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June 7, 2021

Amanda Lessard, Planning Director  
Steve Puleo, Planner  
Town of Windham  
8 School Road  
Windham, ME 04062

**Major Site Plan Application**  
**S&N Investments LLC**  
**Proposed Tier 3 Marijuana Cultivation Facility**  
**Gambo Road**  
**Windham Assessor's Map 41, Lot 4**

Dear Amanda and Steve,

We appreciated the opportunity to virtually meet with you and the Planning Board members on May 10, 2021 to introduce this proposed approximately 7,488 sf building on the Applicant's vacant lot on Gambo Road (Assessor's Map 41 Lot 4) in the Industrial District. As we discussed during the Sketch Plan review, the building is intended to be used as a Tier 3 Marijuana Cultivation Facility, which is an allowed use in this Zoning District.

On behalf of S&N Investments LLC, we have prepared the enclosed Major Site Plan application materials for further review by staff and the members of the Planning Board. With this submittal, we are respectfully requesting placement on the Planning Board's upcoming June 28, 2021 agenda for Major Site Plan review.

As noted during the May 10, 2021 Planning Board meeting, with the submittal of this Site Plan Application package, the Planning Board will want to schedule a public hearing and a site walk to view the parcel firsthand. We look forward to hearing from you with regard to the schedule for these items.

**Setting**

This approximately 1.07 acre site is located on Gambo Road. Since it is currently a vacant parcel, the site has not yet been assigned a street address. The property is located in Windham's Industrial District.

The project site has frontage along Gambo Road. The former Maine Central Railroad rail line corridor, now owned by the Maine Department of Transportation, forms the easterly border of the site. This corridor is now part of the Mountain Division Trail. Land owned by Grondin Corporation abuts the southerly and westerly sides of the site. The land directly across the street from this site (on the northerly side of Gambo Road) is wooded and currently undeveloped.

The site terrain is rather flat, with approximately 3' of vertical relief across the site. The highest point of the site is located at the Gambo Road frontage, in the northerly corner of the site. The northerly end of the site has been previously cleared, the southerly end of the site remains wooded. The site is in the watershed of the Presumpscot River.

**Mapped Soils Data**

As the enclosed NRCS Web Soil Survey indicates, the mapped soils on the site consist of a mix of Scantic Silt Loam (Sn)(0 to 3% slopes) on the north end of the site, and Lamoine Silt Loam (Bub)(3 to 8% slopes) on the south end of the site.

Roughly 70% of the site is mapped as Scantic, which encompasses the vast majority of the proposed development area associated with the new building and parking area. The remainder of the site, (at the southerly end) is mapped as Lamoine Soils. Minimal work is proposed in the area of the Lamoine Soils.

The Scantic Soils are described as poorly drained, with a Hydrologic Soil Group (HSG) of D. The Scantic Soils have a very low to moderately low capacity to transmit water.

The Lamoine Soils are described as somewhat poorly drained and have a Hydrologic Soil group of C/D. They have a very low to moderately low capacity to transmit

water. Given the amount of wetlands on the site, a HSG of D has been used for this soil type in the Stormwater Modeling for the site.

### **Natural Resources**

In the interim since the Sketch Plan presentation and this submittal, a Natural Resources evaluation has been conducted on this site by Mark Hampton Associates (MHA). As the enclosed plans demonstrate, wetland areas have been mapped on the south end of the property. In addition, there is a small wetland finger located on the west end of the site that will be impacted by the proposed building and gravel fire lane to the west of the building.

The enclosed Wetland Letter that describes the work conducted by their office and the results of their mapping. As the MHA letter notes, the wetlands on the site consist of a mix of forested wetlands and wet meadow. As the letter states, the wetlands on the site do not meet the definition of wetlands of special significance as defined by the Maine Department of Environmental Protection (MDEP).

There is approximately 4,200 sf of proposed wetland impact associated with the construction of the building and its related site improvements. Given the available building envelope on the site, these wetland impacts are unavoidable.

Wetland impacts of up to a total of 4,300 sf are exempt from review by the MDEP under the Natural Resources Protection Act (NRPA) provided they do not meet the definition of wetlands of special significance. As such, the proposed wetland impacts shown on the site are not subject to review by the MDEP.

### **Proposed Site Improvements**

#### **Building Design**

The Applicant is proposing to construct an approximately 7,488 sf single-story pre-engineered metal building (PEMB). The building is proposed as a Tier 3 Marijuana Cultivation Facility.

The facility is divided into several rooms that address the various stages in the growing process, as well as an office, kitchen, bathroom and storage/utility room. As discussed at the Sketch Plan review, the proposed kitchen is an employee break room area, and is not a commercial kitchen. No commercial cooking is proposed for this site.

The sizes of each room are shown on the floor plans. As the enclosed plans show, the space dedicated to plant canopy (Flower Rooms #1 and #2) encompass a total of approximately 4,714 sf and are well below the 7,000 sf limit cited in the Ordinance for a Tier 3 Cultivation facility.

In response to comments received during the Sketch Plan review, the Applicant has revised their building floor plan to provide a door on the northerly side of the building, facing Gambo Road. The internal layout has been adjusted slightly to relocate the office area to the location adjacent to the new front door.

Updated Floor Plans and Elevations are enclosed as part of this application package. Please note that the enclosed building plans refer to the side that faces Gambo Road (i.e. the northerly wall) as the Left Elevation. The westerly wall is identified as the Front Elevation. The southerly wall is identified as the Right Elevation, and the easterly wall is identified as the Rear Elevation.

#### Site Layout, Parking and Access

The site will have its driveway access off Gambo Road. In accordance with the Ordinance requirements, a paved apron is provided at the driveway entrance off Gambo Road. Given the front yard setback requirement in the Industrial District, the building sits back from Gambo Road slightly over 100', with parking in front. There is no need for a loading area or large delivery vehicle access and circulation for this site. No overhead doors are proposed.

A total of five parking spaces are shown on the enclosed Site Plan. The parking spaces are located all along the front of the building in a gravel parking area with a 5' wide gravel walkway between the spaces and the building front. As shown on the plans, timber guardrails are provided for separation of the parking from the walkway and building.



All parking spaces are shown at 10' wide by 20' deep. One of the gravel parking spaces has been designed to meet the ADA slope standards for an accessible space. An approximately 24' wide gravel maneuvering area is located to the north of the parking spaces to allow vehicles to turn around within the site, before exiting via the approximately 24' wide gravel driveway.

As requested by the Fire Department, a 14' wide gravel fire lane has been provided along the westerly wall of the building to provide an emergency vehicle access to the doors along the west side of the building. This gravel fire lane extends past the south wall of the building to allow emergency access to the rear of the building as well.

### Staff and Hours of Operation

Recreational marijuana as well as possibly medical marijuana will be grown in the building. No commercial cooking or extraction is proposed for this site. There are no proposed retail sales at the site. As such, the only persons on the site will be employees, with no proposed customer activity on the property.

It is anticipated that there will be approximately 3 employees at the site through the week, along with one manager whose schedule varies. As such, the number of proposed parking spaces on the site meets and exceeds the anticipated employee parking demand.

The employees will water and maintain the plant canopy during the week through its entire growing cycle from seed to flowering to drying.

Operating hours of the facility are expected to be 7:30 AM to 4:30 PM Monday through Friday and from 9:00 AM to 2:00 PM on Saturdays. Even if all employees arrived and left the site at the same time, which is not typically the case, the peak traffic would be 4 vehicles in the AM and 4 vehicles in the PM at the end of the day.

The daily traffic is estimated to be 4 entering vehicle trips and 4 exiting vehicle trips at the end of the day (i.e. 8 trips). If every employee left the facility for lunch and returned, then the total number of trips would increase by an additional 8 trips. This brings the total anticipated number of daily trips to roughly 16.

One small truck visits the site periodically, up to once a week during normal business hours. In discussing the solid waste collection at the site, the Applicants have indicated that their waste generation is typically quite low, and can be accommodated with two rolling totes that will be stored in a fenced in area at the rear (south side of the building) as shown on the enclosed Site Plan. As shown on the Plans and Details, the dumpster tote area will include a concrete slab and wooden fence enclosure.

It is anticipated that the trash will be collected on a weekly basis by a commercial waste hauler. At the scheduled time of trash pick-up, the employees will wheel the totes to the parking area at the front (north side) of the site for pick up. Once the totes are collected by the waste hauler, the empty totes will be returned to the enclosure at the rear of the building.

### Traffic

Given the limited vehicular activities and the low number of employees as described above, the Applicant is respectfully seeking a waiver on the requirement for a traffic assessment citing the AM and PM and Saturday Peak hour and daily traffic generated by the project.

### Utilities

Public water is supplied to the site by the Portland Water District (PWD). There is an existing water main in Gambo Road. The Applicants have coordinated with PWD to seek an "Ability to Serve" letter for the proposed new 1" domestic water service to supply the new building. The PWD has issued their comments on the service for the proposed building, these comments have been addressed and are reflected in the enclosed design. A copy of the PWD's Ability to Serve letter is enclosed. As noted in the PWD letter, there is a public fire hydrant located approximately 750' from the site.

No public sewer is available in the area; as such, a subsurface disposal system is required. The Applicant has retained Mark Hampton Associates to conduct the soils test pits, and septic design work on the site. Based Mr. Hampton's evaluation of the site, he has prepared the enclosed HHE-200 forms for the septic system design. Based on Mr. Hampton's sizing data, the location of the proposed subsurface disposal system is shown on the site.

Existing power, telephone and communication services along Gambo Road appear to all be overhead. As shown on the enclosed Site Plan, the proposed new building services will be extended underground from the existing pole at the northerly corner of the site. All building utility services are subject to the approval of the respective utility supplier.

As discussed during the Sketch Plan presentation, no pole mounted lighting fixtures are proposed. Building mounted fixtures are proposed at each entry door for employee security. These building mounted fixtures are proposed to be 450 watt equivalent outdoor LED Wall packs which provide dusk to dawn control and are equipped with a shield to direct light downward. Catalog excerpts of these fixtures are included as part of this application package.

### Stormwater Management

Based on the proposed site design, the project will disturb approximately 24,249 sf (0.56 acres) of the site, in association with the construction of the building, and its site improvements including the proposed gravel parking area, subsurface disposal system, water and power/telecommunication lines and the gravel fire lane along the westerly side of the building. The total anticipated impervious area associated with the building, gravel parking and fire lane is approximately 14,975 sf.

Since the entire extent of the proposed site development is below the one-acre threshold for which a MDEP Stormwater Permit or Maine Construction General Permit (MCGP) is needed, the project does not require any State Level Permitting for Stormwater under the Chapter 500 standards.

It is our understanding that although this project does not involve the amount of development that the MDEP recognizes as requiring their review under the Chapter 500 standards, Section 812 E.1(f) of the Windham Site Plan Review Ordinance indicates that since this is a Major Site Plan, the Applicant must submit a Stormwater Management Plan that complies with Section 4C(2) and Section 4C(3) of the General Standards of the MDEP's Chapter 500, which require provisions for treatment of stormwater runoff. In addition, the stormwater management provisions for the site must address the peak flow rates from the 2, 10 and 25 year 24-hour storm events (the Flooding Standard). The Planning Board may waive these requirements.

Stormwater Management and the associated stormwater modeling results are discussed, in detail, in a subsequent section of this letter, along with provisions for Erosion and Sediment Control.

### **Project Team**

The applicant has assembled the following project team to prepare the enclosed plans and supporting materials associated with the various elements of the project. Each of the consultants on the team are licensed professionals who have experience in this type of work, and the majority (if not all) have provided professional services for projects in the Town of Windham in the past:

#### *Construction Consultation Services:*

#### **Atlantic Home Construction Inc.**

15 Tranquil Drive  
Gorham, ME 04038  
[atlantichomeconstruction1@gmail.com](mailto:atlantichomeconstruction1@gmail.com)  
207-899-5615

#### *Building Design:*

#### **MacLeod Structural Engineers, PA**

42 Main Street, Suite D  
Gorham, ME 04038  
207-839-0980

#### *Natural Resources, Soils and Septic Systems:*

#### **Mark Hampton Associates, Inc.**

P.O. Box 1931  
Portland, ME 04104-1931  
[mhampto1@maine.rr.com](mailto:mhampto1@maine.rr.com)  
(207)-756-2900

#### *Surveying, Engineering and Permitting:*

#### **St.Clair Associates**

34 Forest Lane  
Cumberland, ME 04021  
[david@stclairassociatesmaine.com](mailto:david@stclairassociatesmaine.com)  
[nancy@stclairassociatesmaine.com](mailto:nancy@stclairassociatesmaine.com)  
(207)-829-5558

### **Proposed Site Use and Safe Zones**

During the May 10, 2021 Planning Board meeting there was some discussion whether a Tier 3 Marijuana Cultivation Facility could be constructed adjacent to the Mountain Division Trail, as the Trail is identified as a Safe Zone. It is our understanding that this question has been reviewed by the Town Attorney, the Town staff in the Planning Office and the Zoning Office, and based on the Town's discussions with the State of Maine Department of Administrative and Financial Services' Office of Marijuana Policy (OMP), the Safe Zone restriction would only be enforced if it was clearly specified in a local Ordinance as a setback from a marijuana business. The Planning office has indicated that this is not the case in the Windham Ordinance. As such, this use is allowed on this site.

### **Chapter 537 Performance Standards**

The following discussion addressing the Ordinance criteria was previously submitted as part of the Sketch Plan application for this project filed on April 19, 2021, and are reiterated below for ease of review. The discussion regarding odor control (item B below) has been updated to provide more detailed information for this facility.

The Performance Standards in the Windham Land Use Ordinance identify 5 permitting standards (Sections 537A-E) that must be met for Marijuana Businesses. Sections 537D and 537E appear to only pertain to home occupations and would not apply in this case. The following permitting standards apply to this proposed Marijuana Cultivation Facility:

- A. Marijuana Businesses shall not locate within 1,000 feet of a public or private school, measured from the exterior wall of the Marijuana Business to the property line of the protected use. Marijuana Businesses other than Caregiver (home occupation) shall not locate within 250 feet of a state licensed daycare of any size, measured from the main entrance door of the daycare facility to the main entrance door of the Marijuana Business. This section shall not prohibit the activity of a caregiver or other authorized individual from administering medical marijuana to a qualified patient who is located within one of these protected areas.*

Based on our review of the surrounding land uses within 1,000' of the proposed Marijuana Business, there are no identified public or private schools in this vicinity. Our office has also reviewed the Maine Department of Health and Human Services (DHHS) list of State licensed daycares in Windham, and the closest one appears to be approximately 2,500' from this site, which well exceeds the minimum 250' separation distance cited in the Ordinance.

*B. Marijuana Businesses shall not have any odor of marijuana detectible beyond the area controlled by the business, whether that be a leased or owned area that is a portion or all of a recorded parcel of land. Odors shall be controlled by whatever best-practices exist.*

All of the plants are cultivated within the building and odors are controlled by the use of a combination of devices. The Applicant has indicated that their odor control system will include four Air Max 6,000 CFM units that provide odor control, ventilation and filtration. These units are each equipped with three carbon filters per unit, which are designed to reduce odor by a minimum of 85%. In addition, there will be two Clean Leaf odor control units with carbon filters that will provide an additional minimum of 95% odor reduction. The Applicant has indicated that their units will be maintained quarterly, with filter replacement as needed, but each filter will be replaced at least every 6 months. Manufacturer's data for these units is included as part of this application.

*C. Marijuana grown by any Marijuana Business shall be grown indoors only. A Medical Marijuana Caregiver shall not conduct any sale of the product on premises unless the business is also permitted as a Medical Marijuana Caregiver Retail Store.*

*1. Medical Marijuana grown by Medical Marijuana Caregivers shall be limited to less than one thousand (1,000) square feet floor area measured cumulatively per lot unless the business is also permitted as a Marijuana Cultivation Facility. A Medical Marijuana Caregiver or Medical Marijuana Caregiver (Home Occupation) in operation as of the effective date of this section shall be permitted to maintain the grow area in existence as of the effective date of this section.*

The Applicant is seeking approval for a Tier 3 Marijuana Cultivation Facility. All plants are grown indoors. No sales are proposed on the site. Under the Ordinance definition of a Marijuana Cultivation Facility, a Tier 3 Facility is limited to no more



than 7,000 sf of plant canopy. As the enclosed plans and information demonstrate, this proposed new site will have less than 7,000 sf of plant canopy.

### **State Level Permit Requirements**

Based on a review of the proposed extent of disturbance and impervious cover associated with the construction of this 7,488 sf building and its associated site improvements on the Applicant's approximately 1.07 acre site, this project does not meet the threshold requirements for a Stormwater Permit review (i.e. less than one acre of disturbance) by the Maine Department of Environmental Protection (MDEP) under the Stormwater Law.

In addition, as described above, although there are proposed wetland impacts associated with the proposed site improvements, the amount of impact is within the 4,300 sf exemption cited in the MDEP's Wetland Protection Rules, and is therefore not subject to review under the MDEP's Natural Resources Protection Act (NRPA).

### **Erosion and Sediment Control**

During construction and for the long-term, proper Erosion and Sediment Controls are critical to protect the site and adjacent areas and to prevent sediment from entering into the downstream receiving areas. Our office has prepared a site-specific Erosion and Sediment Control Plan and Details for this site.

Our Erosion and Sediment Control Plan is an integral part of the Site Plan Set and addresses protection of the site and the surrounding areas. This plan includes notes for the Contractor, included on the Erosion and Sediment Control Plan and accompanying Detail sheets. Specific Erosion and Sediment Control measures are shown the enclosed Grading and Utility Plan as well.

Given the size of the project, lot-specific Stormwater BMPs are relatively limited and owner responsibilities focus on general housekeeping measures such as monitoring and repair/cleaning of the roof dripline BMP, stabilized slopes, gravel areas, and grassed UDSF for accumulated debris and sediment, and reseeding/stabilization of areas in which erosion has occurred or vegetation is lacking. Lot owner inspections should occur at least twice annually, in the spring and fall, or after any significant rain event in which erosion may have occurred. Any accumulated sediment or debris shall be promptly disposed of off-site in an appropriate location suitable to receive such materials.



### **Stormwater Management**

As the Site Plan demonstrates, the site is rather flat, with little vertical relief. Wetland areas have been mapped on the site, with the largest wetland area located at southerly end of the site, on the fringe of the proposed lot improvements. In addition, there is a mapped wetland finger that projects into the building footprint on the westerly end of the site. As previously discussed, unavoidable wetland impacts associated with the site development amount to approximately 4,200 sf, and are within the limits of the 4,300 sf exemption under the MDEP NRPA permitting process.

There is only approximately 3' of vertical relief across the site. In the existing condition, the highest point of the site is located at the Gambo Road frontage, in the northerly corner of the site. The northerly end of the site has been previously cleared, the southerly end of the site remains wooded. As previously noted, the site is in the watershed of the Presumpscot River.

With the proposed site development, the building will become the highest point on the site. The grading along the easterly edge of the site has been designed with an increased foundation reveal, and approximately 1.5 to 1 stabilized slope such that site fills can be reduced, allowing for a wider vegetated area along the easterly side of the site. This also reduces wetland impacts and provides screening of the building from the Mountain Division Trail with the preservation of the remaining wooded areas along that edge of the site. These wooded areas also provide a level of natural stormwater treatment as site runoff from the vegetated areas and stabilized slopes along the easterly side of the site passes through the natural buffer area to the wetlands at the southerly end of the site.

The grading in the gravel parking area at the front of the building must be generally located near the finish floor of the building to provide access into the building. The parking area and entrance drive has been designed to generally drain toward the vegetated area in the northwest corner of the site, where a shallow Grassed Underdrained Soil Filter (Grassed UDSF) is proposed to provide stormwater filtration and to offer a degree of attenuation of peak runoff prior to leaving the site. This area is intended to treat the entire front parking area and driveway.

Given the flat nature of the site, the surface of the Grassed UDSF is proposed at approximately elevation 166.22. The tributary area associated with gravel parking at the front of the building is approximately 5,388 sf of impervious cover. A small amount of landscaped area is also tributary to this BMP (around the eastern and southern side slopes. This area represents approximately 2,938 sf of landscaped area.

Given the limited site elevations, the Grassed UDSF is intended to provide the CPV in a relatively shallow (approximately 6") section, based on the available ponding depth below the parking edge. The sizing of this BMP is based on the MDEP criteria for Grassed UDSF's as follows:

Based on the site design information, the estimated impervious areas and landscaped areas that flow to the Grassed UDSF have been calculated, as described above, in order to size this BMP to provide a Surface Storage Volume based on the following:

- 1" over the estimated Impervious Area, and
- 0.4" over the estimated Landscaped Area

Grassed UDSF Sizing-Surface Storage Volume				
Description	Impervious Area (sf)	Landscaped Area (sf)	Required CPV (cf)	Provided CPV (cf)
Grassed UDSF	5,388	2938	547	754*

*\*Calculated at elevation 166.72*

As described and detailed above, the proposed Grassed UDSF provides a surface storage capacity that meets and exceeds the MDEP's standards for design of this type of BMP.

The table above is based on the entire tributary area to the Grassed UDSF. As the enclosed plan shows, the lowest proposed elevation at the edge of the parking area is approximately 167.65, which is approximately 1.43' above the minimum base elevation of the proposed Grassed UDSF.

Given the proposed site grading, BMP location and sizing, this area provides treatment for the entire front parking area which represents approximately 36% of the

site's approximately 14,975 sf of total new impervious cover. Please note that there is a small area at the entrance to the site from Gambo Road that cannot flow into the proposed Grassed UDSF due to the site grades and the elevations along Gambo Road. This area will continue to flow along the Gambo Road shoulder toward the downstream outlet on the westerly edge of the property.

In order to provide for treatment of stormwater runoff from the building's rooftop, Roof Dripline BMPs are proposed on the westerly and easterly sides of the building along the drip edges. These BMPs have been sized based on the MDEP criteria for 1" of runoff, and treat the entire roof surface (i.e. approximately 7,488 sf).

This BMP provides treatment to 100% of the rooftop, which represents an additional approximately 50% of the site's proposed approximately 14,975 sf of impervious cover. The treatment afforded by this BMP, coupled with proposed Grassed UDSF provides a total treatment of approximately 86% of the site's proposed new impervious cover.

In order to address the Fire Department's request for a 14' wide Fire Lane along the entire westerly edge of the building, along with providing an approximately 3.5' roof dripline BMP along the building's westerly and easterly sides of the building, the sideslopes along the westerly edge of the gravel fire lane are also proposed at a 1.5 to 1 slope with permanent stabilization and vegetation. Given the limited available width between the Fire Lane and the property limits, there are no feasible alternatives to treat runoff from this area. The area is expected to be used only in the case of emergency, and it is not anticipated that it will have heavy traffic use that may track in sediments or other pollutants that may require treatment.

As noted above, there is a wetland area at the southerly fringe of the building limits that affects the full width of the site at the south end of the building. Given the fact that any proposed site BMPs in this area would either be located entirely within the wetland, or must impact additional wetlands to reach the upland areas further to the south, the site conditions preclude the construction of anything at the rear of the building beyond that which is minimally necessary to provide for the Fire Lane and a small area for the dumpster totes.

As discussed above, given the limited extent of proposed developed area and new impervious area, this site does not trigger the Chapter 500 threshold for any MDEP Stormwater Permitting. The project is not of sufficient size to require either treatment (under the General Standards) or quantity controls (under the Flooding Standards).

Since the proposed site improvements are not of sufficient size to require any stormwater provisions under MDEP's Chapter 500, we are respectfully requesting that the Planning Board partially waive the requirements of Section 812 E.1(f) (to provide stormwater treatment in accordance with the MDEP General Standards), and allow the proposed BMPs (i.e. the Grassed UDSF and Roof Dripline BMP), which provide treatment to approximately 86% of the project's total impervious area, to be considered sufficient to meet the local standards for stormwater treatment.

### **Stormwater Modeling**

Given the size of the proposed project, the Flooding Standards of MDEP's Chapter 500 do not apply in this case, nor do the General Standards (for Stormwater Treatment). However, in accordance with the local requirements for Stormwater, a pre- and post-development watershed analysis has been conducted, and as described above, provisions for Stormwater BMPs have also been provided on the site.

As part of the stormwater management evaluation for this project, a stormwater model was created using HydroCAD modeling software to evaluate the pre- and post- development peak flow rates at the identified points of discharge from the site.

The model identifies the anticipated landform changes associated with the proposed construction of the building, parking area, utilities, fire lane and landscaped areas on this parcel. The data specifically considers the pre-and post-development peak rates of runoff at the two Study Points at the site's outlets.

The proposed Grassed UDSF and Roof Dripline BMPs' function during storm events has been modeled using HydroCAD software to evaluate the storage capacity and anticipated exfiltration from each treatment BMP. The anticipated exfiltration through the media has been identified using the MDEP's guidelines for the media mix (i.e. 2.41 inches per hour).

In accordance with the Windham Ordinance requirements, Stormwater routing has been conducted to evaluate the 2, 10, and 25 year 24-hour design storms. The time span for the routing has been set between 0 and 48 hours with a minimum .01 hour time increment.

The stormwater modeling incorporates the rainfall amounts specifically cited in the MDEP Chapter 500 standards. For a Type III Storm Distribution, the following 24-hour duration rainfall amounts were used:

Event	1 YR	2-YR	10-YR	25-YR	100-Yr
24-Hour Rainfall (inches)	2.6	3.1	4.6	5.8	8.1

#### Modeling Results:

The Grassed UDSF has been modeled to identify its anticipated water surface elevations during varying storm events. This modeling was extended up to the 100-year storm event to identify the anticipated water surface elevations in the context of the surrounding parking area and berm height. The table below summarizes the modeling results for water surface elevations in the BMP during the various storm events.

Water Surface Elevations							
Grassed UDSF	Base Elevation	Spillway Outlet	2-yr storm	10-yr storm	25-yr storm	100-yr storm	Berm Height
	166.22	167.4	166.58	166.92	167.2	167.45	167.65

Based on the HydroCAD modeling data for the proposed site improvements, it is anticipated that this BMP can offer a combination of treatment and some peak flow attenuation for the proposed site improvements. HydroCAD data is provided for detailed review of the system model.

This data includes summaries, hydrographs and reports as appropriate for each of the elements within the model. In the post-development condition, stormwater has been routed through the proposed Grassed UDSF and the Roof Dripline BMP to consider the peak rates of discharge at the Study Points on the site.

Based on the modeling information, the following peak discharge rates are expected at the Study Points for the project:

<b>Anticipated Peak Rates of Runoff (cfs)</b>						
	Study Point 1			Study Point 2		
Storm Event (yr)	2	10	25	2	10	25
Pre-Development	0.40	0.81	1.17	0.42	0.85	1.21
Post-Development	0.29	0.44	0.85	0.47	0.92	1.28
Net Change (cfs)	-0.11	-0.37	-0.32	0.05	0.07	0.07

### **Stormwater Waiver Request**

As the Modeling results in the table above demonstrate, Post-Development peak flow rates reaching the site's Study Point 1 are below the calculated Pre-Development peak flow rates for all storm events. However at Study Point 2, at the rear of the site, the anticipated peak rates of discharge are slightly higher than the pre-development peaks for all storm events. As discussed above, given the configuration of the wetland areas on the site, there are no options to feasibly address stormwater treatment and/or attenuation without additional wetland impacts.

Section 812 E.1(a) of the Site Plan Review Ordinance (pertaining to Stormwater Management) requires demonstration that, during the 2, 10 and 25-year storm events, peak rates of stormwater runoff leaving the site do not exceed the pre-development peak discharges leaving the site.

Per Section 812 E.1(a)(1), the Planning Board may grant a waiver to allow an insignificant increase in peak flow rates from a project site. As the table above demonstrates, the stormwater modeling predicts a reduction of peak discharge rates at Study Point 1, but at Study Point 2 there are projected slight increases in each storm event. The Applicant is respectfully requesting a waiver, in accordance with this Ordinance provision, to allow these slight increases at Study Point 2.

Given that this proposed Site Plan is not required to meet the flooding standard at the State level (or any other MDEP Stormwater Permit criteria), the Applicant is respectfully requesting a waiver of the Site Plan Review Ordinance Section 812 E.1(a) pertaining to Stormwater Management, and the limitation of post-development runoff peaks to the pre-development levels.

### **Application Fees**

Payment of the \$1,362.00 Major Site Plan Application Fee and the \$3,000.00 Review Escrow (\$4,362.20 total) will be paid directly by the Applicant, under separate cover.

### **Application Materials**

We have included 5 copies of the following materials in support of the applicant's Major Site Plan Application to the Windham Planning Board:

- Cover letter
- Major Site Plan Application Form (Final Plan)
- Application Checklist
- Waiver Request Forms (traffic and stormwater)
- Agent Letter
- Deed
- Location Map (in plan set)
- Abutter List
- Financial Capacity Letter
- Certificate of Good Standing
- USGS Location Map
- Web Soils Survey
- Wetland Letter by Mark Hampton Associates
- HHE-200 Septic System Design by Mark Hampton Associates
- Site Plan Drawing Set showing the proposed Site Layout, Utilities, Grading, Planting Plan, Erosion and Sediment Control Plan and Details
- Proposed Building Floor Plans and Elevations by MacLeod Structural Engineers
- Proposed Lighting Fixture Information\*



- HydroCAD Data
- Application Fee\*

\*These materials are being provided by the Applicant under separate cover

### **Closure**

We would appreciate your review of the enclosed materials for placement on the Planning Board's upcoming June 28, 2021 Agenda for Major Site Plan review. In the interim, we are available to virtually meet with you and the other department heads, if necessary, to discuss the enclosed materials in greater detail.

We look forward to continuing our team's work with you and the Planning Board as we move through the local permitting process. As discussed during the Sketch Plan review, it is our understanding that the Planning Board will also be scheduling a public hearing and site walk on this matter. We look forward to receiving information on the dates for these events as well.

If you have any questions or need any additional information prior to the upcoming Planning Board meeting, please let us know, we look forward to hearing from you.

Sincerely,

ST.CLAIR ASSOCIATES



Nancy J. St. Clair, P.E.

Vice President

NJS:njs

C: S&N Investments LLC  
Atlantic Home Construction Inc.



## Final Plan - Major Site Plan

Project Name: Gambo Road Site-Plan

Tax Map: 41 Lot: 4

Estimated square footage of building(s): 7,488 S.F.

If no buildings proposed, estimated square footage of total development: \_\_\_\_\_

Is the total disturbance proposed > 1 acre? ☐ Yes ☒ No

### Contact Information

#### 1. Applicant

Name: S&N Investments LLC

Mailing Address: 91 Auburn Street Suite J #240 Portland, Maine 04103

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_ E-mail: maineholdingsllc@gmail.com

#### 2. Record owner of property

☒ (Check here if same as applicant)

Name: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_ E-mail: \_\_\_\_\_

#### 3. Contact Person/Agent (if completed and signed by applicant's agent, provide written documentation of authority to act on behalf of applicant)

Name: Nancy St.Clair

Company Name: St.Clair Associates

Mailing Address: 34 Forest Lane Cumberland, ME 04021

Telephone: 207-615-8586 Fax: \_\_\_\_\_ E-mail: nancy@stclairassociatesmaine.com

I certify all the information in this application form and accompanying materials is true and accurate to the best of my knowledge.

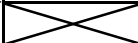

Nancy St.Clair  
Signature agent

6/7/21  
Date



Final Plan - Major Site Plan: Submission Requirements		Applicant	Staff
a.	Complete Sketch Plan Application form		
b.	Evidence of payment of application and escrow fees		
c.	Written information - submitted in bound report		
1	A narrative describing the proposed use or activity	✓	
2	Name, address, & phone number of record owner, and applicant if different	✓	
3	Names and addresses of all abutting property owners	✓	
4	Documentation demonstrating right, title, or interest in property	✓	
5	Copies of existing proposed covenants or deed restrictions	✓	
6	Copies of existing or proposed easements on the property	✓	
7	Name, registration number, and seal of the licensed professional who prepared the plan, if applicable	✓	
8	Evidence of applicant's technical capability to carry out the project	✓	
9	Assessment of the adequacy of any existing sewer and water mains, culverts and drains, on-site sewage disposal systems, wells, underground tanks or installations, and power and telephone lines and poles on the property	✓	
10	Estimated demand for water supply and sewage disposal	✓	
11	Provisions for handling all solid wastes, including hazardous and special wastes	✓	
12	Detail sheets of proposed light fixtures	✓	
13	Listing of proposed trees or shrubs to be used for landscaping	✓	
14	Estimate weekday AM and PM and Saturday peak hour and daily traffic to be generated by the project	See Cover	
15	Description of important or unique natural areas and site features, including floodplains, deer wintering areas, significant wildlife habitats, fisheries, scenic areas, habitat for rare and endangered plants and animals, unique natural communities and natural areas, sand and gravel aquifers, and historic and/or archeological resources	✓	
16	If the project requires a stormwater permit from MaineDEP or if the Planning Board or if the Staff Review Committee determines that such information is required, submit the following:		
	stormwater calculations		
	erosion and sedimentation control measures		
	water quality and/or phosphorous export management provisions		
17	If public water or sewerage will be utilized, provide statement from utility district regarding the adequacy of water supply in terms of quantity and pressure for both domestic and fire flows, and the capacity of the sewer system to accommodate additional wastewater.	✓	
18	Financial Capacity		
	i. Estimated costs of development and itemize estimated major expenses	✓	
	ii. Financing (submit one of the following)		
	a. Letter of commitment to fund		

	b. Self-financing		
	1. Annual corporate report		
	2. Bank Statement		
	c. Other		
	1. Cash equity commitment of 20% of total cost of development		
	2. Financial plan for remaining financing		
	3. Letter from institution indicating intent to finance	✓	
	iii. If a registered corporation a Certificate of Good Standing from:	<del>                    </del>	<del>                    </del>
	Secretary of State, or	✓	
	statement signed by corporate officer		
19	Technical Capacity (address both)	<del>                    </del>	<del>                    </del>
	i. Prior experience	✓	
	ii. Personnel	✓	
d.	<b>Plan Requirements - Existing Conditions</b>		
i.	Location Map adequate to locate project within the municipality	✓	
ii.	Vicinity Plan. Drawn to scale of not over 400 feet to the inch, and showing area within 250 feet of the property line, and shall show the following:	✓	
	a. Approximate location of all property lines and acreage of parcels	✓	
	b. Locations, widths and names of existing, filed or proposed streets, easements or building footprints	✓	
	c. Location and designations of any public spaces		
	d. Outline of proposed subdivision, together with its street system and an indication of the future probable street system of the remaining portion of the tract		
iii.	North Arrow identifying Grid North; Magnetic North with the declination between Grid and Magnetic; and whether Magnetic or Grid bearings were used	✓	
iv.	Location of all required building setbacks, yards, and buffers	✓	
v.	Boundaries of all contiguous property under the total or partial control of the owner or applicant	✓	
vi.	Tax map and lot number of the parcel or parcels on which the project is located	✓	
vii.	Zoning classification(s), including overlay and/or subdistricts, of the property and the location of zoning district boundaries if the property is located in 2 or more districts or abuts a different district.	✓	
viii.	Bearings and lengths of all property lines of the property to be developed, and the stamp of the surveyor that performed the survey.	✓	
ix.	Existing topography of the site at 2-foot contour intervals	✓	
x.	Location and size of any existing sewer and water mains, culvers and drains, on-site sewage disposal systems, wells, underground tanks or installations, and power and telephone lines and poles on the property and on abutting streets or land that may serve the development.	✓	
xi.	Location, names, and present widths of existing public and/or private streets and rights-of way within or adjacent to the proposed development	✓	
xii.	Location, dimensions, and ground floor elevation of all existing buildings		

xiii.	Location and dimensions of existing driveways, parking and loading areas, walkways, and sidewalks on or adjacent to the site.	✓	
xiv.	Location of intersecting roads or driveways within 200 feet of the site.	✓	
xv.	Location of the following:		
	a. Open drainage courses		
	b. Wetlands	✓	
	c. Stone walls		
	d. Graveyards		
	e. Fences		
	f. Stands of trees or treeline, and	✓	
	g. Other important or unique natural areas and site features, including but not limited to, floodplains, deer wintering areas, significant wildlife habitats, fisheries, scenic areas, habitat for rare and endangered plants and animals, unique natural communities and natural areas, sand and gravel aquifers, and historic and/or archaeological resources		
xvi.	Direction of existing surface water drainage across the site	✓	
xvii.	Location, front view, dimensions, and lighting of existing signs		
xviii.	Location & dimensions of existing easements that encumber or benefit the site		
xix.	Location of the nearest fire hydrant, dry hydrant, or other water supply	✓	
<b>Plan Requirements - Proposed Development Activity</b>			
i.	Location and dimensions of all provisions for water supply and wastewater disposal, and evidence of their adequacy for the proposed use, including soils test pit data if on-site sewage disposal is proposed	✓	
ii.	Grading plan showing the proposed topography of the site at 2-foot contour intervals	✓	
iii.	Direction of proposed surface water drainage across the site and from the site, with an assessment of impacts on downstream properties.	✓	
iv.	Location and proposed screening of any on-site collection or storage facilities	✓	
v.	Location, dimensions, and materials to be used in the construction of proposed driveways, parking and loading areas, and walkways, and any changes in traffic flow onto or off-site	✓	
vi.	Proposed landscaping and buffering	✓	
vii.	Location, dimensions, and ground floor elevation of all buildings or expansions	✓	
viii.	Location, front view, materials and dimensions of proposed signs together with method for securing sign	✓	
ix.	Location and type of exterior lighting. Photometric plan to demonstrate coverage area of all lighting may be required by Planning Board.	✓	
x.	Location of all utilities, including fire protection systems	✓	
xi.	Approval block: Provide space on the plan drawing for the following words, "Approved: Town of Windham Planning Board" along with space for signatures and date	✓	

<b>2. Major Final Site Plan Requirements</b>		
a.	Narrative and/or plan describing how the proposed development plan relates to the sketch plan	✓
b.	Stormwater drainage and erosion control program showing:	<del> </del>
	1. Existing and proposed method of handling stormwater runoff	✓
	2. Direction of the flow of the runoff, through the use of arrows and a description of the type of flow (e.g. sheet flow, concentrated flow, etc.)	✓
	3. Location, elevation, and size of all catch basins, dry wells, drainage ditches, swales, retention basins, and storm sewers	✓
	4. Engineering calculations used to determine drainage requirements based on the 25-year, 24-hour storm frequency.	✓
	5. Methods of minimizing erosion and controlling sedimentation during and after construction.	✓
c.	A groundwater impact analysis prepared by a groundwater hydrologist for projects involving on-site water supply or sewage disposal facilities with a capacity of 2,000 gallons or more per day	
d.	Name, registration number, and seal of the Maine Licensed Professional Architect, Engineer, Surveyor, Landscape Architect and/or similar professional who prepared the plan	✓
e.	A utility plan showing, in addition to provisions for water supply and wastewater disposal, the location and nature of electrical, telephone, cable TV, and any other utility services to be installed on the site	✓
f.	A planting schedule keyed to the site plan indicating the general varieties and sizes of trees, shrubs, and other vegetation to be planted on the site, as well as information pertaining to provisions that will be made to retain and protect existing trees, shrubs, and other vegetation	✓
g.	Digital transfer of any site plan data to the town (GIS format)	✓
h.	A traffic impact study if the project expansion will generate 50 or more trips during the AM or PM peak hour, or if required by the Planning Board	See Cover
<b>Electronic Submission</b>		
		✓

**TOWN OF WINDHAM  
SUBDIVISION & SITE PLAN APPLICATION**

**Performance and Design Standards Waiver Request Form**

(Section 808 – Site Plan Review, Waivers)  
(Section 908 – Subdivision Review, Waivers)

For each waiver request from the Performance and Design Standards detailed in Section 811 or Section 911 of the Town of Windham Land Use Ordinance, as applicable, please submit a separate completed copy of this waiver request form.

**Subdivision or Project Name:** Gambo Road Site-Plan

**Tax Map:** 41 **Lot:** 4

**Waivers are requested from the following Performance and Design Standards  
(add rows as necessary):**

Ordinance Section	Standard	Mark which waiver this form is for
811.B.1.(c)(14)	An estimate of the weekday AM and PM and Saturday peak hour and daily traffic to be generated by the project.	✓

- a. Describe how a waiver from the standard indicated above will improve the ability of the project to take the property's pre-development natural features into consideration. Natural features include, but are not limited to, topography, location of water bodies, location of unique or valuable natural resources, relation to abutting properties or land uses. Attach a separate sheet if necessary.

See Cover Letter

(continued next page)



Ordinance Section: 811.B.1.(c)(14)

b. Will the waiver have an impact on any of the following criteria? **No**

	Yes	No
Water or air pollution		
Light pollution or glare		
Water supply		
Soil erosion		
Traffic congestion or safety		
Pedestrian safety or access		
Supply of parking		
Sewage disposal capacity		
Solid waste disposal capacity		
Scenic or natural beauty, aesthetics, historic sites, or rare or irreplaceable natural areas		
Flooding or drainage issues on abutting properties		
The Town's ability to provide the subdivision with public safety services (if subdivision)		

**TOWN OF WINDHAM  
SUBDIVISION & SITE PLAN APPLICATION**

**Performance and Design Standards Waiver Request Form**

(Section 808 – Site Plan Review, Waivers)  
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For each waiver request from the Performance and Design Standards detailed in Section 811 or Section 911 of the Town of Windham Land Use Ordinance, as applicable, please submit a separate completed copy of this waiver request form.

**Subdivision or Project Name:** Gambo Road Site-Plan

**Tax Map:**41 **Lot:** 4

**Waivers are requested from the following Performance and Design Standards  
(add rows as necessary):**

Ordinance Section	Standard	Mark which waiver this form is for
812 E.1(a)	Increase in Peak Flow Rate from Project Site	✓
812 E.1(f)	Stormwater Management Plan for DEP Chapter 500	✓

- a. Describe how a waiver from the standard indicated above will improve the ability of the project to take the property's pre-development natural features into consideration. Natural features include, but are not limited to, topography, location of water bodies, location of unique or valuable natural resources, relation to abutting properties or land uses. Attach a separate sheet if necessary.

See Cover Letter

(continued next page)

Ordinance Section: 812 E.1(a)

b. Will the waiver have an impact on any of the following criteria? **No**

	Yes	No
Water or air pollution		
Light pollution or glare		
Water supply		
Soil erosion		
Traffic congestion or safety		
Pedestrian safety or access		
Supply of parking		
Sewage disposal capacity		
Solid waste disposal capacity		
Scenic or natural beauty, aesthetics, historic sites, or rare or irreplaceable natural areas		
Flooding or drainage issues on abutting properties		
The Town's ability to provide the subdivision with public safety services (if subdivision)		

If granting the waiver will result in an impact on any of the criteria above, please provide more detail below.

Scott Sanfino  
S&N Investments LLC  
91 Auburn Street  
Suite J #240  
Portland, ME 04103

April 19, 2021

Amanda Lessard, Planner  
Town of Windham  
8 School Road  
Windham, ME 04062

**Agent Authorization Letter-Scott Sanfino**  
**Proposed Site Plan**  
**Gambo Road**  
**Windham Assessor's Map 41, Lot 4**

Dear Amanda,

As you are aware, St.Clair Associates and Atlantic Home Construction Inc. are part of my project team and will be preparing, submitting and presenting the local and State application packages in support of my proposed new building on Gambo Road

Please be advised that Nancy St.Clair and David St.Clair Jr., of St.Clair Associates and Atlantic Home Construction Inc. have my authorization to act as an agent and technical representative on my behalf in support of the above referenced project and its local and State review processes. Please let me know if you have any questions.

Sincerely,

Scott Sanfino  
S&N Investments LLC

Two handwritten signatures in black ink. The first signature is on the left and the second is on the right, both appearing to be in cursive script.

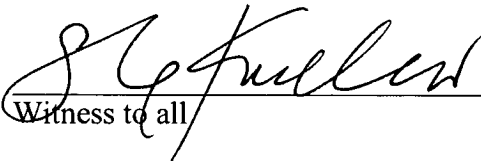
DLN: 1002040124453

**QUITCLAIM DEED**  
Maine Statutory Short Form

**KNOW ALL MEN BY THESE PRESENTS**, That **Sea Coast Mechanical, LLC**, a Maine limited liability company with a place of business in Windham in the County of Cumberland and State of Maine, for consideration paid, grants to **S & N Investments LLC**, a Maine limited liability company with a mailing address of 707 Sable Oaks Drive, Suite 10, South Portland, ME 04106, with **QUITCLAIM COVENANTS**, the real property situated in **Windham**, County of **Cumberland** and **State of Maine** more particularly described in Exhibit A attached hereto and incorporated herein by reference.

**IN WITNESS WHEREOF**, this instrument has been executed this 10th day of December, 2020.

**Sea Coast Mechanical, LLC**

  
Witness to all

  
By: **Daniel J. Richards, Member**

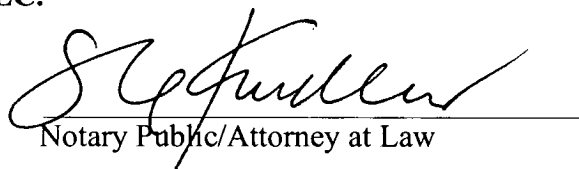
  
By: **Paul M. Baillargeon, Member**

State of Maine  
County of Cumberland, ss.

December 10, 2020

Personally appeared before me the above named **Daniel J. Richards and Paul M. Baillargeon, members of Sea Coast Mechanical, LLC**, and acknowledged the foregoing instrument to be their free acts and deeds in their said capacities and the free act and deed of **Sea Coast Mechanical, LLC**.

SUSAN GACE KNEDLER  
Notary Public, Maine  
My Commission Expires November 22, 2025

  
Notary Public/Attorney at Law

SUSAN GACE KNEDLER  
Notary Public, Maine  
My Commission Expires November 22, 2025

File Number 2020-1316

MAINE REAL ESTATE TAX PAID

**EXHIBIT A**  
(DEED)

A certain lot or parcel of land, with the buildings thereon, situated in the Town of Windham, County of Cumberland and State of Maine, being shown as Lot 7 on a plan made for Small Business Administration, dated January 19, 1960 and recorded in the Cumberland County Registry of Deeds in Plan Book 52, Page 58, to which reference may be had for a more particular description thereof.

This conveyance is made together with and subject to all reservations, restrictive covenants, exceptions, easements and conditions set forth on said plan and any and all other matters of record set forth in the Cumberland County Registry of Deeds.

For title, reference may be had to a deed recorded in the Cumberland Registry of Deeds in Book 36759, Page 159.

Received  
Recorded Register of Deeds  
Dec 16, 2020 11:47:16A  
Cumberland County  
Nancy A. Lane

*DR*  
*P.B.*

MBLU	Location	Owner Name	Co-Owner Name	Address 1	Address 2	City, State, Zip
5/ 6/ / /	GAMBO RD	GRONDIN CORPORATION		39 BELANGER AVENUE		WINDHAM, ME 04062
1/ 20/ / /	VARIOUS LOCATIONS	STATE OF MAINE DEPT OF TRANSPORT		16 STATE HOUSE STATION		AUGUSTA, ME 04333
5/ 3/ / /	GAMBO RD	GRONDIN CORPORATIO N		39 BELANGER AVENUE		WINDHAM, ME 04062
41/ 5/ / /	GAMBO RD	GRONDIN CORPORATION		39 BELANGER AVENUE		WINDHAM, ME 04062





June 1, 2021

Planning Department  
Town of Windham  
8 School Road  
Windham, ME 04062

RE: S&N Investment, Scott Sanfino.

Dear Sir or Madam:

Skowhegan Savings Bank provides credit and deposit services to Mr. Sanfino and he has provided us confidence tax statements, brokerage, and bank statements.

Please be advised that Mr. Sanfino has the financial capacity to perform the proposed improvements at Gabo Road in Windham, ME.

Sincerely,

Vice President  
Commercial Loan Officer  
207-431-4831

## TOWN OF WINDHAM ESTIMATES

AREA OF USE	AMOUNT	DEVICE	PRICE PER	TOTAL
Lights - Flowers	165	Illuminar DE - 1,000 watt	350	\$ 57,750.00
Lights - Veg	35	Spectra King Low Pro Veg Light	550	\$ 19,250.00
HVAC	5	10 Ton	14,000	\$ 70,000.00
HVAC	1	5 Ton HVAC Unit	8,000	\$ 8,000.00
Heat Pump - Daikin	1	2 Head Mini Split	7,000	\$ 7,000.00
Dehumidifier	4	Anden 320	3,200	\$ 12,800.00
Humidifiers	4	Anden Steam Humidifier	1,100	\$ 4,400.00
Tables - Adjustable Slide Units	36	Square Feet	1,477	\$ 53,172.00
Security System	1	With 16 Cameras and Alarms	8,000	\$ 8,000.00
Fans	23	V-Flow	45	\$ 1,035.00
Air Movers / Odor	4	Airmax	5,000	\$ 20,000.00
Air Movers / Odor	2	Cleanleaf Odor Control Series	3,000	\$ 6,000.00
Labor / CMP Install	1	Electrician Labor / CMP	116,350	\$ 116,350.00
Labor / Materials - Framing	1	Framing	15,000	\$ 15,000.00
Trust Core Plastic Walls	1	Framing Plastic Walls	25,000	\$ 25,000.00
Labor / Plumbing	1	Plumbing	20,000	\$ 20,000.00
Land	1		125000	\$ 125,000.00
Metal Building / Installed	1		213750	\$ 213,750.00
General Contractor Fee	1		7500	\$ 7,500.00
Site / Foundation Work	1		89500	\$ 89,500.00
License Fees / Engineering	1		30000	\$ 30,000.00
Misc Expenses	1		15,000	\$ 15,000.00
				<b>\$ 924,507.00</b>



# MAINE

Department of the Secretary of State  
Bureau of Corporations, Elections and Commissions

[Corporate Name Search](#)

## Information Summary

[Subscriber activity report](#)

**This record contains information from the CEC database and is accurate as of: Wed May 26 2021 11:06:20. Please print or save for your records.**

Legal Name	Charter Number	Filing Type	Status
S & N INVESTMENTS LLC	20214293DC	LIMITED LIABILITY COMPANY (DOMESTIC)	GOOD STANDING

Filing Date	Expiration Date	Jurisdiction
11/25/2020	N/A	MAINE

**Other Names** (A=Assumed ; F=Former)

NONE

### Clerk/Registered Agent

SCOTT SANFINO  
707 SABLE OAKS DRIVE, SUITE 10  
SOUTH PORTLAND, ME 04106

[Back to previous screen](#)

[New Search](#)

**Click on a link to obtain additional information.**

List of Filings

[View list of filings](#)

**Obtain additional information:**

Certificate of Existence	<a href="#">(more info)</a>	<a href="#">Short Form without amendments (\$30.00)</a>	<a href="#">Long Form with amendments (\$30.00)</a>
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You will need Adobe Acrobat version 3.0 or higher in order to view PDF files.  
If you encounter problems, visit the [troubleshooting page](#).



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© Department of the Secretary of State





# Custom Soil Resource Report Soil Map



## Cumberland County and Part of Oxford County, Maine

### BuB—Lamoine silt loam, 3 to 8 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2t0kc

*Elevation:* 10 to 490 feet

*Mean annual precipitation:* 33 to 60 inches

*Mean annual air temperature:* 36 to 52 degrees F

*Frost-free period:* 90 to 160 days

*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Lamoine and similar soils:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Lamoine

##### Setting

*Landform:* Marine terraces, river valleys

*Landform position (two-dimensional):* Footslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Linear

*Across-slope shape:* Linear

*Parent material:* Fine glaciomarine deposits

##### Typical profile

*Ap - 0 to 7 inches:* silt loam

*Bw - 7 to 13 inches:* silt loam

*Bg - 13 to 24 inches:* silty clay loam

*Cg - 24 to 65 inches:* silty clay

##### Properties and qualities

*Slope:* 3 to 8 percent

*Depth to restrictive feature:* More than 80 inches

*Drainage class:* Somewhat poorly 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 6 to 17 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Maximum salinity:* Nonsaline (0.0 to 1.9 mmhos/cm)

*Available water capacity:* Moderate (about 7.6 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 3w

*Hydrologic Soil Group:* C/D

*Hydric soil rating:* No

#### Minor Components

##### Scantic

*Percent of map unit:* 10 percent

*Landform:* Marine terraces, river valleys



## Custom Soil Resource Report

*Landform position (two-dimensional):* Toeslope, footslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Linear

*Across-slope shape:* Concave

*Hydric soil rating:* Yes

### **Buxton**

*Percent of map unit:* 3 percent

*Landform:* Marine terraces, river valleys

*Landform position (two-dimensional):* Backslope

*Landform position (three-dimensional):* Side slope

*Down-slope shape:* Linear

*Across-slope shape:* Convex

*Hydric soil rating:* No

### **Ragmuff**

*Percent of map unit:* 1 percent

*Landform:* Marine terraces, river valleys

*Landform position (two-dimensional):* Backslope, shoulder

*Landform position (three-dimensional):* Side slope, base slope

*Down-slope shape:* Convex

*Across-slope shape:* Convex

*Hydric soil rating:* No

### **Biddeford**

*Percent of map unit:* 1 percent

*Landform:* Marine terraces, river valleys

*Landform position (two-dimensional):* Toeslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Concave

*Across-slope shape:* Concave

*Ecological site:* F144BY002ME - Marine Terrace Depression

*Hydric soil rating:* Yes

## **Sn—Scantic silt loam, 0 to 3 percent slopes**

### **Map Unit Setting**

*National map unit symbol:* 2slv3

*Elevation:* 10 to 900 feet

*Mean annual precipitation:* 33 to 60 inches

*Mean annual air temperature:* 39 to 45 degrees F

*Frost-free period:* 90 to 160 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Scantic and similar soils:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

## Description of Scantic

### Setting

*Landform:* Marine terraces, river valleys  
*Landform position (three-dimensional):* Talf  
*Down-slope shape:* Linear  
*Across-slope shape:* Linear  
*Parent material:* Glaciomarine deposits

### Typical profile

*Ap - 0 to 9 inches:* silt loam  
*Bg1 - 9 to 16 inches:* silty clay loam  
*Bg2 - 16 to 29 inches:* silty clay  
*Cg - 29 to 65 inches:* silty clay

### Properties and qualities

*Slope:* 0 to 3 percent  
*Depth to restrictive feature:* More than 80 inches  
*Drainage class:* Poorly drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately low (0.00 to 0.06 in/hr)  
*Depth to water table:* About 0 to 12 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Available water capacity:* Moderate (about 6.3 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 4w  
*Hydrologic Soil Group:* D  
*Hydric soil rating:* Yes

## Minor Components

### Lamoine

*Percent of map unit:* 8 percent  
*Landform:* River valleys, marine terraces  
*Landform position (three-dimensional):* Riser, rise  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

### Biddeford

*Percent of map unit:* 3 percent  
*Landform:* Marine terraces, river valleys  
*Landform position (two-dimensional):* Toeslope  
*Landform position (three-dimensional):* Dip  
*Down-slope shape:* Concave  
*Across-slope shape:* Concave, linear  
*Ecological site:* F144BY002ME - Marine Terrace Depression  
*Hydric soil rating:* Yes

### Roundabout

*Percent of map unit:* 2 percent  
*Landform:* River valleys, marine terraces  
*Landform position (three-dimensional):* Tread, talf  
*Down-slope shape:* Linear

## Custom Soil Resource Report

*Across-slope shape:* Linear

*Hydric soil rating:* Yes

### **Buxton**

*Percent of map unit:* 2 percent

*Landform:* Marine terraces, river valleys

*Landform position (three-dimensional):* Riser, rise

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Hydric soil rating:* No



MARK HAMPTON ASSOCIATES, INC.

SOIL EVALUATION • WETLAND DELINEATIONS • SOIL SURVEYS • WETLAND PERMITTING

6650  
May 25, 2021

Nate & Kayla Hurteau  
Hurteau Holdings  
15 Tranquil Drive  
Gorham, ME 04038

Re: Wetland Delineation, 1.1 acres on Gambo Road in Windham, ME

Dear Kayla & Nate,

I have completed a delineation of wetlands on a 1.1 acre parcel located on Gambo Road adjacent to the Mountain Division Rail Line in Windham, ME. The wetland delineation was completed in accordance with the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual for the Northcentral and Northeast Regions dated January 2012. These manuals require the presence of three parameters for a wetland to be present, wetland hydrology, hydrophytic vegetation, and hydric soils.

The wetlands I found on the parcel were flagged with yellow flagging. The flagging was labeled in an alphanumeric sequence. The wetland flags were located by GPS equipment capable of locating a point to within three feet. The wetland data has sent to St. Clair Associates to be incorporated into the plan of the property. The wetlands found onsite are forested wetlands along the back and side of the property and wet meadow wetlands in the back third of the cleared area. These wetlands do not meet the definition of wetlands of special significance as defined by Maine Department of Environmental Protection.

If you have any questions or require additional information, please contact me.

Sincerely,

Hope Hampton, L.S.E.  
Licensed Site Evaluator #427



6650

## SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Dept. Health & Human Services  
Div. Environmental Health, 11SHS  
(207) 287-2070 Fax: (207) 287-4172

<b>PROPERTY LOCATION</b>		<b>&gt;&gt; CAUTION: LPI APPROVAL REQUIRED &lt;&lt;</b>	
City, Town, or Plantation	Windham	Town/City	Permit #
Street or Road	Gambo Road	Date Permit Issued	Fee: \$
Subdivision, Lot #		Double Fee Charged	[ ]
<b>OWNER/APPLICANT INFORMATION</b>		Local Plumbing Inspector Signature	
Name (last, first, MI)	Hurteau Holdings	Fee: \$	state min fee \$
Mailing Address of Owner/Applicant	15 Tranquil Drive Gorham 04038	Locally adopted fee	
Daytime Tel. #	691-0838	Copy: [ ] Owner [ ] Town [ ] State	
<b>OWNER OR APPLICANT STATEMENT</b> I state and acknowledge that the information submitted is correct to the best of my knowledge and understand that any falsification is reason for the Department and/or Local Plumbing Inspector to deny a Permit.		<b>CAUTION: INSPECTION REQUIRED</b> I have inspected the installation authorized above and found it to be in compliance with the Subsurface Wastewater Disposal Rules Application.	
Signature of Owner or Applicant		Local Plumbing Inspector Signature	
Date		(1st) date approved	

<b>PERMIT INFORMATION</b>	
<b>TYPE OF APPLICATION</b> 1. First Time System 2. Replacement System Type replaced: _____ Year installed: _____ 3. Expanded System a. <25% Expansion b. ≥25% Expansion 4. Experimental System 5. Seasonal Conversion	<b>THIS APPLICATION REQUIRES</b> 1. No Rule Variance 2. First Time System Variance a. Local Plumbing Inspector Approval b. State & Local Plumbing Inspector Approval 3. Replacement System Variance a. Local Plumbing Inspector Approval b. State & Local Plumbing Inspector Approval 4. Minimum Lot Size Variance 5. Seasonal Conversion Permit
<b>SIZE OF PROPERTY</b> 1.1 SQ. FT. ACRES	<b>DISPOSAL SYSTEM TO SERVE</b> 1. Single Family Dwelling Unit, No. of Bedrooms: _____ 2. Multiple Family Dwelling, No. of Units: _____ 3. Other: Commercial - Marijuana Cultivation (specify) Current Use Seasonal Year Round Undeveloped
<b>SHORELAND ZONING</b> Yes No	<b>DISPOSAL SYSTEM COMPONENTS</b> 1. Complete Non-engineered System 2. Primitive System (graywater & alt. toilet) 3. Alternative Toilet, specify: _____ 4. Non-engineered Treatment Tank (only) 5. Holding Tank, _____ gallons 6. Non-engineered Disposal Field (only) 7. Separated Laundry System 8. Complete Engineered System (2000 gpd or more) 9. Engineered Treatment Tank (only) 10. Engineered Disposal Field (only) 11. Pre-treatment, specify: _____ 12. Miscellaneous Components
	<b>TYPE OF WATER SUPPLY</b> 1. Drilled Well 2. Dug Well 3. Private 4. Public 5. Other

<b>DESIGN DETAILS (SYSTEM LAYOUT SHOWN ON PAGE 3)</b>			
<b>TREATMENT TANK</b> 1. Concrete a. Regular b. Low Profile 2. Plastic 3. Other: _____ CAPACITY: 1000 GAL.	<b>DISPOSAL FIELD TYPE &amp; SIZE</b> 1. Stone Bed 2. Stone Trench 3. Proprietary Device a. cluster array c. Linear b. regular load d. H-20 load 4. Other: _____ SIZE: 500 sq. ft. lin. ft.	<b>GARBAGE DISPOSAL UNIT</b> 1. No 2. Yes 3. Maybe If Yes or Maybe, specify one below: a. multi-compartment tank b. _____ tanks in series c. increase in tank capacity d. Filter on Tank Outlet	<b>DESIGN FLOW</b> 100 gallons per day BASED ON: 1. Table 4A (dwelling unit(s)) 2. Table 4C (other facilities) SHOW CALCULATIONS for other facilities 5 employees x 20 GPD (shower on-site) 3. Section 4G (meter readings) ATTACH WATER METER DATA
<b>SOIL DATA &amp; DESIGN CLASS</b> PROFILE CONDITION 12/3 / C at Observation Hole # TP1 Depth 15" of Most Limiting Soil Factor	<b>DISPOSAL FIELD SIZING</b> 1. Medium---2.6 sq. ft. / gpd 2. Medium---Large 3.3 sq. ft. / gpd 3. Large---4.1 sq. ft. / gpd 4. Extra Large---5.0 sq. ft. / gpd	<b>EFFLUENT/EJECTOR PUMP</b> 1. Not Required 2. May Be Required 3. Required Specify only for engineered systems: DOSE: _____ gallons	<b>LATITUDE AND LONGITUDE</b> at center of disposal area Lat. 43 d 44 m 56 s Lon. 70 d 26 m 04 s if g.p.s. state margin of error: 15

<b>SITE EVALUATOR STATEMENT</b>			
I certify that on 06/04/21 (date) I completed a site evaluation on this property and state that the data reported are accurate and that the proposed system is in compliance with the State of Maine Subsurface Wastewater Disposal Rules (10-144A CMR 241).			
Site Evaluator Signature Mark Hampton	263 SE # 207-756-2900	06/04/21 Date	
Site Evaluator Name Printed	Telephone Number	E-mail Address	
Note: Changes to or deviations from the _____ should be confirmed with the Site Evaluator.			

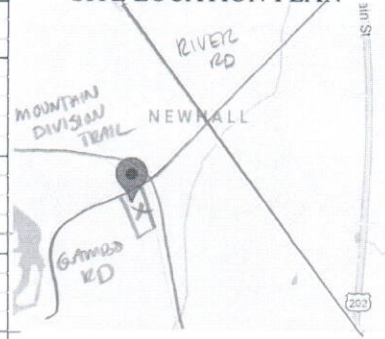


Department of Health & Human Services  
Division of Environmental Health  
(207) 287-5672 Fax: (207) 287-3165

Street, Road, Subdivision

Hurteau Holdings

### SITE LOCATION PLAN



Observation Hole ☐ Test Pit ☐ Boring  
 \_\_\_\_\_" Depth of Organic Horizon Above Mineral Soil

Figure 1 is a soil profile diagram showing the vertical distribution of four soil properties: Texture, Consistency, Color, and Mottling. The y-axis represents Depth Below Mineral Soil Surface (inches), ranging from 0 to 50. The x-axis lists the properties. The diagram shows that Texture is relatively uniform across the profile, while Consistency, Color, and Mottling show significant variation, particularly in the upper 20 inches.

Soil Classification		Slope	Limiting	<input type="checkbox"/> Ground Water
<u>          </u>	<u>          </u>	<u>      </u> %	Factor	<input type="checkbox"/> Restrictive Layer
Profile	Condition			<input type="checkbox"/> Bedrock
			<u>      </u> "	<input type="checkbox"/> Pit Depth

Page 2 of 3  
HHE-200 Rev. 02/11

Date \_\_\_\_\_



6650

# SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Department of Health & Human Services  
Division of Environmental Health  
(207) 287-5672 Fax: (207) 287-3165

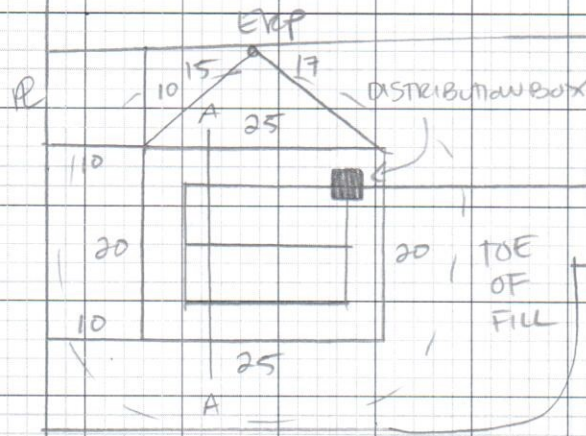
Town, City, Plantation  
Windham

Street, Road, Subdivision  
Gambo Road

Owner's Name  
Hurteau Holdings

## SUBSURFACE WASTEWATER DISPOSAL PLAN

\* DESIGN ONLY  
FOR EMPLOYEE  
USE, DOMESTIC  
LIKE WASTE.  
NO FLOOR DRAINS.

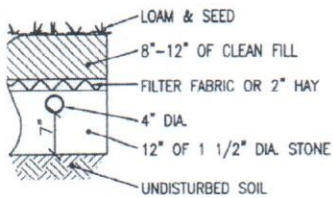


0   
SCALE: 1" = 20 FT.  
PUMP STATION MAY BE  
REQUIRED DEPENDING ON HEIGHT  
OF FOUNDATION

1000  
GALLON  
SEPTIC  
TANK

P  
A  
R  
K  
I  
N  
G

B  
U  
I  
L  
D  
I  
N  
G



DRIVE

### FILL REQUIREMENTS

Depth of Fill (Upslope) 18  
Depth of Fill (Downslope) 22

### CONSTRUCTION ELEVATIONS

Finished Grade Elevation -20  
Top of Distribution Pipe or Proprietary Device -30  
Bottom of Disposal Area -41

ELEVATION REFERENCE POINT  
Location & Description: Top of grade stake, 40" above grade  
Reference Elevation: 0

Note: Materials and installation shall be in accordance with Maine Subsurface Wastewater Disposal Rules dated 08/15 as amended.

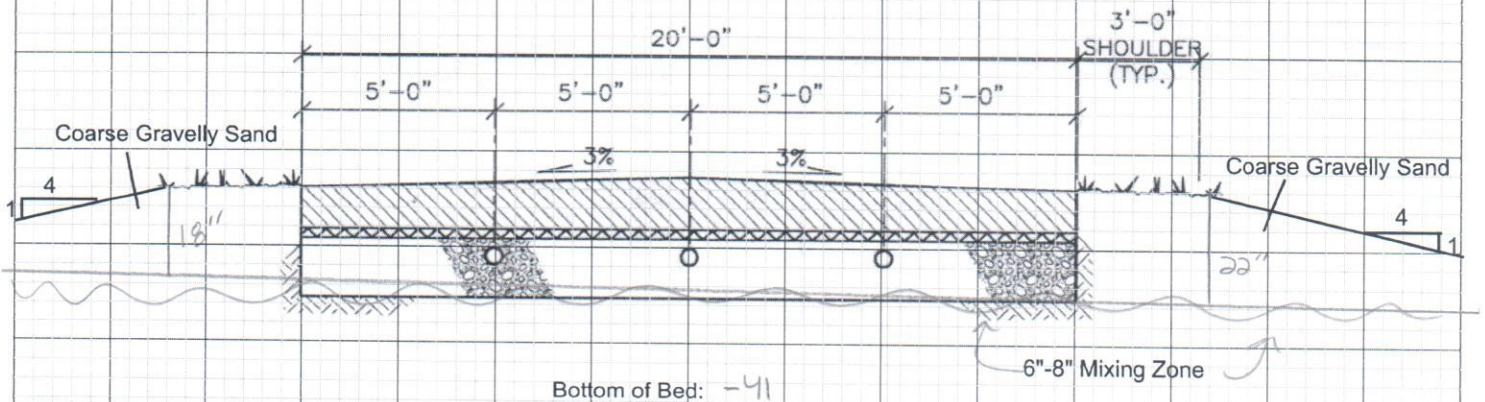
### DISPOSAL AREA CROSS SECTION

A-A

#### Scale

Horizontal 1" = 5 ft.  
Vertical 1" = 3 ft.

Note: All ground to be filled must be scarified



*[Signature]*  
Site Evaluator Signature

263

SE #

06/04/21

Date





June 3, 2021

Kayla Hurteau

Re: Gambo Road, WI  
Ability to Serve with PWD Water

Dear Ms. Hurteau:

The Portland Water District has received your request for an Ability to Serve Determination for the noted site submitted on April 1, 2021. Based on the information provided, we can confirm that the District will be able to serve the proposed project as further described in this letter. **Please note that this letter constitutes approval of the water system as currently designed and is valid for eighteen (18) months after the date of issue. Any changes affecting the approved water system will require further review and approval by PWD.**

Conditions of Service

The following conditions of service apply:

- A new 1-inch domestic service with a 5/8-inch meter may be installed from the water main in Gambo Road. The service should enter through the property's frontage on Gambo Road at least 10-feet from any side property lines.
- An approved non-testable dual check valve assembly backflow prevention device must be installed on the service line directly after the meter prior to service activation.
- The Portland Water District does not have record of any other existing infrastructure in public roads and recommends a survey and test pitting be performed by the development team prior to construction. Any conflicts that arise during construction are at the risk of the developer and may result in job shutdown until new plans are submitted by the developer and reviewed and approved by PWD.

Prior to construction, the owner or contractor will need to complete a Service Application and pay all necessary fees for each proposed service. When the project is ready for construction, an Application for each service can be requested by contacting the MEANS Group at [MEANS@pwd.org](mailto:MEANS@pwd.org) or 207-774-5961 ext. 3199. Once a completed Application has been submitted with payment, please allow seven (7) days for processing.



### Water System Characteristics

According to District records, there is an 2.25-inch diameter ductile iron water main in Gambo Road and a public fire hydrant located approximately 750 feet from the site. The most recent static pressure reading was 75 psi on January 29, 2021.

### Domestic Water Needs

The data noted above indicates there should be adequate pressure and volume of water to serve the domestic water needs of your proposed project. Based on the high water pressure in this area, we recommend that you consider the installation of pressure reducing devices that comply with state plumbing codes.

Should you disagree with this determination, you may request a review by the District's Internal Review Team. Your request for review must be in writing and state the reason for your disagreement with the determination. The request must be sent to [MEANS@PWD.org](mailto:MEANS@PWD.org) or mailed to 225 Douglass Street, Portland Maine, 04104 c/o MEANS. The Internal Review Team will undertake review as requested within 2 weeks of receipt of a request for review.

If the District can be of further assistance in this matter, please let us know.

Sincerely,  
Portland Water District

A handwritten signature in black ink, appearing to read 'Robert A. Bartels', written in a cursive style.

Robert A. Bartels, P.E.  
Senior Project Engineer



## Validation

RGF first developed its Advanced Oxidation Technology over 25 years ago. Over two million RGF Cells are in use around the world. RGF has licensed its technology to many Fortune 500 companies for use in the medical, food, military, residential, commercial, marine, hospitality and government, etc. RGF cells in various products have been tested and approved by:

- ETL, TUV & CSA
- U.S. Military
- Chinese Government
- Japanese Government (TV commercials)
- Canadian Government
- European Union

In addition, RGF technology, because of its ability to kill bacteria and virus on surfaces and in the air, has been specified in the Norovirus/MRSA protection plan of America's largest restaurant chains, hotel chains, theme parks, cruise lines, public schools and hospitals.

## Test Results

**Samples of university & independent lab tests and major corporation studies**

• **Now tested on H1N1 Swine Flu with 99+% Kill on surfaces**

- 4-log reduction (99.99%) surface bacterial/virus reduction
- Over 85% VOC reduction
- 99% of microbes in human sneeze killed at 3 feet
- 97% airborne bacterial reduction
- 99% reductions of E.coli, Listeria, Strep, Tuberculosis, Bird Flu, etc.
- 85% odor reduction
- 97% airborne mold reduction
- US Military approved for mold protection in field hospitals
- Hospital approvals Infectious Diseases - U.S. and International 99% reduction of Staph (MRSA)
- Major US city school reports 20% reduction in absenteeism
- Tested and approved by the Chinese Government for protection against the SARS virus
- Fox News three-part indoor air series featured RGF and concluded substantial mold and bacteria reductions
- RGF's technology has been featured on Fox, ABC, CBS and in Popular Science Magazine

## Safety

It is a normal reaction to question the long-term safety of any product that is effective and uses new or "breakthrough" technology. This type of question has become common as our litigious society has taught us to question things that significantly outperform existing methods or products.

The breakthrough in the RGF advanced oxidation technologies is a group of oxidants known as Hydroperoxides. Hydroperoxides have been a common part of our environment for over 3.5 billion years. Hydroperoxides are created in our atmosphere whenever three components are present: oxygen molecules, water vapor and energy (electro magnetic). PHI™ has the ability to create hydroperoxides.

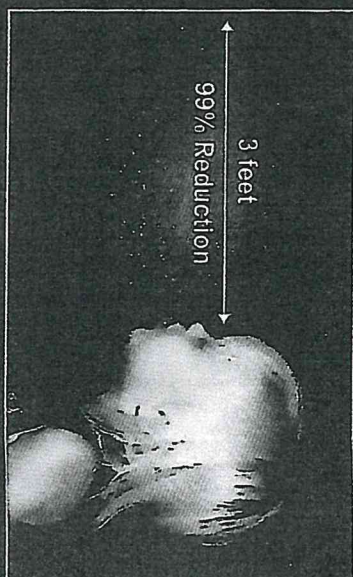
Ionized-Hydro-Peroxides™ are very effective at destroying harmful microbials in the air and on surfaces. As oxidants, they do this by either destroying the microbe through a process known as cell lysing or by changing its molecular structure and rendering it harmless (which is the case in VOC's and odors). The amount of hydroperoxides required to accomplish this task in a conditioned space is well below the level that is constantly in our outside air. The Advanced Oxidation Technology found in RGF's Guardian Air product family has brought the oxidants found in the outside air into the conditioned space of your home.

There is no known case of hydroperoxides ever creating a health risk. Considering we have been exposed to hydroperoxides in nature since the day man stepped on the planet, it is a reasonable assumption that hydroperoxides do not constitute a health risk. Over the past 25 plus years, RGF has more than two million Advanced Oxidation products successfully used worldwide without a safety problem.

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REMI-HALO™ sends Advanced Oxidants throughout the room to kill microbials at the source. Average sneeze microbial reduction: 99%  
The Sneeze Test



Kansas State University Study

- QUICK RELEASE FEATURE  
NO TOOLS REQUIRED FOR SERVING
- KILLS BACTERIA, MOLD AND VIRUSES
- REDUCES ODORS, PARTICULATE, SMOKE AND VOCs
- RECOMMENDED BY  
MAJOR HOTEL AND RESTAURANT CHAINS, CRUISE LINES FOR NOROVIRUS PROTECTION AND MILITARY FOR MOLD REDUCTION
- KILLS 99% OF SNEEZE GERMS WITHIN 3 FEET
- ZINC IONS KILLS 99% OF VIRUSES ON SURFACES

1-603-669-7290  
1-800-247-6291

Jack Balon

**AIRMAX**  
INTERNATIONAL, INC.  
PIONEERS IN AIR DISTRIBUTION



## Validation

RGF first developed its Advanced Oxidation Technology over 5 years ago. Over two million RGF Cells are in use around the world. RGF has licensed its technology to many Fortune 500 companies for use in the medical, food, military, residential, commercial, marine, hospitality and government, etc. RGF cells in various products have been tested and approved by:

- ETL, TUV & CSA
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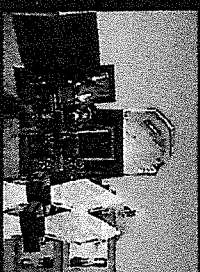
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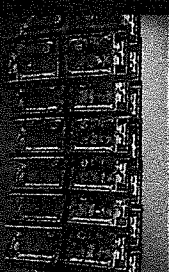
## About RGF Environmental



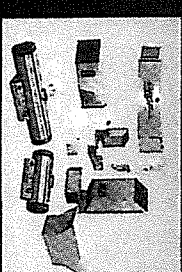
**Innovation**  
Since 1985 RGF has maintained a steady flow of award winning innovative environmental solutions. RGF has been awarded national recognition as a recipient of the Inc./MCI Customer Service Award.



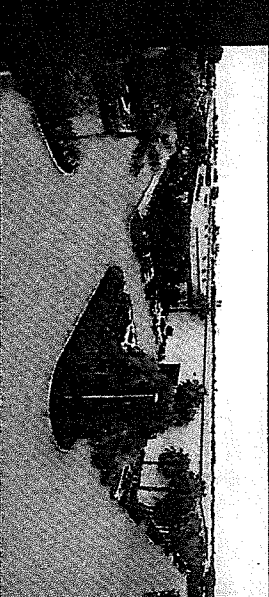
**Design and R&D**  
Our technical staff consists of engineers and scientists from the following specialties: biological, mechanical, chemical, waste treatment, construction engineering, nuclear, fabrication, design, and environmental law.



**Patented Technology**  
RGF has been a leader in patented Environmental Purification Technology. RGF technology has been licensed to numerous Fortune 500 companies and is in use in 33 countries.



**Advanced Oxidation**  
RGF has been a leader in Advanced Oxidation technology since 1985. We developed an advanced catalytic oxidation system for total organic oxidation.

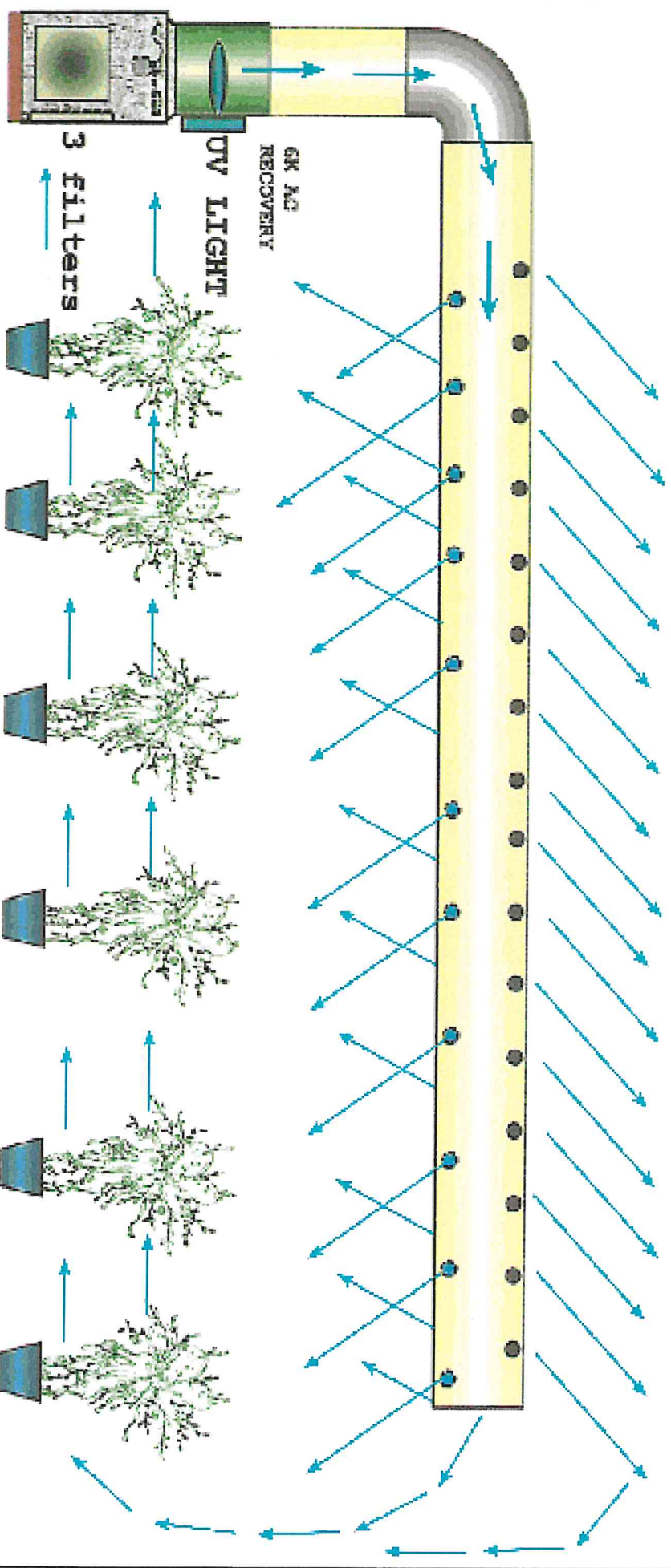


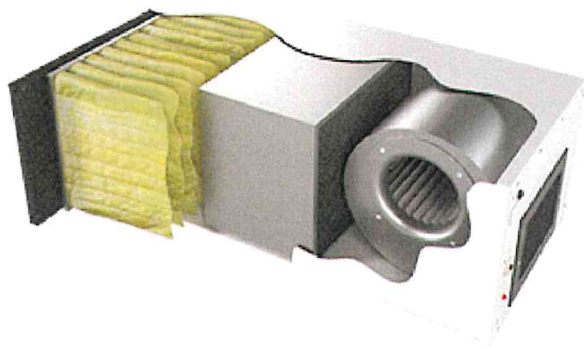
RGF manufactures over 500 environmental products

RGF Proudly Supports



# 6K FILTRATION UNIT





# CLEANLEAF

Air Filtration System

## CL1100-HE Unit

### 800 ACFM Media Filtration System

The CleanLeaf CL1100 series was engineered to capture the multiple airborne threats to medium sized indoor grow rooms. Mold and fungi spores, bacteria, pollen, pest insects, VOCs and odors are all captured through a series of industry proven filtration technologies. Housed in a 16-gauge Cold-Rolled steel cabinet and finished with a light reflective white Polyurethane Powder Coating, each unit is self-contained for use individually or in groups. All units come with a standard 3 year warranty included on all parts excluding filters.

#### Unit Specifications:

ACFM	800
Airflow	Straight Thru
Sound Level	48dB @ 5' (on high)
Cabinet	20"W x 15"T x 44" Long - 16GA CRS
Wiring	3 Prong Power Cord 10 feet with Variable Speed Switch Easy set up -- "Plug and Play"
Hang Weight	115 lbs.
Warranty	3 Years on all parts (not filters)

#### Technical Specifications:

Grille / Louver	4-Way individually adjustable blades/fins
Finish	White Chemical Resistant Powder Coating
Motor	PSC Type 1/5hp Direct Drive with Thermal Overload
Power	115V 60Hz Single Phase 3.5 Amps 500 Watts
Shipping Weight	125 lbs

#### Included Filters

- + 15" x 20" x 1" - Foam Pre Filter - Washable
- + 15" x 20" x 12" - 95% 6 Pocket Bag Filter
- + 12" x 18" x 12" - 99.97% True HEPA Filter

#### Cabinet Options

- + Silencer with Louver  
Reduces sound 6-8 decibels
- + Magnehelic Pressure Gauge  
Indicates when to change filters
- + Eye-Bolts (4)  
Factory Installed Mounting Bolts
- + Eye-Bolt Mounting Kit  
Includes Eye Bolts, Chain and Q-Links
- + Dual L-Brackets  
Underside brackets for Wall Mounting
- + Other options including different Motor Voltage available



We're Open, Essential, & Shipping On Time  
Read our Covid 19 Action Plan.



## ODOR CONTROL SERIES

- ✓ 1100 / 2000 CFM
- ✓ 56 / 112 lbs. of Carbon
- ✓ 2" / 4" Pre-Filter

REQUEST A QUOTE

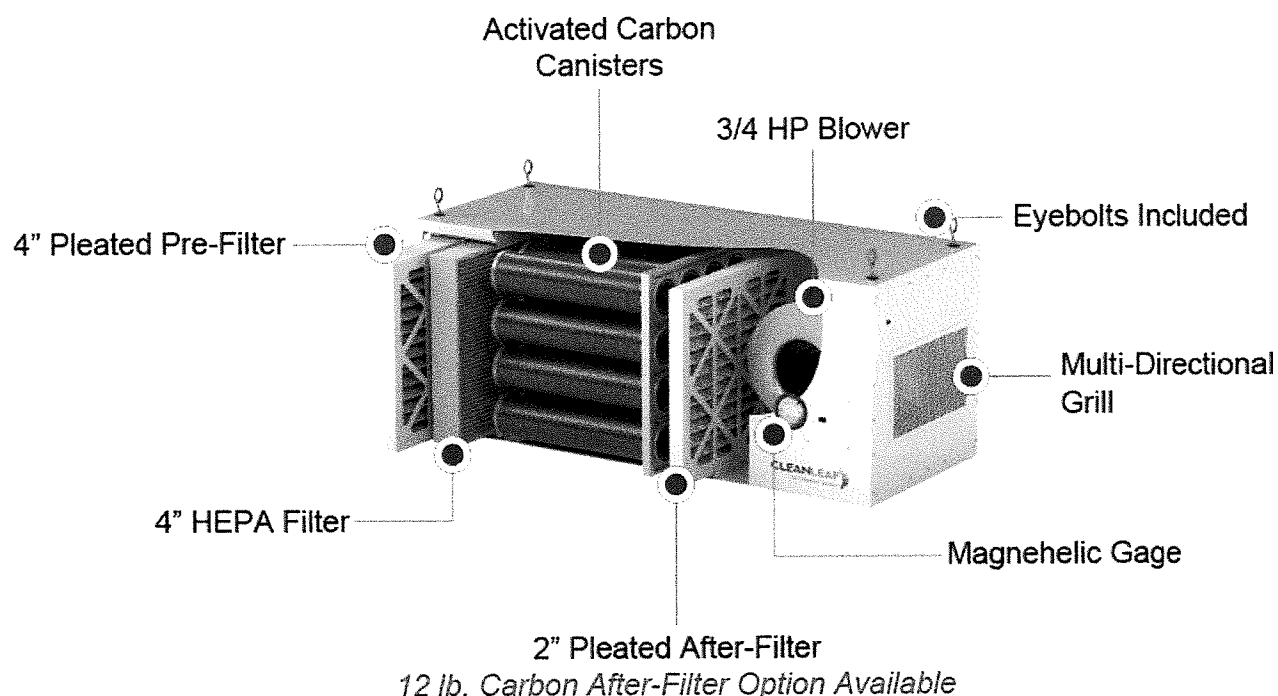
## DESCRIPTION



Controlling odor in & around your facility is a constant challenge. The CleanLeaf Odor Series was specifically engineered for cultivators to eliminate odor from even the most potent flowers while protecting them from contaminants like mold & mildew.

Aggressive oxidizers emit byproducts that are harmful to humans & plants. CleanLeaf units provide the safer, more effective & efficient solution using a powerful 2000 CFM blower to force air through a 4" pleated pre-filter, 16 carbon canisters & a 2" pleated post-filter to ensure maximum adsorption.

Each unit is self-contained in a durable 16-gauge, cold-rolled steel cabinet & finished with a light-reflective polyurethane powder coating & features a locking, hinged door for easy access to filters.



## TECH DATA

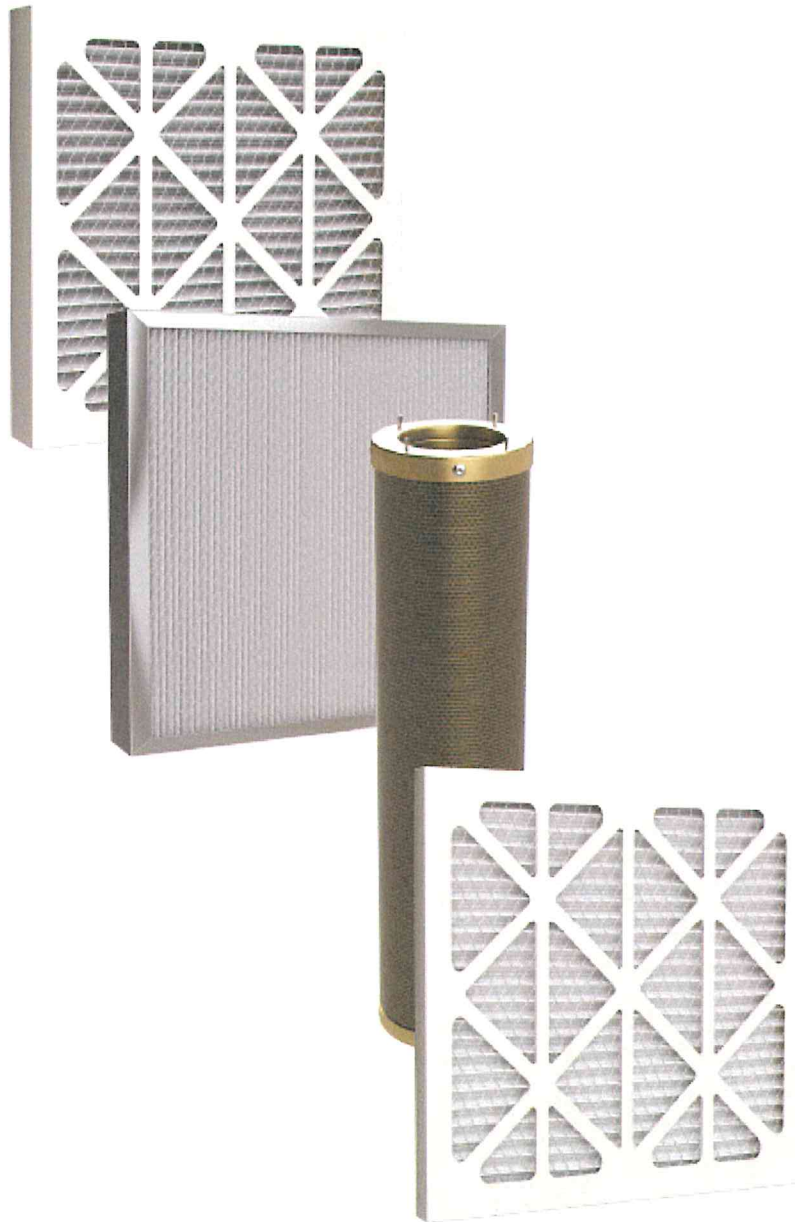


[!\[\]\(1d3a1175dd4902218e694b9c098adb83\_img.jpg\) Download PDF Cut Sheet](#)

## CL1250D-CCPHE

AIRFLOW	1100 CFM
BLOWER	1/3 HP
INPUT POWER	115V / 60Hz / 1PH / 7.5A
UNIT DIMENSIONS	16.5" x 25" x 59"
PRE-FILTER	15" x 25" x 2" - 35% Pleated Pre-Filter
HEPA FILTER	15" x 25" x 4" - 95% D.O.P. HEPA Filter
PRIMARY FILTER	8 Carbon Canisters (56 lbs. total)
AFTER-FILTER	15" x 25" x 2" - 35% Pleated After-Filter
HANGING WEIGHT	324 lbs.

## FILTERS



**STAGE 1: HEPA SAVING PRE-FILTER**

FIBER MEDIA | MERV 10

This pre-filter protects the HEPA filter from getting clogged with larger particulate. Should be changed every 6 months to 1 year.

## **STAGE 2: HEPA FILTER**

HEPA MEDIA | 95% D.O.P. @ 0.3 microns

This true medical grade HEPA filter captures mold & mildew & other contaminants, protecting your garden from powdery mildew, cross-pollination, & more. Should be changed every 6 months to 1 year.

## **STAGE 3: ODOR ABSORBING CARBON CANISTER**

7 lbs. OF ACTIVATED CARBON PER CANISTER

Each carbon canister is filled with 7lbs. of activated carbon. Made to capture & absorb even the most stubborn odors from your garden. Should be changed every year.

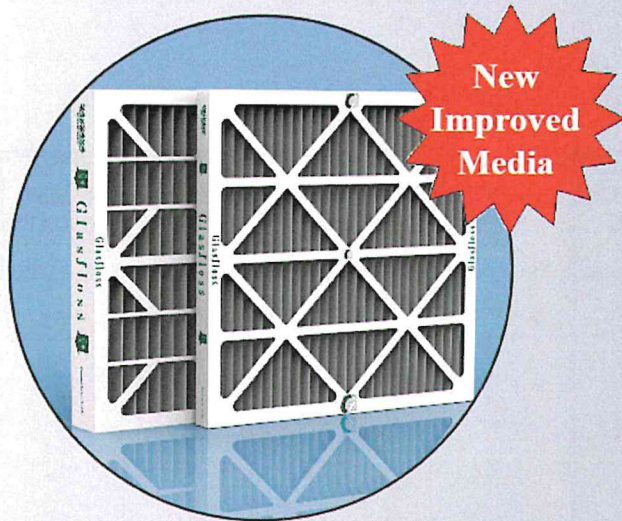
## **STAGE 4: PLEATED AFTER-FILTER**

FIBER MEDIA | MERV 10

This after-filter gives the air one last step of filtration before circulating it back into your garden. Should be changed every 6 months to 1 year.

**WARRANTY**





## [ Z-LINE® SERIES CARBOTRON® ]

- MERV 8
- Reduces Odors
- 100% Synthetic Media
- Heavy-Duty Moisture-Resistant Construction
- Galvanized Expanded Metal Backing
- Standard Size 4" Filters Incorporate Media Separators

### FEATURES

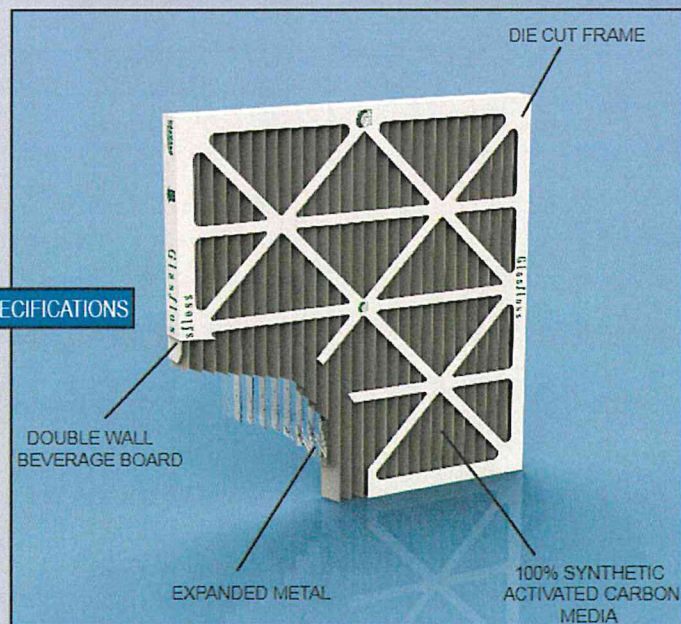


Cigarette smoke, vehicle exhaust, and cooking odors, along with thousands of other activities generate unpleasant odors. The solution to these problems and many offensive odors associated with Indoor Air Quality is the Z-Line Series Carbotron Pleat. The activated carbon used in the Carbotron Pleat has millions of tiny openings that adsorb odorous gas molecules from the air, so clean fresh smelling air remains. The Carbotron Pleat is offered in a wide range of standard and special sizes that allow installation in almost any Air Conditioning, Heating or Ventilating application.

The Glasfloss Z-Line Series Carbotron air filter is an extended-surface pleated-media type filter. The gradient density media combines particulate filtration with odor control in a single filter unit. The media shall be pleated in a tapered radial configuration. An expanded metal reinforcement shall be laminated to the air-exit side of the media by a thermo-setting adhesive to maintain continuity of the radial pleats. The expanded metal shall be galvanized to resist rust and corrosion. The pleated cartridge shall be bonded to the peripheral interior of the outer frame. A heavy-duty moisture-resistant beverage board shall be utilized for an enclosing frame. The frame face shall be internally laminated to the pleated cartridge apexes. Z-Line Carbotron filters shall be rated to withstand temperatures of 180 degrees Fahrenheit. Z-Line Carbotron filters shall be rated under U.L. std. 900. The Z-Line Carbotron shall be rated MERV 8 when tested in accordance with the ANSI/ASHRAE 52.2 Test Standard. The recommended final pressure drop shall be 1.00" w.g.



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### **details**

The ILUMINAR 1000W DE commercial grow light is a feature rich double ended High Pressure Sodium (HPS) all-in-one unit engineered with a low shadow footprint for commercial reliability.

This is the „Úried and true,“ industry standard for performance. These fixtures have now been a staple for more than 10 years.

The ILUMINAR 1000W DE is part of the Commercial Series with the best agricultural technology on the market designed by veterans in the indoor lighting industry.

It powers the HPS or MH lamp of your choice in the Hortilux or ILUMINAR brand. Every option delivers the highest available PAR light output and an increased spectrum that delivers results that you require in today,“s quality market.

With an all-new proprietary single-handed ILUMINAR „Úroll-lock,“ socket for easy lamp changing the 1000W DE delivers the ultimate light output superior uniformity and deeper canopy penetration.

The Hortilux DE HPS grow lamps are regularly utilized by commercial cultivators with vast spaces and high roofs. DE HPS horticultural lights create higher powers of light because of the design development and inner weights of the circular segment tube (light producing source).

### **more information**

### **blog posts (2)**

### **questions**

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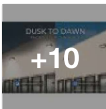
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POWERWALL50

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DUSK-TO-DAWN

Nighttime ON / Daytime OFF photocell with included twist-on cover cap to disable dusk-to-dawn functionality if desired.



LUMENS

This fixture's 6800 lumens brightly illuminates a wide area without glare.

PRO DUTY

DURABLE

Impact-resistant polycarbonate lens with die-cast aluminum housing.



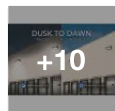
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Save up to \$100 on your qualifying purchase.  
Apply for a Home Depot Consumer Card

Lumens: 6800

3300

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Pack Size: 2 Pack

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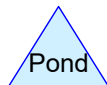
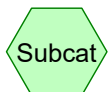
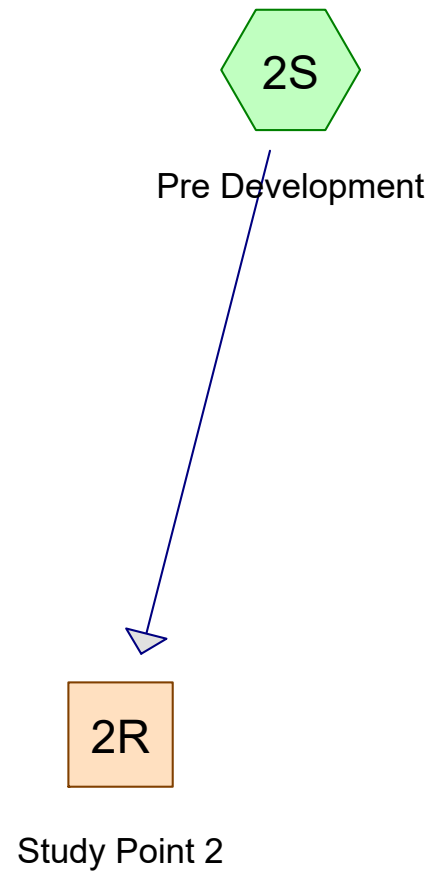
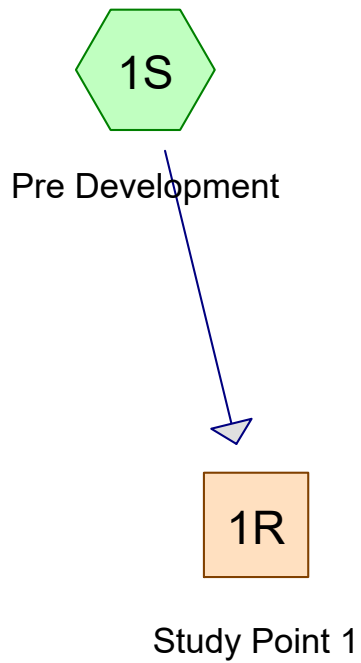
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## 20073 Gambo Road Pre

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Type III 24-hr 2 yr MDEP Rainfall=3.10"

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Page 2

### Summary for Subcatchment 1S: Pre Development

Runoff = 0.40 cfs @ 12.32 hrs, Volume= 0.045 af, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 yr MDEP Rainfall=3.10"

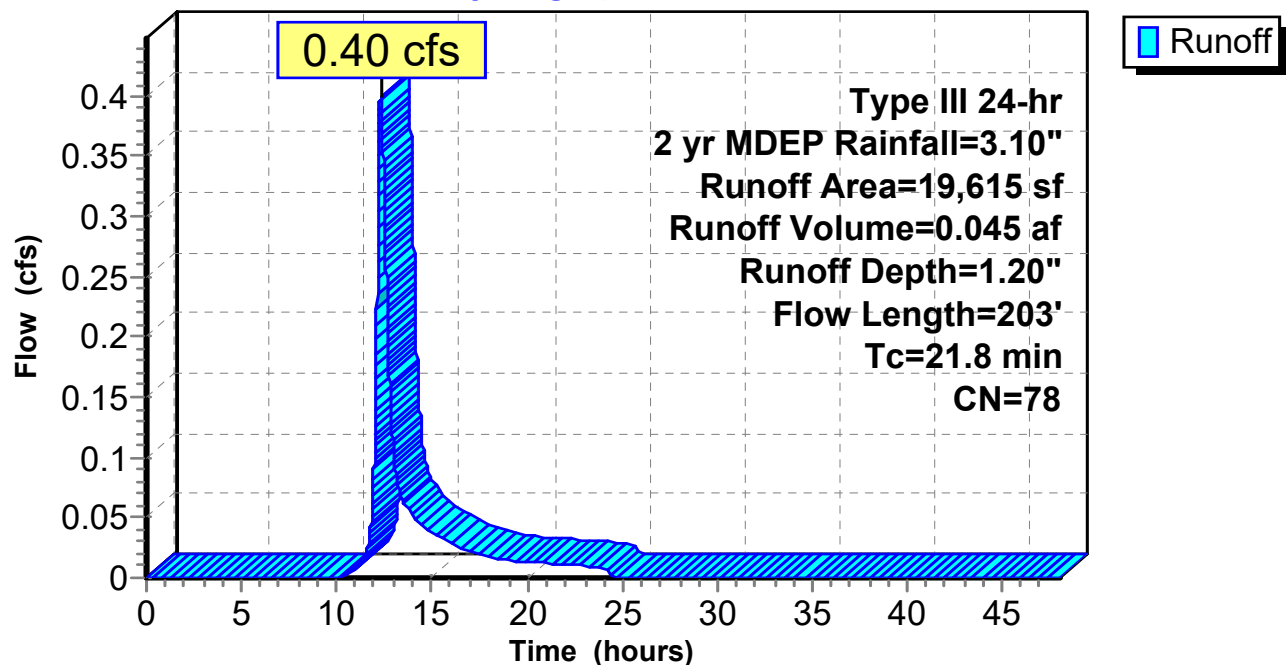
Area (sf)	CN	Description
* 106	98	gravel
345	79	Woods, Fair, HSG D
19,164	78	Meadow, non-grazed, HSG D
19,615	78	Weighted Average
19,509		99.46% Pervious Area
106		0.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	150	0.0190	0.12		Sheet Flow, meadow Grass: Dense n= 0.240 P2= 3.10"
1.3	53	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
21.8	203	Total			

### Subcatchment 1S: Pre Development

#### Hydrograph



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Type III 24-hr 2 yr MDEP Rainfall=3.10"

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**Summary for Subcatchment 2S: Pre Development**

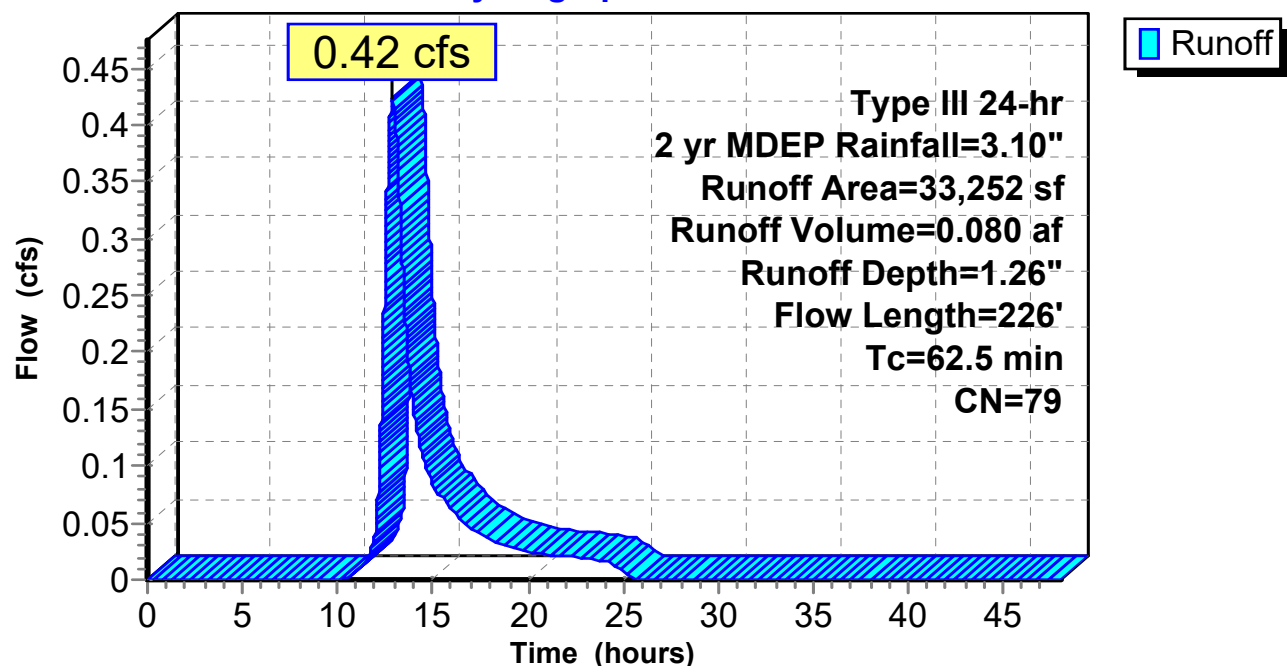
Runoff = 0.42 cfs @ 12.85 hrs, Volume= 0.080 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 yr MDEP Rainfall=3.10"

Area (sf)	CN	Description
746	78	Meadow, non-grazed, HSG D
32,506	79	Woods, Fair, HSG D
33,252	79	Weighted Average
33,252		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	32	0.0400	0.08		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.10"
7.8	34	0.0300	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.10"
25.0	84	0.0100	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.10"
23.1	76	0.0100	0.05		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.10"
62.5	226	Total			

**Subcatchment 2S: Pre Development****Hydrograph**

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Type III 24-hr 2 yr MDEP Rainfall=3.10"

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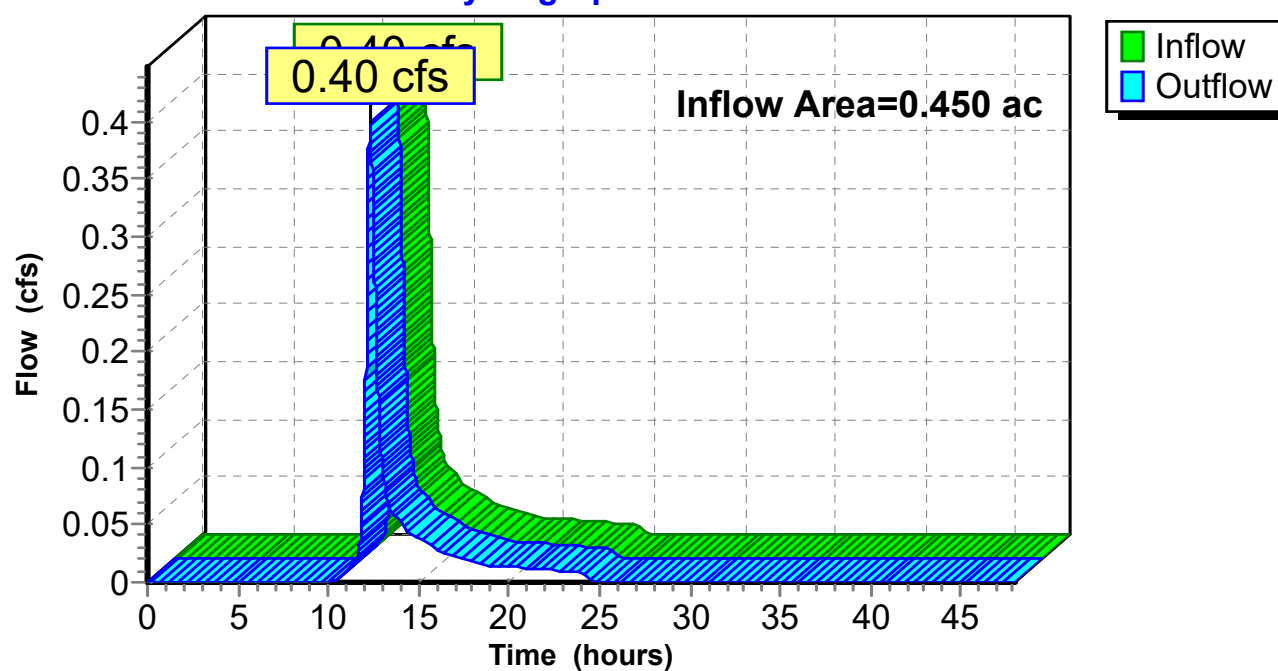
### Summary for Reach 1R: Study Point 1

Inflow Area = 0.450 ac, 0.54% Impervious, Inflow Depth = 1.20" for 2 yr MDEP event  
Inflow = 0.40 cfs @ 12.32 hrs, Volume= 0.045 af  
Outflow = 0.40 cfs @ 12.32 hrs, Volume= 0.045 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Reach 1R: Study Point 1

#### Hydrograph



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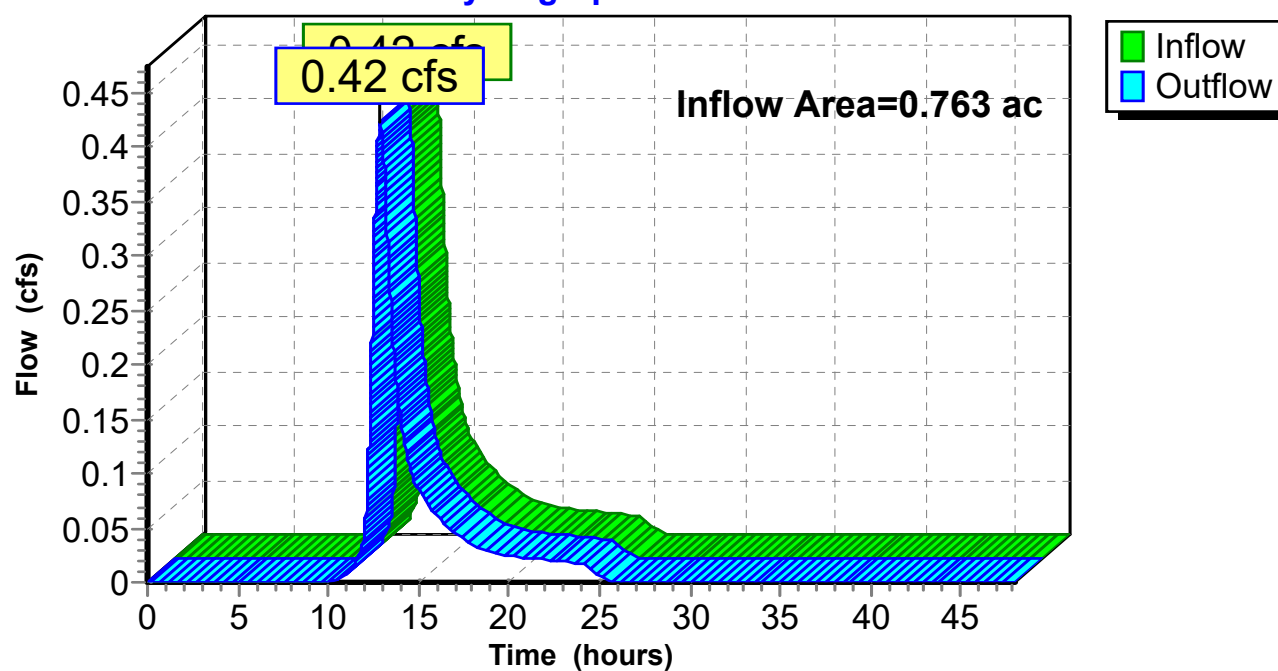
### Summary for Reach 2R: Study Point 2

Inflow Area = 0.763 ac, 0.00% Impervious, Inflow Depth = 1.26" for 2 yr MDEP event  
Inflow = 0.42 cfs @ 12.85 hrs, Volume= 0.080 af  
Outflow = 0.42 cfs @ 12.85 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Reach 2R: Study Point 2

#### Hydrograph





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Type III 24-hr 10 yr MDEP Rainfall=4.60"

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### Summary for Subcatchment 1S: Pre Development

Runoff = 0.81 cfs @ 12.30 hrs, Volume= 0.089 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 yr MDEP Rainfall=4.60"

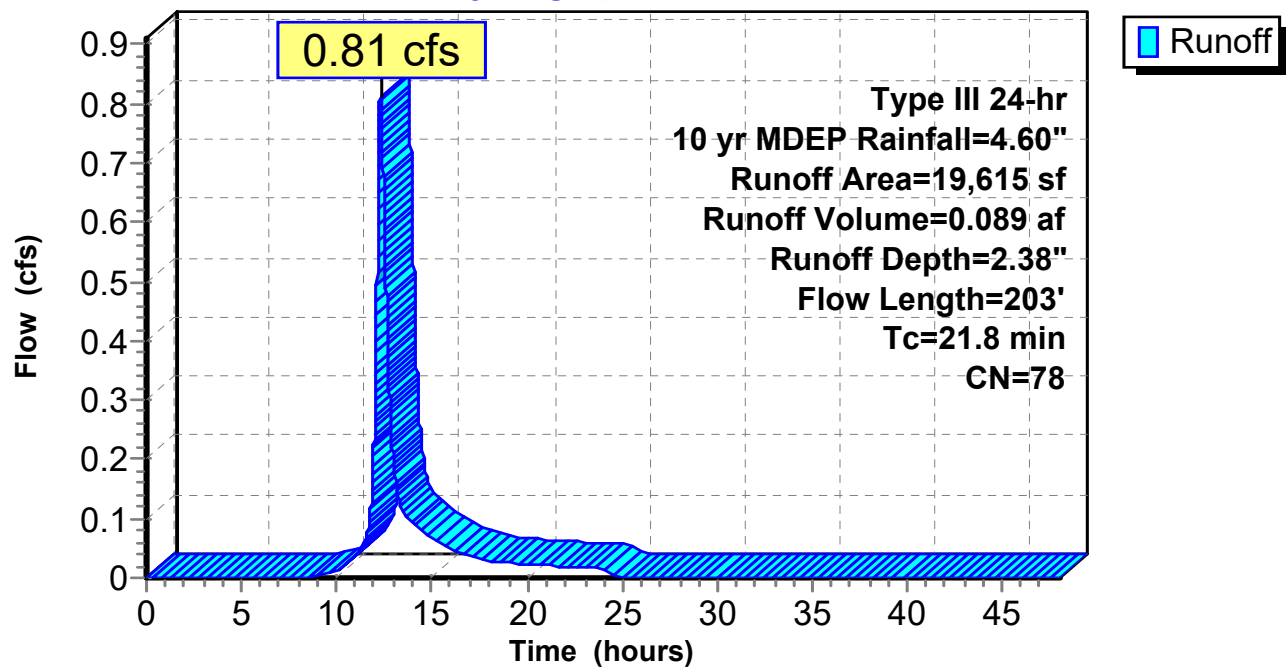
Area (sf)	CN	Description
* 106	98	gravel
345	79	Woods, Fair, HSG D
19,164	78	Meadow, non-grazed, HSG D
19,615	78	Weighted Average
19,509		99.46% Pervious Area
106		0.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	150	0.0190	0.12		Sheet Flow, meadow Grass: Dense n= 0.240 P2= 3.10"
1.3	53	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
21.8	203	Total			

### Subcatchment 1S: Pre Development

#### Hydrograph



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Type III 24-hr 10 yr MDEP Rainfall=4.60"

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**Summary for Subcatchment 2S: Pre Development**

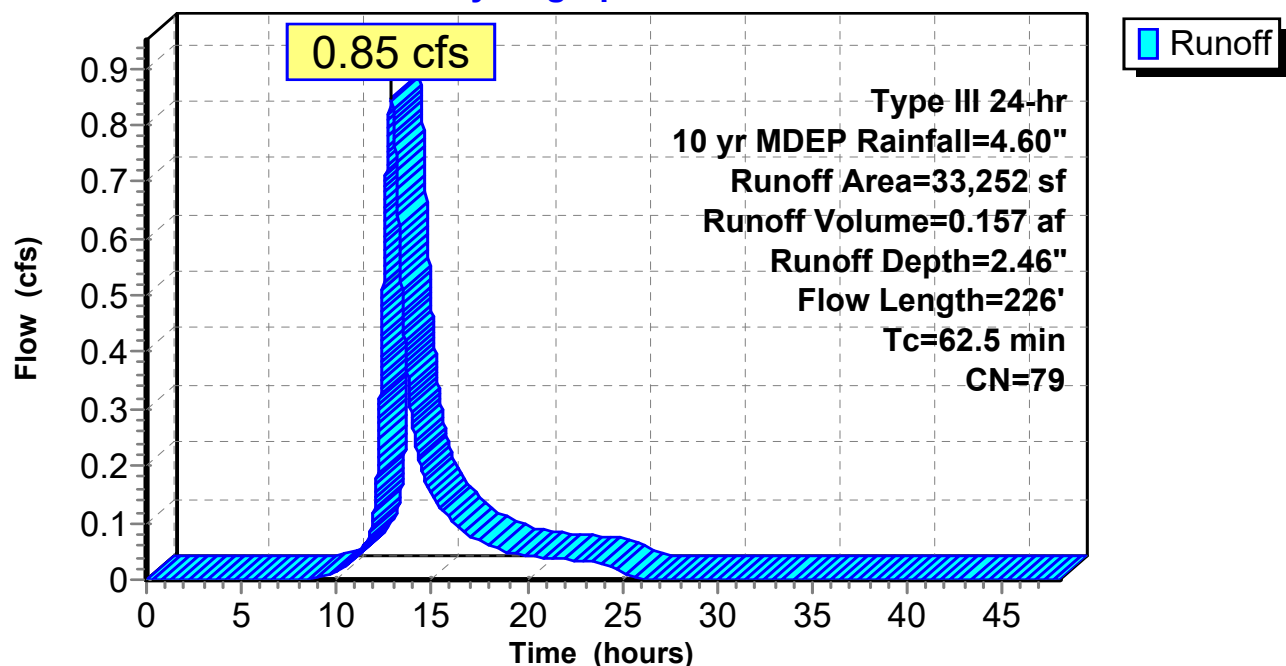
Runoff = 0.85 cfs @ 12.85 hrs, Volume= 0.157 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 yr MDEP Rainfall=4.60"

Area (sf)	CN	Description
746	78	Meadow, non-grazed, HSG D
32,506	79	Woods, Fair, HSG D
33,252	79	Weighted Average
33,252		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	32	0.0400	0.08		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.10"
7.8	34	0.0300	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.10"
25.0	84	0.0100	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.10"
23.1	76	0.0100	0.05		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.10"
62.5	226	Total			

**Subcatchment 2S: Pre Development****Hydrograph**

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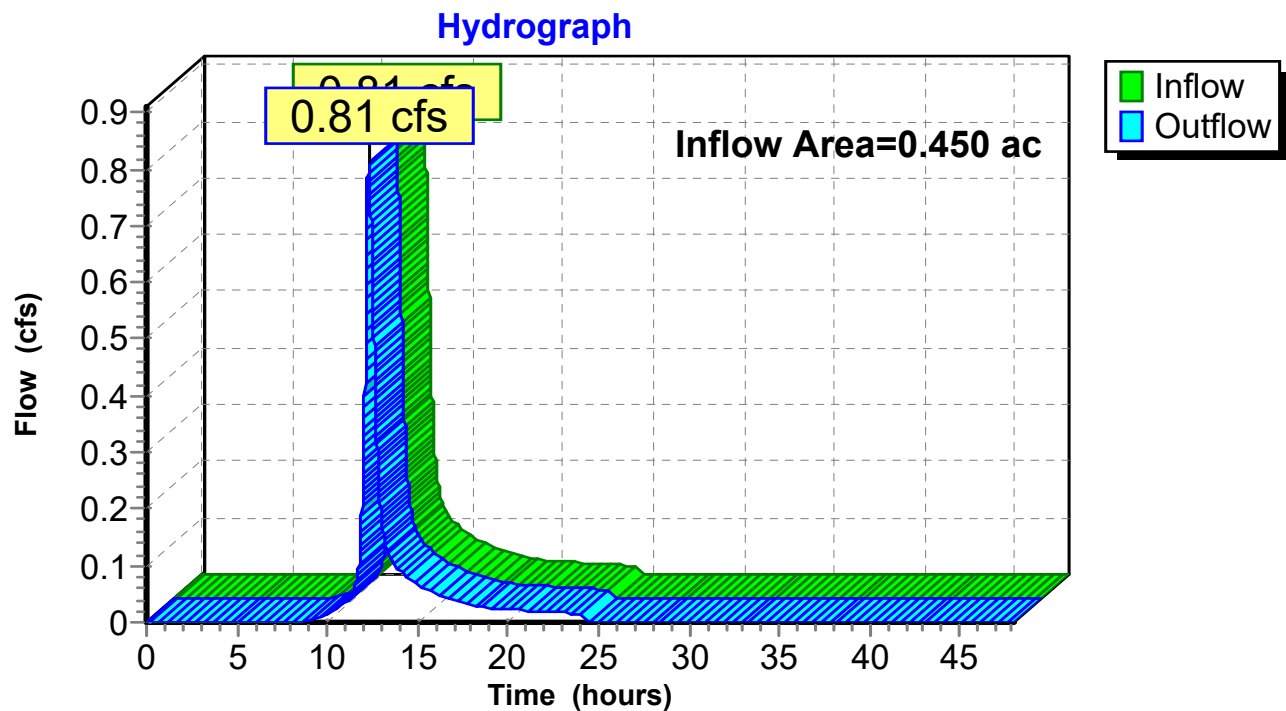
Page 8

### Summary for Reach 1R: Study Point 1

Inflow Area = 0.450 ac, 0.54% Impervious, Inflow Depth = 2.38" for 10 yr MDEP event  
Inflow = 0.81 cfs @ 12.30 hrs, Volume= 0.089 af  
Outflow = 0.81 cfs @ 12.30 hrs, Volume= 0.089 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Reach 1R: Study Point 1



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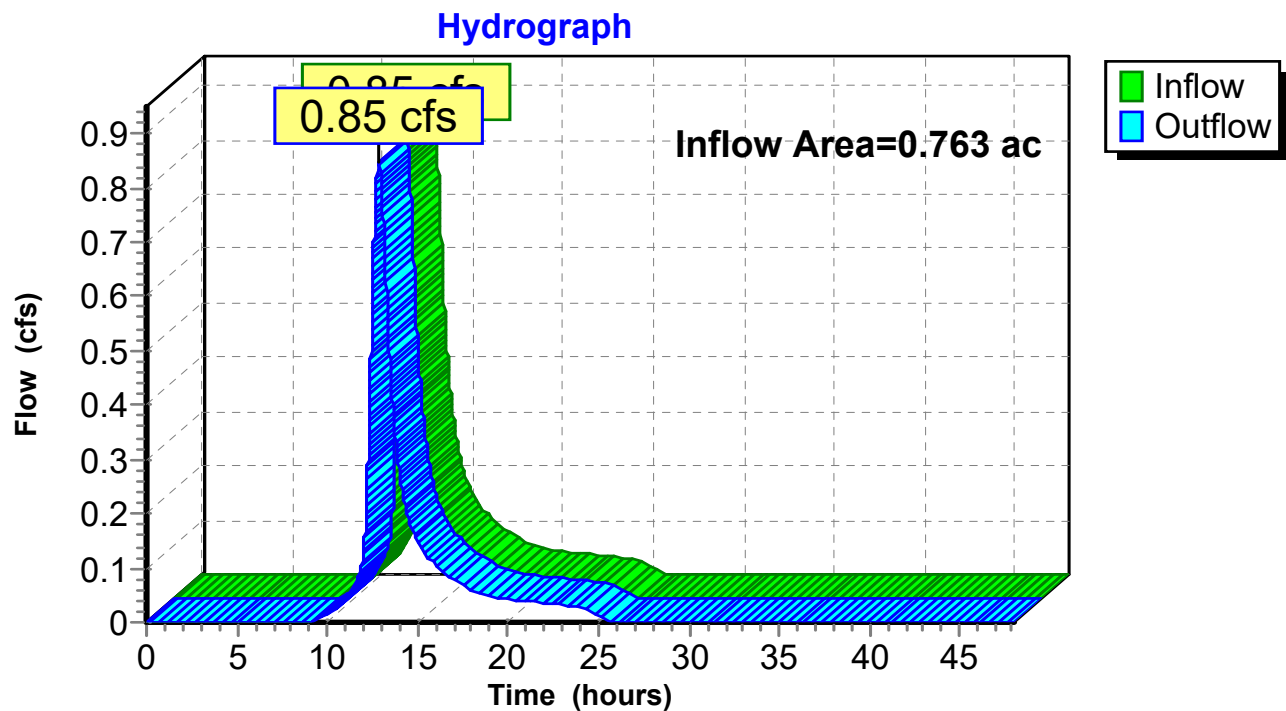
Page 9

### Summary for Reach 2R: Study Point 2

Inflow Area = 0.763 ac, 0.00% Impervious, Inflow Depth = 2.46" for 10 yr MDEP event  
Inflow = 0.85 cfs @ 12.85 hrs, Volume= 0.157 af  
Outflow = 0.85 cfs @ 12.85 hrs, Volume= 0.157 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Reach 2R: Study Point 2



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Type III 24-hr 25 yr MDEP Rainfall=5.80"

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### Summary for Subcatchment 1S: Pre Development

Runoff = 1.17 cfs @ 12.30 hrs, Volume= 0.128 af, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25 yr MDEP Rainfall=5.80"

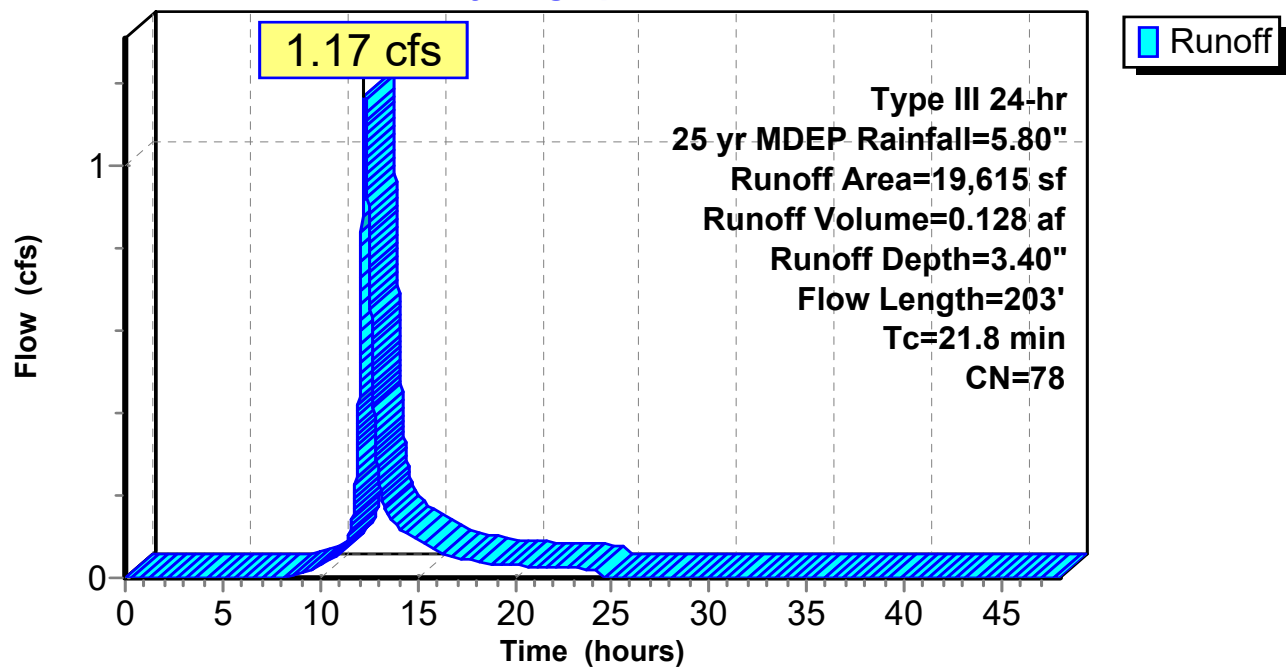
Area (sf)	CN	Description
* 106	98	gravel
345	79	Woods, Fair, HSG D
19,164	78	Meadow, non-grazed, HSG D
19,615	78	Weighted Average
19,509		99.46% Pervious Area
106		0.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	150	0.0190	0.12		Sheet Flow, meadow Grass: Dense n= 0.240 P2= 3.10"
1.3	53	0.0100	0.70		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
21.8	203	Total			

### Subcatchment 1S: Pre Development

#### Hydrograph





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Type III 24-hr 25 yr MDEP Rainfall=5.80"

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### Summary for Subcatchment 2S: Pre Development

Runoff = 1.21 cfs @ 12.85 hrs, Volume= 0.223 af, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25 yr MDEP Rainfall=5.80"

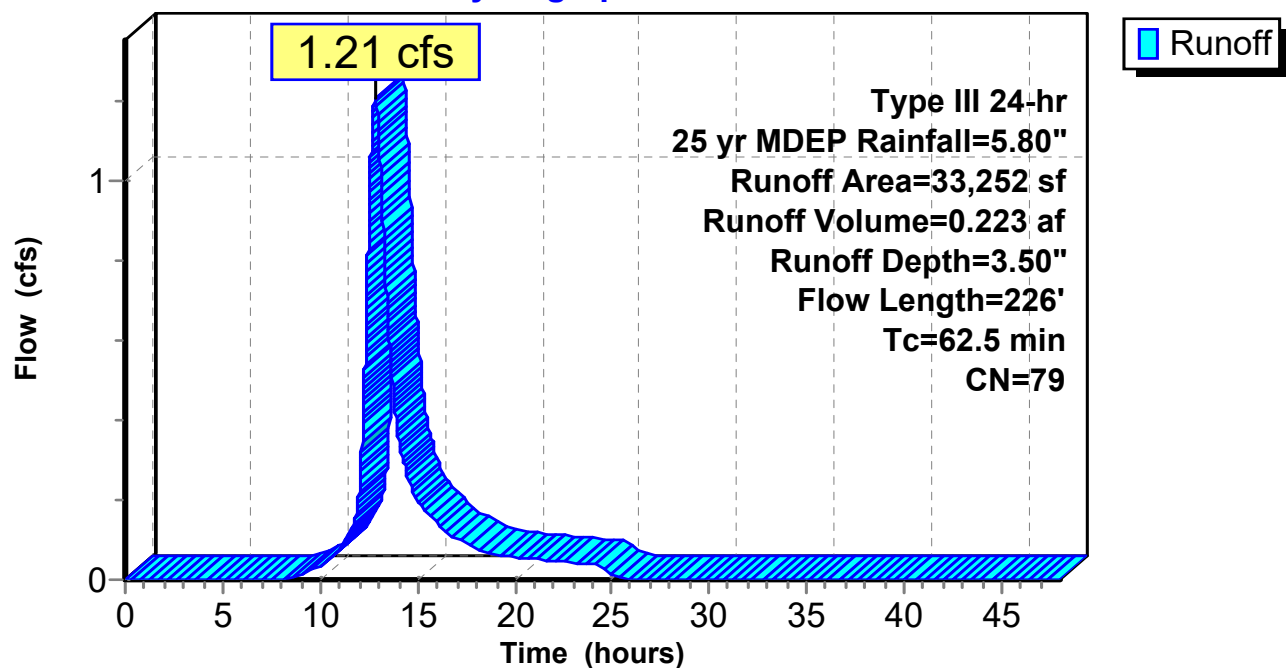
Area (sf)	CN	Description
746	78	Meadow, non-grazed, HSG D
32,506	79	Woods, Fair, HSG D
33,252	79	Weighted Average
33,252		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	32	0.0400	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
7.8	34	0.0300	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
25.0	84	0.0100	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
23.1	76	0.0100	0.05		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
62.5	226	Total			

### Subcatchment 2S: Pre Development

#### Hydrograph



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Type III 24-hr 25 yr MDEP Rainfall=5.80"

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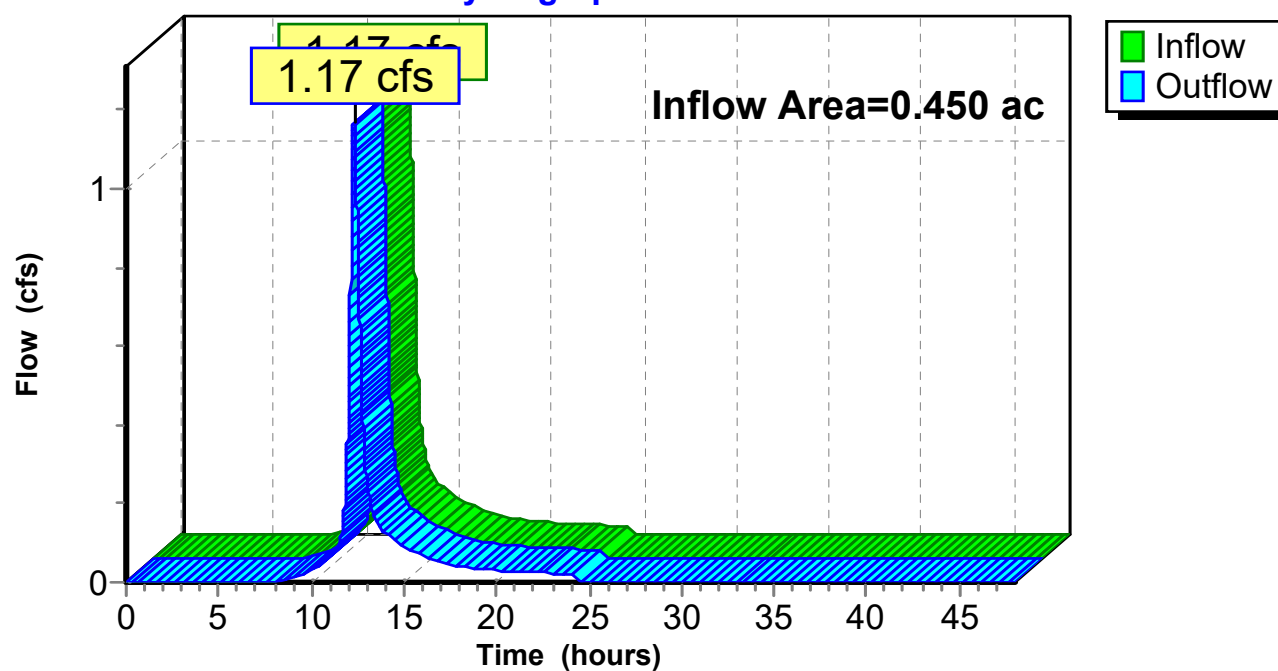
### Summary for Reach 1R: Study Point 1

Inflow Area = 0.450 ac, 0.54% Impervious, Inflow Depth = 3.40" for 25 yr MDEP event  
Inflow = 1.17 cfs @ 12.30 hrs, Volume= 0.128 af  
Outflow = 1.17 cfs @ 12.30 hrs, Volume= 0.128 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Reach 1R: Study Point 1

#### Hydrograph



## 20073 Gambo Road Pre

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Type III 24-hr 25 yr MDEP Rainfall=5.80"

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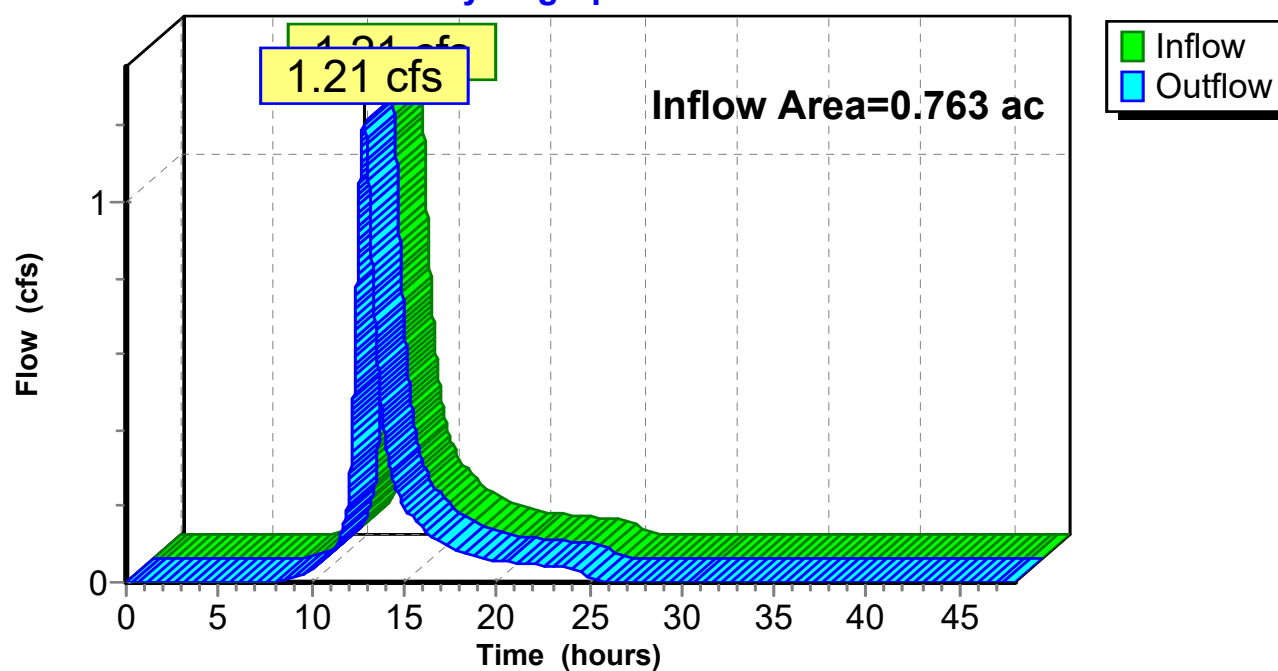
### Summary for Reach 2R: Study Point 2

Inflow Area = 0.763 ac, 0.00% Impervious, Inflow Depth = 3.50" for 25 yr MDEP event  
Inflow = 1.21 cfs @ 12.85 hrs, Volume= 0.223 af  
Outflow = 1.21 cfs @ 12.85 hrs, Volume= 0.223 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Reach 2R: Study Point 2

#### Hydrograph



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Type III 24-hr 100 Yr MDEP Rainfall=8.10"

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**Summary for Subcatchment 1S: Pre Development**

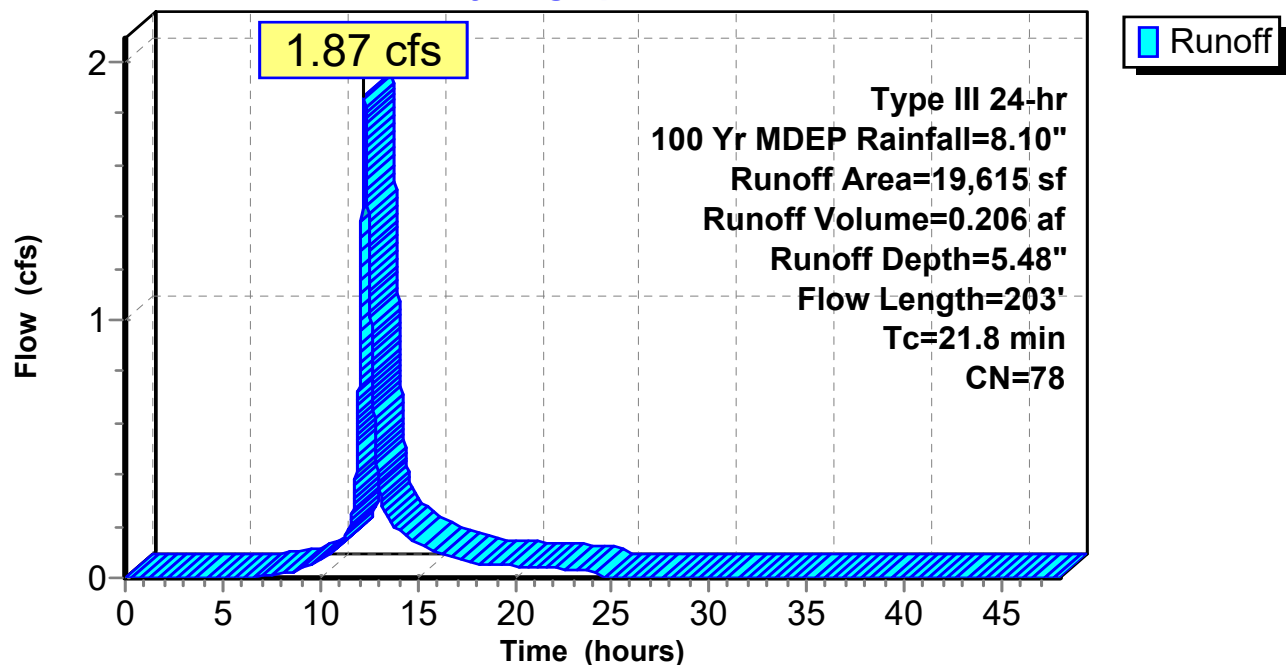
Runoff = 1.87 cfs @ 12.29 hrs, Volume= 0.206 af, Depth= 5.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr MDEP Rainfall=8.10"

Area (sf)	CN	Description
* 106	98	gravel
345	79	Woods, Fair, HSG D
19,164	78	Meadow, non-grazed, HSG D
19,615	78	Weighted Average
19,509		99.46% Pervious Area
106		0.54% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.5	150	0.0190	0.12		<b>Sheet Flow, meadow</b> Grass: Dense n= 0.240 P2= 3.10"
1.3	53	0.0100	0.70		<b>Shallow Concentrated Flow,</b> Short Grass Pasture Kv= 7.0 fps
21.8	203	Total			

**Subcatchment 1S: Pre Development****Hydrograph**

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20073 Gambo Road

Type III 24-hr 100 Yr MDEP Rainfall=8.10"

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### Summary for Subcatchment 2S: Pre Development

Runoff = 1.92 cfs @ 12.84 hrs, Volume= 0.356 af, Depth= 5.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr MDEP Rainfall=8.10"

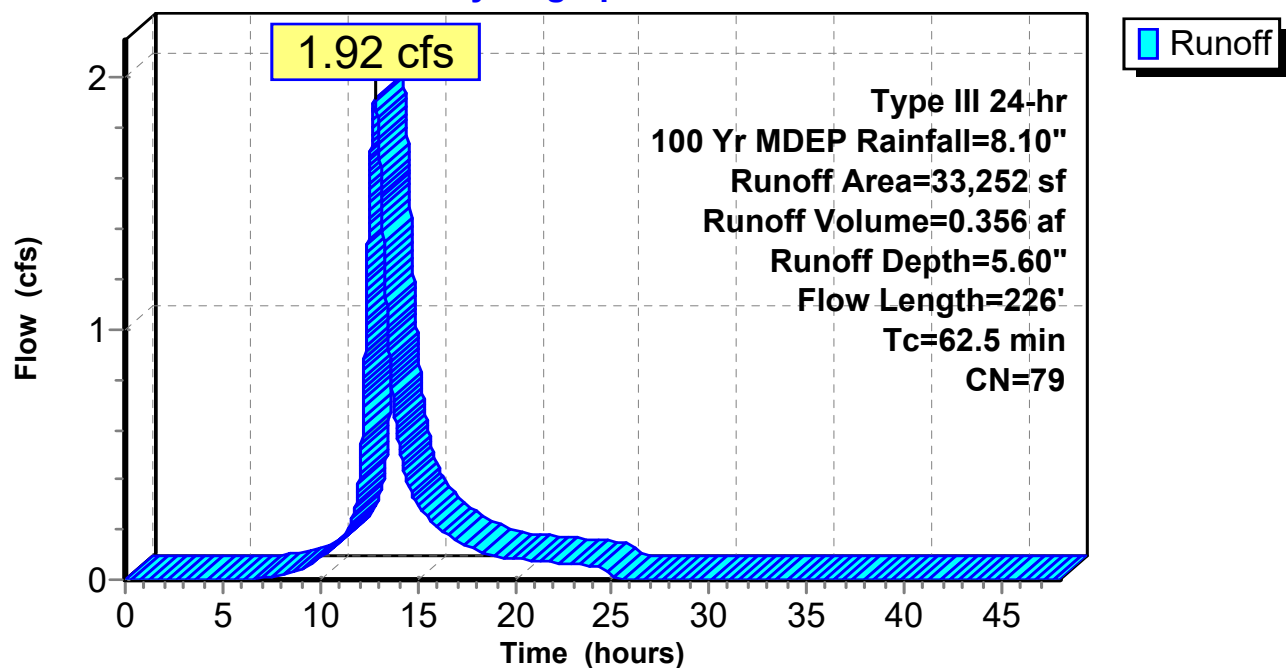
Area (sf)	CN	Description
746	78	Meadow, non-grazed, HSG D
32,506	79	Woods, Fair, HSG D
33,252	79	Weighted Average
33,252		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	32	0.0400	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
7.8	34	0.0300	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
25.0	84	0.0100	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
23.1	76	0.0100	0.05		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
62.5	226	Total			

### Subcatchment 2S: Pre Development

#### Hydrograph





## 20073 Gambo Road Pre

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20073 Gambo Road

Type III 24-hr 100 Yr MDEP Rainfall=8.10"

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### Summary for Reach 1R: Study Point 1

Inflow Area = 0.450 ac, 0.54% Impervious, Inflow Depth = 5.48" for 100 Yr MDEP event

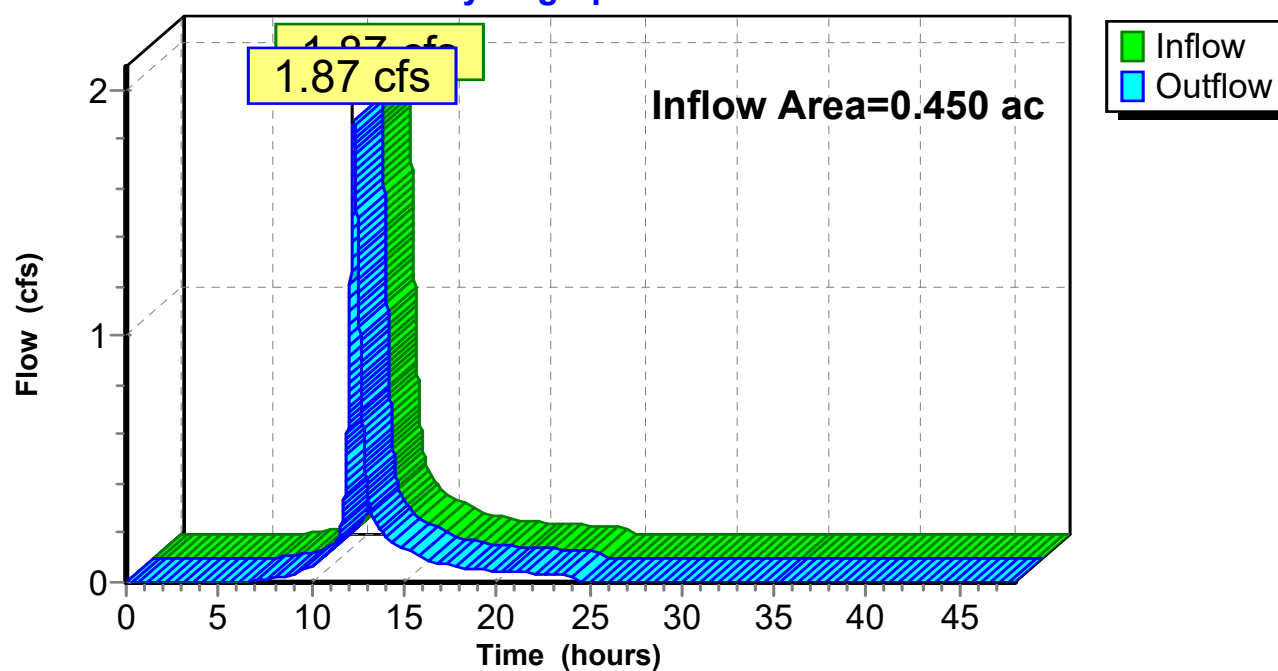
Inflow = 1.87 cfs @ 12.29 hrs, Volume= 0.206 af

Outflow = 1.87 cfs @ 12.29 hrs, Volume= 0.206 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Reach 1R: Study Point 1

#### Hydrograph



## 20073 Gambo Road Pre

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Type III 24-hr 100 Yr MDEP Rainfall=8.10"

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### Summary for Reach 2R: Study Point 2

Inflow Area = 0.763 ac, 0.00% Impervious, Inflow Depth = 5.60" for 100 Yr MDEP event

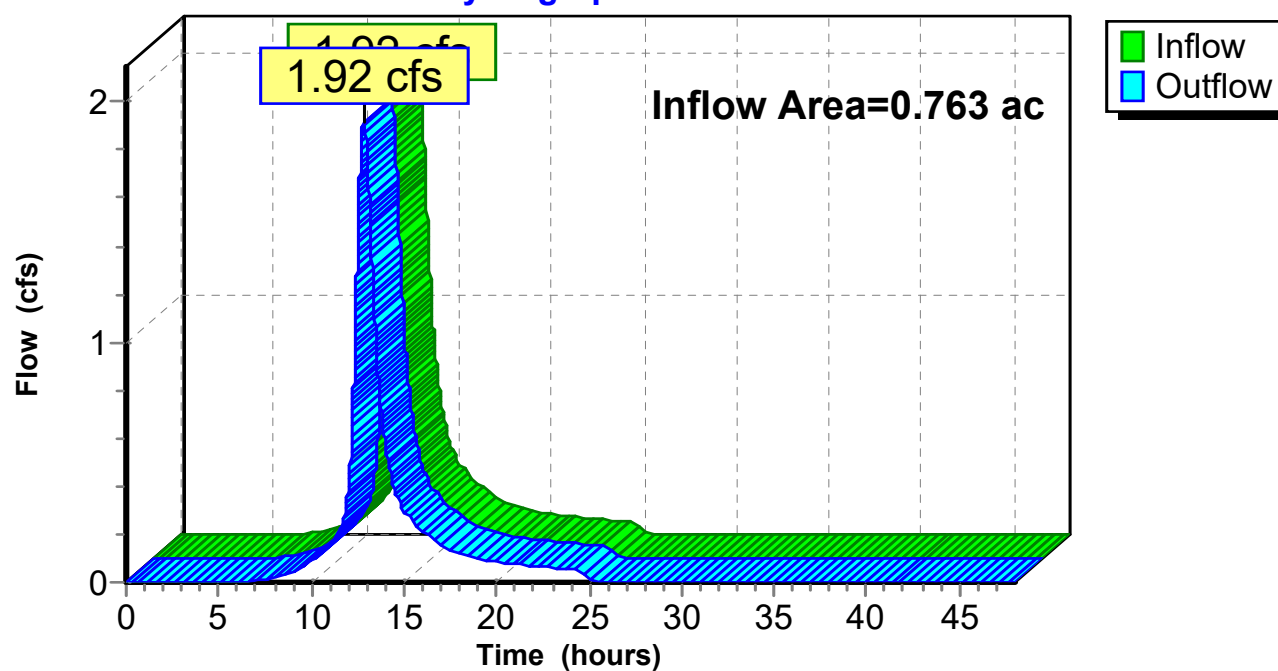
Inflow = 1.92 cfs @ 12.84 hrs, Volume= 0.356 af

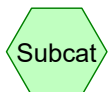
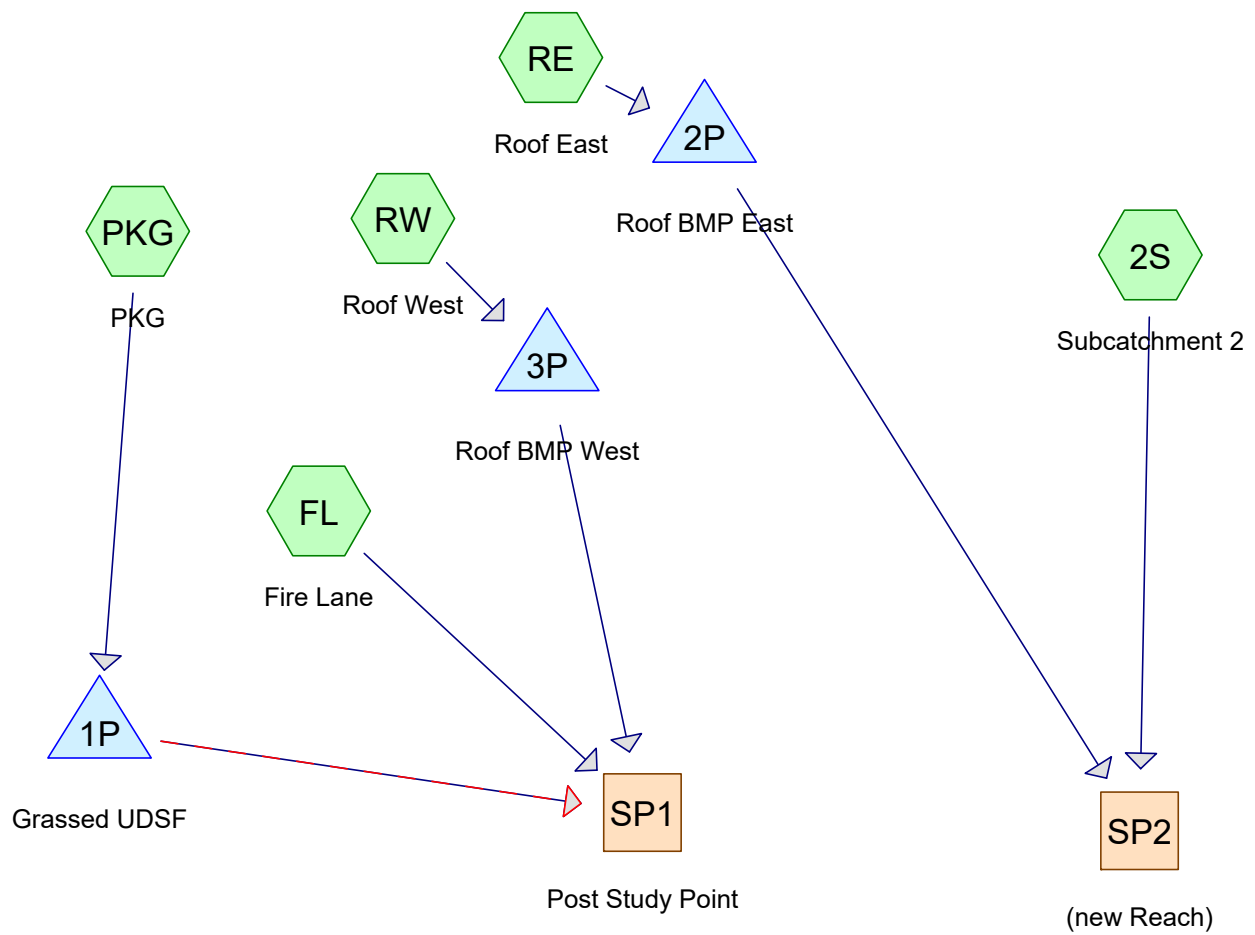
Outflow = 1.92 cfs @ 12.84 hrs, Volume= 0.356 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Reach 2R: Study Point 2

#### Hydrograph

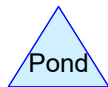




Subcat



Reach



Pond



Link

**Routing Diagram for 20073 Gambo Road Post**  
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## 20073 Gambo Road Post

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20073 Gambo Road

Type III 24-hr 2 yr MDEP Rainfall=3.10"

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### Summary for Subcatchment 2S: Subcatchment 2

Runoff = 0.44 cfs @ 12.85 hrs, Volume= 0.084 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 yr MDEP Rainfall=3.10"

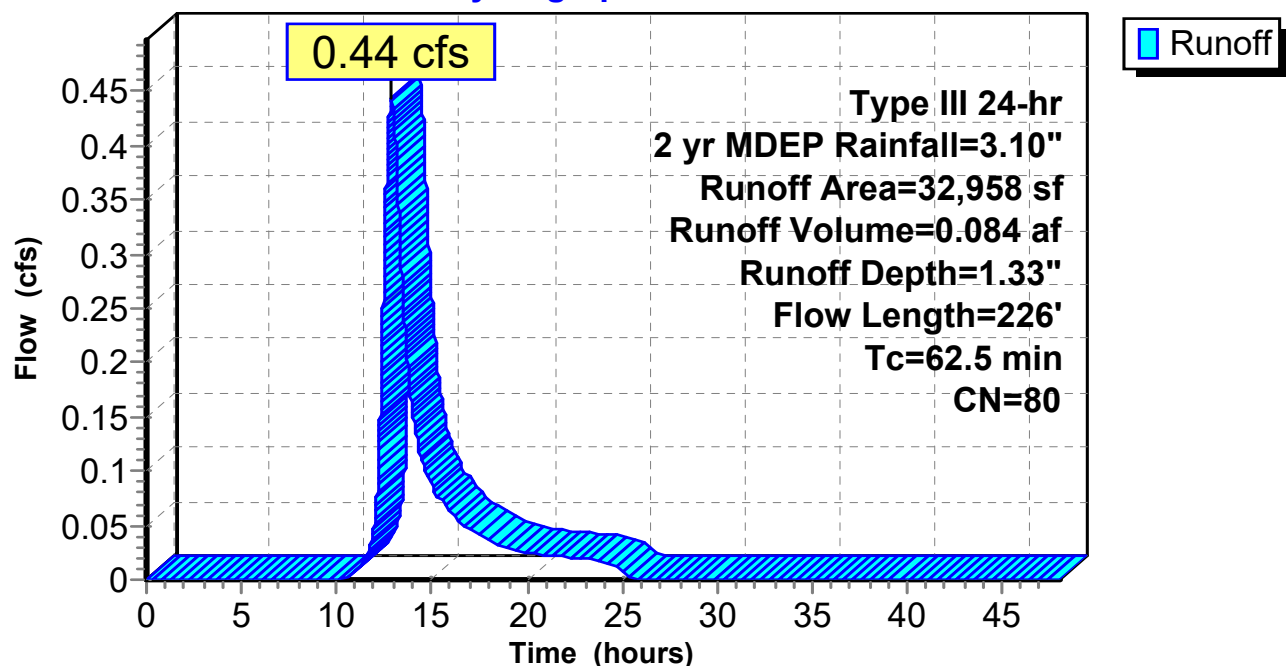
Area (sf)	CN	Description
5,386	84	50-75% Grass cover, Fair, HSG D
556	96	Gravel surface, HSG D
27,016	79	Woods, Fair, HSG D
32,958	80	Weighted Average
32,958		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	32	0.0400	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
7.8	34	0.0300	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
25.0	84	0.0100	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
23.1	76	0.0100	0.05		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
62.5	226	Total			

### Subcatchment 2S: Subcatchment 2

#### Hydrograph



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Type III 24-hr 2 yr MDEP Rainfall=3.10"

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### Summary for Subcatchment FL: Fire Lane

Runoff = 0.19 cfs @ 12.15 hrs, Volume= 0.016 af, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 yr MDEP Rainfall=3.10"

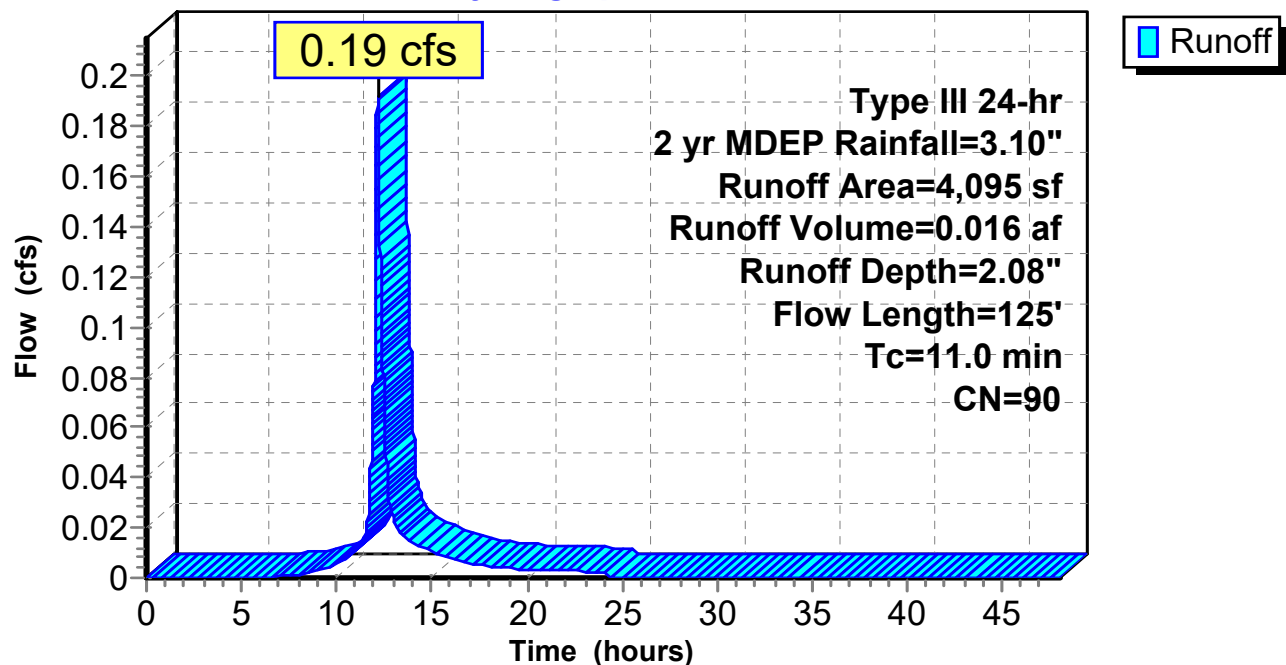
	Area (sf)	CN	Description
*	2,131	96	Fire Lane
	1,964	84	50-75% Grass cover, Fair, HSG D
	4,095	90	Weighted Average
	4,095		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	6	0.3300	0.20		Sheet Flow, Grass: Dense n= 0.240 P2= 3.10"
9.6	42	0.0100	0.07		Sheet Flow, Grass: Dense n= 0.240 P2= 3.10"
0.9	77	0.0100	1.50		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
11.0	125	Total			

### Subcatchment FL: Fire Lane

#### Hydrograph





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20073 Gambo Road

Type III 24-hr 2 yr MDEP Rainfall=3.10"

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### Summary for Subcatchment PKG: PKG

Runoff = 0.60 cfs @ 12.02 hrs, Volume= 0.037 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 yr MDEP Rainfall=3.10"

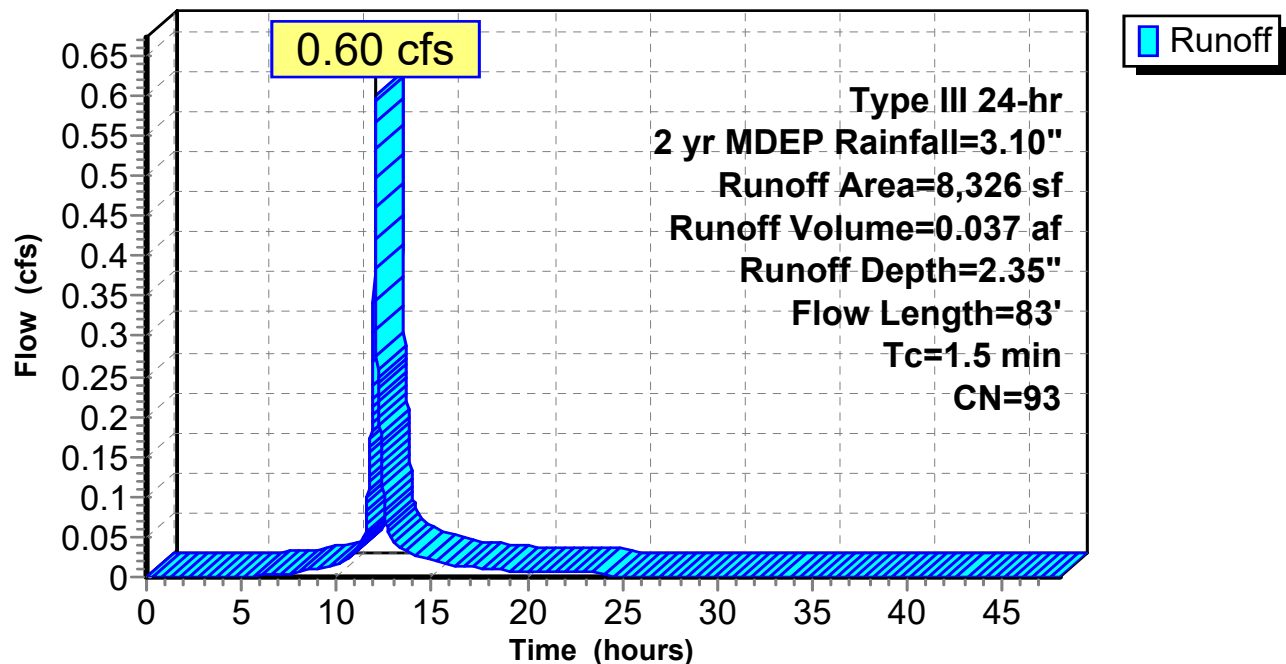
	Area (sf)	CN	Description
*	5,388	98	Gravel Parking
	2,938	84	50-75% Grass cover, Fair, HSG D
	8,326	93	Weighted Average
	2,938		35.29% Pervious Area
	5,388		64.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	80	0.0150	1.15		Sheet Flow, Parking Area
					Smooth surfaces n= 0.011 P2= 3.10"
0.3	3	0.3300	0.17		Sheet Flow,
					Grass: Dense n= 0.240 P2= 3.10"
1.5	83	Total			

### Subcatchment PKG: PKG

#### Hydrograph



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20073 Gambo Road

Type III 24-hr 2 yr MDEP Rainfall=3.10"

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### Summary for Subcatchment RE: Roof East

Runoff = 0.27 cfs @ 12.07 hrs, Volume= 0.021 af, Depth= 2.87"

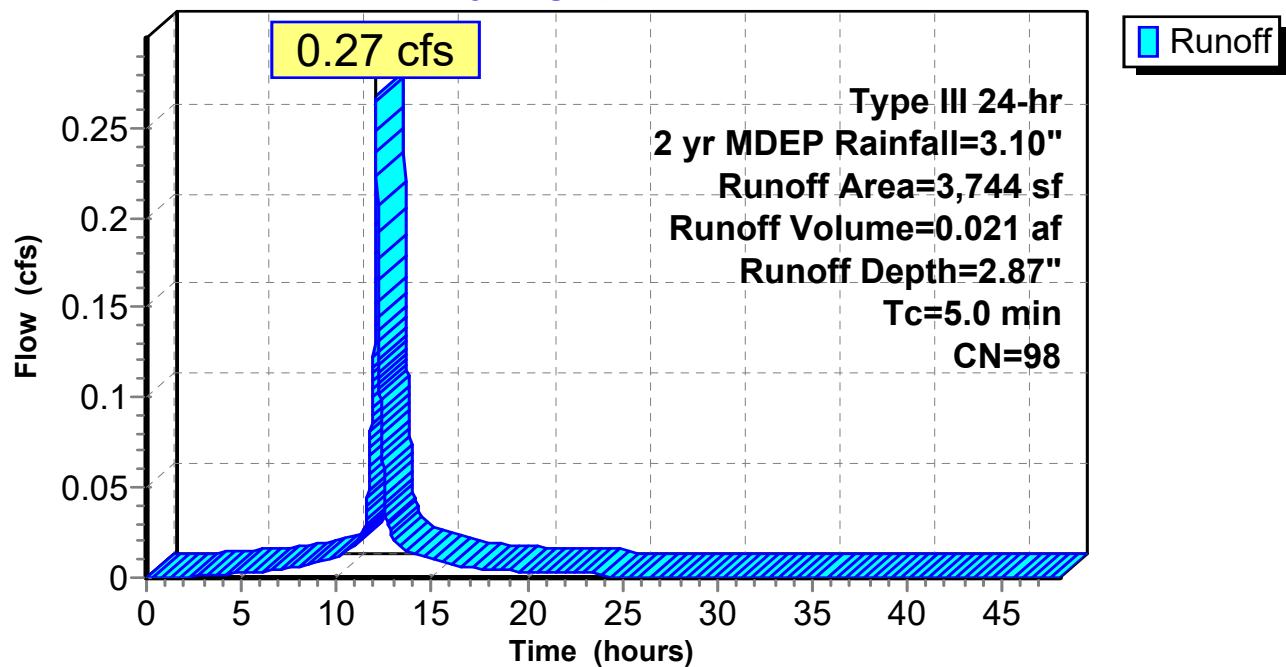
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 yr MDEP Rainfall=3.10"

	Area (sf)	CN	Description
*	3,744	98	Roof
	3,744		100.00% Impervious Area

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

### Subcatchment RE: Roof East

#### Hydrograph



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Type III 24-hr 2 yr MDEP Rainfall=3.10"

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### Summary for Subcatchment RW: Roof West

Runoff = 0.27 cfs @ 12.07 hrs, Volume= 0.021 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2 yr MDEP Rainfall=3.10"

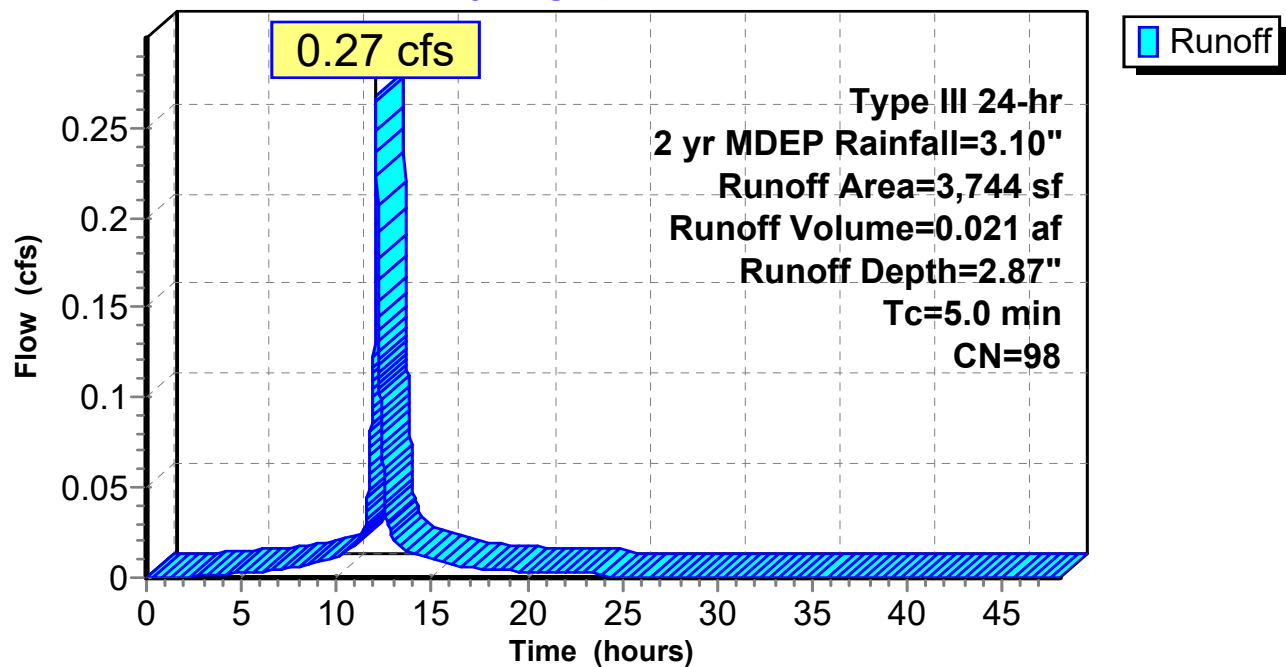
	Area (sf)	CN	Description
*	3,744	98	Roof top
	3,744		100.00% Impervious Area

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

### Subcatchment RW: Roof West

#### Hydrograph



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Type III 24-hr 2 yr MDEP Rainfall=3.10"

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### Summary for Reach SP1: Post Study Point

Inflow Area = 0.371 ac, 56.49% Impervious, Inflow Depth = 2.40" for 2 yr MDEP event

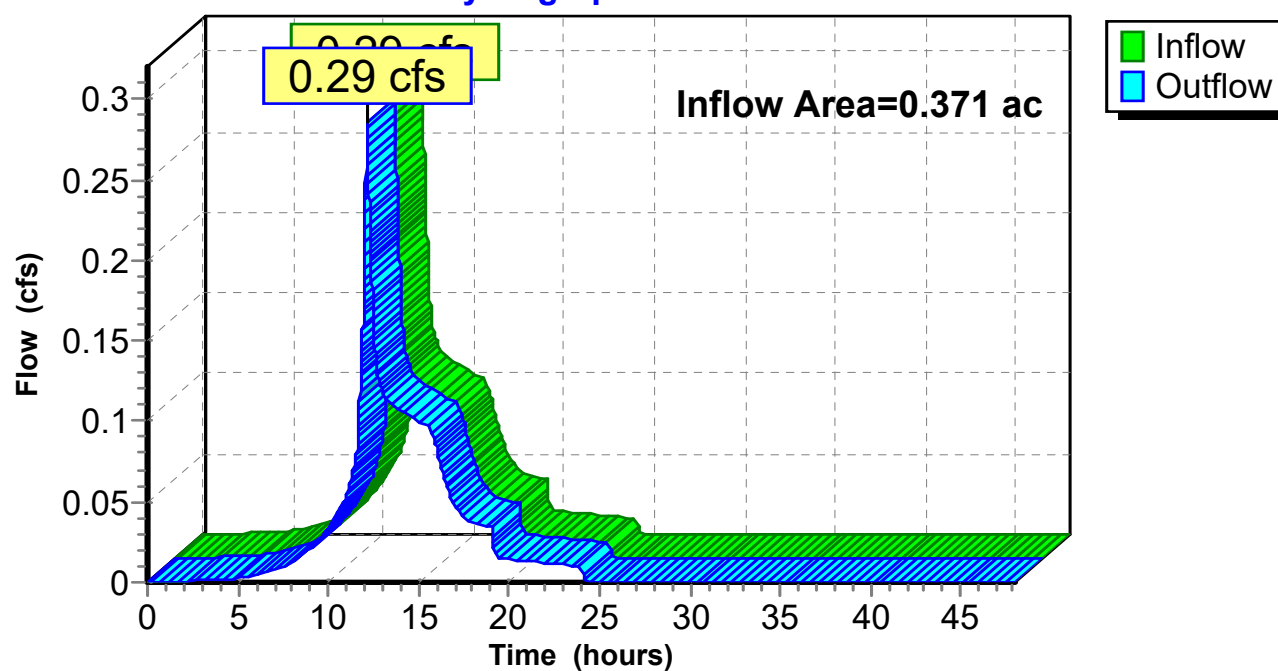
Inflow = 0.29 cfs @ 12.15 hrs, Volume= 0.074 af

Outflow = 0.29 cfs @ 12.15 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Reach SP1: Post Study Point

#### Hydrograph



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Type III 24-hr 2 yr MDEP Rainfall=3.10"

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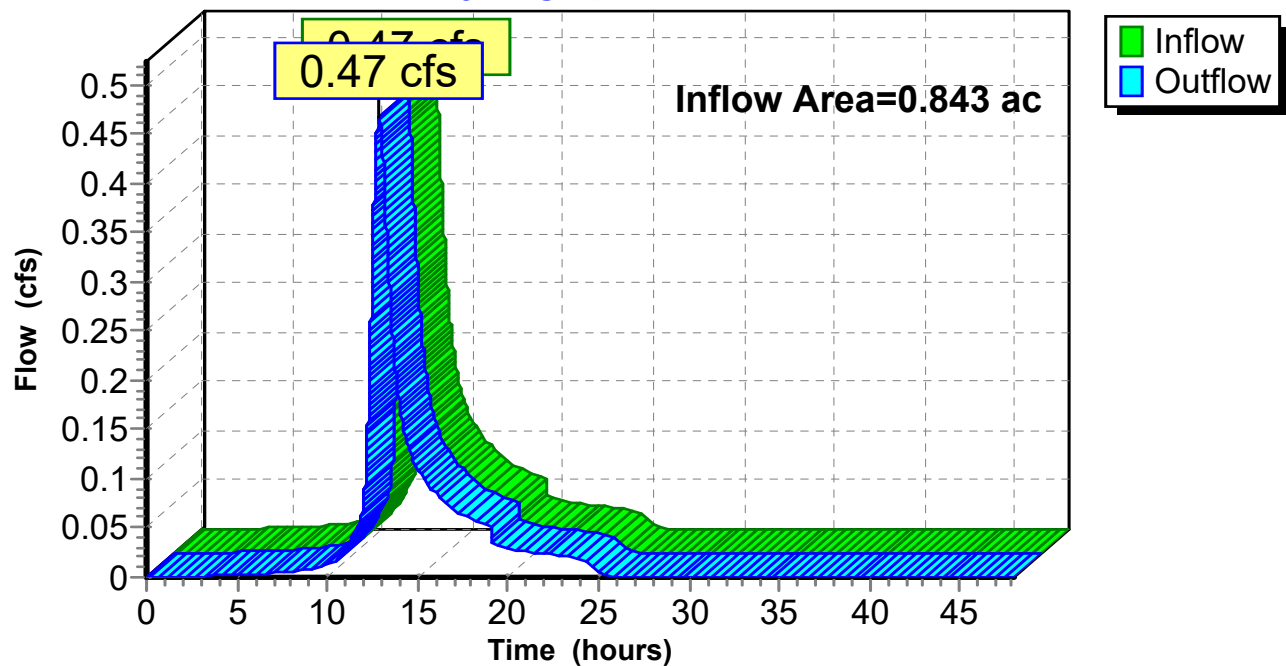
### Summary for Reach SP2: (new Reach)

Inflow Area = 0.843 ac, 10.20% Impervious, Inflow Depth = 1.48" for 2 yr MDEP event  
Inflow = 0.47 cfs @ 12.85 hrs, Volume= 0.104 af  
Outflow = 0.47 cfs @ 12.85 hrs, Volume= 0.104 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Reach SP2: (new Reach)

#### Hydrograph





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Type III 24-hr 2 yr MDEP Rainfall=3.10"

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### Summary for Pond 1P: Grassed UDSF

Inflow Area = 0.191 ac, 64.71% Impervious, Inflow Depth = 2.35" for 2 yr MDEP event  
Inflow = 0.60 cfs @ 12.02 hrs, Volume= 0.037 af  
Outflow = 0.07 cfs @ 12.51 hrs, Volume= 0.037 af, Atten= 88%, Lag= 29.2 min  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Secondary = 0.07 cfs @ 12.51 hrs, Volume= 0.037 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Peak Elev= 166.58' @ 12.51 hrs Surf.Area= 1,301 sf Storage= 567 cf  
Flood Elev= 167.55' Surf.Area= 1,700 sf Storage= 1,945 cf

Plug-Flow detention time= 59.7 min calculated for 0.037 af (100% of inflow)  
Center-of-Mass det. time= 59.7 min ( 849.3 - 789.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	1,945 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	0	0	0
166.22	1,152	127	127
167.00	1,475	1,025	1,151
167.50	1,700	794	1,945

Device	Routing	Invert	Outlet Devices
#1	Secondary	166.00'	<b>2,410 in/hr Exfiltration over Horizontal area</b> Conductivity to Groundwater Elevation = -1.25' Phase-In= 0.01'
#2	Primary	167.40'	<b>10.0' long (Profile 9) Broad-Crested Rectangular Weir</b> Head (feet) 1.97 2.46 2.95 3.94 4.92 Coef. (English) 3.55 3.55 3.57 3.60 3.66

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=166.00' (Free Discharge)  
↑2=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.07 cfs @ 12.51 hrs HW=166.58' (Free Discharge)  
↑1=Exfiltration ( Controls 0.07 cfs)

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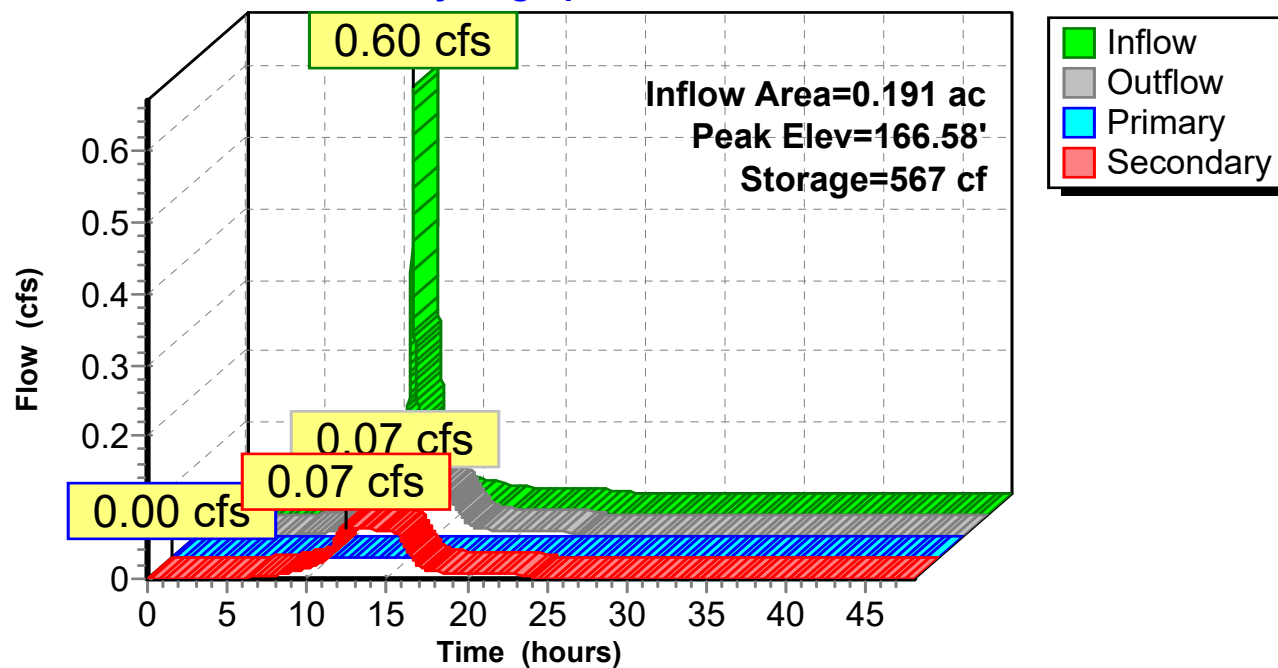
Type III 24-hr 2 yr MDEP Rainfall=3.10"

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### Pond 1P: Grassed UDSF

#### Hydrograph



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Type III 24-hr 2 yr MDEP Rainfall=3.10"

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**Summary for Pond 2P: Roof BMP East**

Inflow Area = 0.086 ac, 100.00% Impervious, Inflow Depth = 2.87" for 2 yr MDEP event  
 Inflow = 0.27 cfs @ 12.07 hrs, Volume = 0.021 af  
 Outflow = 0.02 cfs @ 12.93 hrs, Volume = 0.021 af, Atten = 91%, Lag = 51.7 min  
 Primary = 0.02 cfs @ 12.93 hrs, Volume = 0.021 af

Routing by Stor-Ind method, Time Span = 0.00-48.00 hrs, dt = 0.01 hrs

Peak Elev = 167.93' @ 12.93 hrs Surf.Area = 410 sf Storage = 316 cf

Plug-Flow detention time = 97.0 min calculated for 0.021 af (100% of inflow)

Center-of-Mass det. time = 97.0 min ( 853.2 - 756.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	328 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 820 cf Overall x 40.0% Voids
#2	168.10'	205 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		533 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	410	0	0
168.00	410	820	820

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
168.10	410	0	0
168.60	410	205	205

Device	Routing	Invert	Outlet Devices
#1	Primary	164.18'	<b>6.0" Round Culvert</b> L = 137.0' CPP, square edge headwall, K <sub>e</sub> = 0.500 Inlet / Outlet Invert = 164.18' / 163.50' S = 0.0050 '/' C <sub>c</sub> = 0.900 n = 0.013, Flow Area = 0.20 sf
#2	Device 1	166.00'	<b>2.400 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = -1.25' Phase-In = 0.01'
#3	Primary	168.50'	<b>117.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max = 0.02 cfs @ 12.93 hrs HW = 167.93' (Free Discharge)

1 = **Culvert** (Passes 0.02 cfs of 0.89 cfs potential flow)  
 2 = **Exfiltration** (Controls 0.02 cfs)  
 3 = **Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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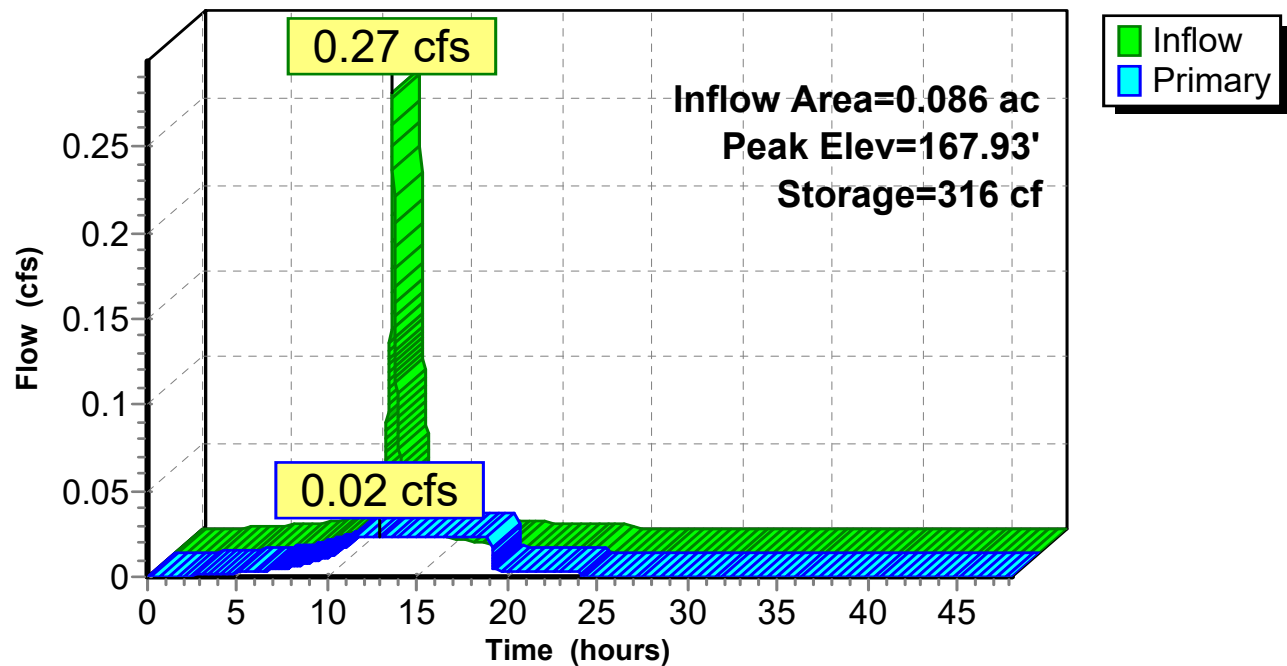
Type III 24-hr 2 yr MDEP Rainfall=3.10"

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### Pond 2P: Roof BMP East

#### Hydrograph



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**Summary for Pond 3P: Roof BMP West**

Inflow Area = 0.086 ac, 100.00% Impervious, Inflow Depth = 2.87" for 2 yr MDEP event  
 Inflow = 0.27 cfs @ 12.07 hrs, Volume = 0.021 af  
 Outflow = 0.02 cfs @ 12.93 hrs, Volume = 0.021 af, Atten = 91%, Lag = 51.7 min  
 Primary = 0.02 cfs @ 12.93 hrs, Volume = 0.021 af

Routing by Stor-Ind method, Time Span = 0.00-48.00 hrs, dt = 0.01 hrs

Peak Elev = 167.93' @ 12.93 hrs Surf.Area = 410 sf Storage = 316 cf

Plug-Flow detention time = 97.0 min calculated for 0.021 af (100% of inflow)

Center-of-Mass det. time = 97.0 min ( 853.2 - 756.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	328 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 820 cf Overall x 40.0% Voids
#2	168.10'	205 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		533 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	410	0	0
168.00	410	820	820

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
168.10	410	0	0
168.60	410	205	205

Device	Routing	Invert	Outlet Devices
#1	Primary	164.18'	<b>6.0" Round Culvert</b> L = 137.0' CPP, square edge headwall, K <sub>e</sub> = 0.500 Inlet / Outlet Invert = 164.18' / 163.50' S = 0.0050 '/' C <sub>c</sub> = 0.900 n = 0.013, Flow Area = 0.20 sf
#2	Device 1	166.00'	<b>2.400 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = -1.25' Phase-In = 0.01'
#3	Primary	168.50'	<b>117.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max = 0.02 cfs @ 12.93 hrs HW = 167.93' (Free Discharge)

1 = **Culvert** (Passes 0.02 cfs of 0.89 cfs potential flow)  
 2 = **Exfiltration** (Controls 0.02 cfs)  
 3 = **Broad-Crested Rectangular Weir** (Controls 0.00 cfs)



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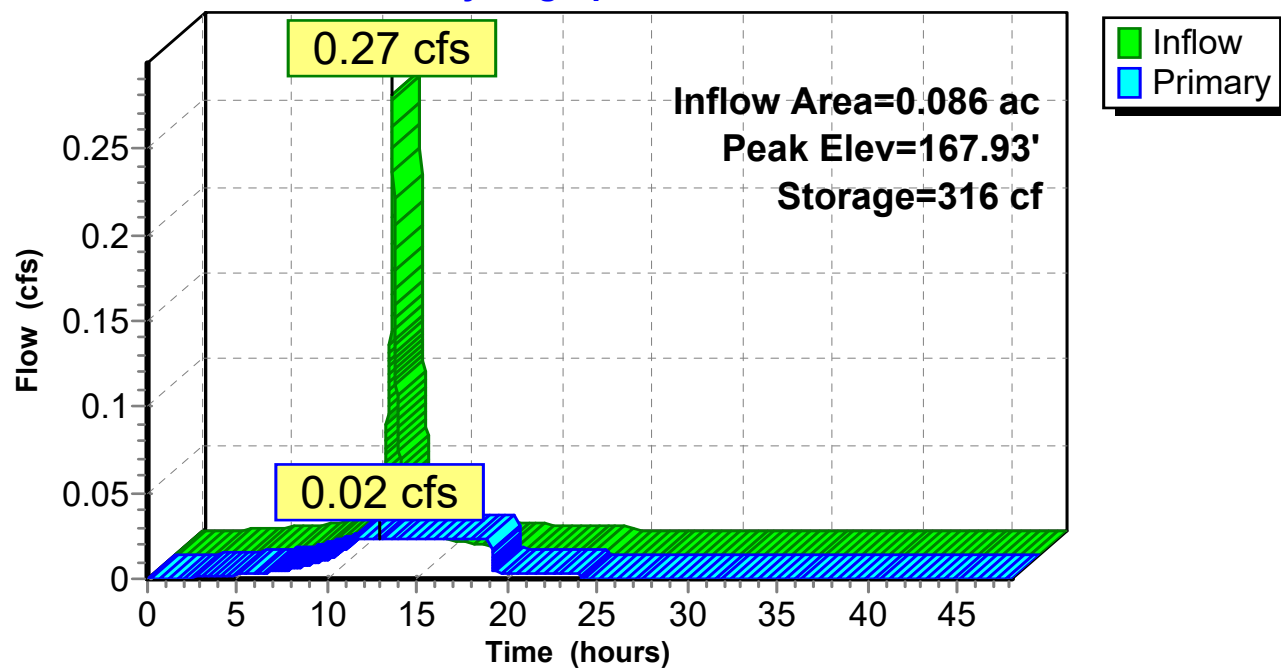
Type III 24-hr 2 yr MDEP Rainfall=3.10"

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### Pond 3P: Roof BMP West

#### Hydrograph



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Type III 24-hr 10 yr MDEP Rainfall=4.60"

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### Summary for Subcatchment 2S: Subcatchment 2

Runoff = 0.87 cfs @ 12.85 hrs, Volume= 0.161 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 yr MDEP Rainfall=4.60"

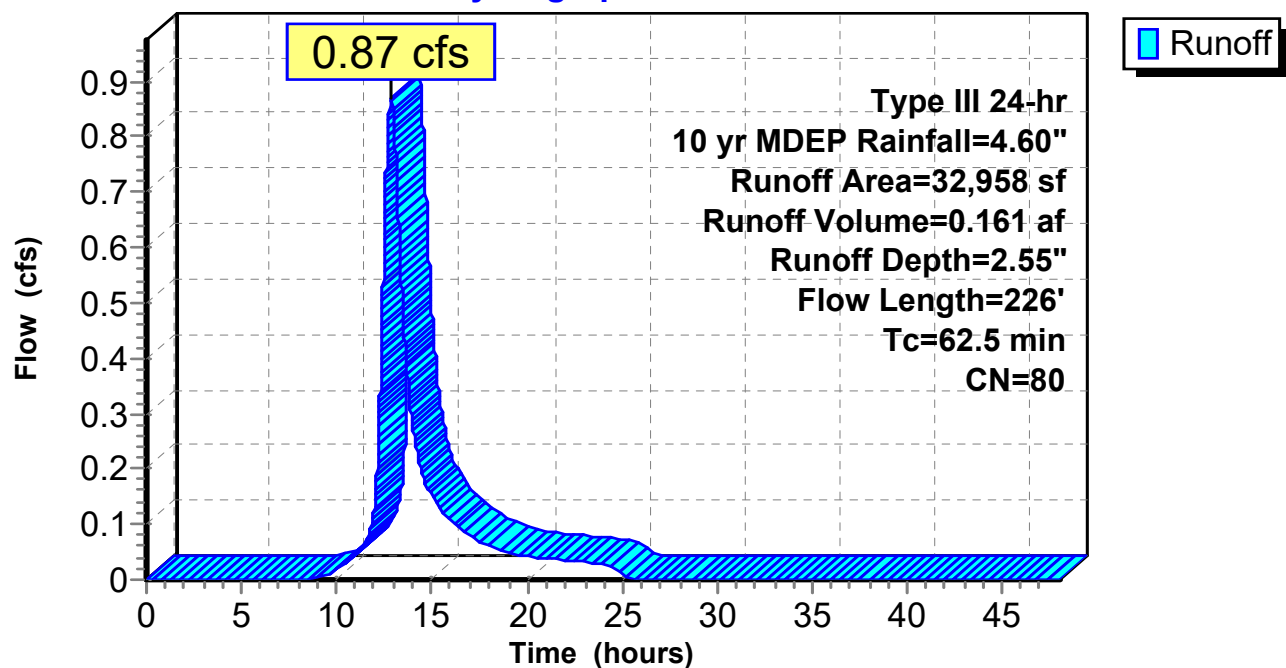
Area (sf)	CN	Description
5,386	84	50-75% Grass cover, Fair, HSG D
556	96	Gravel surface, HSG D
27,016	79	Woods, Fair, HSG D
32,958	80	Weighted Average
32,958		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	32	0.0400	0.08		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.10"
7.8	34	0.0300	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.10"
25.0	84	0.0100	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.10"
23.1	76	0.0100	0.05		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.10"
62.5	226	Total			

### Subcatchment 2S: Subcatchment 2

#### Hydrograph



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Type III 24-hr 10 yr MDEP Rainfall=4.60"

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### Summary for Subcatchment FL: Fire Lane

Runoff = 0.32 cfs @ 12.15 hrs, Volume= 0.027 af, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 yr MDEP Rainfall=4.60"

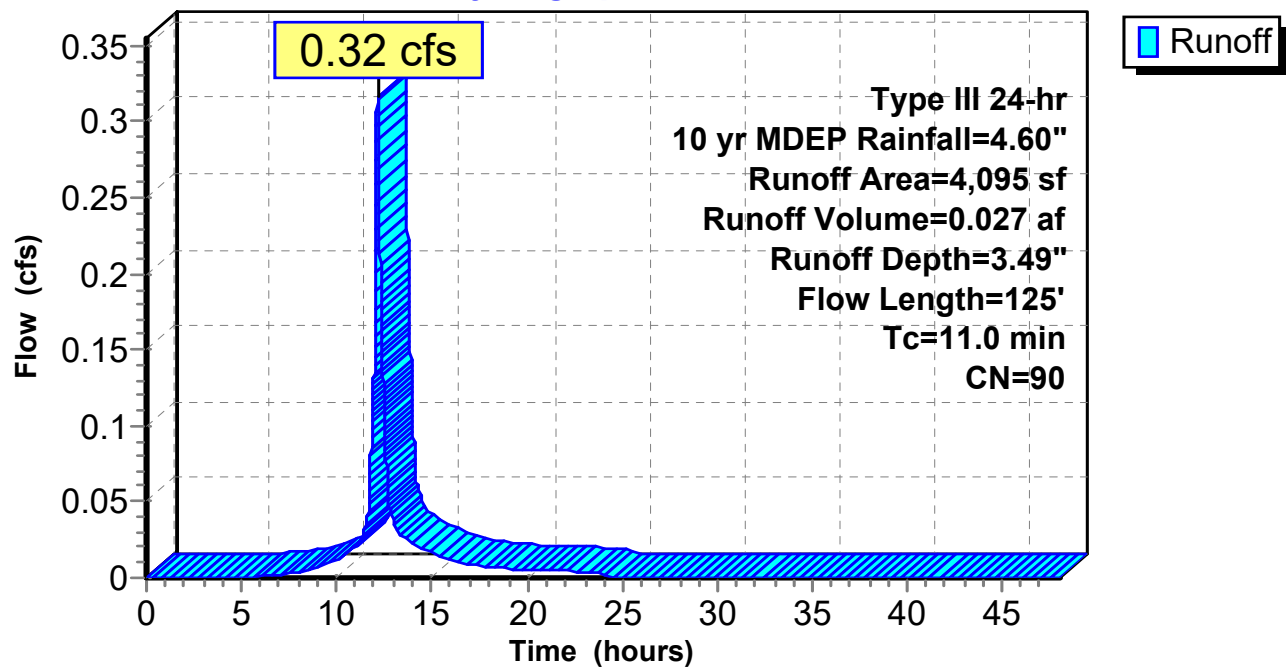
	Area (sf)	CN	Description
*	2,131	96	Fire Lane
	1,964	84	50-75% Grass cover, Fair, HSG D
	4,095	90	Weighted Average
	4,095		100.00% Pervious Area

Tc	Length	Slope	Velocity	Capacity	Description
(min)	(feet)	(ft/ft)	(ft/sec)	(cfs)	
0.5	6	0.3300	0.20		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.10"
9.6	42	0.0100	0.07		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.10"
0.9	77	0.0100	1.50		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
11.0	125	Total			

### Subcatchment FL: Fire Lane

#### Hydrograph



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Type III 24-hr 10 yr MDEP Rainfall=4.60"

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### Summary for Subcatchment PKG: PKG

Runoff = 0.95 cfs @ 12.02 hrs, Volume= 0.061 af, Depth= 3.81"

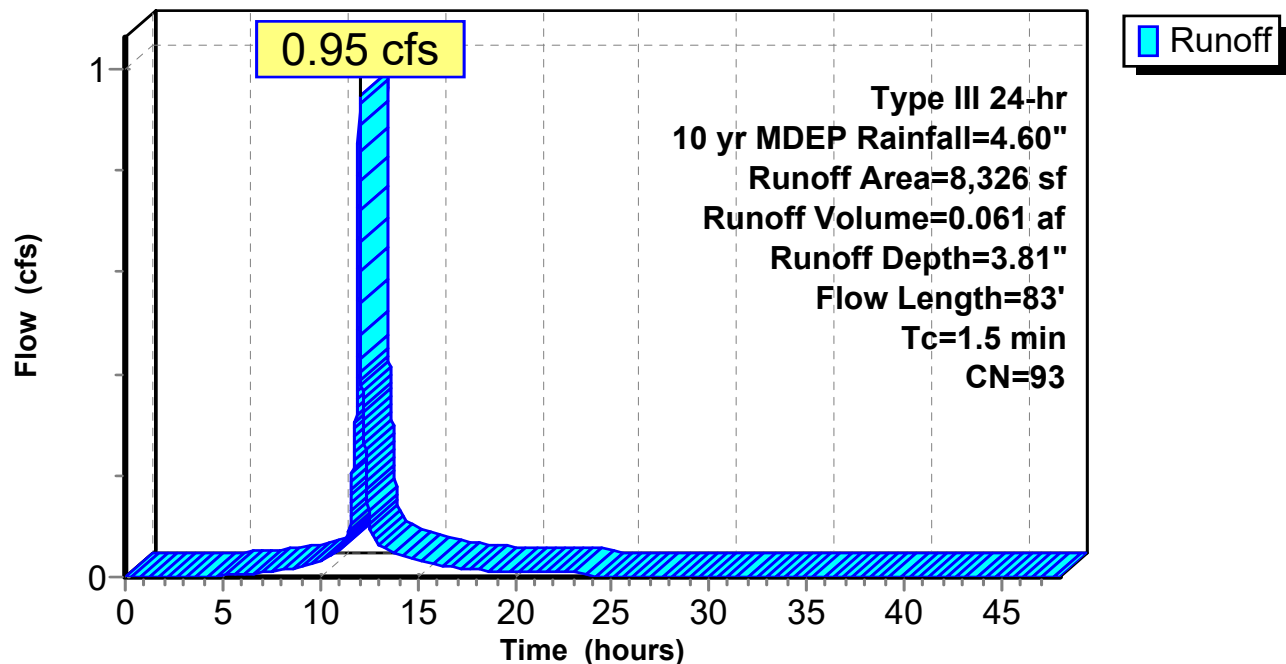
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 yr MDEP Rainfall=4.60"

	Area (sf)	CN	Description
*	5,388	98	Gravel Parking
	2,938	84	50-75% Grass cover, Fair, HSG D
	8,326	93	Weighted Average
	2,938		35.29% Pervious Area
	5,388		64.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	80	0.0150	1.15		Sheet Flow, Parking Area
					Smooth surfaces n= 0.011 P2= 3.10"
0.3	3	0.3300	0.17		Sheet Flow,
					Grass: Dense n= 0.240 P2= 3.10"
1.5	83	Total			

### Subcatchment PKG: PKG

#### Hydrograph



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Type III 24-hr 10 yr MDEP Rainfall=4.60"

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### Summary for Subcatchment RE: Roof East

Runoff = 0.40 cfs @ 12.07 hrs, Volume= 0.031 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

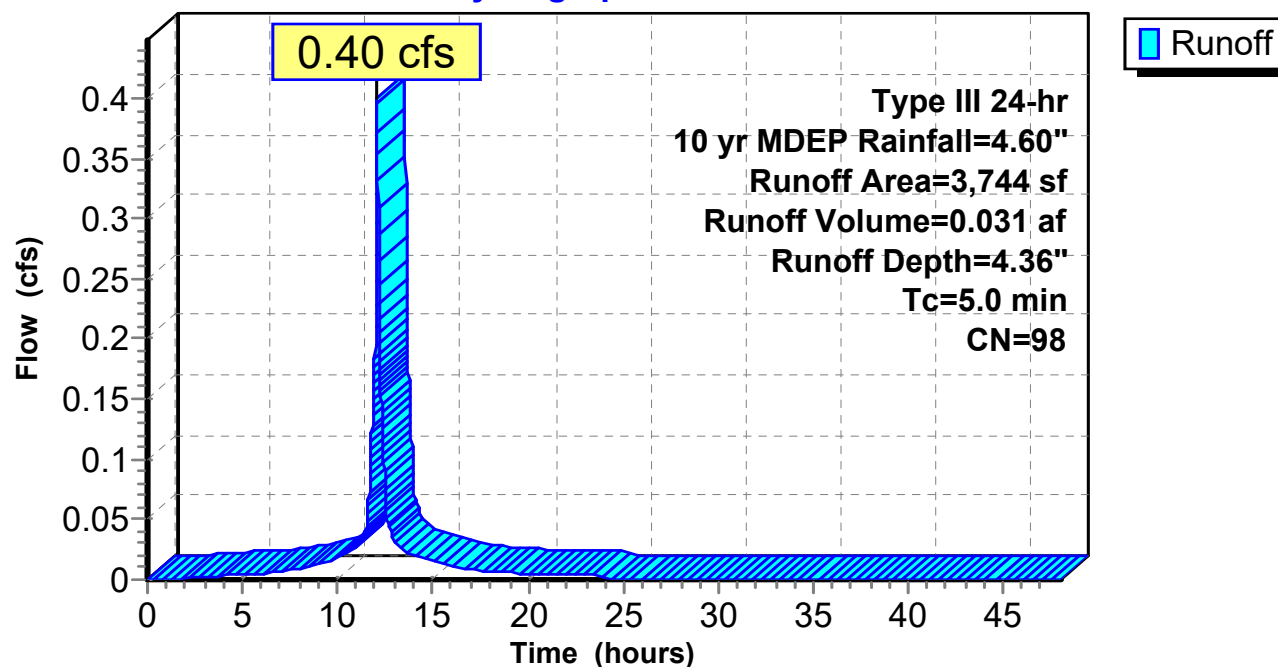
Type III 24-hr 10 yr MDEP Rainfall=4.60"

	Area (sf)	CN	Description
*	3,744	98	Roof
	3,744		100.00% Impervious Area

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

### Subcatchment RE: Roof East

#### Hydrograph





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Type III 24-hr 10 yr MDEP Rainfall=4.60"

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### Summary for Subcatchment RW: Roof West

Runoff = 0.40 cfs @ 12.07 hrs, Volume= 0.031 af, Depth= 4.36"

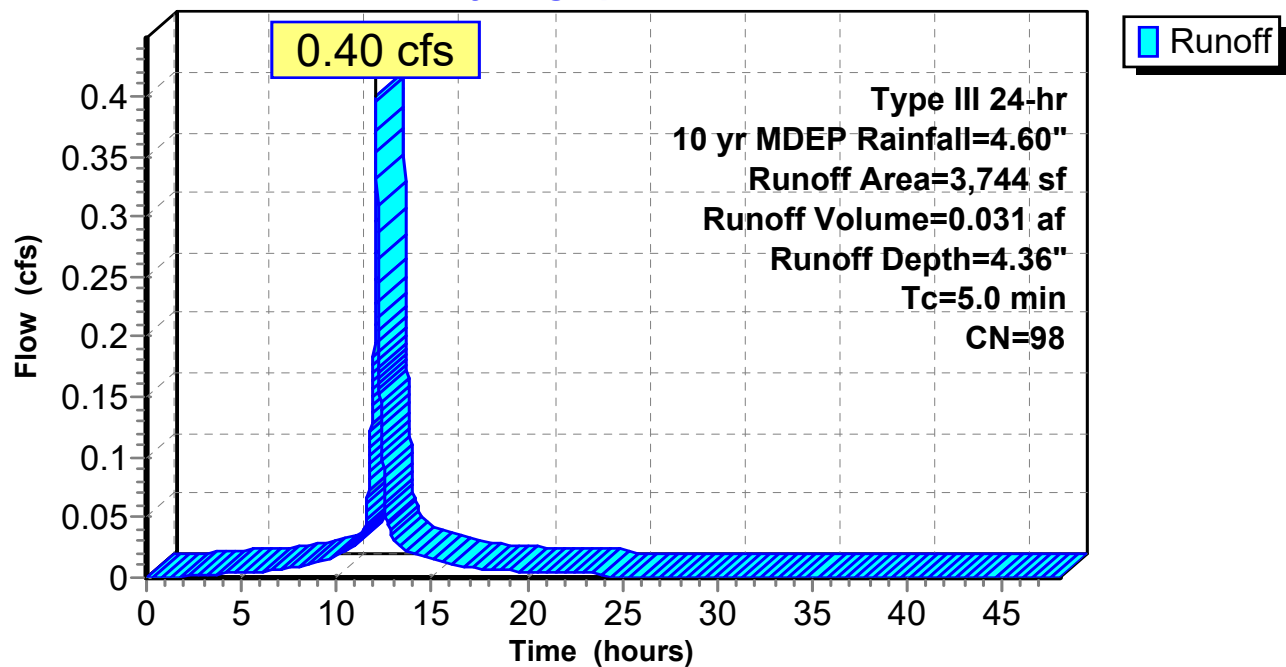
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10 yr MDEP Rainfall=4.60"

	Area (sf)	CN	Description
*	3,744	98	Roof top
	3,744		100.00% Impervious Area

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

### Subcatchment RW: Roof West

#### Hydrograph



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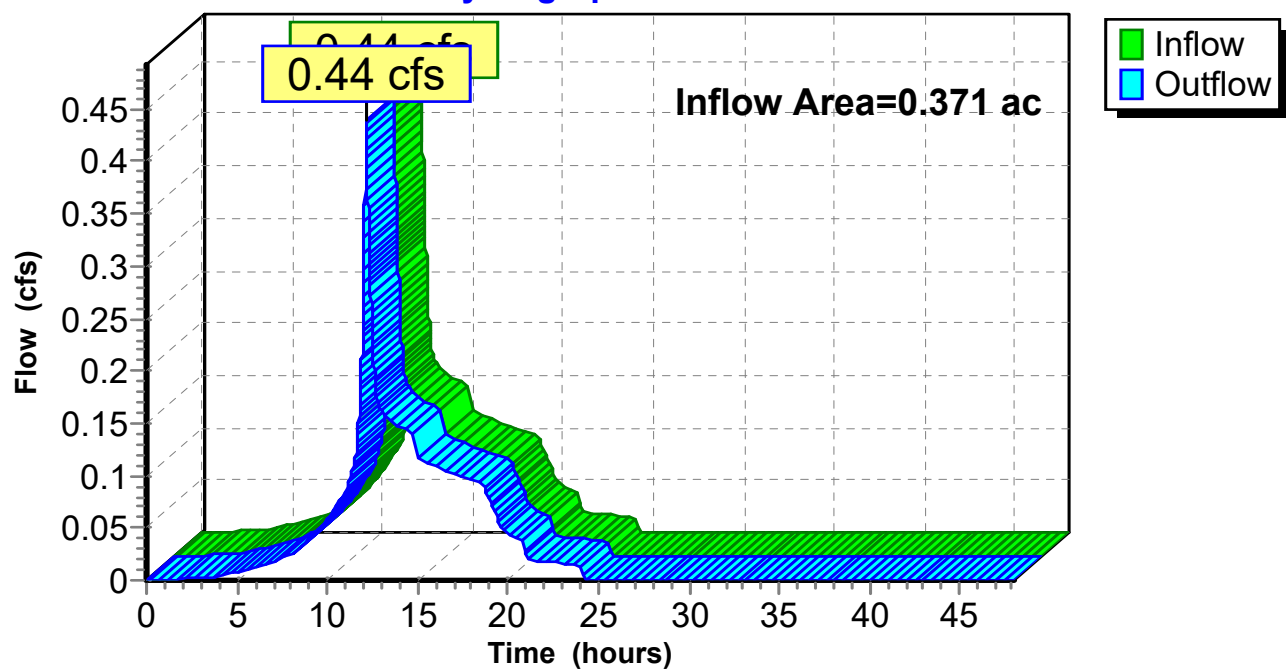
### Summary for Reach SP1: Post Study Point

Inflow Area = 0.371 ac, 56.49% Impervious, Inflow Depth = 3.86" for 10 yr MDEP event  
Inflow = 0.44 cfs @ 12.15 hrs, Volume= 0.119 af  
Outflow = 0.44 cfs @ 12.15 hrs, Volume= 0.119 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Reach SP1: Post Study Point

#### Hydrograph



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### Summary for Reach SP2: (new Reach)

Inflow Area = 0.843 ac, 10.20% Impervious, Inflow Depth = 2.73" for 10 yr MDEP event

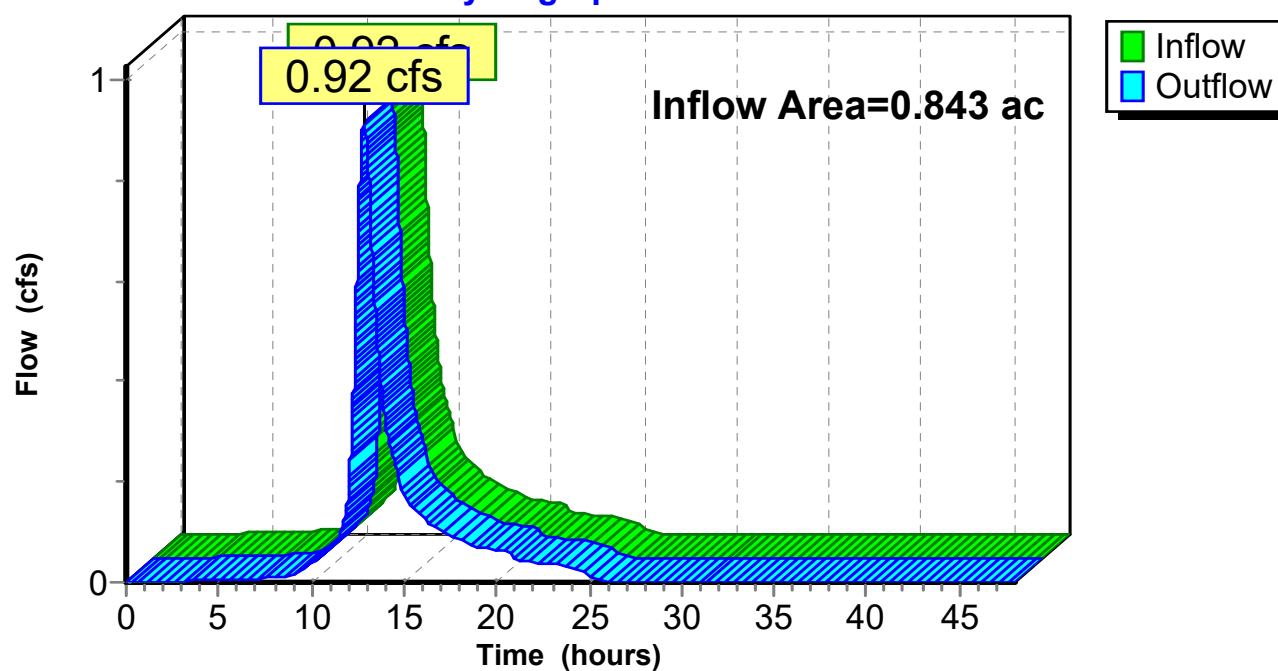
Inflow = 0.92 cfs @ 12.85 hrs, Volume= 0.192 af

Outflow = 0.92 cfs @ 12.85 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Reach SP2: (new Reach)

#### Hydrograph



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Type III 24-hr 10 yr MDEP Rainfall=4.60"

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### Summary for Pond 1P: Grassed UDSF

Inflow Area = 0.191 ac, 64.71% Impervious, Inflow Depth = 3.81" for 10 yr MDEP event  
Inflow = 0.95 cfs @ 12.02 hrs, Volume= 0.061 af  
Outflow = 0.08 cfs @ 12.79 hrs, Volume= 0.061 af, Atten= 91%, Lag= 46.0 min  
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
Secondary = 0.08 cfs @ 12.79 hrs, Volume= 0.061 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Peak Elev= 166.92' @ 12.79 hrs Surf.Area= 1,443 sf Storage= 1,039 cf  
Flood Elev= 167.55' Surf.Area= 1,700 sf Storage= 1,945 cf

Plug-Flow detention time= 108.5 min calculated for 0.061 af (100% of inflow)  
Center-of-Mass det. time= 108.4 min ( 885.1 - 776.6 )

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	1,945 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	0	0	0
166.22	1,152	127	127
167.00	1,475	1,025	1,151
167.50	1,700	794	1,945

Device	Routing	Invert	Outlet Devices
#1	Secondary	166.00'	<b>2,410 in/hr Exfiltration over Horizontal area</b> Conductivity to Groundwater Elevation = -1.25' Phase-In= 0.01'
#2	Primary	167.40'	<b>10.0' long (Profile 9) Broad-Crested Rectangular Weir</b> Head (feet) 1.97 2.46 2.95 3.94 4.92 Coef. (English) 3.55 3.55 3.57 3.60 3.66

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=166.00' (Free Discharge)  
↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.08 cfs @ 12.79 hrs HW=166.92' (Free Discharge)  
↑ **1=Exfiltration** ( Controls 0.08 cfs)

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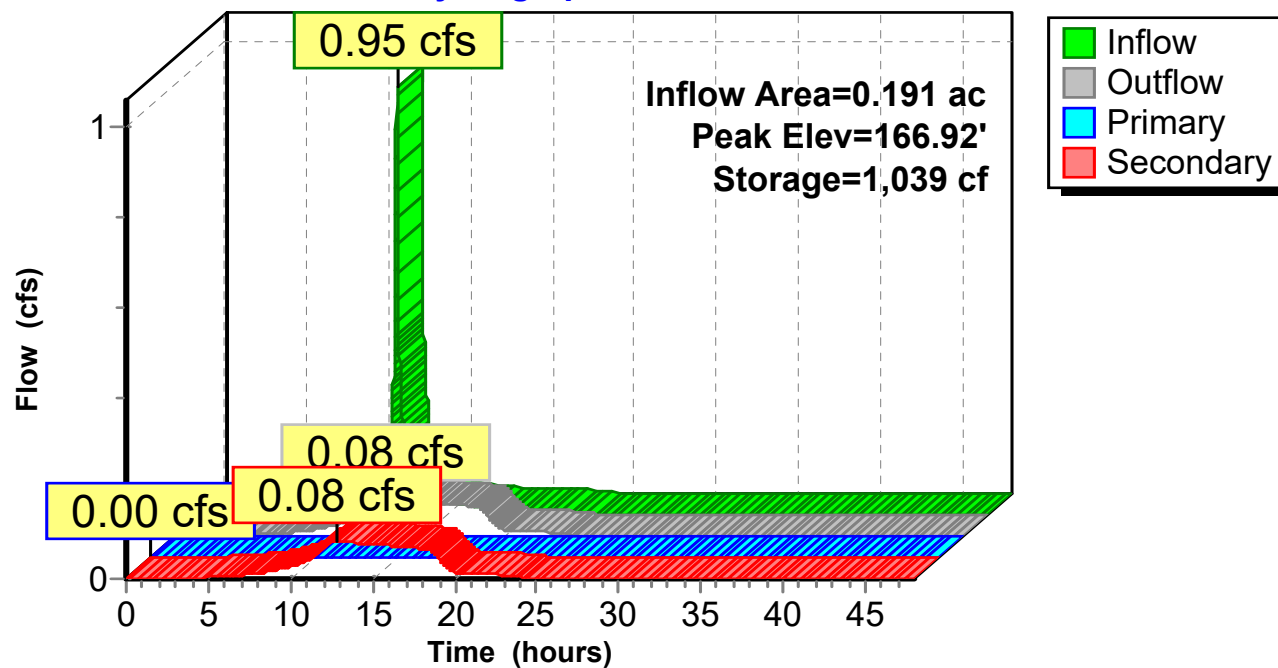
Type III 24-hr 10 yr MDEP Rainfall=4.60"

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### Pond 1P: Grassed UDSF

#### Hydrograph



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Type III 24-hr 10 yr MDEP Rainfall=4.60"

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### Summary for Pond 2P: Roof BMP East

Inflow Area = 0.086 ac, 100.00% Impervious, Inflow Depth = 4.36" for 10 yr MDEP event  
Inflow = 0.40 cfs @ 12.07 hrs, Volume = 0.031 af  
Outflow = 0.05 cfs @ 12.63 hrs, Volume = 0.031 af, Atten = 89%, Lag = 33.9 min  
Primary = 0.05 cfs @ 12.63 hrs, Volume = 0.031 af

Routing by Stor-Ind method, Time Span = 0.00-48.00 hrs, dt = 0.01 hrs

Peak Elev = 168.50' @ 12.63 hrs Surf.Area = 820 sf Storage = 491 cf

Plug-Flow detention time = 104.0 min calculated for 0.031 af (100% of inflow)

Center-of-Mass det. time = 104.0 min (852.5 - 748.5)

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	328 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 820 cf Overall x 40.0% Voids
#2	168.10'	205 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		533 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	410	0	0
168.00	410	820	820

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
168.10	410	0	0
168.60	410	205	205

Device	Routing	Invert	Outlet Devices
#1	Primary	164.18'	<b>6.0" Round Culvert</b> L = 137.0' CPP, square edge headwall, Kc = 0.500 Inlet / Outlet Invert = 164.18' / 163.50' S = 0.0050 '/' Cc = 0.900 n = 0.013, Flow Area = 0.20 sf
#2	Device 1	166.00'	<b>2.400 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = -1.25' Phase-In = 0.01'
#3	Primary	168.50'	<b>117.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max = 0.05 cfs @ 12.63 hrs HW = 168.50' (Free Discharge)

- 1 = **Culvert** (Passes 0.05 cfs of 0.95 cfs potential flow)
- 2 = **Exfiltration** (Controls 0.05 cfs)
- 3 = **Broad-Crested Rectangular Weir** (Controls 0.00 cfs)



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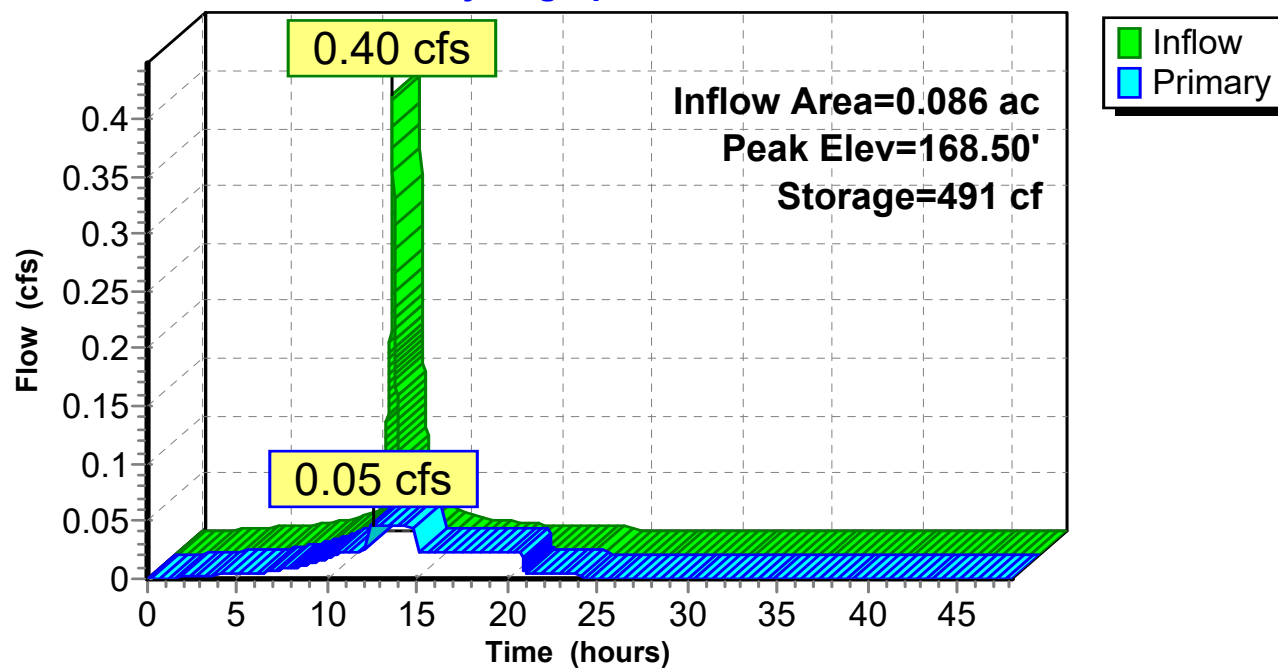
Type III 24-hr 10 yr MDEP Rainfall=4.60"

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### Pond 2P: Roof BMP East

#### Hydrograph



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### Summary for Pond 3P: Roof BMP West

Inflow Area = 0.086 ac, 100.00% Impervious, Inflow Depth = 4.36" for 10 yr MDEP event  
Inflow = 0.40 cfs @ 12.07 hrs, Volume = 0.031 af  
Outflow = 0.05 cfs @ 12.63 hrs, Volume = 0.031 af, Atten = 89%, Lag = 33.9 min  
Primary = 0.05 cfs @ 12.63 hrs, Volume = 0.031 af

Routing by Stor-Ind method, Time Span = 0.00-48.00 hrs, dt = 0.01 hrs

Peak Elev = 168.50' @ 12.63 hrs Surf.Area = 820 sf Storage = 491 cf

Plug-Flow detention time = 104.0 min calculated for 0.031 af (100% of inflow)

Center-of-Mass det. time = 104.0 min (852.5 - 748.5)

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	328 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 820 cf Overall x 40.0% Voids
#2	168.10'	205 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		533 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	410	0	0
168.00	410	820	820

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
168.10	410	0	0
168.60	410	205	205

Device	Routing	Invert	Outlet Devices
#1	Primary	164.18'	<b>6.0" Round Culvert</b> L = 137.0' CPP, square edge headwall, K <sub>e</sub> = 0.500 Inlet / Outlet Invert = 164.18' / 163.50' S = 0.0050 '/' C <sub>c</sub> = 0.900 n = 0.013, Flow Area = 0.20 sf
#2	Device 1	166.00'	<b>2.400 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = -1.25' Phase-In = 0.01'
#3	Primary	168.50'	<b>117.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max = 0.05 cfs @ 12.63 hrs HW = 168.50' (Free Discharge)

1 = **Culvert** (Passes 0.05 cfs of 0.95 cfs potential flow)  
2 = **Exfiltration** (Controls 0.05 cfs)  
3 = **Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

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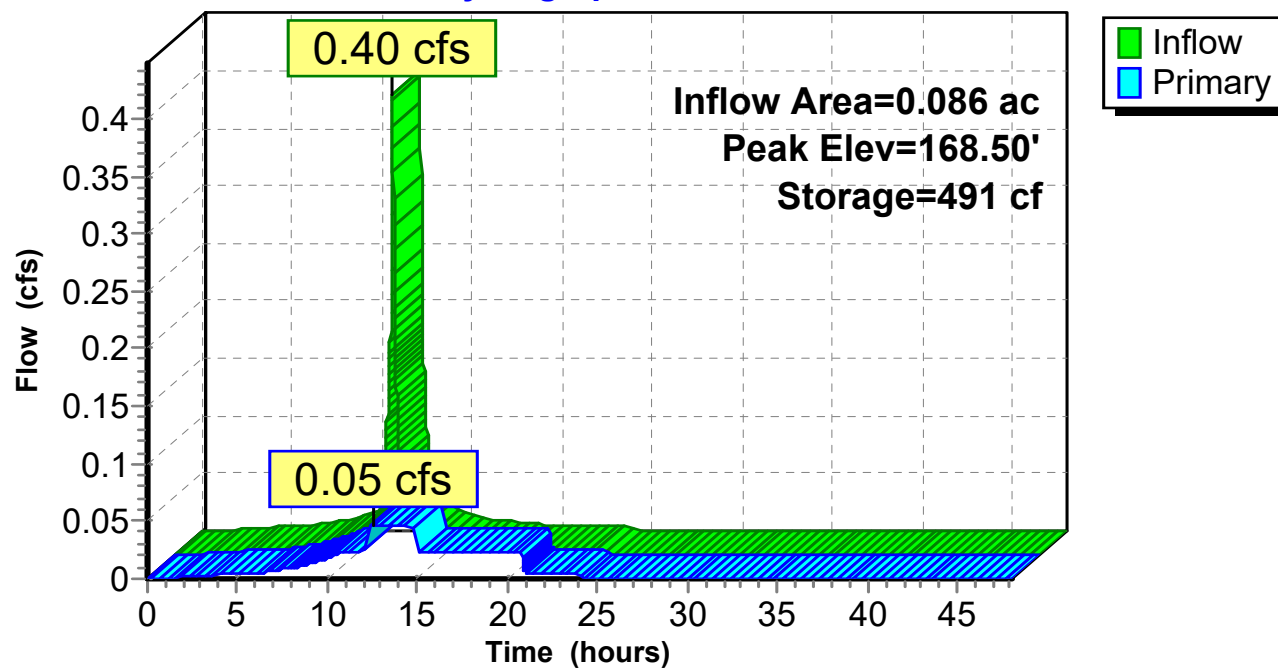
Type III 24-hr 10 yr MDEP Rainfall=4.60"

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### Pond 3P: Roof BMP West

#### Hydrograph



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Type III 24-hr 25 yr MDEP Rainfall=5.80"

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**Summary for Subcatchment 2S: Subcatchment 2**

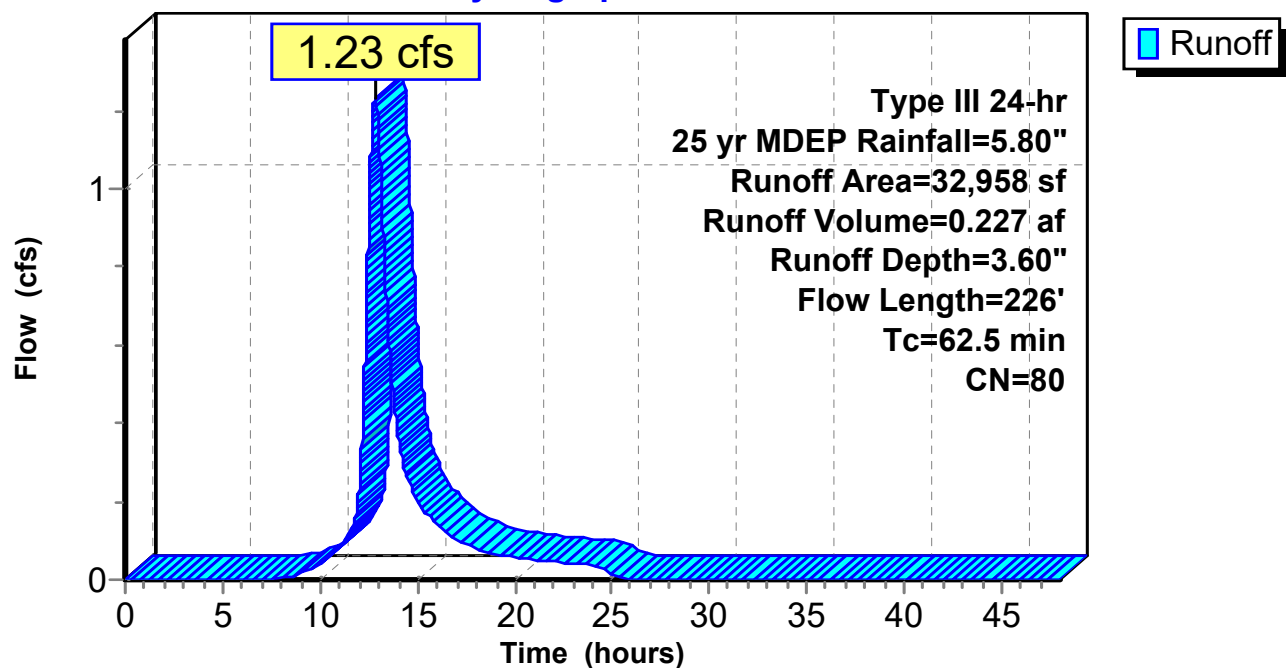
Runoff = 1.23 cfs @ 12.85 hrs, Volume= 0.227 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25 yr MDEP Rainfall=5.80"

Area (sf)	CN	Description
5,386	84	50-75% Grass cover, Fair, HSG D
556	96	Gravel surface, HSG D
27,016	79	Woods, Fair, HSG D
32,958	80	Weighted Average
32,958		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	32	0.0400	0.08		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.10"
7.8	34	0.0300	0.07		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.10"
25.0	84	0.0100	0.06		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.10"
23.1	76	0.0100	0.05		<b>Sheet Flow,</b> Woods: Light underbrush n= 0.400 P2= 3.10"
62.5	226	Total			

**Subcatchment 2S: Subcatchment 2****Hydrograph**

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### Summary for Subcatchment FL: Fire Lane

Runoff = 0.42 cfs @ 12.15 hrs, Volume= 0.036 af, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25 yr MDEP Rainfall=5.80"

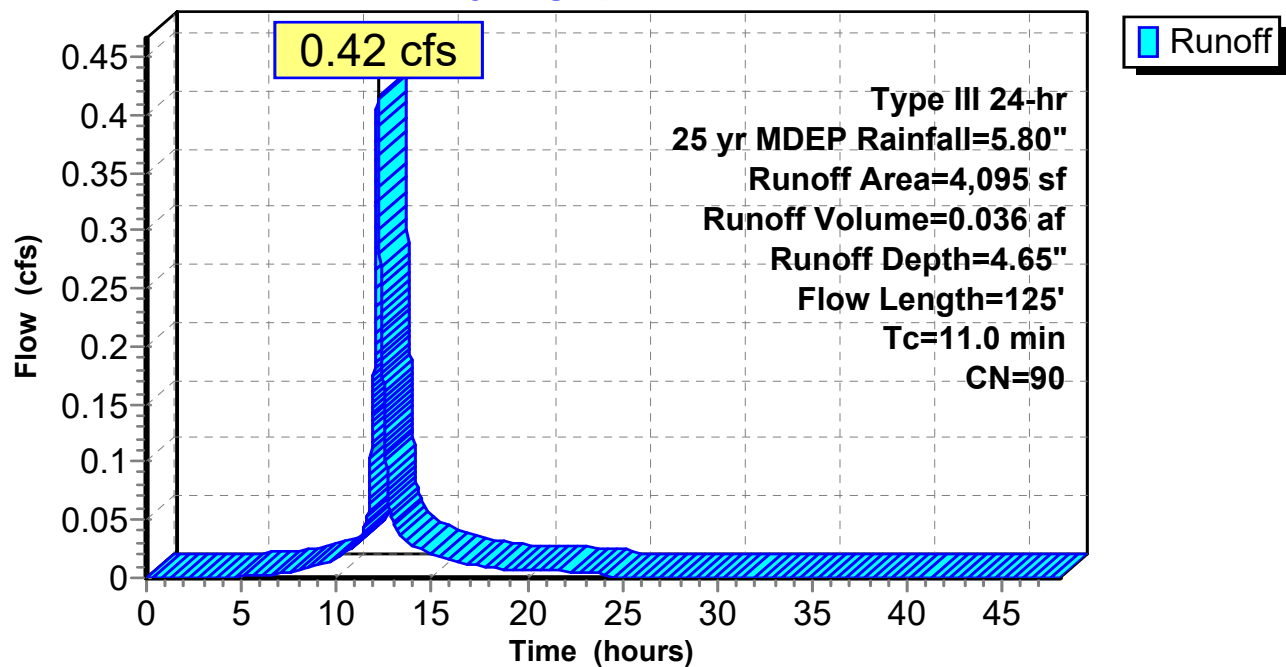
	Area (sf)	CN	Description
*	2,131	96	Fire Lane
	1,964	84	50-75% Grass cover, Fair, HSG D
	4,095	90	Weighted Average
	4,095		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	6	0.3300	0.20		Sheet Flow, Grass: Dense n= 0.240 P2= 3.10"
9.6	42	0.0100	0.07		Sheet Flow, Grass: Dense n= 0.240 P2= 3.10"
0.9	77	0.0100	1.50		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
11.0	125	Total			

### Subcatchment FL: Fire Lane

#### Hydrograph



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### Summary for Subcatchment PKG: PKG

Runoff = 1.22 cfs @ 12.02 hrs, Volume= 0.079 af, Depth= 4.99"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25 yr MDEP Rainfall=5.80"

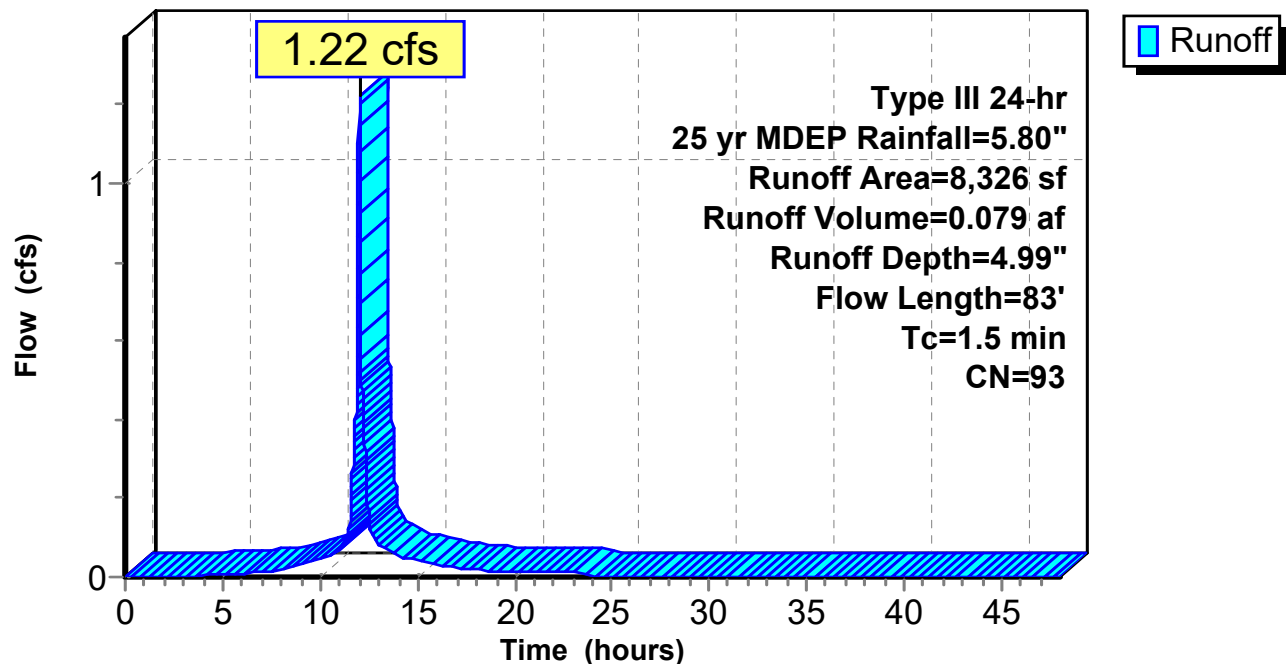
	Area (sf)	CN	Description
*	5,388	98	Gravel Parking
	2,938	84	50-75% Grass cover, Fair, HSG D
	8,326	93	Weighted Average
	2,938		35.29% Pervious Area
	5,388		64.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	80	0.0150	1.15		Sheet Flow, Parking Area
					Smooth surfaces n= 0.011 P2= 3.10"
0.3	3	0.3300	0.17		Sheet Flow,
					Grass: Dense n= 0.240 P2= 3.10"
1.5	83	Total			

### Subcatchment PKG: PKG

#### Hydrograph





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### Summary for Subcatchment RE: Roof East

Runoff = 0.51 cfs @ 12.07 hrs, Volume= 0.040 af, Depth= 5.56"

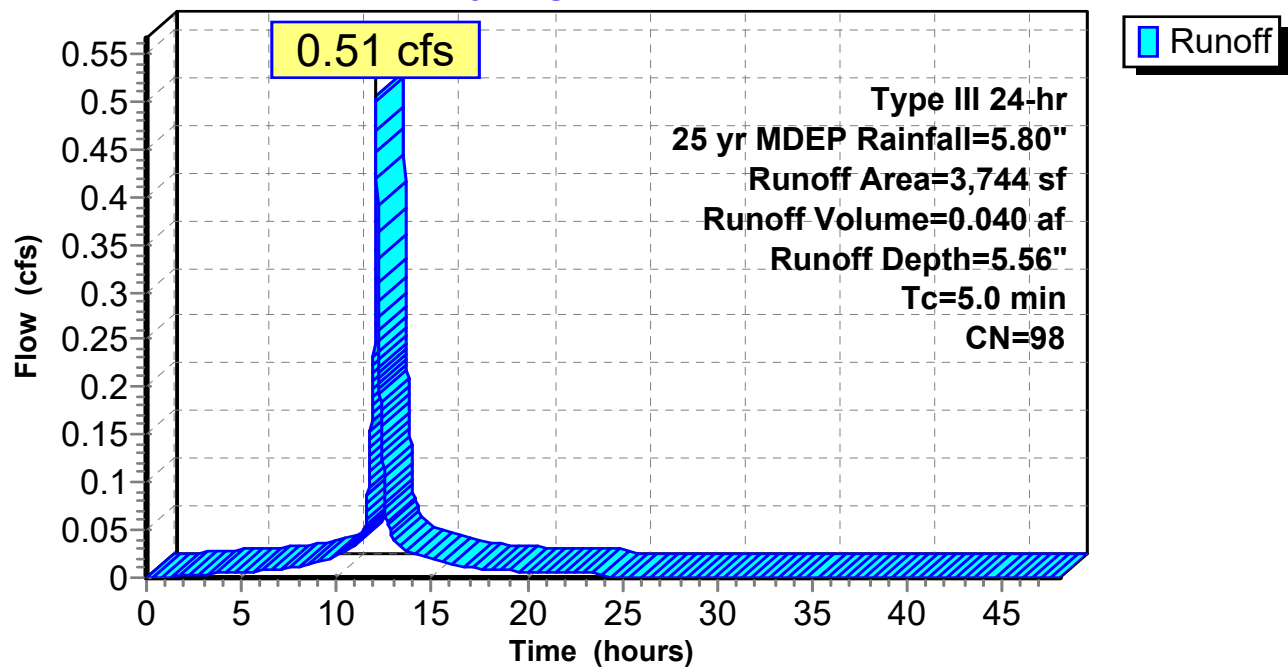
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25 yr MDEP Rainfall=5.80"

	Area (sf)	CN	Description
*	3,744	98	Roof
	3,744		100.00% Impervious Area

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

### Subcatchment RE: Roof East

#### Hydrograph



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### Summary for Subcatchment RW: Roof West

Runoff = 0.51 cfs @ 12.07 hrs, Volume= 0.040 af, Depth= 5.56"

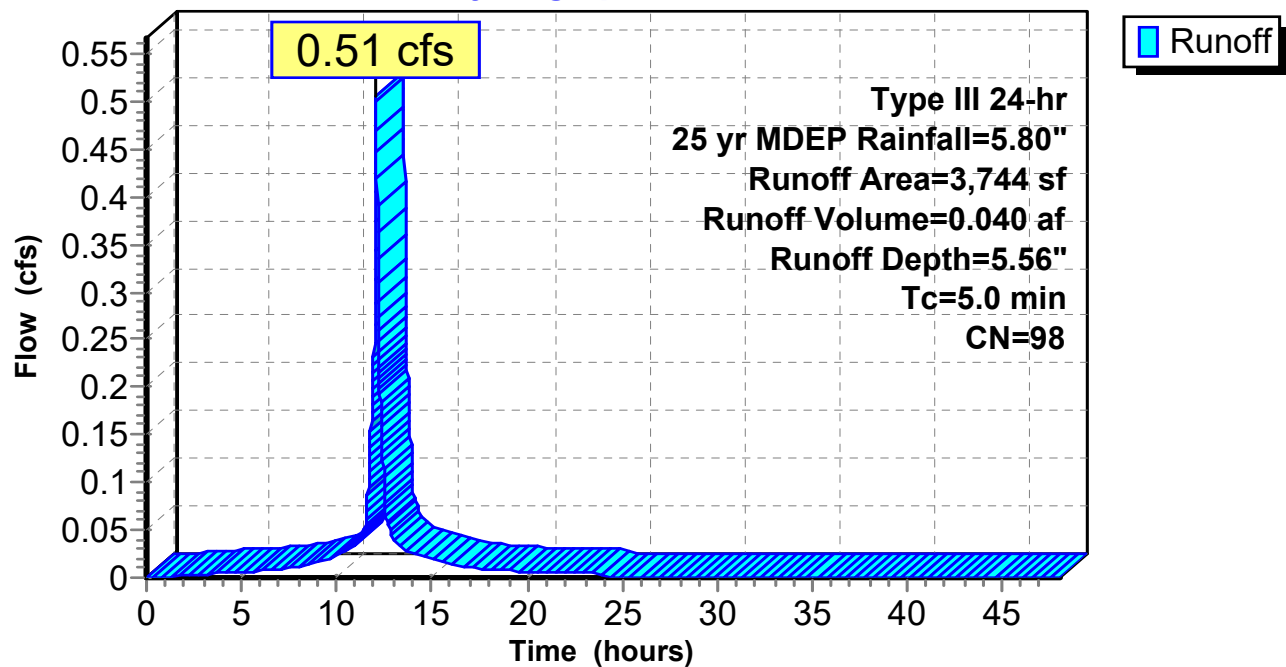
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25 yr MDEP Rainfall=5.80"

	Area (sf)	CN	Description
*	3,744	98	Roof top
	3,744		100.00% Impervious Area

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

### Subcatchment RW: Roof West

#### Hydrograph



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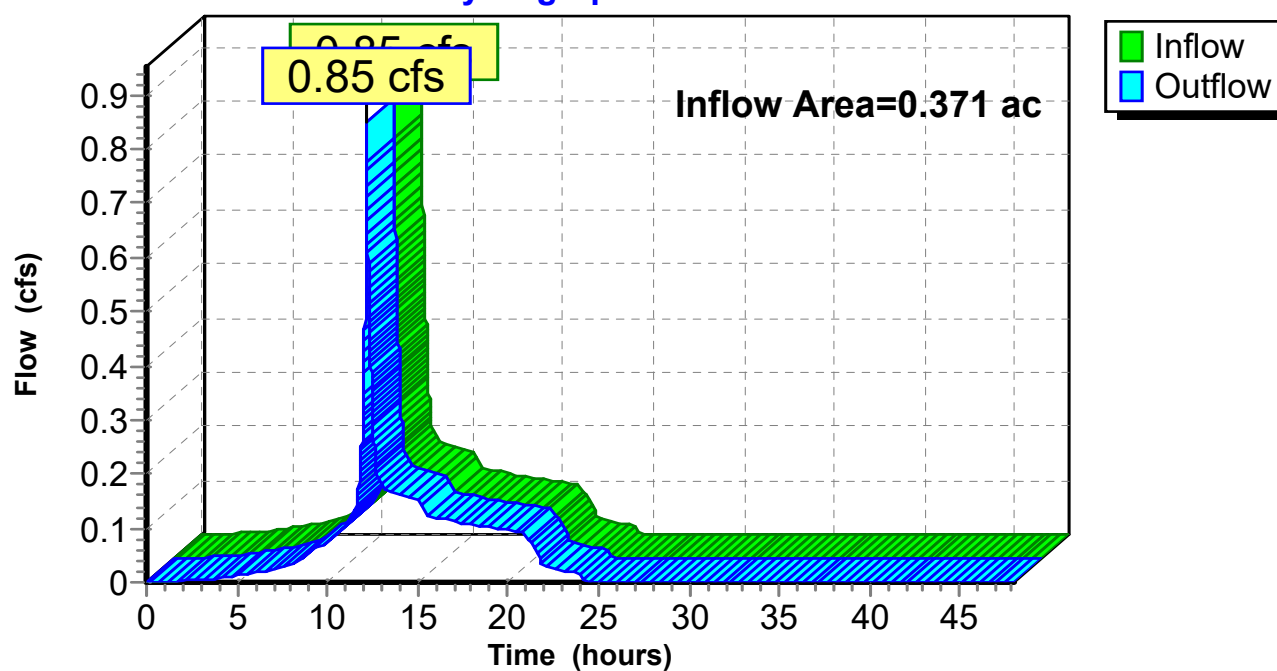
### Summary for Reach SP1: Post Study Point

Inflow Area = 0.371 ac, 56.49% Impervious, Inflow Depth = 5.03" for 25 yr MDEP event  
Inflow = 0.85 cfs @ 12.16 hrs, Volume= 0.156 af  
Outflow = 0.85 cfs @ 12.16 hrs, Volume= 0.156 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Reach SP1: Post Study Point

#### Hydrograph



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Type III 24-hr 25 yr MDEP Rainfall=5.80"

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### Summary for Reach SP2: (new Reach)

Inflow Area = 0.843 ac, 10.20% Impervious, Inflow Depth = 3.80" for 25 yr MDEP event

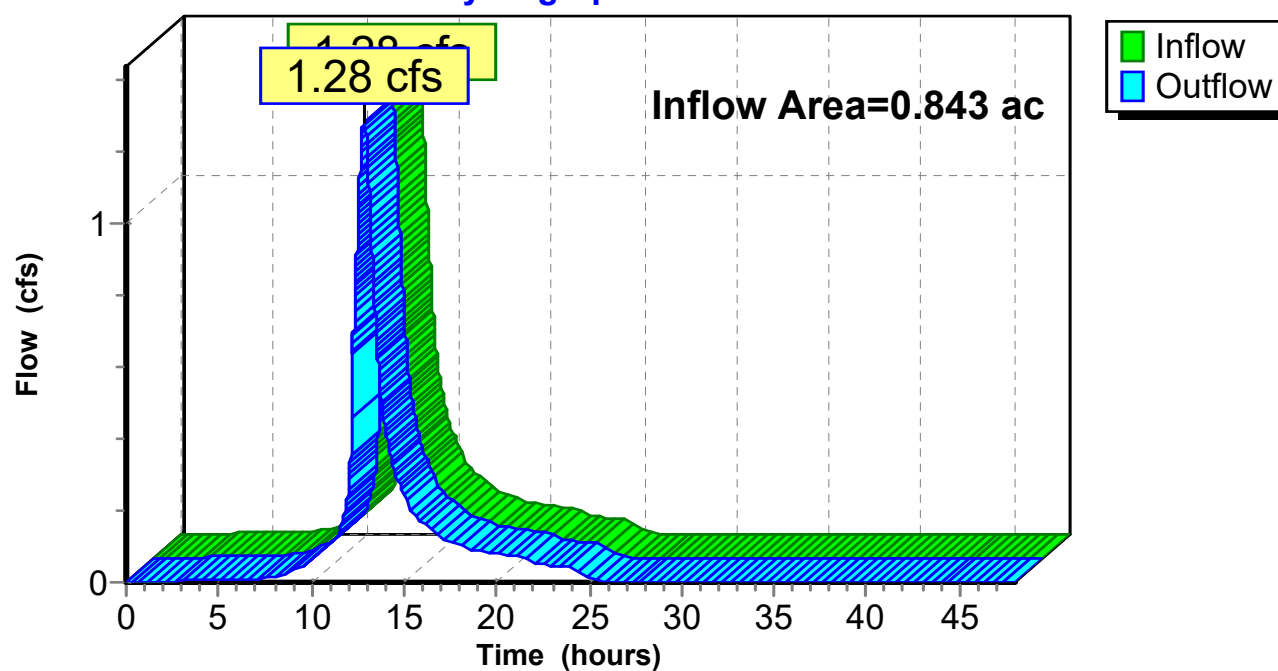
Inflow = 1.28 cfs @ 12.85 hrs, Volume= 0.267 af

Outflow = 1.28 cfs @ 12.85 hrs, Volume= 0.267 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Reach SP2: (new Reach)

#### Hydrograph



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20073 Gambo Road

Type III 24-hr 25 yr MDEP Rainfall=5.80"

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**Summary for Pond 1P: Grassed UDSF**

Inflow Area = 0.191 ac, 64.71% Impervious, Inflow Depth = 4.99" for 25 yr MDEP event  
 Inflow = 1.22 cfs @ 12.02 hrs, Volume= 0.079 af  
 Outflow = 0.09 cfs @ 12.94 hrs, Volume= 0.079 af, Atten= 93%, Lag= 55.3 min  
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af  
 Secondary = 0.09 cfs @ 12.94 hrs, Volume= 0.079 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
 Peak Elev= 167.20' @ 12.94 hrs Surf.Area= 1,563 sf Storage= 1,448 cf  
 Flood Elev= 167.55' Surf.Area= 1,700 sf Storage= 1,945 cf

Plug-Flow detention time= 146.9 min calculated for 0.079 af (100% of inflow)  
 Center-of-Mass det. time= 146.9 min ( 916.6 - 769.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	1,945 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	0	0	0
166.22	1,152	127	127
167.00	1,475	1,025	1,151
167.50	1,700	794	1,945

Device	Routing	Invert	Outlet Devices
#1	Secondary	166.00'	<b>2,410 in/hr Exfiltration over Horizontal area</b> Conductivity to Groundwater Elevation = -1.25' Phase-In= 0.01'
#2	Primary	167.40'	<b>10.0' long (Profile 9) Broad-Crested Rectangular Weir</b> Head (feet) 1.97 2.46 2.95 3.94 4.92 Coef. (English) 3.55 3.55 3.57 3.60 3.66

**Primary OutFlow** Max=0.00 cfs @ 0.00 hrs HW=166.00' (Free Discharge)  
 ↑ **2=Broad-Crested Rectangular Weir** ( Controls 0.00 cfs)

**Secondary OutFlow** Max=0.09 cfs @ 12.94 hrs HW=167.20' (Free Discharge)  
 ↑ **1=Exfiltration** ( Controls 0.09 cfs)

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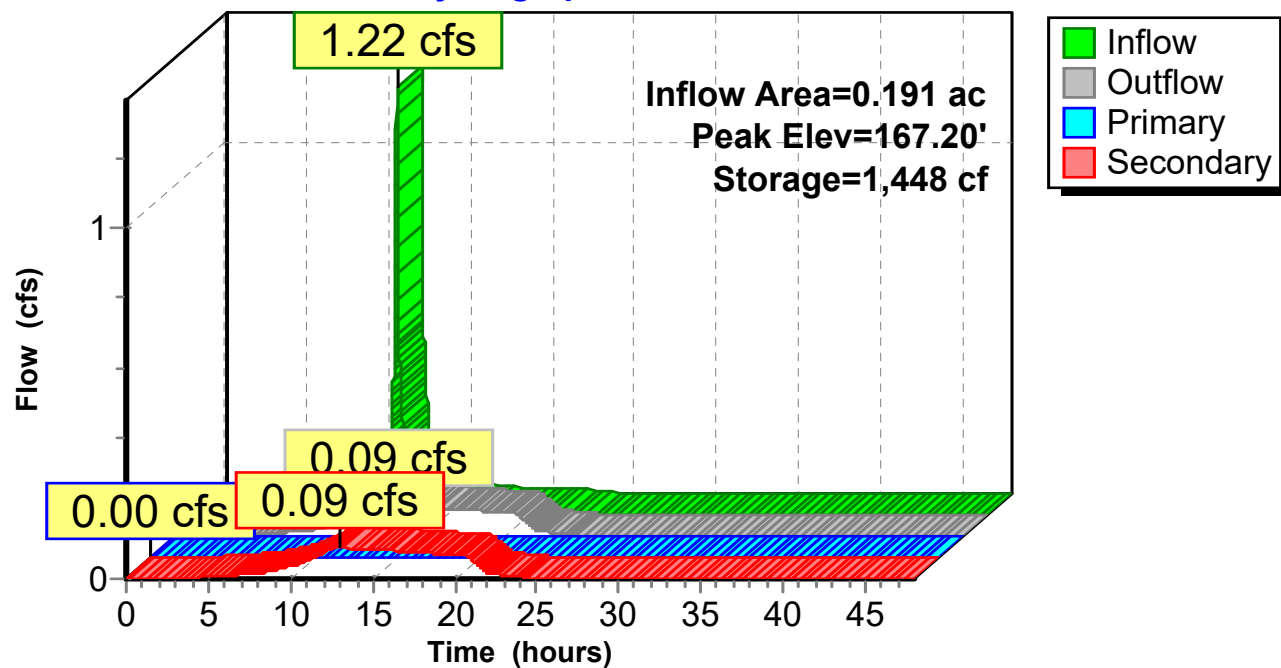
Type III 24-hr 25 yr MDEP Rainfall=5.80"

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### Pond 1P: Grassed UDSF

#### Hydrograph





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Type III 24-hr 25 yr MDEP Rainfall=5.80"

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**Summary for Pond 2P: Roof BMP East**

Inflow Area = 0.086 ac, 100.00% Impervious, Inflow Depth = 5.56" for 25 yr MDEP event  
 Inflow = 0.51 cfs @ 12.07 hrs, Volume = 0.040 af  
 Outflow = 0.35 cfs @ 12.16 hrs, Volume = 0.040 af, Atten = 30%, Lag = 5.5 min  
 Primary = 0.35 cfs @ 12.16 hrs, Volume = 0.040 af

Routing by Stor-Ind method, Time Span = 0.00-48.00 hrs, dt = 0.01 hrs

Peak Elev = 168.51' @ 12.16 hrs Surf.Area = 820 sf Storage = 495 cf

Plug-Flow detention time = 95.1 min calculated for 0.040 af (100% of inflow)

Center-of-Mass det. time = 95.1 min (839.8 - 744.7)

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	328 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 820 cf Overall x 40.0% Voids
#2	168.10'	205 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		533 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	410	0	0
168.00	410	820	820

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
168.10	410	0	0
168.60	410	205	205

Device	Routing	Invert	Outlet Devices
#1	Primary	164.18'	<b>6.0" Round Culvert</b> L = 137.0' CPP, square edge headwall, K <sub>e</sub> = 0.500 Inlet / Outlet Invert = 164.18' / 163.50' S = 0.0050 '/' C <sub>c</sub> = 0.900 n = 0.013, Flow Area = 0.20 sf
#2	Device 1	166.00'	<b>2.400 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = -1.25' Phase-In = 0.01'
#3	Primary	168.50'	<b>117.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max = 0.21 cfs @ 12.16 hrs HW = 168.51' (Free Discharge)1 = **Culvert** (Passes 0.05 cfs of 0.95 cfs potential flow)2 = **Exfiltration** (Controls 0.05 cfs)3 = **Broad-Crested Rectangular Weir** (Weir Controls 0.17 cfs @ 0.21 fps)

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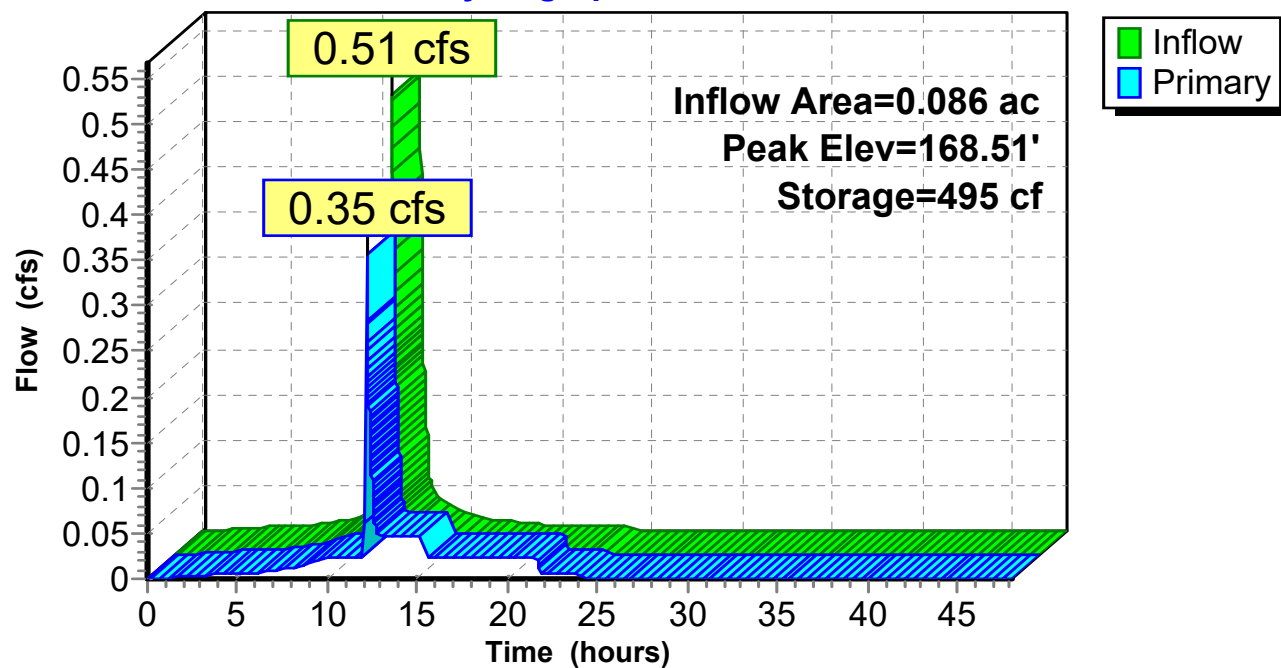
Type III 24-hr 25 yr MDEP Rainfall=5.80"

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### Pond 2P: Roof BMP East

#### Hydrograph



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Type III 24-hr 25 yr MDEP Rainfall=5.80"

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**Summary for Pond 3P: Roof BMP West**

Inflow Area = 0.086 ac, 100.00% Impervious, Inflow Depth = 5.56" for 25 yr MDEP event  
 Inflow = 0.51 cfs @ 12.07 hrs, Volume = 0.040 af  
 Outflow = 0.35 cfs @ 12.16 hrs, Volume = 0.040 af, Atten = 30%, Lag = 5.5 min  
 Primary = 0.35 cfs @ 12.16 hrs, Volume = 0.040 af

Routing by Stor-Ind method, Time Span = 0.00-48.00 hrs, dt = 0.01 hrs

Peak Elev = 168.51' @ 12.16 hrs Surf.Area = 820 sf Storage = 495 cf

Plug-Flow detention time = 95.1 min calculated for 0.040 af (100% of inflow)

Center-of-Mass det. time = 95.1 min (839.8 - 744.7)

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	328 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 820 cf Overall x 40.0% Voids
#2	168.10'	205 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		533 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	410	0	0
168.00	410	820	820

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
168.10	410	0	0
168.60	410	205	205

Device	Routing	Invert	Outlet Devices
#1	Primary	164.18'	<b>6.0" Round Culvert</b> L = 137.0' CPP, square edge headwall, K <sub>e</sub> = 0.500 Inlet / Outlet Invert = 164.18' / 163.50' S = 0.0050 '/' C <sub>c</sub> = 0.900 n = 0.013, Flow Area = 0.20 sf
#2	Device 1	166.00'	<b>2.400 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = -1.25' Phase-In = 0.01'
#3	Primary	168.50'	<b>117.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max = 0.21 cfs @ 12.16 hrs HW = 168.51' (Free Discharge)1 = **Culvert** (Passes 0.05 cfs of 0.95 cfs potential flow)2 = **Exfiltration** (Controls 0.05 cfs)3 = **Broad-Crested Rectangular Weir** (Weir Controls 0.17 cfs @ 0.21 fps)

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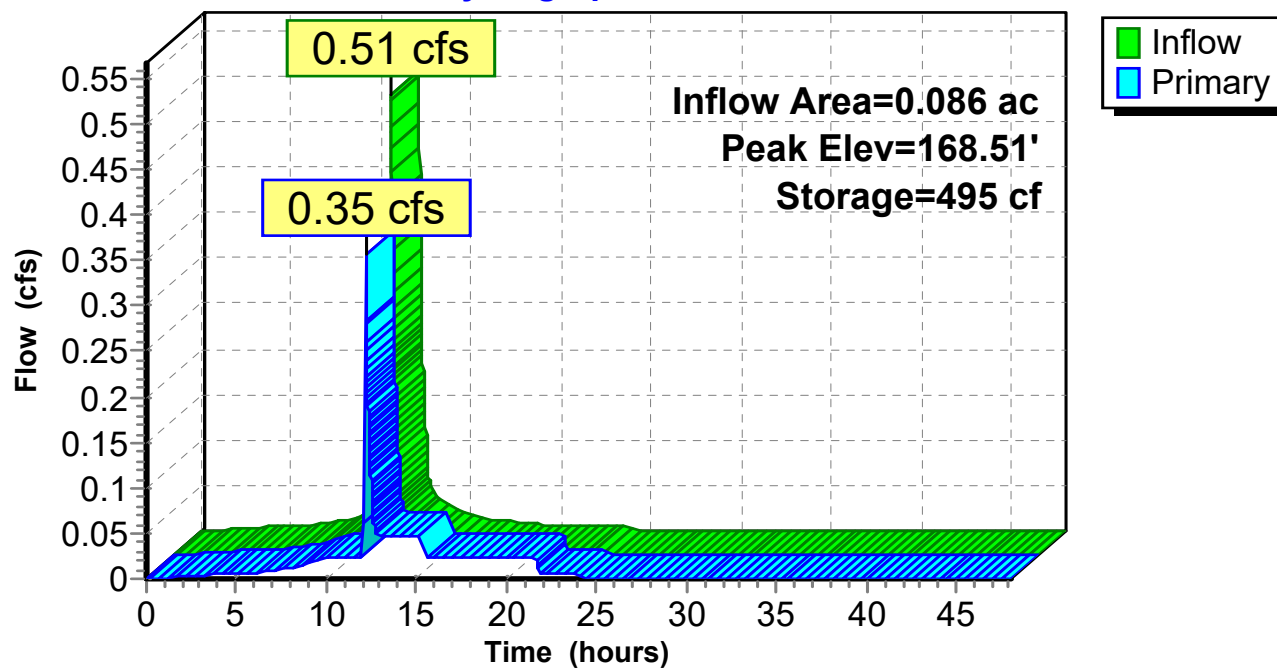
Type III 24-hr 25 yr MDEP Rainfall=5.80"

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### Pond 3P: Roof BMP West

#### Hydrograph



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Type III 24-hr 100 Yr MDEP Rainfall=8.10"

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### Summary for Subcatchment 2S: Subcatchment 2

Runoff = 1.94 cfs @ 12.84 hrs, Volume= 0.361 af, Depth= 5.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr MDEP Rainfall=8.10"

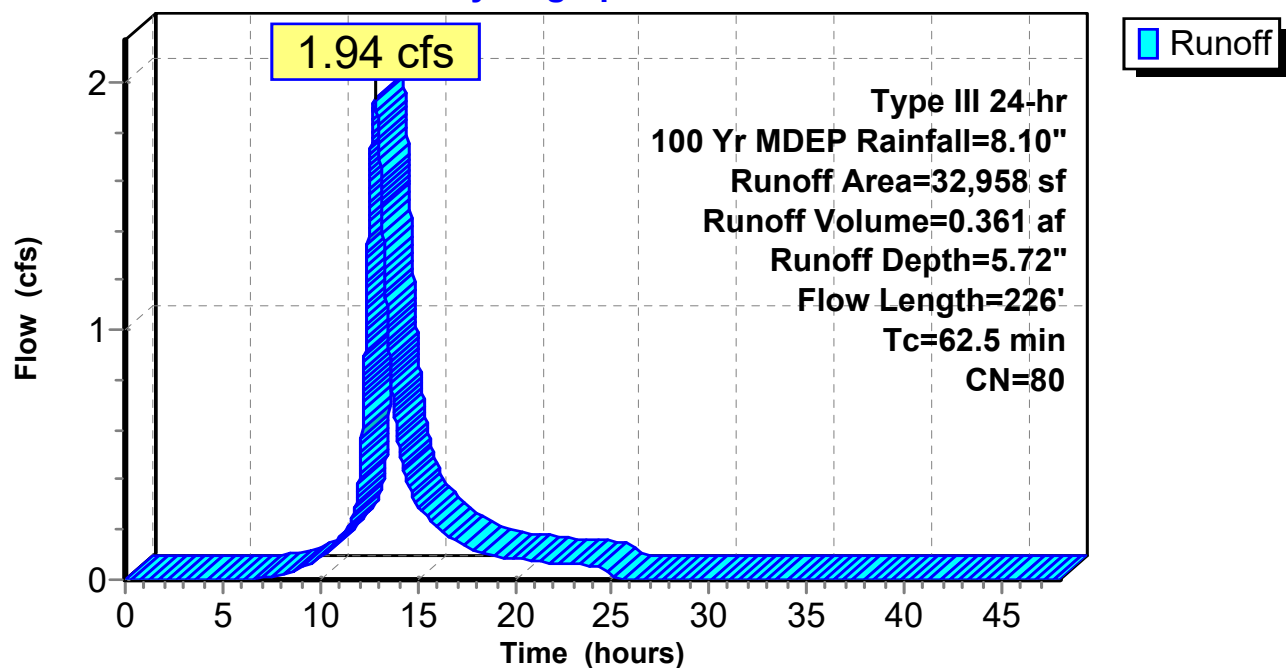
Area (sf)	CN	Description
5,386	84	50-75% Grass cover, Fair, HSG D
556	96	Gravel surface, HSG D
27,016	79	Woods, Fair, HSG D
32,958	80	Weighted Average
32,958		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.6	32	0.0400	0.08		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
7.8	34	0.0300	0.07		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
25.0	84	0.0100	0.06		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
23.1	76	0.0100	0.05		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 3.10"
62.5	226	Total			

### Subcatchment 2S: Subcatchment 2

#### Hydrograph



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Type III 24-hr 100 Yr MDEP Rainfall=8.10"

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### Summary for Subcatchment FL: Fire Lane

Runoff = 0.60 cfs @ 12.15 hrs, Volume= 0.054 af, Depth= 6.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr MDEP Rainfall=8.10"

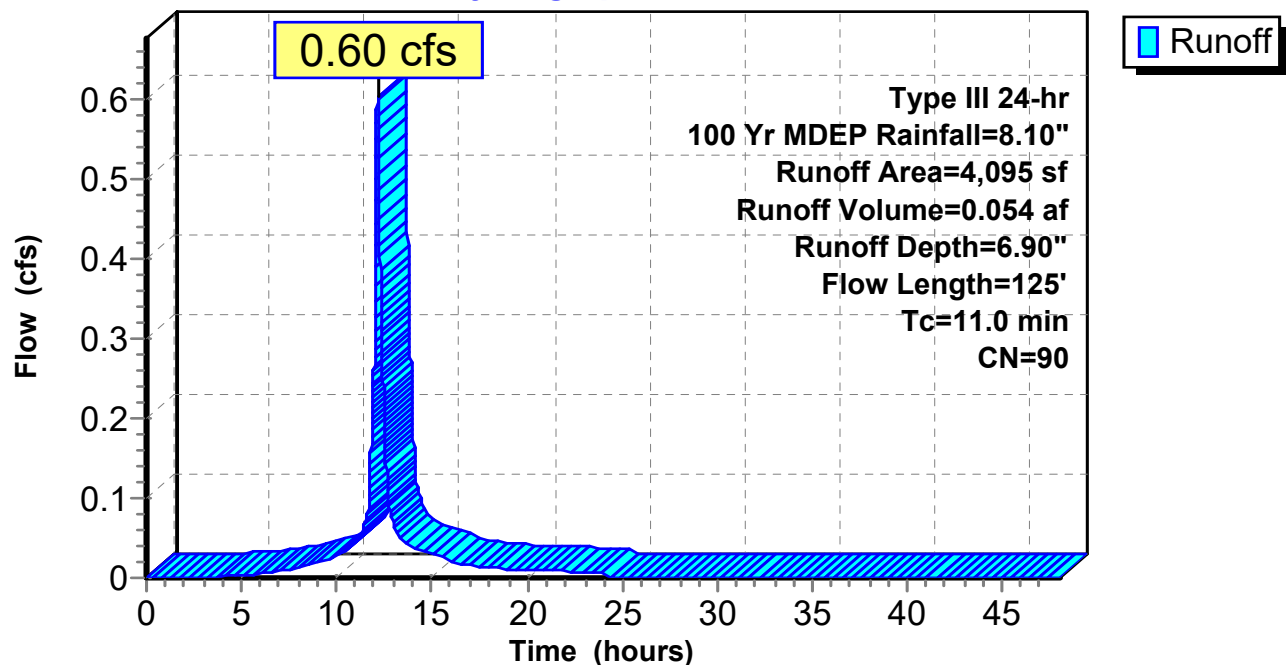
	Area (sf)	CN	Description
*	2,131	96	Fire Lane
	1,964	84	50-75% Grass cover, Fair, HSG D
	4,095	90	Weighted Average
	4,095		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	6	0.3300	0.20		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.10"
9.6	42	0.0100	0.07		<b>Sheet Flow,</b> Grass: Dense n= 0.240 P2= 3.10"
0.9	77	0.0100	1.50		<b>Shallow Concentrated Flow,</b> Grassed Waterway Kv= 15.0 fps
11.0	125	Total			

### Subcatchment FL: Fire Lane

#### Hydrograph





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Type III 24-hr 100 Yr MDEP Rainfall=8.10"

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### Summary for Subcatchment PKG: PKG

Runoff = 1.74 cfs @ 12.02 hrs, Volume= 0.116 af, Depth= 7.26"

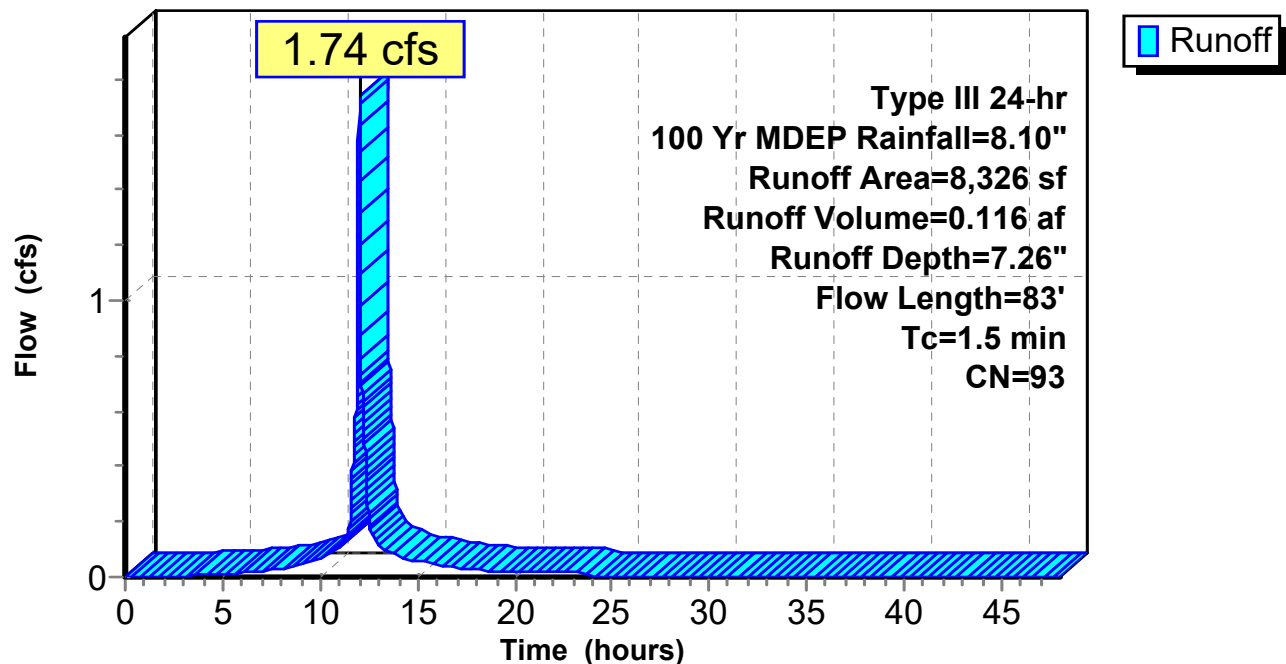
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr MDEP Rainfall=8.10"

	Area (sf)	CN	Description
*	5,388	98	Gravel Parking
	2,938	84	50-75% Grass cover, Fair, HSG D
	8,326	93	Weighted Average
	2,938		35.29% Pervious Area
	5,388		64.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	80	0.0150	1.15		Sheet Flow, Parking Area
					Smooth surfaces n= 0.011 P2= 3.10"
0.3	3	0.3300	0.17		Sheet Flow,
					Grass: Dense n= 0.240 P2= 3.10"
1.5	83	Total			

### Subcatchment PKG: PKG

#### Hydrograph



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Type III 24-hr 100 Yr MDEP Rainfall=8.10"

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### Summary for Subcatchment RE: Roof East

Runoff = 0.71 cfs @ 12.07 hrs, Volume= 0.056 af, Depth= 7.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr MDEP Rainfall=8.10"

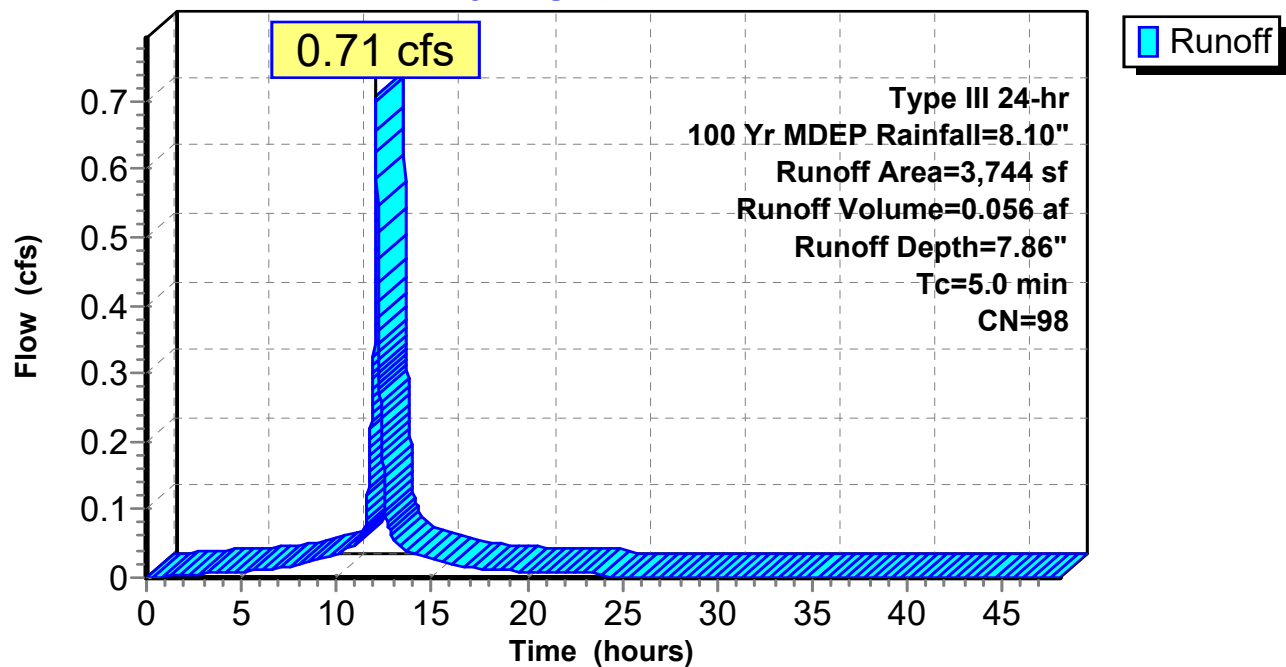
	Area (sf)	CN	Description
*	3,744	98	Roof
	3,744		100.00% Impervious Area

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

### Subcatchment RE: Roof East

#### Hydrograph



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Type III 24-hr 100 Yr MDEP Rainfall=8.10"

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### Summary for Subcatchment RW: Roof West

Runoff = 0.71 cfs @ 12.07 hrs, Volume= 0.056 af, Depth= 7.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100 Yr MDEP Rainfall=8.10"

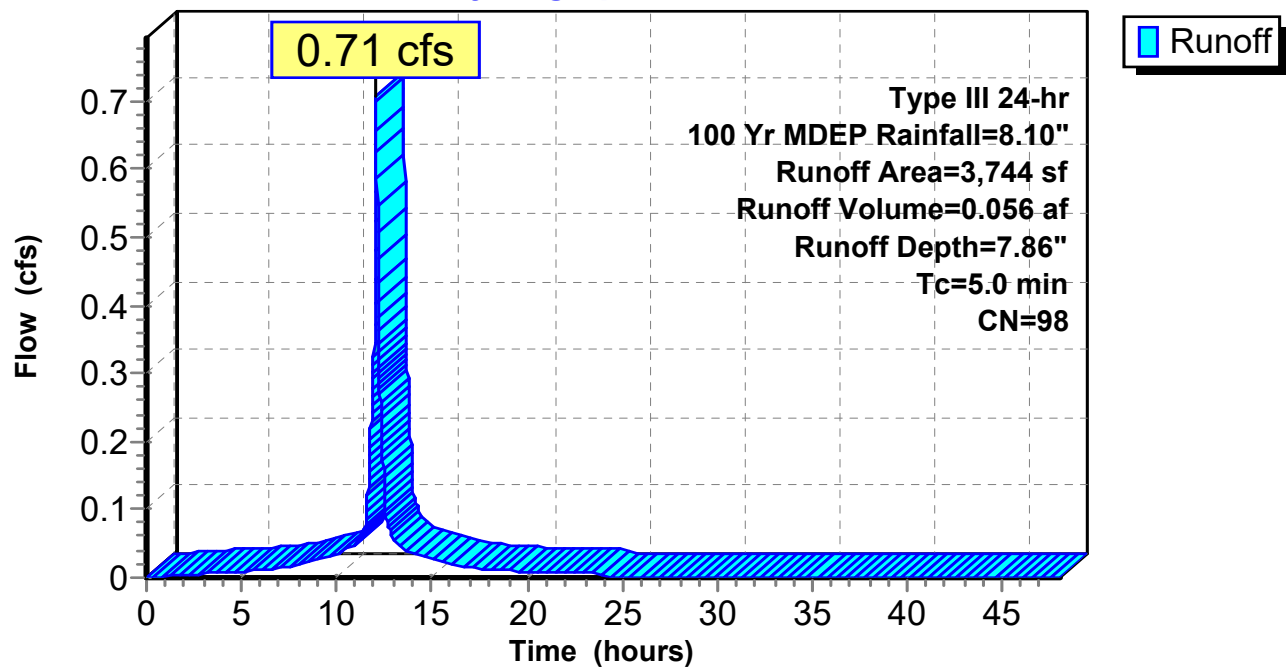
	Area (sf)	CN	Description
*	3,744	98	Roof top
	3,744		100.00% Impervious Area

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

### Subcatchment RW: Roof West

#### Hydrograph



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Type III 24-hr 100 Yr MDEP Rainfall=8.10"

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### Summary for Reach SP1: Post Study Point

Inflow Area = 0.371 ac, 56.49% Impervious, Inflow Depth = 7.31" for 100 Yr MDEP event

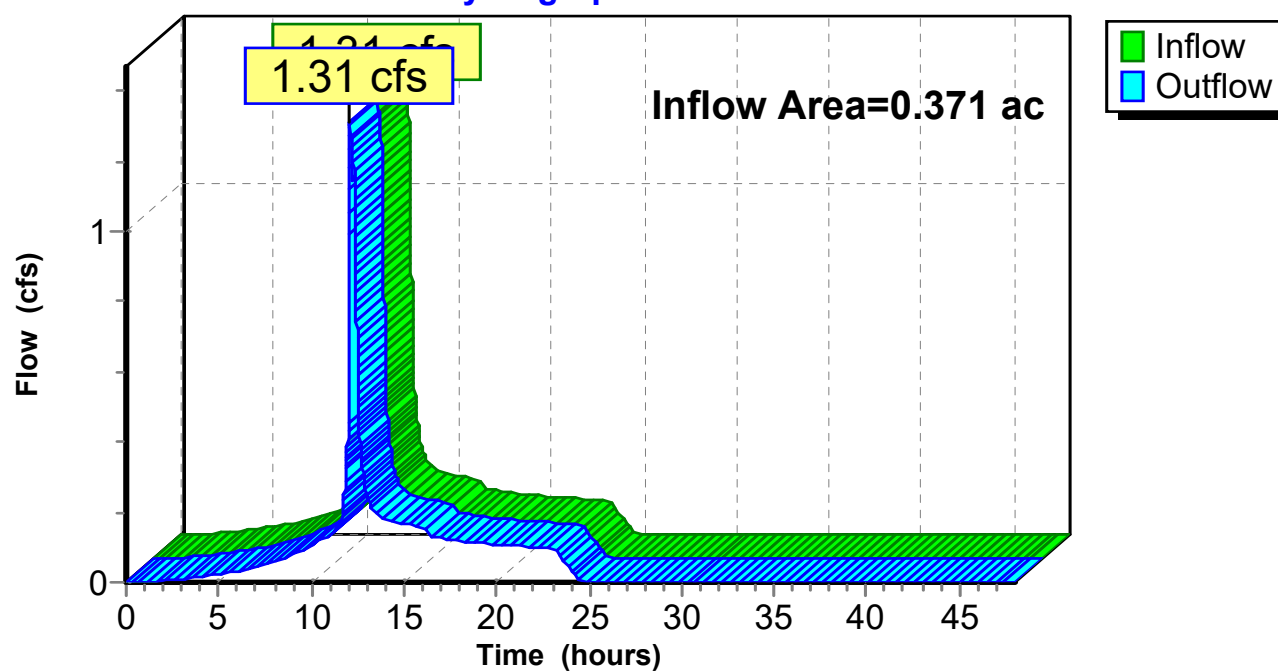
Inflow = 1.31 cfs @ 12.09 hrs, Volume= 0.226 af

Outflow = 1.31 cfs @ 12.09 hrs, Volume= 0.226 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Reach SP1: Post Study Point

#### Hydrograph



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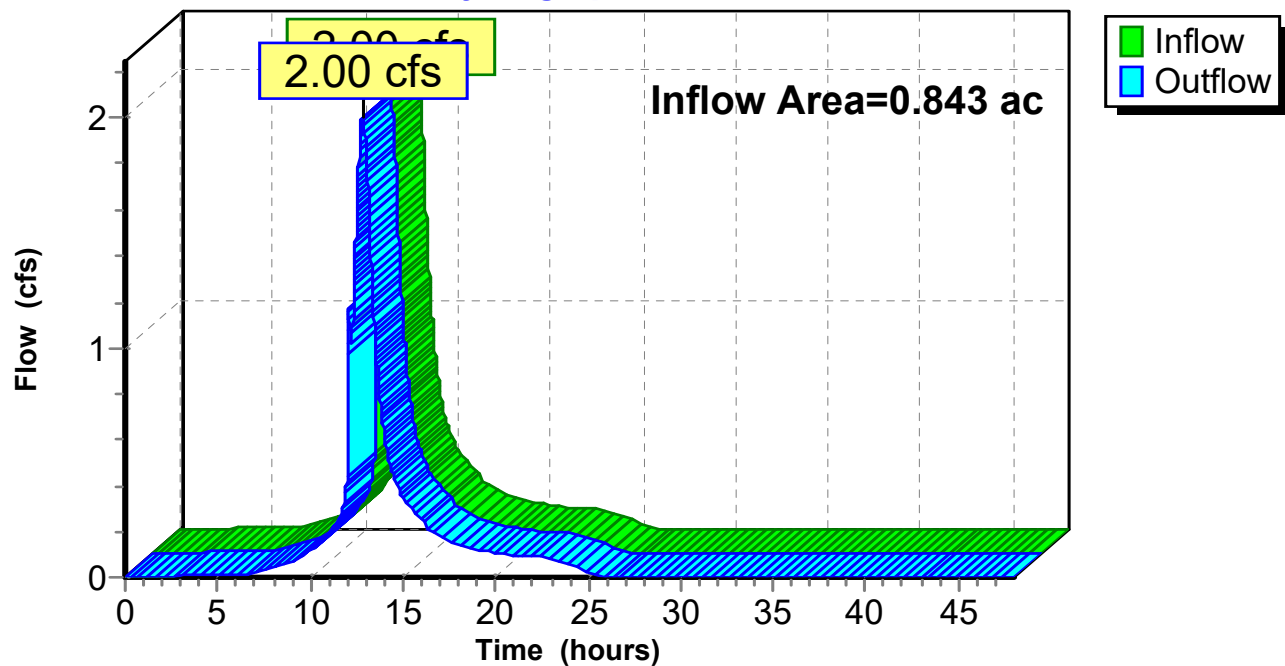
### Summary for Reach SP2: (new Reach)

Inflow Area = 0.843 ac, 10.20% Impervious, Inflow Depth = 5.94" for 100 Yr MDEP event  
Inflow = 2.00 cfs @ 12.84 hrs, Volume= 0.417 af  
Outflow = 2.00 cfs @ 12.84 hrs, Volume= 0.417 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

### Reach SP2: (new Reach)

#### Hydrograph



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Type III 24-hr 100 Yr MDEP Rainfall=8.10"

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### Summary for Pond 1P: Grassed UDSF

Inflow Area = 0.191 ac, 64.71% Impervious, Inflow Depth = 7.26" for 100 Yr MDEP event  
Inflow = 1.74 cfs @ 12.02 hrs, Volume= 0.116 af  
Outflow = 0.52 cfs @ 12.27 hrs, Volume= 0.116 af, Atten= 70%, Lag= 15.1 min  
Primary = 0.43 cfs @ 12.27 hrs, Volume= 0.013 af  
Secondary = 0.09 cfs @ 12.27 hrs, Volume= 0.103 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs  
Peak Elev= 167.45' @ 12.27 hrs Surf.Area= 1,678 sf Storage= 1,864 cf  
Flood Elev= 167.55' Surf.Area= 1,700 sf Storage= 1,945 cf

Plug-Flow detention time= 161.2 min calculated for 0.116 af (100% of inflow)  
Center-of-Mass det. time= 161.2 min ( 922.1 - 760.9 )

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	1,945 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	0	0	0
166.22	1,152	127	127
167.00	1,475	1,025	1,151
167.50	1,700	794	1,945

Device	Routing	Invert	Outlet Devices
#1	Secondary	166.00'	<b>2,410 in/hr Exfiltration over Horizontal area</b> Conductivity to Groundwater Elevation = -1.25' Phase-In= 0.01'
#2	Primary	167.40'	<b>10.0' long (Profile 9) Broad-Crested Rectangular Weir</b> Head (feet) 1.97 2.46 2.95 3.94 4.92 Coef. (English) 3.55 3.55 3.57 3.60 3.66

**Primary OutFlow** Max=0.42 cfs @ 12.27 hrs HW=167.45' (Free Discharge)  
↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 0.42 cfs @ 0.81 fps)

**Secondary OutFlow** Max=0.09 cfs @ 12.27 hrs HW=167.45' (Free Discharge)  
↑ **1=Exfiltration** ( Controls 0.09 cfs)



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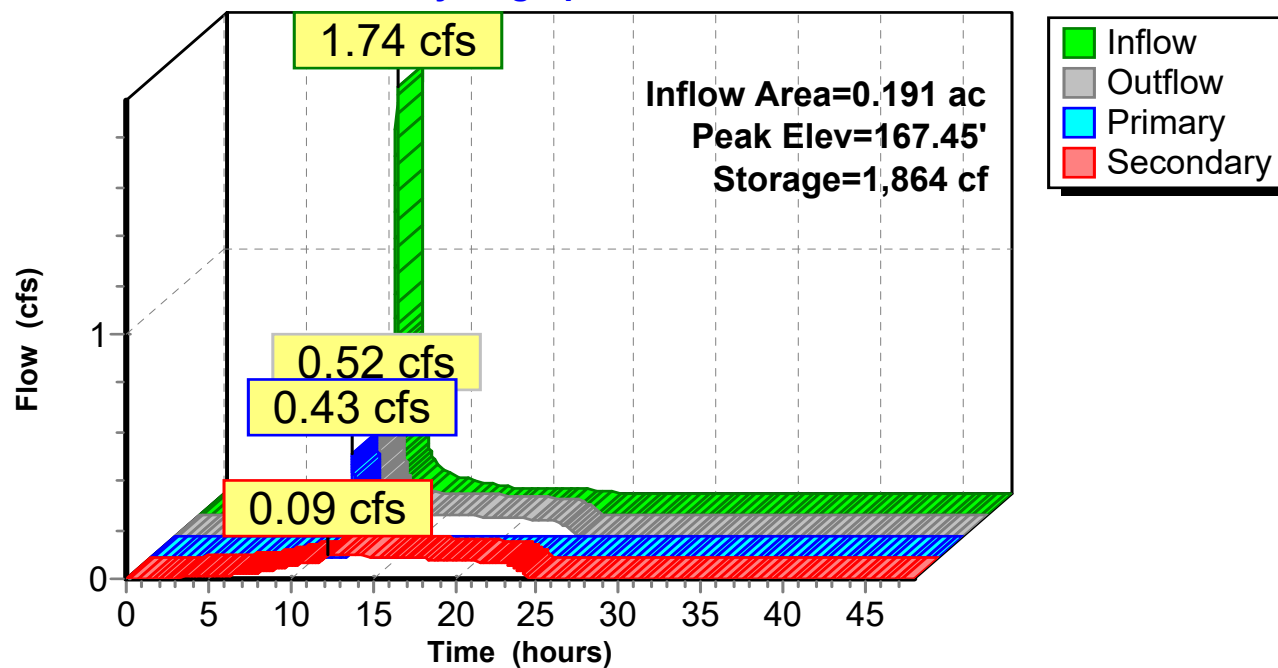
Type III 24-hr 100 Yr MDEP Rainfall=8.10"

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### Pond 1P: Grassed UDSF

#### Hydrograph



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**Summary for Pond 2P: Roof BMP East**

Inflow Area = 0.086 ac, 100.00% Impervious, Inflow Depth = 7.86" for 100 Yr MDEP event  
 Inflow = 0.71 cfs @ 12.07 hrs, Volume = 0.056 af  
 Outflow = 0.71 cfs @ 12.07 hrs, Volume = 0.056 af, Atten = 0%, Lag = 0.2 min  
 Primary = 0.71 cfs @ 12.07 hrs, Volume = 0.056 af

Routing by Stor-Ind method, Time Span = 0.00-48.00 hrs, dt = 0.01 hrs

Peak Elev = 168.52' @ 12.07 hrs Surf.Area = 820 sf Storage = 498 cf

Plug-Flow detention time = 85.6 min calculated for 0.056 af (100% of inflow)

Center-of-Mass det. time = 85.5 min (825.7 - 740.1)

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	328 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 820 cf Overall x 40.0% Voids
#2	168.10'	205 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		533 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	410	0	0
168.00	410	820	820

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
168.10	410	0	0
168.60	410	205	205

Device	Routing	Invert	Outlet Devices
#1	Primary	164.18'	<b>6.0" Round Culvert</b> L = 137.0' CPP, square edge headwall, K <sub>e</sub> = 0.500 Inlet / Outlet Invert = 164.18' / 163.50' S = 0.0050 '/' C <sub>c</sub> = 0.900 n = 0.013, Flow Area = 0.20 sf
#2	Device 1	166.00'	<b>2.400 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = -1.25' Phase-In = 0.01'
#3	Primary	168.50'	<b>117.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max = 0.60 cfs @ 12.07 hrs HW = 168.52' (Free Discharge)

1=Culvert (Passes 0.05 cfs of 0.95 cfs potential flow)

2=Exfiltration (Controls 0.05 cfs)

3=Broad-Crested Rectangular Weir (Weir Controls 0.55 cfs @ 0.31 fps)

## 20073 Gambo Road Post

Prepared by St.Clair Associates

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20073 Gambo Road

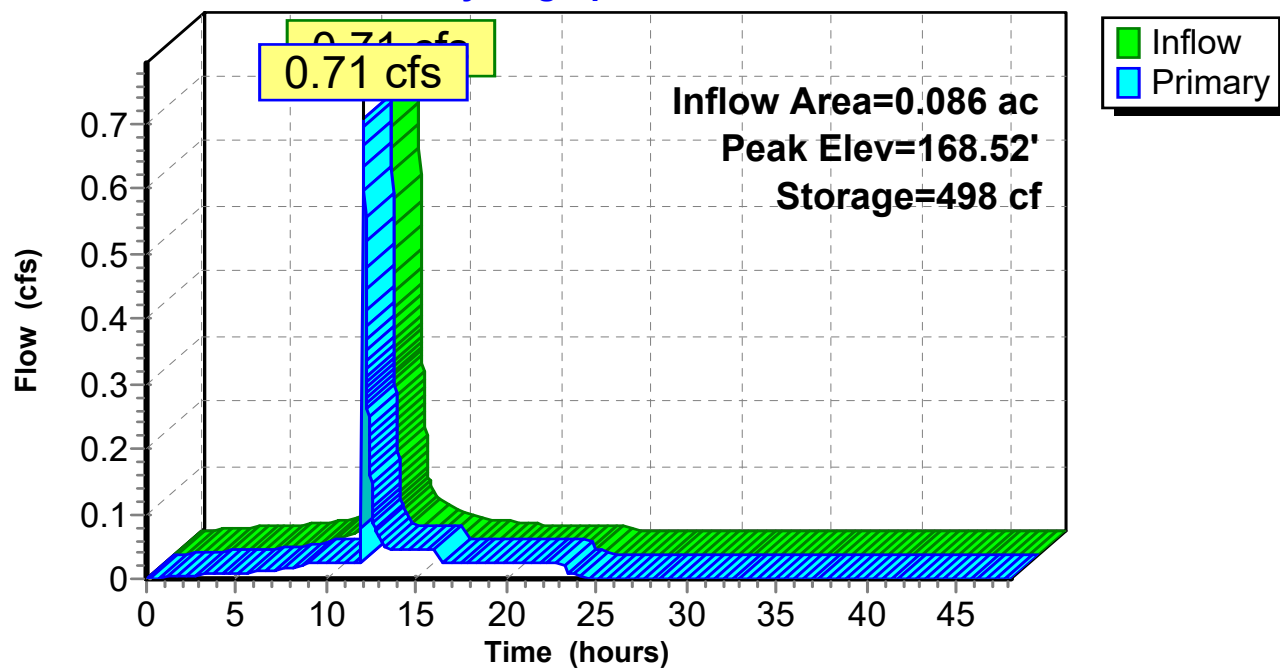
Type III 24-hr 100 Yr MDEP Rainfall=8.10"

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### Pond 2P: Roof BMP East

#### Hydrograph



**20073 Gambo Road Post**

Prepared by St.Clair Associates

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20073 Gambo Road

Type III 24-hr 100 Yr MDEP Rainfall=8.10"

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**Summary for Pond 3P: Roof BMP West**

Inflow Area = 0.086 ac, 100.00% Impervious, Inflow Depth = 7.86" for 100 Yr MDEP event  
 Inflow = 0.71 cfs @ 12.07 hrs, Volume = 0.056 af  
 Outflow = 0.71 cfs @ 12.07 hrs, Volume = 0.056 af, Atten = 0%, Lag = 0.2 min  
 Primary = 0.71 cfs @ 12.07 hrs, Volume = 0.056 af

Routing by Stor-Ind method, Time Span = 0.00-48.00 hrs, dt = 0.01 hrs

Peak Elev = 168.52' @ 12.07 hrs Surf.Area = 820 sf Storage = 498 cf

Plug-Flow detention time = 85.6 min calculated for 0.056 af (100% of inflow)

Center-of-Mass det. time = 85.5 min (825.7 - 740.1)

Volume	Invert	Avail.Storage	Storage Description
#1	166.00'	328 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc) 820 cf Overall x 40.0% Voids
#2	168.10'	205 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)
		533 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
166.00	410	0	0
168.00	410	820	820

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
168.10	410	0	0
168.60	410	205	205

Device	Routing	Invert	Outlet Devices
#1	Primary	164.18'	<b>6.0" Round Culvert</b> L = 137.0' CPP, square edge headwall, K <sub>e</sub> = 0.500 Inlet / Outlet Invert = 164.18' / 163.50' S = 0.0050 '/' C <sub>c</sub> = 0.900 n = 0.013, Flow Area = 0.20 sf
#2	Device 1	166.00'	<b>2.400 in/hr Exfiltration over Surface area</b> Conductivity to Groundwater Elevation = -1.25' Phase-In = 0.01'
#3	Primary	168.50'	<b>117.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

**Primary OutFlow** Max = 0.60 cfs @ 12.07 hrs HW = 168.52' (Free Discharge)

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3=Broad-Crested Rectangular Weir (Weir Controls 0.55 cfs @ 0.31 fps)

## 20073 Gambo Road Post

Prepared by St.Clair Associates

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20073 Gambo Road

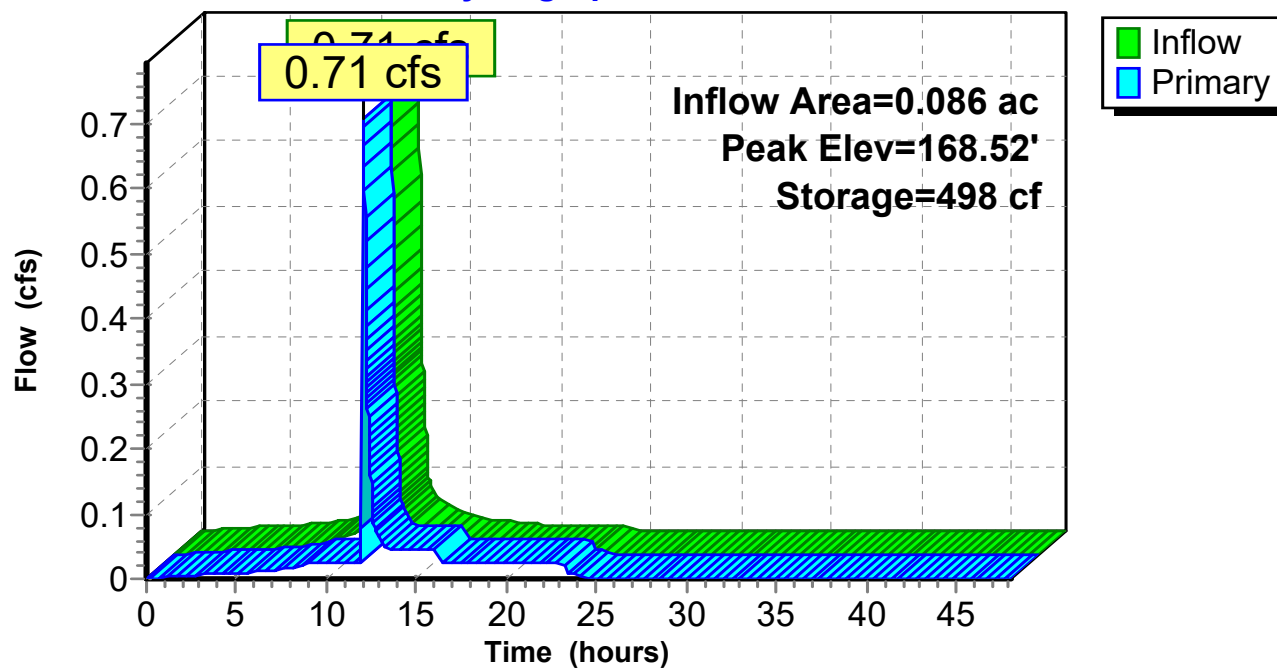
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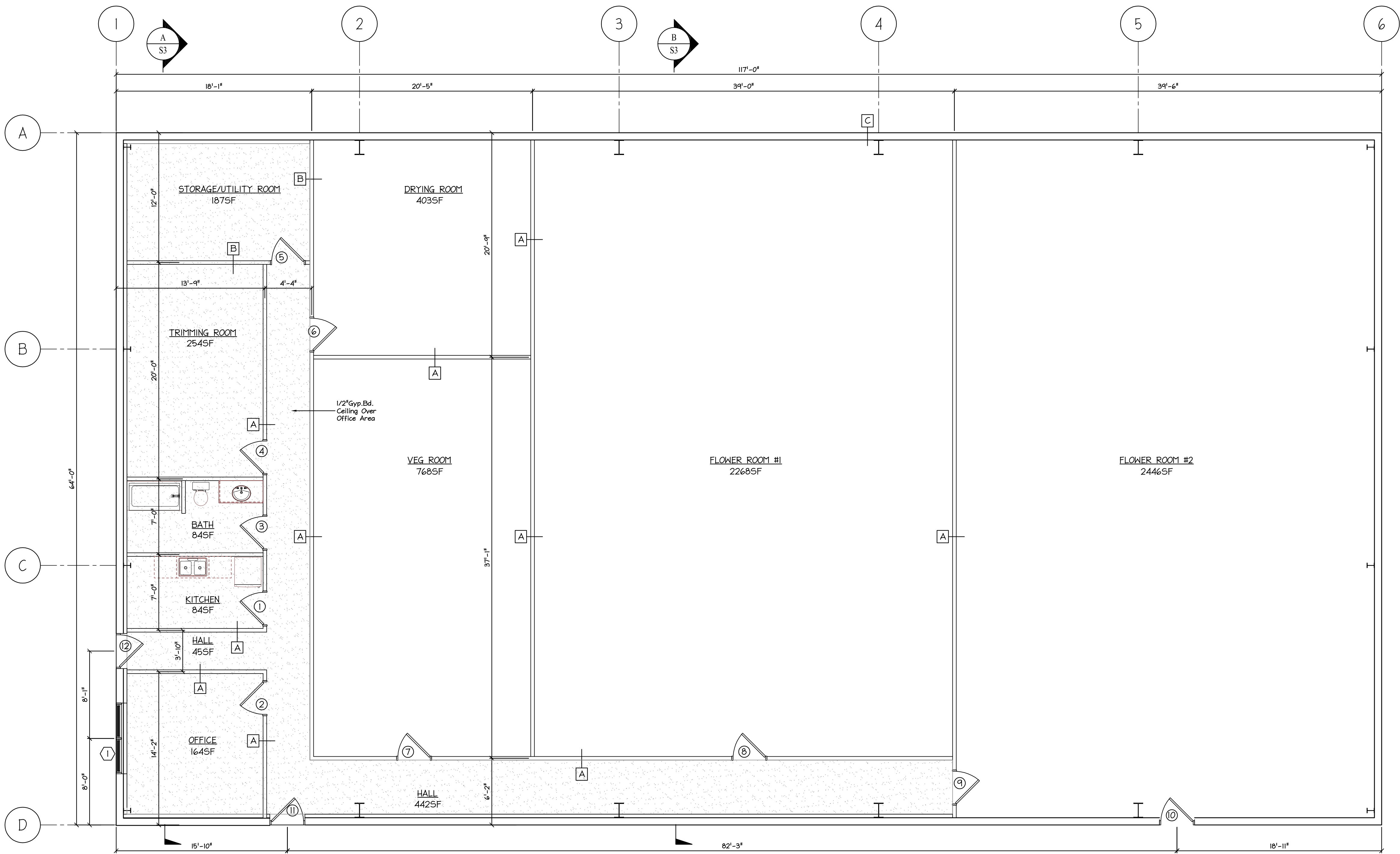
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### Pond 3P: Roof BMP West

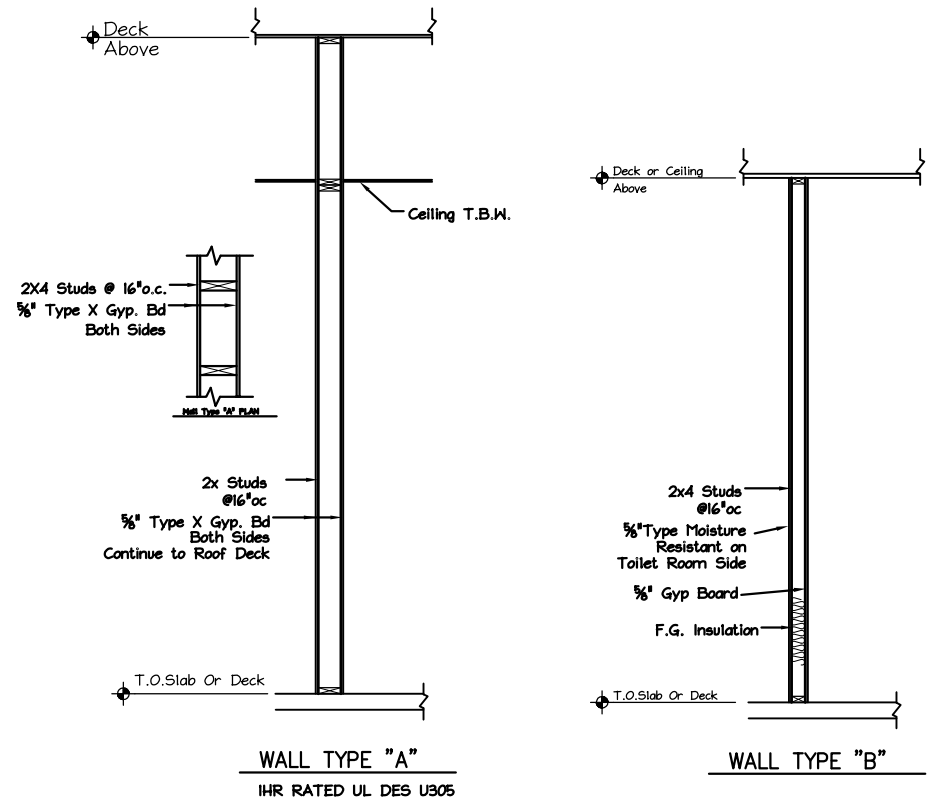
#### Hydrograph





FLOOR PLAN  
Scale: 3/16" = 1'-0"

DOOR SCHEDULE						
DOOR #	SIZE	LABEL	DOOR MTR'L	TYPE	HARDWARE	REMARKS
1	3/0X6/8	N/A	MASONITE	INTERIOR	LEVER	RH IN
2	3/0X6/8	N/A	MASONITE	INTERIOR	LEVER	LH IN
3	3/0X6/8	N/A	MASONITE	INTERIOR	LEVER	LH IN
4	3/0X6/8	N/A	MASONITE	INTERIOR	LEVER	LH IN
5	3/0X6/8	N/A	MASONITE	INTERIOR	LEVER	RH IN
6	3/0X6/8	N/A	MASONITE	INTERIOR	LEVER	RH IN
7	3/0X6/8	N/A	MASONITE	INTERIOR	LEVER	RH IN
8	3/0X6/8	N/A	MASONITE	INTERIOR	LEVER	RH IN
9	3/0X6/8	N/A	MASONITE	INTERIOR	LEVER	RH IN
10	3/0X6/8	EMERGENCY EXIT	STEEL	EXTERIOR	LEVER	RH IN
11	3/0X6/8	EMERGENCY EXIT	STEEL	EXTERIOR	LEVER	LH IN
12	3/0X6/8	EMERGENCY EXIT	STEEL	EXTERIOR	LEVER	RH IN
WINDOW SCHEDULE						
WINDOW #	SIZE	LABEL	MATERIAL	TYPE	GRID	REMARKS
1	72X64	N/A	VINYL	DBL. HUNG	6/6	2 MULLED DBL. HUNG
						NEW W/ SECURITY BARS



WALL TYPES

PROJECT DIRECTORY

BUSINESS OWNER:

S & N INVESTMENTS

DESIGN PROFESSIONAL:

MACLEOD STRUCTURAL ENGINEERS, PA  
42 MAIN ST., GORHAM, MAINE 04038  
TEL.: 207-222-0350

GENERAL CONTRACTOR:

ATLANTIC HOME CONSTRUCTION

PROJECT DESCRIPTION:

THIS PROJECT CONSISTS OF -  
NEW CONSTRUCTION  
PROPOSED USE - MARIJUANA GROW FACILITY  
OCUPANCY CLASSIFICATION: INDUSTRIAL

ISSUED 05/17/21

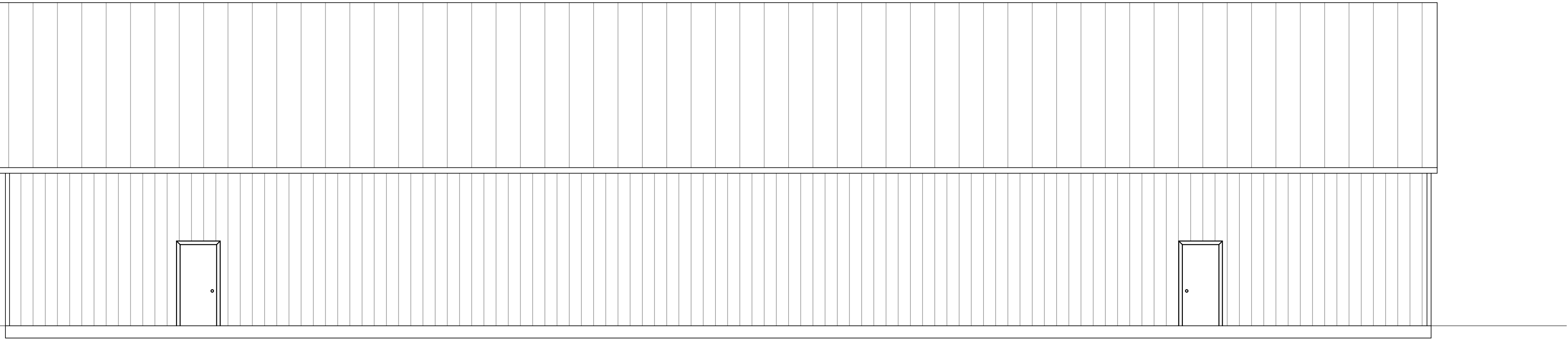
DRAWING LIST

A1 - FLOOR PLAN  
A2 - ELEVATIONS  
A3 - BUILDING SECTIONS  
LST - LIFE SAFETY PLAN

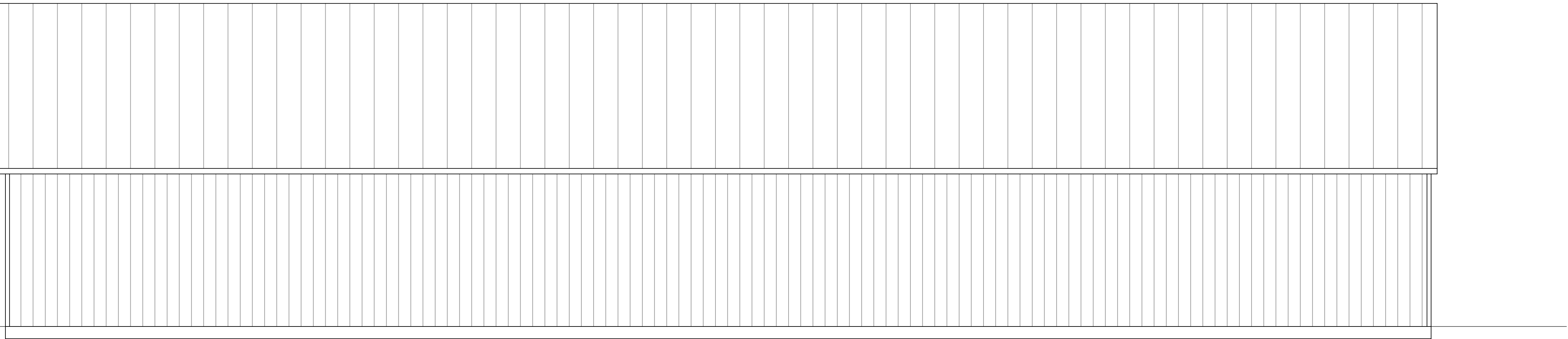
These drawings are the property of MacLeod Structural Engineers, PA  
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**ATLANTIC HOME CONSTRUCTION**  
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<b>MacLeod</b> Structural Engineers, PA		
42 Main St., Suite D Gorham, Maine 04038 207.839.0980		
GROW FACILITY		
Combo Road Windham, Maine		
TITLE: FLOOR PLAN		
DATE: 04.21.21	DRAWN BY: BWM	DRAWING NUMBER:
SCALE: as noted	PROJ. NO: 2021-035	A-1

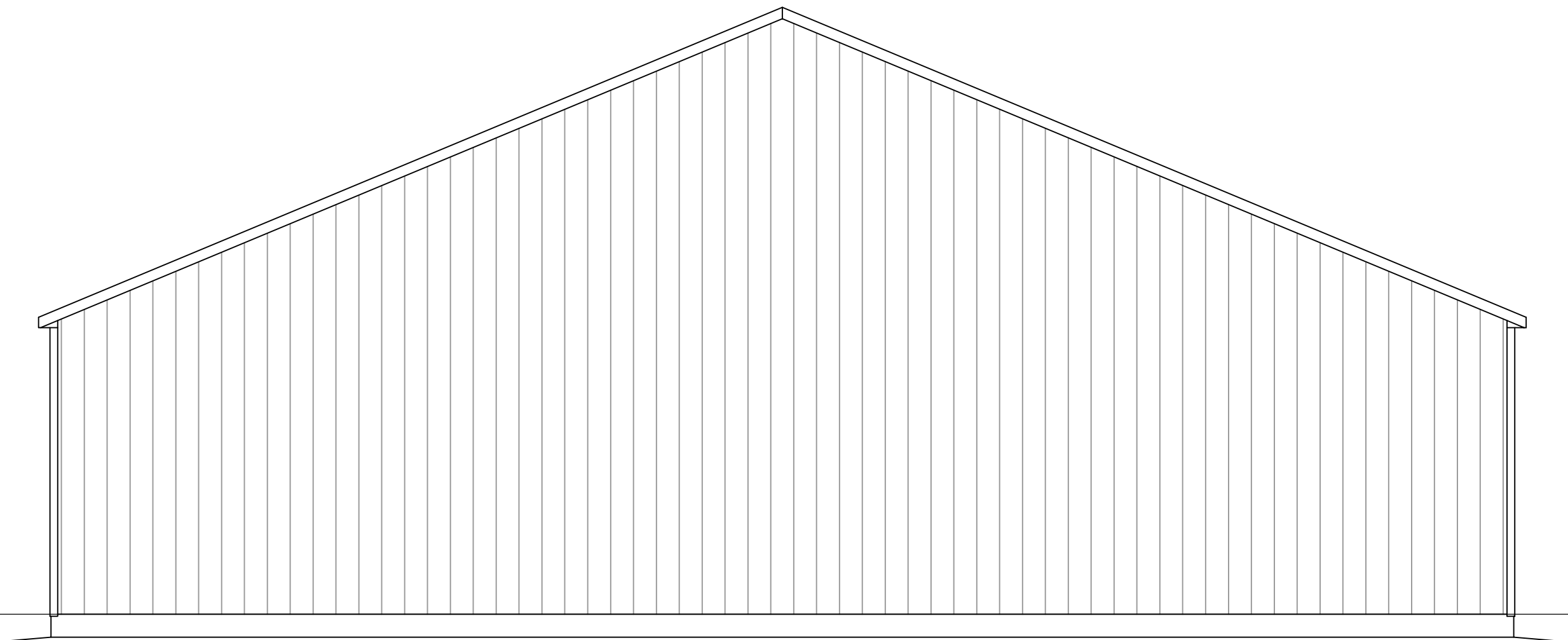




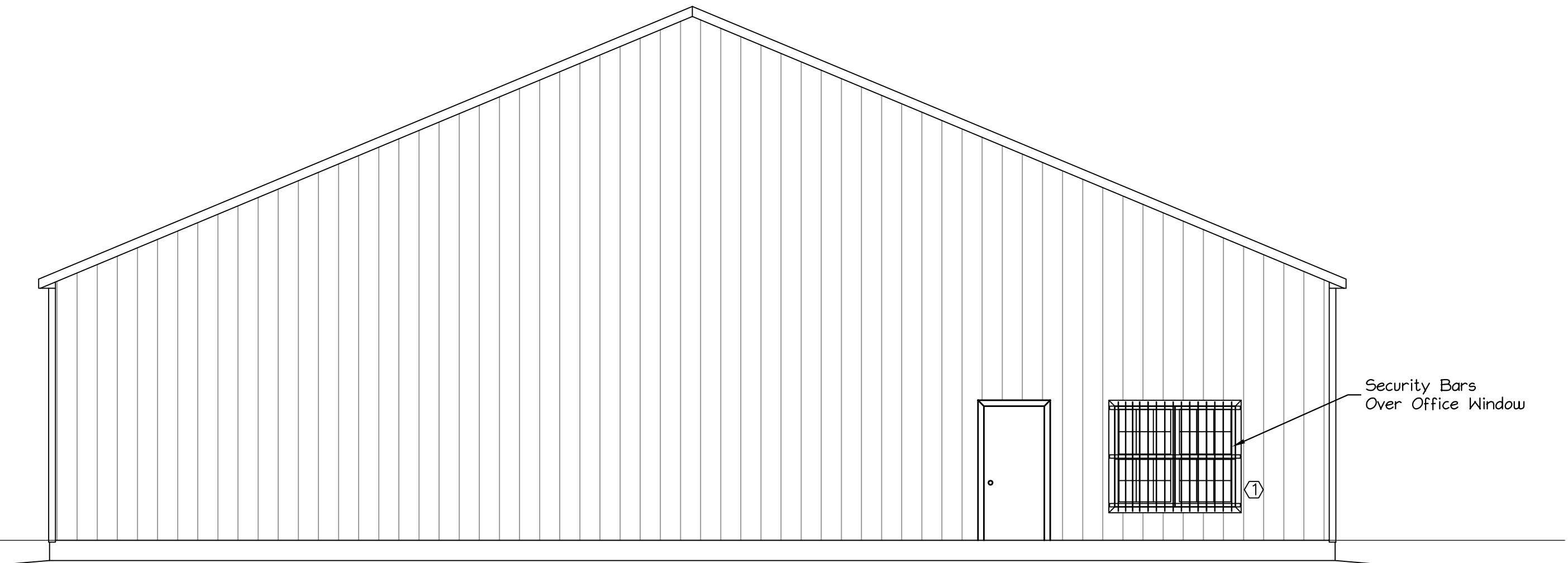
FRONT ELEVATION  
Scale: 3/16" = 1'-0"




REAR ELEVATION  
Scale: 3/16" = 1'-0"

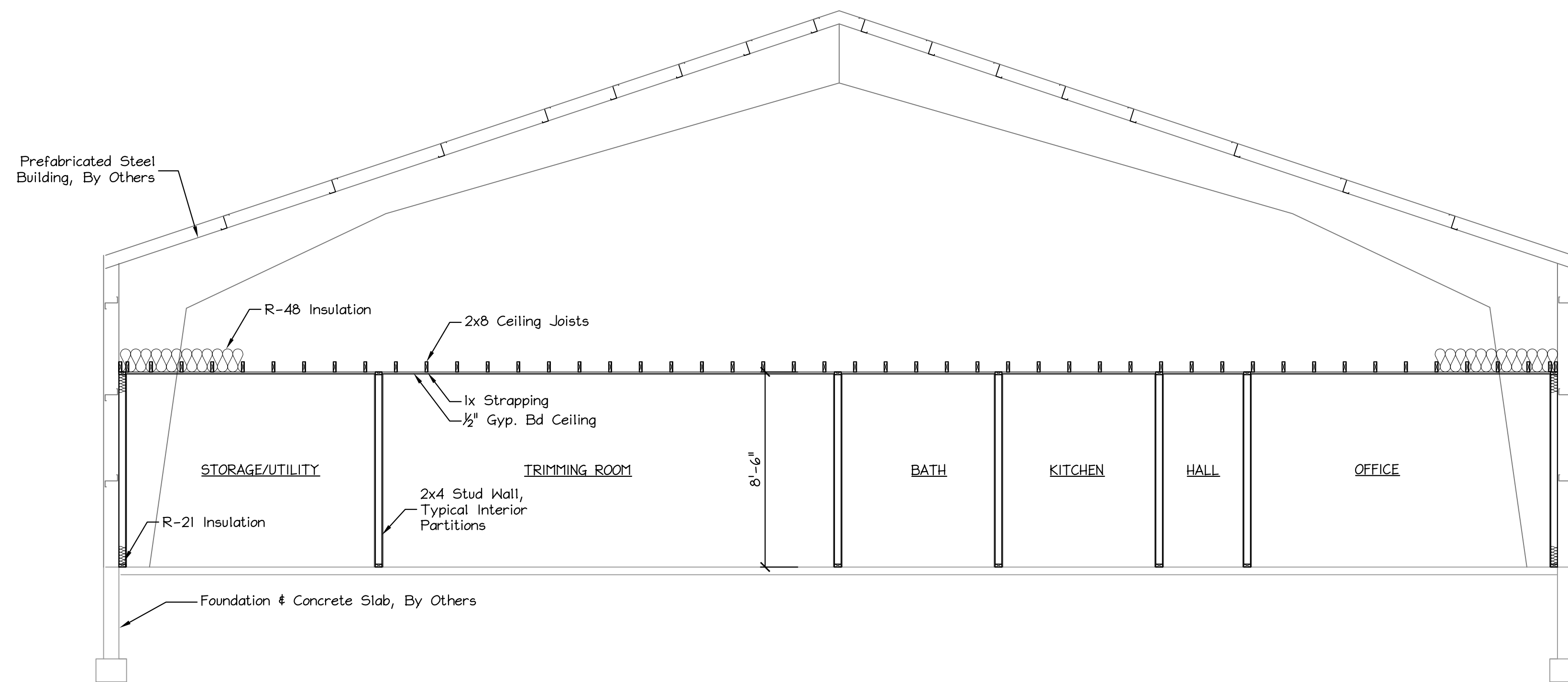


RIGHT ELEVATION  
Scale: 3/16" = 1'-0"

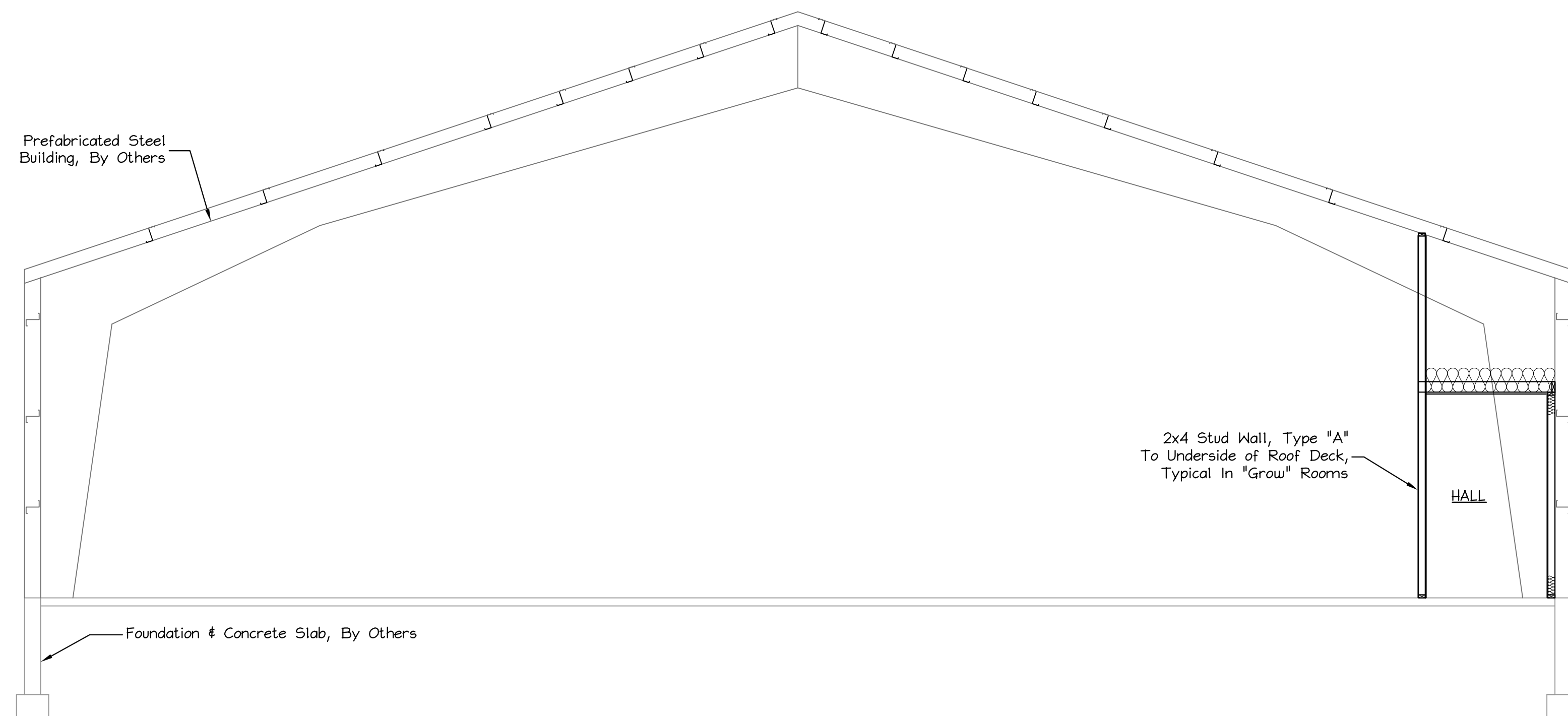


LEFT ELEVATION  
Scale: 3/16" = 1'-0"

		
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GROW FACILITY		
Combo Road		Windham, Maine
ELEVATIONS		
DATE: 04.21.21	DRAWN BY: BWM	DRAWING NUMBER: A-2
SCALE: as noted	PROJ NO: 2021-035	

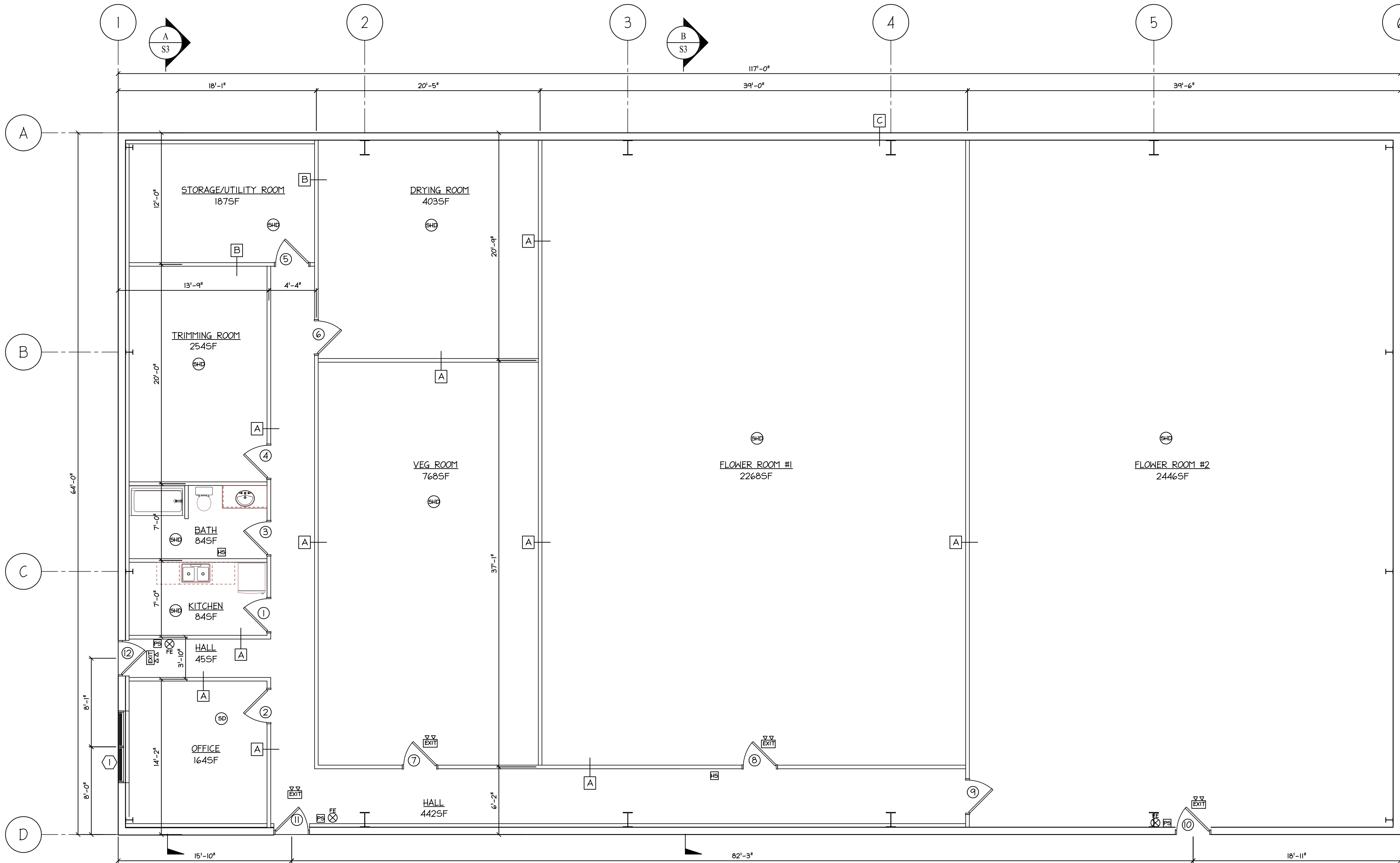


BUILDING SECTION — A  
Scale: 1/4" = 1'-0"



BUILDING SECTION — B  
Scale: 1/4" = 1'-0"

<b>MacLeod</b> Structural Engineers, PA 42 Main St., Suite D Gorham, Maine 04038 207.839.0980		
GROW FACILITY		
Combo Road Windham, Maine		
TITLE: BUILDING SECTION		
DATE: 04.21.21	DRAWN BY: BWM	DRAWING NUMBER:
SCALE: as noted	PROJ NO: 2021-035	A-3



LIFE SAFETY PLAN  
Scale: 3/16" = 1'-0"

**CODE REVIEW**

MUBEC - MAINE UNIFORM BUILDING AND ENERGY CODE  
2015 INTERNATIONAL BUILDING CODE, 2009  
INTERNATIONAL ENERGY CONSERVATION CODE  
2018 NFPA 101 LIFE SAFETY CODE, NFPA 5000  
2015 AMERICANS WITH DISABILITY ACT  
TOWN OF WINDHAM, MAINE ORDINANCES

BUILDING IS NEW CONSTRUCTION

THIS PLAN IS FOR A SINGLE TENANT  
THE PROPOSED USE IS INDUSTRIAL  
(MARIJUANA GROW FACILITY)  
USE AND OCCUPANCY CLASSIFICATION - I

TYPE OF CONSTRUCTION  
CONSTRUCTION TYPE V-B UNPROTECTED

NFPA APPROVED SPRINKLER SYSTEM AS  
REQUIRED PER LOCAL ORDINANCE.

ALARM SYSTEM (SUPERVISED, ADDRESSIBLE)  
WITH SMOKE ALARM SYSTEM

EXIT ACCESS - FRONT EXIT AND REAR EXITS  
DIRECTLY TO THE OUTSIDE.

FIRE RATINGS OF ASSEMBLIES

EXTERIOR WALLS -	0 HR.
INTERIOR WALLS -	0 HR.
ROOF -	0 HR.
MECHANICAL RM 1HR WALLS & CEILING	

MINIMUM NUMBER OF EXITS 2

COMMON PATH = 100 FT  
TRAVEL DISTANCE = 300 FT  
DEAD END CORRIDOR = 50 FT

**GENERAL NOTES:**

- THIS PLAN IS DESIGNED TO COMPLY WITH 2015 IBC, 2015 NFPA, ADA, AND 2015 IECC
- ALL OTHER CODES SHALL BE THE RESPONSIBILITY OF THE OWNER/CONTRACTOR
- ALL FIRE DETECTION AND EXTINGUISHMENT SYSTEMS SHALL BE DESIGNED AND INSTALLED BY QUALIFIED PERSONNEL
- CONTRACTOR SHALL CONSULT WITH MILLWORK PLANS FOR FRAMING AROUND WALLS
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS PRIOR TO BEGINNING WORK
- ALL EQUIPMENT AND EXHAUST DEVICES SHALL COMPLY WITH NFPA CH. 211 STANDARDS

**FIRE SAFETY NOTES:**

- EMERGENCY LIGHTS, HORN STROBES 80" AFF AS PER PLAN CONNECT TO BUILDING ALARM SYSTEM
- PROVIDE SMOKE, C.O. AND HEAT ALARM DETECTORS AS PER PLAN, CONNECT TO BUILDING ALARM SYSTEM
- FIRE EXTINGUISHERS PER PLAN
- SPRINKLER SYSTEM EXISTING - MODIFY FOR PROPOSED USE
- ALL INTERIOR FLOOR, WALL, AND CEILING EXPOSED SURFACE FINISHES, BUILDING CONTENTS AND FURNISHINGS SHALL MEET THE REQUIREMENTS OF CH. 10/NFPA LIFE SAFETY CODE 2009, CLASS A, B, OR C, ASM E84 TABLES A.10.2 AND A.10.2.2 (RENOVATED AREAS ONLY)
- RESERVED
- ALL EQUIPMENT AND EXHAUST DEVICES SHALL COMPLY WITH NFPA CH. 211 STANDARDS
- EXIT LIGHTS TO HAVE GREEN LENSES

**FIRE SAFETY LEGEND**

SHD	SMOKE/HEAT DETECTOR
PS	PULL STATION
FE	FIRE EXTINGUISHER
EL-1	EMERGENCY LIGHT
HS	HORN STROBE PACK
FAB	FIRE ALARM BELL
EXIT	ILLUMINATED EXIT SIGN
EXIT	COMBINED EMERGENCY/ EXIT SIGN

MacLeod

Structural Engineers, PA

42 Main St. Suite D   Gorham, Maine 04038   207.839.0980

GROW FACILITY

Combo Road   Windham, Maine

TITLE: LIFE SAFETY PLAN

DATE: 04.21.21

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DRAWING NUMBER:

SCALE: as noted

PROJ NO: 2021-035

LS-1