	4.87	2.96	0.68
14.50	4.94	3.02	0.63
14.75	5.00	3.08	0.59
15.00	5.06	3.13	0.56
15.25	5.11	3.18	0.52
15.50	5.16	3.22	0.48
15.75	5.20	3.26	0.44
16.00	5.25	3.30	0.40
16.25	5.28	3.33	0.37
16.50	5.32	3.37	0.34
16.75	5.35	3.40	0.33
17.00	5.38	3.42	0.31
17.25	5.41	3.45	0.29
17.50	5.44	3.48	0.28
17.75	5.47	3.50	0.26
18.00	5.49	3.52	0.24
18.25	5.52	3.55	0.23
18.50	5.54	3.57	0.22
18.75	5.56	3.59	0.21
19.00	5.58	3.61	0.21
19.25	5.61	3.63	0.20
19.50	5.63	3.64	0.20
19.75	5.65	3.66	0.19
20.00	5.67	3.68	0.19
20.25	5.68	3.70	0.18
20.50	5.70	3.71	0.18
20.75	5.72	3.73	0.17
21.00	5.74	3.75	0.17
21.25	5.76	3.76	0.16
21.50	5.77	3.78	0.16
21.75	5.79	3.79	0.16
22.00	5.81	3.81	0.15
22.25	5.82	3.82	0.15
22.50	5.84	3.84	0.15
22.75	5.85	3.85	0.14
23.00	5.87	3.86	0.14
23.25	5.88	3.88	0.13
23.50	5.89	3.89	0.13
23.75	5.91	3.90	0.13
24.00	**5.92**	**3.91**	0.12

Summary for Subcatchment OFF3: Offsite Drainage Area 3

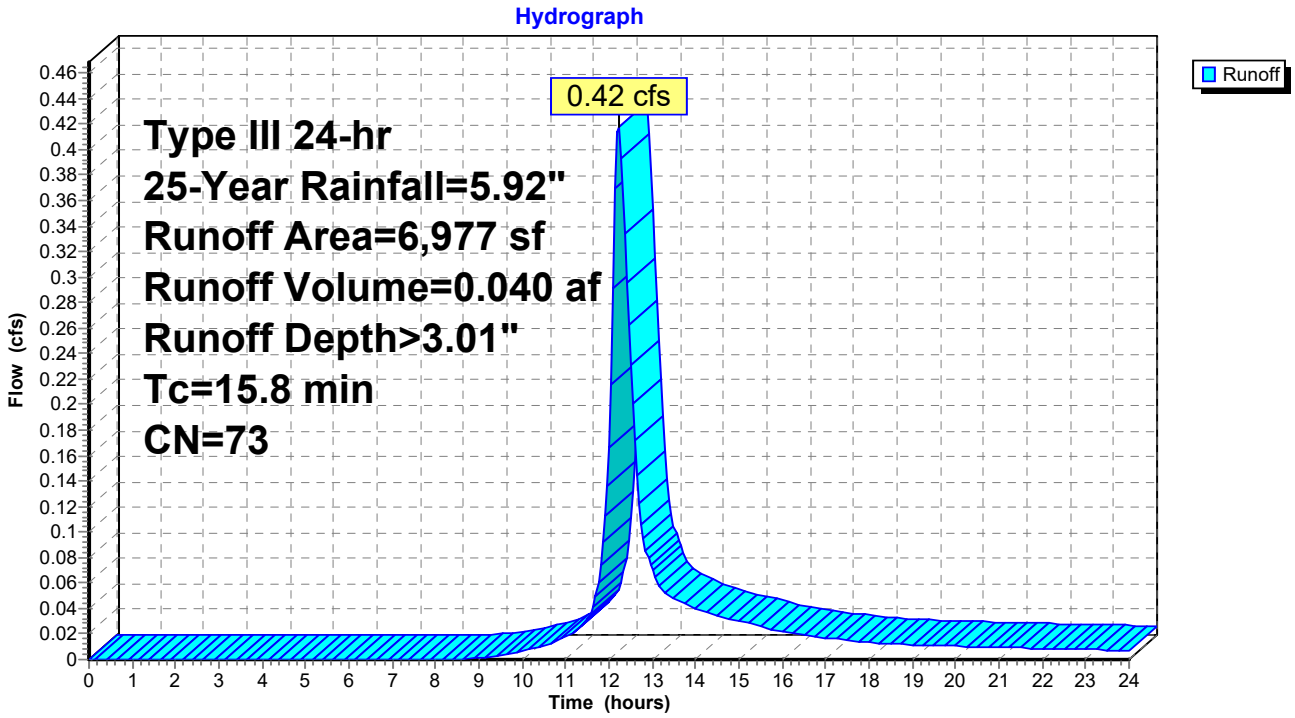
Runoff = 0.42 cfs @ 12.22 hrs, Volume= 0.040 af, Depth> 3.01"
Routed to Link N : POI North

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-Year Rainfall=5.92"

Area (sf)	CN	Description
2,502	61	>75% Grass cover, Good, HSG B
4,475	80	>75% Grass cover, Good, HSG D
6,977	73	Weighted Average
6,977		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.8					**Direct Entry, Match DA 3 Watershed**

Subcatchment OFF3: Offsite Drainage Area 3



Hydrograph for Subcatchment OFF3: Offsite Drainage Area 3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.01	0.00	0.00
0.50	0.03	0.00	0.00
0.75	0.04	0.00	0.00
1.00	0.06	0.00	0.00
1.25	0.07	0.00	0.00
1.50	0.09	0.00	0.00
1.75	0.10	0.00	0.00
2.00	0.12	0.00	0.00
2.25	0.13	0.00	0.00
2.50	0.15	0.00	0.00
2.75	0.17	0.00	0.00
3.00	0.18	0.00	0.00
3.25	0.20	0.00	0.00
3.50	0.22	0.00	0.00
3.75	0.24	0.00	0.00
4.00	0.25	0.00	0.00
4.25	0.27	0.00	0.00
4.50	0.29	0.00	0.00
4.75	0.31	0.00	0.00
5.00	0.34	0.00	0.00
5.25	0.36	0.00	0.00
5.50	0.38	0.00	0.00
5.75	0.40	0.00	0.00
6.00	0.43	0.00	0.00
6.25	0.45	0.00	0.00
6.50	0.48	0.00	0.00
6.75	0.51	0.00	0.00
7.00	0.54	0.00	0.00
7.25	0.57	0.00	0.00
7.50	0.60	0.00	0.00
7.75	0.64	0.00	0.00
8.00	0.67	0.00	0.00
8.25	0.72	0.00	0.00
8.50	0.76	0.00	0.00
8.75	0.81	0.00	0.00
9.00	0.86	0.00	0.00
9.25	0.92	0.01	0.00
9.50	0.98	0.01	0.00
9.75	1.05	0.02	0.00
10.00	1.12	0.04	0.01
10.25	1.20	0.05	0.01
10.50	1.28	0.07	0.01
10.75	1.38	0.09	0.01
11.00	1.48	0.12	0.02
11.25	1.61	0.16	0.02
11.50	1.76	0.22	0.03
11.75	2.10	0.37	0.06
12.00	2.96	0.83	**0.17**
12.25	3.82	1.40	**0.41**
12.50	4.16	1.64	0.23
12.75	4.31	1.76	0.11
13.00	4.44	1.85	0.07
13.25	4.54	1.93	0.05
13.50	4.64	2.00	0.05
13.75	4.72	2.07	0.04
14.00	4.80	2.13	0.04
14.25	4.87	2.18	0.04
14.50	4.94	2.23	0.03
14.75	5.00	2.28	0.03
15.00	5.06	2.33	0.03
15.25	5.11	2.37	0.03
15.50	5.16	2.41	0.03
15.75	5.20	2.44	0.02
16.00	5.25	2.47	0.02
16.25	5.28	2.50	0.02
16.50	5.32	2.53	0.02
16.75	5.35	2.56	0.02
17.00	5.38	2.59	0.02
17.25	5.41	2.61	0.02
17.50	5.44	2.63	0.02
17.75	5.47	2.65	0.01
18.00	5.49	2.67	0.01
18.25	5.52	2.69	0.01
18.50	5.54	2.71	0.01
18.75	5.56	2.73	0.01
19.00	5.58	2.75	0.01
19.25	5.61	2.76	0.01
19.50	5.63	2.78	0.01
19.75	5.65	2.80	0.01
20.00	5.67	2.81	0.01
20.25	5.68	2.83	0.01
20.50	5.70	2.84	0.01
20.75	5.72	2.86	0.01
21.00	5.74	2.87	0.01
21.25	5.76	2.89	0.01
21.50	5.77	2.90	0.01
21.75	5.79	2.92	0.01
22.00	5.81	2.93	0.01
22.25	5.82	2.94	0.01
22.50	5.84	2.95	0.01
22.75	5.85	2.97	0.01
23.00	5.87	2.98	0.01
23.25	5.88	2.99	0.01
23.50	5.89	3.00	0.01
23.75	5.91	3.01	0.01
24.00	**5.92**	**3.02**	0.01

Summary for Pond P1: Ex Onsite Retention Pond

[92] Warning: Device #4 is above defined storage
[92] Warning: Device #5 is above defined storage

Inflow Area = 3.093 ac, 53.12% Impervious, Inflow Depth > 3.89" for 25-Year event
Inflow = 13.72 cfs @ 12.09 hrs, Volume= 1.004 af
Outflow = 6.76 cfs @ 12.26 hrs, Volume= 0.987 af, Atten= 51%, Lag= 10.3 min
Primary = 6.76 cfs @ 12.26 hrs, Volume= 0.987 af
Routed to Link S : POI South
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond P2 : Large Shallow Onsite Depression

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 297.90' @ 12.26 hrs Surf.Area= 5,412 sf Storage= 11,276 cf

Plug-Flow detention time= 43.5 min calculated for 0.987 af (98% of inflow)
Center-of-Mass det. time= 33.5 min (842.8 - 809.4)

Volume	Invert	Avail.Storage	Storage Description
#1	295.30'	18,859 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

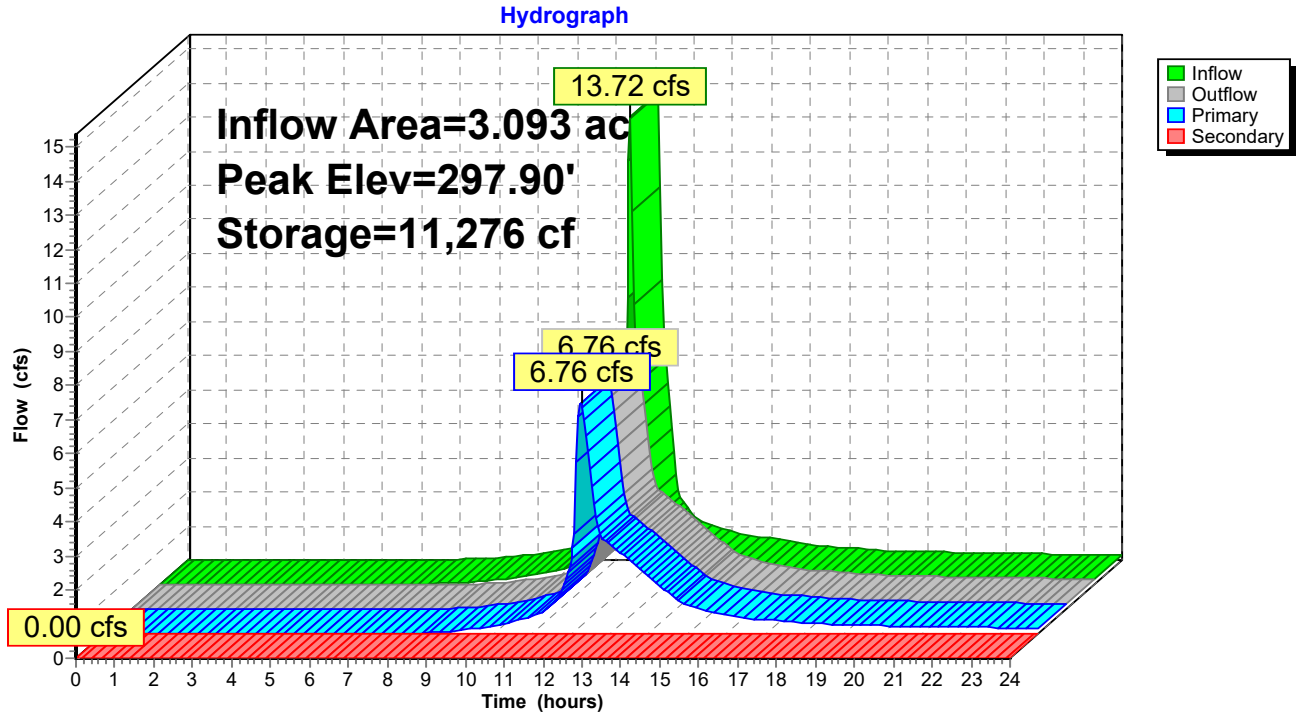
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
295.30	3,441	0	0
296.00	3,790	2,531	2,531
298.00	5,497	9,287	11,818
299.00	6,080	5,789	17,606
299.20	6,450	1,253	18,859

Device	Routing	Invert	Outlet Devices
#1	Primary	295.00'	**24.0" Round Culvert** L= 409.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 295.00' / 292.10' S= 0.0071 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	295.30'	**9.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	297.40'	**41.2 deg x 3.0' long x 1.33' rise Sharp-Crested Vee/Trap Weir** Cv= 2.57 (C= 3.21)
#4	Device 1	299.40'	**48.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	299.20'	**40.0' long x 4.0' breadth Broad-Crested Rectangular Weir** 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

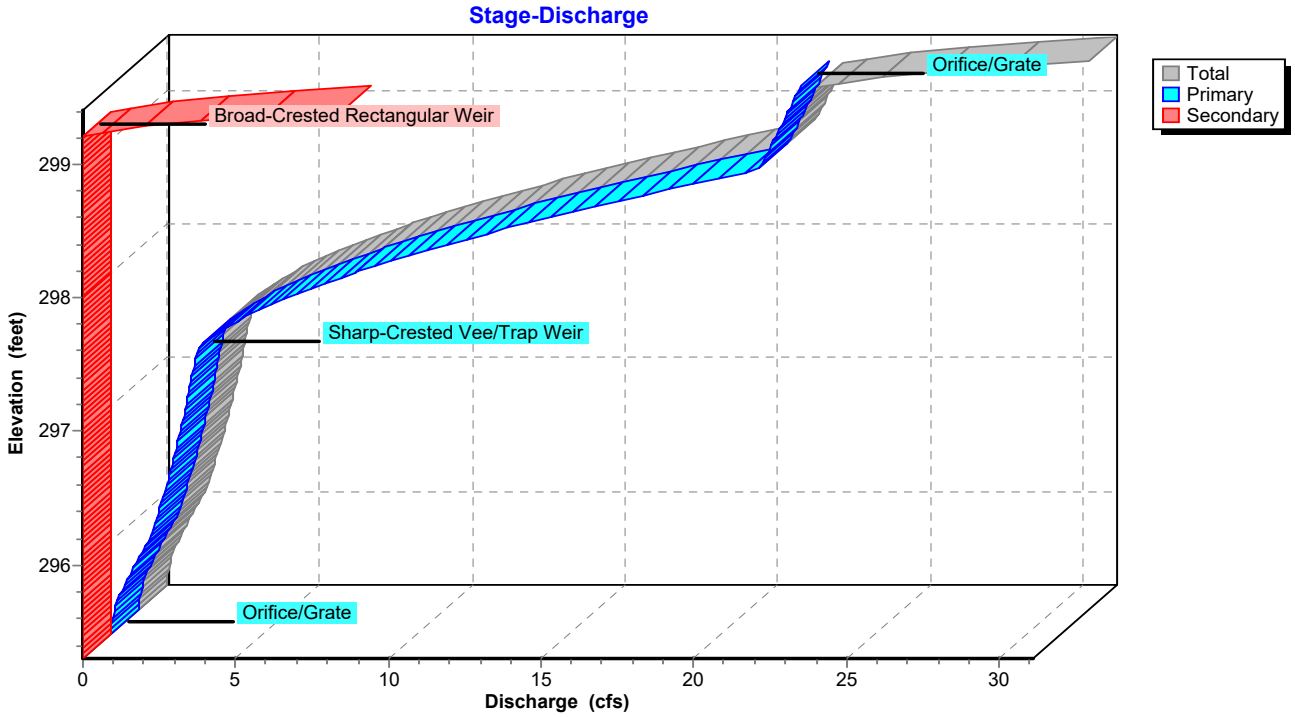
Primary OutFlow Max=6.72 cfs @ 12.26 hrs HW=297.90' (Free Discharge)
└─**1=Culvert** (Passes 6.72 cfs of 19.13 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 3.17 cfs @ 7.18 fps)
  └─**3=Sharp-Crested Vee/Trap Weir** (Weir Controls 3.55 cfs @ 2.24 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=295.30' (Free Discharge)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

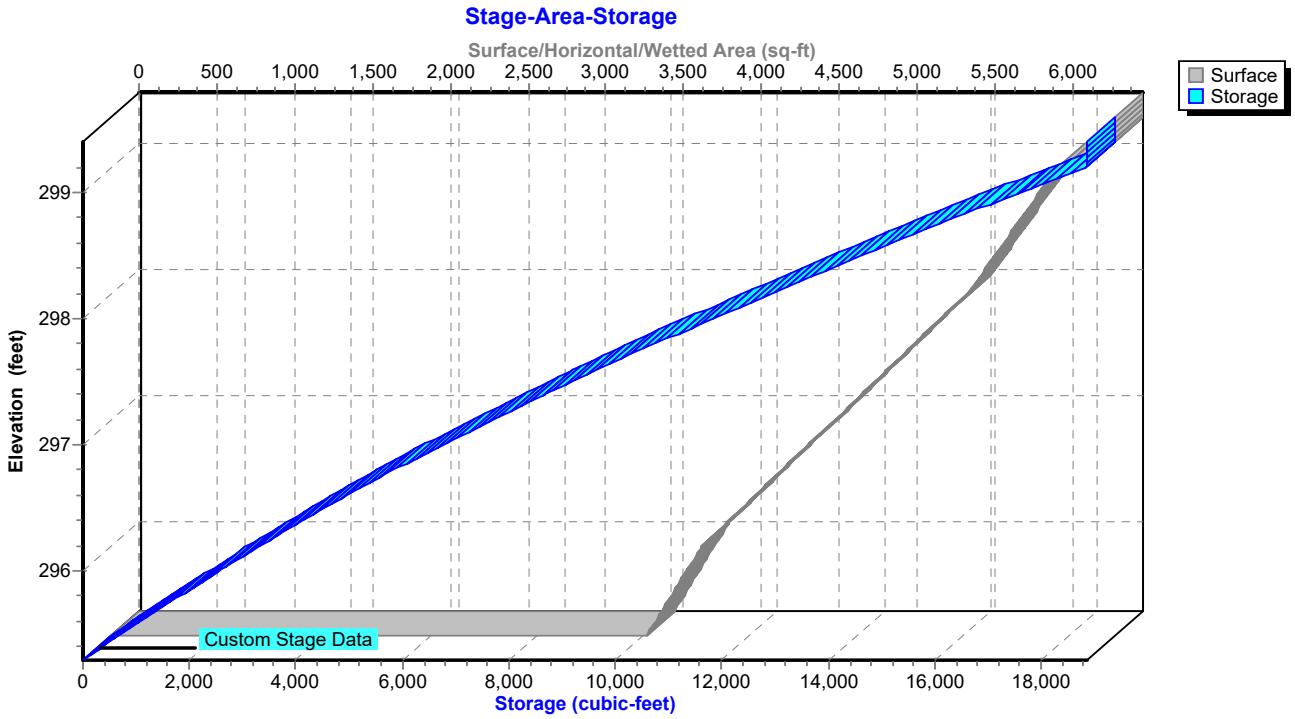
Pond P1: Ex Onsite Retention Pond



Pond P1: Ex Onsite Retention Pond



Pond P1: Ex Onsite Retention Pond



Hydrograph for Pond P1: Ex Onsite Retention Pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	295.30	0.00	0.00	**0.00**
0.50	0.00	0	295.30	0.00	0.00	0.00
1.00	0.00	0	295.30	0.00	0.00	0.00
1.50	0.00	0	295.30	0.00	0.00	0.00
2.00	0.00	0	295.30	0.00	0.00	0.00
2.50	0.00	0	295.30	0.00	0.00	0.00
3.00	0.00	0	295.30	0.00	0.00	0.00
3.50	0.00	0	295.30	0.00	0.00	0.00
4.00	0.00	0	295.30	0.00	0.00	0.00
4.50	0.00	0	295.30	0.00	0.00	0.00
5.00	0.00	0	295.30	0.00	0.00	0.00
5.50	0.00	0	295.30	0.00	0.00	0.00
6.00	0.00	0	295.30	0.00	0.00	0.00
6.50	0.01	4	295.30	0.00	0.00	0.00
7.00	0.03	32	295.31	0.00	0.00	0.00
7.50	0.05	95	295.33	0.00	0.00	0.00
8.00	0.08	198	295.36	0.01	0.01	0.00
8.50	0.13	339	295.40	0.04	0.04	0.00
9.00	0.19	517	295.45	0.08	0.08	0.00
9.50	0.27	717	295.51	0.15	0.15	0.00
10.00	0.36	922	295.56	0.24	0.24	0.00
10.50	0.50	1,149	295.63	0.36	0.36	0.00
11.00	0.68	1,425	295.70	0.52	0.52	0.00
11.50	1.21	1,897	295.83	0.83	0.83	0.00
12.00	**8.44**	**5,589**	**296.74**	**2.20**	**2.20**	0.00
12.50	**3.17**	**10,297**	**297.72**	**4.82**	**4.82**	0.00
13.00	1.31	7,749	297.21	2.64	2.64	0.00
13.50	1.03	5,453	296.71	2.17	2.17	0.00
14.00	0.84	3,673	296.29	1.67	1.67	0.00
14.50	0.73	2,498	295.99	1.20	1.20	0.00
15.00	0.64	1,918	295.84	0.84	0.84	0.00
15.50	0.54	1,642	295.76	0.66	0.66	0.00
16.00	0.45	1,458	295.71	0.54	0.54	0.00
16.50	0.40	1,321	295.67	0.46	0.46	0.00
17.00	0.36	1,229	295.65	0.40	0.40	0.00
17.50	0.32	1,150	295.63	0.36	0.36	0.00
18.00	0.28	1,073	295.61	0.32	0.32	0.00
18.50	0.26	1,010	295.59	0.28	0.28	0.00
19.00	0.25	969	295.58	0.26	0.26	0.00
19.50	0.23	938	295.57	0.25	0.25	0.00
20.00	0.22	910	295.56	0.24	0.24	0.00
20.50	0.21	884	295.55	0.22	0.22	0.00
21.00	0.20	863	295.55	0.21	0.21	0.00
21.50	0.19	842	295.54	0.20	0.20	0.00
22.00	0.18	820	295.53	0.20	0.20	0.00
22.50	0.17	798	295.53	0.19	0.19	0.00
23.00	0.16	776	295.52	0.18	0.18	0.00
23.50	0.16	754	295.52	0.17	0.17	0.00
24.00	0.15	732	295.51	0.16	0.16	0.00

Stage-Discharge for Pond P1: Ex Onsite Retention Pond

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
295.30	0.00	0.00	0.00
295.35	0.01	0.01	0.00
295.40	0.04	0.04	0.00
295.45	0.08	0.08	0.00
295.50	0.14	0.14	0.00
295.55	0.22	0.22	0.00
295.60	0.31	0.31	0.00
295.65	0.41	0.41	0.00
295.70	0.52	0.52	0.00
295.75	0.63	0.63	0.00
295.80	0.75	0.75	0.00
295.85	0.88	0.88	0.00
295.90	1.00	1.00	0.00
295.95	1.12	1.12	0.00
296.00	1.22	1.22	0.00
296.05	1.30	1.30	0.00
296.10	1.39	1.39	0.00
296.15	1.47	1.47	0.00
296.20	1.54	1.54	0.00
296.25	1.61	1.61	0.00
296.30	1.68	1.68	0.00
296.35	1.75	1.75	0.00
296.40	1.81	1.81	0.00
296.45	1.87	1.87	0.00
296.50	1.93	1.93	0.00
296.55	1.99	1.99	0.00
296.60	2.05	2.05	0.00
296.65	2.10	2.10	0.00
296.70	2.15	2.15	0.00
296.75	2.21	2.21	0.00
296.80	2.26	2.26	0.00
296.85	2.31	2.31	0.00
296.90	2.35	2.35	0.00
296.95	2.40	2.40	0.00
297.00	2.45	2.45	0.00
297.05	2.49	2.49	0.00
297.10	2.54	2.54	0.00
297.15	2.58	2.58	0.00
297.20	2.63	2.63	0.00
297.25	2.67	2.67	0.00
297.30	2.71	2.71	0.00
297.35	2.75	2.75	0.00
297.40	2.79	2.79	0.00
297.45	2.94	2.94	0.00
297.50	3.18	3.18	0.00
297.55	3.48	3.48	0.00
297.60	3.83	3.83	0.00
297.65	4.22	4.22	0.00
297.70	4.66	4.66	0.00
297.75	5.13	5.13	0.00
297.80	5.64	5.64	0.00
297.85	6.18	6.18	0.00
297.90	6.75	6.75	0.00
297.95	7.36	7.36	0.00
298.00	7.99	7.99	0.00
298.05	8.66	8.66	0.00
298.10	9.35	9.35	0.00
298.15	10.08	10.08	0.00
298.20	10.83	10.83	0.00
298.25	11.61	11.61	0.00
298.30	12.42	12.42	0.00
298.35	13.25	13.25	0.00
298.40	14.11	14.11	0.00
298.45	15.00	15.00	0.00
298.50	15.92	15.92	0.00
298.55	16.86	16.86	0.00
298.60	17.83	17.83	0.00
298.65	18.83	18.83	0.00
298.70	19.85	19.85	0.00
298.75	20.86	20.86	0.00
298.80	21.28	21.28	0.00
298.85	21.39	21.39	0.00
298.90	21.50	21.50	0.00
298.95	21.62	21.62	0.00
299.00	21.73	21.73	0.00
299.05	21.84	21.84	0.00
299.10	21.95	21.95	0.00
299.15	22.06	22.06	0.00
299.20	22.17	22.17	0.00
299.25	23.34	22.27	1.06
299.30	25.39	22.38	3.01
299.35	28.02	22.49	5.53
299.40	**31.11**	**22.60**	**8.51**

Stage-Area-Storage for Pond P1: Ex Onsite Retention Pond

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
295.30	3,441	0
295.35	3,466	173
295.40	3,491	347
295.45	3,516	522
295.50	3,541	698
295.55	3,566	876
295.60	3,591	1,055
295.65	3,616	1,235
295.70	3,640	1,416
295.75	3,665	1,599
295.80	3,690	1,783
295.85	3,715	1,968
295.90	3,740	2,154
295.95	3,765	2,342
296.00	3,790	2,531
296.05	3,833	2,721
296.10	3,875	2,914
296.15	3,918	3,109
296.20	3,961	3,306
296.25	4,003	3,505
296.30	4,046	3,706
296.35	4,089	3,910
296.40	4,131	4,115
296.45	4,174	4,323
296.50	4,217	4,533
296.55	4,259	4,744
296.60	4,302	4,958
296.65	4,345	5,175
296.70	4,387	5,393
296.75	4,430	5,613
296.80	4,473	5,836
296.85	4,515	6,061
296.90	4,558	6,288
296.95	4,601	6,516
297.00	4,644	6,748
297.05	4,686	6,981
297.10	4,729	7,216
297.15	4,772	7,454
297.20	4,814	7,693
297.25	4,857	7,935
297.30	4,900	8,179
297.35	4,942	8,425
297.40	4,985	8,673
297.45	5,028	8,924
297.50	5,070	9,176
297.55	5,113	9,431
297.60	5,156	9,687
297.65	5,198	9,946
297.70	5,241	10,207
297.75	5,284	10,470
297.80	5,326	10,736
297.85	5,369	11,003
297.90	5,412	11,272
297.95	5,454	11,544
298.00	5,497	11,818
298.05	5,526	12,093
298.10	5,555	12,370
298.15	5,584	12,649
298.20	5,614	12,929
298.25	5,643	13,210
298.30	5,672	13,493
298.35	5,701	13,778
298.40	5,730	14,063
298.45	5,759	14,351
298.50	5,789	14,639
298.55	5,818	14,929
298.60	5,847	15,221
298.65	5,876	15,514
298.70	5,905	15,809
298.75	5,934	16,105
298.80	5,963	16,402
298.85	5,993	16,701
298.90	6,022	17,001
298.95	6,051	17,303
299.00	6,080	17,606
299.05	6,173	17,913
299.10	6,265	18,224
299.15	6,358	18,539
299.20	**6,450**	**18,859**
299.25	6,450	18,859
299.30	6,450	18,859
299.35	6,450	18,859
299.40	6,450	18,859

Summary for Pond P2: Large Shallow Onsite Depression

Inflow Area = 11.825 ac, 2.36% Impervious, Inflow Depth > 2.98" for 25-Year event
Inflow = 27.05 cfs @ 12.30 hrs, Volume= 2.936 af
Outflow = 26.26 cfs @ 12.35 hrs, Volume= 2.783 af, Atten= 3%, Lag= 3.2 min
Primary = 26.26 cfs @ 12.35 hrs, Volume= 2.783 af
Routed to Link S : POI South

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 298.23' @ 12.35 hrs Surf.Area= 30,658 sf Storage= 12,335 cf

Plug-Flow detention time= 43.0 min calculated for 2.783 af (95% of inflow)
Center-of-Mass det. time= 15.6 min (857.7 - 842.1)

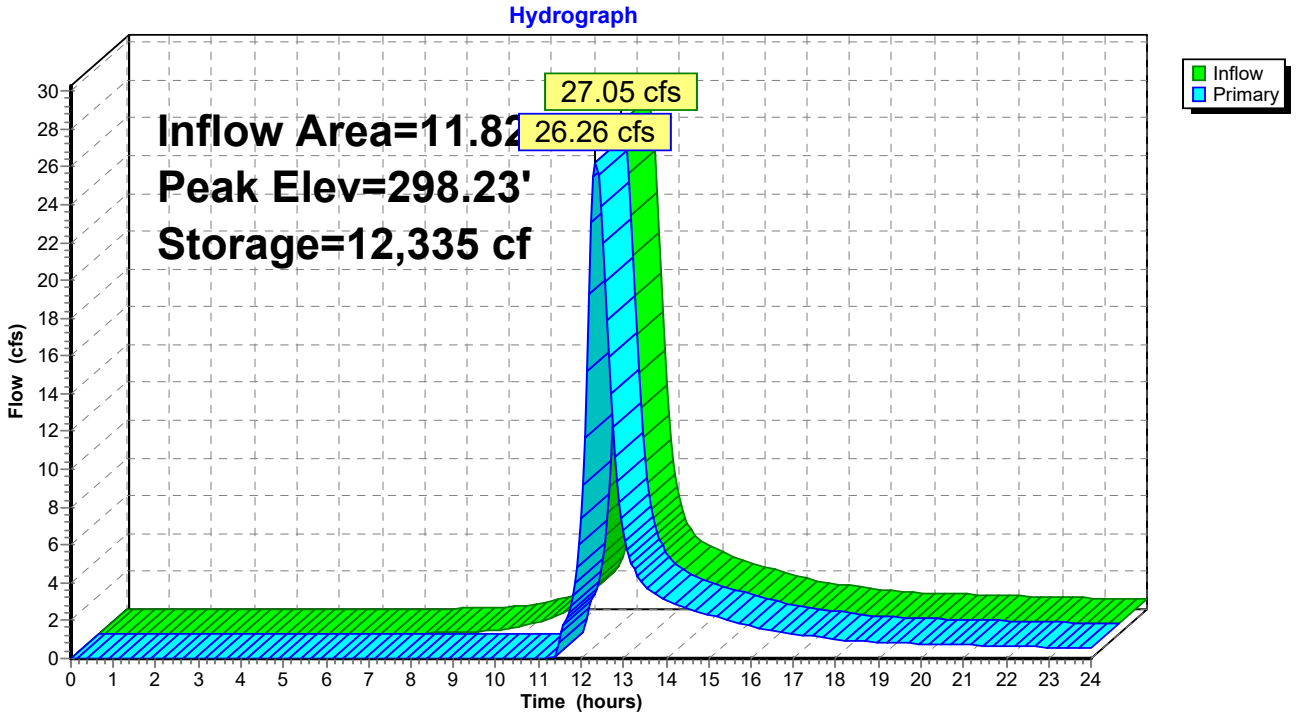
Volume	Invert	Avail.Storage	Storage Description
#1	297.40'	130,870 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
297.40	0	0	0
298.00	21,165	6,350	6,350
300.00	103,355	124,520	130,870

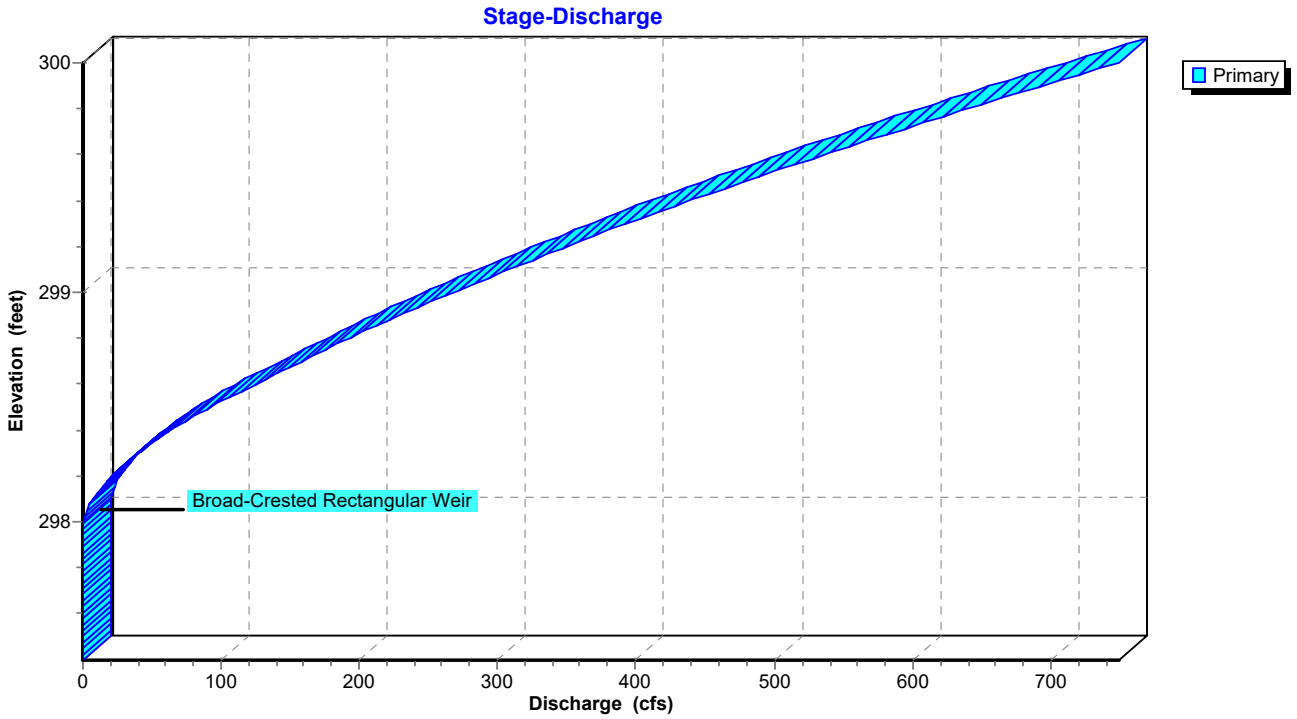
Device	Routing	Invert	Outlet Devices
#1	Primary	298.00'	**100.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=26.24 cfs @ 12.35 hrs HW=298.23' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 26.24 cfs @ 1.14 fps)

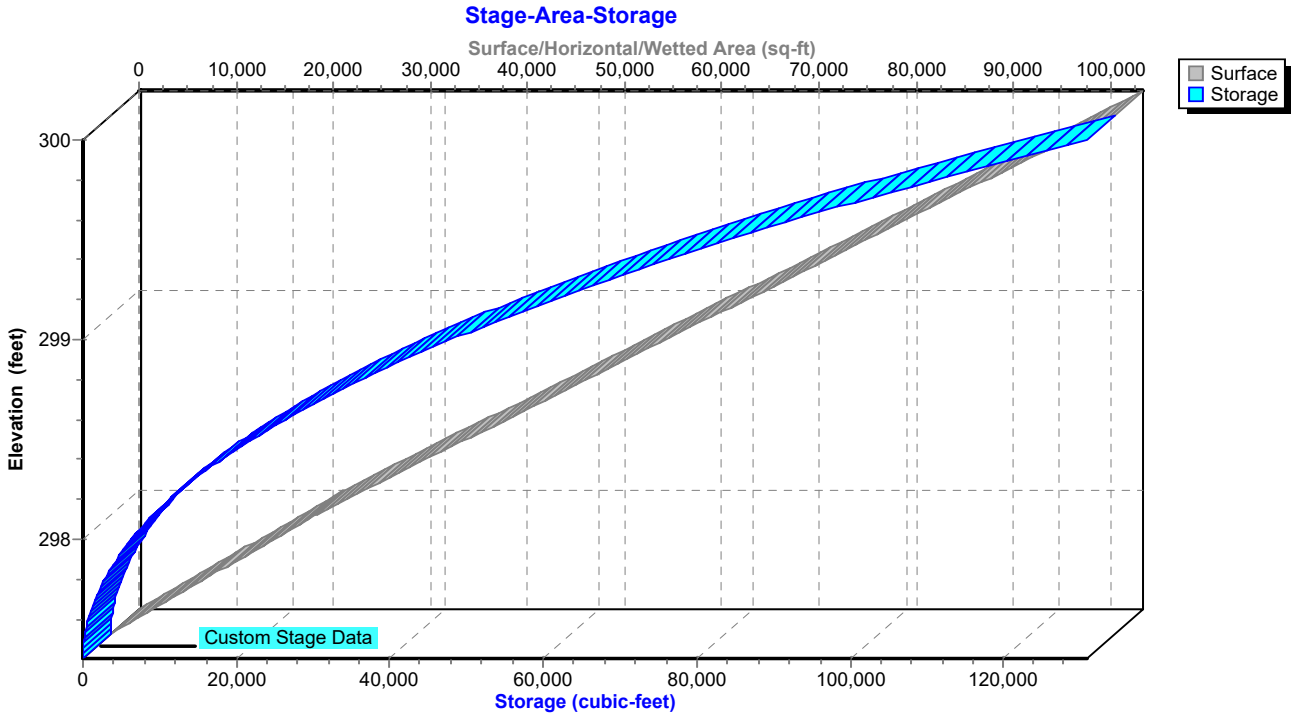
Pond P2: Large Shallow Onsite Depression



Pond P2: Large Shallow Onsite Depression



Pond P2: Large Shallow Onsite Depression



Hydrograph for Pond P2: Large Shallow Onsite Depression

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	297.40	0.00
0.50	0.00	0	297.40	0.00
1.00	0.00	0	297.40	0.00
1.50	0.00	0	297.40	0.00
2.00	0.00	0	297.40	0.00
2.50	0.00	0	297.40	0.00
3.00	0.00	0	297.40	0.00
3.50	0.00	0	297.40	0.00
4.00	0.00	0	297.40	0.00
4.50	0.00	0	297.40	0.00
5.00	0.00	0	297.40	0.00
5.50	0.00	0	297.40	0.00
6.00	0.00	0	297.40	0.00
6.50	0.00	1	297.40	0.00
7.00	0.02	15	297.43	0.00
7.50	0.03	58	297.46	0.00
8.00	0.06	137	297.49	0.00
8.50	0.09	263	297.52	0.00
9.00	0.13	458	297.56	0.00
9.50	0.24	772	297.61	0.00
10.00	0.45	1,384	297.68	0.00
10.50	0.75	2,439	297.77	0.00
11.00	1.20	4,174	297.89	0.00
11.50	2.11	6,842	298.02	0.82
12.00	**9.33**	**8,664**	**298.10**	**7.38**
12.50	**19.90**	**11,581**	**298.21**	**21.92**
13.00	5.98	8,519	298.09	6.77
13.50	3.68	7,791	298.06	3.85
14.00	3.03	7,597	298.06	3.13
14.50	2.55	7,456	298.05	2.61
15.00	2.25	7,354	298.05	2.31
15.50	1.95	7,254	298.04	2.01
16.00	1.65	7,151	298.04	1.70
16.50	1.40	7,061	298.03	1.44
17.00	1.26	7,011	298.03	1.29
17.50	1.13	6,966	298.03	1.15
18.00	0.99	6,919	298.03	1.02
18.50	0.89	6,881	298.02	0.90
19.00	0.85	6,863	298.02	0.86
19.50	0.81	6,840	298.02	0.82
20.00	0.77	6,816	298.02	0.78
20.50	0.73	6,793	298.02	0.74
21.00	0.70	6,773	298.02	0.71
21.50	0.67	6,755	298.02	0.68
22.00	0.64	6,736	298.02	0.65
22.50	0.61	6,718	298.02	0.62
23.00	0.57	6,699	298.02	0.58
23.50	0.54	6,680	298.02	0.55
24.00	0.51	6,661	298.01	0.52

Stage-Discharge for Pond P2: Large Shallow Onsite Depression

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
297.40	0.00	298.46	79.87	299.52	496.61
297.42	0.00	298.48	85.80	299.54	506.44
297.44	0.00	298.50	91.92	299.56	516.34
297.46	0.00	298.52	98.24	299.58	526.30
297.48	0.00	298.54	104.76	299.60	536.32
297.50	0.00	298.56	111.47	299.62	546.41
297.52	0.00	298.58	118.38	299.64	556.56
297.54	0.00	298.60	125.48	299.66	566.77
297.56	0.00	298.62	131.71	299.68	577.05
297.58	0.00	298.64	138.04	299.70	587.38
297.60	0.00	298.66	144.45	299.72	597.78
297.62	0.00	298.68	150.95	299.74	608.23
297.64	0.00	298.70	157.54	299.76	618.75
297.66	0.00	298.72	164.22	299.78	629.33
297.68	0.00	298.74	170.98	299.80	639.96
297.70	0.00	298.76	177.83	299.82	650.66
297.72	0.00	298.78	184.76	299.84	661.41
297.74	0.00	298.80	191.77	299.86	672.23
297.76	0.00	298.82	199.00	299.88	683.10
297.78	0.00	298.84	206.33	299.90	694.03
297.80	0.00	298.86	213.74	299.92	705.01
297.82	0.00	298.88	221.24	299.94	716.06
297.84	0.00	298.90	228.82	299.96	727.16
297.86	0.00	298.92	236.49	299.98	738.32
297.88	0.00	298.94	244.25	300.00	**749.53**
297.90	0.00	298.96	252.08		
297.92	0.00	298.98	260.00		
297.94	0.00	299.00	268.00		
297.96	0.00	299.02	275.87		
297.98	0.00	299.04	283.82		
298.00	0.00	299.06	291.82		
298.02	0.66	299.08	299.90		
298.04	1.87	299.10	308.04		
298.06	3.44	299.12	316.24		
298.08	5.29	299.14	324.50		
298.10	7.40	299.16	332.83		
298.12	9.73	299.18	341.22		
298.14	12.26	299.20	349.67		
298.16	14.98	299.22	358.31		
298.18	17.87	299.24	367.02		
298.20	20.93	299.26	375.79		
298.22	24.31	299.28	384.63		
298.24	27.89	299.30	393.53		
298.26	31.66	299.32	402.50		
298.28	35.62	299.34	411.52		
298.30	39.76	299.36	420.61		
298.32	44.10	299.38	429.76		
298.34	48.61	299.40	438.97		
298.36	53.31	299.42	448.41		
298.38	58.19	299.44	457.92		
298.40	63.25	299.46	467.49		
298.42	68.59	299.48	477.13		
298.44	74.13	299.50	486.84		

Stage-Area-Storage for Pond P2: Large Shallow Onsite Depression

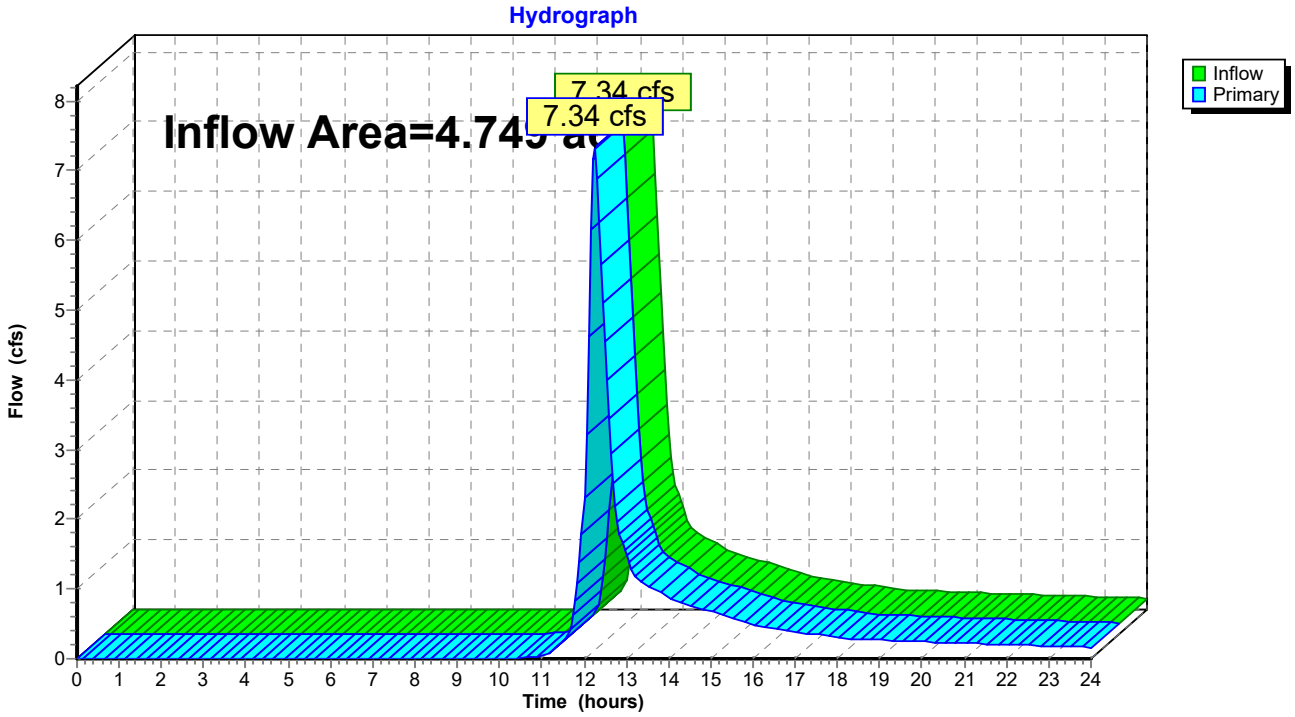
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
297.40	0	0
297.45	1,764	44
297.50	3,528	176
297.55	5,291	397
297.60	7,055	705
297.65	8,819	1,102
297.70	10,583	1,587
297.75	12,346	2,161
297.80	14,110	2,822
297.85	15,874	3,572
297.90	17,637	4,409
297.95	19,401	5,335
298.00	21,165	6,350
298.05	23,220	7,459
298.10	25,274	8,671
298.15	27,329	9,987
298.20	29,384	11,404
298.25	31,439	12,925
298.30	33,493	14,548
298.35	35,548	16,274
298.40	37,603	18,103
298.45	39,658	20,035
298.50	41,713	22,069
298.55	43,767	24,206
298.60	45,822	26,446
298.65	47,877	28,788
298.70	49,931	31,233
298.75	51,986	33,781
298.80	54,041	36,432
298.85	56,096	39,185
298.90	58,150	42,041
298.95	60,205	45,000
299.00	62,260	48,062
299.05	64,315	51,226
299.10	66,369	54,493
299.15	68,424	57,863
299.20	70,479	61,336
299.25	72,534	64,911
299.30	74,588	68,589
299.35	76,643	72,370
299.40	78,698	76,254
299.45	80,753	80,240
299.50	82,808	84,329
299.55	84,862	88,521
299.60	86,917	92,815
299.65	88,972	97,212
299.70	91,026	101,712
299.75	93,081	106,315
299.80	95,136	111,020
299.85	97,191	115,829
299.90	99,245	120,739
299.95	101,300	125,753
300.00	**103,355**	**130,870**

Summary for Link N: POI North

Inflow Area = 4.749 ac, 1.19% Impervious, Inflow Depth > 1.90" for 25-Year event
Inflow = 7.34 cfs @ 12.24 hrs, Volume= 0.752 af
Primary = 7.34 cfs @ 12.24 hrs, Volume= 0.752 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link N: POI North



Hydrograph for Link N: POI North

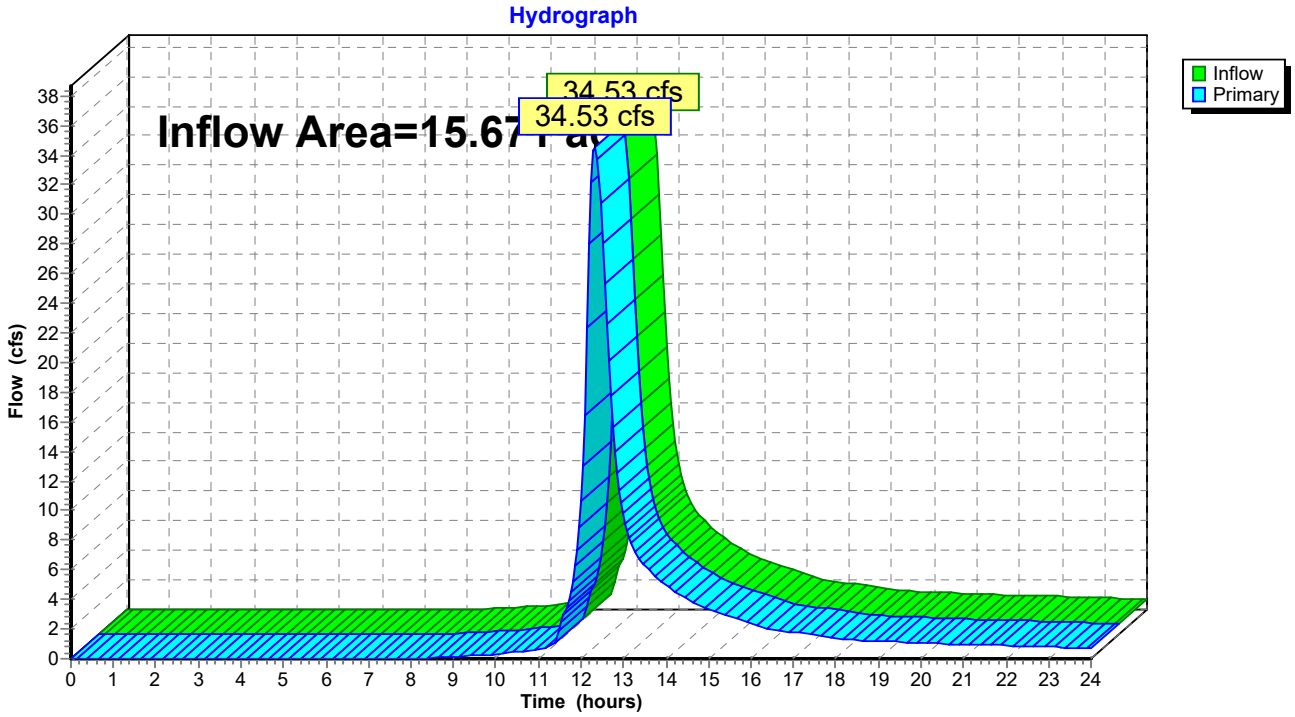
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	13.25	1.16	0.00	1.16
0.25	0.00	0.00	0.00	13.50	1.05	0.00	1.05
0.50	0.00	0.00	0.00	13.75	0.97	0.00	0.97
0.75	0.00	0.00	0.00	14.00	0.88	0.00	0.88
1.00	0.00	0.00	0.00	14.25	0.81	0.00	0.81
1.25	0.00	0.00	0.00	14.50	0.76	0.00	0.76
1.50	0.00	0.00	0.00	14.75	0.72	0.00	0.72
1.75	0.00	0.00	0.00	15.00	0.67	0.00	0.67
2.00	0.00	0.00	0.00	15.25	0.63	0.00	0.63
2.25	0.00	0.00	0.00	15.50	0.59	0.00	0.59
2.50	0.00	0.00	0.00	15.75	0.54	0.00	0.54
2.75	0.00	0.00	0.00	16.00	0.50	0.00	0.50
3.00	0.00	0.00	0.00	16.25	0.45	0.00	0.45
3.25	0.00	0.00	0.00	16.50	0.43	0.00	0.43
3.50	0.00	0.00	0.00	16.75	0.41	0.00	0.41
3.75	0.00	0.00	0.00	17.00	0.39	0.00	0.39
4.00	0.00	0.00	0.00	17.25	0.37	0.00	0.37
4.25	0.00	0.00	0.00	17.50	0.35	0.00	0.35
4.50	0.00	0.00	0.00	17.75	0.33	0.00	0.33
4.75	0.00	0.00	0.00	18.00	0.31	0.00	0.31
5.00	0.00	0.00	0.00	18.25	0.29	0.00	0.29
5.25	0.00	0.00	0.00	18.50	0.28	0.00	0.28
5.50	0.00	0.00	0.00	18.75	0.27	0.00	0.27
5.75	0.00	0.00	0.00	19.00	0.27	0.00	0.27
6.00	0.00	0.00	0.00	19.25	0.26	0.00	0.26
6.25	0.00	0.00	0.00	19.50	0.25	0.00	0.25
6.50	0.00	0.00	0.00	19.75	0.25	0.00	0.25
6.75	0.00	0.00	0.00	20.00	0.24	0.00	0.24
7.00	0.00	0.00	0.00	20.25	0.24	0.00	0.24
7.25	0.00	0.00	0.00	20.50	0.23	0.00	0.23
7.50	0.00	0.00	0.00	20.75	0.23	0.00	0.23
7.75	0.00	0.00	0.00	21.00	0.22	0.00	0.22
8.00	0.00	0.00	0.00	21.25	0.22	0.00	0.22
8.25	0.00	0.00	0.00	21.50	0.21	0.00	0.21
8.50	0.00	0.00	0.00	21.75	0.21	0.00	0.21
8.75	0.00	0.00	0.00	22.00	0.20	0.00	0.20
9.00	0.00	0.00	0.00	22.25	0.20	0.00	0.20
9.25	0.00	0.00	0.00	22.50	0.19	0.00	0.19
9.50	0.00	0.00	0.00	22.75	0.19	0.00	0.19
9.75	0.00	0.00	0.00	23.00	0.18	0.00	0.18
10.00	0.01	0.00	0.01	23.25	0.18	0.00	0.18
10.25	0.01	0.00	0.01	23.50	0.17	0.00	0.17
10.50	0.01	0.00	0.01	23.75	0.17	0.00	0.17
10.75	0.01	0.00	0.01	24.00	0.16	0.00	0.16
11.00	0.05	0.00	0.05				
11.25	0.12	0.00	0.12				
11.50	0.24	0.00	0.24				
11.75	0.62	0.00	0.62				
12.00	2.31	0.00	2.31				
12.25	**7.32**	0.00	**7.32**				
12.50	4.56	0.00	4.56				
12.75	2.19	0.00	2.19				
13.00	1.47	0.00	1.47				

Summary for Link S: POI South

Inflow Area = 15.671 ac, 12.35% Impervious, Inflow Depth > 3.06" for 25-Year event
Inflow = 34.53 cfs @ 12.33 hrs, Volume= 4.002 af
Primary = 34.53 cfs @ 12.33 hrs, Volume= 4.002 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link S: POI South



Hydrograph for Link S: POI South

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	13.25	7.41	0.00	7.41
0.25	0.00	0.00	0.00	13.50	6.27	0.00	6.27
0.50	0.00	0.00	0.00	13.75	5.59	0.00	5.59
0.75	0.00	0.00	0.00	14.00	5.01	0.00	5.01
1.00	0.00	0.00	0.00	14.25	4.44	0.00	4.44
1.25	0.00	0.00	0.00	14.50	3.99	0.00	3.99
1.50	0.00	0.00	0.00	14.75	3.62	0.00	3.62
1.75	0.00	0.00	0.00	15.00	3.31	0.00	3.31
2.00	0.00	0.00	0.00	15.25	3.04	0.00	3.04
2.25	0.00	0.00	0.00	15.50	2.81	0.00	2.81
2.50	0.00	0.00	0.00	15.75	2.58	0.00	2.58
2.75	0.00	0.00	0.00	16.00	2.36	0.00	2.36
3.00	0.00	0.00	0.00	16.25	2.15	0.00	2.15
3.25	0.00	0.00	0.00	16.50	1.99	0.00	1.99
3.50	0.00	0.00	0.00	16.75	1.88	0.00	1.88
3.75	0.00	0.00	0.00	17.00	1.78	0.00	1.78
4.00	0.00	0.00	0.00	17.25	1.69	0.00	1.69
4.25	0.00	0.00	0.00	17.50	1.59	0.00	1.59
4.50	0.00	0.00	0.00	17.75	1.50	0.00	1.50
4.75	0.00	0.00	0.00	18.00	1.41	0.00	1.41
5.00	0.00	0.00	0.00	18.25	1.31	0.00	1.31
5.25	0.00	0.00	0.00	18.50	1.25	0.00	1.25
5.50	0.00	0.00	0.00	18.75	1.21	0.00	1.21
5.75	0.00	0.00	0.00	19.00	1.18	0.00	1.18
6.00	0.00	0.00	0.00	19.25	1.16	0.00	1.16
6.25	0.00	0.00	0.00	19.50	1.13	0.00	1.13
6.50	0.00	0.00	0.00	19.75	1.10	0.00	1.10
6.75	0.00	0.00	0.00	20.00	1.07	0.00	1.07
7.00	0.00	0.00	0.00	20.25	1.04	0.00	1.04
7.25	0.01	0.00	0.01	20.50	1.02	0.00	1.02
7.50	0.01	0.00	0.01	20.75	0.99	0.00	0.99
7.75	0.01	0.00	0.01	21.00	0.97	0.00	0.97
8.00	0.03	0.00	0.03	21.25	0.95	0.00	0.95
8.25	0.04	0.00	0.04	21.50	0.93	0.00	0.93
8.50	0.06	0.00	0.06	21.75	0.91	0.00	0.91
8.75	0.08	0.00	0.08	22.00	0.89	0.00	0.89
9.00	0.12	0.00	0.12	22.25	0.87	0.00	0.87
9.25	0.16	0.00	0.16	22.50	0.84	0.00	0.84
9.50	0.20	0.00	0.20	22.75	0.82	0.00	0.82
9.75	0.25	0.00	0.25	23.00	0.80	0.00	0.80
10.00	0.31	0.00	0.31	23.25	0.78	0.00	0.78
10.25	0.37	0.00	0.37	23.50	0.76	0.00	0.76
10.50	0.46	0.00	0.46	23.75	0.74	0.00	0.74
10.75	0.55	0.00	0.55	24.00	0.71	0.00	0.71
11.00	0.66	0.00	0.66				
11.25	0.80	0.00	0.80				
11.50	1.88	0.00	1.88				
11.75	4.48	0.00	4.48				
12.00	10.63	0.00	10.63				
12.25	**32.13**	0.00	**32.13**				
12.50	**28.00**	0.00	**28.00**				
12.75	15.66	0.00	15.66				
13.00	9.77	0.00	9.77				

Time span=0.00-24.00 hrs, dt=0.05 hrs, 481 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA 1: Drainage Area 1 Runoff Area=32,821 sf 1.83% Impervious Runoff Depth>5.98"
Flow Length=344' Tc=15.6 min CN=80 Runoff=3.88 cfs 0.375 af

Subcatchment DA 2: Drainage Area 2 Runoff Area=404,999 sf 0.60% Impervious Runoff Depth>4.78"
Flow Length=878' Tc=21.1 min CN=70 Runoff=34.41 cfs 3.705 af

Subcatchment DA 3: Drainage Area 3 Runoff Area=199,876 sf 1.24% Impervious Runoff Depth>3.62"
Flow Length=665' Tc=15.8 min CN=60 Runoff=14.14 cfs 1.383 af

Subcatchment DA 4: Drainage Area 4 - Runoff Area=10,931 sf 0.00% Impervious Runoff Depth>5.99"
Flow Length=63' Slope=0.1030 '/' Tc=6.0 min CN=80 Runoff=1.69 cfs 0.125 af

Subcatchment OFF1: Offsite Drainage Runoff Area=123,797 sf 57.81% Impervious Runoff Depth>6.23"
Flow Length=816' Tc=6.0 min CN=82 Runoff=19.78 cfs 1.475 af

Subcatchment OFF2: Offsite Drainage Runoff Area=110,079 sf 8.81% Impervious Runoff Depth>6.21"
Tc=21.1 min CN=82 Runoff=11.89 cfs 1.308 af

Subcatchment OFF3: Offsite Drainage Area 3 Runoff Area=6,977 sf 0.00% Impervious Runoff Depth>5.14"
Tc=15.8 min CN=73 Runoff=0.71 cfs 0.069 af

Pond P1: Ex Onsite Retention Pond Peak Elev=298.48' Storage=14,505 cf Inflow=21.47 cfs 1.600 af
Primary=15.47 cfs 1.579 af Secondary=0.00 cfs 0.000 af Outflow=15.47 cfs 1.579 af

Pond P2: Large Shallow Onsite Peak Elev=298.32' Storage=15,389 cf Inflow=46.29 cfs 5.013 af
Outflow=45.19 cfs 4.856 af

Link N: POI North Inflow=14.85 cfs 1.451 af
Primary=14.85 cfs 1.451 af

Link S: POI South Inflow=59.81 cfs 6.811 af
Primary=59.81 cfs 6.811 af

Total Runoff Area = 20.420 ac Runoff Volume = 8.439 af Average Runoff Depth = 4.96"
90.24% Pervious = 18.427 ac 9.76% Impervious = 1.992 ac

Summary for Subcatchment DA 1: Drainage Area 1

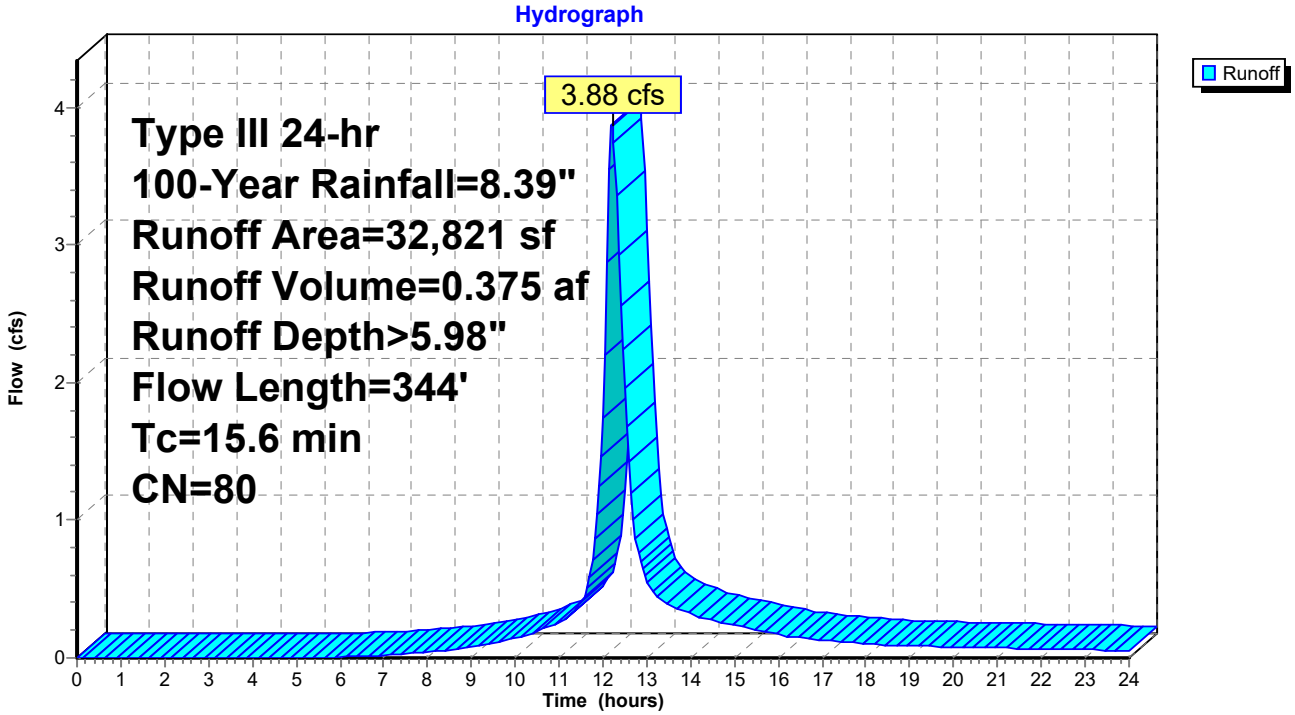
Runoff = 3.88 cfs @ 12.21 hrs, Volume= 0.375 af, Depth> 5.98"
Routed to Link S : POI South

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.39"

	Area (sf)	CN	Description
*	600	98	Macadam Drive
	260	77	Woods, Good, HSG D
	31,961	80	>75% Grass cover, Good, HSG D
	32,821	80	Weighted Average
	32,221		98.17% Pervious Area
	600		1.83% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.1	100	0.0100	0.13		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.11"
2.5	244	0.0120	1.64		**Shallow Concentrated Flow, SCF (Road Swale)** Grassed Waterway Kv= 15.0 fps
15.6	344	Total			

Subcatchment DA 1: Drainage Area 1



Hydrograph for Subcatchment DA 1: Drainage Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.02	0.00	0.00
0.50	0.04	0.00	0.00
0.75	0.06	0.00	0.00
1.00	0.08	0.00	0.00
1.25	0.10	0.00	0.00
1.50	0.13	0.00	0.00
1.75	0.15	0.00	0.00
2.00	0.17	0.00	0.00
2.25	0.19	0.00	0.00
2.50	0.21	0.00	0.00
2.75	0.23	0.00	0.00
3.00	0.26	0.00	0.00
3.25	0.28	0.00	0.00
3.50	0.31	0.00	0.00
3.75	0.33	0.00	0.00
4.00	0.36	0.00	0.00
4.25	0.39	0.00	0.00
4.50	0.42	0.00	0.00
4.75	0.45	0.00	0.00
5.00	0.48	0.00	0.00
5.25	0.51	0.00	0.00
5.50	0.54	0.00	0.00
5.75	0.57	0.00	0.00
6.00	0.60	0.00	0.01
6.25	0.64	0.01	0.01
6.50	0.68	0.01	0.01
6.75	0.72	0.02	0.02
7.00	0.76	0.02	0.02
7.25	0.80	0.03	0.02
7.50	0.85	0.04	0.03
7.75	0.90	0.06	0.03
8.00	0.96	0.07	0.04
8.25	1.01	0.09	0.05
8.50	1.08	0.11	0.06
8.75	1.15	0.13	0.07
9.00	1.22	0.16	0.08
9.25	1.30	0.20	0.10
9.50	1.39	0.23	0.11
9.75	1.49	0.28	0.13
10.00	1.59	0.33	0.14
10.25	1.69	0.39	0.16
10.50	1.82	0.45	0.19
10.75	1.95	0.53	0.22
11.00	2.10	0.62	0.26
11.25	2.27	0.74	0.31
11.50	2.50	0.89	0.41
11.75	2.98	1.24	0.71
12.00	4.19	2.20	**1.75**
12.25	5.41	3.25	**3.74**
12.50	5.89	3.68	1.95
12.75	6.12	3.89	0.87
13.00	6.29	4.05	0.56
13.25	6.44	4.18	0.44
13.50	6.57	4.30	0.39
13.75	6.70	4.41	0.35
14.00	6.80	4.51	0.32
14.25	6.90	4.61	0.29
14.50	7.00	4.69	0.27
14.75	7.09	4.77	0.25
15.00	7.17	4.85	0.24
15.25	7.24	4.92	0.22
15.50	7.31	4.98	0.20
15.75	7.38	5.04	0.19
16.00	7.43	5.10	0.17
16.25	7.49	5.15	0.16
16.50	7.54	5.19	0.15
16.75	7.59	5.24	0.14
17.00	7.63	5.28	0.13
17.25	7.67	5.32	0.12
17.50	7.71	5.36	0.12
17.75	7.75	5.39	0.11
18.00	7.79	5.42	0.10
18.25	7.82	5.46	0.10
18.50	7.85	5.49	0.09
18.75	7.88	5.52	0.09
19.00	7.91	5.54	0.09
19.25	7.94	5.57	0.09
19.50	7.97	5.60	0.08
19.75	8.00	5.63	0.08
20.00	8.03	5.65	0.08
20.25	8.06	5.68	0.08
20.50	8.08	5.70	0.08
20.75	8.11	5.73	0.07
21.00	8.13	5.75	0.07
21.25	8.16	5.77	0.07
21.50	8.18	5.80	0.07
21.75	8.21	5.82	0.07
22.00	8.23	5.84	0.07
22.25	8.25	5.86	0.06
22.50	8.27	5.88	0.06
22.75	8.29	5.90	0.06
23.00	8.31	5.92	0.06
23.25	8.33	5.94	0.06
23.50	8.35	5.96	0.06
23.75	8.37	5.97	0.05
24.00	**8.39**	**5.99**	0.05

Summary for Subcatchment DA 2: Drainage Area 2

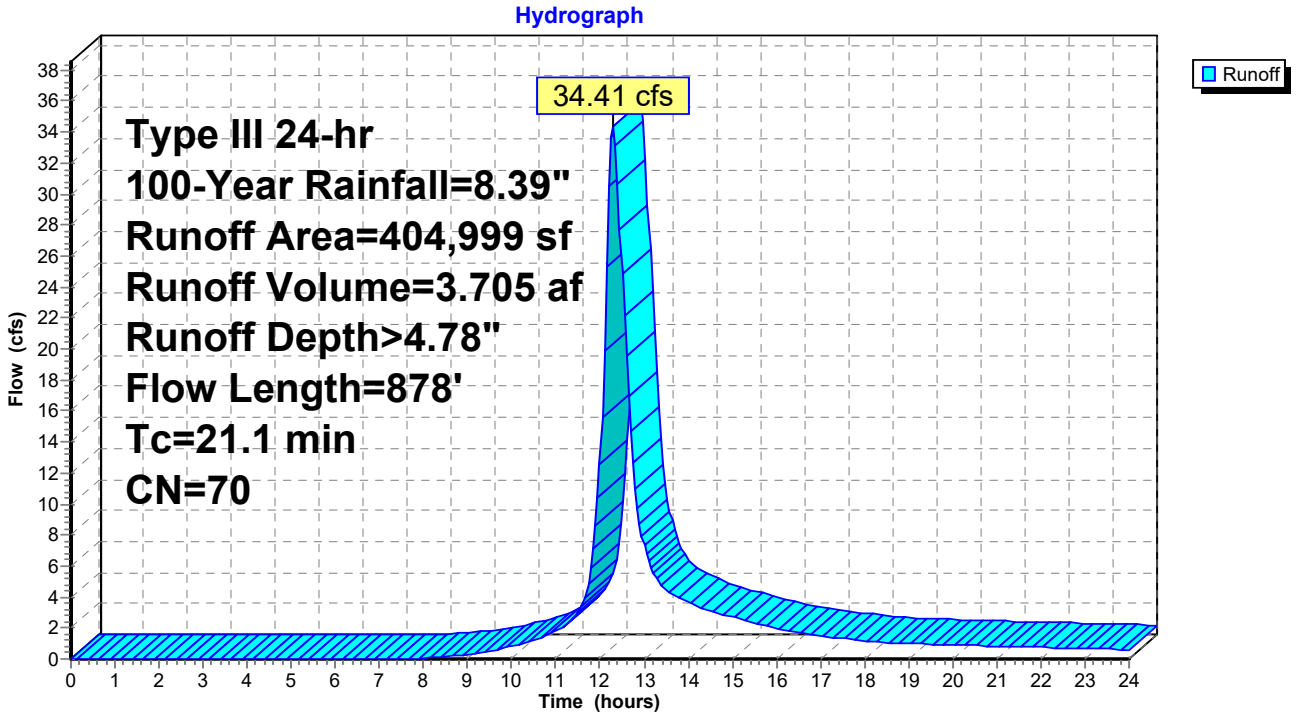
Runoff = 34.41 cfs @ 12.29 hrs, Volume= 3.705 af, Depth> 4.78"
Routed to Pond P2 : Large Shallow Onsite Depression

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.39"

	Area (sf)	CN	Description
*	2,447	98	Misc. Macadam
	82,769	77	Woods, Good, HSG D
	148,017	80	>75% Grass cover, Good, HSG D
	88,344	55	Woods, Good, HSG B
	83,422	61	>75% Grass cover, Good, HSG B
	404,999	70	Weighted Average
	402,552		99.40% Pervious Area
	2,447		0.60% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	100	0.0180	0.16		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.11"
10.7	778	0.0300	1.21		**Shallow Concentrated Flow, SCF** Short Grass Pasture Kv= 7.0 fps
21.1	878	Total			

Subcatchment DA 2: Drainage Area 2



Hydrograph for Subcatchment DA 2: Drainage Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.02	0.00	0.00
0.50	0.04	0.00	0.00
0.75	0.06	0.00	0.00
1.00	0.08	0.00	0.00
1.25	0.10	0.00	0.00
1.50	0.13	0.00	0.00
1.75	0.15	0.00	0.00
2.00	0.17	0.00	0.00
2.25	0.19	0.00	0.00
2.50	0.21	0.00	0.00
2.75	0.23	0.00	0.00
3.00	0.26	0.00	0.00
3.25	0.28	0.00	0.00
3.50	0.31	0.00	0.00
3.75	0.33	0.00	0.00
4.00	0.36	0.00	0.00
4.25	0.39	0.00	0.00
4.50	0.42	0.00	0.00
4.75	0.45	0.00	0.00
5.00	0.48	0.00	0.00
5.25	0.51	0.00	0.00
5.50	0.54	0.00	0.00
5.75	0.57	0.00	0.00
6.00	0.60	0.00	0.00
6.25	0.64	0.00	0.00
6.50	0.68	0.00	0.00
6.75	0.72	0.00	0.00
7.00	0.76	0.00	0.00
7.25	0.80	0.00	0.00
7.50	0.85	0.00	0.00
7.75	0.90	0.00	0.00
8.00	0.96	0.00	0.03
8.25	1.01	0.01	0.08
8.50	1.08	0.01	0.14
8.75	1.15	0.02	0.22
9.00	1.22	0.03	0.31
9.25	1.30	0.04	0.41
9.50	1.39	0.06	0.53
9.75	1.49	0.08	0.67
10.00	1.59	0.11	0.82
10.25	1.69	0.14	0.99
10.50	1.82	0.18	1.23
10.75	1.95	0.22	1.51
11.00	2.10	0.28	1.83
11.25	2.27	0.35	2.23
11.50	2.50	0.46	3.03
11.75	2.98	0.70	4.88
12.00	4.19	1.46	12.53
12.25	5.41	2.34	**33.66**
12.50	5.89	2.72	**24.84**
12.75	6.12	2.90	12.64
13.00	6.29	3.04	7.30
13.25	6.44	3.16	5.27
13.50	6.57	3.27	4.46
13.75	6.70	3.37	4.04
14.00	6.80	3.46	3.66
14.25	6.90	3.54	3.31
14.50	7.00	3.62	3.07
14.75	7.09	3.69	2.88
15.00	7.17	3.76	2.70
15.25	7.24	3.82	2.52
15.50	7.31	3.88	2.34
15.75	7.38	3.93	2.16
16.00	7.43	3.98	1.97
16.25	7.49	4.03	1.79
16.50	7.54	4.07	1.68
16.75	7.59	4.11	1.59
17.00	7.63	4.15	1.51
17.25	7.67	4.19	1.43
17.50	7.71	4.22	1.35
17.75	7.75	4.25	1.26
18.00	7.79	4.28	1.18
18.25	7.82	4.31	1.11
18.50	7.85	4.34	1.06
18.75	7.88	4.36	1.03
19.00	7.91	4.39	1.01
19.25	7.94	4.42	0.99
19.50	7.97	4.44	0.96
19.75	8.00	4.47	0.94
20.00	8.03	4.49	0.91
20.25	8.06	4.51	0.89
20.50	8.08	4.54	0.87
20.75	8.11	4.56	0.85
21.00	8.13	4.58	0.83
21.25	8.16	4.60	0.81
21.50	8.18	4.62	0.79
21.75	8.21	4.64	0.77
22.00	8.23	4.66	0.76
22.25	8.25	4.68	0.74
22.50	8.27	4.70	0.72
22.75	8.29	4.72	0.70
23.00	8.31	4.74	0.68
23.25	8.33	4.75	0.66
23.50	8.35	4.77	0.64
23.75	8.37	4.79	0.62
24.00	**8.39**	**4.80**	0.61

Summary for Subcatchment DA 3: Drainage Area 3

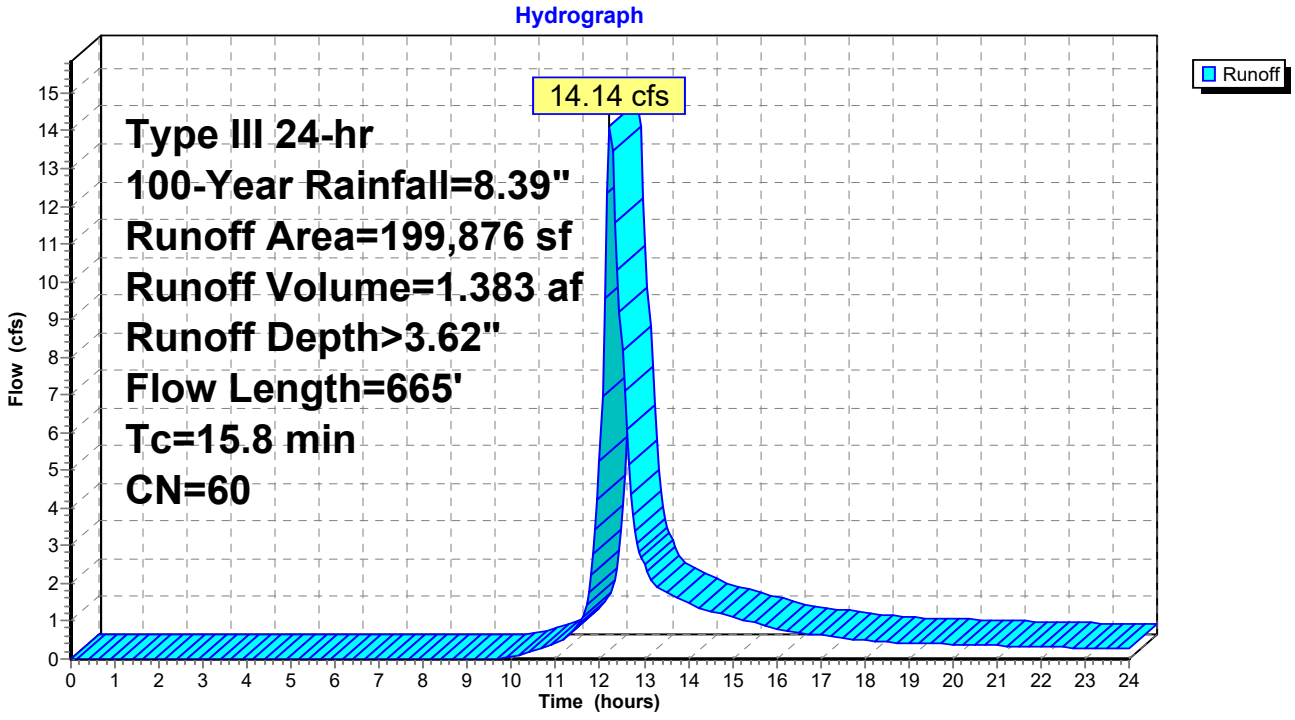
Runoff = 14.14 cfs @ 12.23 hrs, Volume= 1.383 af, Depth> 3.62"
Routed to Link N : POI North

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.39"

	Area (sf)	CN	Description
*	2,471	98	Impervious
	63,897	61	>75% Grass cover, Good, HSG B
	112,976	55	Woods, Good, HSG B
	10,735	80	>75% Grass cover, Good, HSG D
	9,797	77	Woods, Good, HSG D
	199,876	60	Weighted Average
	197,405		98.76% Pervious Area
	2,471		1.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.2	100	0.0240	0.18		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.11"
6.6	565	0.0410	1.42		**Shallow Concentrated Flow, SCF** Short Grass Pasture Kv= 7.0 fps
15.8	665	Total			

Subcatchment DA 3: Drainage Area 3



Hydrograph for Subcatchment DA 3: Drainage Area 3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	13.25	6.44	2.21	1.97
0.25	0.02	0.00	0.00	13.50	6.57	2.31	1.77
0.50	0.04	0.00	0.00	13.75	6.70	2.39	1.62
0.75	0.06	0.00	0.00	14.00	6.80	2.47	1.48
1.00	0.08	0.00	0.00	14.25	6.90	2.54	1.34
1.25	0.10	0.00	0.00	14.50	7.00	2.60	1.26
1.50	0.13	0.00	0.00	14.75	7.09	2.66	1.19
1.75	0.15	0.00	0.00	15.00	7.17	2.72	1.11
2.00	0.17	0.00	0.00	15.25	7.24	2.78	1.04
2.25	0.19	0.00	0.00	15.50	7.31	2.83	0.96
2.50	0.21	0.00	0.00	15.75	7.38	2.87	0.89
2.75	0.23	0.00	0.00	16.00	7.43	2.91	0.81
3.00	0.26	0.00	0.00	16.25	7.49	2.95	0.74
3.25	0.28	0.00	0.00	16.50	7.54	2.99	0.70
3.50	0.31	0.00	0.00	16.75	7.59	3.03	0.67
3.75	0.33	0.00	0.00	17.00	7.63	3.06	0.63
4.00	0.36	0.00	0.00	17.25	7.67	3.09	0.60
4.25	0.39	0.00	0.00	17.50	7.71	3.12	0.56
4.50	0.42	0.00	0.00	17.75	7.75	3.15	0.53
4.75	0.45	0.00	0.00	18.00	7.79	3.17	0.49
5.00	0.48	0.00	0.00	18.25	7.82	3.20	0.46
5.25	0.51	0.00	0.00	18.50	7.85	3.22	0.45
5.50	0.54	0.00	0.00	18.75	7.88	3.25	0.44
5.75	0.57	0.00	0.00	19.00	7.91	3.27	0.43
6.00	0.60	0.00	0.00	19.25	7.94	3.29	0.42
6.25	0.64	0.00	0.00	19.50	7.97	3.31	0.41
6.50	0.68	0.00	0.00	19.75	8.00	3.33	0.40
6.75	0.72	0.00	0.00	20.00	8.03	3.36	0.39
7.00	0.76	0.00	0.00	20.25	8.06	3.38	0.38
7.25	0.80	0.00	0.00	20.50	8.08	3.40	0.37
7.50	0.85	0.00	0.00	20.75	8.11	3.41	0.36
7.75	0.90	0.00	0.00	21.00	8.13	3.43	0.36
8.00	0.96	0.00	0.00	21.25	8.16	3.45	0.35
8.25	1.01	0.00	0.00	21.50	8.18	3.47	0.34
8.50	1.08	0.00	0.00	21.75	8.21	3.49	0.33
8.75	1.15	0.00	0.00	22.00	8.23	3.51	0.32
9.00	1.22	0.00	0.00	22.25	8.25	3.52	0.32
9.25	1.30	0.00	0.00	22.50	8.27	3.54	0.31
9.50	1.39	0.00	0.00	22.75	8.29	3.56	0.30
9.75	1.49	0.00	0.03	23.00	8.31	3.57	0.29
10.00	1.59	0.01	0.08	23.25	8.33	3.59	0.28
10.25	1.69	0.02	0.14	23.50	8.35	3.60	0.28
10.50	1.82	0.03	0.22	23.75	8.37	3.61	0.27
10.75	1.95	0.05	0.31	24.00	**8.39**	**3.63**	0.26
11.00	2.10	0.08	0.43				
11.25	2.27	0.12	0.59				
11.50	2.50	0.17	0.89				
11.75	2.98	0.33	1.76				
12.00	4.19	0.86	5.26				
12.25	5.41	1.55	**14.01**				
12.50	5.89	1.85	8.15				
12.75	6.12	2.00	3.80				
13.00	6.29	2.12	2.52				

Summary for Subcatchment DA 4: Drainage Area 4 - Onsite Tributary to Pond

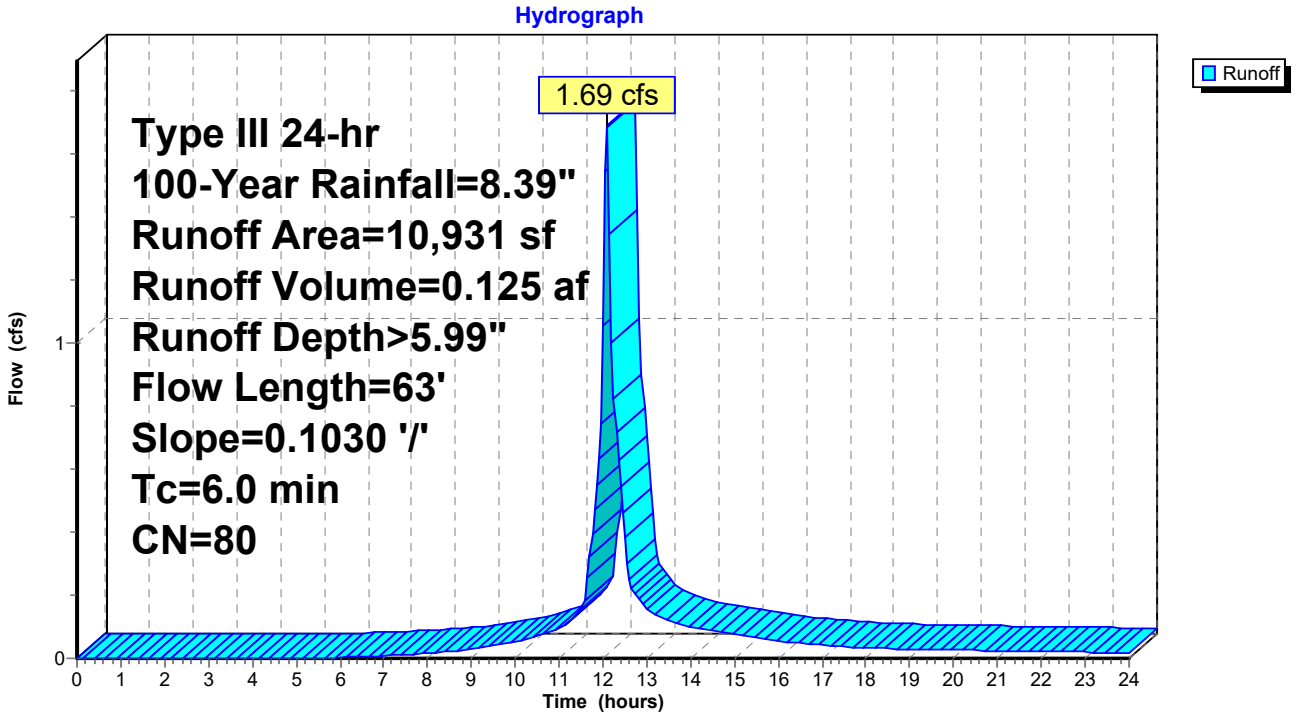
Runoff = 1.69 cfs @ 12.09 hrs, Volume= 0.125 af, Depth> 5.99"
Routed to Pond P1 : Ex Onsite Retention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.39"

Area (sf)	CN	Description
10,931	80	>75% Grass cover, Good, HSG D
10,931		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.6	63	0.1030	0.29		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.11"
2.4					**Direct Entry, + Entry to Reach Minimum**
6.0	63	Total			

Subcatchment DA 4: Drainage Area 4 - Onsite Tributary to Pond



Hydrograph for Subcatchment DA 4: Drainage Area 4 - Onsite Tributary to Pond

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.02	0.00	0.00
0.50	0.04	0.00	0.00
0.75	0.06	0.00	0.00
1.00	0.08	0.00	0.00
1.25	0.10	0.00	0.00
1.50	0.13	0.00	0.00
1.75	0.15	0.00	0.00
2.00	0.17	0.00	0.00
2.25	0.19	0.00	0.00
2.50	0.21	0.00	0.00
2.75	0.23	0.00	0.00
3.00	0.26	0.00	0.00
3.25	0.28	0.00	0.00
3.50	0.31	0.00	0.00
3.75	0.33	0.00	0.00
4.00	0.36	0.00	0.00
4.25	0.39	0.00	0.00
4.50	0.42	0.00	0.00
4.75	0.45	0.00	0.00
5.00	0.48	0.00	0.00
5.25	0.51	0.00	0.00
5.50	0.54	0.00	0.00
5.75	0.57	0.00	0.00
6.00	0.60	0.00	0.00
6.25	0.64	0.01	0.00
6.50	0.68	0.01	0.00
6.75	0.72	0.02	0.01
7.00	0.76	0.02	0.01
7.25	0.80	0.03	0.01
7.50	0.85	0.04	0.01
7.75	0.90	0.06	0.01
8.00	0.96	0.07	0.01
8.25	1.01	0.09	0.02
8.50	1.08	0.11	0.02
8.75	1.15	0.13	0.03
9.00	1.22	0.16	0.03
9.25	1.30	0.20	0.03
9.50	1.39	0.23	0.04
9.75	1.49	0.28	0.05
10.00	1.59	0.33	0.05
10.25	1.69	0.39	0.06
10.50	1.82	0.45	0.07
10.75	1.95	0.53	0.08
11.00	2.10	0.62	0.09
11.25	2.27	0.74	0.12
11.50	2.50	0.89	0.16
11.75	2.98	1.24	0.40
12.00	4.19	2.20	**1.06**
12.25	5.41	3.25	**0.82**
12.50	5.89	3.68	0.38
12.75	6.12	3.89	0.20
13.00	6.29	4.05	0.16
13.25	6.44	4.18	0.13
13.50	6.57	4.30	0.12
13.75	6.70	4.41	0.11
14.00	6.80	4.51	0.10
14.25	6.90	4.61	0.09
14.50	7.00	4.69	0.09
14.75	7.09	4.77	0.08
15.00	7.17	4.85	0.08
15.25	7.24	4.92	0.07
15.50	7.31	4.98	0.06
15.75	7.38	5.04	0.06
16.00	7.43	5.10	0.05
16.25	7.49	5.15	0.05
16.50	7.54	5.19	0.05
16.75	7.59	5.24	0.04
17.00	7.63	5.28	0.04
17.25	7.67	5.32	0.04
17.50	7.71	5.36	0.04
17.75	7.75	5.39	0.04
18.00	7.79	5.42	0.03
18.25	7.82	5.46	0.03
18.50	7.85	5.49	0.03
18.75	7.88	5.52	0.03
19.00	7.91	5.54	0.03
19.25	7.94	5.57	0.03
19.50	7.97	5.60	0.03
19.75	8.00	5.63	0.03
20.00	8.03	5.65	0.03
20.25	8.06	5.68	0.03
20.50	8.08	5.70	0.02
20.75	8.11	5.73	0.02
21.00	8.13	5.75	0.02
21.25	8.16	5.77	0.02
21.50	8.18	5.80	0.02
21.75	8.21	5.82	0.02
22.00	8.23	5.84	0.02
22.25	8.25	5.86	0.02
22.50	8.27	5.88	0.02
22.75	8.29	5.90	0.02
23.00	8.31	5.92	0.02
23.25	8.33	5.94	0.02
23.50	8.35	5.96	0.02
23.75	8.37	5.97	0.02
24.00	**8.39**	**5.99**	0.02

Summary for Subcatchment OFF1: Offsite Drainage Area 1

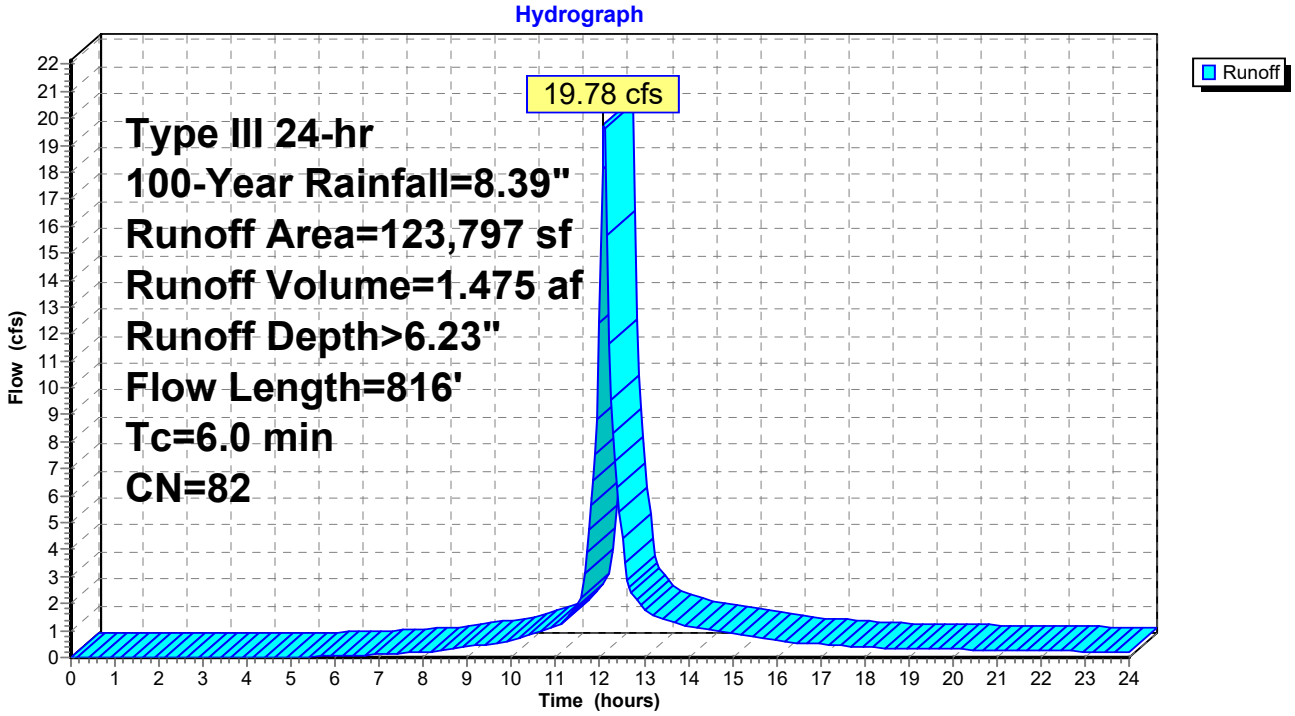
Runoff = 19.78 cfs @ 12.09 hrs, Volume= 1.475 af, Depth> 6.23"
Routed to Pond P1 : Ex Onsite Retention Pond

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.39"

	Area (sf)	CN	Description
	52,228	61	>75% Grass cover, Good, HSG B
*	71,569	98	Impervious Surfaces
	123,797	82	Weighted Average
	52,228		42.19% Pervious Area
	71,569		57.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	345	0.0230	3.08		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.4	471	0.0526	17.89	56.21	**Pipe Channel, 24" Pipe from Jehova Site to onsite detention** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
3.7					**Direct Entry, + Entry to Reach Minimum**
6.0	816	Total			

Subcatchment OFF1: Offsite Drainage Area 1



Hydrograph for Subcatchment OFF1: Offsite Drainage Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.02	0.00	0.00
0.50	0.04	0.00	0.00
0.75	0.06	0.00	0.00
1.00	0.08	0.00	0.00
1.25	0.10	0.00	0.00
1.50	0.13	0.00	0.00
1.75	0.15	0.00	0.00
2.00	0.17	0.00	0.00
2.25	0.19	0.00	0.00
2.50	0.21	0.00	0.00
2.75	0.23	0.00	0.00
3.00	0.26	0.00	0.00
3.25	0.28	0.00	0.00
3.50	0.31	0.00	0.00
3.75	0.33	0.00	0.00
4.00	0.36	0.00	0.00
4.25	0.39	0.00	0.00
4.50	0.42	0.00	0.00
4.75	0.45	0.00	0.00
5.00	0.48	0.00	0.01
5.25	0.51	0.00	0.02
5.50	0.54	0.00	0.03
5.75	0.57	0.01	0.04
6.00	0.60	0.01	0.05
6.25	0.64	0.02	0.06
6.50	0.68	0.02	0.08
6.75	0.72	0.03	0.09
7.00	0.76	0.04	0.11
7.25	0.80	0.05	0.13
7.50	0.85	0.07	0.16
7.75	0.90	0.08	0.18
8.00	0.96	0.10	0.21
8.25	1.01	0.12	0.24
8.50	1.08	0.14	0.29
8.75	1.15	0.17	0.34
9.00	1.22	0.21	0.39
9.25	1.30	0.24	0.45
9.50	1.39	0.29	0.51
9.75	1.49	0.34	0.58
10.00	1.59	0.39	0.64
10.25	1.69	0.46	0.74
10.50	1.82	0.53	0.87
10.75	1.95	0.62	1.00
11.00	2.10	0.71	1.13
11.25	2.27	0.84	1.46
11.50	2.50	1.00	1.92
11.75	2.98	1.36	4.74
12.00	4.19	2.37	**12.43**
12.25	5.41	3.45	**9.57**
12.50	5.89	3.89	4.41
12.75	6.12	4.09	2.32
13.00	6.29	4.26	1.81
13.25	6.44	4.39	1.54
13.50	6.57	4.52	1.41
13.75	6.70	4.63	1.28
14.00	6.80	4.73	1.15
14.25	6.90	4.83	1.06
14.50	7.00	4.91	1.00
14.75	7.09	5.00	0.93
15.00	7.17	5.07	0.87
15.25	7.24	5.14	0.81
15.50	7.31	5.21	0.74
15.75	7.38	5.27	0.68
16.00	7.43	5.32	0.61
16.25	7.49	5.37	0.57
16.50	7.54	5.42	0.54
16.75	7.59	5.47	0.52
17.00	7.63	5.51	0.49
17.25	7.67	5.55	0.46
17.50	7.71	5.59	0.43
17.75	7.75	5.62	0.40
18.00	7.79	5.66	0.37
18.25	7.82	5.69	0.36
18.50	7.85	5.72	0.35
18.75	7.88	5.75	0.34
19.00	7.91	5.78	0.33
19.25	7.94	5.81	0.33
19.50	7.97	5.83	0.32
19.75	8.00	5.86	0.31
20.00	8.03	5.89	0.30
20.25	8.06	5.91	0.29
20.50	8.08	5.94	0.29
20.75	8.11	5.96	0.28
21.00	8.13	5.99	0.27
21.25	8.16	6.01	0.27
21.50	8.18	6.03	0.26
21.75	8.21	6.06	0.25
22.00	8.23	6.08	0.25
22.25	8.25	6.10	0.24
22.50	8.27	6.12	0.24
22.75	8.29	6.14	0.23
23.00	8.31	6.16	0.22
23.25	8.33	6.18	0.22
23.50	8.35	6.20	0.21
23.75	8.37	6.21	0.20
24.00	**8.39**	**6.23**	0.20

Summary for Subcatchment OFF2: Offsite Drainage Area 2

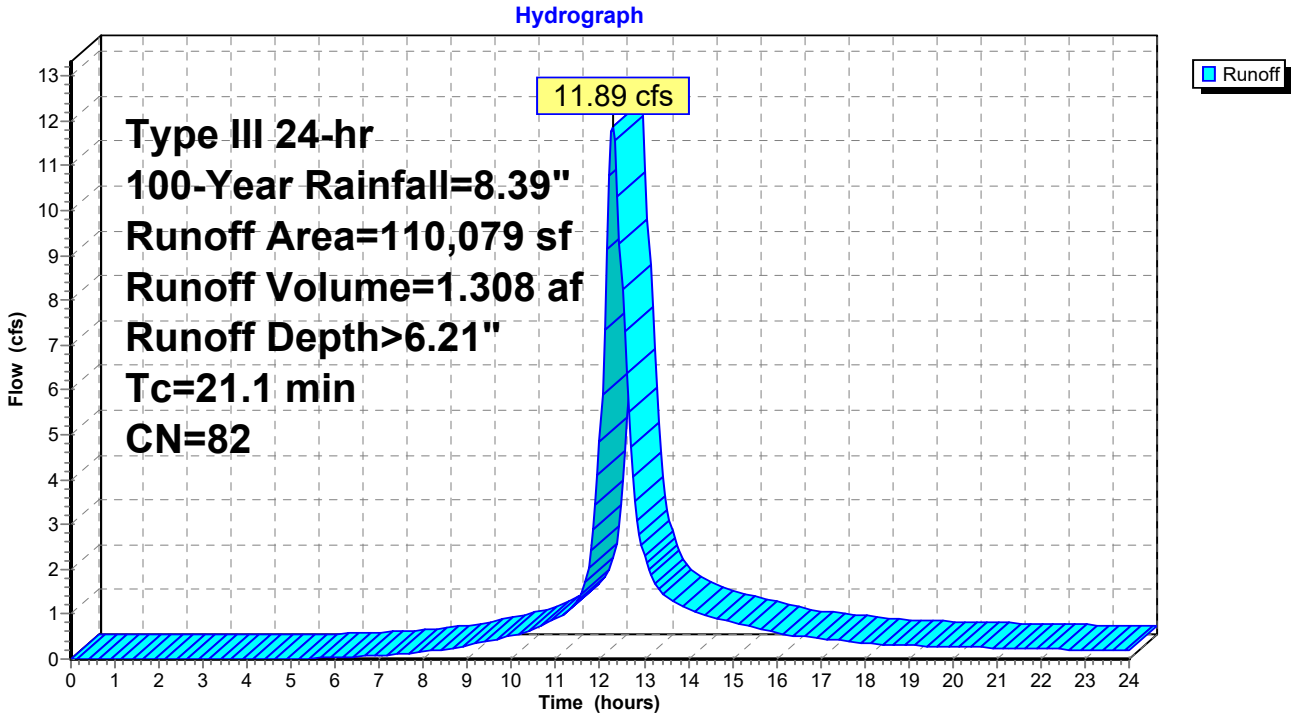
Runoff = 11.89 cfs @ 12.28 hrs, Volume= 1.308 af, Depth> 6.21"
Routed to Pond P2 : Large Shallow Onsite Depression

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.39"

	Area (sf)	CN	Description
	100,377	80	>75% Grass cover, Good, HSG D
*	9,702	98	Impervious Surfaces
	110,079	82	Weighted Average
	100,377		91.19% Pervious Area
	9,702		8.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.1					**Direct Entry, Match DA 2 Watershed**

Subcatchment OFF2: Offsite Drainage Area 2



Hydrograph for Subcatchment OFF2: Offsite Drainage Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.02	0.00	0.00
0.50	0.04	0.00	0.00
0.75	0.06	0.00	0.00
1.00	0.08	0.00	0.00
1.25	0.10	0.00	0.00
1.50	0.13	0.00	0.00
1.75	0.15	0.00	0.00
2.00	0.17	0.00	0.00
2.25	0.19	0.00	0.00
2.50	0.21	0.00	0.00
2.75	0.23	0.00	0.00
3.00	0.26	0.00	0.00
3.25	0.28	0.00	0.00
3.50	0.31	0.00	0.00
3.75	0.33	0.00	0.00
4.00	0.36	0.00	0.00
4.25	0.39	0.00	0.00
4.50	0.42	0.00	0.00
4.75	0.45	0.00	0.00
5.00	0.48	0.00	0.00
5.25	0.51	0.00	0.01
5.50	0.54	0.00	0.02
5.75	0.57	0.01	0.02
6.00	0.60	0.01	0.03
6.25	0.64	0.02	0.04
6.50	0.68	0.02	0.06
6.75	0.72	0.03	0.07
7.00	0.76	0.04	0.08
7.25	0.80	0.05	0.10
7.50	0.85	0.07	0.12
7.75	0.90	0.08	0.14
8.00	0.96	0.10	0.16
8.25	1.01	0.12	0.19
8.50	1.08	0.14	0.22
8.75	1.15	0.17	0.26
9.00	1.22	0.21	0.30
9.25	1.30	0.24	0.35
9.50	1.39	0.29	0.40
9.75	1.49	0.34	0.46
10.00	1.59	0.39	0.52
10.25	1.69	0.46	0.58
10.50	1.82	0.53	0.67
10.75	1.95	0.62	0.78
11.00	2.10	0.71	0.89
11.25	2.27	0.84	1.04
11.50	2.50	1.00	1.34
11.75	2.98	1.36	2.05
12.00	4.19	2.37	4.84
12.25	5.41	3.45	**11.74**
12.50	5.89	3.89	**8.23**
12.75	6.12	4.09	4.07
13.00	6.29	4.26	2.31
13.25	6.44	4.39	1.65
13.50	6.57	4.52	1.39
13.75	6.70	4.63	1.25
14.00	6.80	4.73	1.13
14.25	6.90	4.83	1.02
14.50	7.00	4.91	0.94
14.75	7.09	5.00	0.88
15.00	7.17	5.07	0.83
15.25	7.24	5.14	0.77
15.50	7.31	5.21	0.71
15.75	7.38	5.27	0.66
16.00	7.43	5.32	0.60
16.25	7.49	5.37	0.54
16.50	7.54	5.42	0.51
16.75	7.59	5.47	0.48
17.00	7.63	5.51	0.46
17.25	7.67	5.55	0.43
17.50	7.71	5.59	0.41
17.75	7.75	5.62	0.38
18.00	7.79	5.66	0.36
18.25	7.82	5.69	0.33
18.50	7.85	5.72	0.32
18.75	7.88	5.75	0.31
19.00	7.91	5.78	0.30
19.25	7.94	5.81	0.30
19.50	7.97	5.83	0.29
19.75	8.00	5.86	0.28
20.00	8.03	5.89	0.27
20.25	8.06	5.91	0.27
20.50	8.08	5.94	0.26
20.75	8.11	5.96	0.25
21.00	8.13	5.99	0.25
21.25	8.16	6.01	0.24
21.50	8.18	6.03	0.24
21.75	8.21	6.06	0.23
22.00	8.23	6.08	0.23
22.25	8.25	6.10	0.22
22.50	8.27	6.12	0.21
22.75	8.29	6.14	0.21
23.00	8.31	6.16	0.20
23.25	8.33	6.18	0.20
23.50	8.35	6.20	0.19
23.75	8.37	6.21	0.19
24.00	**8.39**	**6.23**	0.18

Summary for Subcatchment OFF3: Offsite Drainage Area 3

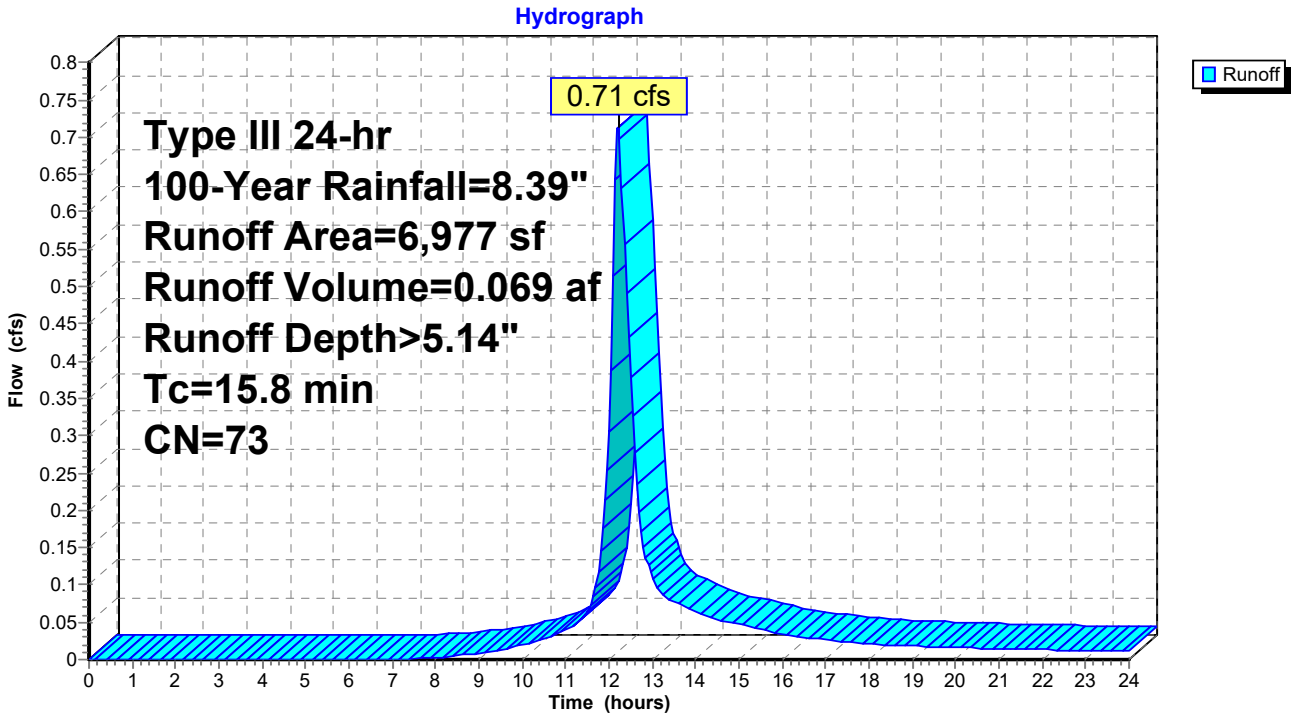
Runoff = 0.71 cfs @ 12.22 hrs, Volume= 0.069 af, Depth> 5.14"
Routed to Link N : POI North

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type III 24-hr 100-Year Rainfall=8.39"

Area (sf)	CN	Description
2,502	61	>75% Grass cover, Good, HSG B
4,475	80	>75% Grass cover, Good, HSG D
6,977	73	Weighted Average
6,977		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.8					**Direct Entry, Match DA 3 Watershed**

Subcatchment OFF3: Offsite Drainage Area 3



Hydrograph for Subcatchment OFF3: Offsite Drainage Area 3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00
0.25	0.02	0.00	0.00
0.50	0.04	0.00	0.00
0.75	0.06	0.00	0.00
1.00	0.08	0.00	0.00
1.25	0.10	0.00	0.00
1.50	0.13	0.00	0.00
1.75	0.15	0.00	0.00
2.00	0.17	0.00	0.00
2.25	0.19	0.00	0.00
2.50	0.21	0.00	0.00
2.75	0.23	0.00	0.00
3.00	0.26	0.00	0.00
3.25	0.28	0.00	0.00
3.50	0.31	0.00	0.00
3.75	0.33	0.00	0.00
4.00	0.36	0.00	0.00
4.25	0.39	0.00	0.00
4.50	0.42	0.00	0.00
4.75	0.45	0.00	0.00
5.00	0.48	0.00	0.00
5.25	0.51	0.00	0.00
5.50	0.54	0.00	0.00
5.75	0.57	0.00	0.00
6.00	0.60	0.00	0.00
6.25	0.64	0.00	0.00
6.50	0.68	0.00	0.00
6.75	0.72	0.00	0.00
7.00	0.76	0.00	0.00
7.25	0.80	0.00	0.00
7.50	0.85	0.00	0.00
7.75	0.90	0.01	0.00
8.00	0.96	0.01	0.00
8.25	1.01	0.02	0.00
8.50	1.08	0.03	0.01
8.75	1.15	0.04	0.01
9.00	1.22	0.06	0.01
9.25	1.30	0.07	0.01
9.50	1.39	0.10	0.01
9.75	1.49	0.13	0.02
10.00	1.59	0.16	0.02
10.25	1.69	0.20	0.02
10.50	1.82	0.24	0.03
10.75	1.95	0.30	0.03
11.00	2.10	0.36	0.04
11.25	2.27	0.45	0.05
11.50	2.50	0.57	0.07
11.75	2.98	0.85	0.12
12.00	4.19	1.67	**0.30**
12.25	5.41	2.61	**0.70**
12.50	5.89	3.00	0.38
12.75	6.12	3.18	0.17
13.00	6.29	3.33	0.11
13.25	6.44	3.46	0.09
13.50	6.57	3.57	0.08
13.75	6.70	3.67	0.07
14.00	6.80	3.77	0.06
14.25	6.90	3.85	0.06
14.50	7.00	3.93	0.05
14.75	7.09	4.01	0.05
15.00	7.17	4.08	0.05
15.25	7.24	4.15	0.04
15.50	7.31	4.21	0.04
15.75	7.38	4.26	0.04
16.00	7.43	4.31	0.03
16.25	7.49	4.36	0.03
16.50	7.54	4.40	0.03
16.75	7.59	4.44	0.03
17.00	7.63	4.48	0.03
17.25	7.67	4.52	0.02
17.50	7.71	4.56	0.02
17.75	7.75	4.59	0.02
18.00	7.79	4.62	0.02
18.25	7.82	4.65	0.02
18.50	7.85	4.68	0.02
18.75	7.88	4.71	0.02
19.00	7.91	4.73	0.02
19.25	7.94	4.76	0.02
19.50	7.97	4.79	0.02
19.75	8.00	4.81	0.02
20.00	8.03	4.84	0.02
20.25	8.06	4.86	0.02
20.50	8.08	4.88	0.02
20.75	8.11	4.91	0.01
21.00	8.13	4.93	0.01
21.25	8.16	4.95	0.01
21.50	8.18	4.97	0.01
21.75	8.21	4.99	0.01
22.00	8.23	5.01	0.01
22.25	8.25	5.03	0.01
22.50	8.27	5.05	0.01
22.75	8.29	5.07	0.01
23.00	8.31	5.09	0.01
23.25	8.33	5.11	0.01
23.50	8.35	5.12	0.01
23.75	8.37	5.14	0.01
24.00	**8.39**	**5.16**	0.01

Summary for Pond P1: Ex Onsite Retention Pond

[92] Warning: Device #4 is above defined storage
[92] Warning: Device #5 is above defined storage

Inflow Area = 3.093 ac, 53.12% Impervious, Inflow Depth > 6.21" for 100-Year event
Inflow = 21.47 cfs @ 12.09 hrs, Volume= 1.600 af
Outflow = 15.47 cfs @ 12.17 hrs, Volume= 1.579 af, Atten= 28%, Lag= 5.0 min
Primary = 15.47 cfs @ 12.17 hrs, Volume= 1.579 af
Routed to Link S : POI South
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond P2 : Large Shallow Onsite Depression

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 298.48' @ 12.17 hrs Surf.Area= 5,775 sf Storage= 14,505 cf

Plug-Flow detention time= 36.6 min calculated for 1.576 af (99% of inflow)
Center-of-Mass det. time= 28.8 min (825.1 - 796.3)

Volume	Invert	Avail.Storage	Storage Description
#1	295.30'	18,859 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

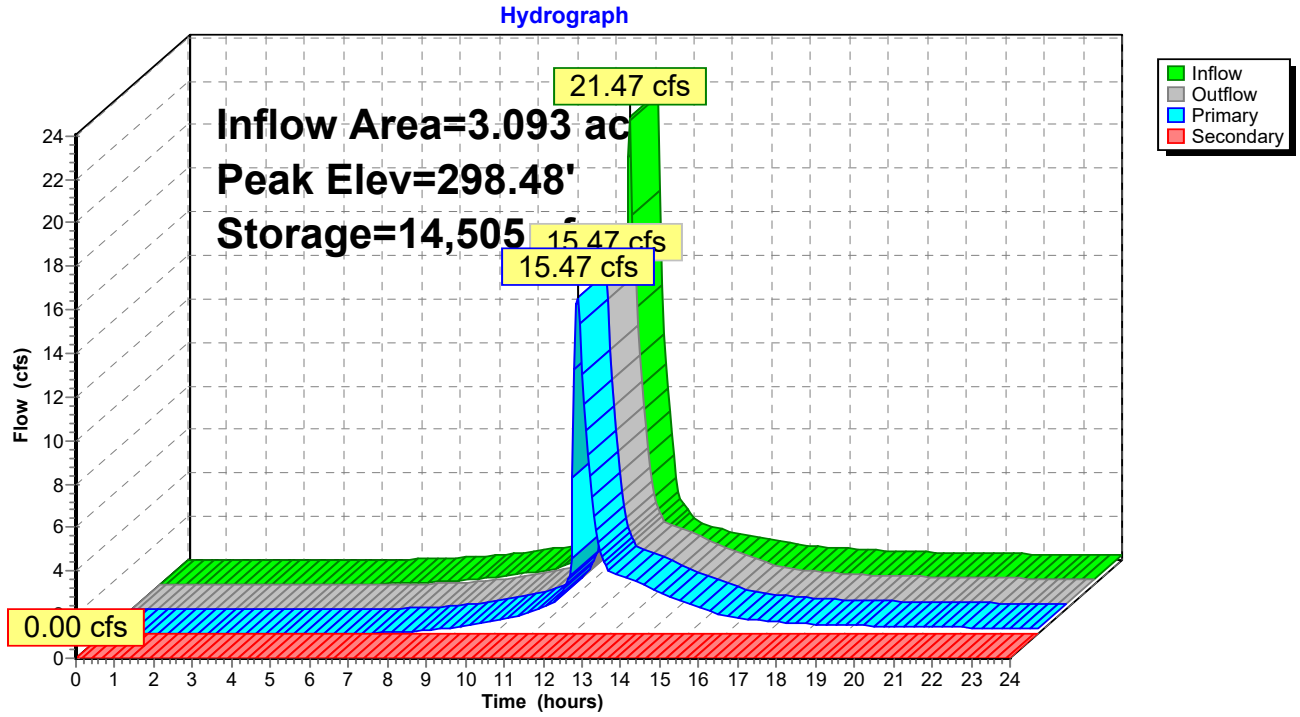
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
295.30	3,441	0	0
296.00	3,790	2,531	2,531
298.00	5,497	9,287	11,818
299.00	6,080	5,789	17,606
299.20	6,450	1,253	18,859

Device	Routing	Invert	Outlet Devices
#1	Primary	295.00'	**24.0" Round Culvert** L= 409.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 295.00' / 292.10' S= 0.0071 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	295.30'	**9.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	297.40'	**41.2 deg x 3.0' long x 1.33' rise Sharp-Crested Vee/Trap Weir** Cv= 2.57 (C= 3.21)
#4	Device 1	299.40'	**48.0" x 24.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#5	Secondary	299.20'	**40.0' long x 4.0' breadth Broad-Crested Rectangular Weir** 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

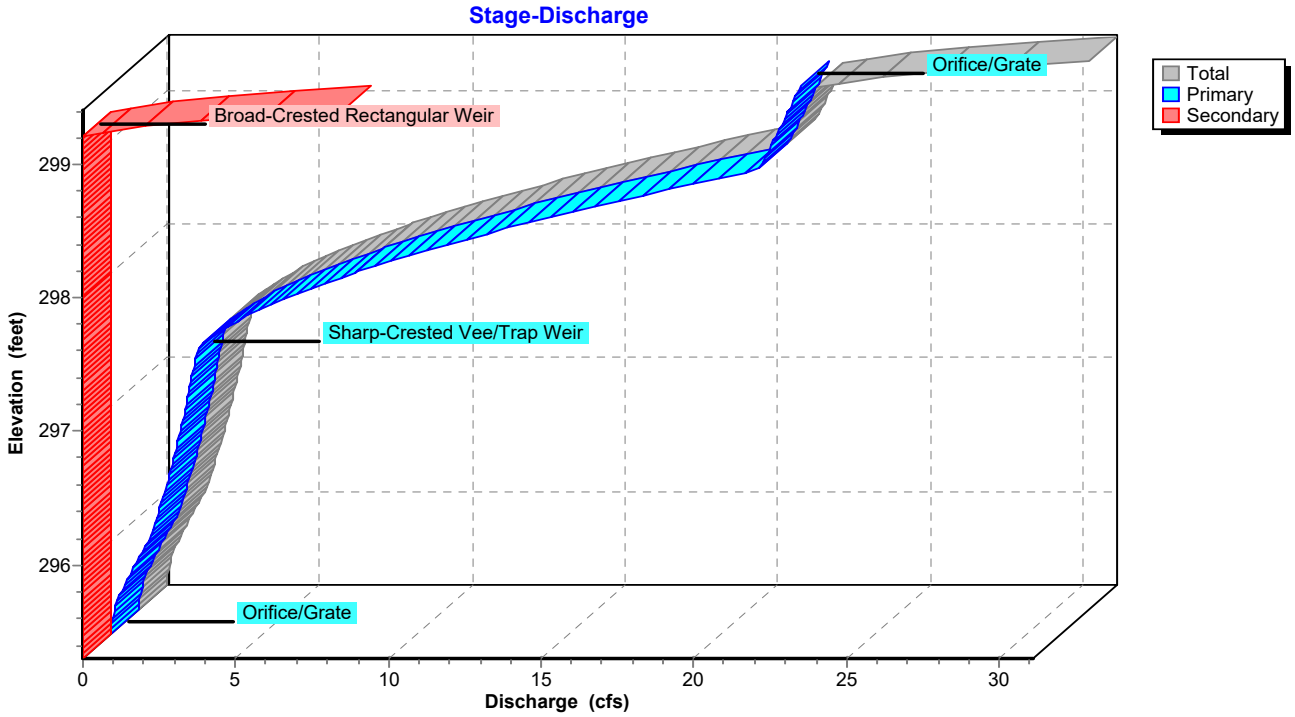
Primary OutFlow Max=15.08 cfs @ 12.17 hrs HW=298.45' (Free Discharge)
└─**1=Culvert** (Passes 15.08 cfs of 20.48 cfs potential flow)
  └─**2=Orifice/Grate** (Orifice Controls 3.55 cfs @ 8.03 fps)
  └─**3=Sharp-Crested Vee/Trap Weir** (Weir Controls 11.54 cfs @ 3.22 fps)
  └─**4=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=295.30' (Free Discharge)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

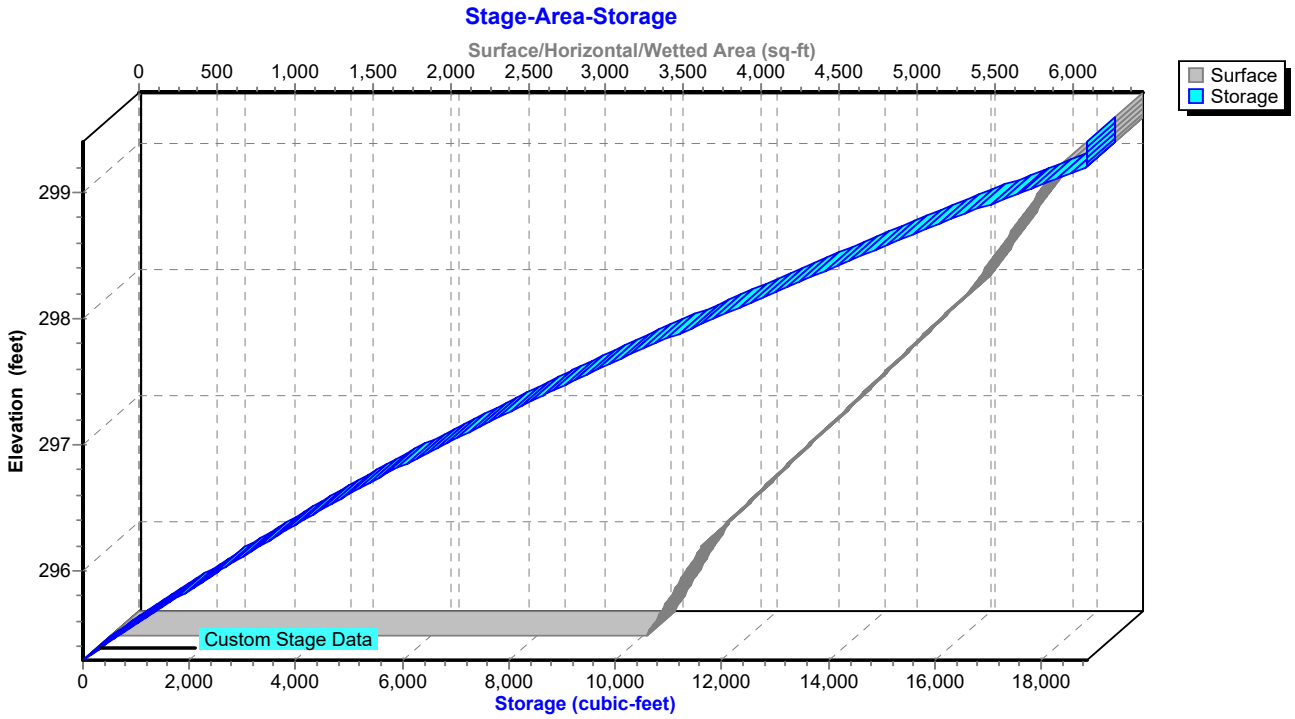
Pond P1: Ex Onsite Retention Pond



Pond P1: Ex Onsite Retention Pond



Pond P1: Ex Onsite Retention Pond



Hydrograph for Pond P1: Ex Onsite Retention Pond

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0	295.30	0.00	0.00	**0.00**
0.50	0.00	0	295.30	0.00	0.00	0.00
1.00	0.00	0	295.30	0.00	0.00	0.00
1.50	0.00	0	295.30	0.00	0.00	0.00
2.00	0.00	0	295.30	0.00	0.00	0.00
2.50	0.00	0	295.30	0.00	0.00	0.00
3.00	0.00	0	295.30	0.00	0.00	0.00
3.50	0.00	0	295.30	0.00	0.00	0.00
4.00	0.00	0	295.30	0.00	0.00	0.00
4.50	0.00	0	295.30	0.00	0.00	0.00
5.00	0.01	3	295.30	0.00	0.00	0.00
5.50	0.03	34	295.31	0.00	0.00	0.00
6.00	0.05	99	295.33	0.00	0.00	0.00
6.50	0.08	201	295.36	0.01	0.01	0.00
7.00	0.12	337	295.40	0.04	0.04	0.00
7.50	0.17	496	295.44	0.08	0.08	0.00
8.00	0.22	660	295.49	0.13	0.13	0.00
8.50	0.31	835	295.54	0.20	0.20	0.00
9.00	0.42	1,041	295.60	0.30	0.30	0.00
9.50	0.55	1,263	295.66	0.42	0.42	0.00
10.00	0.70	1,494	295.72	0.57	0.57	0.00
10.50	0.94	1,775	295.80	0.75	0.75	0.00
11.00	1.23	2,151	295.90	1.00	1.00	0.00
11.50	2.08	2,918	296.10	1.39	1.39	0.00
12.00	**13.49**	**9,429**	**297.55**	**3.48**	**3.48**	0.00
12.50	**4.79**	**11,485**	**297.94**	**7.23**	**7.23**	0.00
13.00	1.97	8,776	297.42	2.85	2.85	0.00
13.50	1.54	7,031	297.06	2.50	2.50	0.00
14.00	1.25	5,349	296.69	2.14	2.14	0.00
14.50	1.08	3,927	296.35	1.75	1.75	0.00
15.00	0.95	2,930	296.10	1.39	1.39	0.00
15.50	0.81	2,282	295.93	1.08	1.08	0.00
16.00	0.67	1,903	295.83	0.83	0.83	0.00
16.50	0.59	1,676	295.77	0.68	0.68	0.00
17.00	0.53	1,540	295.73	0.59	0.59	0.00
17.50	0.47	1,432	295.70	0.53	0.53	0.00
18.00	0.41	1,330	295.68	0.46	0.46	0.00
18.50	0.38	1,248	295.65	0.42	0.42	0.00
19.00	0.36	1,198	295.64	0.39	0.39	0.00
19.50	0.34	1,159	295.63	0.36	0.36	0.00
20.00	0.33	1,124	295.62	0.35	0.35	0.00
20.50	0.31	1,092	295.61	0.33	0.33	0.00
21.00	0.30	1,063	295.60	0.31	0.31	0.00
21.50	0.28	1,036	295.59	0.30	0.30	0.00
22.00	0.27	1,010	295.59	0.28	0.28	0.00
22.50	0.26	983	295.58	0.27	0.27	0.00
23.00	0.24	955	295.57	0.26	0.26	0.00
23.50	0.23	926	295.56	0.24	0.24	0.00
24.00	0.21	898	295.56	0.23	0.23	0.00

Stage-Discharge for Pond P1: Ex Onsite Retention Pond

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
295.30	0.00	0.00	0.00
295.35	0.01	0.01	0.00
295.40	0.04	0.04	0.00
295.45	0.08	0.08	0.00
295.50	0.14	0.14	0.00
295.55	0.22	0.22	0.00
295.60	0.31	0.31	0.00
295.65	0.41	0.41	0.00
295.70	0.52	0.52	0.00
295.75	0.63	0.63	0.00
295.80	0.75	0.75	0.00
295.85	0.88	0.88	0.00
295.90	1.00	1.00	0.00
295.95	1.12	1.12	0.00
296.00	1.22	1.22	0.00
296.05	1.30	1.30	0.00
296.10	1.39	1.39	0.00
296.15	1.47	1.47	0.00
296.20	1.54	1.54	0.00
296.25	1.61	1.61	0.00
296.30	1.68	1.68	0.00
296.35	1.75	1.75	0.00
296.40	1.81	1.81	0.00
296.45	1.87	1.87	0.00
296.50	1.93	1.93	0.00
296.55	1.99	1.99	0.00
296.60	2.05	2.05	0.00
296.65	2.10	2.10	0.00
296.70	2.15	2.15	0.00
296.75	2.21	2.21	0.00
296.80	2.26	2.26	0.00
296.85	2.31	2.31	0.00
296.90	2.35	2.35	0.00
296.95	2.40	2.40	0.00
297.00	2.45	2.45	0.00
297.05	2.49	2.49	0.00
297.10	2.54	2.54	0.00
297.15	2.58	2.58	0.00
297.20	2.63	2.63	0.00
297.25	2.67	2.67	0.00
297.30	2.71	2.71	0.00
297.35	2.75	2.75	0.00
297.40	2.79	2.79	0.00
297.45	2.94	2.94	0.00
297.50	3.18	3.18	0.00
297.55	3.48	3.48	0.00
297.60	3.83	3.83	0.00
297.65	4.22	4.22	0.00
297.70	4.66	4.66	0.00
297.75	5.13	5.13	0.00
297.80	5.64	5.64	0.00
297.85	6.18	6.18	0.00
297.90	6.75	6.75	0.00
297.95	7.36	7.36	0.00
298.00	7.99	7.99	0.00
298.05	8.66	8.66	0.00
298.10	9.35	9.35	0.00
298.15	10.08	10.08	0.00
298.20	10.83	10.83	0.00
298.25	11.61	11.61	0.00
298.30	12.42	12.42	0.00
298.35	13.25	13.25	0.00
298.40	14.11	14.11	0.00
298.45	15.00	15.00	0.00
298.50	15.92	15.92	0.00
298.55	16.86	16.86	0.00
298.60	17.83	17.83	0.00
298.65	18.83	18.83	0.00
298.70	19.85	19.85	0.00
298.75	20.86	20.86	0.00
298.80	21.28	21.28	0.00
298.85	21.39	21.39	0.00
298.90	21.50	21.50	0.00
298.95	21.62	21.62	0.00
299.00	21.73	21.73	0.00
299.05	21.84	21.84	0.00
299.10	21.95	21.95	0.00
299.15	22.06	22.06	0.00
299.20	22.17	22.17	0.00
299.25	23.34	22.27	1.06
299.30	25.39	22.38	3.01
299.35	28.02	22.49	5.53
299.40	**31.11**	**22.60**	**8.51**

Stage-Area-Storage for Pond P1: Ex Onsite Retention Pond

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
295.30	3,441	0
295.35	3,466	173
295.40	3,491	347
295.45	3,516	522
295.50	3,541	698
295.55	3,566	876
295.60	3,591	1,055
295.65	3,616	1,235
295.70	3,640	1,416
295.75	3,665	1,599
295.80	3,690	1,783
295.85	3,715	1,968
295.90	3,740	2,154
295.95	3,765	2,342
296.00	3,790	2,531
296.05	3,833	2,721
296.10	3,875	2,914
296.15	3,918	3,109
296.20	3,961	3,306
296.25	4,003	3,505
296.30	4,046	3,706
296.35	4,089	3,910
296.40	4,131	4,115
296.45	4,174	4,323
296.50	4,217	4,533
296.55	4,259	4,744
296.60	4,302	4,958
296.65	4,345	5,175
296.70	4,387	5,393
296.75	4,430	5,613
296.80	4,473	5,836
296.85	4,515	6,061
296.90	4,558	6,288
296.95	4,601	6,516
297.00	4,644	6,748
297.05	4,686	6,981
297.10	4,729	7,216
297.15	4,772	7,454
297.20	4,814	7,693
297.25	4,857	7,935
297.30	4,900	8,179
297.35	4,942	8,425
297.40	4,985	8,673
297.45	5,028	8,924
297.50	5,070	9,176
297.55	5,113	9,431
297.60	5,156	9,687
297.65	5,198	9,946
297.70	5,241	10,207
297.75	5,284	10,470
297.80	5,326	10,736
297.85	5,369	11,003
297.90	5,412	11,272
297.95	5,454	11,544
298.00	5,497	11,818
298.05	5,526	12,093
298.10	5,555	12,370
298.15	5,584	12,649
298.20	5,614	12,929
298.25	5,643	13,210
298.30	5,672	13,493
298.35	5,701	13,778
298.40	5,730	14,063
298.45	5,759	14,351
298.50	5,789	14,639
298.55	5,818	14,929
298.60	5,847	15,221
298.65	5,876	15,514
298.70	5,905	15,809
298.75	5,934	16,105
298.80	5,963	16,402
298.85	5,993	16,701
298.90	6,022	17,001
298.95	6,051	17,303
299.00	6,080	17,606
299.05	6,173	17,913
299.10	6,265	18,224
299.15	6,358	18,539
299.20	**6,450**	**18,859**
299.25	6,450	18,859
299.30	6,450	18,859
299.35	6,450	18,859
299.40	6,450	18,859

Summary for Pond P2: Large Shallow Onsite Depression

Inflow Area = 11.825 ac, 2.36% Impervious, Inflow Depth > 5.09" for 100-Year event
Inflow = 46.29 cfs @ 12.29 hrs, Volume= 5.013 af
Outflow = 45.19 cfs @ 12.34 hrs, Volume= 4.856 af, Atten= 2%, Lag= 2.8 min
Primary = 45.19 cfs @ 12.34 hrs, Volume= 4.856 af
Routed to Link S : POI South

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 298.32' @ 12.34 hrs Surf.Area= 34,510 sf Storage= 15,389 cf

Plug-Flow detention time= 29.5 min calculated for 4.846 af (97% of inflow)
Center-of-Mass det. time= 12.3 min (839.8 - 827.5)

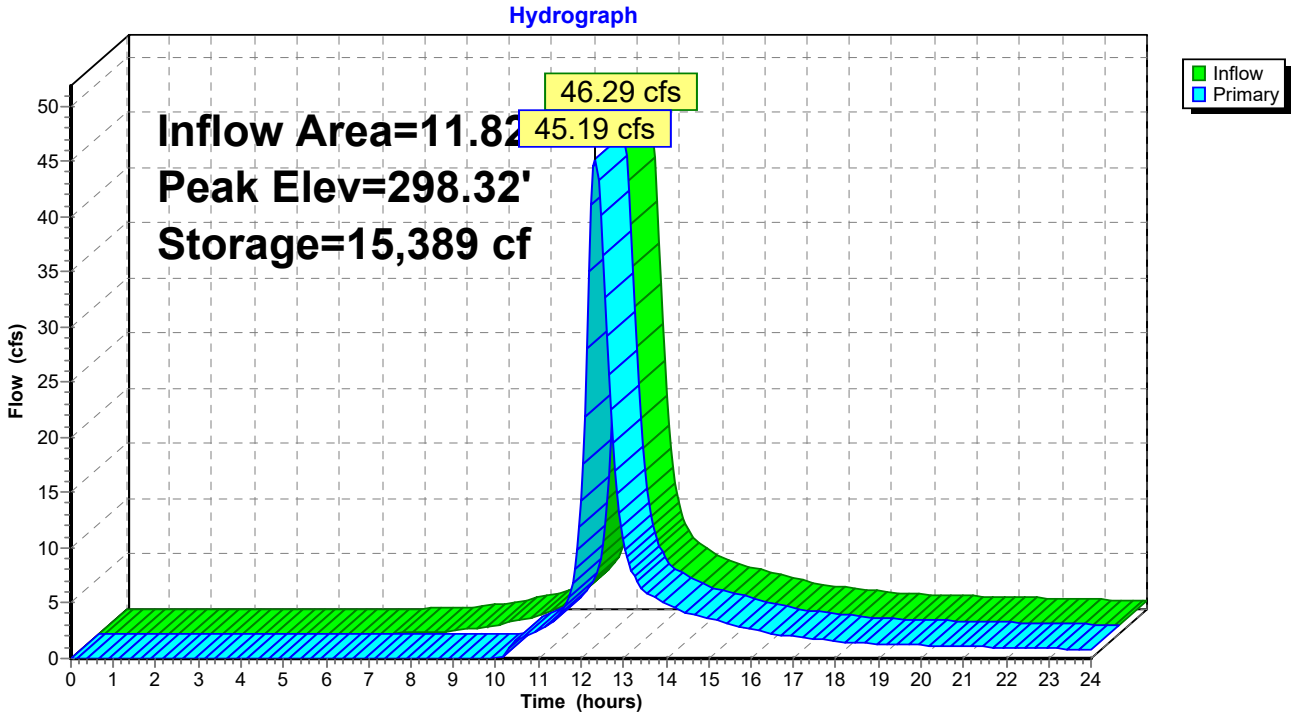
Volume	Invert	Avail.Storage	Storage Description
#1	297.40'	130,870 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
297.40	0	0	0
298.00	21,165	6,350	6,350
300.00	103,355	124,520	130,870

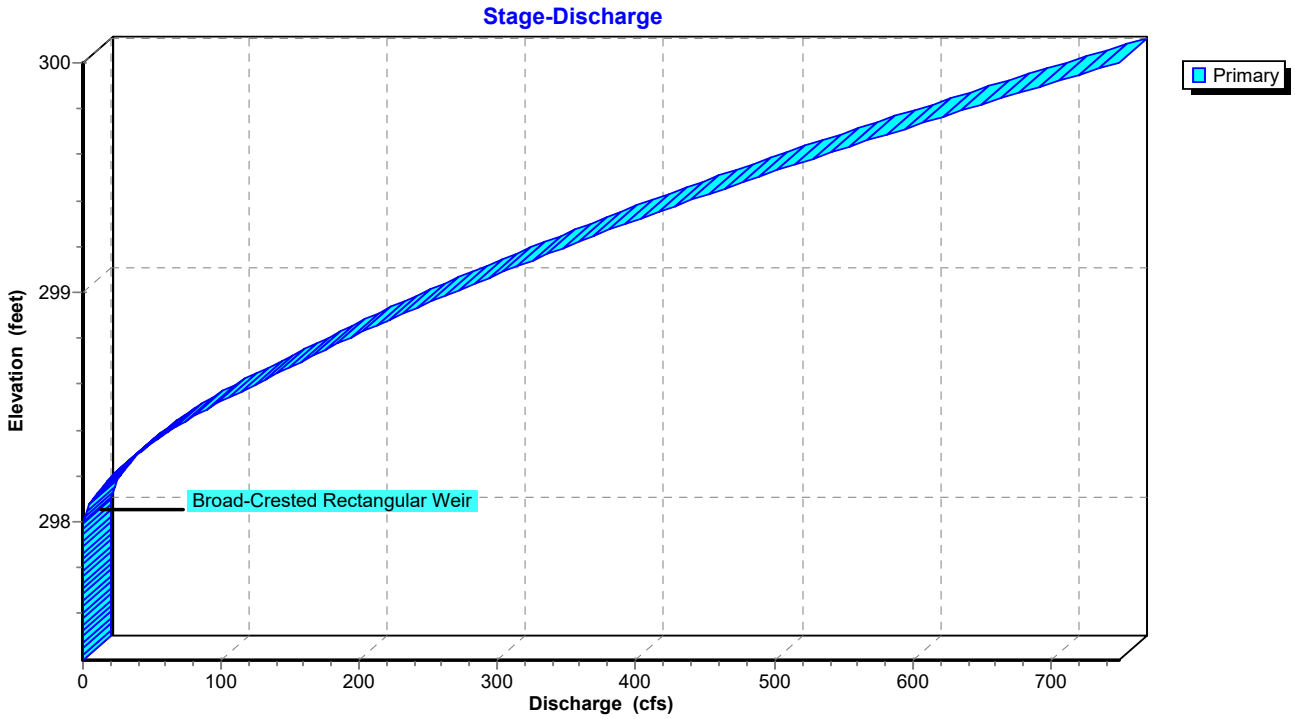
Device	Routing	Invert	Outlet Devices
#1	Primary	298.00'	**100.0' long x 5.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=44.92 cfs @ 12.34 hrs HW=298.32' (Free Discharge)
1=Broad-Crested Rectangular Weir (Weir Controls 44.92 cfs @ 1.39 fps)

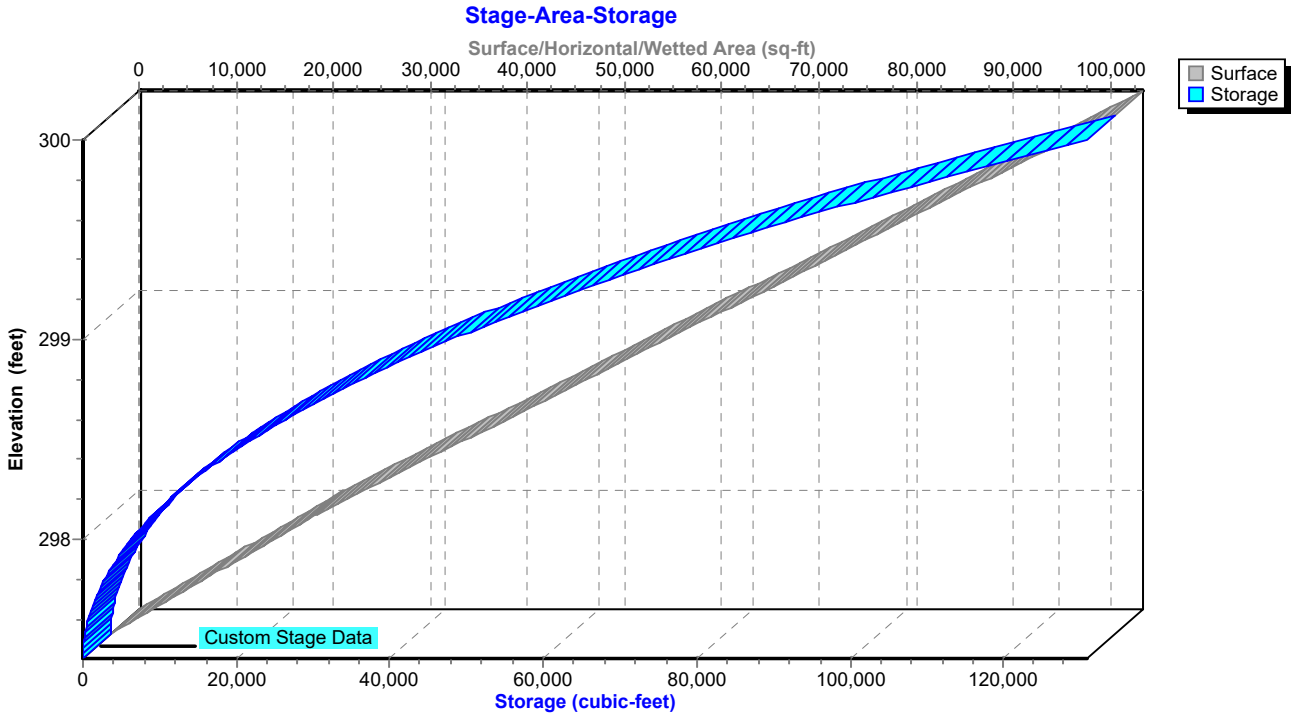
Pond P2: Large Shallow Onsite Depression



Pond P2: Large Shallow Onsite Depression



Pond P2: Large Shallow Onsite Depression



Hydrograph for Pond P2: Large Shallow Onsite Depression

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	297.40	0.00
0.50	0.00	0	297.40	0.00
1.00	0.00	0	297.40	0.00
1.50	0.00	0	297.40	0.00
2.00	0.00	0	297.40	0.00
2.50	0.00	0	297.40	0.00
3.00	0.00	0	297.40	0.00
3.50	0.00	0	297.40	0.00
4.00	0.00	0	297.40	0.00
4.50	0.00	0	297.40	0.00
5.00	0.00	0	297.40	0.00
5.50	0.02	15	297.43	0.00
6.00	0.03	61	297.46	0.00
6.50	0.06	140	297.49	0.00
7.00	0.08	265	297.52	0.00
7.50	0.12	449	297.56	0.00
8.00	0.19	716	297.60	0.00
8.50	0.36	1,198	297.66	0.00
9.00	0.61	2,058	297.74	0.00
9.50	0.94	3,441	297.84	0.00
10.00	1.34	5,480	297.96	0.00
10.50	1.90	7,147	298.04	1.69
11.00	2.72	7,439	298.05	2.56
11.50	4.37	7,836	298.07	4.01
12.00	**17.37**	**10,135**	**298.16**	**14.34**
12.50	**33.08**	**14,011**	**298.28**	**36.39**
13.00	9.61	9,399	298.13	10.74
13.50	5.85	8,355	298.09	6.08
14.00	4.79	8,082	298.08	4.92
14.50	4.01	7,860	298.07	4.10
15.00	3.53	7,725	298.06	3.60
15.50	3.05	7,597	298.06	3.13
16.00	2.57	7,466	298.05	2.64
16.50	2.19	7,332	298.04	2.24
17.00	1.97	7,253	298.04	2.01
17.50	1.75	7,181	298.04	1.79
18.00	1.54	7,109	298.03	1.58
18.50	1.38	7,049	298.03	1.40
19.00	1.31	7,023	298.03	1.33
19.50	1.25	7,002	298.03	1.26
20.00	1.19	6,980	298.03	1.20
20.50	1.13	6,960	298.03	1.14
21.00	1.08	6,943	298.03	1.09
21.50	1.03	6,926	298.03	1.04
22.00	0.98	6,910	298.03	0.99
22.50	0.93	6,894	298.03	0.94
23.00	0.88	6,877	298.02	0.89
23.50	0.84	6,857	298.02	0.85
24.00	0.79	6,829	298.02	0.80

Stage-Discharge for Pond P2: Large Shallow Onsite Depression

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
297.40	0.00	298.46	79.87	299.52	496.61
297.42	0.00	298.48	85.80	299.54	506.44
297.44	0.00	298.50	91.92	299.56	516.34
297.46	0.00	298.52	98.24	299.58	526.30
297.48	0.00	298.54	104.76	299.60	536.32
297.50	0.00	298.56	111.47	299.62	546.41
297.52	0.00	298.58	118.38	299.64	556.56
297.54	0.00	298.60	125.48	299.66	566.77
297.56	0.00	298.62	131.71	299.68	577.05
297.58	0.00	298.64	138.04	299.70	587.38
297.60	0.00	298.66	144.45	299.72	597.78
297.62	0.00	298.68	150.95	299.74	608.23
297.64	0.00	298.70	157.54	299.76	618.75
297.66	0.00	298.72	164.22	299.78	629.33
297.68	0.00	298.74	170.98	299.80	639.96
297.70	0.00	298.76	177.83	299.82	650.66
297.72	0.00	298.78	184.76	299.84	661.41
297.74	0.00	298.80	191.77	299.86	672.23
297.76	0.00	298.82	199.00	299.88	683.10
297.78	0.00	298.84	206.33	299.90	694.03
297.80	0.00	298.86	213.74	299.92	705.01
297.82	0.00	298.88	221.24	299.94	716.06
297.84	0.00	298.90	228.82	299.96	727.16
297.86	0.00	298.92	236.49	299.98	738.32
297.88	0.00	298.94	244.25	300.00	**749.53**
297.90	0.00	298.96	252.08		
297.92	0.00	298.98	260.00		
297.94	0.00	299.00	268.00		
297.96	0.00	299.02	275.87		
297.98	0.00	299.04	283.82		
298.00	0.00	299.06	291.82		
298.02	0.66	299.08	299.90		
298.04	1.87	299.10	308.04		
298.06	3.44	299.12	316.24		
298.08	5.29	299.14	324.50		
298.10	7.40	299.16	332.83		
298.12	9.73	299.18	341.22		
298.14	12.26	299.20	349.67		
298.16	14.98	299.22	358.31		
298.18	17.87	299.24	367.02		
298.20	20.93	299.26	375.79		
298.22	24.31	299.28	384.63		
298.24	27.89	299.30	393.53		
298.26	31.66	299.32	402.50		
298.28	35.62	299.34	411.52		
298.30	39.76	299.36	420.61		
298.32	44.10	299.38	429.76		
298.34	48.61	299.40	438.97		
298.36	53.31	299.42	448.41		
298.38	58.19	299.44	457.92		
298.40	63.25	299.46	467.49		
298.42	68.59	299.48	477.13		
298.44	74.13	299.50	486.84		

Stage-Area-Storage for Pond P2: Large Shallow Onsite Depression

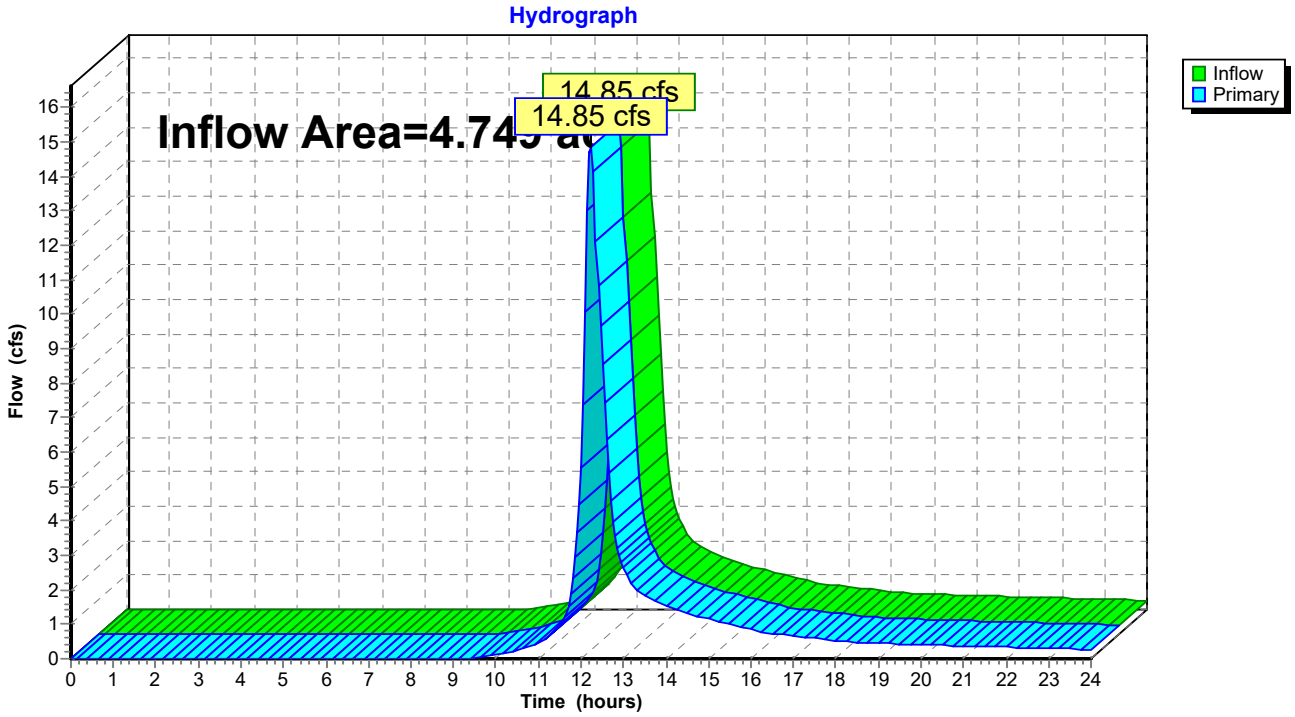
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
297.40	0	0
297.45	1,764	44
297.50	3,528	176
297.55	5,291	397
297.60	7,055	705
297.65	8,819	1,102
297.70	10,583	1,587
297.75	12,346	2,161
297.80	14,110	2,822
297.85	15,874	3,572
297.90	17,637	4,409
297.95	19,401	5,335
298.00	21,165	6,350
298.05	23,220	7,459
298.10	25,274	8,671
298.15	27,329	9,987
298.20	29,384	11,404
298.25	31,439	12,925
298.30	33,493	14,548
298.35	35,548	16,274
298.40	37,603	18,103
298.45	39,658	20,035
298.50	41,713	22,069
298.55	43,767	24,206
298.60	45,822	26,446
298.65	47,877	28,788
298.70	49,931	31,233
298.75	51,986	33,781
298.80	54,041	36,432
298.85	56,096	39,185
298.90	58,150	42,041
298.95	60,205	45,000
299.00	62,260	48,062
299.05	64,315	51,226
299.10	66,369	54,493
299.15	68,424	57,863
299.20	70,479	61,336
299.25	72,534	64,911
299.30	74,588	68,589
299.35	76,643	72,370
299.40	78,698	76,254
299.45	80,753	80,240
299.50	82,808	84,329
299.55	84,862	88,521
299.60	86,917	92,815
299.65	88,972	97,212
299.70	91,026	101,712
299.75	93,081	106,315
299.80	95,136	111,020
299.85	97,191	115,829
299.90	99,245	120,739
299.95	101,300	125,753
300.00	**103,355**	**130,870**

Summary for Link N: POI North

Inflow Area = 4.749 ac, 1.19% Impervious, Inflow Depth > 3.67" for 100-Year event
Inflow = 14.85 cfs @ 12.23 hrs, Volume= 1.451 af
Primary = 14.85 cfs @ 12.23 hrs, Volume= 1.451 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link N: POI North



Hydrograph for Link N: POI North

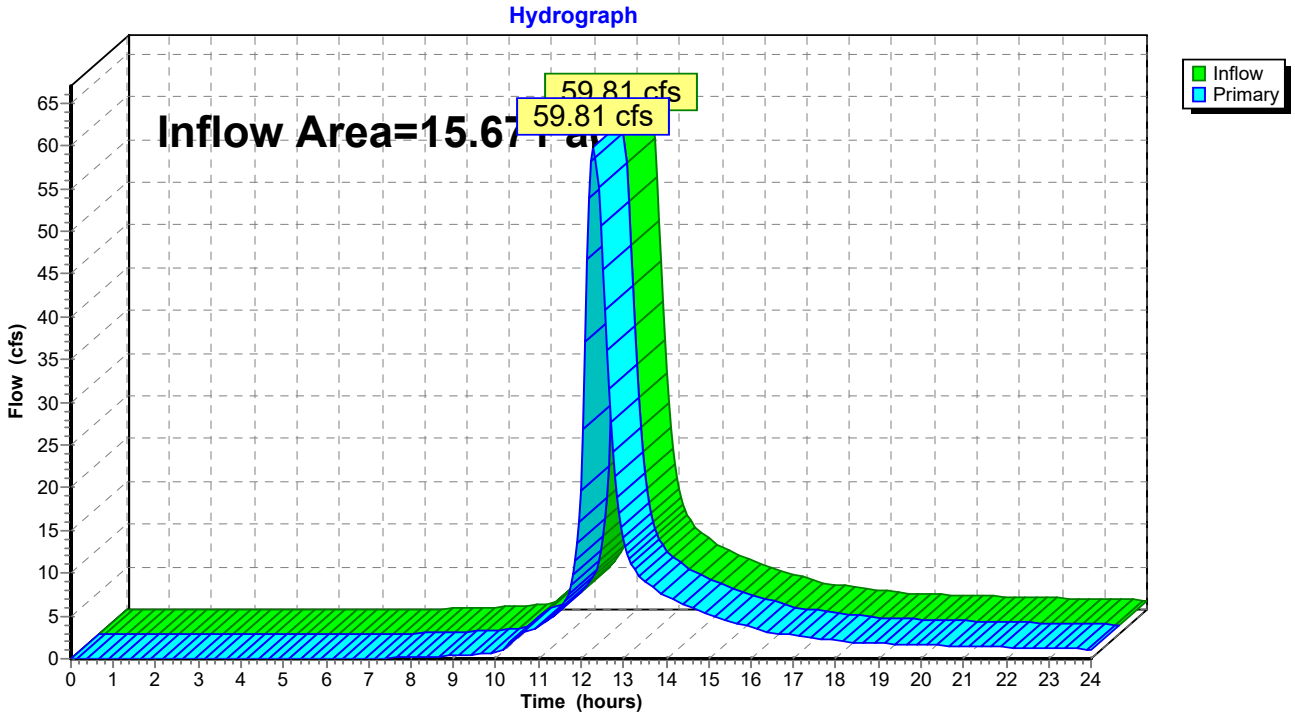
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	13.25	2.06	0.00	2.06
0.25	0.00	0.00	0.00	13.50	1.85	0.00	1.85
0.50	0.00	0.00	0.00	13.75	1.69	0.00	1.69
0.75	0.00	0.00	0.00	14.00	1.54	0.00	1.54
1.00	0.00	0.00	0.00	14.25	1.40	0.00	1.40
1.25	0.00	0.00	0.00	14.50	1.31	0.00	1.31
1.50	0.00	0.00	0.00	14.75	1.24	0.00	1.24
1.75	0.00	0.00	0.00	15.00	1.16	0.00	1.16
2.00	0.00	0.00	0.00	15.25	1.08	0.00	1.08
2.25	0.00	0.00	0.00	15.50	1.01	0.00	1.01
2.50	0.00	0.00	0.00	15.75	0.93	0.00	0.93
2.75	0.00	0.00	0.00	16.00	0.84	0.00	0.84
3.00	0.00	0.00	0.00	16.25	0.77	0.00	0.77
3.25	0.00	0.00	0.00	16.50	0.73	0.00	0.73
3.50	0.00	0.00	0.00	16.75	0.69	0.00	0.69
3.75	0.00	0.00	0.00	17.00	0.66	0.00	0.66
4.00	0.00	0.00	0.00	17.25	0.62	0.00	0.62
4.25	0.00	0.00	0.00	17.50	0.59	0.00	0.59
4.50	0.00	0.00	0.00	17.75	0.55	0.00	0.55
4.75	0.00	0.00	0.00	18.00	0.52	0.00	0.52
5.00	0.00	0.00	0.00	18.25	0.48	0.00	0.48
5.25	0.00	0.00	0.00	18.50	0.47	0.00	0.47
5.50	0.00	0.00	0.00	18.75	0.46	0.00	0.46
5.75	0.00	0.00	0.00	19.00	0.45	0.00	0.45
6.00	0.00	0.00	0.00	19.25	0.44	0.00	0.44
6.25	0.00	0.00	0.00	19.50	0.43	0.00	0.43
6.50	0.00	0.00	0.00	19.75	0.42	0.00	0.42
6.75	0.00	0.00	0.00	20.00	0.41	0.00	0.41
7.00	0.00	0.00	0.00	20.25	0.39	0.00	0.39
7.25	0.00	0.00	0.00	20.50	0.39	0.00	0.39
7.50	0.00	0.00	0.00	20.75	0.38	0.00	0.38
7.75	0.00	0.00	0.00	21.00	0.37	0.00	0.37
8.00	0.00	0.00	0.00	21.25	0.36	0.00	0.36
8.25	0.00	0.00	0.00	21.50	0.35	0.00	0.35
8.50	0.01	0.00	0.01	21.75	0.35	0.00	0.35
8.75	0.01	0.00	0.01	22.00	0.34	0.00	0.34
9.00	0.01	0.00	0.01	22.25	0.33	0.00	0.33
9.25	0.01	0.00	0.01	22.50	0.32	0.00	0.32
9.50	0.02	0.00	0.02	22.75	0.31	0.00	0.31
9.75	0.05	0.00	0.05	23.00	0.30	0.00	0.30
10.00	0.10	0.00	0.10	23.25	0.30	0.00	0.30
10.25	0.16	0.00	0.16	23.50	0.29	0.00	0.29
10.50	0.25	0.00	0.25	23.75	0.28	0.00	0.28
10.75	0.35	0.00	0.35	24.00	0.27	0.00	0.27
11.00	0.47	0.00	0.47				
11.25	0.63	0.00	0.63				
11.50	0.95	0.00	0.95				
11.75	1.88	0.00	1.88				
12.00	5.56	0.00	5.56				
12.25	**14.71**	0.00	**14.71**				
12.50	8.53	0.00	8.53				
12.75	3.97	0.00	3.97				
13.00	2.63	0.00	2.63				

Summary for Link S: POI South

Inflow Area = 15.671 ac, 12.35% Impervious, Inflow Depth > 5.22" for 100-Year event
Inflow = 59.81 cfs @ 12.30 hrs, Volume= 6.811 af
Primary = 59.81 cfs @ 12.30 hrs, Volume= 6.811 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Link S: POI South



Hydrograph for Link S: POI South

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	13.25	10.56	0.00	10.56
0.25	0.00	0.00	0.00	13.50	8.97	0.00	8.97
0.50	0.00	0.00	0.00	13.75	8.11	0.00	8.11
0.75	0.00	0.00	0.00	14.00	7.39	0.00	7.39
1.00	0.00	0.00	0.00	14.25	6.70	0.00	6.70
1.25	0.00	0.00	0.00	14.50	6.13	0.00	6.13
1.50	0.00	0.00	0.00	14.75	5.66	0.00	5.66
1.75	0.00	0.00	0.00	15.00	5.23	0.00	5.23
2.00	0.00	0.00	0.00	15.25	4.82	0.00	4.82
2.25	0.00	0.00	0.00	15.50	4.41	0.00	4.41
2.50	0.00	0.00	0.00	15.75	4.02	0.00	4.02
2.75	0.00	0.00	0.00	16.00	3.65	0.00	3.65
3.00	0.00	0.00	0.00	16.25	3.32	0.00	3.32
3.25	0.00	0.00	0.00	16.50	3.07	0.00	3.07
3.50	0.00	0.00	0.00	16.75	2.89	0.00	2.89
3.75	0.00	0.00	0.00	17.00	2.73	0.00	2.73
4.00	0.00	0.00	0.00	17.25	2.58	0.00	2.58
4.25	0.00	0.00	0.00	17.50	2.44	0.00	2.44
4.50	0.00	0.00	0.00	17.75	2.29	0.00	2.29
4.75	0.00	0.00	0.00	18.00	2.15	0.00	2.15
5.00	0.00	0.00	0.00	18.25	2.01	0.00	2.01
5.25	0.00	0.00	0.00	18.50	1.91	0.00	1.91
5.50	0.00	0.00	0.00	18.75	1.85	0.00	1.85
5.75	0.01	0.00	0.01	19.00	1.80	0.00	1.80
6.00	0.01	0.00	0.01	19.25	1.75	0.00	1.75
6.25	0.02	0.00	0.02	19.50	1.71	0.00	1.71
6.50	0.03	0.00	0.03	19.75	1.67	0.00	1.67
6.75	0.04	0.00	0.04	20.00	1.62	0.00	1.62
7.00	0.06	0.00	0.06	20.25	1.58	0.00	1.58
7.25	0.08	0.00	0.08	20.50	1.54	0.00	1.54
7.50	0.11	0.00	0.11	20.75	1.51	0.00	1.51
7.75	0.14	0.00	0.14	21.00	1.47	0.00	1.47
8.00	0.17	0.00	0.17	21.25	1.44	0.00	1.44
8.25	0.21	0.00	0.21	21.50	1.41	0.00	1.41
8.50	0.26	0.00	0.26	21.75	1.37	0.00	1.37
8.75	0.32	0.00	0.32	22.00	1.34	0.00	1.34
9.00	0.38	0.00	0.38	22.25	1.31	0.00	1.31
9.25	0.46	0.00	0.46	22.50	1.28	0.00	1.28
9.50	0.53	0.00	0.53	22.75	1.24	0.00	1.24
9.75	0.62	0.00	0.62	23.00	1.21	0.00	1.21
10.00	0.71	0.00	0.71	23.25	1.18	0.00	1.18
10.25	1.39	0.00	1.39	23.50	1.15	0.00	1.15
10.50	2.63	0.00	2.63	23.75	1.12	0.00	1.12
10.75	3.22	0.00	3.22	24.00	1.09	0.00	1.09
11.00	3.81	0.00	3.81				
11.25	4.55	0.00	4.55				
11.50	5.81	0.00	5.81				
11.75	8.53	0.00	8.53				
12.00	19.57	0.00	19.57				
12.25	**58.24**	0.00	**58.24**				
12.50	**45.57**	0.00	**45.57**				
12.75	24.24	0.00	24.24				
13.00	14.15	0.00	14.15				

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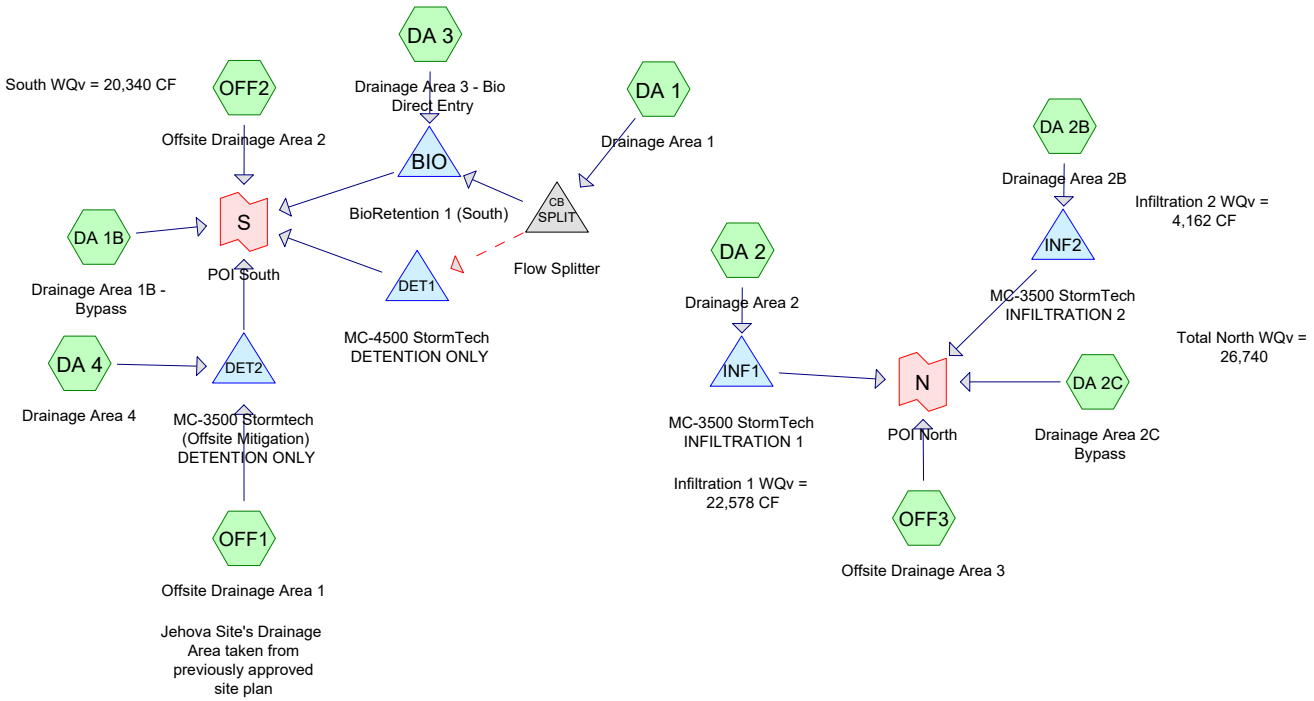
Drainage Report Appendix C

Unity Place Warehouse
Proposed Conditions Detailed HydroCAD Output Report



Subcat Reach Pond Link

Routing Diagram for Proposed

Prepared by Brooker Engineering, PLLC, Printed 6/23/2023

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	Type III 24-hr		Default	24.00	1	2.60	2
2	10-Year	Type III 24-hr		Default	24.00	1	4.71	2
3	25-Year	Type III 24-hr		Default	24.00	1	5.92	2
4	100-Year	Type III 24-hr		Default	24.00	1	8.39	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.462	61	>75% Grass cover, Good, HSG B (DA 1, DA 1B, DA 2, DA 2B, DA 2C, DA 4, OFF1, OFF3)
4.995	80	>75% Grass cover, Good, HSG D (DA 1, DA 1B, DA 2C, DA 3, OFF2, OFF3)
3.725	98	Drive/Parking (DA 1)
0.056	98	Driveway Entrance (DA 1B)
0.779	98	Impervious (DA 2B, DA 2C)
1.866	98	Impervious Surfaces (OFF1, OFF2)
4.227	98	Roof, Parking/Drive (DA 2)
0.202	55	Woods, Good, HSG B (DA 2C)
0.110	77	Woods, Good, HSG D (DA 2C)
20.422	**85**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
4.663	HSG B	DA 1, DA 1B, DA 2, DA 2B, DA 2C, DA 4, OFF1, OFF3
0.000	HSG C	
5.105	HSG D	DA 1, DA 1B, DA 2C, DA 3, OFF2, OFF3
10.653	Other	DA 1, DA 1B, DA 2, DA 2B, DA 2C, OFF1, OFF2
20.422		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	4.462	0.000	4.995	0.000	9.456	>75% Grass cover, Good	DA 1, DA 1B, DA 2, DA 2B, DA 2C, DA 3, DA 4, OFF1, OFF2, OFF3
0.000	0.000	0.000	0.000	3.725	3.725	Drive/Parking	DA 1
0.000	0.000	0.000	0.000	0.056	0.056	Driveway Entrance	DA 1B
0.000	0.000	0.000	0.000	0.779	0.779	Impervious	DA 2B, DA 2C
0.000	0.000	0.000	0.000	1.866	1.866	Impervious Surfaces	OFF1, OFF2
0.000	0.000	0.000	0.000	4.227	4.227	Roof, Parking/Drive	DA 2
0.000	0.202	0.000	0.110	0.000	0.312	Woods, Good	DA 2C
0.000	**4.663**	**0.000**	**5.105**	**10.653**	**20.422**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	DA 1	0.00	0.00	879.0	0.0076	0.012	0.0	15.0	0.0	
2	DA 1B	0.00	0.00	1,156.0	0.0080	0.012	0.0	15.0	0.0	
3	DA 2	0.00	0.00	1,155.0	0.0465	0.010	0.0	15.0	0.0	
4	DA 2	0.00	0.00	119.0	0.0086	0.012	0.0	24.0	0.0	
5	DA 2B	0.00	0.00	106.0	0.0190	0.012	0.0	15.0	0.0	
6	DA 4	0.00	0.00	324.0	0.0250	0.012	0.0	15.0	0.0	
7	OFF1	0.00	0.00	471.0	0.0526	0.012	0.0	24.0	0.0	
8	BIO	295.50	293.25	61.0	0.0369	0.010	0.0	12.0	0.0	

Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA 1: Drainage Area 1 Runoff Area=165,448 sf 98.07% Impervious Runoff Depth>2.37"
Flow Length=1,066' Tc=6.0 min CN=98 Runoff=9.51 cfs 0.750 af

Subcatchment DA 1B: Drainage Area 1B - Runoff Area=69,529 sf 3.51% Impervious Runoff Depth>0.90"
Flow Length=1,406' Tc=21.5 min CN=79 Runoff=1.06 cfs 0.120 af

Subcatchment DA 2: Drainage Area 2 Runoff Area=189,852 sf 96.98% Impervious Runoff Depth>2.26"
Flow Length=1,274' Tc=6.0 min CN=97 Runoff=10.68 cfs 0.821 af

Subcatchment DA 2B: Drainage Area 2B Runoff Area=84,759 sf 38.50% Impervious Runoff Depth>0.71"
Flow Length=556' Tc=12.0 min CN=75 Runoff=1.20 cfs 0.115 af

Subcatchment DA 2C: Drainage Area 2C Runoff Area=83,452 sf 1.57% Impervious Runoff Depth>0.33"
Flow Length=466' Tc=21.7 min CN=65 Runoff=0.31 cfs 0.053 af

Subcatchment DA 3: Drainage Area 3 - Bio Runoff Area=31,825 sf 0.00% Impervious Runoff Depth>0.96"
Flow Length=87' Slope=0.1430 '/' Tc=6.0 min CN=80 Runoff=0.79 cfs 0.058 af

Subcatchment DA 4: Drainage Area 4 Runoff Area=23,833 sf 0.00% Impervious Runoff Depth>0.22"
Flow Length=837' Tc=20.4 min CN=61 Runoff=0.05 cfs 0.010 af

Subcatchment OFF1: Offsite Drainage Runoff Area=123,809 sf 57.82% Impervious Runoff Depth>1.07"
Flow Length=816' Tc=6.0 min CN=82 Runoff=3.51 cfs 0.254 af

Subcatchment OFF2: Offsite Drainage Runoff Area=110,079 sf 8.81% Impervious Runoff Depth>1.07"
Tc=21.5 min CN=82 Runoff=2.04 cfs 0.225 af

Subcatchment OFF3: Offsite Drainage Area 3 Runoff Area=6,977 sf 0.00% Impervious Runoff Depth>0.62"
Tc=21.7 min CN=73 Runoff=0.07 cfs 0.008 af

Pond BIO: BioRetention 1 (South) Peak Elev=299.68' Storage=12,847 cf Inflow=1.74 cfs 0.502 af
Outflow=0.23 cfs 0.216 af

Pond DET1: MC-4500 StormTech Peak Elev=304.48' Storage=0.231 af Inflow=8.56 cfs 0.306 af
Outflow=0.77 cfs 0.305 af

Pond DET2: MC-3500 Stormtech (Offsite Peak Elev=296.77' Storage=4,586 cf Inflow=3.51 cfs 0.264 af
Outflow=0.44 cfs 0.255 af

Pond INF1: MC-3500 StormTech Peak Elev=308.35' Storage=9,938 cf Inflow=10.68 cfs 0.821 af
Discarded=1.79 cfs 0.821 af Primary=0.00 cfs 0.000 af Outflow=1.79 cfs 0.821 af

Pond INF2: MC-3500 StormTech Peak Elev=304.25' Storage=981 cf Inflow=1.20 cfs 0.115 af
Discarded=0.40 cfs 0.115 af Primary=0.00 cfs 0.000 af Outflow=0.40 cfs 0.115 af

Pond SPLIT: Flow Splitter Peak Elev=303.49' Inflow=9.51 cfs 0.750 af
Primary=0.95 cfs 0.444 af Secondary=8.56 cfs 0.306 af Outflow=9.51 cfs 0.750 af

Link N: POI North Inflow=0.37 cfs 0.061 af
Primary=0.37 cfs 0.061 af

Link S: POI South Inflow=4.34 cfs 1.121 af
Primary=4.34 cfs 1.121 af

Total Runoff Area = 20.422 ac Runoff Volume = 2.413 af Average Runoff Depth = 1.42"
47.83% Pervious = 9.769 ac 52.17% Impervious = 10.653 ac

Summary for Subcatchment DA 1: Drainage Area 1

[47] Hint: Peak is 156% of capacity of segment #2

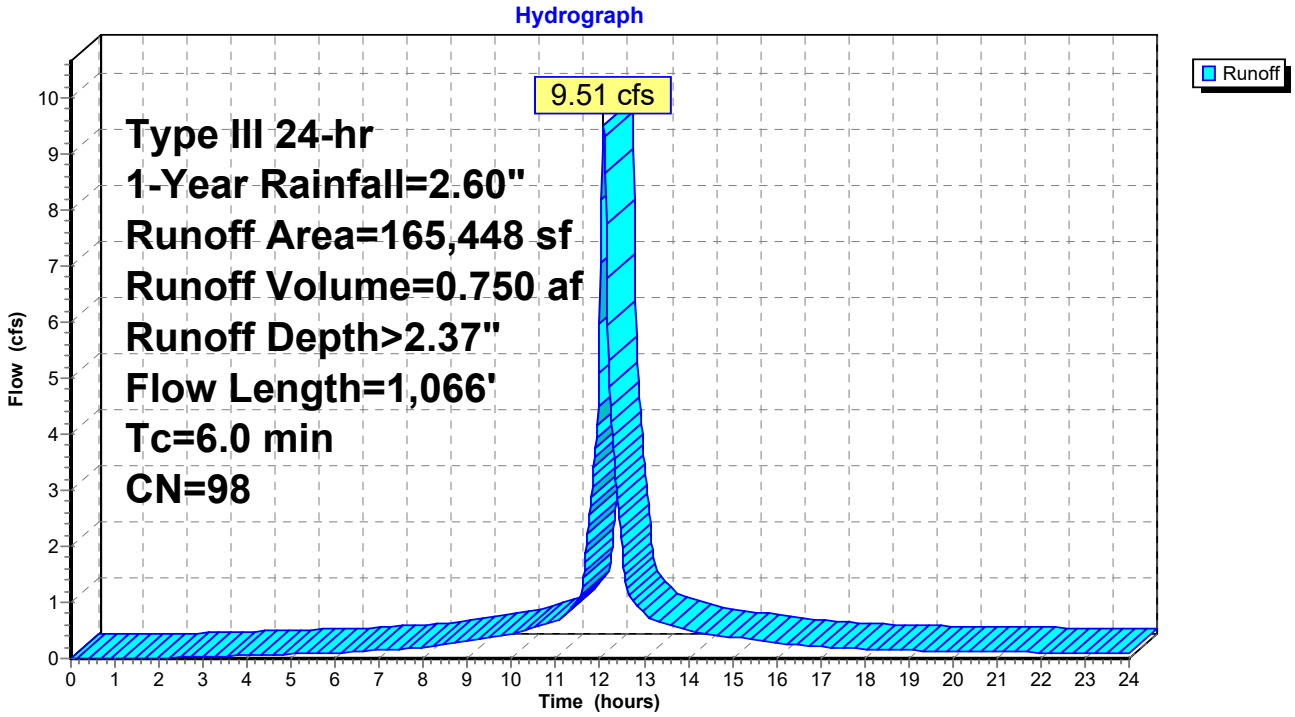
Runoff = 9.51 cfs @ 12.08 hrs, Volume= 0.750 af, Depth> 2.37"
Routed to Pond SPLIT : Flow Splitter

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 1-Year Rainfall=2.60"

	Area (sf)	CN	Description
*	162,255	98	Drive/Parking
	626	61	>75% Grass cover, Good, HSG B
	2,567	80	>75% Grass cover, Good, HSG D
	165,448	98	Weighted Average
	3,193		1.93% Pervious Area
	162,255		98.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	187	0.0200	2.87		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
2.9	879	0.0076	4.97	6.10	**Pipe Channel, Avg Pipe Run from CB 12 to 22** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
2.0					**Direct Entry, + Entry to Reach Minimum**
6.0	1,066	Total			

Subcatchment DA 1: Drainage Area 1



Hydrograph for Subcatchment DA 1: Drainage Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	0.58	0.39	0.56
0.20	0.01	0.00	0.00	10.80	0.61	0.42	0.61
0.40	0.01	0.00	0.00	11.00	0.65	0.46	0.66
0.60	0.02	0.00	0.00	11.20	0.69	0.50	0.78
0.80	0.02	0.00	0.00	11.40	0.75	0.55	0.95
1.00	0.03	0.00	0.00	11.60	0.82	0.61	1.30
1.20	0.03	0.00	0.00	11.80	0.97	0.76	2.89
1.40	0.04	0.00	0.00	12.00	1.30	1.08	**5.98**
1.60	0.04	0.00	0.00	12.20	1.63	1.41	**5.31**
1.80	0.05	0.00	0.00	12.40	1.78	1.56	2.84
2.00	0.05	0.00	0.01	12.60	1.85	1.63	1.28
2.20	0.06	0.00	0.01	12.80	1.91	1.68	0.99
2.40	0.06	0.00	0.02	13.00	1.95	1.72	0.80
2.60	0.07	0.00	0.02	13.20	1.99	1.76	0.70
2.80	0.07	0.00	0.03	13.40	2.02	1.80	0.65
3.00	0.08	0.01	0.03	13.60	2.05	1.83	0.60
3.20	0.09	0.01	0.04	13.80	2.08	1.86	0.55
3.40	0.09	0.01	0.04	14.00	2.11	1.88	0.51
3.60	0.10	0.01	0.05	14.20	2.13	1.91	0.47
3.80	0.11	0.02	0.05	14.40	2.16	1.93	0.45
4.00	0.11	0.02	0.06	14.60	2.18	1.95	0.43
4.20	0.12	0.02	0.06	14.80	2.20	1.97	0.40
4.40	0.13	0.02	0.07	15.00	2.22	1.99	0.38
4.60	0.13	0.03	0.07	15.20	2.24	2.01	0.36
4.80	0.14	0.03	0.08	15.40	2.26	2.03	0.34
5.00	0.15	0.04	0.08	15.60	2.27	2.05	0.31
5.20	0.16	0.04	0.08	15.80	2.29	2.06	0.29
5.40	0.16	0.05	0.09	16.00	2.30	2.08	0.27
5.60	0.17	0.05	0.09	16.20	2.32	2.09	0.25
5.80	0.18	0.06	0.10	16.40	2.33	2.10	0.24
6.00	0.19	0.06	0.10	16.60	2.34	2.11	0.23
6.20	0.20	0.07	0.11	16.80	2.35	2.13	0.22
6.40	0.20	0.07	0.12	17.00	2.36	2.14	0.21
6.60	0.21	0.08	0.13	17.20	2.38	2.15	0.20
6.80	0.22	0.09	0.14	17.40	2.39	2.16	0.19
7.00	0.24	0.09	0.15	17.60	2.40	2.17	0.18
7.20	0.25	0.10	0.16	17.80	2.40	2.18	0.17
7.40	0.26	0.11	0.17	18.00	2.41	2.18	0.16
7.60	0.27	0.12	0.18	18.20	2.42	2.19	0.16
7.80	0.28	0.13	0.19	18.40	2.43	2.20	0.15
8.00	0.30	0.14	0.20	18.60	2.44	2.21	0.15
8.20	0.31	0.15	0.22	18.80	2.44	2.22	0.15
8.40	0.33	0.17	0.24	19.00	2.45	2.22	0.14
8.60	0.34	0.18	0.26	19.20	2.46	2.23	0.14
8.80	0.36	0.19	0.29	19.40	2.47	2.24	0.14
9.00	0.38	0.21	0.31	19.60	2.47	2.25	0.14
9.20	0.40	0.23	0.33	19.80	2.48	2.25	0.13
9.40	0.42	0.25	0.36	20.00	2.49	2.26	0.13
9.60	0.44	0.27	0.38	20.20	2.49	2.27	0.13
9.80	0.47	0.29	0.41	20.40	2.50	2.27	0.13
10.00	0.49	0.31	0.43	20.60	2.51	2.28	0.12
10.20	0.52	0.33	0.47	20.80	2.51	2.28	0.12
10.40	0.55	0.36	0.51	21.00	2.52	2.29	0.12

Hydrograph for Subcatchment DA 1: Drainage Area 1 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	2.53	2.30	0.12
21.40	2.53	2.30	0.11
21.60	2.54	2.31	0.11
21.80	2.54	2.31	0.11
22.00	2.55	2.32	0.11
22.20	2.56	2.33	0.11
22.40	2.56	2.33	0.10
22.60	2.57	2.34	0.10
22.80	2.57	2.34	0.10
23.00	2.58	2.35	0.10
23.20	2.58	2.35	0.09
23.40	2.59	2.36	0.09
23.60	2.59	2.36	0.09
23.80	2.60	2.37	0.09
24.00	**2.60**	**2.37**	0.09

Summary for Subcatchment DA 1B: Drainage Area 1B - Bypass

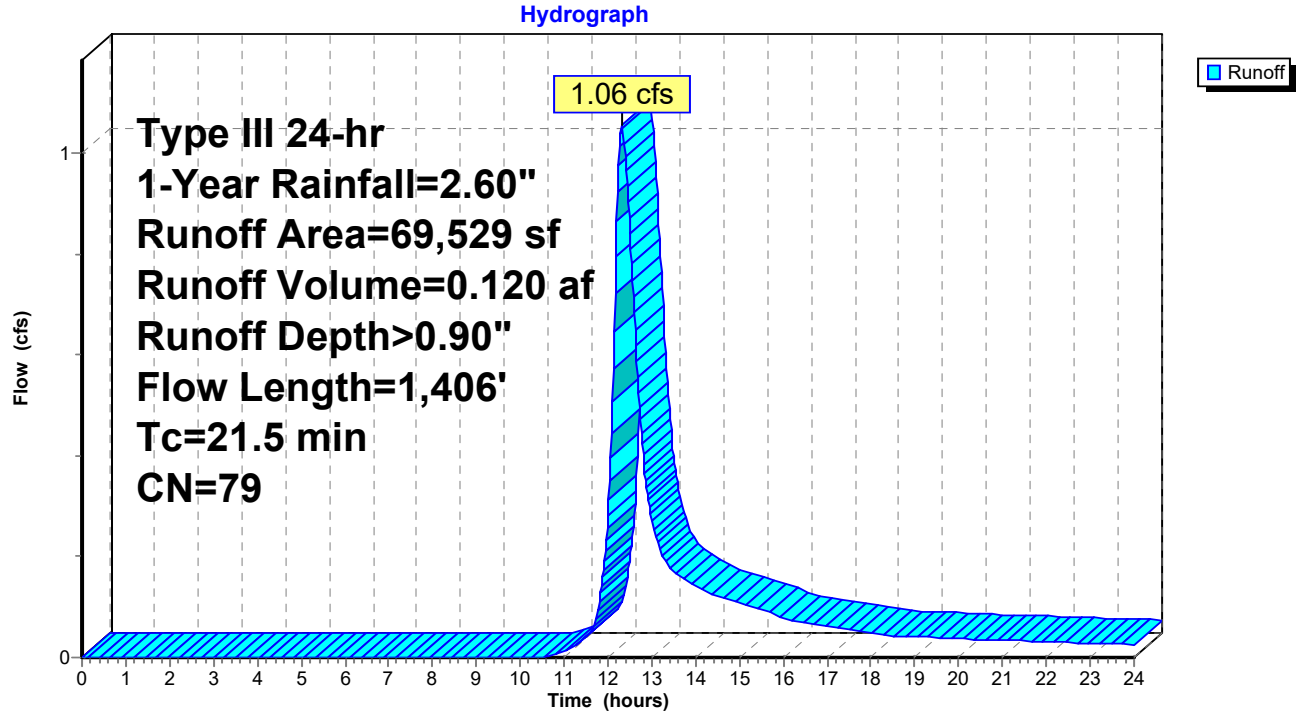
Runoff = 1.06 cfs @ 12.32 hrs, Volume= 0.120 af, Depth> 0.90"
Routed to Link S : POI South

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 1-Year Rainfall=2.60"

	Area (sf)	CN	Description
	62,534	80	>75% Grass cover, Good, HSG D
	4,556	61	>75% Grass cover, Good, HSG B
*	2,439	98	Driveway Entrance
	69,529	79	Weighted Average
	67,090		96.49% Pervious Area
	2,439		3.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.8	100	0.0160	0.11		**Sheet Flow, SF** Grass: Dense n= 0.240 P2= 3.11"
1.9	150	0.0340	1.29		**Shallow Concentrated Flow, SCF** Short Grass Pasture Kv= 7.0 fps
3.8	1,156	0.0080	5.10	6.26	**Pipe Channel, Pipe** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
21.5	1,406	Total			

Subcatchment DA 1B: Drainage Area 1B - Bypass



Hydrograph for Subcatchment DA 1B: Drainage Area 1B - Bypass

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	0.58	0.00	0.00
0.20	0.01	0.00	0.00	10.80	0.61	0.00	0.01
0.40	0.01	0.00	0.00	11.00	0.65	0.01	0.01
0.60	0.02	0.00	0.00	11.20	0.69	0.01	0.02
0.80	0.02	0.00	0.00	11.40	0.75	0.02	0.03
1.00	0.03	0.00	0.00	11.60	0.82	0.03	0.05
1.20	0.03	0.00	0.00	11.80	0.97	0.06	0.11
1.40	0.04	0.00	0.00	12.00	1.30	0.17	0.28
1.60	0.04	0.00	0.00	12.20	1.63	0.32	**0.86**
1.80	0.05	0.00	0.00	12.40	1.78	0.40	**0.99**
2.00	0.05	0.00	0.00	12.60	1.85	0.44	0.68
2.20	0.06	0.00	0.00	12.80	1.91	0.47	0.40
2.40	0.06	0.00	0.00	13.00	1.95	0.49	0.27
2.60	0.07	0.00	0.00	13.20	1.99	0.51	0.21
2.80	0.07	0.00	0.00	13.40	2.02	0.53	0.18
3.00	0.08	0.00	0.00	13.60	2.05	0.55	0.16
3.20	0.09	0.00	0.00	13.80	2.08	0.57	0.15
3.40	0.09	0.00	0.00	14.00	2.11	0.59	0.14
3.60	0.10	0.00	0.00	14.20	2.13	0.60	0.13
3.80	0.11	0.00	0.00	14.40	2.16	0.62	0.12
4.00	0.11	0.00	0.00	14.60	2.18	0.63	0.12
4.20	0.12	0.00	0.00	14.80	2.20	0.64	0.11
4.40	0.13	0.00	0.00	15.00	2.22	0.66	0.11
4.60	0.13	0.00	0.00	15.20	2.24	0.67	0.10
4.80	0.14	0.00	0.00	15.40	2.26	0.68	0.10
5.00	0.15	0.00	0.00	15.60	2.27	0.69	0.09
5.20	0.16	0.00	0.00	15.80	2.29	0.70	0.09
5.40	0.16	0.00	0.00	16.00	2.30	0.71	0.08
5.60	0.17	0.00	0.00	16.20	2.32	0.72	0.07
5.80	0.18	0.00	0.00	16.40	2.33	0.73	0.07
6.00	0.19	0.00	0.00	16.60	2.34	0.73	0.07
6.20	0.20	0.00	0.00	16.80	2.35	0.74	0.06
6.40	0.20	0.00	0.00	17.00	2.36	0.75	0.06
6.60	0.21	0.00	0.00	17.20	2.38	0.76	0.06
6.80	0.22	0.00	0.00	17.40	2.39	0.76	0.06
7.00	0.24	0.00	0.00	17.60	2.40	0.77	0.05
7.20	0.25	0.00	0.00	17.80	2.40	0.77	0.05
7.40	0.26	0.00	0.00	18.00	2.41	0.78	0.05
7.60	0.27	0.00	0.00	18.20	2.42	0.78	0.05
7.80	0.28	0.00	0.00	18.40	2.43	0.79	0.04
8.00	0.30	0.00	0.00	18.60	2.44	0.80	0.04
8.20	0.31	0.00	0.00	18.80	2.44	0.80	0.04
8.40	0.33	0.00	0.00	19.00	2.45	0.81	0.04
8.60	0.34	0.00	0.00	19.20	2.46	0.81	0.04
8.80	0.36	0.00	0.00	19.40	2.47	0.82	0.04
9.00	0.38	0.00	0.00	19.60	2.47	0.82	0.04
9.20	0.40	0.00	0.00	19.80	2.48	0.82	0.04
9.40	0.42	0.00	0.00	20.00	2.49	0.83	0.04
9.60	0.44	0.00	0.00	20.20	2.49	0.83	0.04
9.80	0.47	0.00	0.00	20.40	2.50	0.84	0.04
10.00	0.49	0.00	0.00	20.60	2.51	0.84	0.04
10.20	0.52	0.00	0.00	20.80	2.51	0.85	0.04
10.40	0.55	0.00	0.00	21.00	2.52	0.85	0.03

Hydrograph for Subcatchment DA 1B: Drainage Area 1B - Bypass (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	2.53	0.86	0.03
21.40	2.53	0.86	0.03
21.60	2.54	0.86	0.03
21.80	2.54	0.87	0.03
22.00	2.55	0.87	0.03
22.20	2.56	0.87	0.03
22.40	2.56	0.88	0.03
22.60	2.57	0.88	0.03
22.80	2.57	0.89	0.03
23.00	2.58	0.89	0.03
23.20	2.58	0.89	0.03
23.40	2.59	0.90	0.03
23.60	2.59	0.90	0.03
23.80	2.60	0.90	0.03
24.00	**2.60**	**0.91**	0.03

Summary for Subcatchment DA 2: Drainage Area 2

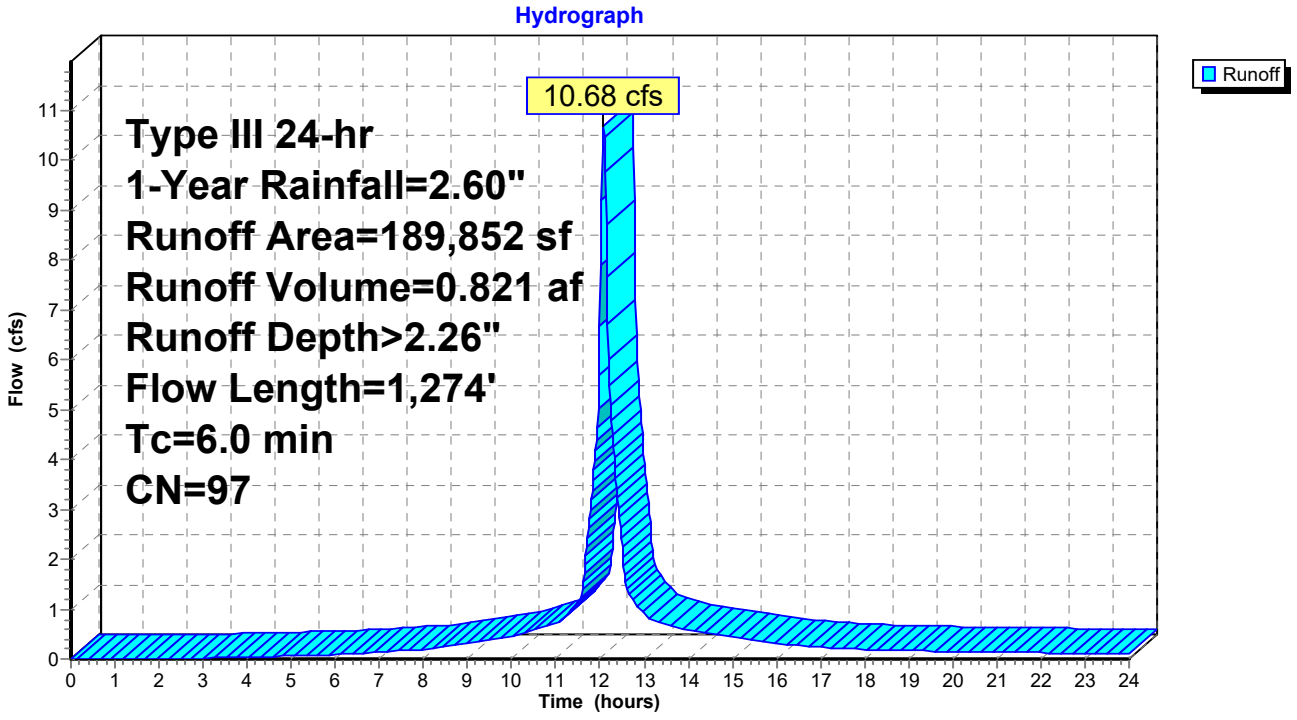
Runoff = 10.68 cfs @ 12.08 hrs, Volume= 0.821 af, Depth> 2.26"
Routed to Pond INF1 : MC-3500 StormTech INFILTRATION 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 1-Year Rainfall=2.60"

	Area (sf)	CN	Description
*	184,125	98	Roof, Parking/Drive
	5,727	61	>75% Grass cover, Good, HSG B
	189,852	97	Weighted Average
	5,727		3.02% Pervious Area
	184,125		96.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	1,155	0.0465	14.76	18.11	**Pipe Channel, Avg Run from Roof to CB 20** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.010 PVC, smooth interior
0.3	119	0.0086	7.23	22.73	**Pipe Channel, CB 20 to Infiltration** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Corrugated PP, smooth interior
4.4					**Direct Entry, + Entry to Reach Minimum**
6.0	1,274	Total			

Subcatchment DA 2: Drainage Area 2



Hydrograph for Subcatchment DA 2: Drainage Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	0.58	0.32	0.60
0.20	0.01	0.00	0.00	10.80	0.61	0.35	0.65
0.40	0.01	0.00	0.00	11.00	0.65	0.39	0.71
0.60	0.02	0.00	0.00	11.20	0.69	0.42	0.84
0.80	0.02	0.00	0.00	11.40	0.75	0.47	1.04
1.00	0.03	0.00	0.00	11.60	0.82	0.54	1.42
1.20	0.03	0.00	0.00	11.80	0.97	0.68	3.19
1.40	0.04	0.00	0.00	12.00	1.30	0.99	**6.68**
1.60	0.04	0.00	0.00	12.20	1.63	1.31	**5.99**
1.80	0.05	0.00	0.00	12.40	1.78	1.46	3.22
2.00	0.05	0.00	0.00	12.60	1.85	1.53	1.45
2.20	0.06	0.00	0.00	12.80	1.91	1.58	1.12
2.40	0.06	0.00	0.00	13.00	1.95	1.62	0.91
2.60	0.07	0.00	0.00	13.20	1.99	1.66	0.79
2.80	0.07	0.00	0.01	13.40	2.02	1.69	0.74
3.00	0.08	0.00	0.01	13.60	2.05	1.72	0.68
3.20	0.09	0.00	0.02	13.80	2.08	1.75	0.63
3.40	0.09	0.00	0.02	14.00	2.11	1.78	0.58
3.60	0.10	0.00	0.03	14.20	2.13	1.80	0.54
3.80	0.11	0.01	0.03	14.40	2.16	1.83	0.51
4.00	0.11	0.01	0.04	14.60	2.18	1.85	0.49
4.20	0.12	0.01	0.04	14.80	2.20	1.87	0.46
4.40	0.13	0.01	0.05	15.00	2.22	1.89	0.43
4.60	0.13	0.01	0.05	15.20	2.24	1.91	0.41
4.80	0.14	0.02	0.06	15.40	2.26	1.92	0.38
5.00	0.15	0.02	0.06	15.60	2.27	1.94	0.36
5.20	0.16	0.02	0.07	15.80	2.29	1.96	0.33
5.40	0.16	0.02	0.07	16.00	2.30	1.97	0.30
5.60	0.17	0.03	0.08	16.20	2.32	1.98	0.29
5.80	0.18	0.03	0.08	16.40	2.33	2.00	0.28
6.00	0.19	0.04	0.09	16.60	2.34	2.01	0.26
6.20	0.20	0.04	0.10	16.80	2.35	2.02	0.25
6.40	0.20	0.05	0.10	17.00	2.36	2.03	0.24
6.60	0.21	0.05	0.11	17.20	2.38	2.04	0.23
6.80	0.22	0.06	0.13	17.40	2.39	2.05	0.22
7.00	0.24	0.06	0.14	17.60	2.40	2.06	0.21
7.20	0.25	0.07	0.15	17.80	2.40	2.07	0.20
7.40	0.26	0.08	0.16	18.00	2.41	2.08	0.19
7.60	0.27	0.08	0.17	18.20	2.42	2.09	0.18
7.80	0.28	0.09	0.18	18.40	2.43	2.09	0.18
8.00	0.30	0.10	0.20	18.60	2.44	2.10	0.17
8.20	0.31	0.11	0.21	18.80	2.44	2.11	0.17
8.40	0.33	0.12	0.24	19.00	2.45	2.12	0.17
8.60	0.34	0.13	0.26	19.20	2.46	2.12	0.16
8.80	0.36	0.15	0.29	19.40	2.47	2.13	0.16
9.00	0.38	0.16	0.31	19.60	2.47	2.14	0.15
9.20	0.40	0.18	0.34	19.80	2.48	2.15	0.15
9.40	0.42	0.19	0.37	20.00	2.49	2.15	0.15
9.60	0.44	0.21	0.39	20.20	2.49	2.16	0.15
9.80	0.47	0.23	0.42	20.40	2.50	2.17	0.14
10.00	0.49	0.25	0.45	20.60	2.51	2.17	0.14
10.20	0.52	0.27	0.49	20.80	2.51	2.18	0.14
10.40	0.55	0.30	0.54	21.00	2.52	2.18	0.14

Hydrograph for Subcatchment DA 2: Drainage Area 2 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	2.53	2.19	0.13
21.40	2.53	2.20	0.13
21.60	2.54	2.20	0.13
21.80	2.54	2.21	0.13
22.00	2.55	2.21	0.12
22.20	2.56	2.22	0.12
22.40	2.56	2.22	0.12
22.60	2.57	2.23	0.11
22.80	2.57	2.23	0.11
23.00	2.58	2.24	0.11
23.20	2.58	2.24	0.11
23.40	2.59	2.25	0.10
23.60	2.59	2.25	0.10
23.80	2.60	2.26	0.10
24.00	**2.60**	**2.26**	0.10

Summary for Subcatchment DA 2B: Drainage Area 2B

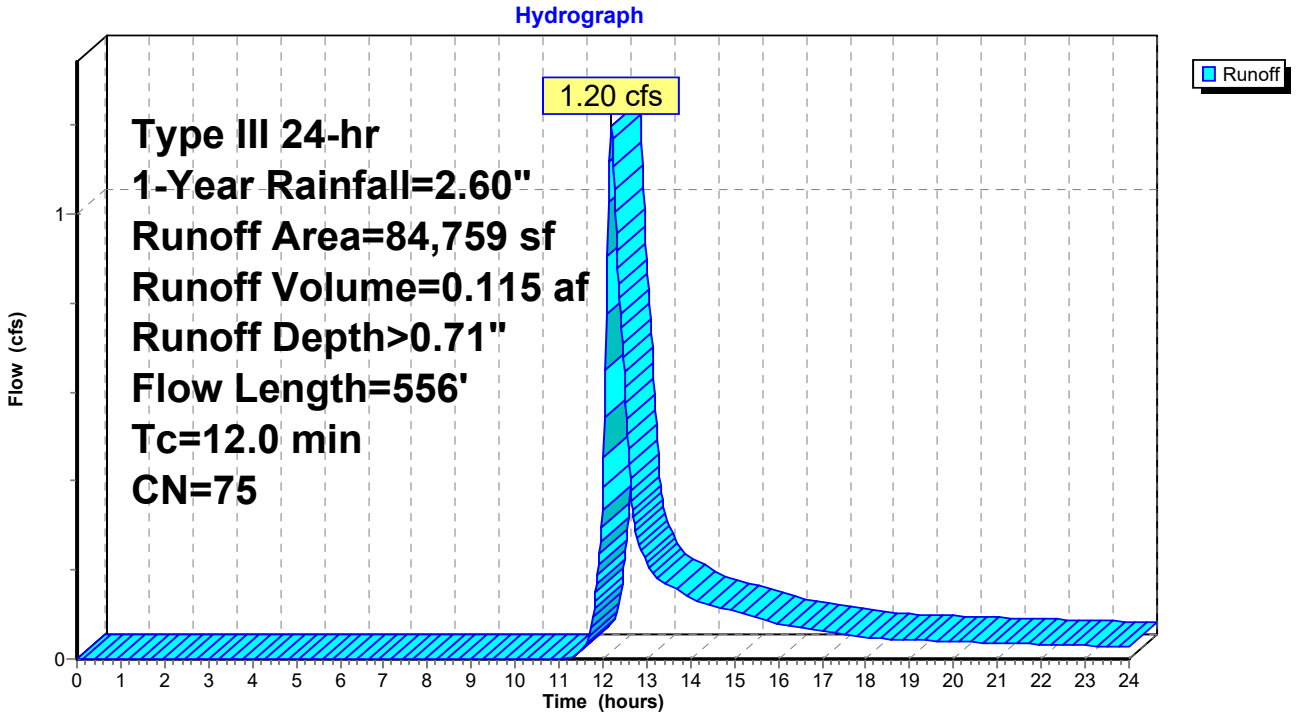
Runoff = 1.20 cfs @ 12.18 hrs, Volume= 0.115 af, Depth> 0.71"
Routed to Pond INF2 : MC-3500 StormTech INFILTRATION 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 1-Year Rainfall=2.60"

	Area (sf)	CN	Description
	52,127	61	>75% Grass cover, Good, HSG B
*	32,632	98	Impervious
	84,759	75	Weighted Average
	52,127		61.50% Pervious Area
	32,632		38.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0200	0.17		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.11"
1.9	350	0.0350	3.01		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.2	106	0.0190	7.86	9.65	**Pipe Channel, Channel Flow** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
12.0	556	Total			

Subcatchment DA 2B: Drainage Area 2B



Hydrograph for Subcatchment DA 2B: Drainage Area 2B

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	0.58	0.00	0.00
0.20	0.01	0.00	0.00	10.80	0.61	0.00	0.00
0.40	0.01	0.00	0.00	11.00	0.65	0.00	0.00
0.60	0.02	0.00	0.00	11.20	0.69	0.00	0.00
0.80	0.02	0.00	0.00	11.40	0.75	0.00	0.01
1.00	0.03	0.00	0.00	11.60	0.82	0.01	0.03
1.20	0.03	0.00	0.00	11.80	0.97	0.03	0.11
1.40	0.04	0.00	0.00	12.00	1.30	0.10	**0.38**
1.60	0.04	0.00	0.00	12.20	1.63	0.22	**1.19**
1.80	0.05	0.00	0.00	12.40	1.78	0.28	0.77
2.00	0.05	0.00	0.00	12.60	1.85	0.31	0.44
2.20	0.06	0.00	0.00	12.80	1.91	0.34	0.27
2.40	0.06	0.00	0.00	13.00	1.95	0.36	0.22
2.60	0.07	0.00	0.00	13.20	1.99	0.37	0.18
2.80	0.07	0.00	0.00	13.40	2.02	0.39	0.17
3.00	0.08	0.00	0.00	13.60	2.05	0.41	0.16
3.20	0.09	0.00	0.00	13.80	2.08	0.42	0.15
3.40	0.09	0.00	0.00	14.00	2.11	0.44	0.14
3.60	0.10	0.00	0.00	14.20	2.13	0.45	0.13
3.80	0.11	0.00	0.00	14.40	2.16	0.46	0.12
4.00	0.11	0.00	0.00	14.60	2.18	0.47	0.12
4.20	0.12	0.00	0.00	14.80	2.20	0.48	0.11
4.40	0.13	0.00	0.00	15.00	2.22	0.49	0.11
4.60	0.13	0.00	0.00	15.20	2.24	0.50	0.10
4.80	0.14	0.00	0.00	15.40	2.26	0.51	0.10
5.00	0.15	0.00	0.00	15.60	2.27	0.52	0.09
5.20	0.16	0.00	0.00	15.80	2.29	0.53	0.08
5.40	0.16	0.00	0.00	16.00	2.30	0.54	0.08
5.60	0.17	0.00	0.00	16.20	2.32	0.55	0.07
5.80	0.18	0.00	0.00	16.40	2.33	0.55	0.07
6.00	0.19	0.00	0.00	16.60	2.34	0.56	0.07
6.20	0.20	0.00	0.00	16.80	2.35	0.57	0.07
6.40	0.20	0.00	0.00	17.00	2.36	0.57	0.06
6.60	0.21	0.00	0.00	17.20	2.38	0.58	0.06
6.80	0.22	0.00	0.00	17.40	2.39	0.58	0.06
7.00	0.24	0.00	0.00	17.60	2.40	0.59	0.05
7.20	0.25	0.00	0.00	17.80	2.40	0.60	0.05
7.40	0.26	0.00	0.00	18.00	2.41	0.60	0.05
7.60	0.27	0.00	0.00	18.20	2.42	0.60	0.05
7.80	0.28	0.00	0.00	18.40	2.43	0.61	0.05
8.00	0.30	0.00	0.00	18.60	2.44	0.61	0.04
8.20	0.31	0.00	0.00	18.80	2.44	0.62	0.04
8.40	0.33	0.00	0.00	19.00	2.45	0.62	0.04
8.60	0.34	0.00	0.00	19.20	2.46	0.63	0.04
8.80	0.36	0.00	0.00	19.40	2.47	0.63	0.04
9.00	0.38	0.00	0.00	19.60	2.47	0.64	0.04
9.20	0.40	0.00	0.00	19.80	2.48	0.64	0.04
9.40	0.42	0.00	0.00	20.00	2.49	0.64	0.04
9.60	0.44	0.00	0.00	20.20	2.49	0.65	0.04
9.80	0.47	0.00	0.00	20.40	2.50	0.65	0.04
10.00	0.49	0.00	0.00	20.60	2.51	0.66	0.04
10.20	0.52	0.00	0.00	20.80	2.51	0.66	0.04
10.40	0.55	0.00	0.00	21.00	2.52	0.66	0.04

Hydrograph for Subcatchment DA 2B: Drainage Area 2B (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	2.53	0.67	0.04
21.40	2.53	0.67	0.03
21.60	2.54	0.67	0.03
21.80	2.54	0.68	0.03
22.00	2.55	0.68	0.03
22.20	2.56	0.68	0.03
22.40	2.56	0.69	0.03
22.60	2.57	0.69	0.03
22.80	2.57	0.69	0.03
23.00	2.58	0.70	0.03
23.20	2.58	0.70	0.03
23.40	2.59	0.70	0.03
23.60	2.59	0.70	0.03
23.80	2.60	0.71	0.03
24.00	**2.60**	**0.71**	0.03

Summary for Subcatchment DA 2C: Drainage Area 2C Bypass

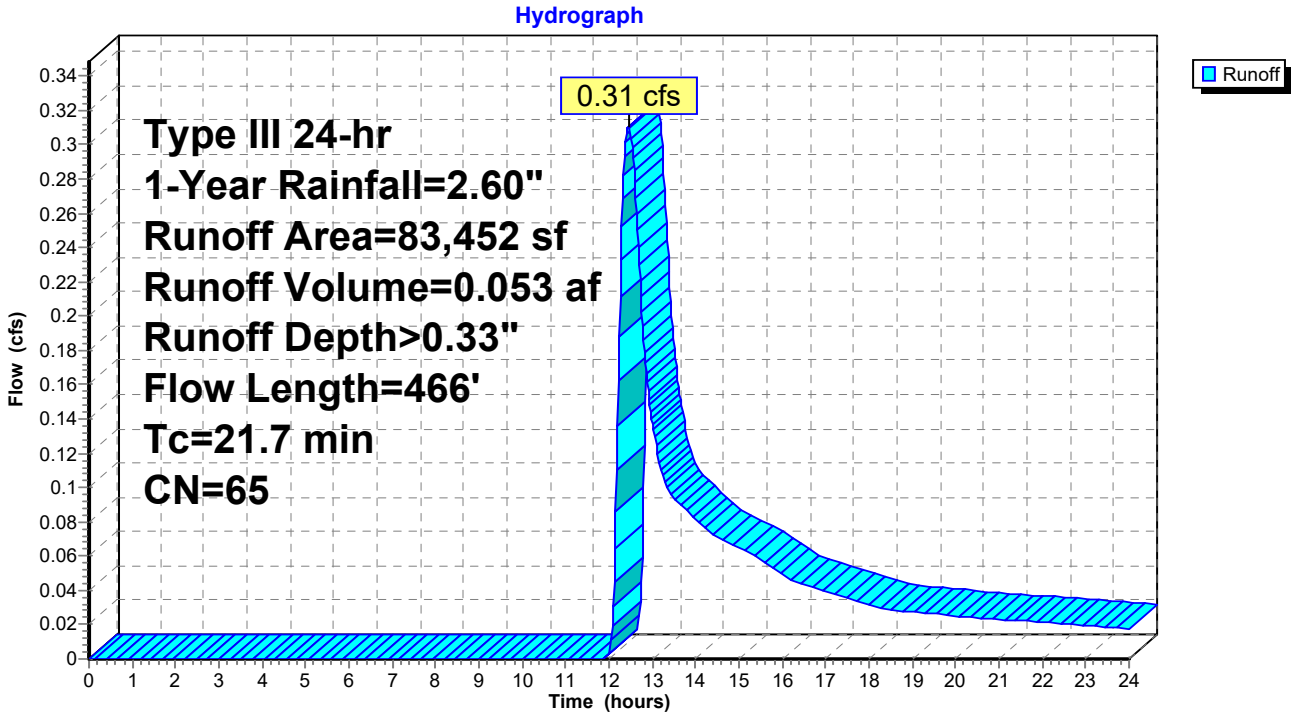
Runoff = 0.31 cfs @ 12.45 hrs, Volume= 0.053 af, Depth> 0.33"
Routed to Link N : POI North

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 1-Year Rainfall=2.60"

	Area (sf)	CN	Description
	52,745	61	>75% Grass cover, Good, HSG B
	15,800	80	>75% Grass cover, Good, HSG D
	4,809	77	Woods, Good, HSG D
*	1,308	98	Impervious
	8,790	55	Woods, Good, HSG B
	83,452	65	Weighted Average
	82,144		98.43% Pervious Area
	1,308		1.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0100	0.09		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.11"
2.6	366	0.0220	2.39		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
21.7	466	Total			

Subcatchment DA 2C: Drainage Area 2C Bypass



Hydrograph for Subcatchment DA 2C: Drainage Area 2C Bypass

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	0.58	0.00	0.00
0.20	0.01	0.00	0.00	10.80	0.61	0.00	0.00
0.40	0.01	0.00	0.00	11.00	0.65	0.00	0.00
0.60	0.02	0.00	0.00	11.20	0.69	0.00	0.00
0.80	0.02	0.00	0.00	11.40	0.75	0.00	0.00
1.00	0.03	0.00	0.00	11.60	0.82	0.00	0.00
1.20	0.03	0.00	0.00	11.80	0.97	0.00	0.00
1.40	0.04	0.00	0.00	12.00	1.30	0.01	0.00
1.60	0.04	0.00	0.00	12.20	1.63	0.05	0.14
1.80	0.05	0.00	0.00	12.40	1.78	0.08	**0.31**
2.00	0.05	0.00	0.00	12.60	1.85	0.10	**0.28**
2.20	0.06	0.00	0.00	12.80	1.91	0.11	0.19
2.40	0.06	0.00	0.00	13.00	1.95	0.12	0.14
2.60	0.07	0.00	0.00	13.20	1.99	0.13	0.11
2.80	0.07	0.00	0.00	13.40	2.02	0.14	0.10
3.00	0.08	0.00	0.00	13.60	2.05	0.15	0.09
3.20	0.09	0.00	0.00	13.80	2.08	0.16	0.09
3.40	0.09	0.00	0.00	14.00	2.11	0.17	0.08
3.60	0.10	0.00	0.00	14.20	2.13	0.17	0.08
3.80	0.11	0.00	0.00	14.40	2.16	0.18	0.07
4.00	0.11	0.00	0.00	14.60	2.18	0.19	0.07
4.20	0.12	0.00	0.00	14.80	2.20	0.19	0.07
4.40	0.13	0.00	0.00	15.00	2.22	0.20	0.06
4.60	0.13	0.00	0.00	15.20	2.24	0.21	0.06
4.80	0.14	0.00	0.00	15.40	2.26	0.21	0.06
5.00	0.15	0.00	0.00	15.60	2.27	0.22	0.06
5.20	0.16	0.00	0.00	15.80	2.29	0.22	0.05
5.40	0.16	0.00	0.00	16.00	2.30	0.23	0.05
5.60	0.17	0.00	0.00	16.20	2.32	0.23	0.05
5.80	0.18	0.00	0.00	16.40	2.33	0.24	0.04
6.00	0.19	0.00	0.00	16.60	2.34	0.24	0.04
6.20	0.20	0.00	0.00	16.80	2.35	0.24	0.04
6.40	0.20	0.00	0.00	17.00	2.36	0.25	0.04
6.60	0.21	0.00	0.00	17.20	2.38	0.25	0.04
6.80	0.22	0.00	0.00	17.40	2.39	0.26	0.04
7.00	0.24	0.00	0.00	17.60	2.40	0.26	0.03
7.20	0.25	0.00	0.00	17.80	2.40	0.26	0.03
7.40	0.26	0.00	0.00	18.00	2.41	0.27	0.03
7.60	0.27	0.00	0.00	18.20	2.42	0.27	0.03
7.80	0.28	0.00	0.00	18.40	2.43	0.27	0.03
8.00	0.30	0.00	0.00	18.60	2.44	0.27	0.03
8.20	0.31	0.00	0.00	18.80	2.44	0.28	0.03
8.40	0.33	0.00	0.00	19.00	2.45	0.28	0.03
8.60	0.34	0.00	0.00	19.20	2.46	0.28	0.03
8.80	0.36	0.00	0.00	19.40	2.47	0.29	0.03
9.00	0.38	0.00	0.00	19.60	2.47	0.29	0.03
9.20	0.40	0.00	0.00	19.80	2.48	0.29	0.03
9.40	0.42	0.00	0.00	20.00	2.49	0.29	0.03
9.60	0.44	0.00	0.00	20.20	2.49	0.30	0.02
9.80	0.47	0.00	0.00	20.40	2.50	0.30	0.02
10.00	0.49	0.00	0.00	20.60	2.51	0.30	0.02
10.20	0.52	0.00	0.00	20.80	2.51	0.30	0.02
10.40	0.55	0.00	0.00	21.00	2.52	0.31	0.02

Hydrograph for Subcatchment DA 2C: Drainage Area 2C Bypass (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	2.53	0.31	0.02
21.40	2.53	0.31	0.02
21.60	2.54	0.31	0.02
21.80	2.54	0.31	0.02
22.00	2.55	0.32	0.02
22.20	2.56	0.32	0.02
22.40	2.56	0.32	0.02
22.60	2.57	0.32	0.02
22.80	2.57	0.32	0.02
23.00	2.58	0.33	0.02
23.20	2.58	0.33	0.02
23.40	2.59	0.33	0.02
23.60	2.59	0.33	0.02
23.80	2.60	0.33	0.02
24.00	**2.60**	**0.34**	0.02

Summary for Subcatchment DA 3: Drainage Area 3 - Bio Direct Entry

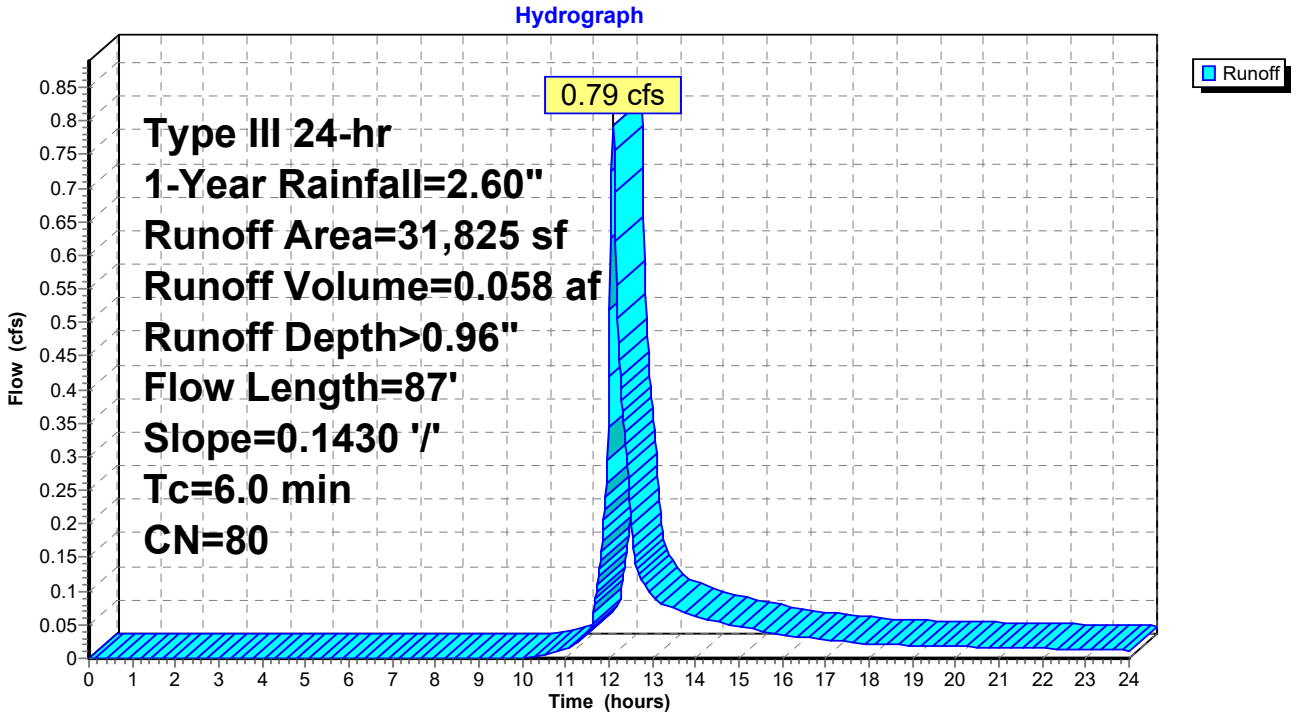
Runoff = 0.79 cfs @ 12.09 hrs, Volume= 0.058 af, Depth> 0.96"
Routed to Pond BIO : BioRetention 1 (South)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 1-Year Rainfall=2.60"

Area (sf)	CN	Description
31,825	80	>75% Grass cover, Good, HSG D
31,825		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	87	0.1430	0.36		**Sheet Flow, SF** Grass: Short n= 0.150 P2= 3.11"
2.0					**Direct Entry, + Entry to Reach Minimum**
6.0	87	Total			

Subcatchment DA 3: Drainage Area 3 - Bio Direct Entry



Hydrograph for Subcatchment DA 3: Drainage Area 3 - Bio Direct Entry

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	0.58	0.00	0.01
0.20	0.01	0.00	0.00	10.80	0.61	0.00	0.01
0.40	0.01	0.00	0.00	11.00	0.65	0.01	0.01
0.60	0.02	0.00	0.00	11.20	0.69	0.01	0.02
0.80	0.02	0.00	0.00	11.40	0.75	0.02	0.03
1.00	0.03	0.00	0.00	11.60	0.82	0.04	0.05
1.20	0.03	0.00	0.00	11.80	0.97	0.07	0.15
1.40	0.04	0.00	0.00	12.00	1.30	0.19	**0.42**
1.60	0.04	0.00	0.00	12.20	1.63	0.35	**0.50**
1.80	0.05	0.00	0.00	12.40	1.78	0.44	0.30
2.00	0.05	0.00	0.00	12.60	1.85	0.48	0.14
2.20	0.06	0.00	0.00	12.80	1.91	0.51	0.11
2.40	0.06	0.00	0.00	13.00	1.95	0.53	0.09
2.60	0.07	0.00	0.00	13.20	1.99	0.55	0.08
2.80	0.07	0.00	0.00	13.40	2.02	0.58	0.08
3.00	0.08	0.00	0.00	13.60	2.05	0.59	0.07
3.20	0.09	0.00	0.00	13.80	2.08	0.61	0.07
3.40	0.09	0.00	0.00	14.00	2.11	0.63	0.06
3.60	0.10	0.00	0.00	14.20	2.13	0.65	0.06
3.80	0.11	0.00	0.00	14.40	2.16	0.66	0.06
4.00	0.11	0.00	0.00	14.60	2.18	0.67	0.05
4.20	0.12	0.00	0.00	14.80	2.20	0.69	0.05
4.40	0.13	0.00	0.00	15.00	2.22	0.70	0.05
4.60	0.13	0.00	0.00	15.20	2.24	0.71	0.05
4.80	0.14	0.00	0.00	15.40	2.26	0.73	0.04
5.00	0.15	0.00	0.00	15.60	2.27	0.74	0.04
5.20	0.16	0.00	0.00	15.80	2.29	0.75	0.04
5.40	0.16	0.00	0.00	16.00	2.30	0.76	0.03
5.60	0.17	0.00	0.00	16.20	2.32	0.76	0.03
5.80	0.18	0.00	0.00	16.40	2.33	0.77	0.03
6.00	0.19	0.00	0.00	16.60	2.34	0.78	0.03
6.20	0.20	0.00	0.00	16.80	2.35	0.79	0.03
6.40	0.20	0.00	0.00	17.00	2.36	0.80	0.03
6.60	0.21	0.00	0.00	17.20	2.38	0.80	0.03
6.80	0.22	0.00	0.00	17.40	2.39	0.81	0.03
7.00	0.24	0.00	0.00	17.60	2.40	0.82	0.02
7.20	0.25	0.00	0.00	17.80	2.40	0.82	0.02
7.40	0.26	0.00	0.00	18.00	2.41	0.83	0.02
7.60	0.27	0.00	0.00	18.20	2.42	0.83	0.02
7.80	0.28	0.00	0.00	18.40	2.43	0.84	0.02
8.00	0.30	0.00	0.00	18.60	2.44	0.85	0.02
8.20	0.31	0.00	0.00	18.80	2.44	0.85	0.02
8.40	0.33	0.00	0.00	19.00	2.45	0.86	0.02
8.60	0.34	0.00	0.00	19.20	2.46	0.86	0.02
8.80	0.36	0.00	0.00	19.40	2.47	0.87	0.02
9.00	0.38	0.00	0.00	19.60	2.47	0.87	0.02
9.20	0.40	0.00	0.00	19.80	2.48	0.88	0.02
9.40	0.42	0.00	0.00	20.00	2.49	0.88	0.02
9.60	0.44	0.00	0.00	20.20	2.49	0.89	0.02
9.80	0.47	0.00	0.00	20.40	2.50	0.89	0.02
10.00	0.49	0.00	0.00	20.60	2.51	0.89	0.02
10.20	0.52	0.00	0.00	20.80	2.51	0.90	0.02
10.40	0.55	0.00	0.00	21.00	2.52	0.90	0.02

Hydrograph for Subcatchment DA 3: Drainage Area 3 - Bio Direct Entry (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	2.53	0.91	0.02
21.40	2.53	0.91	0.02
21.60	2.54	0.92	0.02
21.80	2.54	0.92	0.01
22.00	2.55	0.92	0.01
22.20	2.56	0.93	0.01
22.40	2.56	0.93	0.01
22.60	2.57	0.93	0.01
22.80	2.57	0.94	0.01
23.00	2.58	0.94	0.01
23.20	2.58	0.95	0.01
23.40	2.59	0.95	0.01
23.60	2.59	0.95	0.01
23.80	2.60	0.96	0.01
24.00	**2.60**	**0.96**	0.01

Summary for Subcatchment DA 4: Drainage Area 4

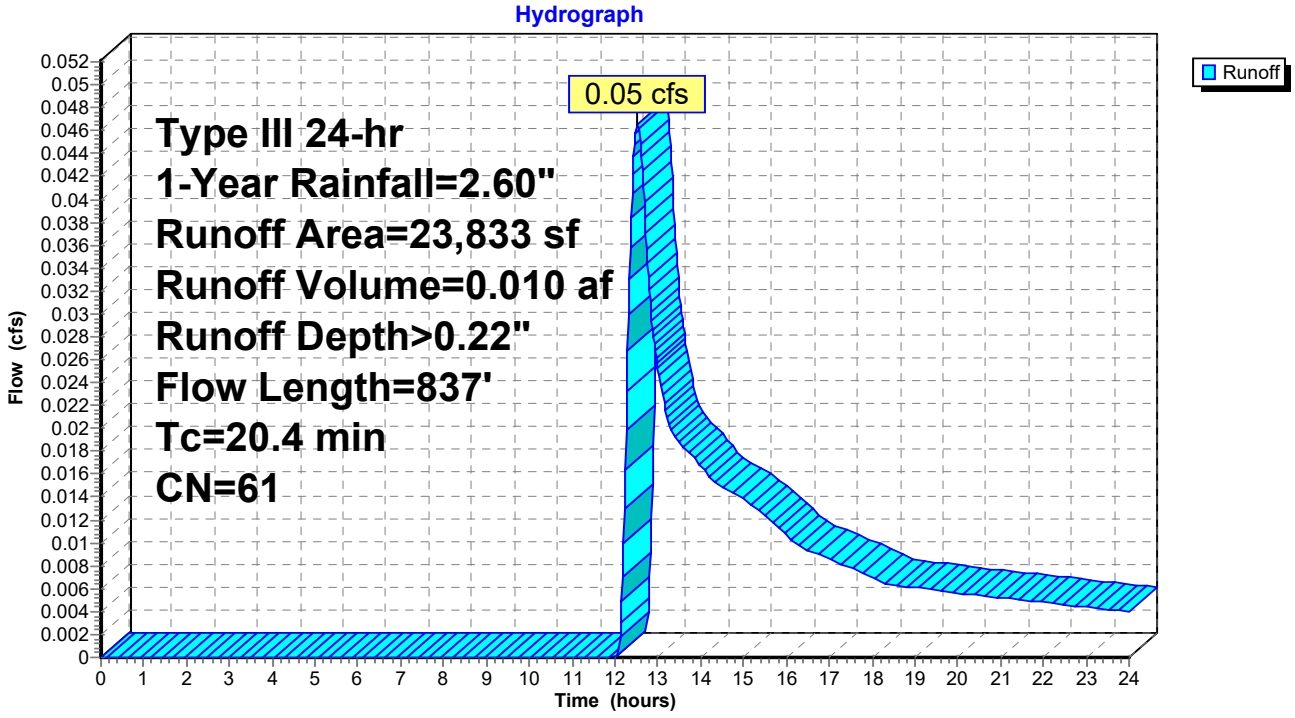
Runoff = 0.05 cfs @ 12.53 hrs, Volume= 0.010 af, Depth> 0.22"
Routed to Pond DET2 : MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 1-Year Rainfall=2.60"

Area (sf)	CN	Description
23,833	61	>75% Grass cover, Good, HSG B
23,833		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.3	100	0.0050	0.10		**Sheet Flow, SF** Grass: Short n= 0.150 P2= 3.11"
2.5	413	0.0290	2.74		**Shallow Concentrated Flow, Grass SCF** Unpaved Kv= 16.1 fps
0.6	324	0.0250	9.02	11.06	**Pipe Channel, Pipe Flow** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
20.4	837	Total			

Subcatchment DA 4: Drainage Area 4



Hydrograph for Subcatchment DA 4: Drainage Area 4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	0.58	0.00	0.00
0.20	0.01	0.00	0.00	10.80	0.61	0.00	0.00
0.40	0.01	0.00	0.00	11.00	0.65	0.00	0.00
0.60	0.02	0.00	0.00	11.20	0.69	0.00	0.00
0.80	0.02	0.00	0.00	11.40	0.75	0.00	0.00
1.00	0.03	0.00	0.00	11.60	0.82	0.00	0.00
1.20	0.03	0.00	0.00	11.80	0.97	0.00	0.00
1.40	0.04	0.00	0.00	12.00	1.30	0.00	0.00
1.60	0.04	0.00	0.00	12.20	1.63	0.02	0.01
1.80	0.05	0.00	0.00	12.40	1.78	0.04	**0.04**
2.00	0.05	0.00	0.00	12.60	1.85	0.05	**0.04**
2.20	0.06	0.00	0.00	12.80	1.91	0.06	0.03
2.40	0.06	0.00	0.00	13.00	1.95	0.06	0.03
2.60	0.07	0.00	0.00	13.20	1.99	0.07	0.02
2.80	0.07	0.00	0.00	13.40	2.02	0.08	0.02
3.00	0.08	0.00	0.00	13.60	2.05	0.08	0.02
3.20	0.09	0.00	0.00	13.80	2.08	0.09	0.02
3.40	0.09	0.00	0.00	14.00	2.11	0.10	0.02
3.60	0.10	0.00	0.00	14.20	2.13	0.10	0.02
3.80	0.11	0.00	0.00	14.40	2.16	0.11	0.02
4.00	0.11	0.00	0.00	14.60	2.18	0.11	0.01
4.20	0.12	0.00	0.00	14.80	2.20	0.12	0.01
4.40	0.13	0.00	0.00	15.00	2.22	0.12	0.01
4.60	0.13	0.00	0.00	15.20	2.24	0.13	0.01
4.80	0.14	0.00	0.00	15.40	2.26	0.13	0.01
5.00	0.15	0.00	0.00	15.60	2.27	0.13	0.01
5.20	0.16	0.00	0.00	15.80	2.29	0.14	0.01
5.40	0.16	0.00	0.00	16.00	2.30	0.14	0.01
5.60	0.17	0.00	0.00	16.20	2.32	0.15	0.01
5.80	0.18	0.00	0.00	16.40	2.33	0.15	0.01
6.00	0.19	0.00	0.00	16.60	2.34	0.15	0.01
6.20	0.20	0.00	0.00	16.80	2.35	0.15	0.01
6.40	0.20	0.00	0.00	17.00	2.36	0.16	0.01
6.60	0.21	0.00	0.00	17.20	2.38	0.16	0.01
6.80	0.22	0.00	0.00	17.40	2.39	0.16	0.01
7.00	0.24	0.00	0.00	17.60	2.40	0.17	0.01
7.20	0.25	0.00	0.00	17.80	2.40	0.17	0.01
7.40	0.26	0.00	0.00	18.00	2.41	0.17	0.01
7.60	0.27	0.00	0.00	18.20	2.42	0.17	0.01
7.80	0.28	0.00	0.00	18.40	2.43	0.18	0.01
8.00	0.30	0.00	0.00	18.60	2.44	0.18	0.01
8.20	0.31	0.00	0.00	18.80	2.44	0.18	0.01
8.40	0.33	0.00	0.00	19.00	2.45	0.18	0.01
8.60	0.34	0.00	0.00	19.20	2.46	0.18	0.01
8.80	0.36	0.00	0.00	19.40	2.47	0.19	0.01
9.00	0.38	0.00	0.00	19.60	2.47	0.19	0.01
9.20	0.40	0.00	0.00	19.80	2.48	0.19	0.01
9.40	0.42	0.00	0.00	20.00	2.49	0.19	0.01
9.60	0.44	0.00	0.00	20.20	2.49	0.19	0.01
9.80	0.47	0.00	0.00	20.40	2.50	0.20	0.01
10.00	0.49	0.00	0.00	20.60	2.51	0.20	0.01
10.20	0.52	0.00	0.00	20.80	2.51	0.20	0.01
10.40	0.55	0.00	0.00	21.00	2.52	0.20	0.01

Hydrograph for Subcatchment DA 4: Drainage Area 4 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	2.53	0.20	0.01
21.40	2.53	0.21	0.01
21.60	2.54	0.21	0.00
21.80	2.54	0.21	0.00
22.00	2.55	0.21	0.00
22.20	2.56	0.21	0.00
22.40	2.56	0.21	0.00
22.60	2.57	0.22	0.00
22.80	2.57	0.22	0.00
23.00	2.58	0.22	0.00
23.20	2.58	0.22	0.00
23.40	2.59	0.22	0.00
23.60	2.59	0.22	0.00
23.80	2.60	0.22	0.00
24.00	**2.60**	**0.23**	0.00

Summary for Subcatchment OFF1: Offsite Drainage Area 1

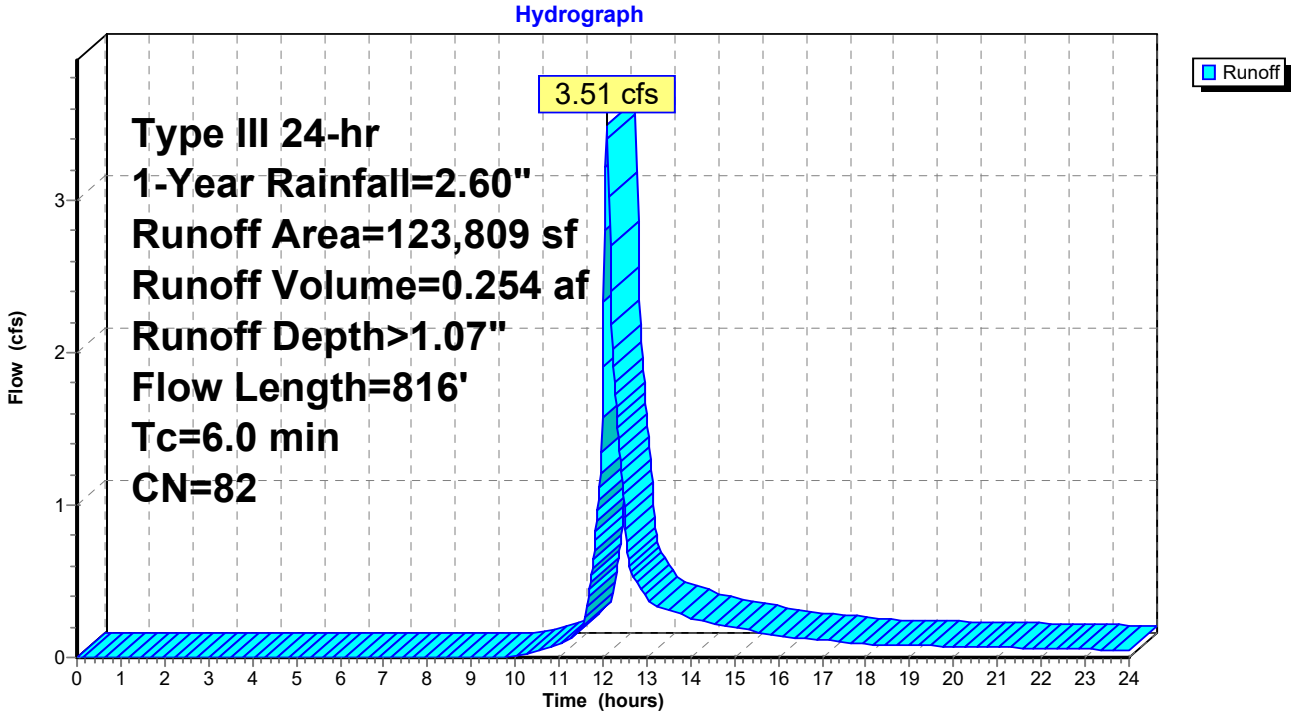
Runoff = 3.51 cfs @ 12.09 hrs, Volume= 0.254 af, Depth> 1.07"
Routed to Pond DET2 : MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 1-Year Rainfall=2.60"

	Area (sf)	CN	Description
	52,228	61	>75% Grass cover, Good, HSG B
*	71,581	98	Impervious Surfaces
	123,809	82	Weighted Average
	52,228		42.18% Pervious Area
	71,581		57.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	345	0.0230	3.08		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.4	471	0.0526	17.89	56.21	**Pipe Channel, 24" Pipe from Jehova Site to onsite detention** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
3.7					**Direct Entry, + Entry to Reach Minimum**
6.0	816	Total			

Subcatchment OFF1: Offsite Drainage Area 1



Hydrograph for Subcatchment OFF1: Offsite Drainage Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	0.58	0.01	0.05
0.20	0.01	0.00	0.00	10.80	0.61	0.01	0.06
0.40	0.01	0.00	0.00	11.00	0.65	0.02	0.08
0.60	0.02	0.00	0.00	11.20	0.69	0.03	0.11
0.80	0.02	0.00	0.00	11.40	0.75	0.04	0.16
1.00	0.03	0.00	0.00	11.60	0.82	0.06	0.26
1.20	0.03	0.00	0.00	11.80	0.97	0.10	0.71
1.40	0.04	0.00	0.00	12.00	1.30	0.24	**1.91**
1.60	0.04	0.00	0.00	12.20	1.63	0.42	**2.19**
1.80	0.05	0.00	0.00	12.40	1.78	0.51	1.29
2.00	0.05	0.00	0.00	12.60	1.85	0.56	0.60
2.20	0.06	0.00	0.00	12.80	1.91	0.59	0.47
2.40	0.06	0.00	0.00	13.00	1.95	0.62	0.39
2.60	0.07	0.00	0.00	13.20	1.99	0.64	0.34
2.80	0.07	0.00	0.00	13.40	2.02	0.66	0.32
3.00	0.08	0.00	0.00	13.60	2.05	0.68	0.30
3.20	0.09	0.00	0.00	13.80	2.08	0.70	0.28
3.40	0.09	0.00	0.00	14.00	2.11	0.72	0.26
3.60	0.10	0.00	0.00	14.20	2.13	0.74	0.24
3.80	0.11	0.00	0.00	14.40	2.16	0.75	0.23
4.00	0.11	0.00	0.00	14.60	2.18	0.77	0.22
4.20	0.12	0.00	0.00	14.80	2.20	0.78	0.21
4.40	0.13	0.00	0.00	15.00	2.22	0.80	0.20
4.60	0.13	0.00	0.00	15.20	2.24	0.81	0.19
4.80	0.14	0.00	0.00	15.40	2.26	0.82	0.18
5.00	0.15	0.00	0.00	15.60	2.27	0.84	0.17
5.20	0.16	0.00	0.00	15.80	2.29	0.85	0.15
5.40	0.16	0.00	0.00	16.00	2.30	0.86	0.14
5.60	0.17	0.00	0.00	16.20	2.32	0.87	0.13
5.80	0.18	0.00	0.00	16.40	2.33	0.87	0.13
6.00	0.19	0.00	0.00	16.60	2.34	0.88	0.12
6.20	0.20	0.00	0.00	16.80	2.35	0.89	0.12
6.40	0.20	0.00	0.00	17.00	2.36	0.90	0.11
6.60	0.21	0.00	0.00	17.20	2.38	0.91	0.11
6.80	0.22	0.00	0.00	17.40	2.39	0.91	0.10
7.00	0.24	0.00	0.00	17.60	2.40	0.92	0.10
7.20	0.25	0.00	0.00	17.80	2.40	0.93	0.09
7.40	0.26	0.00	0.00	18.00	2.41	0.93	0.09
7.60	0.27	0.00	0.00	18.20	2.42	0.94	0.09
7.80	0.28	0.00	0.00	18.40	2.43	0.95	0.08
8.00	0.30	0.00	0.00	18.60	2.44	0.95	0.08
8.20	0.31	0.00	0.00	18.80	2.44	0.96	0.08
8.40	0.33	0.00	0.00	19.00	2.45	0.96	0.08
8.60	0.34	0.00	0.00	19.20	2.46	0.97	0.08
8.80	0.36	0.00	0.00	19.40	2.47	0.97	0.08
9.00	0.38	0.00	0.00	19.60	2.47	0.98	0.07
9.20	0.40	0.00	0.00	19.80	2.48	0.98	0.07
9.40	0.42	0.00	0.00	20.00	2.49	0.99	0.07
9.60	0.44	0.00	0.00	20.20	2.49	0.99	0.07
9.80	0.47	0.00	0.01	20.40	2.50	1.00	0.07
10.00	0.49	0.00	0.01	20.60	2.51	1.00	0.07
10.20	0.52	0.00	0.02	20.80	2.51	1.01	0.07
10.40	0.55	0.01	0.03	21.00	2.52	1.01	0.07

Hydrograph for Subcatchment OFF1: Offsite Drainage Area 1 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	2.53	1.02	0.06
21.40	2.53	1.02	0.06
21.60	2.54	1.03	0.06
21.80	2.54	1.03	0.06
22.00	2.55	1.03	0.06
22.20	2.56	1.04	0.06
22.40	2.56	1.04	0.06
22.60	2.57	1.05	0.06
22.80	2.57	1.05	0.06
23.00	2.58	1.05	0.05
23.20	2.58	1.06	0.05
23.40	2.59	1.06	0.05
23.60	2.59	1.07	0.05
23.80	2.60	1.07	0.05
24.00	**2.60**	**1.07**	0.05

Summary for Subcatchment OFF2: Offsite Drainage Area 2

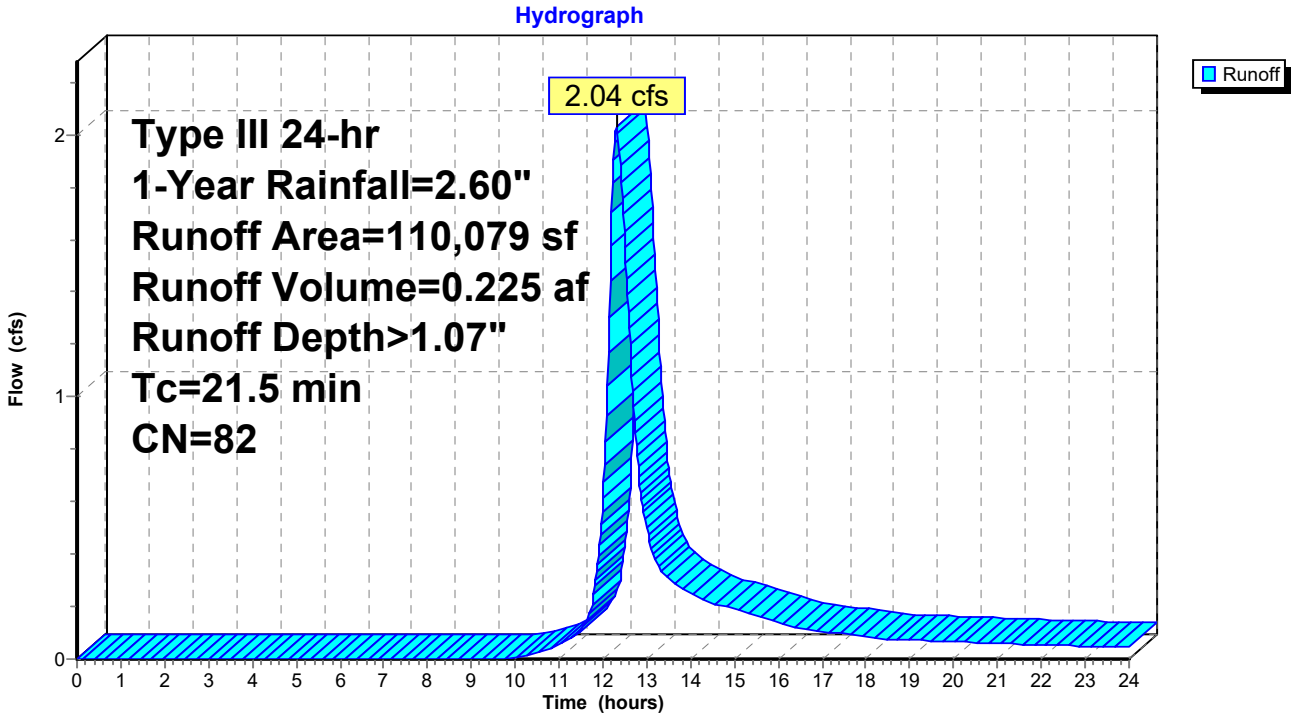
Runoff = 2.04 cfs @ 12.31 hrs, Volume= 0.225 af, Depth> 1.07"
Routed to Link S : POI South

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 1-Year Rainfall=2.60"

	Area (sf)	CN	Description
	100,377	80	>75% Grass cover, Good, HSG D
*	9,702	98	Impervious Surfaces
	110,079	82	Weighted Average
	100,377		91.19% Pervious Area
	9,702		8.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.5					**Direct Entry, Match DA 1B Watershed**

Subcatchment OFF2: Offsite Drainage Area 2



Hydrograph for Subcatchment OFF2: Offsite Drainage Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	0.58	0.01	0.03
0.20	0.01	0.00	0.00	10.80	0.61	0.01	0.04
0.40	0.01	0.00	0.00	11.00	0.65	0.02	0.05
0.60	0.02	0.00	0.00	11.20	0.69	0.03	0.07
0.80	0.02	0.00	0.00	11.40	0.75	0.04	0.10
1.00	0.03	0.00	0.00	11.60	0.82	0.06	0.14
1.20	0.03	0.00	0.00	11.80	0.97	0.10	0.26
1.40	0.04	0.00	0.00	12.00	1.30	0.24	0.61
1.60	0.04	0.00	0.00	12.20	1.63	0.42	**1.71**
1.80	0.05	0.00	0.00	12.40	1.78	0.51	**1.88**
2.00	0.05	0.00	0.00	12.60	1.85	0.56	1.26
2.20	0.06	0.00	0.00	12.80	1.91	0.59	0.73
2.40	0.06	0.00	0.00	13.00	1.95	0.62	0.49
2.60	0.07	0.00	0.00	13.20	1.99	0.64	0.38
2.80	0.07	0.00	0.00	13.40	2.02	0.66	0.32
3.00	0.08	0.00	0.00	13.60	2.05	0.68	0.29
3.20	0.09	0.00	0.00	13.80	2.08	0.70	0.27
3.40	0.09	0.00	0.00	14.00	2.11	0.72	0.25
3.60	0.10	0.00	0.00	14.20	2.13	0.74	0.23
3.80	0.11	0.00	0.00	14.40	2.16	0.75	0.22
4.00	0.11	0.00	0.00	14.60	2.18	0.77	0.21
4.20	0.12	0.00	0.00	14.80	2.20	0.78	0.20
4.40	0.13	0.00	0.00	15.00	2.22	0.80	0.19
4.60	0.13	0.00	0.00	15.20	2.24	0.81	0.18
4.80	0.14	0.00	0.00	15.40	2.26	0.82	0.17
5.00	0.15	0.00	0.00	15.60	2.27	0.84	0.16
5.20	0.16	0.00	0.00	15.80	2.29	0.85	0.15
5.40	0.16	0.00	0.00	16.00	2.30	0.86	0.14
5.60	0.17	0.00	0.00	16.20	2.32	0.87	0.13
5.80	0.18	0.00	0.00	16.40	2.33	0.87	0.12
6.00	0.19	0.00	0.00	16.60	2.34	0.88	0.12
6.20	0.20	0.00	0.00	16.80	2.35	0.89	0.11
6.40	0.20	0.00	0.00	17.00	2.36	0.90	0.11
6.60	0.21	0.00	0.00	17.20	2.38	0.91	0.10
6.80	0.22	0.00	0.00	17.40	2.39	0.91	0.10
7.00	0.24	0.00	0.00	17.60	2.40	0.92	0.09
7.20	0.25	0.00	0.00	17.80	2.40	0.93	0.09
7.40	0.26	0.00	0.00	18.00	2.41	0.93	0.08
7.60	0.27	0.00	0.00	18.20	2.42	0.94	0.08
7.80	0.28	0.00	0.00	18.40	2.43	0.95	0.08
8.00	0.30	0.00	0.00	18.60	2.44	0.95	0.08
8.20	0.31	0.00	0.00	18.80	2.44	0.96	0.07
8.40	0.33	0.00	0.00	19.00	2.45	0.96	0.07
8.60	0.34	0.00	0.00	19.20	2.46	0.97	0.07
8.80	0.36	0.00	0.00	19.40	2.47	0.97	0.07
9.00	0.38	0.00	0.00	19.60	2.47	0.98	0.07
9.20	0.40	0.00	0.00	19.80	2.48	0.98	0.07
9.40	0.42	0.00	0.00	20.00	2.49	0.99	0.07
9.60	0.44	0.00	0.00	20.20	2.49	0.99	0.06
9.80	0.47	0.00	0.00	20.40	2.50	1.00	0.06
10.00	0.49	0.00	0.00	20.60	2.51	1.00	0.06
10.20	0.52	0.00	0.01	20.80	2.51	1.01	0.06
10.40	0.55	0.01	0.02	21.00	2.52	1.01	0.06

Hydrograph for Subcatchment OFF2: Offsite Drainage Area 2 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	2.53	1.02	0.06
21.40	2.53	1.02	0.06
21.60	2.54	1.03	0.06
21.80	2.54	1.03	0.06
22.00	2.55	1.03	0.05
22.20	2.56	1.04	0.05
22.40	2.56	1.04	0.05
22.60	2.57	1.05	0.05
22.80	2.57	1.05	0.05
23.00	2.58	1.05	0.05
23.20	2.58	1.06	0.05
23.40	2.59	1.06	0.05
23.60	2.59	1.07	0.05
23.80	2.60	1.07	0.04
24.00	**2.60**	**1.07**	0.04

Summary for Subcatchment OFF3: Offsite Drainage Area 3

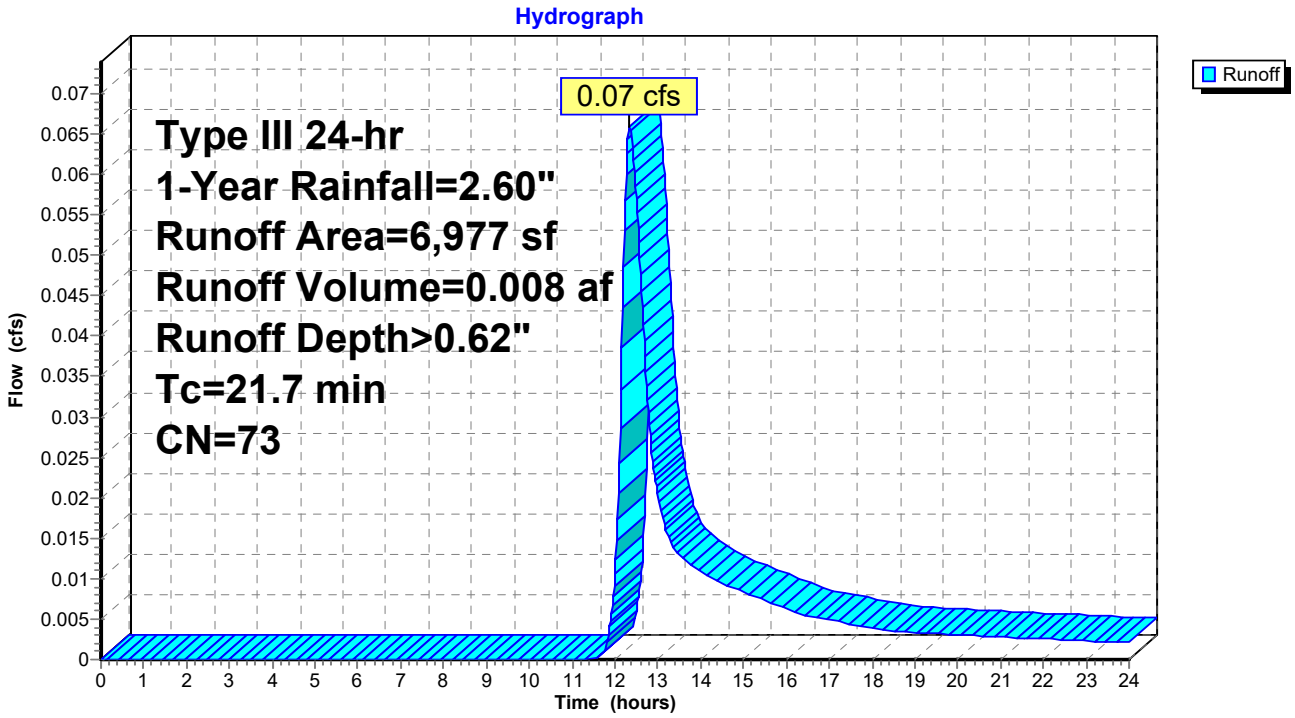
Runoff = 0.07 cfs @ 12.35 hrs, Volume= 0.008 af, Depth> 0.62"
Routed to Link N : POI North

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 1-Year Rainfall=2.60"

Area (sf)	CN	Description
2,502	61	>75% Grass cover, Good, HSG B
4,475	80	>75% Grass cover, Good, HSG D
6,977	73	Weighted Average
6,977		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.7					**Direct Entry, Match DA 3 Watershed**

Subcatchment OFF3: Offsite Drainage Area 3



Hydrograph for Subcatchment OFF3: Offsite Drainage Area 3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	0.58	0.00	0.00
0.20	0.01	0.00	0.00	10.80	0.61	0.00	0.00
0.40	0.01	0.00	0.00	11.00	0.65	0.00	0.00
0.60	0.02	0.00	0.00	11.20	0.69	0.00	0.00
0.80	0.02	0.00	0.00	11.40	0.75	0.00	0.00
1.00	0.03	0.00	0.00	11.60	0.82	0.00	0.00
1.20	0.03	0.00	0.00	11.80	0.97	0.01	0.00
1.40	0.04	0.00	0.00	12.00	1.30	0.07	0.01
1.60	0.04	0.00	0.00	12.20	1.63	0.17	**0.05**
1.80	0.05	0.00	0.00	12.40	1.78	0.23	**0.06**
2.00	0.05	0.00	0.00	12.60	1.85	0.26	0.05
2.20	0.06	0.00	0.00	12.80	1.91	0.28	0.03
2.40	0.06	0.00	0.00	13.00	1.95	0.30	0.02
2.60	0.07	0.00	0.00	13.20	1.99	0.31	0.02
2.80	0.07	0.00	0.00	13.40	2.02	0.33	0.01
3.00	0.08	0.00	0.00	13.60	2.05	0.34	0.01
3.20	0.09	0.00	0.00	13.80	2.08	0.36	0.01
3.40	0.09	0.00	0.00	14.00	2.11	0.37	0.01
3.60	0.10	0.00	0.00	14.20	2.13	0.38	0.01
3.80	0.11	0.00	0.00	14.40	2.16	0.39	0.01
4.00	0.11	0.00	0.00	14.60	2.18	0.40	0.01
4.20	0.12	0.00	0.00	14.80	2.20	0.41	0.01
4.40	0.13	0.00	0.00	15.00	2.22	0.42	0.01
4.60	0.13	0.00	0.00	15.20	2.24	0.43	0.01
4.80	0.14	0.00	0.00	15.40	2.26	0.44	0.01
5.00	0.15	0.00	0.00	15.60	2.27	0.45	0.01
5.20	0.16	0.00	0.00	15.80	2.29	0.46	0.01
5.40	0.16	0.00	0.00	16.00	2.30	0.46	0.01
5.60	0.17	0.00	0.00	16.20	2.32	0.47	0.01
5.80	0.18	0.00	0.00	16.40	2.33	0.48	0.01
6.00	0.19	0.00	0.00	16.60	2.34	0.48	0.01
6.20	0.20	0.00	0.00	16.80	2.35	0.49	0.01
6.40	0.20	0.00	0.00	17.00	2.36	0.50	0.00
6.60	0.21	0.00	0.00	17.20	2.38	0.50	0.00
6.80	0.22	0.00	0.00	17.40	2.39	0.51	0.00
7.00	0.24	0.00	0.00	17.60	2.40	0.51	0.00
7.20	0.25	0.00	0.00	17.80	2.40	0.52	0.00
7.40	0.26	0.00	0.00	18.00	2.41	0.52	0.00
7.60	0.27	0.00	0.00	18.20	2.42	0.53	0.00
7.80	0.28	0.00	0.00	18.40	2.43	0.53	0.00
8.00	0.30	0.00	0.00	18.60	2.44	0.53	0.00
8.20	0.31	0.00	0.00	18.80	2.44	0.54	0.00
8.40	0.33	0.00	0.00	19.00	2.45	0.54	0.00
8.60	0.34	0.00	0.00	19.20	2.46	0.55	0.00
8.80	0.36	0.00	0.00	19.40	2.47	0.55	0.00
9.00	0.38	0.00	0.00	19.60	2.47	0.55	0.00
9.20	0.40	0.00	0.00	19.80	2.48	0.56	0.00
9.40	0.42	0.00	0.00	20.00	2.49	0.56	0.00
9.60	0.44	0.00	0.00	20.20	2.49	0.56	0.00
9.80	0.47	0.00	0.00	20.40	2.50	0.57	0.00
10.00	0.49	0.00	0.00	20.60	2.51	0.57	0.00
10.20	0.52	0.00	0.00	20.80	2.51	0.58	0.00
10.40	0.55	0.00	0.00	21.00	2.52	0.58	0.00

Hydrograph for Subcatchment OFF3: Offsite Drainage Area 3 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	2.53	0.58	0.00
21.40	2.53	0.59	0.00
21.60	2.54	0.59	0.00
21.80	2.54	0.59	0.00
22.00	2.55	0.59	0.00
22.20	2.56	0.60	0.00
22.40	2.56	0.60	0.00
22.60	2.57	0.60	0.00
22.80	2.57	0.61	0.00
23.00	2.58	0.61	0.00
23.20	2.58	0.61	0.00
23.40	2.59	0.61	0.00
23.60	2.59	0.62	0.00
23.80	2.60	0.62	0.00
24.00	**2.60**	**0.62**	0.00

Summary for Pond BIO: BioRetention 1 (South)

Inflow Area = 4.529 ac, 82.25% Impervious, Inflow Depth > 1.33" for 1-Year event
Inflow = 1.74 cfs @ 12.09 hrs, Volume= 0.502 af
Outflow = 0.23 cfs @ 17.09 hrs, Volume= 0.216 af, Atten= 87%, Lag= 300.0 min
Primary = 0.23 cfs @ 17.09 hrs, Volume= 0.216 af
Routed to Link S : POI South

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 299.68' @ 17.09 hrs Surf.Area= 19,784 sf Storage= 12,847 cf

Plug-Flow detention time= 317.9 min calculated for 0.216 af (43% of inflow)
Center-of-Mass det. time= 110.0 min (901.9 - 791.9)

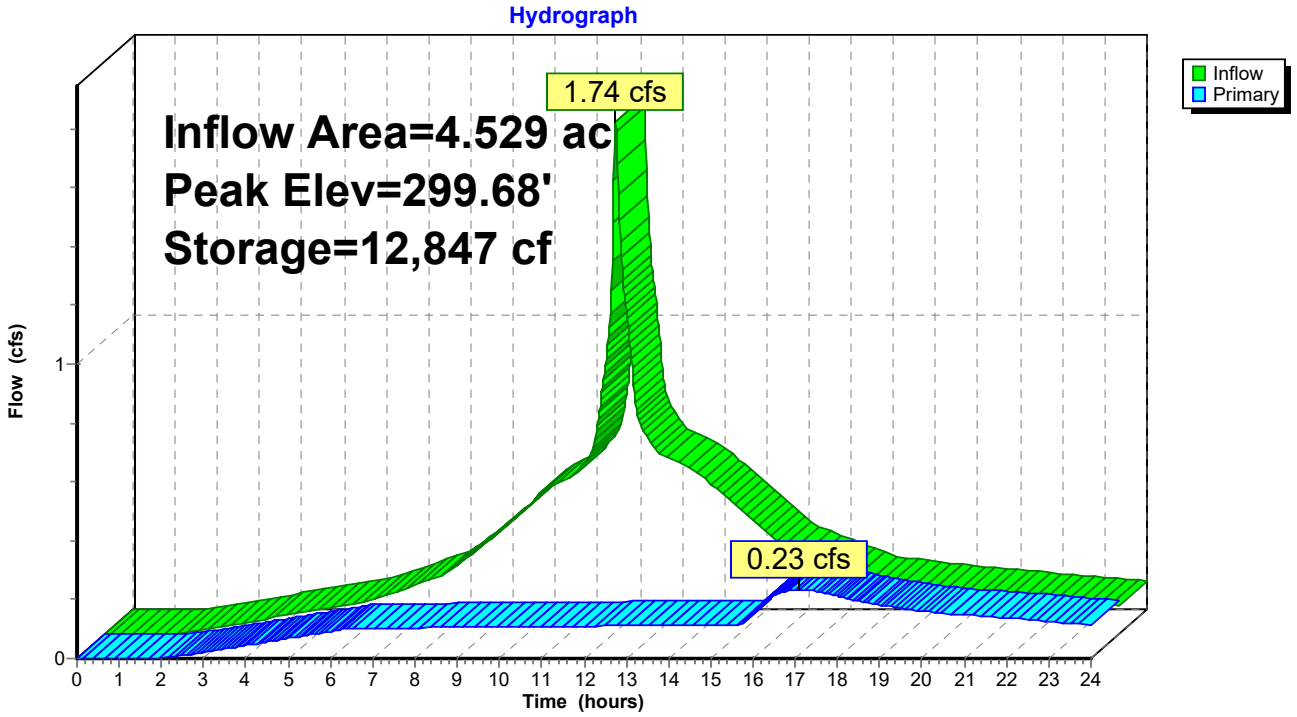
Volume	Invert	Avail.Storage	Storage Description
#1	299.00'	19,296 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
299.00	17,947	0	0
300.00	20,644	19,296	19,296

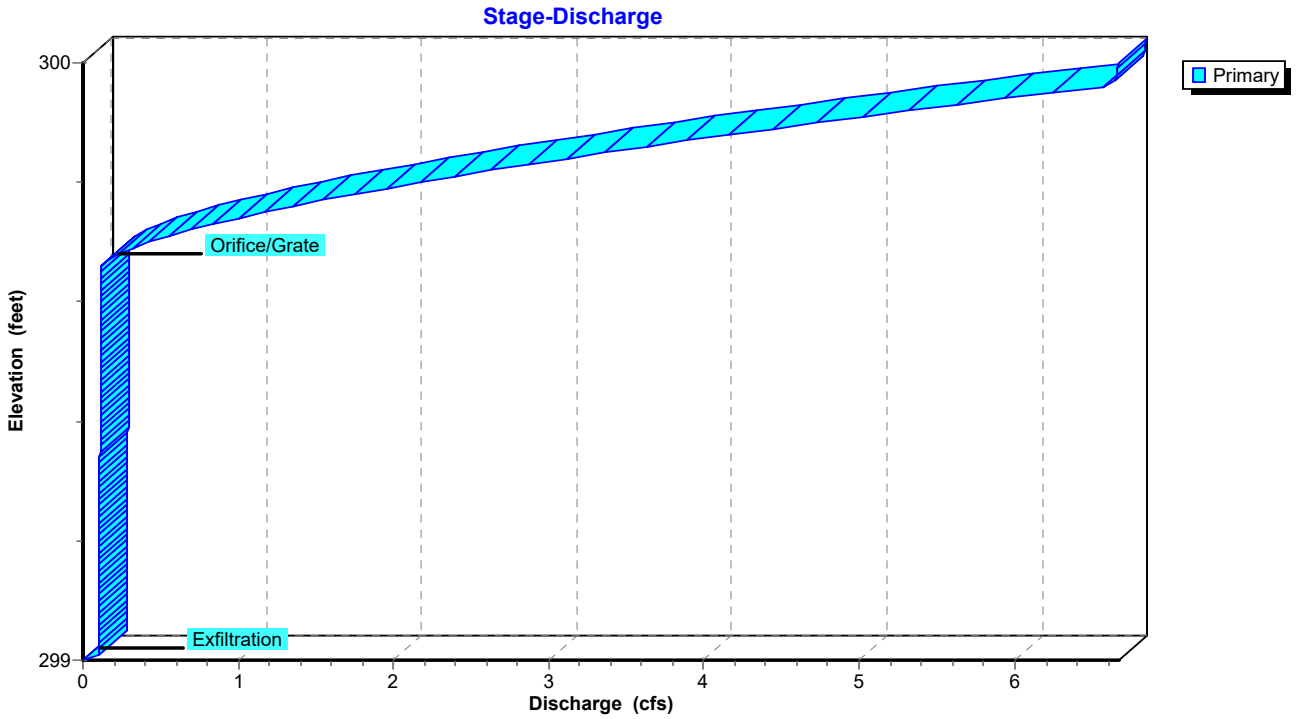
Device	Routing	Invert	Outlet Devices
#1	Primary	295.50'	**12.0" Round Culvert** L= 61.0' Box, 0° wingwalls, square crown edge, Ke= 0.700 Inlet / Outlet Invert= 295.50' / 293.25' S= 0.0369 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Device 1	299.66'	**24.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	299.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 102.00'

Primary OutFlow Max=0.23 cfs @ 17.09 hrs HW=299.68' (Free Discharge)
└**1=Culvert** (Passes 0.23 cfs of 6.40 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 0.12 cfs @ 0.47 fps)
└**3=Exfiltration** (Controls 0.11 cfs)

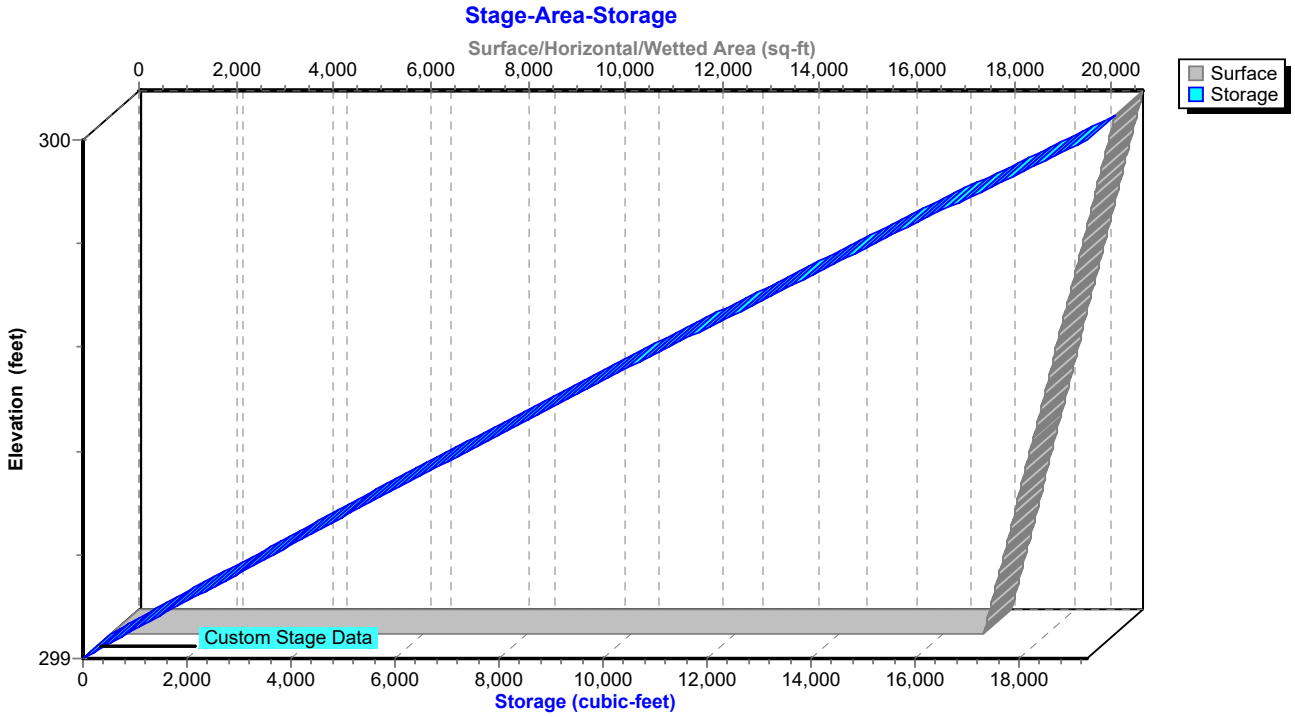
Pond BIO: BioRetention 1 (South)



Pond BIO: BioRetention 1 (South)



Pond BIO: BioRetention 1 (South)



Hydrograph for Pond BIO: BioRetention 1 (South)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	299.00	0.00
0.20	0.00	0	299.00	0.00
0.40	0.00	0	299.00	0.00
0.60	0.00	0	299.00	0.00
0.80	0.00	0	299.00	0.00
1.00	0.00	0	299.00	0.00
1.20	0.00	0	299.00	0.00
1.40	0.00	0	299.00	0.00
1.60	0.00	0	299.00	0.00
1.80	0.00	1	299.00	0.00
2.00	0.01	4	299.00	0.00
2.20	0.01	9	299.00	0.01
2.40	0.02	15	299.00	0.01
2.60	0.02	21	299.00	0.01
2.80	0.03	29	299.00	0.02
3.00	0.03	36	299.00	0.02
3.20	0.04	44	299.00	0.03
3.40	0.04	52	299.00	0.03
3.60	0.05	60	299.00	0.03
3.80	0.05	68	299.00	0.04
4.00	0.06	77	299.00	0.04
4.20	0.06	85	299.00	0.05
4.40	0.07	93	299.01	0.05
4.60	0.07	102	299.01	0.06
4.80	0.08	110	299.01	0.06
5.00	0.08	118	299.01	0.07
5.20	0.08	126	299.01	0.07
5.40	0.09	135	299.01	0.08
5.60	0.09	143	299.01	0.08
5.80	0.10	151	299.01	0.09
6.00	0.10	159	299.01	0.09
6.20	0.11	167	299.01	0.10
6.40	0.12	178	299.01	0.10
6.60	0.13	193	299.01	0.10
6.80	0.14	215	299.01	0.10
7.00	0.15	244	299.01	0.10
7.20	0.16	280	299.02	0.10
7.40	0.17	324	299.02	0.10
7.60	0.18	376	299.02	0.10
7.80	0.19	435	299.02	0.10
8.00	0.20	502	299.03	0.10
8.20	0.22	578	299.03	0.10
8.40	0.24	669	299.04	0.10
8.60	0.26	775	299.04	0.10
8.80	0.29	898	299.05	0.10
9.00	0.31	1,037	299.06	0.10
9.20	0.33	1,193	299.07	0.10
9.40	0.36	1,366	299.08	0.11
9.60	0.38	1,556	299.09	0.11
9.80	0.41	1,763	299.10	0.11
10.00	0.43	1,987	299.11	0.11
10.20	0.47	2,232	299.12	0.11
10.40	0.49	2,501	299.14	0.11

Hydrograph for Pond BIO: BioRetention 1 (South) (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
10.60	0.51	2,783	299.15	0.11
10.80	0.52	3,076	299.17	0.11
11.00	0.53	3,378	299.19	0.11
11.20	0.56	3,693	299.20	0.11
11.40	0.59	4,031	299.22	0.11
11.60	0.65	4,397	299.24	0.11
11.80	0.87	4,863	299.27	0.11
12.00	**1.27**	5,510	299.30	0.11
12.20	**1.33**	6,552	299.36	0.11
12.40	1.02	7,305	299.40	0.11
12.60	0.74	7,856	299.42	0.11
12.80	0.68	8,284	299.45	0.11
13.00	0.64	8,678	299.47	0.11
13.20	0.61	9,044	299.49	0.11
13.40	0.60	9,396	299.50	0.11
13.60	0.58	9,739	299.52	0.11
13.80	0.57	10,071	299.54	0.11
14.00	0.55	10,390	299.56	0.11
14.20	0.53	10,695	299.57	0.11
14.40	0.50	10,986	299.59	0.11
14.60	0.48	11,259	299.60	0.11
14.80	0.45	11,513	299.61	0.11
15.00	0.43	11,749	299.63	0.11
15.20	0.40	11,967	299.64	0.11
15.40	0.38	12,166	299.65	0.11
15.60	0.35	12,347	299.66	0.11
15.80	0.33	12,507	299.66	0.13
16.00	0.30	12,631	299.67	0.15
16.20	0.28	12,718	299.67	0.19
16.40	0.27	12,776	299.68	0.21
16.60	0.26	12,814	299.68	0.22
16.80	0.25	12,837	299.68	0.23
17.00	0.24	**12,846**	**299.68**	**0.23**
17.20	0.23	**12,846**	**299.68**	**0.23**
17.40	0.22	12,839	299.68	0.23
17.60	0.21	12,827	299.68	0.23
17.80	0.20	12,811	299.68	0.22
18.00	0.18	12,792	299.68	0.21
18.20	0.18	12,771	299.68	0.21
18.40	0.17	12,752	299.68	0.20
18.60	0.17	12,736	299.68	0.19
18.80	0.17	12,721	299.67	0.19
19.00	0.16	12,707	299.67	0.18
19.20	0.16	12,695	299.67	0.18
19.40	0.16	12,683	299.67	0.17
19.60	0.15	12,672	299.67	0.17
19.80	0.15	12,661	299.67	0.17
20.00	0.15	12,651	299.67	0.16
20.20	0.14	12,641	299.67	0.16
20.40	0.14	12,632	299.67	0.15
20.60	0.14	12,622	299.67	0.15
20.80	0.14	12,613	299.67	0.15
21.00	0.13	12,603	299.67	0.15

Hydrograph for Pond BIO: BioRetention 1 (South) (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
21.20	0.13	12,593	299.67	0.15
21.40	0.13	12,582	299.67	0.14
21.60	0.13	12,571	299.67	0.14
21.80	0.12	12,560	299.67	0.14
22.00	0.12	12,549	299.67	0.14
22.20	0.12	12,537	299.67	0.14
22.40	0.12	12,526	299.66	0.13
22.60	0.11	12,514	299.66	0.13
22.80	0.11	12,502	299.66	0.13
23.00	0.11	12,490	299.66	0.13
23.20	0.11	12,478	299.66	0.12
23.40	0.10	12,466	299.66	0.12
23.60	0.10	12,454	299.66	0.12
23.80	0.10	12,442	299.66	0.12
24.00	0.10	12,429	299.66	0.11

Stage-Discharge for Pond BIO: BioRetention 1 (South)

Elevation (feet)	Primary (cfs)
299.00	0.00
299.10	0.11
299.20	0.11
299.30	0.11
299.40	0.11
299.50	0.11
299.60	0.11
299.70	0.43
299.80	2.17
299.90	4.73
300.00	**6.67**

Stage-Area-Storage for Pond BIO: BioRetention 1 (South)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
299.00	17,947	0
299.10	18,217	1,808
299.20	18,486	3,643
299.30	18,756	5,505
299.40	19,026	7,395
299.50	19,296	9,311
299.60	19,565	11,254
299.70	19,835	13,224
299.80	20,105	15,221
299.90	20,374	17,245
300.00	**20,644**	**19,296**

Summary for Pond DET1: MC-4500 StormTech DETENTION ONLY

[81] Warning: Exceeded Pond SPLIT by 1.60' @ 12.64 hrs

Inflow = 8.56 cfs @ 12.08 hrs, Volume= 0.306 af
Outflow = 0.77 cfs @ 12.58 hrs, Volume= 0.305 af, Atten= 91%, Lag= 29.6 min
Primary = 0.77 cfs @ 12.58 hrs, Volume= 0.305 af
Routed to Link S : POI South

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 304.48' @ 12.58 hrs Surf.Area= 0.089 ac Storage= 0.231 af

Plug-Flow detention time= 150.3 min calculated for 0.305 af (100% of inflow)
Center-of-Mass det. time= 150.1 min (876.7 - 726.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	300.93'	0.145 af	**37.58'W x 103.72'L x 6.75'H Field A** 0.604 af Overall - 0.241 af Embedded = 0.363 af x 40.0% Voids
#2A	301.68'	0.241 af	**ADS_StormTech MC-4500 +Cap** x 96 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 96 Chambers in 4 Rows Cap Storage= 35.7 cf x 2 x 4 rows = 285.6 cf
		0.386 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	300.93'	**4.0" Vert. Underdrain** C= 0.600 Limited to weir flow at low heads
#2	Primary	304.50'	**28.0" W x 21.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	307.18'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** 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=0.77 cfs @ 12.58 hrs HW=304.48' (Free Discharge)
- **1=Underdrain** (Orifice Controls 0.77 cfs @ 8.85 fps)
- **2=Orifice/Grate** (Controls 0.00 cfs)
- **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond DET1: MC-4500 StormTech DETENTION ONLY - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with cap, use MC-4500 b for new designs)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 35.7 cf x 2 x 4 rows = 285.6 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

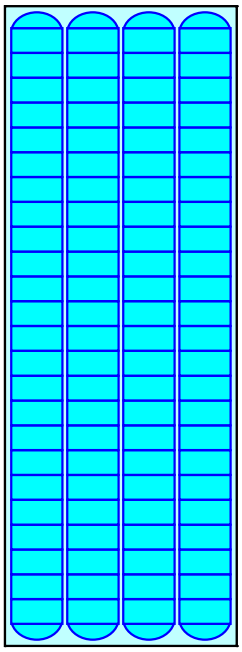
24 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 101.72' Row Length +12.0" End Stone x 2 = 103.72' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

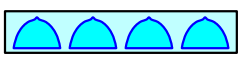
96 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 4 Rows = 10,508.7 cf Chamber Storage

26,311.6 cf Field - 10,508.7 cf Chambers = 15,802.9 cf Stone x 40.0% Voids = 6,321.2 cf Stone Storage

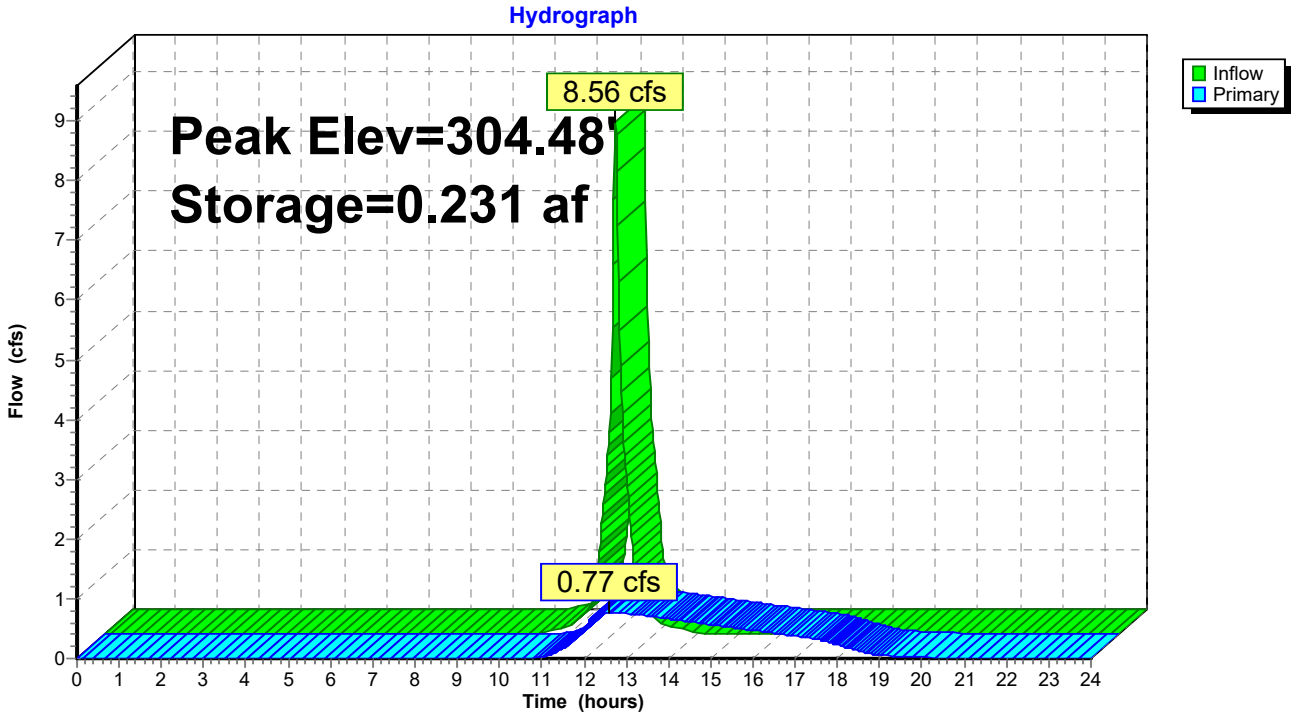
Chamber Storage + Stone Storage = 16,829.9 cf = 0.386 af
Overall Storage Efficiency = 64.0%
Overall System Size = 103.72' x 37.58' x 6.75'

96 Chambers
974.5 cy Field
585.3 cy Stone

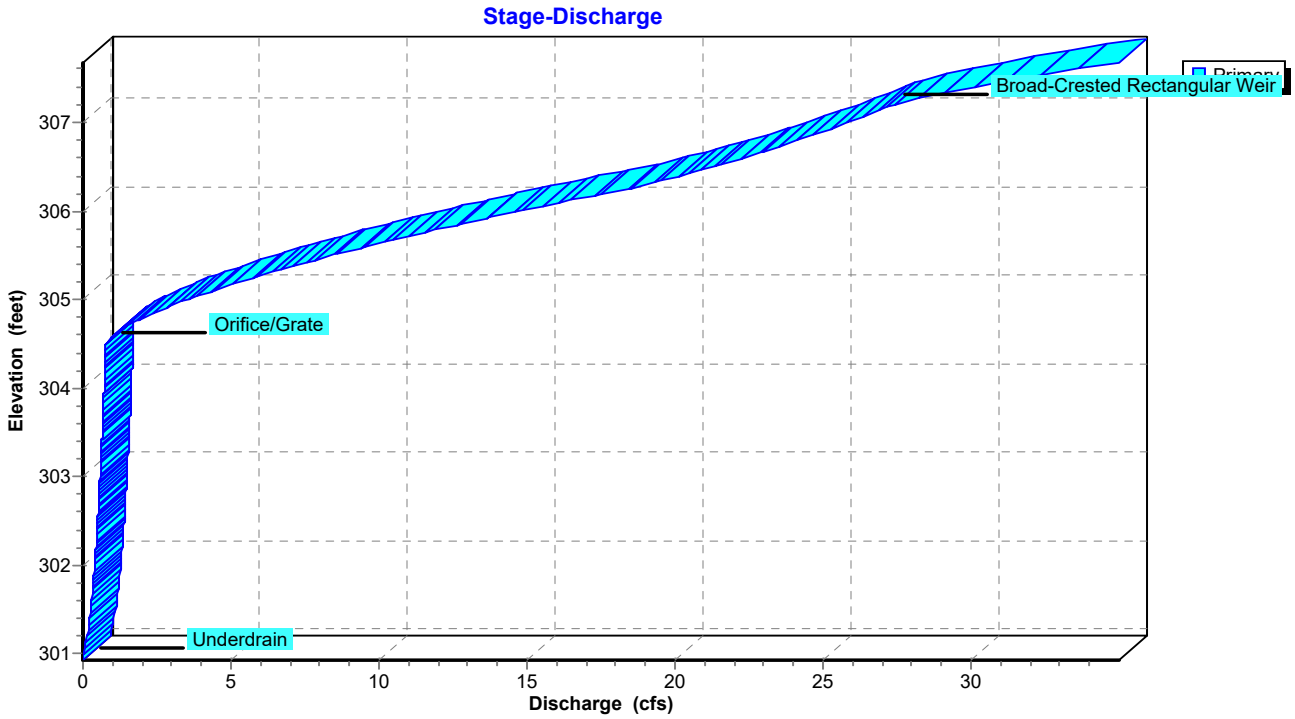




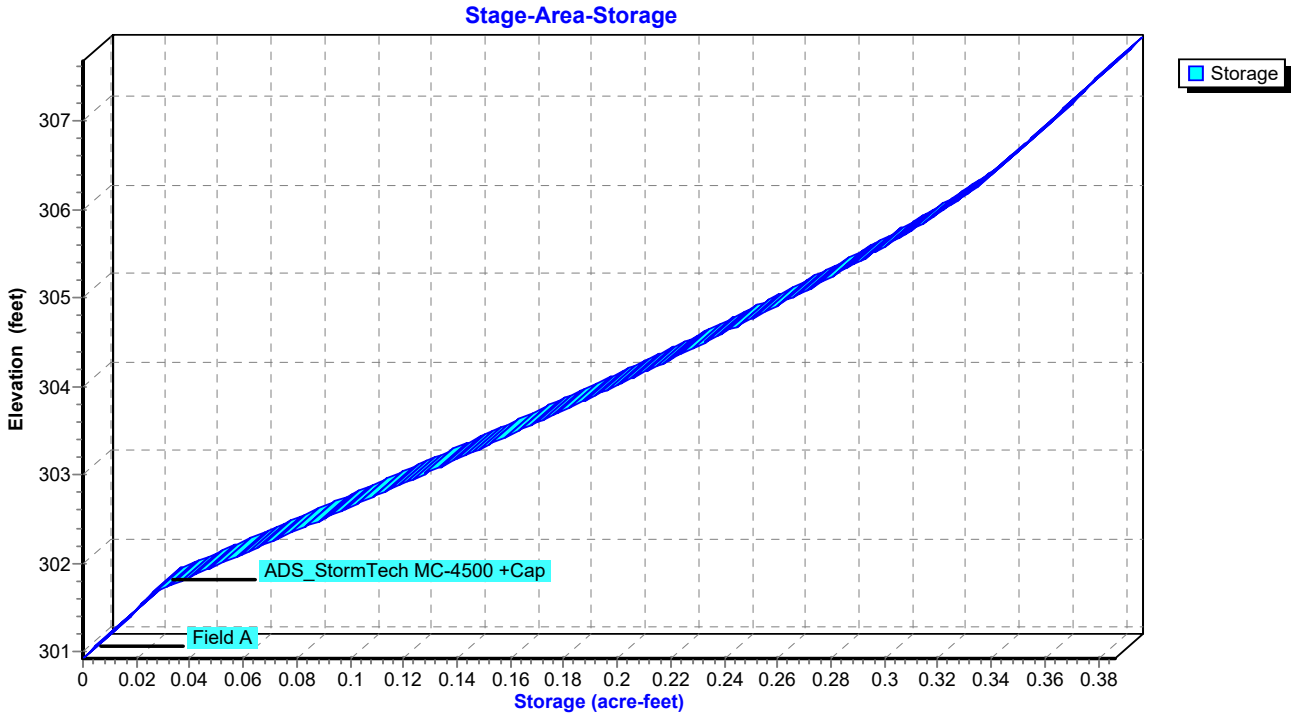
Pond DET1: MC-4500 StormTech DETENTION ONLY



Pond DET1: MC-4500 StormTech DETENTION ONLY



Pond DET1: MC-4500 StormTech DETENTION ONLY



Hydrograph for Pond DET1: MC-4500 StormTech DETENTION ONLY

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	300.93	0.00
0.20	0.00	0.000	300.93	0.00
0.40	0.00	0.000	300.93	0.00
0.60	0.00	0.000	300.93	0.00
0.80	0.00	0.000	300.93	0.00
1.00	0.00	0.000	300.93	0.00
1.20	0.00	0.000	300.93	0.00
1.40	0.00	0.000	300.93	0.00
1.60	0.00	0.000	300.93	0.00
1.80	0.00	0.000	300.93	0.00
2.00	0.00	0.000	300.93	0.00
2.20	0.00	0.000	300.93	0.00
2.40	0.00	0.000	300.93	0.00
2.60	0.00	0.000	300.93	0.00
2.80	0.00	0.000	300.93	0.00
3.00	0.00	0.000	300.93	0.00
3.20	0.00	0.000	300.93	0.00
3.40	0.00	0.000	300.93	0.00
3.60	0.00	0.000	300.93	0.00
3.80	0.00	0.000	300.93	0.00
4.00	0.00	0.000	300.93	0.00
4.20	0.00	0.000	300.93	0.00
4.40	0.00	0.000	300.93	0.00
4.60	0.00	0.000	300.93	0.00
4.80	0.00	0.000	300.93	0.00
5.00	0.00	0.000	300.93	0.00
5.20	0.00	0.000	300.93	0.00
5.40	0.00	0.000	300.93	0.00
5.60	0.00	0.000	300.93	0.00
5.80	0.00	0.000	300.93	0.00
6.00	0.00	0.000	300.93	0.00
6.20	0.00	0.000	300.93	0.00
6.40	0.00	0.000	300.93	0.00
6.60	0.00	0.000	300.93	0.00
6.80	0.00	0.000	300.93	0.00
7.00	0.00	0.000	300.93	0.00
7.20	0.00	0.000	300.93	0.00
7.40	0.00	0.000	300.93	0.00
7.60	0.00	0.000	300.93	0.00
7.80	0.00	0.000	300.93	0.00
8.00	0.00	0.000	300.93	0.00
8.20	0.00	0.000	300.93	0.00
8.40	0.00	0.000	300.93	0.00
8.60	0.00	0.000	300.93	0.00
8.80	0.00	0.000	300.93	0.00
9.00	0.00	0.000	300.93	0.00
9.20	0.00	0.000	300.93	0.00
9.40	0.00	0.000	300.93	0.00
9.60	0.00	0.000	300.93	0.00
9.80	0.00	0.000	300.93	0.00
10.00	0.00	0.000	300.93	0.00
10.20	0.00	0.000	300.93	0.00
10.40	0.03	0.000	300.94	0.00

Hydrograph for Pond DET1: MC-4500 StormTech DETENTION ONLY (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
10.60	0.06	0.001	300.95	0.00
10.80	0.10	0.002	300.99	0.01
11.00	0.14	0.004	301.03	0.03
11.20	0.24	0.006	301.10	0.06
11.40	0.39	0.010	301.20	0.13
11.60	0.69	0.015	301.34	0.21
11.80	2.17	0.033	301.76	0.34
12.00	**5.13**	0.079	302.36	0.47
12.20	**4.48**	0.183	303.77	0.69
12.40	2.12	**0.222**	**304.34**	**0.76**
12.60	0.67	**0.231**	**304.48**	**0.77**
12.80	0.42	0.227	304.41	0.77
13.00	0.26	0.220	304.31	0.75
13.20	0.17	0.211	304.18	0.74
13.40	0.13	0.201	304.04	0.72
13.60	0.09	0.192	303.90	0.70
13.80	0.05	0.181	303.75	0.68
14.00	0.02	0.171	303.60	0.67
14.20	0.00	0.160	303.46	0.65
14.40	0.00	0.150	303.31	0.63
14.60	0.00	0.139	303.17	0.61
14.80	0.00	0.130	303.04	0.59
15.00	0.00	0.120	302.91	0.57
15.20	0.00	0.111	302.79	0.55
15.40	0.00	0.102	302.67	0.53
15.60	0.00	0.093	302.55	0.51
15.80	0.00	0.085	302.44	0.49
16.00	0.00	0.077	302.34	0.47
16.20	0.00	0.070	302.24	0.45
16.40	0.00	0.062	302.14	0.43
16.60	0.00	0.055	302.05	0.41
16.80	0.00	0.049	301.97	0.39
17.00	0.00	0.043	301.88	0.37
17.20	0.00	0.037	301.81	0.35
17.40	0.00	0.031	301.73	0.33
17.60	0.00	0.025	301.64	0.31
17.80	0.00	0.021	301.51	0.27
18.00	0.00	0.017	301.39	0.23
18.20	0.00	0.013	301.30	0.19
18.40	0.00	0.010	301.22	0.15
18.60	0.00	0.008	301.16	0.11
18.80	0.00	0.007	301.12	0.08
19.00	0.00	0.006	301.09	0.06
19.20	0.00	0.005	301.07	0.04
19.40	0.00	0.004	301.05	0.03
19.60	0.00	0.004	301.03	0.03
19.80	0.00	0.003	301.02	0.02
20.00	0.00	0.003	301.01	0.02
20.20	0.00	0.003	301.01	0.01
20.40	0.00	0.002	301.00	0.01
20.60	0.00	0.002	300.99	0.01
20.80	0.00	0.002	300.99	0.01
21.00	0.00	0.002	300.99	0.01

Hydrograph for Pond DET1: MC-4500 StormTech DETENTION ONLY (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
21.20	0.00	0.002	300.98	0.01
21.40	0.00	0.002	300.98	0.01
21.60	0.00	0.002	300.97	0.01
21.80	0.00	0.001	300.97	0.01
22.00	0.00	0.001	300.97	0.01
22.20	0.00	0.001	300.96	0.01
22.40	0.00	0.001	300.96	0.01
22.60	0.00	0.001	300.96	0.00
22.80	0.00	0.001	300.96	0.00
23.00	0.00	0.001	300.96	0.00
23.20	0.00	0.001	300.95	0.00
23.40	0.00	0.001	300.95	0.00
23.60	0.00	0.001	300.95	0.00
23.80	0.00	0.001	300.95	0.00
24.00	0.00	0.001	300.95	0.00

Stage-Discharge for Pond DET1: MC-4500 StormTech DETENTION ONLY

Elevation (feet)	Primary (cfs)
300.93	0.00
301.03	0.02
301.13	0.08
301.23	0.15
301.33	0.20
301.43	0.24
301.53	0.28
301.63	0.31
301.73	0.33
301.83	0.36
301.93	0.38
302.03	0.41
302.13	0.43
302.23	0.45
302.33	0.47
302.43	0.49
302.53	0.50
302.63	0.52
302.73	0.54
302.83	0.55
302.93	0.57
303.03	0.58
303.13	0.60
303.23	0.61
303.33	0.63
303.43	0.64
303.53	0.66
303.63	0.67
303.73	0.68
303.83	0.69
303.93	0.71
304.03	0.72
304.13	0.73
304.23	0.74
304.33	0.76
304.43	0.77
304.53	0.82
304.63	1.14
304.73	1.63
304.83	2.23
304.93	2.93
305.03	3.72
305.13	4.59
305.23	5.53
305.33	6.53
305.43	7.59
305.53	8.71
305.63	9.89
305.73	11.12
305.83	12.40
305.93	13.73
306.03	15.11
306.13	16.53
306.23	18.00
306.33	19.33
306.43	20.48
306.53	21.53
306.63	22.52
306.73	23.45
306.83	24.34
306.93	25.19
307.03	26.01
307.13	26.79
307.23	27.68
307.33	28.95
307.43	30.44
307.53	32.12
307.63	**33.98**

Stage-Area-Storage for Pond DET1: MC-4500 StormTech DETENTION ONLY

Elevation (feet)	Storage (acre-feet)
300.93	0.000
301.03	0.004
301.13	0.007
301.23	0.011
301.33	0.014
301.43	0.018
301.53	0.021
301.63	0.025
301.73	0.031
301.83	0.038
301.93	0.046
302.03	0.054
302.13	0.061
302.23	0.069
302.33	0.077
302.43	0.084
302.53	0.092
302.63	0.099
302.73	0.107
302.83	0.114
302.93	0.122
303.03	0.129
303.13	0.136
303.23	0.144
303.33	0.151
303.43	0.158
303.53	0.165
303.63	0.173
303.73	0.180
303.83	0.187
303.93	0.194
304.03	0.201
304.13	0.208
304.23	0.215
304.33	0.221
304.43	0.228
304.53	0.235
304.63	0.241
304.73	0.248
304.83	0.254
304.93	0.261
305.03	0.267
305.13	0.273
305.23	0.279
305.33	0.285
305.43	0.291
305.53	0.297
305.63	0.303
305.73	0.308
305.83	0.314
305.93	0.319
306.03	0.324
306.13	0.329
306.23	0.333
306.33	0.337
306.43	0.341
306.53	0.345
306.63	0.349
306.73	0.352
306.83	0.356
306.93	0.360
307.03	0.363
307.13	0.367
307.23	0.370
307.33	0.374
307.43	0.377
307.53	0.381
307.63	**0.385**

Summary for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Inflow Area = 3.389 ac, 48.48% Impervious, Inflow Depth > 0.93" for 1-Year event
Inflow = 3.51 cfs @ 12.09 hrs, Volume= 0.264 af
Outflow = 0.44 cfs @ 12.95 hrs, Volume= 0.255 af, Atten= 87%, Lag= 51.2 min
Primary = 0.44 cfs @ 12.95 hrs, Volume= 0.255 af
Routed to Link S : POI South

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 296.77' @ 12.95 hrs Surf.Area= 6,177 sf Storage= 4,586 cf

Plug-Flow detention time= 127.6 min calculated for 0.255 af (96% of inflow)
Center-of-Mass det. time= 108.2 min (958.6 - 850.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	295.50'	8,615 cf	**29.92'W x 206.46'L x 5.50'H Field A** 33,971 cf Overall - 12,434 cf Embedded = 21,537 cf x 40.0% Voids
#2A	296.25'	12,434 cf	**ADS_StormTech MC-3500 d +Cap** x 112 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 112 Chambers in 4 Rows Cap Storage= 14.9 cf x 2 x 4 rows = 119.2 cf
		21,049 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	295.50'	**4.0" Vert. Underdrain** C= 0.600 Limited to weir flow at low heads
#2	Primary	297.60'	**17.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	300.50'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** 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=0.44 cfs @ 12.95 hrs HW=296.77' (Free Discharge)
- **1=Underdrain** (Orifice Controls 0.44 cfs @ 5.05 fps)
- **2=Orifice/Grate** (Controls 0.00 cfs)
- **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 4 rows = 119.2 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

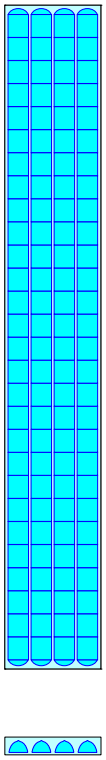
28 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 204.46' Row Length +12.0" End Stone x 2 = 206.46' Base Length
4 Rows x 77.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 29.92' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

112 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 4 Rows = 12,433.8 cf Chamber Storage

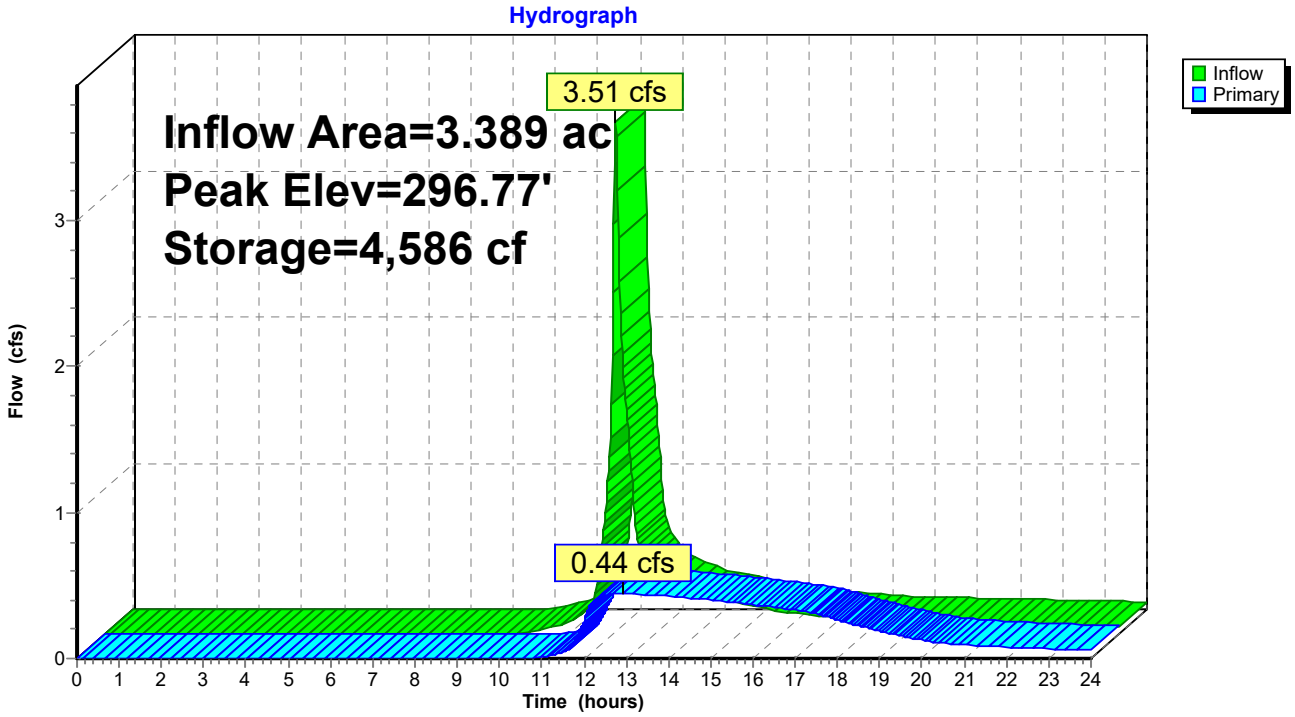
33,971.3 cf Field - 12,433.8 cf Chambers = 21,537.5 cf Stone x 40.0% Voids = 8,615.0 cf Stone Storage

Chamber Storage + Stone Storage = 21,048.8 cf = 0.483 af
Overall Storage Efficiency = 62.0%
Overall System Size = 206.46' x 29.92' x 5.50'

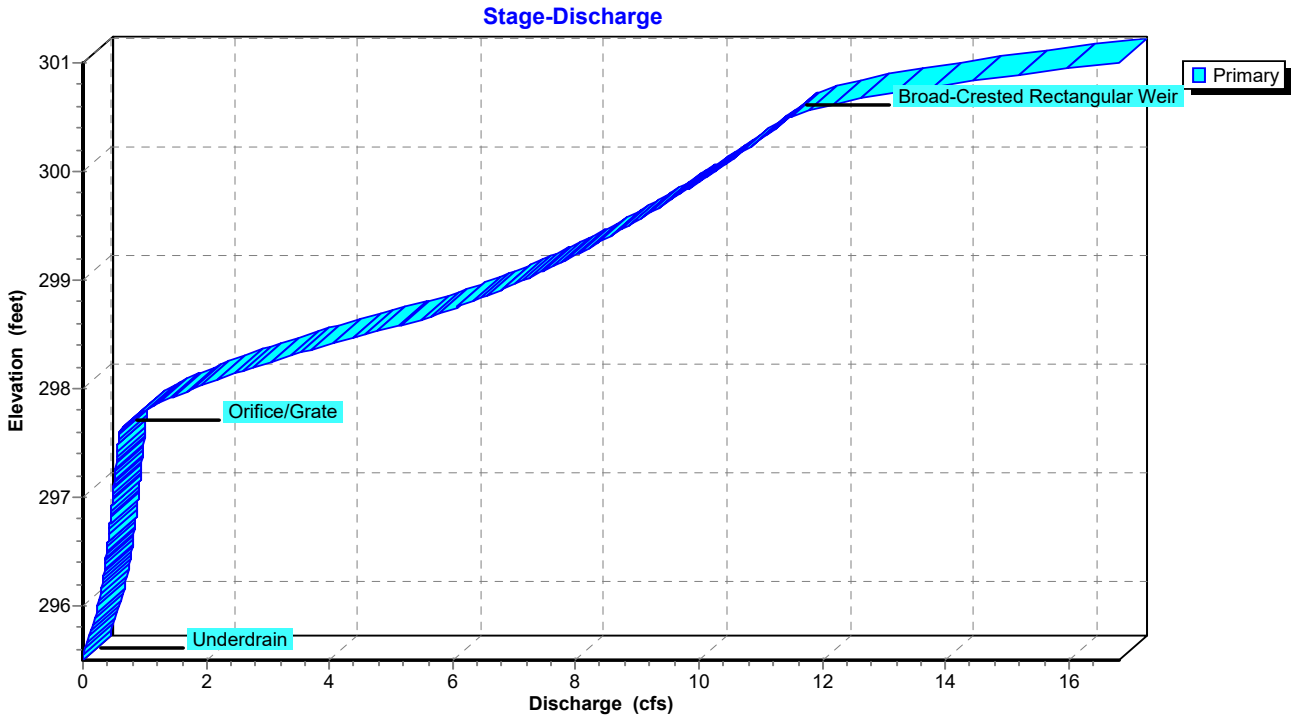
112 Chambers
1,258.2 cy Field
797.7 cy Stone



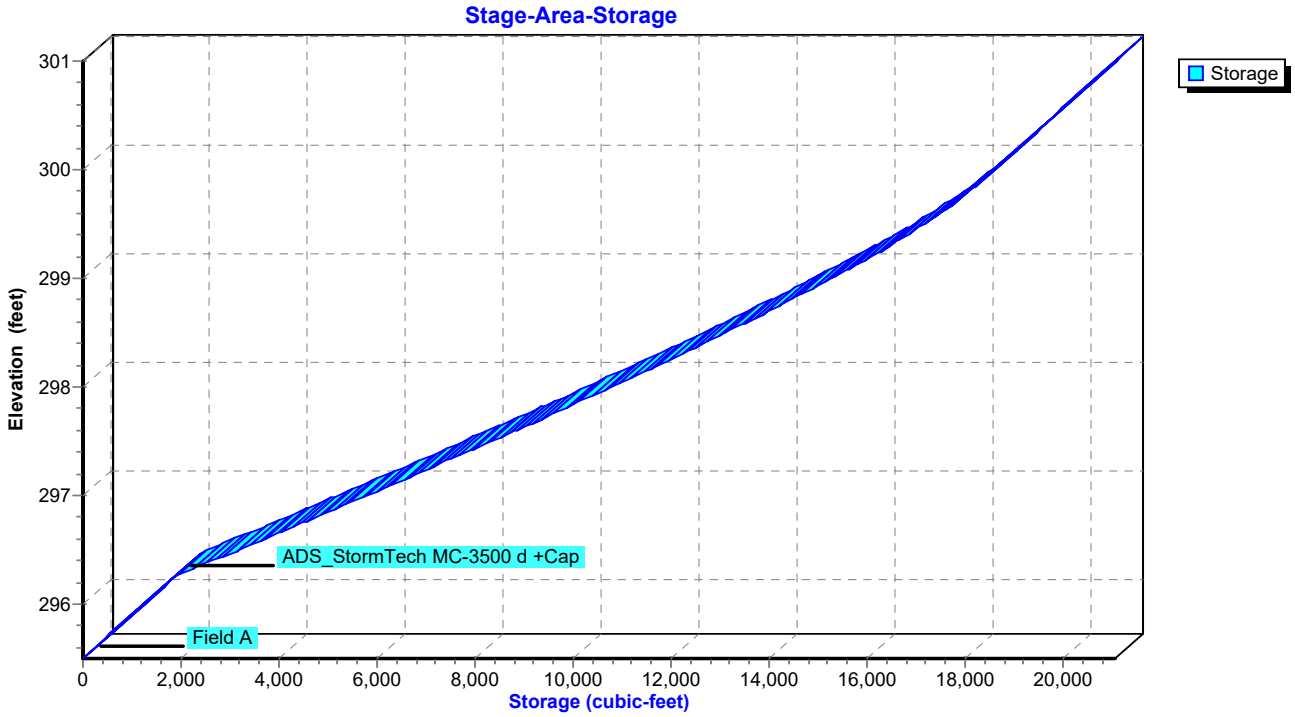
Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY



Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY



Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY



Hydrograph for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	295.50	0.00
0.20	0.00	0	295.50	0.00
0.40	0.00	0	295.50	0.00
0.60	0.00	0	295.50	0.00
0.80	0.00	0	295.50	0.00
1.00	0.00	0	295.50	0.00
1.20	0.00	0	295.50	0.00
1.40	0.00	0	295.50	0.00
1.60	0.00	0	295.50	0.00
1.80	0.00	0	295.50	0.00
2.00	0.00	0	295.50	0.00
2.20	0.00	0	295.50	0.00
2.40	0.00	0	295.50	0.00
2.60	0.00	0	295.50	0.00
2.80	0.00	0	295.50	0.00
3.00	0.00	0	295.50	0.00
3.20	0.00	0	295.50	0.00
3.40	0.00	0	295.50	0.00
3.60	0.00	0	295.50	0.00
3.80	0.00	0	295.50	0.00
4.00	0.00	0	295.50	0.00
4.20	0.00	0	295.50	0.00
4.40	0.00	0	295.50	0.00
4.60	0.00	0	295.50	0.00
4.80	0.00	0	295.50	0.00
5.00	0.00	0	295.50	0.00
5.20	0.00	0	295.50	0.00
5.40	0.00	0	295.50	0.00
5.60	0.00	0	295.50	0.00
5.80	0.00	0	295.50	0.00
6.00	0.00	0	295.50	0.00
6.20	0.00	0	295.50	0.00
6.40	0.00	0	295.50	0.00
6.60	0.00	0	295.50	0.00
6.80	0.00	0	295.50	0.00
7.00	0.00	0	295.50	0.00
7.20	0.00	0	295.50	0.00
7.40	0.00	0	295.50	0.00
7.60	0.00	0	295.50	0.00
7.80	0.00	0	295.50	0.00
8.00	0.00	0	295.50	0.00
8.20	0.00	0	295.50	0.00
8.40	0.00	0	295.50	0.00
8.60	0.00	0	295.50	0.00
8.80	0.00	0	295.50	0.00
9.00	0.00	0	295.50	0.00
9.20	0.00	0	295.50	0.00
9.40	0.00	0	295.50	0.00
9.60	0.00	0	295.50	0.00
9.80	0.01	1	295.50	0.00
10.00	0.01	8	295.50	0.00
10.20	0.02	20	295.51	0.00
10.40	0.03	39	295.52	0.00

Hydrograph for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
10.60	0.05	66	295.53	0.00
10.80	0.06	103	295.54	0.01
11.00	0.08	150	295.56	0.01
11.20	0.11	208	295.58	0.02
11.40	0.16	289	295.62	0.03
11.60	0.26	398	295.66	0.06
11.80	0.71	662	295.77	0.13
12.00	**1.91**	1,321	296.03	0.25
12.20	**2.20**	3,160	296.50	0.38
12.40	1.33	4,093	296.67	0.42
12.60	0.65	4,480	296.75	0.44
12.80	0.51	**4,568**	**296.76**	**0.44**
13.00	0.42	**4,583**	**296.77**	**0.44**
13.20	0.36	4,543	296.76	0.44
13.40	0.34	4,482	296.75	0.44
13.60	0.32	4,406	296.73	0.43
13.80	0.30	4,317	296.72	0.43
14.00	0.27	4,215	296.70	0.43
14.20	0.26	4,100	296.68	0.42
14.40	0.25	3,979	296.65	0.42
14.60	0.24	3,855	296.63	0.41
14.80	0.22	3,726	296.60	0.41
15.00	0.21	3,592	296.58	0.40
15.20	0.20	3,455	296.55	0.40
15.40	0.19	3,313	296.53	0.39
15.60	0.18	3,167	296.50	0.38
15.80	0.17	3,018	296.47	0.38
16.00	0.15	2,864	296.44	0.37
16.20	0.14	2,707	296.41	0.36
16.40	0.14	2,551	296.38	0.36
16.60	0.13	2,396	296.35	0.35
16.80	0.13	2,242	296.32	0.34
17.00	0.12	2,091	296.29	0.33
17.20	0.12	1,940	296.27	0.33
17.40	0.11	1,792	296.23	0.31
17.60	0.11	1,651	296.17	0.30
17.80	0.10	1,517	296.11	0.28
18.00	0.10	1,392	296.06	0.26
18.20	0.09	1,274	296.02	0.25
18.40	0.09	1,167	295.97	0.23
18.60	0.09	1,070	295.93	0.22
18.80	0.09	983	295.90	0.20
19.00	0.09	905	295.87	0.19
19.20	0.08	835	295.84	0.17
19.40	0.08	775	295.81	0.16
19.60	0.08	722	295.79	0.15
19.80	0.08	677	295.77	0.14
20.00	0.08	639	295.76	0.13
20.20	0.08	607	295.75	0.12
20.40	0.07	581	295.73	0.11
20.60	0.07	558	295.73	0.10
20.80	0.07	539	295.72	0.10
21.00	0.07	523	295.71	0.09

Hydrograph for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
21.20	0.07	509	295.71	0.09
21.40	0.07	497	295.70	0.08
21.60	0.07	486	295.70	0.08
21.80	0.07	476	295.69	0.08
22.00	0.06	467	295.69	0.08
22.20	0.06	459	295.69	0.07
22.40	0.06	452	295.68	0.07
22.60	0.06	445	295.68	0.07
22.80	0.06	439	295.68	0.07
23.00	0.06	433	295.68	0.07
23.20	0.06	427	295.67	0.06
23.40	0.06	421	295.67	0.06
23.60	0.05	416	295.67	0.06
23.80	0.05	410	295.67	0.06
24.00	0.05	405	295.66	0.06

Stage-Discharge for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Elevation (feet)	Primary (cfs)
295.50	0.00
295.60	0.02
295.70	0.08
295.80	0.15
295.90	0.20
296.00	0.24
296.10	0.28
296.20	0.31
296.30	0.33
296.40	0.36
296.50	0.38
296.60	0.41
296.70	0.43
296.80	0.45
296.90	0.47
297.00	0.49
297.10	0.50
297.20	0.52
297.30	0.54
297.40	0.55
297.50	0.57
297.60	0.58
297.70	0.74
297.80	1.02
297.90	1.38
298.00	1.79
298.10	2.26
298.20	2.78
298.30	3.35
298.40	3.95
298.50	4.59
298.60	5.27
298.70	5.83
298.80	6.31
298.90	6.75
299.00	7.15
299.10	7.53
299.20	7.88
299.30	8.22
299.40	8.54
299.50	8.85
299.60	9.15
299.70	9.44
299.80	9.72
299.90	9.99
300.00	10.25
300.10	10.51
300.20	10.76
300.30	11.00
300.40	11.24
300.50	11.47
300.60	12.05
300.70	12.93
300.80	14.02
300.90	15.31
301.00	**16.81**

Stage-Area-Storage for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Elevation (feet)	Storage (cubic-feet)
295.50	0
295.60	247
295.70	494
295.80	741
295.90	988
296.00	1,235
296.10	1,482
296.20	1,729
296.30	2,119
296.40	2,650
296.50	3,179
296.60	3,706
296.70	4,230
296.80	4,752
296.90	5,272
297.00	5,790
297.10	6,305
297.20	6,817
297.30	7,326
297.40	7,831
297.50	8,334
297.60	8,833
297.70	9,327
297.80	9,818
297.90	10,304
298.00	10,786
298.10	11,262
298.20	11,734
298.30	12,200
298.40	12,660
298.50	13,113
298.60	13,560
298.70	13,999
298.80	14,431
298.90	14,854
299.00	15,268
299.10	15,672
299.20	16,065
299.30	16,445
299.40	16,811
299.50	17,161
299.60	17,486
299.70	17,784
299.80	18,060
299.90	18,325
300.00	18,578
300.10	18,825
300.20	19,072
300.30	19,319
300.40	19,566
300.50	19,813
300.60	20,061
300.70	20,308
300.80	20,555
300.90	20,802
301.00	**21,049**

Summary for Pond INF1: MC-3500 StormTech INFILTRATION 1

Inflow Area = 4.358 ac, 96.98% Impervious, Inflow Depth > 2.26" for 1-Year event
Inflow = 10.68 cfs @ 12.08 hrs, Volume= 0.821 af
Outflow = 1.79 cfs @ 12.55 hrs, Volume= 0.821 af, Atten= 83%, Lag= 27.8 min
Discarded = 1.79 cfs @ 12.55 hrs, Volume= 0.821 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link N : POI North

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 308.35' @ 12.55 hrs Surf.Area= 14,195 sf Storage= 9,938 cf

Plug-Flow detention time= 33.4 min calculated for 0.820 af (100% of inflow)
Center-of-Mass det. time= 33.0 min (804.0 - 771.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	307.14'	19,523 cf	**58.58'W x 242.31'L x 5.50'H Field A** 78,074 cf Overall - 29,266 cf Embedded = 48,809 cf x 40.0% Voids
#2A	307.89'	29,266 cf	**ADS_StormTech MC-3500 d +Cap** x 264 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 264 Chambers in 8 Rows Cap Storage= 14.9 cf x 2 x 8 rows = 238.4 cf
		48,789 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	307.14'	**5.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 294.00'
#2	Primary	309.65'	**18.5" W x 4.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	312.14'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=1.79 cfs @ 12.55 hrs HW=308.35' (Free Discharge)
└**1=Exfiltration** (Controls 1.79 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=307.14' (Free Discharge)
├**2=Orifice/Grate** (Controls 0.00 cfs)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond INF1: MC-3500 StormTech INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 8 rows = 238.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

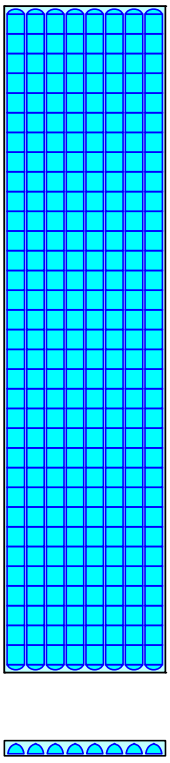
33 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 240.31' Row Length +12.0" End Stone x 2 = 242.31' Base Length
8 Rows x 77.0" Wide + 9.0" Spacing x 7 + 12.0" Side Stone x 2 = 58.58' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

264 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 8 Rows = 29,265.7 cf Chamber Storage

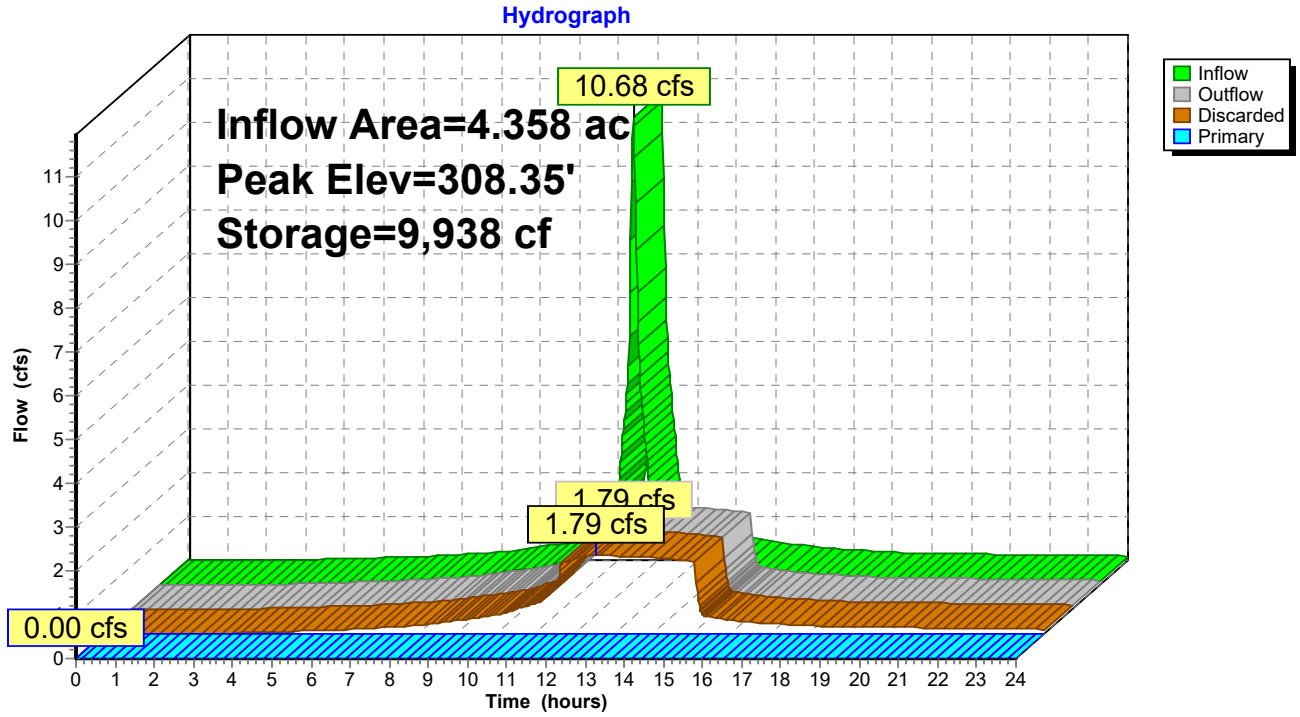
78,074.3 cf Field - 29,265.7 cf Chambers = 48,808.6 cf Stone x 40.0% Voids = 19,523.4 cf Stone Storage

Chamber Storage + Stone Storage = 48,789.1 cf = 1.120 af
Overall Storage Efficiency = 62.5%
Overall System Size = 242.31' x 58.58' x 5.50'

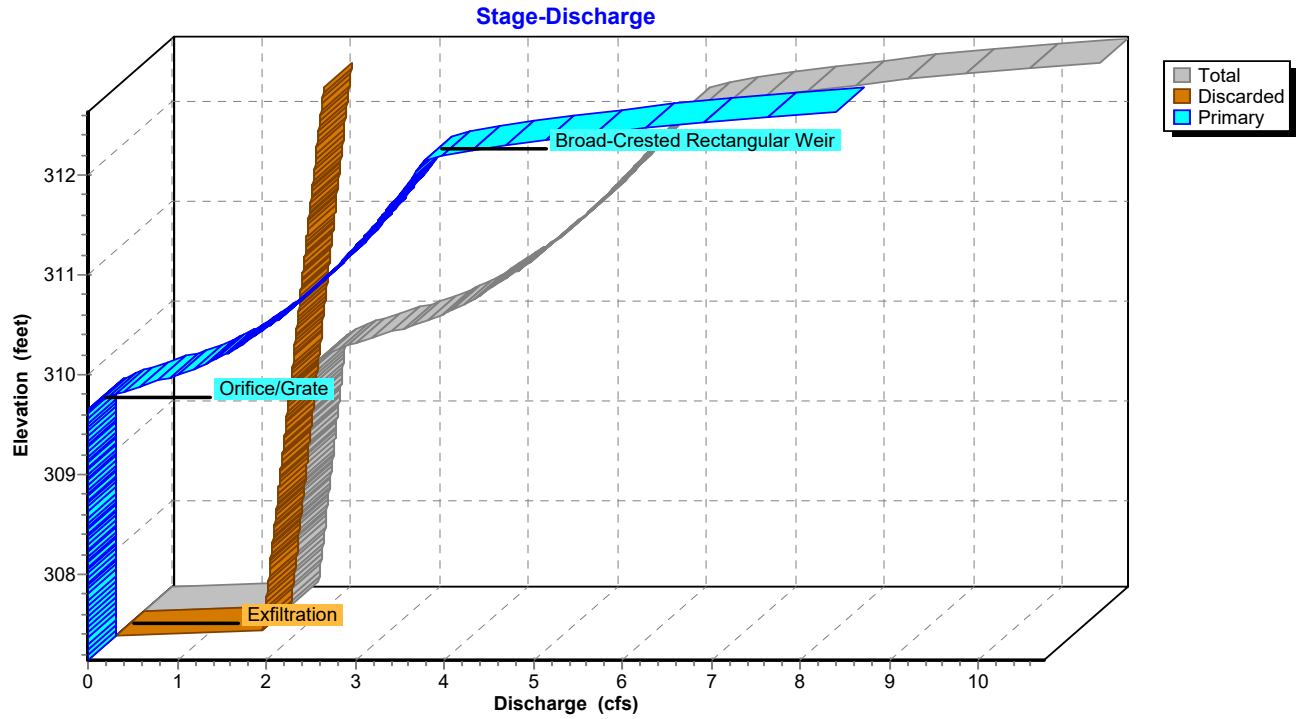
264 Chambers
2,891.6 cy Field
1,807.7 cy Stone



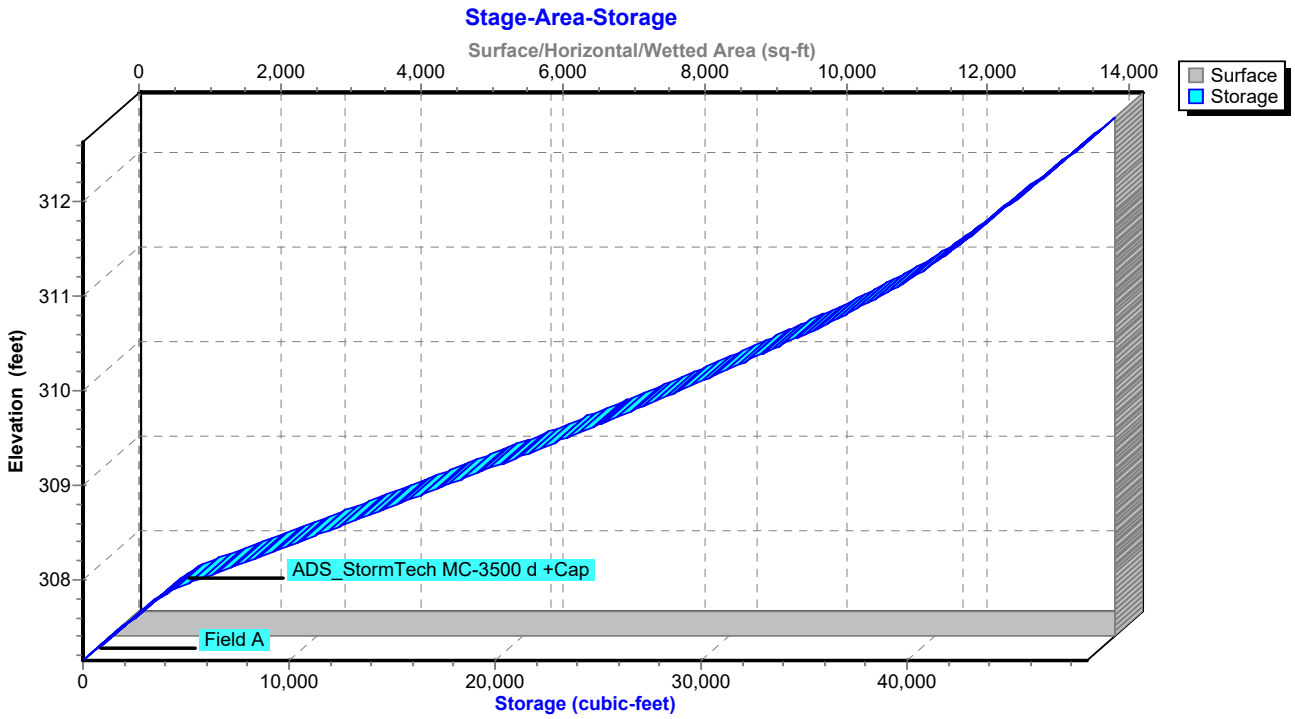
Pond INF1: MC-3500 StormTech INFILTRATION 1



Pond INF1: MC-3500 StormTech INFILTRATION 1



Pond INF1: MC-3500 StormTech INFILTRATION 1



Hydrograph for Pond INF1: MC-3500 StormTech INFILTRATION 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	307.14	0.00	0.00	**0.00**
0.20	0.00	0	307.14	0.00	0.00	0.00
0.40	0.00	0	307.14	0.00	0.00	0.00
0.60	0.00	0	307.14	0.00	0.00	0.00
0.80	0.00	0	307.14	0.00	0.00	0.00
1.00	0.00	0	307.14	0.00	0.00	0.00
1.20	0.00	0	307.14	0.00	0.00	0.00
1.40	0.00	0	307.14	0.00	0.00	0.00
1.60	0.00	0	307.14	0.00	0.00	0.00
1.80	0.00	0	307.14	0.00	0.00	0.00
2.00	0.00	0	307.14	0.00	0.00	0.00
2.20	0.00	0	307.14	0.00	0.00	0.00
2.40	0.00	0	307.14	0.00	0.00	0.00
2.60	0.00	0	307.14	0.00	0.00	0.00
2.80	0.01	1	307.14	0.01	0.01	0.00
3.00	0.01	2	307.14	0.01	0.01	0.00
3.20	0.02	3	307.14	0.02	0.02	0.00
3.40	0.02	4	307.14	0.02	0.02	0.00
3.60	0.03	5	307.14	0.02	0.02	0.00
3.80	0.03	6	307.14	0.03	0.03	0.00
4.00	0.04	7	307.14	0.03	0.03	0.00
4.20	0.04	8	307.14	0.04	0.04	0.00
4.40	0.05	8	307.14	0.04	0.04	0.00
4.60	0.05	9	307.14	0.05	0.05	0.00
4.80	0.06	10	307.14	0.06	0.06	0.00
5.00	0.06	11	307.14	0.06	0.06	0.00
5.20	0.07	12	307.14	0.07	0.07	0.00
5.40	0.07	13	307.14	0.07	0.07	0.00
5.60	0.08	14	307.14	0.08	0.08	0.00
5.80	0.08	15	307.14	0.08	0.08	0.00
6.00	0.09	16	307.14	0.09	0.09	0.00
6.20	0.10	18	307.14	0.09	0.09	0.00
6.40	0.10	19	307.14	0.10	0.10	0.00
6.60	0.11	21	307.14	0.11	0.11	0.00
6.80	0.13	23	307.14	0.12	0.12	0.00
7.00	0.14	25	307.14	0.13	0.13	0.00
7.20	0.15	27	307.14	0.14	0.14	0.00
7.40	0.16	30	307.15	0.16	0.16	0.00
7.60	0.17	32	307.15	0.17	0.17	0.00
7.80	0.18	34	307.15	0.18	0.18	0.00
8.00	0.20	36	307.15	0.19	0.19	0.00
8.20	0.21	39	307.15	0.21	0.21	0.00
8.40	0.24	44	307.15	0.23	0.23	0.00
8.60	0.26	48	307.15	0.25	0.25	0.00
8.80	0.29	53	307.15	0.28	0.28	0.00
9.00	0.31	58	307.15	0.31	0.31	0.00
9.20	0.34	63	307.15	0.33	0.33	0.00
9.40	0.37	68	307.15	0.36	0.36	0.00
9.60	0.39	73	307.15	0.39	0.39	0.00
9.80	0.42	78	307.15	0.41	0.41	0.00
10.00	0.45	84	307.15	0.44	0.44	0.00
10.20	0.49	90	307.16	0.48	0.48	0.00
10.40	0.54	100	307.16	0.53	0.53	0.00

Hydrograph for Pond INF1: MC-3500 StormTech INFILTRATION 1 (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
10.60	0.60	110	307.16	0.58	0.58	0.00
10.80	0.65	121	307.16	0.64	0.64	0.00
11.00	0.71	131	307.16	0.69	0.69	0.00
11.20	0.84	151	307.17	0.80	0.80	0.00
11.40	1.04	187	307.17	0.99	0.99	0.00
11.60	1.42	236	307.18	1.25	1.25	0.00
11.80	3.19	737	307.27	1.66	1.66	0.00
12.00	**6.68**	2,663	307.61	1.70	1.70	0.00
12.20	**5.99**	7,712	308.17	1.77	1.77	0.00
12.40	3.22	**9,564**	**308.32**	**1.79**	**1.79**	0.00
12.60	1.45	**9,900**	**308.35**	**1.79**	**1.79**	0.00
12.80	1.12	9,506	308.32	1.79	1.79	0.00
13.00	0.91	8,950	308.27	1.78	1.78	0.00
13.20	0.79	8,270	308.22	1.78	1.78	0.00
13.40	0.74	7,542	308.16	1.77	1.77	0.00
13.60	0.68	6,780	308.09	1.76	1.76	0.00
13.80	0.63	5,986	308.03	1.75	1.75	0.00
14.00	0.58	5,160	307.96	1.75	1.75	0.00
14.20	0.54	4,304	307.89	1.74	1.74	0.00
14.40	0.51	3,437	307.75	1.72	1.72	0.00
14.60	0.49	2,565	307.59	1.70	1.70	0.00
14.80	0.46	1,688	307.44	1.68	1.68	0.00
15.00	0.43	807	307.28	1.66	1.66	0.00
15.20	0.41	122	307.16	0.64	0.64	0.00
15.40	0.38	75	307.15	0.39	0.39	0.00
15.60	0.36	69	307.15	0.36	0.36	0.00
15.80	0.33	64	307.15	0.34	0.34	0.00
16.00	0.30	59	307.15	0.31	0.31	0.00
16.20	0.29	55	307.15	0.29	0.29	0.00
16.40	0.28	53	307.15	0.28	0.28	0.00
16.60	0.26	51	307.15	0.27	0.27	0.00
16.80	0.25	48	307.15	0.26	0.26	0.00
17.00	0.24	46	307.15	0.24	0.24	0.00
17.20	0.23	44	307.15	0.23	0.23	0.00
17.40	0.22	42	307.15	0.22	0.22	0.00
17.60	0.21	40	307.15	0.21	0.21	0.00
17.80	0.20	38	307.15	0.20	0.20	0.00
18.00	0.19	36	307.15	0.19	0.19	0.00
18.20	0.18	34	307.15	0.18	0.18	0.00
18.40	0.18	33	307.15	0.18	0.18	0.00
18.60	0.17	33	307.15	0.17	0.17	0.00
18.80	0.17	32	307.15	0.17	0.17	0.00
19.00	0.17	31	307.15	0.17	0.17	0.00
19.20	0.16	31	307.15	0.16	0.16	0.00
19.40	0.16	30	307.15	0.16	0.16	0.00
19.60	0.15	29	307.15	0.16	0.16	0.00
19.80	0.15	29	307.15	0.15	0.15	0.00
20.00	0.15	28	307.14	0.15	0.15	0.00
20.20	0.15	28	307.14	0.15	0.15	0.00
20.40	0.14	27	307.14	0.14	0.14	0.00
20.60	0.14	27	307.14	0.14	0.14	0.00
20.80	0.14	26	307.14	0.14	0.14	0.00
21.00	0.14	26	307.14	0.14	0.14	0.00

Hydrograph for Pond INF1: MC-3500 StormTech INFILTRATION 1 (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
21.20	0.13	25	307.14	0.13	0.13	0.00
21.40	0.13	25	307.14	0.13	0.13	0.00
21.60	0.13	24	307.14	0.13	0.13	0.00
21.80	0.13	24	307.14	0.13	0.13	0.00
22.00	0.12	23	307.14	0.12	0.12	0.00
22.20	0.12	23	307.14	0.12	0.12	0.00
22.40	0.12	22	307.14	0.12	0.12	0.00
22.60	0.11	22	307.14	0.12	0.12	0.00
22.80	0.11	21	307.14	0.11	0.11	0.00
23.00	0.11	21	307.14	0.11	0.11	0.00
23.20	0.11	20	307.14	0.11	0.11	0.00
23.40	0.10	20	307.14	0.11	0.11	0.00
23.60	0.10	19	307.14	0.10	0.10	0.00
23.80	0.10	19	307.14	0.10	0.10	0.00
24.00	0.10	19	307.14	0.10	0.10	0.00

Stage-Discharge for Pond INF1: MC-3500 StormTech INFILTRATION 1

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
307.14	0.00	0.00	0.00
307.24	1.66	1.66	0.00
307.34	1.67	1.67	0.00
307.44	1.68	1.68	0.00
307.54	1.69	1.69	0.00
307.64	1.71	1.71	0.00
307.74	1.72	1.72	0.00
307.84	1.73	1.73	0.00
307.94	1.74	1.74	0.00
308.04	1.76	1.76	0.00
308.14	1.77	1.77	0.00
308.24	1.78	1.78	0.00
308.34	1.79	1.79	0.00
308.44	1.81	1.81	0.00
308.54	1.82	1.82	0.00
308.64	1.83	1.83	0.00
308.74	1.84	1.84	0.00
308.84	1.86	1.86	0.00
308.94	1.87	1.87	0.00
309.04	1.88	1.88	0.00
309.14	1.89	1.89	0.00
309.24	1.91	1.91	0.00
309.34	1.92	1.92	0.00
309.44	1.93	1.93	0.00
309.54	1.94	1.94	0.00
309.64	1.96	1.96	0.00
309.74	2.10	1.97	0.13
309.84	2.39	1.98	0.41
309.94	2.77	1.99	0.77
310.04	3.14	2.01	1.14
310.14	3.41	2.02	1.39
310.24	3.63	2.03	1.60
310.34	3.83	2.04	1.78
310.44	4.00	2.06	1.95
310.54	4.17	2.07	2.10
310.64	4.32	2.08	2.24
310.74	4.47	2.09	2.37
310.84	4.61	2.11	2.50
310.94	4.74	2.12	2.62
311.04	4.87	2.13	2.73
311.14	4.99	2.14	2.84
311.24	5.11	2.16	2.95
311.34	5.22	2.17	3.05
311.44	5.33	2.18	3.15
311.54	5.44	2.19	3.25
311.64	5.55	2.21	3.34
311.74	5.65	2.22	3.43
311.84	5.75	2.23	3.52
311.94	5.85	2.24	3.60
312.04	5.94	2.26	3.69
312.14	6.04	2.27	3.77
312.24	6.49	2.28	4.21
312.34	7.22	2.29	4.93
312.44	8.19	2.31	5.89
312.54	9.36	2.32	7.04
312.64	**10.73**	**2.33**	**8.40**

Stage-Area-Storage for Pond INF1: MC-3500 StormTech INFILTRATION 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
307.14	**14,195**	0
307.24	14,195	568
307.34	14,195	1,136
307.44	14,195	1,703
307.54	14,195	2,271
307.64	14,195	2,839
307.74	14,195	3,407
307.84	14,195	3,975
307.94	14,195	4,878
308.04	14,195	6,114
308.14	14,195	7,345
308.24	14,195	8,571
308.34	14,195	9,792
308.44	14,195	11,008
308.54	14,195	12,218
308.64	14,195	13,423
308.74	14,195	14,621
308.84	14,195	15,812
308.94	14,195	16,996
309.04	14,195	18,173
309.14	14,195	19,342
309.24	14,195	20,502
309.34	14,195	21,653
309.44	14,195	22,793
309.54	14,195	23,924
309.64	14,195	25,044
309.74	14,195	26,152
309.84	14,195	27,248
309.94	14,195	28,331
310.04	14,195	29,400
310.14	14,195	30,454
310.24	14,195	31,492
310.34	14,195	32,512
310.44	14,195	33,514
310.54	14,195	34,496
310.64	14,195	35,457
310.74	14,195	36,394
310.84	14,195	37,304
310.94	14,195	38,186
311.04	14,195	39,035
311.14	14,195	39,843
311.24	14,195	40,596
311.34	14,195	41,282
311.44	14,195	41,919
311.54	14,195	42,529
311.64	14,195	43,111
311.74	14,195	43,679
311.84	14,195	44,247
311.94	14,195	44,814
312.04	14,195	45,382
312.14	14,195	45,950
312.24	14,195	46,518
312.34	14,195	47,086
312.44	14,195	47,654
312.54	14,195	48,221
312.64	14,195	**48,789**

Summary for Pond INF2: MC-3500 StormTech INFILTRATION 2

Inflow Area = 1.946 ac, 38.50% Impervious, Inflow Depth > 0.71" for 1-Year event
Inflow = 1.20 cfs @ 12.18 hrs, Volume= 0.115 af
Outflow = 0.40 cfs @ 12.63 hrs, Volume= 0.115 af, Atten= 67%, Lag= 26.6 min
Discarded = 0.40 cfs @ 12.63 hrs, Volume= 0.115 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link N : POI North

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 304.25' @ 12.63 hrs Surf.Area= 3,229 sf Storage= 981 cf

Plug-Flow detention time= 15.3 min calculated for 0.115 af (100% of inflow)
Center-of-Mass det. time= 14.8 min (890.9 - 876.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	303.50'	4,561 cf	**22.75'W x 141.93'L x 5.50'H Field A** 17,759 cf Overall - 6,357 cf Embedded = 11,402 cf x 40.0% Voids
#2A	304.25'	6,357 cf	**ADS_StormTech MC-3500 d +Cap** x 57 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 57 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		10,918 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	303.50'	**5.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 291.50'
#2	Primary	305.65'	**21.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	308.50'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.40 cfs @ 12.63 hrs HW=304.25' (Free Discharge)
└**1=Exfiltration** (Controls 0.40 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=303.50' (Free Discharge)
├**2=Orifice/Grate** (Controls 0.00 cfs)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond INF2: MC-3500 StormTech INFILTRATION 2 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

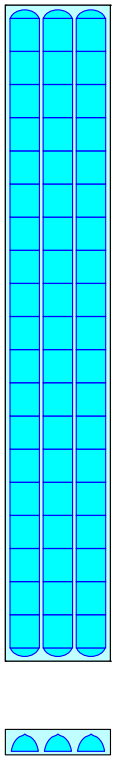
19 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 139.93' Row Length +12.0" End Stone x 2 = 141.93' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

57 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 6,356.7 cf Chamber Storage

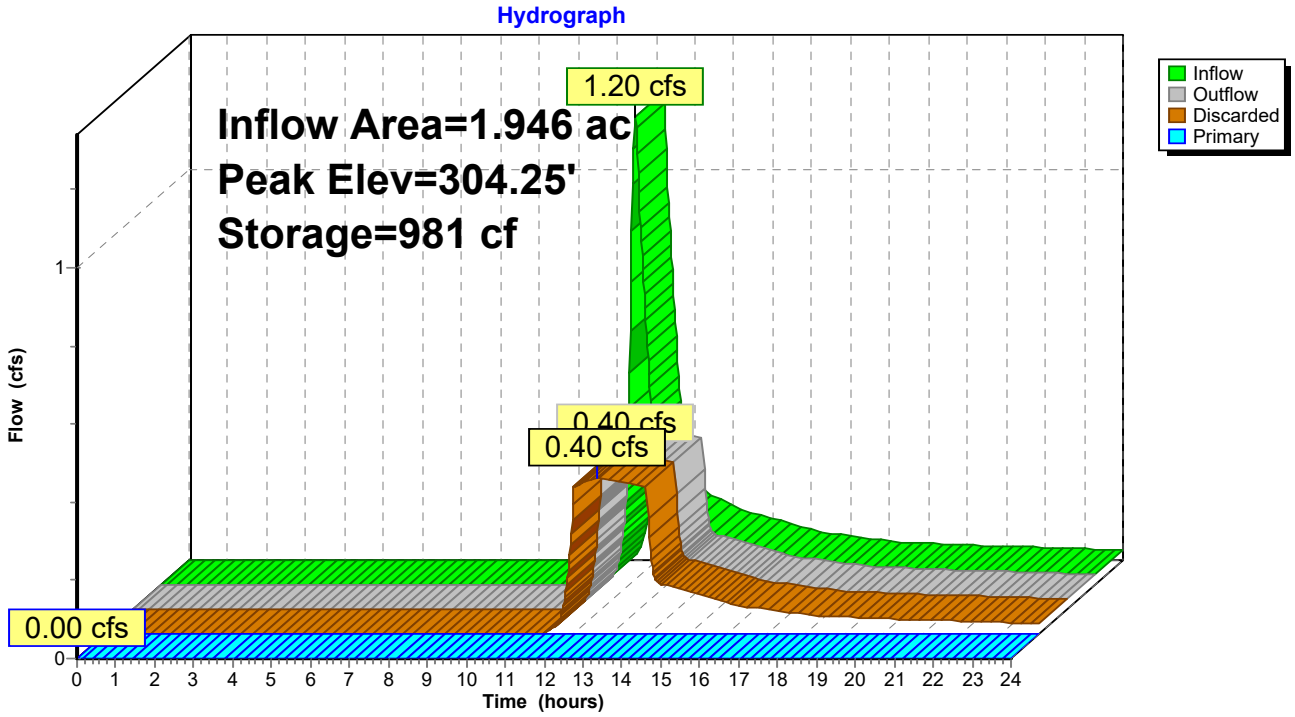
17,759.0 cf Field - 6,356.7 cf Chambers = 11,402.3 cf Stone x 40.0% Voids = 4,560.9 cf Stone Storage

Chamber Storage + Stone Storage = 10,917.6 cf = 0.251 af
Overall Storage Efficiency = 61.5%
Overall System Size = 141.93' x 22.75' x 5.50'

57 Chambers
657.7 cy Field
422.3 cy Stone



Pond INF2: MC-3500 StormTech INFILTRATION 2



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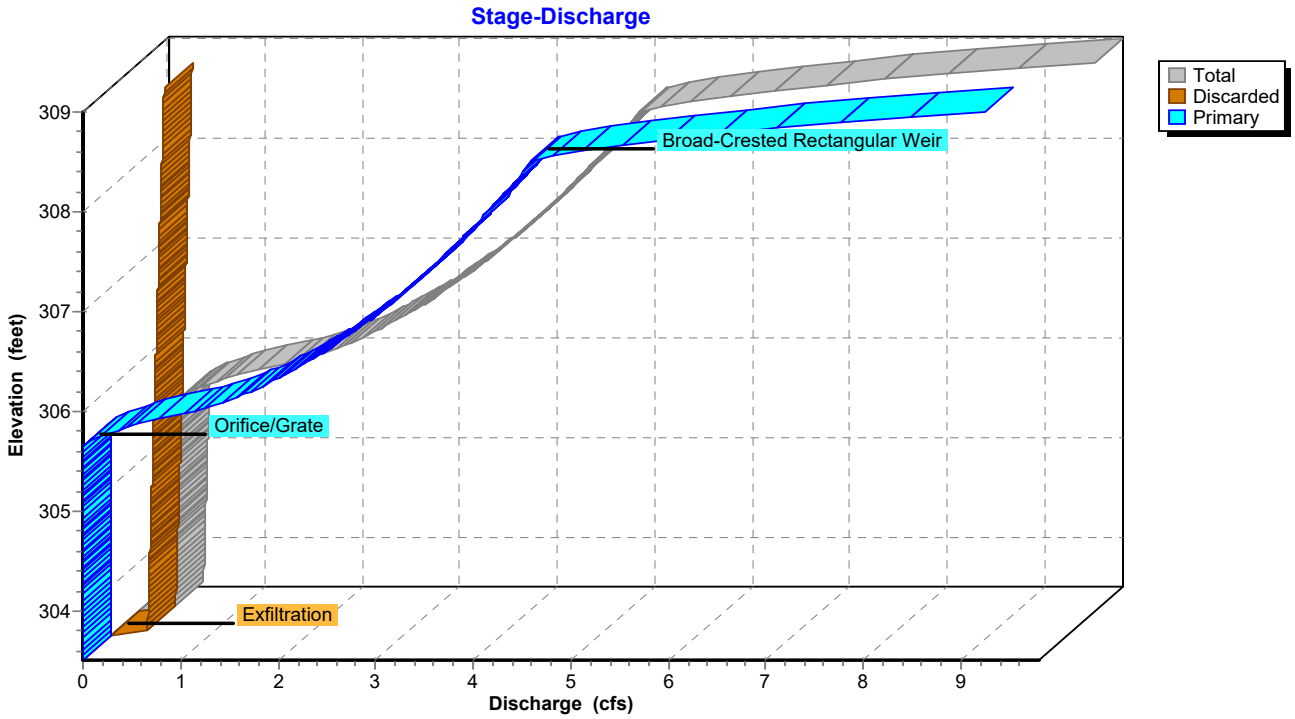

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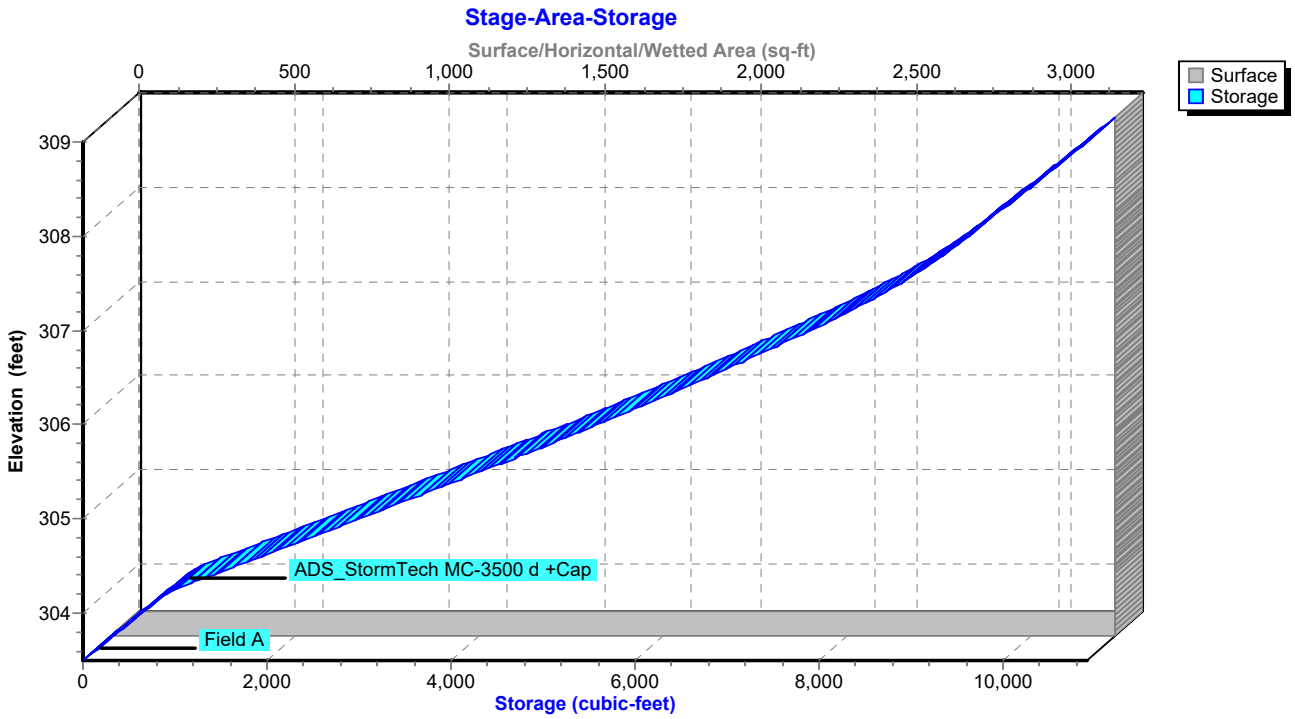


Hydrograph for Pond INF2: MC-3500 StormTech INFILTRATION 2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	303.50	0.00	0.00	**0.00**
0.20	0.00	0	303.50	0.00	0.00	0.00
0.40	0.00	0	303.50	0.00	0.00	0.00
0.60	0.00	0	303.50	0.00	0.00	0.00
0.80	0.00	0	303.50	0.00	0.00	0.00
1.00	0.00	0	303.50	0.00	0.00	0.00
1.20	0.00	0	303.50	0.00	0.00	0.00
1.40	0.00	0	303.50	0.00	0.00	0.00
1.60	0.00	0	303.50	0.00	0.00	0.00
1.80	0.00	0	303.50	0.00	0.00	0.00
2.00	0.00	0	303.50	0.00	0.00	0.00
2.20	0.00	0	303.50	0.00	0.00	0.00
2.40	0.00	0	303.50	0.00	0.00	0.00
2.60	0.00	0	303.50	0.00	0.00	0.00
2.80	0.00	0	303.50	0.00	0.00	0.00
3.00	0.00	0	303.50	0.00	0.00	0.00
3.20	0.00	0	303.50	0.00	0.00	0.00
3.40	0.00	0	303.50	0.00	0.00	0.00
3.60	0.00	0	303.50	0.00	0.00	0.00
3.80	0.00	0	303.50	0.00	0.00	0.00
4.00	0.00	0	303.50	0.00	0.00	0.00
4.20	0.00	0	303.50	0.00	0.00	0.00
4.40	0.00	0	303.50	0.00	0.00	0.00
4.60	0.00	0	303.50	0.00	0.00	0.00
4.80	0.00	0	303.50	0.00	0.00	0.00
5.00	0.00	0	303.50	0.00	0.00	0.00
5.20	0.00	0	303.50	0.00	0.00	0.00
5.40	0.00	0	303.50	0.00	0.00	0.00
5.60	0.00	0	303.50	0.00	0.00	0.00
5.80	0.00	0	303.50	0.00	0.00	0.00
6.00	0.00	0	303.50	0.00	0.00	0.00
6.20	0.00	0	303.50	0.00	0.00	0.00
6.40	0.00	0	303.50	0.00	0.00	0.00
6.60	0.00	0	303.50	0.00	0.00	0.00
6.80	0.00	0	303.50	0.00	0.00	0.00
7.00	0.00	0	303.50	0.00	0.00	0.00
7.20	0.00	0	303.50	0.00	0.00	0.00
7.40	0.00	0	303.50	0.00	0.00	0.00
7.60	0.00	0	303.50	0.00	0.00	0.00
7.80	0.00	0	303.50	0.00	0.00	0.00
8.00	0.00	0	303.50	0.00	0.00	0.00
8.20	0.00	0	303.50	0.00	0.00	0.00
8.40	0.00	0	303.50	0.00	0.00	0.00
8.60	0.00	0	303.50	0.00	0.00	0.00
8.80	0.00	0	303.50	0.00	0.00	0.00
9.00	0.00	0	303.50	0.00	0.00	0.00
9.20	0.00	0	303.50	0.00	0.00	0.00
9.40	0.00	0	303.50	0.00	0.00	0.00
9.60	0.00	0	303.50	0.00	0.00	0.00
9.80	0.00	0	303.50	0.00	0.00	0.00
10.00	0.00	0	303.50	0.00	0.00	0.00
10.20	0.00	0	303.50	0.00	0.00	0.00
10.40	0.00	0	303.50	0.00	0.00	0.00

Hydrograph for Pond INF2: MC-3500 StormTech INFILTRATION 2 (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
10.60	0.00	0	303.50	0.00	0.00	0.00
10.80	0.00	0	303.50	0.00	0.00	0.00
11.00	0.00	0	303.50	0.00	0.00	0.00
11.20	0.00	0	303.50	0.00	0.00	0.00
11.40	0.01	1	303.50	0.01	0.01	0.00
11.60	0.03	4	303.50	0.02	0.02	0.00
11.80	0.11	16	303.51	0.08	0.08	0.00
12.00	**0.38**	55	303.54	0.29	0.29	0.00
12.20	**1.19**	410	303.82	0.38	0.38	0.00
12.40	0.77	827	304.14	0.39	0.39	0.00
12.60	0.44	**979**	**304.25**	**0.40**	**0.40**	0.00
12.80	0.27	**931**	**304.22**	**0.40**	**0.40**	0.00
13.00	0.22	818	304.13	0.39	0.39	0.00
13.20	0.18	678	304.03	0.39	0.39	0.00
13.40	0.17	525	303.91	0.39	0.39	0.00
13.60	0.16	366	303.78	0.38	0.38	0.00
13.80	0.15	203	303.66	0.38	0.38	0.00
14.00	0.14	46	303.54	0.24	0.24	0.00
14.20	0.13	25	303.52	0.13	0.13	0.00
14.40	0.12	24	303.52	0.12	0.12	0.00
14.60	0.12	23	303.52	0.12	0.12	0.00
14.80	0.11	22	303.52	0.11	0.11	0.00
15.00	0.11	21	303.52	0.11	0.11	0.00
15.20	0.10	20	303.52	0.10	0.10	0.00
15.40	0.10	18	303.51	0.10	0.10	0.00
15.60	0.09	17	303.51	0.09	0.09	0.00
15.80	0.08	16	303.51	0.09	0.09	0.00
16.00	0.08	15	303.51	0.08	0.08	0.00
16.20	0.07	14	303.51	0.07	0.07	0.00
16.40	0.07	13	303.51	0.07	0.07	0.00
16.60	0.07	13	303.51	0.07	0.07	0.00
16.80	0.07	12	303.51	0.07	0.07	0.00
17.00	0.06	12	303.51	0.06	0.06	0.00
17.20	0.06	11	303.51	0.06	0.06	0.00
17.40	0.06	11	303.51	0.06	0.06	0.00
17.60	0.05	10	303.51	0.06	0.06	0.00
17.80	0.05	10	303.51	0.05	0.05	0.00
18.00	0.05	9	303.51	0.05	0.05	0.00
18.20	0.05	9	303.51	0.05	0.05	0.00
18.40	0.05	9	303.51	0.05	0.05	0.00
18.60	0.04	9	303.51	0.05	0.05	0.00
18.80	0.04	8	303.51	0.04	0.04	0.00
19.00	0.04	8	303.51	0.04	0.04	0.00
19.20	0.04	8	303.51	0.04	0.04	0.00
19.40	0.04	8	303.51	0.04	0.04	0.00
19.60	0.04	8	303.51	0.04	0.04	0.00
19.80	0.04	8	303.51	0.04	0.04	0.00
20.00	0.04	7	303.51	0.04	0.04	0.00
20.20	0.04	7	303.51	0.04	0.04	0.00
20.40	0.04	7	303.51	0.04	0.04	0.00
20.60	0.04	7	303.51	0.04	0.04	0.00
20.80	0.04	7	303.51	0.04	0.04	0.00
21.00	0.04	7	303.51	0.04	0.04	0.00

Hydrograph for Pond INF2: MC-3500 StormTech INFILTRATION 2 (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
21.20	0.04	7	303.51	0.04	0.04	0.00
21.40	0.03	7	303.51	0.04	0.04	0.00
21.60	0.03	7	303.51	0.03	0.03	0.00
21.80	0.03	6	303.50	0.03	0.03	0.00
22.00	0.03	6	303.50	0.03	0.03	0.00
22.20	0.03	6	303.50	0.03	0.03	0.00
22.40	0.03	6	303.50	0.03	0.03	0.00
22.60	0.03	6	303.50	0.03	0.03	0.00
22.80	0.03	6	303.50	0.03	0.03	0.00
23.00	0.03	6	303.50	0.03	0.03	0.00
23.20	0.03	6	303.50	0.03	0.03	0.00
23.40	0.03	5	303.50	0.03	0.03	0.00
23.60	0.03	5	303.50	0.03	0.03	0.00
23.80	0.03	5	303.50	0.03	0.03	0.00
24.00	0.03	5	303.50	0.03	0.03	0.00

Stage-Discharge for Pond INF2: MC-3500 StormTech INFILTRATION 2

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
303.50	0.00	0.00	0.00
303.60	0.38	0.38	0.00
303.70	0.38	0.38	0.00
303.80	0.38	0.38	0.00
303.90	0.39	0.39	0.00
304.00	0.39	0.39	0.00
304.10	0.39	0.39	0.00
304.20	0.40	0.40	0.00
304.30	0.40	0.40	0.00
304.40	0.40	0.40	0.00
304.50	0.40	0.40	0.00
304.60	0.41	0.41	0.00
304.70	0.41	0.41	0.00
304.80	0.41	0.41	0.00
304.90	0.42	0.42	0.00
305.00	0.42	0.42	0.00
305.10	0.42	0.42	0.00
305.20	0.43	0.43	0.00
305.30	0.43	0.43	0.00
305.40	0.43	0.43	0.00
305.50	0.44	0.44	0.00
305.60	0.44	0.44	0.00
305.70	0.51	0.44	0.06
305.80	0.77	0.45	0.33
305.90	1.15	0.45	0.70
306.00	1.60	0.45	1.15
306.10	1.93	0.45	1.47
306.20	2.18	0.46	1.72
306.30	2.40	0.46	1.94
306.40	2.60	0.46	2.14
306.50	2.78	0.47	2.32
306.60	2.95	0.47	2.48
306.70	3.11	0.47	2.64
306.80	3.26	0.48	2.78
306.90	3.40	0.48	2.92
307.00	3.54	0.48	3.05
307.10	3.67	0.49	3.18
307.20	3.79	0.49	3.30
307.30	3.91	0.49	3.42
307.40	4.03	0.50	3.53
307.50	4.14	0.50	3.64
307.60	4.25	0.50	3.75
307.70	4.36	0.50	3.85
307.80	4.46	0.51	3.95
307.90	4.56	0.51	4.05
308.00	4.66	0.51	4.15
308.10	4.76	0.52	4.24
308.20	4.86	0.52	4.34
308.30	4.95	0.52	4.43
308.40	5.04	0.53	4.51
308.50	5.13	0.53	4.60
308.60	5.57	0.53	5.04
308.70	6.31	0.54	5.77
308.80	7.27	0.54	6.73
308.90	8.43	0.54	7.89
309.00	**9.80**	**0.55**	**9.25**

Stage-Area-Storage for Pond INF2: MC-3500 StormTech INFILTRATION 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
303.50	**3,229**	0
303.60	3,229	129
303.70	3,229	258
303.80	3,229	387
303.90	3,229	517
304.00	3,229	646
304.10	3,229	775
304.20	3,229	904
304.30	3,229	1,106
304.40	3,229	1,380
304.50	3,229	1,654
304.60	3,229	1,926
304.70	3,229	2,197
304.80	3,229	2,467
304.90	3,229	2,735
305.00	3,229	3,003
305.10	3,229	3,269
305.20	3,229	3,533
305.30	3,229	3,796
305.40	3,229	4,058
305.50	3,229	4,318
305.60	3,229	4,575
305.70	3,229	4,831
305.80	3,229	5,085
305.90	3,229	5,336
306.00	3,229	5,585
306.10	3,229	5,832
306.20	3,229	6,076
306.30	3,229	6,317
306.40	3,229	6,555
306.50	3,229	6,789
306.60	3,229	7,021
306.70	3,229	7,248
306.80	3,229	7,472
306.90	3,229	7,691
307.00	3,229	7,905
307.10	3,229	8,115
307.20	3,229	8,318
307.30	3,229	8,516
307.40	3,229	8,706
307.50	3,229	8,887
307.60	3,229	9,056
307.70	3,229	9,211
307.80	3,229	9,355
307.90	3,229	9,494
308.00	3,229	9,626
308.10	3,229	9,755
308.20	3,229	9,884
308.30	3,229	10,013
308.40	3,229	10,143
308.50	3,229	10,272
308.60	3,229	10,401
308.70	3,229	10,530
308.80	3,229	10,659
308.90	3,229	10,788
309.00	3,229	**10,918**

Summary for Pond SPLIT: Flow Splitter

[57] Hint: Peaked at 303.49' (Flood elevation advised)

Inflow Area = 3.798 ac, 98.07% Impervious, Inflow Depth > 2.37" for 1-Year event
Inflow = 9.51 cfs @ 12.08 hrs, Volume= 0.750 af
Outflow = 9.51 cfs @ 12.08 hrs, Volume= 0.750 af, Atten= 0%, Lag= 0.0 min
Primary = 0.95 cfs @ 12.08 hrs, Volume= 0.444 af
Routed to Pond BIO : BioRetention 1 (South)
Secondary = 8.56 cfs @ 12.08 hrs, Volume= 0.306 af
Routed to Pond DET1 : MC-4500 StormTech DETENTION ONLY

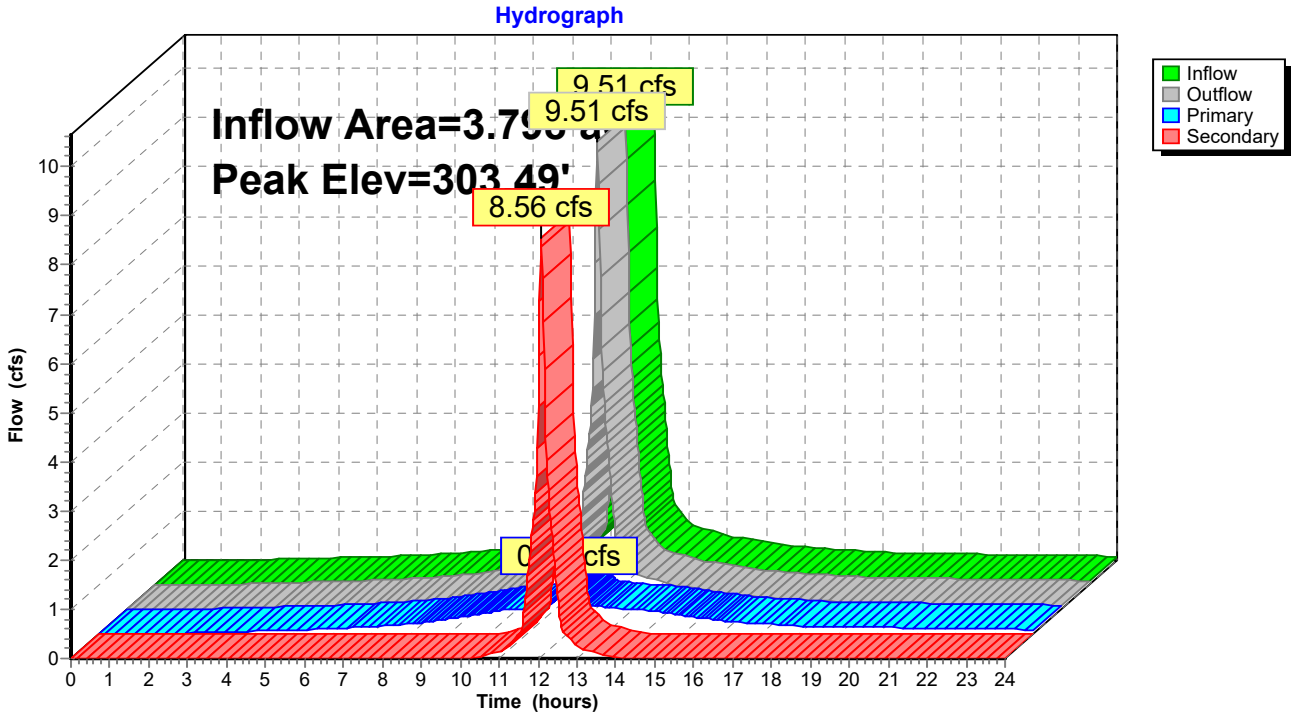
Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 303.49' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	302.23'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Device 3	302.73'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Secondary	302.23'	**30.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

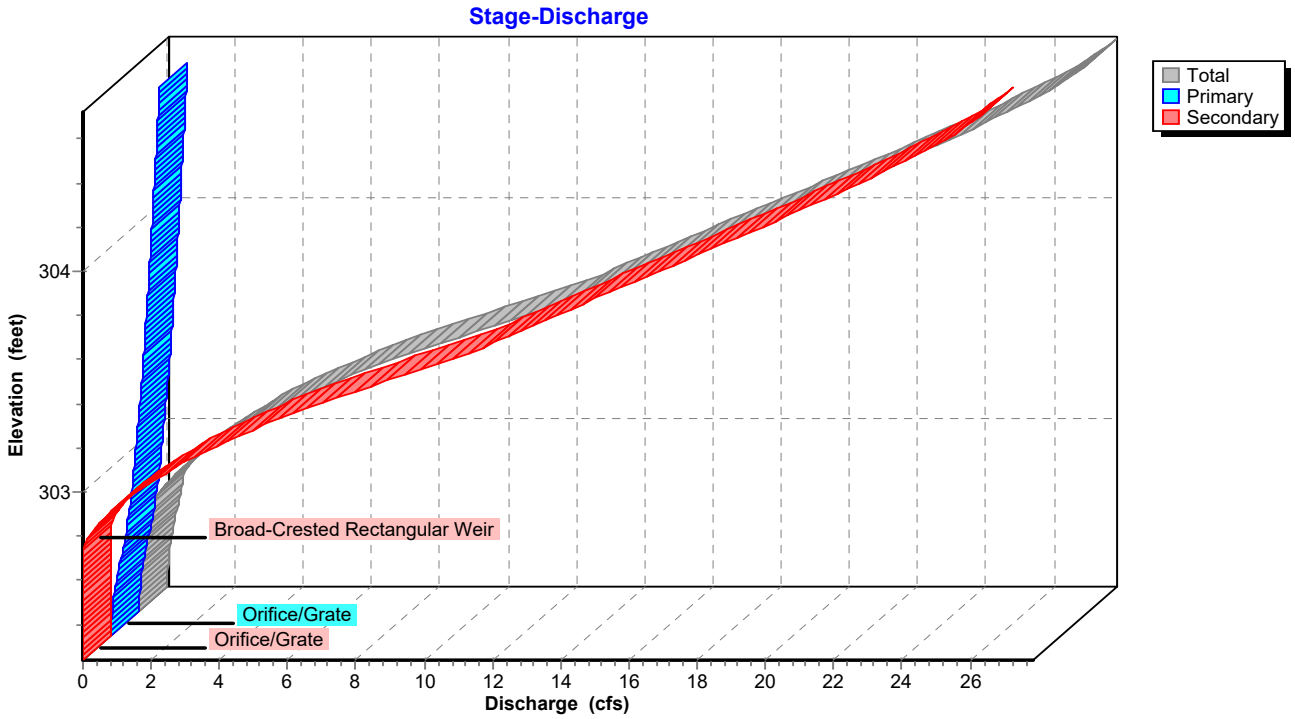
Primary OutFlow Max=0.95 cfs @ 12.08 hrs HW=303.48' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 0.95 cfs @ 4.83 fps)

Secondary OutFlow Max=8.52 cfs @ 12.08 hrs HW=303.48' (Free Discharge)
└**3=Orifice/Grate** (Passes 8.52 cfs of 9.40 cfs potential flow)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 8.52 cfs @ 2.82 fps)

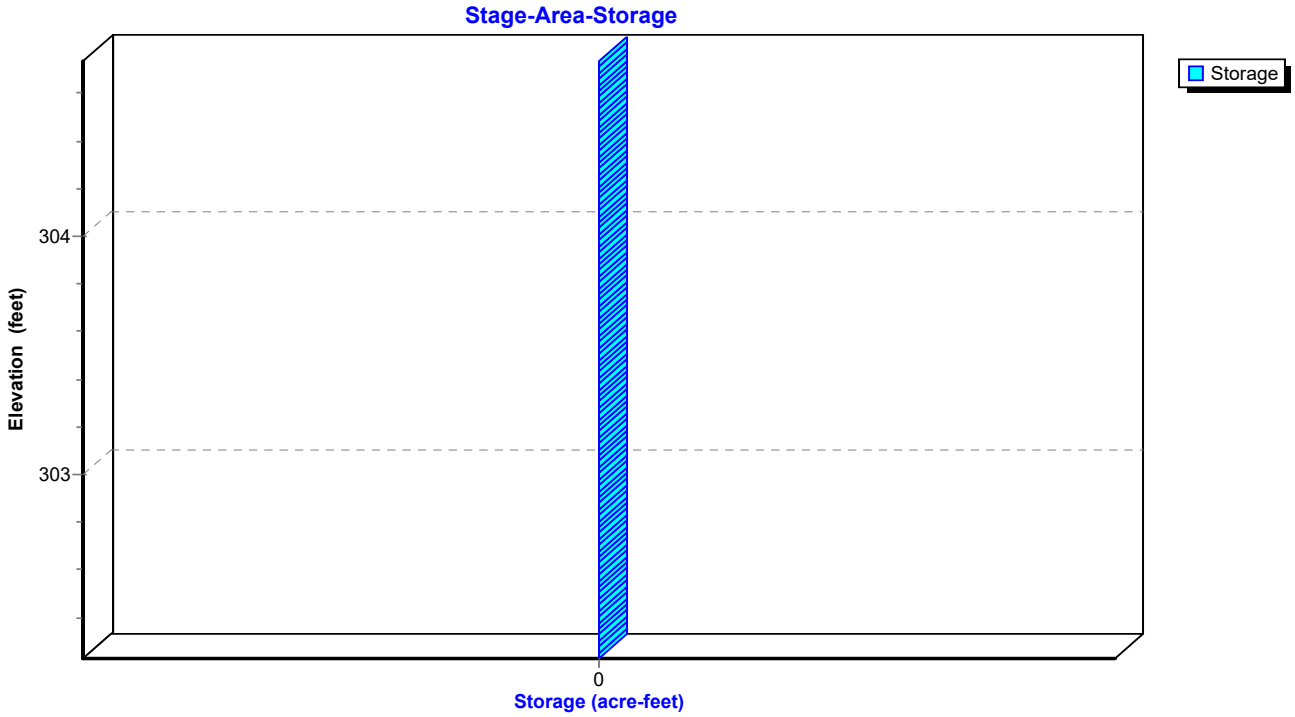
Pond SPLIT: Flow Splitter



Pond SPLIT: Flow Splitter



Pond SPLIT: Flow Splitter



Hydrograph for Pond SPLIT: Flow Splitter

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	302.23	0.00	0.00	0.00
0.20	0.00	302.23	0.00	0.00	0.00
0.40	0.00	302.23	0.00	0.00	0.00
0.60	0.00	302.23	0.00	0.00	0.00
0.80	0.00	302.23	0.00	0.00	0.00
1.00	0.00	302.23	0.00	0.00	0.00
1.20	0.00	302.23	0.00	0.00	0.00
1.40	0.00	302.23	0.00	0.00	0.00
1.60	0.00	302.23	0.00	0.00	0.00
1.80	0.00	302.26	0.00	0.00	0.00
2.00	0.01	302.28	0.01	0.01	0.00
2.20	0.01	302.29	0.01	0.01	0.00
2.40	0.02	302.31	0.02	0.02	0.00
2.60	0.02	302.31	0.02	0.02	0.00
2.80	0.03	302.32	0.03	0.03	0.00
3.00	0.03	302.33	0.03	0.03	0.00
3.20	0.04	302.34	0.04	0.04	0.00
3.40	0.04	302.35	0.04	0.04	0.00
3.60	0.05	302.36	0.05	0.05	0.00
3.80	0.05	302.36	0.05	0.05	0.00
4.00	0.06	302.37	0.06	0.06	0.00
4.20	0.06	302.37	0.06	0.06	0.00
4.40	0.07	302.38	0.07	0.07	0.00
4.60	0.07	302.39	0.07	0.07	0.00
4.80	0.08	302.39	0.08	0.08	0.00
5.00	0.08	302.40	0.08	0.08	0.00
5.20	0.08	302.40	0.08	0.08	0.00
5.40	0.09	302.41	0.09	0.09	0.00
5.60	0.09	302.41	0.09	0.09	0.00
5.80	0.10	302.42	0.10	0.10	0.00
6.00	0.10	302.42	0.10	0.10	0.00
6.20	0.11	302.43	0.11	0.11	0.00
6.40	0.12	302.44	0.12	0.12	0.00
6.60	0.13	302.45	0.13	0.13	0.00
6.80	0.14	302.46	0.14	0.14	0.00
7.00	0.15	302.46	0.15	0.15	0.00
7.20	0.16	302.47	0.16	0.16	0.00
7.40	0.17	302.48	0.17	0.17	0.00
7.60	0.18	302.49	0.18	0.18	0.00
7.80	0.19	302.50	0.19	0.19	0.00
8.00	0.20	302.51	0.20	0.20	0.00
8.20	0.22	302.52	0.22	0.22	0.00
8.40	0.24	302.54	0.24	0.24	0.00
8.60	0.26	302.56	0.26	0.26	0.00
8.80	0.29	302.57	0.29	0.29	0.00
9.00	0.31	302.59	0.31	0.31	0.00
9.20	0.33	302.61	0.33	0.33	0.00
9.40	0.36	302.63	0.36	0.36	0.00
9.60	0.38	302.64	0.38	0.38	0.00
9.80	0.41	302.66	0.41	0.41	0.00
10.00	0.43	302.68	0.43	0.43	0.00
10.20	0.47	302.72	0.47	0.47	0.00
10.40	0.51	302.75	0.51	0.49	0.03

Hydrograph for Pond SPLIT: Flow Splitter (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
10.60	0.56	302.76	0.56	0.50	0.06
10.80	0.61	302.77	0.61	0.51	0.10
11.00	0.66	302.78	0.66	0.52	0.14
11.20	0.78	302.81	0.78	0.54	0.24
11.40	0.95	302.84	0.95	0.56	0.39
11.60	1.30	302.89	1.30	0.60	0.69
11.80	2.89	303.06	2.89	0.72	2.17
12.00	**5.98**	**303.29**	**5.98**	**0.85**	**5.13**
12.20	**5.31**	**303.25**	**5.31**	**0.83**	**4.48**
12.40	2.84	303.05	2.84	0.72	2.12
12.60	1.28	302.88	1.28	0.60	0.67
12.80	0.99	302.84	0.99	0.57	0.42
13.00	0.80	302.81	0.80	0.54	0.26
13.20	0.70	302.79	0.70	0.53	0.17
13.40	0.65	302.78	0.65	0.52	0.13
13.60	0.60	302.77	0.60	0.51	0.09
13.80	0.55	302.76	0.55	0.50	0.05
14.00	0.51	302.74	0.51	0.48	0.02
14.20	0.47	302.73	0.47	0.47	0.00
14.40	0.45	302.70	0.45	0.45	0.00
14.60	0.43	302.68	0.43	0.43	0.00
14.80	0.40	302.66	0.40	0.40	0.00
15.00	0.38	302.64	0.38	0.38	0.00
15.20	0.36	302.63	0.36	0.36	0.00
15.40	0.34	302.61	0.34	0.34	0.00
15.60	0.31	302.59	0.31	0.31	0.00
15.80	0.29	302.58	0.29	0.29	0.00
16.00	0.27	302.56	0.27	0.27	0.00
16.20	0.25	302.55	0.25	0.25	0.00
16.40	0.24	302.54	0.24	0.24	0.00
16.60	0.23	302.53	0.23	0.23	0.00
16.80	0.22	302.52	0.22	0.22	0.00
17.00	0.21	302.52	0.21	0.21	0.00
17.20	0.20	302.51	0.20	0.20	0.00
17.40	0.19	302.50	0.19	0.19	0.00
17.60	0.18	302.49	0.18	0.18	0.00
17.80	0.17	302.48	0.17	0.17	0.00
18.00	0.16	302.48	0.16	0.16	0.00
18.20	0.16	302.47	0.16	0.16	0.00
18.40	0.15	302.47	0.15	0.15	0.00
18.60	0.15	302.47	0.15	0.15	0.00
18.80	0.15	302.46	0.15	0.15	0.00
19.00	0.14	302.46	0.14	0.14	0.00
19.20	0.14	302.46	0.14	0.14	0.00
19.40	0.14	302.46	0.14	0.14	0.00
19.60	0.14	302.45	0.14	0.14	0.00
19.80	0.13	302.45	0.13	0.13	0.00
20.00	0.13	302.45	0.13	0.13	0.00
20.20	0.13	302.44	0.13	0.13	0.00
20.40	0.13	302.44	0.13	0.13	0.00
20.60	0.12	302.44	0.12	0.12	0.00
20.80	0.12	302.44	0.12	0.12	0.00
21.00	0.12	302.44	0.12	0.12	0.00

Hydrograph for Pond SPLIT: Flow Splitter (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
21.20	0.12	302.43	0.12	0.12	0.00
21.40	0.11	302.43	0.11	0.11	0.00
21.60	0.11	302.43	0.11	0.11	0.00
21.80	0.11	302.43	0.11	0.11	0.00
22.00	0.11	302.43	0.11	0.11	0.00
22.20	0.11	302.42	0.11	0.11	0.00
22.40	0.10	302.42	0.10	0.10	0.00
22.60	0.10	302.42	0.10	0.10	0.00
22.80	0.10	302.42	0.10	0.10	0.00
23.00	0.10	302.41	0.10	0.10	0.00
23.20	0.09	302.41	0.09	0.09	0.00
23.40	0.09	302.41	0.09	0.09	0.00
23.60	0.09	302.41	0.09	0.09	0.00
23.80	0.09	302.41	0.09	0.09	0.00
24.00	0.09	302.40	0.09	0.09	0.00

Stage-Discharge for Pond SPLIT: Flow Splitter

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
302.23	0.00	0.00	0.00
302.33	0.03	0.03	0.00
302.43	0.11	0.11	0.00
302.53	0.23	0.23	0.00
302.63	0.36	0.36	0.00
302.73	0.47	0.47	0.00
302.83	0.91	0.56	0.35
302.93	1.64	0.63	1.00
303.03	2.58	0.70	1.88
303.13	3.72	0.76	2.95
303.23	5.06	0.82	4.24
303.33	6.60	0.87	5.73
303.43	8.39	0.92	7.47
303.53	10.41	0.97	9.45
303.63	12.32	1.01	11.30
303.73	13.88	1.06	12.82
303.83	15.39	1.10	14.29
303.93	16.92	1.14	15.78
304.03	18.46	1.18	17.28
304.13	20.00	1.21	18.79
304.23	21.52	1.25	20.27
304.33	23.00	1.29	21.72
304.43	24.42	1.32	23.10
304.53	25.75	1.35	24.40
304.63	26.93	1.39	25.54
304.73	**27.84**	**1.42**	**26.43**

Stage-Area-Storage for Pond SPLIT: Flow Splitter

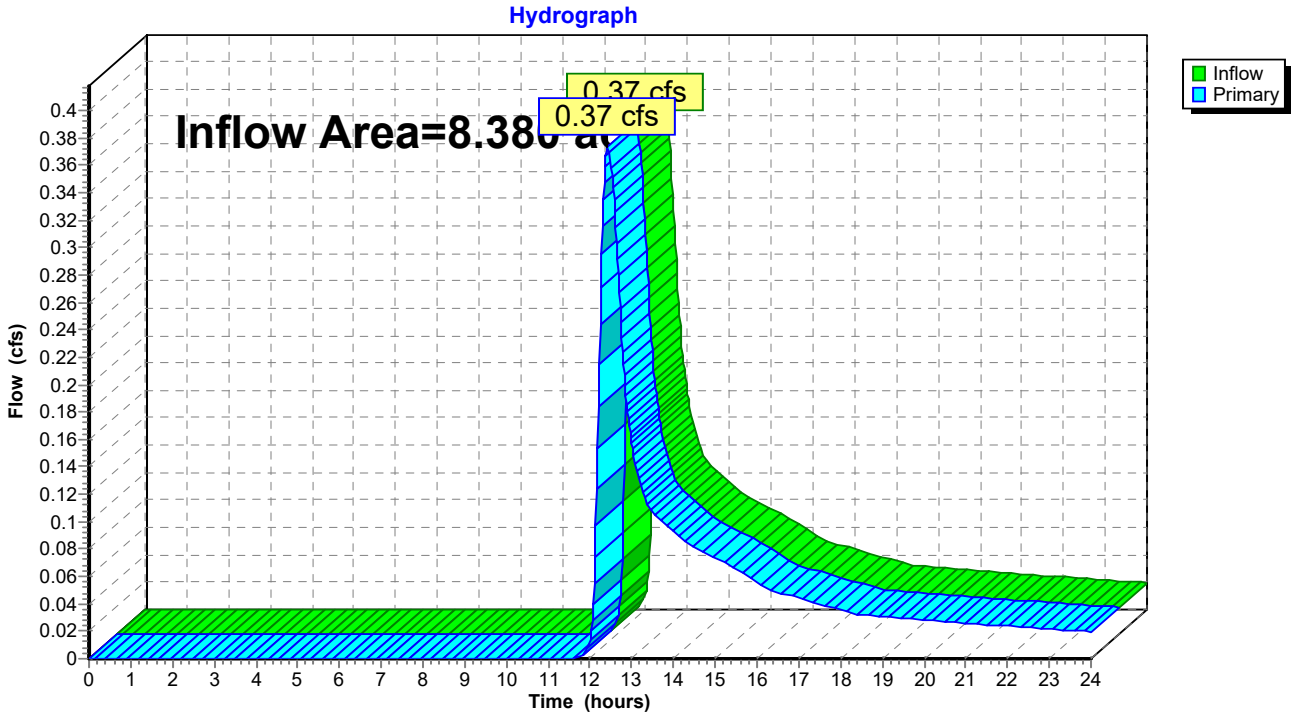
Elevation (feet)	Storage (acre-feet)
302.23	**0.000**
302.33	0.000
302.43	0.000
302.53	0.000
302.63	0.000
302.73	0.000
302.83	0.000
302.93	0.000
303.03	0.000
303.13	0.000
303.23	0.000
303.33	0.000
303.43	0.000
303.53	0.000
303.63	0.000
303.73	0.000
303.83	0.000
303.93	0.000
304.03	0.000
304.13	0.000
304.23	0.000
304.33	0.000
304.43	0.000
304.53	0.000
304.63	0.000
304.73	0.000

Summary for Link N: POI North

Inflow Area = 8.380 ac, 59.74% Impervious, Inflow Depth > 0.09" for 1-Year event
Inflow = 0.37 cfs @ 12.43 hrs, Volume= 0.061 af
Primary = 0.37 cfs @ 12.43 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link N: POI North



Hydrograph for Link N: POI North

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	10.60	0.00	0.00	0.00
0.20	0.00	0.00	0.00	10.80	0.00	0.00	0.00
0.40	0.00	0.00	0.00	11.00	0.00	0.00	0.00
0.60	0.00	0.00	0.00	11.20	0.00	0.00	0.00
0.80	0.00	0.00	0.00	11.40	0.00	0.00	0.00
1.00	0.00	0.00	0.00	11.60	0.00	0.00	0.00
1.20	0.00	0.00	0.00	11.80	0.00	0.00	0.00
1.40	0.00	0.00	0.00	12.00	0.01	0.00	0.01
1.60	0.00	0.00	0.00	12.20	0.18	0.00	0.18
1.80	0.00	0.00	0.00	12.40	**0.37**	0.00	**0.37**
2.00	0.00	0.00	0.00	12.60	**0.33**	0.00	**0.33**
2.20	0.00	0.00	0.00	12.80	0.22	0.00	0.22
2.40	0.00	0.00	0.00	13.00	0.16	0.00	0.16
2.60	0.00	0.00	0.00	13.20	0.13	0.00	0.13
2.80	0.00	0.00	0.00	13.40	0.11	0.00	0.11
3.00	0.00	0.00	0.00	13.60	0.10	0.00	0.10
3.20	0.00	0.00	0.00	13.80	0.10	0.00	0.10
3.40	0.00	0.00	0.00	14.00	0.09	0.00	0.09
3.60	0.00	0.00	0.00	14.20	0.09	0.00	0.09
3.80	0.00	0.00	0.00	14.40	0.08	0.00	0.08
4.00	0.00	0.00	0.00	14.60	0.08	0.00	0.08
4.20	0.00	0.00	0.00	14.80	0.08	0.00	0.08
4.40	0.00	0.00	0.00	15.00	0.07	0.00	0.07
4.60	0.00	0.00	0.00	15.20	0.07	0.00	0.07
4.80	0.00	0.00	0.00	15.40	0.07	0.00	0.07
5.00	0.00	0.00	0.00	15.60	0.06	0.00	0.06
5.20	0.00	0.00	0.00	15.80	0.06	0.00	0.06
5.40	0.00	0.00	0.00	16.00	0.06	0.00	0.06
5.60	0.00	0.00	0.00	16.20	0.05	0.00	0.05
5.80	0.00	0.00	0.00	16.40	0.05	0.00	0.05
6.00	0.00	0.00	0.00	16.60	0.05	0.00	0.05
6.20	0.00	0.00	0.00	16.80	0.05	0.00	0.05
6.40	0.00	0.00	0.00	17.00	0.04	0.00	0.04
6.60	0.00	0.00	0.00	17.20	0.04	0.00	0.04
6.80	0.00	0.00	0.00	17.40	0.04	0.00	0.04
7.00	0.00	0.00	0.00	17.60	0.04	0.00	0.04
7.20	0.00	0.00	0.00	17.80	0.04	0.00	0.04
7.40	0.00	0.00	0.00	18.00	0.04	0.00	0.04
7.60	0.00	0.00	0.00	18.20	0.03	0.00	0.03
7.80	0.00	0.00	0.00	18.40	0.03	0.00	0.03
8.00	0.00	0.00	0.00	18.60	0.03	0.00	0.03
8.20	0.00	0.00	0.00	18.80	0.03	0.00	0.03
8.40	0.00	0.00	0.00	19.00	0.03	0.00	0.03
8.60	0.00	0.00	0.00	19.20	0.03	0.00	0.03
8.80	0.00	0.00	0.00	19.40	0.03	0.00	0.03
9.00	0.00	0.00	0.00	19.60	0.03	0.00	0.03
9.20	0.00	0.00	0.00	19.80	0.03	0.00	0.03
9.40	0.00	0.00	0.00	20.00	0.03	0.00	0.03
9.60	0.00	0.00	0.00	20.20	0.03	0.00	0.03
9.80	0.00	0.00	0.00	20.40	0.03	0.00	0.03
10.00	0.00	0.00	0.00	20.60	0.03	0.00	0.03
10.20	0.00	0.00	0.00	20.80	0.03	0.00	0.03
10.40	0.00	0.00	0.00	21.00	0.03	0.00	0.03

Hydrograph for Link N: POI North (continued)

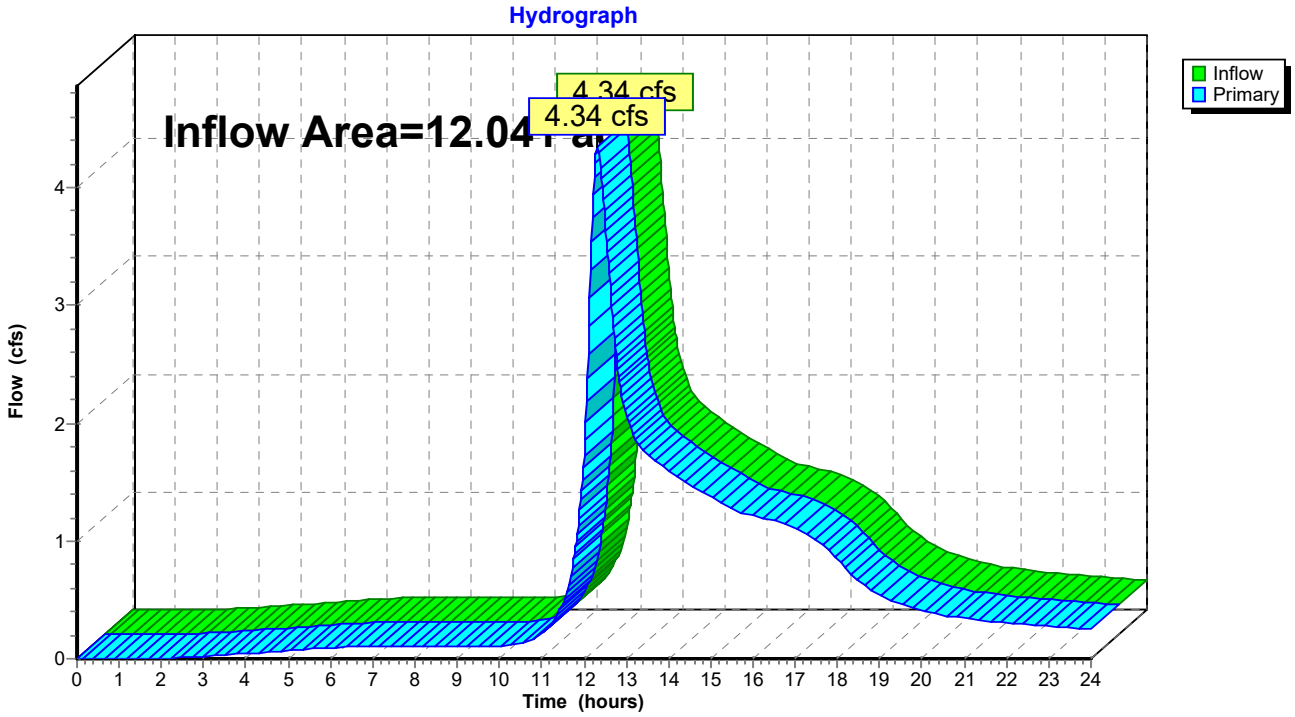
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
21.20	0.03	0.00	0.03
21.40	0.03	0.00	0.03
21.60	0.02	0.00	0.02
21.80	0.02	0.00	0.02
22.00	0.02	0.00	0.02
22.20	0.02	0.00	0.02
22.40	0.02	0.00	0.02
22.60	0.02	0.00	0.02
22.80	0.02	0.00	0.02
23.00	0.02	0.00	0.02
23.20	0.02	0.00	0.02
23.40	0.02	0.00	0.02
23.60	0.02	0.00	0.02
23.80	0.02	0.00	0.02
24.00	0.02	0.00	0.02

Summary for Link S: POI South

Inflow Area = 12.041 ac, 46.90% Impervious, Inflow Depth > 1.12" for 1-Year event
Inflow = 4.34 cfs @ 12.32 hrs, Volume= 1.121 af
Primary = 4.34 cfs @ 12.32 hrs, Volume= 1.121 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link S: POI South



Hydrograph for Link S: POI South

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	10.60	0.14	0.00	0.14
0.20	0.00	0.00	0.00	10.80	0.17	0.00	0.17
0.40	0.00	0.00	0.00	11.00	0.21	0.00	0.21
0.60	0.00	0.00	0.00	11.20	0.28	0.00	0.28
0.80	0.00	0.00	0.00	11.40	0.40	0.00	0.40
1.00	0.00	0.00	0.00	11.60	0.56	0.00	0.56
1.20	0.00	0.00	0.00	11.80	0.95	0.00	0.95
1.40	0.00	0.00	0.00	12.00	1.73	0.00	1.73
1.60	0.00	0.00	0.00	12.20	**3.75**	0.00	**3.75**
1.80	0.00	0.00	0.00	12.40	**4.16**	0.00	**4.16**
2.00	0.00	0.00	0.00	12.60	3.27	0.00	3.27
2.20	0.01	0.00	0.01	12.80	2.45	0.00	2.45
2.40	0.01	0.00	0.01	13.00	2.07	0.00	2.07
2.60	0.01	0.00	0.01	13.20	1.88	0.00	1.88
2.80	0.02	0.00	0.02	13.40	1.77	0.00	1.77
3.00	0.02	0.00	0.02	13.60	1.71	0.00	1.71
3.20	0.03	0.00	0.03	13.80	1.65	0.00	1.65
3.40	0.03	0.00	0.03	14.00	1.60	0.00	1.60
3.60	0.03	0.00	0.03	14.20	1.55	0.00	1.55
3.80	0.04	0.00	0.04	14.40	1.50	0.00	1.50
4.00	0.04	0.00	0.04	14.60	1.46	0.00	1.46
4.20	0.05	0.00	0.05	14.80	1.42	0.00	1.42
4.40	0.05	0.00	0.05	15.00	1.38	0.00	1.38
4.60	0.06	0.00	0.06	15.20	1.34	0.00	1.34
4.80	0.06	0.00	0.06	15.40	1.30	0.00	1.30
5.00	0.07	0.00	0.07	15.60	1.25	0.00	1.25
5.20	0.07	0.00	0.07	15.80	1.23	0.00	1.23
5.40	0.08	0.00	0.08	16.00	1.21	0.00	1.21
5.60	0.08	0.00	0.08	16.20	1.20	0.00	1.20
5.80	0.09	0.00	0.09	16.40	1.18	0.00	1.18
6.00	0.09	0.00	0.09	16.60	1.16	0.00	1.16
6.20	0.10	0.00	0.10	16.80	1.14	0.00	1.14
6.40	0.10	0.00	0.10	17.00	1.11	0.00	1.11
6.60	0.10	0.00	0.10	17.20	1.07	0.00	1.07
6.80	0.10	0.00	0.10	17.40	1.03	0.00	1.03
7.00	0.10	0.00	0.10	17.60	0.98	0.00	0.98
7.20	0.10	0.00	0.10	17.80	0.91	0.00	0.91
7.40	0.10	0.00	0.10	18.00	0.84	0.00	0.84
7.60	0.10	0.00	0.10	18.20	0.77	0.00	0.77
7.80	0.10	0.00	0.10	18.40	0.70	0.00	0.70
8.00	0.10	0.00	0.10	18.60	0.63	0.00	0.63
8.20	0.10	0.00	0.10	18.80	0.58	0.00	0.58
8.40	0.10	0.00	0.10	19.00	0.54	0.00	0.54
8.60	0.10	0.00	0.10	19.20	0.51	0.00	0.51
8.80	0.10	0.00	0.10	19.40	0.48	0.00	0.48
9.00	0.10	0.00	0.10	19.60	0.45	0.00	0.45
9.20	0.10	0.00	0.10	19.80	0.43	0.00	0.43
9.40	0.11	0.00	0.11	20.00	0.41	0.00	0.41
9.60	0.11	0.00	0.11	20.20	0.39	0.00	0.39
9.80	0.11	0.00	0.11	20.40	0.37	0.00	0.37
10.00	0.11	0.00	0.11	20.60	0.36	0.00	0.36
10.20	0.12	0.00	0.12	20.80	0.35	0.00	0.35
10.40	0.13	0.00	0.13	21.00	0.34	0.00	0.34

Hydrograph for Link S: POI South (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
21.20	0.34	0.00	0.34
21.40	0.33	0.00	0.33
21.60	0.32	0.00	0.32
21.80	0.31	0.00	0.31
22.00	0.31	0.00	0.31
22.20	0.30	0.00	0.30
22.40	0.29	0.00	0.29
22.60	0.29	0.00	0.29
22.80	0.28	0.00	0.28
23.00	0.27	0.00	0.27
23.20	0.27	0.00	0.27
23.40	0.26	0.00	0.26
23.60	0.26	0.00	0.26
23.80	0.25	0.00	0.25
24.00	0.25	0.00	0.25

Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA 1: Drainage Area 1 Runoff Area=165,448 sf 98.07% Impervious Runoff Depth>4.47"
Flow Length=1,066' Tc=6.0 min CN=98 Runoff=17.46 cfs 1.415 af

Subcatchment DA 1B: Drainage Area 1B - Runoff Area=69,529 sf 3.51% Impervious Runoff Depth>2.54"
Flow Length=1,406' Tc=21.5 min CN=79 Runoff=3.13 cfs 0.338 af

Subcatchment DA 2: Drainage Area 2 Runoff Area=189,852 sf 96.98% Impervious Runoff Depth>4.35"
Flow Length=1,274' Tc=6.0 min CN=97 Runoff=19.88 cfs 1.582 af

Subcatchment DA 2B: Drainage Area 2B Runoff Area=84,759 sf 38.50% Impervious Runoff Depth>2.21"
Flow Length=556' Tc=12.0 min CN=75 Runoff=4.12 cfs 0.358 af

Subcatchment DA 2C: Drainage Area 2C Runoff Area=83,452 sf 1.57% Impervious Runoff Depth>1.46"
Flow Length=466' Tc=21.7 min CN=65 Runoff=2.00 cfs 0.232 af

Subcatchment DA 3: Drainage Area 3 - Bio Runoff Area=31,825 sf 0.00% Impervious Runoff Depth>2.64"
Flow Length=87' Slope=0.1430 '/' Tc=6.0 min CN=80 Runoff=2.26 cfs 0.161 af

Subcatchment DA 4: Drainage Area 4 Runoff Area=23,833 sf 0.00% Impervious Runoff Depth>1.19"
Flow Length=837' Tc=20.4 min CN=61 Runoff=0.45 cfs 0.054 af

Subcatchment OFF1: Offsite Drainage Runoff Area=123,809 sf 57.82% Impervious Runoff Depth>2.82"
Flow Length=816' Tc=6.0 min CN=82 Runoff=9.38 cfs 0.667 af

Subcatchment OFF2: Offsite Drainage Runoff Area=110,079 sf 8.81% Impervious Runoff Depth>2.81"
Tc=21.5 min CN=82 Runoff=5.47 cfs 0.592 af

Subcatchment OFF3: Offsite Drainage Area 3 Runoff Area=6,977 sf 0.00% Impervious Runoff Depth>2.05"
Tc=21.7 min CN=73 Runoff=0.25 cfs 0.027 af

Pond BIO: BioRetention 1 (South) Peak Elev=299.74' Storage=14,007 cf Inflow=3.41 cfs 0.832 af
Outflow=0.99 cfs 0.539 af

Pond DET1: MC-4500 StormTech Peak Elev=305.77' Storage=0.310 af Inflow=16.31 cfs 0.744 af
Outflow=11.61 cfs 0.743 af

Pond DET2: MC-3500 Stormtech (Offsite Peak Elev=298.23' Storage=11,875 cf Inflow=9.55 cfs 0.722 af
Outflow=2.95 cfs 0.690 af

Pond INF1: MC-3500 StormTech Peak Elev=309.56' Storage=24,112 cf Inflow=19.88 cfs 1.582 af
Discarded=1.95 cfs 1.581 af Primary=0.00 cfs 0.000 af Outflow=1.95 cfs 1.581 af

Pond INF2: MC-3500 StormTech Peak Elev=305.90' Storage=5,333 cf Inflow=4.12 cfs 0.358 af
Discarded=0.45 cfs 0.326 af Primary=0.70 cfs 0.032 af Outflow=1.15 cfs 0.358 af

Pond SPLIT: Flow Splitter Peak Elev=303.97' Inflow=17.46 cfs 1.415 af
Primary=1.15 cfs 0.671 af Secondary=16.31 cfs 0.744 af Outflow=17.46 cfs 1.415 af

Link N: POI North Inflow=2.29 cfs 0.292 af
Primary=2.29 cfs 0.292 af

Link S: POI South Inflow=19.64 cfs 2.902 af
Primary=19.64 cfs 2.902 af

Total Runoff Area = 20.422 ac Runoff Volume = 5.427 af Average Runoff Depth = 3.19"
47.83% Pervious = 9.769 ac 52.17% Impervious = 10.653 ac

Summary for Subcatchment DA 1: Drainage Area 1

[47] Hint: Peak is 286% of capacity of segment #2

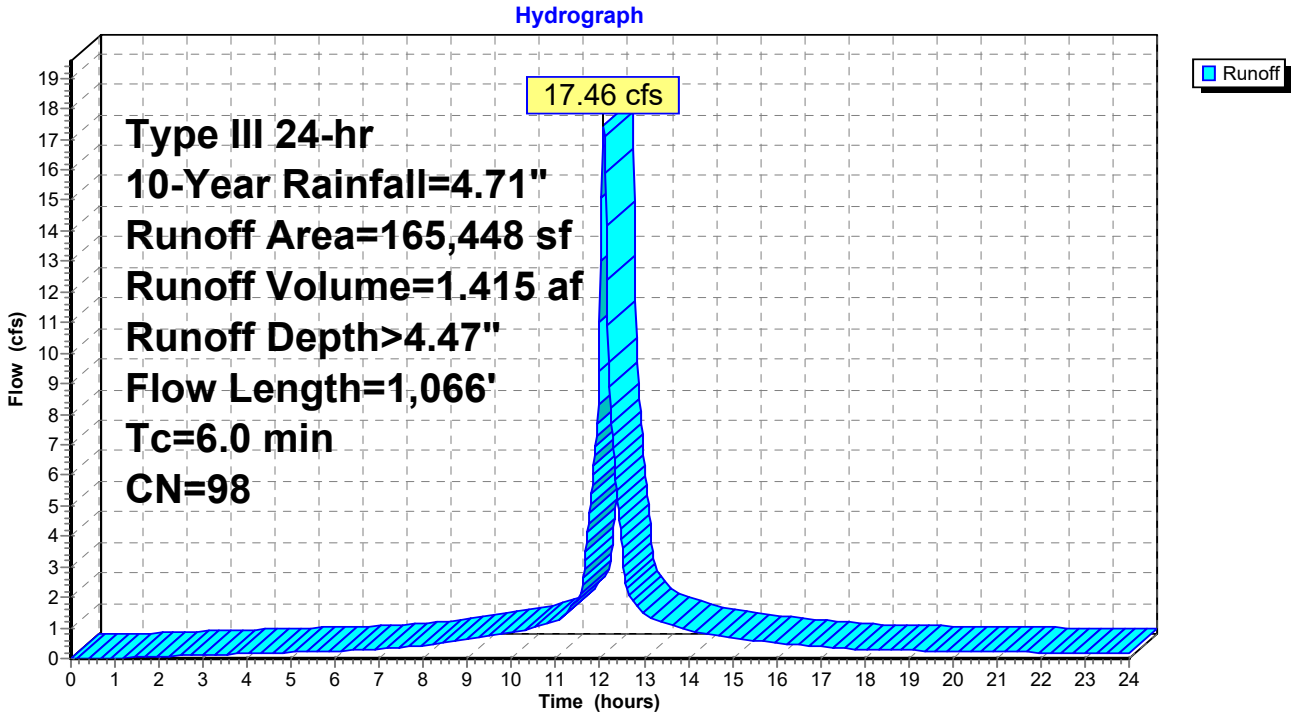
Runoff = 17.46 cfs @ 12.08 hrs, Volume= 1.415 af, Depth> 4.47"
Routed to Pond SPLIT : Flow Splitter

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=4.71"

	Area (sf)	CN	Description
*	162,255	98	Drive/Parking
	626	61	>75% Grass cover, Good, HSG B
	2,567	80	>75% Grass cover, Good, HSG D
	165,448	98	Weighted Average
	3,193		1.93% Pervious Area
	162,255		98.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	187	0.0200	2.87		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
2.9	879	0.0076	4.97	6.10	**Pipe Channel, Avg Pipe Run from CB 12 to 22** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
2.0					**Direct Entry, + Entry to Reach Minimum**
6.0	1,066	Total			

Subcatchment DA 1: Drainage Area 1



Hydrograph for Subcatchment DA 1: Drainage Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.05	0.84	1.07
0.20	0.01	0.00	0.00	10.80	1.11	0.90	1.16
0.40	0.02	0.00	0.00	11.00	1.18	0.96	1.25
0.60	0.03	0.00	0.00	11.20	1.25	1.04	1.46
0.80	0.04	0.00	0.00	11.40	1.35	1.13	1.79
1.00	0.05	0.00	0.00	11.60	1.48	1.26	2.42
1.20	0.06	0.00	0.02	11.80	1.76	1.54	5.37
1.40	0.07	0.00	0.03	12.00	2.35	2.13	**11.02**
1.60	0.08	0.01	0.04	12.20	2.95	2.72	**9.71**
1.80	0.08	0.01	0.05	12.40	3.23	3.00	5.19
2.00	0.09	0.01	0.06	12.60	3.36	3.13	2.33
2.20	0.10	0.01	0.07	12.80	3.46	3.22	1.80
2.40	0.11	0.02	0.08	13.00	3.53	3.30	1.47
2.60	0.12	0.02	0.09	13.20	3.60	3.37	1.27
2.80	0.13	0.03	0.10	13.40	3.66	3.43	1.18
3.00	0.14	0.04	0.11	13.60	3.72	3.48	1.09
3.20	0.16	0.04	0.12	13.80	3.77	3.54	1.01
3.40	0.17	0.05	0.13	14.00	3.82	3.59	0.92
3.60	0.18	0.06	0.14	14.20	3.86	3.63	0.86
3.80	0.19	0.06	0.15	14.40	3.91	3.67	0.82
4.00	0.20	0.07	0.16	14.60	3.95	3.71	0.78
4.20	0.21	0.08	0.17	14.80	3.99	3.75	0.74
4.40	0.23	0.09	0.17	15.00	4.02	3.79	0.69
4.60	0.24	0.10	0.18	15.20	4.06	3.82	0.65
4.80	0.25	0.11	0.19	15.40	4.09	3.85	0.61
5.00	0.27	0.12	0.20	15.60	4.12	3.88	0.57
5.20	0.28	0.13	0.21	15.80	4.15	3.91	0.53
5.40	0.30	0.14	0.21	16.00	4.17	3.94	0.49
5.60	0.31	0.15	0.22	16.20	4.20	3.96	0.46
5.80	0.32	0.16	0.23	16.40	4.22	3.98	0.44
6.00	0.34	0.18	0.24	16.60	4.24	4.01	0.42
6.20	0.35	0.19	0.25	16.80	4.26	4.03	0.40
6.40	0.37	0.20	0.27	17.00	4.28	4.05	0.39
6.60	0.39	0.22	0.29	17.20	4.30	4.07	0.37
6.80	0.41	0.24	0.31	17.40	4.32	4.09	0.35
7.00	0.43	0.25	0.32	17.60	4.34	4.10	0.33
7.20	0.45	0.27	0.34	17.80	4.36	4.12	0.31
7.40	0.47	0.29	0.36	18.00	4.37	4.14	0.30
7.60	0.49	0.31	0.38	18.20	4.39	4.15	0.29
7.80	0.51	0.33	0.40	18.40	4.40	4.16	0.28
8.00	0.54	0.35	0.42	18.60	4.41	4.18	0.27
8.20	0.56	0.38	0.45	18.80	4.43	4.19	0.27
8.40	0.59	0.40	0.49	19.00	4.44	4.21	0.26
8.60	0.62	0.43	0.53	19.20	4.46	4.22	0.26
8.80	0.65	0.46	0.58	19.40	4.47	4.23	0.25
9.00	0.69	0.49	0.62	19.60	4.48	4.25	0.25
9.20	0.72	0.52	0.66	19.80	4.50	4.26	0.24
9.40	0.76	0.56	0.70	20.00	4.51	4.27	0.24
9.60	0.80	0.60	0.75	20.20	4.52	4.28	0.23
9.80	0.85	0.64	0.79	20.40	4.53	4.30	0.23
10.00	0.89	0.68	0.83	20.60	4.54	4.31	0.22
10.20	0.94	0.73	0.90	20.80	4.55	4.32	0.22
10.40	0.99	0.78	0.98	21.00	4.57	4.33	0.22

Hydrograph for Subcatchment DA 1: Drainage Area 1 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	4.58	4.34	0.21
21.40	4.59	4.35	0.21
21.60	4.60	4.36	0.20
21.80	4.61	4.37	0.20
22.00	4.62	4.38	0.20
22.20	4.63	4.39	0.19
22.40	4.64	4.40	0.19
22.60	4.65	4.41	0.18
22.80	4.66	4.42	0.18
23.00	4.67	4.43	0.18
23.20	4.68	4.44	0.17
23.40	4.69	4.45	0.17
23.60	4.69	4.46	0.16
23.80	4.70	4.47	0.16
24.00	**4.71**	**4.47**	0.15

Summary for Subcatchment DA 1B: Drainage Area 1B - Bypass

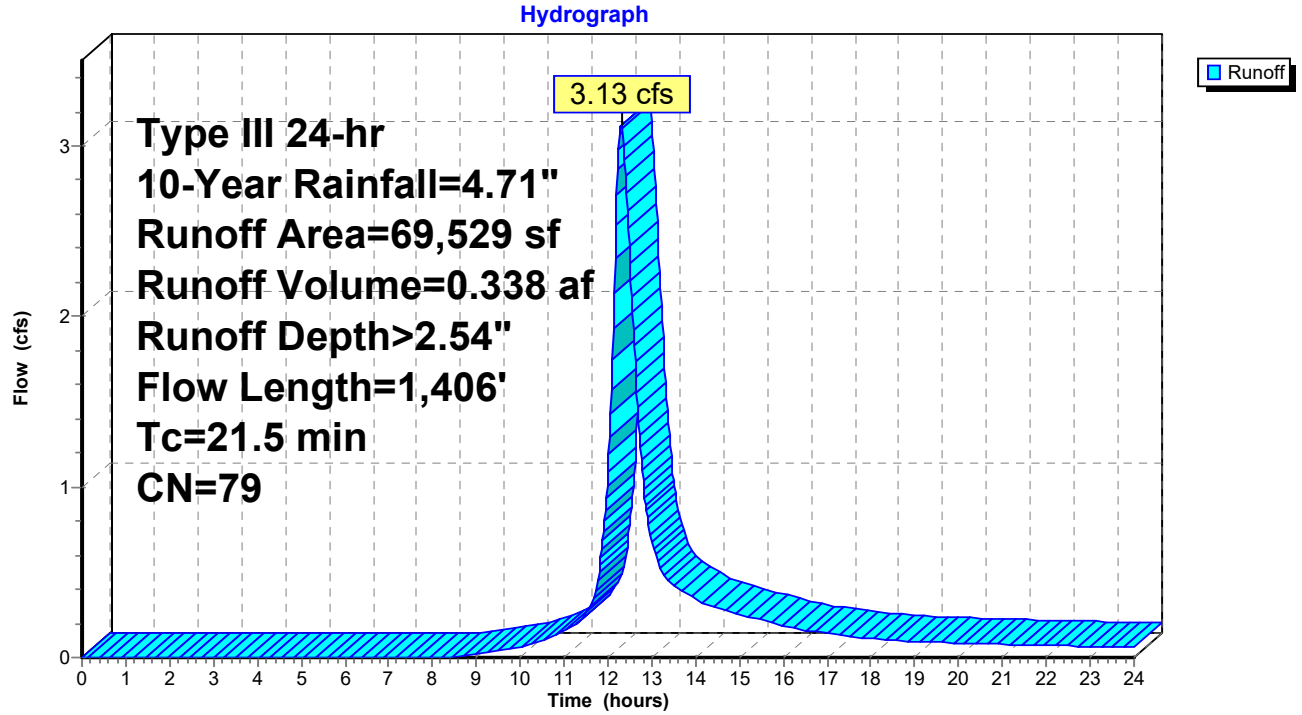
Runoff = 3.13 cfs @ 12.30 hrs, Volume= 0.338 af, Depth> 2.54"
Routed to Link S : POI South

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=4.71"

	Area (sf)	CN	Description
	62,534	80	>75% Grass cover, Good, HSG D
	4,556	61	>75% Grass cover, Good, HSG B
*	2,439	98	Driveway Entrance
	69,529	79	Weighted Average
	67,090		96.49% Pervious Area
	2,439		3.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.8	100	0.0160	0.11		**Sheet Flow, SF** Grass: Dense n= 0.240 P2= 3.11"
1.9	150	0.0340	1.29		**Shallow Concentrated Flow, SCF** Short Grass Pasture Kv= 7.0 fps
3.8	1,156	0.0080	5.10	6.26	**Pipe Channel, Pipe** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
21.5	1,406	Total			

Subcatchment DA 1B: Drainage Area 1B - Bypass



Hydrograph for Subcatchment DA 1B: Drainage Area 1B - Bypass

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.05	0.08	0.11
0.20	0.01	0.00	0.00	10.80	1.11	0.10	0.13
0.40	0.02	0.00	0.00	11.00	1.18	0.13	0.15
0.60	0.03	0.00	0.00	11.20	1.25	0.15	0.18
0.80	0.04	0.00	0.00	11.40	1.35	0.19	0.23
1.00	0.05	0.00	0.00	11.60	1.48	0.25	0.30
1.20	0.06	0.00	0.00	11.80	1.76	0.39	0.50
1.40	0.07	0.00	0.00	12.00	2.35	0.74	1.09
1.60	0.08	0.00	0.00	12.20	2.95	1.15	**2.72**
1.80	0.08	0.00	0.00	12.40	3.23	1.36	**2.82**
2.00	0.09	0.00	0.00	12.60	3.36	1.46	1.83
2.20	0.10	0.00	0.00	12.80	3.46	1.53	1.04
2.40	0.11	0.00	0.00	13.00	3.53	1.59	0.69
2.60	0.12	0.00	0.00	13.20	3.60	1.64	0.52
2.80	0.13	0.00	0.00	13.40	3.66	1.69	0.44
3.00	0.14	0.00	0.00	13.60	3.72	1.74	0.40
3.20	0.16	0.00	0.00	13.80	3.77	1.78	0.37
3.40	0.17	0.00	0.00	14.00	3.82	1.82	0.34
3.60	0.18	0.00	0.00	14.20	3.86	1.85	0.32
3.80	0.19	0.00	0.00	14.40	3.91	1.89	0.30
4.00	0.20	0.00	0.00	14.60	3.95	1.92	0.28
4.20	0.21	0.00	0.00	14.80	3.99	1.95	0.27
4.40	0.23	0.00	0.00	15.00	4.02	1.98	0.25
4.60	0.24	0.00	0.00	15.20	4.06	2.01	0.24
4.80	0.25	0.00	0.00	15.40	4.09	2.04	0.23
5.00	0.27	0.00	0.00	15.60	4.12	2.06	0.21
5.20	0.28	0.00	0.00	15.80	4.15	2.08	0.20
5.40	0.30	0.00	0.00	16.00	4.17	2.10	0.19
5.60	0.31	0.00	0.00	16.20	4.20	2.12	0.17
5.80	0.32	0.00	0.00	16.40	4.22	2.14	0.16
6.00	0.34	0.00	0.00	16.60	4.24	2.16	0.15
6.20	0.35	0.00	0.00	16.80	4.26	2.18	0.15
6.40	0.37	0.00	0.00	17.00	4.28	2.20	0.14
6.60	0.39	0.00	0.00	17.20	4.30	2.21	0.14
6.80	0.41	0.00	0.00	17.40	4.32	2.23	0.13
7.00	0.43	0.00	0.00	17.60	4.34	2.24	0.12
7.20	0.45	0.00	0.00	17.80	4.36	2.26	0.12
7.40	0.47	0.00	0.00	18.00	4.37	2.27	0.11
7.60	0.49	0.00	0.00	18.20	4.39	2.28	0.11
7.80	0.51	0.00	0.00	18.40	4.40	2.29	0.10
8.00	0.54	0.00	0.00	18.60	4.41	2.31	0.10
8.20	0.56	0.00	0.00	18.80	4.43	2.32	0.10
8.40	0.59	0.00	0.00	19.00	4.44	2.33	0.09
8.60	0.62	0.00	0.01	19.20	4.46	2.34	0.09
8.80	0.65	0.01	0.01	19.40	4.47	2.35	0.09
9.00	0.69	0.01	0.02	19.60	4.48	2.36	0.09
9.20	0.72	0.01	0.03	19.80	4.50	2.37	0.09
9.40	0.76	0.02	0.03	20.00	4.51	2.38	0.09
9.60	0.80	0.02	0.04	20.20	4.52	2.39	0.08
9.80	0.85	0.03	0.05	20.40	4.53	2.40	0.08
10.00	0.89	0.04	0.06	20.60	4.54	2.41	0.08
10.20	0.94	0.05	0.08	20.80	4.55	2.42	0.08
10.40	0.99	0.07	0.09	21.00	4.57	2.43	0.08

Hydrograph for Subcatchment DA 1B: Drainage Area 1B - Bypass (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	4.58	2.44	0.08
21.40	4.59	2.45	0.08
21.60	4.60	2.46	0.07
21.80	4.61	2.47	0.07
22.00	4.62	2.48	0.07
22.20	4.63	2.49	0.07
22.40	4.64	2.49	0.07
22.60	4.65	2.50	0.07
22.80	4.66	2.51	0.07
23.00	4.67	2.52	0.06
23.20	4.68	2.53	0.06
23.40	4.69	2.53	0.06
23.60	4.69	2.54	0.06
23.80	4.70	2.55	0.06
24.00	**4.71**	**2.55**	0.06

Summary for Subcatchment DA 2: Drainage Area 2

[47] Hint: Peak is 110% of capacity of segment #1

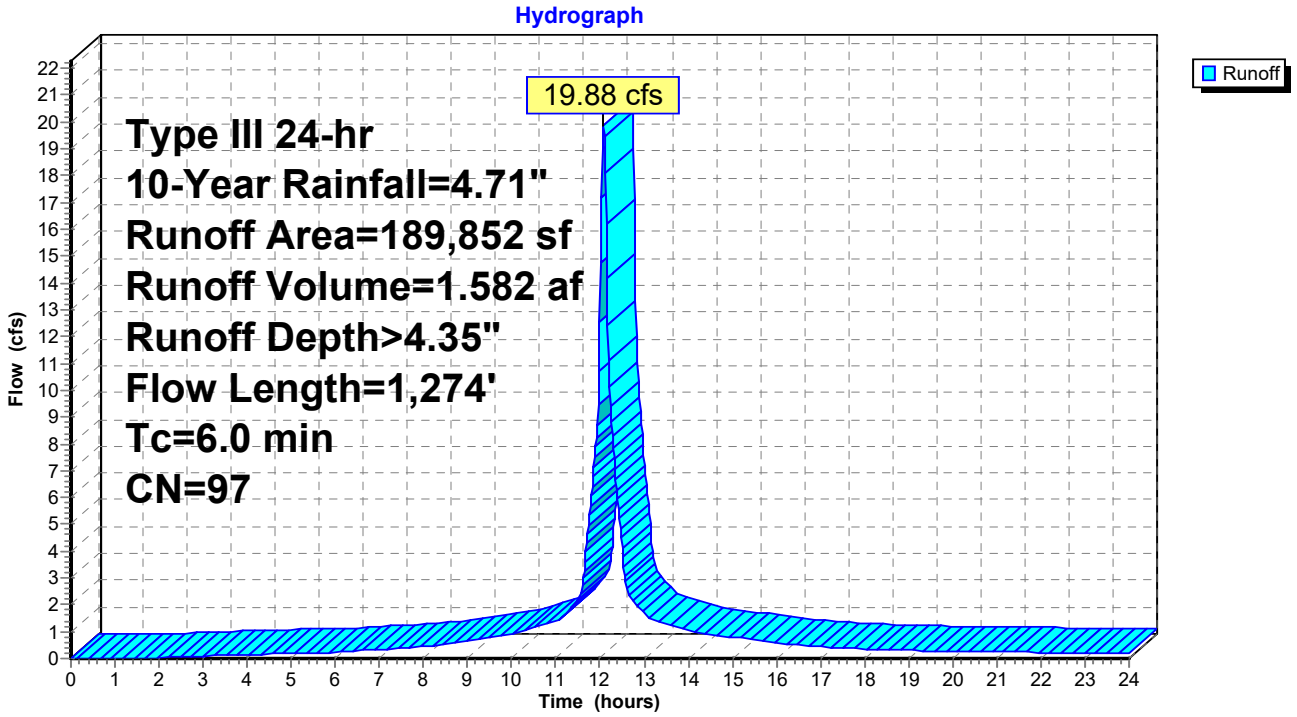
Runoff = 19.88 cfs @ 12.08 hrs, Volume= 1.582 af, Depth> 4.35"
Routed to Pond INF1 : MC-3500 StormTech INFILTRATION 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=4.71"

	Area (sf)	CN	Description
*	184,125	98	Roof, Parking/Drive
	5,727	61	>75% Grass cover, Good, HSG B
	189,852	97	Weighted Average
	5,727		3.02% Pervious Area
	184,125		96.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	1,155	0.0465	14.76	18.11	**Pipe Channel, Avg Run from Roof to CB 20** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.010 PVC, smooth interior
0.3	119	0.0086	7.23	22.73	**Pipe Channel, CB 20 to Infiltration** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Corrugated PP, smooth interior
4.4					**Direct Entry, + Entry to Reach Minimum**
6.0	1,274	Total			

Subcatchment DA 2: Drainage Area 2



Hydrograph for Subcatchment DA 2: Drainage Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.05	0.75	1.19
0.20	0.01	0.00	0.00	10.80	1.11	0.81	1.29
0.40	0.02	0.00	0.00	11.00	1.18	0.87	1.39
0.60	0.03	0.00	0.00	11.20	1.25	0.95	1.64
0.80	0.04	0.00	0.00	11.40	1.35	1.04	2.01
1.00	0.05	0.00	0.00	11.60	1.48	1.16	2.73
1.20	0.06	0.00	0.00	11.80	1.76	1.43	6.07
1.40	0.07	0.00	0.00	12.00	2.35	2.02	**12.52**
1.60	0.08	0.00	0.01	12.20	2.95	2.61	**11.08**
1.80	0.08	0.00	0.02	12.40	3.23	2.89	5.93
2.00	0.09	0.00	0.03	12.60	3.36	3.02	2.66
2.20	0.10	0.01	0.04	12.80	3.46	3.11	2.05
2.40	0.11	0.01	0.05	13.00	3.53	3.19	1.68
2.60	0.12	0.01	0.06	13.20	3.60	3.25	1.45
2.80	0.13	0.01	0.07	13.40	3.66	3.31	1.35
3.00	0.14	0.02	0.09	13.60	3.72	3.37	1.25
3.20	0.16	0.02	0.10	13.80	3.77	3.42	1.15
3.40	0.17	0.03	0.11	14.00	3.82	3.47	1.05
3.60	0.18	0.03	0.12	14.20	3.86	3.52	0.98
3.80	0.19	0.04	0.13	14.40	3.91	3.56	0.94
4.00	0.20	0.04	0.14	14.60	3.95	3.60	0.89
4.20	0.21	0.05	0.15	14.80	3.99	3.64	0.84
4.40	0.23	0.06	0.16	15.00	4.02	3.67	0.79
4.60	0.24	0.07	0.17	15.20	4.06	3.71	0.75
4.80	0.25	0.07	0.18	15.40	4.09	3.74	0.70
5.00	0.27	0.08	0.19	15.60	4.12	3.77	0.65
5.20	0.28	0.09	0.20	15.80	4.15	3.80	0.60
5.40	0.30	0.10	0.21	16.00	4.17	3.82	0.56
5.60	0.31	0.11	0.22	16.20	4.20	3.85	0.52
5.80	0.32	0.12	0.23	16.40	4.22	3.87	0.50
6.00	0.34	0.13	0.23	16.60	4.24	3.89	0.48
6.20	0.35	0.14	0.25	16.80	4.26	3.91	0.46
6.40	0.37	0.15	0.27	17.00	4.28	3.93	0.44
6.60	0.39	0.17	0.29	17.20	4.30	3.95	0.42
6.80	0.41	0.18	0.31	17.40	4.32	3.97	0.40
7.00	0.43	0.20	0.33	17.60	4.34	3.99	0.38
7.20	0.45	0.21	0.35	17.80	4.36	4.00	0.36
7.40	0.47	0.23	0.38	18.00	4.37	4.02	0.34
7.60	0.49	0.25	0.40	18.20	4.39	4.04	0.33
7.80	0.51	0.27	0.42	18.40	4.40	4.05	0.32
8.00	0.54	0.29	0.44	18.60	4.41	4.06	0.31
8.20	0.56	0.31	0.48	18.80	4.43	4.08	0.31
8.40	0.59	0.33	0.53	19.00	4.44	4.09	0.30
8.60	0.62	0.36	0.57	19.20	4.46	4.11	0.30
8.80	0.65	0.39	0.62	19.40	4.47	4.12	0.29
9.00	0.69	0.42	0.67	19.60	4.48	4.13	0.28
9.20	0.72	0.45	0.72	19.80	4.50	4.14	0.28
9.40	0.76	0.49	0.77	20.00	4.51	4.16	0.27
9.60	0.80	0.52	0.82	20.20	4.52	4.17	0.27
9.80	0.85	0.56	0.87	20.40	4.53	4.18	0.26
10.00	0.89	0.60	0.92	20.60	4.54	4.19	0.26
10.20	0.94	0.65	0.99	20.80	4.55	4.20	0.25
10.40	0.99	0.70	1.09	21.00	4.57	4.21	0.25

Hydrograph for Subcatchment DA 2: Drainage Area 2 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	4.58	4.23	0.24
21.40	4.59	4.24	0.24
21.60	4.60	4.25	0.23
21.80	4.61	4.26	0.23
22.00	4.62	4.27	0.22
22.20	4.63	4.28	0.22
22.40	4.64	4.29	0.21
22.60	4.65	4.30	0.21
22.80	4.66	4.31	0.21
23.00	4.67	4.32	0.20
23.20	4.68	4.32	0.20
23.40	4.69	4.33	0.19
23.60	4.69	4.34	0.19
23.80	4.70	4.35	0.18
24.00	**4.71**	**4.36**	0.18

Summary for Subcatchment DA 2B: Drainage Area 2B

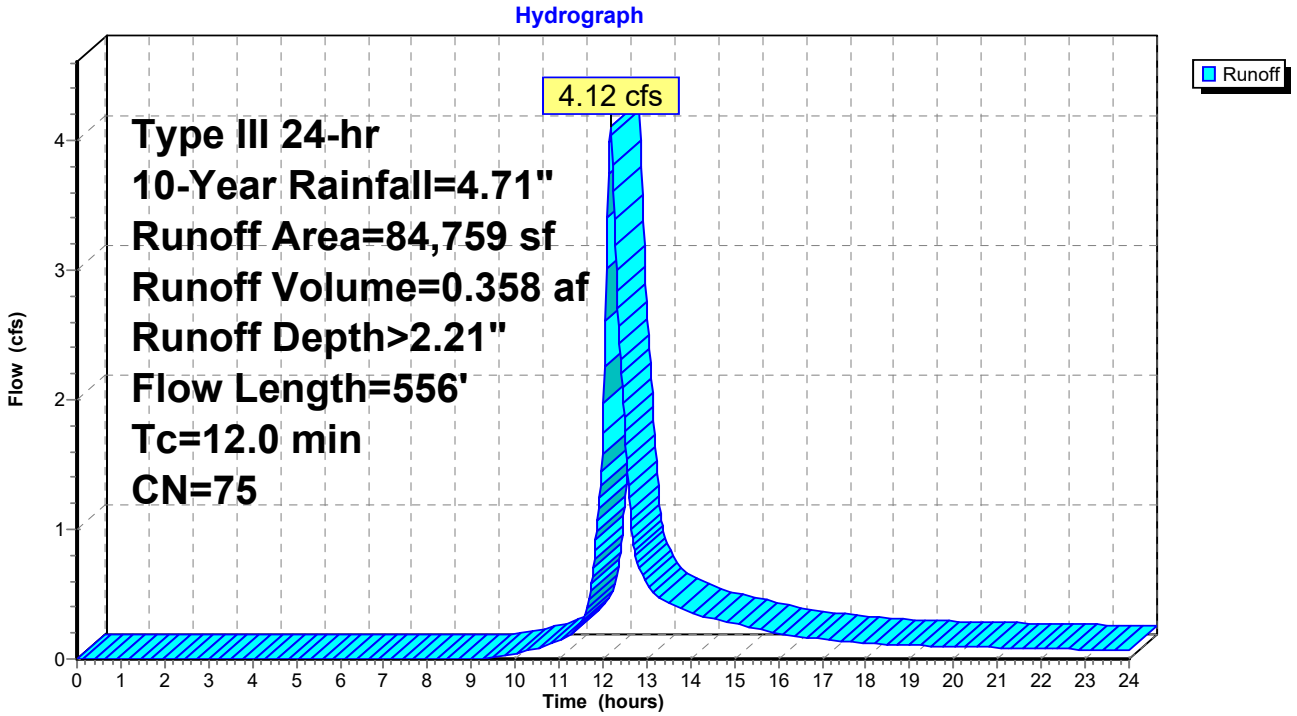
Runoff = 4.12 cfs @ 12.17 hrs, Volume= 0.358 af, Depth> 2.21"
Routed to Pond INF2 : MC-3500 StormTech INFILTRATION 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=4.71"

	Area (sf)	CN	Description
	52,127	61	>75% Grass cover, Good, HSG B
*	32,632	98	Impervious
	84,759	75	Weighted Average
	52,127		61.50% Pervious Area
	32,632		38.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0200	0.17		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.11"
1.9	350	0.0350	3.01		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.2	106	0.0190	7.86	9.65	**Pipe Channel, Channel Flow** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
12.0	556	Total			

Subcatchment DA 2B: Drainage Area 2B



Hydrograph for Subcatchment DA 2B: Drainage Area 2B

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.05	0.04	0.09
0.20	0.01	0.00	0.00	10.80	1.11	0.05	0.12
0.40	0.02	0.00	0.00	11.00	1.18	0.07	0.14
0.60	0.03	0.00	0.00	11.20	1.25	0.09	0.18
0.80	0.04	0.00	0.00	11.40	1.35	0.12	0.24
1.00	0.05	0.00	0.00	11.60	1.48	0.16	0.33
1.20	0.06	0.00	0.00	11.80	1.76	0.27	0.77
1.40	0.07	0.00	0.00	12.00	2.35	0.57	**1.75**
1.60	0.08	0.00	0.00	12.20	2.95	0.93	**4.00**
1.80	0.08	0.00	0.00	12.40	3.23	1.11	2.32
2.00	0.09	0.00	0.00	12.60	3.36	1.20	1.24
2.20	0.10	0.00	0.00	12.80	3.46	1.27	0.73
2.40	0.11	0.00	0.00	13.00	3.53	1.32	0.59
2.60	0.12	0.00	0.00	13.20	3.60	1.37	0.49
2.80	0.13	0.00	0.00	13.40	3.66	1.42	0.45
3.00	0.14	0.00	0.00	13.60	3.72	1.46	0.42
3.20	0.16	0.00	0.00	13.80	3.77	1.50	0.39
3.40	0.17	0.00	0.00	14.00	3.82	1.53	0.36
3.60	0.18	0.00	0.00	14.20	3.86	1.57	0.33
3.80	0.19	0.00	0.00	14.40	3.91	1.60	0.32
4.00	0.20	0.00	0.00	14.60	3.95	1.63	0.30
4.20	0.21	0.00	0.00	14.80	3.99	1.66	0.29
4.40	0.23	0.00	0.00	15.00	4.02	1.68	0.27
4.60	0.24	0.00	0.00	15.20	4.06	1.71	0.26
4.80	0.25	0.00	0.00	15.40	4.09	1.73	0.24
5.00	0.27	0.00	0.00	15.60	4.12	1.76	0.23
5.20	0.28	0.00	0.00	15.80	4.15	1.78	0.21
5.40	0.30	0.00	0.00	16.00	4.17	1.80	0.20
5.60	0.31	0.00	0.00	16.20	4.20	1.82	0.18
5.80	0.32	0.00	0.00	16.40	4.22	1.83	0.18
6.00	0.34	0.00	0.00	16.60	4.24	1.85	0.17
6.20	0.35	0.00	0.00	16.80	4.26	1.87	0.16
6.40	0.37	0.00	0.00	17.00	4.28	1.88	0.16
6.60	0.39	0.00	0.00	17.20	4.30	1.90	0.15
6.80	0.41	0.00	0.00	17.40	4.32	1.91	0.14
7.00	0.43	0.00	0.00	17.60	4.34	1.92	0.14
7.20	0.45	0.00	0.00	17.80	4.36	1.94	0.13
7.40	0.47	0.00	0.00	18.00	4.37	1.95	0.12
7.60	0.49	0.00	0.00	18.20	4.39	1.96	0.12
7.80	0.51	0.00	0.00	18.40	4.40	1.97	0.11
8.00	0.54	0.00	0.00	18.60	4.41	1.98	0.11
8.20	0.56	0.00	0.00	18.80	4.43	1.99	0.11
8.40	0.59	0.00	0.00	19.00	4.44	2.01	0.11
8.60	0.62	0.00	0.00	19.20	4.46	2.02	0.10
8.80	0.65	0.00	0.00	19.40	4.47	2.03	0.10
9.00	0.69	0.00	0.00	19.60	4.48	2.04	0.10
9.20	0.72	0.00	0.00	19.80	4.50	2.05	0.10
9.40	0.76	0.00	0.01	20.00	4.51	2.06	0.10
9.60	0.80	0.01	0.02	20.20	4.52	2.07	0.09
9.80	0.85	0.01	0.03	20.40	4.53	2.08	0.09
10.00	0.89	0.01	0.04	20.60	4.54	2.08	0.09
10.20	0.94	0.02	0.06	20.80	4.55	2.09	0.09
10.40	0.99	0.03	0.07	21.00	4.57	2.10	0.09

Hydrograph for Subcatchment DA 2B: Drainage Area 2B (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	4.58	2.11	0.09
21.40	4.59	2.12	0.08
21.60	4.60	2.13	0.08
21.80	4.61	2.14	0.08
22.00	4.62	2.14	0.08
22.20	4.63	2.15	0.08
22.40	4.64	2.16	0.08
22.60	4.65	2.17	0.08
22.80	4.66	2.18	0.07
23.00	4.67	2.18	0.07
23.20	4.68	2.19	0.07
23.40	4.69	2.20	0.07
23.60	4.69	2.20	0.07
23.80	4.70	2.21	0.07
24.00	**4.71**	**2.22**	0.06

Summary for Subcatchment DA 2C: Drainage Area 2C Bypass

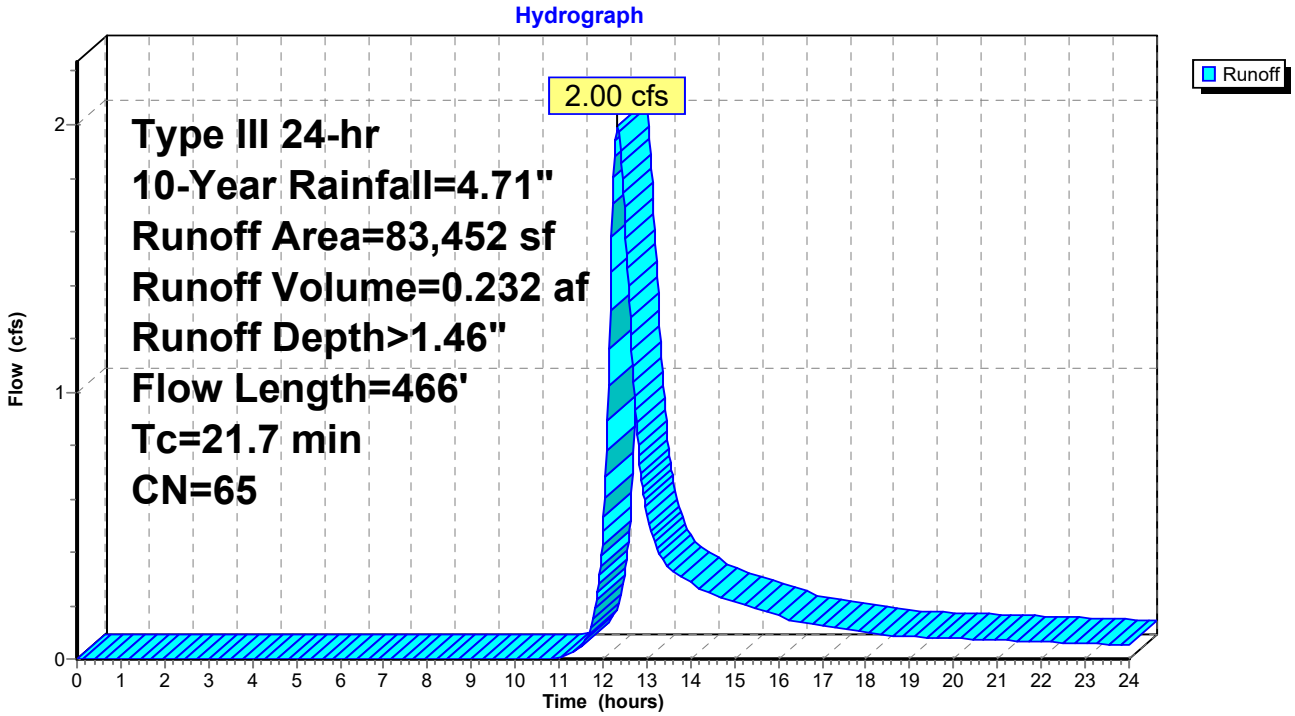
Runoff = 2.00 cfs @ 12.33 hrs, Volume= 0.232 af, Depth> 1.46"
Routed to Link N : POI North

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=4.71"

	Area (sf)	CN	Description
	52,745	61	>75% Grass cover, Good, HSG B
	15,800	80	>75% Grass cover, Good, HSG D
	4,809	77	Woods, Good, HSG D
*	1,308	98	Impervious
	8,790	55	Woods, Good, HSG B
	83,452	65	Weighted Average
	82,144		98.43% Pervious Area
	1,308		1.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0100	0.09		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.11"
2.6	366	0.0220	2.39		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
21.7	466	Total			

Subcatchment DA 2C: Drainage Area 2C Bypass



Hydrograph for Subcatchment DA 2C: Drainage Area 2C Bypass

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.05	0.00	0.00
0.20	0.01	0.00	0.00	10.80	1.11	0.00	0.00
0.40	0.02	0.00	0.00	11.00	1.18	0.00	0.00
0.60	0.03	0.00	0.00	11.20	1.25	0.01	0.01
0.80	0.04	0.00	0.00	11.40	1.35	0.01	0.04
1.00	0.05	0.00	0.00	11.60	1.48	0.03	0.07
1.20	0.06	0.00	0.00	11.80	1.76	0.08	0.16
1.40	0.07	0.00	0.00	12.00	2.35	0.25	0.48
1.60	0.08	0.00	0.00	12.20	2.95	0.48	**1.58**
1.80	0.08	0.00	0.00	12.40	3.23	0.61	**1.90**
2.00	0.09	0.00	0.00	12.60	3.36	0.68	1.34
2.20	0.10	0.00	0.00	12.80	3.46	0.73	0.80
2.40	0.11	0.00	0.00	13.00	3.53	0.77	0.55
2.60	0.12	0.00	0.00	13.20	3.60	0.80	0.42
2.80	0.13	0.00	0.00	13.40	3.66	0.84	0.36
3.00	0.14	0.00	0.00	13.60	3.72	0.87	0.33
3.20	0.16	0.00	0.00	13.80	3.77	0.90	0.31
3.40	0.17	0.00	0.00	14.00	3.82	0.93	0.29
3.60	0.18	0.00	0.00	14.20	3.86	0.95	0.27
3.80	0.19	0.00	0.00	14.40	3.91	0.98	0.25
4.00	0.20	0.00	0.00	14.60	3.95	1.00	0.24
4.20	0.21	0.00	0.00	14.80	3.99	1.02	0.23
4.40	0.23	0.00	0.00	15.00	4.02	1.04	0.22
4.60	0.24	0.00	0.00	15.20	4.06	1.06	0.21
4.80	0.25	0.00	0.00	15.40	4.09	1.08	0.20
5.00	0.27	0.00	0.00	15.60	4.12	1.10	0.18
5.20	0.28	0.00	0.00	15.80	4.15	1.12	0.17
5.40	0.30	0.00	0.00	16.00	4.17	1.13	0.16
5.60	0.31	0.00	0.00	16.20	4.20	1.14	0.15
5.80	0.32	0.00	0.00	16.40	4.22	1.16	0.14
6.00	0.34	0.00	0.00	16.60	4.24	1.17	0.13
6.20	0.35	0.00	0.00	16.80	4.26	1.18	0.13
6.40	0.37	0.00	0.00	17.00	4.28	1.20	0.12
6.60	0.39	0.00	0.00	17.20	4.30	1.21	0.12
6.80	0.41	0.00	0.00	17.40	4.32	1.22	0.11
7.00	0.43	0.00	0.00	17.60	4.34	1.23	0.11
7.20	0.45	0.00	0.00	17.80	4.36	1.24	0.10
7.40	0.47	0.00	0.00	18.00	4.37	1.25	0.10
7.60	0.49	0.00	0.00	18.20	4.39	1.26	0.09
7.80	0.51	0.00	0.00	18.40	4.40	1.27	0.09
8.00	0.54	0.00	0.00	18.60	4.41	1.28	0.09
8.20	0.56	0.00	0.00	18.80	4.43	1.29	0.09
8.40	0.59	0.00	0.00	19.00	4.44	1.29	0.08
8.60	0.62	0.00	0.00	19.20	4.46	1.30	0.08
8.80	0.65	0.00	0.00	19.40	4.47	1.31	0.08
9.00	0.69	0.00	0.00	19.60	4.48	1.32	0.08
9.20	0.72	0.00	0.00	19.80	4.50	1.33	0.08
9.40	0.76	0.00	0.00	20.00	4.51	1.34	0.08
9.60	0.80	0.00	0.00	20.20	4.52	1.34	0.08
9.80	0.85	0.00	0.00	20.40	4.53	1.35	0.07
10.00	0.89	0.00	0.00	20.60	4.54	1.36	0.07
10.20	0.94	0.00	0.00	20.80	4.55	1.36	0.07
10.40	0.99	0.00	0.00	21.00	4.57	1.37	0.07

Hydrograph for Subcatchment DA 2C: Drainage Area 2C Bypass (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	4.58	1.38	0.07
21.40	4.59	1.39	0.07
21.60	4.60	1.39	0.07
21.80	4.61	1.40	0.07
22.00	4.62	1.41	0.06
22.20	4.63	1.41	0.06
22.40	4.64	1.42	0.06
22.60	4.65	1.42	0.06
22.80	4.66	1.43	0.06
23.00	4.67	1.44	0.06
23.20	4.68	1.44	0.06
23.40	4.69	1.45	0.06
23.60	4.69	1.45	0.05
23.80	4.70	1.46	0.05
24.00	**4.71**	**1.46**	0.05

Summary for Subcatchment DA 3: Drainage Area 3 - Bio Direct Entry

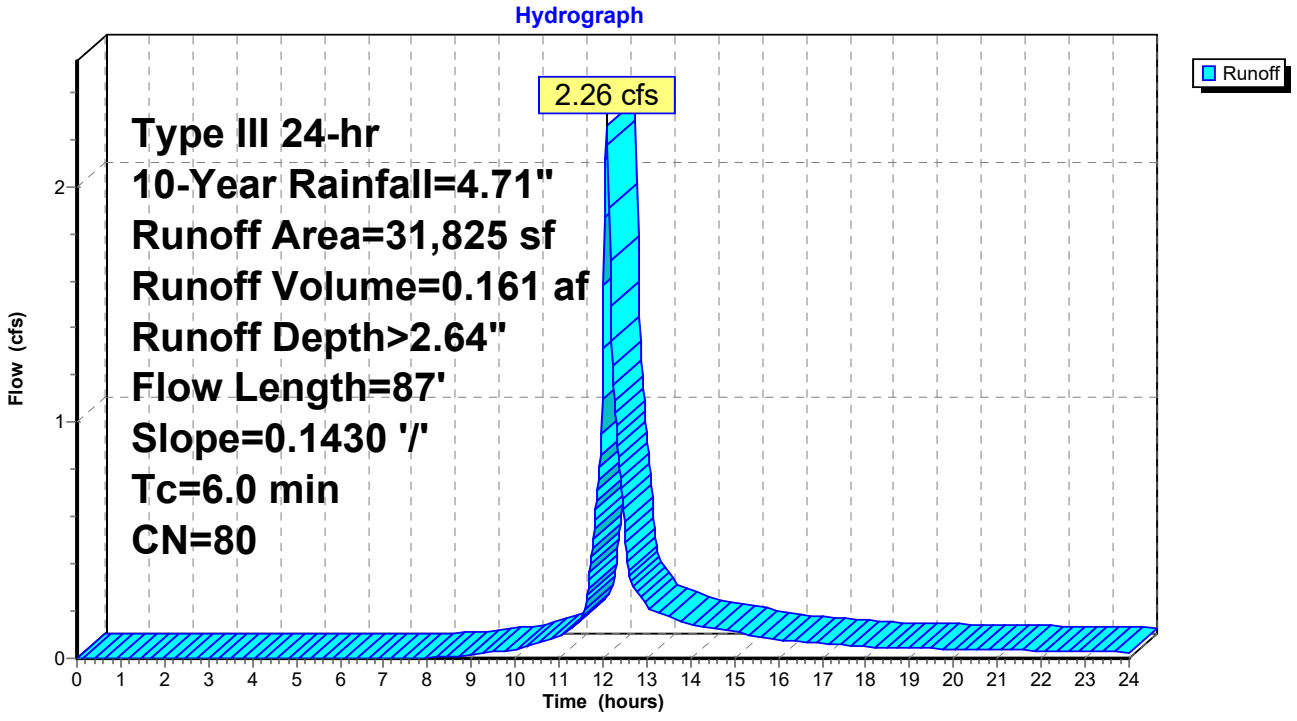
Runoff = 2.26 cfs @ 12.09 hrs, Volume= 0.161 af, Depth> 2.64"
Routed to Pond BIO : BioRetention 1 (South)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=4.71"

Area (sf)	CN	Description
31,825	80	>75% Grass cover, Good, HSG D
31,825		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	87	0.1430	0.36		**Sheet Flow, SF** Grass: Short n= 0.150 P2= 3.11"
2.0					**Direct Entry, + Entry to Reach Minimum**
6.0	87	Total			

Subcatchment DA 3: Drainage Area 3 - Bio Direct Entry



Hydrograph for Subcatchment DA 3: Drainage Area 3 - Bio Direct Entry

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.05	0.10	0.07
0.20	0.01	0.00	0.00	10.80	1.11	0.12	0.08
0.40	0.02	0.00	0.00	11.00	1.18	0.14	0.09
0.60	0.03	0.00	0.00	11.20	1.25	0.18	0.11
0.80	0.04	0.00	0.00	11.40	1.35	0.22	0.15
1.00	0.05	0.00	0.00	11.60	1.48	0.28	0.22
1.20	0.06	0.00	0.00	11.80	1.76	0.42	0.55
1.40	0.07	0.00	0.00	12.00	2.35	0.79	**1.31**
1.60	0.08	0.00	0.00	12.20	2.95	1.21	**1.35**
1.80	0.08	0.00	0.00	12.40	3.23	1.42	0.76
2.00	0.09	0.00	0.00	12.60	3.36	1.53	0.35
2.20	0.10	0.00	0.00	12.80	3.46	1.60	0.27
2.40	0.11	0.00	0.00	13.00	3.53	1.66	0.22
2.60	0.12	0.00	0.00	13.20	3.60	1.72	0.20
2.80	0.13	0.00	0.00	13.40	3.66	1.77	0.18
3.00	0.14	0.00	0.00	13.60	3.72	1.81	0.17
3.20	0.16	0.00	0.00	13.80	3.77	1.85	0.16
3.40	0.17	0.00	0.00	14.00	3.82	1.89	0.14
3.60	0.18	0.00	0.00	14.20	3.86	1.93	0.14
3.80	0.19	0.00	0.00	14.40	3.91	1.97	0.13
4.00	0.20	0.00	0.00	14.60	3.95	2.00	0.12
4.20	0.21	0.00	0.00	14.80	3.99	2.03	0.12
4.40	0.23	0.00	0.00	15.00	4.02	2.06	0.11
4.60	0.24	0.00	0.00	15.20	4.06	2.09	0.10
4.80	0.25	0.00	0.00	15.40	4.09	2.12	0.10
5.00	0.27	0.00	0.00	15.60	4.12	2.14	0.09
5.20	0.28	0.00	0.00	15.80	4.15	2.16	0.08
5.40	0.30	0.00	0.00	16.00	4.17	2.19	0.08
5.60	0.31	0.00	0.00	16.20	4.20	2.21	0.07
5.80	0.32	0.00	0.00	16.40	4.22	2.22	0.07
6.00	0.34	0.00	0.00	16.60	4.24	2.24	0.07
6.20	0.35	0.00	0.00	16.80	4.26	2.26	0.07
6.40	0.37	0.00	0.00	17.00	4.28	2.28	0.06
6.60	0.39	0.00	0.00	17.20	4.30	2.29	0.06
6.80	0.41	0.00	0.00	17.40	4.32	2.31	0.06
7.00	0.43	0.00	0.00	17.60	4.34	2.32	0.05
7.20	0.45	0.00	0.00	17.80	4.36	2.34	0.05
7.40	0.47	0.00	0.00	18.00	4.37	2.35	0.05
7.60	0.49	0.00	0.00	18.20	4.39	2.36	0.05
7.80	0.51	0.00	0.00	18.40	4.40	2.38	0.05
8.00	0.54	0.00	0.00	18.60	4.41	2.39	0.04
8.20	0.56	0.00	0.00	18.80	4.43	2.40	0.04
8.40	0.59	0.00	0.01	19.00	4.44	2.41	0.04
8.60	0.62	0.01	0.01	19.20	4.46	2.42	0.04
8.80	0.65	0.01	0.01	19.40	4.47	2.44	0.04
9.00	0.69	0.01	0.02	19.60	4.48	2.45	0.04
9.20	0.72	0.02	0.02	19.80	4.50	2.46	0.04
9.40	0.76	0.02	0.02	20.00	4.51	2.47	0.04
9.60	0.80	0.03	0.03	20.20	4.52	2.48	0.04
9.80	0.85	0.04	0.03	20.40	4.53	2.49	0.04
10.00	0.89	0.05	0.04	20.60	4.54	2.50	0.04
10.20	0.94	0.07	0.05	20.80	4.55	2.51	0.04
10.40	0.99	0.08	0.06	21.00	4.57	2.52	0.04

Hydrograph for Subcatchment DA 3: Drainage Area 3 - Bio Direct Entry (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	4.58	2.53	0.03
21.40	4.59	2.54	0.03
21.60	4.60	2.55	0.03
21.80	4.61	2.55	0.03
22.00	4.62	2.56	0.03
22.20	4.63	2.57	0.03
22.40	4.64	2.58	0.03
22.60	4.65	2.59	0.03
22.80	4.66	2.60	0.03
23.00	4.67	2.60	0.03
23.20	4.68	2.61	0.03
23.40	4.69	2.62	0.03
23.60	4.69	2.63	0.03
23.80	4.70	2.63	0.03
24.00	**4.71**	**2.64**	0.03

Summary for Subcatchment DA 4: Drainage Area 4

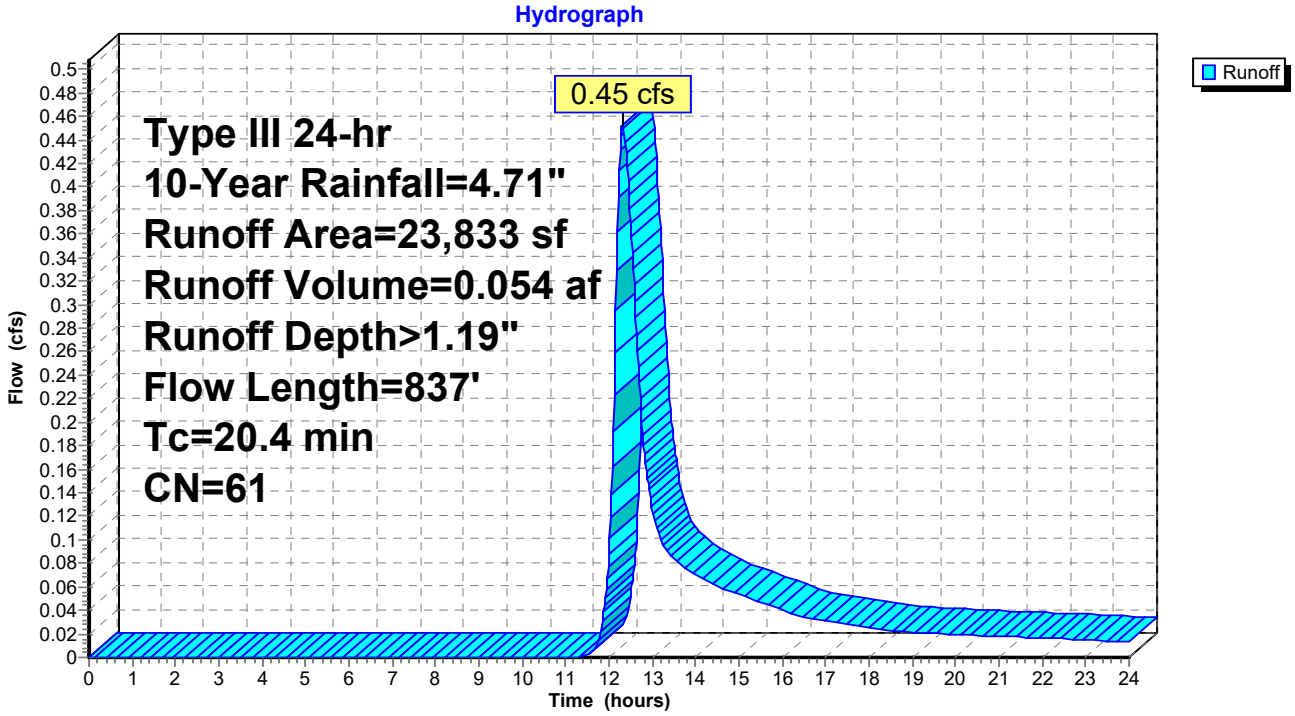
Runoff = 0.45 cfs @ 12.32 hrs, Volume= 0.054 af, Depth> 1.19"
Routed to Pond DET2 : MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=4.71"

Area (sf)	CN	Description
23,833	61	>75% Grass cover, Good, HSG B
23,833		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.3	100	0.0050	0.10		**Sheet Flow, SF** Grass: Short n= 0.150 P2= 3.11"
2.5	413	0.0290	2.74		**Shallow Concentrated Flow, Grass SCF** Unpaved Kv= 16.1 fps
0.6	324	0.0250	9.02	11.06	**Pipe Channel, Pipe Flow** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
20.4	837	Total			

Subcatchment DA 4: Drainage Area 4



Hydrograph for Subcatchment DA 4: Drainage Area 4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.05	0.00	0.00
0.20	0.01	0.00	0.00	10.80	1.11	0.00	0.00
0.40	0.02	0.00	0.00	11.00	1.18	0.00	0.00
0.60	0.03	0.00	0.00	11.20	1.25	0.00	0.00
0.80	0.04	0.00	0.00	11.40	1.35	0.00	0.00
1.00	0.05	0.00	0.00	11.60	1.48	0.01	0.00
1.20	0.06	0.00	0.00	11.80	1.76	0.03	0.02
1.40	0.07	0.00	0.00	12.00	2.35	0.16	0.09
1.60	0.08	0.00	0.00	12.20	2.95	0.35	**0.36**
1.80	0.08	0.00	0.00	12.40	3.23	0.46	**0.43**
2.00	0.09	0.00	0.00	12.60	3.36	0.51	0.30
2.20	0.10	0.00	0.00	12.80	3.46	0.55	0.18
2.40	0.11	0.00	0.00	13.00	3.53	0.59	0.13
2.60	0.12	0.00	0.00	13.20	3.60	0.62	0.10
2.80	0.13	0.00	0.00	13.40	3.66	0.65	0.09
3.00	0.14	0.00	0.00	13.60	3.72	0.67	0.08
3.20	0.16	0.00	0.00	13.80	3.77	0.70	0.08
3.40	0.17	0.00	0.00	14.00	3.82	0.72	0.07
3.60	0.18	0.00	0.00	14.20	3.86	0.74	0.07
3.80	0.19	0.00	0.00	14.40	3.91	0.77	0.06
4.00	0.20	0.00	0.00	14.60	3.95	0.79	0.06
4.20	0.21	0.00	0.00	14.80	3.99	0.81	0.06
4.40	0.23	0.00	0.00	15.00	4.02	0.82	0.05
4.60	0.24	0.00	0.00	15.20	4.06	0.84	0.05
4.80	0.25	0.00	0.00	15.40	4.09	0.86	0.05
5.00	0.27	0.00	0.00	15.60	4.12	0.87	0.05
5.20	0.28	0.00	0.00	15.80	4.15	0.89	0.04
5.40	0.30	0.00	0.00	16.00	4.17	0.90	0.04
5.60	0.31	0.00	0.00	16.20	4.20	0.91	0.04
5.80	0.32	0.00	0.00	16.40	4.22	0.93	0.04
6.00	0.34	0.00	0.00	16.60	4.24	0.94	0.03
6.20	0.35	0.00	0.00	16.80	4.26	0.95	0.03
6.40	0.37	0.00	0.00	17.00	4.28	0.96	0.03
6.60	0.39	0.00	0.00	17.20	4.30	0.97	0.03
6.80	0.41	0.00	0.00	17.40	4.32	0.98	0.03
7.00	0.43	0.00	0.00	17.60	4.34	0.99	0.03
7.20	0.45	0.00	0.00	17.80	4.36	1.00	0.03
7.40	0.47	0.00	0.00	18.00	4.37	1.01	0.02
7.60	0.49	0.00	0.00	18.20	4.39	1.02	0.02
7.80	0.51	0.00	0.00	18.40	4.40	1.02	0.02
8.00	0.54	0.00	0.00	18.60	4.41	1.03	0.02
8.20	0.56	0.00	0.00	18.80	4.43	1.04	0.02
8.40	0.59	0.00	0.00	19.00	4.44	1.05	0.02
8.60	0.62	0.00	0.00	19.20	4.46	1.05	0.02
8.80	0.65	0.00	0.00	19.40	4.47	1.06	0.02
9.00	0.69	0.00	0.00	19.60	4.48	1.07	0.02
9.20	0.72	0.00	0.00	19.80	4.50	1.08	0.02
9.40	0.76	0.00	0.00	20.00	4.51	1.08	0.02
9.60	0.80	0.00	0.00	20.20	4.52	1.09	0.02
9.80	0.85	0.00	0.00	20.40	4.53	1.10	0.02
10.00	0.89	0.00	0.00	20.60	4.54	1.10	0.02
10.20	0.94	0.00	0.00	20.80	4.55	1.11	0.02
10.40	0.99	0.00	0.00	21.00	4.57	1.12	0.02

Hydrograph for Subcatchment DA 4: Drainage Area 4 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	4.58	1.12	0.02
21.40	4.59	1.13	0.02
21.60	4.60	1.13	0.02
21.80	4.61	1.14	0.02
22.00	4.62	1.15	0.02
22.20	4.63	1.15	0.02
22.40	4.64	1.16	0.02
22.60	4.65	1.16	0.02
22.80	4.66	1.17	0.02
23.00	4.67	1.17	0.01
23.20	4.68	1.18	0.01
23.40	4.69	1.18	0.01
23.60	4.69	1.19	0.01
23.80	4.70	1.19	0.01
24.00	**4.71**	**1.20**	0.01

Summary for Subcatchment OFF1: Offsite Drainage Area 1

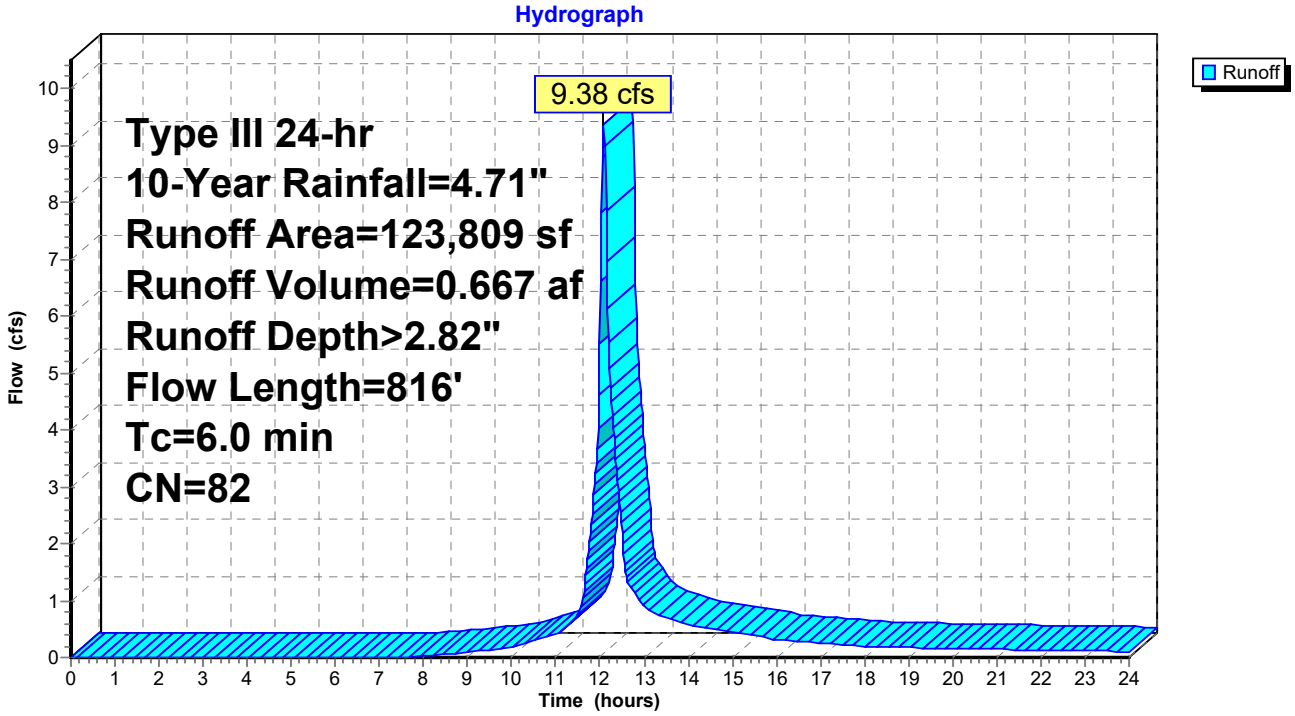
Runoff = 9.38 cfs @ 12.09 hrs, Volume= 0.667 af, Depth> 2.82"
Routed to Pond DET2 : MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=4.71"

	Area (sf)	CN	Description
	52,228	61	>75% Grass cover, Good, HSG B
*	71,581	98	Impervious Surfaces
	123,809	82	Weighted Average
	52,228		42.18% Pervious Area
	71,581		57.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	345	0.0230	3.08		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.4	471	0.0526	17.89	56.21	**Pipe Channel, 24" Pipe from Jehova Site to onsite detention** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
3.7					**Direct Entry, + Entry to Reach Minimum**
6.0	816	Total			

Subcatchment OFF1: Offsite Drainage Area 1



Hydrograph for Subcatchment OFF1: Offsite Drainage Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.05	0.13	0.31
0.20	0.01	0.00	0.00	10.80	1.11	0.16	0.36
0.40	0.02	0.00	0.00	11.00	1.18	0.19	0.41
0.60	0.03	0.00	0.00	11.20	1.25	0.22	0.51
0.80	0.04	0.00	0.00	11.40	1.35	0.27	0.66
1.00	0.05	0.00	0.00	11.60	1.48	0.34	0.96
1.20	0.06	0.00	0.00	11.80	1.76	0.50	2.35
1.40	0.07	0.00	0.00	12.00	2.35	0.89	**5.51**
1.60	0.08	0.00	0.00	12.20	2.95	1.34	**5.53**
1.80	0.08	0.00	0.00	12.40	3.23	1.56	3.10
2.00	0.09	0.00	0.00	12.60	3.36	1.67	1.42
2.20	0.10	0.00	0.00	12.80	3.46	1.75	1.11
2.40	0.11	0.00	0.00	13.00	3.53	1.81	0.91
2.60	0.12	0.00	0.00	13.20	3.60	1.86	0.79
2.80	0.13	0.00	0.00	13.40	3.66	1.92	0.74
3.00	0.14	0.00	0.00	13.60	3.72	1.96	0.69
3.20	0.16	0.00	0.00	13.80	3.77	2.01	0.64
3.40	0.17	0.00	0.00	14.00	3.82	2.05	0.58
3.60	0.18	0.00	0.00	14.20	3.86	2.09	0.55
3.80	0.19	0.00	0.00	14.40	3.91	2.12	0.52
4.00	0.20	0.00	0.00	14.60	3.95	2.16	0.50
4.20	0.21	0.00	0.00	14.80	3.99	2.19	0.47
4.40	0.23	0.00	0.00	15.00	4.02	2.22	0.45
4.60	0.24	0.00	0.00	15.20	4.06	2.25	0.42
4.80	0.25	0.00	0.00	15.40	4.09	2.28	0.39
5.00	0.27	0.00	0.00	15.60	4.12	2.31	0.37
5.20	0.28	0.00	0.00	15.80	4.15	2.33	0.34
5.40	0.30	0.00	0.00	16.00	4.17	2.35	0.32
5.60	0.31	0.00	0.00	16.20	4.20	2.37	0.30
5.80	0.32	0.00	0.00	16.40	4.22	2.39	0.29
6.00	0.34	0.00	0.00	16.60	4.24	2.41	0.27
6.20	0.35	0.00	0.00	16.80	4.26	2.43	0.26
6.40	0.37	0.00	0.00	17.00	4.28	2.45	0.25
6.60	0.39	0.00	0.00	17.20	4.30	2.46	0.24
6.80	0.41	0.00	0.00	17.40	4.32	2.48	0.23
7.00	0.43	0.00	0.00	17.60	4.34	2.50	0.22
7.20	0.45	0.00	0.00	17.80	4.36	2.51	0.21
7.40	0.47	0.00	0.01	18.00	4.37	2.52	0.19
7.60	0.49	0.00	0.01	18.20	4.39	2.54	0.19
7.80	0.51	0.00	0.02	18.40	4.40	2.55	0.18
8.00	0.54	0.00	0.03	18.60	4.41	2.56	0.18
8.20	0.56	0.01	0.03	18.80	4.43	2.57	0.18
8.40	0.59	0.01	0.05	19.00	4.44	2.59	0.17
8.60	0.62	0.01	0.06	19.20	4.46	2.60	0.17
8.80	0.65	0.02	0.07	19.40	4.47	2.61	0.17
9.00	0.69	0.03	0.09	19.60	4.48	2.62	0.16
9.20	0.72	0.03	0.11	19.80	4.50	2.63	0.16
9.40	0.76	0.04	0.13	20.00	4.51	2.64	0.16
9.60	0.80	0.05	0.15	20.20	4.52	2.65	0.15
9.80	0.85	0.06	0.17	20.40	4.53	2.66	0.15
10.00	0.89	0.08	0.19	20.60	4.54	2.67	0.15
10.20	0.94	0.09	0.23	20.80	4.55	2.68	0.14
10.40	0.99	0.11	0.27	21.00	4.57	2.69	0.14

Hydrograph for Subcatchment OFF1: Offsite Drainage Area 1 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	4.58	2.70	0.14
21.40	4.59	2.71	0.14
21.60	4.60	2.72	0.13
21.80	4.61	2.73	0.13
22.00	4.62	2.74	0.13
22.20	4.63	2.75	0.13
22.40	4.64	2.76	0.12
22.60	4.65	2.77	0.12
22.80	4.66	2.78	0.12
23.00	4.67	2.78	0.12
23.20	4.68	2.79	0.11
23.40	4.69	2.80	0.11
23.60	4.69	2.81	0.11
23.80	4.70	2.81	0.11
24.00	**4.71**	**2.82**	0.10

Summary for Subcatchment OFF2: Offsite Drainage Area 2

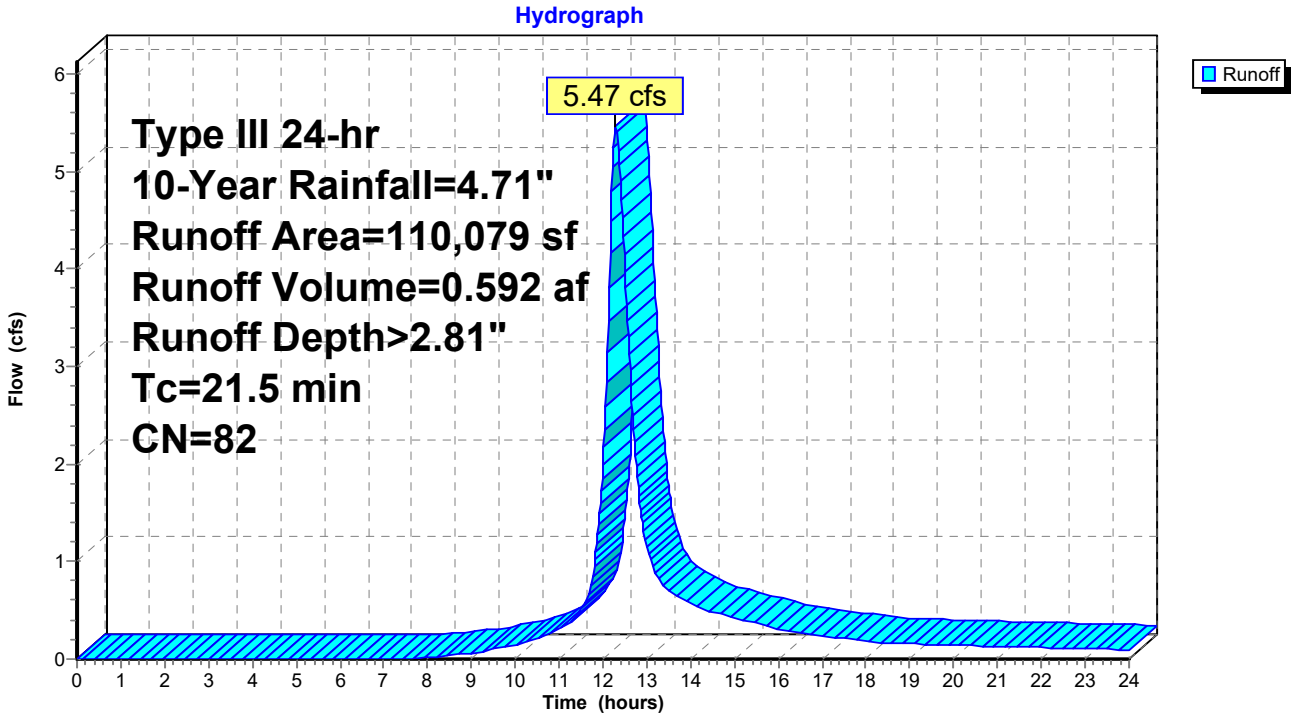
Runoff = 5.47 cfs @ 12.30 hrs, Volume= 0.592 af, Depth> 2.81"
Routed to Link S : POI South

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=4.71"

	Area (sf)	CN	Description
	100,377	80	>75% Grass cover, Good, HSG D
*	9,702	98	Impervious Surfaces
	110,079	82	Weighted Average
	100,377		91.19% Pervious Area
	9,702		8.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.5					**Direct Entry, Match DA 1B Watershed**

Subcatchment OFF2: Offsite Drainage Area 2



Hydrograph for Subcatchment OFF2: Offsite Drainage Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.05	0.13	0.23
0.20	0.01	0.00	0.00	10.80	1.11	0.16	0.27
0.40	0.02	0.00	0.00	11.00	1.18	0.19	0.31
0.60	0.03	0.00	0.00	11.20	1.25	0.22	0.36
0.80	0.04	0.00	0.00	11.40	1.35	0.27	0.44
1.00	0.05	0.00	0.00	11.60	1.48	0.34	0.57
1.20	0.06	0.00	0.00	11.80	1.76	0.50	0.95
1.40	0.07	0.00	0.00	12.00	2.35	0.89	2.00
1.60	0.08	0.00	0.00	12.20	2.95	1.34	**4.80**
1.80	0.08	0.00	0.00	12.40	3.23	1.56	**4.90**
2.00	0.09	0.00	0.00	12.60	3.36	1.67	3.13
2.20	0.10	0.00	0.00	12.80	3.46	1.75	1.77
2.40	0.11	0.00	0.00	13.00	3.53	1.81	1.16
2.60	0.12	0.00	0.00	13.20	3.60	1.86	0.88
2.80	0.13	0.00	0.00	13.40	3.66	1.92	0.74
3.00	0.14	0.00	0.00	13.60	3.72	1.96	0.67
3.20	0.16	0.00	0.00	13.80	3.77	2.01	0.62
3.40	0.17	0.00	0.00	14.00	3.82	2.05	0.57
3.60	0.18	0.00	0.00	14.20	3.86	2.09	0.53
3.80	0.19	0.00	0.00	14.40	3.91	2.12	0.49
4.00	0.20	0.00	0.00	14.60	3.95	2.16	0.47
4.20	0.21	0.00	0.00	14.80	3.99	2.19	0.45
4.40	0.23	0.00	0.00	15.00	4.02	2.22	0.42
4.60	0.24	0.00	0.00	15.20	4.06	2.25	0.40
4.80	0.25	0.00	0.00	15.40	4.09	2.28	0.38
5.00	0.27	0.00	0.00	15.60	4.12	2.31	0.35
5.20	0.28	0.00	0.00	15.80	4.15	2.33	0.33
5.40	0.30	0.00	0.00	16.00	4.17	2.35	0.31
5.60	0.31	0.00	0.00	16.20	4.20	2.37	0.29
5.80	0.32	0.00	0.00	16.40	4.22	2.39	0.27
6.00	0.34	0.00	0.00	16.60	4.24	2.41	0.26
6.20	0.35	0.00	0.00	16.80	4.26	2.43	0.25
6.40	0.37	0.00	0.00	17.00	4.28	2.45	0.24
6.60	0.39	0.00	0.00	17.20	4.30	2.46	0.23
6.80	0.41	0.00	0.00	17.40	4.32	2.48	0.22
7.00	0.43	0.00	0.00	17.60	4.34	2.50	0.21
7.20	0.45	0.00	0.00	17.80	4.36	2.51	0.19
7.40	0.47	0.00	0.00	18.00	4.37	2.52	0.18
7.60	0.49	0.00	0.00	18.20	4.39	2.54	0.17
7.80	0.51	0.00	0.01	18.40	4.40	2.55	0.17
8.00	0.54	0.00	0.02	18.60	4.41	2.56	0.16
8.20	0.56	0.01	0.02	18.80	4.43	2.57	0.16
8.40	0.59	0.01	0.03	19.00	4.44	2.59	0.16
8.60	0.62	0.01	0.04	19.20	4.46	2.60	0.15
8.80	0.65	0.02	0.05	19.40	4.47	2.61	0.15
9.00	0.69	0.03	0.06	19.60	4.48	2.62	0.15
9.20	0.72	0.03	0.08	19.80	4.50	2.63	0.15
9.40	0.76	0.04	0.09	20.00	4.51	2.64	0.14
9.60	0.80	0.05	0.11	20.20	4.52	2.65	0.14
9.80	0.85	0.06	0.13	20.40	4.53	2.66	0.14
10.00	0.89	0.08	0.15	20.60	4.54	2.67	0.13
10.20	0.94	0.09	0.17	20.80	4.55	2.68	0.13
10.40	0.99	0.11	0.20	21.00	4.57	2.69	0.13

Hydrograph for Subcatchment OFF2: Offsite Drainage Area 2 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	4.58	2.70	0.13
21.40	4.59	2.71	0.12
21.60	4.60	2.72	0.12
21.80	4.61	2.73	0.12
22.00	4.62	2.74	0.12
22.20	4.63	2.75	0.12
22.40	4.64	2.76	0.11
22.60	4.65	2.77	0.11
22.80	4.66	2.78	0.11
23.00	4.67	2.78	0.11
23.20	4.68	2.79	0.10
23.40	4.69	2.80	0.10
23.60	4.69	2.81	0.10
23.80	4.70	2.81	0.10
24.00	**4.71**	**2.82**	0.09

Summary for Subcatchment OFF3: Offsite Drainage Area 3

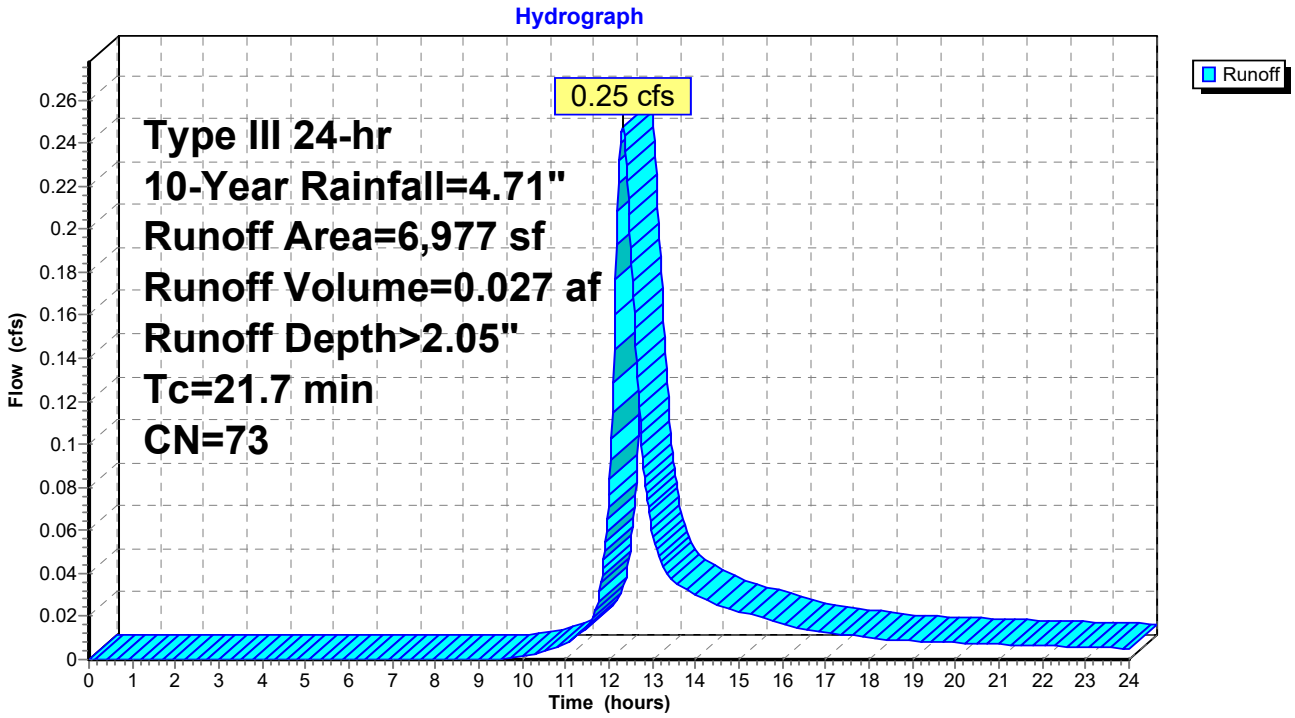
Runoff = 0.25 cfs @ 12.31 hrs, Volume= 0.027 af, Depth> 2.05"
Routed to Link N : POI North

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-Year Rainfall=4.71"

Area (sf)	CN	Description
2,502	61	>75% Grass cover, Good, HSG B
4,475	80	>75% Grass cover, Good, HSG D
6,977	73	Weighted Average
6,977		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.7					**Direct Entry, Match DA 3 Watershed**

Subcatchment OFF3: Offsite Drainage Area 3



Hydrograph for Subcatchment OFF3: Offsite Drainage Area 3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.05	0.02	0.00
0.20	0.01	0.00	0.00	10.80	1.11	0.03	0.01
0.40	0.02	0.00	0.00	11.00	1.18	0.05	0.01
0.60	0.03	0.00	0.00	11.20	1.25	0.06	0.01
0.80	0.04	0.00	0.00	11.40	1.35	0.09	0.01
1.00	0.05	0.00	0.00	11.60	1.48	0.12	0.02
1.20	0.06	0.00	0.00	11.80	1.76	0.22	0.03
1.40	0.07	0.00	0.00	12.00	2.35	0.49	0.08
1.60	0.08	0.00	0.00	12.20	2.95	0.83	**0.21**
1.80	0.08	0.00	0.00	12.40	3.23	1.00	**0.23**
2.00	0.09	0.00	0.00	12.60	3.36	1.09	0.15
2.20	0.10	0.00	0.00	12.80	3.46	1.15	0.09
2.40	0.11	0.00	0.00	13.00	3.53	1.20	0.06
2.60	0.12	0.00	0.00	13.20	3.60	1.25	0.05
2.80	0.13	0.00	0.00	13.40	3.66	1.29	0.04
3.00	0.14	0.00	0.00	13.60	3.72	1.33	0.03
3.20	0.16	0.00	0.00	13.80	3.77	1.37	0.03
3.40	0.17	0.00	0.00	14.00	3.82	1.40	0.03
3.60	0.18	0.00	0.00	14.20	3.86	1.43	0.03
3.80	0.19	0.00	0.00	14.40	3.91	1.46	0.03
4.00	0.20	0.00	0.00	14.60	3.95	1.49	0.02
4.20	0.21	0.00	0.00	14.80	3.99	1.52	0.02
4.40	0.23	0.00	0.00	15.00	4.02	1.54	0.02
4.60	0.24	0.00	0.00	15.20	4.06	1.57	0.02
4.80	0.25	0.00	0.00	15.40	4.09	1.59	0.02
5.00	0.27	0.00	0.00	15.60	4.12	1.61	0.02
5.20	0.28	0.00	0.00	15.80	4.15	1.63	0.02
5.40	0.30	0.00	0.00	16.00	4.17	1.65	0.02
5.60	0.31	0.00	0.00	16.20	4.20	1.67	0.02
5.80	0.32	0.00	0.00	16.40	4.22	1.69	0.01
6.00	0.34	0.00	0.00	16.60	4.24	1.70	0.01
6.20	0.35	0.00	0.00	16.80	4.26	1.72	0.01
6.40	0.37	0.00	0.00	17.00	4.28	1.73	0.01
6.60	0.39	0.00	0.00	17.20	4.30	1.75	0.01
6.80	0.41	0.00	0.00	17.40	4.32	1.76	0.01
7.00	0.43	0.00	0.00	17.60	4.34	1.78	0.01
7.20	0.45	0.00	0.00	17.80	4.36	1.79	0.01
7.40	0.47	0.00	0.00	18.00	4.37	1.80	0.01
7.60	0.49	0.00	0.00	18.20	4.39	1.81	0.01
7.80	0.51	0.00	0.00	18.40	4.40	1.82	0.01
8.00	0.54	0.00	0.00	18.60	4.41	1.83	0.01
8.20	0.56	0.00	0.00	18.80	4.43	1.84	0.01
8.40	0.59	0.00	0.00	19.00	4.44	1.85	0.01
8.60	0.62	0.00	0.00	19.20	4.46	1.86	0.01
8.80	0.65	0.00	0.00	19.40	4.47	1.87	0.01
9.00	0.69	0.00	0.00	19.60	4.48	1.88	0.01
9.20	0.72	0.00	0.00	19.80	4.50	1.89	0.01
9.40	0.76	0.00	0.00	20.00	4.51	1.90	0.01
9.60	0.80	0.00	0.00	20.20	4.52	1.91	0.01
9.80	0.85	0.00	0.00	20.40	4.53	1.92	0.01
10.00	0.89	0.01	0.00	20.60	4.54	1.93	0.01
10.20	0.94	0.01	0.00	20.80	4.55	1.94	0.01
10.40	0.99	0.02	0.00	21.00	4.57	1.95	0.01

Hydrograph for Subcatchment OFF3: Offsite Drainage Area 3 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	4.58	1.95	0.01
21.40	4.59	1.96	0.01
21.60	4.60	1.97	0.01
21.80	4.61	1.98	0.01
22.00	4.62	1.99	0.01
22.20	4.63	1.99	0.01
22.40	4.64	2.00	0.01
22.60	4.65	2.01	0.01
22.80	4.66	2.02	0.01
23.00	4.67	2.02	0.01
23.20	4.68	2.03	0.01
23.40	4.69	2.04	0.01
23.60	4.69	2.04	0.01
23.80	4.70	2.05	0.01
24.00	**4.71**	**2.06**	0.01

Summary for Pond BIO: BioRetention 1 (South)

Inflow Area = 4.529 ac, 82.25% Impervious, Inflow Depth > 2.20" for 10-Year event
Inflow = 3.41 cfs @ 12.09 hrs, Volume= 0.832 af
Outflow = 0.99 cfs @ 12.64 hrs, Volume= 0.539 af, Atten= 71%, Lag= 33.2 min
Primary = 0.99 cfs @ 12.64 hrs, Volume= 0.539 af
Routed to Link S : POI South

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 299.74' @ 12.64 hrs Surf.Area= 19,941 sf Storage= 14,007 cf

Plug-Flow detention time= 279.4 min calculated for 0.538 af (65% of inflow)
Center-of-Mass det. time= 119.0 min (901.3 - 782.3)

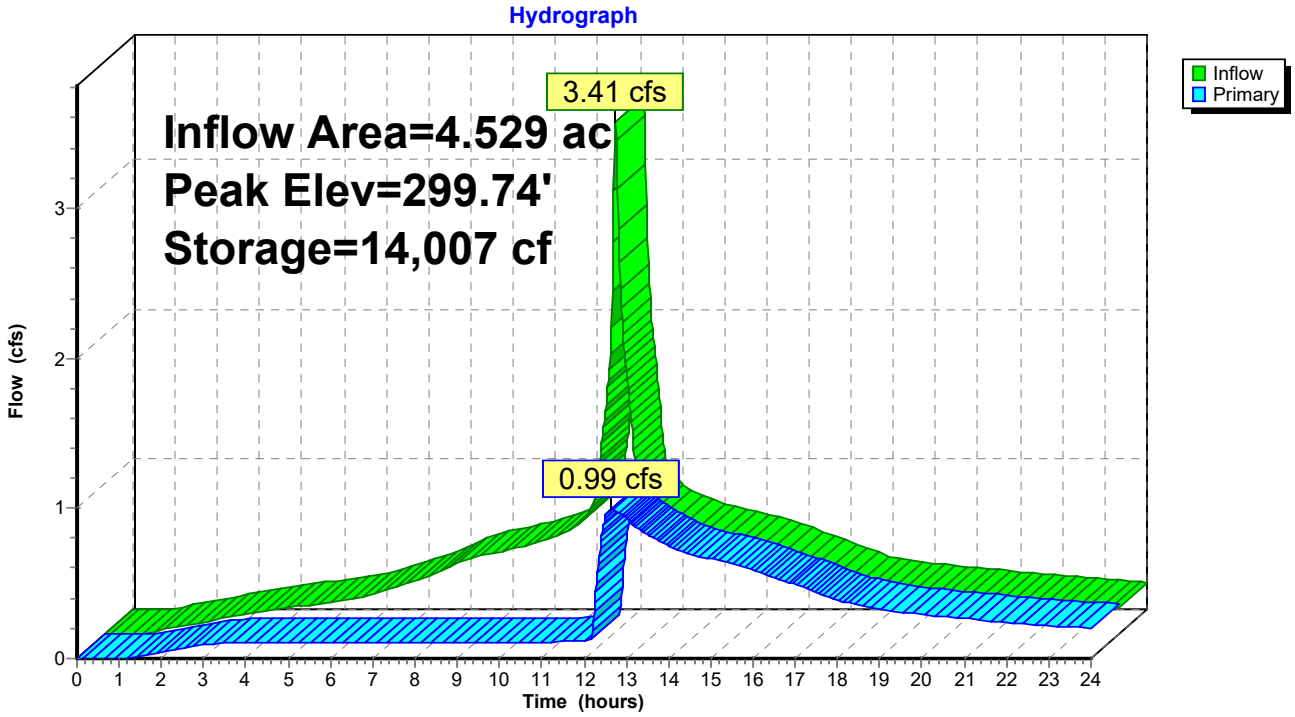
Volume	Invert	Avail.Storage	Storage Description
#1	299.00'	19,296 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
299.00	17,947	0	0
300.00	20,644	19,296	19,296

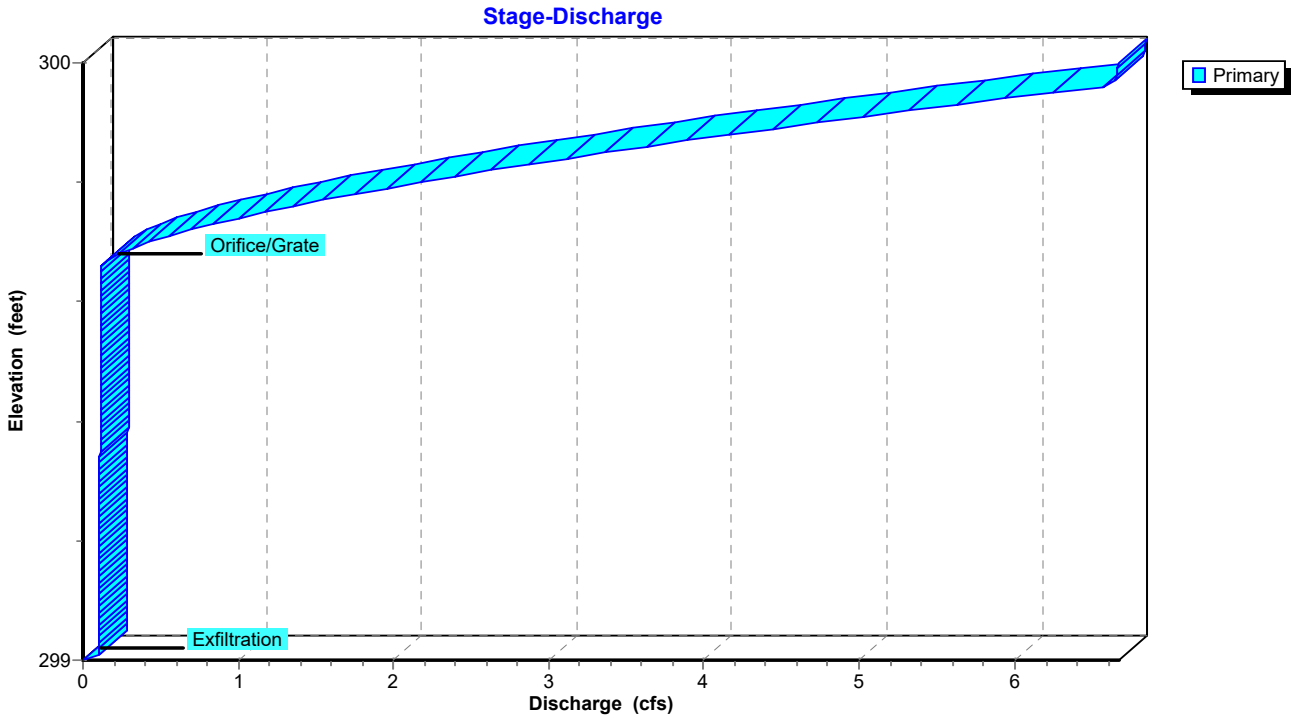
Device	Routing	Invert	Outlet Devices
#1	Primary	295.50'	**12.0" Round Culvert** L= 61.0' Box, 0° wingwalls, square crown edge, Ke= 0.700 Inlet / Outlet Invert= 295.50' / 293.25' S= 0.0369 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Device 1	299.66'	**24.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	299.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 102.00'

Primary OutFlow Max=0.99 cfs @ 12.64 hrs HW=299.74' (Free Discharge)
└**1=Culvert** (Passes 0.99 cfs of 6.45 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 0.88 cfs @ 0.92 fps)
└**3=Exfiltration** (Controls 0.12 cfs)

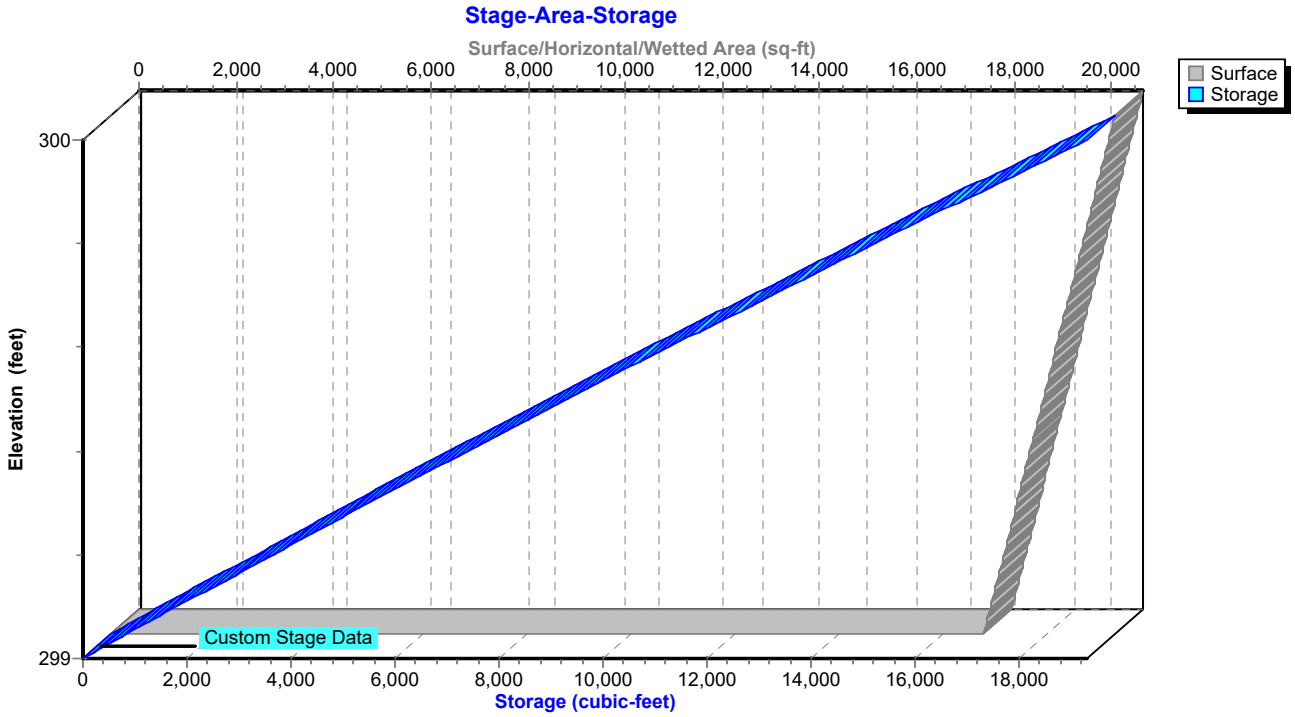
Pond BIO: BioRetention 1 (South)



Pond BIO: BioRetention 1 (South)



Pond BIO: BioRetention 1 (South)



Hydrograph for Pond BIO: BioRetention 1 (South)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	299.00	0.00
0.20	0.00	0	299.00	0.00
0.40	0.00	0	299.00	0.00
0.60	0.00	0	299.00	0.00
0.80	0.00	0	299.00	0.00
1.00	0.00	0	299.00	0.00
1.20	0.02	7	299.00	0.00
1.40	0.03	20	299.00	0.01
1.60	0.04	36	299.00	0.02
1.80	0.05	52	299.00	0.03
2.00	0.06	69	299.00	0.04
2.20	0.07	86	299.00	0.05
2.40	0.08	102	299.01	0.06
2.60	0.09	119	299.01	0.07
2.80	0.10	136	299.01	0.08
3.00	0.11	153	299.01	0.09
3.20	0.12	170	299.01	0.10
3.40	0.13	187	299.01	0.10
3.60	0.14	209	299.01	0.10
3.80	0.15	238	299.01	0.10
4.00	0.16	274	299.02	0.10
4.20	0.17	315	299.02	0.10
4.40	0.17	363	299.02	0.10
4.60	0.18	417	299.02	0.10
4.80	0.19	476	299.03	0.10
5.00	0.20	541	299.03	0.10
5.20	0.21	612	299.03	0.10
5.40	0.21	689	299.04	0.10
5.60	0.22	771	299.04	0.10
5.80	0.23	859	299.05	0.10
6.00	0.24	952	299.05	0.10
6.20	0.25	1,052	299.06	0.10
6.40	0.27	1,163	299.06	0.10
6.60	0.29	1,288	299.07	0.11
6.80	0.31	1,426	299.08	0.11
7.00	0.32	1,577	299.09	0.11
7.20	0.34	1,741	299.10	0.11
7.40	0.36	1,920	299.11	0.11
7.60	0.38	2,112	299.12	0.11
7.80	0.40	2,317	299.13	0.11
8.00	0.42	2,537	299.14	0.11
8.20	0.45	2,775	299.15	0.11
8.40	0.49	3,039	299.17	0.11
8.60	0.50	3,318	299.18	0.11
8.80	0.52	3,608	299.20	0.11
9.00	0.53	3,906	299.21	0.11
9.20	0.54	4,213	299.23	0.11
9.40	0.55	4,529	299.25	0.11
9.60	0.56	4,853	299.27	0.11
9.80	0.58	5,186	299.28	0.11
10.00	0.59	5,526	299.30	0.11
10.20	0.60	5,876	299.32	0.11
10.40	0.62	6,240	299.34	0.11

Hydrograph for Pond BIO: BioRetention 1 (South) (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
10.60	0.65	6,619	299.36	0.11
10.80	0.67	7,012	299.38	0.11
11.00	0.69	7,420	299.40	0.11
11.20	0.73	7,849	299.42	0.11
11.40	0.80	8,320	299.45	0.11
11.60	0.91	8,841	299.48	0.11
11.80	1.38	9,577	299.51	0.11
12.00	**2.30**	10,712	299.57	0.11
12.20	**2.30**	12,733	299.68	0.19
12.40	1.59	13,735	299.73	0.78
12.60	1.03	**14,004**	**299.74**	**0.99**
12.80	0.92	**13,987**	**299.74**	**0.98**
13.00	0.84	13,933	299.74	0.93
13.20	0.80	13,866	299.73	0.88
13.40	0.77	13,813	299.73	0.84
13.60	0.75	13,771	299.73	0.81
13.80	0.73	13,734	299.73	0.78
14.00	0.71	13,700	299.72	0.75
14.20	0.69	13,668	299.72	0.73
14.40	0.68	13,642	299.72	0.71
14.60	0.66	13,620	299.72	0.69
14.80	0.65	13,600	299.72	0.68
15.00	0.64	13,580	299.72	0.66
15.20	0.62	13,561	299.72	0.65
15.40	0.61	13,541	299.72	0.64
15.60	0.59	13,521	299.71	0.62
15.80	0.58	13,500	299.71	0.61
16.00	0.56	13,476	299.71	0.59
16.20	0.53	13,449	299.71	0.57
16.40	0.51	13,419	299.71	0.55
16.60	0.49	13,389	299.71	0.53
16.80	0.47	13,358	299.71	0.51
17.00	0.45	13,326	299.71	0.49
17.20	0.43	13,294	299.70	0.47
17.40	0.41	13,261	299.70	0.45
17.60	0.39	13,228	299.70	0.43
17.80	0.37	13,195	299.70	0.41
18.00	0.34	13,160	299.70	0.39
18.20	0.33	13,126	299.70	0.37
18.40	0.33	13,098	299.69	0.36
18.60	0.32	13,076	299.69	0.35
18.80	0.31	13,058	299.69	0.34
19.00	0.31	13,042	299.69	0.33
19.20	0.30	13,027	299.69	0.32
19.40	0.29	13,013	299.69	0.31
19.60	0.29	13,000	299.69	0.31
19.80	0.28	12,986	299.69	0.30
20.00	0.28	12,973	299.69	0.29
20.20	0.27	12,959	299.69	0.29
20.40	0.27	12,947	299.69	0.28
20.60	0.26	12,935	299.69	0.28
20.80	0.26	12,924	299.68	0.27
21.00	0.25	12,913	299.68	0.27

Hydrograph for Pond BIO: BioRetention 1 (South) (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
21.20	0.25	12,903	299.68	0.26
21.40	0.24	12,892	299.68	0.26
21.60	0.24	12,882	299.68	0.25
21.80	0.23	12,872	299.68	0.25
22.00	0.23	12,861	299.68	0.24
22.20	0.22	12,851	299.68	0.24
22.40	0.22	12,841	299.68	0.23
22.60	0.21	12,831	299.68	0.23
22.80	0.21	12,821	299.68	0.22
23.00	0.20	12,810	299.68	0.22
23.20	0.20	12,799	299.68	0.22
23.40	0.19	12,787	299.68	0.21
23.60	0.19	12,775	299.68	0.21
23.80	0.19	12,763	299.68	0.20
24.00	0.18	12,751	299.68	0.20

Stage-Discharge for Pond BIO: BioRetention 1 (South)

Elevation (feet)	Primary (cfs)
299.00	0.00
299.10	0.11
299.20	0.11
299.30	0.11
299.40	0.11
299.50	0.11
299.60	0.11
299.70	0.43
299.80	2.17
299.90	4.73
300.00	**6.67**

Stage-Area-Storage for Pond BIO: BioRetention 1 (South)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
299.00	17,947	0
299.10	18,217	1,808
299.20	18,486	3,643
299.30	18,756	5,505
299.40	19,026	7,395
299.50	19,296	9,311
299.60	19,565	11,254
299.70	19,835	13,224
299.80	20,105	15,221
299.90	20,374	17,245
300.00	**20,644**	**19,296**

Summary for Pond DET1: MC-4500 StormTech DETENTION ONLY

[81] Warning: Exceeded Pond SPLIT by 2.20' @ 12.20 hrs

Inflow = 16.31 cfs @ 12.08 hrs, Volume= 0.744 af
Outflow = 11.61 cfs @ 12.16 hrs, Volume= 0.743 af, Atten= 29%, Lag= 4.6 min
Primary = 11.61 cfs @ 12.16 hrs, Volume= 0.743 af
Routed to Link S : POI South

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 305.77' @ 12.16 hrs Surf.Area= 0.089 ac Storage= 0.310 af

Plug-Flow detention time= 95.7 min calculated for 0.742 af (100% of inflow)
Center-of-Mass det. time= 95.7 min (822.6 - 727.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	300.93'	0.145 af	**37.58'W x 103.72'L x 6.75'H Field A** 0.604 af Overall - 0.241 af Embedded = 0.363 af x 40.0% Voids
#2A	301.68'	0.241 af	**ADS_StormTech MC-4500 +Cap** x 96 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 96 Chambers in 4 Rows Cap Storage= 35.7 cf x 2 x 4 rows = 285.6 cf
		0.386 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	300.93'	**4.0" Vert. Underdrain** C= 0.600 Limited to weir flow at low heads
#2	Primary	304.50'	**28.0" W x 21.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	307.18'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** 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=11.61 cfs @ 12.16 hrs HW=305.77' (Free Discharge)
- **1=Underdrain** (Orifice Controls 0.91 cfs @ 10.41 fps)
- **2=Orifice/Grate** (Orifice Controls 10.70 cfs @ 3.62 fps)
- **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond DET1: MC-4500 StormTech DETENTION ONLY - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with cap, use MC-4500 b for new designs)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 35.7 cf x 2 x 4 rows = 285.6 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

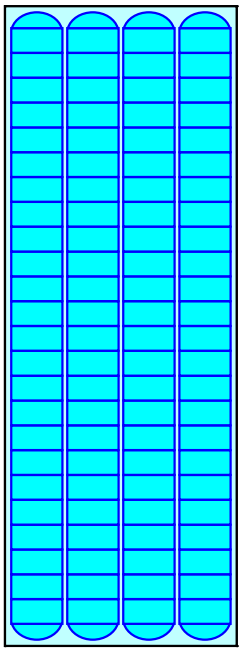
24 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 101.72' Row Length +12.0" End Stone x 2 = 103.72' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

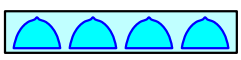
96 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 4 Rows = 10,508.7 cf Chamber Storage

26,311.6 cf Field - 10,508.7 cf Chambers = 15,802.9 cf Stone x 40.0% Voids = 6,321.2 cf Stone Storage

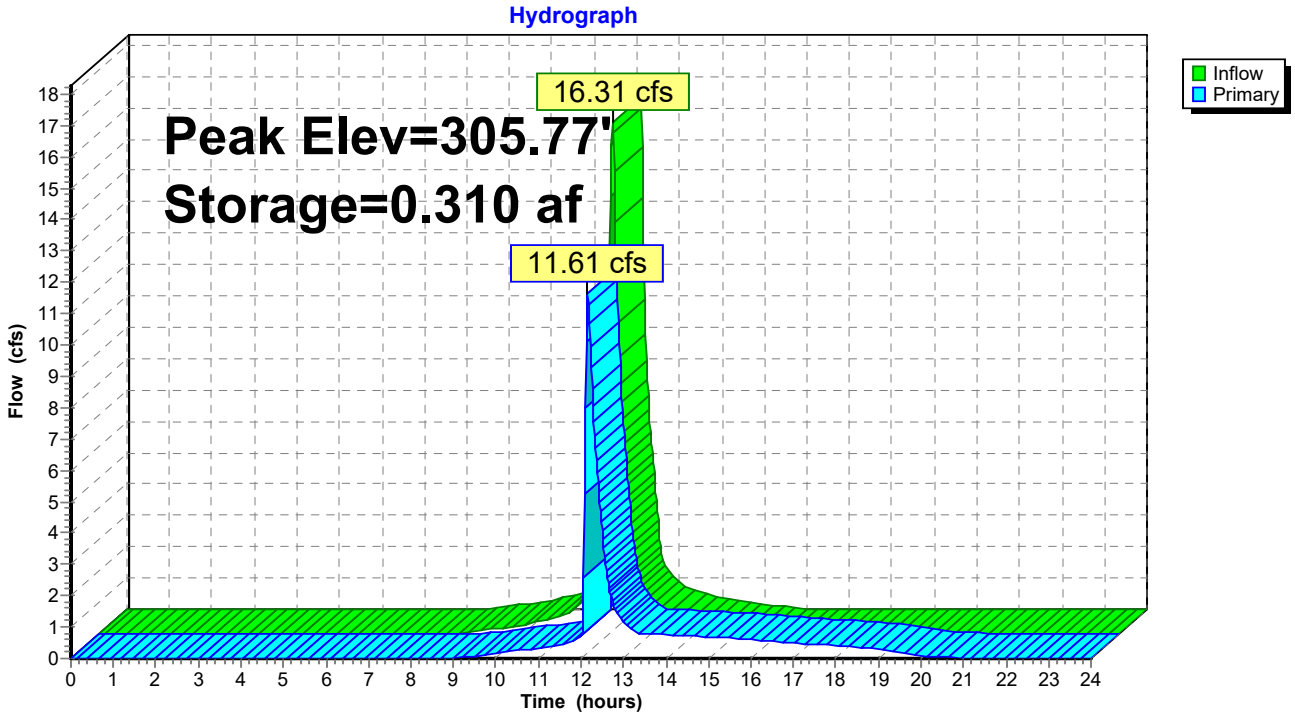
Chamber Storage + Stone Storage = 16,829.9 cf = 0.386 af
Overall Storage Efficiency = 64.0%
Overall System Size = 103.72' x 37.58' x 6.75'

96 Chambers
974.5 cy Field
585.3 cy Stone

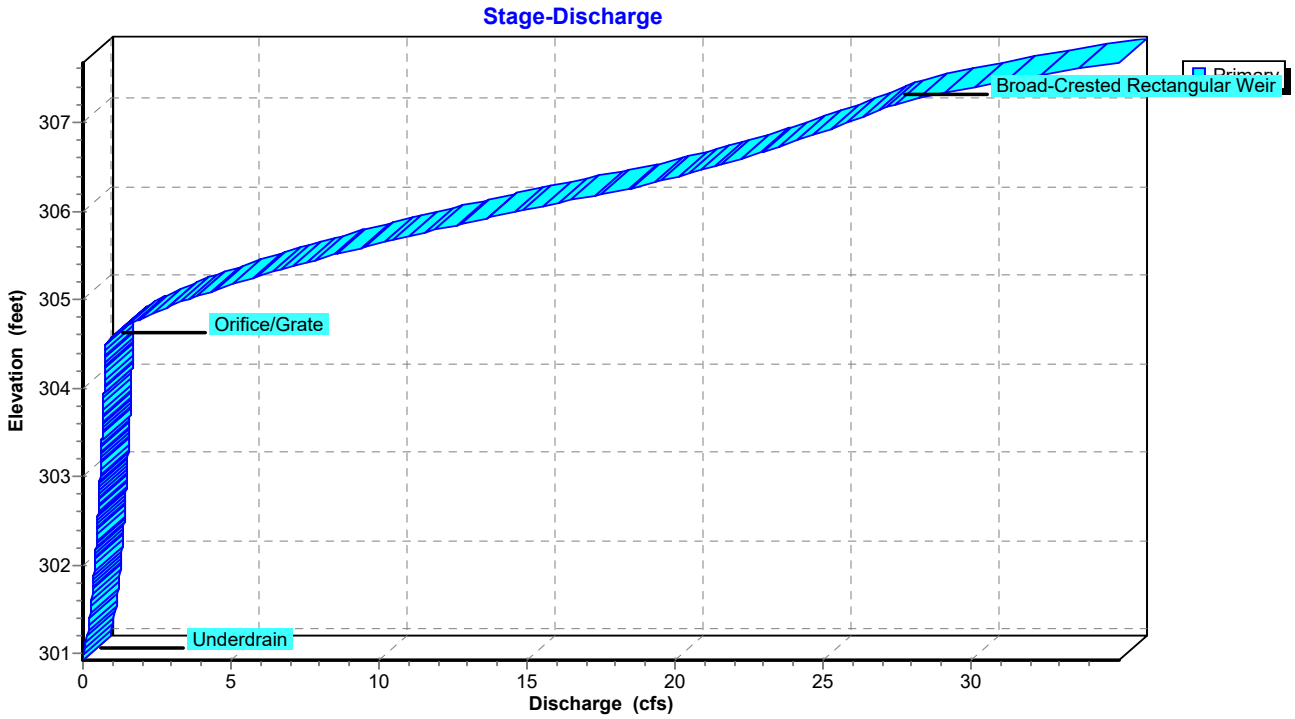




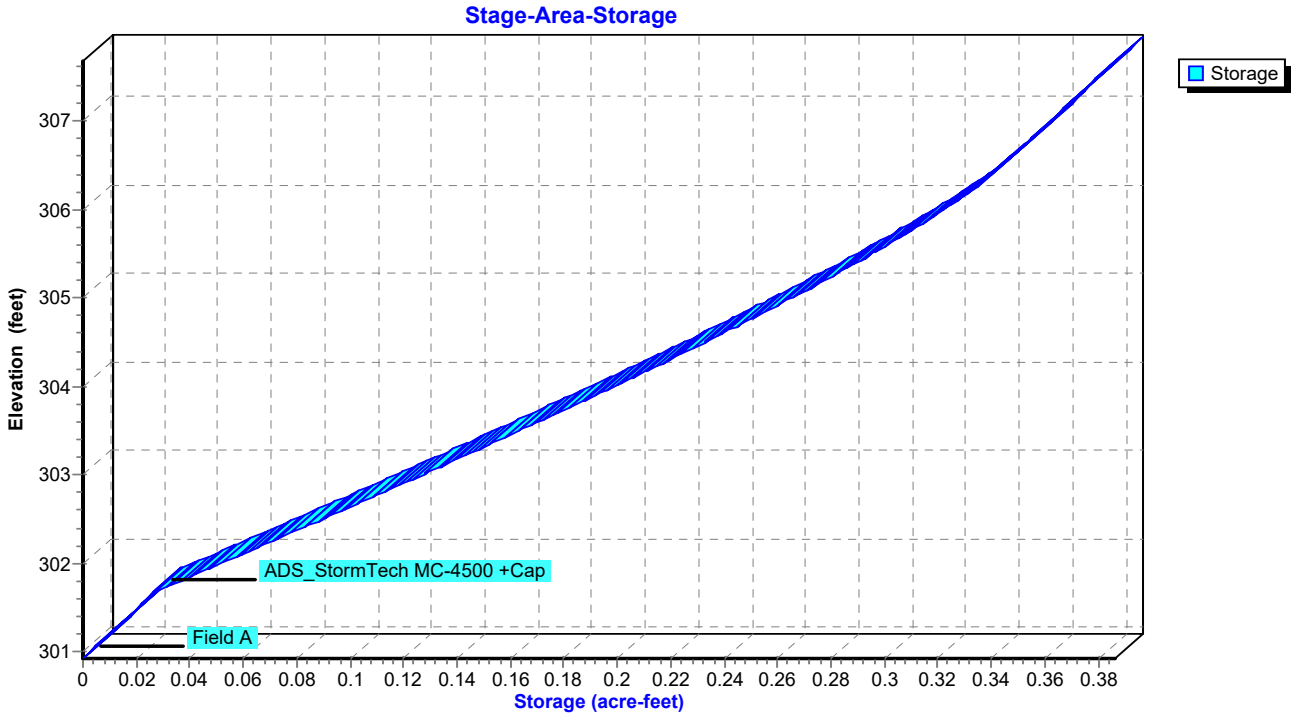
Pond DET1: MC-4500 StormTech DETENTION ONLY



Pond DET1: MC-4500 StormTech DETENTION ONLY



Pond DET1: MC-4500 StormTech DETENTION ONLY



Hydrograph for Pond DET1: MC-4500 StormTech DETENTION ONLY

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	300.93	0.00
0.20	0.00	0.000	300.93	0.00
0.40	0.00	0.000	300.93	0.00
0.60	0.00	0.000	300.93	0.00
0.80	0.00	0.000	300.93	0.00
1.00	0.00	0.000	300.93	0.00
1.20	0.00	0.000	300.93	0.00
1.40	0.00	0.000	300.93	0.00
1.60	0.00	0.000	300.93	0.00
1.80	0.00	0.000	300.93	0.00
2.00	0.00	0.000	300.93	0.00
2.20	0.00	0.000	300.93	0.00
2.40	0.00	0.000	300.93	0.00
2.60	0.00	0.000	300.93	0.00
2.80	0.00	0.000	300.93	0.00
3.00	0.00	0.000	300.93	0.00
3.20	0.00	0.000	300.93	0.00
3.40	0.00	0.000	300.93	0.00
3.60	0.00	0.000	300.93	0.00
3.80	0.00	0.000	300.93	0.00
4.00	0.00	0.000	300.93	0.00
4.20	0.00	0.000	300.93	0.00
4.40	0.00	0.000	300.93	0.00
4.60	0.00	0.000	300.93	0.00
4.80	0.00	0.000	300.93	0.00
5.00	0.00	0.000	300.93	0.00
5.20	0.00	0.000	300.93	0.00
5.40	0.00	0.000	300.93	0.00
5.60	0.00	0.000	300.93	0.00
5.80	0.00	0.000	300.93	0.00
6.00	0.00	0.000	300.93	0.00
6.20	0.00	0.000	300.93	0.00
6.40	0.00	0.000	300.93	0.00
6.60	0.00	0.000	300.93	0.00
6.80	0.00	0.000	300.93	0.00
7.00	0.00	0.000	300.93	0.00
7.20	0.00	0.000	300.93	0.00
7.40	0.00	0.000	300.93	0.00
7.60	0.00	0.000	300.93	0.00
7.80	0.00	0.000	300.93	0.00
8.00	0.00	0.000	300.93	0.00
8.20	0.00	0.000	300.93	0.00
8.40	0.01	0.000	300.93	0.00
8.60	0.04	0.000	300.94	0.00
8.80	0.07	0.001	300.97	0.01
9.00	0.11	0.003	301.00	0.01
9.20	0.14	0.004	301.05	0.03
9.40	0.17	0.006	301.10	0.06
9.60	0.21	0.008	301.15	0.10
9.80	0.25	0.010	301.20	0.14
10.00	0.28	0.012	301.26	0.17
10.20	0.34	0.014	301.31	0.20
10.40	0.42	0.016	301.39	0.23

Hydrograph for Pond DET1: MC-4500 StormTech DETENTION ONLY (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
10.60	0.49	0.020	301.49	0.26
10.80	0.57	0.024	301.60	0.30
11.00	0.65	0.029	301.71	0.33
11.20	0.84	0.035	301.79	0.35
11.40	1.14	0.046	301.93	0.38
11.60	1.73	0.061	302.13	0.43
11.80	4.54	0.104	302.69	0.53
12.00	**10.04**	**0.199**	**304.00**	**0.72**
12.20	**8.76**	**0.306**	**305.69**	**10.67**
12.40	4.37	0.280	305.24	5.60
12.60	1.64	0.259	304.91	2.78
12.80	1.15	0.247	304.72	1.59
13.00	0.85	0.242	304.63	1.16
13.20	0.67	0.237	304.56	0.91
13.40	0.59	0.233	304.51	0.78
13.60	0.51	0.230	304.45	0.77
13.80	0.44	0.225	304.38	0.76
14.00	0.36	0.219	304.30	0.75
14.20	0.31	0.212	304.19	0.74
14.40	0.27	0.205	304.09	0.73
14.60	0.24	0.197	303.98	0.71
14.80	0.20	0.189	303.86	0.70
15.00	0.17	0.181	303.74	0.68
15.20	0.13	0.172	303.62	0.67
15.40	0.10	0.163	303.50	0.65
15.60	0.07	0.154	303.37	0.63
15.80	0.04	0.144	303.24	0.62
16.00	0.01	0.135	303.11	0.60
16.20	0.00	0.125	302.98	0.58
16.40	0.00	0.116	302.85	0.56
16.60	0.00	0.107	302.73	0.54
16.80	0.00	0.098	302.61	0.52
17.00	0.00	0.090	302.50	0.50
17.20	0.00	0.081	302.39	0.48
17.40	0.00	0.074	302.29	0.46
17.60	0.00	0.066	302.19	0.44
17.80	0.00	0.059	302.10	0.42
18.00	0.00	0.052	302.01	0.40
18.20	0.00	0.046	301.93	0.38
18.40	0.00	0.040	301.85	0.36
18.60	0.00	0.034	301.77	0.34
18.80	0.00	0.028	301.70	0.33
19.00	0.00	0.023	301.58	0.29
19.20	0.00	0.019	301.45	0.25
19.40	0.00	0.015	301.35	0.21
19.60	0.00	0.012	301.26	0.17
19.80	0.00	0.009	301.19	0.13
20.00	0.00	0.008	301.14	0.09
20.20	0.00	0.006	301.10	0.07
20.40	0.00	0.005	301.08	0.05
20.60	0.00	0.005	301.06	0.04
20.80	0.00	0.004	301.04	0.03
21.00	0.00	0.004	301.03	0.03

Hydrograph for Pond DET1: MC-4500 StormTech DETENTION ONLY (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
21.20	0.00	0.003	301.02	0.02
21.40	0.00	0.003	301.01	0.02
21.60	0.00	0.003	301.00	0.01
21.80	0.00	0.002	301.00	0.01
22.00	0.00	0.002	300.99	0.01
22.20	0.00	0.002	300.99	0.01
22.40	0.00	0.002	300.98	0.01
22.60	0.00	0.002	300.98	0.01
22.80	0.00	0.002	300.98	0.01
23.00	0.00	0.002	300.97	0.01
23.20	0.00	0.001	300.97	0.01
23.40	0.00	0.001	300.97	0.01
23.60	0.00	0.001	300.96	0.01
23.80	0.00	0.001	300.96	0.01
24.00	0.00	0.001	300.96	0.00

Stage-Discharge for Pond DET1: MC-4500 StormTech DETENTION ONLY

Elevation (feet)	Primary (cfs)
300.93	0.00
301.03	0.02
301.13	0.08
301.23	0.15
301.33	0.20
301.43	0.24
301.53	0.28
301.63	0.31
301.73	0.33
301.83	0.36
301.93	0.38
302.03	0.41
302.13	0.43
302.23	0.45
302.33	0.47
302.43	0.49
302.53	0.50
302.63	0.52
302.73	0.54
302.83	0.55
302.93	0.57
303.03	0.58
303.13	0.60
303.23	0.61
303.33	0.63
303.43	0.64
303.53	0.66
303.63	0.67
303.73	0.68
303.83	0.69
303.93	0.71
304.03	0.72
304.13	0.73
304.23	0.74
304.33	0.76
304.43	0.77
304.53	0.82
304.63	1.14
304.73	1.63
304.83	2.23
304.93	2.93
305.03	3.72
305.13	4.59
305.23	5.53
305.33	6.53
305.43	7.59
305.53	8.71
305.63	9.89
305.73	11.12
305.83	12.40
305.93	13.73
306.03	15.11
306.13	16.53
306.23	18.00
306.33	19.33
306.43	20.48
306.53	21.53
306.63	22.52
306.73	23.45
306.83	24.34
306.93	25.19
307.03	26.01
307.13	26.79
307.23	27.68
307.33	28.95
307.43	30.44
307.53	32.12
307.63	**33.98**

Stage-Area-Storage for Pond DET1: MC-4500 StormTech DETENTION ONLY

Elevation (feet)	Storage (acre-feet)
300.93	0.000
301.03	0.004
301.13	0.007
301.23	0.011
301.33	0.014
301.43	0.018
301.53	0.021
301.63	0.025
301.73	0.031
301.83	0.038
301.93	0.046
302.03	0.054
302.13	0.061
302.23	0.069
302.33	0.077
302.43	0.084
302.53	0.092
302.63	0.099
302.73	0.107
302.83	0.114
302.93	0.122
303.03	0.129
303.13	0.136
303.23	0.144
303.33	0.151
303.43	0.158
303.53	0.165
303.63	0.173
303.73	0.180
303.83	0.187
303.93	0.194
304.03	0.201
304.13	0.208
304.23	0.215
304.33	0.221
304.43	0.228
304.53	0.235
304.63	0.241
304.73	0.248
304.83	0.254
304.93	0.261
305.03	0.267
305.13	0.273
305.23	0.279
305.33	0.285
305.43	0.291
305.53	0.297
305.63	0.303
305.73	0.308
305.83	0.314
305.93	0.319
306.03	0.324
306.13	0.329
306.23	0.333
306.33	0.337
306.43	0.341
306.53	0.345
306.63	0.349
306.73	0.352
306.83	0.356
306.93	0.360
307.03	0.363
307.13	0.367
307.23	0.370
307.33	0.374
307.43	0.377
307.53	0.381
307.63	**0.385**

Summary for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Inflow Area = 3.389 ac, 48.48% Impervious, Inflow Depth > 2.56" for 10-Year event
Inflow = 9.55 cfs @ 12.09 hrs, Volume= 0.722 af
Outflow = 2.95 cfs @ 12.46 hrs, Volume= 0.690 af, Atten= 69%, Lag= 22.3 min
Primary = 2.95 cfs @ 12.46 hrs, Volume= 0.690 af
Routed to Link S : POI South

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 298.23' @ 12.46 hrs Surf.Area= 6,177 sf Storage= 11,875 cf

Plug-Flow detention time= 153.7 min calculated for 0.689 af (96% of inflow)
Center-of-Mass det. time= 129.4 min (952.6 - 823.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	295.50'	8,615 cf	**29.92'W x 206.46'L x 5.50'H Field A** 33,971 cf Overall - 12,434 cf Embedded = 21,537 cf x 40.0% Voids
#2A	296.25'	12,434 cf	**ADS_StormTech MC-3500 d +Cap** x 112 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 112 Chambers in 4 Rows Cap Storage= 14.9 cf x 2 x 4 rows = 119.2 cf
		21,049 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	295.50'	**4.0" Vert. Underdrain** C= 0.600 Limited to weir flow at low heads
#2	Primary	297.60'	**17.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	300.50'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** 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=2.95 cfs @ 12.46 hrs HW=298.23' (Free Discharge)
- **1=Underdrain** (Orifice Controls 0.67 cfs @ 7.71 fps)
- **2=Orifice/Grate** (Orifice Controls 2.27 cfs @ 2.55 fps)
- **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 4 rows = 119.2 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

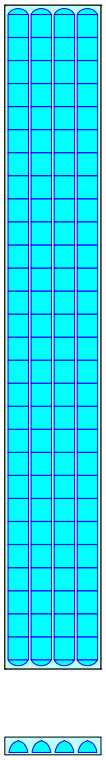
28 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 204.46' Row Length +12.0" End Stone x 2 = 206.46' Base Length
4 Rows x 77.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 29.92' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

112 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 4 Rows = 12,433.8 cf Chamber Storage

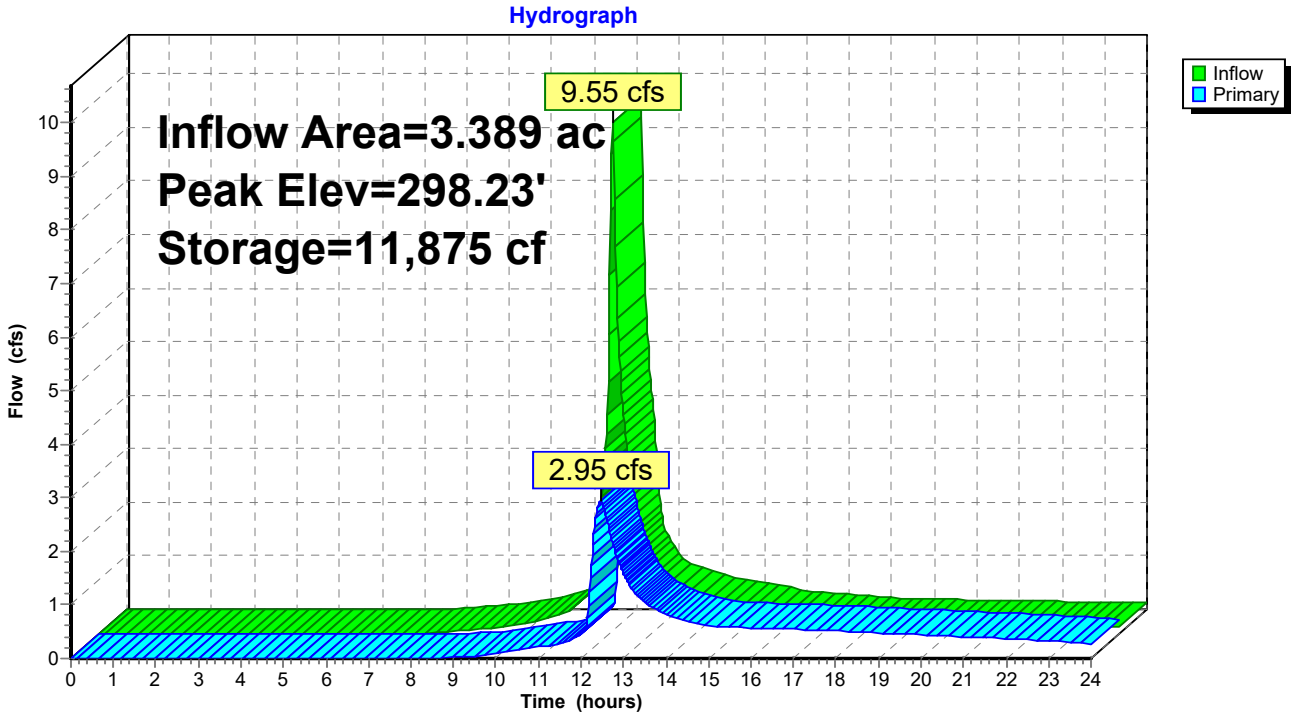
33,971.3 cf Field - 12,433.8 cf Chambers = 21,537.5 cf Stone x 40.0% Voids = 8,615.0 cf Stone Storage

Chamber Storage + Stone Storage = 21,048.8 cf = 0.483 af
Overall Storage Efficiency = 62.0%
Overall System Size = 206.46' x 29.92' x 5.50'

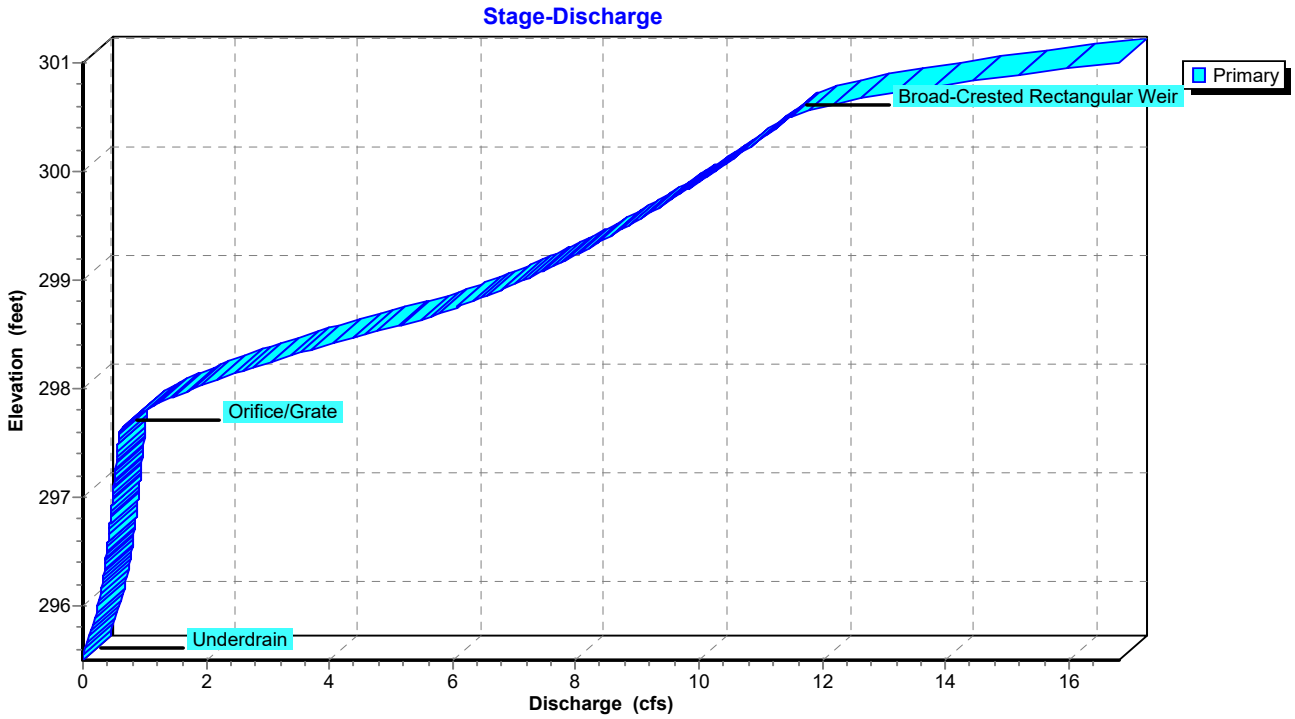
112 Chambers
1,258.2 cy Field
797.7 cy Stone



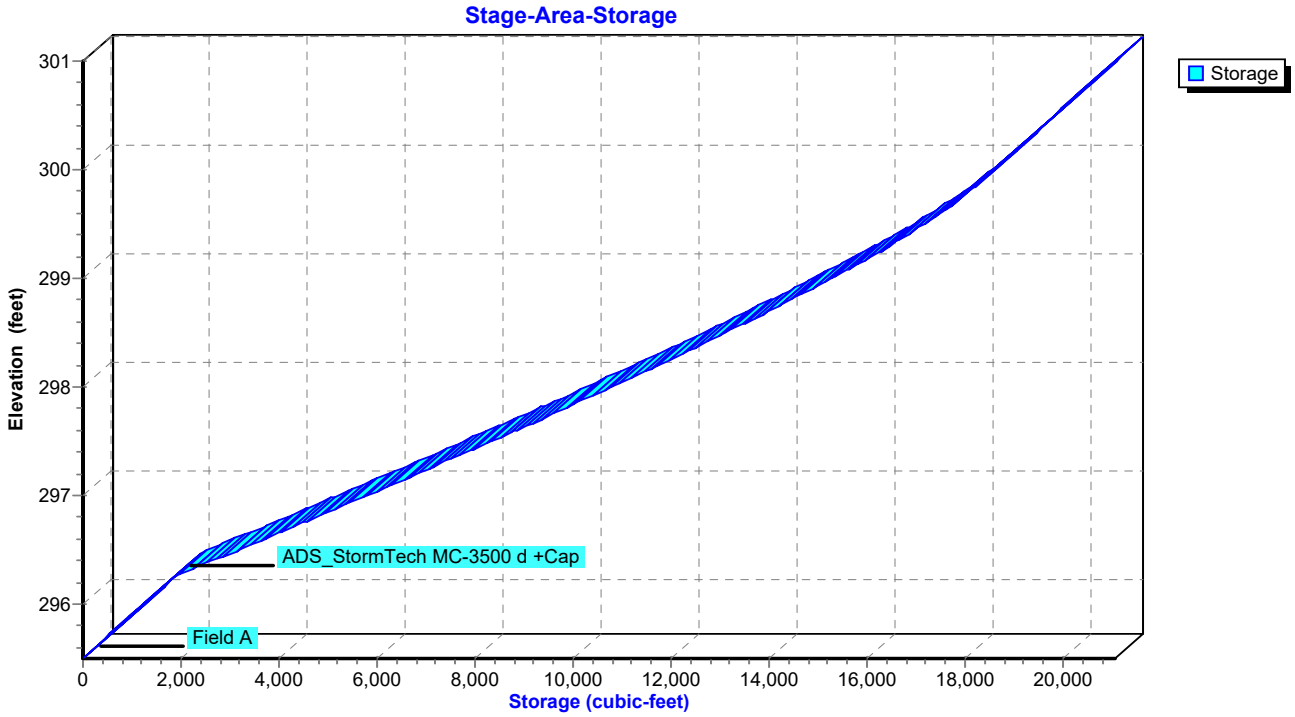
Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY



Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY



Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY



Hydrograph for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	295.50	0.00
0.20	0.00	0	295.50	0.00
0.40	0.00	0	295.50	0.00
0.60	0.00	0	295.50	0.00
0.80	0.00	0	295.50	0.00
1.00	0.00	0	295.50	0.00
1.20	0.00	0	295.50	0.00
1.40	0.00	0	295.50	0.00
1.60	0.00	0	295.50	0.00
1.80	0.00	0	295.50	0.00
2.00	0.00	0	295.50	0.00
2.20	0.00	0	295.50	0.00
2.40	0.00	0	295.50	0.00
2.60	0.00	0	295.50	0.00
2.80	0.00	0	295.50	0.00
3.00	0.00	0	295.50	0.00
3.20	0.00	0	295.50	0.00
3.40	0.00	0	295.50	0.00
3.60	0.00	0	295.50	0.00
3.80	0.00	0	295.50	0.00
4.00	0.00	0	295.50	0.00
4.20	0.00	0	295.50	0.00
4.40	0.00	0	295.50	0.00
4.60	0.00	0	295.50	0.00
4.80	0.00	0	295.50	0.00
5.00	0.00	0	295.50	0.00
5.20	0.00	0	295.50	0.00
5.40	0.00	0	295.50	0.00
5.60	0.00	0	295.50	0.00
5.80	0.00	0	295.50	0.00
6.00	0.00	0	295.50	0.00
6.20	0.00	0	295.50	0.00
6.40	0.00	0	295.50	0.00
6.60	0.00	0	295.50	0.00
6.80	0.00	0	295.50	0.00
7.00	0.00	0	295.50	0.00
7.20	0.00	0	295.50	0.00
7.40	0.01	2	295.50	0.00
7.60	0.01	7	295.50	0.00
7.80	0.02	18	295.51	0.00
8.00	0.03	32	295.51	0.00
8.20	0.03	52	295.52	0.00
8.40	0.05	79	295.53	0.00
8.60	0.06	112	295.55	0.01
8.80	0.07	154	295.56	0.01
9.00	0.09	203	295.58	0.02
9.20	0.11	257	295.60	0.03
9.40	0.13	318	295.63	0.04
9.60	0.15	384	295.66	0.05
9.80	0.17	453	295.68	0.07
10.00	0.19	525	295.71	0.09
10.20	0.23	601	295.74	0.11
10.40	0.27	687	295.78	0.14

Hydrograph for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
10.60	0.31	786	295.82	0.16
10.80	0.36	900	295.86	0.19
11.00	0.41	1,033	295.92	0.21
11.20	0.51	1,196	295.98	0.24
11.40	0.66	1,435	296.08	0.27
11.60	0.96	1,777	296.22	0.31
11.80	2.37	2,695	296.41	0.36
12.00	**5.60**	4,889	296.83	0.45
12.20	**5.89**	10,131	297.86	1.24
12.40	3.53	**11,806**	**298.22**	**2.87**
12.60	1.72	**11,596**	**298.17**	**2.63**
12.80	1.29	10,999	298.04	2.00
13.00	1.04	10,552	297.95	1.58
13.20	0.89	10,203	297.88	1.30
13.40	0.83	9,957	297.83	1.11
13.60	0.77	9,774	297.79	0.99
13.80	0.71	9,625	297.76	0.90
14.00	0.65	9,494	297.73	0.83
14.20	0.61	9,373	297.71	0.77
14.40	0.58	9,270	297.69	0.72
14.60	0.55	9,176	297.67	0.68
14.80	0.53	9,089	297.65	0.65
15.00	0.50	9,003	297.63	0.62
15.20	0.47	8,911	297.62	0.60
15.40	0.44	8,814	297.60	0.58
15.60	0.41	8,703	297.57	0.58
15.80	0.38	8,574	297.55	0.58
16.00	0.36	8,426	297.52	0.57
16.20	0.33	8,264	297.49	0.57
16.40	0.32	8,093	297.45	0.56
16.60	0.31	7,917	297.42	0.56
16.80	0.30	7,736	297.38	0.55
17.00	0.28	7,550	297.34	0.54
17.20	0.27	7,360	297.31	0.54
17.40	0.26	7,164	297.27	0.53
17.60	0.24	6,964	297.23	0.53
17.80	0.23	6,760	297.19	0.52
18.00	0.22	6,551	297.15	0.51
18.20	0.21	6,339	297.11	0.50
18.40	0.21	6,128	297.07	0.50
18.60	0.20	5,920	297.03	0.49
18.80	0.20	5,714	296.99	0.48
19.00	0.19	5,510	296.95	0.48
19.20	0.19	5,309	296.91	0.47
19.40	0.19	5,110	296.87	0.46
19.60	0.18	4,914	296.83	0.45
19.80	0.18	4,721	296.79	0.45
20.00	0.18	4,529	296.76	0.44
20.20	0.17	4,341	296.72	0.43
20.40	0.17	4,155	296.69	0.42
20.60	0.17	3,973	296.65	0.42
20.80	0.16	3,794	296.62	0.41
21.00	0.16	3,618	296.58	0.40

Hydrograph for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
21.20	0.16	3,445	296.55	0.40
21.40	0.15	3,275	296.52	0.39
21.60	0.15	3,109	296.49	0.38
21.80	0.15	2,945	296.46	0.37
22.00	0.15	2,785	296.43	0.37
22.20	0.14	2,628	296.40	0.36
22.40	0.14	2,474	296.37	0.35
22.60	0.14	2,323	296.34	0.34
22.80	0.13	2,175	296.31	0.34
23.00	0.13	2,030	296.28	0.33
23.20	0.13	1,888	296.26	0.32
23.40	0.12	1,751	296.21	0.31
23.60	0.12	1,623	296.16	0.29
23.80	0.12	1,503	296.11	0.28
24.00	0.12	1,392	296.06	0.26

Stage-Discharge for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Elevation (feet)	Primary (cfs)
295.50	0.00
295.60	0.02
295.70	0.08
295.80	0.15
295.90	0.20
296.00	0.24
296.10	0.28
296.20	0.31
296.30	0.33
296.40	0.36
296.50	0.38
296.60	0.41
296.70	0.43
296.80	0.45
296.90	0.47
297.00	0.49
297.10	0.50
297.20	0.52
297.30	0.54
297.40	0.55
297.50	0.57
297.60	0.58
297.70	0.74
297.80	1.02
297.90	1.38
298.00	1.79
298.10	2.26
298.20	2.78
298.30	3.35
298.40	3.95
298.50	4.59
298.60	5.27
298.70	5.83
298.80	6.31
298.90	6.75
299.00	7.15
299.10	7.53
299.20	7.88
299.30	8.22
299.40	8.54
299.50	8.85
299.60	9.15
299.70	9.44
299.80	9.72
299.90	9.99
300.00	10.25
300.10	10.51
300.20	10.76
300.30	11.00
300.40	11.24
300.50	11.47
300.60	12.05
300.70	12.93
300.80	14.02
300.90	15.31
301.00	**16.81**

Stage-Area-Storage for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Elevation (feet)	Storage (cubic-feet)
295.50	0
295.60	247
295.70	494
295.80	741
295.90	988
296.00	1,235
296.10	1,482
296.20	1,729
296.30	2,119
296.40	2,650
296.50	3,179
296.60	3,706
296.70	4,230
296.80	4,752
296.90	5,272
297.00	5,790
297.10	6,305
297.20	6,817
297.30	7,326
297.40	7,831
297.50	8,334
297.60	8,833
297.70	9,327
297.80	9,818
297.90	10,304
298.00	10,786
298.10	11,262
298.20	11,734
298.30	12,200
298.40	12,660
298.50	13,113
298.60	13,560
298.70	13,999
298.80	14,431
298.90	14,854
299.00	15,268
299.10	15,672
299.20	16,065
299.30	16,445
299.40	16,811
299.50	17,161
299.60	17,486
299.70	17,784
299.80	18,060
299.90	18,325
300.00	18,578
300.10	18,825
300.20	19,072
300.30	19,319
300.40	19,566
300.50	19,813
300.60	20,061
300.70	20,308
300.80	20,555
300.90	20,802
301.00	**21,049**

Summary for Pond INF1: MC-3500 StormTech INFILTRATION 1

Inflow Area = 4.358 ac, 96.98% Impervious, Inflow Depth > 4.35" for 10-Year event
Inflow = 19.88 cfs @ 12.08 hrs, Volume= 1.582 af
Outflow = 1.95 cfs @ 12.86 hrs, Volume= 1.581 af, Atten= 90%, Lag= 46.4 min
Discarded = 1.95 cfs @ 12.86 hrs, Volume= 1.581 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link N : POI North

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 309.56' @ 12.86 hrs Surf.Area= 14,195 sf Storage= 24,112 cf

Plug-Flow detention time= 89.7 min calculated for 1.580 af (100% of inflow)
Center-of-Mass det. time= 89.3 min (845.8 - 756.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	307.14'	19,523 cf	**58.58'W x 242.31'L x 5.50'H Field A** 78,074 cf Overall - 29,266 cf Embedded = 48,809 cf x 40.0% Voids
#2A	307.89'	29,266 cf	**ADS_StormTech MC-3500 d +Cap** x 264 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 264 Chambers in 8 Rows Cap Storage= 14.9 cf x 2 x 8 rows = 238.4 cf
		48,789 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	307.14'	**5.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 294.00'
#2	Primary	309.65'	**18.5" W x 4.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	312.14'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=1.95 cfs @ 12.86 hrs HW=309.56' (Free Discharge)
└**1=Exfiltration** (Controls 1.95 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=307.14' (Free Discharge)
├**2=Orifice/Grate** (Controls 0.00 cfs)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond INF1: MC-3500 StormTech INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 8 rows = 238.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

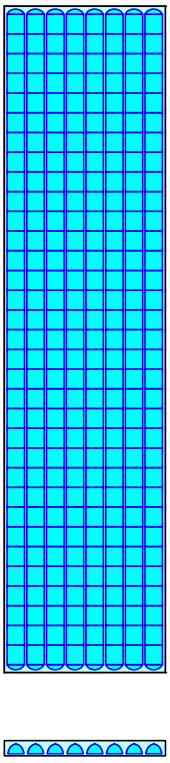
33 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 240.31' Row Length +12.0" End Stone x 2 = 242.31' Base Length
8 Rows x 77.0" Wide + 9.0" Spacing x 7 + 12.0" Side Stone x 2 = 58.58' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

264 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 8 Rows = 29,265.7 cf Chamber Storage

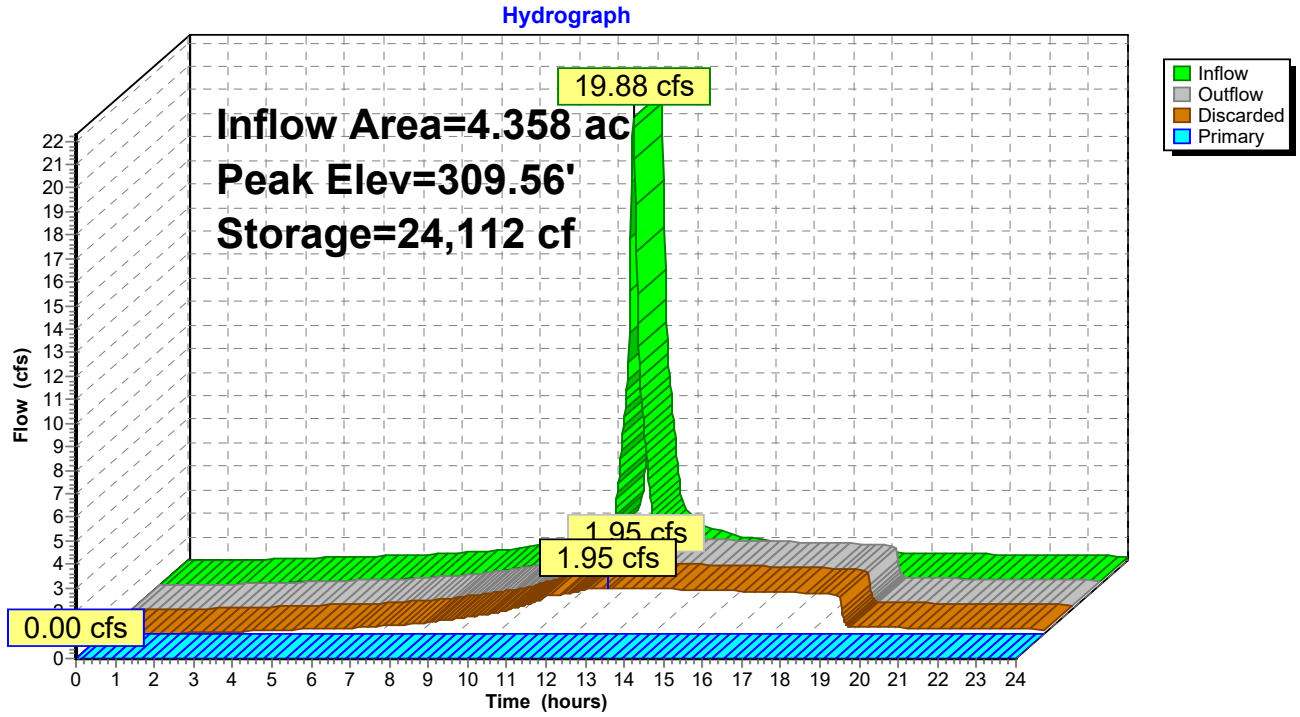
78,074.3 cf Field - 29,265.7 cf Chambers = 48,808.6 cf Stone x 40.0% Voids = 19,523.4 cf Stone Storage

Chamber Storage + Stone Storage = 48,789.1 cf = 1.120 af
Overall Storage Efficiency = 62.5%
Overall System Size = 242.31' x 58.58' x 5.50'

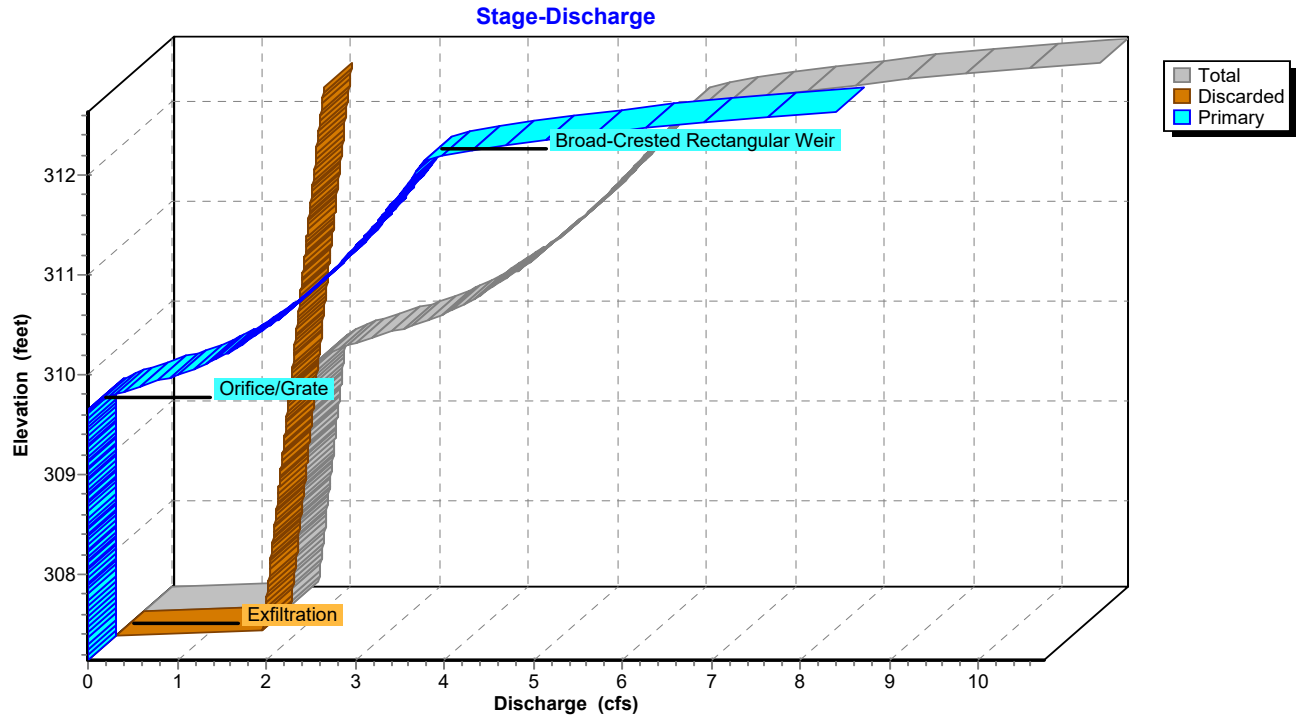
264 Chambers
2,891.6 cy Field
1,807.7 cy Stone



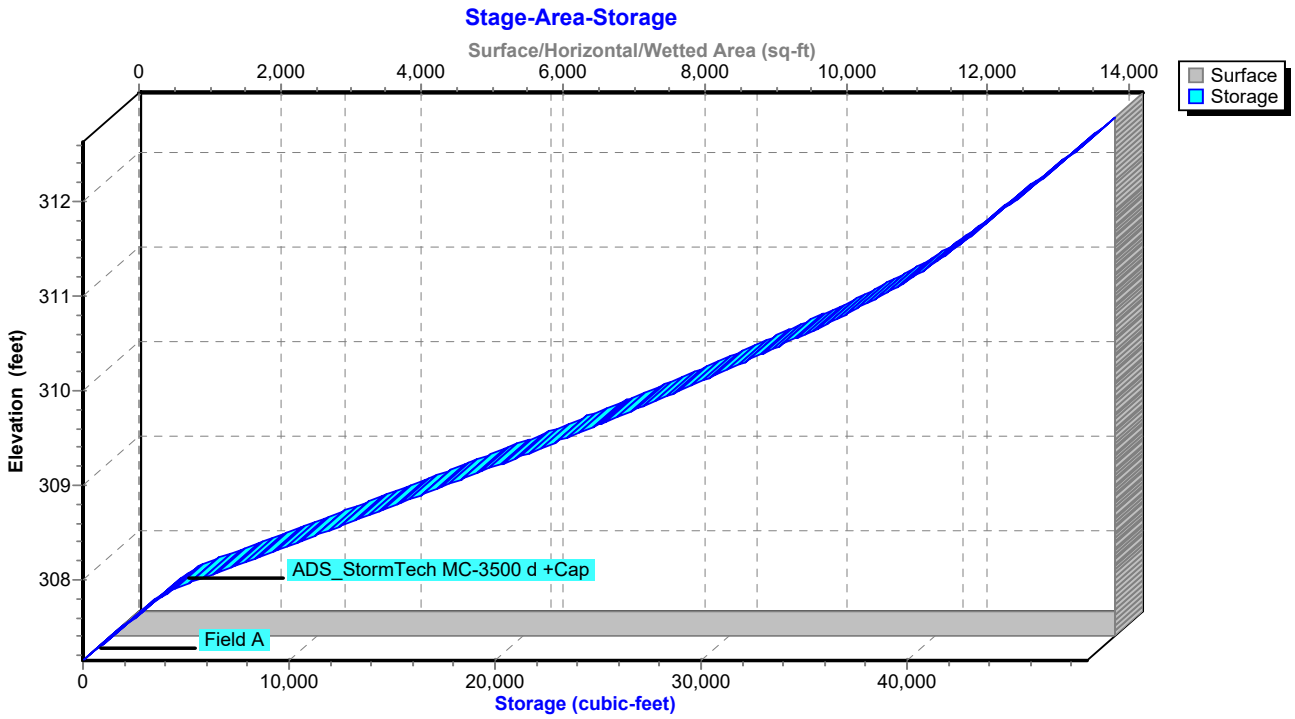
Pond INF1: MC-3500 StormTech INFILTRATION 1



Pond INF1: MC-3500 StormTech INFILTRATION 1



Pond INF1: MC-3500 StormTech INFILTRATION 1



Hydrograph for Pond INF1: MC-3500 StormTech INFILTRATION 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	307.14	0.00	0.00	**0.00**
0.20	0.00	0	307.14	0.00	0.00	0.00
0.40	0.00	0	307.14	0.00	0.00	0.00
0.60	0.00	0	307.14	0.00	0.00	0.00
0.80	0.00	0	307.14	0.00	0.00	0.00
1.00	0.00	0	307.14	0.00	0.00	0.00
1.20	0.00	0	307.14	0.00	0.00	0.00
1.40	0.00	0	307.14	0.00	0.00	0.00
1.60	0.01	2	307.14	0.01	0.01	0.00
1.80	0.02	4	307.14	0.02	0.02	0.00
2.00	0.03	6	307.14	0.03	0.03	0.00
2.20	0.04	8	307.14	0.04	0.04	0.00
2.40	0.05	10	307.14	0.05	0.05	0.00
2.60	0.06	12	307.14	0.06	0.06	0.00
2.80	0.07	14	307.14	0.07	0.07	0.00
3.00	0.09	16	307.14	0.08	0.08	0.00
3.20	0.10	18	307.14	0.09	0.09	0.00
3.40	0.11	20	307.14	0.10	0.10	0.00
3.60	0.12	22	307.14	0.11	0.11	0.00
3.80	0.13	24	307.14	0.12	0.12	0.00
4.00	0.14	25	307.14	0.13	0.13	0.00
4.20	0.15	27	307.14	0.14	0.14	0.00
4.40	0.16	29	307.15	0.15	0.15	0.00
4.60	0.17	31	307.15	0.16	0.16	0.00
4.80	0.18	33	307.15	0.17	0.17	0.00
5.00	0.19	35	307.15	0.18	0.18	0.00
5.20	0.20	37	307.15	0.19	0.19	0.00
5.40	0.21	39	307.15	0.20	0.20	0.00
5.60	0.22	40	307.15	0.21	0.21	0.00
5.80	0.23	42	307.15	0.22	0.22	0.00
6.00	0.23	44	307.15	0.23	0.23	0.00
6.20	0.25	46	307.15	0.25	0.25	0.00
6.40	0.27	50	307.15	0.26	0.26	0.00
6.60	0.29	54	307.15	0.29	0.29	0.00
6.80	0.31	58	307.15	0.31	0.31	0.00
7.00	0.33	62	307.15	0.33	0.33	0.00
7.20	0.35	66	307.15	0.35	0.35	0.00
7.40	0.38	70	307.15	0.37	0.37	0.00
7.60	0.40	74	307.15	0.39	0.39	0.00
7.80	0.42	79	307.15	0.42	0.42	0.00
8.00	0.44	83	307.15	0.44	0.44	0.00
8.20	0.48	89	307.16	0.47	0.47	0.00
8.40	0.53	97	307.16	0.51	0.51	0.00
8.60	0.57	106	307.16	0.56	0.56	0.00
8.80	0.62	115	307.16	0.61	0.61	0.00
9.00	0.67	124	307.16	0.66	0.66	0.00
9.20	0.72	133	307.16	0.70	0.70	0.00
9.40	0.77	143	307.17	0.75	0.75	0.00
9.60	0.82	152	307.17	0.80	0.80	0.00
9.80	0.87	161	307.17	0.85	0.85	0.00
10.00	0.92	171	307.17	0.90	0.90	0.00
10.20	0.99	183	307.17	0.97	0.97	0.00
10.40	1.09	202	307.18	1.07	1.07	0.00

Hydrograph for Pond INF1: MC-3500 StormTech INFILTRATION 1 (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
10.60	1.19	220	307.18	1.16	1.16	0.00
10.80	1.29	239	307.18	1.27	1.27	0.00
11.00	1.39	259	307.19	1.37	1.37	0.00
11.20	1.64	294	307.19	1.56	1.56	0.00
11.40	2.01	430	307.22	1.65	1.65	0.00
11.60	2.73	852	307.29	1.66	1.66	0.00
11.80	6.07	2,757	307.63	1.70	1.70	0.00
12.00	**12.52**	7,418	308.15	1.77	1.77	0.00
12.20	**11.08**	17,834	309.01	1.88	1.88	0.00
12.40	5.93	22,252	309.39	1.92	1.92	0.00
12.60	2.66	23,854	309.53	1.94	1.94	0.00
12.80	2.05	**24,101**	**309.56**	**1.95**	**1.95**	0.00
13.00	1.68	**24,043**	**309.55**	**1.94**	**1.94**	0.00
13.20	1.45	23,749	309.52	1.94	1.94	0.00
13.40	1.35	23,361	309.49	1.94	1.94	0.00
13.60	1.25	22,904	309.45	1.93	1.93	0.00
13.80	1.15	22,381	309.40	1.93	1.93	0.00
14.00	1.05	21,791	309.35	1.92	1.92	0.00
14.20	0.98	21,141	309.30	1.91	1.91	0.00
14.40	0.94	20,457	309.24	1.91	1.91	0.00
14.60	0.89	19,745	309.17	1.90	1.90	0.00
14.80	0.84	19,005	309.11	1.89	1.89	0.00
15.00	0.79	18,236	309.05	1.88	1.88	0.00
15.20	0.75	17,439	308.98	1.87	1.87	0.00
15.40	0.70	16,615	308.91	1.86	1.86	0.00
15.60	0.65	15,763	308.84	1.86	1.86	0.00
15.80	0.60	14,883	308.76	1.85	1.85	0.00
16.00	0.56	13,976	308.69	1.84	1.84	0.00
16.20	0.52	13,045	308.61	1.83	1.83	0.00
16.40	0.50	12,103	308.53	1.82	1.82	0.00
16.60	0.48	11,154	308.45	1.81	1.81	0.00
16.80	0.46	10,197	308.37	1.80	1.80	0.00
17.00	0.44	9,232	308.29	1.79	1.79	0.00
17.20	0.42	8,260	308.21	1.78	1.78	0.00
17.40	0.40	7,280	308.13	1.77	1.77	0.00
17.60	0.38	6,293	308.05	1.76	1.76	0.00
17.80	0.36	5,298	307.97	1.75	1.75	0.00
18.00	0.34	4,295	307.89	1.74	1.74	0.00
18.20	0.33	3,290	307.72	1.72	1.72	0.00
18.40	0.32	2,296	307.54	1.69	1.69	0.00
18.60	0.31	1,313	307.37	1.67	1.67	0.00
18.80	0.31	341	307.20	1.65	1.65	0.00
19.00	0.30	64	307.15	0.34	0.34	0.00
19.20	0.30	56	307.15	0.30	0.30	0.00
19.40	0.29	55	307.15	0.29	0.29	0.00
19.60	0.28	54	307.15	0.28	0.28	0.00
19.80	0.28	53	307.15	0.28	0.28	0.00
20.00	0.27	52	307.15	0.27	0.27	0.00
20.20	0.27	50	307.15	0.27	0.27	0.00
20.40	0.26	50	307.15	0.26	0.26	0.00
20.60	0.26	49	307.15	0.26	0.26	0.00
20.80	0.25	48	307.15	0.25	0.25	0.00
21.00	0.25	47	307.15	0.25	0.25	0.00

Hydrograph for Pond INF1: MC-3500 StormTech INFILTRATION 1 (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
21.20	0.24	46	307.15	0.24	0.24	0.00
21.40	0.24	45	307.15	0.24	0.24	0.00
21.60	0.23	44	307.15	0.23	0.23	0.00
21.80	0.23	43	307.15	0.23	0.23	0.00
22.00	0.22	43	307.15	0.22	0.22	0.00
22.20	0.22	42	307.15	0.22	0.22	0.00
22.40	0.21	41	307.15	0.22	0.22	0.00
22.60	0.21	40	307.15	0.21	0.21	0.00
22.80	0.21	39	307.15	0.21	0.21	0.00
23.00	0.20	38	307.15	0.20	0.20	0.00
23.20	0.20	37	307.15	0.20	0.20	0.00
23.40	0.19	36	307.15	0.19	0.19	0.00
23.60	0.19	36	307.15	0.19	0.19	0.00
23.80	0.18	35	307.15	0.18	0.18	0.00
24.00	0.18	34	307.15	0.18	0.18	0.00

Stage-Discharge for Pond INF1: MC-3500 StormTech INFILTRATION 1

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
307.14	0.00	0.00	0.00
307.24	1.66	1.66	0.00
307.34	1.67	1.67	0.00
307.44	1.68	1.68	0.00
307.54	1.69	1.69	0.00
307.64	1.71	1.71	0.00
307.74	1.72	1.72	0.00
307.84	1.73	1.73	0.00
307.94	1.74	1.74	0.00
308.04	1.76	1.76	0.00
308.14	1.77	1.77	0.00
308.24	1.78	1.78	0.00
308.34	1.79	1.79	0.00
308.44	1.81	1.81	0.00
308.54	1.82	1.82	0.00
308.64	1.83	1.83	0.00
308.74	1.84	1.84	0.00
308.84	1.86	1.86	0.00
308.94	1.87	1.87	0.00
309.04	1.88	1.88	0.00
309.14	1.89	1.89	0.00
309.24	1.91	1.91	0.00
309.34	1.92	1.92	0.00
309.44	1.93	1.93	0.00
309.54	1.94	1.94	0.00
309.64	1.96	1.96	0.00
309.74	2.10	1.97	0.13
309.84	2.39	1.98	0.41
309.94	2.77	1.99	0.77
310.04	3.14	2.01	1.14
310.14	3.41	2.02	1.39
310.24	3.63	2.03	1.60
310.34	3.83	2.04	1.78
310.44	4.00	2.06	1.95
310.54	4.17	2.07	2.10
310.64	4.32	2.08	2.24
310.74	4.47	2.09	2.37
310.84	4.61	2.11	2.50
310.94	4.74	2.12	2.62
311.04	4.87	2.13	2.73
311.14	4.99	2.14	2.84
311.24	5.11	2.16	2.95
311.34	5.22	2.17	3.05
311.44	5.33	2.18	3.15
311.54	5.44	2.19	3.25
311.64	5.55	2.21	3.34
311.74	5.65	2.22	3.43
311.84	5.75	2.23	3.52
311.94	5.85	2.24	3.60
312.04	5.94	2.26	3.69
312.14	6.04	2.27	3.77
312.24	6.49	2.28	4.21
312.34	7.22	2.29	4.93
312.44	8.19	2.31	5.89
312.54	9.36	2.32	7.04
312.64	**10.73**	**2.33**	**8.40**

Stage-Area-Storage for Pond INF1: MC-3500 StormTech INFILTRATION 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
307.14	**14,195**	0
307.24	14,195	568
307.34	14,195	1,136
307.44	14,195	1,703
307.54	14,195	2,271
307.64	14,195	2,839
307.74	14,195	3,407
307.84	14,195	3,975
307.94	14,195	4,878
308.04	14,195	6,114
308.14	14,195	7,345
308.24	14,195	8,571
308.34	14,195	9,792
308.44	14,195	11,008
308.54	14,195	12,218
308.64	14,195	13,423
308.74	14,195	14,621
308.84	14,195	15,812
308.94	14,195	16,996
309.04	14,195	18,173
309.14	14,195	19,342
309.24	14,195	20,502
309.34	14,195	21,653
309.44	14,195	22,793
309.54	14,195	23,924
309.64	14,195	25,044
309.74	14,195	26,152
309.84	14,195	27,248
309.94	14,195	28,331
310.04	14,195	29,400
310.14	14,195	30,454
310.24	14,195	31,492
310.34	14,195	32,512
310.44	14,195	33,514
310.54	14,195	34,496
310.64	14,195	35,457
310.74	14,195	36,394
310.84	14,195	37,304
310.94	14,195	38,186
311.04	14,195	39,035
311.14	14,195	39,843
311.24	14,195	40,596
311.34	14,195	41,282
311.44	14,195	41,919
311.54	14,195	42,529
311.64	14,195	43,111
311.74	14,195	43,679
311.84	14,195	44,247
311.94	14,195	44,814
312.04	14,195	45,382
312.14	14,195	45,950
312.24	14,195	46,518
312.34	14,195	47,086
312.44	14,195	47,654
312.54	14,195	48,221
312.64	14,195	**48,789**

Summary for Pond INF2: MC-3500 StormTech INFILTRATION 2

Inflow Area = 1.946 ac, 38.50% Impervious, Inflow Depth > 2.21" for 10-Year event
Inflow = 4.12 cfs @ 12.17 hrs, Volume= 0.358 af
Outflow = 1.15 cfs @ 12.62 hrs, Volume= 0.358 af, Atten= 72%, Lag= 27.1 min
Discarded = 0.45 cfs @ 12.62 hrs, Volume= 0.326 af
Primary = 0.70 cfs @ 12.62 hrs, Volume= 0.032 af
Routed to Link N : POI North

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 305.90' @ 12.62 hrs Surf.Area= 3,229 sf Storage= 5,333 cf

Plug-Flow detention time= 93.7 min calculated for 0.358 af (100% of inflow)
Center-of-Mass det. time= 93.2 min (935.0 - 841.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	303.50'	4,561 cf	**22.75'W x 141.93'L x 5.50'H Field A** 17,759 cf Overall - 6,357 cf Embedded = 11,402 cf x 40.0% Voids
#2A	304.25'	6,357 cf	**ADS_StormTech MC-3500 d +Cap** x 57 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 57 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		10,918 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	303.50'	**5.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 291.50'
#2	Primary	305.65'	**21.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	308.50'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.45 cfs @ 12.62 hrs HW=305.90' (Free Discharge)
└**1=Exfiltration** (Controls 0.45 cfs)

Primary OutFlow Max=0.70 cfs @ 12.62 hrs HW=305.90' (Free Discharge)
├**2=Orifice/Grate** (Orifice Controls 0.70 cfs @ 1.60 fps)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond INF2: MC-3500 StormTech INFILTRATION 2 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

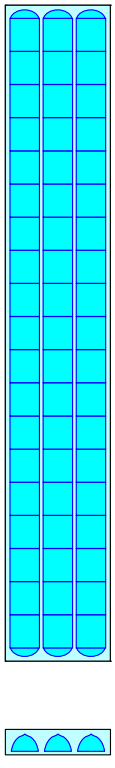
19 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 139.93' Row Length +12.0" End Stone x 2 = 141.93' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

57 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 6,356.7 cf Chamber Storage

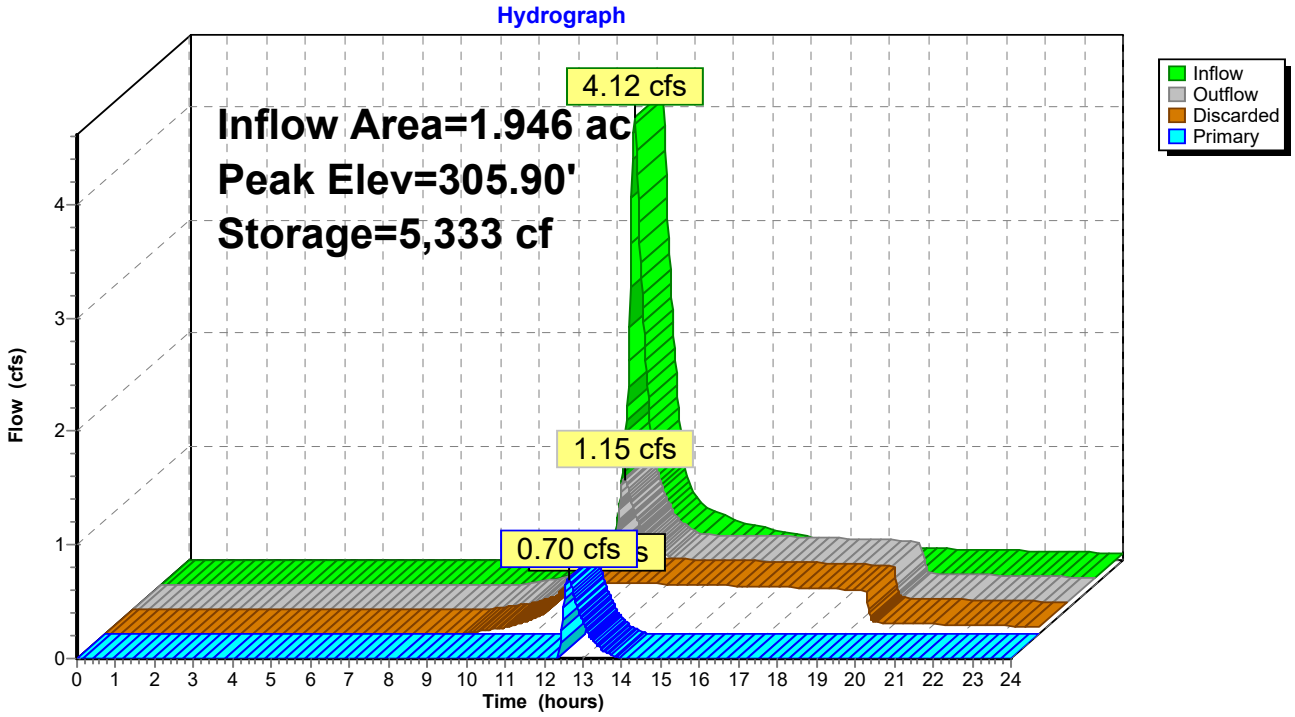
17,759.0 cf Field - 6,356.7 cf Chambers = 11,402.3 cf Stone x 40.0% Voids = 4,560.9 cf Stone Storage

Chamber Storage + Stone Storage = 10,917.6 cf = 0.251 af
Overall Storage Efficiency = 61.5%
Overall System Size = 141.93' x 22.75' x 5.50'

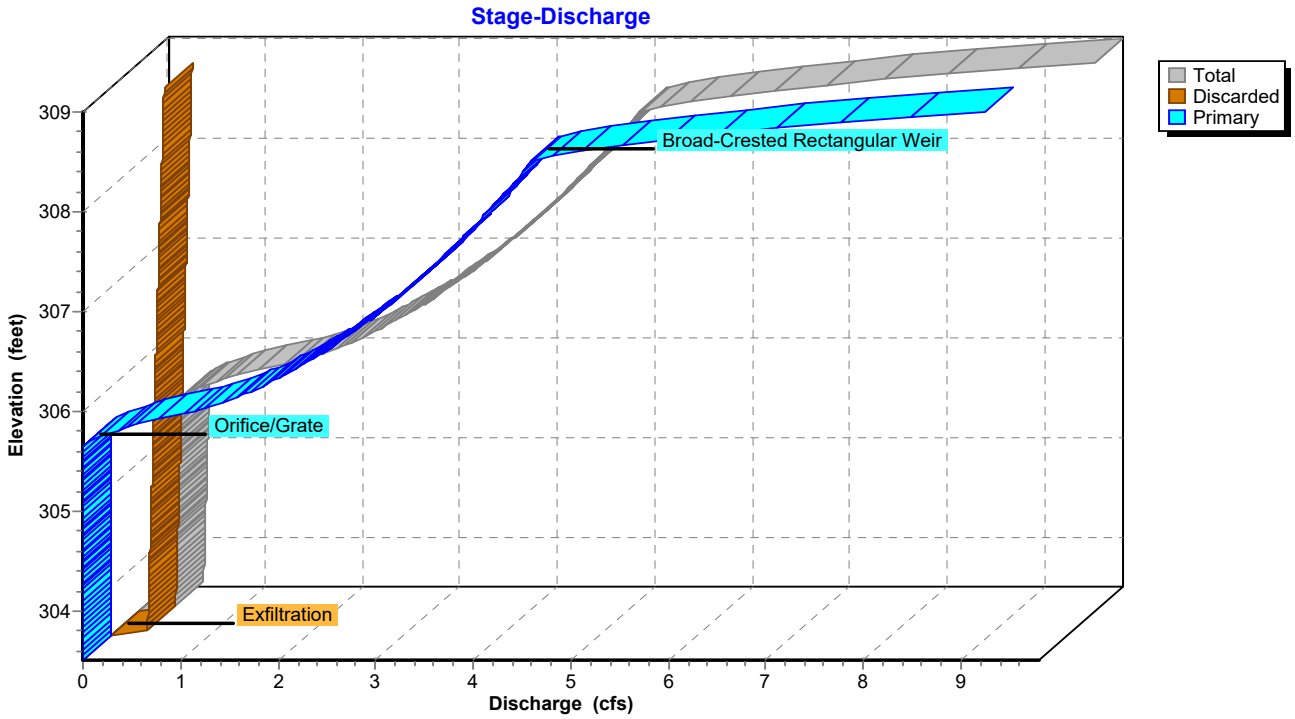
57 Chambers
657.7 cy Field
422.3 cy Stone



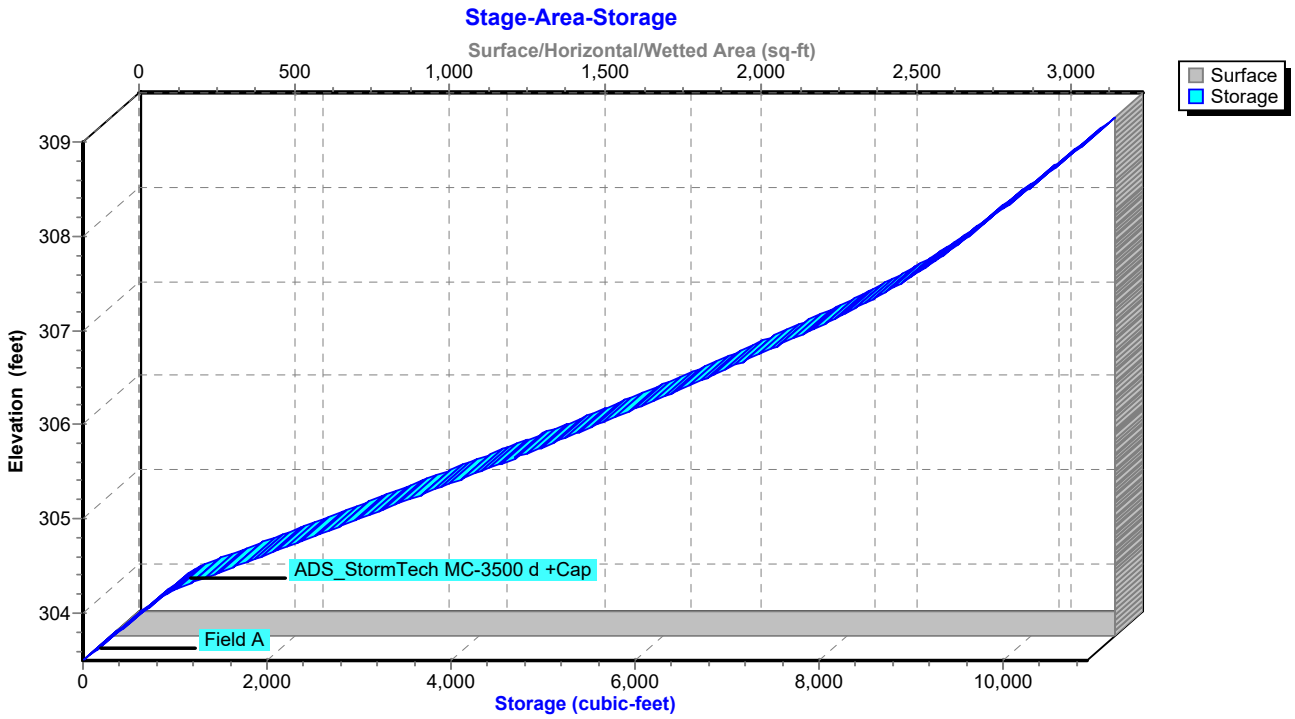
Pond INF2: MC-3500 StormTech INFILTRATION 2



Pond INF2: MC-3500 StormTech INFILTRATION 2



Pond INF2: MC-3500 StormTech INFILTRATION 2



Hydrograph for Pond INF2: MC-3500 StormTech INFILTRATION 2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	303.50	0.00	0.00	0.00
0.20	0.00	0	303.50	0.00	0.00	0.00
0.40	0.00	0	303.50	0.00	0.00	0.00
0.60	0.00	0	303.50	0.00	0.00	0.00
0.80	0.00	0	303.50	0.00	0.00	0.00
1.00	0.00	0	303.50	0.00	0.00	0.00
1.20	0.00	0	303.50	0.00	0.00	0.00
1.40	0.00	0	303.50	0.00	0.00	0.00
1.60	0.00	0	303.50	0.00	0.00	0.00
1.80	0.00	0	303.50	0.00	0.00	0.00
2.00	0.00	0	303.50	0.00	0.00	0.00
2.20	0.00	0	303.50	0.00	0.00	0.00
2.40	0.00	0	303.50	0.00	0.00	0.00
2.60	0.00	0	303.50	0.00	0.00	0.00
2.80	0.00	0	303.50	0.00	0.00	0.00
3.00	0.00	0	303.50	0.00	0.00	0.00
3.20	0.00	0	303.50	0.00	0.00	0.00
3.40	0.00	0	303.50	0.00	0.00	0.00
3.60	0.00	0	303.50	0.00	0.00	0.00
3.80	0.00	0	303.50	0.00	0.00	0.00
4.00	0.00	0	303.50	0.00	0.00	0.00
4.20	0.00	0	303.50	0.00	0.00	0.00
4.40	0.00	0	303.50	0.00	0.00	0.00
4.60	0.00	0	303.50	0.00	0.00	0.00
4.80	0.00	0	303.50	0.00	0.00	0.00
5.00	0.00	0	303.50	0.00	0.00	0.00
5.20	0.00	0	303.50	0.00	0.00	0.00
5.40	0.00	0	303.50	0.00	0.00	0.00
5.60	0.00	0	303.50	0.00	0.00	0.00
5.80	0.00	0	303.50	0.00	0.00	0.00
6.00	0.00	0	303.50	0.00	0.00	0.00
6.20	0.00	0	303.50	0.00	0.00	0.00
6.40	0.00	0	303.50	0.00	0.00	0.00
6.60	0.00	0	303.50	0.00	0.00	0.00
6.80	0.00	0	303.50	0.00	0.00	0.00
7.00	0.00	0	303.50	0.00	0.00	0.00
7.20	0.00	0	303.50	0.00	0.00	0.00
7.40	0.00	0	303.50	0.00	0.00	0.00
7.60	0.00	0	303.50	0.00	0.00	0.00
7.80	0.00	0	303.50	0.00	0.00	0.00
8.00	0.00	0	303.50	0.00	0.00	0.00
8.20	0.00	0	303.50	0.00	0.00	0.00
8.40	0.00	0	303.50	0.00	0.00	0.00
8.60	0.00	0	303.50	0.00	0.00	0.00
8.80	0.00	0	303.50	0.00	0.00	0.00
9.00	0.00	0	303.50	0.00	0.00	0.00
9.20	0.00	1	303.50	0.00	0.00	0.00
9.40	0.01	2	303.50	0.01	0.01	0.00
9.60	0.02	4	303.50	0.02	0.02	0.00
9.80	0.03	6	303.50	0.03	0.03	0.00
10.00	0.04	8	303.51	0.04	0.04	0.00
10.20	0.06	10	303.51	0.05	0.05	0.00
10.40	0.07	13	303.51	0.07	0.07	0.00

Hydrograph for Pond INF2: MC-3500 StormTech INFILTRATION 2 (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
10.60	0.09	17	303.51	0.09	0.09	0.00
10.80	0.12	21	303.52	0.11	0.11	0.00
11.00	0.14	26	303.52	0.13	0.13	0.00
11.20	0.18	31	303.52	0.17	0.17	0.00
11.40	0.24	42	303.53	0.22	0.22	0.00
11.60	0.33	57	303.54	0.30	0.30	0.00
11.80	0.77	163	303.63	0.38	0.38	0.00
12.00	**1.75**	742	304.07	0.39	0.39	0.00
12.20	**4.00**	2,761	304.91	0.42	0.42	0.00
12.40	2.32	4,665	305.63	0.44	0.44	0.00
12.60	1.24	**5,330**	**305.90**	**1.14**	**0.45**	**0.69**
12.80	0.73	**5,217**	**305.85**	**0.96**	**0.45**	**0.51**
13.00	0.59	5,075	305.80	0.76	0.45	0.32
13.20	0.49	4,962	305.75	0.63	0.44	0.18
13.40	0.45	4,878	305.72	0.55	0.44	0.11
13.60	0.42	4,818	305.69	0.50	0.44	0.05
13.80	0.39	4,764	305.67	0.46	0.44	0.02
14.00	0.36	4,710	305.65	0.44	0.44	0.00
14.20	0.33	4,643	305.63	0.44	0.44	0.00
14.40	0.32	4,561	305.59	0.44	0.44	0.00
14.60	0.30	4,470	305.56	0.44	0.44	0.00
14.80	0.29	4,368	305.52	0.44	0.44	0.00
15.00	0.27	4,257	305.48	0.44	0.44	0.00
15.20	0.26	4,137	305.43	0.43	0.43	0.00
15.40	0.24	4,006	305.38	0.43	0.43	0.00
15.60	0.23	3,866	305.33	0.43	0.43	0.00
15.80	0.21	3,716	305.27	0.43	0.43	0.00
16.00	0.20	3,556	305.21	0.43	0.43	0.00
16.20	0.18	3,386	305.14	0.42	0.42	0.00
16.40	0.18	3,210	305.08	0.42	0.42	0.00
16.60	0.17	3,031	305.01	0.42	0.42	0.00
16.80	0.16	2,848	304.94	0.42	0.42	0.00
17.00	0.16	2,662	304.87	0.42	0.42	0.00
17.20	0.15	2,473	304.80	0.41	0.41	0.00
17.40	0.14	2,280	304.73	0.41	0.41	0.00
17.60	0.14	2,084	304.66	0.41	0.41	0.00
17.80	0.13	1,885	304.58	0.41	0.41	0.00
18.00	0.12	1,682	304.51	0.41	0.41	0.00
18.20	0.12	1,476	304.43	0.40	0.40	0.00
18.40	0.11	1,269	304.36	0.40	0.40	0.00
18.60	0.11	1,061	304.28	0.40	0.40	0.00
18.80	0.11	855	304.16	0.39	0.39	0.00
19.00	0.11	650	304.00	0.39	0.39	0.00
19.20	0.10	447	303.85	0.38	0.38	0.00
19.40	0.10	247	303.69	0.38	0.38	0.00
19.60	0.10	53	303.54	0.28	0.28	0.00
19.80	0.10	19	303.52	0.10	0.10	0.00
20.00	0.10	18	303.51	0.10	0.10	0.00
20.20	0.09	18	303.51	0.09	0.09	0.00
20.40	0.09	18	303.51	0.09	0.09	0.00
20.60	0.09	17	303.51	0.09	0.09	0.00
20.80	0.09	17	303.51	0.09	0.09	0.00
21.00	0.09	17	303.51	0.09	0.09	0.00

Hydrograph for Pond INF2: MC-3500 StormTech INFILTRATION 2 (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
21.20	0.09	16	303.51	0.09	0.09	0.00
21.40	0.08	16	303.51	0.09	0.09	0.00
21.60	0.08	16	303.51	0.08	0.08	0.00
21.80	0.08	16	303.51	0.08	0.08	0.00
22.00	0.08	15	303.51	0.08	0.08	0.00
22.20	0.08	15	303.51	0.08	0.08	0.00
22.40	0.08	15	303.51	0.08	0.08	0.00
22.60	0.08	14	303.51	0.08	0.08	0.00
22.80	0.07	14	303.51	0.07	0.07	0.00
23.00	0.07	14	303.51	0.07	0.07	0.00
23.20	0.07	13	303.51	0.07	0.07	0.00
23.40	0.07	13	303.51	0.07	0.07	0.00
23.60	0.07	13	303.51	0.07	0.07	0.00
23.80	0.07	12	303.51	0.07	0.07	0.00
24.00	0.06	12	303.51	0.06	0.06	0.00

Stage-Discharge for Pond INF2: MC-3500 StormTech INFILTRATION 2

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
303.50	0.00	0.00	0.00
303.60	0.38	0.38	0.00
303.70	0.38	0.38	0.00
303.80	0.38	0.38	0.00
303.90	0.39	0.39	0.00
304.00	0.39	0.39	0.00
304.10	0.39	0.39	0.00
304.20	0.40	0.40	0.00
304.30	0.40	0.40	0.00
304.40	0.40	0.40	0.00
304.50	0.40	0.40	0.00
304.60	0.41	0.41	0.00
304.70	0.41	0.41	0.00
304.80	0.41	0.41	0.00
304.90	0.42	0.42	0.00
305.00	0.42	0.42	0.00
305.10	0.42	0.42	0.00
305.20	0.43	0.43	0.00
305.30	0.43	0.43	0.00
305.40	0.43	0.43	0.00
305.50	0.44	0.44	0.00
305.60	0.44	0.44	0.00
305.70	0.51	0.44	0.06
305.80	0.77	0.45	0.33
305.90	1.15	0.45	0.70
306.00	1.60	0.45	1.15
306.10	1.93	0.45	1.47
306.20	2.18	0.46	1.72
306.30	2.40	0.46	1.94
306.40	2.60	0.46	2.14
306.50	2.78	0.47	2.32
306.60	2.95	0.47	2.48
306.70	3.11	0.47	2.64
306.80	3.26	0.48	2.78
306.90	3.40	0.48	2.92
307.00	3.54	0.48	3.05
307.10	3.67	0.49	3.18
307.20	3.79	0.49	3.30
307.30	3.91	0.49	3.42
307.40	4.03	0.50	3.53
307.50	4.14	0.50	3.64
307.60	4.25	0.50	3.75
307.70	4.36	0.50	3.85
307.80	4.46	0.51	3.95
307.90	4.56	0.51	4.05
308.00	4.66	0.51	4.15
308.10	4.76	0.52	4.24
308.20	4.86	0.52	4.34
308.30	4.95	0.52	4.43
308.40	5.04	0.53	4.51
308.50	5.13	0.53	4.60
308.60	5.57	0.53	5.04
308.70	6.31	0.54	5.77
308.80	7.27	0.54	6.73
308.90	8.43	0.54	7.89
309.00	**9.80**	**0.55**	**9.25**

Stage-Area-Storage for Pond INF2: MC-3500 StormTech INFILTRATION 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
303.50	**3,229**	0
303.60	3,229	129
303.70	3,229	258
303.80	3,229	387
303.90	3,229	517
304.00	3,229	646
304.10	3,229	775
304.20	3,229	904
304.30	3,229	1,106
304.40	3,229	1,380
304.50	3,229	1,654
304.60	3,229	1,926
304.70	3,229	2,197
304.80	3,229	2,467
304.90	3,229	2,735
305.00	3,229	3,003
305.10	3,229	3,269
305.20	3,229	3,533
305.30	3,229	3,796
305.40	3,229	4,058
305.50	3,229	4,318
305.60	3,229	4,575
305.70	3,229	4,831
305.80	3,229	5,085
305.90	3,229	5,336
306.00	3,229	5,585
306.10	3,229	5,832
306.20	3,229	6,076
306.30	3,229	6,317
306.40	3,229	6,555
306.50	3,229	6,789
306.60	3,229	7,021
306.70	3,229	7,248
306.80	3,229	7,472
306.90	3,229	7,691
307.00	3,229	7,905
307.10	3,229	8,115
307.20	3,229	8,318
307.30	3,229	8,516
307.40	3,229	8,706
307.50	3,229	8,887
307.60	3,229	9,056
307.70	3,229	9,211
307.80	3,229	9,355
307.90	3,229	9,494
308.00	3,229	9,626
308.10	3,229	9,755
308.20	3,229	9,884
308.30	3,229	10,013
308.40	3,229	10,143
308.50	3,229	10,272
308.60	3,229	10,401
308.70	3,229	10,530
308.80	3,229	10,659
308.90	3,229	10,788
309.00	3,229	**10,918**

Summary for Pond SPLIT: Flow Splitter

[57] Hint: Peaked at 303.97' (Flood elevation advised)

Inflow Area = 3.798 ac, 98.07% Impervious, Inflow Depth > 4.47" for 10-Year event
Inflow = 17.46 cfs @ 12.08 hrs, Volume= 1.415 af
Outflow = 17.46 cfs @ 12.08 hrs, Volume= 1.415 af, Atten= 0%, Lag= 0.0 min
Primary = 1.15 cfs @ 12.08 hrs, Volume= 0.671 af
Routed to Pond BIO : BioRetention 1 (South)
Secondary = 16.31 cfs @ 12.08 hrs, Volume= 0.744 af
Routed to Pond DET1 : MC-4500 StormTech DETENTION ONLY

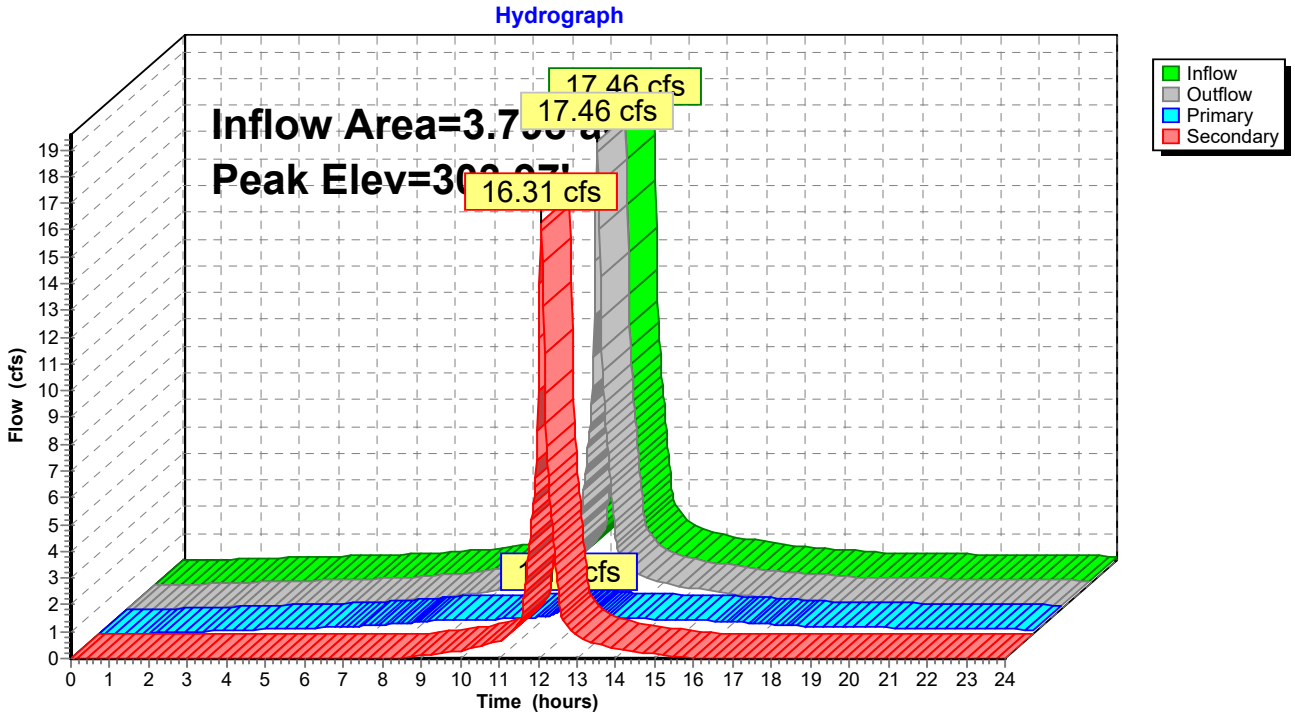
Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 303.97' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	302.23'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Device 3	302.73'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Secondary	302.23'	**30.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

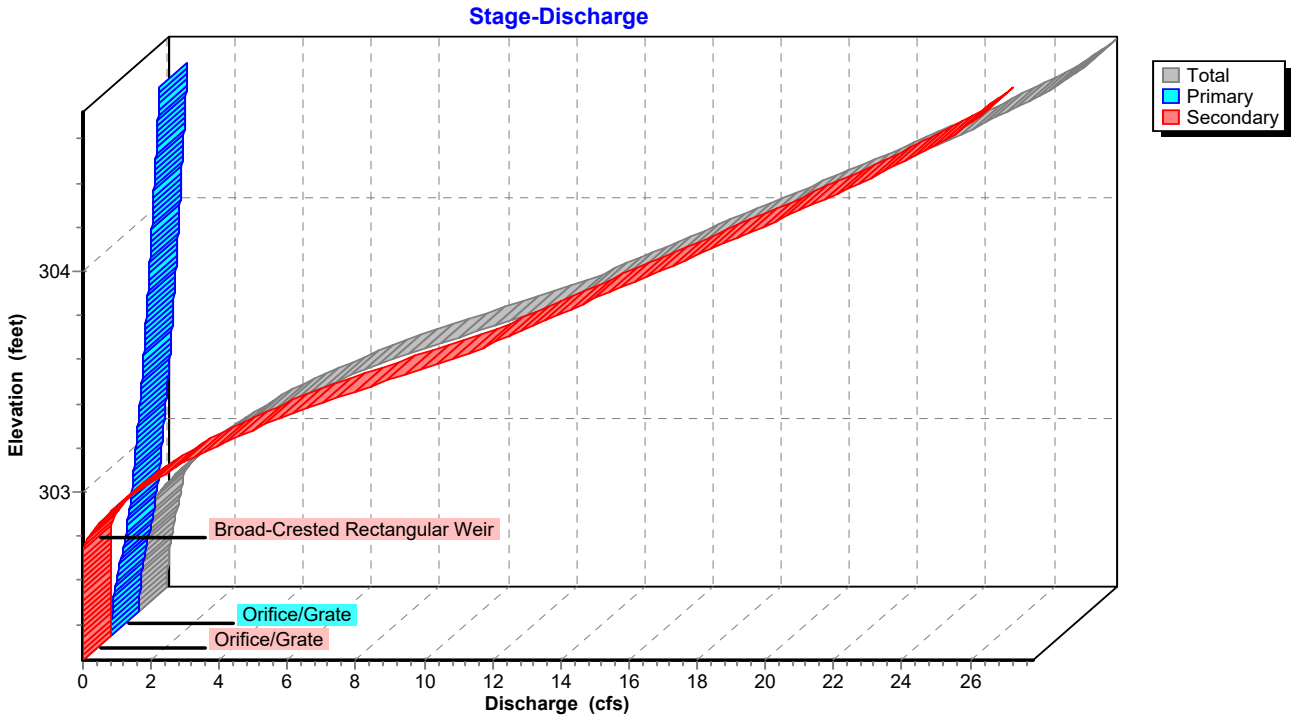
Primary OutFlow Max=1.15 cfs @ 12.08 hrs HW=303.96' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 1.15 cfs @ 5.86 fps)

Secondary OutFlow Max=16.24 cfs @ 12.08 hrs HW=303.96' (Free Discharge)
└**3=Orifice/Grate** (Orifice Controls 16.24 cfs @ 4.48 fps)
└**2=Broad-Crested Rectangular Weir** (Passes 16.24 cfs of 18.13 cfs potential flow)

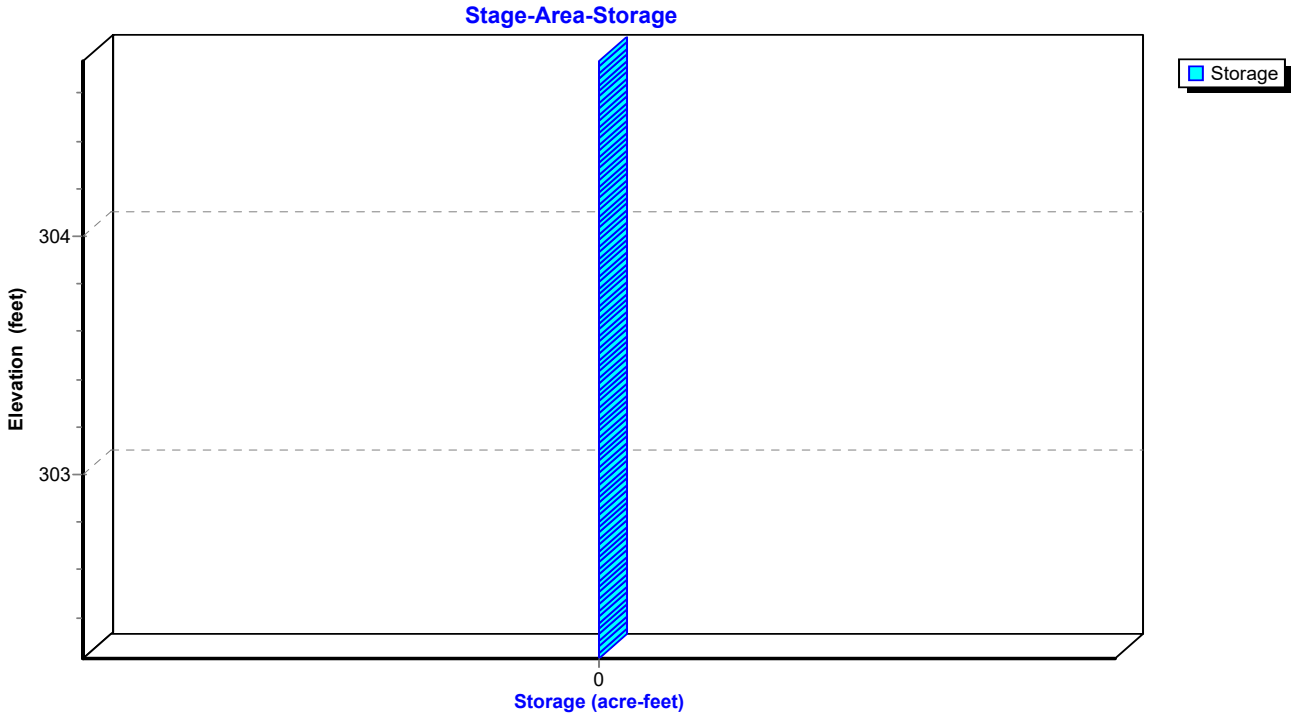
Pond SPLIT: Flow Splitter



Pond SPLIT: Flow Splitter



Pond SPLIT: Flow Splitter



Hydrograph for Pond SPLIT: Flow Splitter

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	302.23	0.00	0.00	0.00
0.20	0.00	302.23	0.00	0.00	0.00
0.40	0.00	302.23	0.00	0.00	0.00
0.60	0.00	302.23	0.00	0.00	0.00
0.80	0.00	302.23	0.00	0.00	0.00
1.00	0.00	302.26	0.00	0.00	0.00
1.20	0.02	302.31	0.02	0.02	0.00
1.40	0.03	302.33	0.03	0.03	0.00
1.60	0.04	302.35	0.04	0.04	0.00
1.80	0.05	302.36	0.05	0.05	0.00
2.00	0.06	302.38	0.06	0.06	0.00
2.20	0.07	302.39	0.07	0.07	0.00
2.40	0.08	302.40	0.08	0.08	0.00
2.60	0.09	302.41	0.09	0.09	0.00
2.80	0.10	302.42	0.10	0.10	0.00
3.00	0.11	302.43	0.11	0.11	0.00
3.20	0.12	302.44	0.12	0.12	0.00
3.40	0.13	302.45	0.13	0.13	0.00
3.60	0.14	302.46	0.14	0.14	0.00
3.80	0.15	302.46	0.15	0.15	0.00
4.00	0.16	302.47	0.16	0.16	0.00
4.20	0.17	302.48	0.17	0.17	0.00
4.40	0.17	302.49	0.17	0.17	0.00
4.60	0.18	302.49	0.18	0.18	0.00
4.80	0.19	302.50	0.19	0.19	0.00
5.00	0.20	302.51	0.20	0.20	0.00
5.20	0.21	302.51	0.21	0.21	0.00
5.40	0.21	302.52	0.21	0.21	0.00
5.60	0.22	302.52	0.22	0.22	0.00
5.80	0.23	302.53	0.23	0.23	0.00
6.00	0.24	302.54	0.24	0.24	0.00
6.20	0.25	302.55	0.25	0.25	0.00
6.40	0.27	302.56	0.27	0.27	0.00
6.60	0.29	302.57	0.29	0.29	0.00
6.80	0.31	302.59	0.31	0.31	0.00
7.00	0.32	302.60	0.32	0.32	0.00
7.20	0.34	302.62	0.34	0.34	0.00
7.40	0.36	302.63	0.36	0.36	0.00
7.60	0.38	302.64	0.38	0.38	0.00
7.80	0.40	302.66	0.40	0.40	0.00
8.00	0.42	302.68	0.42	0.42	0.00
8.20	0.45	302.70	0.45	0.45	0.00
8.40	0.49	302.74	0.49	0.48	0.01
8.60	0.53	302.75	0.53	0.49	0.04
8.80	0.58	302.76	0.58	0.50	0.07
9.00	0.62	302.77	0.62	0.51	0.11
9.20	0.66	302.78	0.66	0.52	0.14
9.40	0.70	302.79	0.70	0.53	0.17
9.60	0.75	302.80	0.75	0.54	0.21
9.80	0.79	302.81	0.79	0.54	0.25
10.00	0.83	302.82	0.83	0.55	0.28
10.20	0.90	302.83	0.90	0.56	0.34
10.40	0.98	302.84	0.98	0.57	0.42

Hydrograph for Pond SPLIT: Flow Splitter (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
10.60	1.07	302.85	1.07	0.58	0.49
10.80	1.16	302.87	1.16	0.59	0.57
11.00	1.25	302.88	1.25	0.60	0.65
11.20	1.46	302.91	1.46	0.62	0.84
11.40	1.79	302.95	1.79	0.65	1.14
11.60	2.42	303.01	2.42	0.69	1.73
11.80	5.37	303.25	5.37	0.83	4.54
12.00	**11.02**	**303.56**	**11.02**	**0.98**	**10.04**
12.20	**9.71**	**303.50**	**9.71**	**0.95**	**8.76**
12.40	5.19	303.24	5.19	0.82	4.37
12.60	2.33	303.01	2.33	0.69	1.64
12.80	1.80	302.95	1.80	0.65	1.15
13.00	1.47	302.91	1.47	0.62	0.85
13.20	1.27	302.88	1.27	0.60	0.67
13.40	1.18	302.87	1.18	0.59	0.59
13.60	1.09	302.86	1.09	0.58	0.51
13.80	1.01	302.84	1.01	0.57	0.44
14.00	0.92	302.83	0.92	0.56	0.36
14.20	0.86	302.82	0.86	0.55	0.31
14.40	0.82	302.81	0.82	0.55	0.27
14.60	0.78	302.81	0.78	0.54	0.24
14.80	0.74	302.80	0.74	0.53	0.20
15.00	0.69	302.79	0.69	0.53	0.17
15.20	0.65	302.78	0.65	0.52	0.13
15.40	0.61	302.77	0.61	0.51	0.10
15.60	0.57	302.76	0.57	0.50	0.07
15.80	0.53	302.75	0.53	0.49	0.04
16.00	0.49	302.74	0.49	0.48	0.01
16.20	0.46	302.71	0.46	0.46	0.00
16.40	0.44	302.69	0.44	0.44	0.00
16.60	0.42	302.68	0.42	0.42	0.00
16.80	0.40	302.66	0.40	0.40	0.00
17.00	0.39	302.65	0.39	0.39	0.00
17.20	0.37	302.63	0.37	0.37	0.00
17.40	0.35	302.62	0.35	0.35	0.00
17.60	0.33	302.61	0.33	0.33	0.00
17.80	0.31	302.59	0.31	0.31	0.00
18.00	0.30	302.58	0.30	0.30	0.00
18.20	0.29	302.57	0.29	0.29	0.00
18.40	0.28	302.57	0.28	0.28	0.00
18.60	0.27	302.56	0.27	0.27	0.00
18.80	0.27	302.56	0.27	0.27	0.00
19.00	0.26	302.56	0.26	0.26	0.00
19.20	0.26	302.55	0.26	0.26	0.00
19.40	0.25	302.55	0.25	0.25	0.00
19.60	0.25	302.54	0.25	0.25	0.00
19.80	0.24	302.54	0.24	0.24	0.00
20.00	0.24	302.54	0.24	0.24	0.00
20.20	0.23	302.53	0.23	0.23	0.00
20.40	0.23	302.53	0.23	0.23	0.00
20.60	0.22	302.53	0.22	0.22	0.00
20.80	0.22	302.52	0.22	0.22	0.00
21.00	0.22	302.52	0.22	0.22	0.00

Hydrograph for Pond SPLIT: Flow Splitter (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
21.20	0.21	302.52	0.21	0.21	0.00
21.40	0.21	302.51	0.21	0.21	0.00
21.60	0.20	302.51	0.20	0.20	0.00
21.80	0.20	302.51	0.20	0.20	0.00
22.00	0.20	302.50	0.20	0.20	0.00
22.20	0.19	302.50	0.19	0.19	0.00
22.40	0.19	302.50	0.19	0.19	0.00
22.60	0.18	302.49	0.18	0.18	0.00
22.80	0.18	302.49	0.18	0.18	0.00
23.00	0.18	302.49	0.18	0.18	0.00
23.20	0.17	302.48	0.17	0.17	0.00
23.40	0.17	302.48	0.17	0.17	0.00
23.60	0.16	302.48	0.16	0.16	0.00
23.80	0.16	302.47	0.16	0.16	0.00
24.00	0.15	302.47	0.15	0.15	0.00

Stage-Discharge for Pond SPLIT: Flow Splitter

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
302.23	0.00	0.00	0.00
302.33	0.03	0.03	0.00
302.43	0.11	0.11	0.00
302.53	0.23	0.23	0.00
302.63	0.36	0.36	0.00
302.73	0.47	0.47	0.00
302.83	0.91	0.56	0.35
302.93	1.64	0.63	1.00
303.03	2.58	0.70	1.88
303.13	3.72	0.76	2.95
303.23	5.06	0.82	4.24
303.33	6.60	0.87	5.73
303.43	8.39	0.92	7.47
303.53	10.41	0.97	9.45
303.63	12.32	1.01	11.30
303.73	13.88	1.06	12.82
303.83	15.39	1.10	14.29
303.93	16.92	1.14	15.78
304.03	18.46	1.18	17.28
304.13	20.00	1.21	18.79
304.23	21.52	1.25	20.27
304.33	23.00	1.29	21.72
304.43	24.42	1.32	23.10
304.53	25.75	1.35	24.40
304.63	26.93	1.39	25.54
304.73	**27.84**	**1.42**	**26.43**

Stage-Area-Storage for Pond SPLIT: Flow Splitter

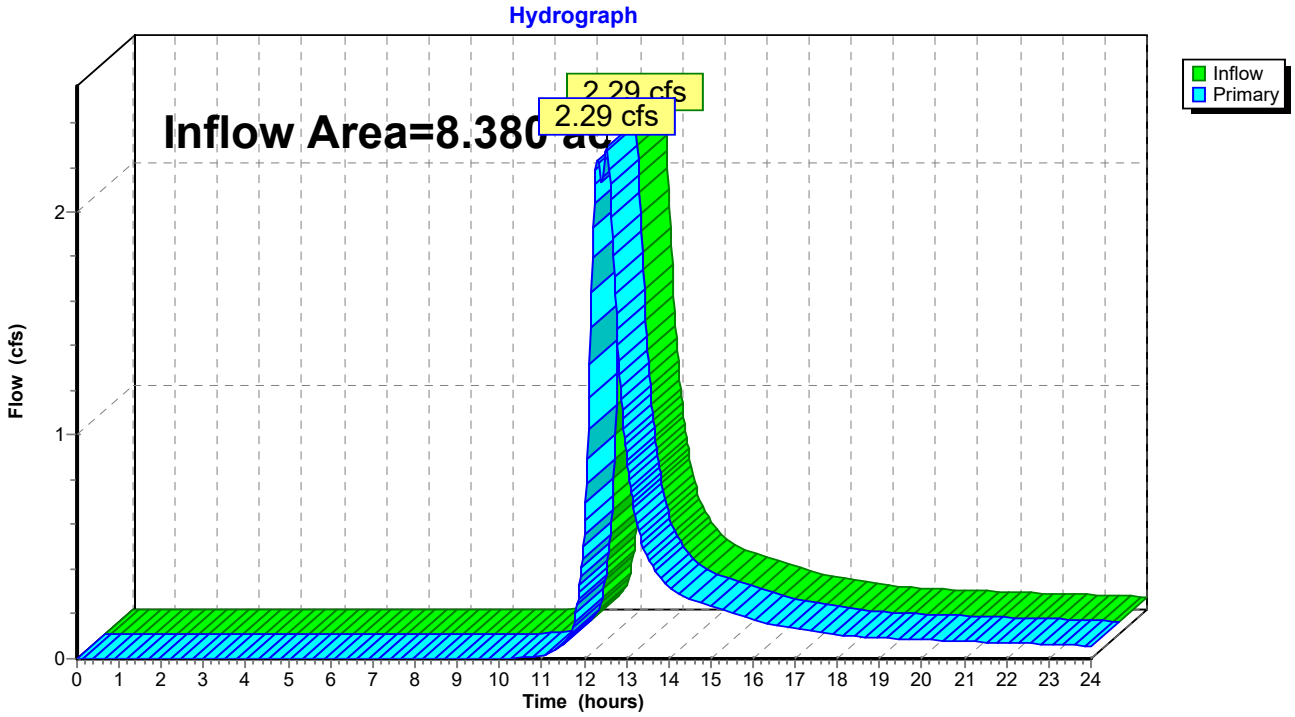
Elevation (feet)	Storage (acre-feet)
302.23	**0.000**
302.33	0.000
302.43	0.000
302.53	0.000
302.63	0.000
302.73	0.000
302.83	0.000
302.93	0.000
303.03	0.000
303.13	0.000
303.23	0.000
303.33	0.000
303.43	0.000
303.53	0.000
303.63	0.000
303.73	0.000
303.83	0.000
303.93	0.000
304.03	0.000
304.13	0.000
304.23	0.000
304.33	0.000
304.43	0.000
304.53	0.000
304.63	0.000
304.73	0.000

Summary for Link N: POI North

Inflow Area = 8.380 ac, 59.74% Impervious, Inflow Depth > 0.42" for 10-Year event
Inflow = 2.29 cfs @ 12.53 hrs, Volume= 0.292 af
Primary = 2.29 cfs @ 12.53 hrs, Volume= 0.292 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link N: POI North



Hydrograph for Link N: POI North

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	10.60	0.00	0.00	0.00
0.20	0.00	0.00	0.00	10.80	0.01	0.00	0.01
0.40	0.00	0.00	0.00	11.00	0.01	0.00	0.01
0.60	0.00	0.00	0.00	11.20	0.02	0.00	0.02
0.80	0.00	0.00	0.00	11.40	0.05	0.00	0.05
1.00	0.00	0.00	0.00	11.60	0.09	0.00	0.09
1.20	0.00	0.00	0.00	11.80	0.19	0.00	0.19
1.40	0.00	0.00	0.00	12.00	0.55	0.00	0.55
1.60	0.00	0.00	0.00	12.20	1.79	0.00	1.79
1.80	0.00	0.00	0.00	12.40	**2.13**	0.00	**2.13**
2.00	0.00	0.00	0.00	12.60	**2.19**	0.00	**2.19**
2.20	0.00	0.00	0.00	12.80	1.40	0.00	1.40
2.40	0.00	0.00	0.00	13.00	0.92	0.00	0.92
2.60	0.00	0.00	0.00	13.20	0.65	0.00	0.65
2.80	0.00	0.00	0.00	13.40	0.50	0.00	0.50
3.00	0.00	0.00	0.00	13.60	0.42	0.00	0.42
3.20	0.00	0.00	0.00	13.80	0.36	0.00	0.36
3.40	0.00	0.00	0.00	14.00	0.32	0.00	0.32
3.60	0.00	0.00	0.00	14.20	0.29	0.00	0.29
3.80	0.00	0.00	0.00	14.40	0.28	0.00	0.28
4.00	0.00	0.00	0.00	14.60	0.26	0.00	0.26
4.20	0.00	0.00	0.00	14.80	0.25	0.00	0.25
4.40	0.00	0.00	0.00	15.00	0.24	0.00	0.24
4.60	0.00	0.00	0.00	15.20	0.23	0.00	0.23
4.80	0.00	0.00	0.00	15.40	0.22	0.00	0.22
5.00	0.00	0.00	0.00	15.60	0.20	0.00	0.20
5.20	0.00	0.00	0.00	15.80	0.19	0.00	0.19
5.40	0.00	0.00	0.00	16.00	0.18	0.00	0.18
5.60	0.00	0.00	0.00	16.20	0.16	0.00	0.16
5.80	0.00	0.00	0.00	16.40	0.16	0.00	0.16
6.00	0.00	0.00	0.00	16.60	0.15	0.00	0.15
6.20	0.00	0.00	0.00	16.80	0.14	0.00	0.14
6.40	0.00	0.00	0.00	17.00	0.14	0.00	0.14
6.60	0.00	0.00	0.00	17.20	0.13	0.00	0.13
6.80	0.00	0.00	0.00	17.40	0.13	0.00	0.13
7.00	0.00	0.00	0.00	17.60	0.12	0.00	0.12
7.20	0.00	0.00	0.00	17.80	0.11	0.00	0.11
7.40	0.00	0.00	0.00	18.00	0.11	0.00	0.11
7.60	0.00	0.00	0.00	18.20	0.10	0.00	0.10
7.80	0.00	0.00	0.00	18.40	0.10	0.00	0.10
8.00	0.00	0.00	0.00	18.60	0.10	0.00	0.10
8.20	0.00	0.00	0.00	18.80	0.09	0.00	0.09
8.40	0.00	0.00	0.00	19.00	0.09	0.00	0.09
8.60	0.00	0.00	0.00	19.20	0.09	0.00	0.09
8.80	0.00	0.00	0.00	19.40	0.09	0.00	0.09
9.00	0.00	0.00	0.00	19.60	0.09	0.00	0.09
9.20	0.00	0.00	0.00	19.80	0.09	0.00	0.09
9.40	0.00	0.00	0.00	20.00	0.08	0.00	0.08
9.60	0.00	0.00	0.00	20.20	0.08	0.00	0.08
9.80	0.00	0.00	0.00	20.40	0.08	0.00	0.08
10.00	0.00	0.00	0.00	20.60	0.08	0.00	0.08
10.20	0.00	0.00	0.00	20.80	0.08	0.00	0.08
10.40	0.00	0.00	0.00	21.00	0.08	0.00	0.08

Hydrograph for Link N: POI North (continued)

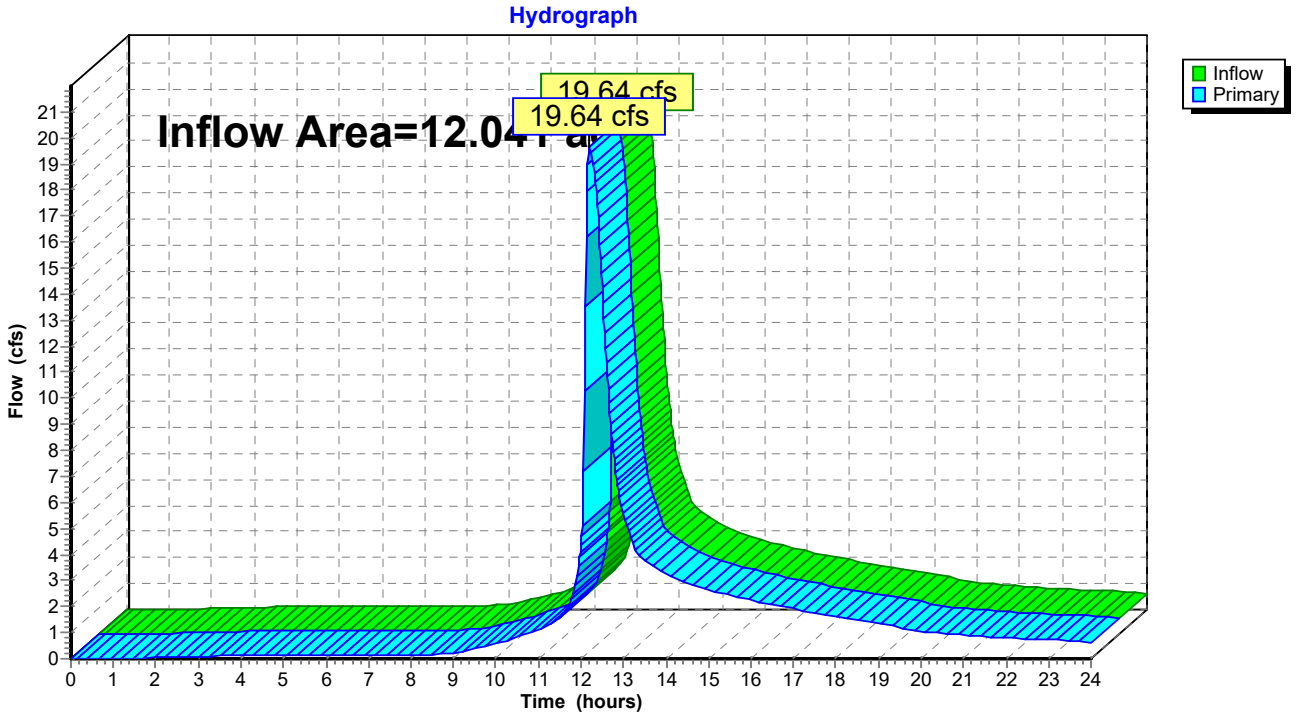
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
21.20	0.08	0.00	0.08
21.40	0.07	0.00	0.07
21.60	0.07	0.00	0.07
21.80	0.07	0.00	0.07
22.00	0.07	0.00	0.07
22.20	0.07	0.00	0.07
22.40	0.07	0.00	0.07
22.60	0.07	0.00	0.07
22.80	0.07	0.00	0.07
23.00	0.06	0.00	0.06
23.20	0.06	0.00	0.06
23.40	0.06	0.00	0.06
23.60	0.06	0.00	0.06
23.80	0.06	0.00	0.06
24.00	0.06	0.00	0.06

Summary for Link S: POI South

Inflow Area = 12.041 ac, 46.90% Impervious, Inflow Depth > 2.89" for 10-Year event
Inflow = 19.64 cfs @ 12.21 hrs, Volume= 2.902 af
Primary = 19.64 cfs @ 12.21 hrs, Volume= 2.902 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link S: POI South



Hydrograph for Link S: POI South

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	10.60	0.87	0.00	0.87
0.20	0.00	0.00	0.00	10.80	0.99	0.00	0.99
0.40	0.00	0.00	0.00	11.00	1.11	0.00	1.11
0.60	0.00	0.00	0.00	11.20	1.24	0.00	1.24
0.80	0.00	0.00	0.00	11.40	1.43	0.00	1.43
1.00	0.00	0.00	0.00	11.60	1.72	0.00	1.72
1.20	0.00	0.00	0.00	11.80	2.45	0.00	2.45
1.40	0.01	0.00	0.01	12.00	4.38	0.00	4.38
1.60	0.02	0.00	0.02	12.20	**19.62**	0.00	**19.62**
1.80	0.03	0.00	0.03	12.40	16.97	0.00	16.97
2.00	0.04	0.00	0.04	12.60	11.36	0.00	11.36
2.20	0.05	0.00	0.05	12.80	7.37	0.00	7.37
2.40	0.06	0.00	0.06	13.00	5.53	0.00	5.53
2.60	0.07	0.00	0.07	13.20	4.49	0.00	4.49
2.80	0.08	0.00	0.08	13.40	3.92	0.00	3.92
3.00	0.09	0.00	0.09	13.60	3.64	0.00	3.64
3.20	0.10	0.00	0.10	13.80	3.43	0.00	3.43
3.40	0.10	0.00	0.10	14.00	3.25	0.00	3.25
3.60	0.10	0.00	0.10	14.20	3.08	0.00	3.08
3.80	0.10	0.00	0.10	14.40	2.94	0.00	2.94
4.00	0.10	0.00	0.10	14.60	2.83	0.00	2.83
4.20	0.10	0.00	0.10	14.80	2.74	0.00	2.74
4.40	0.10	0.00	0.10	15.00	2.65	0.00	2.65
4.60	0.10	0.00	0.10	15.20	2.56	0.00	2.56
4.80	0.10	0.00	0.10	15.40	2.48	0.00	2.48
5.00	0.10	0.00	0.10	15.60	2.40	0.00	2.40
5.20	0.10	0.00	0.10	15.80	2.33	0.00	2.33
5.40	0.10	0.00	0.10	16.00	2.25	0.00	2.25
5.60	0.10	0.00	0.10	16.20	2.17	0.00	2.17
5.80	0.10	0.00	0.10	16.40	2.10	0.00	2.10
6.00	0.10	0.00	0.10	16.60	2.04	0.00	2.04
6.20	0.10	0.00	0.10	16.80	1.98	0.00	1.98
6.40	0.10	0.00	0.10	17.00	1.91	0.00	1.91
6.60	0.11	0.00	0.11	17.20	1.85	0.00	1.85
6.80	0.11	0.00	0.11	17.40	1.79	0.00	1.79
7.00	0.11	0.00	0.11	17.60	1.73	0.00	1.73
7.20	0.11	0.00	0.11	17.80	1.67	0.00	1.67
7.40	0.11	0.00	0.11	18.00	1.60	0.00	1.60
7.60	0.11	0.00	0.11	18.20	1.54	0.00	1.54
7.80	0.12	0.00	0.12	18.40	1.49	0.00	1.49
8.00	0.12	0.00	0.12	18.60	1.44	0.00	1.44
8.20	0.13	0.00	0.13	18.80	1.40	0.00	1.40
8.40	0.14	0.00	0.14	19.00	1.35	0.00	1.35
8.60	0.16	0.00	0.16	19.20	1.29	0.00	1.29
8.80	0.19	0.00	0.19	19.40	1.23	0.00	1.23
9.00	0.22	0.00	0.22	19.60	1.17	0.00	1.17
9.20	0.27	0.00	0.27	19.80	1.11	0.00	1.11
9.40	0.34	0.00	0.34	20.00	1.05	0.00	1.05
9.60	0.41	0.00	0.41	20.20	1.01	0.00	1.01
9.80	0.50	0.00	0.50	20.40	0.97	0.00	0.97
10.00	0.58	0.00	0.58	20.60	0.95	0.00	0.95
10.20	0.66	0.00	0.66	20.80	0.92	0.00	0.92
10.40	0.76	0.00	0.76	21.00	0.90	0.00	0.90

Hydrograph for Link S: POI South (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
21.20	0.88	0.00	0.88
21.40	0.86	0.00	0.86
21.60	0.84	0.00	0.84
21.80	0.82	0.00	0.82
22.00	0.81	0.00	0.81
22.20	0.79	0.00	0.79
22.40	0.77	0.00	0.77
22.60	0.76	0.00	0.76
22.80	0.74	0.00	0.74
23.00	0.73	0.00	0.73
23.20	0.71	0.00	0.71
23.40	0.69	0.00	0.69
23.60	0.67	0.00	0.67
23.80	0.64	0.00	0.64
24.00	0.62	0.00	0.62

Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA 1: Drainage Area 1 Runoff Area=165,448 sf 98.07% Impervious Runoff Depth>5.68"
Flow Length=1,066' Tc=6.0 min CN=98 Runoff=22.00 cfs 1.797 af

Subcatchment DA 1B: Drainage Area 1B - Runoff Area=69,529 sf 3.51% Impervious Runoff Depth>3.59"
Flow Length=1,406' Tc=21.5 min CN=79 Runoff=4.42 cfs 0.478 af

Subcatchment DA 2: Drainage Area 2 Runoff Area=189,852 sf 96.98% Impervious Runoff Depth>5.56"
Flow Length=1,274' Tc=6.0 min CN=97 Runoff=25.12 cfs 2.019 af

Subcatchment DA 2B: Drainage Area 2B Runoff Area=84,759 sf 38.50% Impervious Runoff Depth>3.21"
Flow Length=556' Tc=12.0 min CN=75 Runoff=6.02 cfs 0.520 af

Subcatchment DA 2C: Drainage Area 2C Runoff Area=83,452 sf 1.57% Impervious Runoff Depth>2.28"
Flow Length=466' Tc=21.7 min CN=65 Runoff=3.26 cfs 0.364 af

Subcatchment DA 3: Drainage Area 3 - Bio Runoff Area=31,825 sf 0.00% Impervious Runoff Depth>3.71"
Flow Length=87' Slope=0.1430 '/' Tc=6.0 min CN=80 Runoff=3.16 cfs 0.226 af

Subcatchment DA 4: Drainage Area 4 Runoff Area=23,833 sf 0.00% Impervious Runoff Depth>1.94"
Flow Length=837' Tc=20.4 min CN=61 Runoff=0.79 cfs 0.089 af

Subcatchment OFF1: Offsite Drainage Runoff Area=123,809 sf 57.82% Impervious Runoff Depth>3.91"
Flow Length=816' Tc=6.0 min CN=82 Runoff=12.92 cfs 0.926 af

Subcatchment OFF2: Offsite Drainage Runoff Area=110,079 sf 8.81% Impervious Runoff Depth>3.90"
Tc=21.5 min CN=82 Runoff=7.55 cfs 0.821 af

Subcatchment OFF3: Offsite Drainage Area 3 Runoff Area=6,977 sf 0.00% Impervious Runoff Depth>3.01"
Tc=21.7 min CN=73 Runoff=0.37 cfs 0.040 af

Pond BIO: BioRetention 1 (South) Peak Elev=299.80' Storage=15,274 cf Inflow=4.42 cfs 0.998 af
Outflow=2.23 cfs 0.703 af

Pond DET1: MC-4500 StormTech Peak Elev=306.26' Storage=0.334 af Inflow=20.74 cfs 1.025 af
Outflow=18.37 cfs 1.023 af

Pond DET2: MC-3500 Stormtech (Offsite Peak Elev=298.74' Storage=14,159 cf Inflow=13.28 cfs 1.015 af
Outflow=6.02 cfs 0.958 af

Pond INF1: MC-3500 StormTech Peak Elev=310.20' Storage=31,037 cf Inflow=25.12 cfs 2.019 af
Discarded=2.03 cfs 1.883 af Primary=1.51 cfs 0.135 af Outflow=3.54 cfs 2.018 af

Pond INF2: MC-3500 StormTech Peak Elev=306.41' Storage=6,589 cf Inflow=6.02 cfs 0.520 af
Discarded=0.46 cfs 0.388 af Primary=2.16 cfs 0.131 af Outflow=2.63 cfs 0.520 af

Pond SPLIT: Flow Splitter Peak Elev=304.26' Inflow=22.00 cfs 1.797 af
Primary=1.26 cfs 0.773 af Secondary=20.74 cfs 1.025 af Outflow=22.00 cfs 1.797 af

Link N: POI North Inflow=6.70 cfs 0.671 af
Primary=6.70 cfs 0.671 af

Link S: POI South Inflow=32.80 cfs 3.983 af
Primary=32.80 cfs 3.983 af

Total Runoff Area = 20.422 ac Runoff Volume = 7.280 af Average Runoff Depth = 4.28"
47.83% Pervious = 9.769 ac 52.17% Impervious = 10.653 ac

Summary for Subcatchment DA 1: Drainage Area 1

[47] Hint: Peak is 361% of capacity of segment #2

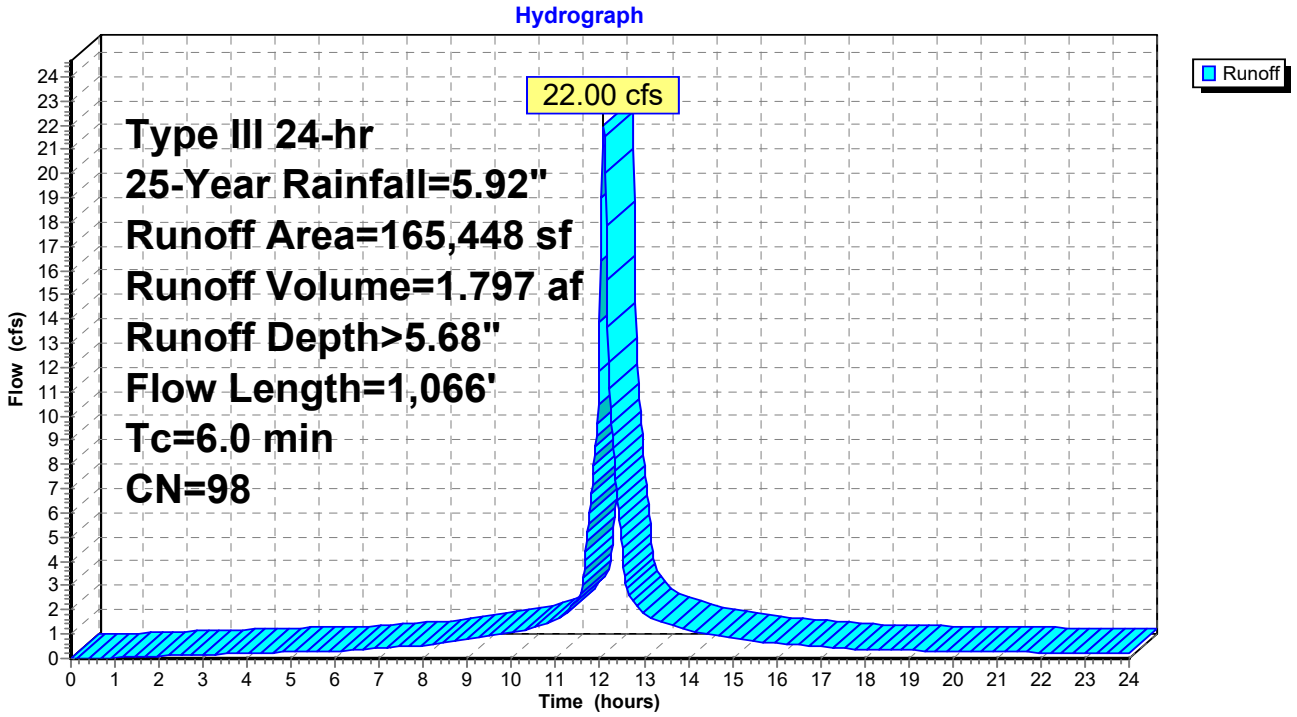
Runoff = 22.00 cfs @ 12.08 hrs, Volume= 1.797 af, Depth> 5.68"
Routed to Pond SPLIT : Flow Splitter

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Year Rainfall=5.92"

	Area (sf)	CN	Description
*	162,255	98	Drive/Parking
	626	61	>75% Grass cover, Good, HSG B
	2,567	80	>75% Grass cover, Good, HSG D
	165,448	98	Weighted Average
	3,193		1.93% Pervious Area
	162,255		98.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	187	0.0200	2.87		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
2.9	879	0.0076	4.97	6.10	**Pipe Channel, Avg Pipe Run from CB 12 to 22** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
2.0					**Direct Entry, + Entry to Reach Minimum**
6.0	1,066	Total			

Subcatchment DA 1: Drainage Area 1



Hydrograph for Subcatchment DA 1: Drainage Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.32	1.10	1.36
0.20	0.01	0.00	0.00	10.80	1.40	1.18	1.47
0.40	0.02	0.00	0.00	11.00	1.48	1.26	1.58
0.60	0.04	0.00	0.00	11.20	1.58	1.36	1.85
0.80	0.05	0.00	0.00	11.40	1.70	1.47	2.27
1.00	0.06	0.00	0.03	11.60	1.86	1.64	3.06
1.20	0.07	0.00	0.05	11.80	2.21	1.98	6.78
1.40	0.08	0.01	0.06	12.00	2.96	2.73	**13.90**
1.60	0.09	0.01	0.08	12.20	3.71	3.48	**12.23**
1.80	0.11	0.02	0.09	12.40	4.06	3.82	6.53
2.00	0.12	0.02	0.10	12.60	4.22	3.99	2.93
2.20	0.13	0.03	0.11	12.80	4.34	4.11	2.26
2.40	0.14	0.03	0.13	13.00	4.44	4.20	1.85
2.60	0.16	0.04	0.14	13.20	4.52	4.29	1.60
2.80	0.17	0.05	0.15	13.40	4.60	4.37	1.49
3.00	0.18	0.06	0.16	13.60	4.67	4.44	1.38
3.20	0.20	0.07	0.18	13.80	4.74	4.50	1.27
3.40	0.21	0.08	0.19	14.00	4.80	4.56	1.16
3.60	0.22	0.09	0.20	14.20	4.86	4.62	1.08
3.80	0.24	0.10	0.21	14.40	4.91	4.68	1.03
4.00	0.25	0.11	0.22	14.60	4.96	4.73	0.98
4.20	0.27	0.12	0.23	14.80	5.01	4.77	0.93
4.40	0.29	0.13	0.24	15.00	5.06	4.82	0.87
4.60	0.30	0.15	0.25	15.20	5.10	4.86	0.82
4.80	0.32	0.16	0.26	15.40	5.14	4.90	0.77
5.00	0.34	0.17	0.27	15.60	5.18	4.94	0.72
5.20	0.35	0.19	0.28	15.80	5.21	4.98	0.66
5.40	0.37	0.20	0.29	16.00	5.25	5.01	0.61
5.60	0.39	0.22	0.30	16.20	5.28	5.04	0.58
5.80	0.41	0.24	0.31	16.40	5.30	5.07	0.55
6.00	0.43	0.25	0.32	16.60	5.33	5.09	0.53
6.20	0.45	0.27	0.33	16.80	5.36	5.12	0.51
6.40	0.47	0.29	0.35	17.00	5.38	5.15	0.49
6.60	0.49	0.31	0.38	17.20	5.41	5.17	0.46
6.80	0.51	0.33	0.40	17.40	5.43	5.19	0.44
7.00	0.54	0.35	0.42	17.60	5.45	5.22	0.42
7.20	0.56	0.37	0.45	17.80	5.47	5.24	0.40
7.40	0.59	0.40	0.47	18.00	5.49	5.26	0.37
7.60	0.62	0.42	0.50	18.20	5.51	5.27	0.36
7.80	0.64	0.45	0.52	18.40	5.53	5.29	0.35
8.00	0.67	0.48	0.54	18.60	5.55	5.31	0.35
8.20	0.71	0.51	0.58	18.80	5.57	5.33	0.34
8.40	0.74	0.54	0.63	19.00	5.58	5.35	0.33
8.60	0.78	0.58	0.69	19.20	5.60	5.36	0.32
8.80	0.82	0.62	0.74	19.40	5.62	5.38	0.32
9.00	0.86	0.66	0.79	19.60	5.63	5.40	0.31
9.20	0.91	0.70	0.85	19.80	5.65	5.41	0.30
9.40	0.96	0.75	0.90	20.00	5.67	5.43	0.30
9.60	1.01	0.80	0.95	20.20	5.68	5.44	0.29
9.80	1.06	0.85	1.00	20.40	5.70	5.46	0.29
10.00	1.12	0.91	1.06	20.60	5.71	5.47	0.28
10.20	1.18	0.97	1.14	20.80	5.72	5.49	0.28
10.40	1.25	1.03	1.25	21.00	5.74	5.50	0.27

Hydrograph for Subcatchment DA 1: Drainage Area 1 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	5.75	5.52	0.27
21.40	5.77	5.53	0.26
21.60	5.78	5.54	0.26
21.80	5.79	5.56	0.25
22.00	5.81	5.57	0.25
22.20	5.82	5.58	0.24
22.40	5.83	5.59	0.24
22.60	5.84	5.61	0.23
22.80	5.85	5.62	0.23
23.00	5.87	5.63	0.22
23.20	5.88	5.64	0.22
23.40	5.89	5.65	0.21
23.60	5.90	5.66	0.21
23.80	5.91	5.67	0.20
24.00	**5.92**	**5.68**	0.19

Summary for Subcatchment DA 1B: Drainage Area 1B - Bypass

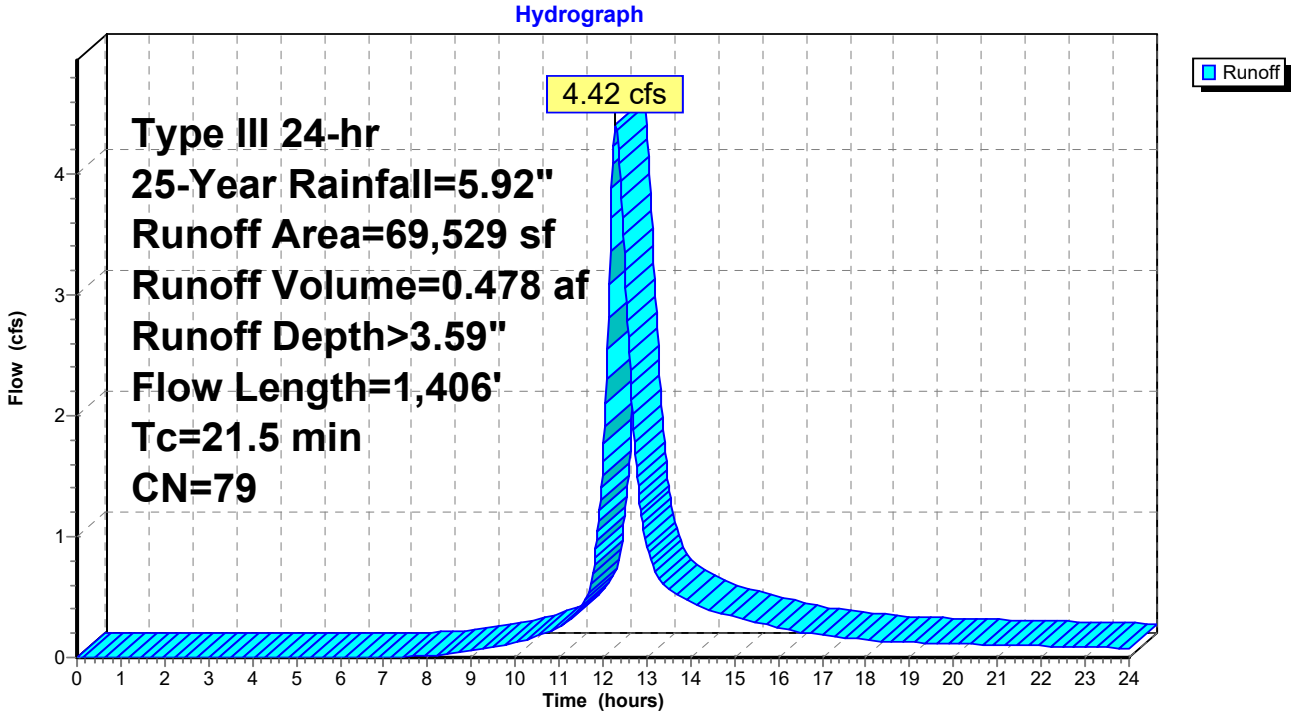
Runoff = 4.42 cfs @ 12.30 hrs, Volume= 0.478 af, Depth> 3.59"
Routed to Link S : POI South

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Year Rainfall=5.92"

	Area (sf)	CN	Description
	62,534	80	>75% Grass cover, Good, HSG D
	4,556	61	>75% Grass cover, Good, HSG B
*	2,439	98	Driveway Entrance
	69,529	79	Weighted Average
	67,090		96.49% Pervious Area
	2,439		3.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.8	100	0.0160	0.11		**Sheet Flow, SF** Grass: Dense n= 0.240 P2= 3.11"
1.9	150	0.0340	1.29		**Shallow Concentrated Flow, SCF** Short Grass Pasture Kv= 7.0 fps
3.8	1,156	0.0080	5.10	6.26	**Pipe Channel, Pipe** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
21.5	1,406	Total			

Subcatchment DA 1B: Drainage Area 1B - Bypass



Hydrograph for Subcatchment DA 1B: Drainage Area 1B - Bypass

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.32	0.18	0.19
0.20	0.01	0.00	0.00	10.80	1.40	0.21	0.22
0.40	0.02	0.00	0.00	11.00	1.48	0.25	0.26
0.60	0.04	0.00	0.00	11.20	1.58	0.30	0.30
0.80	0.05	0.00	0.00	11.40	1.70	0.35	0.37
1.00	0.06	0.00	0.00	11.60	1.86	0.44	0.47
1.20	0.07	0.00	0.00	11.80	2.21	0.65	0.77
1.40	0.08	0.00	0.00	12.00	2.96	1.16	1.63
1.60	0.09	0.00	0.00	12.20	3.71	1.73	**3.88**
1.80	0.11	0.00	0.00	12.40	4.06	2.01	**3.95**
2.00	0.12	0.00	0.00	12.60	4.22	2.15	2.52
2.20	0.13	0.00	0.00	12.80	4.34	2.25	1.42
2.40	0.14	0.00	0.00	13.00	4.44	2.33	0.93
2.60	0.16	0.00	0.00	13.20	4.52	2.40	0.71
2.80	0.17	0.00	0.00	13.40	4.60	2.46	0.59
3.00	0.18	0.00	0.00	13.60	4.67	2.52	0.54
3.20	0.20	0.00	0.00	13.80	4.74	2.58	0.50
3.40	0.21	0.00	0.00	14.00	4.80	2.63	0.46
3.60	0.22	0.00	0.00	14.20	4.86	2.68	0.42
3.80	0.24	0.00	0.00	14.40	4.91	2.73	0.40
4.00	0.25	0.00	0.00	14.60	4.96	2.77	0.38
4.20	0.27	0.00	0.00	14.80	5.01	2.81	0.36
4.40	0.29	0.00	0.00	15.00	5.06	2.85	0.34
4.60	0.30	0.00	0.00	15.20	5.10	2.89	0.32
4.80	0.32	0.00	0.00	15.40	5.14	2.92	0.30
5.00	0.34	0.00	0.00	15.60	5.18	2.96	0.28
5.20	0.35	0.00	0.00	15.80	5.21	2.99	0.27
5.40	0.37	0.00	0.00	16.00	5.25	3.01	0.25
5.60	0.39	0.00	0.00	16.20	5.28	3.04	0.23
5.80	0.41	0.00	0.00	16.40	5.30	3.07	0.21
6.00	0.43	0.00	0.00	16.60	5.33	3.09	0.21
6.20	0.45	0.00	0.00	16.80	5.36	3.11	0.20
6.40	0.47	0.00	0.00	17.00	5.38	3.14	0.19
6.60	0.49	0.00	0.00	17.20	5.41	3.16	0.18
6.80	0.51	0.00	0.00	17.40	5.43	3.18	0.17
7.00	0.54	0.00	0.00	17.60	5.45	3.20	0.16
7.20	0.56	0.00	0.00	17.80	5.47	3.21	0.16
7.40	0.59	0.00	0.00	18.00	5.49	3.23	0.15
7.60	0.62	0.00	0.01	18.20	5.51	3.25	0.14
7.80	0.64	0.00	0.01	18.40	5.53	3.26	0.13
8.00	0.67	0.01	0.02	18.60	5.55	3.28	0.13
8.20	0.71	0.01	0.02	18.80	5.57	3.30	0.13
8.40	0.74	0.02	0.03	19.00	5.58	3.31	0.13
8.60	0.78	0.02	0.04	19.20	5.60	3.33	0.12
8.80	0.82	0.03	0.04	19.40	5.62	3.34	0.12
9.00	0.86	0.04	0.06	19.60	5.63	3.35	0.12
9.20	0.91	0.05	0.07	19.80	5.65	3.37	0.12
9.40	0.96	0.06	0.08	20.00	5.67	3.38	0.11
9.60	1.01	0.07	0.09	20.20	5.68	3.40	0.11
9.80	1.06	0.09	0.11	20.40	5.70	3.41	0.11
10.00	1.12	0.11	0.12	20.60	5.71	3.42	0.11
10.20	1.18	0.13	0.14	20.80	5.72	3.43	0.11
10.40	1.25	0.15	0.16	21.00	5.74	3.45	0.10

Hydrograph for Subcatchment DA 1B: Drainage Area 1B - Bypass (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	5.75	3.46	0.10
21.40	5.77	3.47	0.10
21.60	5.78	3.48	0.10
21.80	5.79	3.50	0.10
22.00	5.81	3.51	0.09
22.20	5.82	3.52	0.09
22.40	5.83	3.53	0.09
22.60	5.84	3.54	0.09
22.80	5.85	3.55	0.09
23.00	5.87	3.56	0.08
23.20	5.88	3.57	0.08
23.40	5.89	3.58	0.08
23.60	5.90	3.59	0.08
23.80	5.91	3.60	0.08
24.00	**5.92**	**3.61**	0.08

Summary for Subcatchment DA 2: Drainage Area 2

[47] Hint: Peak is 139% of capacity of segment #1
[47] Hint: Peak is 111% of capacity of segment #2

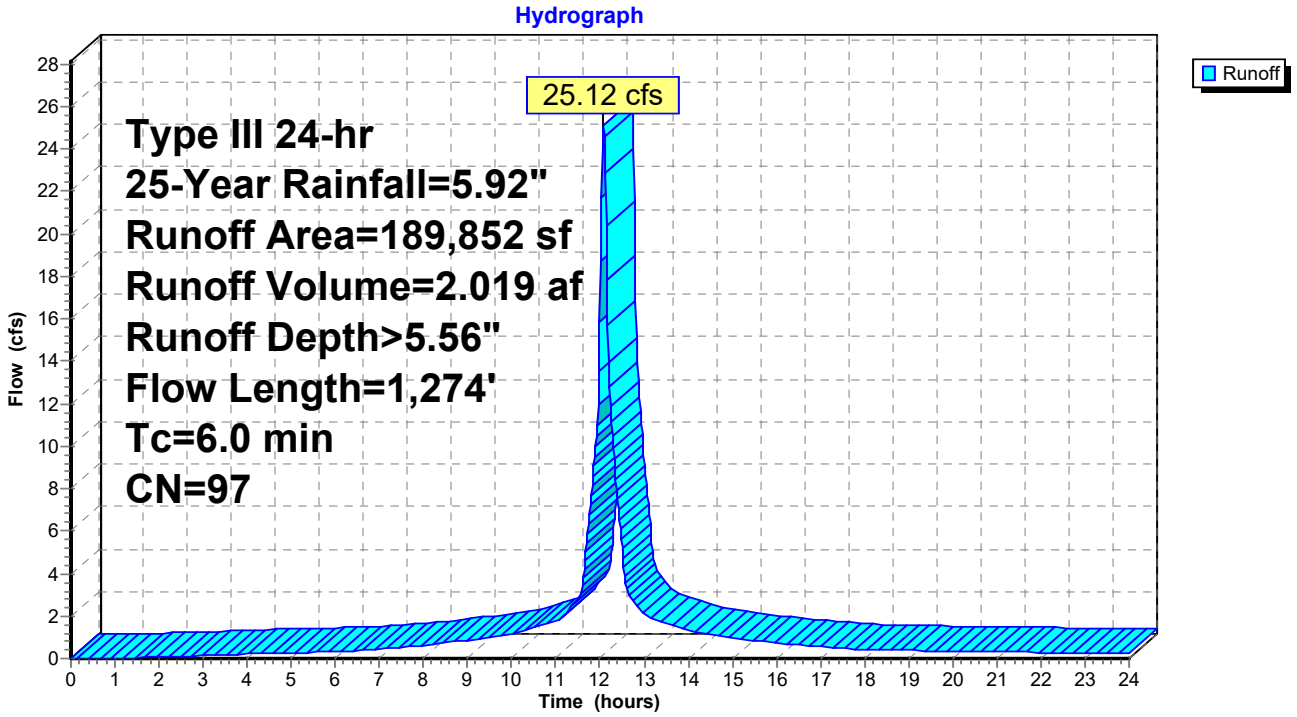
Runoff = 25.12 cfs @ 12.08 hrs, Volume= 2.019 af, Depth> 5.56"
Routed to Pond INF1 : MC-3500 StormTech INFILTRATION 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Year Rainfall=5.92"

	Area (sf)	CN	Description
*	184,125	98	Roof, Parking/Drive
	5,727	61	>75% Grass cover, Good, HSG B
	189,852	97	Weighted Average
	5,727		3.02% Pervious Area
	184,125		96.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	1,155	0.0465	14.76	18.11	**Pipe Channel, Avg Run from Roof to CB 20** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.010 PVC, smooth interior
0.3	119	0.0086	7.23	22.73	**Pipe Channel, CB 20 to Infiltration** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Corrugated PP, smooth interior
4.4					**Direct Entry, + Entry to Reach Minimum**
6.0	1,274	Total			

Subcatchment DA 2: Drainage Area 2



Hydrograph for Subcatchment DA 2: Drainage Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.32	1.01	1.53
0.20	0.01	0.00	0.00	10.80	1.40	1.08	1.65
0.40	0.02	0.00	0.00	11.00	1.48	1.16	1.78
0.60	0.04	0.00	0.00	11.20	1.58	1.26	2.09
0.80	0.05	0.00	0.00	11.40	1.70	1.37	2.56
1.00	0.06	0.00	0.00	11.60	1.86	1.53	3.47
1.20	0.07	0.00	0.01	11.80	2.21	1.88	7.70
1.40	0.08	0.00	0.02	12.00	2.96	2.62	**15.84**
1.60	0.09	0.00	0.04	12.20	3.71	3.36	**13.98**
1.80	0.11	0.01	0.06	12.40	4.06	3.71	7.47
2.00	0.12	0.01	0.07	12.60	4.22	3.87	3.35
2.20	0.13	0.01	0.08	12.80	4.34	3.99	2.59
2.40	0.14	0.02	0.10	13.00	4.44	4.09	2.11
2.60	0.16	0.02	0.11	13.20	4.52	4.17	1.83
2.80	0.17	0.03	0.12	13.40	4.60	4.25	1.70
3.00	0.18	0.03	0.14	13.60	4.67	4.32	1.58
3.20	0.20	0.04	0.15	13.80	4.74	4.39	1.45
3.40	0.21	0.05	0.16	14.00	4.80	4.45	1.33
3.60	0.22	0.06	0.18	14.20	4.86	4.51	1.24
3.80	0.24	0.06	0.19	14.40	4.91	4.56	1.18
4.00	0.25	0.07	0.20	14.60	4.96	4.61	1.12
4.20	0.27	0.08	0.22	14.80	5.01	4.66	1.06
4.40	0.29	0.09	0.23	15.00	5.06	4.70	1.00
4.60	0.30	0.11	0.24	15.20	5.10	4.75	0.94
4.80	0.32	0.12	0.25	15.40	5.14	4.79	0.88
5.00	0.34	0.13	0.27	15.60	5.18	4.82	0.82
5.20	0.35	0.14	0.28	15.80	5.21	4.86	0.76
5.40	0.37	0.15	0.29	16.00	5.25	4.89	0.70
5.60	0.39	0.17	0.30	16.20	5.28	4.92	0.66
5.80	0.41	0.18	0.31	16.40	5.30	4.95	0.63
6.00	0.43	0.20	0.32	16.60	5.33	4.98	0.61
6.20	0.45	0.21	0.34	16.80	5.36	5.00	0.58
6.40	0.47	0.23	0.37	17.00	5.38	5.03	0.56
6.60	0.49	0.25	0.39	17.20	5.41	5.05	0.53
6.80	0.51	0.27	0.42	17.40	5.43	5.08	0.50
7.00	0.54	0.29	0.45	17.60	5.45	5.10	0.48
7.20	0.56	0.31	0.48	17.80	5.47	5.12	0.45
7.40	0.59	0.33	0.50	18.00	5.49	5.14	0.43
7.60	0.62	0.36	0.53	18.20	5.51	5.16	0.41
7.80	0.64	0.38	0.56	18.40	5.53	5.18	0.40
8.00	0.67	0.41	0.59	18.60	5.55	5.19	0.40
8.20	0.71	0.44	0.63	18.80	5.57	5.21	0.39
8.40	0.74	0.47	0.69	19.00	5.58	5.23	0.38
8.60	0.78	0.50	0.75	19.20	5.60	5.25	0.37
8.80	0.82	0.54	0.81	19.40	5.62	5.26	0.36
9.00	0.86	0.58	0.87	19.60	5.63	5.28	0.36
9.20	0.91	0.62	0.93	19.80	5.65	5.29	0.35
9.40	0.96	0.67	0.99	20.00	5.67	5.31	0.34
9.60	1.01	0.71	1.06	20.20	5.68	5.33	0.33
9.80	1.06	0.76	1.12	20.40	5.70	5.34	0.33
10.00	1.12	0.82	1.18	20.60	5.71	5.36	0.32
10.20	1.18	0.88	1.28	20.80	5.72	5.37	0.32
10.40	1.25	0.94	1.40	21.00	5.74	5.38	0.31

Hydrograph for Subcatchment DA 2: Drainage Area 2 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	5.75	5.40	0.31
21.40	5.77	5.41	0.30
21.60	5.78	5.42	0.29
21.80	5.79	5.44	0.29
22.00	5.81	5.45	0.28
22.20	5.82	5.46	0.28
22.40	5.83	5.48	0.27
22.60	5.84	5.49	0.26
22.80	5.85	5.50	0.26
23.00	5.87	5.51	0.25
23.20	5.88	5.52	0.25
23.40	5.89	5.53	0.24
23.60	5.90	5.54	0.23
23.80	5.91	5.55	0.23
24.00	**5.92**	**5.56**	0.22

Summary for Subcatchment DA 2B: Drainage Area 2B

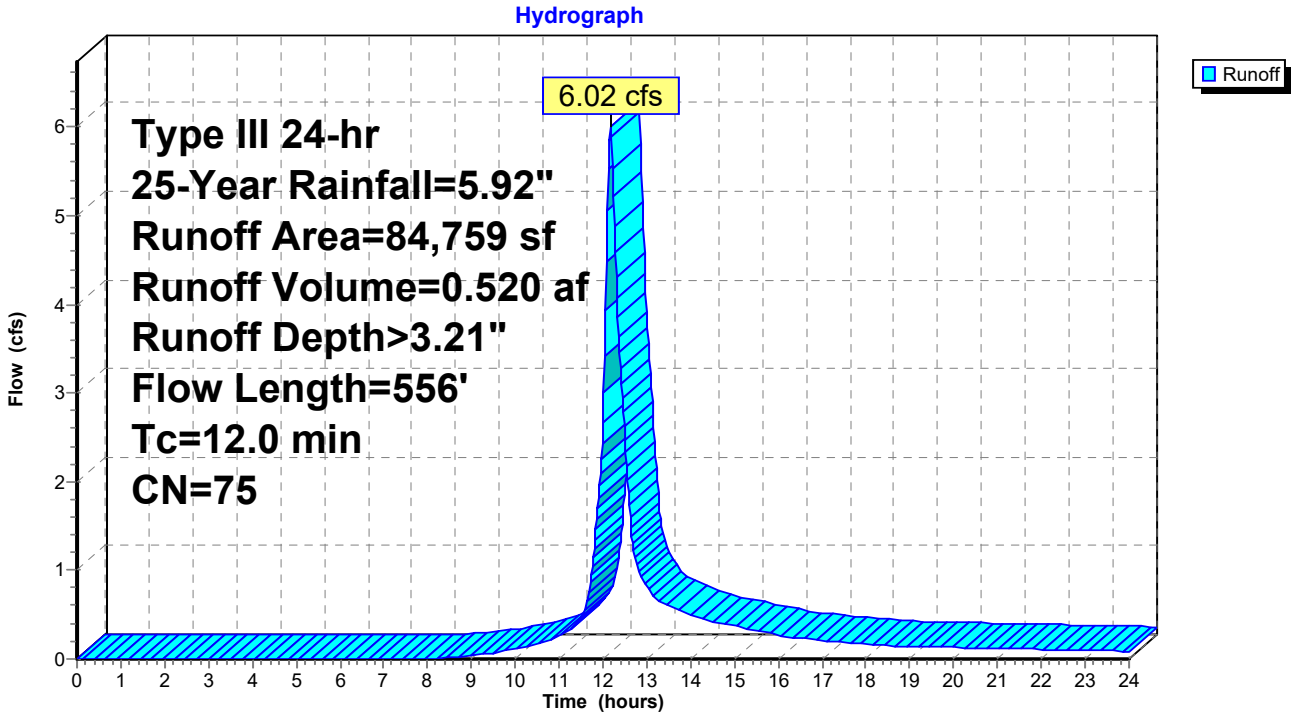
Runoff = 6.02 cfs @ 12.17 hrs, Volume= 0.520 af, Depth> 3.21"
Routed to Pond INF2 : MC-3500 StormTech INFILTRATION 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Year Rainfall=5.92"

	Area (sf)	CN	Description
	52,127	61	>75% Grass cover, Good, HSG B
*	32,632	98	Impervious
	84,759	75	Weighted Average
	52,127		61.50% Pervious Area
	32,632		38.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0200	0.17		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.11"
1.9	350	0.0350	3.01		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.2	106	0.0190	7.86	9.65	**Pipe Channel, Channel Flow** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
12.0	556	Total			

Subcatchment DA 2B: Drainage Area 2B



Hydrograph for Subcatchment DA 2B: Drainage Area 2B

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.32	0.11	0.19
0.20	0.01	0.00	0.00	10.80	1.40	0.13	0.22
0.40	0.02	0.00	0.00	11.00	1.48	0.16	0.26
0.60	0.04	0.00	0.00	11.20	1.58	0.20	0.32
0.80	0.05	0.00	0.00	11.40	1.70	0.24	0.42
1.00	0.06	0.00	0.00	11.60	1.86	0.31	0.56
1.20	0.07	0.00	0.00	11.80	2.21	0.49	1.24
1.40	0.08	0.00	0.00	12.00	2.96	0.93	**2.67**
1.60	0.09	0.00	0.00	12.20	3.71	1.45	**5.81**
1.80	0.11	0.00	0.00	12.40	4.06	1.71	3.28
2.00	0.12	0.00	0.00	12.60	4.22	1.84	1.73
2.20	0.13	0.00	0.00	12.80	4.34	1.93	1.02
2.40	0.14	0.00	0.00	13.00	4.44	2.00	0.81
2.60	0.16	0.00	0.00	13.20	4.52	2.07	0.68
2.80	0.17	0.00	0.00	13.40	4.60	2.13	0.62
3.00	0.18	0.00	0.00	13.60	4.67	2.19	0.58
3.20	0.20	0.00	0.00	13.80	4.74	2.24	0.54
3.40	0.21	0.00	0.00	14.00	4.80	2.29	0.50
3.60	0.22	0.00	0.00	14.20	4.86	2.33	0.46
3.80	0.24	0.00	0.00	14.40	4.91	2.38	0.43
4.00	0.25	0.00	0.00	14.60	4.96	2.42	0.41
4.20	0.27	0.00	0.00	14.80	5.01	2.46	0.39
4.40	0.29	0.00	0.00	15.00	5.06	2.50	0.37
4.60	0.30	0.00	0.00	15.20	5.10	2.53	0.35
4.80	0.32	0.00	0.00	15.40	5.14	2.56	0.33
5.00	0.34	0.00	0.00	15.60	5.18	2.59	0.31
5.20	0.35	0.00	0.00	15.80	5.21	2.62	0.29
5.40	0.37	0.00	0.00	16.00	5.25	2.65	0.27
5.60	0.39	0.00	0.00	16.20	5.28	2.67	0.25
5.80	0.41	0.00	0.00	16.40	5.30	2.70	0.24
6.00	0.43	0.00	0.00	16.60	5.33	2.72	0.23
6.20	0.45	0.00	0.00	16.80	5.36	2.74	0.22
6.40	0.47	0.00	0.00	17.00	5.38	2.76	0.21
6.60	0.49	0.00	0.00	17.20	5.41	2.78	0.20
6.80	0.51	0.00	0.00	17.40	5.43	2.80	0.19
7.00	0.54	0.00	0.00	17.60	5.45	2.82	0.18
7.20	0.56	0.00	0.00	17.80	5.47	2.84	0.17
7.40	0.59	0.00	0.00	18.00	5.49	2.86	0.16
7.60	0.62	0.00	0.00	18.20	5.51	2.87	0.16
7.80	0.64	0.00	0.00	18.40	5.53	2.89	0.15
8.00	0.67	0.00	0.00	18.60	5.55	2.90	0.15
8.20	0.71	0.00	0.00	18.80	5.57	2.92	0.15
8.40	0.74	0.00	0.01	19.00	5.58	2.93	0.14
8.60	0.78	0.00	0.02	19.20	5.60	2.94	0.14
8.80	0.82	0.01	0.03	19.40	5.62	2.96	0.14
9.00	0.86	0.01	0.04	19.60	5.63	2.97	0.14
9.20	0.91	0.02	0.05	19.80	5.65	2.99	0.13
9.40	0.96	0.02	0.06	20.00	5.67	3.00	0.13
9.60	1.01	0.03	0.08	20.20	5.68	3.01	0.13
9.80	1.06	0.04	0.09	20.40	5.70	3.02	0.12
10.00	1.12	0.05	0.11	20.60	5.71	3.04	0.12
10.20	1.18	0.07	0.13	20.80	5.72	3.05	0.12
10.40	1.25	0.09	0.16	21.00	5.74	3.06	0.12

Hydrograph for Subcatchment DA 2B: Drainage Area 2B (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	5.75	3.07	0.12
21.40	5.77	3.08	0.11
21.60	5.78	3.10	0.11
21.80	5.79	3.11	0.11
22.00	5.81	3.12	0.11
22.20	5.82	3.13	0.11
22.40	5.83	3.14	0.10
22.60	5.84	3.15	0.10
22.80	5.85	3.16	0.10
23.00	5.87	3.17	0.10
23.20	5.88	3.18	0.09
23.40	5.89	3.19	0.09
23.60	5.90	3.20	0.09
23.80	5.91	3.21	0.09
24.00	**5.92**	**3.21**	0.09

Summary for Subcatchment DA 2C: Drainage Area 2C Bypass

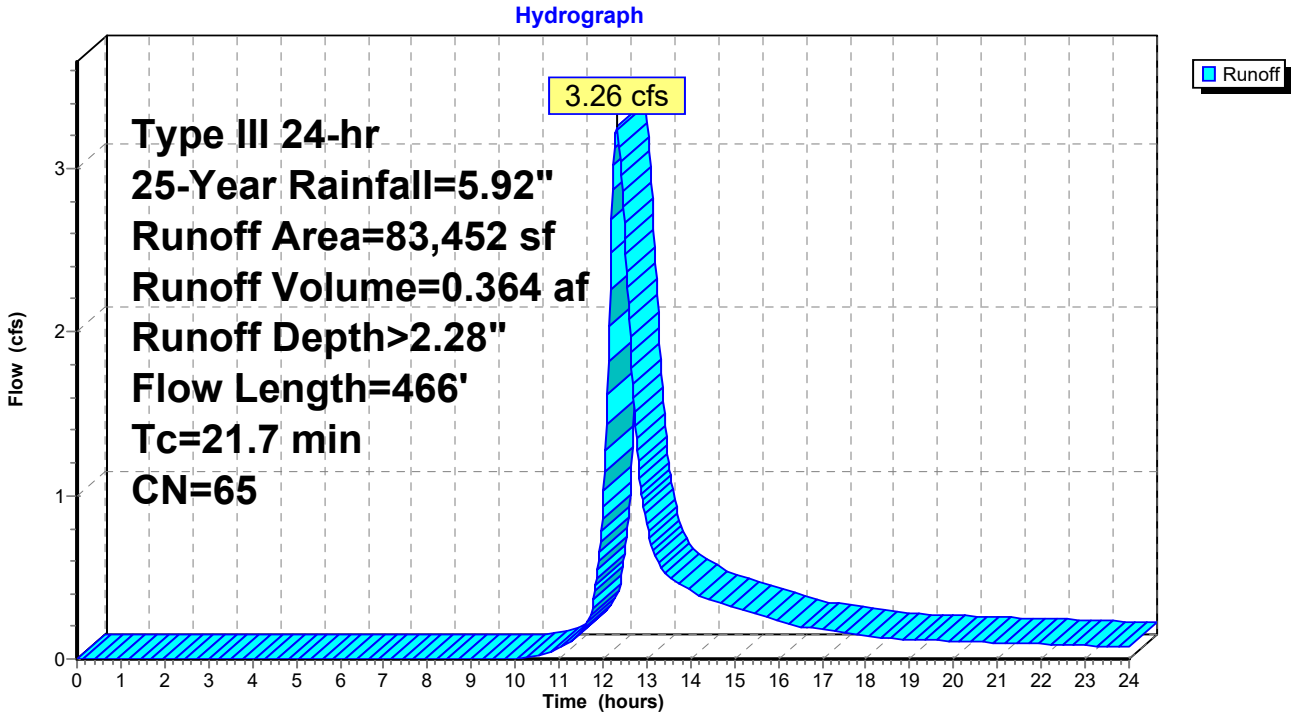
Runoff = 3.26 cfs @ 12.32 hrs, Volume= 0.364 af, Depth> 2.28"
Routed to Link N : POI North

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Year Rainfall=5.92"

	Area (sf)	CN	Description
	52,745	61	>75% Grass cover, Good, HSG B
	15,800	80	>75% Grass cover, Good, HSG D
	4,809	77	Woods, Good, HSG D
*	1,308	98	Impervious
	8,790	55	Woods, Good, HSG B
	83,452	65	Weighted Average
	82,144		98.43% Pervious Area
	1,308		1.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0100	0.09		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.11"
2.6	366	0.0220	2.39		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
21.7	466	Total			

Subcatchment DA 2C: Drainage Area 2C Bypass



Hydrograph for Subcatchment DA 2C: Drainage Area 2C Bypass

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.32	0.01	0.03
0.20	0.01	0.00	0.00	10.80	1.40	0.02	0.05
0.40	0.02	0.00	0.00	11.00	1.48	0.03	0.07
0.60	0.04	0.00	0.00	11.20	1.58	0.04	0.10
0.80	0.05	0.00	0.00	11.40	1.70	0.06	0.14
1.00	0.06	0.00	0.00	11.60	1.86	0.10	0.20
1.20	0.07	0.00	0.00	11.80	2.21	0.20	0.38
1.40	0.08	0.00	0.00	12.00	2.96	0.49	0.94
1.60	0.09	0.00	0.00	12.20	3.71	0.86	**2.69**
1.80	0.11	0.00	0.00	12.40	4.06	1.06	**3.05**
2.00	0.12	0.00	0.00	12.60	4.22	1.16	2.07
2.20	0.13	0.00	0.00	12.80	4.34	1.23	1.21
2.40	0.14	0.00	0.00	13.00	4.44	1.29	0.82
2.60	0.16	0.00	0.00	13.20	4.52	1.35	0.63
2.80	0.17	0.00	0.00	13.40	4.60	1.39	0.53
3.00	0.18	0.00	0.00	13.60	4.67	1.44	0.48
3.20	0.20	0.00	0.00	13.80	4.74	1.48	0.45
3.40	0.21	0.00	0.00	14.00	4.80	1.52	0.42
3.60	0.22	0.00	0.00	14.20	4.86	1.56	0.39
3.80	0.24	0.00	0.00	14.40	4.91	1.60	0.36
4.00	0.25	0.00	0.00	14.60	4.96	1.63	0.35
4.20	0.27	0.00	0.00	14.80	5.01	1.66	0.33
4.40	0.29	0.00	0.00	15.00	5.06	1.69	0.31
4.60	0.30	0.00	0.00	15.20	5.10	1.72	0.30
4.80	0.32	0.00	0.00	15.40	5.14	1.75	0.28
5.00	0.34	0.00	0.00	15.60	5.18	1.77	0.27
5.20	0.35	0.00	0.00	15.80	5.21	1.80	0.25
5.40	0.37	0.00	0.00	16.00	5.25	1.82	0.23
5.60	0.39	0.00	0.00	16.20	5.28	1.84	0.21
5.80	0.41	0.00	0.00	16.40	5.30	1.86	0.20
6.00	0.43	0.00	0.00	16.60	5.33	1.88	0.19
6.20	0.45	0.00	0.00	16.80	5.36	1.90	0.19
6.40	0.47	0.00	0.00	17.00	5.38	1.91	0.18
6.60	0.49	0.00	0.00	17.20	5.41	1.93	0.17
6.80	0.51	0.00	0.00	17.40	5.43	1.95	0.16
7.00	0.54	0.00	0.00	17.60	5.45	1.96	0.16
7.20	0.56	0.00	0.00	17.80	5.47	1.98	0.15
7.40	0.59	0.00	0.00	18.00	5.49	1.99	0.14
7.60	0.62	0.00	0.00	18.20	5.51	2.00	0.13
7.80	0.64	0.00	0.00	18.40	5.53	2.02	0.13
8.00	0.67	0.00	0.00	18.60	5.55	2.03	0.13
8.20	0.71	0.00	0.00	18.80	5.57	2.04	0.12
8.40	0.74	0.00	0.00	19.00	5.58	2.05	0.12
8.60	0.78	0.00	0.00	19.20	5.60	2.07	0.12
8.80	0.82	0.00	0.00	19.40	5.62	2.08	0.12
9.00	0.86	0.00	0.00	19.60	5.63	2.09	0.11
9.20	0.91	0.00	0.00	19.80	5.65	2.10	0.11
9.40	0.96	0.00	0.00	20.00	5.67	2.11	0.11
9.60	1.01	0.00	0.00	20.20	5.68	2.12	0.11
9.80	1.06	0.00	0.00	20.40	5.70	2.13	0.10
10.00	1.12	0.00	0.00	20.60	5.71	2.14	0.10
10.20	1.18	0.00	0.00	20.80	5.72	2.15	0.10
10.40	1.25	0.01	0.01	21.00	5.74	2.16	0.10

Hydrograph for Subcatchment DA 2C: Drainage Area 2C Bypass (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	5.75	2.17	0.10
21.40	5.77	2.18	0.10
21.60	5.78	2.19	0.09
21.80	5.79	2.20	0.09
22.00	5.81	2.21	0.09
22.20	5.82	2.22	0.09
22.40	5.83	2.23	0.09
22.60	5.84	2.24	0.09
22.80	5.85	2.25	0.08
23.00	5.87	2.25	0.08
23.20	5.88	2.26	0.08
23.40	5.89	2.27	0.08
23.60	5.90	2.28	0.08
23.80	5.91	2.29	0.08
24.00	**5.92**	**2.29**	0.07

Summary for Subcatchment DA 3: Drainage Area 3 - Bio Direct Entry

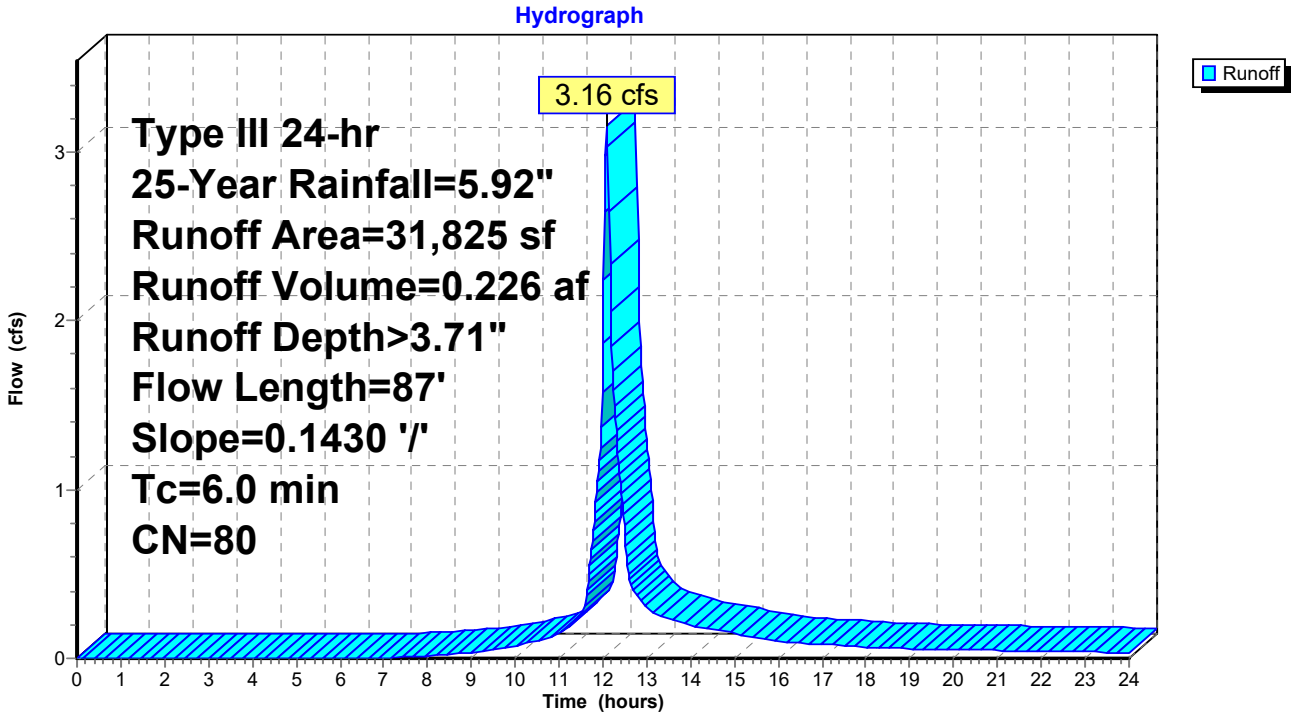
Runoff = 3.16 cfs @ 12.09 hrs, Volume= 0.226 af, Depth> 3.71"
Routed to Pond BIO : BioRetention 1 (South)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Year Rainfall=5.92"

Area (sf)	CN	Description
31,825	80	>75% Grass cover, Good, HSG D
31,825		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	87	0.1430	0.36		**Sheet Flow, SF** Grass: Short n= 0.150 P2= 3.11"
2.0					**Direct Entry, + Entry to Reach Minimum**
6.0	87	Total			

Subcatchment DA 3: Drainage Area 3 - Bio Direct Entry



Hydrograph for Subcatchment DA 3: Drainage Area 3 - Bio Direct Entry

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.32	0.20	0.11
0.20	0.01	0.00	0.00	10.80	1.40	0.24	0.13
0.40	0.02	0.00	0.00	11.00	1.48	0.28	0.15
0.60	0.04	0.00	0.00	11.20	1.58	0.32	0.18
0.80	0.05	0.00	0.00	11.40	1.70	0.39	0.23
1.00	0.06	0.00	0.00	11.60	1.86	0.48	0.33
1.20	0.07	0.00	0.00	11.80	2.21	0.69	0.81
1.40	0.08	0.00	0.00	12.00	2.96	1.22	**1.87**
1.60	0.09	0.00	0.00	12.20	3.71	1.80	**1.85**
1.80	0.11	0.00	0.00	12.40	4.06	2.09	1.03
2.00	0.12	0.00	0.00	12.60	4.22	2.23	0.47
2.20	0.13	0.00	0.00	12.80	4.34	2.33	0.37
2.40	0.14	0.00	0.00	13.00	4.44	2.41	0.30
2.60	0.16	0.00	0.00	13.20	4.52	2.48	0.26
2.80	0.17	0.00	0.00	13.40	4.60	2.55	0.24
3.00	0.18	0.00	0.00	13.60	4.67	2.61	0.23
3.20	0.20	0.00	0.00	13.80	4.74	2.67	0.21
3.40	0.21	0.00	0.00	14.00	4.80	2.72	0.19
3.60	0.22	0.00	0.00	14.20	4.86	2.77	0.18
3.80	0.24	0.00	0.00	14.40	4.91	2.82	0.17
4.00	0.25	0.00	0.00	14.60	4.96	2.86	0.16
4.20	0.27	0.00	0.00	14.80	5.01	2.90	0.16
4.40	0.29	0.00	0.00	15.00	5.06	2.94	0.15
4.60	0.30	0.00	0.00	15.20	5.10	2.98	0.14
4.80	0.32	0.00	0.00	15.40	5.14	3.02	0.13
5.00	0.34	0.00	0.00	15.60	5.18	3.05	0.12
5.20	0.35	0.00	0.00	15.80	5.21	3.08	0.11
5.40	0.37	0.00	0.00	16.00	5.25	3.11	0.10
5.60	0.39	0.00	0.00	16.20	5.28	3.13	0.10
5.80	0.41	0.00	0.00	16.40	5.30	3.16	0.09
6.00	0.43	0.00	0.00	16.60	5.33	3.18	0.09
6.20	0.45	0.00	0.00	16.80	5.36	3.21	0.09
6.40	0.47	0.00	0.00	17.00	5.38	3.23	0.08
6.60	0.49	0.00	0.00	17.20	5.41	3.25	0.08
6.80	0.51	0.00	0.00	17.40	5.43	3.27	0.08
7.00	0.54	0.00	0.00	17.60	5.45	3.29	0.07
7.20	0.56	0.00	0.00	17.80	5.47	3.31	0.07
7.40	0.59	0.00	0.01	18.00	5.49	3.33	0.06
7.60	0.62	0.01	0.01	18.20	5.51	3.34	0.06
7.80	0.64	0.01	0.01	18.40	5.53	3.36	0.06
8.00	0.67	0.01	0.01	18.60	5.55	3.38	0.06
8.20	0.71	0.02	0.02	18.80	5.57	3.39	0.06
8.40	0.74	0.02	0.02	19.00	5.58	3.41	0.06
8.60	0.78	0.03	0.03	19.20	5.60	3.42	0.06
8.80	0.82	0.04	0.03	19.40	5.62	3.44	0.05
9.00	0.86	0.05	0.04	19.60	5.63	3.45	0.05
9.20	0.91	0.06	0.04	19.80	5.65	3.47	0.05
9.40	0.96	0.07	0.05	20.00	5.67	3.48	0.05
9.60	1.01	0.09	0.06	20.20	5.68	3.49	0.05
9.80	1.06	0.10	0.06	20.40	5.70	3.51	0.05
10.00	1.12	0.12	0.07	20.60	5.71	3.52	0.05
10.20	1.18	0.15	0.08	20.80	5.72	3.53	0.05
10.40	1.25	0.17	0.10	21.00	5.74	3.55	0.05

Hydrograph for Subcatchment DA 3: Drainage Area 3 - Bio Direct Entry (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	5.75	3.56	0.05
21.40	5.77	3.57	0.05
21.60	5.78	3.58	0.04
21.80	5.79	3.60	0.04
22.00	5.81	3.61	0.04
22.20	5.82	3.62	0.04
22.40	5.83	3.63	0.04
22.60	5.84	3.64	0.04
22.80	5.85	3.65	0.04
23.00	5.87	3.66	0.04
23.20	5.88	3.67	0.04
23.40	5.89	3.68	0.04
23.60	5.90	3.69	0.04
23.80	5.91	3.70	0.03
24.00	**5.92**	**3.71**	0.03

Summary for Subcatchment DA 4: Drainage Area 4

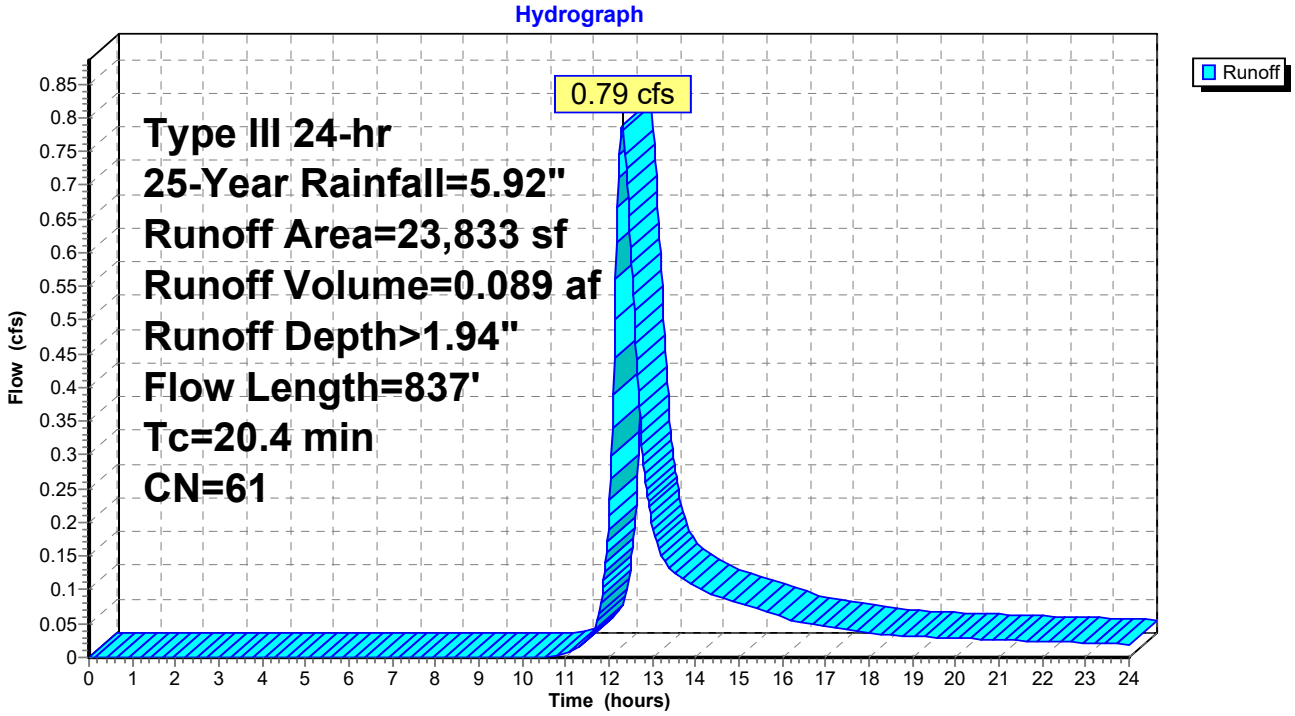
Runoff = 0.79 cfs @ 12.30 hrs, Volume= 0.089 af, Depth> 1.94"
Routed to Pond DET2 : MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Year Rainfall=5.92"

Area (sf)	CN	Description
23,833	61	>75% Grass cover, Good, HSG B
23,833		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.3	100	0.0050	0.10		**Sheet Flow, SF** Grass: Short n= 0.150 P2= 3.11"
2.5	413	0.0290	2.74		**Shallow Concentrated Flow, Grass SCF** Unpaved Kv= 16.1 fps
0.6	324	0.0250	9.02	11.06	**Pipe Channel, Pipe Flow** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
20.4	837	Total			

Subcatchment DA 4: Drainage Area 4



Hydrograph for Subcatchment DA 4: Drainage Area 4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.32	0.00	0.00
0.20	0.01	0.00	0.00	10.80	1.40	0.00	0.00
0.40	0.02	0.00	0.00	11.00	1.48	0.01	0.01
0.60	0.04	0.00	0.00	11.20	1.58	0.01	0.01
0.80	0.05	0.00	0.00	11.40	1.70	0.03	0.02
1.00	0.06	0.00	0.00	11.60	1.86	0.05	0.03
1.20	0.07	0.00	0.00	11.80	2.21	0.12	0.08
1.40	0.08	0.00	0.00	12.00	2.96	0.35	0.21
1.60	0.09	0.00	0.00	12.20	3.71	0.67	**0.67**
1.80	0.11	0.00	0.00	12.40	4.06	0.84	**0.72**
2.00	0.12	0.00	0.00	12.60	4.22	0.93	0.49
2.20	0.13	0.00	0.00	12.80	4.34	0.99	0.28
2.40	0.14	0.00	0.00	13.00	4.44	1.05	0.20
2.60	0.16	0.00	0.00	13.20	4.52	1.09	0.15
2.80	0.17	0.00	0.00	13.40	4.60	1.14	0.13
3.00	0.18	0.00	0.00	13.60	4.67	1.18	0.12
3.20	0.20	0.00	0.00	13.80	4.74	1.22	0.11
3.40	0.21	0.00	0.00	14.00	4.80	1.25	0.11
3.60	0.22	0.00	0.00	14.20	4.86	1.28	0.10
3.80	0.24	0.00	0.00	14.40	4.91	1.32	0.09
4.00	0.25	0.00	0.00	14.60	4.96	1.35	0.09
4.20	0.27	0.00	0.00	14.80	5.01	1.38	0.08
4.40	0.29	0.00	0.00	15.00	5.06	1.40	0.08
4.60	0.30	0.00	0.00	15.20	5.10	1.43	0.08
4.80	0.32	0.00	0.00	15.40	5.14	1.45	0.07
5.00	0.34	0.00	0.00	15.60	5.18	1.48	0.07
5.20	0.35	0.00	0.00	15.80	5.21	1.50	0.06
5.40	0.37	0.00	0.00	16.00	5.25	1.52	0.06
5.60	0.39	0.00	0.00	16.20	5.28	1.54	0.06
5.80	0.41	0.00	0.00	16.40	5.30	1.56	0.05
6.00	0.43	0.00	0.00	16.60	5.33	1.57	0.05
6.20	0.45	0.00	0.00	16.80	5.36	1.59	0.05
6.40	0.47	0.00	0.00	17.00	5.38	1.61	0.05
6.60	0.49	0.00	0.00	17.20	5.41	1.62	0.04
6.80	0.51	0.00	0.00	17.40	5.43	1.64	0.04
7.00	0.54	0.00	0.00	17.60	5.45	1.65	0.04
7.20	0.56	0.00	0.00	17.80	5.47	1.66	0.04
7.40	0.59	0.00	0.00	18.00	5.49	1.67	0.04
7.60	0.62	0.00	0.00	18.20	5.51	1.69	0.03
7.80	0.64	0.00	0.00	18.40	5.53	1.70	0.03
8.00	0.67	0.00	0.00	18.60	5.55	1.71	0.03
8.20	0.71	0.00	0.00	18.80	5.57	1.72	0.03
8.40	0.74	0.00	0.00	19.00	5.58	1.73	0.03
8.60	0.78	0.00	0.00	19.20	5.60	1.74	0.03
8.80	0.82	0.00	0.00	19.40	5.62	1.75	0.03
9.00	0.86	0.00	0.00	19.60	5.63	1.76	0.03
9.20	0.91	0.00	0.00	19.80	5.65	1.78	0.03
9.40	0.96	0.00	0.00	20.00	5.67	1.79	0.03
9.60	1.01	0.00	0.00	20.20	5.68	1.79	0.03
9.80	1.06	0.00	0.00	20.40	5.70	1.80	0.03
10.00	1.12	0.00	0.00	20.60	5.71	1.81	0.03
10.20	1.18	0.00	0.00	20.80	5.72	1.82	0.03
10.40	1.25	0.00	0.00	21.00	5.74	1.83	0.03

Hydrograph for Subcatchment DA 4: Drainage Area 4 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	5.75	1.84	0.03
21.40	5.77	1.85	0.03
21.60	5.78	1.86	0.02
21.80	5.79	1.87	0.02
22.00	5.81	1.88	0.02
22.20	5.82	1.89	0.02
22.40	5.83	1.89	0.02
22.60	5.84	1.90	0.02
22.80	5.85	1.91	0.02
23.00	5.87	1.92	0.02
23.20	5.88	1.92	0.02
23.40	5.89	1.93	0.02
23.60	5.90	1.94	0.02
23.80	5.91	1.95	0.02
24.00	**5.92**	**1.95**	0.02

Summary for Subcatchment OFF1: Offsite Drainage Area 1

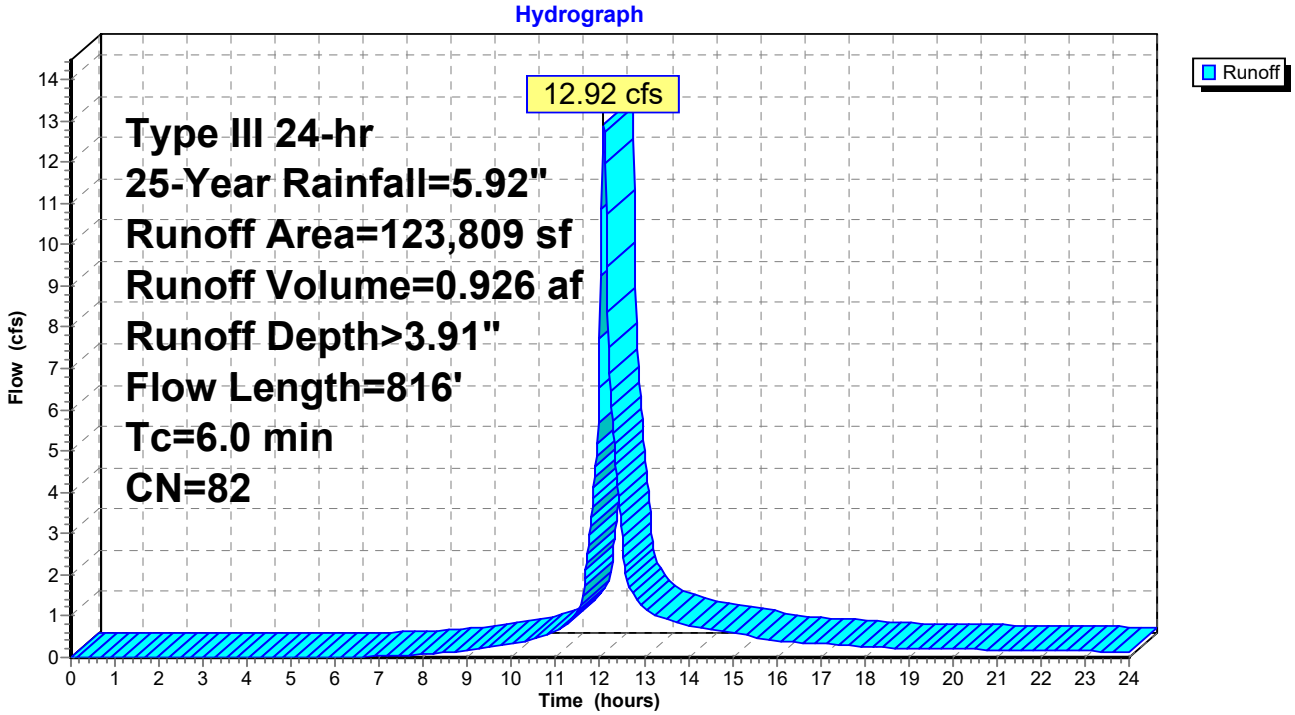
Runoff = 12.92 cfs @ 12.09 hrs, Volume= 0.926 af, Depth> 3.91"
Routed to Pond DET2 : MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Year Rainfall=5.92"

	Area (sf)	CN	Description
	52,228	61	>75% Grass cover, Good, HSG B
*	71,581	98	Impervious Surfaces
	123,809	82	Weighted Average
	52,228		42.18% Pervious Area
	71,581		57.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	345	0.0230	3.08		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.4	471	0.0526	17.89	56.21	**Pipe Channel, 24" Pipe from Jehova Site to onsite detention** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
3.7					**Direct Entry, + Entry to Reach Minimum**
6.0	816	Total			

Subcatchment OFF1: Offsite Drainage Area 1



Hydrograph for Subcatchment OFF1: Offsite Drainage Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.32	0.25	0.50
0.20	0.01	0.00	0.00	10.80	1.40	0.29	0.56
0.40	0.02	0.00	0.00	11.00	1.48	0.33	0.63
0.60	0.04	0.00	0.00	11.20	1.58	0.39	0.78
0.80	0.05	0.00	0.00	11.40	1.70	0.46	1.00
1.00	0.06	0.00	0.00	11.60	1.86	0.56	1.42
1.20	0.07	0.00	0.00	11.80	2.21	0.79	3.40
1.40	0.08	0.00	0.00	12.00	2.96	1.35	**7.73**
1.60	0.09	0.00	0.00	12.20	3.71	1.96	**7.51**
1.80	0.11	0.00	0.00	12.40	4.06	2.25	4.16
2.00	0.12	0.00	0.00	12.60	4.22	2.40	1.89
2.20	0.13	0.00	0.00	12.80	4.34	2.50	1.47
2.40	0.14	0.00	0.00	13.00	4.44	2.58	1.21
2.60	0.16	0.00	0.00	13.20	4.52	2.66	1.05
2.80	0.17	0.00	0.00	13.40	4.60	2.73	0.98
3.00	0.18	0.00	0.00	13.60	4.67	2.79	0.91
3.20	0.20	0.00	0.00	13.80	4.74	2.85	0.84
3.40	0.21	0.00	0.00	14.00	4.80	2.90	0.77
3.60	0.22	0.00	0.00	14.20	4.86	2.95	0.72
3.80	0.24	0.00	0.00	14.40	4.91	3.00	0.69
4.00	0.25	0.00	0.00	14.60	4.96	3.05	0.65
4.20	0.27	0.00	0.00	14.80	5.01	3.09	0.62
4.40	0.29	0.00	0.00	15.00	5.06	3.13	0.59
4.60	0.30	0.00	0.00	15.20	5.10	3.17	0.55
4.80	0.32	0.00	0.00	15.40	5.14	3.21	0.52
5.00	0.34	0.00	0.00	15.60	5.18	3.24	0.48
5.20	0.35	0.00	0.00	15.80	5.21	3.27	0.45
5.40	0.37	0.00	0.00	16.00	5.25	3.30	0.41
5.60	0.39	0.00	0.00	16.20	5.28	3.33	0.39
5.80	0.41	0.00	0.00	16.40	5.30	3.35	0.37
6.00	0.43	0.00	0.00	16.60	5.33	3.38	0.36
6.20	0.45	0.00	0.00	16.80	5.36	3.40	0.34
6.40	0.47	0.00	0.00	17.00	5.38	3.42	0.33
6.60	0.49	0.00	0.01	17.20	5.41	3.45	0.31
6.80	0.51	0.00	0.02	17.40	5.43	3.47	0.30
7.00	0.54	0.00	0.03	17.60	5.45	3.49	0.28
7.20	0.56	0.01	0.03	17.80	5.47	3.51	0.27
7.40	0.59	0.01	0.04	18.00	5.49	3.52	0.25
7.60	0.62	0.01	0.05	18.20	5.51	3.54	0.24
7.80	0.64	0.02	0.06	18.40	5.53	3.56	0.24
8.00	0.67	0.02	0.08	18.60	5.55	3.57	0.24
8.20	0.71	0.03	0.09	18.80	5.57	3.59	0.23
8.40	0.74	0.04	0.11	19.00	5.58	3.61	0.23
8.60	0.78	0.05	0.13	19.20	5.60	3.62	0.22
8.80	0.82	0.06	0.15	19.40	5.62	3.64	0.22
9.00	0.86	0.07	0.18	19.60	5.63	3.65	0.21
9.20	0.91	0.08	0.20	19.80	5.65	3.67	0.21
9.40	0.96	0.10	0.23	20.00	5.67	3.68	0.20
9.60	1.01	0.12	0.26	20.20	5.68	3.69	0.20
9.80	1.06	0.14	0.30	20.40	5.70	3.71	0.20
10.00	1.12	0.16	0.33	20.60	5.71	3.72	0.19
10.20	1.18	0.19	0.38	20.80	5.72	3.73	0.19
10.40	1.25	0.22	0.43	21.00	5.74	3.75	0.19

Hydrograph for Subcatchment OFF1: Offsite Drainage Area 1 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	5.75	3.76	0.18
21.40	5.77	3.77	0.18
21.60	5.78	3.79	0.18
21.80	5.79	3.80	0.17
22.00	5.81	3.81	0.17
22.20	5.82	3.82	0.17
22.40	5.83	3.83	0.16
22.60	5.84	3.84	0.16
22.80	5.85	3.85	0.15
23.00	5.87	3.86	0.15
23.20	5.88	3.87	0.15
23.40	5.89	3.88	0.14
23.60	5.90	3.89	0.14
23.80	5.91	3.90	0.14
24.00	**5.92**	**3.91**	0.13

Summary for Subcatchment OFF2: Offsite Drainage Area 2

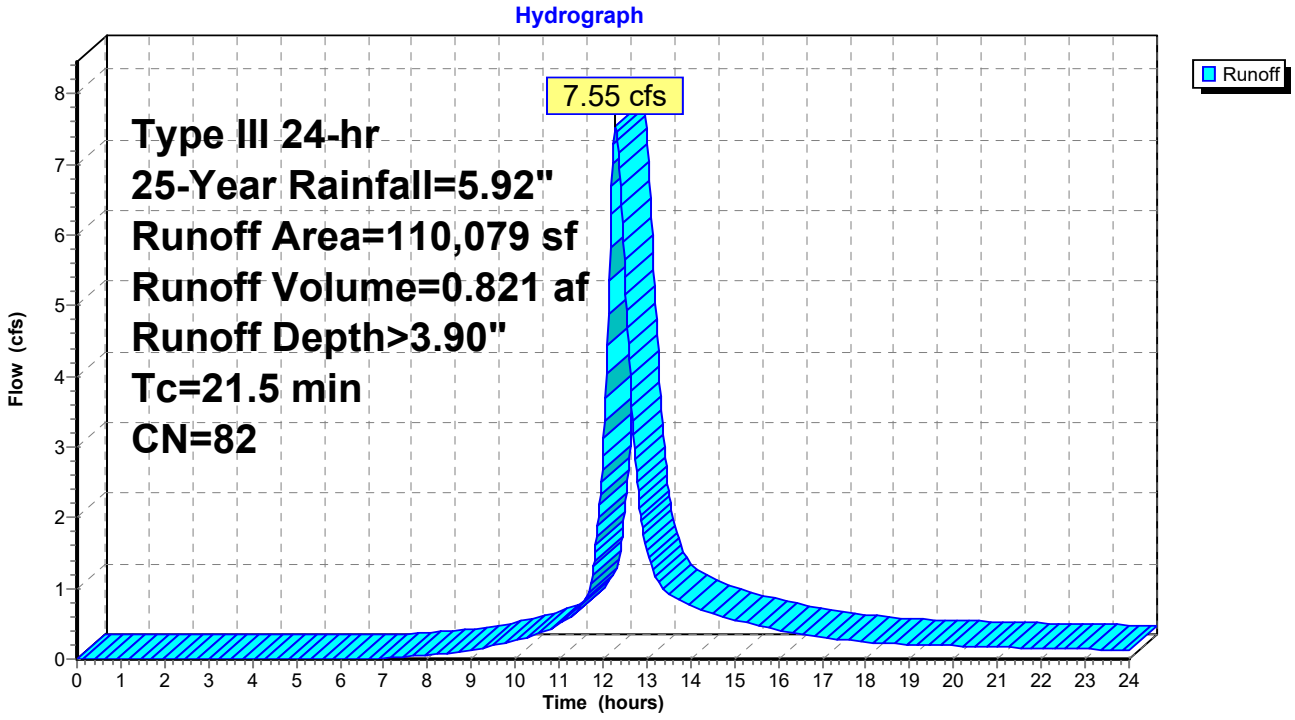
Runoff = 7.55 cfs @ 12.29 hrs, Volume= 0.821 af, Depth> 3.90"
Routed to Link S : POI South

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Year Rainfall=5.92"

	Area (sf)	CN	Description
	100,377	80	>75% Grass cover, Good, HSG D
*	9,702	98	Impervious Surfaces
	110,079	82	Weighted Average
	100,377		91.19% Pervious Area
	9,702		8.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.5					**Direct Entry, Match DA 1B Watershed**

Subcatchment OFF2: Offsite Drainage Area 2



Hydrograph for Subcatchment OFF2: Offsite Drainage Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.32	0.25	0.38
0.20	0.01	0.00	0.00	10.80	1.40	0.29	0.43
0.40	0.02	0.00	0.00	11.00	1.48	0.33	0.49
0.60	0.04	0.00	0.00	11.20	1.58	0.39	0.56
0.80	0.05	0.00	0.00	11.40	1.70	0.46	0.68
1.00	0.06	0.00	0.00	11.60	1.86	0.56	0.86
1.20	0.07	0.00	0.00	11.80	2.21	0.79	1.40
1.40	0.08	0.00	0.00	12.00	2.96	1.35	2.89
1.60	0.09	0.00	0.00	12.20	3.71	1.96	**6.70**
1.80	0.11	0.00	0.00	12.40	4.06	2.25	**6.70**
2.00	0.12	0.00	0.00	12.60	4.22	2.40	4.23
2.20	0.13	0.00	0.00	12.80	4.34	2.50	2.37
2.40	0.14	0.00	0.00	13.00	4.44	2.58	1.55
2.60	0.16	0.00	0.00	13.20	4.52	2.66	1.17
2.80	0.17	0.00	0.00	13.40	4.60	2.73	0.98
3.00	0.18	0.00	0.00	13.60	4.67	2.79	0.89
3.20	0.20	0.00	0.00	13.80	4.74	2.85	0.82
3.40	0.21	0.00	0.00	14.00	4.80	2.90	0.76
3.60	0.22	0.00	0.00	14.20	4.86	2.95	0.70
3.80	0.24	0.00	0.00	14.40	4.91	3.00	0.65
4.00	0.25	0.00	0.00	14.60	4.96	3.05	0.62
4.20	0.27	0.00	0.00	14.80	5.01	3.09	0.59
4.40	0.29	0.00	0.00	15.00	5.06	3.13	0.56
4.60	0.30	0.00	0.00	15.20	5.10	3.17	0.53
4.80	0.32	0.00	0.00	15.40	5.14	3.21	0.50
5.00	0.34	0.00	0.00	15.60	5.18	3.24	0.47
5.20	0.35	0.00	0.00	15.80	5.21	3.27	0.44
5.40	0.37	0.00	0.00	16.00	5.25	3.30	0.40
5.60	0.39	0.00	0.00	16.20	5.28	3.33	0.37
5.80	0.41	0.00	0.00	16.40	5.30	3.35	0.35
6.00	0.43	0.00	0.00	16.60	5.33	3.38	0.34
6.20	0.45	0.00	0.00	16.80	5.36	3.40	0.32
6.40	0.47	0.00	0.00	17.00	5.38	3.42	0.31
6.60	0.49	0.00	0.00	17.20	5.41	3.45	0.30
6.80	0.51	0.00	0.01	17.40	5.43	3.47	0.28
7.00	0.54	0.00	0.01	17.60	5.45	3.49	0.27
7.20	0.56	0.01	0.02	17.80	5.47	3.51	0.26
7.40	0.59	0.01	0.03	18.00	5.49	3.52	0.24
7.60	0.62	0.01	0.04	18.20	5.51	3.54	0.23
7.80	0.64	0.02	0.05	18.40	5.53	3.56	0.22
8.00	0.67	0.02	0.06	18.60	5.55	3.57	0.21
8.20	0.71	0.03	0.07	18.80	5.57	3.59	0.21
8.40	0.74	0.04	0.08	19.00	5.58	3.61	0.21
8.60	0.78	0.05	0.09	19.20	5.60	3.62	0.20
8.80	0.82	0.06	0.11	19.40	5.62	3.64	0.20
9.00	0.86	0.07	0.13	19.60	5.63	3.65	0.19
9.20	0.91	0.08	0.15	19.80	5.65	3.67	0.19
9.40	0.96	0.10	0.18	20.00	5.67	3.68	0.19
9.60	1.01	0.12	0.20	20.20	5.68	3.69	0.18
9.80	1.06	0.14	0.23	20.40	5.70	3.71	0.18
10.00	1.12	0.16	0.26	20.60	5.71	3.72	0.17
10.20	1.18	0.19	0.29	20.80	5.72	3.73	0.17
10.40	1.25	0.22	0.33	21.00	5.74	3.75	0.17

Hydrograph for Subcatchment OFF2: Offsite Drainage Area 2 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	5.75	3.76	0.17
21.40	5.77	3.77	0.16
21.60	5.78	3.79	0.16
21.80	5.79	3.80	0.16
22.00	5.81	3.81	0.15
22.20	5.82	3.82	0.15
22.40	5.83	3.83	0.15
22.60	5.84	3.84	0.14
22.80	5.85	3.85	0.14
23.00	5.87	3.86	0.14
23.20	5.88	3.87	0.14
23.40	5.89	3.88	0.13
23.60	5.90	3.89	0.13
23.80	5.91	3.90	0.13
24.00	**5.92**	**3.91**	0.12

Summary for Subcatchment OFF3: Offsite Drainage Area 3

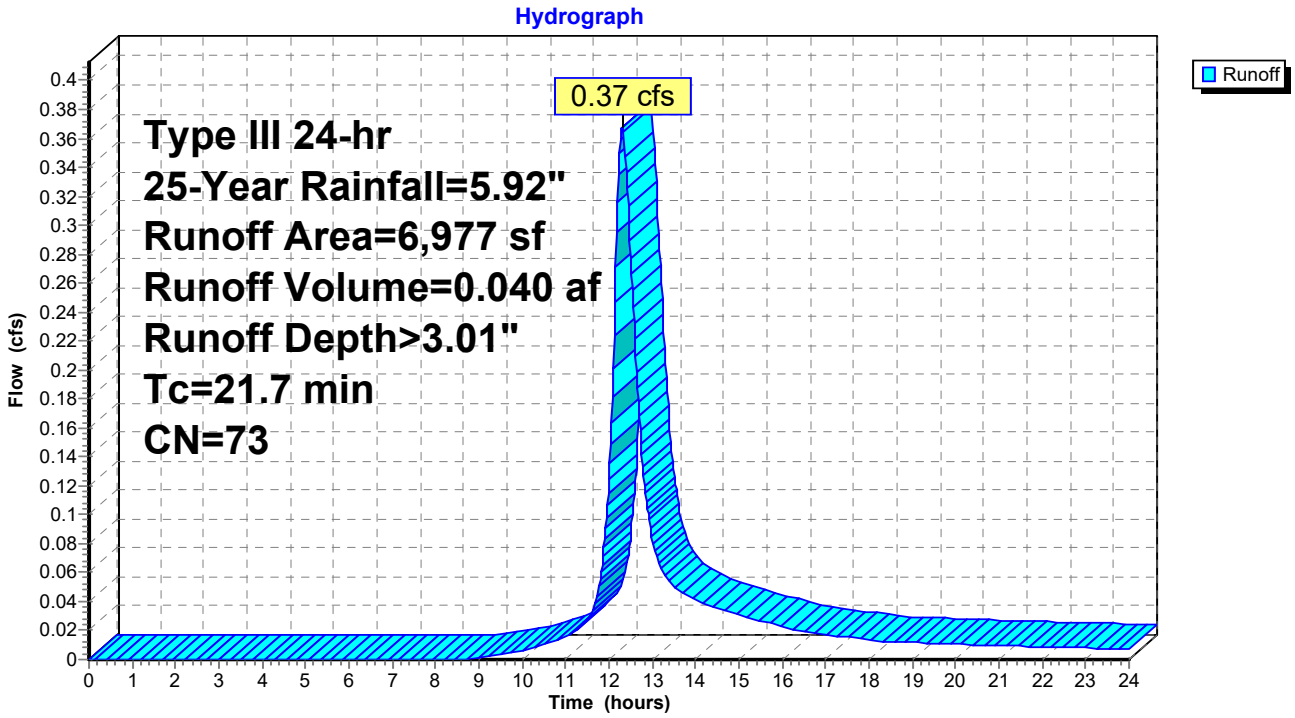
Runoff = 0.37 cfs @ 12.31 hrs, Volume= 0.040 af, Depth> 3.01"
Routed to Link N : POI North

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-Year Rainfall=5.92"

Area (sf)	CN	Description
2,502	61	>75% Grass cover, Good, HSG B
4,475	80	>75% Grass cover, Good, HSG D
6,977	73	Weighted Average
6,977		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.7					**Direct Entry, Match DA 3 Watershed**

Subcatchment OFF3: Offsite Drainage Area 3



Hydrograph for Subcatchment OFF3: Offsite Drainage Area 3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.32	0.08	0.01
0.20	0.01	0.00	0.00	10.80	1.40	0.10	0.01
0.40	0.02	0.00	0.00	11.00	1.48	0.12	0.02
0.60	0.04	0.00	0.00	11.20	1.58	0.15	0.02
0.80	0.05	0.00	0.00	11.40	1.70	0.20	0.02
1.00	0.06	0.00	0.00	11.60	1.86	0.26	0.03
1.20	0.07	0.00	0.00	11.80	2.21	0.42	0.06
1.40	0.08	0.00	0.00	12.00	2.96	0.83	0.12
1.60	0.09	0.00	0.00	12.20	3.71	1.32	**0.32**
1.80	0.11	0.00	0.00	12.40	4.06	1.57	**0.34**
2.00	0.12	0.00	0.00	12.60	4.22	1.69	0.22
2.20	0.13	0.00	0.00	12.80	4.34	1.78	0.13
2.40	0.14	0.00	0.00	13.00	4.44	1.85	0.08
2.60	0.16	0.00	0.00	13.20	4.52	1.91	0.06
2.80	0.17	0.00	0.00	13.40	4.60	1.97	0.05
3.00	0.18	0.00	0.00	13.60	4.67	2.03	0.05
3.20	0.20	0.00	0.00	13.80	4.74	2.08	0.05
3.40	0.21	0.00	0.00	14.00	4.80	2.13	0.04
3.60	0.22	0.00	0.00	14.20	4.86	2.17	0.04
3.80	0.24	0.00	0.00	14.40	4.91	2.21	0.04
4.00	0.25	0.00	0.00	14.60	4.96	2.25	0.03
4.20	0.27	0.00	0.00	14.80	5.01	2.29	0.03
4.40	0.29	0.00	0.00	15.00	5.06	2.33	0.03
4.60	0.30	0.00	0.00	15.20	5.10	2.36	0.03
4.80	0.32	0.00	0.00	15.40	5.14	2.39	0.03
5.00	0.34	0.00	0.00	15.60	5.18	2.42	0.03
5.20	0.35	0.00	0.00	15.80	5.21	2.45	0.02
5.40	0.37	0.00	0.00	16.00	5.25	2.47	0.02
5.60	0.39	0.00	0.00	16.20	5.28	2.50	0.02
5.80	0.41	0.00	0.00	16.40	5.30	2.52	0.02
6.00	0.43	0.00	0.00	16.60	5.33	2.54	0.02
6.20	0.45	0.00	0.00	16.80	5.36	2.57	0.02
6.40	0.47	0.00	0.00	17.00	5.38	2.59	0.02
6.60	0.49	0.00	0.00	17.20	5.41	2.61	0.02
6.80	0.51	0.00	0.00	17.40	5.43	2.62	0.02
7.00	0.54	0.00	0.00	17.60	5.45	2.64	0.02
7.20	0.56	0.00	0.00	17.80	5.47	2.66	0.01
7.40	0.59	0.00	0.00	18.00	5.49	2.67	0.01
7.60	0.62	0.00	0.00	18.20	5.51	2.69	0.01
7.80	0.64	0.00	0.00	18.40	5.53	2.70	0.01
8.00	0.67	0.00	0.00	18.60	5.55	2.72	0.01
8.20	0.71	0.00	0.00	18.80	5.57	2.73	0.01
8.40	0.74	0.00	0.00	19.00	5.58	2.75	0.01
8.60	0.78	0.00	0.00	19.20	5.60	2.76	0.01
8.80	0.82	0.00	0.00	19.40	5.62	2.77	0.01
9.00	0.86	0.00	0.00	19.60	5.63	2.79	0.01
9.20	0.91	0.01	0.00	19.80	5.65	2.80	0.01
9.40	0.96	0.01	0.00	20.00	5.67	2.81	0.01
9.60	1.01	0.02	0.00	20.20	5.68	2.83	0.01
9.80	1.06	0.03	0.00	20.40	5.70	2.84	0.01
10.00	1.12	0.04	0.01	20.60	5.71	2.85	0.01
10.20	1.18	0.05	0.01	20.80	5.72	2.86	0.01
10.40	1.25	0.06	0.01	21.00	5.74	2.87	0.01

Hydrograph for Subcatchment OFF3: Offsite Drainage Area 3 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	5.75	2.88	0.01
21.40	5.77	2.90	0.01
21.60	5.78	2.91	0.01
21.80	5.79	2.92	0.01
22.00	5.81	2.93	0.01
22.20	5.82	2.94	0.01
22.40	5.83	2.95	0.01
22.60	5.84	2.96	0.01
22.80	5.85	2.97	0.01
23.00	5.87	2.98	0.01
23.20	5.88	2.99	0.01
23.40	5.89	3.00	0.01
23.60	5.90	3.01	0.01
23.80	5.91	3.01	0.01
24.00	**5.92**	**3.02**	0.01

Summary for Pond BIO: BioRetention 1 (South)

Inflow Area = 4.529 ac, 82.25% Impervious, Inflow Depth > 2.64" for 25-Year event
Inflow = 4.42 cfs @ 12.09 hrs, Volume= 0.998 af
Outflow = 2.23 cfs @ 12.31 hrs, Volume= 0.703 af, Atten= 50%, Lag= 13.5 min
Primary = 2.23 cfs @ 12.31 hrs, Volume= 0.703 af
Routed to Link S : POI South

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 299.80' @ 12.31 hrs Surf.Area= 20,112 sf Storage= 15,274 cf

Plug-Flow detention time= 260.8 min calculated for 0.702 af (70% of inflow)
Center-of-Mass det. time= 115.2 min (893.9 - 778.7)

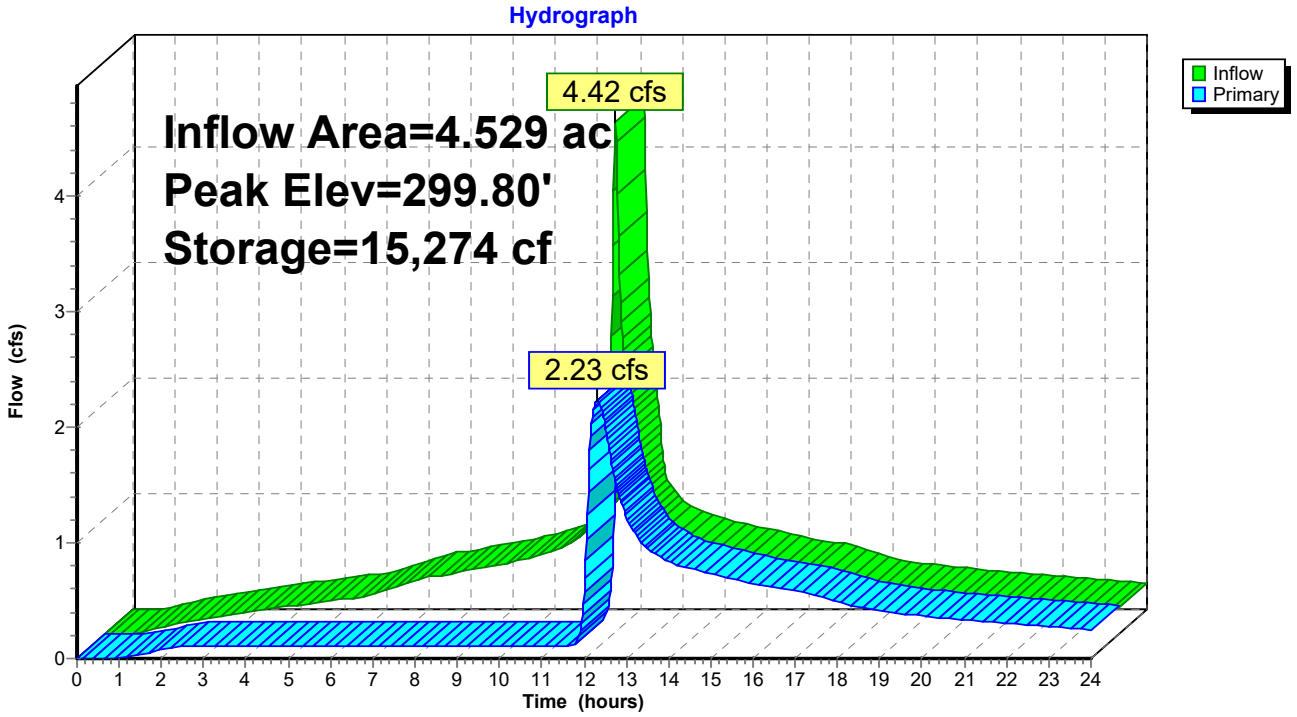
Volume	Invert	Avail.Storage	Storage Description
#1	299.00'	19,296 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
299.00	17,947	0	0
300.00	20,644	19,296	19,296

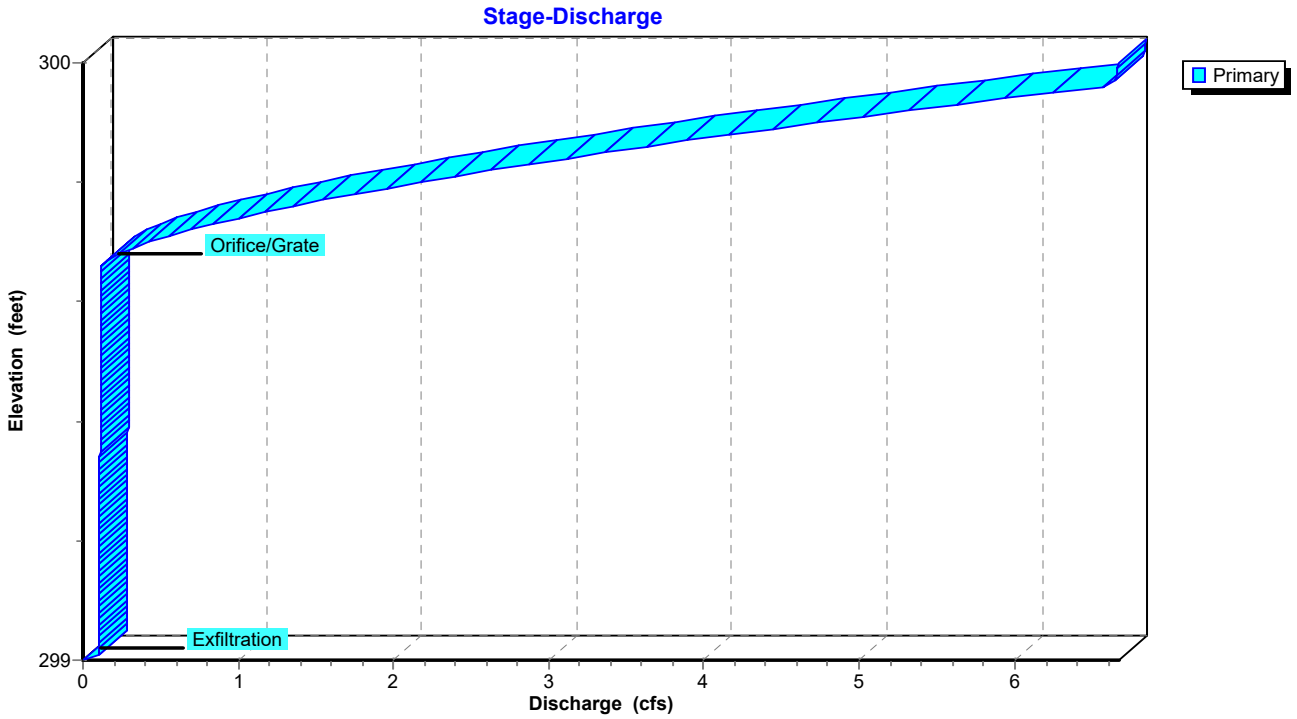
Device	Routing	Invert	Outlet Devices
#1	Primary	295.50'	**12.0" Round Culvert** L= 61.0' Box, 0° wingwalls, square crown edge, Ke= 0.700 Inlet / Outlet Invert= 295.50' / 293.25' S= 0.0369 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Device 1	299.66'	**24.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	299.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 102.00'

Primary OutFlow Max=2.23 cfs @ 12.31 hrs HW=299.80' (Free Discharge)
└**1=Culvert** (Passes 2.23 cfs of 6.51 cfs potential flow)
└**2=Orifice/Grate** (Weir Controls 2.11 cfs @ 1.24 fps)
└**3=Exfiltration** (Controls 0.12 cfs)

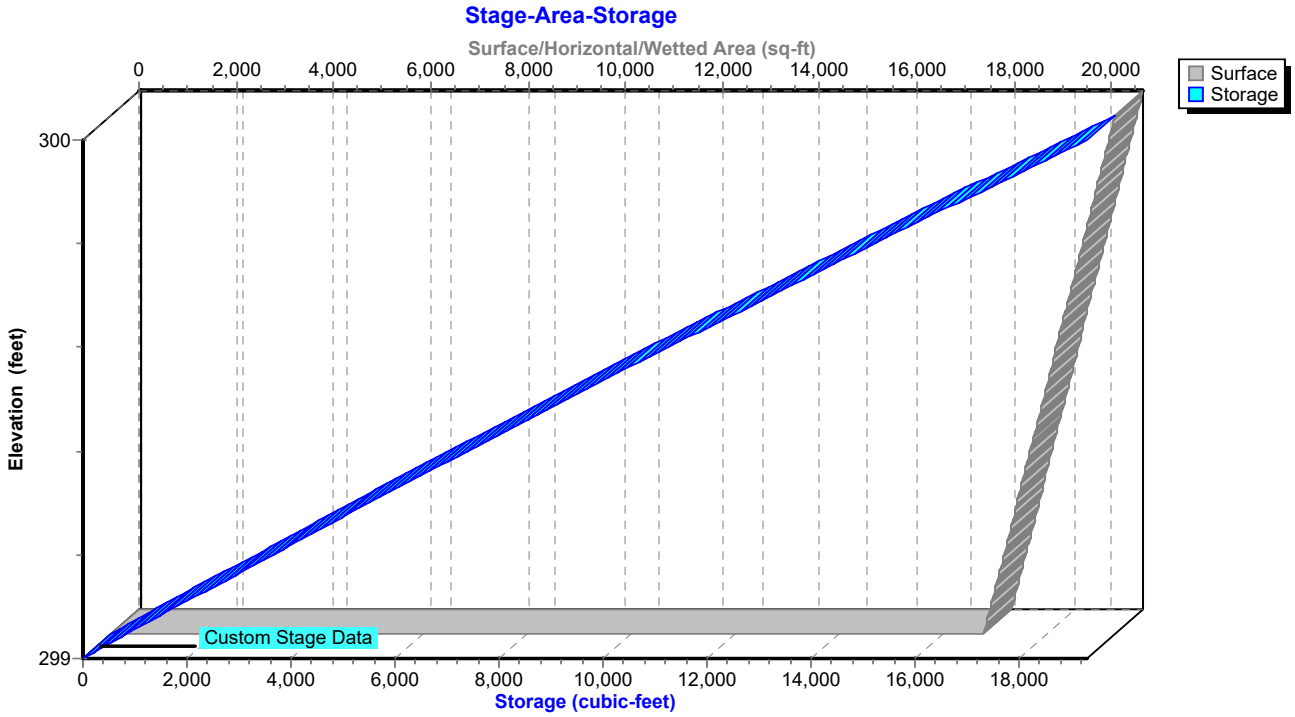
Pond BIO: BioRetention 1 (South)



Pond BIO: BioRetention 1 (South)



Pond BIO: BioRetention 1 (South)



Hydrograph for Pond BIO: BioRetention 1 (South)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	299.00	0.00
0.20	0.00	0	299.00	0.00
0.40	0.00	0	299.00	0.00
0.60	0.00	0	299.00	0.00
0.80	0.00	0	299.00	0.00
1.00	0.03	9	299.00	0.01
1.20	0.05	28	299.00	0.02
1.40	0.06	51	299.00	0.03
1.60	0.08	76	299.00	0.04
1.80	0.09	101	299.01	0.06
2.00	0.10	124	299.01	0.07
2.20	0.11	146	299.01	0.08
2.40	0.13	168	299.01	0.10
2.60	0.14	191	299.01	0.10
2.80	0.15	221	299.01	0.10
3.00	0.16	260	299.01	0.10
3.20	0.18	307	299.02	0.10
3.40	0.19	363	299.02	0.10
3.60	0.20	427	299.02	0.10
3.80	0.21	498	299.03	0.10
4.00	0.22	578	299.03	0.10
4.20	0.23	664	299.04	0.10
4.40	0.24	758	299.04	0.10
4.60	0.25	859	299.05	0.10
4.80	0.26	968	299.05	0.10
5.00	0.27	1,083	299.06	0.10
5.20	0.28	1,205	299.07	0.10
5.40	0.29	1,333	299.07	0.11
5.60	0.30	1,468	299.08	0.11
5.80	0.31	1,610	299.09	0.11
6.00	0.32	1,758	299.10	0.11
6.20	0.33	1,913	299.11	0.11
6.40	0.35	2,084	299.12	0.11
6.60	0.38	2,272	299.13	0.11
6.80	0.40	2,476	299.14	0.11
7.00	0.43	2,697	299.15	0.11
7.20	0.45	2,937	299.16	0.11
7.40	0.48	3,195	299.18	0.11
7.60	0.49	3,466	299.19	0.11
7.80	0.50	3,744	299.21	0.11
8.00	0.51	4,030	299.22	0.11
8.20	0.52	4,323	299.24	0.11
8.40	0.54	4,626	299.25	0.11
8.60	0.55	4,940	299.27	0.11
8.80	0.56	5,263	299.29	0.11
9.00	0.58	5,596	299.30	0.11
9.20	0.59	5,939	299.32	0.11
9.40	0.61	6,292	299.34	0.11
9.60	0.62	6,654	299.36	0.11
9.80	0.63	7,027	299.38	0.11
10.00	0.65	7,410	299.40	0.11
10.20	0.67	7,805	299.42	0.11
10.40	0.70	8,216	299.44	0.11

Hydrograph for Pond BIO: BioRetention 1 (South) (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
10.60	0.72	8,646	299.47	0.11
10.80	0.75	9,094	299.49	0.11
11.00	0.77	9,562	299.51	0.11
11.20	0.83	10,055	299.54	0.11
11.40	0.91	10,602	299.57	0.11
11.60	1.06	11,215	299.60	0.11
11.80	1.69	12,113	299.64	0.11
12.00	**2.93**	13,452	299.71	0.57
12.20	**2.86**	**15,152**	**299.80**	**2.10**
12.40	1.90	**15,227**	**299.80**	**2.18**
12.60	1.19	14,876	299.78	1.81
12.80	1.05	14,512	299.76	1.45
13.00	0.95	14,275	299.75	1.23
13.20	0.89	14,108	299.74	1.08
13.40	0.87	13,999	299.74	0.99
13.60	0.84	13,924	299.74	0.93
13.80	0.81	13,868	299.73	0.88
14.00	0.78	13,820	299.73	0.84
14.20	0.76	13,779	299.73	0.81
14.40	0.75	13,746	299.73	0.79
14.60	0.73	13,719	299.72	0.77
14.80	0.72	13,695	299.72	0.75
15.00	0.70	13,672	299.72	0.73
15.20	0.68	13,651	299.72	0.71
15.40	0.67	13,629	299.72	0.70
15.60	0.65	13,607	299.72	0.68
15.80	0.63	13,584	299.72	0.67
16.00	0.62	13,560	299.72	0.65
16.20	0.60	13,536	299.72	0.63
16.40	0.59	13,515	299.71	0.62
16.60	0.58	13,498	299.71	0.61
16.80	0.57	13,481	299.71	0.59
17.00	0.56	13,464	299.71	0.58
17.20	0.54	13,447	299.71	0.57
17.40	0.52	13,422	299.71	0.55
17.60	0.49	13,392	299.71	0.54
17.80	0.46	13,357	299.71	0.51
18.00	0.44	13,320	299.70	0.49
18.20	0.42	13,283	299.70	0.47
18.40	0.41	13,254	299.70	0.45
18.60	0.40	13,230	299.70	0.43
18.80	0.40	13,211	299.70	0.42
19.00	0.39	13,193	299.70	0.41
19.20	0.38	13,177	299.70	0.40
19.40	0.37	13,161	299.70	0.39
19.60	0.36	13,145	299.70	0.39
19.80	0.36	13,130	299.70	0.38
20.00	0.35	13,116	299.69	0.37
20.20	0.34	13,101	299.69	0.36
20.40	0.34	13,088	299.69	0.35
20.60	0.33	13,076	299.69	0.35
20.80	0.32	13,064	299.69	0.34
21.00	0.32	13,052	299.69	0.33

Hydrograph for Pond BIO: BioRetention 1 (South) (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
21.20	0.31	13,041	299.69	0.33
21.40	0.31	13,030	299.69	0.32
21.60	0.30	13,019	299.69	0.32
21.80	0.29	13,007	299.69	0.31
22.00	0.29	12,996	299.69	0.30
22.20	0.28	12,984	299.69	0.30
22.40	0.28	12,971	299.69	0.29
22.60	0.27	12,959	299.69	0.29
22.80	0.26	12,947	299.69	0.28
23.00	0.26	12,934	299.69	0.28
23.20	0.25	12,921	299.68	0.27
23.40	0.25	12,909	299.68	0.26
23.60	0.24	12,896	299.68	0.26
23.80	0.23	12,884	299.68	0.25
24.00	0.23	12,871	299.68	0.25

Stage-Discharge for Pond BIO: BioRetention 1 (South)

Elevation (feet)	Primary (cfs)
299.00	0.00
299.10	0.11
299.20	0.11
299.30	0.11
299.40	0.11
299.50	0.11
299.60	0.11
299.70	0.43
299.80	2.17
299.90	4.73
300.00	**6.67**

Stage-Area-Storage for Pond BIO: BioRetention 1 (South)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
299.00	17,947	0
299.10	18,217	1,808
299.20	18,486	3,643
299.30	18,756	5,505
299.40	19,026	7,395
299.50	19,296	9,311
299.60	19,565	11,254
299.70	19,835	13,224
299.80	20,105	15,221
299.90	20,374	17,245
300.00	**20,644**	**19,296**

Summary for Pond DET1: MC-4500 StormTech DETENTION ONLY

[81] Warning: Exceeded Pond SPLIT by 2.35' @ 12.18 hrs

Inflow = 20.74 cfs @ 12.08 hrs, Volume= 1.025 af
Outflow = 18.37 cfs @ 12.13 hrs, Volume= 1.023 af, Atten= 11%, Lag= 2.5 min
Primary = 18.37 cfs @ 12.13 hrs, Volume= 1.023 af
Routed to Link S : POI South

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 306.26' @ 12.13 hrs Surf.Area= 0.089 ac Storage= 0.334 af

Plug-Flow detention time= 83.4 min calculated for 1.023 af (100% of inflow)
Center-of-Mass det. time= 83.1 min (810.1 - 727.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	300.93'	0.145 af	**37.58'W x 103.72'L x 6.75'H Field A** 0.604 af Overall - 0.241 af Embedded = 0.363 af x 40.0% Voids
#2A	301.68'	0.241 af	**ADS_StormTech MC-4500 +Cap** x 96 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 96 Chambers in 4 Rows Cap Storage= 35.7 cf x 2 x 4 rows = 285.6 cf
		0.386 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	300.93'	**4.0" Vert. Underdrain** C= 0.600 Limited to weir flow at low heads
#2	Primary	304.50'	**28.0" W x 21.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	307.18'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** 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=18.26 cfs @ 12.13 hrs HW=306.25' (Free Discharge)
- **1=Underdrain** (Orifice Controls 0.95 cfs @ 10.93 fps)
- **2=Orifice/Grate** (Orifice Controls 17.30 cfs @ 4.24 fps)
- **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond DET1: MC-4500 StormTech DETENTION ONLY - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with cap, use MC-4500 b for new designs)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 35.7 cf x 2 x 4 rows = 285.6 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

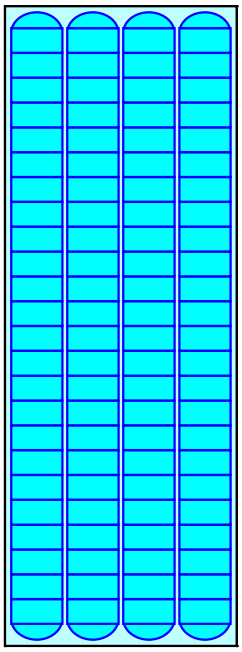
24 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 101.72' Row Length +12.0" End Stone x 2 = 103.72' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

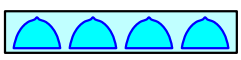
96 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 4 Rows = 10,508.7 cf Chamber Storage

26,311.6 cf Field - 10,508.7 cf Chambers = 15,802.9 cf Stone x 40.0% Voids = 6,321.2 cf Stone Storage

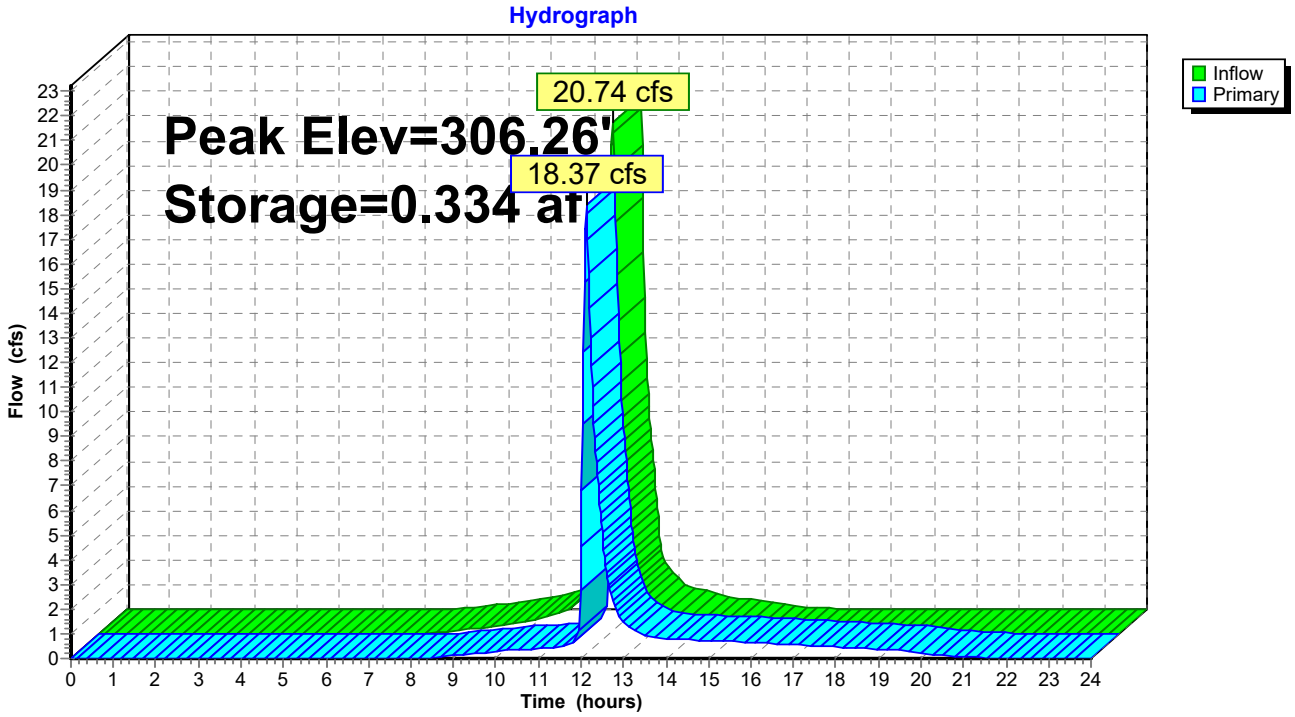
Chamber Storage + Stone Storage = 16,829.9 cf = 0.386 af
Overall Storage Efficiency = 64.0%
Overall System Size = 103.72' x 37.58' x 6.75'

96 Chambers
974.5 cy Field
585.3 cy Stone

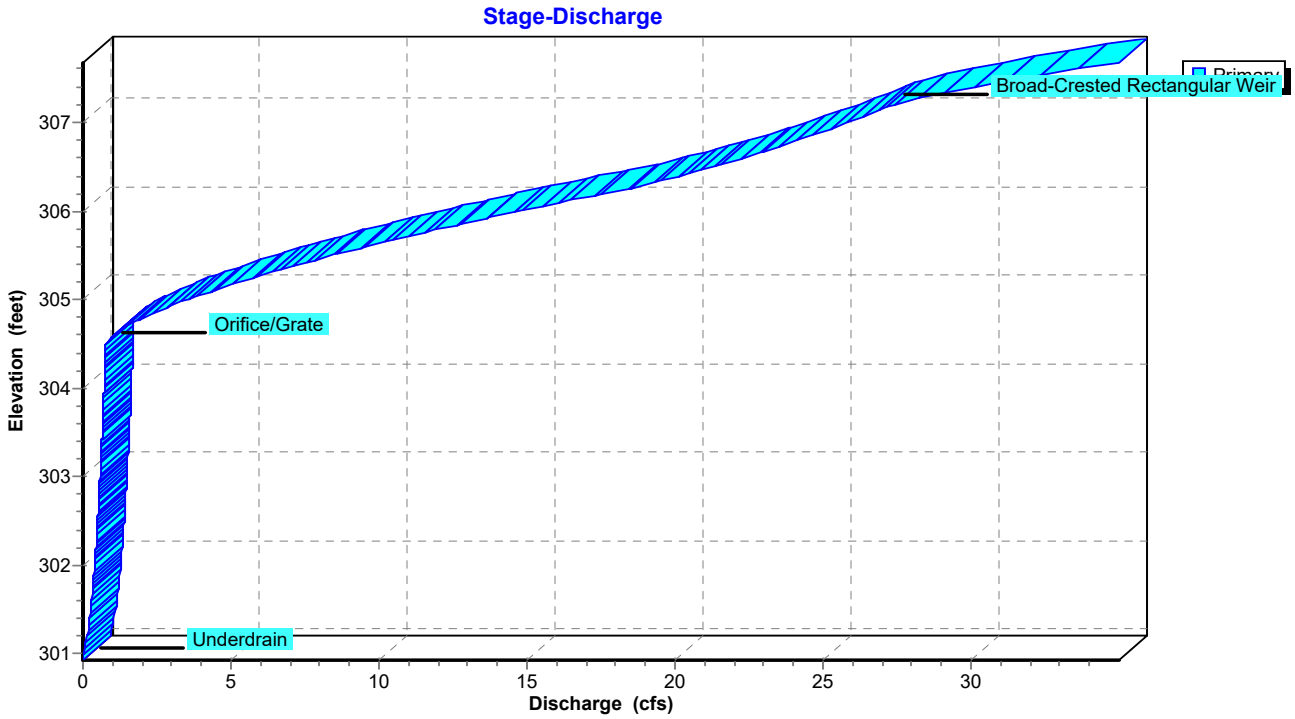




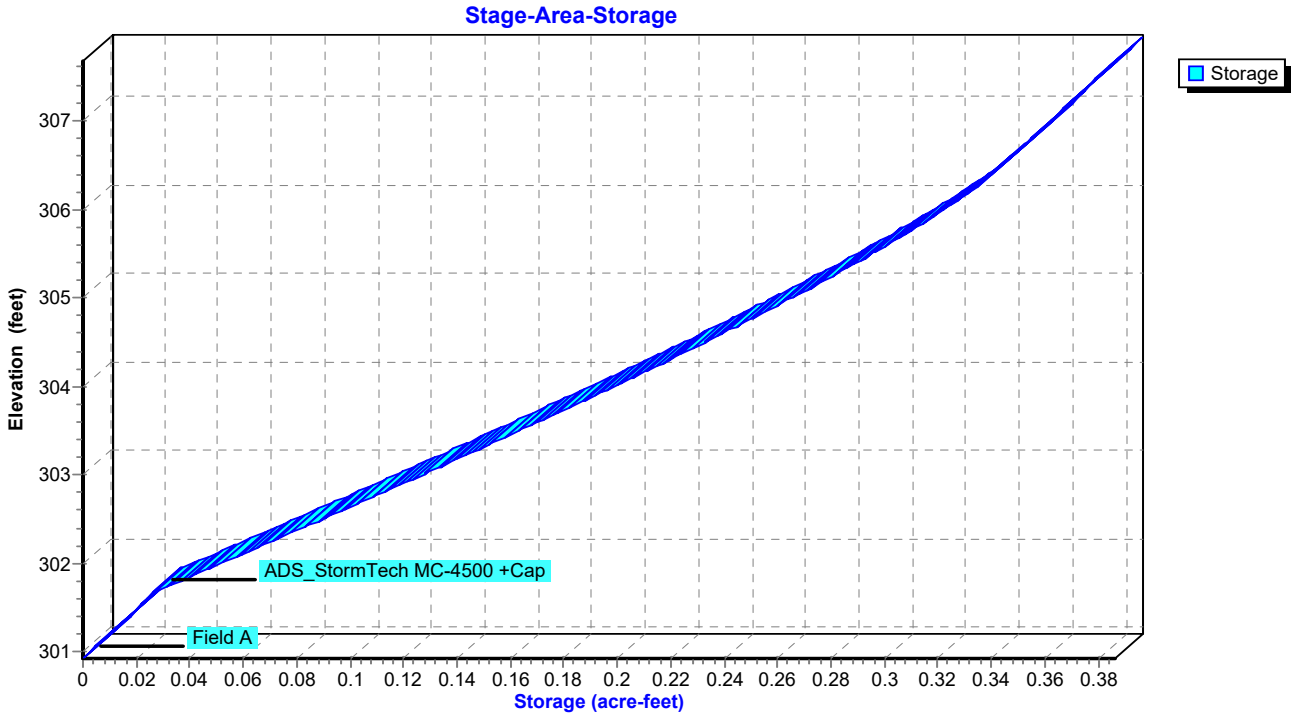
Pond DET1: MC-4500 StormTech DETENTION ONLY



Pond DET1: MC-4500 StormTech DETENTION ONLY



Pond DET1: MC-4500 StormTech DETENTION ONLY



Hydrograph for Pond DET1: MC-4500 StormTech DETENTION ONLY

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	300.93	0.00
0.20	0.00	0.000	300.93	0.00
0.40	0.00	0.000	300.93	0.00
0.60	0.00	0.000	300.93	0.00
0.80	0.00	0.000	300.93	0.00
1.00	0.00	0.000	300.93	0.00
1.20	0.00	0.000	300.93	0.00
1.40	0.00	0.000	300.93	0.00
1.60	0.00	0.000	300.93	0.00
1.80	0.00	0.000	300.93	0.00
2.00	0.00	0.000	300.93	0.00
2.20	0.00	0.000	300.93	0.00
2.40	0.00	0.000	300.93	0.00
2.60	0.00	0.000	300.93	0.00
2.80	0.00	0.000	300.93	0.00
3.00	0.00	0.000	300.93	0.00
3.20	0.00	0.000	300.93	0.00
3.40	0.00	0.000	300.93	0.00
3.60	0.00	0.000	300.93	0.00
3.80	0.00	0.000	300.93	0.00
4.00	0.00	0.000	300.93	0.00
4.20	0.00	0.000	300.93	0.00
4.40	0.00	0.000	300.93	0.00
4.60	0.00	0.000	300.93	0.00
4.80	0.00	0.000	300.93	0.00
5.00	0.00	0.000	300.93	0.00
5.20	0.00	0.000	300.93	0.00
5.40	0.00	0.000	300.93	0.00
5.60	0.00	0.000	300.93	0.00
5.80	0.00	0.000	300.93	0.00
6.00	0.00	0.000	300.93	0.00
6.20	0.00	0.000	300.93	0.00
6.40	0.00	0.000	300.93	0.00
6.60	0.00	0.000	300.93	0.00
6.80	0.00	0.000	300.93	0.00
7.00	0.00	0.000	300.93	0.00
7.20	0.00	0.000	300.93	0.00
7.40	0.00	0.000	300.93	0.00
7.60	0.02	0.000	300.93	0.00
7.80	0.03	0.000	300.94	0.00
8.00	0.05	0.001	300.96	0.00
8.20	0.08	0.002	300.98	0.01
8.40	0.12	0.003	301.02	0.02
8.60	0.16	0.005	301.07	0.05
8.80	0.21	0.007	301.13	0.08
9.00	0.25	0.009	301.19	0.12
9.20	0.30	0.011	301.25	0.16
9.40	0.34	0.014	301.31	0.19
9.60	0.39	0.016	301.38	0.22
9.80	0.43	0.019	301.46	0.25
10.00	0.48	0.022	301.55	0.28
10.20	0.56	0.026	301.65	0.31
10.40	0.65	0.030	301.73	0.33

Hydrograph for Pond DET1: MC-4500 StormTech DETENTION ONLY (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
10.60	0.75	0.036	301.80	0.35
10.80	0.85	0.043	301.90	0.38
11.00	0.95	0.052	302.01	0.40
11.20	1.20	0.062	302.14	0.43
11.40	1.59	0.078	302.35	0.47
11.60	2.33	0.100	302.64	0.52
11.80	5.90	0.157	303.42	0.64
12.00	**12.84**	**0.273**	**305.13**	**4.57**
12.20	**11.22**	**0.321**	**305.97**	**14.24**
12.40	5.66	0.288	305.38	7.05
12.60	2.21	0.265	305.00	3.49
12.80	1.58	0.252	304.80	2.04
13.00	1.19	0.246	304.71	1.50
13.20	0.96	0.242	304.64	1.18
13.40	0.86	0.239	304.60	1.01
13.60	0.77	0.237	304.56	0.90
13.80	0.67	0.234	304.53	0.82
14.00	0.57	0.232	304.48	0.77
14.20	0.50	0.228	304.42	0.77
14.40	0.46	0.223	304.36	0.76
14.60	0.41	0.218	304.28	0.75
14.80	0.36	0.212	304.19	0.74
15.00	0.32	0.205	304.10	0.73
15.20	0.27	0.198	304.00	0.72
15.40	0.23	0.191	303.89	0.70
15.60	0.19	0.183	303.77	0.69
15.80	0.14	0.174	303.65	0.67
16.00	0.10	0.165	303.53	0.66
16.20	0.07	0.156	303.40	0.64
16.40	0.06	0.147	303.27	0.62
16.60	0.04	0.137	303.14	0.60
16.80	0.02	0.128	303.02	0.58
17.00	0.01	0.119	302.89	0.56
17.20	0.00	0.110	302.77	0.54
17.40	0.00	0.101	302.65	0.52
17.60	0.00	0.092	302.54	0.50
17.80	0.00	0.084	302.43	0.49
18.00	0.00	0.076	302.33	0.47
18.20	0.00	0.069	302.23	0.45
18.40	0.00	0.062	302.13	0.43
18.60	0.00	0.055	302.04	0.41
18.80	0.00	0.048	301.96	0.39
19.00	0.00	0.042	301.87	0.37
19.20	0.00	0.036	301.80	0.35
19.40	0.00	0.030	301.72	0.33
19.60	0.00	0.025	301.62	0.31
19.80	0.00	0.020	301.49	0.26
20.00	0.00	0.016	301.38	0.22
20.20	0.00	0.013	301.29	0.18
20.40	0.00	0.010	301.21	0.14
20.60	0.00	0.008	301.16	0.10
20.80	0.00	0.007	301.12	0.07
21.00	0.00	0.006	301.09	0.06

Hydrograph for Pond DET1: MC-4500 StormTech DETENTION ONLY (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
21.20	0.00	0.005	301.06	0.04
21.40	0.00	0.004	301.05	0.03
21.60	0.00	0.004	301.03	0.03
21.80	0.00	0.003	301.02	0.02
22.00	0.00	0.003	301.01	0.02
22.20	0.00	0.003	301.01	0.01
22.40	0.00	0.002	301.00	0.01
22.60	0.00	0.002	300.99	0.01
22.80	0.00	0.002	300.99	0.01
23.00	0.00	0.002	300.98	0.01
23.20	0.00	0.002	300.98	0.01
23.40	0.00	0.002	300.98	0.01
23.60	0.00	0.002	300.97	0.01
23.80	0.00	0.001	300.97	0.01
24.00	0.00	0.001	300.97	0.01

Stage-Discharge for Pond DET1: MC-4500 StormTech DETENTION ONLY

Elevation (feet)	Primary (cfs)
300.93	0.00
301.03	0.02
301.13	0.08
301.23	0.15
301.33	0.20
301.43	0.24
301.53	0.28
301.63	0.31
301.73	0.33
301.83	0.36
301.93	0.38
302.03	0.41
302.13	0.43
302.23	0.45
302.33	0.47
302.43	0.49
302.53	0.50
302.63	0.52
302.73	0.54
302.83	0.55
302.93	0.57
303.03	0.58
303.13	0.60
303.23	0.61
303.33	0.63
303.43	0.64
303.53	0.66
303.63	0.67
303.73	0.68
303.83	0.69
303.93	0.71
304.03	0.72
304.13	0.73
304.23	0.74
304.33	0.76
304.43	0.77
304.53	0.82
304.63	1.14
304.73	1.63
304.83	2.23
304.93	2.93
305.03	3.72
305.13	4.59
305.23	5.53
305.33	6.53
305.43	7.59
305.53	8.71
305.63	9.89
305.73	11.12
305.83	12.40
305.93	13.73
306.03	15.11
306.13	16.53
306.23	18.00
306.33	19.33
306.43	20.48
306.53	21.53
306.63	22.52
306.73	23.45
306.83	24.34
306.93	25.19
307.03	26.01
307.13	26.79
307.23	27.68
307.33	28.95
307.43	30.44
307.53	32.12
307.63	**33.98**

Stage-Area-Storage for Pond DET1: MC-4500 StormTech DETENTION ONLY

Elevation (feet)	Storage (acre-feet)
300.93	0.000
301.03	0.004
301.13	0.007
301.23	0.011
301.33	0.014
301.43	0.018
301.53	0.021
301.63	0.025
301.73	0.031
301.83	0.038
301.93	0.046
302.03	0.054
302.13	0.061
302.23	0.069
302.33	0.077
302.43	0.084
302.53	0.092
302.63	0.099
302.73	0.107
302.83	0.114
302.93	0.122
303.03	0.129
303.13	0.136
303.23	0.144
303.33	0.151
303.43	0.158
303.53	0.165
303.63	0.173
303.73	0.180
303.83	0.187
303.93	0.194
304.03	0.201
304.13	0.208
304.23	0.215
304.33	0.221
304.43	0.228
304.53	0.235
304.63	0.241
304.73	0.248
304.83	0.254
304.93	0.261
305.03	0.267
305.13	0.273
305.23	0.279
305.33	0.285
305.43	0.291
305.53	0.297
305.63	0.303
305.73	0.308
305.83	0.314
305.93	0.319
306.03	0.324
306.13	0.329
306.23	0.333
306.33	0.337
306.43	0.341
306.53	0.345
306.63	0.349
306.73	0.352
306.83	0.356
306.93	0.360
307.03	0.363
307.13	0.367
307.23	0.370
307.33	0.374
307.43	0.377
307.53	0.381
307.63	**0.385**

Summary for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Inflow Area = 3.389 ac, 48.48% Impervious, Inflow Depth > 3.59" for 25-Year event
Inflow = 13.28 cfs @ 12.09 hrs, Volume= 1.015 af
Outflow = 6.02 cfs @ 12.32 hrs, Volume= 0.958 af, Atten= 55%, Lag= 13.7 min
Primary = 6.02 cfs @ 12.32 hrs, Volume= 0.958 af
Routed to Link S : POI South

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 298.74' @ 12.32 hrs Surf.Area= 6,177 sf Storage= 14,159 cf

Plug-Flow detention time= 127.3 min calculated for 0.958 af (94% of inflow)
Center-of-Mass det. time= 97.2 min (911.4 - 814.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	295.50'	8,615 cf	**29.92'W x 206.46'L x 5.50'H Field A** 33,971 cf Overall - 12,434 cf Embedded = 21,537 cf x 40.0% Voids
#2A	296.25'	12,434 cf	**ADS_StormTech MC-3500 d +Cap** x 112 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 112 Chambers in 4 Rows Cap Storage= 14.9 cf x 2 x 4 rows = 119.2 cf
		21,049 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	295.50'	**4.0" Vert. Underdrain** C= 0.600 Limited to weir flow at low heads
#2	Primary	297.60'	**17.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	300.50'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** 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=6.02 cfs @ 12.32 hrs HW=298.74' (Free Discharge)
- **1=Underdrain** (Orifice Controls 0.74 cfs @ 8.44 fps)
- **2=Orifice/Grate** (Orifice Controls 5.28 cfs @ 3.73 fps)
- **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 4 rows = 119.2 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

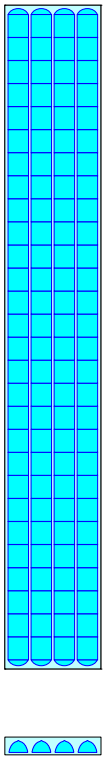
28 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 204.46' Row Length +12.0" End Stone x 2 = 206.46' Base Length
4 Rows x 77.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 29.92' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

112 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 4 Rows = 12,433.8 cf Chamber Storage

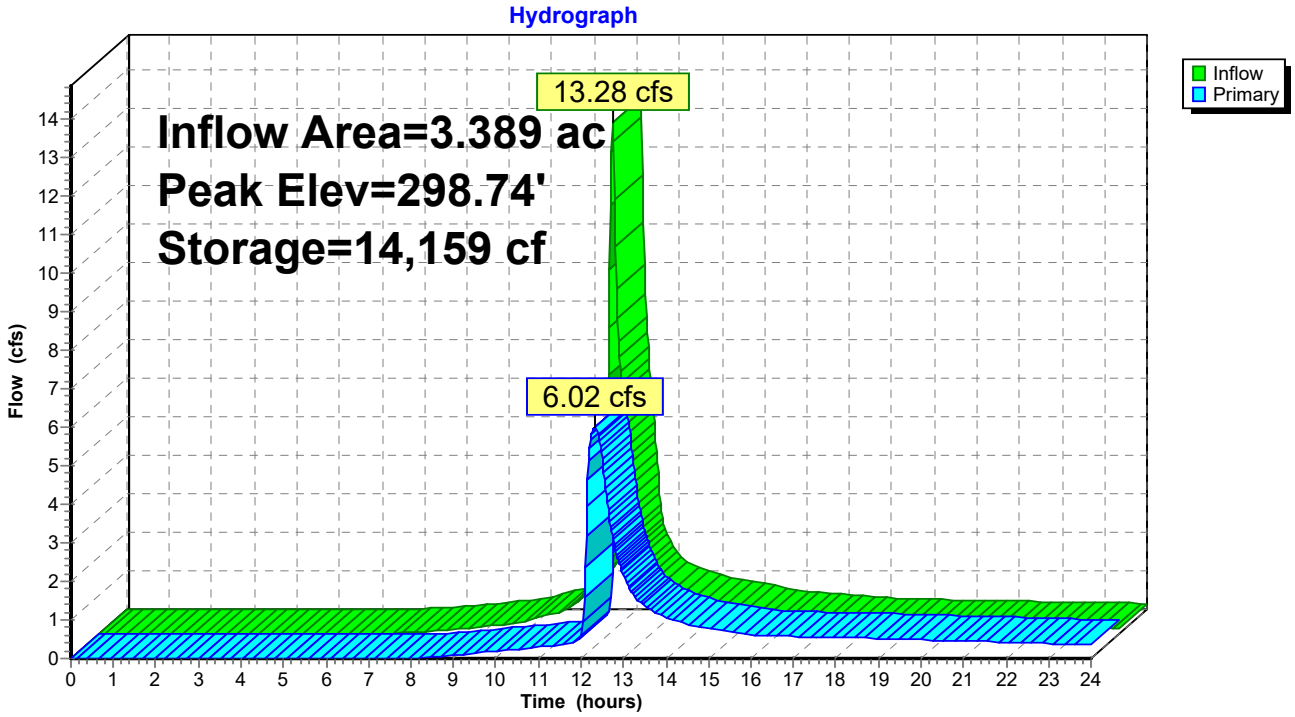
33,971.3 cf Field - 12,433.8 cf Chambers = 21,537.5 cf Stone x 40.0% Voids = 8,615.0 cf Stone Storage

Chamber Storage + Stone Storage = 21,048.8 cf = 0.483 af
Overall Storage Efficiency = 62.0%
Overall System Size = 206.46' x 29.92' x 5.50'

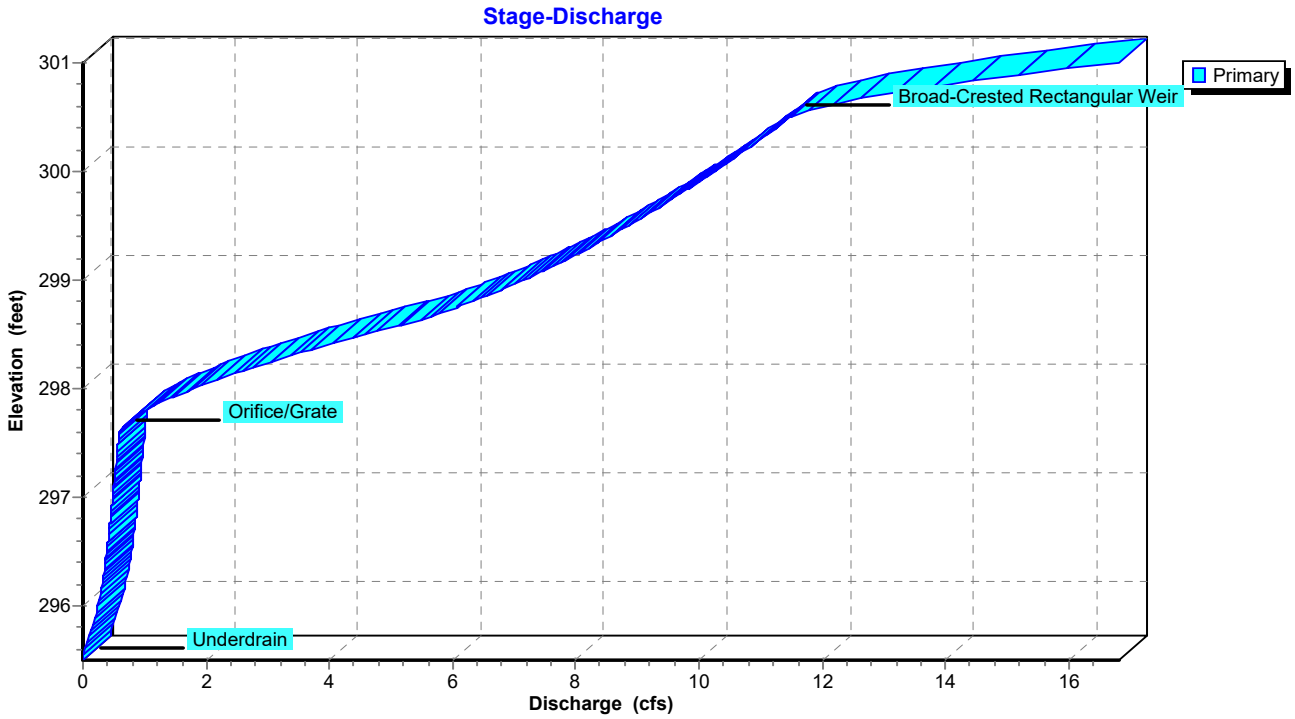
112 Chambers
1,258.2 cy Field
797.7 cy Stone



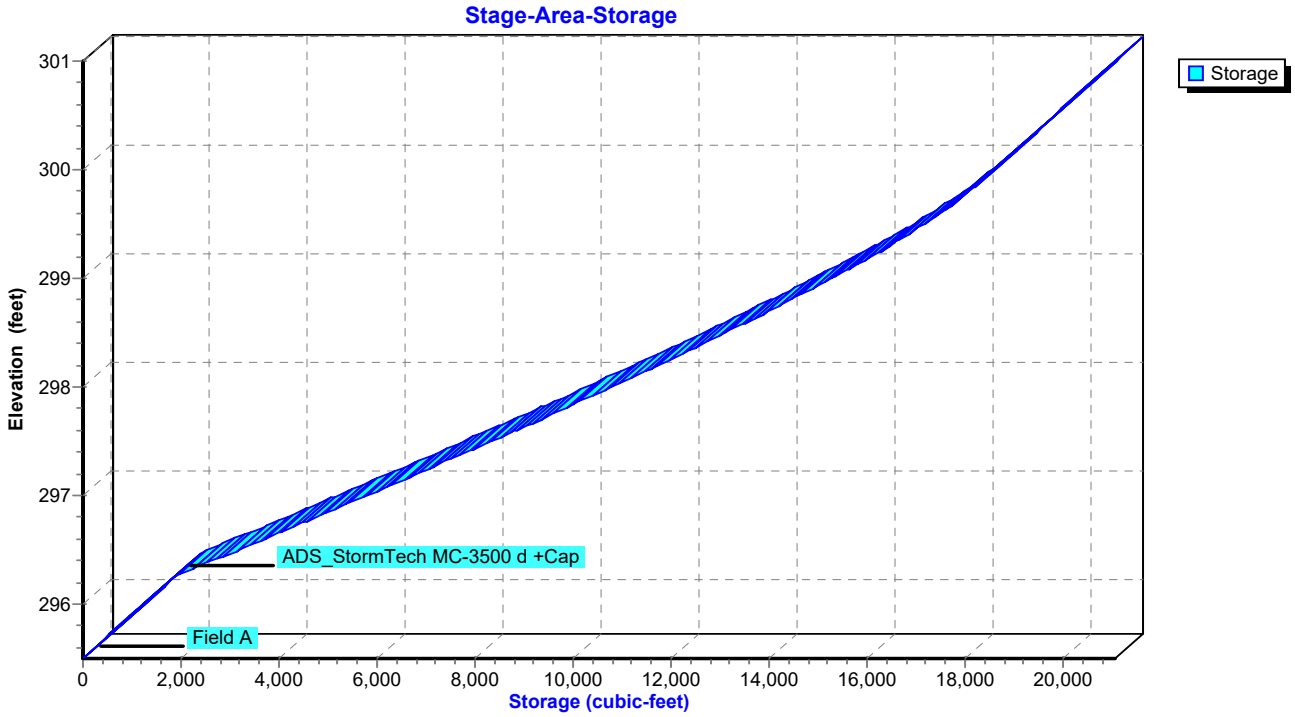
Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY



Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY



Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY



Hydrograph for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	295.50	0.00
0.20	0.00	0	295.50	0.00
0.40	0.00	0	295.50	0.00
0.60	0.00	0	295.50	0.00
0.80	0.00	0	295.50	0.00
1.00	0.00	0	295.50	0.00
1.20	0.00	0	295.50	0.00
1.40	0.00	0	295.50	0.00
1.60	0.00	0	295.50	0.00
1.80	0.00	0	295.50	0.00
2.00	0.00	0	295.50	0.00
2.20	0.00	0	295.50	0.00
2.40	0.00	0	295.50	0.00
2.60	0.00	0	295.50	0.00
2.80	0.00	0	295.50	0.00
3.00	0.00	0	295.50	0.00
3.20	0.00	0	295.50	0.00
3.40	0.00	0	295.50	0.00
3.60	0.00	0	295.50	0.00
3.80	0.00	0	295.50	0.00
4.00	0.00	0	295.50	0.00
4.20	0.00	0	295.50	0.00
4.40	0.00	0	295.50	0.00
4.60	0.00	0	295.50	0.00
4.80	0.00	0	295.50	0.00
5.00	0.00	0	295.50	0.00
5.20	0.00	0	295.50	0.00
5.40	0.00	0	295.50	0.00
5.60	0.00	0	295.50	0.00
5.80	0.00	0	295.50	0.00
6.00	0.00	0	295.50	0.00
6.20	0.00	0	295.50	0.00
6.40	0.00	2	295.50	0.00
6.60	0.01	7	295.50	0.00
6.80	0.02	17	295.51	0.00
7.00	0.03	32	295.51	0.00
7.20	0.03	51	295.52	0.00
7.40	0.04	77	295.53	0.00
7.60	0.05	108	295.54	0.01
7.80	0.06	145	295.56	0.01
8.00	0.08	187	295.58	0.02
8.20	0.09	233	295.59	0.02
8.40	0.11	286	295.62	0.03
8.60	0.13	344	295.64	0.04
8.80	0.15	408	295.67	0.06
9.00	0.18	476	295.69	0.08
9.20	0.20	549	295.72	0.10
9.40	0.23	627	295.75	0.12
9.60	0.26	709	295.79	0.14
9.80	0.30	799	295.82	0.17
10.00	0.33	897	295.86	0.19
10.20	0.38	1,009	295.91	0.21
10.40	0.43	1,144	295.96	0.23

Hydrograph for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
10.60	0.50	1,306	296.03	0.25
10.80	0.57	1,497	296.11	0.28
11.00	0.64	1,720	296.20	0.31
11.20	0.79	1,996	296.28	0.33
11.40	1.02	2,403	296.35	0.35
11.60	1.46	2,984	296.46	0.37
11.80	3.48	4,418	296.74	0.43
12.00	**7.94**	7,650	297.36	0.55
12.20	**8.18**	**13,705**	**298.63**	**5.47**
12.40	4.89	**14,006**	**298.70**	**5.84**
12.60	2.38	12,862	298.44	4.23
12.80	1.76	11,810	298.22	2.87
13.00	1.40	11,156	298.08	2.15
13.20	1.20	10,699	297.98	1.71
13.40	1.11	10,398	297.92	1.45
13.60	1.03	10,188	297.88	1.29
13.80	0.96	10,024	297.84	1.16
14.00	0.88	9,883	297.81	1.06
14.20	0.82	9,755	297.79	0.98
14.40	0.78	9,648	297.77	0.92
14.60	0.74	9,557	297.75	0.86
14.80	0.70	9,472	297.73	0.82
15.00	0.67	9,392	297.71	0.78
15.20	0.63	9,314	297.70	0.74
15.40	0.59	9,234	297.68	0.70
15.60	0.55	9,151	297.66	0.67
15.80	0.51	9,064	297.65	0.64
16.00	0.47	8,968	297.63	0.61
16.20	0.45	8,863	297.61	0.59
16.40	0.43	8,756	297.58	0.58
16.60	0.41	8,640	297.56	0.58
16.80	0.39	8,514	297.54	0.57
17.00	0.38	8,378	297.51	0.57
17.20	0.36	8,234	297.48	0.57
17.40	0.34	8,080	297.45	0.56
17.60	0.32	7,918	297.42	0.56
17.80	0.31	7,747	297.38	0.55
18.00	0.29	7,568	297.35	0.54
18.20	0.28	7,382	297.31	0.54
18.40	0.27	7,194	297.27	0.53
18.60	0.27	7,008	297.24	0.53
18.80	0.26	6,822	297.20	0.52
19.00	0.26	6,636	297.16	0.51
19.20	0.25	6,452	297.13	0.51
19.40	0.25	6,268	297.09	0.50
19.60	0.24	6,085	297.06	0.50
19.80	0.24	5,903	297.02	0.49
20.00	0.23	5,722	296.99	0.48
20.20	0.23	5,542	296.95	0.48
20.40	0.22	5,364	296.92	0.47
20.60	0.22	5,187	296.88	0.46
20.80	0.22	5,012	296.85	0.46
21.00	0.21	4,839	296.82	0.45

Hydrograph for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
21.20	0.21	4,668	296.78	0.44
21.40	0.20	4,499	296.75	0.44
21.60	0.20	4,332	296.72	0.43
21.80	0.20	4,167	296.69	0.42
22.00	0.19	4,003	296.66	0.42
22.20	0.19	3,842	296.63	0.41
22.40	0.18	3,682	296.60	0.40
22.60	0.18	3,525	296.57	0.40
22.80	0.18	3,369	296.54	0.39
23.00	0.17	3,215	296.51	0.39
23.20	0.17	3,063	296.48	0.38
23.40	0.17	2,913	296.45	0.37
23.60	0.16	2,765	296.42	0.37
23.80	0.16	2,619	296.39	0.36
24.00	0.15	2,476	296.37	0.35

Stage-Discharge for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Elevation (feet)	Primary (cfs)
295.50	0.00
295.60	0.02
295.70	0.08
295.80	0.15
295.90	0.20
296.00	0.24
296.10	0.28
296.20	0.31
296.30	0.33
296.40	0.36
296.50	0.38
296.60	0.41
296.70	0.43
296.80	0.45
296.90	0.47
297.00	0.49
297.10	0.50
297.20	0.52
297.30	0.54
297.40	0.55
297.50	0.57
297.60	0.58
297.70	0.74
297.80	1.02
297.90	1.38
298.00	1.79
298.10	2.26
298.20	2.78
298.30	3.35
298.40	3.95
298.50	4.59
298.60	5.27
298.70	5.83
298.80	6.31
298.90	6.75
299.00	7.15
299.10	7.53
299.20	7.88
299.30	8.22
299.40	8.54
299.50	8.85
299.60	9.15
299.70	9.44
299.80	9.72
299.90	9.99
300.00	10.25
300.10	10.51
300.20	10.76
300.30	11.00
300.40	11.24
300.50	11.47
300.60	12.05
300.70	12.93
300.80	14.02
300.90	15.31
301.00	**16.81**

Stage-Area-Storage for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Elevation (feet)	Storage (cubic-feet)
295.50	0
295.60	247
295.70	494
295.80	741
295.90	988
296.00	1,235
296.10	1,482
296.20	1,729
296.30	2,119
296.40	2,650
296.50	3,179
296.60	3,706
296.70	4,230
296.80	4,752
296.90	5,272
297.00	5,790
297.10	6,305
297.20	6,817
297.30	7,326
297.40	7,831
297.50	8,334
297.60	8,833
297.70	9,327
297.80	9,818
297.90	10,304
298.00	10,786
298.10	11,262
298.20	11,734
298.30	12,200
298.40	12,660
298.50	13,113
298.60	13,560
298.70	13,999
298.80	14,431
298.90	14,854
299.00	15,268
299.10	15,672
299.20	16,065
299.30	16,445
299.40	16,811
299.50	17,161
299.60	17,486
299.70	17,784
299.80	18,060
299.90	18,325
300.00	18,578
300.10	18,825
300.20	19,072
300.30	19,319
300.40	19,566
300.50	19,813
300.60	20,061
300.70	20,308
300.80	20,555
300.90	20,802
301.00	**21,049**

Summary for Pond INF1: MC-3500 StormTech INFILTRATION 1

Inflow Area = 4.358 ac, 96.98% Impervious, Inflow Depth > 5.56" for 25-Year event
Inflow = 25.12 cfs @ 12.08 hrs, Volume= 2.019 af
Outflow = 3.54 cfs @ 12.59 hrs, Volume= 2.018 af, Atten= 86%, Lag= 30.1 min
Discarded = 2.03 cfs @ 12.59 hrs, Volume= 1.883 af
Primary = 1.51 cfs @ 12.59 hrs, Volume= 0.135 af
Routed to Link N : POI North

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 310.20' @ 12.59 hrs Surf.Area= 14,195 sf Storage= 31,037 cf

Plug-Flow detention time= 99.6 min calculated for 2.017 af (100% of inflow)
Center-of-Mass det. time= 99.1 min (851.0 - 751.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	307.14'	19,523 cf	**58.58'W x 242.31'L x 5.50'H Field A** 78,074 cf Overall - 29,266 cf Embedded = 48,809 cf x 40.0% Voids
#2A	307.89'	29,266 cf	**ADS_StormTech MC-3500 d +Cap** x 264 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 264 Chambers in 8 Rows Cap Storage= 14.9 cf x 2 x 8 rows = 238.4 cf
		48,789 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	307.14'	**5.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 294.00'
#2	Primary	309.65'	**18.5" W x 4.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	312.14'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=2.03 cfs @ 12.59 hrs HW=310.20' (Free Discharge)
└**1=Exfiltration** (Controls 2.03 cfs)

Primary OutFlow Max=1.51 cfs @ 12.59 hrs HW=310.20' (Free Discharge)
├**2=Orifice/Grate** (Orifice Controls 1.51 cfs @ 2.94 fps)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond INF1: MC-3500 StormTech INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 8 rows = 238.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

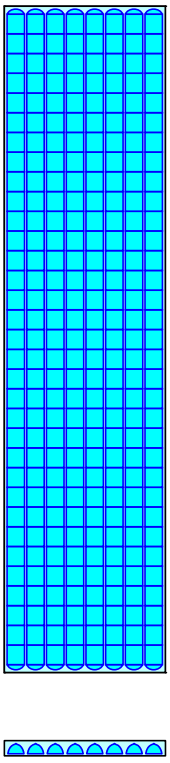
33 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 240.31' Row Length +12.0" End Stone x 2 = 242.31' Base Length
8 Rows x 77.0" Wide + 9.0" Spacing x 7 + 12.0" Side Stone x 2 = 58.58' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

264 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 8 Rows = 29,265.7 cf Chamber Storage

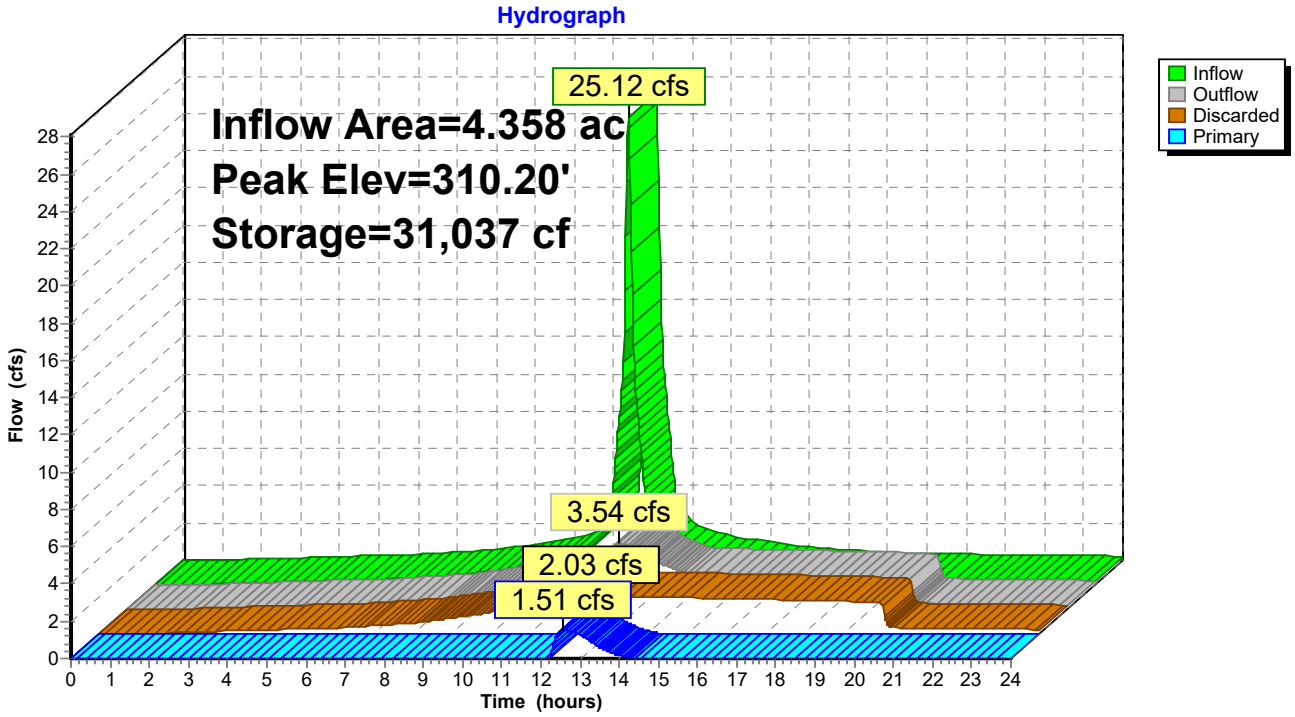
78,074.3 cf Field - 29,265.7 cf Chambers = 48,808.6 cf Stone x 40.0% Voids = 19,523.4 cf Stone Storage

Chamber Storage + Stone Storage = 48,789.1 cf = 1.120 af
Overall Storage Efficiency = 62.5%
Overall System Size = 242.31' x 58.58' x 5.50'

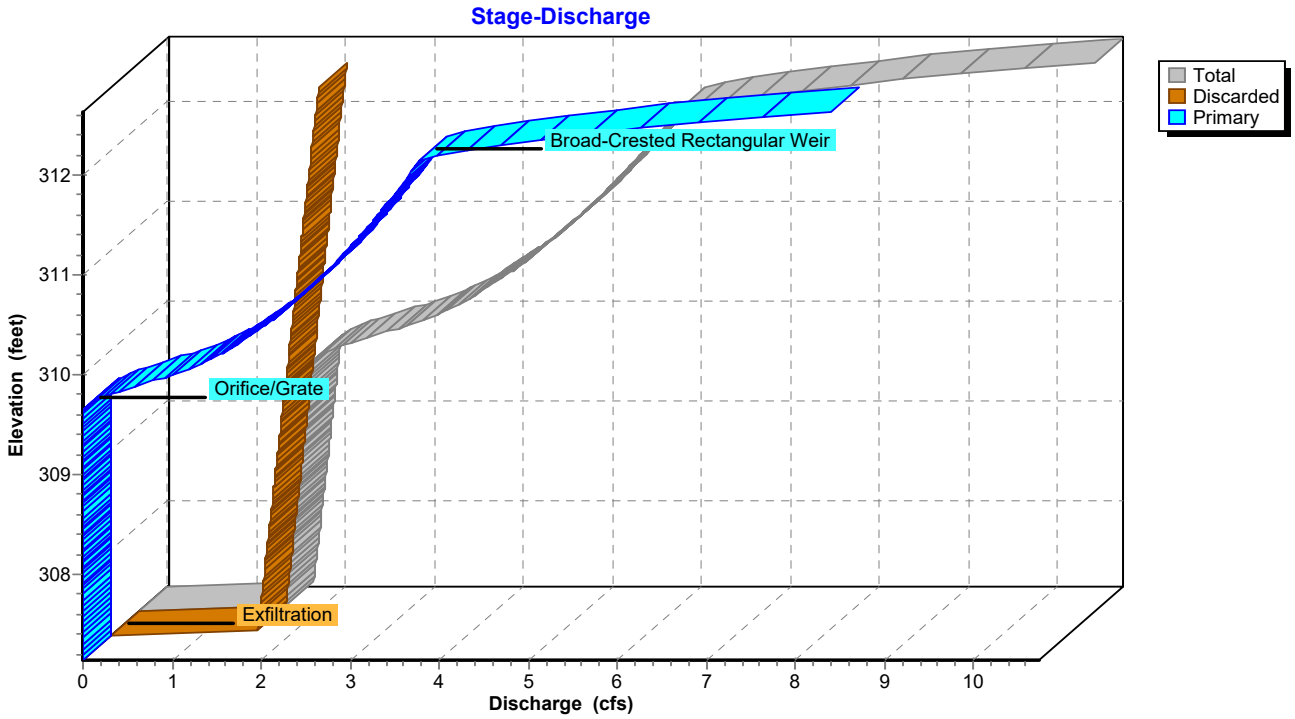
264 Chambers
2,891.6 cy Field
1,807.7 cy Stone



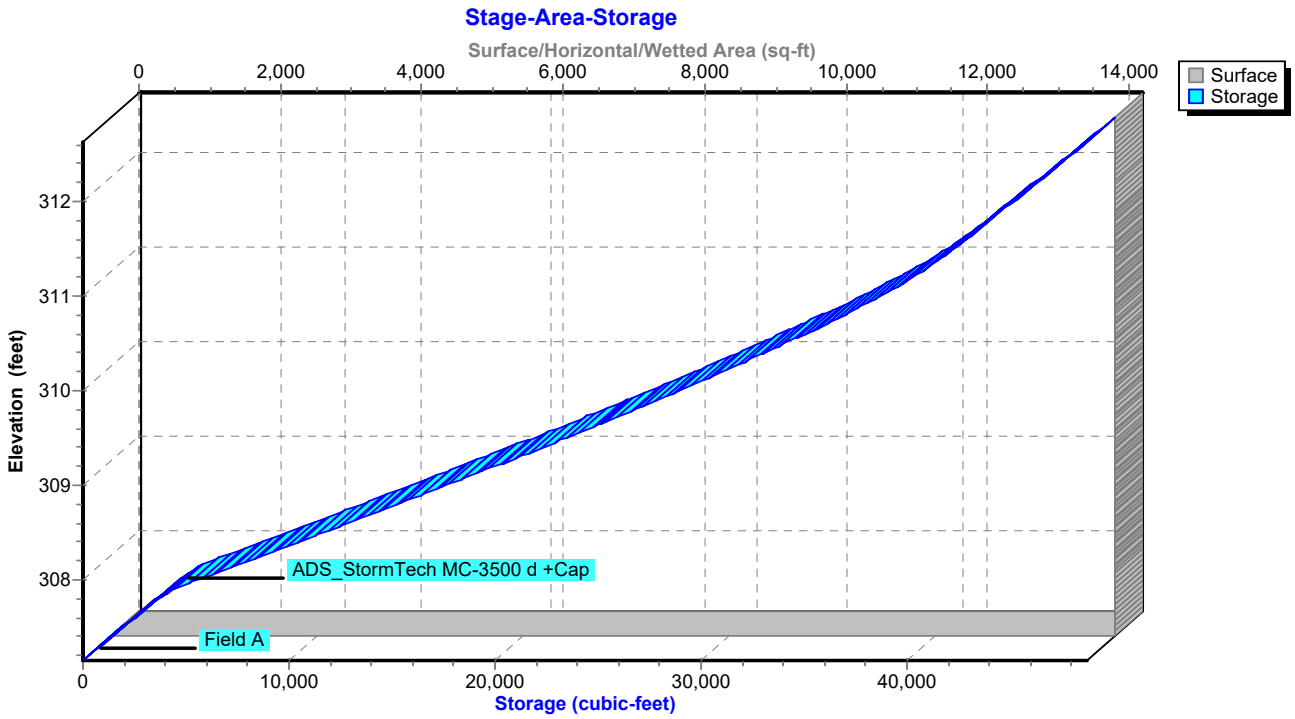
Pond INF1: MC-3500 StormTech INFILTRATION 1



Pond INF1: MC-3500 StormTech INFILTRATION 1



Pond INF1: MC-3500 StormTech INFILTRATION 1



Hydrograph for Pond INF1: MC-3500 StormTech INFILTRATION 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	307.14	0.00	0.00	0.00
0.20	0.00	0	307.14	0.00	0.00	0.00
0.40	0.00	0	307.14	0.00	0.00	0.00
0.60	0.00	0	307.14	0.00	0.00	0.00
0.80	0.00	0	307.14	0.00	0.00	0.00
1.00	0.00	0	307.14	0.00	0.00	0.00
1.20	0.01	1	307.14	0.00	0.00	0.00
1.40	0.02	4	307.14	0.02	0.02	0.00
1.60	0.04	7	307.14	0.04	0.04	0.00
1.80	0.06	10	307.14	0.05	0.05	0.00
2.00	0.07	12	307.14	0.07	0.07	0.00
2.20	0.08	15	307.14	0.08	0.08	0.00
2.40	0.10	17	307.14	0.09	0.09	0.00
2.60	0.11	20	307.14	0.11	0.11	0.00
2.80	0.12	23	307.14	0.12	0.12	0.00
3.00	0.14	25	307.14	0.13	0.13	0.00
3.20	0.15	28	307.14	0.15	0.15	0.00
3.40	0.16	31	307.15	0.16	0.16	0.00
3.60	0.18	33	307.15	0.17	0.17	0.00
3.80	0.19	36	307.15	0.19	0.19	0.00
4.00	0.20	38	307.15	0.20	0.20	0.00
4.20	0.22	40	307.15	0.21	0.21	0.00
4.40	0.23	43	307.15	0.23	0.23	0.00
4.60	0.24	45	307.15	0.24	0.24	0.00
4.80	0.25	47	307.15	0.25	0.25	0.00
5.00	0.27	50	307.15	0.26	0.26	0.00
5.20	0.28	52	307.15	0.27	0.27	0.00
5.40	0.29	54	307.15	0.29	0.29	0.00
5.60	0.30	56	307.15	0.30	0.30	0.00
5.80	0.31	59	307.15	0.31	0.31	0.00
6.00	0.32	61	307.15	0.32	0.32	0.00
6.20	0.34	64	307.15	0.34	0.34	0.00
6.40	0.37	68	307.15	0.36	0.36	0.00
6.60	0.39	73	307.15	0.39	0.39	0.00
6.80	0.42	78	307.15	0.41	0.41	0.00
7.00	0.45	84	307.15	0.44	0.44	0.00
7.20	0.48	89	307.16	0.47	0.47	0.00
7.40	0.50	94	307.16	0.50	0.50	0.00
7.60	0.53	99	307.16	0.52	0.52	0.00
7.80	0.56	104	307.16	0.55	0.55	0.00
8.00	0.59	110	307.16	0.58	0.58	0.00
8.20	0.63	117	307.16	0.62	0.62	0.00
8.40	0.69	128	307.16	0.68	0.68	0.00
8.60	0.75	139	307.16	0.73	0.73	0.00
8.80	0.81	150	307.17	0.79	0.79	0.00
9.00	0.87	162	307.17	0.86	0.86	0.00
9.20	0.93	174	307.17	0.92	0.92	0.00
9.40	0.99	185	307.17	0.98	0.98	0.00
9.60	1.06	197	307.17	1.04	1.04	0.00
9.80	1.12	209	307.18	1.10	1.10	0.00
10.00	1.18	220	307.18	1.16	1.16	0.00
10.20	1.28	236	307.18	1.25	1.25	0.00
10.40	1.40	259	307.19	1.37	1.37	0.00

Hydrograph for Pond INF1: MC-3500 StormTech INFILTRATION 1 (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
10.60	1.53	283	307.19	1.49	1.49	0.00
10.80	1.65	307	307.19	1.62	1.62	0.00
11.00	1.78	357	307.20	1.65	1.65	0.00
11.20	2.09	536	307.23	1.65	1.65	0.00
11.40	2.56	1,017	307.32	1.67	1.67	0.00
11.60	3.47	1,865	307.47	1.68	1.68	0.00
11.80	7.70	4,590	307.92	1.74	1.74	0.00
12.00	**15.84**	10,806	308.42	1.80	1.80	0.00
12.20	**13.98**	24,271	309.57	1.95	1.95	0.00
12.40	7.47	**29,740**	**310.07**	**3.23**	**2.01**	**1.22**
12.60	3.35	**31,030**	**310.20**	**3.53**	**2.03**	**1.51**
12.80	2.59	30,590	310.15	3.44	2.02	1.42
13.00	2.11	29,863	310.08	3.27	2.01	1.25
13.20	1.83	28,989	310.00	3.02	2.00	1.02
13.40	1.70	28,196	309.93	2.72	1.99	0.73
13.60	1.58	27,510	309.86	2.48	1.98	0.49
13.80	1.45	26,889	309.81	2.28	1.98	0.31
14.00	1.33	26,299	309.75	2.14	1.97	0.17
14.20	1.24	25,723	309.70	2.03	1.96	0.06
14.40	1.18	25,163	309.65	1.96	1.96	0.00
14.60	1.12	24,583	309.60	1.95	1.95	0.00
14.80	1.06	23,966	309.54	1.94	1.94	0.00
15.00	1.00	23,310	309.49	1.94	1.94	0.00
15.20	0.94	22,617	309.42	1.93	1.93	0.00
15.40	0.88	21,887	309.36	1.92	1.92	0.00
15.60	0.82	21,120	309.29	1.91	1.91	0.00
15.80	0.76	20,316	309.22	1.90	1.90	0.00
16.00	0.70	19,476	309.15	1.89	1.89	0.00
16.20	0.66	18,603	309.08	1.89	1.89	0.00
16.40	0.63	17,715	309.00	1.88	1.88	0.00
16.60	0.61	16,816	308.92	1.87	1.87	0.00
16.80	0.58	15,904	308.85	1.86	1.86	0.00
17.00	0.56	14,981	308.77	1.85	1.85	0.00
17.20	0.53	14,047	308.69	1.84	1.84	0.00
17.40	0.50	13,100	308.61	1.83	1.83	0.00
17.60	0.48	12,143	308.53	1.82	1.82	0.00
17.80	0.45	11,173	308.45	1.81	1.81	0.00
18.00	0.43	10,193	308.37	1.80	1.80	0.00
18.20	0.41	9,203	308.29	1.79	1.79	0.00
18.40	0.40	8,213	308.21	1.78	1.78	0.00
18.60	0.40	7,224	308.13	1.77	1.77	0.00
18.80	0.39	6,238	308.05	1.76	1.76	0.00
19.00	0.38	5,253	307.97	1.75	1.75	0.00
19.20	0.37	4,269	307.89	1.74	1.74	0.00
19.40	0.36	3,291	307.72	1.72	1.72	0.00
19.60	0.36	2,323	307.55	1.69	1.69	0.00
19.80	0.35	1,365	307.38	1.67	1.67	0.00
20.00	0.34	416	307.21	1.65	1.65	0.00
20.20	0.33	72	307.15	0.38	0.38	0.00
20.40	0.33	63	307.15	0.33	0.33	0.00
20.60	0.32	61	307.15	0.32	0.32	0.00
20.80	0.32	60	307.15	0.32	0.32	0.00
21.00	0.31	59	307.15	0.31	0.31	0.00

Hydrograph for Pond INF1: MC-3500 StormTech INFILTRATION 1 (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
21.20	0.31	58	307.15	0.31	0.31	0.00
21.40	0.30	57	307.15	0.30	0.30	0.00
21.60	0.29	56	307.15	0.29	0.29	0.00
21.80	0.29	55	307.15	0.29	0.29	0.00
22.00	0.28	54	307.15	0.28	0.28	0.00
22.20	0.28	52	307.15	0.28	0.28	0.00
22.40	0.27	51	307.15	0.27	0.27	0.00
22.60	0.26	50	307.15	0.27	0.27	0.00
22.80	0.26	49	307.15	0.26	0.26	0.00
23.00	0.25	48	307.15	0.25	0.25	0.00
23.20	0.25	47	307.15	0.25	0.25	0.00
23.40	0.24	46	307.15	0.24	0.24	0.00
23.60	0.23	45	307.15	0.24	0.24	0.00
23.80	0.23	44	307.15	0.23	0.23	0.00
24.00	0.22	43	307.15	0.22	0.22	0.00

Stage-Discharge for Pond INF1: MC-3500 StormTech INFILTRATION 1

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
307.14	0.00	0.00	0.00
307.24	1.66	1.66	0.00
307.34	1.67	1.67	0.00
307.44	1.68	1.68	0.00
307.54	1.69	1.69	0.00
307.64	1.71	1.71	0.00
307.74	1.72	1.72	0.00
307.84	1.73	1.73	0.00
307.94	1.74	1.74	0.00
308.04	1.76	1.76	0.00
308.14	1.77	1.77	0.00
308.24	1.78	1.78	0.00
308.34	1.79	1.79	0.00
308.44	1.81	1.81	0.00
308.54	1.82	1.82	0.00
308.64	1.83	1.83	0.00
308.74	1.84	1.84	0.00
308.84	1.86	1.86	0.00
308.94	1.87	1.87	0.00
309.04	1.88	1.88	0.00
309.14	1.89	1.89	0.00
309.24	1.91	1.91	0.00
309.34	1.92	1.92	0.00
309.44	1.93	1.93	0.00
309.54	1.94	1.94	0.00
309.64	1.96	1.96	0.00
309.74	2.10	1.97	0.13
309.84	2.39	1.98	0.41
309.94	2.77	1.99	0.77
310.04	3.14	2.01	1.14
310.14	3.41	2.02	1.39
310.24	3.63	2.03	1.60
310.34	3.83	2.04	1.78
310.44	4.00	2.06	1.95
310.54	4.17	2.07	2.10
310.64	4.32	2.08	2.24
310.74	4.47	2.09	2.37
310.84	4.61	2.11	2.50
310.94	4.74	2.12	2.62
311.04	4.87	2.13	2.73
311.14	4.99	2.14	2.84
311.24	5.11	2.16	2.95
311.34	5.22	2.17	3.05
311.44	5.33	2.18	3.15
311.54	5.44	2.19	3.25
311.64	5.55	2.21	3.34
311.74	5.65	2.22	3.43
311.84	5.75	2.23	3.52
311.94	5.85	2.24	3.60
312.04	5.94	2.26	3.69
312.14	6.04	2.27	3.77
312.24	6.49	2.28	4.21
312.34	7.22	2.29	4.93
312.44	8.19	2.31	5.89
312.54	9.36	2.32	7.04
312.64	**10.73**	**2.33**	**8.40**

Stage-Area-Storage for Pond INF1: MC-3500 StormTech INFILTRATION 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
307.14	**14,195**	0
307.24	14,195	568
307.34	14,195	1,136
307.44	14,195	1,703
307.54	14,195	2,271
307.64	14,195	2,839
307.74	14,195	3,407
307.84	14,195	3,975
307.94	14,195	4,878
308.04	14,195	6,114
308.14	14,195	7,345
308.24	14,195	8,571
308.34	14,195	9,792
308.44	14,195	11,008
308.54	14,195	12,218
308.64	14,195	13,423
308.74	14,195	14,621
308.84	14,195	15,812
308.94	14,195	16,996
309.04	14,195	18,173
309.14	14,195	19,342
309.24	14,195	20,502
309.34	14,195	21,653
309.44	14,195	22,793
309.54	14,195	23,924
309.64	14,195	25,044
309.74	14,195	26,152
309.84	14,195	27,248
309.94	14,195	28,331
310.04	14,195	29,400
310.14	14,195	30,454
310.24	14,195	31,492
310.34	14,195	32,512
310.44	14,195	33,514
310.54	14,195	34,496
310.64	14,195	35,457
310.74	14,195	36,394
310.84	14,195	37,304
310.94	14,195	38,186
311.04	14,195	39,035
311.14	14,195	39,843
311.24	14,195	40,596
311.34	14,195	41,282
311.44	14,195	41,919
311.54	14,195	42,529
311.64	14,195	43,111
311.74	14,195	43,679
311.84	14,195	44,247
311.94	14,195	44,814
312.04	14,195	45,382
312.14	14,195	45,950
312.24	14,195	46,518
312.34	14,195	47,086
312.44	14,195	47,654
312.54	14,195	48,221
312.64	14,195	**48,789**

Summary for Pond INF2: MC-3500 StormTech INFILTRATION 2

Inflow Area = 1.946 ac, 38.50% Impervious, Inflow Depth > 3.21" for 25-Year event
Inflow = 6.02 cfs @ 12.17 hrs, Volume= 0.520 af
Outflow = 2.63 cfs @ 12.48 hrs, Volume= 0.520 af, Atten= 56%, Lag= 18.8 min
Discarded = 0.46 cfs @ 12.48 hrs, Volume= 0.388 af
Primary = 2.16 cfs @ 12.48 hrs, Volume= 0.131 af
Routed to Link N : POI North

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 306.41' @ 12.48 hrs Surf.Area= 3,229 sf Storage= 6,589 cf

Plug-Flow detention time= 82.4 min calculated for 0.520 af (100% of inflow)
Center-of-Mass det. time= 82.0 min (913.1 - 831.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	303.50'	4,561 cf	**22.75'W x 141.93'L x 5.50'H Field A** 17,759 cf Overall - 6,357 cf Embedded = 11,402 cf x 40.0% Voids
#2A	304.25'	6,357 cf	**ADS_StormTech MC-3500 d +Cap** x 57 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 57 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		10,918 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	303.50'	**5.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 291.50'
#2	Primary	305.65'	**21.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	308.50'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.46 cfs @ 12.48 hrs HW=306.41' (Free Discharge)
└**1=Exfiltration** (Controls 0.46 cfs)

Primary OutFlow Max=2.16 cfs @ 12.48 hrs HW=306.41' (Free Discharge)
├**2=Orifice/Grate** (Orifice Controls 2.16 cfs @ 3.71 fps)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond INF2: MC-3500 StormTech INFILTRATION 2 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

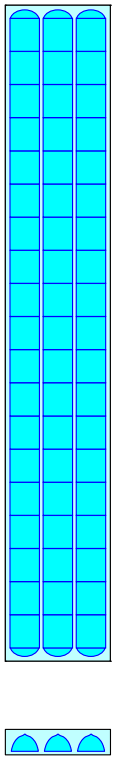
19 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 139.93' Row Length +12.0" End Stone x 2 = 141.93' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

57 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 6,356.7 cf Chamber Storage

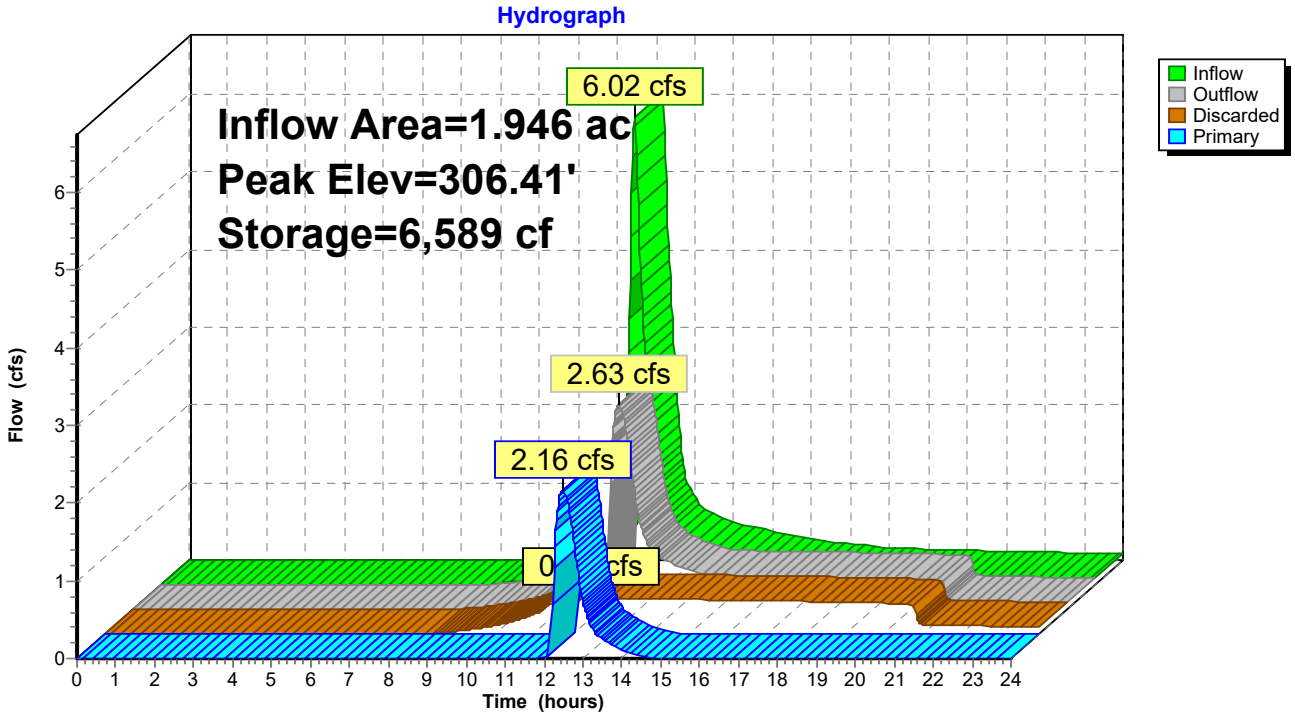
17,759.0 cf Field - 6,356.7 cf Chambers = 11,402.3 cf Stone x 40.0% Voids = 4,560.9 cf Stone Storage

Chamber Storage + Stone Storage = 10,917.6 cf = 0.251 af
Overall Storage Efficiency = 61.5%
Overall System Size = 141.93' x 22.75' x 5.50'

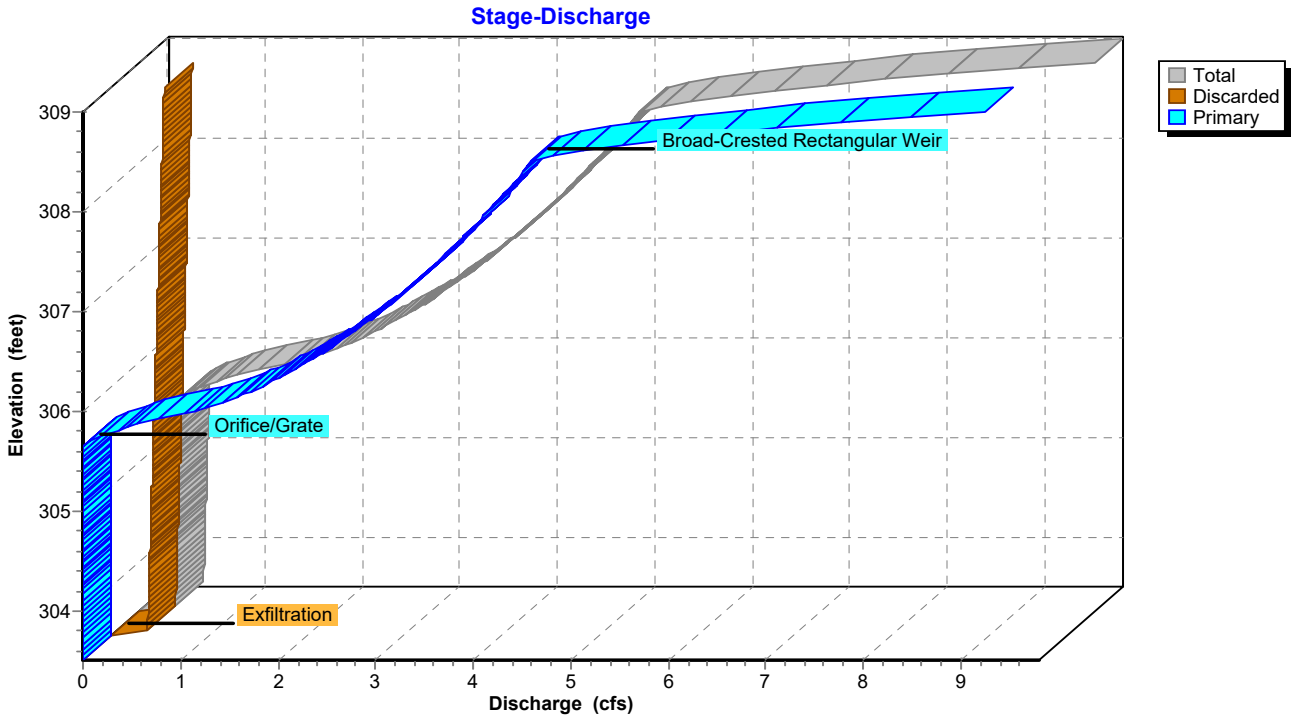
57 Chambers
657.7 cy Field
422.3 cy Stone



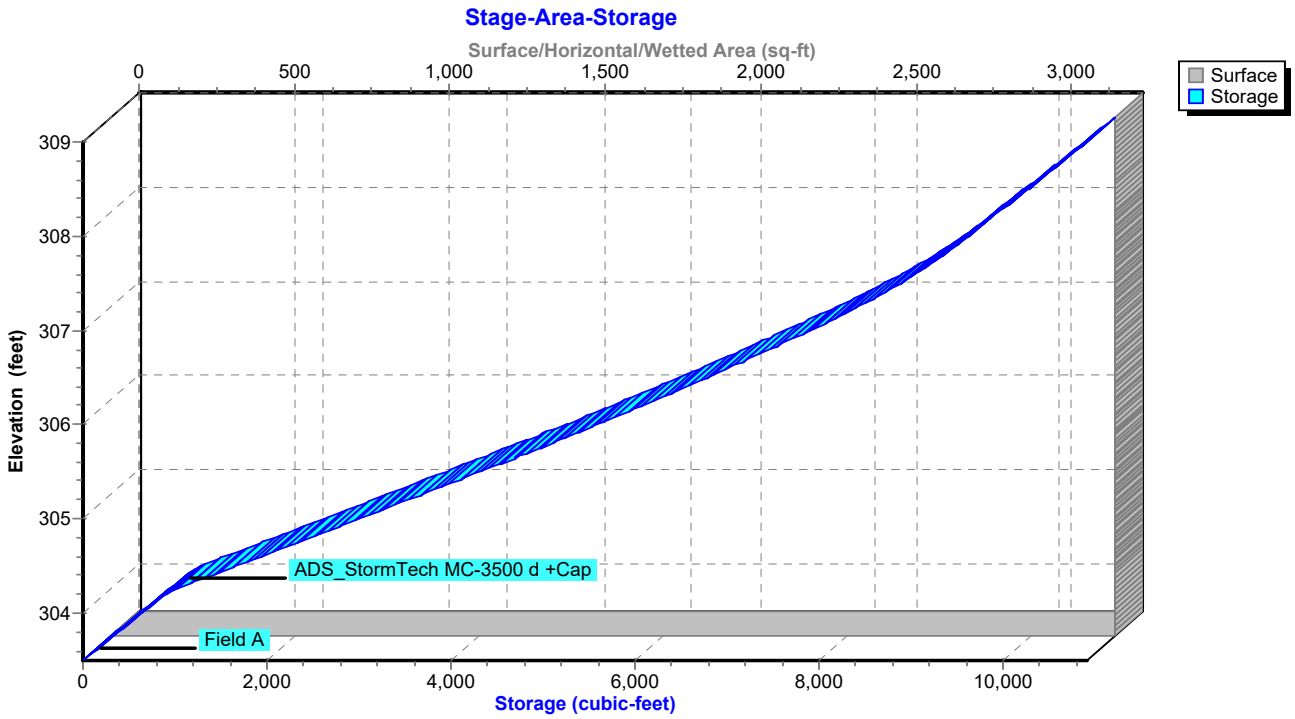
Pond INF2: MC-3500 StormTech INFILTRATION 2



Pond INF2: MC-3500 StormTech INFILTRATION 2



Pond INF2: MC-3500 StormTech INFILTRATION 2



Hydrograph for Pond INF2: MC-3500 StormTech INFILTRATION 2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	303.50	0.00	0.00	0.00
0.20	0.00	0	303.50	0.00	0.00	0.00
0.40	0.00	0	303.50	0.00	0.00	0.00
0.60	0.00	0	303.50	0.00	0.00	0.00
0.80	0.00	0	303.50	0.00	0.00	0.00
1.00	0.00	0	303.50	0.00	0.00	0.00
1.20	0.00	0	303.50	0.00	0.00	0.00
1.40	0.00	0	303.50	0.00	0.00	0.00
1.60	0.00	0	303.50	0.00	0.00	0.00
1.80	0.00	0	303.50	0.00	0.00	0.00
2.00	0.00	0	303.50	0.00	0.00	0.00
2.20	0.00	0	303.50	0.00	0.00	0.00
2.40	0.00	0	303.50	0.00	0.00	0.00
2.60	0.00	0	303.50	0.00	0.00	0.00
2.80	0.00	0	303.50	0.00	0.00	0.00
3.00	0.00	0	303.50	0.00	0.00	0.00
3.20	0.00	0	303.50	0.00	0.00	0.00
3.40	0.00	0	303.50	0.00	0.00	0.00
3.60	0.00	0	303.50	0.00	0.00	0.00
3.80	0.00	0	303.50	0.00	0.00	0.00
4.00	0.00	0	303.50	0.00	0.00	0.00
4.20	0.00	0	303.50	0.00	0.00	0.00
4.40	0.00	0	303.50	0.00	0.00	0.00
4.60	0.00	0	303.50	0.00	0.00	0.00
4.80	0.00	0	303.50	0.00	0.00	0.00
5.00	0.00	0	303.50	0.00	0.00	0.00
5.20	0.00	0	303.50	0.00	0.00	0.00
5.40	0.00	0	303.50	0.00	0.00	0.00
5.60	0.00	0	303.50	0.00	0.00	0.00
5.80	0.00	0	303.50	0.00	0.00	0.00
6.00	0.00	0	303.50	0.00	0.00	0.00
6.20	0.00	0	303.50	0.00	0.00	0.00
6.40	0.00	0	303.50	0.00	0.00	0.00
6.60	0.00	0	303.50	0.00	0.00	0.00
6.80	0.00	0	303.50	0.00	0.00	0.00
7.00	0.00	0	303.50	0.00	0.00	0.00
7.20	0.00	0	303.50	0.00	0.00	0.00
7.40	0.00	0	303.50	0.00	0.00	0.00
7.60	0.00	0	303.50	0.00	0.00	0.00
7.80	0.00	0	303.50	0.00	0.00	0.00
8.00	0.00	0	303.50	0.00	0.00	0.00
8.20	0.00	0	303.50	0.00	0.00	0.00
8.40	0.01	1	303.50	0.01	0.01	0.00
8.60	0.02	3	303.50	0.01	0.01	0.00
8.80	0.03	4	303.50	0.02	0.02	0.00
9.00	0.04	6	303.50	0.03	0.03	0.00
9.20	0.05	8	303.51	0.04	0.04	0.00
9.40	0.06	11	303.51	0.06	0.06	0.00
9.60	0.08	14	303.51	0.07	0.07	0.00
9.80	0.09	17	303.51	0.09	0.09	0.00
10.00	0.11	20	303.52	0.11	0.11	0.00
10.20	0.13	24	303.52	0.13	0.13	0.00
10.40	0.16	29	303.52	0.15	0.15	0.00

Hydrograph for Pond INF2: MC-3500 StormTech INFILTRATION 2 (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
10.60	0.19	34	303.53	0.18	0.18	0.00
10.80	0.22	41	303.53	0.21	0.21	0.00
11.00	0.26	48	303.54	0.25	0.25	0.00
11.20	0.32	56	303.54	0.30	0.30	0.00
11.40	0.42	74	303.56	0.38	0.38	0.00
11.60	0.56	149	303.62	0.38	0.38	0.00
11.80	1.24	472	303.87	0.39	0.39	0.00
12.00	**2.67**	1,526	304.45	0.40	0.40	0.00
12.20	**5.81**	4,645	305.63	0.44	0.44	0.00
12.40	3.28	**6,489**	**306.37**	**2.55**	**0.46**	**2.09**
12.60	1.73	**6,413**	**306.34**	**2.49**	**0.46**	**2.02**
12.80	1.02	5,763	306.07	1.84	0.45	1.39
13.00	0.81	5,348	305.90	1.17	0.45	0.72
13.20	0.68	5,157	305.83	0.87	0.45	0.42
13.40	0.62	5,050	305.79	0.73	0.44	0.29
13.60	0.58	4,985	305.76	0.65	0.44	0.21
13.80	0.54	4,937	305.74	0.60	0.44	0.16
14.00	0.50	4,891	305.72	0.56	0.44	0.12
14.20	0.46	4,845	305.71	0.52	0.44	0.08
14.40	0.43	4,805	305.69	0.49	0.44	0.05
14.60	0.41	4,767	305.67	0.47	0.44	0.02
14.80	0.39	4,730	305.66	0.45	0.44	0.01
15.00	0.37	4,687	305.64	0.44	0.44	0.00
15.20	0.35	4,632	305.62	0.44	0.44	0.00
15.40	0.33	4,562	305.59	0.44	0.44	0.00
15.60	0.31	4,478	305.56	0.44	0.44	0.00
15.80	0.29	4,379	305.52	0.44	0.44	0.00
16.00	0.27	4,266	305.48	0.44	0.44	0.00
16.20	0.25	4,139	305.43	0.43	0.43	0.00
16.40	0.24	4,003	305.38	0.43	0.43	0.00
16.60	0.23	3,860	305.32	0.43	0.43	0.00
16.80	0.22	3,713	305.27	0.43	0.43	0.00
17.00	0.21	3,560	305.21	0.43	0.43	0.00
17.20	0.20	3,402	305.15	0.43	0.43	0.00
17.40	0.19	3,238	305.09	0.42	0.42	0.00
17.60	0.18	3,069	305.02	0.42	0.42	0.00
17.80	0.17	2,894	304.96	0.42	0.42	0.00
18.00	0.16	2,714	304.89	0.42	0.42	0.00
18.20	0.16	2,530	304.82	0.41	0.41	0.00
18.40	0.15	2,342	304.75	0.41	0.41	0.00
18.60	0.15	2,154	304.68	0.41	0.41	0.00
18.80	0.15	1,966	304.61	0.41	0.41	0.00
19.00	0.14	1,777	304.55	0.41	0.41	0.00
19.20	0.14	1,587	304.48	0.40	0.40	0.00
19.40	0.14	1,397	304.41	0.40	0.40	0.00
19.60	0.14	1,207	304.34	0.40	0.40	0.00
19.80	0.13	1,016	304.27	0.40	0.40	0.00
20.00	0.13	826	304.14	0.39	0.39	0.00
20.20	0.13	636	303.99	0.39	0.39	0.00
20.40	0.12	448	303.85	0.38	0.38	0.00
20.60	0.12	262	303.70	0.38	0.38	0.00
20.80	0.12	77	303.56	0.38	0.38	0.00
21.00	0.12	24	303.52	0.13	0.13	0.00

Hydrograph for Pond INF2: MC-3500 StormTech INFILTRATION 2 (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
21.20	0.12	22	303.52	0.12	0.12	0.00
21.40	0.11	22	303.52	0.11	0.11	0.00
21.60	0.11	21	303.52	0.11	0.11	0.00
21.80	0.11	21	303.52	0.11	0.11	0.00
22.00	0.11	20	303.52	0.11	0.11	0.00
22.20	0.11	20	303.52	0.11	0.11	0.00
22.40	0.10	20	303.52	0.10	0.10	0.00
22.60	0.10	19	303.51	0.10	0.10	0.00
22.80	0.10	19	303.51	0.10	0.10	0.00
23.00	0.10	18	303.51	0.10	0.10	0.00
23.20	0.09	18	303.51	0.10	0.10	0.00
23.40	0.09	18	303.51	0.09	0.09	0.00
23.60	0.09	17	303.51	0.09	0.09	0.00
23.80	0.09	17	303.51	0.09	0.09	0.00
24.00	0.09	16	303.51	0.09	0.09	0.00

Stage-Discharge for Pond INF2: MC-3500 StormTech INFILTRATION 2

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
303.50	0.00	0.00	0.00
303.60	0.38	0.38	0.00
303.70	0.38	0.38	0.00
303.80	0.38	0.38	0.00
303.90	0.39	0.39	0.00
304.00	0.39	0.39	0.00
304.10	0.39	0.39	0.00
304.20	0.40	0.40	0.00
304.30	0.40	0.40	0.00
304.40	0.40	0.40	0.00
304.50	0.40	0.40	0.00
304.60	0.41	0.41	0.00
304.70	0.41	0.41	0.00
304.80	0.41	0.41	0.00
304.90	0.42	0.42	0.00
305.00	0.42	0.42	0.00
305.10	0.42	0.42	0.00
305.20	0.43	0.43	0.00
305.30	0.43	0.43	0.00
305.40	0.43	0.43	0.00
305.50	0.44	0.44	0.00
305.60	0.44	0.44	0.00
305.70	0.51	0.44	0.06
305.80	0.77	0.45	0.33
305.90	1.15	0.45	0.70
306.00	1.60	0.45	1.15
306.10	1.93	0.45	1.47
306.20	2.18	0.46	1.72
306.30	2.40	0.46	1.94
306.40	2.60	0.46	2.14
306.50	2.78	0.47	2.32
306.60	2.95	0.47	2.48
306.70	3.11	0.47	2.64
306.80	3.26	0.48	2.78
306.90	3.40	0.48	2.92
307.00	3.54	0.48	3.05
307.10	3.67	0.49	3.18
307.20	3.79	0.49	3.30
307.30	3.91	0.49	3.42
307.40	4.03	0.50	3.53
307.50	4.14	0.50	3.64
307.60	4.25	0.50	3.75
307.70	4.36	0.50	3.85
307.80	4.46	0.51	3.95
307.90	4.56	0.51	4.05
308.00	4.66	0.51	4.15
308.10	4.76	0.52	4.24
308.20	4.86	0.52	4.34
308.30	4.95	0.52	4.43
308.40	5.04	0.53	4.51
308.50	5.13	0.53	4.60
308.60	5.57	0.53	5.04
308.70	6.31	0.54	5.77
308.80	7.27	0.54	6.73
308.90	8.43	0.54	7.89
309.00	**9.80**	**0.55**	**9.25**

Stage-Area-Storage for Pond INF2: MC-3500 StormTech INFILTRATION 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
303.50	**3,229**	0
303.60	3,229	129
303.70	3,229	258
303.80	3,229	387
303.90	3,229	517
304.00	3,229	646
304.10	3,229	775
304.20	3,229	904
304.30	3,229	1,106
304.40	3,229	1,380
304.50	3,229	1,654
304.60	3,229	1,926
304.70	3,229	2,197
304.80	3,229	2,467
304.90	3,229	2,735
305.00	3,229	3,003
305.10	3,229	3,269
305.20	3,229	3,533
305.30	3,229	3,796
305.40	3,229	4,058
305.50	3,229	4,318
305.60	3,229	4,575
305.70	3,229	4,831
305.80	3,229	5,085
305.90	3,229	5,336
306.00	3,229	5,585
306.10	3,229	5,832
306.20	3,229	6,076
306.30	3,229	6,317
306.40	3,229	6,555
306.50	3,229	6,789
306.60	3,229	7,021
306.70	3,229	7,248
306.80	3,229	7,472
306.90	3,229	7,691
307.00	3,229	7,905
307.10	3,229	8,115
307.20	3,229	8,318
307.30	3,229	8,516
307.40	3,229	8,706
307.50	3,229	8,887
307.60	3,229	9,056
307.70	3,229	9,211
307.80	3,229	9,355
307.90	3,229	9,494
308.00	3,229	9,626
308.10	3,229	9,755
308.20	3,229	9,884
308.30	3,229	10,013
308.40	3,229	10,143
308.50	3,229	10,272
308.60	3,229	10,401
308.70	3,229	10,530
308.80	3,229	10,659
308.90	3,229	10,788
309.00	3,229	**10,918**

Summary for Pond SPLIT: Flow Splitter

[57] Hint: Peaked at 304.26' (Flood elevation advised)

Inflow Area = 3.798 ac, 98.07% Impervious, Inflow Depth > 5.68" for 25-Year event
Inflow = 22.00 cfs @ 12.08 hrs, Volume= 1.797 af
Outflow = 22.00 cfs @ 12.08 hrs, Volume= 1.797 af, Atten= 0%, Lag= 0.0 min
Primary = 1.26 cfs @ 12.08 hrs, Volume= 0.773 af
Routed to Pond BIO : BioRetention 1 (South)
Secondary = 20.74 cfs @ 12.08 hrs, Volume= 1.025 af
Routed to Pond DET1 : MC-4500 StormTech DETENTION ONLY

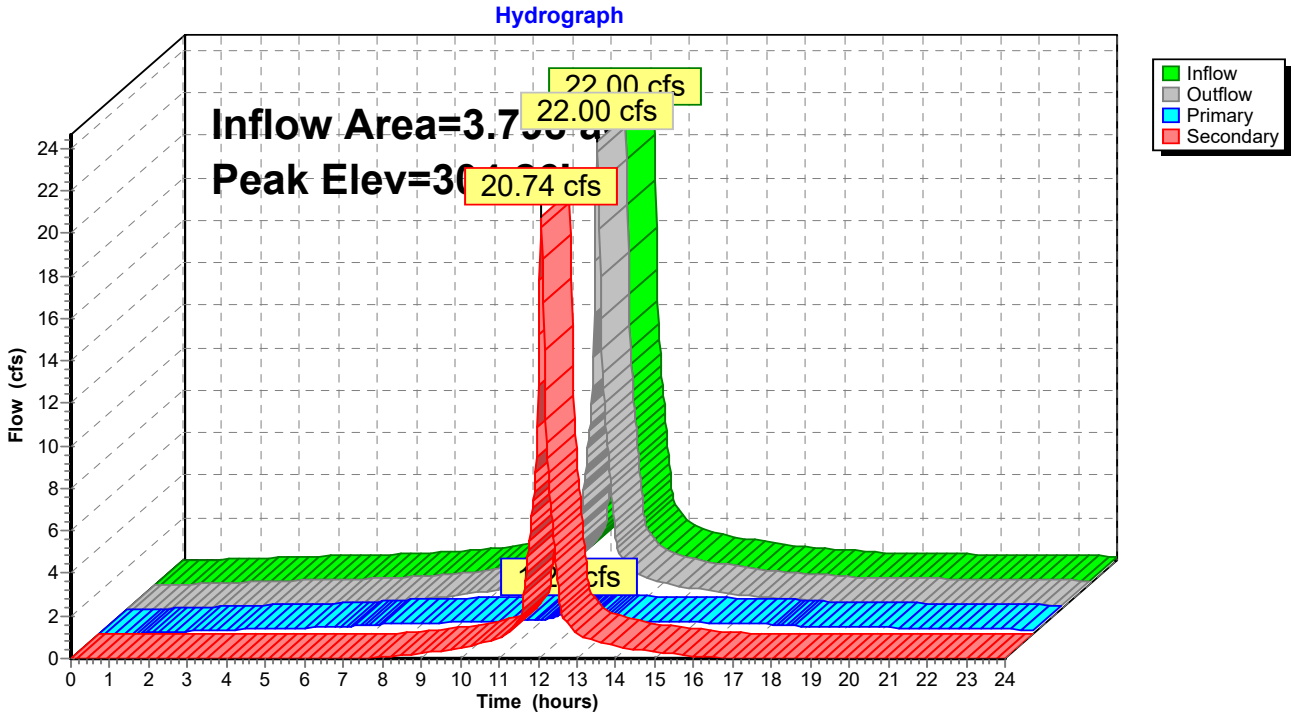
Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 304.26' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	302.23'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Device 3	302.73'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Secondary	302.23'	**30.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

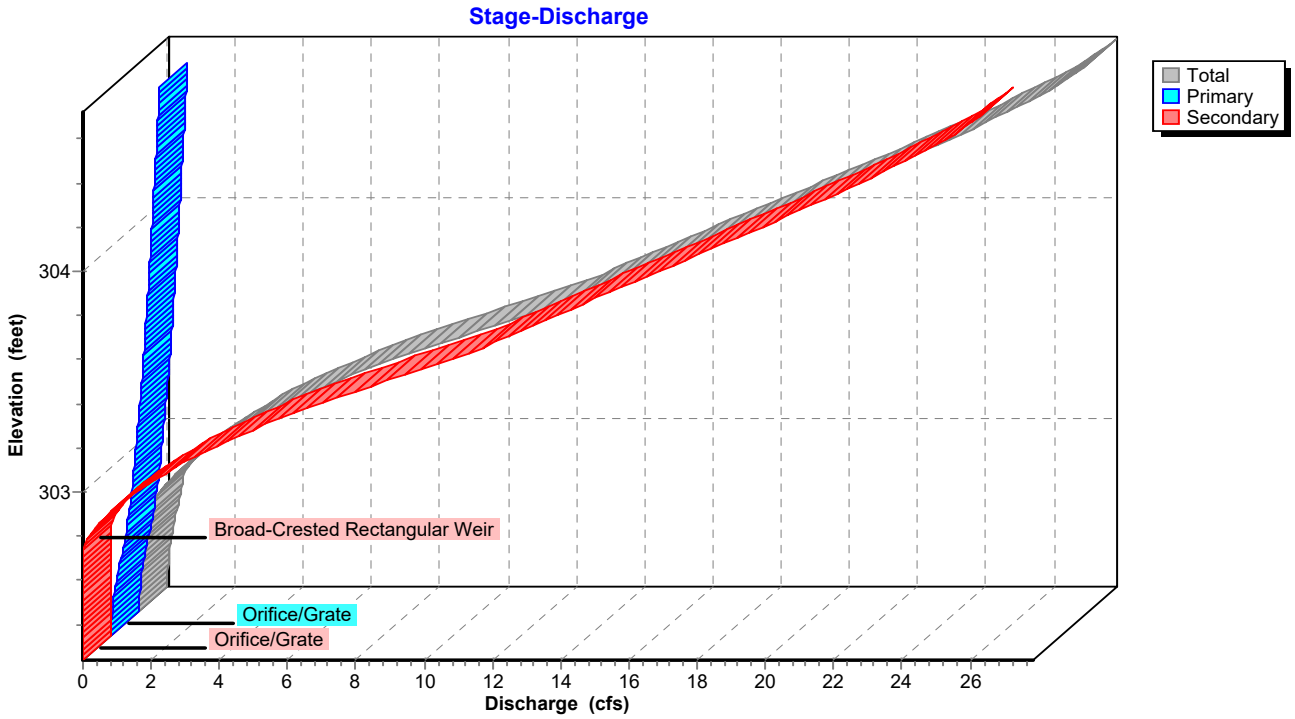
Primary OutFlow Max=1.26 cfs @ 12.08 hrs HW=304.26' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 1.26 cfs @ 6.42 fps)

Secondary OutFlow Max=20.65 cfs @ 12.08 hrs HW=304.26' (Free Discharge)
└**3=Orifice/Grate** (Orifice Controls 20.65 cfs @ 4.85 fps)
└**2=Broad-Crested Rectangular Weir** (Passes 20.65 cfs of 25.03 cfs potential flow)

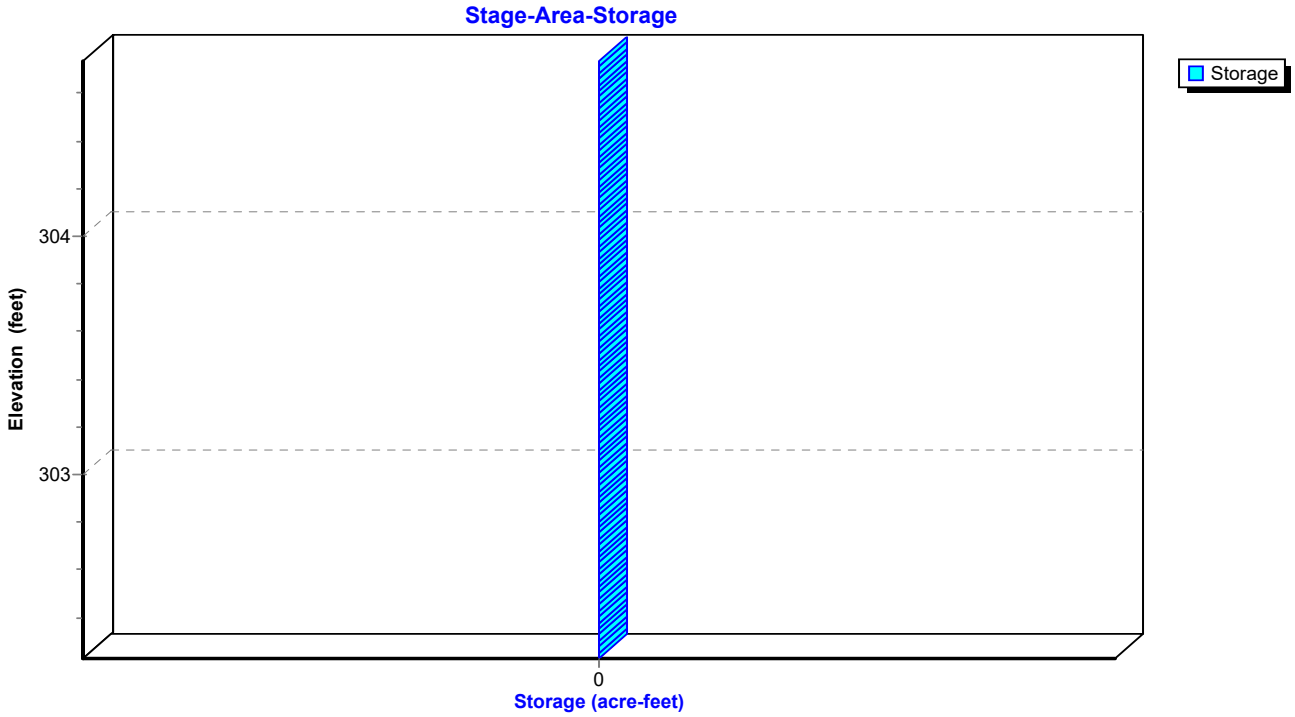
Pond SPLIT: Flow Splitter



Pond SPLIT: Flow Splitter



Pond SPLIT: Flow Splitter



Hydrograph for Pond SPLIT: Flow Splitter

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	302.23	0.00	0.00	0.00
0.20	0.00	302.23	0.00	0.00	0.00
0.40	0.00	302.23	0.00	0.00	0.00
0.60	0.00	302.23	0.00	0.00	0.00
0.80	0.00	302.26	0.00	0.00	0.00
1.00	0.03	302.32	0.03	0.03	0.00
1.20	0.05	302.36	0.05	0.05	0.00
1.40	0.06	302.38	0.06	0.06	0.00
1.60	0.08	302.40	0.08	0.08	0.00
1.80	0.09	302.41	0.09	0.09	0.00
2.00	0.10	302.42	0.10	0.10	0.00
2.20	0.11	302.43	0.11	0.11	0.00
2.40	0.13	302.44	0.13	0.13	0.00
2.60	0.14	302.46	0.14	0.14	0.00
2.80	0.15	302.47	0.15	0.15	0.00
3.00	0.16	302.48	0.16	0.16	0.00
3.20	0.18	302.49	0.18	0.18	0.00
3.40	0.19	302.50	0.19	0.19	0.00
3.60	0.20	302.51	0.20	0.20	0.00
3.80	0.21	302.51	0.21	0.21	0.00
4.00	0.22	302.52	0.22	0.22	0.00
4.20	0.23	302.53	0.23	0.23	0.00
4.40	0.24	302.54	0.24	0.24	0.00
4.60	0.25	302.55	0.25	0.25	0.00
4.80	0.26	302.55	0.26	0.26	0.00
5.00	0.27	302.56	0.27	0.27	0.00
5.20	0.28	302.57	0.28	0.28	0.00
5.40	0.29	302.57	0.29	0.29	0.00
5.60	0.30	302.58	0.30	0.30	0.00
5.80	0.31	302.59	0.31	0.31	0.00
6.00	0.32	302.59	0.32	0.32	0.00
6.20	0.33	302.61	0.33	0.33	0.00
6.40	0.35	302.62	0.35	0.35	0.00
6.60	0.38	302.64	0.38	0.38	0.00
6.80	0.40	302.66	0.40	0.40	0.00
7.00	0.42	302.68	0.42	0.42	0.00
7.20	0.45	302.70	0.45	0.45	0.00
7.40	0.47	302.73	0.47	0.47	0.00
7.60	0.50	302.74	0.50	0.48	0.02
7.80	0.52	302.75	0.52	0.49	0.03
8.00	0.54	302.76	0.54	0.50	0.05
8.20	0.58	302.77	0.58	0.50	0.08
8.40	0.63	302.78	0.63	0.52	0.12
8.60	0.69	302.79	0.69	0.53	0.16
8.80	0.74	302.80	0.74	0.53	0.21
9.00	0.79	302.81	0.79	0.54	0.25
9.20	0.85	302.82	0.85	0.55	0.30
9.40	0.90	302.83	0.90	0.56	0.34
9.60	0.95	302.84	0.95	0.56	0.39
9.80	1.00	302.84	1.00	0.57	0.43
10.00	1.06	302.85	1.06	0.58	0.48
10.20	1.14	302.86	1.14	0.59	0.56
10.40	1.25	302.88	1.25	0.60	0.65

Hydrograph for Pond SPLIT: Flow Splitter (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
10.60	1.36	302.89	1.36	0.61	0.75
10.80	1.47	302.91	1.47	0.62	0.85
11.00	1.58	302.92	1.58	0.63	0.95
11.20	1.85	302.96	1.85	0.65	1.20
11.40	2.27	303.00	2.27	0.68	1.59
11.60	3.06	303.07	3.06	0.73	2.33
11.80	6.78	303.34	6.78	0.88	5.90
12.00	**13.90**	**303.73**	**13.90**	**1.06**	**12.84**
12.20	**12.23**	**303.63**	**12.23**	**1.01**	**11.22**
12.40	6.53	303.33	6.53	0.87	5.66
12.60	2.93	303.06	2.93	0.72	2.21
12.80	2.26	303.00	2.26	0.68	1.58
13.00	1.85	302.95	1.85	0.65	1.19
13.20	1.60	302.92	1.60	0.63	0.96
13.40	1.49	302.91	1.49	0.62	0.86
13.60	1.38	302.90	1.38	0.61	0.77
13.80	1.27	302.88	1.27	0.60	0.67
14.00	1.16	302.87	1.16	0.59	0.57
14.20	1.08	302.86	1.08	0.58	0.50
14.40	1.03	302.85	1.03	0.57	0.46
14.60	0.98	302.84	0.98	0.57	0.41
14.80	0.93	302.83	0.93	0.56	0.36
15.00	0.87	302.82	0.87	0.55	0.32
15.20	0.82	302.81	0.82	0.55	0.27
15.40	0.77	302.81	0.77	0.54	0.23
15.60	0.72	302.79	0.72	0.53	0.19
15.80	0.66	302.78	0.66	0.52	0.14
16.00	0.61	302.77	0.61	0.51	0.10
16.20	0.58	302.76	0.58	0.50	0.07
16.40	0.55	302.76	0.55	0.50	0.06
16.60	0.53	302.75	0.53	0.49	0.04
16.80	0.51	302.74	0.51	0.49	0.02
17.00	0.49	302.73	0.49	0.48	0.01
17.20	0.46	302.72	0.46	0.46	0.00
17.40	0.44	302.69	0.44	0.44	0.00
17.60	0.42	302.67	0.42	0.42	0.00
17.80	0.40	302.66	0.40	0.40	0.00
18.00	0.37	302.64	0.37	0.37	0.00
18.20	0.36	302.63	0.36	0.36	0.00
18.40	0.35	302.62	0.35	0.35	0.00
18.60	0.35	302.62	0.35	0.35	0.00
18.80	0.34	302.61	0.34	0.34	0.00
19.00	0.33	302.61	0.33	0.33	0.00
19.20	0.32	302.60	0.32	0.32	0.00
19.40	0.32	302.60	0.32	0.32	0.00
19.60	0.31	302.59	0.31	0.31	0.00
19.80	0.30	302.59	0.30	0.30	0.00
20.00	0.30	302.58	0.30	0.30	0.00
20.20	0.29	302.58	0.29	0.29	0.00
20.40	0.29	302.57	0.29	0.29	0.00
20.60	0.28	302.57	0.28	0.28	0.00
20.80	0.28	302.57	0.28	0.28	0.00
21.00	0.27	302.56	0.27	0.27	0.00

Hydrograph for Pond SPLIT: Flow Splitter (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
21.20	0.27	302.56	0.27	0.27	0.00
21.40	0.26	302.55	0.26	0.26	0.00
21.60	0.26	302.55	0.26	0.26	0.00
21.80	0.25	302.55	0.25	0.25	0.00
22.00	0.25	302.54	0.25	0.25	0.00
22.20	0.24	302.54	0.24	0.24	0.00
22.40	0.24	302.53	0.24	0.24	0.00
22.60	0.23	302.53	0.23	0.23	0.00
22.80	0.23	302.53	0.23	0.23	0.00
23.00	0.22	302.52	0.22	0.22	0.00
23.20	0.22	302.52	0.22	0.22	0.00
23.40	0.21	302.51	0.21	0.21	0.00
23.60	0.21	302.51	0.21	0.21	0.00
23.80	0.20	302.51	0.20	0.20	0.00
24.00	0.19	302.50	0.19	0.19	0.00

Stage-Discharge for Pond SPLIT: Flow Splitter

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
302.23	0.00	0.00	0.00
302.33	0.03	0.03	0.00
302.43	0.11	0.11	0.00
302.53	0.23	0.23	0.00
302.63	0.36	0.36	0.00
302.73	0.47	0.47	0.00
302.83	0.91	0.56	0.35
302.93	1.64	0.63	1.00
303.03	2.58	0.70	1.88
303.13	3.72	0.76	2.95
303.23	5.06	0.82	4.24
303.33	6.60	0.87	5.73
303.43	8.39	0.92	7.47
303.53	10.41	0.97	9.45
303.63	12.32	1.01	11.30
303.73	13.88	1.06	12.82
303.83	15.39	1.10	14.29
303.93	16.92	1.14	15.78
304.03	18.46	1.18	17.28
304.13	20.00	1.21	18.79
304.23	21.52	1.25	20.27
304.33	23.00	1.29	21.72
304.43	24.42	1.32	23.10
304.53	25.75	1.35	24.40
304.63	26.93	1.39	25.54
304.73	**27.84**	**1.42**	**26.43**

Stage-Area-Storage for Pond SPLIT: Flow Splitter

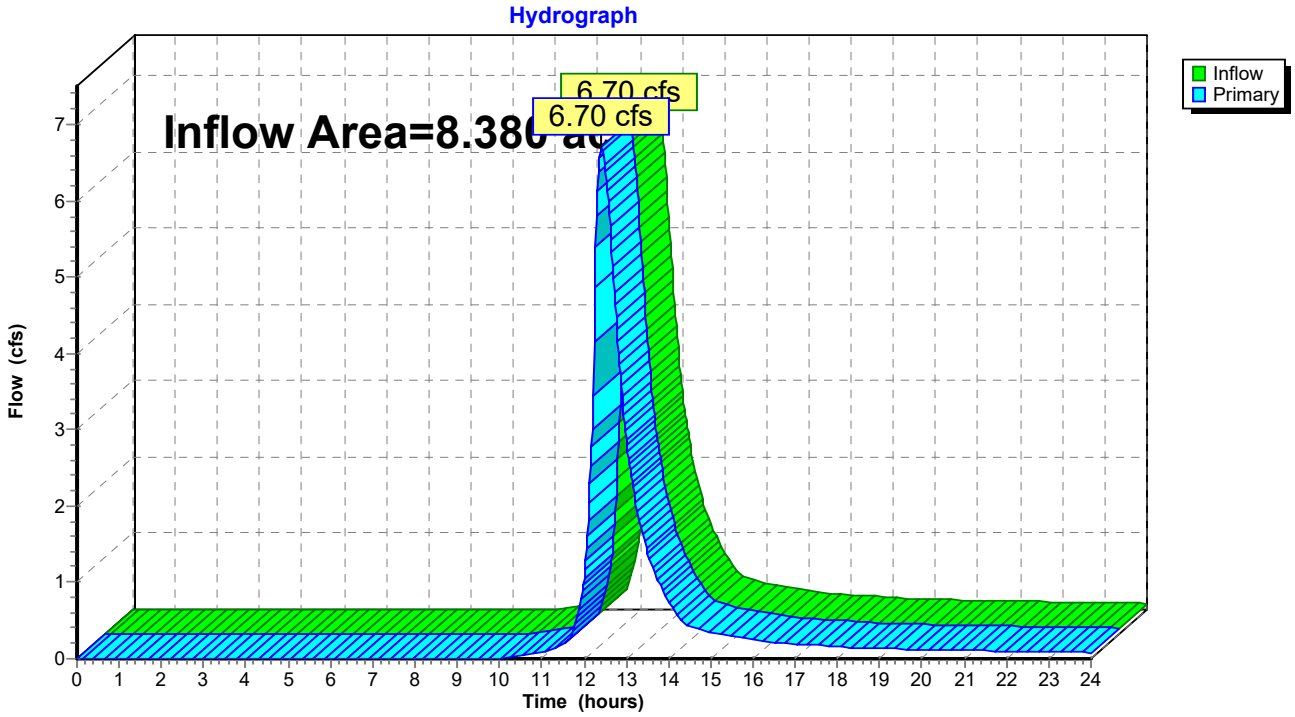
Elevation (feet)	Storage (acre-feet)
302.23	**0.000**
302.33	0.000
302.43	0.000
302.53	0.000
302.63	0.000
302.73	0.000
302.83	0.000
302.93	0.000
303.03	0.000
303.13	0.000
303.23	0.000
303.33	0.000
303.43	0.000
303.53	0.000
303.63	0.000
303.73	0.000
303.83	0.000
303.93	0.000
304.03	0.000
304.13	0.000
304.23	0.000
304.33	0.000
304.43	0.000
304.53	0.000
304.63	0.000
304.73	0.000

Summary for Link N: POI North

Inflow Area = 8.380 ac, 59.74% Impervious, Inflow Depth > 0.96" for 25-Year event
Inflow = 6.70 cfs @ 12.41 hrs, Volume= 0.671 af
Primary = 6.70 cfs @ 12.41 hrs, Volume= 0.671 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link N: POI North



Hydrograph for Link N: POI North

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	10.60	0.04	0.00	0.04
0.20	0.00	0.00	0.00	10.80	0.06	0.00	0.06
0.40	0.00	0.00	0.00	11.00	0.09	0.00	0.09
0.60	0.00	0.00	0.00	11.20	0.11	0.00	0.11
0.80	0.00	0.00	0.00	11.40	0.16	0.00	0.16
1.00	0.00	0.00	0.00	11.60	0.23	0.00	0.23
1.20	0.00	0.00	0.00	11.80	0.43	0.00	0.43
1.40	0.00	0.00	0.00	12.00	1.06	0.00	1.06
1.60	0.00	0.00	0.00	12.20	3.01	0.00	3.01
1.80	0.00	0.00	0.00	12.40	**6.69**	0.00	**6.69**
2.00	0.00	0.00	0.00	12.60	**5.83**	0.00	**5.83**
2.20	0.00	0.00	0.00	12.80	4.15	0.00	4.15
2.40	0.00	0.00	0.00	13.00	2.88	0.00	2.88
2.60	0.00	0.00	0.00	13.20	2.13	0.00	2.13
2.80	0.00	0.00	0.00	13.40	1.60	0.00	1.60
3.00	0.00	0.00	0.00	13.60	1.23	0.00	1.23
3.20	0.00	0.00	0.00	13.80	0.96	0.00	0.96
3.40	0.00	0.00	0.00	14.00	0.75	0.00	0.75
3.60	0.00	0.00	0.00	14.20	0.56	0.00	0.56
3.80	0.00	0.00	0.00	14.40	0.45	0.00	0.45
4.00	0.00	0.00	0.00	14.60	0.40	0.00	0.40
4.20	0.00	0.00	0.00	14.80	0.37	0.00	0.37
4.40	0.00	0.00	0.00	15.00	0.34	0.00	0.34
4.60	0.00	0.00	0.00	15.20	0.33	0.00	0.33
4.80	0.00	0.00	0.00	15.40	0.31	0.00	0.31
5.00	0.00	0.00	0.00	15.60	0.29	0.00	0.29
5.20	0.00	0.00	0.00	15.80	0.27	0.00	0.27
5.40	0.00	0.00	0.00	16.00	0.25	0.00	0.25
5.60	0.00	0.00	0.00	16.20	0.24	0.00	0.24
5.80	0.00	0.00	0.00	16.40	0.22	0.00	0.22
6.00	0.00	0.00	0.00	16.60	0.21	0.00	0.21
6.20	0.00	0.00	0.00	16.80	0.20	0.00	0.20
6.40	0.00	0.00	0.00	17.00	0.20	0.00	0.20
6.60	0.00	0.00	0.00	17.20	0.19	0.00	0.19
6.80	0.00	0.00	0.00	17.40	0.18	0.00	0.18
7.00	0.00	0.00	0.00	17.60	0.17	0.00	0.17
7.20	0.00	0.00	0.00	17.80	0.16	0.00	0.16
7.40	0.00	0.00	0.00	18.00	0.15	0.00	0.15
7.60	0.00	0.00	0.00	18.20	0.15	0.00	0.15
7.80	0.00	0.00	0.00	18.40	0.14	0.00	0.14
8.00	0.00	0.00	0.00	18.60	0.14	0.00	0.14
8.20	0.00	0.00	0.00	18.80	0.13	0.00	0.13
8.40	0.00	0.00	0.00	19.00	0.13	0.00	0.13
8.60	0.00	0.00	0.00	19.20	0.13	0.00	0.13
8.80	0.00	0.00	0.00	19.40	0.13	0.00	0.13
9.00	0.00	0.00	0.00	19.60	0.12	0.00	0.12
9.20	0.00	0.00	0.00	19.80	0.12	0.00	0.12
9.40	0.00	0.00	0.00	20.00	0.12	0.00	0.12
9.60	0.00	0.00	0.00	20.20	0.12	0.00	0.12
9.80	0.00	0.00	0.00	20.40	0.11	0.00	0.11
10.00	0.01	0.00	0.01	20.60	0.11	0.00	0.11
10.20	0.01	0.00	0.01	20.80	0.11	0.00	0.11
10.40	0.02	0.00	0.02	21.00	0.11	0.00	0.11

Hydrograph for Link N: POI North (continued)

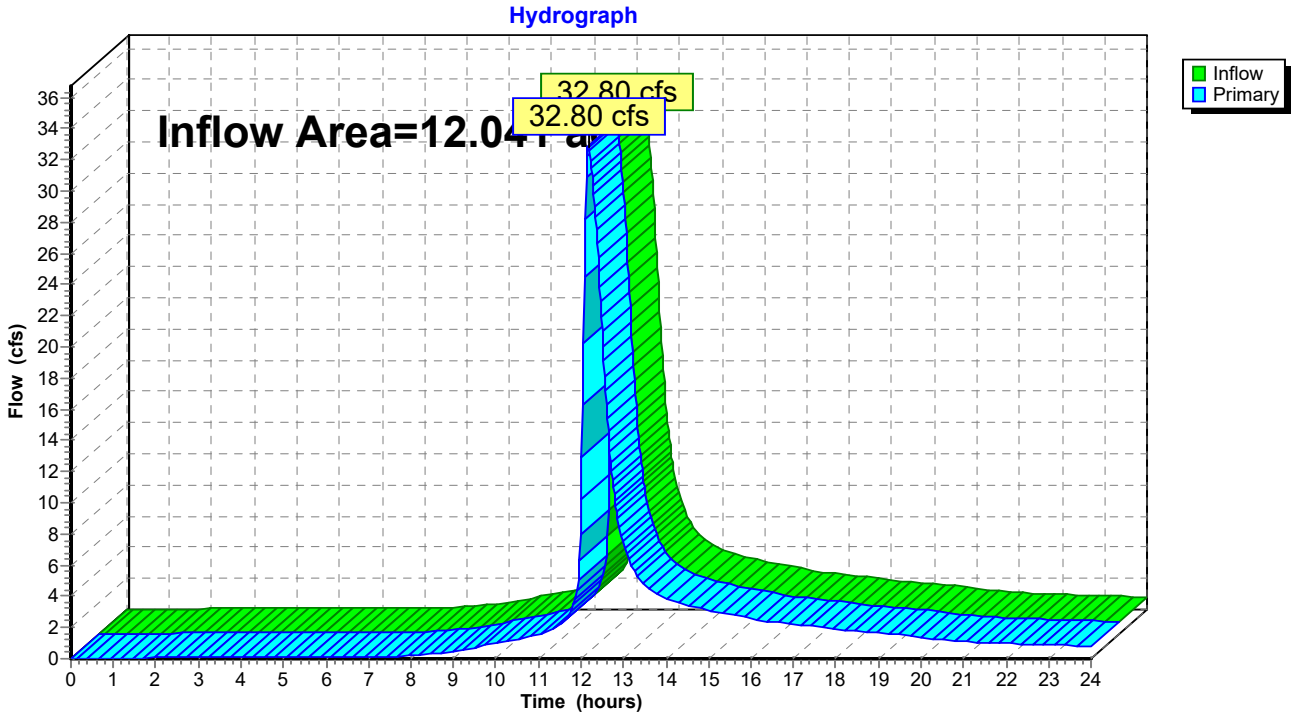
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
21.20	0.11	0.00	0.11
21.40	0.11	0.00	0.11
21.60	0.10	0.00	0.10
21.80	0.10	0.00	0.10
22.00	0.10	0.00	0.10
22.20	0.10	0.00	0.10
22.40	0.10	0.00	0.10
22.60	0.09	0.00	0.09
22.80	0.09	0.00	0.09
23.00	0.09	0.00	0.09
23.20	0.09	0.00	0.09
23.40	0.09	0.00	0.09
23.60	0.08	0.00	0.08
23.80	0.08	0.00	0.08
24.00	0.08	0.00	0.08

Summary for Link S: POI South

Inflow Area = 12.041 ac, 46.90% Impervious, Inflow Depth > 3.97" for 25-Year event
Inflow = 32.80 cfs @ 12.17 hrs, Volume= 3.983 af
Primary = 32.80 cfs @ 12.17 hrs, Volume= 3.983 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link S: POI South



Hydrograph for Link S: POI South

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	10.60	1.29	0.00	1.29
0.20	0.00	0.00	0.00	10.80	1.42	0.00	1.42
0.40	0.00	0.00	0.00	11.00	1.57	0.00	1.57
0.60	0.00	0.00	0.00	11.20	1.72	0.00	1.72
0.80	0.00	0.00	0.00	11.40	1.98	0.00	1.98
1.00	0.01	0.00	0.01	11.60	2.34	0.00	2.34
1.20	0.02	0.00	0.02	11.80	3.36	0.00	3.36
1.40	0.03	0.00	0.03	12.00	**10.20**	0.00	**10.20**
1.60	0.04	0.00	0.04	12.20	**32.38**	0.00	**32.38**
1.80	0.06	0.00	0.06	12.40	25.71	0.00	25.71
2.00	0.07	0.00	0.07	12.60	16.28	0.00	16.28
2.20	0.08	0.00	0.08	12.80	10.14	0.00	10.14
2.40	0.10	0.00	0.10	13.00	7.37	0.00	7.37
2.60	0.10	0.00	0.10	13.20	5.85	0.00	5.85
2.80	0.10	0.00	0.10	13.40	5.02	0.00	5.02
3.00	0.10	0.00	0.10	13.60	4.55	0.00	4.55
3.20	0.10	0.00	0.10	13.80	4.18	0.00	4.18
3.40	0.10	0.00	0.10	14.00	3.90	0.00	3.90
3.60	0.10	0.00	0.10	14.20	3.68	0.00	3.68
3.80	0.10	0.00	0.10	14.40	3.51	0.00	3.51
4.00	0.10	0.00	0.10	14.60	3.37	0.00	3.37
4.20	0.10	0.00	0.10	14.80	3.25	0.00	3.25
4.40	0.10	0.00	0.10	15.00	3.13	0.00	3.13
4.60	0.10	0.00	0.10	15.20	3.01	0.00	3.01
4.80	0.10	0.00	0.10	15.40	2.90	0.00	2.90
5.00	0.10	0.00	0.10	15.60	2.79	0.00	2.79
5.20	0.10	0.00	0.10	15.80	2.68	0.00	2.68
5.40	0.11	0.00	0.11	16.00	2.57	0.00	2.57
5.60	0.11	0.00	0.11	16.20	2.46	0.00	2.46
5.80	0.11	0.00	0.11	16.40	2.39	0.00	2.39
6.00	0.11	0.00	0.11	16.60	2.33	0.00	2.33
6.20	0.11	0.00	0.11	16.80	2.27	0.00	2.27
6.40	0.11	0.00	0.11	17.00	2.21	0.00	2.21
6.60	0.11	0.00	0.11	17.20	2.16	0.00	2.16
6.80	0.12	0.00	0.12	17.40	2.09	0.00	2.09
7.00	0.12	0.00	0.12	17.60	2.03	0.00	2.03
7.20	0.13	0.00	0.13	17.80	1.96	0.00	1.96
7.40	0.14	0.00	0.14	18.00	1.89	0.00	1.89
7.60	0.16	0.00	0.16	18.20	1.82	0.00	1.82
7.80	0.17	0.00	0.17	18.40	1.76	0.00	1.76
8.00	0.20	0.00	0.20	18.60	1.71	0.00	1.71
8.20	0.23	0.00	0.23	18.80	1.67	0.00	1.67
8.40	0.27	0.00	0.27	19.00	1.63	0.00	1.63
8.60	0.33	0.00	0.33	19.20	1.59	0.00	1.59
8.80	0.41	0.00	0.41	19.40	1.55	0.00	1.55
9.00	0.50	0.00	0.50	19.60	1.50	0.00	1.50
9.20	0.59	0.00	0.59	19.80	1.44	0.00	1.44
9.40	0.68	0.00	0.68	20.00	1.37	0.00	1.37
9.60	0.77	0.00	0.77	20.20	1.31	0.00	1.31
9.80	0.87	0.00	0.87	20.40	1.25	0.00	1.25
10.00	0.96	0.00	0.96	20.60	1.19	0.00	1.19
10.20	1.06	0.00	1.06	20.80	1.15	0.00	1.15
10.40	1.17	0.00	1.17	21.00	1.11	0.00	1.11

Hydrograph for Link S: POI South (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
21.20	1.08	0.00	1.08
21.40	1.05	0.00	1.05
21.60	1.03	0.00	1.03
21.80	1.01	0.00	1.01
22.00	0.99	0.00	0.99
22.20	0.97	0.00	0.97
22.40	0.95	0.00	0.95
22.60	0.93	0.00	0.93
22.80	0.91	0.00	0.91
23.00	0.89	0.00	0.89
23.20	0.87	0.00	0.87
23.40	0.86	0.00	0.86
23.60	0.84	0.00	0.84
23.80	0.82	0.00	0.82
24.00	0.80	0.00	0.80

Time span=0.00-24.00 hrs, dt=0.02 hrs, 1201 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment DA 1: Drainage Area 1 Runoff Area=165,448 sf 98.07% Impervious Runoff Depth>8.14"
Flow Length=1,066' Tc=6.0 min CN=98 Runoff=31.25 cfs 2.578 af

Subcatchment DA 1B: Drainage Area 1B - Runoff Area=69,529 sf 3.51% Impervious Runoff Depth>5.85"
Flow Length=1,406' Tc=21.5 min CN=79 Runoff=7.11 cfs 0.778 af

Subcatchment DA 2: Drainage Area 2 Runoff Area=189,852 sf 96.98% Impervious Runoff Depth>8.02"
Flow Length=1,274' Tc=6.0 min CN=97 Runoff=35.76 cfs 2.914 af

Subcatchment DA 2B: Drainage Area 2B Runoff Area=84,759 sf 38.50% Impervious Runoff Depth>5.38"
Flow Length=556' Tc=12.0 min CN=75 Runoff=10.06 cfs 0.873 af

Subcatchment DA 2C: Drainage Area 2C Runoff Area=83,452 sf 1.57% Impervious Runoff Depth>4.19"
Flow Length=466' Tc=21.7 min CN=65 Runoff=6.14 cfs 0.669 af

Subcatchment DA 3: Drainage Area 3 - Bio Runoff Area=31,825 sf 0.00% Impervious Runoff Depth>5.99"
Flow Length=87' Slope=0.1430 '/' Tc=6.0 min CN=80 Runoff=5.03 cfs 0.364 af

Subcatchment DA 4: Drainage Area 4 Runoff Area=23,833 sf 0.00% Impervious Runoff Depth>3.73"
Flow Length=837' Tc=20.4 min CN=61 Runoff=1.59 cfs 0.170 af

Subcatchment OFF1: Offsite Drainage Runoff Area=123,809 sf 57.82% Impervious Runoff Depth>6.23"
Flow Length=816' Tc=6.0 min CN=82 Runoff=20.20 cfs 1.474 af

Subcatchment OFF2: Offsite Drainage Runoff Area=110,079 sf 8.81% Impervious Runoff Depth>6.21"
Tc=21.5 min CN=82 Runoff=11.83 cfs 1.307 af

Subcatchment OFF3: Offsite Drainage Area 3 Runoff Area=6,977 sf 0.00% Impervious Runoff Depth>5.14"
Tc=21.7 min CN=73 Runoff=0.63 cfs 0.069 af

Pond BIO: BioRetention 1 (South) Peak Elev=299.88' Storage=16,825 cf Inflow=6.55 cfs 1.304 af
Outflow=4.15 cfs 1.004 af

Pond DET1: MC-4500 StormTech Peak Elev=307.13' Storage=0.366 af Inflow=29.73 cfs 1.638 af
Outflow=26.76 cfs 1.636 af

Pond DET2: MC-3500 Stormtech (Offsite Peak Elev=300.47' Storage=19,730 cf Inflow=21.01 cfs 1.644 af
Outflow=11.39 cfs 1.541 af

Pond INF1: MC-3500 StormTech Peak Elev=312.13' Storage=45,887 cf Inflow=35.76 cfs 2.914 af
Discarded=2.27 cfs 2.319 af Primary=3.76 cfs 0.594 af Outflow=6.03 cfs 2.913 af

Pond INF2: MC-3500 StormTech Peak Elev=308.45' Storage=10,208 cf Inflow=10.06 cfs 0.873 af
Discarded=0.53 cfs 0.492 af Primary=4.56 cfs 0.380 af Outflow=5.09 cfs 0.872 af

Pond SPLIT: Flow Splitter Peak Elev=305.06' Inflow=31.25 cfs 2.578 af
Primary=1.52 cfs 0.940 af Secondary=29.73 cfs 1.638 af Outflow=31.25 cfs 2.578 af

Link N: POI North Inflow=14.52 cfs 1.712 af
Primary=14.52 cfs 1.712 af

Link S: POI South Inflow=54.93 cfs 6.266 af
Primary=54.93 cfs 6.266 af

Total Runoff Area = 20.422 ac Runoff Volume = 11.197 af Average Runoff Depth = 6.58"
47.83% Pervious = 9.769 ac 52.17% Impervious = 10.653 ac

Summary for Subcatchment DA 1: Drainage Area 1

[47] Hint: Peak is 512% of capacity of segment #2

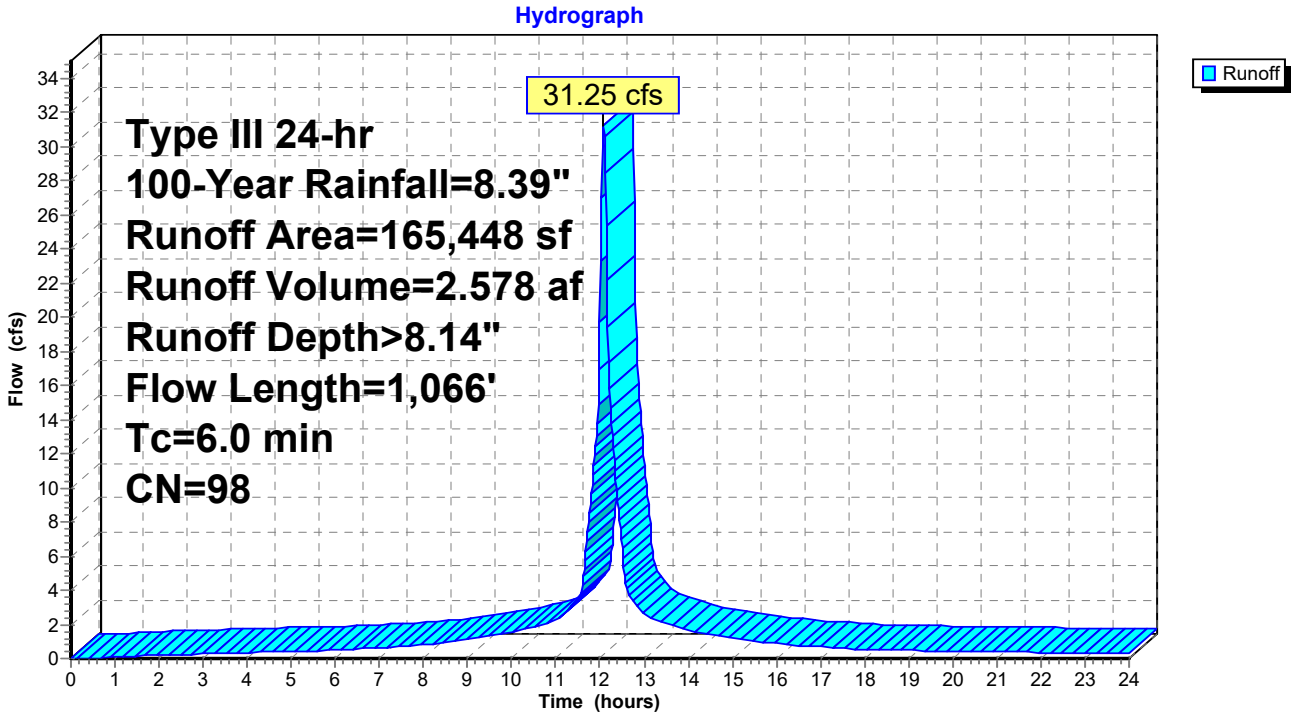
Runoff = 31.25 cfs @ 12.08 hrs, Volume= 2.578 af, Depth> 8.14"
Routed to Pond SPLIT : Flow Splitter

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=8.39"

	Area (sf)	CN	Description
*	162,255	98	Drive/Parking
	626	61	>75% Grass cover, Good, HSG B
	2,567	80	>75% Grass cover, Good, HSG D
	165,448	98	Weighted Average
	3,193		1.93% Pervious Area
	162,255		98.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	187	0.0200	2.87		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
2.9	879	0.0076	4.97	6.10	**Pipe Channel, Avg Pipe Run from CB 12 to 22** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
2.0					**Direct Entry, + Entry to Reach Minimum**
6.0	1,066	Total			

Subcatchment DA 1: Drainage Area 1



Hydrograph for Subcatchment DA 1: Drainage Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.87	1.64	1.95
0.20	0.02	0.00	0.00	10.80	1.98	1.75	2.10
0.40	0.03	0.00	0.00	11.00	2.10	1.87	2.25
0.60	0.05	0.00	0.01	11.20	2.24	2.01	2.64
0.80	0.07	0.00	0.05	11.40	2.40	2.18	3.23
1.00	0.08	0.01	0.09	11.60	2.64	2.41	4.36
1.20	0.10	0.01	0.12	11.80	3.13	2.90	9.64
1.40	0.12	0.02	0.14	12.00	4.19	3.96	**19.75**
1.60	0.13	0.03	0.16	12.20	5.26	5.02	**17.36**
1.80	0.15	0.04	0.18	12.40	5.75	5.52	9.27
2.00	0.17	0.05	0.19	12.60	5.99	5.75	4.16
2.20	0.18	0.06	0.21	12.80	6.15	5.92	3.21
2.40	0.20	0.07	0.23	13.00	6.29	6.05	2.62
2.60	0.22	0.08	0.24	13.20	6.41	6.17	2.26
2.80	0.24	0.10	0.26	13.40	6.52	6.28	2.11
3.00	0.26	0.11	0.28	13.60	6.62	6.38	1.95
3.20	0.28	0.13	0.29	13.80	6.72	6.48	1.80
3.40	0.30	0.14	0.31	14.00	6.80	6.57	1.64
3.60	0.32	0.16	0.32	14.20	6.88	6.65	1.53
3.80	0.34	0.18	0.33	14.40	6.96	6.72	1.46
4.00	0.36	0.20	0.35	14.60	7.03	6.79	1.39
4.20	0.38	0.21	0.36	14.80	7.10	6.86	1.31
4.40	0.41	0.23	0.37	15.00	7.17	6.93	1.24
4.60	0.43	0.25	0.39	15.20	7.23	6.99	1.16
4.80	0.45	0.27	0.40	15.40	7.29	7.05	1.09
5.00	0.48	0.30	0.41	15.60	7.34	7.10	1.02
5.20	0.50	0.32	0.43	15.80	7.39	7.15	0.94
5.40	0.53	0.34	0.44	16.00	7.43	7.19	0.87
5.60	0.55	0.36	0.45	16.20	7.48	7.24	0.82
5.80	0.58	0.39	0.46	16.40	7.52	7.28	0.79
6.00	0.60	0.41	0.47	16.60	7.56	7.32	0.75
6.20	0.63	0.44	0.50	16.80	7.59	7.36	0.72
6.40	0.66	0.47	0.53	17.00	7.63	7.39	0.69
6.60	0.69	0.50	0.56	17.20	7.67	7.43	0.66
6.80	0.72	0.53	0.59	17.40	7.70	7.46	0.63
7.00	0.76	0.56	0.63	17.60	7.73	7.49	0.59
7.20	0.80	0.59	0.66	17.80	7.76	7.52	0.56
7.40	0.83	0.63	0.69	18.00	7.79	7.55	0.53
7.60	0.87	0.67	0.73	18.20	7.81	7.57	0.51
7.80	0.91	0.71	0.76	18.40	7.84	7.60	0.50
8.00	0.96	0.75	0.79	18.60	7.86	7.62	0.49
8.20	1.00	0.79	0.85	18.80	7.89	7.65	0.48
8.40	1.05	0.84	0.92	19.00	7.91	7.67	0.47
8.60	1.10	0.89	1.00	19.20	7.94	7.70	0.46
8.80	1.16	0.95	1.07	19.40	7.96	7.72	0.45
9.00	1.22	1.01	1.14	19.60	7.98	7.74	0.44
9.20	1.29	1.07	1.22	19.80	8.01	7.77	0.43
9.40	1.36	1.14	1.29	20.00	8.03	7.79	0.42
9.60	1.43	1.21	1.37	20.20	8.05	7.81	0.41
9.80	1.51	1.29	1.44	20.40	8.07	7.83	0.41
10.00	1.59	1.36	1.52	20.60	8.09	7.85	0.40
10.20	1.67	1.45	1.64	20.80	8.11	7.87	0.39
10.40	1.77	1.54	1.79	21.00	8.13	7.89	0.38

Hydrograph for Subcatchment DA 1: Drainage Area 1 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	8.15	7.91	0.38
21.40	8.17	7.93	0.37
21.60	8.19	7.95	0.36
21.80	8.21	7.97	0.36
22.00	8.23	7.99	0.35
22.20	8.25	8.01	0.34
22.40	8.26	8.02	0.33
22.60	8.28	8.04	0.33
22.80	8.30	8.06	0.32
23.00	8.31	8.07	0.31
23.20	8.33	8.09	0.31
23.40	8.35	8.11	0.30
23.60	8.36	8.12	0.29
23.80	8.38	8.14	0.28
24.00	**8.39**	**8.15**	0.28

Summary for Subcatchment DA 1B: Drainage Area 1B - Bypass

[47] Hint: Peak is 114% of capacity of segment #3

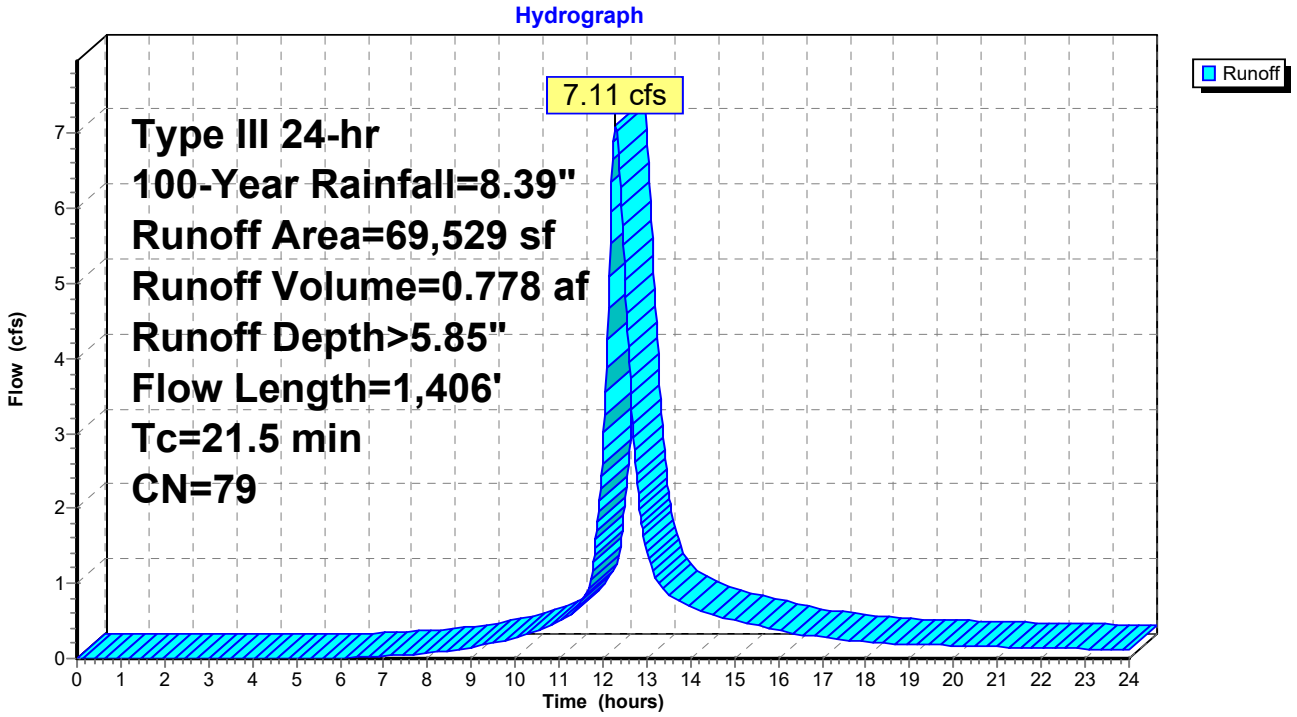
Runoff = 7.11 cfs @ 12.29 hrs, Volume= 0.778 af, Depth> 5.85"
Routed to Link S : POI South

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=8.39"

	Area (sf)	CN	Description
	62,534	80	>75% Grass cover, Good, HSG D
	4,556	61	>75% Grass cover, Good, HSG B
*	2,439	98	Driveway Entrance
	69,529	79	Weighted Average
	67,090		96.49% Pervious Area
	2,439		3.51% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.8	100	0.0160	0.11		**Sheet Flow, SF** Grass: Dense n= 0.240 P2= 3.11"
1.9	150	0.0340	1.29		**Shallow Concentrated Flow, SCF** Short Grass Pasture Kv= 7.0 fps
3.8	1,156	0.0080	5.10	6.26	**Pipe Channel, Pipe** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
21.5	1,406	Total			

Subcatchment DA 1B: Drainage Area 1B - Bypass



Hydrograph for Subcatchment DA 1B: Drainage Area 1B - Bypass

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.87	0.45	0.39
0.20	0.02	0.00	0.00	10.80	1.98	0.51	0.44
0.40	0.03	0.00	0.00	11.00	2.10	0.58	0.50
0.60	0.05	0.00	0.00	11.20	2.24	0.67	0.56
0.80	0.07	0.00	0.00	11.40	2.40	0.77	0.68
1.00	0.08	0.00	0.00	11.60	2.64	0.93	0.85
1.20	0.10	0.00	0.00	11.80	3.13	1.29	1.37
1.40	0.12	0.00	0.00	12.00	4.19	2.12	2.79
1.60	0.13	0.00	0.00	12.20	5.26	3.03	**6.34**
1.80	0.15	0.00	0.00	12.40	5.75	3.46	**6.28**
2.00	0.17	0.00	0.00	12.60	5.99	3.67	3.94
2.20	0.18	0.00	0.00	12.80	6.15	3.82	2.20
2.40	0.20	0.00	0.00	13.00	6.29	3.94	1.44
2.60	0.22	0.00	0.00	13.20	6.41	4.05	1.08
2.80	0.24	0.00	0.00	13.40	6.52	4.15	0.91
3.00	0.26	0.00	0.00	13.60	6.62	4.24	0.82
3.20	0.28	0.00	0.00	13.80	6.72	4.33	0.76
3.40	0.30	0.00	0.00	14.00	6.80	4.41	0.70
3.60	0.32	0.00	0.00	14.20	6.88	4.48	0.64
3.80	0.34	0.00	0.00	14.40	6.96	4.55	0.60
4.00	0.36	0.00	0.00	14.60	7.03	4.62	0.57
4.20	0.38	0.00	0.00	14.80	7.10	4.68	0.54
4.40	0.41	0.00	0.00	15.00	7.17	4.74	0.51
4.60	0.43	0.00	0.00	15.20	7.23	4.79	0.48
4.80	0.45	0.00	0.00	15.40	7.29	4.85	0.46
5.00	0.48	0.00	0.00	15.60	7.34	4.90	0.43
5.20	0.50	0.00	0.00	15.80	7.39	4.94	0.40
5.40	0.53	0.00	0.00	16.00	7.43	4.98	0.37
5.60	0.55	0.00	0.00	16.20	7.48	5.02	0.34
5.80	0.58	0.00	0.00	16.40	7.52	5.06	0.32
6.00	0.60	0.00	0.00	16.60	7.56	5.10	0.31
6.20	0.63	0.00	0.01	16.80	7.59	5.13	0.30
6.40	0.66	0.01	0.01	17.00	7.63	5.17	0.28
6.60	0.69	0.01	0.02	17.20	7.67	5.20	0.27
6.80	0.72	0.01	0.02	17.40	7.70	5.23	0.26
7.00	0.76	0.02	0.03	17.60	7.73	5.26	0.25
7.20	0.80	0.02	0.04	17.80	7.76	5.28	0.23
7.40	0.83	0.03	0.05	18.00	7.79	5.31	0.22
7.60	0.87	0.04	0.05	18.20	7.81	5.33	0.21
7.80	0.91	0.05	0.06	18.40	7.84	5.36	0.20
8.00	0.96	0.06	0.07	18.60	7.86	5.38	0.20
8.20	1.00	0.07	0.08	18.80	7.89	5.40	0.19
8.40	1.05	0.09	0.10	19.00	7.91	5.43	0.19
8.60	1.10	0.10	0.11	19.20	7.94	5.45	0.18
8.80	1.16	0.12	0.13	19.40	7.96	5.47	0.18
9.00	1.22	0.14	0.15	19.60	7.98	5.49	0.18
9.20	1.29	0.17	0.17	19.80	8.01	5.51	0.17
9.40	1.36	0.20	0.20	20.00	8.03	5.54	0.17
9.60	1.43	0.23	0.22	20.20	8.05	5.56	0.17
9.80	1.51	0.26	0.25	20.40	8.07	5.58	0.16
10.00	1.59	0.30	0.27	20.60	8.09	5.59	0.16
10.20	1.67	0.34	0.30	20.80	8.11	5.61	0.16
10.40	1.77	0.39	0.34	21.00	8.13	5.63	0.15

Hydrograph for Subcatchment DA 1B: Drainage Area 1B - Bypass (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	8.15	5.65	0.15
21.40	8.17	5.67	0.15
21.60	8.19	5.69	0.15
21.80	8.21	5.70	0.14
22.00	8.23	5.72	0.14
22.20	8.25	5.74	0.14
22.40	8.26	5.75	0.13
22.60	8.28	5.77	0.13
22.80	8.30	5.79	0.13
23.00	8.31	5.80	0.13
23.20	8.33	5.82	0.12
23.40	8.35	5.83	0.12
23.60	8.36	5.84	0.12
23.80	8.38	5.86	0.11
24.00	**8.39**	**5.87**	0.11

Summary for Subcatchment DA 2: Drainage Area 2

[47] Hint: Peak is 197% of capacity of segment #1
[47] Hint: Peak is 157% of capacity of segment #2

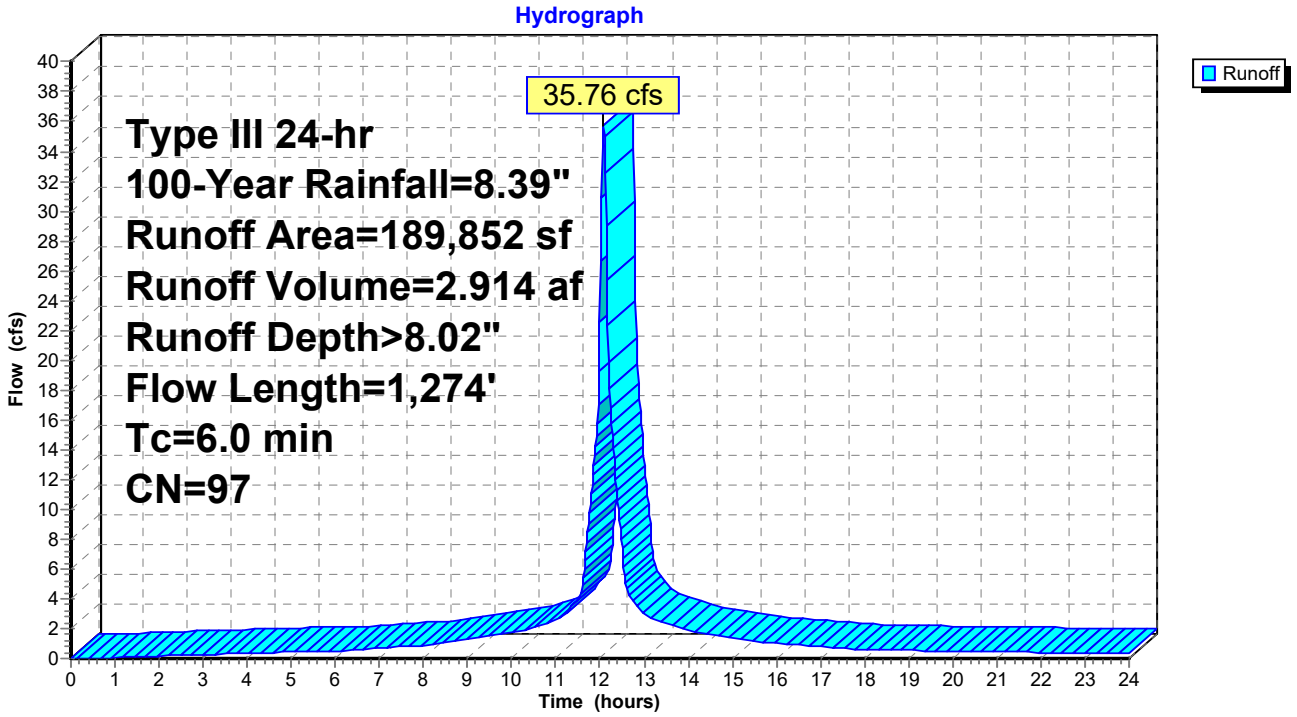
Runoff = 35.76 cfs @ 12.08 hrs, Volume= 2.914 af, Depth> 8.02"
Routed to Pond INF1 : MC-3500 StormTech INFILTRATION 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=8.39"

	Area (sf)	CN	Description
*	184,125	98	Roof, Parking/Drive
	5,727	61	>75% Grass cover, Good, HSG B
	189,852	97	Weighted Average
	5,727		3.02% Pervious Area
	184,125		96.98% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.3	1,155	0.0465	14.76	18.11	**Pipe Channel, Avg Run from Roof to CB 20** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.010 PVC, smooth interior
0.3	119	0.0086	7.23	22.73	**Pipe Channel, CB 20 to Infiltration** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Corrugated PP, smooth interior
4.4					**Direct Entry, + Entry to Reach Minimum**
6.0	1,274	Total			

Subcatchment DA 2: Drainage Area 2



Hydrograph for Subcatchment DA 2: Drainage Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.87	1.54	2.21
0.20	0.02	0.00	0.00	10.80	1.98	1.65	2.38
0.40	0.03	0.00	0.00	11.00	2.10	1.77	2.56
0.60	0.05	0.00	0.00	11.20	2.24	1.90	3.01
0.80	0.07	0.00	0.00	11.40	2.40	2.07	3.68
1.00	0.08	0.00	0.03	11.60	2.64	2.30	4.97
1.20	0.10	0.00	0.06	11.80	3.13	2.79	11.01
1.40	0.12	0.01	0.09	12.00	4.19	3.85	**22.58**
1.60	0.13	0.01	0.12	12.20	5.26	4.90	**19.88**
1.80	0.15	0.02	0.14	12.40	5.75	5.40	10.62
2.00	0.17	0.03	0.16	12.60	5.99	5.63	4.76
2.20	0.18	0.03	0.18	12.80	6.15	5.80	3.68
2.40	0.20	0.04	0.20	13.00	6.29	5.94	3.00
2.60	0.22	0.05	0.22	13.20	6.41	6.05	2.59
2.80	0.24	0.06	0.24	13.40	6.52	6.16	2.41
3.00	0.26	0.08	0.26	13.60	6.62	6.27	2.24
3.20	0.28	0.09	0.28	13.80	6.72	6.36	2.06
3.40	0.30	0.10	0.29	14.00	6.80	6.45	1.89
3.60	0.32	0.12	0.31	14.20	6.88	6.53	1.76
3.80	0.34	0.13	0.33	14.40	6.96	6.60	1.67
4.00	0.36	0.15	0.35	14.60	7.03	6.68	1.59
4.20	0.38	0.16	0.36	14.80	7.10	6.74	1.50
4.40	0.41	0.18	0.38	15.00	7.17	6.81	1.42
4.60	0.43	0.20	0.40	15.20	7.23	6.87	1.34
4.80	0.45	0.22	0.41	15.40	7.29	6.93	1.25
5.00	0.48	0.24	0.43	15.60	7.34	6.98	1.17
5.20	0.50	0.26	0.45	15.80	7.39	7.03	1.08
5.40	0.53	0.28	0.46	16.00	7.43	7.07	1.00
5.60	0.55	0.30	0.48	16.20	7.48	7.12	0.94
5.80	0.58	0.32	0.49	16.40	7.52	7.16	0.90
6.00	0.60	0.35	0.51	16.60	7.56	7.20	0.86
6.20	0.63	0.37	0.53	16.80	7.59	7.24	0.83
6.40	0.66	0.40	0.57	17.00	7.63	7.27	0.79
6.60	0.69	0.42	0.61	17.20	7.67	7.31	0.75
6.80	0.72	0.45	0.65	17.40	7.70	7.34	0.72
7.00	0.76	0.48	0.68	17.60	7.73	7.37	0.68
7.20	0.80	0.52	0.72	17.80	7.76	7.40	0.64
7.40	0.83	0.55	0.76	18.00	7.79	7.43	0.61
7.60	0.87	0.59	0.80	18.20	7.81	7.45	0.58
7.80	0.91	0.62	0.84	18.40	7.84	7.48	0.57
8.00	0.96	0.66	0.88	18.60	7.86	7.50	0.56
8.20	1.00	0.71	0.94	18.80	7.89	7.53	0.55
8.40	1.05	0.75	1.03	19.00	7.91	7.55	0.54
8.60	1.10	0.80	1.11	19.20	7.94	7.58	0.53
8.80	1.16	0.86	1.20	19.40	7.96	7.60	0.52
9.00	1.22	0.92	1.28	19.60	7.98	7.63	0.51
9.20	1.29	0.98	1.37	19.80	8.01	7.65	0.49
9.40	1.36	1.04	1.45	20.00	8.03	7.67	0.48
9.60	1.43	1.11	1.54	20.20	8.05	7.69	0.47
9.80	1.51	1.19	1.63	20.40	8.07	7.71	0.47
10.00	1.59	1.27	1.72	20.60	8.09	7.73	0.46
10.20	1.67	1.35	1.85	20.80	8.11	7.75	0.45
10.40	1.77	1.44	2.03	21.00	8.13	7.77	0.44

Hydrograph for Subcatchment DA 2: Drainage Area 2 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	8.15	7.79	0.43
21.40	8.17	7.81	0.42
21.60	8.19	7.83	0.42
21.80	8.21	7.85	0.41
22.00	8.23	7.87	0.40
22.20	8.25	7.89	0.39
22.40	8.26	7.90	0.38
22.60	8.28	7.92	0.37
22.80	8.30	7.94	0.37
23.00	8.31	7.95	0.36
23.20	8.33	7.97	0.35
23.40	8.35	7.99	0.34
23.60	8.36	8.00	0.33
23.80	8.38	8.02	0.33
24.00	**8.39**	**8.03**	0.32

Summary for Subcatchment DA 2B: Drainage Area 2B

[47] Hint: Peak is 104% of capacity of segment #3

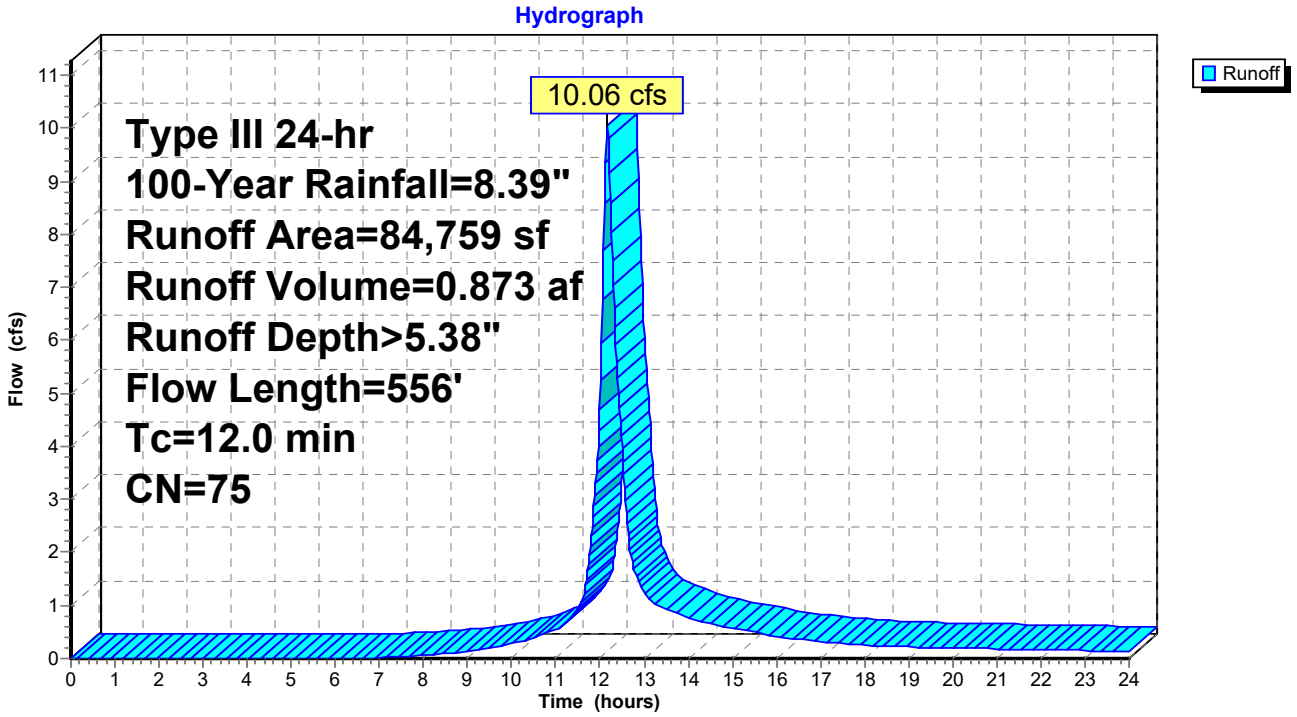
Runoff = 10.06 cfs @ 12.16 hrs, Volume= 0.873 af, Depth> 5.38"
Routed to Pond INF2 : MC-3500 StormTech INFILTRATION 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=8.39"

	Area (sf)	CN	Description
	52,127	61	>75% Grass cover, Good, HSG B
*	32,632	98	Impervious
	84,759	75	Weighted Average
	52,127		61.50% Pervious Area
	32,632		38.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0200	0.17		**Sheet Flow, Sheet Flow** Grass: Short n= 0.150 P2= 3.11"
1.9	350	0.0350	3.01		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
0.2	106	0.0190	7.86	9.65	**Pipe Channel, Channel Flow** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
12.0	556	Total			

Subcatchment DA 2B: Drainage Area 2B



Hydrograph for Subcatchment DA 2B: Drainage Area 2B

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.87	0.32	0.42
0.20	0.02	0.00	0.00	10.80	1.98	0.37	0.48
0.40	0.03	0.00	0.00	11.00	2.10	0.43	0.55
0.60	0.05	0.00	0.00	11.20	2.24	0.50	0.64
0.80	0.07	0.00	0.00	11.40	2.40	0.60	0.83
1.00	0.08	0.00	0.00	11.60	2.64	0.73	1.07
1.20	0.10	0.00	0.00	11.80	3.13	1.05	2.30
1.40	0.12	0.00	0.00	12.00	4.19	1.81	**4.71**
1.60	0.13	0.00	0.00	12.20	5.26	2.66	**9.64**
1.80	0.15	0.00	0.00	12.40	5.75	3.07	5.29
2.00	0.17	0.00	0.00	12.60	5.99	3.27	2.75
2.20	0.18	0.00	0.00	12.80	6.15	3.41	1.61
2.40	0.20	0.00	0.00	13.00	6.29	3.53	1.28
2.60	0.22	0.00	0.00	13.20	6.41	3.63	1.06
2.80	0.24	0.00	0.00	13.40	6.52	3.73	0.97
3.00	0.26	0.00	0.00	13.60	6.62	3.82	0.90
3.20	0.28	0.00	0.00	13.80	6.72	3.90	0.84
3.40	0.30	0.00	0.00	14.00	6.80	3.98	0.77
3.60	0.32	0.00	0.00	14.20	6.88	4.05	0.71
3.80	0.34	0.00	0.00	14.40	6.96	4.12	0.67
4.00	0.36	0.00	0.00	14.60	7.03	4.18	0.64
4.20	0.38	0.00	0.00	14.80	7.10	4.24	0.61
4.40	0.41	0.00	0.00	15.00	7.17	4.30	0.58
4.60	0.43	0.00	0.00	15.20	7.23	4.35	0.54
4.80	0.45	0.00	0.00	15.40	7.29	4.40	0.51
5.00	0.48	0.00	0.00	15.60	7.34	4.45	0.48
5.20	0.50	0.00	0.00	15.80	7.39	4.49	0.45
5.40	0.53	0.00	0.00	16.00	7.43	4.53	0.41
5.60	0.55	0.00	0.00	16.20	7.48	4.57	0.38
5.80	0.58	0.00	0.00	16.40	7.52	4.61	0.37
6.00	0.60	0.00	0.00	16.60	7.56	4.64	0.35
6.20	0.63	0.00	0.00	16.80	7.59	4.68	0.34
6.40	0.66	0.00	0.00	17.00	7.63	4.71	0.32
6.60	0.69	0.00	0.00	17.20	7.67	4.74	0.31
6.80	0.72	0.00	0.01	17.40	7.70	4.77	0.29
7.00	0.76	0.00	0.01	17.60	7.73	4.80	0.28
7.20	0.80	0.00	0.02	17.80	7.76	4.82	0.26
7.40	0.83	0.01	0.03	18.00	7.79	4.85	0.25
7.60	0.87	0.01	0.04	18.20	7.81	4.87	0.24
7.80	0.91	0.02	0.05	18.40	7.84	4.90	0.23
8.00	0.96	0.02	0.06	18.60	7.86	4.92	0.23
8.20	1.00	0.03	0.07	18.80	7.89	4.94	0.22
8.40	1.05	0.04	0.08	19.00	7.91	4.96	0.22
8.60	1.10	0.05	0.10	19.20	7.94	4.99	0.21
8.80	1.16	0.06	0.12	19.40	7.96	5.01	0.21
9.00	1.22	0.08	0.14	19.60	7.98	5.03	0.21
9.20	1.29	0.10	0.17	19.80	8.01	5.05	0.20
9.40	1.36	0.12	0.19	20.00	8.03	5.07	0.20
9.60	1.43	0.14	0.22	20.20	8.05	5.09	0.19
9.80	1.51	0.17	0.25	20.40	8.07	5.11	0.19
10.00	1.59	0.20	0.28	20.60	8.09	5.13	0.19
10.20	1.67	0.23	0.32	20.80	8.11	5.14	0.18
10.40	1.77	0.27	0.37	21.00	8.13	5.16	0.18

Hydrograph for Subcatchment DA 2B: Drainage Area 2B (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	8.15	5.18	0.18
21.40	8.17	5.20	0.17
21.60	8.19	5.21	0.17
21.80	8.21	5.23	0.17
22.00	8.23	5.25	0.16
22.20	8.25	5.26	0.16
22.40	8.26	5.28	0.16
22.60	8.28	5.30	0.15
22.80	8.30	5.31	0.15
23.00	8.31	5.33	0.15
23.20	8.33	5.34	0.14
23.40	8.35	5.35	0.14
23.60	8.36	5.37	0.14
23.80	8.38	5.38	0.13
24.00	**8.39**	**5.39**	0.13

Summary for Subcatchment DA 2C: Drainage Area 2C Bypass

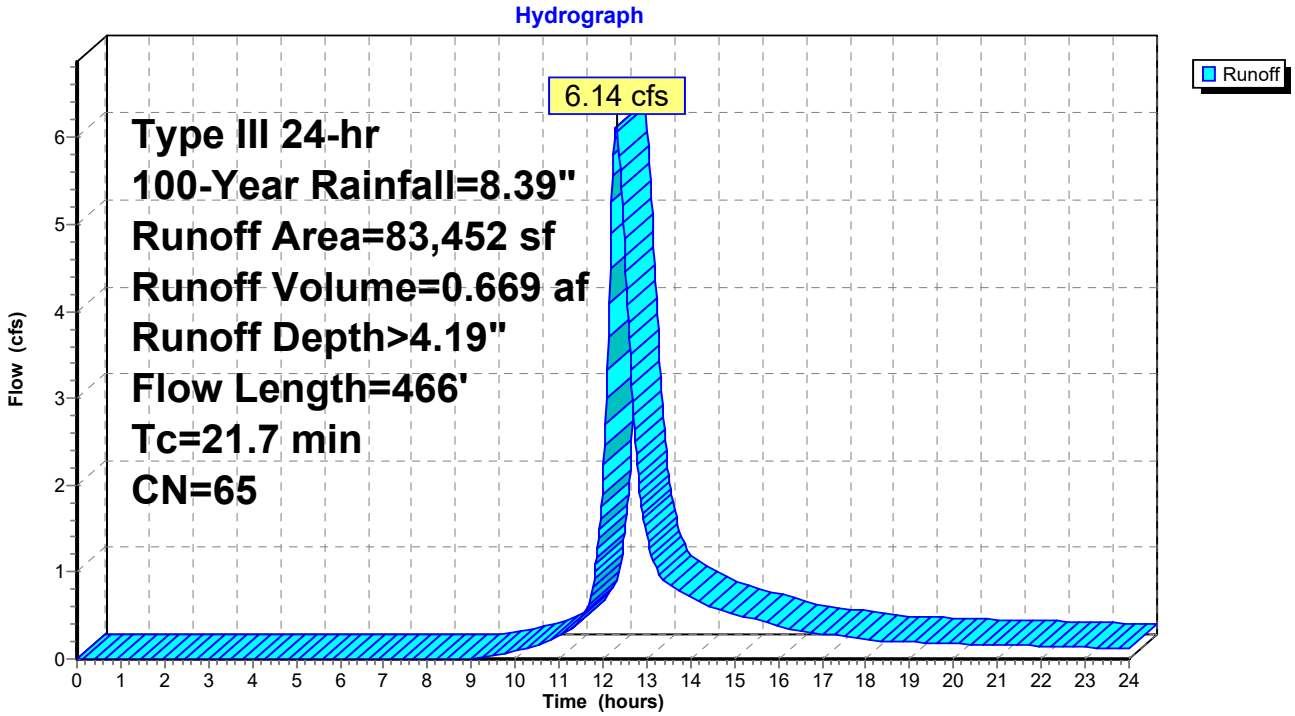
Runoff = 6.14 cfs @ 12.31 hrs, Volume= 0.669 af, Depth> 4.19"
Routed to Link N : POI North

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=8.39"

	Area (sf)	CN	Description
	52,745	61	>75% Grass cover, Good, HSG B
	15,800	80	>75% Grass cover, Good, HSG D
	4,809	77	Woods, Good, HSG D
*	1,308	98	Impervious
	8,790	55	Woods, Good, HSG B
	83,452	65	Weighted Average
	82,144		98.43% Pervious Area
	1,308		1.57% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	100	0.0100	0.09		**Sheet Flow, Sheet Flow** Grass: Dense n= 0.240 P2= 3.11"
2.6	366	0.0220	2.39		**Shallow Concentrated Flow, SCF** Unpaved Kv= 16.1 fps
21.7	466	Total			

Subcatchment DA 2C: Drainage Area 2C Bypass



Hydrograph for Subcatchment DA 2C: Drainage Area 2C Bypass

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.87	0.10	0.18
0.20	0.02	0.00	0.00	10.80	1.98	0.13	0.22
0.40	0.03	0.00	0.00	11.00	2.10	0.16	0.26
0.60	0.05	0.00	0.00	11.20	2.24	0.21	0.32
0.80	0.07	0.00	0.00	11.40	2.40	0.26	0.40
1.00	0.08	0.00	0.00	11.60	2.64	0.35	0.54
1.20	0.10	0.00	0.00	11.80	3.13	0.57	0.92
1.40	0.12	0.00	0.00	12.00	4.19	1.14	2.05
1.60	0.13	0.00	0.00	12.20	5.26	1.83	**5.26**
1.80	0.15	0.00	0.00	12.40	5.75	2.17	**5.62**
2.00	0.17	0.00	0.00	12.60	5.99	2.34	3.69
2.20	0.18	0.00	0.00	12.80	6.15	2.46	2.12
2.40	0.20	0.00	0.00	13.00	6.29	2.57	1.41
2.60	0.22	0.00	0.00	13.20	6.41	2.65	1.07
2.80	0.24	0.00	0.00	13.40	6.52	2.74	0.90
3.00	0.26	0.00	0.00	13.60	6.62	2.81	0.82
3.20	0.28	0.00	0.00	13.80	6.72	2.89	0.76
3.40	0.30	0.00	0.00	14.00	6.80	2.95	0.70
3.60	0.32	0.00	0.00	14.20	6.88	3.01	0.65
3.80	0.34	0.00	0.00	14.40	6.96	3.07	0.61
4.00	0.36	0.00	0.00	14.60	7.03	3.13	0.57
4.20	0.38	0.00	0.00	14.80	7.10	3.18	0.55
4.40	0.41	0.00	0.00	15.00	7.17	3.23	0.52
4.60	0.43	0.00	0.00	15.20	7.23	3.28	0.49
4.80	0.45	0.00	0.00	15.40	7.29	3.32	0.47
5.00	0.48	0.00	0.00	15.60	7.34	3.37	0.44
5.20	0.50	0.00	0.00	15.80	7.39	3.41	0.41
5.40	0.53	0.00	0.00	16.00	7.43	3.44	0.38
5.60	0.55	0.00	0.00	16.20	7.48	3.48	0.35
5.80	0.58	0.00	0.00	16.40	7.52	3.51	0.33
6.00	0.60	0.00	0.00	16.60	7.56	3.54	0.32
6.20	0.63	0.00	0.00	16.80	7.59	3.57	0.30
6.40	0.66	0.00	0.00	17.00	7.63	3.60	0.29
6.60	0.69	0.00	0.00	17.20	7.67	3.63	0.28
6.80	0.72	0.00	0.00	17.40	7.70	3.65	0.27
7.00	0.76	0.00	0.00	17.60	7.73	3.68	0.25
7.20	0.80	0.00	0.00	17.80	7.76	3.70	0.24
7.40	0.83	0.00	0.00	18.00	7.79	3.72	0.23
7.60	0.87	0.00	0.00	18.20	7.81	3.74	0.22
7.80	0.91	0.00	0.00	18.40	7.84	3.76	0.21
8.00	0.96	0.00	0.00	18.60	7.86	3.78	0.20
8.20	1.00	0.00	0.00	18.80	7.89	3.80	0.20
8.40	1.05	0.00	0.00	19.00	7.91	3.82	0.20
8.60	1.10	0.00	0.00	19.20	7.94	3.84	0.19
8.80	1.16	0.00	0.00	19.40	7.96	3.86	0.19
9.00	1.22	0.00	0.01	19.60	7.98	3.88	0.18
9.20	1.29	0.01	0.02	19.80	8.01	3.90	0.18
9.40	1.36	0.01	0.04	20.00	8.03	3.92	0.18
9.60	1.43	0.02	0.05	20.20	8.05	3.94	0.17
9.80	1.51	0.03	0.07	20.40	8.07	3.95	0.17
10.00	1.59	0.04	0.09	20.60	8.09	3.97	0.17
10.20	1.67	0.06	0.12	20.80	8.11	3.99	0.16
10.40	1.77	0.08	0.14	21.00	8.13	4.00	0.16

Hydrograph for Subcatchment DA 2C: Drainage Area 2C Bypass (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	8.15	4.02	0.16
21.40	8.17	4.03	0.16
21.60	8.19	4.05	0.15
21.80	8.21	4.06	0.15
22.00	8.23	4.08	0.15
22.20	8.25	4.09	0.14
22.40	8.26	4.11	0.14
22.60	8.28	4.12	0.14
22.80	8.30	4.14	0.14
23.00	8.31	4.15	0.13
23.20	8.33	4.16	0.13
23.40	8.35	4.18	0.13
23.60	8.36	4.19	0.12
23.80	8.38	4.20	0.12
24.00	**8.39**	**4.21**	0.12

Summary for Subcatchment DA 3: Drainage Area 3 - Bio Direct Entry

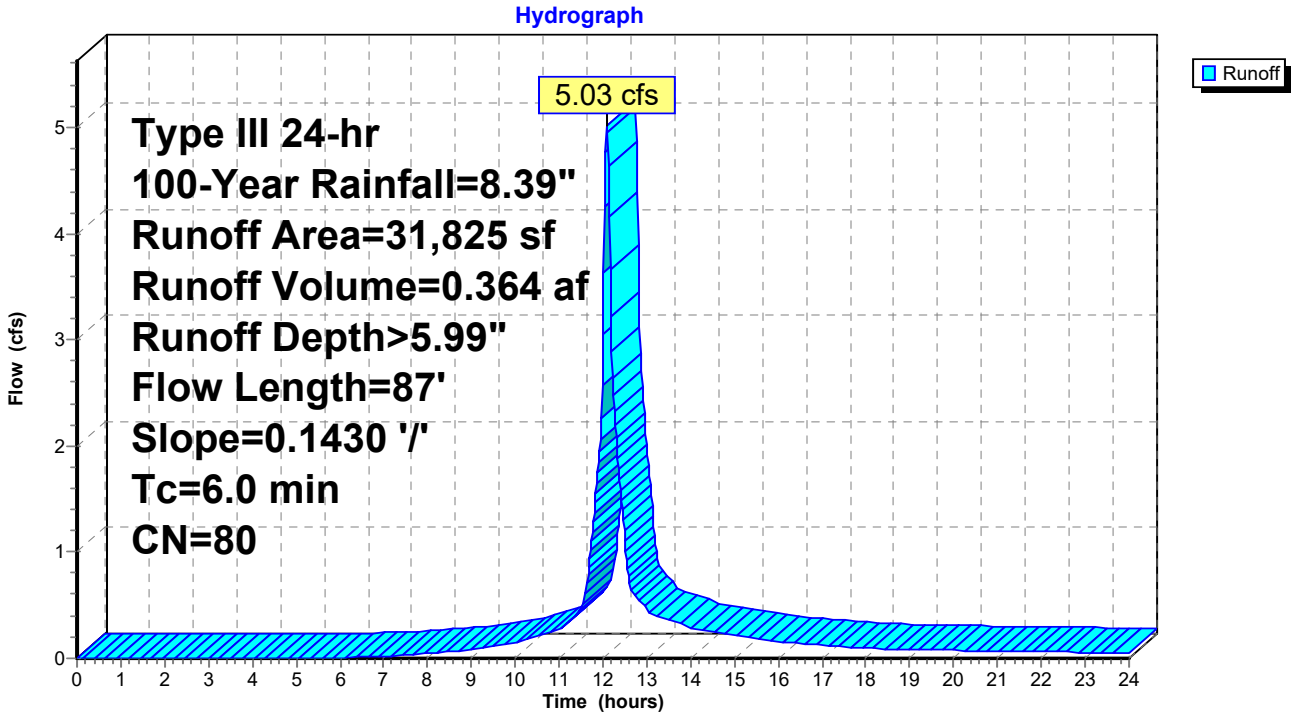
Runoff = 5.03 cfs @ 12.09 hrs, Volume= 0.364 af, Depth> 5.99"
Routed to Pond BIO : BioRetention 1 (South)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=8.39"

Area (sf)	CN	Description
31,825	80	>75% Grass cover, Good, HSG D
31,825		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.0	87	0.1430	0.36		**Sheet Flow, SF** Grass: Short n= 0.150 P2= 3.11"
2.0					**Direct Entry, + Entry to Reach Minimum**
6.0	87	Total			

Subcatchment DA 3: Drainage Area 3 - Bio Direct Entry



Hydrograph for Subcatchment DA 3: Drainage Area 3 - Bio Direct Entry

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.87	0.48	0.22
0.20	0.02	0.00	0.00	10.80	1.98	0.55	0.24
0.40	0.03	0.00	0.00	11.00	2.10	0.62	0.27
0.60	0.05	0.00	0.00	11.20	2.24	0.71	0.33
0.80	0.07	0.00	0.00	11.40	2.40	0.82	0.42
1.00	0.08	0.00	0.00	11.60	2.64	0.98	0.59
1.20	0.10	0.00	0.00	11.80	3.13	1.35	1.37
1.40	0.12	0.00	0.00	12.00	4.19	2.20	**3.05**
1.60	0.13	0.00	0.00	12.20	5.26	3.12	**2.89**
1.80	0.15	0.00	0.00	12.40	5.75	3.56	1.59
2.00	0.17	0.00	0.00	12.60	5.99	3.77	0.72
2.20	0.18	0.00	0.00	12.80	6.15	3.92	0.56
2.40	0.20	0.00	0.00	13.00	6.29	4.05	0.46
2.60	0.22	0.00	0.00	13.20	6.41	4.15	0.40
2.80	0.24	0.00	0.00	13.40	6.52	4.25	0.37
3.00	0.26	0.00	0.00	13.60	6.62	4.35	0.34
3.20	0.28	0.00	0.00	13.80	6.72	4.43	0.32
3.40	0.30	0.00	0.00	14.00	6.80	4.51	0.29
3.60	0.32	0.00	0.00	14.20	6.88	4.59	0.27
3.80	0.34	0.00	0.00	14.40	6.96	4.66	0.26
4.00	0.36	0.00	0.00	14.60	7.03	4.73	0.25
4.20	0.38	0.00	0.00	14.80	7.10	4.79	0.23
4.40	0.41	0.00	0.00	15.00	7.17	4.85	0.22
4.60	0.43	0.00	0.00	15.20	7.23	4.91	0.21
4.80	0.45	0.00	0.00	15.40	7.29	4.96	0.19
5.00	0.48	0.00	0.00	15.60	7.34	5.01	0.18
5.20	0.50	0.00	0.00	15.80	7.39	5.05	0.17
5.40	0.53	0.00	0.00	16.00	7.43	5.10	0.16
5.60	0.55	0.00	0.00	16.20	7.48	5.14	0.15
5.80	0.58	0.00	0.00	16.40	7.52	5.17	0.14
6.00	0.60	0.00	0.01	16.60	7.56	5.21	0.14
6.20	0.63	0.01	0.01	16.80	7.59	5.25	0.13
6.40	0.66	0.01	0.01	17.00	7.63	5.28	0.12
6.60	0.69	0.01	0.01	17.20	7.67	5.31	0.12
6.80	0.72	0.02	0.02	17.40	7.70	5.34	0.11
7.00	0.76	0.02	0.02	17.60	7.73	5.37	0.11
7.20	0.80	0.03	0.03	17.80	7.76	5.40	0.10
7.40	0.83	0.04	0.03	18.00	7.79	5.42	0.10
7.60	0.87	0.05	0.03	18.20	7.81	5.45	0.09
7.80	0.91	0.06	0.04	18.40	7.84	5.47	0.09
8.00	0.96	0.07	0.04	18.60	7.86	5.50	0.09
8.20	1.00	0.08	0.05	18.80	7.89	5.52	0.09
8.40	1.05	0.10	0.06	19.00	7.91	5.54	0.08
8.60	1.10	0.12	0.07	19.20	7.94	5.57	0.08
8.80	1.16	0.14	0.08	19.40	7.96	5.59	0.08
9.00	1.22	0.16	0.09	19.60	7.98	5.61	0.08
9.20	1.29	0.19	0.10	19.80	8.01	5.63	0.08
9.40	1.36	0.22	0.11	20.00	8.03	5.65	0.08
9.60	1.43	0.25	0.12	20.20	8.05	5.67	0.07
9.80	1.51	0.29	0.14	20.40	8.07	5.69	0.07
10.00	1.59	0.33	0.15	20.60	8.09	5.71	0.07
10.20	1.67	0.37	0.17	20.80	8.11	5.73	0.07
10.40	1.77	0.43	0.19	21.00	8.13	5.75	0.07

Hydrograph for Subcatchment DA 3: Drainage Area 3 - Bio Direct Entry (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	8.15	5.77	0.07
21.40	8.17	5.79	0.07
21.60	8.19	5.80	0.07
21.80	8.21	5.82	0.06
22.00	8.23	5.84	0.06
22.20	8.25	5.86	0.06
22.40	8.26	5.87	0.06
22.60	8.28	5.89	0.06
22.80	8.30	5.90	0.06
23.00	8.31	5.92	0.06
23.20	8.33	5.93	0.06
23.40	8.35	5.95	0.05
23.60	8.36	5.96	0.05
23.80	8.38	5.98	0.05
24.00	**8.39**	**5.99**	0.05

Summary for Subcatchment DA 4: Drainage Area 4

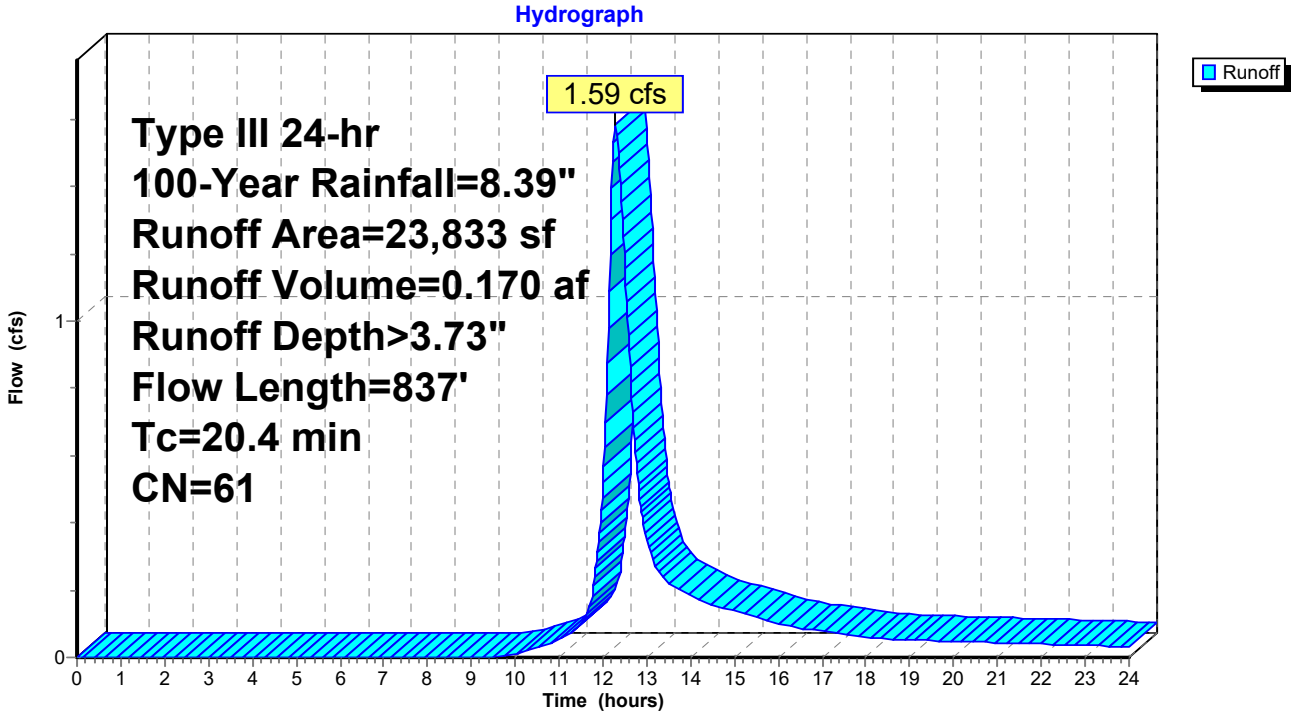
Runoff = 1.59 cfs @ 12.29 hrs, Volume= 0.170 af, Depth> 3.73"
Routed to Pond DET2 : MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=8.39"

Area (sf)	CN	Description
23,833	61	>75% Grass cover, Good, HSG B
23,833		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.3	100	0.0050	0.10		**Sheet Flow, SF** Grass: Short n= 0.150 P2= 3.11"
2.5	413	0.0290	2.74		**Shallow Concentrated Flow, Grass SCF** Unpaved Kv= 16.1 fps
0.6	324	0.0250	9.02	11.06	**Pipe Channel, Pipe Flow** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012 Corrugated PP, smooth interior
20.4	837	Total			

Subcatchment DA 4: Drainage Area 4



Hydrograph for Subcatchment DA 4: Drainage Area 4

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.87	0.05	0.03
0.20	0.02	0.00	0.00	10.80	1.98	0.07	0.04
0.40	0.03	0.00	0.00	11.00	2.10	0.09	0.05
0.60	0.05	0.00	0.00	11.20	2.24	0.12	0.07
0.80	0.07	0.00	0.00	11.40	2.40	0.17	0.09
1.00	0.08	0.00	0.00	11.60	2.64	0.24	0.12
1.20	0.10	0.00	0.00	11.80	3.13	0.42	0.22
1.40	0.12	0.00	0.00	12.00	4.19	0.91	0.52
1.60	0.13	0.00	0.00	12.20	5.26	1.53	**1.40**
1.80	0.15	0.00	0.00	12.40	5.75	1.84	**1.41**
2.00	0.17	0.00	0.00	12.60	5.99	2.00	0.91
2.20	0.18	0.00	0.00	12.80	6.15	2.11	0.52
2.40	0.20	0.00	0.00	13.00	6.29	2.20	0.35
2.60	0.22	0.00	0.00	13.20	6.41	2.29	0.27
2.80	0.24	0.00	0.00	13.40	6.52	2.36	0.23
3.00	0.26	0.00	0.00	13.60	6.62	2.43	0.21
3.20	0.28	0.00	0.00	13.80	6.72	2.50	0.20
3.40	0.30	0.00	0.00	14.00	6.80	2.56	0.18
3.60	0.32	0.00	0.00	14.20	6.88	2.62	0.17
3.80	0.34	0.00	0.00	14.40	6.96	2.67	0.16
4.00	0.36	0.00	0.00	14.60	7.03	2.73	0.15
4.20	0.38	0.00	0.00	14.80	7.10	2.78	0.15
4.40	0.41	0.00	0.00	15.00	7.17	2.82	0.14
4.60	0.43	0.00	0.00	15.20	7.23	2.87	0.13
4.80	0.45	0.00	0.00	15.40	7.29	2.91	0.12
5.00	0.48	0.00	0.00	15.60	7.34	2.95	0.12
5.20	0.50	0.00	0.00	15.80	7.39	2.99	0.11
5.40	0.53	0.00	0.00	16.00	7.43	3.02	0.10
5.60	0.55	0.00	0.00	16.20	7.48	3.05	0.09
5.80	0.58	0.00	0.00	16.40	7.52	3.08	0.09
6.00	0.60	0.00	0.00	16.60	7.56	3.11	0.08
6.20	0.63	0.00	0.00	16.80	7.59	3.14	0.08
6.40	0.66	0.00	0.00	17.00	7.63	3.17	0.08
6.60	0.69	0.00	0.00	17.20	7.67	3.19	0.07
6.80	0.72	0.00	0.00	17.40	7.70	3.22	0.07
7.00	0.76	0.00	0.00	17.60	7.73	3.24	0.07
7.20	0.80	0.00	0.00	17.80	7.76	3.26	0.06
7.40	0.83	0.00	0.00	18.00	7.79	3.28	0.06
7.60	0.87	0.00	0.00	18.20	7.81	3.30	0.06
7.80	0.91	0.00	0.00	18.40	7.84	3.32	0.06
8.00	0.96	0.00	0.00	18.60	7.86	3.34	0.05
8.20	1.00	0.00	0.00	18.80	7.89	3.36	0.05
8.40	1.05	0.00	0.00	19.00	7.91	3.38	0.05
8.60	1.10	0.00	0.00	19.20	7.94	3.40	0.05
8.80	1.16	0.00	0.00	19.40	7.96	3.42	0.05
9.00	1.22	0.00	0.00	19.60	7.98	3.43	0.05
9.20	1.29	0.00	0.00	19.80	8.01	3.45	0.05
9.40	1.36	0.00	0.00	20.00	8.03	3.47	0.05
9.60	1.43	0.00	0.00	20.20	8.05	3.48	0.05
9.80	1.51	0.01	0.01	20.40	8.07	3.50	0.05
10.00	1.59	0.01	0.01	20.60	8.09	3.52	0.04
10.20	1.67	0.02	0.02	20.80	8.11	3.53	0.04
10.40	1.77	0.03	0.02	21.00	8.13	3.55	0.04

Hydrograph for Subcatchment DA 4: Drainage Area 4 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	8.15	3.56	0.04
21.40	8.17	3.58	0.04
21.60	8.19	3.59	0.04
21.80	8.21	3.61	0.04
22.00	8.23	3.62	0.04
22.20	8.25	3.63	0.04
22.40	8.26	3.65	0.04
22.60	8.28	3.66	0.04
22.80	8.30	3.67	0.04
23.00	8.31	3.69	0.04
23.20	8.33	3.70	0.03
23.40	8.35	3.71	0.03
23.60	8.36	3.72	0.03
23.80	8.38	3.73	0.03
24.00	**8.39**	**3.74**	0.03

Summary for Subcatchment OFF1: Offsite Drainage Area 1

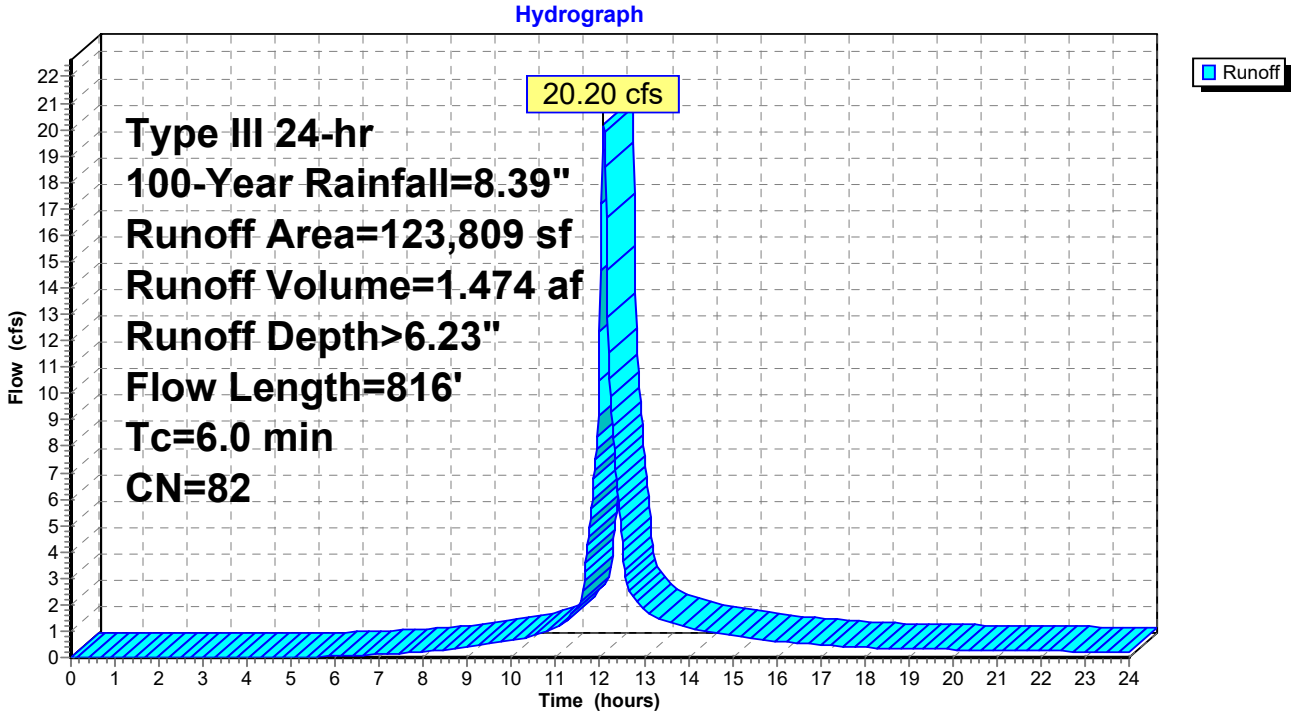
Runoff = 20.20 cfs @ 12.09 hrs, Volume= 1.474 af, Depth> 6.23"
Routed to Pond DET2 : MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=8.39"

	Area (sf)	CN	Description
	52,228	61	>75% Grass cover, Good, HSG B
*	71,581	98	Impervious Surfaces
	123,809	82	Weighted Average
	52,228		42.18% Pervious Area
	71,581		57.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	345	0.0230	3.08		**Shallow Concentrated Flow, SCF** Paved Kv= 20.3 fps
0.4	471	0.0526	17.89	56.21	**Pipe Channel, 24" Pipe from Jehova Site to onsite detention** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.012 Concrete pipe, finished
3.7					**Direct Entry, + Entry to Reach Minimum**
6.0	816	Total			

Subcatchment OFF1: Offsite Drainage Area 1



Hydrograph for Subcatchment OFF1: Offsite Drainage Area 1

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.87	0.56	0.92
0.20	0.02	0.00	0.00	10.80	1.98	0.63	1.02
0.40	0.03	0.00	0.00	11.00	2.10	0.71	1.13
0.60	0.05	0.00	0.00	11.20	2.24	0.81	1.37
0.80	0.07	0.00	0.00	11.40	2.40	0.93	1.73
1.00	0.08	0.00	0.00	11.60	2.64	1.10	2.42
1.20	0.10	0.00	0.00	11.80	3.13	1.48	5.63
1.40	0.12	0.00	0.00	12.00	4.19	2.37	**12.33**
1.60	0.13	0.00	0.00	12.20	5.26	3.31	**11.55**
1.80	0.15	0.00	0.00	12.40	5.75	3.76	6.31
2.00	0.17	0.00	0.00	12.60	5.99	3.97	2.86
2.20	0.18	0.00	0.00	12.80	6.15	4.13	2.21
2.40	0.20	0.00	0.00	13.00	6.29	4.26	1.81
2.60	0.22	0.00	0.00	13.20	6.41	4.37	1.57
2.80	0.24	0.00	0.00	13.40	6.52	4.47	1.47
3.00	0.26	0.00	0.00	13.60	6.62	4.56	1.36
3.20	0.28	0.00	0.00	13.80	6.72	4.65	1.26
3.40	0.30	0.00	0.00	14.00	6.80	4.73	1.15
3.60	0.32	0.00	0.00	14.20	6.88	4.81	1.07
3.80	0.34	0.00	0.00	14.40	6.96	4.88	1.02
4.00	0.36	0.00	0.00	14.60	7.03	4.95	0.97
4.20	0.38	0.00	0.00	14.80	7.10	5.01	0.92
4.40	0.41	0.00	0.00	15.00	7.17	5.07	0.87
4.60	0.43	0.00	0.00	15.20	7.23	5.13	0.82
4.80	0.45	0.00	0.00	15.40	7.29	5.18	0.77
5.00	0.48	0.00	0.01	15.60	7.34	5.23	0.72
5.20	0.50	0.00	0.02	15.80	7.39	5.28	0.67
5.40	0.53	0.00	0.02	16.00	7.43	5.32	0.61
5.60	0.55	0.01	0.03	16.20	7.48	5.36	0.58
5.80	0.58	0.01	0.04	16.40	7.52	5.40	0.56
6.00	0.60	0.01	0.05	16.60	7.56	5.44	0.53
6.20	0.63	0.02	0.06	16.80	7.59	5.48	0.51
6.40	0.66	0.02	0.07	17.00	7.63	5.51	0.49
6.60	0.69	0.03	0.08	17.20	7.67	5.54	0.47
6.80	0.72	0.03	0.10	17.40	7.70	5.57	0.44
7.00	0.76	0.04	0.11	17.60	7.73	5.60	0.42
7.20	0.80	0.05	0.13	17.80	7.76	5.63	0.40
7.40	0.83	0.06	0.15	18.00	7.79	5.66	0.37
7.60	0.87	0.07	0.17	18.20	7.81	5.68	0.36
7.80	0.91	0.08	0.19	18.40	7.84	5.71	0.35
8.00	0.96	0.10	0.21	18.60	7.86	5.73	0.35
8.20	1.00	0.11	0.23	18.80	7.89	5.75	0.34
8.40	1.05	0.13	0.27	19.00	7.91	5.78	0.33
8.60	1.10	0.15	0.31	19.20	7.94	5.80	0.33
8.80	1.16	0.18	0.35	19.40	7.96	5.82	0.32
9.00	1.22	0.21	0.39	19.60	7.98	5.85	0.31
9.20	1.29	0.24	0.44	19.80	8.01	5.87	0.31
9.40	1.36	0.27	0.49	20.00	8.03	5.89	0.30
9.60	1.43	0.31	0.54	20.20	8.05	5.91	0.29
9.80	1.51	0.35	0.59	20.40	8.07	5.93	0.29
10.00	1.59	0.39	0.64	20.60	8.09	5.95	0.28
10.20	1.67	0.44	0.72	20.80	8.11	5.97	0.28
10.40	1.77	0.50	0.82	21.00	8.13	5.99	0.27

Hydrograph for Subcatchment OFF1: Offsite Drainage Area 1 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	8.15	6.01	0.27
21.40	8.17	6.02	0.26
21.60	8.19	6.04	0.26
21.80	8.21	6.06	0.25
22.00	8.23	6.08	0.25
22.20	8.25	6.09	0.24
22.40	8.26	6.11	0.24
22.60	8.28	6.13	0.23
22.80	8.30	6.14	0.23
23.00	8.31	6.16	0.22
23.20	8.33	6.17	0.22
23.40	8.35	6.19	0.21
23.60	8.36	6.20	0.21
23.80	8.38	6.22	0.20
24.00	**8.39**	**6.23**	0.20

Summary for Subcatchment OFF2: Offsite Drainage Area 2

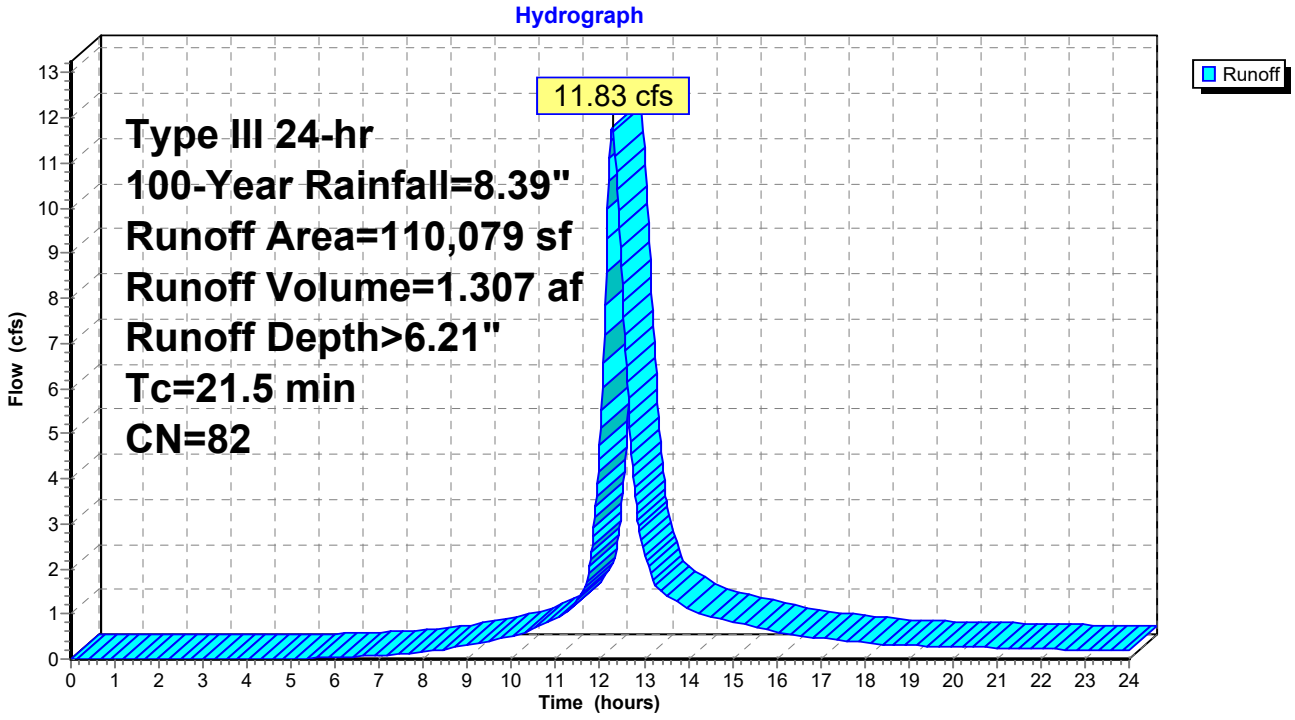
Runoff = 11.83 cfs @ 12.29 hrs, Volume= 1.307 af, Depth> 6.21"
Routed to Link S : POI South

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=8.39"

	Area (sf)	CN	Description
	100,377	80	>75% Grass cover, Good, HSG D
*	9,702	98	Impervious Surfaces
	110,079	82	Weighted Average
	100,377		91.19% Pervious Area
	9,702		8.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.5					**Direct Entry, Match DA 1B Watershed**

Subcatchment OFF2: Offsite Drainage Area 2



Hydrograph for Subcatchment OFF2: Offsite Drainage Area 2

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.87	0.56	0.71
0.20	0.02	0.00	0.00	10.80	1.98	0.63	0.80
0.40	0.03	0.00	0.00	11.00	2.10	0.71	0.89
0.60	0.05	0.00	0.00	11.20	2.24	0.81	1.00
0.80	0.07	0.00	0.00	11.40	2.40	0.93	1.20
1.00	0.08	0.00	0.00	11.60	2.64	1.10	1.49
1.20	0.10	0.00	0.00	11.80	3.13	1.48	2.37
1.40	0.12	0.00	0.00	12.00	4.19	2.37	4.75
1.60	0.13	0.00	0.00	12.20	5.26	3.31	**10.62**
1.80	0.15	0.00	0.00	12.40	5.75	3.76	**10.40**
2.00	0.17	0.00	0.00	12.60	5.99	3.97	6.48
2.20	0.18	0.00	0.00	12.80	6.15	4.13	3.60
2.40	0.20	0.00	0.00	13.00	6.29	4.26	2.34
2.60	0.22	0.00	0.00	13.20	6.41	4.37	1.76
2.80	0.24	0.00	0.00	13.40	6.52	4.47	1.48
3.00	0.26	0.00	0.00	13.60	6.62	4.56	1.33
3.20	0.28	0.00	0.00	13.80	6.72	4.65	1.23
3.40	0.30	0.00	0.00	14.00	6.80	4.73	1.13
3.60	0.32	0.00	0.00	14.20	6.88	4.81	1.04
3.80	0.34	0.00	0.00	14.40	6.96	4.88	0.97
4.00	0.36	0.00	0.00	14.60	7.03	4.95	0.92
4.20	0.38	0.00	0.00	14.80	7.10	5.01	0.87
4.40	0.41	0.00	0.00	15.00	7.17	5.07	0.83
4.60	0.43	0.00	0.00	15.20	7.23	5.13	0.78
4.80	0.45	0.00	0.00	15.40	7.29	5.18	0.74
5.00	0.48	0.00	0.00	15.60	7.34	5.23	0.69
5.20	0.50	0.00	0.01	15.80	7.39	5.28	0.65
5.40	0.53	0.00	0.01	16.00	7.43	5.32	0.60
5.60	0.55	0.01	0.02	16.20	7.48	5.36	0.56
5.80	0.58	0.01	0.03	16.40	7.52	5.40	0.52
6.00	0.60	0.01	0.03	16.60	7.56	5.44	0.50
6.20	0.63	0.02	0.04	16.80	7.59	5.48	0.48
6.40	0.66	0.02	0.05	17.00	7.63	5.51	0.46
6.60	0.69	0.03	0.06	17.20	7.67	5.54	0.44
6.80	0.72	0.03	0.07	17.40	7.70	5.57	0.42
7.00	0.76	0.04	0.08	17.60	7.73	5.60	0.40
7.20	0.80	0.05	0.10	17.80	7.76	5.63	0.38
7.40	0.83	0.06	0.11	18.00	7.79	5.66	0.36
7.60	0.87	0.07	0.13	18.20	7.81	5.68	0.34
7.80	0.91	0.08	0.14	18.40	7.84	5.71	0.32
8.00	0.96	0.10	0.16	18.60	7.86	5.73	0.32
8.20	1.00	0.11	0.18	18.80	7.89	5.75	0.31
8.40	1.05	0.13	0.20	19.00	7.91	5.78	0.30
8.60	1.10	0.15	0.23	19.20	7.94	5.80	0.30
8.80	1.16	0.18	0.27	19.40	7.96	5.82	0.29
9.00	1.22	0.21	0.30	19.60	7.98	5.85	0.29
9.20	1.29	0.24	0.34	19.80	8.01	5.87	0.28
9.40	1.36	0.27	0.38	20.00	8.03	5.89	0.27
9.60	1.43	0.31	0.42	20.20	8.05	5.91	0.27
9.80	1.51	0.35	0.47	20.40	8.07	5.93	0.26
10.00	1.59	0.39	0.51	20.60	8.09	5.95	0.26
10.20	1.67	0.44	0.56	20.80	8.11	5.97	0.25
10.40	1.77	0.50	0.63	21.00	8.13	5.99	0.25

Hydrograph for Subcatchment OFF2: Offsite Drainage Area 2 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	8.15	6.01	0.24
21.40	8.17	6.02	0.24
21.60	8.19	6.04	0.24
21.80	8.21	6.06	0.23
22.00	8.23	6.08	0.23
22.20	8.25	6.09	0.22
22.40	8.26	6.11	0.22
22.60	8.28	6.13	0.21
22.80	8.30	6.14	0.21
23.00	8.31	6.16	0.20
23.20	8.33	6.17	0.20
23.40	8.35	6.19	0.19
23.60	8.36	6.20	0.19
23.80	8.38	6.22	0.19
24.00	**8.39**	**6.23**	0.18

Summary for Subcatchment OFF3: Offsite Drainage Area 3

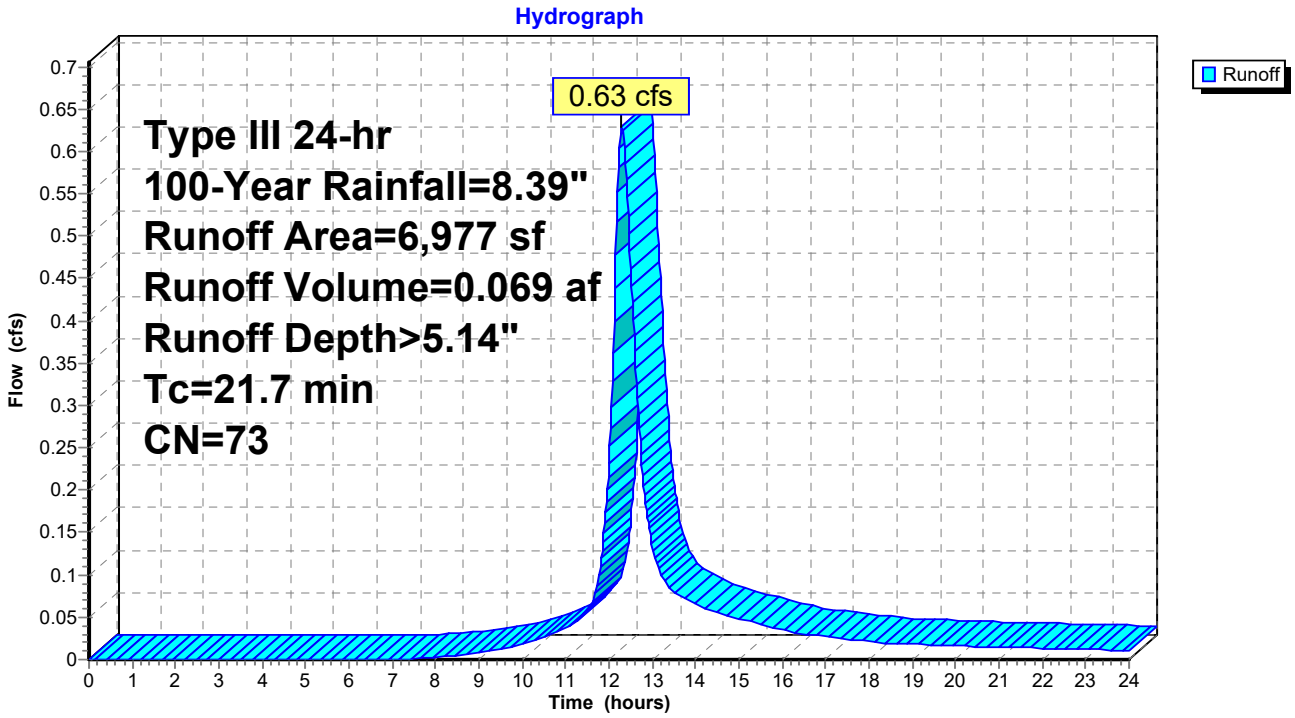
Runoff = 0.63 cfs @ 12.30 hrs, Volume= 0.069 af, Depth> 5.14"
Routed to Link N : POI North

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Type III 24-hr 100-Year Rainfall=8.39"

Area (sf)	CN	Description
2,502	61	>75% Grass cover, Good, HSG B
4,475	80	>75% Grass cover, Good, HSG D
6,977	73	Weighted Average
6,977		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.7					**Direct Entry, Match DA 3 Watershed**

Subcatchment OFF3: Offsite Drainage Area 3



Hydrograph for Subcatchment OFF3: Offsite Drainage Area 3

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)	Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
0.00	0.00	0.00	0.00	10.60	1.87	0.26	0.03
0.20	0.02	0.00	0.00	10.80	1.98	0.31	0.03
0.40	0.03	0.00	0.00	11.00	2.10	0.36	0.04
0.60	0.05	0.00	0.00	11.20	2.24	0.43	0.04
0.80	0.07	0.00	0.00	11.40	2.40	0.52	0.05
1.00	0.08	0.00	0.00	11.60	2.64	0.64	0.07
1.20	0.10	0.00	0.00	11.80	3.13	0.94	0.11
1.40	0.12	0.00	0.00	12.00	4.19	1.67	0.23
1.60	0.13	0.00	0.00	12.20	5.26	2.48	**0.55**
1.80	0.15	0.00	0.00	12.40	5.75	2.88	**0.57**
2.00	0.17	0.00	0.00	12.60	5.99	3.08	0.36
2.20	0.18	0.00	0.00	12.80	6.15	3.22	0.21
2.40	0.20	0.00	0.00	13.00	6.29	3.33	0.13
2.60	0.22	0.00	0.00	13.20	6.41	3.43	0.10
2.80	0.24	0.00	0.00	13.40	6.52	3.53	0.09
3.00	0.26	0.00	0.00	13.60	6.62	3.61	0.08
3.20	0.28	0.00	0.00	13.80	6.72	3.69	0.07
3.40	0.30	0.00	0.00	14.00	6.80	3.77	0.07
3.60	0.32	0.00	0.00	14.20	6.88	3.84	0.06
3.80	0.34	0.00	0.00	14.40	6.96	3.90	0.06
4.00	0.36	0.00	0.00	14.60	7.03	3.96	0.05
4.20	0.38	0.00	0.00	14.80	7.10	4.02	0.05
4.40	0.41	0.00	0.00	15.00	7.17	4.08	0.05
4.60	0.43	0.00	0.00	15.20	7.23	4.13	0.05
4.80	0.45	0.00	0.00	15.40	7.29	4.18	0.04
5.00	0.48	0.00	0.00	15.60	7.34	4.23	0.04
5.20	0.50	0.00	0.00	15.80	7.39	4.27	0.04
5.40	0.53	0.00	0.00	16.00	7.43	4.31	0.04
5.60	0.55	0.00	0.00	16.20	7.48	4.35	0.03
5.80	0.58	0.00	0.00	16.40	7.52	4.38	0.03
6.00	0.60	0.00	0.00	16.60	7.56	4.42	0.03
6.20	0.63	0.00	0.00	16.80	7.59	4.45	0.03
6.40	0.66	0.00	0.00	17.00	7.63	4.48	0.03
6.60	0.69	0.00	0.00	17.20	7.67	4.51	0.03
6.80	0.72	0.00	0.00	17.40	7.70	4.54	0.02
7.00	0.76	0.00	0.00	17.60	7.73	4.57	0.02
7.20	0.80	0.00	0.00	17.80	7.76	4.60	0.02
7.40	0.83	0.00	0.00	18.00	7.79	4.62	0.02
7.60	0.87	0.00	0.00	18.20	7.81	4.64	0.02
7.80	0.91	0.01	0.00	18.40	7.84	4.67	0.02
8.00	0.96	0.01	0.00	18.60	7.86	4.69	0.02
8.20	1.00	0.02	0.00	18.80	7.89	4.71	0.02
8.40	1.05	0.02	0.00	19.00	7.91	4.73	0.02
8.60	1.10	0.03	0.01	19.20	7.94	4.75	0.02
8.80	1.16	0.04	0.01	19.40	7.96	4.78	0.02
9.00	1.22	0.06	0.01	19.60	7.98	4.80	0.02
9.20	1.29	0.07	0.01	19.80	8.01	4.82	0.02
9.40	1.36	0.09	0.01	20.00	8.03	4.84	0.02
9.60	1.43	0.11	0.01	20.20	8.05	4.86	0.02
9.80	1.51	0.13	0.02	20.40	8.07	4.87	0.02
10.00	1.59	0.16	0.02	20.60	8.09	4.89	0.02
10.20	1.67	0.19	0.02	20.80	8.11	4.91	0.02
10.40	1.77	0.22	0.02	21.00	8.13	4.93	0.01

Hydrograph for Subcatchment OFF3: Offsite Drainage Area 3 (continued)

Time (hours)	Precip. (inches)	Excess (inches)	Runoff (cfs)
21.20	8.15	4.95	0.01
21.40	8.17	4.96	0.01
21.60	8.19	4.98	0.01
21.80	8.21	5.00	0.01
22.00	8.23	5.01	0.01
22.20	8.25	5.03	0.01
22.40	8.26	5.04	0.01
22.60	8.28	5.06	0.01
22.80	8.30	5.07	0.01
23.00	8.31	5.09	0.01
23.20	8.33	5.10	0.01
23.40	8.35	5.12	0.01
23.60	8.36	5.13	0.01
23.80	8.38	5.14	0.01
24.00	**8.39**	**5.16**	0.01

Summary for Pond BIO: BioRetention 1 (South)

Inflow Area = 4.529 ac, 82.25% Impervious, Inflow Depth > 3.46" for 100-Year event
Inflow = 6.55 cfs @ 12.09 hrs, Volume= 1.304 af
Outflow = 4.15 cfs @ 12.20 hrs, Volume= 1.004 af, Atten= 37%, Lag= 6.6 min
Primary = 4.15 cfs @ 12.20 hrs, Volume= 1.004 af
Routed to Link S : POI South

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 299.88' @ 12.20 hrs Surf.Area= 20,319 sf Storage= 16,825 cf

Plug-Flow detention time= 235.2 min calculated for 1.004 af (77% of inflow)
Center-of-Mass det. time= 109.9 min (883.3 - 773.4)

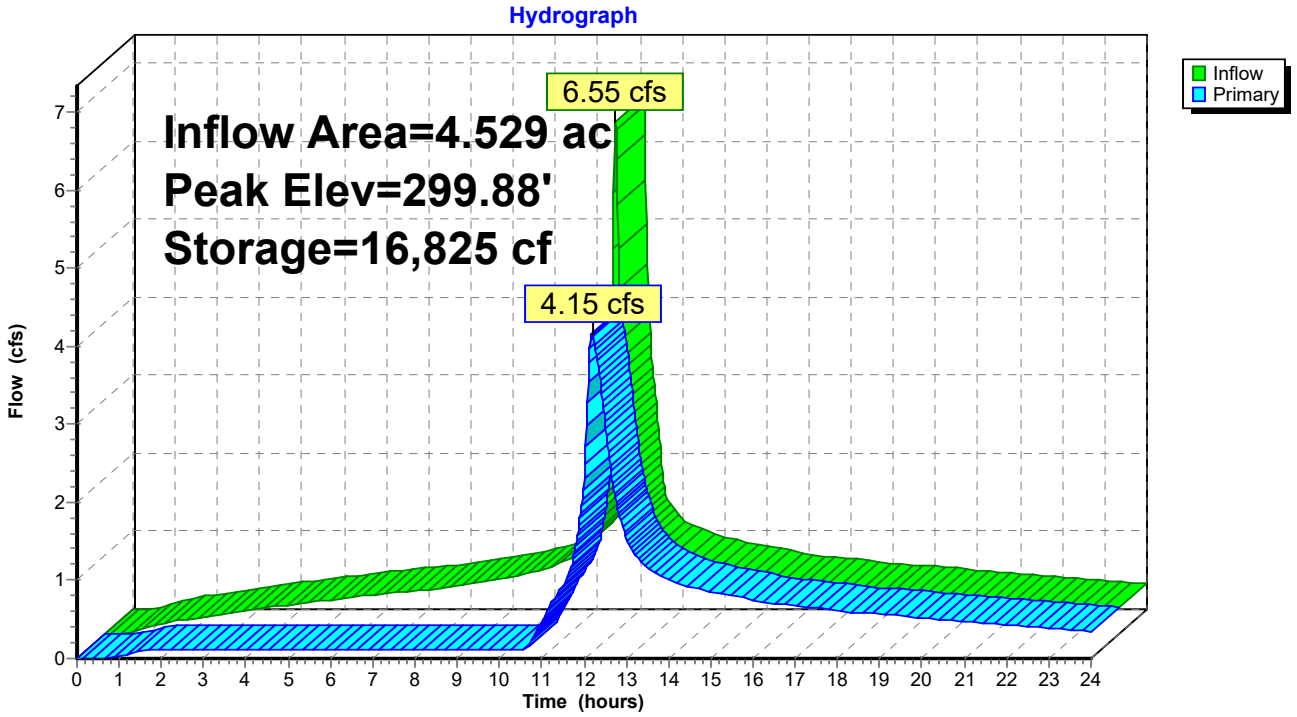
Volume	Invert	Avail.Storage	Storage Description
#1	299.00'	19,296 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
299.00	17,947	0	0
300.00	20,644	19,296	19,296

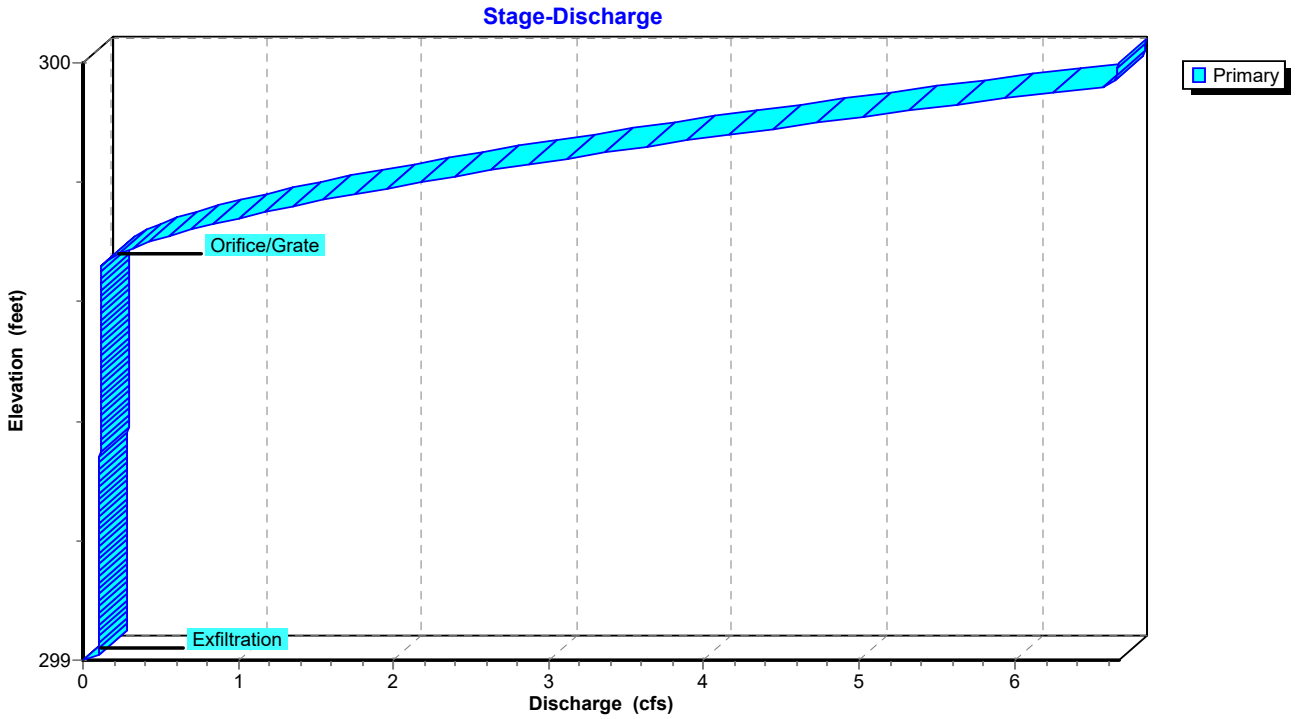
Device	Routing	Invert	Outlet Devices
#1	Primary	295.50'	**12.0" Round Culvert** L= 61.0' Box, 0° wingwalls, square crown edge, Ke= 0.700 Inlet / Outlet Invert= 295.50' / 293.25' S= 0.0369 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Device 1	299.66'	**24.0" x 48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	299.00'	**0.250 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 102.00'

Primary OutFlow Max=4.15 cfs @ 12.20 hrs HW=299.88' (Free Discharge)
└**1=Culvert** (Passes 4.15 cfs of 6.57 cfs potential flow)
  ├**2=Orifice/Grate** (Weir Controls 4.03 cfs @ 1.53 fps)
  └**3=Exfiltration** (Controls 0.12 cfs)

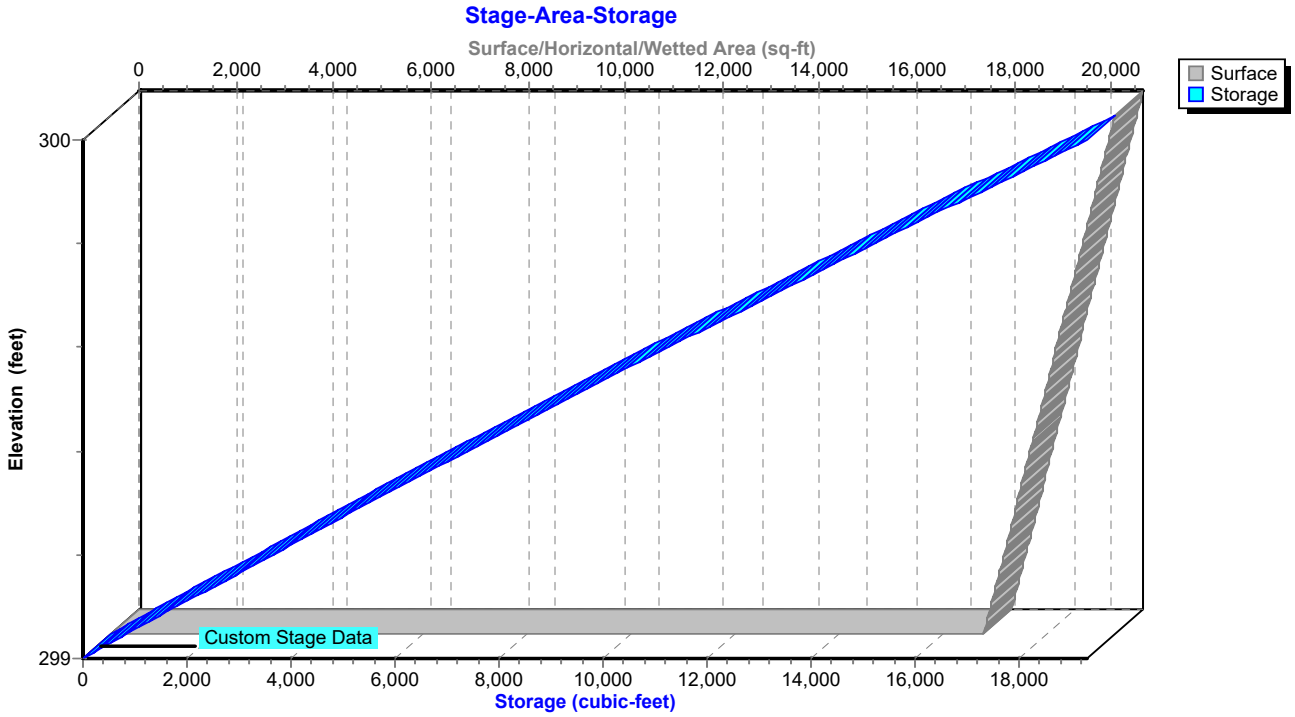
Pond BIO: BioRetention 1 (South)



Pond BIO: BioRetention 1 (South)



Pond BIO: BioRetention 1 (South)



Hydrograph for Pond BIO: BioRetention 1 (South)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	299.00	0.00
0.20	0.00	0	299.00	0.00
0.40	0.00	0	299.00	0.00
0.60	0.01	1	299.00	0.00
0.80	0.05	19	299.00	0.01
1.00	0.09	54	299.00	0.03
1.20	0.12	97	299.01	0.06
1.40	0.14	141	299.01	0.08
1.60	0.16	183	299.01	0.10
1.80	0.18	231	299.01	0.10
2.00	0.19	290	299.02	0.10
2.20	0.21	359	299.02	0.10
2.40	0.23	441	299.02	0.10
2.60	0.24	535	299.03	0.10
2.80	0.26	641	299.04	0.10
3.00	0.28	759	299.04	0.10
3.20	0.29	887	299.05	0.10
3.40	0.31	1,027	299.06	0.10
3.60	0.32	1,177	299.07	0.10
3.80	0.33	1,337	299.07	0.11
4.00	0.35	1,507	299.08	0.11
4.20	0.36	1,687	299.09	0.11
4.40	0.37	1,876	299.10	0.11
4.60	0.39	2,074	299.11	0.11
4.80	0.40	2,282	299.13	0.11
5.00	0.41	2,498	299.14	0.11
5.20	0.43	2,723	299.15	0.11
5.40	0.44	2,957	299.16	0.11
5.60	0.45	3,201	299.18	0.11
5.80	0.47	3,454	299.19	0.11
6.00	0.48	3,717	299.20	0.11
6.20	0.49	3,988	299.22	0.11
6.40	0.50	4,268	299.23	0.11
6.60	0.51	4,558	299.25	0.11
6.80	0.53	4,854	299.27	0.11
7.00	0.54	5,158	299.28	0.11
7.20	0.55	5,469	299.30	0.11
7.40	0.56	5,788	299.32	0.11
7.60	0.57	6,113	299.33	0.11
7.80	0.58	6,445	299.35	0.11
8.00	0.59	6,784	299.37	0.11
8.20	0.60	7,131	299.39	0.11
8.40	0.62	7,490	299.41	0.11
8.60	0.64	7,862	299.42	0.11
8.80	0.66	8,248	299.44	0.11
9.00	0.67	8,646	299.47	0.11
9.20	0.69	9,058	299.49	0.11
9.40	0.71	9,483	299.51	0.11
9.60	0.73	9,922	299.53	0.11
9.80	0.75	10,376	299.55	0.11
10.00	0.77	10,844	299.58	0.11
10.20	0.80	11,328	299.60	0.11
10.40	0.84	11,836	299.63	0.11

Hydrograph for Pond BIO: BioRetention 1 (South) (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
10.60	0.87	12,370	299.66	0.11
10.80	0.91	12,892	299.68	0.26
11.00	0.95	13,299	299.70	0.48
11.20	1.03	13,592	299.72	0.67
11.40	1.15	13,830	299.73	0.85
11.60	1.38	14,041	299.74	1.02
11.80	2.33	14,499	299.76	1.43
12.00	**4.26**	15,335	299.81	2.30
12.20	**4.04**	**16,825**	**299.88**	**4.15**
12.40	2.53	16,313	299.85	3.47
12.60	1.50	15,565	299.82	2.56
12.80	1.30	14,973	299.79	1.91
13.00	1.16	14,623	299.77	1.55
13.20	1.08	14,390	299.76	1.33
13.40	1.04	14,245	299.75	1.20
13.60	1.00	14,149	299.75	1.12
13.80	0.96	14,077	299.74	1.05
14.00	0.93	14,018	299.74	1.00
14.20	0.90	13,966	299.74	0.96
14.40	0.88	13,925	299.74	0.93
14.60	0.86	13,892	299.73	0.90
14.80	0.84	13,863	299.73	0.88
15.00	0.82	13,835	299.73	0.85
15.20	0.80	13,808	299.73	0.83
15.40	0.78	13,781	299.73	0.81
15.60	0.75	13,754	299.73	0.79
15.80	0.73	13,725	299.73	0.77
16.00	0.71	13,697	299.72	0.75
16.20	0.69	13,668	299.72	0.73
16.40	0.68	13,645	299.72	0.71
16.60	0.67	13,626	299.72	0.70
16.80	0.66	13,609	299.72	0.68
17.00	0.65	13,592	299.72	0.67
17.20	0.64	13,576	299.72	0.66
17.40	0.63	13,559	299.72	0.65
17.60	0.61	13,542	299.72	0.64
17.80	0.60	13,525	299.72	0.63
18.00	0.59	13,507	299.71	0.61
18.20	0.58	13,488	299.71	0.60
18.40	0.57	13,474	299.71	0.59
18.60	0.57	13,462	299.71	0.58
18.80	0.56	13,452	299.71	0.57
19.00	0.55	13,443	299.71	0.57
19.20	0.54	13,431	299.71	0.56
19.40	0.53	13,418	299.71	0.55
19.60	0.52	13,403	299.71	0.54
19.80	0.51	13,387	299.71	0.53
20.00	0.50	13,371	299.71	0.52
20.20	0.49	13,354	299.71	0.51
20.40	0.48	13,338	299.71	0.50
20.60	0.47	13,323	299.71	0.49
20.80	0.46	13,309	299.70	0.48
21.00	0.45	13,294	299.70	0.47

Hydrograph for Pond BIO: BioRetention 1 (South) (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
21.20	0.45	13,281	299.70	0.46
21.40	0.44	13,267	299.70	0.46
21.60	0.43	13,253	299.70	0.45
21.80	0.42	13,239	299.70	0.44
22.00	0.41	13,226	299.70	0.43
22.20	0.40	13,212	299.70	0.42
22.40	0.39	13,198	299.70	0.41
22.60	0.39	13,183	299.70	0.41
22.80	0.38	13,168	299.70	0.40
23.00	0.37	13,153	299.70	0.39
23.20	0.36	13,138	299.70	0.38
23.40	0.35	13,123	299.69	0.37
23.60	0.34	13,108	299.69	0.36
23.80	0.33	13,092	299.69	0.36
24.00	0.33	13,077	299.69	0.35

Stage-Discharge for Pond BIO: BioRetention 1 (South)

Elevation (feet)	Primary (cfs)
299.00	0.00
299.10	0.11
299.20	0.11
299.30	0.11
299.40	0.11
299.50	0.11
299.60	0.11
299.70	0.43
299.80	2.17
299.90	4.73
300.00	**6.67**

Stage-Area-Storage for Pond BIO: BioRetention 1 (South)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
299.00	17,947	0
299.10	18,217	1,808
299.20	18,486	3,643
299.30	18,756	5,505
299.40	19,026	7,395
299.50	19,296	9,311
299.60	19,565	11,254
299.70	19,835	13,224
299.80	20,105	15,221
299.90	20,374	17,245
300.00	**20,644**	**19,296**

Summary for Pond DET1: MC-4500 StormTech DETENTION ONLY

[81] Warning: Exceeded Pond SPLIT by 2.65' @ 12.16 hrs

Inflow = 29.73 cfs @ 12.08 hrs, Volume= 1.638 af
Outflow = 26.76 cfs @ 12.12 hrs, Volume= 1.636 af, Atten= 10%, Lag= 2.3 min
Primary = 26.76 cfs @ 12.12 hrs, Volume= 1.636 af
Routed to Link S : POI South

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 307.13' @ 12.12 hrs Surf.Area= 0.089 ac Storage= 0.366 af

Plug-Flow detention time= 69.5 min calculated for 1.636 af (100% of inflow)
Center-of-Mass det. time= 69.1 min (796.1 - 727.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	300.93'	0.145 af	**37.58'W x 103.72'L x 6.75'H Field A** 0.604 af Overall - 0.241 af Embedded = 0.363 af x 40.0% Voids
#2A	301.68'	0.241 af	**ADS_StormTech MC-4500 +Cap** x 96 Inside #1 Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap 96 Chambers in 4 Rows Cap Storage= 35.7 cf x 2 x 4 rows = 285.6 cf
		0.386 af	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	300.93'	**4.0" Vert. Underdrain** C= 0.600 Limited to weir flow at low heads
#2	Primary	304.50'	**28.0" W x 21.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	307.18'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** 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=26.71 cfs @ 12.12 hrs HW=307.12' (Free Discharge)
- **1=Underdrain** (Orifice Controls 1.03 cfs @ 11.82 fps)
- **2=Orifice/Grate** (Orifice Controls 25.68 cfs @ 6.29 fps)
- **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond DET1: MC-4500 StormTech DETENTION ONLY - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-4500 +Cap (ADS StormTech® MC-4500 with cap, use MC-4500 b for new designs)
Effective Size= 90.4"W x 60.0"H => 26.46 sf x 4.03'L = 106.5 cf
Overall Size= 100.0"W x 60.0"H x 4.33'L with 0.31' Overlap
Cap Storage= 35.7 cf x 2 x 4 rows = 285.6 cf

100.0" Wide + 9.0" Spacing = 109.0" C-C Row Spacing

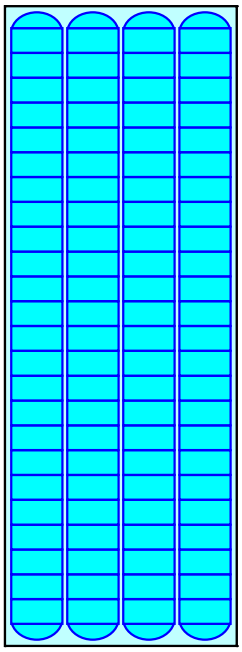
24 Chambers/Row x 4.02' Long +2.56' Cap Length x 2 = 101.72' Row Length +12.0" End Stone x 2 = 103.72' Base Length
4 Rows x 100.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 37.58' Base Width
9.0" Stone Base + 60.0" Chamber Height + 12.0" Stone Cover = 6.75' Field Height

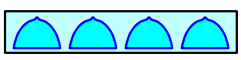
96 Chambers x 106.5 cf + 35.7 cf Cap Volume x 2 x 4 Rows = 10,508.7 cf Chamber Storage

26,311.6 cf Field - 10,508.7 cf Chambers = 15,802.9 cf Stone x 40.0% Voids = 6,321.2 cf Stone Storage

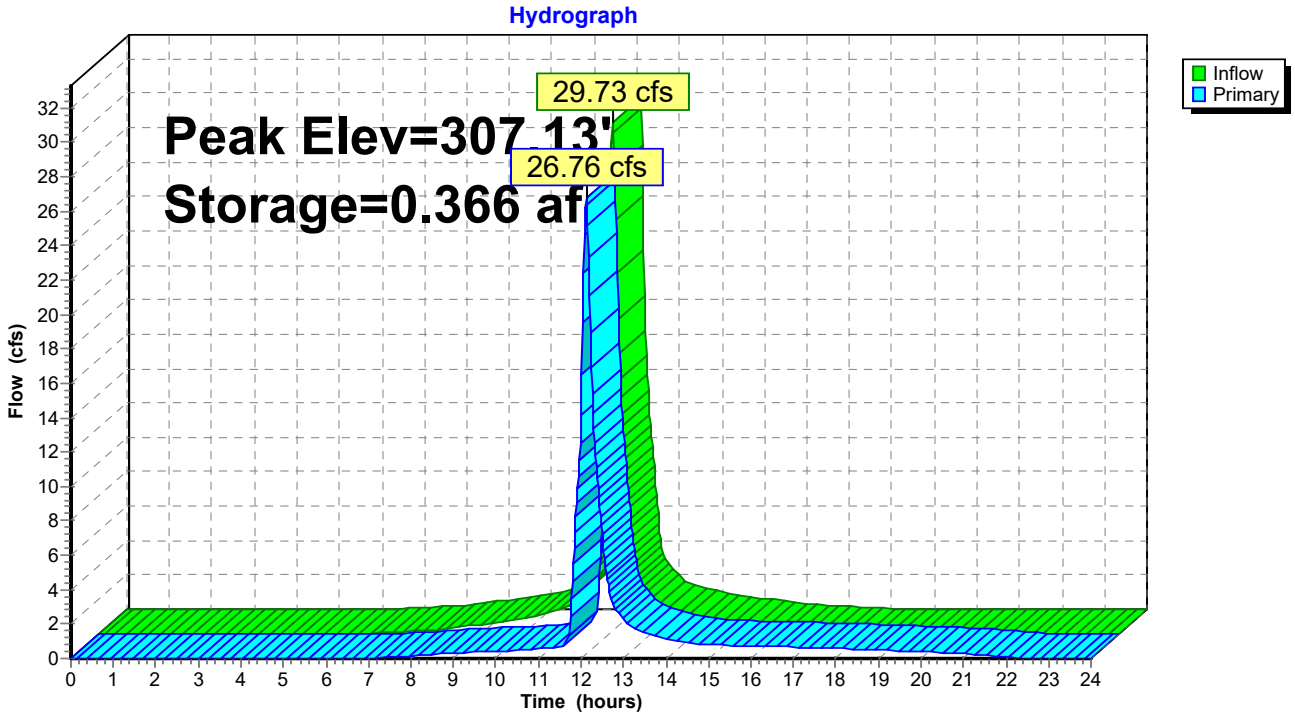
Chamber Storage + Stone Storage = 16,829.9 cf = 0.386 af
Overall Storage Efficiency = 64.0%
Overall System Size = 103.72' x 37.58' x 6.75'

96 Chambers
974.5 cy Field
585.3 cy Stone

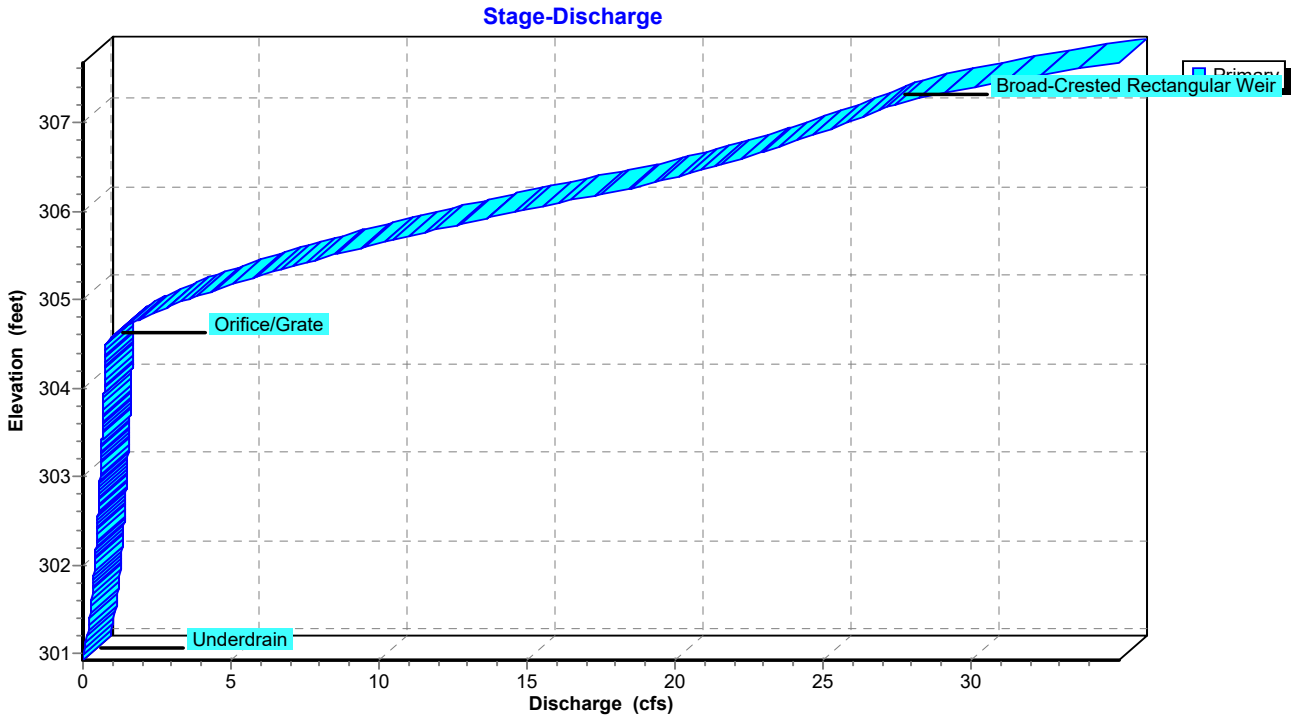




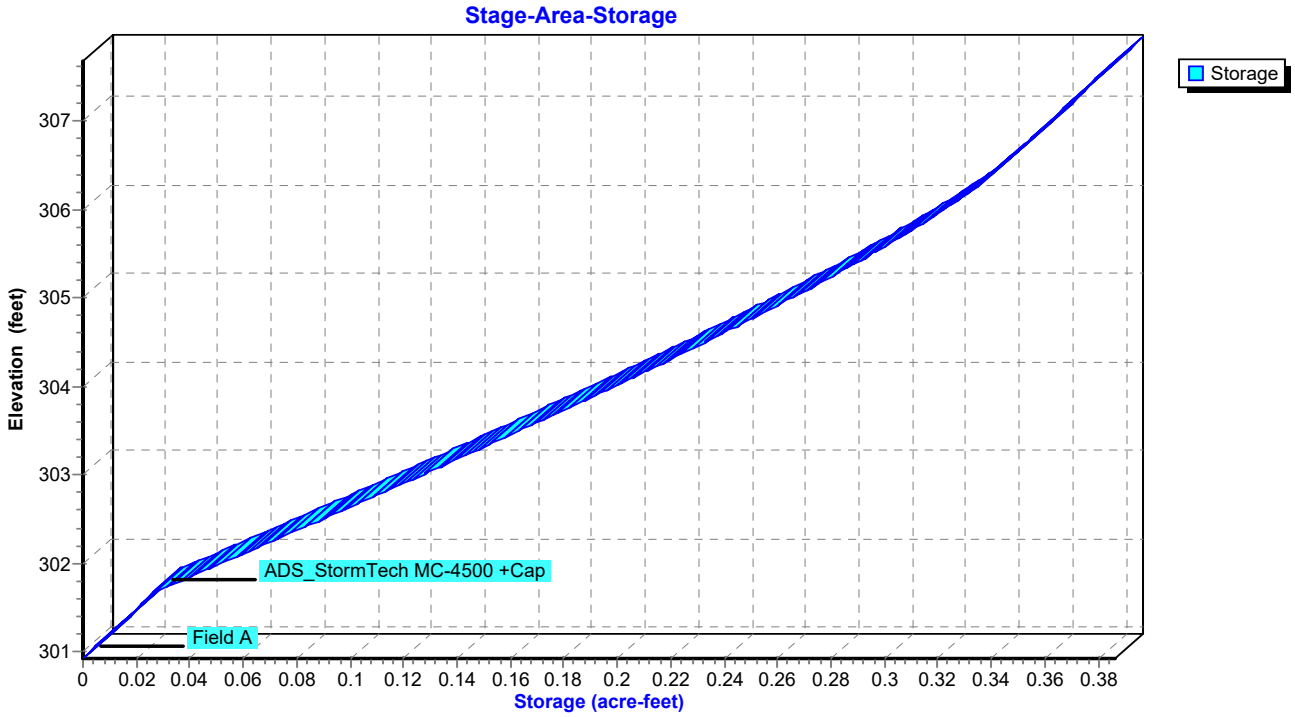
Pond DET1: MC-4500 StormTech DETENTION ONLY



Pond DET1: MC-4500 StormTech DETENTION ONLY



Pond DET1: MC-4500 StormTech DETENTION ONLY



Hydrograph for Pond DET1: MC-4500 StormTech DETENTION ONLY

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0.000	300.93	0.00
0.20	0.00	0.000	300.93	0.00
0.40	0.00	0.000	300.93	0.00
0.60	0.00	0.000	300.93	0.00
0.80	0.00	0.000	300.93	0.00
1.00	0.00	0.000	300.93	0.00
1.20	0.00	0.000	300.93	0.00
1.40	0.00	0.000	300.93	0.00
1.60	0.00	0.000	300.93	0.00
1.80	0.00	0.000	300.93	0.00
2.00	0.00	0.000	300.93	0.00
2.20	0.00	0.000	300.93	0.00
2.40	0.00	0.000	300.93	0.00
2.60	0.00	0.000	300.93	0.00
2.80	0.00	0.000	300.93	0.00
3.00	0.00	0.000	300.93	0.00
3.20	0.00	0.000	300.93	0.00
3.40	0.00	0.000	300.93	0.00
3.60	0.00	0.000	300.93	0.00
3.80	0.00	0.000	300.93	0.00
4.00	0.00	0.000	300.93	0.00
4.20	0.00	0.000	300.93	0.00
4.40	0.00	0.000	300.93	0.00
4.60	0.00	0.000	300.93	0.00
4.80	0.00	0.000	300.93	0.00
5.00	0.00	0.000	300.93	0.00
5.20	0.00	0.000	300.93	0.00
5.40	0.00	0.000	300.93	0.00
5.60	0.00	0.000	300.93	0.00
5.80	0.00	0.000	300.93	0.00
6.00	0.00	0.000	300.93	0.00
6.20	0.01	0.000	300.93	0.00
6.40	0.04	0.000	300.94	0.00
6.60	0.06	0.001	300.96	0.01
6.80	0.09	0.002	300.99	0.01
7.00	0.11	0.004	301.03	0.03
7.20	0.14	0.005	301.07	0.05
7.40	0.17	0.007	301.12	0.07
7.60	0.19	0.008	301.16	0.10
7.80	0.22	0.010	301.20	0.13
8.00	0.25	0.011	301.24	0.16
8.20	0.30	0.013	301.29	0.18
8.40	0.36	0.015	301.35	0.21
8.60	0.43	0.018	301.43	0.24
8.80	0.49	0.021	301.52	0.27
9.00	0.56	0.025	301.63	0.31
9.20	0.62	0.029	301.71	0.33
9.40	0.69	0.035	301.78	0.35
9.60	0.76	0.041	301.86	0.37
9.80	0.83	0.048	301.95	0.39
10.00	0.89	0.055	302.05	0.41
10.20	1.00	0.064	302.16	0.43
10.40	1.14	0.074	302.30	0.46

Hydrograph for Pond DET1: MC-4500 StormTech DETENTION ONLY (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
10.60	1.29	0.086	302.46	0.49
10.80	1.43	0.100	302.65	0.52
11.00	1.57	0.116	302.86	0.56
11.20	1.94	0.135	303.11	0.60
11.40	2.49	0.162	303.48	0.65
11.60	3.57	0.197	303.98	0.71
11.80	8.69	0.272	305.11	4.44
12.00	**18.54**	**0.320**	**305.96**	**14.18**
12.20	**16.21**	**0.343**	**306.49**	**21.11**
12.40	8.32	0.303	305.63	9.92
12.60	3.37	0.275	305.16	4.91
12.80	2.47	0.261	304.93	2.95
13.00	1.91	0.254	304.83	2.25
13.20	1.58	0.250	304.76	1.79
13.40	1.44	0.247	304.72	1.56
13.60	1.29	0.245	304.69	1.41
13.80	1.15	0.243	304.66	1.27
14.00	1.01	0.241	304.63	1.14
14.20	0.91	0.239	304.60	1.01
14.40	0.84	0.238	304.57	0.93
14.60	0.77	0.236	304.55	0.87
14.80	0.71	0.234	304.52	0.81
15.00	0.64	0.232	304.50	0.77
15.20	0.58	0.230	304.45	0.77
15.40	0.51	0.226	304.40	0.76
15.60	0.44	0.221	304.33	0.76
15.80	0.38	0.216	304.25	0.75
16.00	0.32	0.209	304.15	0.73
16.20	0.27	0.202	304.05	0.72
16.40	0.24	0.194	303.94	0.71
16.60	0.22	0.187	303.83	0.69
16.80	0.19	0.179	303.72	0.68
17.00	0.16	0.170	303.60	0.66
17.20	0.14	0.162	303.48	0.65
17.40	0.11	0.154	303.37	0.63
17.60	0.09	0.145	303.25	0.62
17.80	0.06	0.136	303.13	0.60
18.00	0.04	0.127	303.00	0.58
18.20	0.02	0.118	302.88	0.56
18.40	0.02	0.109	302.77	0.54
18.60	0.01	0.101	302.65	0.52
18.80	0.00	0.092	302.54	0.50
19.00	0.00	0.084	302.43	0.49
19.20	0.00	0.076	302.33	0.47
19.40	0.00	0.069	302.23	0.45
19.60	0.00	0.062	302.13	0.43
19.80	0.00	0.055	302.04	0.41
20.00	0.00	0.048	301.96	0.39
20.20	0.00	0.042	301.87	0.37
20.40	0.00	0.036	301.80	0.35
20.60	0.00	0.030	301.72	0.33
20.80	0.00	0.025	301.62	0.31
21.00	0.00	0.020	301.49	0.26

Hydrograph for Pond DET1: MC-4500 StormTech DETENTION ONLY (continued)

Time (hours)	Inflow (cfs)	Storage (acre-feet)	Elevation (feet)	Primary (cfs)
21.20	0.00	0.016	301.38	0.22
21.40	0.00	0.013	301.29	0.18
21.60	0.00	0.010	301.21	0.14
21.80	0.00	0.008	301.16	0.10
22.00	0.00	0.007	301.12	0.07
22.20	0.00	0.006	301.09	0.06
22.40	0.00	0.005	301.06	0.04
22.60	0.00	0.004	301.05	0.03
22.80	0.00	0.004	301.03	0.03
23.00	0.00	0.003	301.02	0.02
23.20	0.00	0.003	301.01	0.02
23.40	0.00	0.003	301.01	0.01
23.60	0.00	0.002	301.00	0.01
23.80	0.00	0.002	300.99	0.01
24.00	0.00	0.002	300.99	0.01

Stage-Discharge for Pond DET1: MC-4500 StormTech DETENTION ONLY

Elevation (feet)	Primary (cfs)
300.93	0.00
301.03	0.02
301.13	0.08
301.23	0.15
301.33	0.20
301.43	0.24
301.53	0.28
301.63	0.31
301.73	0.33
301.83	0.36
301.93	0.38
302.03	0.41
302.13	0.43
302.23	0.45
302.33	0.47
302.43	0.49
302.53	0.50
302.63	0.52
302.73	0.54
302.83	0.55
302.93	0.57
303.03	0.58
303.13	0.60
303.23	0.61
303.33	0.63
303.43	0.64
303.53	0.66
303.63	0.67
303.73	0.68
303.83	0.69
303.93	0.71
304.03	0.72
304.13	0.73
304.23	0.74
304.33	0.76
304.43	0.77
304.53	0.82
304.63	1.14
304.73	1.63
304.83	2.23
304.93	2.93
305.03	3.72
305.13	4.59
305.23	5.53
305.33	6.53
305.43	7.59
305.53	8.71
305.63	9.89
305.73	11.12
305.83	12.40
305.93	13.73
306.03	15.11
306.13	16.53
306.23	18.00
306.33	19.33
306.43	20.48
306.53	21.53
306.63	22.52
306.73	23.45
306.83	24.34
306.93	25.19
307.03	26.01
307.13	26.79
307.23	27.68
307.33	28.95
307.43	30.44
307.53	32.12
307.63	**33.98**

Stage-Area-Storage for Pond DET1: MC-4500 StormTech DETENTION ONLY

Elevation (feet)	Storage (acre-feet)
300.93	0.000
301.03	0.004
301.13	0.007
301.23	0.011
301.33	0.014
301.43	0.018
301.53	0.021
301.63	0.025
301.73	0.031
301.83	0.038
301.93	0.046
302.03	0.054
302.13	0.061
302.23	0.069
302.33	0.077
302.43	0.084
302.53	0.092
302.63	0.099
302.73	0.107
302.83	0.114
302.93	0.122
303.03	0.129
303.13	0.136
303.23	0.144
303.33	0.151
303.43	0.158
303.53	0.165
303.63	0.173
303.73	0.180
303.83	0.187
303.93	0.194
304.03	0.201
304.13	0.208
304.23	0.215
304.33	0.221
304.43	0.228
304.53	0.235
304.63	0.241
304.73	0.248
304.83	0.254
304.93	0.261
305.03	0.267
305.13	0.273
305.23	0.279
305.33	0.285
305.43	0.291
305.53	0.297
305.63	0.303
305.73	0.308
305.83	0.314
305.93	0.319
306.03	0.324
306.13	0.329
306.23	0.333
306.33	0.337
306.43	0.341
306.53	0.345
306.63	0.349
306.73	0.352
306.83	0.356
306.93	0.360
307.03	0.363
307.13	0.367
307.23	0.370
307.33	0.374
307.43	0.377
307.53	0.381
307.63	**0.385**

Summary for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Inflow Area = 3.389 ac, 48.48% Impervious, Inflow Depth > 5.82" for 100-Year event
Inflow = 21.01 cfs @ 12.09 hrs, Volume= 1.644 af
Outflow = 11.39 cfs @ 12.24 hrs, Volume= 1.541 af, Atten= 46%, Lag= 9.2 min
Primary = 11.39 cfs @ 12.24 hrs, Volume= 1.541 af
Routed to Link S : POI South

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 300.47' @ 12.24 hrs Surf.Area= 6,177 sf Storage= 19,730 cf

Plug-Flow detention time= 96.6 min calculated for 1.541 af (94% of inflow)
Center-of-Mass det. time= 62.9 min (864.6 - 801.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	295.50'	8,615 cf	**29.92'W x 206.46'L x 5.50'H Field A** 33,971 cf Overall - 12,434 cf Embedded = 21,537 cf x 40.0% Voids
#2A	296.25'	12,434 cf	**ADS_StormTech MC-3500 d +Cap** x 112 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 112 Chambers in 4 Rows Cap Storage= 14.9 cf x 2 x 4 rows = 119.2 cf
		21,049 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	295.50'	**4.0" Vert. Underdrain** C= 0.600 Limited to weir flow at low heads
#2	Primary	297.60'	**17.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	300.50'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** 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=11.39 cfs @ 12.24 hrs HW=300.47' (Free Discharge)
- **1=Underdrain** (Orifice Controls 0.92 cfs @ 10.55 fps)
- **2=Orifice/Grate** (Orifice Controls 10.47 cfs @ 7.39 fps)
- **3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 4 rows = 119.2 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

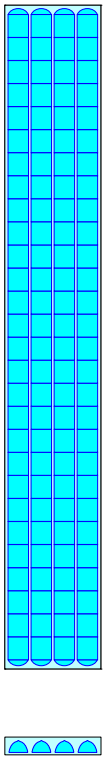
28 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 204.46' Row Length +12.0" End Stone x 2 = 206.46' Base Length
4 Rows x 77.0" Wide + 9.0" Spacing x 3 + 12.0" Side Stone x 2 = 29.92' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

112 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 4 Rows = 12,433.8 cf Chamber Storage

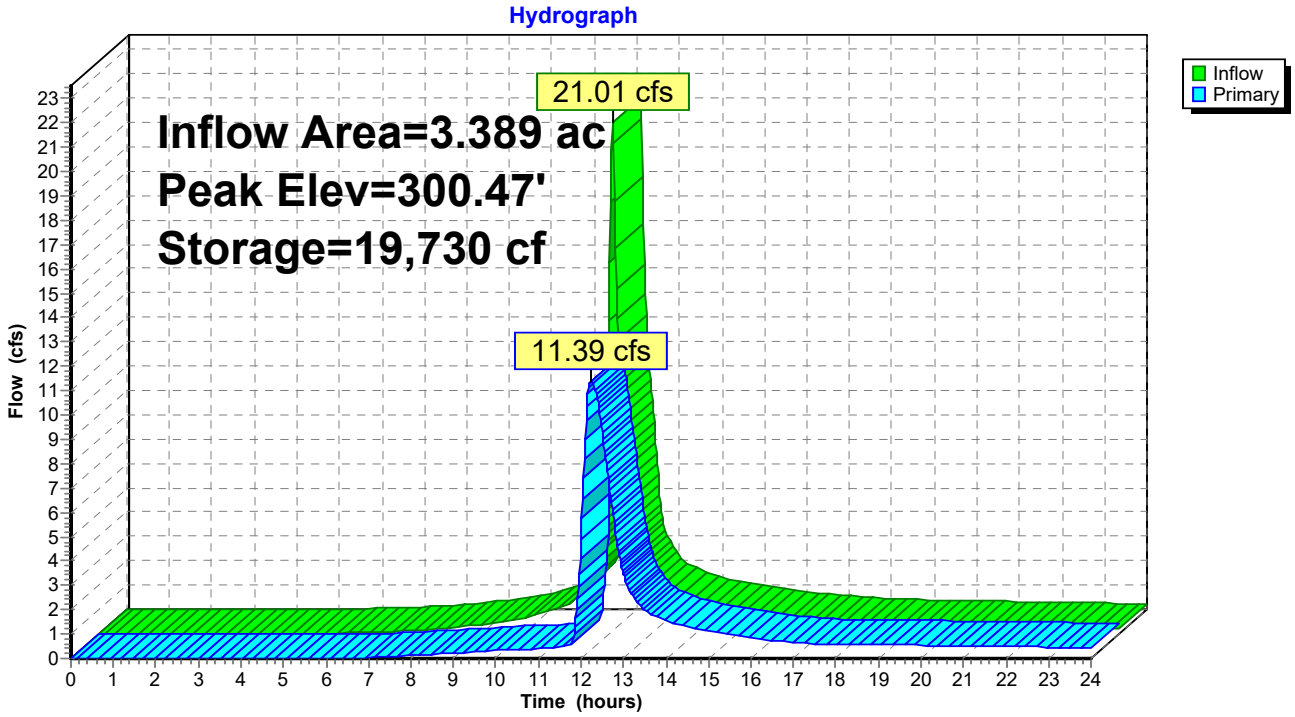
33,971.3 cf Field - 12,433.8 cf Chambers = 21,537.5 cf Stone x 40.0% Voids = 8,615.0 cf Stone Storage

Chamber Storage + Stone Storage = 21,048.8 cf = 0.483 af
Overall Storage Efficiency = 62.0%
Overall System Size = 206.46' x 29.92' x 5.50'

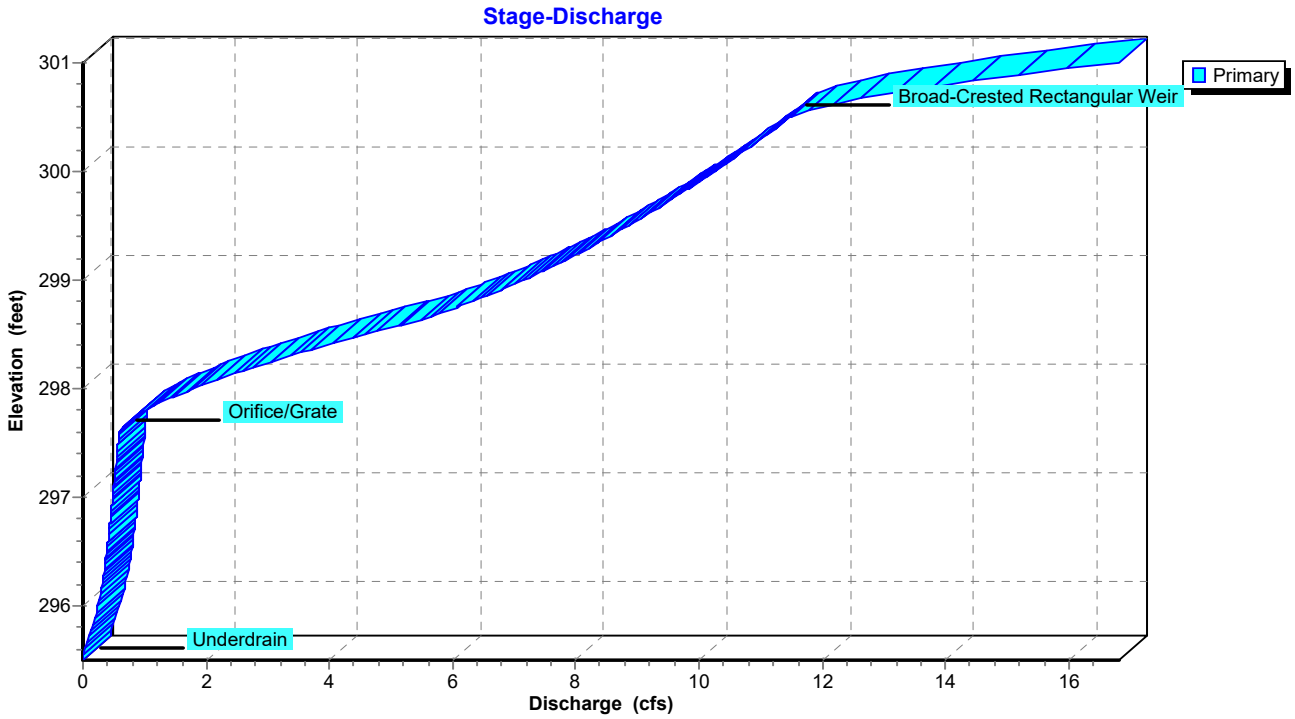
112 Chambers
1,258.2 cy Field
797.7 cy Stone



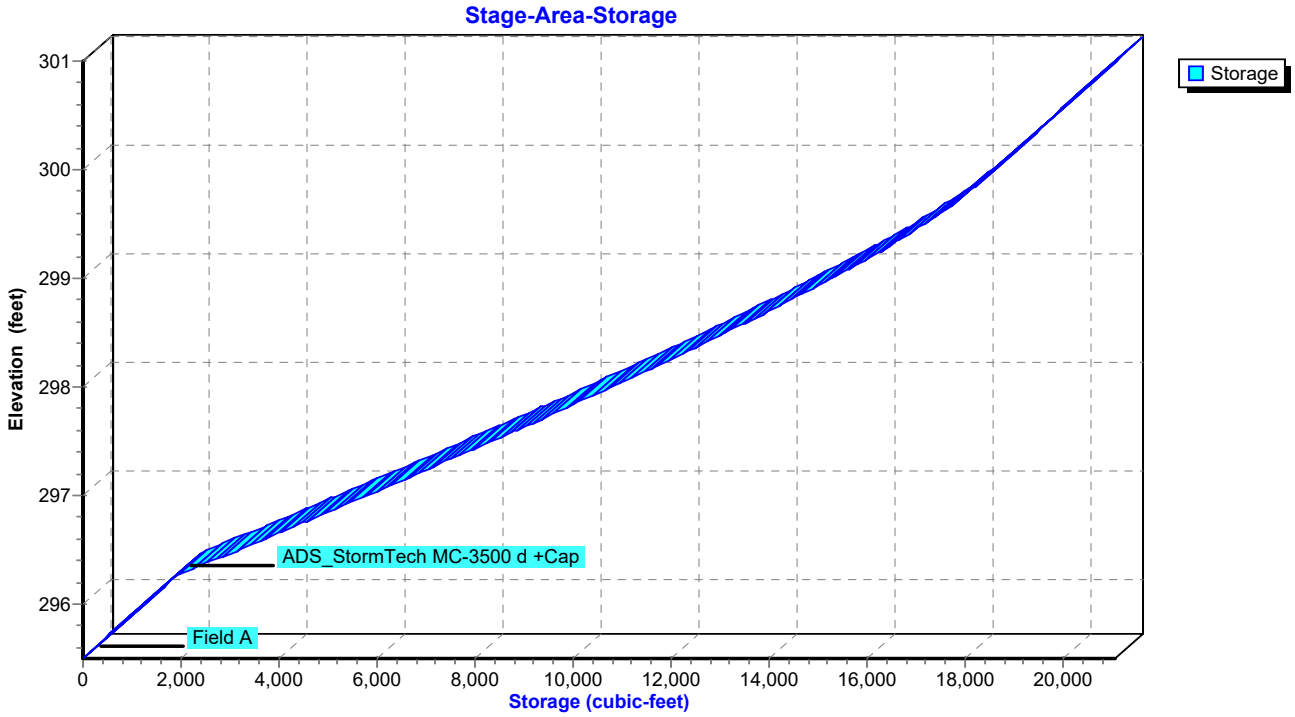
Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY



Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY



Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY



Hydrograph for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
0.00	0.00	0	295.50	0.00
0.20	0.00	0	295.50	0.00
0.40	0.00	0	295.50	0.00
0.60	0.00	0	295.50	0.00
0.80	0.00	0	295.50	0.00
1.00	0.00	0	295.50	0.00
1.20	0.00	0	295.50	0.00
1.40	0.00	0	295.50	0.00
1.60	0.00	0	295.50	0.00
1.80	0.00	0	295.50	0.00
2.00	0.00	0	295.50	0.00
2.20	0.00	0	295.50	0.00
2.40	0.00	0	295.50	0.00
2.60	0.00	0	295.50	0.00
2.80	0.00	0	295.50	0.00
3.00	0.00	0	295.50	0.00
3.20	0.00	0	295.50	0.00
3.40	0.00	0	295.50	0.00
3.60	0.00	0	295.50	0.00
3.80	0.00	0	295.50	0.00
4.00	0.00	0	295.50	0.00
4.20	0.00	0	295.50	0.00
4.40	0.00	0	295.50	0.00
4.60	0.00	0	295.50	0.00
4.80	0.00	0	295.50	0.00
5.00	0.01	3	295.50	0.00
5.20	0.02	11	295.50	0.00
5.40	0.02	25	295.51	0.00
5.60	0.03	43	295.52	0.00
5.80	0.04	67	295.53	0.00
6.00	0.05	95	295.54	0.01
6.20	0.06	128	295.55	0.01
6.40	0.07	168	295.57	0.01
6.60	0.08	211	295.59	0.02
6.80	0.10	260	295.61	0.03
7.00	0.11	313	295.63	0.04
7.20	0.13	368	295.65	0.05
7.40	0.15	426	295.67	0.06
7.60	0.17	486	295.70	0.08
7.80	0.19	548	295.72	0.10
8.00	0.21	611	295.75	0.12
8.20	0.23	677	295.77	0.14
8.40	0.27	752	295.80	0.16
8.60	0.31	840	295.84	0.18
8.80	0.35	943	295.88	0.19
9.00	0.39	1,061	295.93	0.22
9.20	0.44	1,197	295.98	0.24
9.40	0.49	1,350	296.05	0.26
9.60	0.54	1,524	296.12	0.28
9.80	0.60	1,721	296.20	0.31
10.00	0.66	1,943	296.27	0.33
10.20	0.74	2,203	296.32	0.34
10.40	0.84	2,521	296.38	0.35

Hydrograph for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
10.60	0.95	2,903	296.45	0.37
10.80	1.06	3,353	296.53	0.39
11.00	1.19	3,874	296.63	0.41
11.20	1.44	4,495	296.75	0.44
11.40	1.82	5,338	296.91	0.47
11.60	2.54	6,470	297.13	0.51
11.80	5.85	9,018	297.64	0.63
12.00	**12.85**	13,306	298.54	4.88
12.20	**12.95**	**19,621**	**300.42**	**11.29**
12.40	7.72	**18,810**	**300.09**	**10.49**
12.60	3.77	16,169	299.23	7.97
12.80	2.73	13,643	298.62	5.38
13.00	2.16	12,305	298.32	3.48
13.20	1.84	11,571	298.17	2.60
13.40	1.70	11,151	298.08	2.15
13.60	1.58	10,884	298.02	1.89
13.80	1.46	10,686	297.98	1.70
14.00	1.33	10,519	297.94	1.56
14.20	1.24	10,371	297.91	1.43
14.40	1.18	10,250	297.89	1.33
14.60	1.12	10,150	297.87	1.26
14.80	1.07	10,059	297.85	1.19
15.00	1.01	9,973	297.83	1.13
15.20	0.95	9,889	297.81	1.07
15.40	0.89	9,803	297.80	1.01
15.60	0.83	9,714	297.78	0.96
15.80	0.77	9,624	297.76	0.90
16.00	0.71	9,530	297.74	0.85
16.20	0.67	9,434	297.72	0.80
16.40	0.64	9,349	297.70	0.75
16.60	0.62	9,273	297.69	0.72
16.80	0.59	9,201	297.67	0.69
17.00	0.57	9,132	297.66	0.66
17.20	0.54	9,063	297.65	0.64
17.40	0.51	8,990	297.63	0.62
17.60	0.49	8,911	297.62	0.60
17.80	0.46	8,826	297.60	0.58
18.00	0.44	8,730	297.58	0.58
18.20	0.42	8,620	297.56	0.58
18.40	0.41	8,503	297.53	0.57
18.60	0.40	8,383	297.51	0.57
18.80	0.39	8,261	297.49	0.57
19.00	0.39	8,135	297.46	0.56
19.20	0.38	8,007	297.43	0.56
19.40	0.37	7,876	297.41	0.55
19.60	0.36	7,742	297.38	0.55
19.80	0.36	7,606	297.36	0.55
20.00	0.35	7,467	297.33	0.54
20.20	0.34	7,327	297.30	0.54
20.40	0.33	7,185	297.27	0.53
20.60	0.33	7,042	297.24	0.53
20.80	0.32	6,898	297.22	0.52
21.00	0.32	6,754	297.19	0.52

Hydrograph for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Primary (cfs)
21.20	0.31	6,609	297.16	0.51
21.40	0.31	6,463	297.13	0.51
21.60	0.30	6,317	297.10	0.50
21.80	0.29	6,170	297.07	0.50
22.00	0.29	6,022	297.05	0.49
22.20	0.28	5,874	297.02	0.49
22.40	0.28	5,725	296.99	0.48
22.60	0.27	5,576	296.96	0.48
22.80	0.26	5,427	296.93	0.47
23.00	0.26	5,277	296.90	0.47
23.20	0.25	5,127	296.87	0.46
23.40	0.25	4,976	296.84	0.46
23.60	0.24	4,826	296.81	0.45
23.80	0.23	4,675	296.79	0.44
24.00	0.23	4,524	296.76	0.44

Stage-Discharge for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Elevation (feet)	Primary (cfs)
295.50	0.00
295.60	0.02
295.70	0.08
295.80	0.15
295.90	0.20
296.00	0.24
296.10	0.28
296.20	0.31
296.30	0.33
296.40	0.36
296.50	0.38
296.60	0.41
296.70	0.43
296.80	0.45
296.90	0.47
297.00	0.49
297.10	0.50
297.20	0.52
297.30	0.54
297.40	0.55
297.50	0.57
297.60	0.58
297.70	0.74
297.80	1.02
297.90	1.38
298.00	1.79
298.10	2.26
298.20	2.78
298.30	3.35
298.40	3.95
298.50	4.59
298.60	5.27
298.70	5.83
298.80	6.31
298.90	6.75
299.00	7.15
299.10	7.53
299.20	7.88
299.30	8.22
299.40	8.54
299.50	8.85
299.60	9.15
299.70	9.44
299.80	9.72
299.90	9.99
300.00	10.25
300.10	10.51
300.20	10.76
300.30	11.00
300.40	11.24
300.50	11.47
300.60	12.05
300.70	12.93
300.80	14.02
300.90	15.31
301.00	**16.81**

Stage-Area-Storage for Pond DET2: MC-3500 Stormtech (Offsite Mitigation) DETENTION ONLY

Elevation (feet)	Storage (cubic-feet)
295.50	0
295.60	247
295.70	494
295.80	741
295.90	988
296.00	1,235
296.10	1,482
296.20	1,729
296.30	2,119
296.40	2,650
296.50	3,179
296.60	3,706
296.70	4,230
296.80	4,752
296.90	5,272
297.00	5,790
297.10	6,305
297.20	6,817
297.30	7,326
297.40	7,831
297.50	8,334
297.60	8,833
297.70	9,327
297.80	9,818
297.90	10,304
298.00	10,786
298.10	11,262
298.20	11,734
298.30	12,200
298.40	12,660
298.50	13,113
298.60	13,560
298.70	13,999
298.80	14,431
298.90	14,854
299.00	15,268
299.10	15,672
299.20	16,065
299.30	16,445
299.40	16,811
299.50	17,161
299.60	17,486
299.70	17,784
299.80	18,060
299.90	18,325
300.00	18,578
300.10	18,825
300.20	19,072
300.30	19,319
300.40	19,566
300.50	19,813
300.60	20,061
300.70	20,308
300.80	20,555
300.90	20,802
301.00	**21,049**

Summary for Pond INF1: MC-3500 StormTech INFILTRATION 1

Inflow Area = 4.358 ac, 96.98% Impervious, Inflow Depth > 8.02" for 100-Year event
Inflow = 35.76 cfs @ 12.08 hrs, Volume= 2.914 af
Outflow = 6.03 cfs @ 12.54 hrs, Volume= 2.913 af, Atten= 83%, Lag= 27.6 min
Discarded = 2.27 cfs @ 12.54 hrs, Volume= 2.319 af
Primary = 3.76 cfs @ 12.54 hrs, Volume= 0.594 af
Routed to Link N : POI North

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 312.13' @ 12.54 hrs Surf.Area= 14,195 sf Storage= 45,887 cf

Plug-Flow detention time= 101.7 min calculated for 2.913 af (100% of inflow)
Center-of-Mass det. time= 101.4 min (847.2 - 745.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	307.14'	19,523 cf	**58.58'W x 242.31'L x 5.50'H Field A** 78,074 cf Overall - 29,266 cf Embedded = 48,809 cf x 40.0% Voids
#2A	307.89'	29,266 cf	**ADS_StormTech MC-3500 d +Cap** x 264 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 264 Chambers in 8 Rows Cap Storage= 14.9 cf x 2 x 8 rows = 238.4 cf
		48,789 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	307.14'	**5.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 294.00'
#2	Primary	309.65'	**18.5" W x 4.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	312.14'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=2.27 cfs @ 12.54 hrs HW=312.13' (Free Discharge)
└**1=Exfiltration** (Controls 2.27 cfs)

Primary OutFlow Max=3.76 cfs @ 12.54 hrs HW=312.13' (Free Discharge)
├**2=Orifice/Grate** (Orifice Controls 3.76 cfs @ 7.32 fps)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond INF1: MC-3500 StormTech INFILTRATION 1 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 8 rows = 238.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

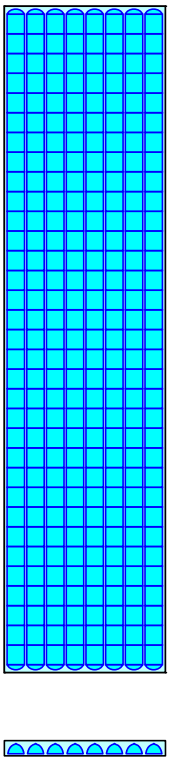
33 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 240.31' Row Length +12.0" End Stone x 2 = 242.31' Base Length
8 Rows x 77.0" Wide + 9.0" Spacing x 7 + 12.0" Side Stone x 2 = 58.58' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

264 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 8 Rows = 29,265.7 cf Chamber Storage

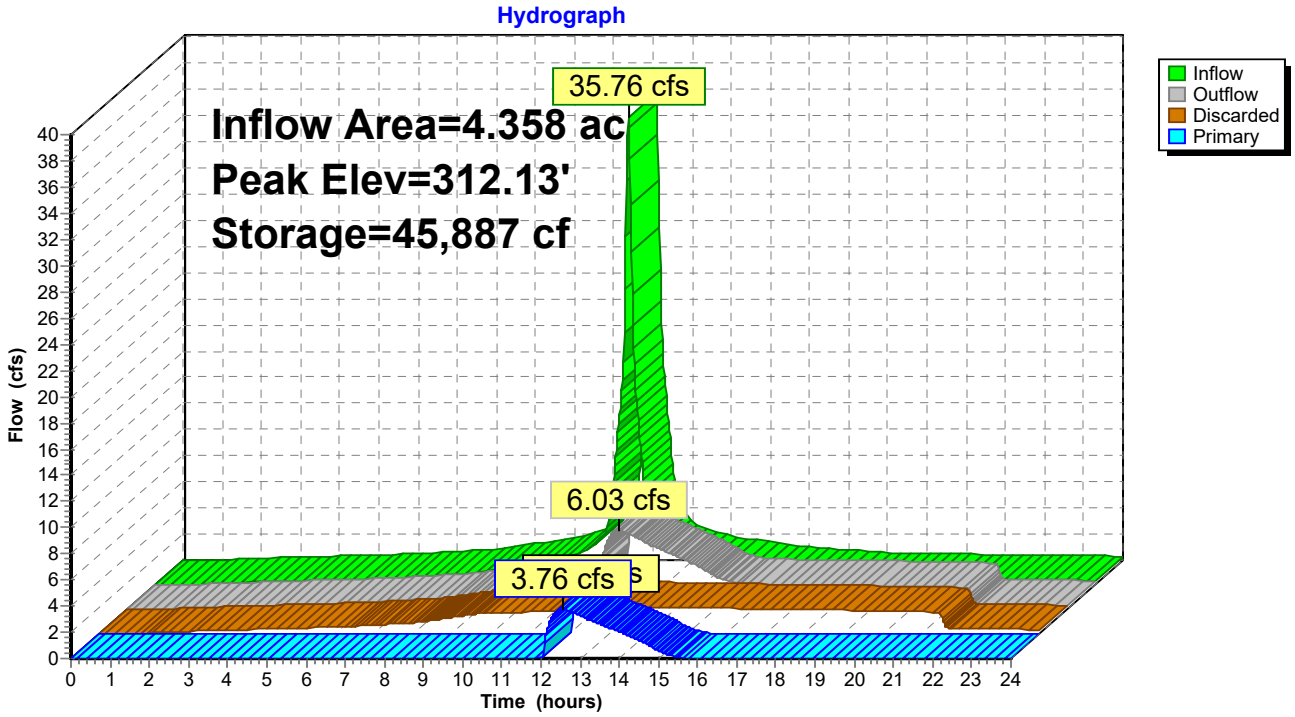
78,074.3 cf Field - 29,265.7 cf Chambers = 48,808.6 cf Stone x 40.0% Voids = 19,523.4 cf Stone Storage

Chamber Storage + Stone Storage = 48,789.1 cf = 1.120 af
Overall Storage Efficiency = 62.5%
Overall System Size = 242.31' x 58.58' x 5.50'

264 Chambers
2,891.6 cy Field
1,807.7 cy Stone



Pond INF1: MC-3500 StormTech INFILTRATION 1



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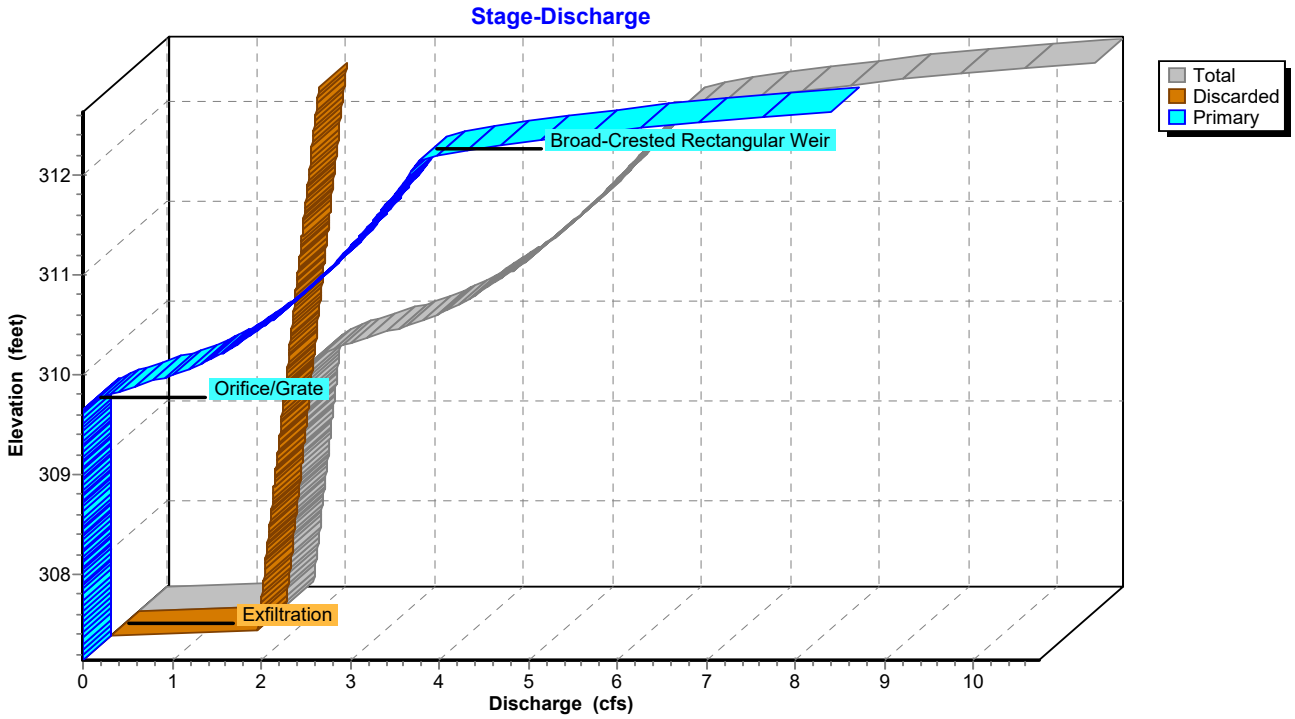

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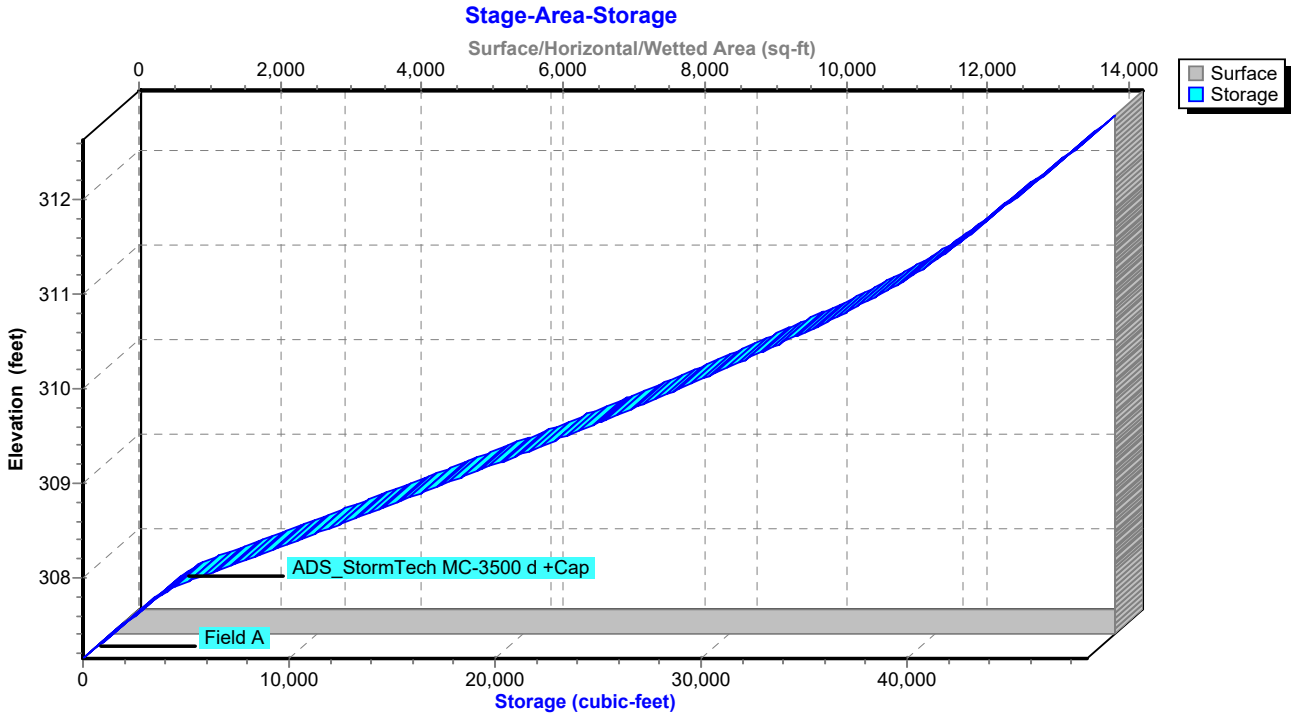


Hydrograph for Pond INF1: MC-3500 StormTech INFILTRATION 1

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	307.14	0.00	0.00	0.00
0.20	0.00	0	307.14	0.00	0.00	0.00
0.40	0.00	0	307.14	0.00	0.00	0.00
0.60	0.00	0	307.14	0.00	0.00	0.00
0.80	0.00	0	307.14	0.00	0.00	0.00
1.00	0.03	4	307.14	0.02	0.02	0.00
1.20	0.06	11	307.14	0.06	0.06	0.00
1.40	0.09	16	307.14	0.08	0.08	0.00
1.60	0.12	21	307.14	0.11	0.11	0.00
1.80	0.14	25	307.14	0.13	0.13	0.00
2.00	0.16	29	307.15	0.15	0.15	0.00
2.20	0.18	32	307.15	0.17	0.17	0.00
2.40	0.20	36	307.15	0.19	0.19	0.00
2.60	0.22	40	307.15	0.21	0.21	0.00
2.80	0.24	44	307.15	0.23	0.23	0.00
3.00	0.26	48	307.15	0.25	0.25	0.00
3.20	0.28	51	307.15	0.27	0.27	0.00
3.40	0.29	55	307.15	0.29	0.29	0.00
3.60	0.31	58	307.15	0.31	0.31	0.00
3.80	0.33	62	307.15	0.33	0.33	0.00
4.00	0.35	65	307.15	0.34	0.34	0.00
4.20	0.36	68	307.15	0.36	0.36	0.00
4.40	0.38	71	307.15	0.38	0.38	0.00
4.60	0.40	74	307.15	0.39	0.39	0.00
4.80	0.41	78	307.15	0.41	0.41	0.00
5.00	0.43	81	307.15	0.43	0.43	0.00
5.20	0.45	84	307.15	0.44	0.44	0.00
5.40	0.46	86	307.16	0.46	0.46	0.00
5.60	0.48	89	307.16	0.47	0.47	0.00
5.80	0.49	92	307.16	0.49	0.49	0.00
6.00	0.51	95	307.16	0.50	0.50	0.00
6.20	0.53	99	307.16	0.52	0.52	0.00
6.40	0.57	106	307.16	0.56	0.56	0.00
6.60	0.61	113	307.16	0.60	0.60	0.00
6.80	0.65	120	307.16	0.64	0.64	0.00
7.00	0.68	127	307.16	0.67	0.67	0.00
7.20	0.72	135	307.16	0.71	0.71	0.00
7.40	0.76	142	307.17	0.75	0.75	0.00
7.60	0.80	149	307.17	0.79	0.79	0.00
7.80	0.84	157	307.17	0.83	0.83	0.00
8.00	0.88	164	307.17	0.87	0.87	0.00
8.20	0.94	174	307.17	0.92	0.92	0.00
8.40	1.03	190	307.17	1.00	1.00	0.00
8.60	1.11	206	307.18	1.09	1.09	0.00
8.80	1.20	222	307.18	1.17	1.17	0.00
9.00	1.28	238	307.18	1.26	1.26	0.00
9.20	1.37	255	307.18	1.35	1.35	0.00
9.40	1.45	271	307.19	1.43	1.43	0.00
9.60	1.54	287	307.19	1.52	1.52	0.00
9.80	1.63	304	307.19	1.61	1.61	0.00
10.00	1.72	328	307.20	1.65	1.65	0.00
10.20	1.85	416	307.21	1.65	1.65	0.00
10.40	2.03	621	307.25	1.66	1.66	0.00

Hydrograph for Pond INF1: MC-3500 StormTech INFILTRATION 1 (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
10.60	2.21	949	307.31	1.66	1.66	0.00
10.80	2.38	1,400	307.39	1.67	1.67	0.00
11.00	2.56	1,971	307.49	1.69	1.69	0.00
11.20	3.01	2,720	307.62	1.70	1.70	0.00
11.40	3.68	3,892	307.83	1.73	1.73	0.00
11.60	4.97	5,584	308.00	1.75	1.75	0.00
11.80	11.01	9,971	308.35	1.79	1.79	0.00
12.00	**22.58**	19,338	309.14	1.89	1.89	0.00
12.20	**19.88**	38,161	310.94	4.73	2.12	2.62
12.40	10.62	**44,683**	**311.92**	**5.83**	**2.24**	**3.58**
12.60	4.76	**45,743**	**312.10**	**6.00**	**2.26**	**3.74**
12.80	3.68	44,441	311.87	5.78	2.23	3.55
13.00	3.00	42,784	311.58	5.49	2.20	3.29
13.20	2.59	40,928	311.29	5.16	2.16	3.00
13.40	2.41	39,119	311.05	4.88	2.13	2.75
13.60	2.24	37,377	310.85	4.62	2.11	2.51
13.80	2.06	35,693	310.67	4.36	2.08	2.28
14.00	1.89	34,069	310.50	4.10	2.06	2.03
14.20	1.76	32,521	310.34	3.83	2.04	1.78
14.40	1.67	31,101	310.20	3.55	2.03	1.52
14.60	1.59	29,824	310.08	3.26	2.01	1.24
14.80	1.50	28,710	309.98	2.92	2.00	0.92
15.00	1.42	27,794	309.89	2.57	1.99	0.58
15.20	1.34	27,028	309.82	2.33	1.98	0.35
15.40	1.25	26,351	309.76	2.15	1.97	0.18
15.60	1.17	25,722	309.70	2.03	1.96	0.06
15.80	1.08	25,102	309.65	1.96	1.96	0.00
16.00	1.00	24,444	309.59	1.95	1.95	0.00
16.20	0.94	23,737	309.52	1.94	1.94	0.00
16.40	0.90	23,004	309.46	1.93	1.93	0.00
16.60	0.86	22,250	309.39	1.92	1.92	0.00
16.80	0.83	21,476	309.32	1.92	1.92	0.00
17.00	0.79	20,682	309.26	1.91	1.91	0.00
17.20	0.75	19,867	309.19	1.90	1.90	0.00
17.40	0.72	19,033	309.11	1.89	1.89	0.00
17.60	0.68	18,178	309.04	1.88	1.88	0.00
17.80	0.64	17,303	308.97	1.87	1.87	0.00
18.00	0.61	16,409	308.89	1.86	1.86	0.00
18.20	0.58	15,498	308.81	1.85	1.85	0.00
18.40	0.57	14,584	308.74	1.84	1.84	0.00
18.60	0.56	13,669	308.66	1.83	1.83	0.00
18.80	0.55	12,752	308.58	1.82	1.82	0.00
19.00	0.54	11,835	308.51	1.81	1.81	0.00
19.20	0.53	10,916	308.43	1.80	1.80	0.00
19.40	0.52	9,996	308.36	1.80	1.80	0.00
19.60	0.51	9,076	308.28	1.79	1.79	0.00
19.80	0.49	8,154	308.21	1.78	1.78	0.00
20.00	0.48	7,230	308.13	1.77	1.77	0.00
20.20	0.47	6,306	308.06	1.76	1.76	0.00
20.40	0.47	5,383	307.98	1.75	1.75	0.00
20.60	0.46	4,460	307.91	1.74	1.74	0.00
20.80	0.45	3,540	307.76	1.72	1.72	0.00
21.00	0.44	2,629	307.60	1.70	1.70	0.00

Hydrograph for Pond INF1: MC-3500 StormTech INFILTRATION 1 (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
21.20	0.43	1,726	307.44	1.68	1.68	0.00
21.40	0.42	832	307.29	1.66	1.66	0.00
21.60	0.42	127	307.16	0.67	0.67	0.00
21.80	0.41	79	307.15	0.42	0.42	0.00
22.00	0.40	76	307.15	0.40	0.40	0.00
22.20	0.39	75	307.15	0.39	0.39	0.00
22.40	0.38	73	307.15	0.39	0.39	0.00
22.60	0.37	71	307.15	0.38	0.38	0.00
22.80	0.37	70	307.15	0.37	0.37	0.00
23.00	0.36	68	307.15	0.36	0.36	0.00
23.20	0.35	67	307.15	0.35	0.35	0.00
23.40	0.34	65	307.15	0.34	0.34	0.00
23.60	0.33	64	307.15	0.34	0.34	0.00
23.80	0.33	62	307.15	0.33	0.33	0.00
24.00	0.32	60	307.15	0.32	0.32	0.00

Stage-Discharge for Pond INF1: MC-3500 StormTech INFILTRATION 1

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
307.14	0.00	0.00	0.00
307.24	1.66	1.66	0.00
307.34	1.67	1.67	0.00
307.44	1.68	1.68	0.00
307.54	1.69	1.69	0.00
307.64	1.71	1.71	0.00
307.74	1.72	1.72	0.00
307.84	1.73	1.73	0.00
307.94	1.74	1.74	0.00
308.04	1.76	1.76	0.00
308.14	1.77	1.77	0.00
308.24	1.78	1.78	0.00
308.34	1.79	1.79	0.00
308.44	1.81	1.81	0.00
308.54	1.82	1.82	0.00
308.64	1.83	1.83	0.00
308.74	1.84	1.84	0.00
308.84	1.86	1.86	0.00
308.94	1.87	1.87	0.00
309.04	1.88	1.88	0.00
309.14	1.89	1.89	0.00
309.24	1.91	1.91	0.00
309.34	1.92	1.92	0.00
309.44	1.93	1.93	0.00
309.54	1.94	1.94	0.00
309.64	1.96	1.96	0.00
309.74	2.10	1.97	0.13
309.84	2.39	1.98	0.41
309.94	2.77	1.99	0.77
310.04	3.14	2.01	1.14
310.14	3.41	2.02	1.39
310.24	3.63	2.03	1.60
310.34	3.83	2.04	1.78
310.44	4.00	2.06	1.95
310.54	4.17	2.07	2.10
310.64	4.32	2.08	2.24
310.74	4.47	2.09	2.37
310.84	4.61	2.11	2.50
310.94	4.74	2.12	2.62
311.04	4.87	2.13	2.73
311.14	4.99	2.14	2.84
311.24	5.11	2.16	2.95
311.34	5.22	2.17	3.05
311.44	5.33	2.18	3.15
311.54	5.44	2.19	3.25
311.64	5.55	2.21	3.34
311.74	5.65	2.22	3.43
311.84	5.75	2.23	3.52
311.94	5.85	2.24	3.60
312.04	5.94	2.26	3.69
312.14	6.04	2.27	3.77
312.24	6.49	2.28	4.21
312.34	7.22	2.29	4.93
312.44	8.19	2.31	5.89
312.54	9.36	2.32	7.04
312.64	**10.73**	**2.33**	**8.40**

Stage-Area-Storage for Pond INF1: MC-3500 StormTech INFILTRATION 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
307.14	**14,195**	0
307.24	14,195	568
307.34	14,195	1,136
307.44	14,195	1,703
307.54	14,195	2,271
307.64	14,195	2,839
307.74	14,195	3,407
307.84	14,195	3,975
307.94	14,195	4,878
308.04	14,195	6,114
308.14	14,195	7,345
308.24	14,195	8,571
308.34	14,195	9,792
308.44	14,195	11,008
308.54	14,195	12,218
308.64	14,195	13,423
308.74	14,195	14,621
308.84	14,195	15,812
308.94	14,195	16,996
309.04	14,195	18,173
309.14	14,195	19,342
309.24	14,195	20,502
309.34	14,195	21,653
309.44	14,195	22,793
309.54	14,195	23,924
309.64	14,195	25,044
309.74	14,195	26,152
309.84	14,195	27,248
309.94	14,195	28,331
310.04	14,195	29,400
310.14	14,195	30,454
310.24	14,195	31,492
310.34	14,195	32,512
310.44	14,195	33,514
310.54	14,195	34,496
310.64	14,195	35,457
310.74	14,195	36,394
310.84	14,195	37,304
310.94	14,195	38,186
311.04	14,195	39,035
311.14	14,195	39,843
311.24	14,195	40,596
311.34	14,195	41,282
311.44	14,195	41,919
311.54	14,195	42,529
311.64	14,195	43,111
311.74	14,195	43,679
311.84	14,195	44,247
311.94	14,195	44,814
312.04	14,195	45,382
312.14	14,195	45,950
312.24	14,195	46,518
312.34	14,195	47,086
312.44	14,195	47,654
312.54	14,195	48,221
312.64	14,195	**48,789**

Summary for Pond INF2: MC-3500 StormTech INFILTRATION 2

Inflow Area = 1.946 ac, 38.50% Impervious, Inflow Depth > 5.38" for 100-Year event
Inflow = 10.06 cfs @ 12.16 hrs, Volume= 0.873 af
Outflow = 5.09 cfs @ 12.41 hrs, Volume= 0.872 af, Atten= 49%, Lag= 15.0 min
Discarded = 0.53 cfs @ 12.41 hrs, Volume= 0.492 af
Primary = 4.56 cfs @ 12.41 hrs, Volume= 0.380 af
Routed to Link N : POI North

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs
Peak Elev= 308.45' @ 12.41 hrs Surf.Area= 3,229 sf Storage= 10,208 cf

Plug-Flow detention time= 69.9 min calculated for 0.872 af (100% of inflow)
Center-of-Mass det. time= 69.5 min (885.9 - 816.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	303.50'	4,561 cf	**22.75'W x 141.93'L x 5.50'H Field A** 17,759 cf Overall - 6,357 cf Embedded = 11,402 cf x 40.0% Voids
#2A	304.25'	6,357 cf	**ADS_StormTech MC-3500 d +Cap** x 57 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 57 Chambers in 3 Rows Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf
		10,918 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	303.50'	**5.000 in/hr Exfiltration over Surface area** Conductivity to Groundwater Elevation = 291.50'
#2	Primary	305.65'	**21.0" W x 4.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Primary	308.50'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

Discarded OutFlow Max=0.53 cfs @ 12.41 hrs HW=308.45' (Free Discharge)
└**1=Exfiltration** (Controls 0.53 cfs)

Primary OutFlow Max=4.56 cfs @ 12.41 hrs HW=308.45' (Free Discharge)
├**2=Orifice/Grate** (Orifice Controls 4.56 cfs @ 7.81 fps)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond INF2: MC-3500 StormTech INFILTRATION 2 - Chamber Wizard Field A

Chamber Model = ADS_StormTech MC-3500 d +Cap (ADS StormTech® MC-3500 d rev 03/14 with Cap volume)
Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf
Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap
Cap Storage= 14.9 cf x 2 x 3 rows = 89.4 cf

77.0" Wide + 9.0" Spacing = 86.0" C-C Row Spacing

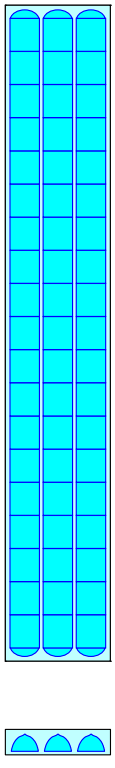
19 Chambers/Row x 7.17' Long +1.85' Cap Length x 2 = 139.93' Row Length +12.0" End Stone x 2 = 141.93' Base Length
3 Rows x 77.0" Wide + 9.0" Spacing x 2 + 12.0" Side Stone x 2 = 22.75' Base Width
9.0" Stone Base + 45.0" Chamber Height + 12.0" Stone Cover = 5.50' Field Height

57 Chambers x 110.0 cf + 14.9 cf Cap Volume x 2 x 3 Rows = 6,356.7 cf Chamber Storage

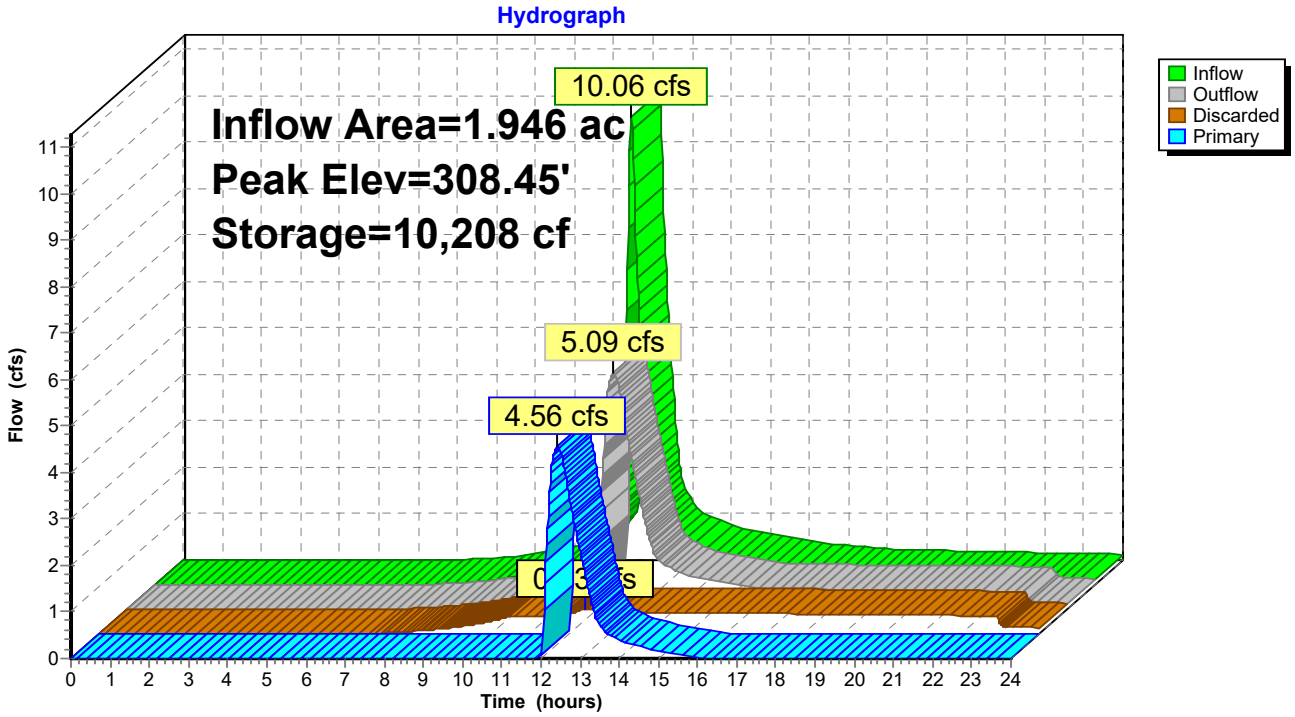
17,759.0 cf Field - 6,356.7 cf Chambers = 11,402.3 cf Stone x 40.0% Voids = 4,560.9 cf Stone Storage

Chamber Storage + Stone Storage = 10,917.6 cf = 0.251 af
Overall Storage Efficiency = 61.5%
Overall System Size = 141.93' x 22.75' x 5.50'

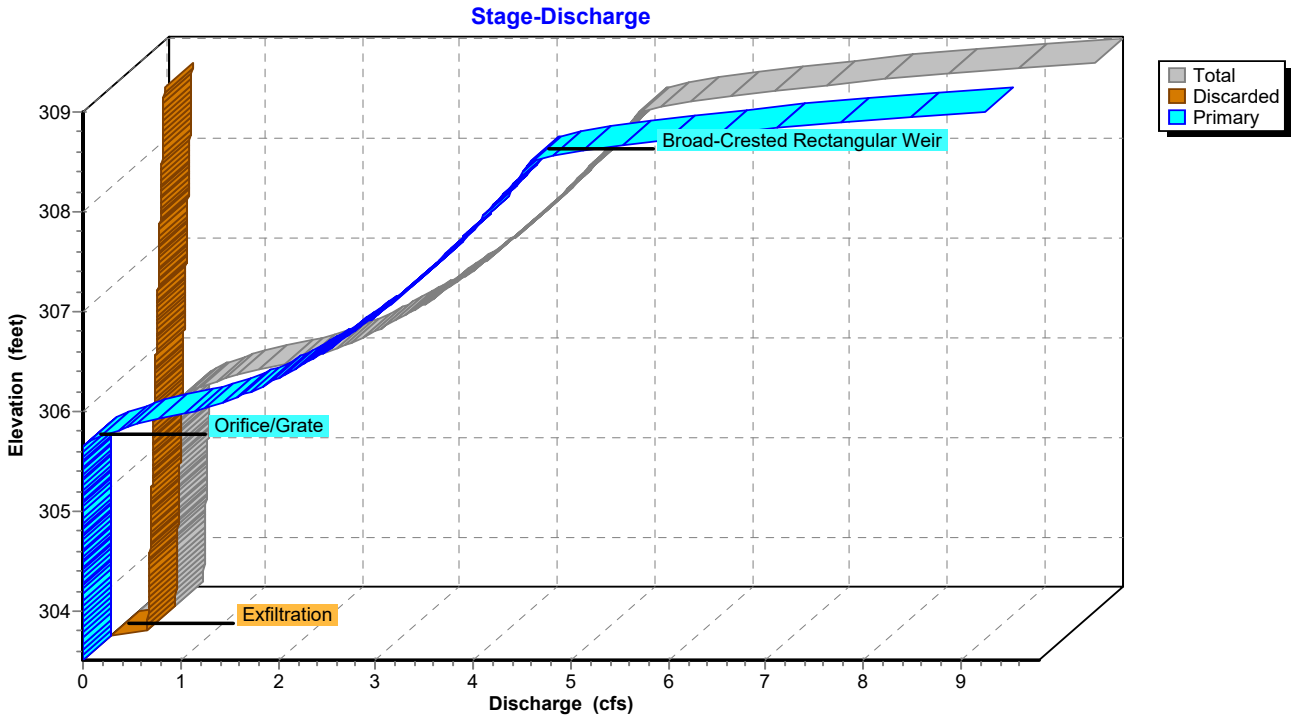
57 Chambers
657.7 cy Field
422.3 cy Stone



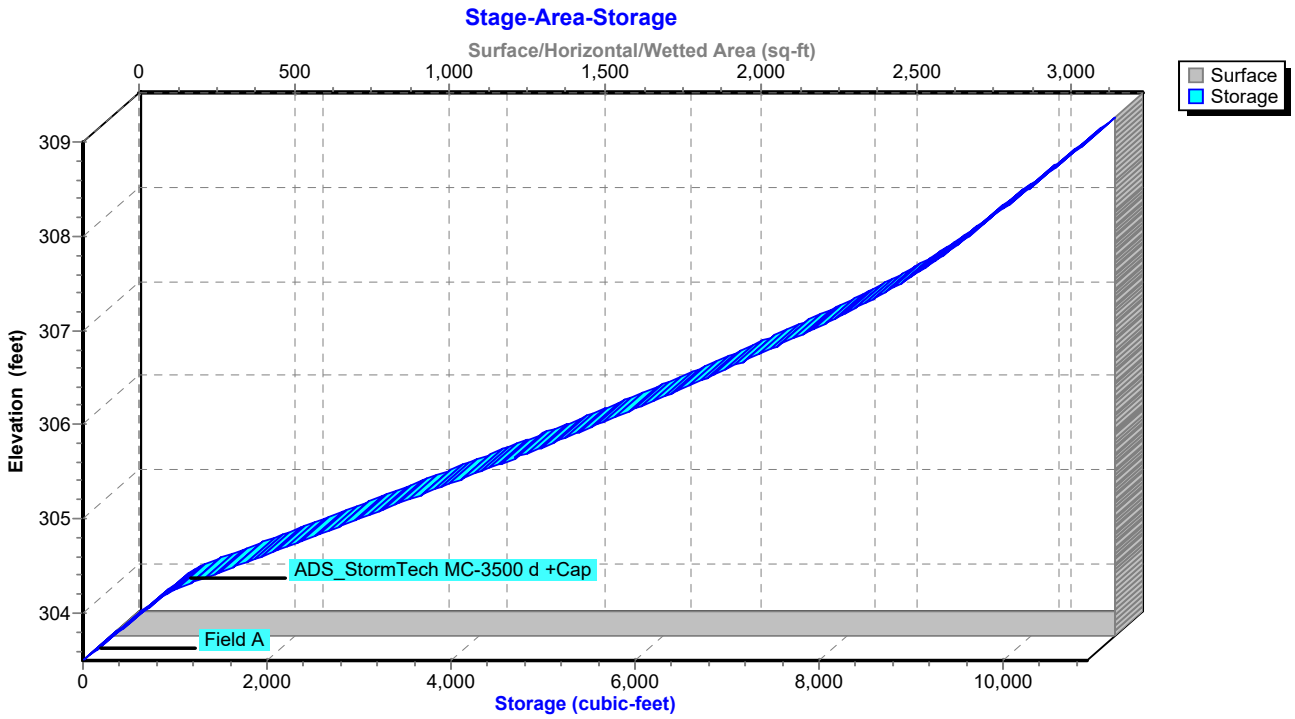
Pond INF2: MC-3500 StormTech INFILTRATION 2



Pond INF2: MC-3500 StormTech INFILTRATION 2



Pond INF2: MC-3500 StormTech INFILTRATION 2



Hydrograph for Pond INF2: MC-3500 StormTech INFILTRATION 2

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
0.00	0.00	0	303.50	0.00	0.00	0.00
0.20	0.00	0	303.50	0.00	0.00	0.00
0.40	0.00	0	303.50	0.00	0.00	0.00
0.60	0.00	0	303.50	0.00	0.00	0.00
0.80	0.00	0	303.50	0.00	0.00	0.00
1.00	0.00	0	303.50	0.00	0.00	0.00
1.20	0.00	0	303.50	0.00	0.00	0.00
1.40	0.00	0	303.50	0.00	0.00	0.00
1.60	0.00	0	303.50	0.00	0.00	0.00
1.80	0.00	0	303.50	0.00	0.00	0.00
2.00	0.00	0	303.50	0.00	0.00	0.00
2.20	0.00	0	303.50	0.00	0.00	0.00
2.40	0.00	0	303.50	0.00	0.00	0.00
2.60	0.00	0	303.50	0.00	0.00	0.00
2.80	0.00	0	303.50	0.00	0.00	0.00
3.00	0.00	0	303.50	0.00	0.00	0.00
3.20	0.00	0	303.50	0.00	0.00	0.00
3.40	0.00	0	303.50	0.00	0.00	0.00
3.60	0.00	0	303.50	0.00	0.00	0.00
3.80	0.00	0	303.50	0.00	0.00	0.00
4.00	0.00	0	303.50	0.00	0.00	0.00
4.20	0.00	0	303.50	0.00	0.00	0.00
4.40	0.00	0	303.50	0.00	0.00	0.00
4.60	0.00	0	303.50	0.00	0.00	0.00
4.80	0.00	0	303.50	0.00	0.00	0.00
5.00	0.00	0	303.50	0.00	0.00	0.00
5.20	0.00	0	303.50	0.00	0.00	0.00
5.40	0.00	0	303.50	0.00	0.00	0.00
5.60	0.00	0	303.50	0.00	0.00	0.00
5.80	0.00	0	303.50	0.00	0.00	0.00
6.00	0.00	0	303.50	0.00	0.00	0.00
6.20	0.00	0	303.50	0.00	0.00	0.00
6.40	0.00	0	303.50	0.00	0.00	0.00
6.60	0.00	0	303.50	0.00	0.00	0.00
6.80	0.01	1	303.50	0.00	0.00	0.00
7.00	0.01	2	303.50	0.01	0.01	0.00
7.20	0.02	3	303.50	0.02	0.02	0.00
7.40	0.03	5	303.50	0.02	0.02	0.00
7.60	0.04	6	303.50	0.03	0.03	0.00
7.80	0.05	8	303.51	0.04	0.04	0.00
8.00	0.06	10	303.51	0.05	0.05	0.00
8.20	0.07	12	303.51	0.06	0.06	0.00
8.40	0.08	15	303.51	0.08	0.08	0.00
8.60	0.10	18	303.51	0.10	0.10	0.00
8.80	0.12	22	303.52	0.11	0.11	0.00
9.00	0.14	26	303.52	0.14	0.14	0.00
9.20	0.17	30	303.52	0.16	0.16	0.00
9.40	0.19	35	303.53	0.18	0.18	0.00
9.60	0.22	40	303.53	0.21	0.21	0.00
9.80	0.25	46	303.54	0.24	0.24	0.00
10.00	0.28	51	303.54	0.27	0.27	0.00
10.20	0.32	58	303.54	0.31	0.31	0.00
10.40	0.37	67	303.55	0.35	0.35	0.00

Hydrograph for Pond INF2: MC-3500 StormTech INFILTRATION 2 (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
10.60	0.42	84	303.57	0.38	0.38	0.00
10.80	0.48	140	303.61	0.38	0.38	0.00
11.00	0.55	240	303.69	0.38	0.38	0.00
11.20	0.64	390	303.80	0.38	0.38	0.00
11.40	0.83	639	303.99	0.39	0.39	0.00
11.60	1.07	1,030	304.27	0.40	0.40	0.00
11.80	2.30	1,867	304.58	0.41	0.41	0.00
12.00	**4.71**	3,979	305.37	0.43	0.43	0.00
12.20	**9.64**	8,372	307.23	3.82	0.49	3.33
12.40	5.29	**10,203**	**308.45**	**5.08**	**0.53**	**4.55**
12.60	2.75	**9,519**	**307.92**	**4.58**	**0.51**	**4.07**
12.80	1.61	8,037	307.06	3.62	0.48	3.13
13.00	1.28	6,770	306.49	2.77	0.47	2.30
13.20	1.06	5,891	306.12	1.99	0.46	1.54
13.40	0.97	5,435	305.94	1.33	0.45	0.88
13.60	0.90	5,271	305.87	1.04	0.45	0.60
13.80	0.84	5,192	305.84	0.92	0.45	0.48
14.00	0.77	5,136	305.82	0.84	0.45	0.40
14.20	0.71	5,086	305.80	0.78	0.45	0.33
14.40	0.67	5,044	305.78	0.72	0.44	0.28
14.60	0.64	5,011	305.77	0.68	0.44	0.24
14.80	0.61	4,981	305.76	0.65	0.44	0.20
15.00	0.58	4,953	305.75	0.62	0.44	0.17
15.20	0.54	4,923	305.74	0.59	0.44	0.15
15.40	0.51	4,889	305.72	0.56	0.44	0.12
15.60	0.48	4,855	305.71	0.53	0.44	0.08
15.80	0.45	4,819	305.70	0.50	0.44	0.06
16.00	0.41	4,778	305.68	0.47	0.44	0.03
16.20	0.38	4,733	305.66	0.45	0.44	0.01
16.40	0.37	4,683	305.64	0.44	0.44	0.00
16.60	0.35	4,625	305.62	0.44	0.44	0.00
16.80	0.34	4,556	305.59	0.44	0.44	0.00
17.00	0.32	4,478	305.56	0.44	0.44	0.00
17.20	0.31	4,391	305.53	0.44	0.44	0.00
17.40	0.29	4,293	305.49	0.44	0.44	0.00
17.60	0.28	4,187	305.45	0.43	0.43	0.00
17.80	0.26	4,070	305.40	0.43	0.43	0.00
18.00	0.25	3,944	305.36	0.43	0.43	0.00
18.20	0.24	3,809	305.30	0.43	0.43	0.00
18.40	0.23	3,669	305.25	0.43	0.43	0.00
18.60	0.23	3,527	305.20	0.43	0.43	0.00
18.80	0.22	3,383	305.14	0.42	0.42	0.00
19.00	0.22	3,237	305.09	0.42	0.42	0.00
19.20	0.21	3,089	305.03	0.42	0.42	0.00
19.40	0.21	2,939	304.98	0.42	0.42	0.00
19.60	0.21	2,788	304.92	0.42	0.42	0.00
19.80	0.20	2,634	304.86	0.42	0.42	0.00
20.00	0.20	2,479	304.80	0.41	0.41	0.00
20.20	0.19	2,321	304.75	0.41	0.41	0.00
20.40	0.19	2,163	304.69	0.41	0.41	0.00
20.60	0.19	2,003	304.63	0.41	0.41	0.00
20.80	0.18	1,843	304.57	0.41	0.41	0.00
21.00	0.18	1,681	304.51	0.41	0.41	0.00

Hydrograph for Pond INF2: MC-3500 StormTech INFILTRATION 2 (continued)

Time (hours)	Inflow (cfs)	Storage (cubic-feet)	Elevation (feet)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)
21.20	0.18	1,518	304.45	0.40	0.40	0.00
21.40	0.17	1,355	304.39	0.40	0.40	0.00
21.60	0.17	1,190	304.33	0.40	0.40	0.00
21.80	0.17	1,024	304.27	0.40	0.40	0.00
22.00	0.16	858	304.16	0.39	0.39	0.00
22.20	0.16	692	304.04	0.39	0.39	0.00
22.40	0.16	526	303.91	0.39	0.39	0.00
22.60	0.15	361	303.78	0.38	0.38	0.00
22.80	0.15	196	303.65	0.38	0.38	0.00
23.00	0.15	46	303.54	0.24	0.24	0.00
23.20	0.14	28	303.52	0.15	0.15	0.00
23.40	0.14	27	303.52	0.14	0.14	0.00
23.60	0.14	26	303.52	0.14	0.14	0.00
23.80	0.13	25	303.52	0.13	0.13	0.00
24.00	0.13	25	303.52	0.13	0.13	0.00

Stage-Discharge for Pond INF2: MC-3500 StormTech INFILTRATION 2

Elevation (feet)	Discharge (cfs)	Discarded (cfs)	Primary (cfs)
303.50	0.00	0.00	0.00
303.60	0.38	0.38	0.00
303.70	0.38	0.38	0.00
303.80	0.38	0.38	0.00
303.90	0.39	0.39	0.00
304.00	0.39	0.39	0.00
304.10	0.39	0.39	0.00
304.20	0.40	0.40	0.00
304.30	0.40	0.40	0.00
304.40	0.40	0.40	0.00
304.50	0.40	0.40	0.00
304.60	0.41	0.41	0.00
304.70	0.41	0.41	0.00
304.80	0.41	0.41	0.00
304.90	0.42	0.42	0.00
305.00	0.42	0.42	0.00
305.10	0.42	0.42	0.00
305.20	0.43	0.43	0.00
305.30	0.43	0.43	0.00
305.40	0.43	0.43	0.00
305.50	0.44	0.44	0.00
305.60	0.44	0.44	0.00
305.70	0.51	0.44	0.06
305.80	0.77	0.45	0.33
305.90	1.15	0.45	0.70
306.00	1.60	0.45	1.15
306.10	1.93	0.45	1.47
306.20	2.18	0.46	1.72
306.30	2.40	0.46	1.94
306.40	2.60	0.46	2.14
306.50	2.78	0.47	2.32
306.60	2.95	0.47	2.48
306.70	3.11	0.47	2.64
306.80	3.26	0.48	2.78
306.90	3.40	0.48	2.92
307.00	3.54	0.48	3.05
307.10	3.67	0.49	3.18
307.20	3.79	0.49	3.30
307.30	3.91	0.49	3.42
307.40	4.03	0.50	3.53
307.50	4.14	0.50	3.64
307.60	4.25	0.50	3.75
307.70	4.36	0.50	3.85
307.80	4.46	0.51	3.95
307.90	4.56	0.51	4.05
308.00	4.66	0.51	4.15
308.10	4.76	0.52	4.24
308.20	4.86	0.52	4.34
308.30	4.95	0.52	4.43
308.40	5.04	0.53	4.51
308.50	5.13	0.53	4.60
308.60	5.57	0.53	5.04
308.70	6.31	0.54	5.77
308.80	7.27	0.54	6.73
308.90	8.43	0.54	7.89
309.00	**9.80**	**0.55**	**9.25**

Stage-Area-Storage for Pond INF2: MC-3500 StormTech INFILTRATION 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
303.50	**3,229**	0
303.60	3,229	129
303.70	3,229	258
303.80	3,229	387
303.90	3,229	517
304.00	3,229	646
304.10	3,229	775
304.20	3,229	904
304.30	3,229	1,106
304.40	3,229	1,380
304.50	3,229	1,654
304.60	3,229	1,926
304.70	3,229	2,197
304.80	3,229	2,467
304.90	3,229	2,735
305.00	3,229	3,003
305.10	3,229	3,269
305.20	3,229	3,533
305.30	3,229	3,796
305.40	3,229	4,058
305.50	3,229	4,318
305.60	3,229	4,575
305.70	3,229	4,831
305.80	3,229	5,085
305.90	3,229	5,336
306.00	3,229	5,585
306.10	3,229	5,832
306.20	3,229	6,076
306.30	3,229	6,317
306.40	3,229	6,555
306.50	3,229	6,789
306.60	3,229	7,021
306.70	3,229	7,248
306.80	3,229	7,472
306.90	3,229	7,691
307.00	3,229	7,905
307.10	3,229	8,115
307.20	3,229	8,318
307.30	3,229	8,516
307.40	3,229	8,706
307.50	3,229	8,887
307.60	3,229	9,056
307.70	3,229	9,211
307.80	3,229	9,355
307.90	3,229	9,494
308.00	3,229	9,626
308.10	3,229	9,755
308.20	3,229	9,884
308.30	3,229	10,013
308.40	3,229	10,143
308.50	3,229	10,272
308.60	3,229	10,401
308.70	3,229	10,530
308.80	3,229	10,659
308.90	3,229	10,788
309.00	3,229	**10,918**

Summary for Pond SPLIT: Flow Splitter

[57] Hint: Peaked at 305.06' (Flood elevation advised)

Inflow Area = 3.798 ac, 98.07% Impervious, Inflow Depth > 8.14" for 100-Year event
Inflow = 31.25 cfs @ 12.08 hrs, Volume= 2.578 af
Outflow = 31.25 cfs @ 12.08 hrs, Volume= 2.578 af, Atten= 0%, Lag= 0.0 min
Primary = 1.52 cfs @ 12.08 hrs, Volume= 0.940 af
Routed to Pond BIO : BioRetention 1 (South)
Secondary = 29.73 cfs @ 12.08 hrs, Volume= 1.638 af
Routed to Pond DET1 : MC-4500 StormTech DETENTION ONLY

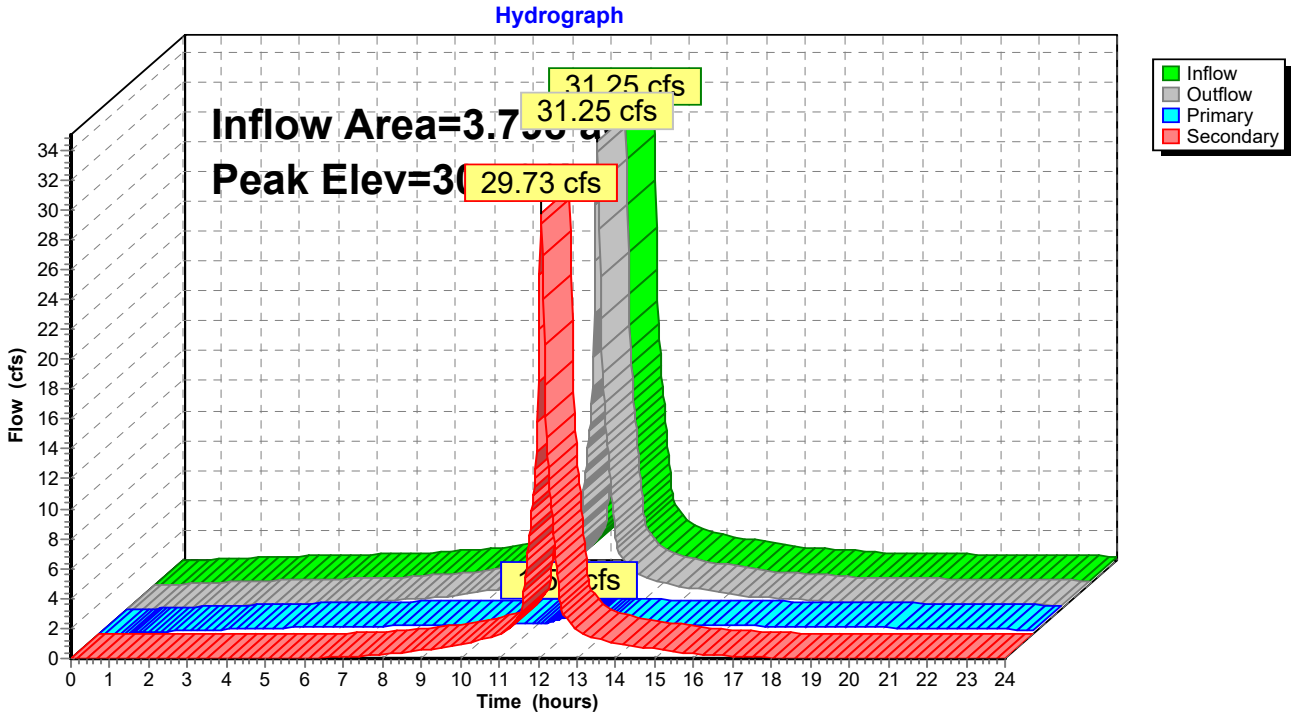
Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs / 2
Peak Elev= 305.06' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	302.23'	**6.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Device 3	302.73'	**4.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Secondary	302.23'	**30.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

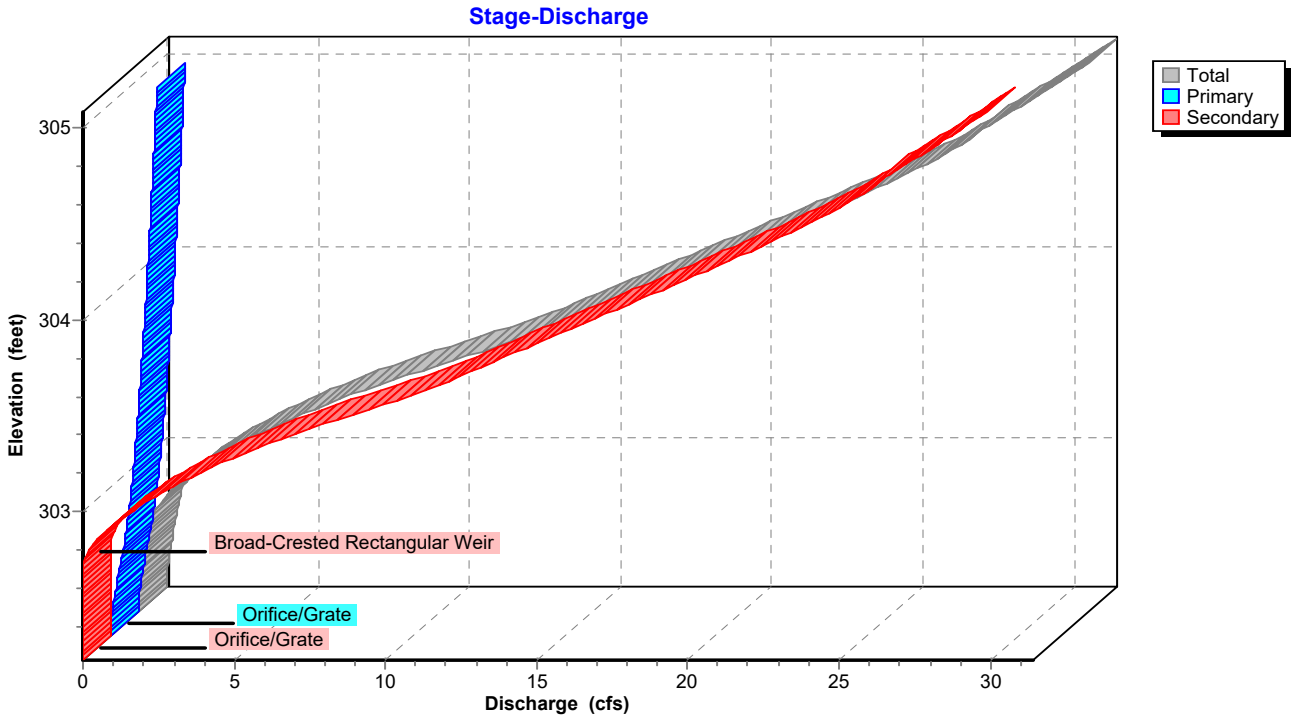
Primary OutFlow Max=1.52 cfs @ 12.08 hrs HW=305.05' (Free Discharge)
└**1=Orifice/Grate** (Orifice Controls 1.52 cfs @ 7.72 fps)

Secondary OutFlow Max=29.60 cfs @ 12.08 hrs HW=305.05' (Free Discharge)
└**3=Orifice/Grate** (Orifice Controls 29.60 cfs @ 6.03 fps)
└**2=Broad-Crested Rectangular Weir** (Passes 29.60 cfs of 46.88 cfs potential flow)

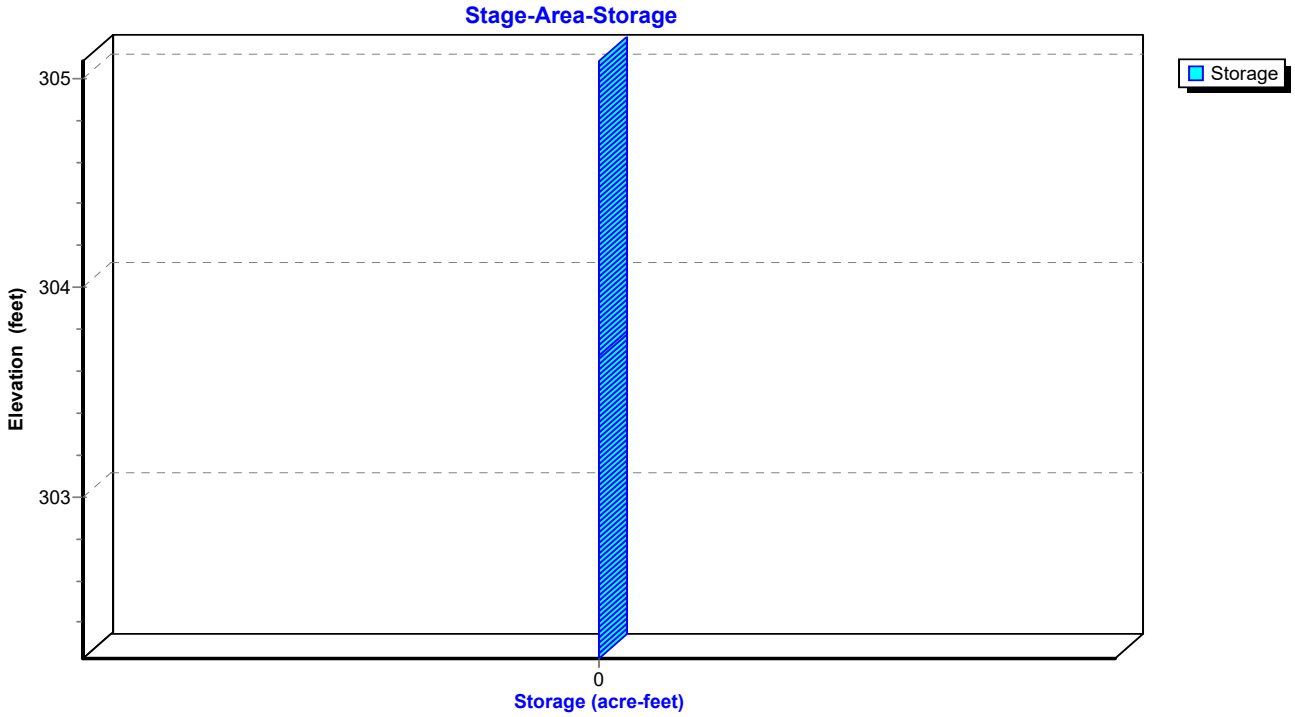
Pond SPLIT: Flow Splitter



Pond SPLIT: Flow Splitter



Pond SPLIT: Flow Splitter



Hydrograph for Pond SPLIT: Flow Splitter

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	302.23	0.00	0.00	0.00
0.20	0.00	302.23	0.00	0.00	0.00
0.40	0.00	302.23	0.00	0.00	0.00
0.60	0.01	302.28	0.01	0.01	0.00
0.80	0.05	302.36	0.05	0.05	0.00
1.00	0.09	302.41	0.09	0.09	0.00
1.20	0.12	302.44	0.12	0.12	0.00
1.40	0.14	302.46	0.14	0.14	0.00
1.60	0.16	302.48	0.16	0.16	0.00
1.80	0.18	302.49	0.18	0.18	0.00
2.00	0.19	302.50	0.19	0.19	0.00
2.20	0.21	302.51	0.21	0.21	0.00
2.40	0.23	302.53	0.23	0.23	0.00
2.60	0.24	302.54	0.24	0.24	0.00
2.80	0.26	302.55	0.26	0.26	0.00
3.00	0.28	302.57	0.28	0.28	0.00
3.20	0.29	302.58	0.29	0.29	0.00
3.40	0.31	302.59	0.31	0.31	0.00
3.60	0.32	302.60	0.32	0.32	0.00
3.80	0.33	302.61	0.33	0.33	0.00
4.00	0.35	302.62	0.35	0.35	0.00
4.20	0.36	302.63	0.36	0.36	0.00
4.40	0.37	302.64	0.37	0.37	0.00
4.60	0.39	302.65	0.39	0.39	0.00
4.80	0.40	302.66	0.40	0.40	0.00
5.00	0.41	302.67	0.41	0.41	0.00
5.20	0.43	302.68	0.43	0.43	0.00
5.40	0.44	302.69	0.44	0.44	0.00
5.60	0.45	302.70	0.45	0.45	0.00
5.80	0.46	302.72	0.46	0.46	0.00
6.00	0.47	302.73	0.47	0.47	0.00
6.20	0.50	302.74	0.50	0.48	0.01
6.40	0.53	302.75	0.53	0.49	0.04
6.60	0.56	302.76	0.56	0.50	0.06
6.80	0.59	302.77	0.59	0.51	0.09
7.00	0.63	302.78	0.63	0.51	0.11
7.20	0.66	302.78	0.66	0.52	0.14
7.40	0.69	302.79	0.69	0.53	0.17
7.60	0.73	302.80	0.73	0.53	0.19
7.80	0.76	302.80	0.76	0.54	0.22
8.00	0.79	302.81	0.79	0.54	0.25
8.20	0.85	302.82	0.85	0.55	0.30
8.40	0.92	302.83	0.92	0.56	0.36
8.60	1.00	302.84	1.00	0.57	0.43
8.80	1.07	302.85	1.07	0.58	0.49
9.00	1.14	302.87	1.14	0.59	0.56
9.20	1.22	302.88	1.22	0.59	0.62
9.40	1.29	302.89	1.29	0.60	0.69
9.60	1.37	302.90	1.37	0.61	0.76
9.80	1.44	302.91	1.44	0.62	0.83
10.00	1.52	302.92	1.52	0.62	0.89
10.20	1.64	302.93	1.64	0.63	1.00
10.40	1.79	302.95	1.79	0.65	1.14

Hydrograph for Pond SPLIT: Flow Splitter (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
10.60	1.95	302.96	1.95	0.66	1.29
10.80	2.10	302.98	2.10	0.67	1.43
11.00	2.25	303.00	2.25	0.68	1.57
11.20	2.64	303.04	2.64	0.70	1.94
11.40	3.23	303.09	3.23	0.74	2.49
11.60	4.36	303.18	4.36	0.79	3.57
11.80	9.64	303.49	9.64	0.95	8.69
12.00	**19.75**	**304.11**	**19.75**	**1.21**	**18.54**
12.20	**17.36**	**303.96**	**17.36**	**1.15**	**16.21**
12.40	9.27	303.47	9.27	0.94	8.32
12.60	4.16	303.16	4.16	0.78	3.37
12.80	3.21	303.09	3.21	0.74	2.47
13.00	2.62	303.03	2.62	0.70	1.91
13.20	2.26	303.00	2.26	0.68	1.58
13.40	2.11	302.98	2.11	0.67	1.44
13.60	1.95	302.97	1.95	0.66	1.29
13.80	1.80	302.95	1.80	0.65	1.15
14.00	1.64	302.93	1.64	0.63	1.01
14.20	1.53	302.92	1.53	0.63	0.91
14.40	1.46	302.91	1.46	0.62	0.84
14.60	1.39	302.90	1.39	0.61	0.77
14.80	1.31	302.89	1.31	0.60	0.71
15.00	1.24	302.88	1.24	0.60	0.64
15.20	1.16	302.87	1.16	0.59	0.58
15.40	1.09	302.86	1.09	0.58	0.51
15.60	1.02	302.85	1.02	0.57	0.44
15.80	0.94	302.83	0.94	0.56	0.38
16.00	0.87	302.82	0.87	0.55	0.32
16.20	0.82	302.81	0.82	0.55	0.27
16.40	0.79	302.81	0.79	0.54	0.24
16.60	0.75	302.80	0.75	0.54	0.22
16.80	0.72	302.80	0.72	0.53	0.19
17.00	0.69	302.79	0.69	0.53	0.16
17.20	0.66	302.78	0.66	0.52	0.14
17.40	0.63	302.78	0.63	0.51	0.11
17.60	0.59	302.77	0.59	0.51	0.09
17.80	0.56	302.76	0.56	0.50	0.06
18.00	0.53	302.75	0.53	0.49	0.04
18.20	0.51	302.74	0.51	0.49	0.02
18.40	0.50	302.74	0.50	0.48	0.02
18.60	0.49	302.74	0.49	0.48	0.01
18.80	0.48	302.73	0.48	0.48	0.00
19.00	0.47	302.73	0.47	0.47	0.00
19.20	0.46	302.72	0.46	0.46	0.00
19.40	0.45	302.70	0.45	0.45	0.00
19.60	0.44	302.69	0.44	0.44	0.00
19.80	0.43	302.69	0.43	0.43	0.00
20.00	0.42	302.68	0.42	0.42	0.00
20.20	0.41	302.67	0.41	0.41	0.00
20.40	0.41	302.66	0.41	0.41	0.00
20.60	0.40	302.66	0.40	0.40	0.00
20.80	0.39	302.65	0.39	0.39	0.00
21.00	0.38	302.65	0.38	0.38	0.00

Hydrograph for Pond SPLIT: Flow Splitter (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Outflow (cfs)	Primary (cfs)	Secondary (cfs)
21.20	0.38	302.64	0.38	0.38	0.00
21.40	0.37	302.64	0.37	0.37	0.00
21.60	0.36	302.63	0.36	0.36	0.00
21.80	0.36	302.62	0.36	0.36	0.00
22.00	0.35	302.62	0.35	0.35	0.00
22.20	0.34	302.61	0.34	0.34	0.00
22.40	0.33	302.61	0.33	0.33	0.00
22.60	0.33	302.60	0.33	0.33	0.00
22.80	0.32	302.60	0.32	0.32	0.00
23.00	0.31	302.59	0.31	0.31	0.00
23.20	0.31	302.59	0.31	0.31	0.00
23.40	0.30	302.58	0.30	0.30	0.00
23.60	0.29	302.58	0.29	0.29	0.00
23.80	0.28	302.57	0.28	0.28	0.00
24.00	0.28	302.57	0.28	0.28	0.00

Stage-Discharge for Pond SPLIT: Flow Splitter

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
302.23	0.00	0.00	0.00
302.33	0.03	0.03	0.00
302.43	0.11	0.11	0.00
302.53	0.23	0.23	0.00
302.63	0.36	0.36	0.00
302.73	0.47	0.47	0.00
302.83	0.91	0.56	0.35
302.93	1.64	0.63	1.00
303.03	2.58	0.70	1.88
303.13	3.72	0.76	2.95
303.23	5.06	0.82	4.24
303.33	6.60	0.87	5.73
303.43	8.39	0.92	7.47
303.53	10.41	0.97	9.45
303.63	12.32	1.01	11.30
303.73	13.88	1.06	12.82
303.83	15.39	1.10	14.29
303.93	16.92	1.14	15.78
304.03	18.46	1.18	17.28
304.13	20.00	1.21	18.79
304.23	21.52	1.25	20.27
304.33	23.00	1.29	21.72
304.43	24.42	1.32	23.10
304.53	25.75	1.35	24.40
304.63	26.93	1.39	25.54
304.73	27.84	1.42	26.43
304.83	28.91	1.45	27.46
304.93	29.94	1.48	28.46
305.03	**30.94**	**1.51**	**29.43**

Stage-Area-Storage for Pond SPLIT: Flow Splitter

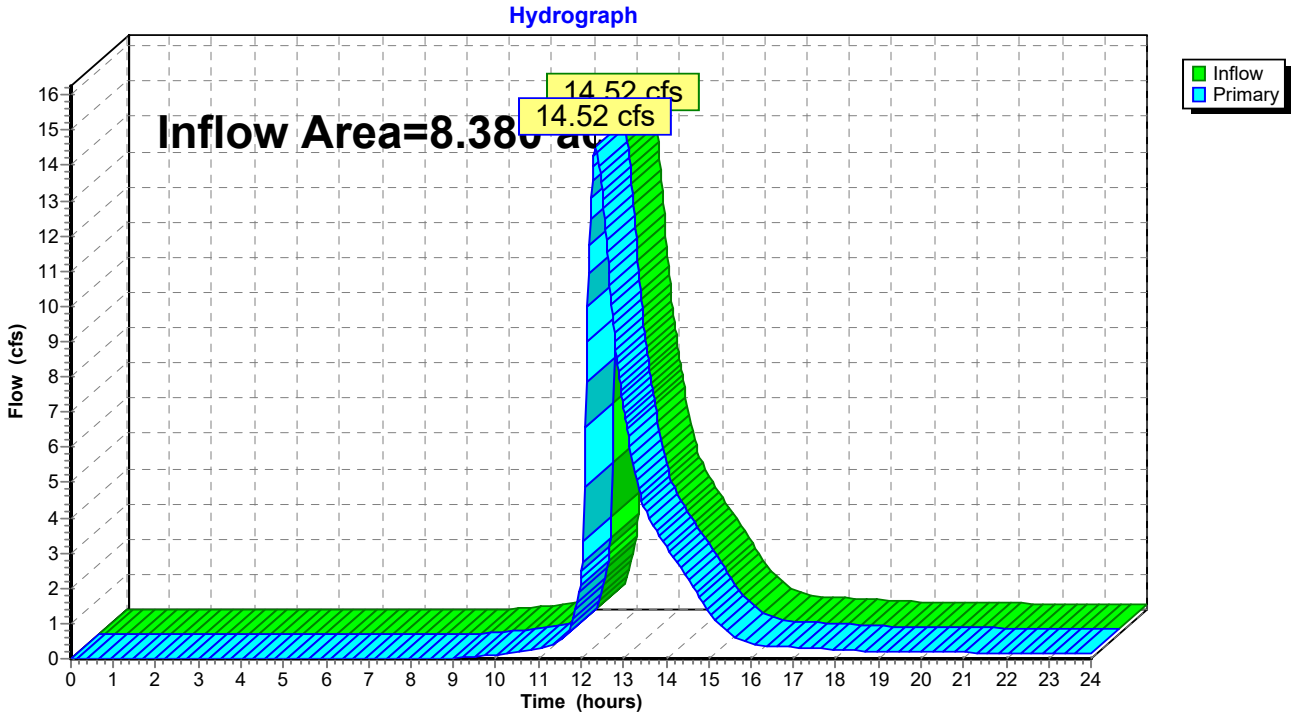
Elevation (feet)	Storage (acre-feet)
302.23	**0.000**
302.33	0.000
302.43	0.000
302.53	0.000
302.63	0.000
302.73	0.000
302.83	0.000
302.93	0.000
303.03	0.000
303.13	0.000
303.23	0.000
303.33	0.000
303.43	0.000
303.53	0.000
303.63	0.000
303.73	0.000
303.83	0.000
303.93	0.000
304.03	0.000
304.13	0.000
304.23	0.000
304.33	0.000
304.43	0.000
304.53	0.000
304.63	0.000
304.73	0.000
304.83	0.000
304.93	0.000
305.03	0.000

Summary for Link N: POI North

Inflow Area = 8.380 ac, 59.74% Impervious, Inflow Depth > 2.45" for 100-Year event
Inflow = 14.52 cfs @ 12.35 hrs, Volume= 1.712 af
Primary = 14.52 cfs @ 12.35 hrs, Volume= 1.712 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link N: POI North



Hydrograph for Link N: POI North

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	10.60	0.21	0.00	0.21
0.20	0.00	0.00	0.00	10.80	0.25	0.00	0.25
0.40	0.00	0.00	0.00	11.00	0.30	0.00	0.30
0.60	0.00	0.00	0.00	11.20	0.36	0.00	0.36
0.80	0.00	0.00	0.00	11.40	0.46	0.00	0.46
1.00	0.00	0.00	0.00	11.60	0.61	0.00	0.61
1.20	0.00	0.00	0.00	11.80	1.03	0.00	1.03
1.40	0.00	0.00	0.00	12.00	2.29	0.00	2.29
1.60	0.00	0.00	0.00	12.20	**11.76**	0.00	**11.76**
1.80	0.00	0.00	0.00	12.40	**14.32**	0.00	**14.32**
2.00	0.00	0.00	0.00	12.60	11.87	0.00	11.87
2.20	0.00	0.00	0.00	12.80	9.00	0.00	9.00
2.40	0.00	0.00	0.00	13.00	7.13	0.00	7.13
2.60	0.00	0.00	0.00	13.20	5.71	0.00	5.71
2.80	0.00	0.00	0.00	13.40	4.61	0.00	4.61
3.00	0.00	0.00	0.00	13.60	4.00	0.00	4.00
3.20	0.00	0.00	0.00	13.80	3.58	0.00	3.58
3.40	0.00	0.00	0.00	14.00	3.20	0.00	3.20
3.60	0.00	0.00	0.00	14.20	2.82	0.00	2.82
3.80	0.00	0.00	0.00	14.40	2.46	0.00	2.46
4.00	0.00	0.00	0.00	14.60	2.11	0.00	2.11
4.20	0.00	0.00	0.00	14.80	1.72	0.00	1.72
4.40	0.00	0.00	0.00	15.00	1.32	0.00	1.32
4.60	0.00	0.00	0.00	15.20	1.03	0.00	1.03
4.80	0.00	0.00	0.00	15.40	0.80	0.00	0.80
5.00	0.00	0.00	0.00	15.60	0.63	0.00	0.63
5.20	0.00	0.00	0.00	15.80	0.50	0.00	0.50
5.40	0.00	0.00	0.00	16.00	0.45	0.00	0.45
5.60	0.00	0.00	0.00	16.20	0.39	0.00	0.39
5.80	0.00	0.00	0.00	16.40	0.36	0.00	0.36
6.00	0.00	0.00	0.00	16.60	0.35	0.00	0.35
6.20	0.00	0.00	0.00	16.80	0.33	0.00	0.33
6.40	0.00	0.00	0.00	17.00	0.32	0.00	0.32
6.60	0.00	0.00	0.00	17.20	0.31	0.00	0.31
6.80	0.00	0.00	0.00	17.40	0.29	0.00	0.29
7.00	0.00	0.00	0.00	17.60	0.28	0.00	0.28
7.20	0.00	0.00	0.00	17.80	0.26	0.00	0.26
7.40	0.00	0.00	0.00	18.00	0.25	0.00	0.25
7.60	0.00	0.00	0.00	18.20	0.24	0.00	0.24
7.80	0.00	0.00	0.00	18.40	0.23	0.00	0.23
8.00	0.00	0.00	0.00	18.60	0.22	0.00	0.22
8.20	0.00	0.00	0.00	18.80	0.22	0.00	0.22
8.40	0.00	0.00	0.00	19.00	0.21	0.00	0.21
8.60	0.01	0.00	0.01	19.20	0.21	0.00	0.21
8.80	0.01	0.00	0.01	19.40	0.21	0.00	0.21
9.00	0.02	0.00	0.02	19.60	0.20	0.00	0.20
9.20	0.03	0.00	0.03	19.80	0.20	0.00	0.20
9.40	0.05	0.00	0.05	20.00	0.19	0.00	0.19
9.60	0.07	0.00	0.07	20.20	0.19	0.00	0.19
9.80	0.09	0.00	0.09	20.40	0.19	0.00	0.19
10.00	0.11	0.00	0.11	20.60	0.18	0.00	0.18
10.20	0.14	0.00	0.14	20.80	0.18	0.00	0.18
10.40	0.17	0.00	0.17	21.00	0.18	0.00	0.18

Hydrograph for Link N: POI North (continued)

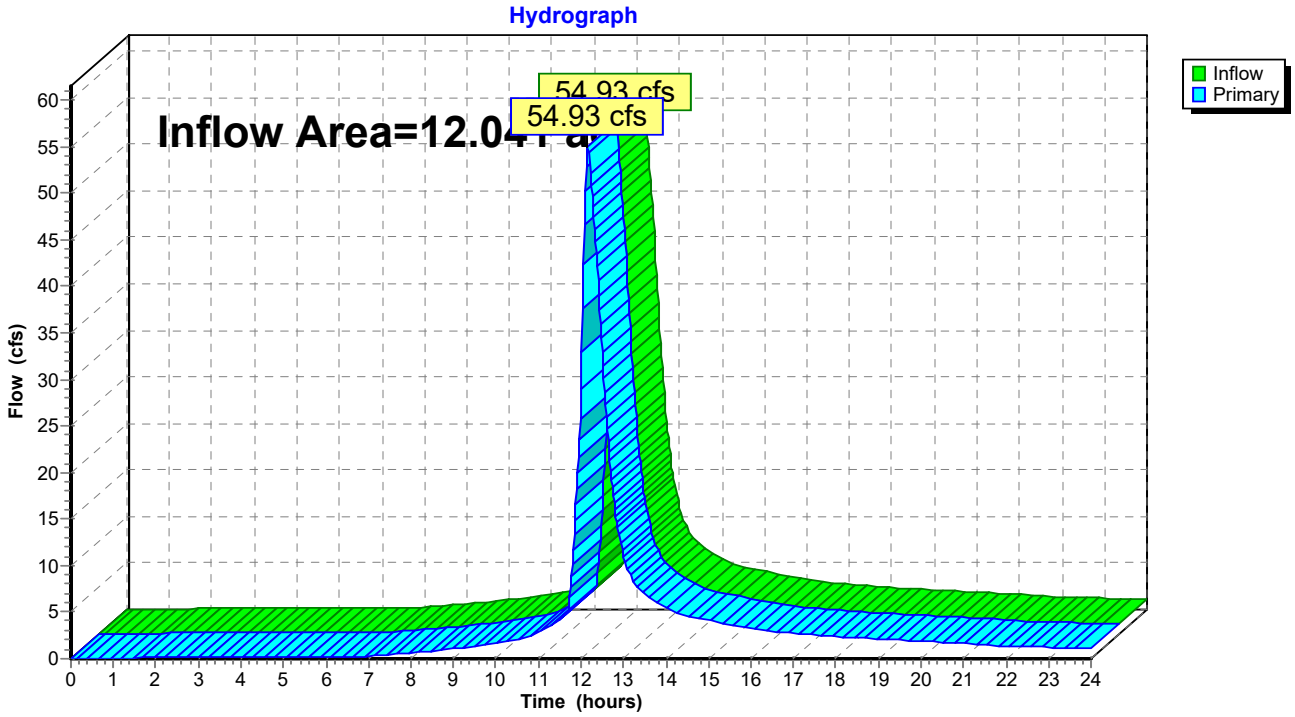
Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
21.20	0.17	0.00	0.17
21.40	0.17	0.00	0.17
21.60	0.17	0.00	0.17
21.80	0.16	0.00	0.16
22.00	0.16	0.00	0.16
22.20	0.16	0.00	0.16
22.40	0.15	0.00	0.15
22.60	0.15	0.00	0.15
22.80	0.15	0.00	0.15
23.00	0.14	0.00	0.14
23.20	0.14	0.00	0.14
23.40	0.14	0.00	0.14
23.60	0.14	0.00	0.14
23.80	0.13	0.00	0.13
24.00	0.13	0.00	0.13

Summary for Link S: POI South

Inflow Area = 12.041 ac, 46.90% Impervious, Inflow Depth > 6.24" for 100-Year event
Inflow = 54.93 cfs @ 12.16 hrs, Volume= 6.266 af
Primary = 54.93 cfs @ 12.16 hrs, Volume= 6.266 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.02 hrs

Link S: POI South



Hydrograph for Link S: POI South

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	10.60	2.08	0.00	2.08
0.20	0.00	0.00	0.00	10.80	2.41	0.00	2.41
0.40	0.00	0.00	0.00	11.00	2.84	0.00	2.84
0.60	0.00	0.00	0.00	11.20	3.27	0.00	3.27
0.80	0.01	0.00	0.01	11.40	3.84	0.00	3.84
1.00	0.03	0.00	0.03	11.60	4.59	0.00	4.59
1.20	0.06	0.00	0.06	11.80	10.23	0.00	10.23
1.40	0.08	0.00	0.08	12.00	**28.90**	0.00	**28.90**
1.60	0.10	0.00	0.10	12.20	**53.51**	0.00	**53.51**
1.80	0.10	0.00	0.10	12.40	40.56	0.00	40.56
2.00	0.10	0.00	0.10	12.60	25.87	0.00	25.87
2.20	0.10	0.00	0.10	12.80	16.03	0.00	16.03
2.40	0.10	0.00	0.10	13.00	11.07	0.00	11.07
2.60	0.10	0.00	0.10	13.20	8.56	0.00	8.56
2.80	0.10	0.00	0.10	13.40	7.29	0.00	7.29
3.00	0.10	0.00	0.10	13.60	6.56	0.00	6.56
3.20	0.10	0.00	0.10	13.80	6.01	0.00	6.01
3.40	0.10	0.00	0.10	14.00	5.53	0.00	5.53
3.60	0.10	0.00	0.10	14.20	5.09	0.00	5.09
3.80	0.11	0.00	0.11	14.40	4.77	0.00	4.77
4.00	0.11	0.00	0.11	14.60	4.52	0.00	4.52
4.20	0.11	0.00	0.11	14.80	4.29	0.00	4.29
4.40	0.11	0.00	0.11	15.00	4.09	0.00	4.09
4.60	0.11	0.00	0.11	15.20	3.94	0.00	3.94
4.80	0.11	0.00	0.11	15.40	3.78	0.00	3.78
5.00	0.11	0.00	0.11	15.60	3.63	0.00	3.63
5.20	0.11	0.00	0.11	15.80	3.46	0.00	3.46
5.40	0.12	0.00	0.12	16.00	3.30	0.00	3.30
5.60	0.13	0.00	0.13	16.20	3.15	0.00	3.15
5.80	0.14	0.00	0.14	16.40	3.02	0.00	3.02
6.00	0.15	0.00	0.15	16.60	2.92	0.00	2.92
6.20	0.16	0.00	0.16	16.80	2.83	0.00	2.83
6.40	0.19	0.00	0.19	17.00	2.74	0.00	2.74
6.60	0.21	0.00	0.21	17.20	2.65	0.00	2.65
6.80	0.24	0.00	0.24	17.40	2.58	0.00	2.58
7.00	0.29	0.00	0.29	17.60	2.50	0.00	2.50
7.20	0.34	0.00	0.34	17.80	2.42	0.00	2.42
7.40	0.41	0.00	0.41	18.00	2.35	0.00	2.35
7.60	0.48	0.00	0.48	18.20	2.29	0.00	2.29
7.80	0.55	0.00	0.55	18.40	2.23	0.00	2.23
8.00	0.62	0.00	0.62	18.60	2.19	0.00	2.19
8.20	0.69	0.00	0.69	18.80	2.15	0.00	2.15
8.40	0.78	0.00	0.78	19.00	2.11	0.00	2.11
8.60	0.87	0.00	0.87	19.20	2.07	0.00	2.07
8.80	0.98	0.00	0.98	19.40	2.03	0.00	2.03
9.00	1.09	0.00	1.09	19.60	1.98	0.00	1.98
9.20	1.19	0.00	1.19	19.80	1.94	0.00	1.94
9.40	1.30	0.00	1.30	20.00	1.90	0.00	1.90
9.60	1.41	0.00	1.41	20.20	1.85	0.00	1.85
9.80	1.52	0.00	1.52	20.40	1.81	0.00	1.81
10.00	1.64	0.00	1.64	20.60	1.77	0.00	1.77
10.20	1.75	0.00	1.75	20.80	1.72	0.00	1.72
10.40	1.90	0.00	1.90	21.00	1.66	0.00	1.66

Hydrograph for Link S: POI South (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
21.20	1.60	0.00	1.60
21.40	1.54	0.00	1.54
21.60	1.47	0.00	1.47
21.80	1.41	0.00	1.41
22.00	1.36	0.00	1.36
22.20	1.33	0.00	1.33
22.40	1.29	0.00	1.29
22.60	1.26	0.00	1.26
22.80	1.23	0.00	1.23
23.00	1.21	0.00	1.21
23.20	1.18	0.00	1.18
23.40	1.16	0.00	1.16
23.60	1.13	0.00	1.13
23.80	1.11	0.00	1.11
24.00	1.09	0.00	1.09

Drainage Report Appendix D

Unity Place Warehouse

Proposed Soil Testing Program

& Test Results

BROOKER ENGINEERING, PLLC

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SOIL TESTING PROGRAM

Prepared for:

UNITY PLACE WAREHOUSE, NEWBURGH NY STORMWATER MANAGEMENT

December 29, 2021

Brooker Engineering, PLLC has been retained to perform the hydraulic and hydrologic analysis and design for the Unity Place Warehouse project to meet the five unified sizing criteria from the New York State Stormwater Design Manual as a result of the proposed development.

To offset the increased runoff associated with the new impervious surfaces, (2) off-line underground infiltration systems have been designed, as well as third in-line underground infiltration system intended to offset the capacity of the existing detention facility located on the site currently receiving runoff from the existing conveyance system located in Unity Place.

Per the New York State Storm Water Management Design Manual, one infiltration test and one test pit are required per 200 square feet of infiltration basin area. Due to the large sizes of the proposed infiltration and other factors such as wooded areas and deep excavations, our office is proposing a reduced number of tests per facility:

Infiltration Facility # 1
The bottom of the proposed southwesterly infiltration facility is 17,928 square feet and would require 90 infiltration tests and test pits as per NYSDEC guidance. Majority of the proposed infiltration system is located where isolated dense woods/brush currently exists. Conducting 90 tests would require clearing/stripping majority of these isolated woods. Additionally, the existing grade are generally uniform, therefore, we anticipate the soil profiles to be consistent. Therefore, we propose to perform 13 infiltration tests and test pits around the perimeter of the proposed system and existing woods. (see attached maps).

It should also be noted that this proposed infiltration facility # 1 will be located in fill. The insitu soil will be tested and the system designed in accordance with NYS DEC guidance for infiltration systems in fill soils:

- *Insitu/natural soil layer below infiltration system has an infiltration rate greater than or equal to the 0.5 in/hr*
- *Ground water and bedrock levels in insitu/natural soil should be two to three feet below grade*
- *Fill material is an engineered fill that is tested after placement (by geotechnical firm) and demonstrated to be equivalent to a soil material acceptable for the installation of an infiltration system (i.e. infiltration rate greater than or equal to 0.5 inches /hr, etc.). Infiltration rate of fill material should be similar infiltration rate as insitu/existing soil.*

- *If there is a difference in the infiltration rates between the fill and insitu/native soil, the designer should use the more conservative (i.e. slower infiltration rate) when determining whether the infiltration system will dewater (exfiltrate) within the required 48 hours (see Section 6.3.2 "Conveyance" of the Design Manual).*
- *Required vertical separation distances to groundwater/bedrock are maintained*
- *Required horizontal separation distances to surface waters, wells, etc. are maintained*
- *There is adequate fill along the edges of the infiltration system to prevent seeps/breakouts*

Infiltration Facility # 2

The bottom of the proposed southeasterly infiltration facility is 6,195 square feet and requires 31 infiltration tests and test pits. However, due to the depth of the proposed system (6 feet deep plus an additional 4 feet below bottom of system for groundwater and bedrock separation check) and location of existing isolated woods, it is proposed to perform 6 infiltration tests and test pits located around the perimeter of the proposed system and existing woods. (see attached maps).

Infiltration Facility # 3

The bottom of the proposed northerly infiltration facility is 4,955 square feet and requires 25 infiltration tests and test pits. However, due to the depth of the proposed system (ranging from 5 to 11 feet deep plus an additional 4 feet below bottom of system for groundwater and bedrock separation check) and location of existing isolated woods, it is proposed to perform 5 infiltration tests and test pits located around the perimeter of the proposed system and existing woods. (see attached maps).

Upon completion of all infiltration tests and test pits the results will be analyzed in the field and compared for consistency. In the event that there are significant variations in infiltration rates between the preliminary testing locations, further testing will be performed between those locations. Additionally, if bedrock or groundwater depths are found to be inconsistent among the preliminary testing locations, further test pits will be excavated between those locations.

Due to the depth of the proposed basins we are proposing a modified infiltration test procedure as follows:

- Pre-soak to be a one inch drop before starting test, to avoid leaving test pits unattended overnight.
- The test pits for groundwater and bedrock separation check will be stepped next to the infiltration test pit at least 4' below the proposed system.

Attached map and forms to be used for test pits and infiltration tests.

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22 Paris Avenue, Suite 105
Rockleigh, NJ 07647
Tel: 201.750.3527

SHEET:

SITE: ______________________
JOB # ______________________
DATE: ______________________
NAME: ______________________

Test Hole

DEPTH		TEST HOLE 1	TEST HOLE 2	TEST HOLE 3	TEST HOLE 4	TEST HOLE 5	TEST HOLE 6
FEET	INCHES						
PERC. RATE							
DEPTH TO G. W.							

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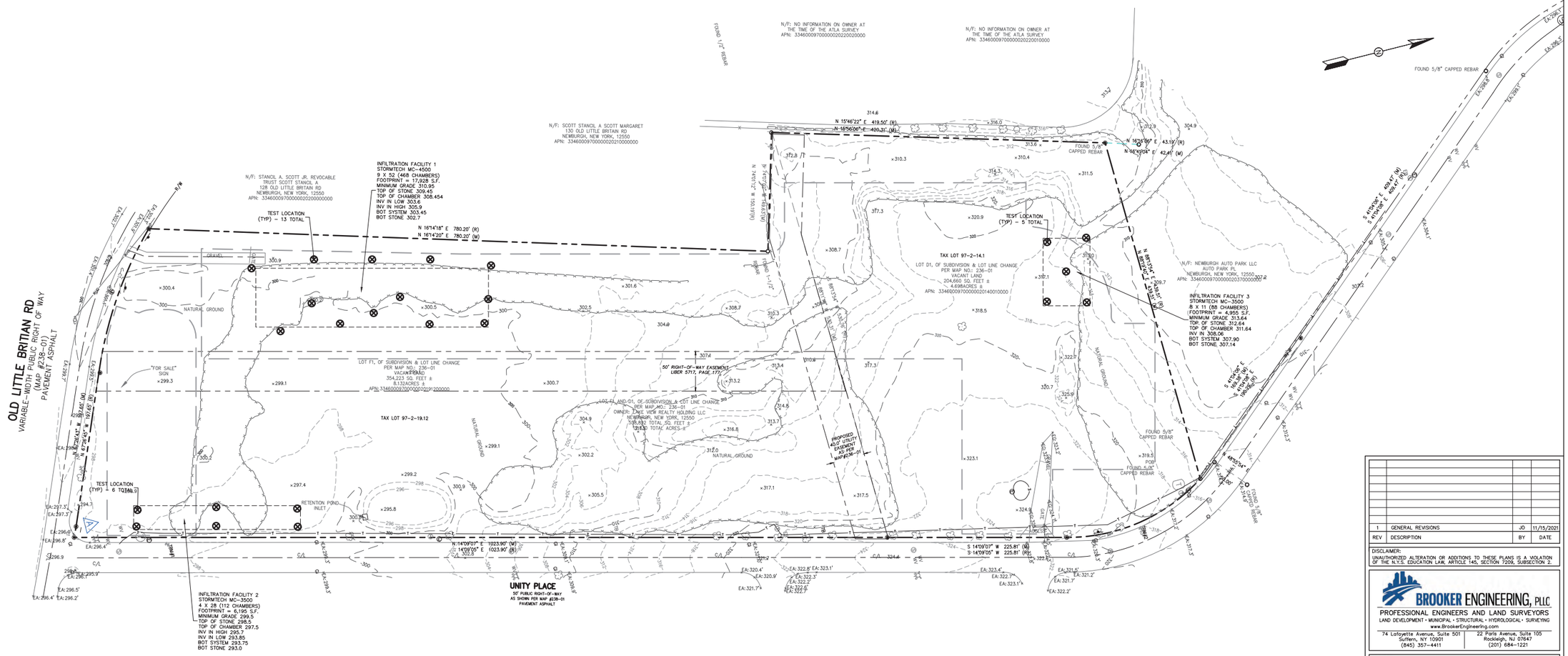
Percolation Test Data

Development/Site: _____ (T/V/C) _____ County: _____

Date : Test Conducted By:

Test Hole No.	Test Hole Depth (ft-in.)	Lot No.	Soil Profile	Presoak date & time	Time	Percolation Test Runs					
						1	2	3	4	5	6
1					END						
					BEGIN						
					RESULT						
2					END						
					BEGIN						
					RESULT						
3					END						
					BEGIN						
					RESULT						
4					END						
					BEGIN						
					RESULT						
5					END						
					BEGIN						
					RESULT						
6					END						
					BEGIN						
					RESULT						



1	GENERAL REVISIONS	JO	11/15/2021
REV	DESCRIPTION	BY	DATE

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22 Paris Avenue, Suite 105, Rockleigh, NJ 07647, (201) 684-1221

PROJECT:
UNITY PLACE WAREHOUSE
TOWN OF NEWBURGH
ORANGE COUNTY
NEW YORK

TITLE:
SOIL TESTING PROCEDURE

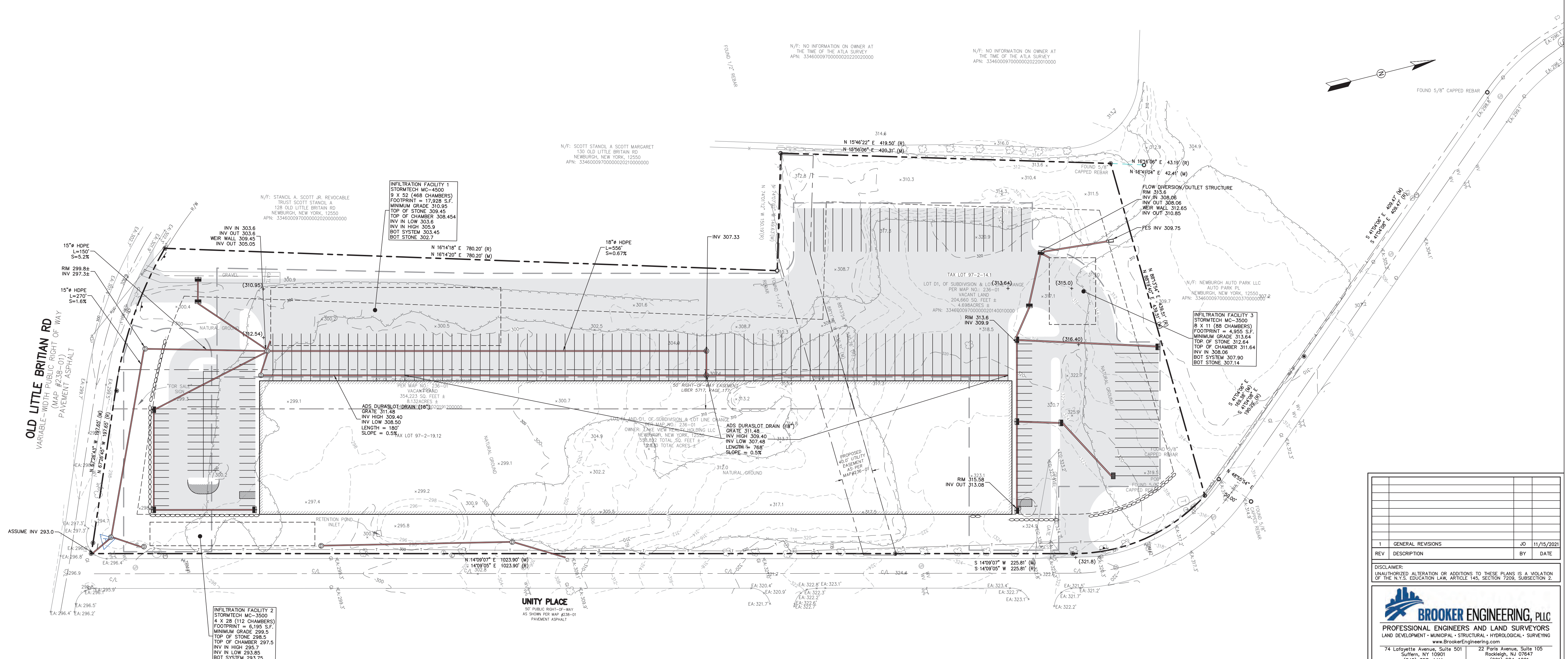
PROJECT NO:	DRAWN:	CHECKED:
21202	MT	DR

SCALE: 1"=50'

GRAPHIC SCALE: 0 50' 100'

DATE: 12/02/2021

DRAWING NO: STP



1	GENERAL REVISIONS	JO	11/15/2021
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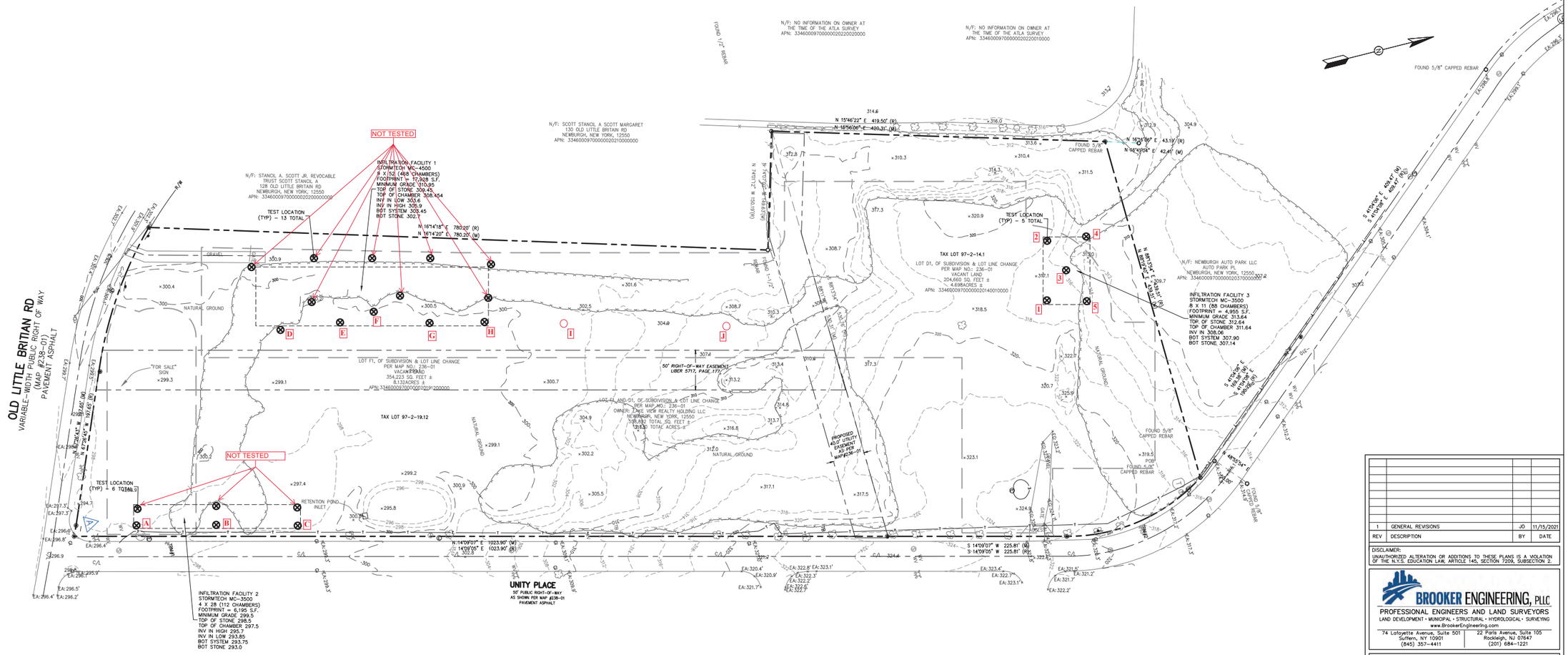
PROJECT:
UNITY PLACE WAREHOUSE
TOWN OF NEWBURGH
ORANGE COUNTY
NEW YORK

TITLE:
DRAINAGE FEASIBILITY PLAN

PROJECT NO:	DRAWN:	CHECKED:
21202	JO	DR

SCALE: 1"=50'
GRAPHIC SCALE: 0 50' 100'
DATE: 12/02/2021
DRAWING NO: C



TEST HOLE MAP
RESULTS MARKUP
03/03/2022

REV	DESCRIPTION	BY	DATE
1	GENERAL REVISIONS	JO	11/15/2021

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TITLE:
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PROJECT NO:	DRAWN:	CHECKED:
21202	MT	DR

SCALE: 1"=50'

GRAPHIC SCALE: 0 50' 100'

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12/02/2021	STP

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SOIL TEST PIT DATA

PROJECT 21202 Unity Place Warehouse **DATE** 3/3/22

LOT # 97-2-14.1 (North System)

HOLE # 1

DEPTH	
0"-6"	Topsoil / item material
6"-30"	Silty light brown mixed with dark brown, wet
30"	Thick filter fabric material separating stratum - possibly for previous access road construction
30"-48"	Light Brown loam
48"-156"	Brown sandy loam, medium/small rocks

GROUNDWATER @ N/E (Not encountered) FEET

ROCK @ N/E FEET

HOLE # 5

DEPTH	
0"-6"	Topsoil
6"-24"	Brown silty loam, roots
24"-40"	Light brown loam
40"-132"	Brown Sandy loam medium-small rocks

GROUNDWATER @ N/E FEET

ROCK @ N/E FEET

PERCOLATION TESTS

DEPTH @ 120 INCHES

TIME	RUN#	START	STOP	MINUTES
9:40a	1	6"	20.5"	60
10:40a	2	11.25"	20.0"	60
11:43a	3	11.25"	19.5"	60
12:45p	4	11.5"	18.5"	60
	5			
SOIL RATE OBSERVED: **8.5 MINUTES / 1" DROP**				

PERCOLATION TESTS

DEPTH @ 96 INCHES

TIME	RUN#	START	STOP	MINUTES
10:27a	1	4"	13.25"	60
11:40a	2	4"	13.5"	60
12:40p	3	7"	13.0"	60
1:40p	4	7"	14.0"	60
	5			
SOIL RATE OBSERVED: **8.5 MINUTES / 1" DROP**				

DESIGN DATA

DESIGN SOIL RATE USED = 12 MINUTES / 1" DROP

NOTES: See Test Hole Location Map & Soil Testing Program for additional information on procedure and deviations

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SOIL TEST PIT DATA

PROJECT 21202 Unity Place Warehouse **DATE** 3/3/22

LOT # 97-2-14.1 (North System)

HOLE # 3

DEPTH	
0"-3"	Topsoil
3"-48"	Brown sandy fill
48"-60"	Light brown sand layer
60"	Thick filter fabric at bottom of statum
60"-144"	Brown sandy loam, rocky

GROUNDWATER @ N/E FEET

ROCK @ N/E FEET

HOLE # 4

DEPTH	
0"-16"	Topsoil
16"-30"	Light brown sandy
30"-96"	Brown sandy rocky

GROUNDWATER @ N/E FEET

ROCK @ N/E FEET

PERCOLATION TESTS

DEPTH @ 108 INCHES

TIME	RUN#	START	STOP	MINUTES
11:20a	1	6"	16"	60
12:20p	2	5.5"	14.5"	60
1:20p	3	6"	14.25"	60
2:20p	4	6"	13.25"	60
	5			

SOIL RATE OBSERVED: **8.3 MINUTES / 1" DROP**

PERCOLATION TESTS

DEPTH @ 60 INCHES

TIME	RUN#	START	STOP	MINUTES
11:52a	1	6"	18"	60
12:52p	2	10"	18.75"	60
1:52p	3	9.5"	18"	60
2:52p	4	10"	18.5"	60
	5			

SOIL RATE OBSERVED: **7 MINUTES / 1" DROP**

DESIGN DATA

DESIGN SOIL RATE USED = 12 MINUTES / 1" DROP

NOTES: See Test Hole Location Map & Soil Testing Program for additional information on procedure and deviations

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SOIL TEST PIT DATA

PROJECT 21202 Unity Place Warehouse **DATE** 3/3/22

LOT # 97-2-14.1 (North System)

HOLE # 2

DEPTH	
0"-6"	Topsoil/Vegetation
6"-84"	Mixed brown, grey soil (Fill?)
84"	Gravel, wet, possible old access road layer
84"-96"	Light Brown Sand
96"-168"	Brown sandy. rocky

GROUNDWATER @ N/E FEET

ROCK @ N/E FEET

PERCOLATION TESTS

DEPTH @ 132 INCHES

TIME	RUN#	START	STOP	MINUTES
1:00p	1	6"	14"	60
2:00p	2	7"	15"	60
3:00p	3	6"	13.75"	60
4:00p	4	6.5	14"	60
	5			

SOIL RATE OBSERVED: **8 MINUTES / 1" DROP**

HOLE #

DEPTH	

GROUNDWATER @ _____ FEET

ROCK @ _____ FEET

PERCOLATION TESTS

DEPTH @ _____ INCHES

TIME	RUN#	START	STOP	MINUTES
	1			
	2			
	3			
	4			
	5			

SOIL RATE OBSERVED: - **MINUTES / 1" DROP**

DESIGN DATA

DESIGN SOIL RATE USED = 12 MINUTES / 1" DROP

NOTES: See Test Hole Location Map & Soil Testing Program for additional information on procedure and deviations

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SOIL TEST PIT DATA

PROJECT 21202 Unity Place Warehouse **DATE** 3/4/22

LOT # 97-2-19.12 (South System)

HOLE # A

DEPTH	
0-6"	Topsoil
6"-24"	Brownish gray silt
24"-36"	Light brown silt, wet
36"-52"	Brownish grey silt
52"-72"	Gray clay
72"-84"	Brown Silty Clay, Groundwater

GROUNDWATER @ 6-7 FEET

ROCK @ N/E FEET

HOLE # B

DEPTH	
0-6"	Topsoil
6"-24"	Brownish Gray Silt
24"	Groundwater

GROUNDWATER @ 2-3 FEET

ROCK @ N/E FEET

PERCOLATION TESTS

DEPTH @ 4 FT

TIME	RUN#	START	STOP	MINUTES
N/A	1			
	2			
	3			
	4			
	5			

SOIL RATE OBSERVED: **0 MINUTES / 1" DROP**

PERCOLATION TESTS

DEPTH @ NOT PERFORMEED

TIME	RUN#	START	STOP	MINUTES
N/A	1			
	2			
	3			
	4			
	5			

SOIL RATE OBSERVED: **0 MINUTES / 1" DROP**

DESIGN DATA

DESIGN SOIL RATE USED = 0 MINUTES / 1" DROP

NOTES: NO PERC

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SOIL TEST PIT DATA

PROJECT 21202 Unity Place Warehouse **DATE** 3/4/22

LOT # 97-2-19.12 (South System)

HOLE # C

DEPTH	
	Similar Stratum to Holes A & B

GROUNDWATER @ 2 FEET

ROCK @ N/E FEET

PERCOLATION TESTS

DEPTH @ NOT PERFORMED

TIME	RUN#	START	STOP	MINUTES
N/A	1			
	2			
	3			
	4			
	5			

SOIL RATE OBSERVED: **0 MINUTES / 1" DROP**

HOLE # D

DEPTH	
0"-6"	Topsoil
12"	Brown silt, wet
12"-48"	Lighter brown, silty, clayish
48"	Groundwater seeping from basin of test hole @ about 4'

GROUNDWATER @ 4 FEET

ROCK @ N/E FEET

PERCOLATION TESTS

DEPTH @ 18 INCHES

TIME	RUN#	START	STOP	MINUTES
9:37a	1	9"	10.25"	60
10:39a	2	10.25"	9.5"	40
	3			
	4			
	5			

SOIL RATE OBSERVED: **0 MINUTES / 1" DROP**

DESIGN DATA

DESIGN SOIL RATE USED = 0 MINUTES / 1" DROP

NOTES: NO PERC

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SOIL TEST PIT DATA

PROJECT 21202 Unity Place Warehouse **DATE** 3/4/22

LOT # 97-2-19.12 (South System)

HOLE # E

DEPTH	
	Similar to Hole D

GROUNDWATER @ 4 FEET

ROCK @ N/E FEET

HOLE # F

DEPTH	
	Similar to Hole D

GROUNDWATER @ 3 FEET

ROCK @ N/E FEET

PERCOLATION TESTS

DEPTH @ 12 INCHES

TIME	RUN#	START	STOP	MINUTES
9:56a	1	7.75"	8.0"	60 FAIL
10:56a	2	8.0"	8.0"	30 FAIL
	3			
	4			
	5			

SOIL RATE OBSERVED: **0 MINUTES / 1" DROP**

PERCOLATION TESTS

DEPTH @ NOT PERFORMEED

TIME	RUN#	START	STOP	MINUTES
	1			
	2			
	3			
	4			
	5			

SOIL RATE OBSERVED: **0 MINUTES / 1" DROP**

DESIGN DATA

DESIGN SOIL RATE USED = 0 MINUTES / 1" DROP

NOTES: NO PERC

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SOIL TEST PIT DATA

PROJECT 21202 Unity Place Warehouse **DATE** 3/4/22

LOT # 97-2-19.12 (South System)

HOLE # G

DEPTH	
	Similar to Hole D

GROUNDWATER @ 2.5 FEET

ROCK @ N/E FEET

HOLE # H

DEPTH	
	Similar to Hole D

GROUNDWATER @ 3 FEET

ROCK @ N/E FEET

PERCOLATION TESTS

DEPTH @ NOT PERFORMEED

TIME	RUN#	START	STOP	MINUTES
	1			
	2			
	3			
	4			
	5			
SOIL RATE OBSERVED: **0 MINUTES / 1" DROP**				

PERCOLATION TESTS

DEPTH @ NOT PERFORMEED

TIME	RUN#	START	STOP	MINUTES
	1			
	2			
	3			
	4			
	5			
SOIL RATE OBSERVED: **0 MINUTES / 1" DROP**				

DESIGN DATA

DESIGN SOIL RATE USED = 0 MINUTES / 1" DROP

NOTES: NO PERC

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SOIL TEST PIT DATA

PROJECT 21202 Unity Place Warehouse **DATE** 3/4/22

LOT # 97-2-19.12 (South System)

HOLE # I

DEPTH	
	Similar to D

GROUNDWATER @ 2 FEET

ROCK @ N/E FEET

HOLE # J

DEPTH	
0"-12"	Topsoil
12"-28"	Light brown silty loam
28"-90"	Brown silty loam
	Water seeping into test hole

GROUNDWATER @ 6.5 FEET

ROCK @ N/E FEET

PERCOLATION TESTS

DEPTH @ 12 INCHES

TIME	RUN#	START	STOP	MINUTES
N/A	1			NO PERC
	2			
	3			
	4			
	5			
SOIL RATE OBSERVED: **0 MINUTES / 1" DROP**				

PERCOLATION TESTS

DEPTH @ 54 INCHES

TIME	RUN#	START	STOP	MINUTES
	1			NO PERC
	2			
	3			
	4			
	5			
SOIL RATE OBSERVED: **0 MINUTES / 1" DROP**				

DESIGN DATA

DESIGN SOIL RATE USED = 0 MINUTES / 1" DROP

NOTES: NO PERC

TAX LOT 97-2-22.2
N/F
THE CITY OF NEWBURGH INDUSTRIAL
DEVELOPMENT AGENCY

TAX LOT 97-2-37.1
N/F
NEWBURGH AUTO PARK LLC
(LOT 1-FM 386-21)

NOT LOCATED
DRAINAGE PER REF

N68°52'16"W
115.22'

N16°16'06"E
43.19'

IPIN FND

N48°55'52"E
164.16'

329.99'

TEMPORARY GRADING
& DRAINAGE ESMT
IN FAVOR OF 97-2-37.1
AS PER REF #6

20.00'

174.88' ESMT
359.04'
155.28'

ACCESS, UTILITY
& DRAINAGE ESMT
IN FAVOR OF 97-2-37.1
AS PER REF #6
(SEE DRIVEWAY AGREEMENT
IN L15164 P1718)

ACCESS & UTILITY
& DRAINAGE ESMT IN
FAVOR OF 97-2-37.2
AS PER REF #6

N19°41'23"E
22.47'

19.60'

0.98'

SMH: 305.3
INV: 296.4

186.95'

15" CPP

24" CPP

TCCB: 306.19
GRT: 305.5
INV: 302.6

ELEC MH
TEL
TEL MH
WV
304.4

WOODED

ROCKS

LAWN/FIELD

DIRT TRAIL

POSSIBLE
TEST PIT
(TYP.)

SOLAR
PANEL

FM LOT 6
TAX LOT 97-2-14.1

STOCKPILE #6

TEST HOLE 3
PERC TEST @ 3.0 FEET
DEEP HOLE @ 7.0 FEET

TEST HOLE 4
PERC TEST @ 2.5 FEET
DEEP HOLE @ 6.5 FEET
TCCB: 306.15
GRT: 305.5
INV: 301.4
INV: 301.3

TAX LOT 97-2-37.2
FM LOT 2 AS PER REF #6

NOTE: BEARING SYSTEM OF THIS LOT ON
FM REF#6 ROTATED 00°07'58" TO
MATCH ADJOINING PROPERTY TO THE SOUTH

TEST HOLE 2
PERC TEST @ 3.5 FEET
DEEP HOLE @ 7.5 FEET

FM LOT 3
TAX LOT 97-2-37
N/F
NEWBURGH AUTO PARK LLC

TEST HOLE 1
PLAN A
PERC TEST @ 4.0 FEET
DEEP HOLE TO 8 FEET
PLAN B
MEASURE DEPTH TO GW/BR
TEST IN-SITU AT GRADE

TREE
W/SWITCH

BEE HIVES IN
ENCLOSED
ELEC FEN AREA

INFILTRATION FACILITY
STORMTECH MC-3500
(xxx CHAMBERS)
FOOTPRINT = xxx S.F.
MINIMUM GRADE 310.0
TOP OF STONE 309.5
TOP OF CHAMBER 308.5
INV IN xxx
BOT CHAMBER 304.75
BOT STONE 304.0

S41°04'08"E
190.29'

24" CPP

TCCB: 312.94
GRT: 312.3
INV: 308/0 S
INV: 306.4 E
INV: 306.3 N

CATV FLAGS

18" CPP

8" SAN

S41°04'08"E
26.43'

R=225.00'

TCCB: 316.2
GRT: 316.2

TCCB: 312.90
GRT: 312.2
INV: 306.6

WV
HYD
LP

REV	DESCRIPTION	BY	DATE
1	GENERAL REVISIONS	JO	11/15/2021

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PROJECT:
UNITY PLACE WAREHOUSE
TOWN OF NEWBURGH
ORANGE COUNTY
NEW YORK

TITLE:
SOIL TESTING
PROCEDURE 2

PROJECT NO:	DRAWN:	CHECKED:
21202	MT	DR

SCALE: 1"=20'

GRAPHIC SCALE: 0 20' 40'

DATE: 12/02/2021

DRAWING NO: STP 2

BROOKER ENGINEERING PLLC

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SOIL TEST PIT DATA

PROJECT 21202 Unity Place Warehouse **DATE** 04/25/2023

LOT # 97-2-37.2 (North System 2)

HOLE # 1

DEPTH	
0"-18"	Topsoil
18"-96"	Silty light brown sediment

GROUNDWATER @ N/E (Not encountered) FEET

ROCK @ N/E FEET

HOLE # 2

DEPTH	
0"-12"	Topsoil
12"-90"	Silty light brown sediment

GROUNDWATER @ N/E FEET

ROCK @ N/E FEET

PERCOLATION TESTS

DEPTH @ 54 INCHES

TIME	RUN#	START	STOP	MINUTES
11:20 A.M.	1	Pre-Soak	Pre-Soak	60
12:21 P.M.	2	4"	10.6"	60
1:20 P.M.	3	3"	19""	60
2:29 P.M.	4	5"	10.75"	60
3:31 P.M	5	5"	10.5"	60
SOIL RATE OBSERVED: **11 MINUTES / 1" DROP**				

PERCOLATION TESTS

DEPTH @ 42 INCHES

TIME	RUN#	START	STOP	MINUTES
11:21 A.M.	1	Pre-Soak	Pre-Soak	60
12:20 P.M.	2	6"	23.6"	60
1:27 P.M.	3	7.6"	23"	60
2:28 P.M.	4	6"	22"	60
3:30 P.M.	5	7"	23.5"	60
SOIL RATE OBSERVED: **5.5 MINUTES / 1" DROP**				

DESIGN DATA

DESIGN SOIL RATE USED = 12 MINUTES / 1" DROP

NOTES: See Test Hole Location Map & Soil Testing Program for additional information on procedure and deviations

BROOKER ENGINEERING PLLC

NY OFFICE
74 Lafayette Avenue, Suite 501 845.357.4411 Tel
Suffern, NY 10901 845.357.1896 Fax

NJ OFFICE
22 Paris Avenue, Suite 105 201.750.3527 Tel
Rockleigh, NJ 07647

SOIL TEST PIT DATA

PROJECT 21202 Unity Place Warehouse **DATE** 04/25/2023

LOT # 97-2-337.2 (North System 2)

HOLE # 3

DEPTH	
0"-24"	Topsoil
24"-84"	Silty light brown sediment

GROUNDWATER @ N/E FEET

ROCK @ N/E FEET

HOLE # 4

DEPTH	
0"-18"	Topsoil
18"-78"	Silty light brown sediment

GROUNDWATER @ N/E FEET

ROCK @ N/E FEET

PERCOLATION TESTS

DEPTH @ 36 INCHES

TIME	RUN#	START	STOP	MINUTES
11:20 A.M.	1	Pre-Soak	Pre-Soak	60
12:20 P.M.	2	3"	18.6"	60
1:22 P.M.	3	5"	28"	60
2:20 P.M.	4	6"	20.6"	60
3:33 P.M.	5	5"	21"	60
SOIL RATE OBSERVED: **4 MINUTES / 1" DROP**				

PERCOLATION TESTS

DEPTH @ 30 INCHES

TIME	RUN#	START	STOP	MINUTES
11:21 A.M.	1	Pre-Soak	Pre-Soak	60
12:20 P.M.	2	6"	28.6"	60
1:22 P.M.	3	6"	18.5"	60
2:32 P.M.	4	5"	27.6"	60
3:35 P.M.	5	5.5	25.0"	60
SOIL RATE OBSERVED: **4 MINUTES / 1" DROP**				

DESIGN DATA

DESIGN SOIL RATE USED = 12 MINUTES / 1" DROP

NOTES: See Test Hole Location Map & Soil Testing Program for additional information on procedure and deviations

Appendix G

Wetlands Investigation Letter
Peter Torgersen, August 5, 2021
Peter Torgersen, May 3, 2023

PETER D. TORGERSEN,
ENVIRONMENTAL SCIENCES
110 Town Line Road, Pearl River New York 10965, 845 642 8939 petertorger271@gmail.com

August 5, 2021

Eliot Spitzer

Re: Lot D1 & F1, Unity Place, Newburgh, New York

Dear Mr. Spitzer,

Last Week I walked the above site to determine either the presence or absence of any wetlands, steams or ponds that could inhibit any future development. Except for an existing manmade detention pond I found nothing that fit any description of wetlands. The USACOE does not have jurisdiction over manmade features such as detention ponds or water quality basins that are actively maintained and still functioning as originally designed. There had been a significant amount of rain the night before and except for a few depressions in the wooded portions of the site there were no signs of surface saturation. The site appears to have been significantly disturbed in the past and the recent installation of the municipal road named Unity Place has rerouted any surface water that might have impacted this site. The existing detention pond has a piped outlet and can never flood the site. Neither the national Wetlands Inventory nor the NYSDEC Wetlands Mapper indicate any existing wetlands at this location. The Soils Survey of Orange County shows the south half of this site to have Erie type soils. Erie soils are a type that is known to have a high frequency of having wetlands. In this case there are no dominant plant communities of wetland tolerant vegetation. There are no onsite streams or ditches that connect to the adjacent lake. There are no examples of saturated soil.

There are no wetlands located on these two adjacent properties.

Yours truly,

Peter Torgersen

Peter Torgersen

PETER D. TORGERSEN,
ENVIRONMENTAL SCIENCES
110 Town Line Road, Pearl River New York 10965, 845 642 8939 petertorger271@gmail.com

May 3, 2023

Eliot Spitzer

Re: Tax Lot 97-2-37.2 Town of Newburgh

Dear Mr. Spitzer,

At your request I visited the above site to look for wetlands or wetland like conditions that could impact future development, I found none whatsoever. There are no ponds, streams, ditches or wetlands on the subject parcel. I did not see any wetlands on any adjacent parcels. There are no established communities of wetland tolerant plant species. The site is entirely upland in vegetation and composition. The NYSDEC Environmental Mapper does not show any wetlands to exist here, The National Wetlands Inventory does not show any wetlands to exist here. The Soils Survey of Orange County shows this location to have Pittsfield type soils. This is recognized as a well-drained upland soil. There are no naturally occurring onsite conditions that could impact any future development.

Yours truly,

Peter Torgersen

Appendix H

Stormwater Runoff Volume Summary
&
Lockwood Basin Watershed Analysis

BROOKER ENGINEERING PLLC

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STORMWATER RUNOFF VOLUME SUMMARY
&
LOCKWOOD BASIN WATERSHED ANALYSIS
prepared for
UNITY PLACE WAREHOUSE
April 25, 2023

As requested in the City of Newburgh's letter dated January 5, 2023, our office has reviewed the total overall volume discharged to the southerly point of interest which flows into the existing stormwater conveyance system along Old Little Britain Road. We then performed a watershed analysis to demonstrate the de minimis impact it has towards the City's downstream flooding concerns of Lockwood Basin.

Stormwater Runoff Volume Summary

Supplemental HydroCAD outputs with extended time spans to calculate the full runoff volume conveyed to the southerly point are provided at the end of this report. The pre- versus post- conditions summary for the proposed warehouse site is provided below.

POI SOUTH
Volume Summary (Acre-feet)

FREQUENCY	EXISTING CONDITIONS	PROPOSED CONDITIONS	DIFFERENCE
1 YEAR	0.804	1.419	+0.615
10 YEAR	2.751	3.233	+0.482
25 YEAR	4.040	4.344	+0.304
100 YEAR	6.863	6.684	-0.179

As part of the proposed development, 3.6 acres of drainage area (roof drainage) has been redirected to the northerly point of interest due to better soil conditions that allow for infiltration facilities. This design element has limited the amount of additional runoff volume to the south.

- The 1, 10, & 25-year storm events demonstrate a relatively small net increase in stormwater runoff volume.
- The 100-year storm demonstrates a net **decrease** in stormwater runoff volume.

The gradual decrease in overall volume difference when comparing storm frequencies is due to the 3.6-acre area reduction and relationship between rainfall and CN values. As observed in TR-55 Table 2-1 below, the magnitude of runoff depth of pervious versus impervious surfaces is significantly less for the 100-year storm than more frequent storms.

Table 2-1 Runoff depth for selected CN's and rainfall amounts [1/]

Rainfall	Runoff depth for curve number of—												
	40	45	50	55	60	65	70	75	80	85	90	95	98
	inches												
1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.08	0.17	0.32	0.56	0.79
1.2	.00	.00	.00	.00	.00	.00	.03	.07	.15	.27	.46	.74	.99
1.4	.00	.00	.00	.00	.00	.02	.06	.13	.24	.39	.61	.92	1.18
1.6	.00	.00	.00	.00	.01	.05	.11	.20	.34	.52	.76	1.11	1.38
1.8	.00	.00	.00	.00	.03	.09	.17	.29	.44	.65	.93	1.29	1.58
2.0	.00	.00	.00	.02	.06	.14	.24	.38	.56	.80	1.09	1.48	1.77
2.5	.00	.00	.02	.08	.17	.30	.46	.65	.89	1.18	1.53	1.96	2.27
3.0	.00	.02	.09	.19	.33	.51	.71	.96	1.25	1.59	1.98	2.45	2.77
3.5	.02	.08	.20	.35	.53	.75	1.01	1.30	1.64	2.02	2.45	2.94	3.27
4.0	.06	.18	.33	.53	.76	1.03	1.33	1.67	2.04	2.46	2.92	3.43	3.77
4.5	.14	.30	.50	.74	1.02	1.33	1.67	2.05	2.46	2.91	3.40	3.92	4.26
5.0	.24	.44	.69	.98	1.30	1.65	2.04	2.45	2.89	3.37	3.88	4.42	4.76
6.0	.50	.80	1.14	1.52	1.92	2.35	2.81	3.28	3.78	4.30	4.85	5.41	5.76
7.0	.84	1.24	1.68	2.12	2.60	3.10	3.62	4.15	4.69	5.25	5.82	6.41	6.76
8.0	1.25	1.74	2.25	2.78	3.33	3.89	4.46	5.04	5.63	6.21	6.81	7.40	7.76
9.0	1.71	2.29	2.88	3.49	4.10	4.72	5.33	5.95	6.57	7.18	7.79	8.40	8.76
10.0	2.23	2.89	3.56	4.23	4.90	5.56	6.22	6.88	7.52	8.16	8.78	9.40	9.76
11.0	2.78	3.52	4.26	5.00	5.72	6.43	7.13	7.81	8.48	9.13	9.77	10.39	10.76
12.0	3.38	4.19	5.00	5.79	6.56	7.32	8.05	8.76	9.45	10.11	10.76	11.39	11.76
13.0	4.00	4.89	5.76	6.61	7.42	8.21	8.98	9.71	10.42	11.10	11.76	12.39	12.76
14.0	4.65	5.62	6.55	7.44	8.30	9.12	9.91	10.67	11.39	12.08	12.75	13.39	13.76
15.0	5.33	6.36	7.35	8.29	9.19	10.04	10.85	11.63	12.37	13.07	13.74	14.39	14.76

~1-yr storm → 2.5

~100-yr storm → 8.0

[1/] Interpolate the values shown to obtain runoff depths for CN's or rainfall amounts not shown.

For example, if we assume a 95 CN for proposed conditions and a 70 CN for existing, the 1-year storm has 4.2 times more runoff depth in proposed conditions than existing conditions. The 100-year storm, on the other hand, has only 1.6 times more runoff depth in proposed conditions than existing. Since there is more impervious but less drainage area in proposed conditions, this results in a gradual decrease in the difference of runoff volume as the storm intensity is increased.

Lockwood Basin Watershed Analysis

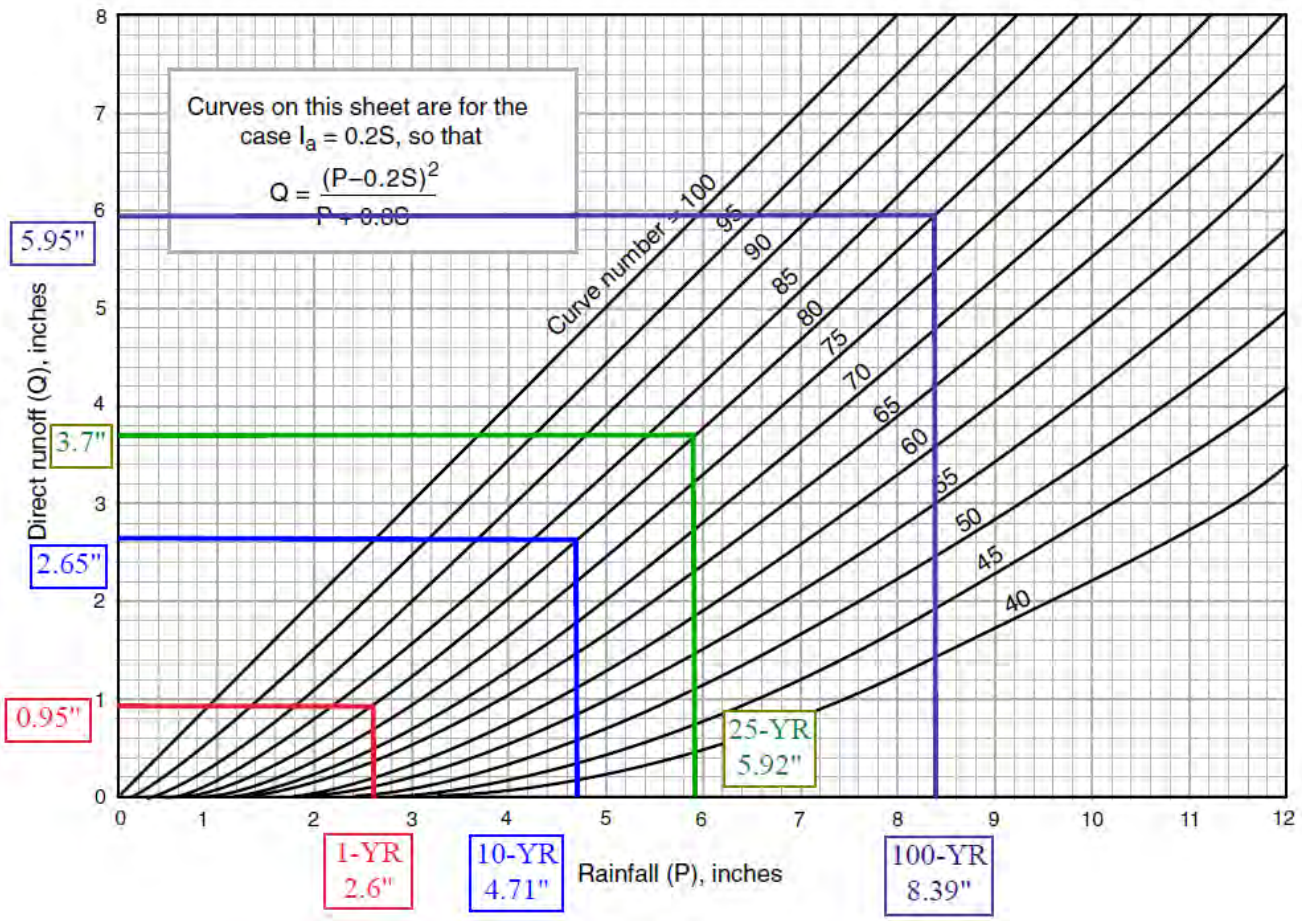
In response to the City of Newburgh's concerns of downstream flooding impacts to Lockwood Basin, our office has prepared a watershed analysis to evaluate the current contributing volume to Lockwood Basin and how the proposed warehouse facility will affect it. Pleases refer to the Watershed Map attached to this report that illustrates the contributing drainage area to Lockwood Basin. We've incorporated two conveyance diversion points that have the option of directing water to Lake Washington & Lockwood Basin.

Lockwood Basin Direct Contributing Area:	700 acres
Silver Stream Diversion Contributing Area:	2,319 acres
Murphy's Ditch Diversion Contributing Area:	1,586 acres
Total Contributing Area to Lockwood Basin:	4,605 acres

Assumed Watershed Characteristics

Cover Type:	Water Surfaces (352 acres) – CN 98 Impervious Roofs, Pavements, Hardscape (1,063 acres) – CN 98 Woods/Grass Combo, Good Condition (3,190 acres) – CN 72
Total Area:	4,605 Acres
Hydologic Soil Group:	C
Composite Curve Number:	80

Total Runoff Volume Estimation Utilizing TR-55 Guidance - Direct Runoff Chart, Figure 2-1



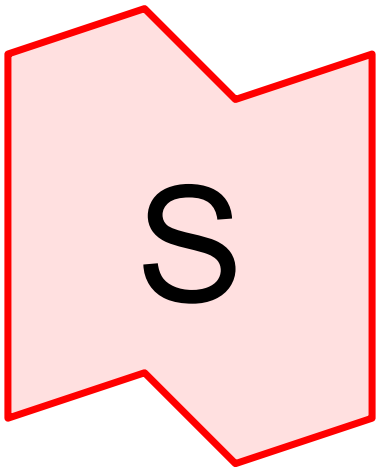
1-YR Storm Frequency Runoff Volume: (0.95 inches * 1 ft / 12 inches) * 4,605 acres = **365 acre-ft**
10-YR Storm Frequency Runoff Volume: (2.65 inches * 1 ft / 12 inches) * 4,605 acres = **1,017 acre-ft**
25-YR Storm Frequency Runoff Volume: (3.7 inches * 1 ft / 12 inches) * 4,605 acres = **1,420 acre-ft**
100-YR Storm Frequency Runoff Volume: (5.95 inches * 1 ft / 12 inches) * 4,605 acres = **2,283 acre-ft**

POI SOUTH
Volume Summary (Acre-feet)

FREQUENCY	EXISTING RUNOFF VOLUME	PROPOSED RUNOFF VOLUME	DIFFERENCE (%)
1 YEAR	365	365.615	+ 0.17%
10 YEAR	1,017	1,017.482	+ 0.05%
25 YEAR	1,420	1,420.304	+ 0.02%
100 YEAR	2,283	2,282.821	- 0.008%

As observed in the volume summary table above, the Unity Warehouse project will result in a de minimis impact to the overall contributing runoff volume to Lockwood Basin. It's our understanding that flooding events in that area in the past are a result from more intense storm events, such as the 100-year storm, which our project exhibits a decrease in total volume for. In conclusion, the minor fluctuations indicated above are beyond the scope of Lockwood Basin's apparent lack of storage and/or discharge capacity.

P:\BBE\21\21202_UnityPlaceWarehouse\Reports\Drainage\2023-04 Volume Analysis Summary\Stormwater Volume Memo.docx



POI South

Subcat Reach Pond Link

Routing Diagram for Existing
Prepared by Hewlett-Packard Company, Printed 5/1/2023

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	Type III 24-hr		Default	24.00	1	2.60	2
2	10-Year	Type III 24-hr		Default	24.00	1	4.71	2
3	25-Year	Type III 24-hr		Default	24.00	1	5.92	2
4	100-Year	Type III 24-hr		Default	24.00	1	8.39	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.000	**0**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.000		**TOTAL AREA**

Ground Covers (selected 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**	**0.000**	**0.000**	**0.000**	**0.000**	**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 Stor-Ind+Trans method - Pond routing by Stor-Ind method

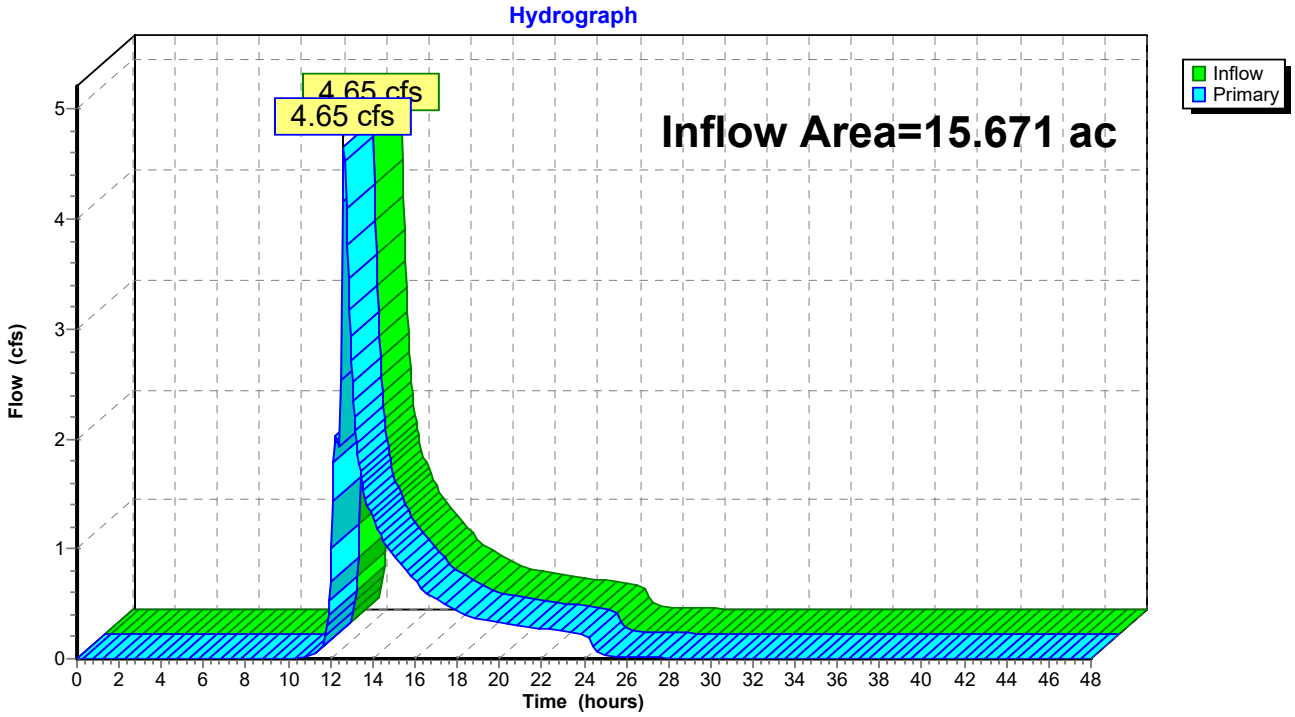
Link S: POI South Inflow=4.65 cfs 0.804 af
Primary=4.65 cfs 0.804 af

Summary for Link S: POI South

Inflow Area = 15.671 ac, 12.35% Impervious, Inflow Depth = 0.62" for 1-Year event
Inflow = 4.65 cfs @ 12.63 hrs, Volume= 0.804 af
Primary = 4.65 cfs @ 12.63 hrs, Volume= 0.804 af, Atten= 0%, Lag= 0.0 min

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

Link S: POI South



Hydrograph for Link S: POI South

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	26.50	0.01	0.00	0.01
0.50	0.00	0.00	0.00	27.00	0.01	0.00	0.01
1.00	0.00	0.00	0.00	27.50	0.01	0.00	0.01
1.50	0.00	0.00	0.00	28.00	0.01	0.00	0.01
2.00	0.00	0.00	0.00	28.50	0.01	0.00	0.01
2.50	0.00	0.00	0.00	29.00	0.01	0.00	0.01
3.00	0.00	0.00	0.00	29.50	0.01	0.00	0.01
3.50	0.00	0.00	0.00	30.00	0.00	0.00	0.00
4.00	0.00	0.00	0.00	30.50	0.00	0.00	0.00
4.50	0.00	0.00	0.00	31.00	0.00	0.00	0.00
5.00	0.00	0.00	0.00	31.50	0.00	0.00	0.00
5.50	0.00	0.00	0.00	32.00	0.00	0.00	0.00
6.00	0.00	0.00	0.00	32.50	0.00	0.00	0.00
6.50	0.00	0.00	0.00	33.00	0.00	0.00	0.00
7.00	0.00	0.00	0.00	33.50	0.00	0.00	0.00
7.50	0.00	0.00	0.00	34.00	0.00	0.00	0.00
8.00	0.00	0.00	0.00	34.50	0.00	0.00	0.00
8.50	0.00	0.00	0.00	35.00	0.00	0.00	0.00
9.00	0.00	0.00	0.00	35.50	0.00	0.00	0.00
9.50	0.00	0.00	0.00	36.00	0.00	0.00	0.00
10.00	0.00	0.00	0.00	36.50	0.00	0.00	0.00
10.50	0.00	0.00	0.00	37.00	0.00	0.00	0.00
11.00	0.02	0.00	0.02	37.50	0.00	0.00	0.00
11.50	0.07	0.00	0.07	38.00	0.00	0.00	0.00
12.00	0.70	0.00	0.70	38.50	0.00	0.00	0.00
12.50	**3.14**	0.00	**3.14**	39.00	0.00	0.00	0.00
13.00	**2.71**	0.00	**2.71**	39.50	0.00	0.00	0.00
13.50	1.59	0.00	1.59	40.00	0.00	0.00	0.00
14.00	1.28	0.00	1.28	40.50	0.00	0.00	0.00
14.50	1.07	0.00	1.07	41.00	0.00	0.00	0.00
15.00	0.94	0.00	0.94	41.50	0.00	0.00	0.00
15.50	0.83	0.00	0.83	42.00	0.00	0.00	0.00
16.00	0.71	0.00	0.71	42.50	0.00	0.00	0.00
16.50	0.61	0.00	0.61	43.00	0.00	0.00	0.00
17.00	0.54	0.00	0.54	43.50	0.00	0.00	0.00
17.50	0.49	0.00	0.49	44.00	0.00	0.00	0.00
18.00	0.43	0.00	0.43	44.50	0.00	0.00	0.00
18.50	0.39	0.00	0.39	45.00	0.00	0.00	0.00
19.00	0.36	0.00	0.36	45.50	0.00	0.00	0.00
19.50	0.35	0.00	0.35	46.00	0.00	0.00	0.00
20.00	0.33	0.00	0.33	46.50	0.00	0.00	0.00
20.50	0.31	0.00	0.31	47.00	0.00	0.00	0.00
21.00	0.30	0.00	0.30	47.50	0.00	0.00	0.00
21.50	0.29	0.00	0.29	48.00	0.00	0.00	0.00
22.00	0.27	0.00	0.27				
22.50	0.26	0.00	0.26				
23.00	0.25	0.00	0.25				
23.50	0.24	0.00	0.24				
24.00	0.22	0.00	0.22				
24.50	0.10	0.00	0.10				
25.00	0.03	0.00	0.03				
25.50	0.02	0.00	0.02				
26.00	0.02	0.00	0.02				

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 Stor-Ind+Trans method - Pond routing by Stor-Ind method

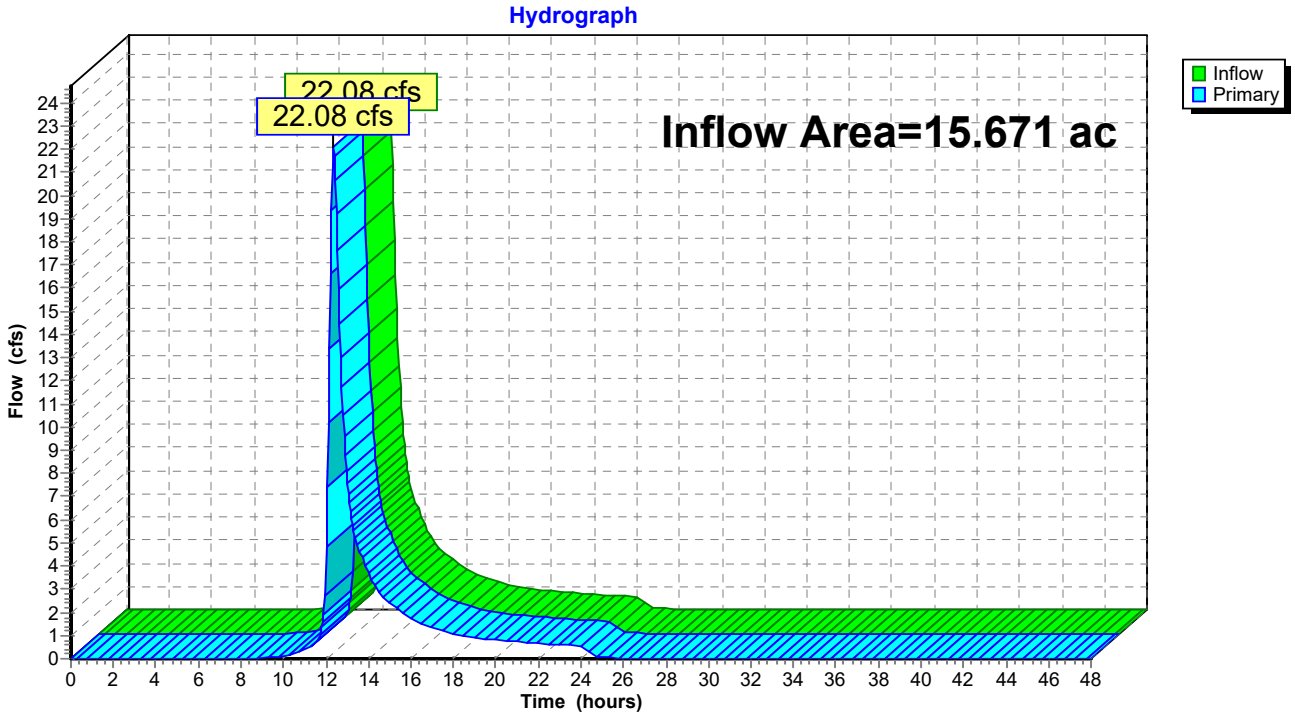
Link S: POI South Inflow=22.08 cfs 2.751 af
Primary=22.08 cfs 2.751 af

Summary for Link S: POI South

Inflow Area = 15.671 ac, 12.35% Impervious, Inflow Depth = 2.11" for 10-Year event
Inflow = 22.08 cfs @ 12.36 hrs, Volume= 2.751 af
Primary = 22.08 cfs @ 12.36 hrs, Volume= 2.751 af, Atten= 0%, Lag= 0.0 min

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

Link S: POI South



Hydrograph for Link S: POI South

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00
0.50	0.00	0.00	0.00
1.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00
2.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00
3.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00
4.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00
5.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.50	0.00	0.00	0.00
8.00	0.00	0.00	0.00
8.50	0.01	0.00	0.01
9.00	0.03	0.00	0.03
9.50	0.07	0.00	0.07
10.00	0.13	0.00	0.13
10.50	0.24	0.00	0.24
11.00	0.38	0.00	0.38
11.50	0.66	0.00	0.66
12.00	**4.83**	0.00	**4.83**
12.50	**19.21**	0.00	**19.21**
13.00	7.54	0.00	7.54
13.50	4.82	0.00	4.82
14.00	3.74	0.00	3.74
14.50	2.86	0.00	2.86
15.00	2.40	0.00	2.40
15.50	2.06	0.00	2.06
16.00	1.74	0.00	1.74
16.50	1.47	0.00	1.47
17.00	1.32	0.00	1.32
17.50	1.19	0.00	1.19
18.00	1.06	0.00	1.06
18.50	0.94	0.00	0.94
19.00	0.88	0.00	0.88
19.50	0.84	0.00	0.84
20.00	0.80	0.00	0.80
20.50	0.76	0.00	0.76
21.00	0.72	0.00	0.72
21.50	0.69	0.00	0.69
22.00	0.66	0.00	0.66
22.50	0.63	0.00	0.63
23.00	0.60	0.00	0.60
23.50	0.57	0.00	0.57
24.00	0.53	0.00	0.53
24.50	0.23	0.00	0.23
25.00	0.06	0.00	0.06
25.50	0.03	0.00	0.03
26.00	0.02	0.00	0.02
26.50	0.02	0.00	0.02
27.00	0.01	0.00	0.01
27.50	0.01	0.00	0.01
28.00	0.01	0.00	0.01
28.50	0.01	0.00	0.01
29.00	0.01	0.00	0.01
29.50	0.01	0.00	0.01
30.00	0.01	0.00	0.01
30.50	0.00	0.00	0.00
31.00	0.00	0.00	0.00
31.50	0.00	0.00	0.00
32.00	0.00	0.00	0.00
32.50	0.00	0.00	0.00
33.00	0.00	0.00	0.00
33.50	0.00	0.00	0.00
34.00	0.00	0.00	0.00
34.50	0.00	0.00	0.00
35.00	0.00	0.00	0.00
35.50	0.00	0.00	0.00
36.00	0.00	0.00	0.00
36.50	0.00	0.00	0.00
37.00	0.00	0.00	0.00
37.50	0.00	0.00	0.00
38.00	0.00	0.00	0.00
38.50	0.00	0.00	0.00
39.00	0.00	0.00	0.00
39.50	0.00	0.00	0.00
40.00	0.00	0.00	0.00
40.50	0.00	0.00	0.00
41.00	0.00	0.00	0.00
41.50	0.00	0.00	0.00
42.00	0.00	0.00	0.00
42.50	0.00	0.00	0.00
43.00	0.00	0.00	0.00
43.50	0.00	0.00	0.00
44.00	0.00	0.00	0.00
44.50	0.00	0.00	0.00
45.00	0.00	0.00	0.00
45.50	0.00	0.00	0.00
46.00	0.00	0.00	0.00
46.50	0.00	0.00	0.00
47.00	0.00	0.00	0.00
47.50	0.00	0.00	0.00
48.00	0.00	0.00	0.00

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 Stor-Ind+Trans method - Pond routing by Stor-Ind method

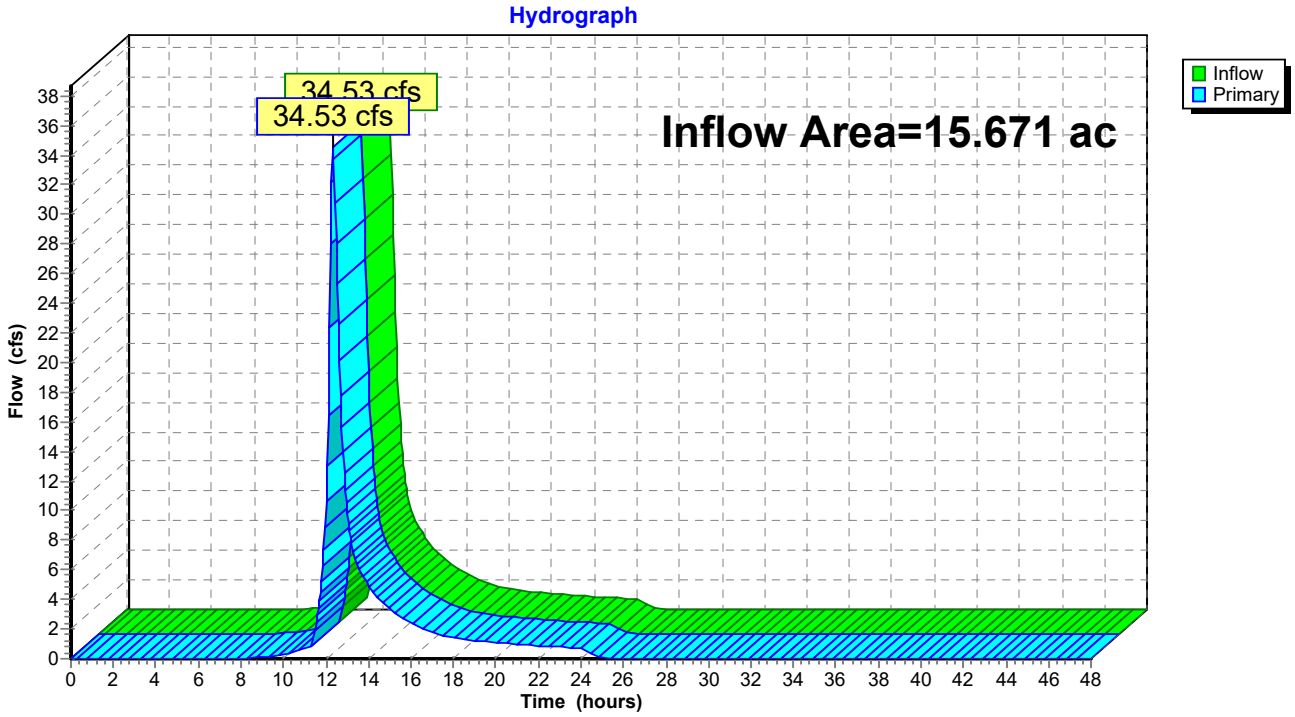
Link S: POI South Inflow=34.53 cfs 4.040 af
Primary=34.53 cfs 4.040 af

Summary for Link S: POI South

Inflow Area = 15.671 ac, 12.35% Impervious, Inflow Depth = 3.09" for 25-Year event
Inflow = 34.53 cfs @ 12.33 hrs, Volume= 4.040 af
Primary = 34.53 cfs @ 12.33 hrs, Volume= 4.040 af, Atten= 0%, Lag= 0.0 min

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

Link S: POI South



Hydrograph for Link S: POI South

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00
0.50	0.00	0.00	0.00
1.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00
2.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00
3.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00
4.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00
5.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.50	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.50	0.01	0.00	0.01
8.00	0.03	0.00	0.03
8.50	0.06	0.00	0.06
9.00	0.12	0.00	0.12
9.50	0.20	0.00	0.20
10.00	0.31	0.00	0.31
10.50	0.46	0.00	0.46
11.00	0.66	0.00	0.66
11.50	1.88	0.00	1.88
12.00	**10.63**	0.00	**10.63**
12.50	**28.00**	0.00	**28.00**
13.00	9.77	0.00	9.77
13.50	6.27	0.00	6.27
14.00	5.01	0.00	5.01
14.50	3.99	0.00	3.99
15.00	3.31	0.00	3.31
15.50	2.81	0.00	2.81
16.00	2.36	0.00	2.36
16.50	1.99	0.00	1.99
17.00	1.78	0.00	1.78
17.50	1.59	0.00	1.59
18.00	1.41	0.00	1.41
18.50	1.25	0.00	1.25
19.00	1.18	0.00	1.18
19.50	1.13	0.00	1.13
20.00	1.07	0.00	1.07
20.50	1.02	0.00	1.02
21.00	0.97	0.00	0.97
21.50	0.93	0.00	0.93
22.00	0.89	0.00	0.89
22.50	0.84	0.00	0.84
23.00	0.80	0.00	0.80
23.50	0.76	0.00	0.76
24.00	0.71	0.00	0.71
24.50	0.30	0.00	0.30
25.00	0.07	0.00	0.07
25.50	0.04	0.00	0.04
26.00	0.03	0.00	0.03
26.50	0.02	0.00	0.02
27.00	0.02	0.00	0.02
27.50	0.01	0.00	0.01
28.00	0.01	0.00	0.01
28.50	0.01	0.00	0.01
29.00	0.01	0.00	0.01
29.50	0.01	0.00	0.01
30.00	0.01	0.00	0.01
30.50	0.00	0.00	0.00
31.00	0.00	0.00	0.00
31.50	0.00	0.00	0.00
32.00	0.00	0.00	0.00
32.50	0.00	0.00	0.00
33.00	0.00	0.00	0.00
33.50	0.00	0.00	0.00
34.00	0.00	0.00	0.00
34.50	0.00	0.00	0.00
35.00	0.00	0.00	0.00
35.50	0.00	0.00	0.00
36.00	0.00	0.00	0.00
36.50	0.00	0.00	0.00
37.00	0.00	0.00	0.00
37.50	0.00	0.00	0.00
38.00	0.00	0.00	0.00
38.50	0.00	0.00	0.00
39.00	0.00	0.00	0.00
39.50	0.00	0.00	0.00
40.00	0.00	0.00	0.00
40.50	0.00	0.00	0.00
41.00	0.00	0.00	0.00
41.50	0.00	0.00	0.00
42.00	0.00	0.00	0.00
42.50	0.00	0.00	0.00
43.00	0.00	0.00	0.00
43.50	0.00	0.00	0.00
44.00	0.00	0.00	0.00
44.50	0.00	0.00	0.00
45.00	0.00	0.00	0.00
45.50	0.00	0.00	0.00
46.00	0.00	0.00	0.00
46.50	0.00	0.00	0.00
47.00	0.00	0.00	0.00
47.50	0.00	0.00	0.00
48.00	0.00	0.00	0.00

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 Stor-Ind+Trans method - Pond routing by Stor-Ind method

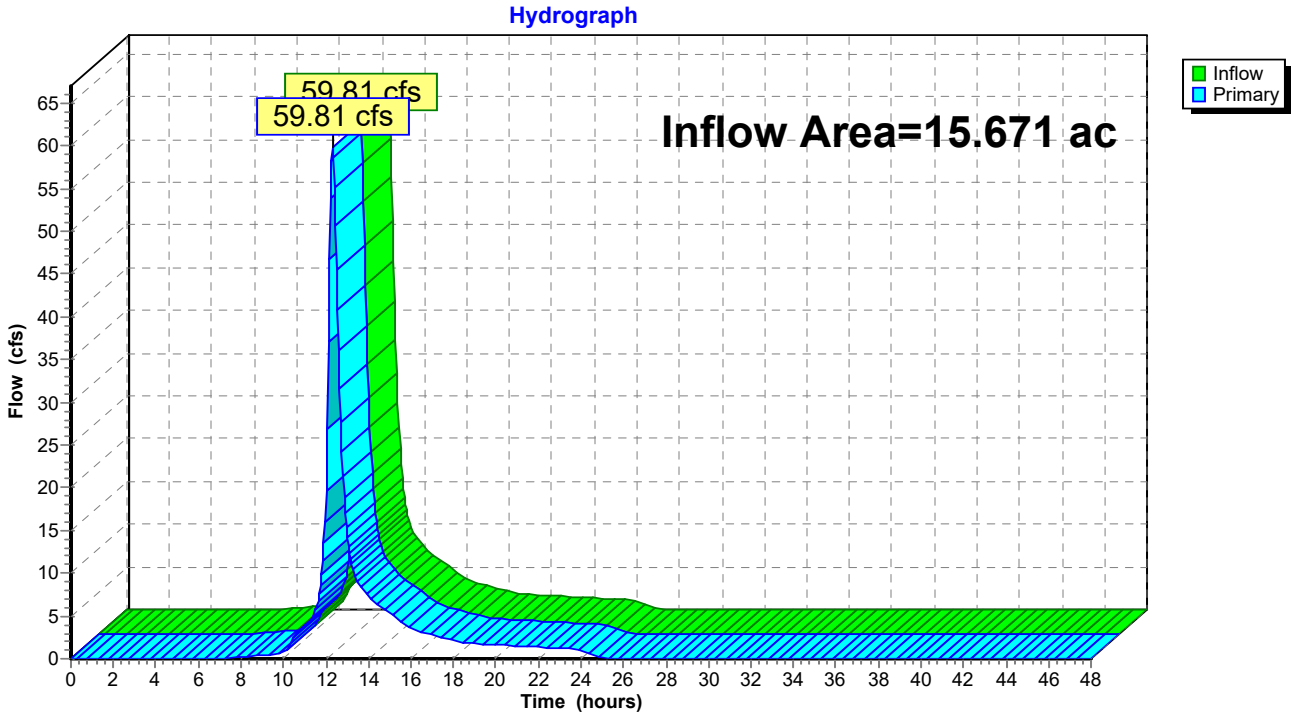
Link S: POI South Inflow=59.81 cfs 6.863 af
Primary=59.81 cfs 6.863 af

Summary for Link S: POI South

Inflow Area = 15.671 ac, 12.35% Impervious, Inflow Depth = 5.26" for 100-Year event
Inflow = 59.81 cfs @ 12.30 hrs, Volume= 6.863 af
Primary = 59.81 cfs @ 12.30 hrs, Volume= 6.863 af, Atten= 0%, Lag= 0.0 min

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

Link S: POI South



Hydrograph for Link S: POI South

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00
0.50	0.00	0.00	0.00
1.00	0.00	0.00	0.00
1.50	0.00	0.00	0.00
2.00	0.00	0.00	0.00
2.50	0.00	0.00	0.00
3.00	0.00	0.00	0.00
3.50	0.00	0.00	0.00
4.00	0.00	0.00	0.00
4.50	0.00	0.00	0.00
5.00	0.00	0.00	0.00
5.50	0.00	0.00	0.00
6.00	0.01	0.00	0.01
6.50	0.03	0.00	0.03
7.00	0.06	0.00	0.06
7.50	0.11	0.00	0.11
8.00	0.17	0.00	0.17
8.50	0.26	0.00	0.26
9.00	0.38	0.00	0.38
9.50	0.53	0.00	0.53
10.00	0.71	0.00	0.71
10.50	2.63	0.00	2.63
11.00	3.81	0.00	3.81
11.50	5.81	0.00	5.81
12.00	**19.57**	0.00	**19.57**
12.50	**45.57**	0.00	**45.57**
13.00	14.15	0.00	14.15
13.50	8.97	0.00	8.97
14.00	7.39	0.00	7.39
14.50	6.13	0.00	6.13
15.00	5.23	0.00	5.23
15.50	4.41	0.00	4.41
16.00	3.65	0.00	3.65
16.50	3.07	0.00	3.07
17.00	2.73	0.00	2.73
17.50	2.44	0.00	2.44
18.00	2.15	0.00	2.15
18.50	1.91	0.00	1.91
19.00	1.80	0.00	1.80
19.50	1.71	0.00	1.71
20.00	1.62	0.00	1.62
20.50	1.54	0.00	1.54
21.00	1.47	0.00	1.47
21.50	1.41	0.00	1.41
22.00	1.34	0.00	1.34
22.50	1.28	0.00	1.28
23.00	1.21	0.00	1.21
23.50	1.15	0.00	1.15
24.00	1.09	0.00	1.09
24.50	0.44	0.00	0.44
25.00	0.10	0.00	0.10
25.50	0.05	0.00	0.05
26.00	0.03	0.00	0.03
26.50	0.02	0.00	0.02
27.00	0.02	0.00	0.02
27.50	0.01	0.00	0.01
28.00	0.01	0.00	0.01
28.50	0.01	0.00	0.01
29.00	0.01	0.00	0.01
29.50	0.01	0.00	0.01
30.00	0.01	0.00	0.01
30.50	0.01	0.00	0.01
31.00	0.00	0.00	0.00
31.50	0.00	0.00	0.00
32.00	0.00	0.00	0.00
32.50	0.00	0.00	0.00
33.00	0.00	0.00	0.00
33.50	0.00	0.00	0.00
34.00	0.00	0.00	0.00
34.50	0.00	0.00	0.00
35.00	0.00	0.00	0.00
35.50	0.00	0.00	0.00
36.00	0.00	0.00	0.00
36.50	0.00	0.00	0.00
37.00	0.00	0.00	0.00
37.50	0.00	0.00	0.00
38.00	0.00	0.00	0.00
38.50	0.00	0.00	0.00
39.00	0.00	0.00	0.00
39.50	0.00	0.00	0.00
40.00	0.00	0.00	0.00
40.50	0.00	0.00	0.00
41.00	0.00	0.00	0.00
41.50	0.00	0.00	0.00
42.00	0.00	0.00	0.00
42.50	0.00	0.00	0.00
43.00	0.00	0.00	0.00
43.50	0.00	0.00	0.00
44.00	0.00	0.00	0.00
44.50	0.00	0.00	0.00
45.00	0.00	0.00	0.00
45.50	0.00	0.00	0.00
46.00	0.00	0.00	0.00
46.50	0.00	0.00	0.00
47.00	0.00	0.00	0.00
47.50	0.00	0.00	0.00
48.00	0.00	0.00	0.00

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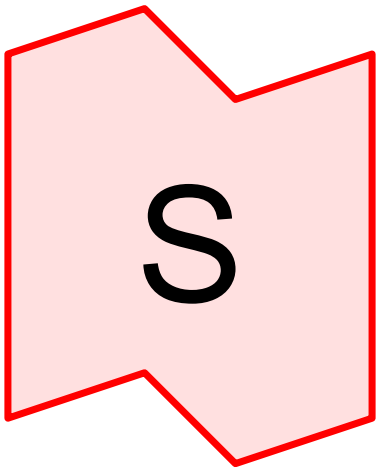


POI South

Subcat Reach Pond Link

Routing Diagram for Proposed
Prepared by Hewlett-Packard Company, Printed 5/1/2023

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-Year	Type III 24-hr		Default	24.00	1	2.60	2
2	10-Year	Type III 24-hr		Default	24.00	1	4.71	2
3	25-Year	Type III 24-hr		Default	24.00	1	5.92	2
4	100-Year	Type III 24-hr		Default	24.00	1	8.39	2

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.000	**0**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.000	Other	
0.000		**TOTAL AREA**

Ground Covers (selected 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**	**0.000**	**0.000**	**0.000**	**0.000**	**TOTAL AREA**	

Time span=0.00-60.00 hrs, dt=0.02 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

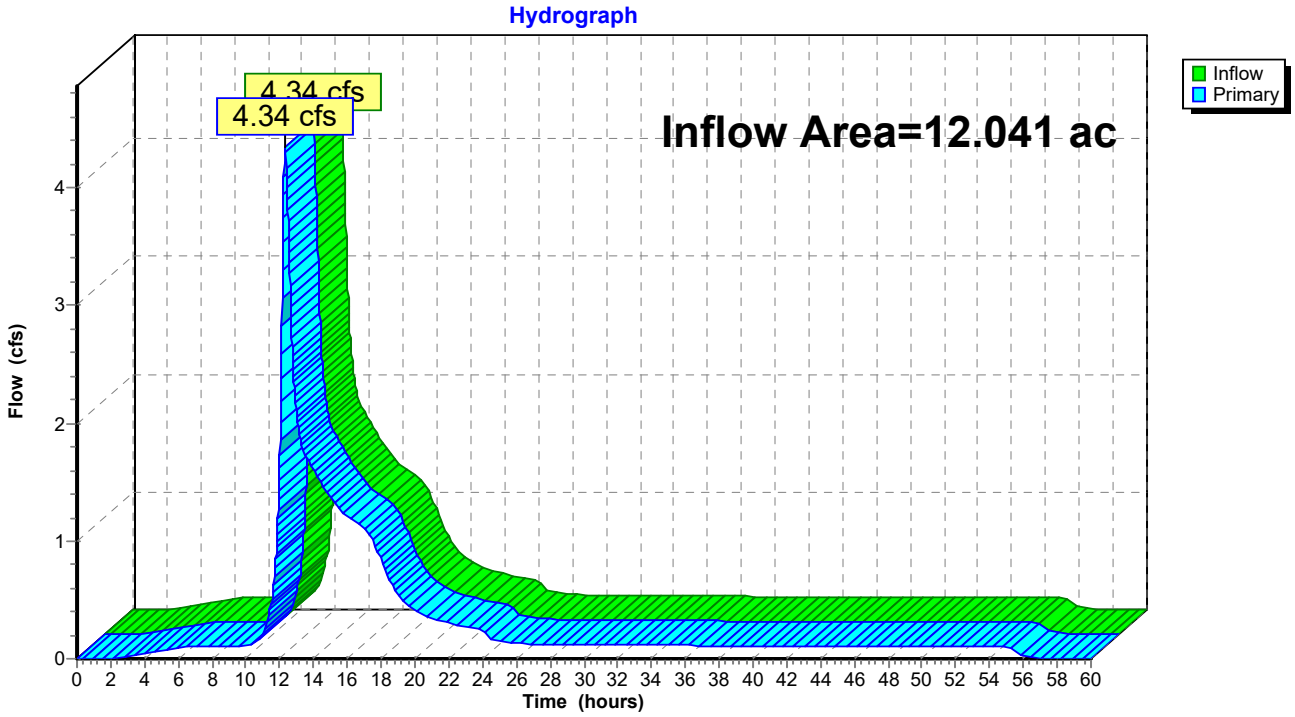
Link S: POI South Inflow=4.34 cfs 1.419 af
Primary=4.34 cfs 1.419 af

Summary for Link S: POI South

Inflow Area = 12.041 ac, 46.90% Impervious, Inflow Depth = 1.41" for 1-Year event
Inflow = 4.34 cfs @ 12.32 hrs, Volume= 1.419 af
Primary = 4.34 cfs @ 12.32 hrs, Volume= 1.419 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs

Link S: POI South



Hydrograph for Link S: POI South

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	10.60	0.14	0.00	0.14
0.20	0.00	0.00	0.00	10.80	0.17	0.00	0.17
0.40	0.00	0.00	0.00	11.00	0.21	0.00	0.21
0.60	0.00	0.00	0.00	11.20	0.28	0.00	0.28
0.80	0.00	0.00	0.00	11.40	0.40	0.00	0.40
1.00	0.00	0.00	0.00	11.60	0.56	0.00	0.56
1.20	0.00	0.00	0.00	11.80	0.95	0.00	0.95
1.40	0.00	0.00	0.00	12.00	1.73	0.00	1.73
1.60	0.00	0.00	0.00	12.20	**3.75**	0.00	**3.75**
1.80	0.00	0.00	0.00	12.40	**4.16**	0.00	**4.16**
2.00	0.00	0.00	0.00	12.60	3.27	0.00	3.27
2.20	0.01	0.00	0.01	12.80	2.45	0.00	2.45
2.40	0.01	0.00	0.01	13.00	2.07	0.00	2.07
2.60	0.01	0.00	0.01	13.20	1.88	0.00	1.88
2.80	0.02	0.00	0.02	13.40	1.77	0.00	1.77
3.00	0.02	0.00	0.02	13.60	1.71	0.00	1.71
3.20	0.03	0.00	0.03	13.80	1.65	0.00	1.65
3.40	0.03	0.00	0.03	14.00	1.60	0.00	1.60
3.60	0.03	0.00	0.03	14.20	1.55	0.00	1.55
3.80	0.04	0.00	0.04	14.40	1.50	0.00	1.50
4.00	0.04	0.00	0.04	14.60	1.46	0.00	1.46
4.20	0.05	0.00	0.05	14.80	1.42	0.00	1.42
4.40	0.05	0.00	0.05	15.00	1.38	0.00	1.38
4.60	0.06	0.00	0.06	15.20	1.34	0.00	1.34
4.80	0.06	0.00	0.06	15.40	1.30	0.00	1.30
5.00	0.07	0.00	0.07	15.60	1.25	0.00	1.25
5.20	0.07	0.00	0.07	15.80	1.23	0.00	1.23
5.40	0.08	0.00	0.08	16.00	1.21	0.00	1.21
5.60	0.08	0.00	0.08	16.20	1.20	0.00	1.20
5.80	0.09	0.00	0.09	16.40	1.18	0.00	1.18
6.00	0.09	0.00	0.09	16.60	1.16	0.00	1.16
6.20	0.10	0.00	0.10	16.80	1.14	0.00	1.14
6.40	0.10	0.00	0.10	17.00	1.11	0.00	1.11
6.60	0.10	0.00	0.10	17.20	1.07	0.00	1.07
6.80	0.10	0.00	0.10	17.40	1.03	0.00	1.03
7.00	0.10	0.00	0.10	17.60	0.98	0.00	0.98
7.20	0.10	0.00	0.10	17.80	0.91	0.00	0.91
7.40	0.10	0.00	0.10	18.00	0.84	0.00	0.84
7.60	0.10	0.00	0.10	18.20	0.77	0.00	0.77
7.80	0.10	0.00	0.10	18.40	0.70	0.00	0.70
8.00	0.10	0.00	0.10	18.60	0.63	0.00	0.63
8.20	0.10	0.00	0.10	18.80	0.58	0.00	0.58
8.40	0.10	0.00	0.10	19.00	0.54	0.00	0.54
8.60	0.10	0.00	0.10	19.20	0.51	0.00	0.51
8.80	0.10	0.00	0.10	19.40	0.48	0.00	0.48
9.00	0.10	0.00	0.10	19.60	0.45	0.00	0.45
9.20	0.10	0.00	0.10	19.80	0.43	0.00	0.43
9.40	0.11	0.00	0.11	20.00	0.41	0.00	0.41
9.60	0.11	0.00	0.11	20.20	0.39	0.00	0.39
9.80	0.11	0.00	0.11	20.40	0.37	0.00	0.37
10.00	0.11	0.00	0.11	20.60	0.36	0.00	0.36
10.20	0.12	0.00	0.12	20.80	0.35	0.00	0.35
10.40	0.13	0.00	0.13	21.00	0.34	0.00	0.34

Hydrograph for Link S: POI South (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
21.20	0.34	0.00	0.34	31.80	0.12	0.00	0.12
21.40	0.33	0.00	0.33	32.00	0.11	0.00	0.11
21.60	0.32	0.00	0.32	32.20	0.11	0.00	0.11
21.80	0.31	0.00	0.31	32.40	0.11	0.00	0.11
22.00	0.31	0.00	0.31	32.60	0.11	0.00	0.11
22.20	0.30	0.00	0.30	32.80	0.11	0.00	0.11
22.40	0.29	0.00	0.29	33.00	0.11	0.00	0.11
22.60	0.29	0.00	0.29	33.20	0.11	0.00	0.11
22.80	0.28	0.00	0.28	33.40	0.11	0.00	0.11
23.00	0.27	0.00	0.27	33.60	0.11	0.00	0.11
23.20	0.27	0.00	0.27	33.80	0.11	0.00	0.11
23.40	0.26	0.00	0.26	34.00	0.11	0.00	0.11
23.60	0.26	0.00	0.26	34.20	0.11	0.00	0.11
23.80	0.25	0.00	0.25	34.40	0.11	0.00	0.11
24.00	0.25	0.00	0.25	34.60	0.11	0.00	0.11
24.20	0.23	0.00	0.23	34.80	0.11	0.00	0.11
24.40	0.18	0.00	0.18	35.00	0.11	0.00	0.11
24.60	0.16	0.00	0.16	35.20	0.11	0.00	0.11
24.80	0.15	0.00	0.15	35.40	0.11	0.00	0.11
25.00	0.14	0.00	0.14	35.60	0.11	0.00	0.11
25.20	0.14	0.00	0.14	35.80	0.11	0.00	0.11
25.40	0.14	0.00	0.14	36.00	0.11	0.00	0.11
25.60	0.14	0.00	0.14	36.20	0.11	0.00	0.11
25.80	0.13	0.00	0.13	36.40	0.11	0.00	0.11
26.00	0.13	0.00	0.13	36.60	0.11	0.00	0.11
26.20	0.13	0.00	0.13	36.80	0.11	0.00	0.11
26.40	0.13	0.00	0.13	37.00	0.11	0.00	0.11
26.60	0.13	0.00	0.13	37.20	0.11	0.00	0.11
26.80	0.13	0.00	0.13	37.40	0.11	0.00	0.11
27.00	0.12	0.00	0.12	37.60	0.11	0.00	0.11
27.20	0.12	0.00	0.12	37.80	0.11	0.00	0.11
27.40	0.12	0.00	0.12	38.00	0.11	0.00	0.11
27.60	0.12	0.00	0.12	38.20	0.11	0.00	0.11
27.80	0.12	0.00	0.12	38.40	0.11	0.00	0.11
28.00	0.12	0.00	0.12	38.60	0.11	0.00	0.11
28.20	0.12	0.00	0.12	38.80	0.11	0.00	0.11
28.40	0.12	0.00	0.12	39.00	0.11	0.00	0.11
28.60	0.12	0.00	0.12	39.20	0.11	0.00	0.11
28.80	0.12	0.00	0.12	39.40	0.11	0.00	0.11
29.00	0.12	0.00	0.12	39.60	0.11	0.00	0.11
29.20	0.12	0.00	0.12	39.80	0.11	0.00	0.11
29.40	0.12	0.00	0.12	40.00	0.11	0.00	0.11
29.60	0.12	0.00	0.12	40.20	0.11	0.00	0.11
29.80	0.12	0.00	0.12	40.40	0.11	0.00	0.11
30.00	0.12	0.00	0.12	40.60	0.11	0.00	0.11
30.20	0.12	0.00	0.12	40.80	0.11	0.00	0.11
30.40	0.12	0.00	0.12	41.00	0.11	0.00	0.11
30.60	0.12	0.00	0.12	41.20	0.11	0.00	0.11
30.80	0.12	0.00	0.12	41.40	0.11	0.00	0.11
31.00	0.12	0.00	0.12	41.60	0.11	0.00	0.11
31.20	0.12	0.00	0.12	41.80	0.11	0.00	0.11
31.40	0.12	0.00	0.12	42.00	0.11	0.00	0.11
31.60	0.12	0.00	0.12	42.20	0.11	0.00	0.11

Hydrograph for Link S: POI South (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
42.40	0.11	0.00	0.11
42.60	0.11	0.00	0.11
42.80	0.11	0.00	0.11
43.00	0.11	0.00	0.11
43.20	0.11	0.00	0.11
43.40	0.11	0.00	0.11
43.60	0.11	0.00	0.11
43.80	0.11	0.00	0.11
44.00	0.11	0.00	0.11
44.20	0.11	0.00	0.11
44.40	0.11	0.00	0.11
44.60	0.11	0.00	0.11
44.80	0.11	0.00	0.11
45.00	0.11	0.00	0.11
45.20	0.11	0.00	0.11
45.40	0.11	0.00	0.11
45.60	0.11	0.00	0.11
45.80	0.11	0.00	0.11
46.00	0.11	0.00	0.11
46.20	0.11	0.00	0.11
46.40	0.11	0.00	0.11
46.60	0.11	0.00	0.11
46.80	0.11	0.00	0.11
47.00	0.11	0.00	0.11
47.20	0.11	0.00	0.11
47.40	0.11	0.00	0.11
47.60	0.11	0.00	0.11
47.80	0.11	0.00	0.11
48.00	0.11	0.00	0.11
48.20	0.11	0.00	0.11
48.40	0.11	0.00	0.11
48.60	0.11	0.00	0.11
48.80	0.11	0.00	0.11
49.00	0.11	0.00	0.11
49.20	0.11	0.00	0.11
49.40	0.11	0.00	0.11
49.60	0.11	0.00	0.11
49.80	0.11	0.00	0.11
50.00	0.11	0.00	0.11
50.20	0.11	0.00	0.11
50.40	0.11	0.00	0.11
50.60	0.11	0.00	0.11
50.80	0.11	0.00	0.11
51.00	0.11	0.00	0.11
51.20	0.11	0.00	0.11
51.40	0.11	0.00	0.11
51.60	0.11	0.00	0.11
51.80	0.11	0.00	0.11
52.00	0.11	0.00	0.11
52.20	0.11	0.00	0.11
52.40	0.11	0.00	0.11
52.60	0.10	0.00	0.10
52.80	0.10	0.00	0.10
53.00	0.10	0.00	0.10
53.20	0.10	0.00	0.10
53.40	0.10	0.00	0.10
53.60	0.10	0.00	0.10
53.80	0.10	0.00	0.10
54.00	0.10	0.00	0.10
54.20	0.10	0.00	0.10
54.40	0.10	0.00	0.10
54.60	0.10	0.00	0.10
54.80	0.10	0.00	0.10
55.00	0.10	0.00	0.10
55.20	0.10	0.00	0.10
55.40	0.07	0.00	0.07
55.60	0.05	0.00	0.05
55.80	0.03	0.00	0.03
56.00	0.02	0.00	0.02
56.20	0.01	0.00	0.01
56.40	0.01	0.00	0.01
56.60	0.01	0.00	0.01
56.80	0.00	0.00	0.00
57.00	0.00	0.00	0.00
57.20	0.00	0.00	0.00
57.40	0.00	0.00	0.00
57.60	0.00	0.00	0.00
57.80	0.00	0.00	0.00
58.00	0.00	0.00	0.00
58.20	0.00	0.00	0.00
58.40	0.00	0.00	0.00
58.60	0.00	0.00	0.00
58.80	0.00	0.00	0.00
59.00	0.00	0.00	0.00
59.20	0.00	0.00	0.00
59.40	0.00	0.00	0.00
59.60	0.00	0.00	0.00
59.80	0.00	0.00	0.00
60.00	0.00	0.00	0.00

Time span=0.00-60.00 hrs, dt=0.02 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

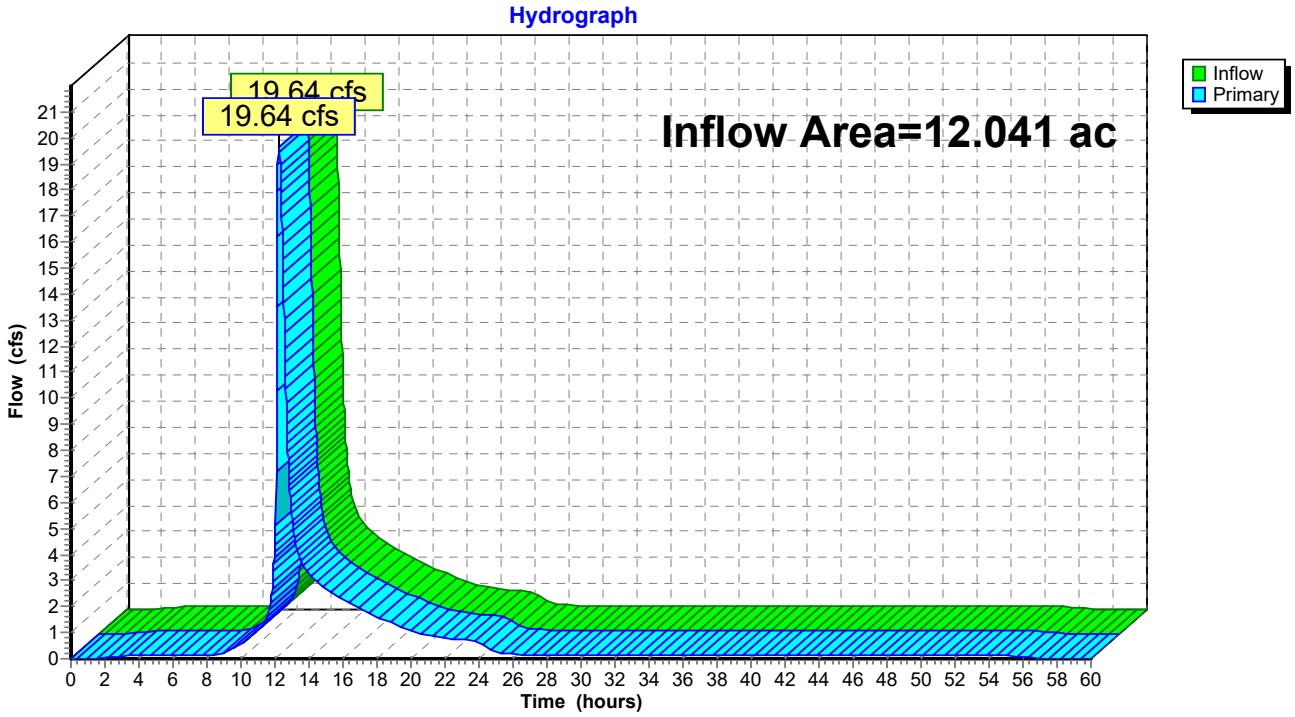
Link S: POI South Inflow=19.64 cfs 3.233 af
Primary=19.64 cfs 3.233 af

Summary for Link S: POI South

Inflow Area = 12.041 ac, 46.90% Impervious, Inflow Depth = 3.22" for 10-Year event
Inflow = 19.64 cfs @ 12.21 hrs, Volume= 3.233 af
Primary = 19.64 cfs @ 12.21 hrs, Volume= 3.233 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs

Link S: POI South



Hydrograph for Link S: POI South

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	10.60	0.87	0.00	0.87
0.20	0.00	0.00	0.00	10.80	0.99	0.00	0.99
0.40	0.00	0.00	0.00	11.00	1.11	0.00	1.11
0.60	0.00	0.00	0.00	11.20	1.24	0.00	1.24
0.80	0.00	0.00	0.00	11.40	1.43	0.00	1.43
1.00	0.00	0.00	0.00	11.60	1.72	0.00	1.72
1.20	0.00	0.00	0.00	11.80	2.45	0.00	2.45
1.40	0.01	0.00	0.01	12.00	4.38	0.00	4.38
1.60	0.02	0.00	0.02	12.20	**19.62**	0.00	**19.62**
1.80	0.03	0.00	0.03	12.40	16.97	0.00	16.97
2.00	0.04	0.00	0.04	12.60	11.36	0.00	11.36
2.20	0.05	0.00	0.05	12.80	7.37	0.00	7.37
2.40	0.06	0.00	0.06	13.00	5.53	0.00	5.53
2.60	0.07	0.00	0.07	13.20	4.49	0.00	4.49
2.80	0.08	0.00	0.08	13.40	3.92	0.00	3.92
3.00	0.09	0.00	0.09	13.60	3.64	0.00	3.64
3.20	0.10	0.00	0.10	13.80	3.43	0.00	3.43
3.40	0.10	0.00	0.10	14.00	3.25	0.00	3.25
3.60	0.10	0.00	0.10	14.20	3.08	0.00	3.08
3.80	0.10	0.00	0.10	14.40	2.94	0.00	2.94
4.00	0.10	0.00	0.10	14.60	2.83	0.00	2.83
4.20	0.10	0.00	0.10	14.80	2.74	0.00	2.74
4.40	0.10	0.00	0.10	15.00	2.65	0.00	2.65
4.60	0.10	0.00	0.10	15.20	2.56	0.00	2.56
4.80	0.10	0.00	0.10	15.40	2.48	0.00	2.48
5.00	0.10	0.00	0.10	15.60	2.40	0.00	2.40
5.20	0.10	0.00	0.10	15.80	2.33	0.00	2.33
5.40	0.10	0.00	0.10	16.00	2.25	0.00	2.25
5.60	0.10	0.00	0.10	16.20	2.17	0.00	2.17
5.80	0.10	0.00	0.10	16.40	2.10	0.00	2.10
6.00	0.10	0.00	0.10	16.60	2.04	0.00	2.04
6.20	0.10	0.00	0.10	16.80	1.98	0.00	1.98
6.40	0.10	0.00	0.10	17.00	1.91	0.00	1.91
6.60	0.11	0.00	0.11	17.20	1.85	0.00	1.85
6.80	0.11	0.00	0.11	17.40	1.79	0.00	1.79
7.00	0.11	0.00	0.11	17.60	1.73	0.00	1.73
7.20	0.11	0.00	0.11	17.80	1.67	0.00	1.67
7.40	0.11	0.00	0.11	18.00	1.60	0.00	1.60
7.60	0.11	0.00	0.11	18.20	1.54	0.00	1.54
7.80	0.12	0.00	0.12	18.40	1.49	0.00	1.49
8.00	0.12	0.00	0.12	18.60	1.44	0.00	1.44
8.20	0.13	0.00	0.13	18.80	1.40	0.00	1.40
8.40	0.14	0.00	0.14	19.00	1.35	0.00	1.35
8.60	0.16	0.00	0.16	19.20	1.29	0.00	1.29
8.80	0.19	0.00	0.19	19.40	1.23	0.00	1.23
9.00	0.22	0.00	0.22	19.60	1.17	0.00	1.17
9.20	0.27	0.00	0.27	19.80	1.11	0.00	1.11
9.40	0.34	0.00	0.34	20.00	1.05	0.00	1.05
9.60	0.41	0.00	0.41	20.20	1.01	0.00	1.01
9.80	0.50	0.00	0.50	20.40	0.97	0.00	0.97
10.00	0.58	0.00	0.58	20.60	0.95	0.00	0.95
10.20	0.66	0.00	0.66	20.80	0.92	0.00	0.92
10.40	0.76	0.00	0.76	21.00	0.90	0.00	0.90

Hydrograph for Link S: POI South (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
21.20	0.88	0.00	0.88	31.80	0.12	0.00	0.12
21.40	0.86	0.00	0.86	32.00	0.12	0.00	0.12
21.60	0.84	0.00	0.84	32.20	0.12	0.00	0.12
21.80	0.82	0.00	0.82	32.40	0.12	0.00	0.12
22.00	0.81	0.00	0.81	32.60	0.12	0.00	0.12
22.20	0.79	0.00	0.79	32.80	0.12	0.00	0.12
22.40	0.77	0.00	0.77	33.00	0.12	0.00	0.12
22.60	0.76	0.00	0.76	33.20	0.12	0.00	0.12
22.80	0.74	0.00	0.74	33.40	0.11	0.00	0.11
23.00	0.73	0.00	0.73	33.60	0.11	0.00	0.11
23.20	0.71	0.00	0.71	33.80	0.11	0.00	0.11
23.40	0.69	0.00	0.69	34.00	0.11	0.00	0.11
23.60	0.67	0.00	0.67	34.20	0.11	0.00	0.11
23.80	0.64	0.00	0.64	34.40	0.11	0.00	0.11
24.00	0.62	0.00	0.62	34.60	0.11	0.00	0.11
24.20	0.54	0.00	0.54	34.80	0.11	0.00	0.11
24.40	0.40	0.00	0.40	35.00	0.11	0.00	0.11
24.60	0.33	0.00	0.33	35.20	0.11	0.00	0.11
24.80	0.29	0.00	0.29	35.40	0.11	0.00	0.11
25.00	0.26	0.00	0.26	35.60	0.11	0.00	0.11
25.20	0.23	0.00	0.23	35.80	0.11	0.00	0.11
25.40	0.21	0.00	0.21	36.00	0.11	0.00	0.11
25.60	0.19	0.00	0.19	36.20	0.11	0.00	0.11
25.80	0.18	0.00	0.18	36.40	0.11	0.00	0.11
26.00	0.17	0.00	0.17	36.60	0.11	0.00	0.11
26.20	0.16	0.00	0.16	36.80	0.11	0.00	0.11
26.40	0.15	0.00	0.15	37.00	0.11	0.00	0.11
26.60	0.15	0.00	0.15	37.20	0.11	0.00	0.11
26.80	0.14	0.00	0.14	37.40	0.11	0.00	0.11
27.00	0.14	0.00	0.14	37.60	0.11	0.00	0.11
27.20	0.14	0.00	0.14	37.80	0.11	0.00	0.11
27.40	0.13	0.00	0.13	38.00	0.11	0.00	0.11
27.60	0.13	0.00	0.13	38.20	0.11	0.00	0.11
27.80	0.13	0.00	0.13	38.40	0.11	0.00	0.11
28.00	0.13	0.00	0.13	38.60	0.11	0.00	0.11
28.20	0.13	0.00	0.13	38.80	0.11	0.00	0.11
28.40	0.13	0.00	0.13	39.00	0.11	0.00	0.11
28.60	0.12	0.00	0.12	39.20	0.11	0.00	0.11
28.80	0.12	0.00	0.12	39.40	0.11	0.00	0.11
29.00	0.12	0.00	0.12	39.60	0.11	0.00	0.11
29.20	0.12	0.00	0.12	39.80	0.11	0.00	0.11
29.40	0.12	0.00	0.12	40.00	0.11	0.00	0.11
29.60	0.12	0.00	0.12	40.20	0.11	0.00	0.11
29.80	0.12	0.00	0.12	40.40	0.11	0.00	0.11
30.00	0.12	0.00	0.12	40.60	0.11	0.00	0.11
30.20	0.12	0.00	0.12	40.80	0.11	0.00	0.11
30.40	0.12	0.00	0.12	41.00	0.11	0.00	0.11
30.60	0.12	0.00	0.12	41.20	0.11	0.00	0.11
30.80	0.12	0.00	0.12	41.40	0.11	0.00	0.11
31.00	0.12	0.00	0.12	41.60	0.11	0.00	0.11
31.20	0.12	0.00	0.12	41.80	0.11	0.00	0.11
31.40	0.12	0.00	0.12	42.00	0.11	0.00	0.11
31.60	0.12	0.00	0.12	42.20	0.11	0.00	0.11

Hydrograph for Link S: POI South (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
42.40	0.11	0.00	0.11
42.60	0.11	0.00	0.11
42.80	0.11	0.00	0.11
43.00	0.11	0.00	0.11
43.20	0.11	0.00	0.11
43.40	0.11	0.00	0.11
43.60	0.11	0.00	0.11
43.80	0.11	0.00	0.11
44.00	0.11	0.00	0.11
44.20	0.11	0.00	0.11
44.40	0.11	0.00	0.11
44.60	0.11	0.00	0.11
44.80	0.11	0.00	0.11
45.00	0.11	0.00	0.11
45.20	0.11	0.00	0.11
45.40	0.11	0.00	0.11
45.60	0.11	0.00	0.11
45.80	0.11	0.00	0.11
46.00	0.11	0.00	0.11
46.20	0.11	0.00	0.11
46.40	0.11	0.00	0.11
46.60	0.11	0.00	0.11
46.80	0.11	0.00	0.11
47.00	0.11	0.00	0.11
47.20	0.11	0.00	0.11
47.40	0.11	0.00	0.11
47.60	0.11	0.00	0.11
47.80	0.11	0.00	0.11
48.00	0.11	0.00	0.11
48.20	0.11	0.00	0.11
48.40	0.11	0.00	0.11
48.60	0.11	0.00	0.11
48.80	0.11	0.00	0.11
49.00	0.11	0.00	0.11
49.20	0.11	0.00	0.11
49.40	0.11	0.00	0.11
49.60	0.11	0.00	0.11
49.80	0.11	0.00	0.11
50.00	0.11	0.00	0.11
50.20	0.11	0.00	0.11
50.40	0.11	0.00	0.11
50.60	0.11	0.00	0.11
50.80	0.11	0.00	0.11
51.00	0.11	0.00	0.11
51.20	0.11	0.00	0.11
51.40	0.11	0.00	0.11
51.60	0.11	0.00	0.11
51.80	0.11	0.00	0.11
52.00	0.11	0.00	0.11
52.20	0.11	0.00	0.11
52.40	0.11	0.00	0.11
52.60	0.11	0.00	0.11
52.80	0.11	0.00	0.11
53.00	0.11	0.00	0.11
53.20	0.10	0.00	0.10
53.40	0.10	0.00	0.10
53.60	0.10	0.00	0.10
53.80	0.10	0.00	0.10
54.00	0.10	0.00	0.10
54.20	0.10	0.00	0.10
54.40	0.10	0.00	0.10
54.60	0.10	0.00	0.10
54.80	0.10	0.00	0.10
55.00	0.10	0.00	0.10
55.20	0.10	0.00	0.10
55.40	0.10	0.00	0.10
55.60	0.10	0.00	0.10
55.80	0.10	0.00	0.10
56.00	0.07	0.00	0.07
56.20	0.05	0.00	0.05
56.40	0.03	0.00	0.03
56.60	0.02	0.00	0.02
56.80	0.01	0.00	0.01
57.00	0.01	0.00	0.01
57.20	0.01	0.00	0.01
57.40	0.00	0.00	0.00
57.60	0.00	0.00	0.00
57.80	0.00	0.00	0.00
58.00	0.00	0.00	0.00
58.20	0.00	0.00	0.00
58.40	0.00	0.00	0.00
58.60	0.00	0.00	0.00
58.80	0.00	0.00	0.00
59.00	0.00	0.00	0.00
59.20	0.00	0.00	0.00
59.40	0.00	0.00	0.00
59.60	0.00	0.00	0.00
59.80	0.00	0.00	0.00
60.00	0.00	0.00	0.00

Time span=0.00-60.00 hrs, dt=0.02 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

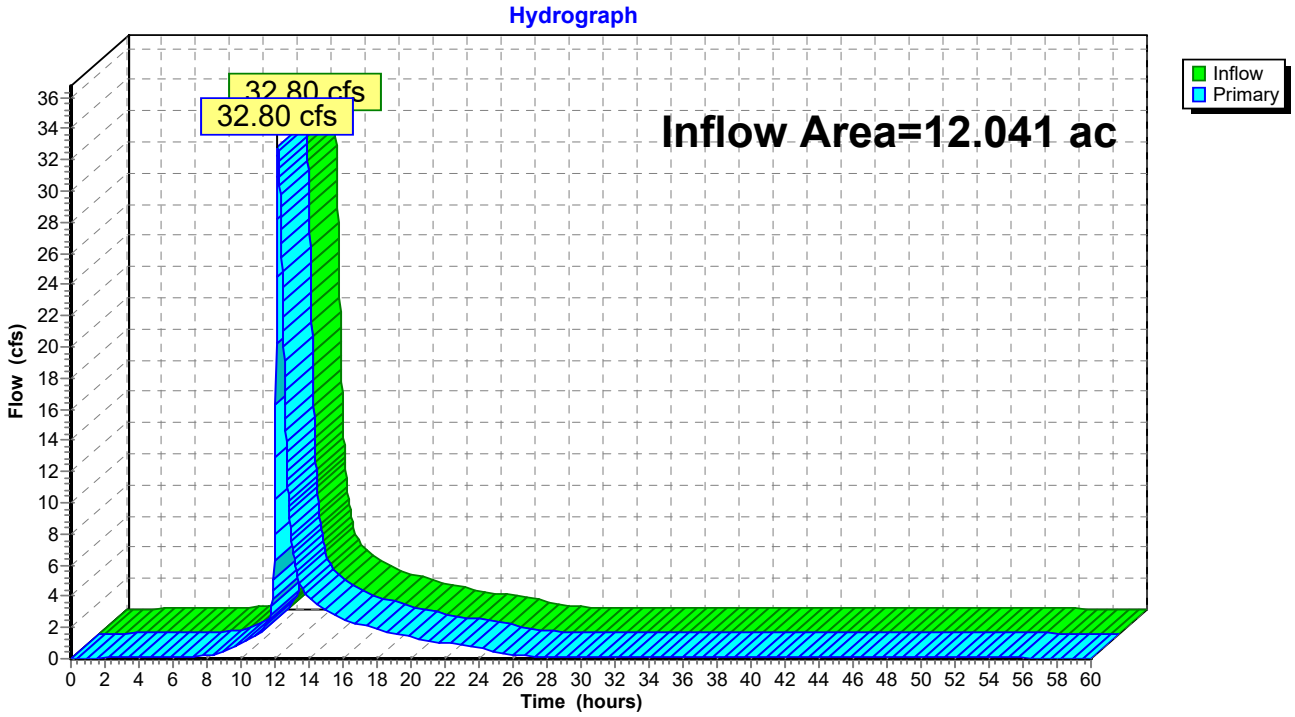
Link S: POI South Inflow=32.80 cfs 4.344 af
Primary=32.80 cfs 4.344 af

Summary for Link S: POI South

Inflow Area = 12.041 ac, 46.90% Impervious, Inflow Depth = 4.33" for 25-Year event
Inflow = 32.80 cfs @ 12.17 hrs, Volume= 4.344 af
Primary = 32.80 cfs @ 12.17 hrs, Volume= 4.344 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs

Link S: POI South



Hydrograph for Link S: POI South

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	10.60	1.29	0.00	1.29
0.20	0.00	0.00	0.00	10.80	1.42	0.00	1.42
0.40	0.00	0.00	0.00	11.00	1.57	0.00	1.57
0.60	0.00	0.00	0.00	11.20	1.72	0.00	1.72
0.80	0.00	0.00	0.00	11.40	1.98	0.00	1.98
1.00	0.01	0.00	0.01	11.60	2.34	0.00	2.34
1.20	0.02	0.00	0.02	11.80	3.36	0.00	3.36
1.40	0.03	0.00	0.03	12.00	**10.20**	0.00	**10.20**
1.60	0.04	0.00	0.04	12.20	**32.38**	0.00	**32.38**
1.80	0.06	0.00	0.06	12.40	25.71	0.00	25.71
2.00	0.07	0.00	0.07	12.60	16.28	0.00	16.28
2.20	0.08	0.00	0.08	12.80	10.14	0.00	10.14
2.40	0.10	0.00	0.10	13.00	7.37	0.00	7.37
2.60	0.10	0.00	0.10	13.20	5.85	0.00	5.85
2.80	0.10	0.00	0.10	13.40	5.02	0.00	5.02
3.00	0.10	0.00	0.10	13.60	4.55	0.00	4.55
3.20	0.10	0.00	0.10	13.80	4.18	0.00	4.18
3.40	0.10	0.00	0.10	14.00	3.90	0.00	3.90
3.60	0.10	0.00	0.10	14.20	3.68	0.00	3.68
3.80	0.10	0.00	0.10	14.40	3.51	0.00	3.51
4.00	0.10	0.00	0.10	14.60	3.37	0.00	3.37
4.20	0.10	0.00	0.10	14.80	3.25	0.00	3.25
4.40	0.10	0.00	0.10	15.00	3.13	0.00	3.13
4.60	0.10	0.00	0.10	15.20	3.01	0.00	3.01
4.80	0.10	0.00	0.10	15.40	2.90	0.00	2.90
5.00	0.10	0.00	0.10	15.60	2.79	0.00	2.79
5.20	0.10	0.00	0.10	15.80	2.68	0.00	2.68
5.40	0.11	0.00	0.11	16.00	2.57	0.00	2.57
5.60	0.11	0.00	0.11	16.20	2.46	0.00	2.46
5.80	0.11	0.00	0.11	16.40	2.39	0.00	2.39
6.00	0.11	0.00	0.11	16.60	2.33	0.00	2.33
6.20	0.11	0.00	0.11	16.80	2.27	0.00	2.27
6.40	0.11	0.00	0.11	17.00	2.21	0.00	2.21
6.60	0.11	0.00	0.11	17.20	2.16	0.00	2.16
6.80	0.12	0.00	0.12	17.40	2.09	0.00	2.09
7.00	0.12	0.00	0.12	17.60	2.03	0.00	2.03
7.20	0.13	0.00	0.13	17.80	1.96	0.00	1.96
7.40	0.14	0.00	0.14	18.00	1.89	0.00	1.89
7.60	0.16	0.00	0.16	18.20	1.82	0.00	1.82
7.80	0.17	0.00	0.17	18.40	1.76	0.00	1.76
8.00	0.20	0.00	0.20	18.60	1.71	0.00	1.71
8.20	0.23	0.00	0.23	18.80	1.67	0.00	1.67
8.40	0.27	0.00	0.27	19.00	1.63	0.00	1.63
8.60	0.33	0.00	0.33	19.20	1.59	0.00	1.59
8.80	0.41	0.00	0.41	19.40	1.55	0.00	1.55
9.00	0.50	0.00	0.50	19.60	1.50	0.00	1.50
9.20	0.59	0.00	0.59	19.80	1.44	0.00	1.44
9.40	0.68	0.00	0.68	20.00	1.37	0.00	1.37
9.60	0.77	0.00	0.77	20.20	1.31	0.00	1.31
9.80	0.87	0.00	0.87	20.40	1.25	0.00	1.25
10.00	0.96	0.00	0.96	20.60	1.19	0.00	1.19
10.20	1.06	0.00	1.06	20.80	1.15	0.00	1.15
10.40	1.17	0.00	1.17	21.00	1.11	0.00	1.11

Hydrograph for Link S: POI South (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
21.20	1.08	0.00	1.08	31.80	0.12	0.00	0.12
21.40	1.05	0.00	1.05	32.00	0.12	0.00	0.12
21.60	1.03	0.00	1.03	32.20	0.12	0.00	0.12
21.80	1.01	0.00	1.01	32.40	0.12	0.00	0.12
22.00	0.99	0.00	0.99	32.60	0.12	0.00	0.12
22.20	0.97	0.00	0.97	32.80	0.12	0.00	0.12
22.40	0.95	0.00	0.95	33.00	0.12	0.00	0.12
22.60	0.93	0.00	0.93	33.20	0.12	0.00	0.12
22.80	0.91	0.00	0.91	33.40	0.12	0.00	0.12
23.00	0.89	0.00	0.89	33.60	0.12	0.00	0.12
23.20	0.87	0.00	0.87	33.80	0.12	0.00	0.12
23.40	0.86	0.00	0.86	34.00	0.12	0.00	0.12
23.60	0.84	0.00	0.84	34.20	0.11	0.00	0.11
23.80	0.82	0.00	0.82	34.40	0.11	0.00	0.11
24.00	0.80	0.00	0.80	34.60	0.11	0.00	0.11
24.20	0.71	0.00	0.71	34.80	0.11	0.00	0.11
24.40	0.55	0.00	0.55	35.00	0.11	0.00	0.11
24.60	0.47	0.00	0.47	35.20	0.11	0.00	0.11
24.80	0.42	0.00	0.42	35.40	0.11	0.00	0.11
25.00	0.38	0.00	0.38	35.60	0.11	0.00	0.11
25.20	0.36	0.00	0.36	35.80	0.11	0.00	0.11
25.40	0.33	0.00	0.33	36.00	0.11	0.00	0.11
25.60	0.31	0.00	0.31	36.20	0.11	0.00	0.11
25.80	0.28	0.00	0.28	36.40	0.11	0.00	0.11
26.00	0.25	0.00	0.25	36.60	0.11	0.00	0.11
26.20	0.23	0.00	0.23	36.80	0.11	0.00	0.11
26.40	0.21	0.00	0.21	37.00	0.11	0.00	0.11
26.60	0.19	0.00	0.19	37.20	0.11	0.00	0.11
26.80	0.18	0.00	0.18	37.40	0.11	0.00	0.11
27.00	0.17	0.00	0.17	37.60	0.11	0.00	0.11
27.20	0.16	0.00	0.16	37.80	0.11	0.00	0.11
27.40	0.15	0.00	0.15	38.00	0.11	0.00	0.11
27.60	0.15	0.00	0.15	38.20	0.11	0.00	0.11
27.80	0.14	0.00	0.14	38.40	0.11	0.00	0.11
28.00	0.14	0.00	0.14	38.60	0.11	0.00	0.11
28.20	0.14	0.00	0.14	38.80	0.11	0.00	0.11
28.40	0.13	0.00	0.13	39.00	0.11	0.00	0.11
28.60	0.13	0.00	0.13	39.20	0.11	0.00	0.11
28.80	0.13	0.00	0.13	39.40	0.11	0.00	0.11
29.00	0.13	0.00	0.13	39.60	0.11	0.00	0.11
29.20	0.13	0.00	0.13	39.80	0.11	0.00	0.11
29.40	0.12	0.00	0.12	40.00	0.11	0.00	0.11
29.60	0.12	0.00	0.12	40.20	0.11	0.00	0.11
29.80	0.12	0.00	0.12	40.40	0.11	0.00	0.11
30.00	0.12	0.00	0.12	40.60	0.11	0.00	0.11
30.20	0.12	0.00	0.12	40.80	0.11	0.00	0.11
30.40	0.12	0.00	0.12	41.00	0.11	0.00	0.11
30.60	0.12	0.00	0.12	41.20	0.11	0.00	0.11
30.80	0.12	0.00	0.12	41.40	0.11	0.00	0.11
31.00	0.12	0.00	0.12	41.60	0.11	0.00	0.11
31.20	0.12	0.00	0.12	41.80	0.11	0.00	0.11
31.40	0.12	0.00	0.12	42.00	0.11	0.00	0.11
31.60	0.12	0.00	0.12	42.20	0.11	0.00	0.11

Hydrograph for Link S: POI South (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
42.40	0.11	0.00	0.11
42.60	0.11	0.00	0.11
42.80	0.11	0.00	0.11
43.00	0.11	0.00	0.11
43.20	0.11	0.00	0.11
43.40	0.11	0.00	0.11
43.60	0.11	0.00	0.11
43.80	0.11	0.00	0.11
44.00	0.11	0.00	0.11
44.20	0.11	0.00	0.11
44.40	0.11	0.00	0.11
44.60	0.11	0.00	0.11
44.80	0.11	0.00	0.11
45.00	0.11	0.00	0.11
45.20	0.11	0.00	0.11
45.40	0.11	0.00	0.11
45.60	0.11	0.00	0.11
45.80	0.11	0.00	0.11
46.00	0.11	0.00	0.11
46.20	0.11	0.00	0.11
46.40	0.11	0.00	0.11
46.60	0.11	0.00	0.11
46.80	0.11	0.00	0.11
47.00	0.11	0.00	0.11
47.20	0.11	0.00	0.11
47.40	0.11	0.00	0.11
47.60	0.11	0.00	0.11
47.80	0.11	0.00	0.11
48.00	0.11	0.00	0.11
48.20	0.11	0.00	0.11
48.40	0.11	0.00	0.11
48.60	0.11	0.00	0.11
48.80	0.11	0.00	0.11
49.00	0.11	0.00	0.11
49.20	0.11	0.00	0.11
49.40	0.11	0.00	0.11
49.60	0.11	0.00	0.11
49.80	0.11	0.00	0.11
50.00	0.11	0.00	0.11
50.20	0.11	0.00	0.11
50.40	0.11	0.00	0.11
50.60	0.11	0.00	0.11
50.80	0.11	0.00	0.11
51.00	0.11	0.00	0.11
51.20	0.11	0.00	0.11
51.40	0.11	0.00	0.11
51.60	0.11	0.00	0.11
51.80	0.11	0.00	0.11
52.00	0.11	0.00	0.11
52.20	0.11	0.00	0.11
52.40	0.11	0.00	0.11
52.60	0.11	0.00	0.11
52.80	0.11	0.00	0.11
53.00	0.11	0.00	0.11
53.20	0.11	0.00	0.11
53.40	0.10	0.00	0.10
53.60	0.10	0.00	0.10
53.80	0.10	0.00	0.10
54.00	0.10	0.00	0.10
54.20	0.10	0.00	0.10
54.40	0.10	0.00	0.10
54.60	0.10	0.00	0.10
54.80	0.10	0.00	0.10
55.00	0.10	0.00	0.10
55.20	0.10	0.00	0.10
55.40	0.10	0.00	0.10
55.60	0.10	0.00	0.10
55.80	0.10	0.00	0.10
56.00	0.10	0.00	0.10
56.20	0.07	0.00	0.07
56.40	0.04	0.00	0.04
56.60	0.03	0.00	0.03
56.80	0.02	0.00	0.02
57.00	0.01	0.00	0.01
57.20	0.01	0.00	0.01
57.40	0.01	0.00	0.01
57.60	0.00	0.00	0.00
57.80	0.00	0.00	0.00
58.00	0.00	0.00	0.00
58.20	0.00	0.00	0.00
58.40	0.00	0.00	0.00
58.60	0.00	0.00	0.00
58.80	0.00	0.00	0.00
59.00	0.00	0.00	0.00
59.20	0.00	0.00	0.00
59.40	0.00	0.00	0.00
59.60	0.00	0.00	0.00
59.80	0.00	0.00	0.00
60.00	0.00	0.00	0.00

Time span=0.00-60.00 hrs, dt=0.02 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

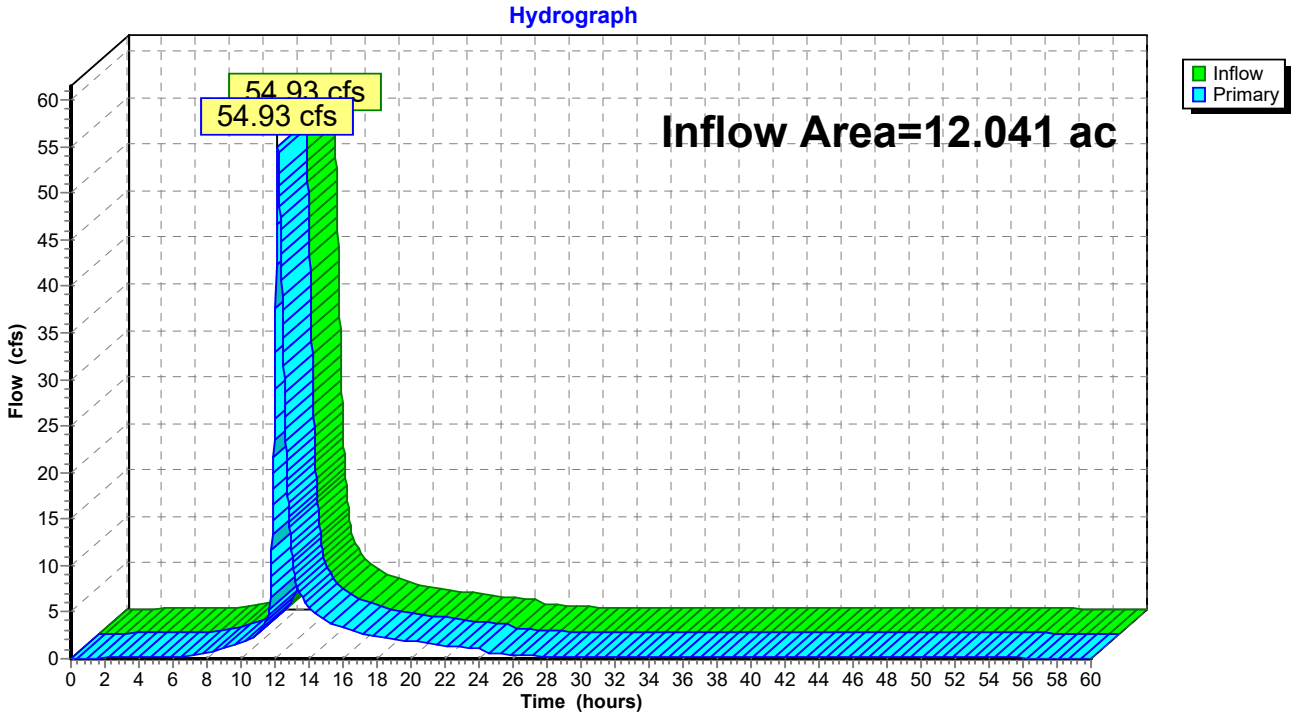
Link S: POI South Inflow=54.93 cfs 6.684 af
Primary=54.93 cfs 6.684 af

Summary for Link S: POI South

Inflow Area = 12.041 ac, 46.90% Impervious, Inflow Depth = 6.66" for 100-Year event
Inflow = 54.93 cfs @ 12.16 hrs, Volume= 6.684 af
Primary = 54.93 cfs @ 12.16 hrs, Volume= 6.684 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-60.00 hrs, dt= 0.02 hrs

Link S: POI South



Hydrograph for Link S: POI South

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
0.00	0.00	**0.00**	0.00	10.60	2.08	0.00	2.08
0.20	0.00	0.00	0.00	10.80	2.41	0.00	2.41
0.40	0.00	0.00	0.00	11.00	2.84	0.00	2.84
0.60	0.00	0.00	0.00	11.20	3.27	0.00	3.27
0.80	0.01	0.00	0.01	11.40	3.84	0.00	3.84
1.00	0.03	0.00	0.03	11.60	4.59	0.00	4.59
1.20	0.06	0.00	0.06	11.80	10.23	0.00	10.23
1.40	0.08	0.00	0.08	12.00	**28.90**	0.00	**28.90**
1.60	0.10	0.00	0.10	12.20	**53.51**	0.00	**53.51**
1.80	0.10	0.00	0.10	12.40	40.56	0.00	40.56
2.00	0.10	0.00	0.10	12.60	25.87	0.00	25.87
2.20	0.10	0.00	0.10	12.80	16.03	0.00	16.03
2.40	0.10	0.00	0.10	13.00	11.07	0.00	11.07
2.60	0.10	0.00	0.10	13.20	8.56	0.00	8.56
2.80	0.10	0.00	0.10	13.40	7.29	0.00	7.29
3.00	0.10	0.00	0.10	13.60	6.56	0.00	6.56
3.20	0.10	0.00	0.10	13.80	6.01	0.00	6.01
3.40	0.10	0.00	0.10	14.00	5.53	0.00	5.53
3.60	0.10	0.00	0.10	14.20	5.09	0.00	5.09
3.80	0.11	0.00	0.11	14.40	4.77	0.00	4.77
4.00	0.11	0.00	0.11	14.60	4.52	0.00	4.52
4.20	0.11	0.00	0.11	14.80	4.29	0.00	4.29
4.40	0.11	0.00	0.11	15.00	4.09	0.00	4.09
4.60	0.11	0.00	0.11	15.20	3.94	0.00	3.94
4.80	0.11	0.00	0.11	15.40	3.78	0.00	3.78
5.00	0.11	0.00	0.11	15.60	3.63	0.00	3.63
5.20	0.11	0.00	0.11	15.80	3.46	0.00	3.46
5.40	0.12	0.00	0.12	16.00	3.30	0.00	3.30
5.60	0.13	0.00	0.13	16.20	3.15	0.00	3.15
5.80	0.14	0.00	0.14	16.40	3.02	0.00	3.02
6.00	0.15	0.00	0.15	16.60	2.92	0.00	2.92
6.20	0.16	0.00	0.16	16.80	2.83	0.00	2.83
6.40	0.19	0.00	0.19	17.00	2.74	0.00	2.74
6.60	0.21	0.00	0.21	17.20	2.65	0.00	2.65
6.80	0.24	0.00	0.24	17.40	2.58	0.00	2.58
7.00	0.29	0.00	0.29	17.60	2.50	0.00	2.50
7.20	0.34	0.00	0.34	17.80	2.42	0.00	2.42
7.40	0.41	0.00	0.41	18.00	2.35	0.00	2.35
7.60	0.48	0.00	0.48	18.20	2.29	0.00	2.29
7.80	0.55	0.00	0.55	18.40	2.23	0.00	2.23
8.00	0.62	0.00	0.62	18.60	2.19	0.00	2.19
8.20	0.69	0.00	0.69	18.80	2.15	0.00	2.15
8.40	0.78	0.00	0.78	19.00	2.11	0.00	2.11
8.60	0.87	0.00	0.87	19.20	2.07	0.00	2.07
8.80	0.98	0.00	0.98	19.40	2.03	0.00	2.03
9.00	1.09	0.00	1.09	19.60	1.98	0.00	1.98
9.20	1.19	0.00	1.19	19.80	1.94	0.00	1.94
9.40	1.30	0.00	1.30	20.00	1.90	0.00	1.90
9.60	1.41	0.00	1.41	20.20	1.85	0.00	1.85
9.80	1.52	0.00	1.52	20.40	1.81	0.00	1.81
10.00	1.64	0.00	1.64	20.60	1.77	0.00	1.77
10.20	1.75	0.00	1.75	20.80	1.72	0.00	1.72
10.40	1.90	0.00	1.90	21.00	1.66	0.00	1.66

Hydrograph for Link S: POI South (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)	Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
21.20	1.60	0.00	1.60	31.80	0.12	0.00	0.12
21.40	1.54	0.00	1.54	32.00	0.12	0.00	0.12
21.60	1.47	0.00	1.47	32.20	0.12	0.00	0.12
21.80	1.41	0.00	1.41	32.40	0.12	0.00	0.12
22.00	1.36	0.00	1.36	32.60	0.12	0.00	0.12
22.20	1.33	0.00	1.33	32.80	0.12	0.00	0.12
22.40	1.29	0.00	1.29	33.00	0.12	0.00	0.12
22.60	1.26	0.00	1.26	33.20	0.12	0.00	0.12
22.80	1.23	0.00	1.23	33.40	0.12	0.00	0.12
23.00	1.21	0.00	1.21	33.60	0.12	0.00	0.12
23.20	1.18	0.00	1.18	33.80	0.12	0.00	0.12
23.40	1.16	0.00	1.16	34.00	0.12	0.00	0.12
23.60	1.13	0.00	1.13	34.20	0.12	0.00	0.12
23.80	1.11	0.00	1.11	34.40	0.12	0.00	0.12
24.00	1.09	0.00	1.09	34.60	0.12	0.00	0.12
24.20	0.96	0.00	0.96	34.80	0.12	0.00	0.12
24.40	0.71	0.00	0.71	35.00	0.12	0.00	0.12
24.60	0.59	0.00	0.59	35.20	0.11	0.00	0.11
24.80	0.54	0.00	0.54	35.40	0.11	0.00	0.11
25.00	0.51	0.00	0.51	35.60	0.11	0.00	0.11
25.20	0.49	0.00	0.49	35.80	0.11	0.00	0.11
25.40	0.48	0.00	0.48	36.00	0.11	0.00	0.11
25.60	0.47	0.00	0.47	36.20	0.11	0.00	0.11
25.80	0.45	0.00	0.45	36.40	0.11	0.00	0.11
26.00	0.44	0.00	0.44	36.60	0.11	0.00	0.11
26.20	0.42	0.00	0.42	36.80	0.11	0.00	0.11
26.40	0.39	0.00	0.39	37.00	0.11	0.00	0.11
26.60	0.36	0.00	0.36	37.20	0.11	0.00	0.11
26.80	0.34	0.00	0.34	37.40	0.11	0.00	0.11
27.00	0.31	0.00	0.31	37.60	0.11	0.00	0.11
27.20	0.29	0.00	0.29	37.80	0.11	0.00	0.11
27.40	0.26	0.00	0.26	38.00	0.11	0.00	0.11
27.60	0.23	0.00	0.23	38.20	0.11	0.00	0.11
27.80	0.21	0.00	0.21	38.40	0.11	0.00	0.11
28.00	0.19	0.00	0.19	38.60	0.11	0.00	0.11
28.20	0.18	0.00	0.18	38.80	0.11	0.00	0.11
28.40	0.17	0.00	0.17	39.00	0.11	0.00	0.11
28.60	0.16	0.00	0.16	39.20	0.11	0.00	0.11
28.80	0.15	0.00	0.15	39.40	0.11	0.00	0.11
29.00	0.15	0.00	0.15	39.60	0.11	0.00	0.11
29.20	0.14	0.00	0.14	39.80	0.11	0.00	0.11
29.40	0.14	0.00	0.14	40.00	0.11	0.00	0.11
29.60	0.14	0.00	0.14	40.20	0.11	0.00	0.11
29.80	0.13	0.00	0.13	40.40	0.11	0.00	0.11
30.00	0.13	0.00	0.13	40.60	0.11	0.00	0.11
30.20	0.13	0.00	0.13	40.80	0.11	0.00	0.11
30.40	0.13	0.00	0.13	41.00	0.11	0.00	0.11
30.60	0.13	0.00	0.13	41.20	0.11	0.00	0.11
30.80	0.12	0.00	0.12	41.40	0.11	0.00	0.11
31.00	0.12	0.00	0.12	41.60	0.11	0.00	0.11
31.20	0.12	0.00	0.12	41.80	0.11	0.00	0.11
31.40	0.12	0.00	0.12	42.00	0.11	0.00	0.11
31.60	0.12	0.00	0.12	42.20	0.11	0.00	0.11

Hydrograph for Link S: POI South (continued)

Time (hours)	Inflow (cfs)	Elevation (feet)	Primary (cfs)
42.40	0.11	0.00	0.11
42.60	0.11	0.00	0.11
42.80	0.11	0.00	0.11
43.00	0.11	0.00	0.11
43.20	0.11	0.00	0.11
43.40	0.11	0.00	0.11
43.60	0.11	0.00	0.11
43.80	0.11	0.00	0.11
44.00	0.11	0.00	0.11
44.20	0.11	0.00	0.11
44.40	0.11	0.00	0.11
44.60	0.11	0.00	0.11
44.80	0.11	0.00	0.11
45.00	0.11	0.00	0.11
45.20	0.11	0.00	0.11
45.40	0.11	0.00	0.11
45.60	0.11	0.00	0.11
45.80	0.11	0.00	0.11
46.00	0.11	0.00	0.11
46.20	0.11	0.00	0.11
46.40	0.11	0.00	0.11
46.60	0.11	0.00	0.11
46.80	0.11	0.00	0.11
47.00	0.11	0.00	0.11
47.20	0.11	0.00	0.11
47.40	0.11	0.00	0.11
47.60	0.11	0.00	0.11
47.80	0.11	0.00	0.11
48.00	0.11	0.00	0.11
48.20	0.11	0.00	0.11
48.40	0.11	0.00	0.11
48.60	0.11	0.00	0.11
48.80	0.11	0.00	0.11
49.00	0.11	0.00	0.11
49.20	0.11	0.00	0.11
49.40	0.11	0.00	0.11
49.60	0.11	0.00	0.11
49.80	0.11	0.00	0.11
50.00	0.11	0.00	0.11
50.20	0.11	0.00	0.11
50.40	0.11	0.00	0.11
50.60	0.11	0.00	0.11
50.80	0.11	0.00	0.11
51.00	0.11	0.00	0.11
51.20	0.11	0.00	0.11
51.40	0.11	0.00	0.11
51.60	0.11	0.00	0.11
51.80	0.11	0.00	0.11
52.00	0.11	0.00	0.11
52.20	0.11	0.00	0.11
52.40	0.11	0.00	0.11
52.60	0.11	0.00	0.11
52.80	0.11	0.00	0.11
53.00	0.11	0.00	0.11
53.20	0.11	0.00	0.11
53.40	0.11	0.00	0.11
53.60	0.10	0.00	0.10
53.80	0.10	0.00	0.10
54.00	0.10	0.00	0.10
54.20	0.10	0.00	0.10
54.40	0.10	0.00	0.10
54.60	0.10	0.00	0.10
54.80	0.10	0.00	0.10
55.00	0.10	0.00	0.10
55.20	0.10	0.00	0.10
55.40	0.10	0.00	0.10
55.60	0.10	0.00	0.10
55.80	0.10	0.00	0.10
56.00	0.10	0.00	0.10
56.20	0.10	0.00	0.10
56.40	0.07	0.00	0.07
56.60	0.04	0.00	0.04
56.80	0.03	0.00	0.03
57.00	0.02	0.00	0.02
57.20	0.01	0.00	0.01
57.40	0.01	0.00	0.01
57.60	0.01	0.00	0.01
57.80	0.00	0.00	0.00
58.00	0.00	0.00	0.00
58.20	0.00	0.00	0.00
58.40	0.00	0.00	0.00
58.60	0.00	0.00	0.00
58.80	0.00	0.00	0.00
59.00	0.00	0.00	0.00
59.20	0.00	0.00	0.00
59.40	0.00	0.00	0.00
59.60	0.00	0.00	0.00
59.80	0.00	0.00	0.00
60.00	0.00	0.00	0.00

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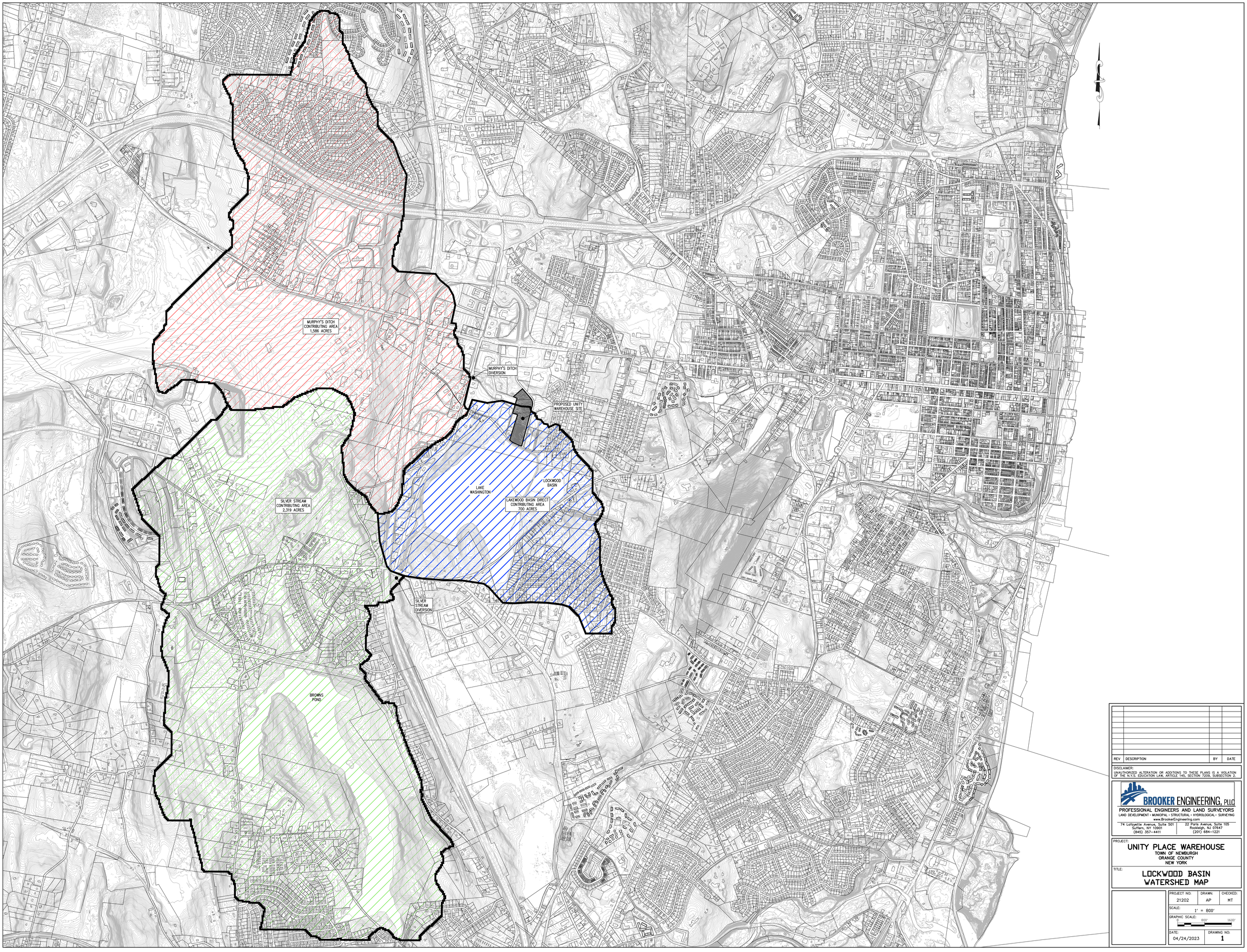

REV	DESCRIPTION	BY	DATE

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PROJECT:
UNITY PLACE WAREHOUSE
TOWN OF NEWBURGH
ORANGE COUNTY
NEW YORK

TITLE:
LOCKWOOD BASIN WATERSHED MAP

PROJECT NO:	DRAWN:	CHECKED:
21202	AP	MT

SCALE: 1" = 800'

GRAPHIC SCALE: 0 800' 1600'

DATE:	DRAWING NO:
04/24/2023	1

Appendix I

Inspection Reports
(To be included throughout construction)

Appendix J

Site Plans
(Including Soil Erosion and Sediment Control Plan)