SITE PLAN & LOT LINE CHANGE FOR CRAIGVILLE LOGISTICS

TOWN OF BLOOMING GROVE
ORANGE COUNTY, NEW YORK

STORMWATER POLLUTION PREVENTION PLAN

PREPARED FOR:

-CHESTER SF, LLC
-THE TOWN OF BLOOMING GROVE
-NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

November 28, 2022

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SWPPP Preparer Certification

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

Michael A. Morgante

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1. PROJECT INFORMATION

1.1 Project Name and Location

Site Plan Prepared for Craigville Logistics
Craigville Road
Blooming Grove, NY

1.2 Property Owner Name and Address

Chester SF LLC
5014 16 Avenue
Brooklyn, NY 11204

1.3 Project Operator Name and Address

Chester SF LLC
5014 16 Avenue
Brooklyn, NY 11204

1.4 SWPPP Municipality

Town of Blooming Grove
6 Horton Road
Blooming Grove, NY 10914

1.5 SWPPP Reviewer

Pat Brady, P.E.
Town of Blooming Grove Planning Board Engineer
6 Horton Road
Blooming Grove, NY 10914

2. INTRODUCTION

2.1 Project Description

The site is located off Craigville Road (Orange County Highway No. 51), in the Town of Blooming Grove, Orange County, New York. Geographically, the site is located approximately 1,500 feet east of New York State Route 17 Exit 128. The tax map designation of the parcel is Section 54, Block 1, Lot 50.12 [201.808 acres]. The lot is owned by Chester SF LLC. The general land use in the nearby vicinity contains residential dwellings and farms.

The site is characterized by a gentle south easterly sloping topography that descends from the northern portion of the site. Topography on the site reflects the local surrounding topography. The highest elevation is found in the middle of the northeasterly portion of the site, with an elevation of approximately 546.0. The lowest elevations on the site are found near the location where Young's Brook crosses under Craigville Road at elevation 447.0. New York State Department of Environmental Conservation (NYSDEC) Wetland MO-3 is located within the southwestern portion of the site.

The soils on the Property were identified using the soil classifications of the USDA Soil Conservation Service (SCS), Soil Survey of Orange County, New York, and the Web Soil Survey. The soil types are found in the table below. The distribution of the soil types on the site is shown on the Existing Conditions Map on the project plans as well as the attached Pre & Post Development Maps.

Map unit Symbol	Map Unit Name	Acre in AOI	Percent of AOI
Ab	Alden silt loam	2.6	1.3%
Cd	Catden muck, drained, 0 to 2 percent slopes	40.3	20.8%
Fd	Fredon loam	18.4	9.5%
HoB	Hoosic Gravelly sandy loam, 3 to 8 percent slopes	1.5	0.8%
HoC	Hoosic Gravelly sandy loam, 8 to 15 percent slopes	1.0	0.5%
MdB	Mardin gravelly silt loam, 3 to 8 percent slopes	31.7	16.3%
MdC	Mardin gravelly silt loam, 8 to 15 percent slopes	55.5	28.6%
MdD	Mardin gravelly silt loam, 15 to 25 percent slopes	2.3	1.2%
NcA	Natchaug muck, drained, 0 to 2 percent slopes	5.6	2.9%
Ra	Raynham silt loam	34.9	18.0%
Totals for Area of Interest		**193.9**	**100.0%**

The project has been designated within the NNI (Non-Nuisance Industry) Zone by the Town of Blooming Grove where distribution warehouse uses require a Town Board Special Land Use Permit. The proposed project includes a distribution warehouse with a footprint of 562,450 SF, 409 parking spaces and truck loading berths, a subsurface septic system and an individual drilled well. There will also be access driveways and refuse locations. Stormwater facilities are also proposed to attenuate post-development stormwater flows and provide water quality treatment.

2.2 Project Disturbance Area

Total Project Property Area: 201.808 Acres
Total Disturbed Area: 40.00 Acres
Existing Impervious Area: 0.85 Acres

Proposed Additional Impervious Area: 24.17 Acres
NYSDEC Adjacent Area Disturbance: 16,232 SF

2.3 Cultural Resources Investigation

A cultural resource study has been completed and submitted using the New York State Historic Preservation Office (SHPO) online CRIS tool. A No Effect Finding Letter dated October 21, 2021, has been issued by SHPO for the subject project.

2.4 Existing Drainage Patterns

Generally, the pre-development site conditions are best described as a mix of open meadows, wetlands, and woods. The pre-development runoff within the watershed drains to the NYSDEC wetland described above. Four sub-catchments have been shown on the attached Pre-Development Analysis Map. The first 100 feet of runoff within the watershed is classified as sheet flow while the remaining distance the runoff travels to the wetlands has been classified as shallow concentrated flow. Several areas of the site will remain in the pre-existing condition and as a result have been excluded from the analysis.

2.5 Proposed Drainage Patterns

The proposed site was divided into several sub-catchments as shown on the Post Development Analysis Map. The proposed impervious surface associated with the project will drain into the proposed stormwater management facilities and discharge to on-site surface water.

3. STORMWATER MANAGEMENT

3.1 General

The applicant is required to complete this Stormwater Pollution Prevention Plan (SWPPP) for the New York State DEC and the Town of Blooming Grove. This plan must meet the requirements of NYS GP-0-20-001. Implementation of the proposed action would result in an increase of approximately 24.17 acres of impervious. Water quality as well as water quantity measures have been provided. In general, increased imperviousness can change the volume and rate of runoff as well as the amount of suspended or dissolved substances entering local streams along with runoff. In some cases, a change in the quantity of impervious surface can change the distribution of water in each area, affecting local water bodies, wetlands and associated fauna and flora.

The development of the site will create an increase in runoff volume and the potential for pollutant loading. However, the project design includes measures to reduce the level of pollutants in post-development runoff in compliance with NYSDEC requirements. This will be achieved using sediment basins and bioretention facilities. The post development runoff will be captured, treated, and attenuated.

3.2 Stormwater Analysis

A drainage analysis has been performed during the Draft Environmental Impact Statement (DEIS) portion of the Planning Board review process. The drainage report has been prepared to analyze the impact of stormwater runoff at the major Design Points on the property. This report is intended to address the drainage impacts as they only relate to the portions of the site where new construction is proposed. The impacts of the proposed development on existing drainage patterns were evaluated for both the pre and post development conditions, and areas where stormwater treatment and attenuation are provided has been analyzed.

Information and data to prepare this report was obtained from the following sources:

- Boundary & topographic information from Clearpoint Services, LLC.
- Site Plan documents as prepared by Arden Consulting Engineers, PLLC.
- The site soil information from Orange County Soil Conservation Service & Web Soil Survey.
- Site evaluations by personnel of Arden Consulting Engineers, PLLC.

The Soil Conservation Service TR-55 method was used to determine the pre-development and post-development runoff rates at the various design points identified on the property, which is illustrated on the attached drawings entitled Pre-Development Stormwater Analysis and Post Development Stormwater Analysis.

The drainage summary shown on the following tables outline the runoff rates & volumes from the 1-, 10- and 100-year storm events in the pre-development without retention, and post-development with retention conditions, using a Type III storm distribution. The 24-hour rainfall values used for each storm occurrence are as follows:

1 year storm = 2.7 in.
10-year storm = 5.00 in.
100-year storm = 9.00 in.

Detail sheets for the engineered drainage system have been provided within the project site drawings. The Pre and Post Development Analysis Plan(s) have been prepared to illustrate existing drainage areas and how their configuration would change following construction on the site.

It is the overall goal of the stormwater management plan to provide for proper drainage control on a quantity and quality basis. The plan has been prepared so there will be no negative effect on downstream properties with respect to quantity and quality issues.

Following the identification of the design points, analysis of the site runoff characteristics was performed. The hydrologic characteristics of the pre-development site conditions were modeled using HydroCAD computer software. The model analyzes watershed conditions and provides hydrograph generation and routing based on the Natural Resources Conservation Service (NRCS) Technical Release 55 (TR-55) procedures. These procedures consider the land cover and use on site, the underlying soils, the general topography and local rainfall distribution to model stormwater runoff volumes and flow rates resulting from the site.

As discussed earlier, the maximum future impervious surface on the site will increase that will result in an increase in the rate and volume of runoff reaching the design points. The hydrologic

characteristics of the post-development site conditions were modeled using HydroCAD, similar to the analysis for pre-development conditions. This model incorporated the proposed construction as found in the Project Description and drainage patterns resulting primarily from the construction of the proposed building and parking area. Watershed 4 was not analyzed since there is no development proposed within this area that would change the hydrology.

3.3 Stormwater Runoff Rates

In general, development creates impervious surfaces and can also result in wooded areas that are cleared and replaced by lawn. This increases downstream stormwater runoff rates and volumes when attenuation of stormwater flows is not provided on-site.

The difference in the pre- & post-development rate of runoff is attenuated by the proposed bioretention facilities & stormwater ponds, and the post-construction runoff rate from the site will be less than the pre-construction condition. This meets the standards of SPDES General Permit for Stormwater Discharges (GP-0-20-001).

Table 1 that follow summarize the pre versus post development HydroCAD modeling results for the design points noted below where runoff leaves the site.

Table 1
Pre- vs. Post- Development Runoff Rates (cfs)

Storm Frequency	Pre	**Post**
1 year	149.02	**123.00**
10 year	326.78	**269.30**
100 year	633.88	**601.22**

3.4 Stormwater Quality

As described above, the watersheds have been analyzed for the purpose of pre & post-development conditions. The impervious cover used in these calculations represents the land use as described and shown on the project plans.

The New York State DEC requires the use of "Unified Stormwater Sizing Criteria" to ensure that water quality, channel erosion reduction, overbank flood protection and safe conveyance of extreme storms is achieved (New York State Stormwater Management Design Manual, January 2015).

The proposed bioretention facilities provide 100% of the required WQv. A large portion of this treatment can also be applied towards meeting the Runoff Reduction Volume (RRv). Table 3 & 4 below summarize the Water Quality Volume and Runoff Reduction Volume for the proposed project.

Table 3 – Water Quality Volume (ft^3)	
WQv Required	WQv Provided
158,586	247,382

Table 4 – Runoff Reduction Volume (ft^3)	
Minimum RRv	RRv Provided
28,111	222,644

Without the use of stormwater quality management practices, the proposed development would result in an increase in the loadings of various chemical constituents to the receiving waters, potentially impairing the quality of those waters. Recognizing that the site is tributary to the wetlands previously noted, these increases would be unacceptable if not mitigated.

Runoff from impervious surfaces related to roadways and parking lots poses a potential increase in road and vehicle-related contaminants in the stormwater diverted to treatment basin. These include hydrocarbons derived primarily from crankcase oil drippings and un-combusted exhaust hydrocarbons. Furthermore, roadway runoff typically contains detectable levels of heavy and trace metal contaminants such as lead, zinc, copper, chromium, and nickel. These types of potential impacts require appropriate mitigation measures to limit impacts to existing water quality.

The stormwater management system for the proposed site is based on design criteria required to meet applicable standards through the incorporation of pretreatment prior to conveyance into the bioretention facilities and stormwater ponds. This report and the attached plans demonstrate that adequate area and conditions are available for the proper reduction of stormwater runoff volume and treatment of stormwater runoff.

The stormwater runoff will be conveyed to the stormwater facilities for treatment and attenuation. The stormwater ponds were designed to meet or exceed requirements of the NYSDEC for the required storm events. It is assumed that by meeting the water quality volume and runoff reduction volume requirements, a project will meet water quality objectives.

3.5 Sources of Pollutants

The New York State DEC lists several potential pollutants and their sources to be considered during site design. Nutrients, sediment, bacteria, and various other components can potentially contribute to the reduction of water quality and impacts to downstream receiving waters and habitat for water dependent species.

Many of these constituents, i.e., nitrogen, phosphorus, bacteria and others, are expected to be accounted for in the capture and treatment of the water quality volume. The DEC guidelines have established that if the runoff from a 90% storm event from impervious surfaces is treated, the water quality goals of the State are met. A primary source of nutrients, i.e., the use of fertilizers, is discussed below.

Sediments are typically associated with runoff from un-stabilized sites or are the result of erosion in watercourses that cannot handle the velocity of stormwater flows. They can also result from the sanding of impervious surfaces during winter storm events. Un-stabilized sediments can be transported via storm flows to receiving wetlands and watercourses, altering the soil-water-air interface in wetlands, and burying established vegetation. The current proposal will utilize sedimentation basins for pretreatment. Stormwater flow is then conveyed to bioretention facilities for treatment to achieve water quality goals.

Trash and debris can be a nuisance associated with any site development. The stormwater flows will enter grated catch basins to minimize trash and debris entering the facility. Well maintained

sites that receive approval and are monitored on a regular basis are not typically the source of significant amounts of trash and debris.

3.6 De-icing Materials

The Applicant proposes the use of salt as the primary winter road safety agent on the proposed parking lot and sidewalks. Due to the potential for accumulation of sand in the stormwater management system, which will significantly reduce its ability to operate properly, traction sand is not a feasible alternative. Salt application rates will be dictated by the need to provide safe traveling conditions for the public and emergency vehicles, and by access drive and parking lot conditions. The application of salt will be minimized to the extent necessary to ensure that public safety is not compromised.

4. STORMWATER MANAGAMENT DESIGN GUIDANCE

The Applicant proposes bioretention facilities and dry swales to provide water quality treatment in accordance with SPDES General Permit (GP-0-20-001). The paragraphs below discuss the design guidance requirements associated with this technology.

Bioretention

***Feasibility*:**

Soil borings and associated geotechnical report have been conducted for this project by Kevin Patton, P.E. and are included in Appendix H. 100% of the WQv has been provided within the bioretention facilities.

Most stormwater filters require four to six feet of head, depending on site configuration and land area available. Both Bioretention facilities operate with over 4-feet of head.

Sand and organic filtering systems are generally applied to land uses with a high percentage of impervious surfaces. Sites with imperviousness less than 75% will require full sedimentation pretreatment techniques. Full sedimentation has been provided for in the sediment basins.

Conveyance:

If runoff is delivered by a storm drain pipe or is along the main conveyance system, the filtering practice shall be designed off-line (see Appendix K). The bioretention facilities are designed off-line where large stormwater events are diverted to the stormwater ponds.

An overflow shall be provided within the practice to pass a percentage of the WQv to a stabilized water course. In addition, overflow for the ten-year storm shall be provided to a non-erosive outlet point (i.e., prevent downstream slope erosion). Both facilities discharge to stormwater ponds under larger stormwater events.

A flow regulator (or flow splitter diversion structure) shall be supplied to divert the WQv to the filtering practice and allow larger flows to bypass the practice. Overflow weirs and outlet control structures divert larger stormwater events to the stormwater ponds.

Stormwater filters shall be equipped with a minimum 4" perforated pipe underdrain (6" is preferred) in a gravel layer. A permeable filter fabric shall be placed between the gravel layer and the filter media. A 6" underdrain system has been provided.

Require a minimum 2' separation between the filter bottom and groundwater.

Treatment:

The entire treatment system (including pretreatment) shall be sized to temporarily hold at least 75% of the WQv prior to filtration.
The filter media shall consist of a medium sand (meeting ASTM C-33 concrete sand). Media used for organic filters may consist of peat/sand mix or leaf compost. Peat shall be a reed-sedge hemic peat.

Bioretention systems shall consist of the following treatment components: A four foot deep planting soil bed, a surface mulch layer, and a six inch deep surface ponding area. Soils shall meet the design criteria outlined in Appendix H.

The filter bed typically has a minimum depth of 18". The perimeter filter may have a minimum filter bed depth of 12".

Landscaping:

A dense and vigorous vegetative cover shall be established over the contributing pervious drainage areas before runoff can be accepted into the facility.

Landscaping is critical to the performance and function of bioretention areas. Therefore, a landscaping plan must be provided for bioretention areas.

Surface filters can have a grass cover to aid in pollutant adsorption. The grass should be capable of withstanding frequent periods of inundation and drought.

- Planting recommendations for bioretention facilities are as follows:
- Native plant species should be specified over non-native species.
- Vegetation should be selected based on a specified zone of hydric tolerance.
- A selection of trees with an understory of shrubs and herbaceous materials should be provided.
- Woody vegetation should not be specified at inflow locations.
- Trees should be planted primarily along the perimeter of the facility.
- A tree density of approximately one tree per 100 square feet (i.e., 10 feet on-center) is recommended. Shrubs and herbaceous vegetation should generally be planted at higher densities (five feet on-center and 2.5 feet on center, respectively).

Maintenance:

A legally binding and enforceable maintenance agreement shall be executed between the facility owner and the local review authority to ensure the following:

- Sediment shall be cleaned out of the sedimentation chamber when it accumulates to a depth of more than six inches. Vegetation within the sedimentation chamber shall be

limited to a height of 18 inches. The sediment chamber outlet devices shall be cleaned/repaired when drawdown times exceed 36 hours. Trash and debris shall be removed as necessary.

- Silt/sediment shall be removed from the filter bed when the accumulation exceeds one inch.
- When the filtering capacity of the filter diminishes substantially (i.e., when water ponds on the surface of the filter bed for more than 48 hours), the top few inches of discolored material shall be removed and shall be replaced with fresh material. The removed sediments shall be disposed in an acceptable manner (i.e., landfill).
- A stone drop (pea gravel diaphragm) of at least six inches shall be provided at the inlet of bioretention facilities (F-6). Areas devoid of mulch shall be re-mulched on an annual basis. Dead or diseased plant material shall be replaced.
- Organic filters or surface sand filters that have a grass cover should be mowed a minimum of three times per growing season to maintain maximum grass heights less than 12 inches

Dry Swales

***Feasibility Required Elements*:** The system shall have a maximum longitudinal slope of 4.0%. The dry swales have a maximum longitudinal slope less than 4%.

***Feasibility Design Guidance*:** Dry Swales (O-1) are primarily applicable for land uses such as roads, highways, residential development, and pervious areas. The dry swales are proposed for the entrance driveway to the site.

A minimum 2’ separation distance from groundwater for the dry swale is provided.

***Conveyance Required Elements*:** The peak velocity for the two-year storm must be non-erosive (i.e., 3.5-5.0 fps). The peak velocity will be less than this as the longitudinal slope is minimal and there are check dams proposed within the dry swale to enhance treatment and reduce velocities.

The dry swale has been designed to safely convey the ten-year storm with a minimum of 6 inches of freeboard.
The maximum allowable temporary ponding time within the channel is less than 48 hours. An underdrain system is proposed to be used in the dry swale to ensure this ponding time.

The dry swale has been designed with moderate side slopes (flatter than 3:1) for most conditions. Conveyance Design Guidance: The underdrain system is composed of a 6" gravel bed with a 4" PVC pipe. Even though the driveway slope is low, check dams have been provided to aid in the retention of the water quality volume within the swale system.

***Pretreatment Required Elements*:** Provide 10% of the WQv in pretreatment. This storage has been provided via check dams within the dry swale.

***Treatment Design Guidance*:** The dry swale maintains a maximum ponding depth of one foot at the mid-point of the channel, and a maximum depth of 18" at the end point of the channel (for storage of the WQv).

***Maintenance Design Guidance*:** A legally binding and enforceable maintenance agreement is provided within the Appendices of this SWPPP and shall be executed between the facility owner and the local review authority to ensure the following:

- Sediment build-up within the bottom of the channel or filter strip is removed when 25% of the original WQv volume has been exceeded.

- Vegetation in dry swales is mowed as required during the growing season to maintain grass heights in the 4-to-6-inch range.

5. EROSION & SEDIMENT CONTROL

5.1 General

The SPDES General Permit (GP-0-20-001) for construction activities requires that an Erosion and Sediment Control Plan be developed. This plan has been provided as part of the Site Plan and will be available at the project site during the time of construction. The plan will also comply with current regulations, including construction sequence, both short- and long-term maintenance of facilities, storage of materials and temporary and permanent structures.

The following temporary and permanent erosion control practices are proposed for use during construction and for long-term protection:

A. <u>Stabilized Construction Entrance:</u>

A stabilized pad of aggregate underlain with geotextile located at any point where traffic will be entering or leaving a construction site to or from a public right-of-way, street, sidewalk, or parking area. The purpose of stabilized construction entrance is to reduce or eliminate the tracking of sediment onto public rights-of-way or streets. Stabilized construction entrances will be placed as shown on the Erosion and Sediment Control Plans.

B. <u>Siltation Fence:</u>

A temporary barrier of geotextile fabric installed on the contours across a slope used to intercept sediment laden runoff from small drainage areas of disturbed soil. The purpose of a silt fence is to reduce runoff velocity and effect deposition of transported sediment loads. Silt fence will be placed as shown on the Erosion and Sediment Control Plans.

C. <u>Storm Drain Inlet Protection:</u>

A temporary, somewhat permeable barrier, installed around inlets in the form of a fence, berm, or excavation around an opening, trapping water and thereby reducing the sediment content of sediment laden water by settling. The purpose is to prevent heavily sediment laden water from entering a storm drain system through inlets. Inlet protection will only be used in road areas before pavement is placed. Locations of inlet protection are shown on the Erosion and Sediment Control Plans.

D. Slope Stabilization Matting

Matting made synthetic or natural fibers that is placed on steep slopes to allow newly planted vegetation to take root and protect the slope from erosion before vegetation is fully established. Locations of slope stabilization matting are shown on the Erosion and Sediment Control Plans.

E. Rock Outlet Protection:

A section of rock protection placed at the outlet of the culverts, conduits, or channels. The purpose of the rock outlet protection is to reduce the depth, velocity, and energy of water, such that the flow will not erode the receiving downstream reach. Rock outlet protection is proposed at all pipe discharge points. See the Erosion and Sediment Control Plans for locations of rock outlet protection.

5.2 Implementation Schedule & Maintenance

A. Schedule

As part of the development of the Erosion and Sediment Control Plans for the project, preparation of construction sequencing was completed to ensure water quality discharges are maintained during construction. The following construction schedule for implementing stormwater management during construction is proposed. Please refer to the Site Plan for specific sequencing and scheduling.

General Notes:

1. The Erosion & Sediment Control Plan has been phased to prevent more than 5 acres of disturbance from occurring at one time. In the event that more than 5 acres of disturbance is required, the owner or operator shall have a qualified inspector conduct at least two (2) site inspections in accordance with Part IV.C. of this permit every seven (7) calendar days, for as long as greater than five (5) acres of soil remain disturbed. The two (2) inspections shall be separated by a minimum of two (2) full calendar days.

2. In areas where soil disturbance activity has been temporarily or permanently ceased, temporary and/or permanent soil stabilization measures shall be installed and/or implemented within seven (7) days from the date the soil disturbance activity ceased.

3. Temporary Stabilization means that exposed soil has been covered with material(s) as set forth in the technical standard, New York Standards and Specifications for Erosion and Sediment Control, to prevent the exposed soil from eroding. The materials can include, but are not limited to, mulch, seed and mulch, and erosion control mats.

4. Final Stabilization means that all soil disturbance activities have ceased and a uniform, perennial vegetative cover with a density of eighty (80)

percent over the entire pervious surface has been established; or other equivalent stabilization measures, such as permanent landscape mulches, rock rip-rap or washed/crushed stone have been applied on all disturbed areas that are not covered by permanent structures, concrete or pavement.

5.3 Construction Sequence:

1. File NOI & Pre-construction meeting: Before construction activities an evaluation of the site will be performed with the site contractor, Town personnel and site design engineer to discuss general construction procedures and sequencing. During this meeting sensitive areas of the property shall be delineated and marked-out with orange construction fence (i.e.; trees, wetlands, wells, etc.).

2. Protect existing buffers: Place erosion control devices (silt fencing, diversion berms, etc.) upstream of any existing watercourse within or outside of construction areas, prior to the start of any construction.

3. Construction entrances/siltation controls: A temporary construction entrance will be installed at the site entrances as shown on the Site Plans. In addition, any other siltation control devices, as shown on the erosion control plan are to be installed adjacent to the temporary enhance and staging area.

4. Construction of temporary sediment traps/basins: Construction of the temporary sediment traps prior to the start of any major earthwork movement or site construction.

5. Strip topsoil: Topsoil will be stripped and stockpiled for later reuse.

6. Land grading: Bulk soil grading will commence. At this time, temporary stockpile areas should be utilized.

7. Retaining walls: Begin construction of on-site retaining walls. Walls to be installed concurrently with land grading.

8. Construction of buildings and driveway grading and subbase will begin upon completion of grading.

9. Utility installation: Install sanitary sewer, water, and stormwater. Inlet protection will be installed at all stormwater catch basins.

10. Stormwater installation: Install stormwater facilities when all contributing areas have been graded and stabilized. Protect areas during and after construction until pavement is installed.

11. Pavement construction: Construct paved driveways, parking and access roads.

12. Upon completion of grading and retaining walls, construction of buildings and walkways will commence.

13. Landscaping and final stabilization: All open areas to be stabilized with topsoil and seeded as per the seeding schedule specified on the erosion and sediment control plans. Removal of all temporary measures, flushing/cleaning of all catch basins and pipe, and removal and disposal of all trapped sediment on site shall be completed.

14. Final site inspection and certification: At the end of construction a site evaluation of the site will be performed with site contractor, Town personnel, and site engineer to ensure that all stormwater facilities were constructed as per the SWPPP design and that the site has been stabilized. A Notice of Termination (NOT) will be submitted to the NYSDEC.

Please refer to the Erosion and Sediment Control Plans within the Site Plans for construction notes and seeding schedule for disturbance and final stabilization.

5.4 Pollution Prevention Measures:

All pollutants, including waste materials and demolition debris, that occur onsite shall be handled and disposed of in a manner that conforms to all applicable Federal and State regulations that does not cause contamination of stormwater. Good housekeeping and preventative measures will be taken to ensure that the site will be kept clean, well-organized, and free of debris. If required, BMPs to be implemented to control specific sources of pollutants are discussed below.

Vehicles, construction equipment, and/or petroleum product storage/dispensing:

1. All vehicles, equipment, and petroleum product storage/dispensing areas will be observed regularly during site observations to detect any leaks or spills, and to identify maintenance needs to prevent leaks or spills.

2. On-site fueling tanks and petroleum product storage containers shall include secondary containment.

3. Spill prevention measures, such as drip pans, will be used when conducting maintenance and repair of vehicles or equipment.

4. To perform emergency repairs on site, temporary plastic will be placed beneath and, if raining, over the vehicle.

5. Contaminated surfaces shall be cleaned immediately following any discharge or spill incident. Contaminated soil shall be removed from site and disposed of in accordance with all current Federal and State Regulations.

Chemical storage:

1. Any chemicals stored in the construction areas will conform to the appropriate manufacturer's recommendations and or the appropriate State/Federal Regulations. All chemicals shall have cover, containment, and protection provided on site, per all Federal and NYSDEC regulations.

2. Application of agricultural chemicals, including fertilizers and pesticides, shall be conducted in a manner and at application rates that will not result in loss of chemical to stormwater runoff. Manufacturers' recommendations for application procedures and rates shall be followed.

Demolition:

1. Dust released from demolished sidewalks, buildings, structures or on-site grading operations will be controlled using Dust Control measures as specified in the N.Y.S. Erosion and Sediment Control Specification Manual.

2. Storm drain inlets vulnerable to stormwater discharge carrying dust, soil, or debris will be protected using Storm Drain Inlet Protection.

3. Process water and slurry resulting from saw cutting and surfacing operations will be prevented from entering the waters of the State by implementing Saw cutting and Surfacing Pollution Prevention measures.

Concrete and grout:

1. Process water and slurry resulting from concrete work will be prevented from entering bodies of water by implementing Concrete Handling measures.

Sanitary wastewater:

1. Portable sanitation facilities will be firmly secured, regularly maintained, and emptied when necessary.

Solid Waste:

1. Solid waste will be stored in secure, clearly marked containers.

Litter/Trash:

1. Litter and Trash shall be cleaned and disposed of in secure clearly marked dumpsters or trash receptacles.

2. Site is to be cleaned daily of debris and disposed of daily.

Other:

Other BMPs will be administered as necessary to address any other additional pollutant sources on site.

6. OPERATION & MAINTENANCE (DURING CONSTRUCTION & LONG-TERM)

The Contractor will be responsible for the maintenance and operation of all site related stormwater management facilities during construction and the property owner will be responsible for long-term maintenance and operation. A Stormwater Management Agreement can be found in Appendix G.

1. Construction and long-term maintenance shall be carried out in accordance with the following notes

    a. Swales: Inspection shall be made weekly and after every ½" rainfall event during construction. During the first growing season inspections shall be conducted monthly, and on an annual basis thereafter. The following tasks shall be performed as needed:

        (1) Removal of accumulated sediment and cleaning and/or restoration whenever accumulated sediment reaches a volume of 50% of the available capacity.

        (2) Restoration of any eroded embankments. Infrequent reshaping of the swale line should be completed as needed.

        (3) Removal of accumulated debris/trash within the swale and at all inlet and outfall structures.

        (4) Seasonal mowing of the swale bottom and surrounding side slopes. Removal of any fallen trees or limbs. Replacement and/or restoration of proposed grasses shall occur if more than 50% of the coverage of the facility is not achieved. Grasses should be kept at a maximum height of 6"- 8".

    b. Stormwater Facilities: Inspection shall be made twice (2) weekly by a licensed professional and after every ½" rainfall event by the owner or contractor during construction. During the first growing season inspections shall be conducted monthly and bi-annually thereafter. The following tasks shall be performed as needed:

        (1) Removal of accumulated sediment and cleaning and/or restoration of the Sediment Basins bi-annually or whenever accumulated sediment reaches a volume of 25% of the available capacity.

        (2) Restoration of any disturbed plant material and any eroded embankments. Replacement of proposed plants shall occur if more than 50% of the coverage of the facility is not achieved.

        (3) Removal of accumulated debris at all catch basins, all site drainage pipe and outfall structures.

        (4) Inspection of the outlet structure to ensure structural stability and removal of any accumulated trash within the structure.

    c. Roadway Pavements: Roadway pavements shall be swept on a regular basis to remove accumulated sediment. Collected sediment shall be removed, which will not allow the reentrance of silt into the storm water drainage system.

    d. Catch Basins: Catch basins shall be flushed and cleaned of any collected sediment within the bottom of the basin approximately every 2-3 years. Collected sediment

shall be removed, which will not allow the reentrance of silt into the storm water drainage system.

e. Vegetative Stabilization:

(1) All vegetative planting on areas that have been disturbed and are finish graded shall be inspected monthly during the first growing season and annually thereafter. Planting (or seeding) shall be maintained in viable conditions to stabilize the soil and to prevent soil erosion. Restore all site planting and/or seeding which has been damaged to a viable condition.

(2) If vegetative stabilization has been damaged from storm water erosion, correct upstream conditions that caused the erosion. Check dams may be required in drainage ways and stone outfall aprons may be required to be repaired on storm water outfall sites.

f. Temporary erosion and sediment control maintenance:

(1) All erosion and sediment control practices will be checked for stability and operation following every runoff-producing rainfall, but in no case less than once every week. Any needed repairs will be made immediately to maintain all practices as designed and installed for their appropriate phase of the project.

7. SUMMARY

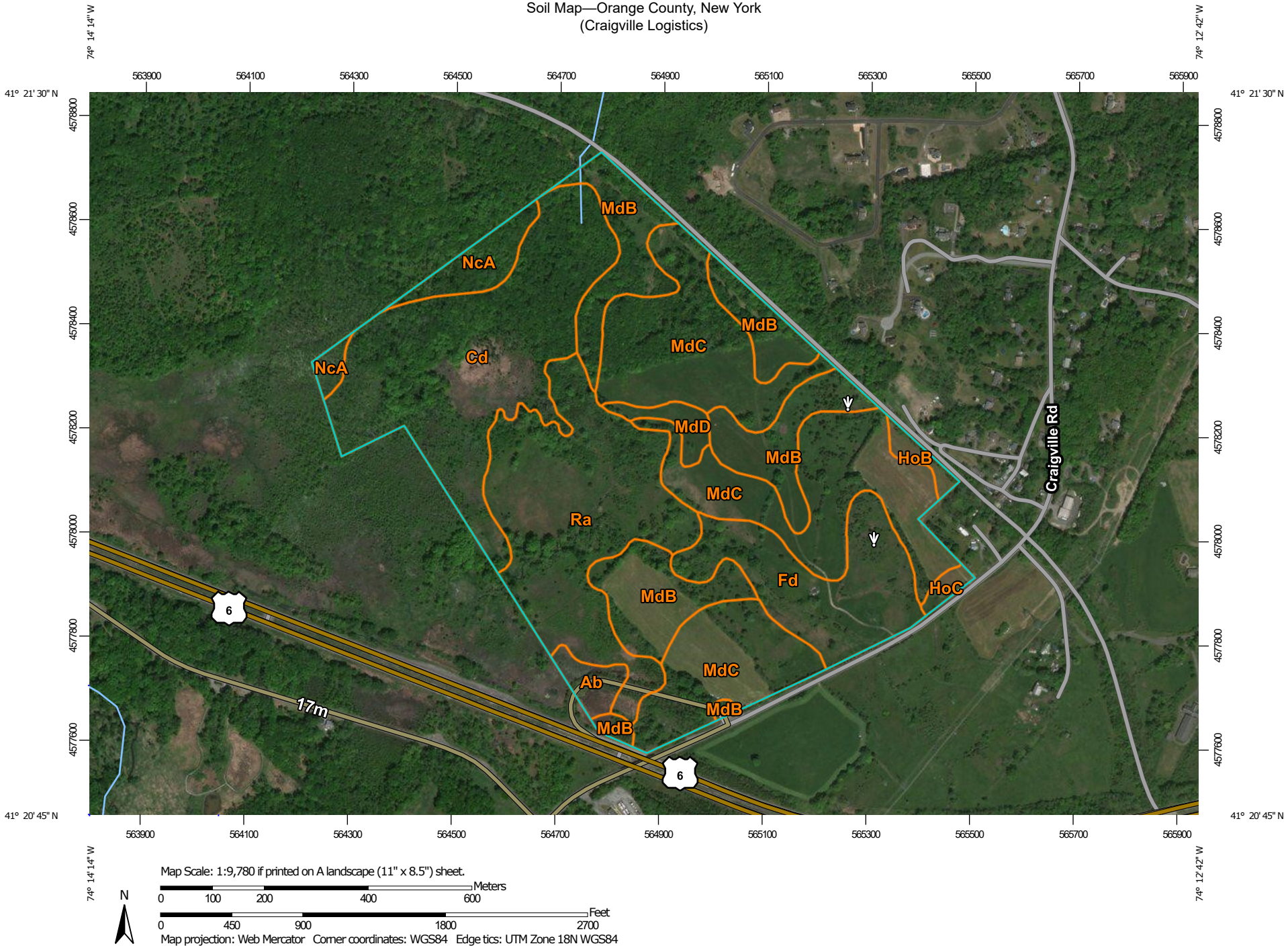
7.1 General

Drainage from the proposed impervious surfaces will be collected by sheet and pipe flow and conveyed to the stormwater management facility. The Soil Conservation Service TR-55 method has been utilized to evaluate the changes in stormwater runoff volume because of development of the site. The storm drainage system has been designed to collect and convey stormwater in a manner that would provide no increase in stormwater runoff rates downstream from the property. On-site treatment, retention and attenuation of stormwater is necessary and has been provided to mitigate the increases in stormwater runoff rates and pollutants that would otherwise impact downstream conditions.

The construction activity on the site will therefore not alter existing drainage patterns. The proposed erosion and sediment practices will prevent the erosion and sediment deposits to downstream properties.

APPENDIX A

Soil Map—Orange County, New York
(Craigville Logistics)



Map Scale: 1:9,780 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 100 200 400 600

Feet: 0 450 900 1800 2700

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

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Orange County, New York
Survey Area Data: Version 22, Aug 29, 2021

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

Date(s) aerial images were photographed: Oct 7, 2013—Feb 26, 2017

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ab	Alden silt loam	2.6	1.3%
Cd	Catden muck, drained, 0 to 2 percent slopes	40.3	20.8%
Fd	Fredon loam	18.4	9.5%
HoB	Hoosic gravelly sandy loam, 3 to 8 percent slopes	1.5	0.8%
HoC	Hoosic gravelly sandy loam, 8 to 15 percent slopes	1.0	0.5%
MdB	Mardin gravelly silt loam, 3 to 8 percent slopes	31.7	16.3%
MdC	Mardin gravelly silt loam, 8 to 15 percent slopes	55.5	28.6%
MdD	Mardin gravelly silt loam, 15 to 25 percent slopes	2.3	1.2%
NcA	Natchaug muck, drained, 0 to 2 percent slopes	5.6	2.9%
Ra	Raynham silt loam	34.9	18.0%
Totals for Area of Interest		**193.9**	**100.0%**

Table 8: Soil hydrologic groups for New York soils.

HG = hydrologic group. For soils with a hydrologic group that consists of more than one letter (e.g. “A/B”, “B/C”, “C/D”), its hydrologic group is determined by the presence or absence of adequate artificial drainage. If the field is artificially drained the hydrologic group moves to the first of the two classes. If the field is inadequately drained or not drained at all, the second of the two classes is assigned.

Soil Type	HG
Acton	C
Adams	A
Adirondack	D
Adjidaumo	D
Adrian	A/D
Agawam	B
Albia	C
Albrights	C
Alden	D
Allagash	B
Allard	B
Allendale	D
Allis	D
Alluvial Land	C
Almond	C
Alps	C
Altmar	B
Alton	A
Amboy	C
Amenia	B
Angola	C
Appleton	C
Arkport	B
Armagh	D
Arnot	C/D
Ashville	D
Atherton	B
Atkins	D
Atsion	C
Au Gres	B
Aurelie	D
Aurora	C

Soil Type	HG
Barbour	B
Barcelona	C
Barre	D
Bash	C
Basher	B
Bath	C
Becket	C
Becraft	B
Belgrade	B
Benson	D
Berkshire	B
Bernardston	C
Berrien	C
Berryland	B
Beseman	A
Bice	B
Biddeford	D
Birdsall	D
Blasdell	A
Bombay	B
Bonaparte	A
Bono	D
Boots	A
Borosaprists	A/D
Boynton	D
Braceville	C
Brayton	C
Bridge-hampton	B
Bridport	D
Briggs	A
Brinkerton	D

Soil Type	HG
Broadalbin	C
Brockport	D
Brookfield	B
Buckland	C
Bucksport	D
Budd	B
Burdett	C
Burnham	D
Busti	C
Buxton	C
Cambria	D
Cambridge	C
Camillus	B
Camroden	C
Canaan	C
Canaan-Rock Outcrop	C
Canadice	D
Canandaigua	D
Canaseraga	C
Canastota	C
Caneadea	D
Canfield	C
Canton	B
Carbondale	A
Carlisle	A/D
Carrollton	C
Carver	A
Carver-Plymouth	A
Castile	B
Cathro	A

Soil Type	HG
Cathro-Greenwood	A
Cattaraugus	C
Cavode	C
Cayuga	C
Cazenovia	B
Ceresco	B
Chadakoin	B
Chagrin	B
Champlain	A
Charles	C
Charlton	B
Chatfield (E)	B
Chatfield (WE)	B
Chaumont	D
Chautauqua	C
Cheektowaga	D
Chenango	A
Cheshire	B
Chippeny	D
Chippewa	D
Churchville	D
Cicero	C
Clarkson	B
Claverack	C
Clymer	B
Cohoctah	B
Collamer	C
Colonie	A
Colosse	A
Colrain	A
Colton	A

Soil Type	HG
Colwood	D
Conesus	B
Conotton	A
Constable	A
Cook	D
Copake	B
Cornish	C
Cosad	C
Cossayuna	C
Covert	A
Coveytown	C
Covington	D
Crary	C
Croghan	B
Culvers	C
Dalbo	C
Dalton	C
Danley	C
Dannemora	D
Darien	C
Dawson	A
Deerfield	B
Deford	A
Dekalb	A
Depeyster	C
Deposit	B
Derb	C
Dixmont	C
Dorval	A
Dover	B
Duane	B
Dunkirk	B
Dutchess	B
Duxbury	A
Edwards	B
Eel	B
Eelweir	C
Elka	C
Ellery	D
Elmridge	C
Elmwood	C
Elnora	B

Soil Type	HG
Empeyville	C
Enfield	B
Ensley	B
Erie	C
Ernest	C
Essex	C
Fahey	B
Farmington	C
Farnham	C
Fernlake	A
Flackville	C
Fonda	D
Franklinville	B
Fredon	C
Freetown	D
Fremont	C
Frenchtown	D
Frewsburg	C
Fryeburg	B
Fulton	D
Gage	D
Galen	B
Galestown	A
Galoo	C
Galoo-Rock Outcrop	C
Galway	B
Genesee	B
Georgia	C
Getzville	D
Gilpen	C
Gilpin	C
Glebe	C
Glebe-Saddleback	C
Glendora	A/D
Glenfield	B
Gloucester	A
Glover	D
Gougeville	A
Granby	A/D
Grattan	A

Soil Type	HG
Greene	C
Greenwood	A
Grenville	B
Gretor	C
Groton	A
Groveton	A
Guff	D
Guffin	D
Gulf	B
Hadley	B
Haights	B
Haights-Gulf	B
Hailesboro	C
Halcott	C/D
Halsey	C/D
Hamlin	B
Hamplain	B
Hannawa	D
Hartland	B
Haven	B
Hawksnest	C/D
Hempstead	B
Henrietta	B
Herkimer	B
Hermon	A
Hero	B
Heuvelton	C
Hilton	B
Hinckley	A
Hinesburg	C
Hogansburg	B
Hogback	C
Hogback-Ricker	C
Holderton	B
Hollis	C
Holly	C/D
Holyoke	C
Holyoke-Rock Outcrop	C
Homer	B
Honeoye	B

Soil Type	HG
Hoosic	A
Hornell	D
Hornellsville	D
Houghtonville	C
Houghtonville-Rawson	C
Houseville	C
Howard	A
Hudson	C
Hulberton	C
Ilion	D
Insula	B
Ipswich	D
Ira	C
Ischua	B
Ivory	C
Jebavy	A
Joliet	D
Junius	C
Kalurah	B
Kanona	D
Kars	A
Kearsarge	B
Kendaia	C
Kibbie	B
Kingsbury	D
Kinzua	B
Knicker-bocker	A
Lackawanna	C
Lagross	A
Lagross-Haights	A
Lairdsville	D
Lakemont	D
Lakewood	A
Lamson	B/D
Lanesboro	C
Langford	C
Lansing	B
Leck Kill	B
Leicester	C

Soil Type	HG
Leon	C
Lewbath	C
Lewbeach	C
Leyden	C
Lima	B
Limerick	C
Linden	B
Linlithgo	B
Livingston	D
Lobdell	B
Lockport	D
Lorain	D
Lordstown	C
Lovewell	B
Lowville	B
Loxley	A
Lucas	C
Ludlow	C
Lupton	A
Lyman	C
Lyman-Becket-Berkshire	C
Lyme	C
Lyons	D
Machias	B
Macomber	C
Macomber-Taconic	C
Madalin	D
Madawaska	B
Madrid	B
Malone	C
Manahawkin	D
Mandy	C
Manheim	C
Manhoning	D
Manlius	C
Mansfield	D
Maplecrest	B
Marcy	D
Mardin	C

Soil Type	HG
Marilla	C
Markey	A/D
Marlow	C
Martisco	B
Massena	C
Matoon	D
Matunuck	D
Medihemists	A/D
Medina	B
Medomak	D
Melrose	C
Menlo	D
Mentor	B
Merrimac	A
Middlebrook	C
Middlebrook-Mongaup	C
Middlebury	B
Millis	C
Millsite	C
Mineola	A
Miner	D
Mino	C
Minoa	C
Mohawk	B
Moira	C
Monadnock	B
Monarda	D
Mongaup	C
Montauk	C
Mooers	B
Morocco	C
Morris	C
Mosherville	C
Muck	D
Muck-Peat	D
Mundal	C
Mundalite	C
Mundalite-Rawsonville	C
Munson	D
Munuscong	B

Soil Type	HG
Muskego	A/C
Muskellunge	D
Napoleon	A
Napoli	C
Nassau	C
Naumburg	C
Nehasne	B
Nellis	B
Neversink	D
Newfane	B
Newstead	C
Newton	A/D
Niagara	C
Nicholville	C
Ninigret	B
Norchip	D
Norwell	C
Norwich	D
Nunda	C
Oakville	A
Occum	B
Odessa	D
Ogdensburg	C
Olean	B
Ondawa	B
Oneida	C
Onoville	C
Ontario	B
Onteora	C
Ontusia	C
Oquaga	C
Oramel	C
Organic	A/D
Orpark	C
Orwell	D
Ossipee	D
Otego	B
Otisville	A
Ottawa	A
Ovid	C
Palatine	B
Palms	A/D

Soil Type	HG
Palmyra	B
Panton	D
Papakating	D
Parishville	C
Parsippany	D
Patchin	D
Pawcatuck	D
Pawling	B
Paxton	C
Peacham	D
Peat	A/D
Peat-Muck	A/D
Peru	C
Petoskey	A
Phelps	B
Philo	B
Pillsbury	C
Pinckney	C
Pipestone	B
Pittsfield	B
Pittstown	C
Plainbo	A
Plainfield	A
Plessis	D
Plymouth	A
Podunk	B
Poland	B
Pompton	B
Pootatuck	B
Pope	B
Potsdam	C
Poygan	D
Punsit	C
Pyrities	B
Quetico	D
Quetico-Rock Outcrop	D
Raquette	B
Rawsonville	C
Rawsonville-Beseman-Rayne	C B

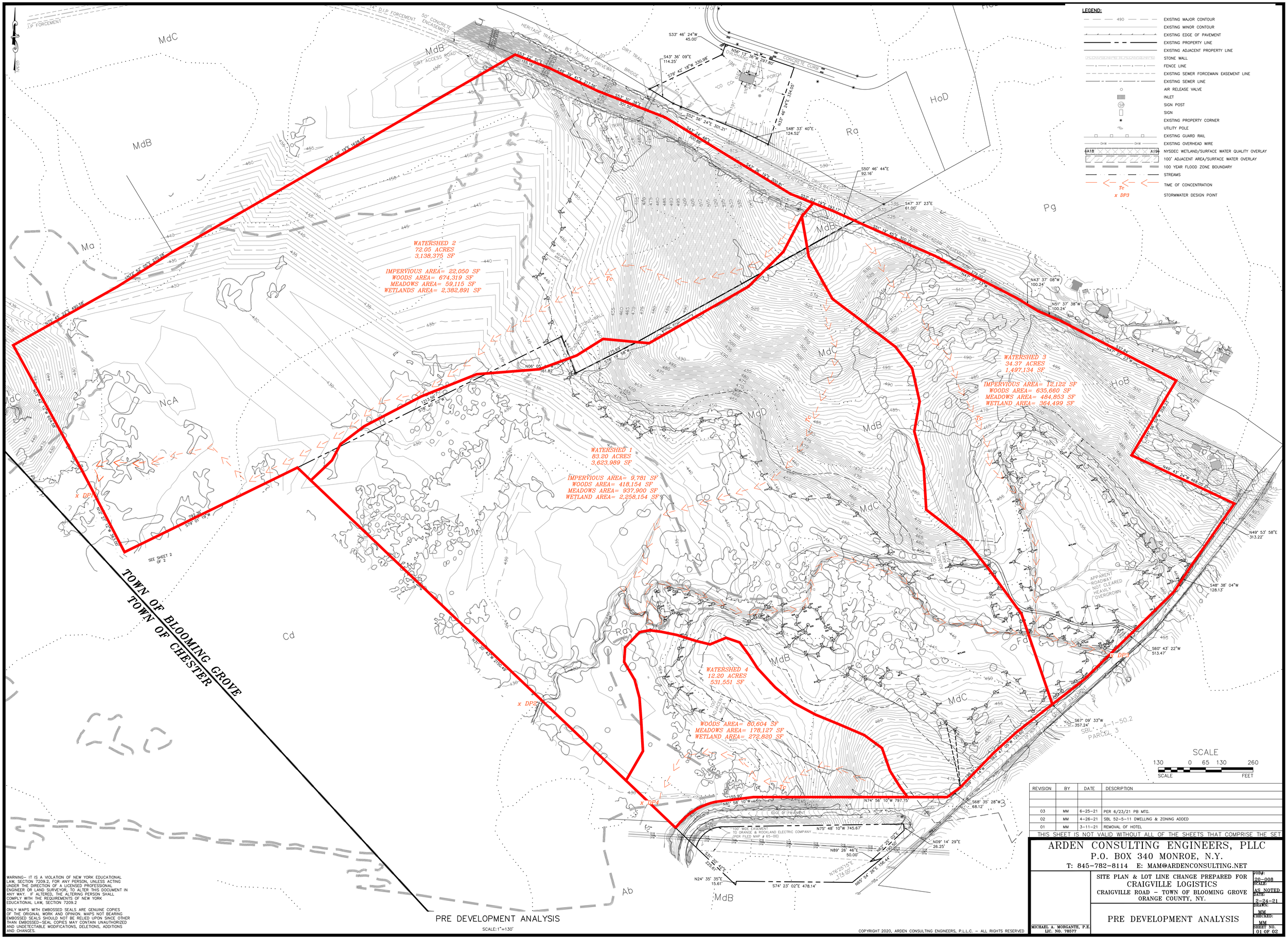
Soil Type	HG
Raynham	C
Raypol	C
Red Hook	C
Redwater	B
Remsen	D
Retsof	C
Rexford	C
Rhinebeck	D
Ricker	A
Ricker-Lyman	A
Ridgebury	C
Rifle	A
Riga	D
Rippowam	C
Riverhead	B
Rockaway	C
Romulus	D
Ross	B
Roundabout	C
Rumney	C
Runeberg	C
Ruse	D
Rushford	B
Saco	D
Salamanca	B
Salmon	B
Saprists	A/D
Saugatuck	C
Scantic	D
Scarboro	D
Schoharie	C
Schroon	B
Schuyler	B
Scio	B
Scituate	B
Scriba	C
Searsport	D
Shaker	C
Shoreham	D

Soil Type	HG
Sisk	C
Skerry	C
Sloan	B
Sodus	C
Somerset	C
St Johns	D
Staatsburg	C
Stafford	C
Steamburg	B
Stetson	B
Stissing	C
Stockbridge	C
Stockholm	C
Stowe	B
Sudbury	B
Suffield	B
Summerville	D
Sun	D
Sunapee	B
Suncook	A
Suny	D
Surplus	C
Surplus-Sisk	C
Sutton	B
Swanton	C
Swartswood	C
Swormville	C
Taconic	C
Taconic-Macomber	C
Tawas	A
Teel	B
Tioga	B
Toledo	D
Tonawanda	D
Tor	D
Torull	D
Towerville	B
Trestle	B

Soil Type	HG
Trout River	A
Troy	C
Trumbull	D
Tughill	D
Tuller	D
Tunbridge	C
Tunbridge-Adirondack	C
Tunkhannock	A
Turin	C
Tuscarora	C
Unadilla	B
Valois	B
Varick	D
Varysburg	B
Venango	C
Vergennes	C
Vly	C
Volusia	C
Waddington	A
Wainola	B
Wakeland	C
Wakeville	B
Wallace	B
Wallington	C
Wallkill	C
Walpole	C
Walton	C
Wampsville	B
Wappinger	B
Wareham	C
Warners	C
Wassaic	B
Watchaug	B
Waumbeck	B
Wayland	C/D
Weaver	C
Wegatchie	D
Wellsboro	C

Soil Type	HG
Wenonah	C
Westbury	B
Westland	C
Wethersfield	C
Wharton	C
Whately	D
Whippany	C
Whitelaw	B
Whitman	D
Wilbraham	C
Willdin	C
Willette	A
Williamson	C
Willowemoc	C
Wilmington	D
Wilpoint	D
Windsor	A
Winooski	B
Wolcottsburg	D
Wonsqueak	D
Woodbridge	C
Woodlawn	B
Woodstock	D
Woodstock-Rock Outcrop	D
Wooster	C
Woostern	C
Woostern-Bath-Valois	C
Worden	C
Worth	C
Wurtsboro	C
Wyalusing	D
Yalesville	C
Yorkshire	C

APPENDIX B



REVISION	BY	DATE	DESCRIPTION
03	MM	6-25-21	PER 6/23/21 PB MTG.
02	MM	4-26-21	SBL 52-5-11 DWELLING & ZONING ADDED
01	MM	3-11-21	REMOVAL OF HOTEL

THIS SHEET IS NOT VALID WITHOUT ALL OF THE SHEETS THAT COMPRISE THE SET

ARDEN CONSULTING ENGINEERS, PLLC
P.O. BOX 340 MONROE, N.Y.
T: 845-782-8114 E: MAM@ARDENCONSULTING.NET

SITE PLAN & LOT LINE CHANGE PREPARED FOR
CRAIGVILLE LOGISTICS
CRAIGVILLE ROAD – TOWN OF BLOOMING GROVE
ORANGE COUNTY, NY.

PRE DEVELOPMENT ANALYSIS

JOB#: 20-008
SCALE: AS NOTED
DATE: 2-24-21
DRAWN: MM
CHECKED: MM
SHEET NO. 01 OF 02

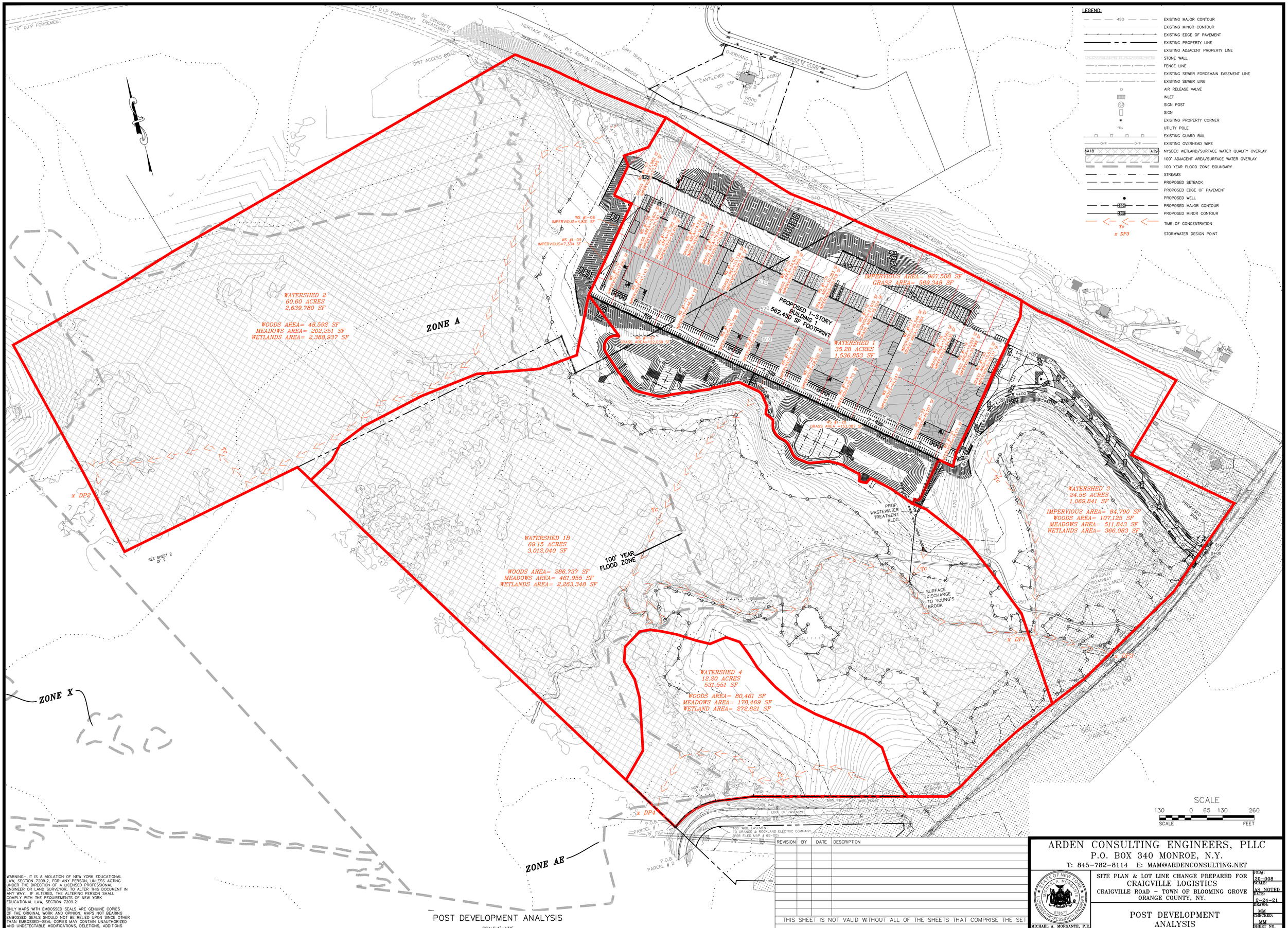
MICHAEL A. MORGANTE, P.E.
LIC. NO. 78577

PRE DEVELOPMENT ANALYSIS
SCALE:1"=130'

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POST DEVELOPMENT ANALYSIS

SCALE: 1"=130'

REVISION	BY	DATE	DESCRIPTION

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STATE OF NEW YORK – MICHAEL A. MORGANTE – 078577 – LICENSED PROFESSIONAL ENGINEER

MICHAEL A. MORGANTE, P.E.
LIC. NO. 78577

SITE PLAN & LOT LINE CHANGE PREPARED FOR
CRAIGVILLE LOGISTICS
CRAIGVILLE ROAD – TOWN OF BLOOMING GROVE
ORANGE COUNTY, NY.

POST DEVELOPMENT ANALYSIS

JOB#:	20-008
SCALE:	AS NOTED
DATE:	2-24-21
DRAWN:	MM
CHECKED:	MM
SHEET NO.	01 OF 03



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SCALE
60 0 30 60 120
SCALE FEET

POST DEVELOPMENT ANALYSIS

SCALE: 1"=60'

REVISION	BY	DATE	DESCRIPTION

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MICHAEL A. MORGANTE, P.E.
LIC. NO. 78577

SITE PLAN & LOT LINE CHANGE PREPARED FOR
CRAIGVILLE LOGISTICS
CRAIGVILLE ROAD – TOWN OF BLOOMING GROVE
ORANGE COUNTY, NY.

POST DEVELOPMENT ANALYSIS

JOB#: 20-008
SCALE: AS NOTED
DATE: 2-24-21
DRAWN: MM
CHECKED: MM
SHEET NO. 02 OF 05

MATCH LINE SEE SHEET 02

CB 01
RIM: 492.01
INV OUT: 488.50 (24" NW)

CB 16
RIM: 491.13
INV OUT: 488.13 (24" SE)

TW: 497.1
BW: 491.1

TW: 497.4
BW: 491.4

FG: 492.4

FG: 492.0

200 LF 24" ø HDPE

FG: 492.5

CB 18
RIM: 491.11
INV IN: 485.63 (30" NW)
INV OUT: 485.13 (36" SE)

CB 17
RIM: 491.11
INV IN: 487.13 (24" NW)
INV OUT: 486.63 (30" SE)

MEP & ARCHITECT TO COORDINATE LOCATIONS OF ROOF LEADERS

PROPOSED 1-STORY BUILDING 7 562,450 SF FOOTPRINT

FFE: 498.0

FG: 491.1

CB 20
RIM: 492.03
INV IN: 483.94 (36" NE)
INV OUT: 483.94 (36" SE)

205 LF 36" ø HDPE

FG: 492.0

CB 21
RIM: 491.88
INV IN: 482.92 (36" NW)
INV OUT: 482.92 (36" SW)

200' WELL RADIUS

100' WELL RADIUS

WATERSHED 1
35.28 ACRES
1,536,853 SF

IMPERVIOUS AREA= 967,508 SF
GRASS AREA= 569,348 SF

CB 28
RIM: 494.64
INV IN: 490.55 (18" NW)
INV IN: 476.74 (36" SE)
INV OUT: 476.74 (36" SW)

60 LF 36" ø HDPE

131 LF 36" ø HDPE

CB 27
RIM: 494.45
INV IN: 477.39 (36" SE)
INV OUT: 477.39 (36" NW)

CB 26
RIM: 494.45
INV IN: 478.38 (36" SE)
INV OUT: 478.38 (36" NW)

CB 22
RIM: 494.11
INV IN: 481.92 (36" NE)
INV OUT: 481.92 (36" SW)

CB 23
RIM: 495.61
INV IN: 480.92 (36" NE)
INV OUT: 480.92 (36" SW)

145 LF 36" ø HDPE

FG: 490.9

PROP WATER TREATMENT BLDG. & WELL

PROPOSED WELL

HW-02
INV OUT: 474.00

SPILLWAY
L=30'
W=10'
INV.=467.7

SEDIMENT BASIN 2

BIORETENTION 2

SPILLWAY
L=30'
W=10'
INV.=468.0

OCS 2A
RIM: 467.50
INV OUT: 463.00 (18" SE)

INV OUT: 460.00

CONCRETE SIDEWALK

184 LF 36" ø HDPE

FG: 494.6

CB 25
RIM: 494.45
INV IN: 479.37 (36" SE)
INV OUT: 479.37 (36" NW)

566 LF 6" UNDERDRAIN INV.=463.5

UNDERDRAIN CLEANOUT

51 LF 18" ø HDPE

EMERGENCY SPILLWAY
L=30'
W=10'
INV.=468.00

STORMWATER POND 2

TW: 474.5
BW: 464.7

TW: 492.2
BW: 464.8

TW: 490.3
BW: 465.0

TW: 465.8
BW: 461.1

CB 24
RIM: 494.72
INV IN: 480.19 (36" NE)
INV OUT: 480.19 (36" NW)
FG: 494.4

OCS 2
RIM: 467.60
INV OUT: 460.00 (48" S)

PROP. WASTEWATER TREATMENT BLDG.

268 LF 48" ø HDPE

INV IN: 457.37

WETLAND ADJACENT AREA DISTURBANCE =2874 SF

SURFACE DISCHARGE TO YOUNG'S BROOK

73 LF 15" ø HDPE

CB 49
RIM: 479.08
INV IN: 475.27 (15" NE)
INV OUT: 470.09 (15" SW)

30 LF 15" ø HDPE

INV OUT: 469.79

CB 48
RIM: 479.60
INV OUT: 476.00 (15"

TW: 487.0
BW: 486.4

TW: 486.0
BW: 485.4

TW: 487.0
BW: 486.2

WETLAND ADJACENT AREA DISTURBANCE =15,914 SF

WATERSHED 3
24.56 ACRES
1,069,841 SF

IMPERVIOUS AREA= 84,790 SF
WOODS AREA= 107,125 SF
MEADOWS AREA= 511,843 SF
WETLANDS AREA= 366,083 SF

APPARENT ROADWAY NOT CLEARED HEAVILY OVERGROWN

CB 47
RIM: 470.35
INV IN: 468.13 (15" NE)
INV IN: 468.20 (4" NW)
INV OUT: 468.13 (15" SW)

37 LF 15" ø HDPE

INV OUT: 467.94

INV OUT: 468.30

CB 46
INV: 470.57
INV IN: 468.40 (4" NW)
INV OUT: 468.38 (15" SW)

INV IN: 472.56

MATCH EG: 477.0

0+00

97 LF 15" ø HDPE w/ FES, S=4.41%

MATCH EG: 468.8

MACADAM PAVEMENT

Tc

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POST DEVELOPMENT ANALYSIS

SCALE: 1"=60'

LEGEND:

- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- EXISTING EDGE OF PAVEMENT
- EXISTING PROPERTY LINE
- EXISTING ADJACENT PROPERTY LINE
- STONE WALL
- FENCE LINE
- EXISTING SEWER FORCEMAIN EASEMENT LINE
- EXISTING SEWER LINE
- AIR RELEASE VALVE
- INLET
- SIGN POST
- SIGN
- EXISTING PROPERTY CORNER
- UTILITY POLE
- EXISTING GUARD RAIL
- EXISTING OVERHEAD WIRE
- NYSDEC WETLAND/SURFACE WATER QUALITY OVERLAY
- 100' ADJACENT AREA/SURFACE WATER OVERLAY
- 100 YEAR FLOOD ZONE BOUNDARY
- STREAMS
- PROPOSED SETBACK
- PROPOSED EDGE OF PAVEMENT
- PROPOSED WELL
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- TIME OF CONCENTRATION
- STORMWATER DESIGN POINT

SCALE
60 0 30 60 120
SCALE FEET

REVISION	BY	DATE	DESCRIPTION

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STATE OF NEW YORK · MICHAEL A. MORGANTE · 078577 · LICENSED PROFESSIONAL ENGINEER

MICHAEL A. MORGANTE, P.E.
LIC. NO. 78577

SITE PLAN & LOT LINE CHANGE PREPARED FOR
CRAIGVILLE LOGISTICS
CRAIGVILLE ROAD – TOWN OF BLOOMING GROVE
ORANGE COUNTY, NY.

POST DEVELOPMENT ANALYSIS

JOB#:	20-008
SCALE:	AS NOTED
DATE:	2-24-21
DRAWN:	MM
CHECKED:	MM
SHEET NO.	03 OF 03

Version 1.8
Last Updated: 11/09/2015

Total Water Quality Volume Calculation
WQv(acre-feet) = [(P)(Rv)(A)] /12

Is this project subject to Chapter 10 of the NYS Design Manual (i.e. WQv is equal to post-development 1 year runoff volume)?.....	No

Design Point:	1	
P=	1.40	*inch*

Manually enter P, Total Area and Impervious Cover.

Breakdown of Subcatchments

Catchment Number	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Rv	WQv *(ft^3)*	Description
1	104.43	22.20	21%	0.24	128,074	
2	60.60	0.00	0%	0.05	15,398	
3	24.56	1.94	8%	0.12	15,114	
4						
5						
6						
7						
8						
9						
10						
Subtotal (1-30)	189.59	24.14	13%	0.16	**158,586**	**Subtotal 1**
Total	189.59	24.14	13%	0.16	**158,586**	**Initial WQv**

Identify Runoff Reduction Techniques By Area

Technique	Total Contributing Area *(Acre)*	Contributing Impervious Area *(Acre)*	Notes
Conservation of Natural Areas	0.00	0.00	*minimum 10,000 sf*
Riparian Buffers	0.00	0.00	*maximum contributing length 75 feet to 150 feet*
Filter Strips	0.00	0.00	
Tree Planting	0.00	0.00	*Up to 100 sf directly connected impervious area may be subtracted per tree*
Total	**0.00**	**0.00**	

Recalculate WQv after application of Area Reduction Techniques

	Total Area *(Acres)*	Impervious Area *(Acres)*	Percent Impervious *%*	Runoff Coefficient Rv	WQv *(ft^3)*
"<<Initial WQv"	189.59	24.14	13%	0.16	158,586
Subtract Area	0.00	0.00			
WQv adjusted after Area Reductions	**189.59**	**24.14**	13%	0.16	158,586
Disconnection of Rooftops		0.00			
Adjusted WQv after Area Reduction and Rooftop Disconnect	189.59	24.14	13%	0.16	**158,586**
WQv reduced by Area Reduction techniques					0

Minimum RRv

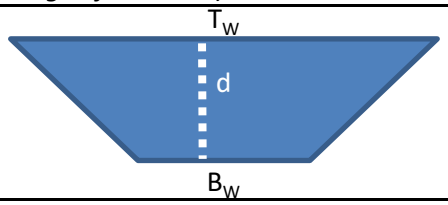
Enter the Soils Data for the site		
Soil Group	Acres	S
A		55%
B		40%
C	83.14	30%
D	**118.65**	20%
Total Area	201.791	
Calculate the Minimum RRv		
S =	**0.24**	
Impervious =	24.14	*acre*
Precipitation	1.4	*in*
Rv	0.95	
Minimum RRv	**28,111**	***ft3***
	0.65	af

Dry Swale Worksheet

Design Point:	1

Enter Site Data For Drainage Area to be Treated by Practice							
Catchment Number	**Total Area** *(Acres)*	**Impervious Area** *(Acres)*	**Percent Impervious** *%*	**Rv**	**WQv** *(ft^3)*	**Precipitation** *(in)*	**Description**
3	24.16	2.83	0.12	0.16	19082.91	1.40	
Enter Impervious Area Reduced by Disconnection of Rooftops			12%	0.16	19,083	<<WQv after adjusting for Disconnected Rooftops	

Pretreatment Provided			Pretreatment Technique
Pretreatment (10% of WQv)	1,908	ft^3	Pea Gravel Diaphragm

Calculate Available Storage Capacity			
Bottom Width	3	*ft*	Design with a bottom width no greater than eight feet to avoid potential gullying and channel braiding, but no less than two feet
Side Slope (X:1)	2	*Okay*	Channels shall be designed with moderate side slopes (flatter than 3:1) for most conditions. 2:1 is the absolute maximum side slope
Longitudinal Slope	2%	*Okay*	*Maximum longitudinal slope shall be 4%*
Flow Depth	1.5	*ft*	*Maximum ponding depth of one foot at the mid-point of the channel, and a maximum depth of 18" at the end point of the channel (for storage of the WQv)*
Top Width	9	*ft*	
Area	9.00	*sf*	
Minimum Length	1908	*ft*	
Actual Length	2100	*ft*	
End Point Depth check	1.50	*Okay*	*A maximum depth of 18" at the end point of the channel (for storage of the WQv)*
Storage Capacity	20,808	ft^3	
Soil Group (HSG)		C	

Runoff Reduction					
Is the Dry Swale contributing flow to another practice?			No	Select Practice	N/A
RRv	**4,162**	***ft^3***	**Runnoff Reduction equals 40% in HSG A and B and 20% in HSG C and D up to the WQv**		
Volume Treated	14,921	ft^3	This is the difference between the WQv calculated and the runoff reduction achieved in the swale		
Volume Directed	0	ft^3	This volume is directed another practice		
Volume √	*Okay*		Check to be sure that channel is long enough to store WQv		

Cpv - 24 Hour Detention of 1 Year-Storm

WATERSHED 1:

Performance Criteria Compliance:

CN=	74		
I_a=	(200/CN)-2		
I_a=	0.703		
P=	2.7	in	
I_a/P=	0.26		
T_c=	0.1	hr	From HydroCad

From 4-III of TR-55: q_u=600 csm/in

From Table in Appendix B in NYS Design Manual for 24 hour storm

q_o/q_i= 0.03

$$V_s/V_r=0.682-1.43(q_o/q_i)+1.64(q_o/q_i)^2-0.804(q_o/q_i)^3$$

V_s/V_r= 0.641

$V_s=Cp_v$ V_r=Volume of Runoff

$$Vs=\frac{(Vs/Vr)QA}{12}$$

A=	12	ac.	Area remaining before runoff reductions = 12 acres However, total area has been used for Cp_v

$$Q=\frac{(P-I_a)^2}{P+4I_a}$$

Q=	0.72	inches
Vs=	**0.46**	**ac-ft**

Vs= 20,198 cf of storage is required

Vs= 24,000 cf provided

While the TR-55 short-cut method reports to incorporate multiple stage structures, experience has shown that an additional 10-15% storage is required when multiple levels of extended detention are provided.

Figure B.1 Detention Time vs. Discharge Ratios (Source: MDE, 2000)

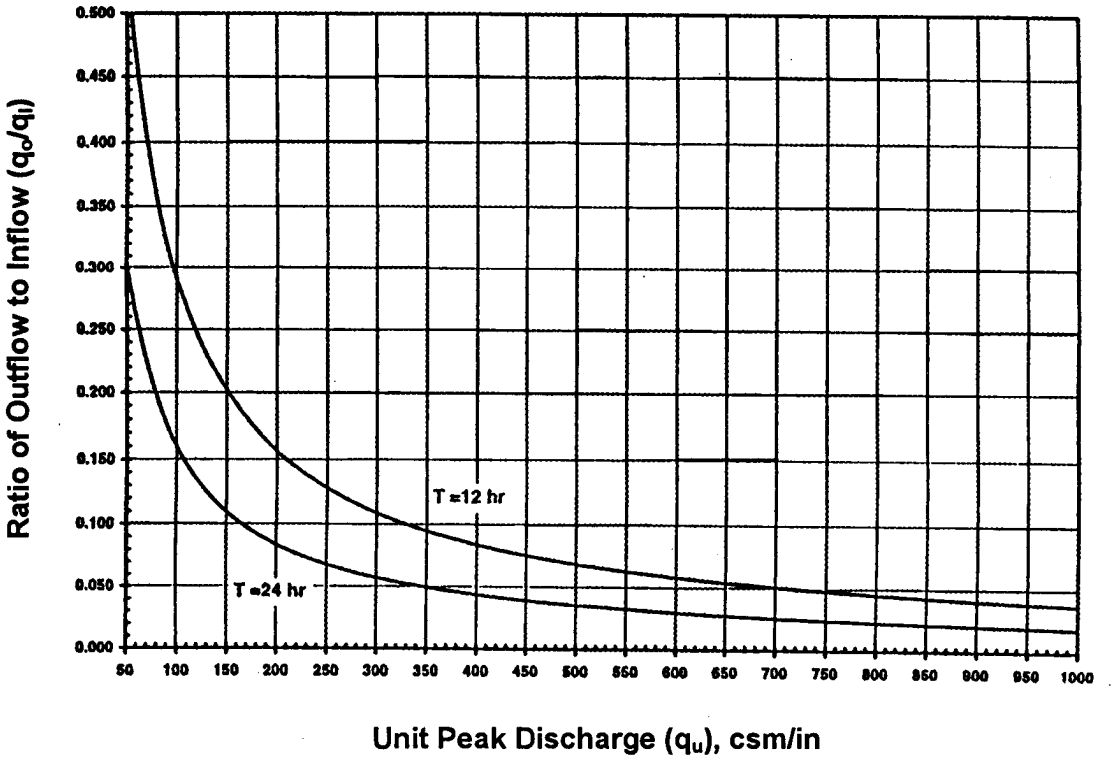


Figure B.2 Approximate Detention Basin Routing For Rainfall Types I, IA, II, and III (Source: NRCS, 1986)

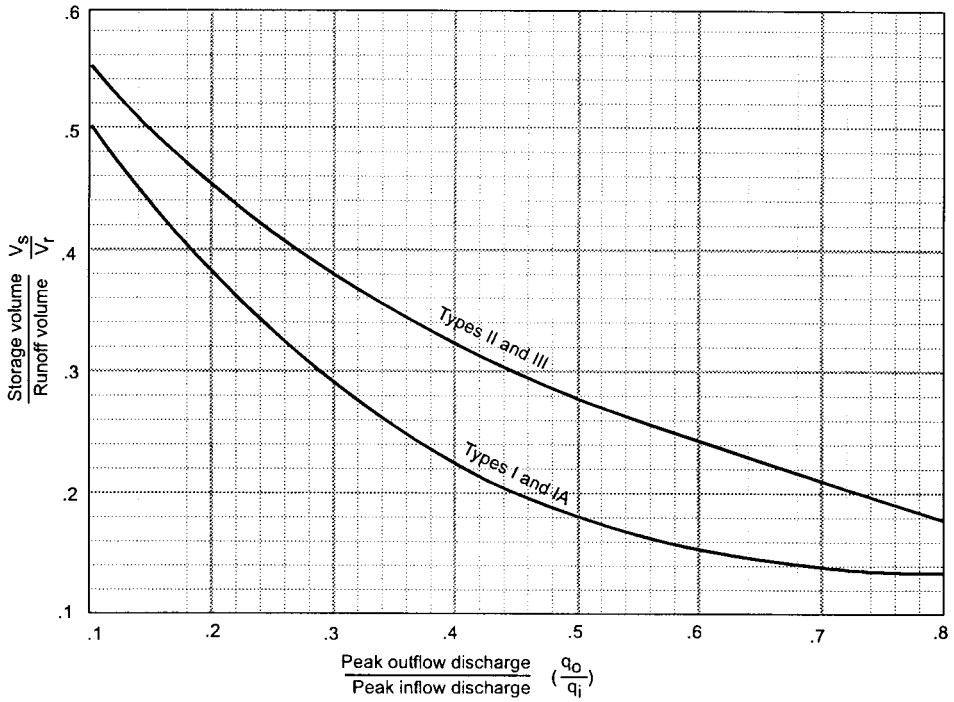
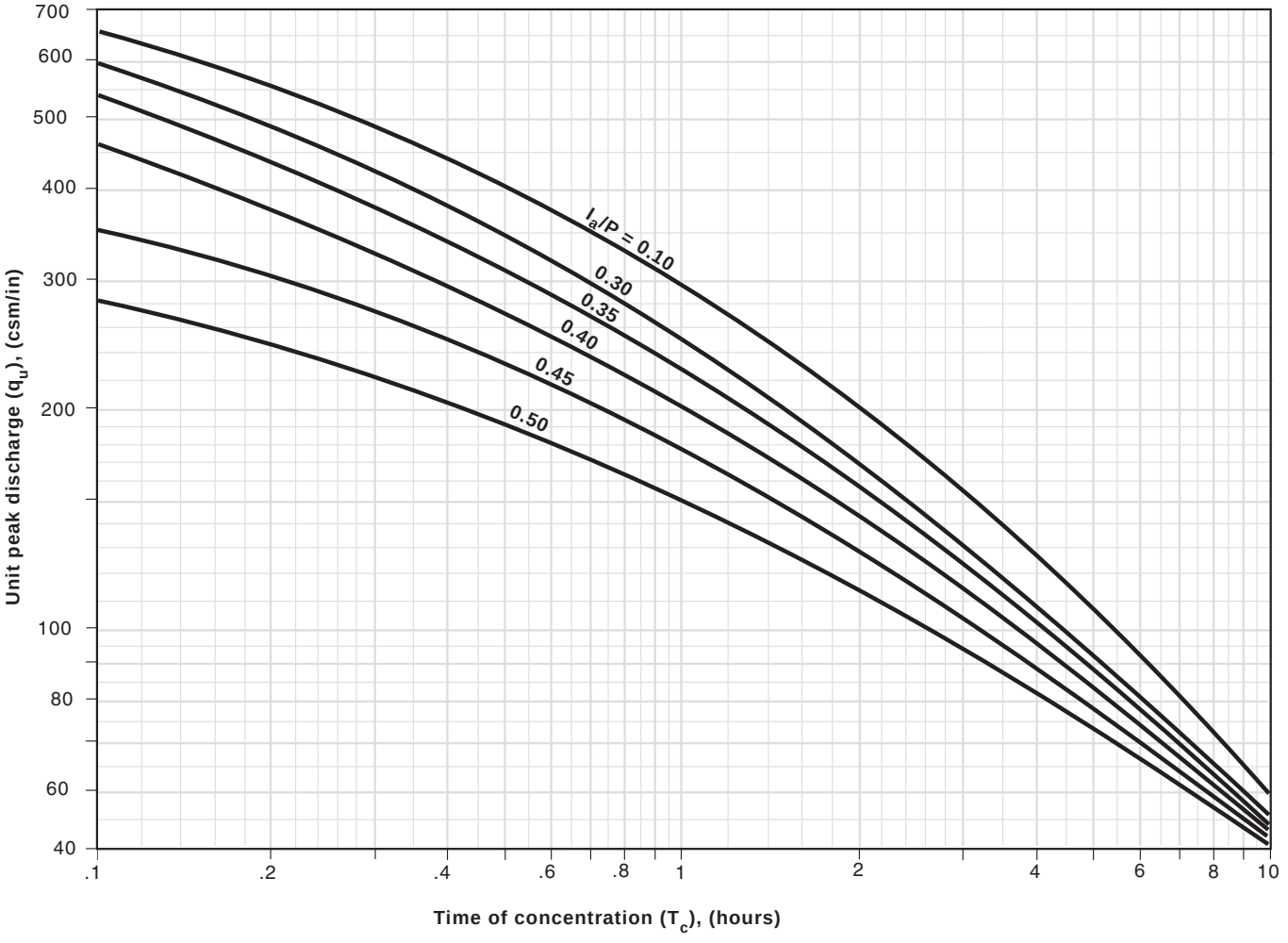
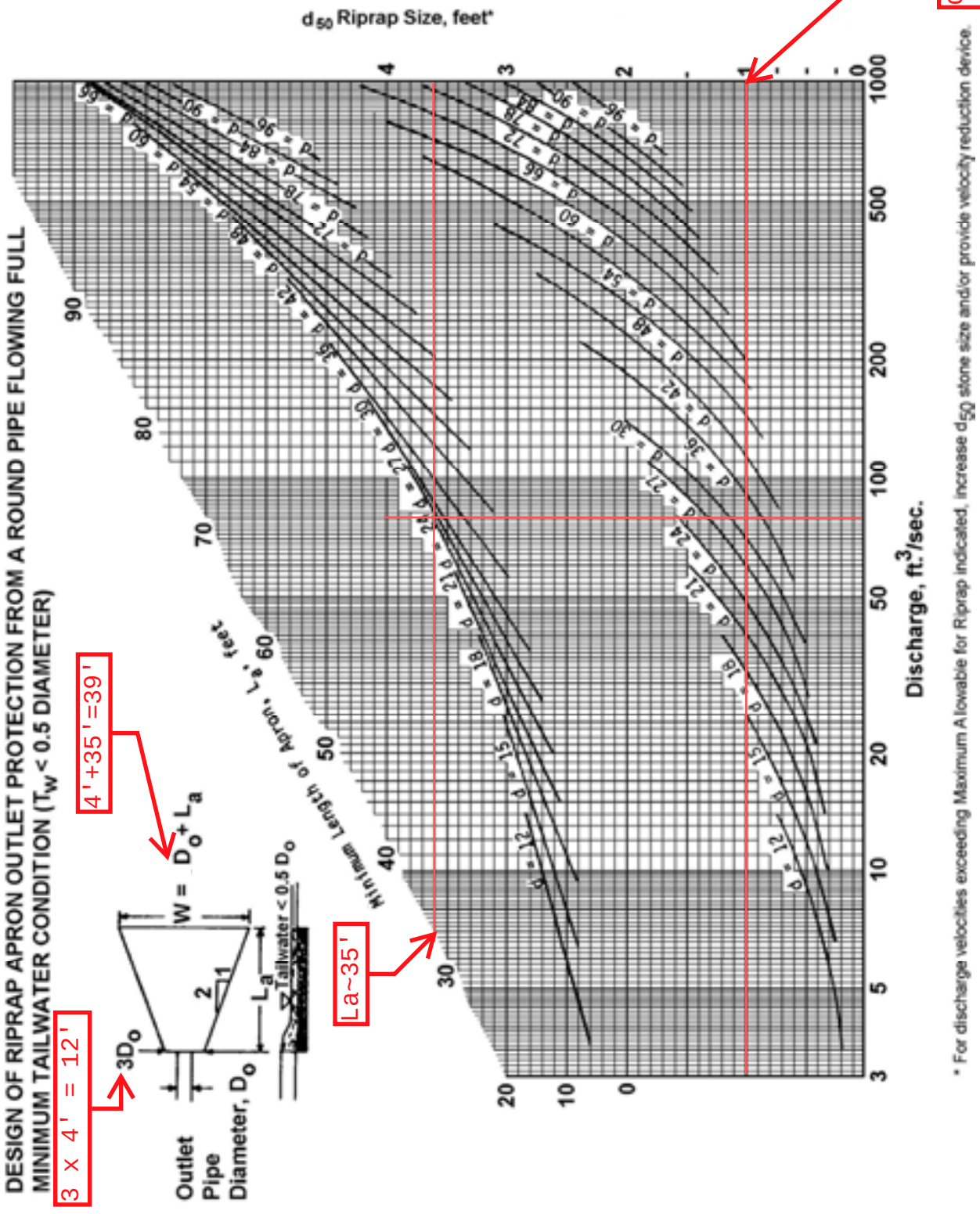


Exhibit 4-III Unit peal discharge (q_u) for NRCS (SCS) type III rainfall distribution



OCS-1 OUTFALL

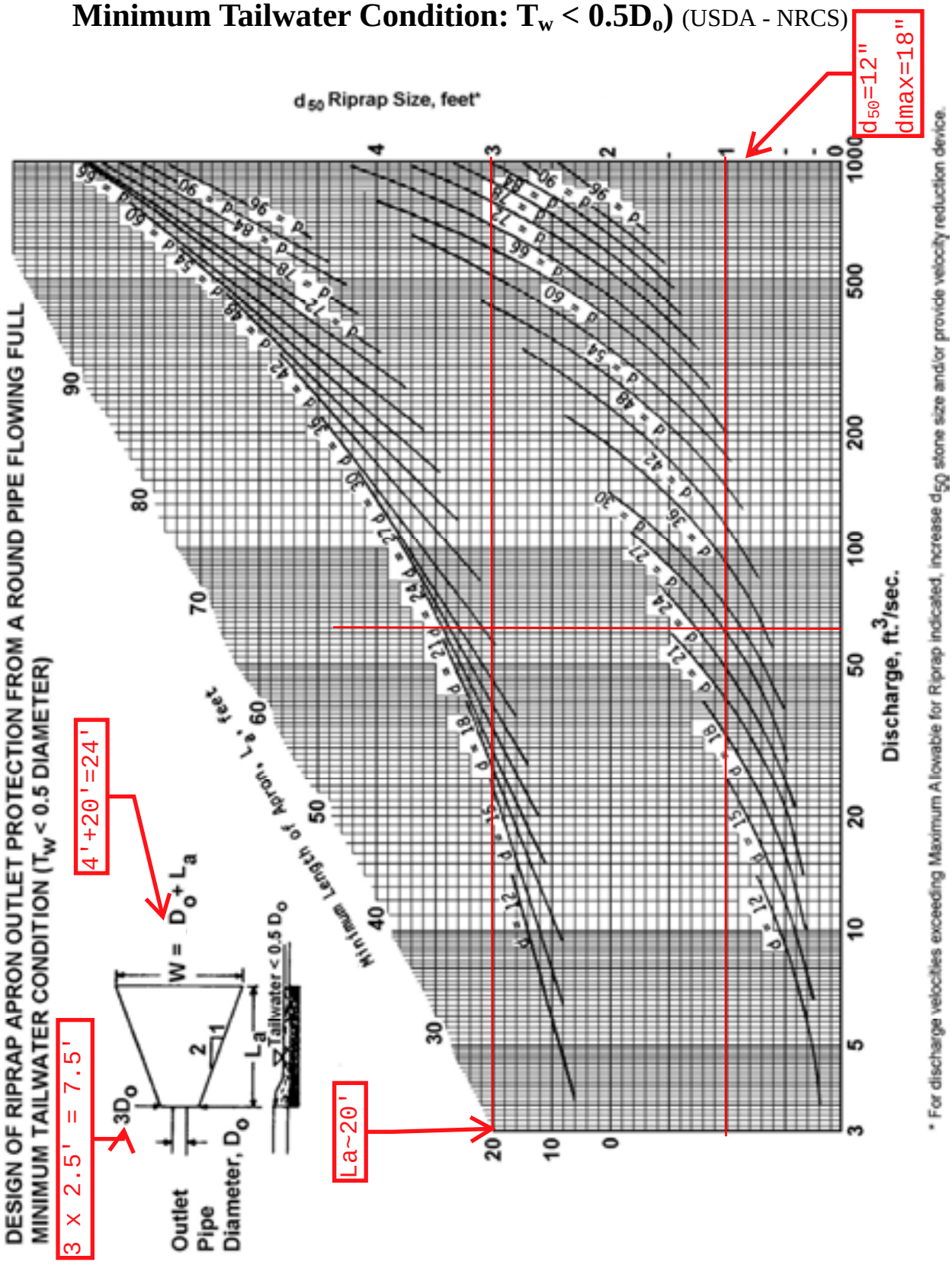
Figure 3.16
Outlet Protection Design—Minimum Tailwater Condition Chart (Design of Outlet Protection from a Round Pipe Flowing Full, Minimum Tailwater Condition: $T_w < 0.5D_o$) (USDA - NRCS)



OCS-2 OUTFALL

Figure 3.16

Outlet Protection Design—Minimum Tailwater Condition Chart (Design of Outlet Protection from a Round Pipe Flowing Full, Minimum Tailwater Condition: $T_w < 0.5D_o$) (USDA - NRCS)



Channel Report

Hydraflow Express Extension for Autodesk® Civil 3D® by Autodesk, Inc. Tuesday, Aug 23 2022

Dry Swale Design

Trapezoidal

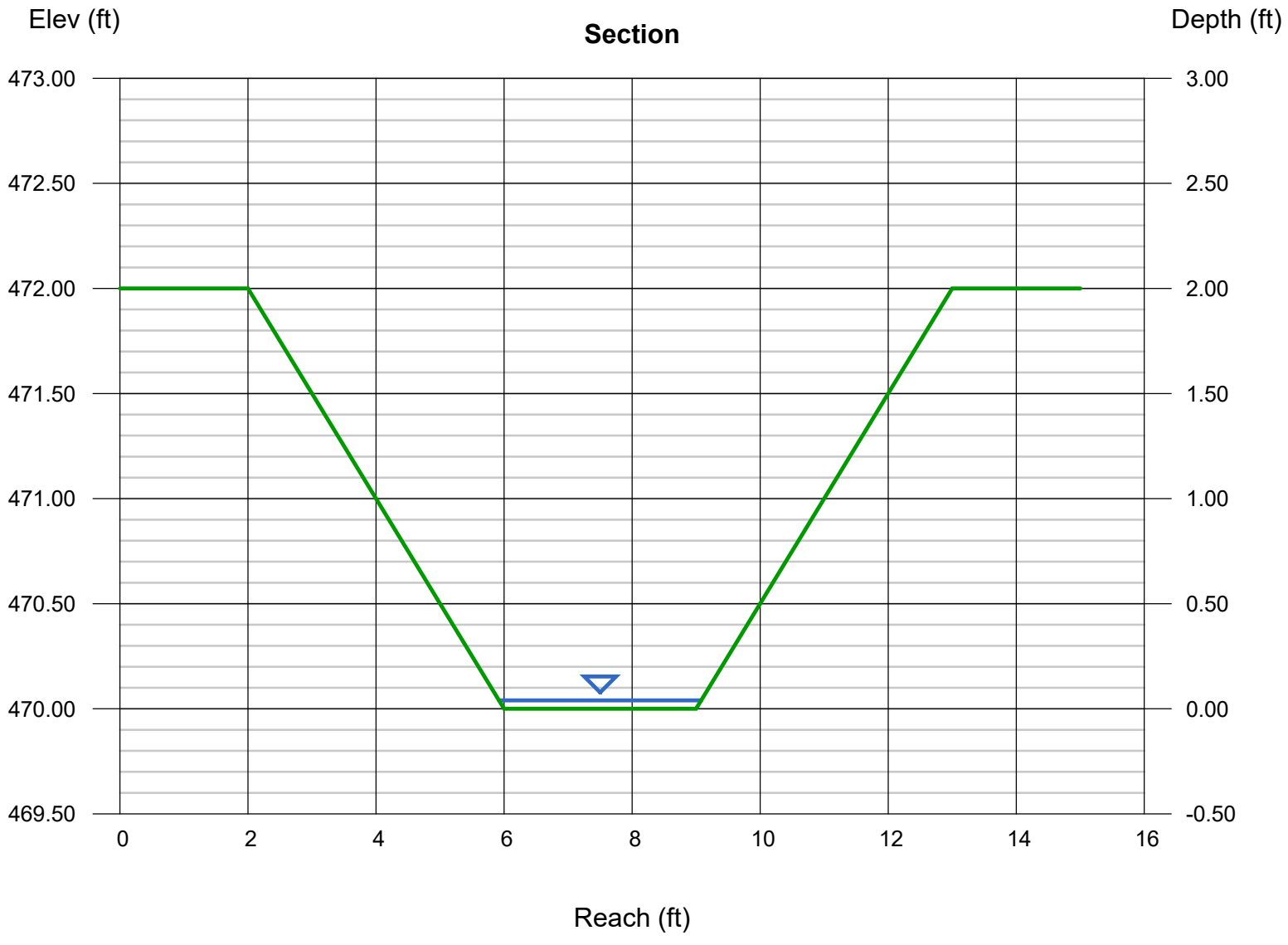
Bottom Width (ft)	= 3.00
Side Slopes (z:1)	= 2.00, 2.00
Total Depth (ft)	= 2.00
Invert Elev (ft)	= 470.00
Slope (%)	= 2.00
N-Value	= 0.022

Calculations

Compute by:	Q vs Depth
No. Increments	= 50

Highlighted

Depth (ft)	= 0.04
Q (cfs)	= 0.135
Area (sqft)	= 0.12
Velocity (ft/s)	= 1.09
Wetted Perim (ft)	= 3.18
Crit Depth, Yc (ft)	= 0.04
Top Width (ft)	= 3.16
EGL (ft)	= 0.06



Depth	Q	Area	Veloc
(ft)	(cfs)	(sqft)	(ft/s)
0.04	0.135	0.123	1.09
0.08	0.430	0.253	1.70
0.12	0.852	0.389	2.19
0.16	1.386	0.531	2.61
0.20	2.028	0.680	2.98
0.24	2.773	0.835	3.32
0.28	3.618	0.997	3.63
0.32	4.564	1.165	3.92
0.36	5.609	1.339	4.19
0.40	6.754	1.520	4.44
0.44	7.998	1.707	4.68
0.48	9.344	1.901	4.92
0.52	10.79	2.101	5.14
0.56	12.34	2.307	5.35
0.60	13.99	2.520	5.55
0.64	15.75	2.739	5.75
0.68	17.62	2.965	5.94
0.72	19.59	3.197	6.13
0.76	21.67	3.435	6.31
0.80	23.86	3.680	6.48
0.84	26.17	3.931	6.66
0.88	28.58	4.189	6.82

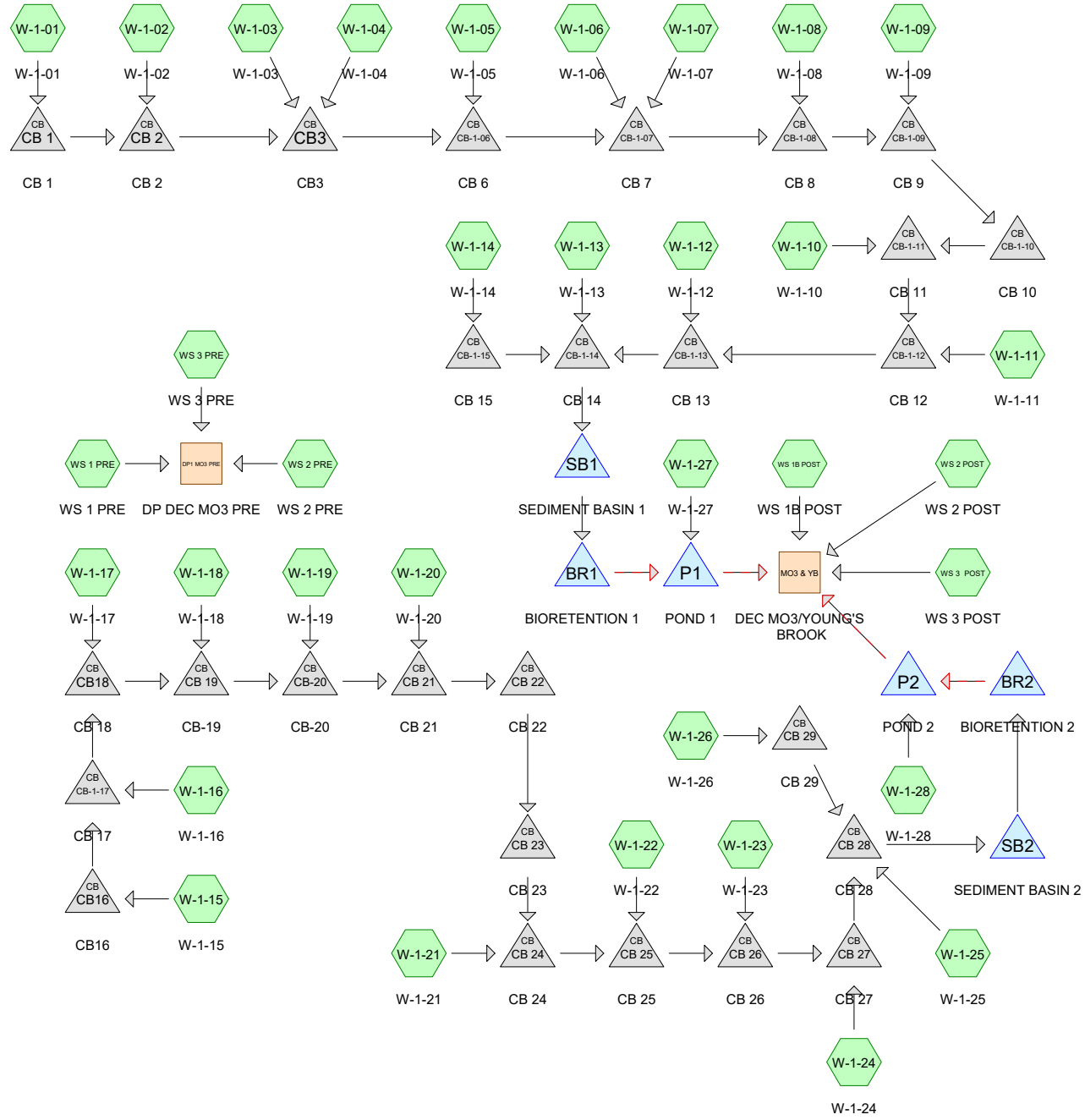
Depth	Q	Area	Veloc
(ft)	(cfs)	(sqft)	(ft/s)
0.92	31.12	4.453	6.99
0.96	33.77	4.723	7.15
1.00	36.53	5.000	7.31
1.04	39.42	5.283	7.46
1.08	42.43	5.573	7.61
1.12	45.56	5.869	7.76
1.16	48.82	6.171	7.91
1.20	52.20	6.480	8.06
1.24	55.71	6.795	8.20
1.28	59.35	7.117	8.34
1.32	63.12	7.445	8.48
1.36	67.02	7.779	8.61
1.40	71.05	8.120	8.75
1.44	75.22	8.467	8.88
1.48	79.53	8.821	9.02
1.52	83.98	9.181	9.15
1.56	88.56	9.547	9.28
1.60	93.29	9.920	9.40
1.64	98.16	10.30	9.53
1.68	103.2	10.68	9.66
1.72	108.3	11.08	9.78
1.76	113.6	11.48	9.90

Depth	Q	Area	Veloc
(ft)	(cfs)	(sqft)	(ft/s)
1.80	119.1	11.88	10.03
1.84	124.7	12.29	10.15
1.88	130.5	12.71	10.27
1.92	136.4	13.13	10.38
1.96	142.5	13.56	10.50
2.00	148.7	14.00	10.62

Wp	Yc	TopWidth	Energy
(ft)	(ft)	(ft)	(ft)
3.18	0.04	3.16	0.06
3.36	0.09	3.32	0.13
3.54	0.14	3.48	0.19
3.72	0.19	3.64	0.27
3.89	0.23	3.80	0.34
4.07	0.28	3.96	0.41
4.25	0.33	4.12	0.48
4.43	0.39	4.28	0.56
4.61	0.44	4.44	0.63
4.79	0.49	4.60	0.71
4.97	0.54	4.76	0.78
5.15	0.59	4.92	0.86
5.33	0.64	5.08	0.93
5.50	0.69	5.24	1.00
5.68	0.74	5.40	1.08
5.86	0.80	5.56	1.15
6.04	0.85	5.72	1.23
6.22	0.90	5.88	1.30
6.40	0.95	6.04	1.38
6.58	1.00	6.20	1.45
6.76	1.05	6.36	1.53
6.94	1.11	6.52	1.60

Wp	Yc	TopWidth	Energy
(ft)	(ft)	(ft)	(ft)
7.11	1.16	6.68	1.68
7.29	1.21	6.84	1.75
7.47	1.26	7.00	1.83
7.65	1.31	7.16	1.91
7.83	1.37	7.32	1.98
8.01	1.42	7.48	2.06
8.19	1.47	7.64	2.13
8.37	1.52	7.80	2.21
8.55	1.57	7.96	2.28
8.72	1.63	8.12	2.36
8.90	1.68	8.28	2.44
9.08	1.73	8.44	2.51
9.26	1.78	8.60	2.59
9.44	1.84	8.76	2.67
9.62	1.89	8.92	2.74
9.80	1.94	9.08	2.82
9.98	1.99	9.24	2.90
10.16	2.00	9.40	2.97
10.33	2.00	9.56	3.05
10.51	2.00	9.72	3.13
10.69	2.00	9.88	3.21
10.87	2.00	10.04	3.28

Wp	Yc	TopWidth	Energy
(ft)	(ft)	(ft)	(ft)
11.05	2.00	10.20	3.36
11.23	2.00	10.36	3.44
11.41	2.00	10.52	3.52
11.59	2.00	10.68	3.60
11.77	2.00	10.84	3.67
11.94	2.00	11.00	3.75



Subcat Reach Pond Link

Routing Diagram for Craigeville 06-21-24

Prepared by Arden Consulting Engineers PLLC, Printed 6/24/2024

HydroCAD® 10.20-5a s/n 04164 © 2023 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (sq-ft)	CN	Description (subcatchment-numbers)
548,158	74	>75% Grass cover, Good, HSG C (W-1-01, W-1-02, W-1-03, W-1-04, W-1-05, W-1-06, W-1-07, W-1-15, W-1-16, W-1-17, W-1-18, W-1-19, W-1-20, W-1-27, W-1-28)
1,253,458	71	Meadow, non-grazed, HSG C (WS 1B POST, WS 2 POST, WS 3 POST)
1,481,868	78	Meadow, non-grazed, HSG D (WS 1 PRE, WS 2 PRE, WS 3 PRE)
118,962	98	Paved parking, HSG C (WS 2 PRE, WS 3 POST, WS 3 PRE)
876,079	98	Paved parking, HSG D (W-1-01, W-1-02, W-1-03, W-1-04, W-1-05, W-1-06, W-1-07, W-1-08, W-1-09, W-1-10, W-1-11, W-1-12, W-1-13, W-1-14, W-1-15, W-1-16, W-1-17, W-1-18, W-1-19, W-1-20, W-1-21, W-1-22, W-1-23, W-1-24, W-1-25, W-1-26)
5,018,368	98	Water Surface, 0% imp, HSG C (WS 1B POST, WS 2 POST, WS 3 POST)
5,005,544	98	Water Surface, 0% imp, HSG D (WS 1 PRE, WS 2 PRE, WS 3 PRE)
9,781	98	Water Surface, HSG D (WS 1 PRE)
442,454	70	Woods, Good, HSG C (WS 1B POST, WS 2 POST, WS 3 POST)
1,728,133	77	Woods, Good, HSG D (WS 1 PRE, WS 2 PRE, WS 3 PRE)
16,482,805	**90**	**TOTAL AREA**

Ground Covers (all nodes)

HSG-A (sq-ft)	HSG-B (sq-ft)	HSG-C (sq-ft)	HSG-D (sq-ft)	Other (sq-ft)	Total (sq-ft)	Ground Cover	Su Nu
0	0	548,158	0	0	548,158	>75% Grass cover, Good	
0	0	1,253,458	1,481,868	0	2,735,326	Meadow, non-grazed	
0	0	118,962	876,079	0	995,041	Paved parking	
0	0	0	9,781	0	9,781	Water Surface	
0	0	5,018,368	5,005,544	0	10,023,912	Water Surface, 0% imp	
0	0	442,454	1,728,133	0	2,170,587	Woods, Good	
0	**0**	**7,381,400**	**9,101,405**	**0**	**16,482,805**	**TOTAL AREA**	

Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	BR1	469.00	467.00	54.0	0.0370	0.013	0.0	18.0	0.0	
2	BR2	475.50	472.50	51.0	0.0588	0.013	0.0	18.0	0.0	
3	CB 1	488.50	487.50	200.0	0.0050	0.012	0.0	24.0	0.0	
4	CB 19	484.74	484.44	60.0	0.0050	0.012	0.0	36.0	0.0	
5	CB 2	487.00	486.19	163.0	0.0050	0.012	0.0	30.0	0.0	
6	CB 21	482.92	481.92	200.0	0.0050	0.012	0.0	36.0	0.0	
7	CB 22	481.92	480.92	200.0	0.0050	0.012	0.0	36.0	0.0	
8	CB 23	480.92	480.19	145.0	0.0050	0.012	0.0	36.0	0.0	
9	CB 24	480.19	479.37	164.0	0.0050	0.012	0.0	36.0	0.0	
10	CB 25	479.37	478.38	198.0	0.0050	0.012	0.0	36.0	0.0	
11	CB 26	478.38	477.39	198.0	0.0050	0.012	0.0	36.0	0.0	
12	CB 27	477.39	476.74	131.0	0.0050	0.012	0.0	36.0	0.0	
13	CB 28	476.74	476.00	71.0	0.0104	0.012	0.0	36.0	0.0	
14	CB 29	491.40	490.55	169.0	0.0050	0.012	0.0	18.0	0.0	
15	CB-1-06	484.75	484.03	142.0	0.0051	0.012	0.0	36.0	0.0	
16	CB-1-07	484.03	483.35	136.0	0.0050	0.012	0.0	36.0	0.0	
17	CB-1-08	483.35	482.71	129.0	0.0050	0.012	0.0	36.0	0.0	
18	CB-1-09	482.71	481.71	200.0	0.0050	0.012	0.0	36.0	0.0	
19	CB-1-10	481.71	481.30	82.0	0.0050	0.012	0.0	36.0	0.0	
20	CB-1-11	481.30	480.33	194.0	0.0050	0.012	0.0	36.0	0.0	
21	CB-1-12	480.33	479.33	200.0	0.0050	0.012	0.0	36.0	0.0	
22	CB-1-13	478.83	477.90	186.0	0.0050	0.012	0.0	42.0	0.0	
23	CB-1-14	477.90	477.00	58.0	0.0155	0.012	0.0	48.0	0.0	
24	CB-1-15	491.90	491.30	114.0	0.0053	0.012	0.0	18.0	0.0	
25	CB-1-17	486.63	485.63	200.0	0.0050	0.012	0.0	30.0	0.0	
26	CB-20	483.94	482.92	205.0	0.0050	0.012	0.0	36.0	0.0	
27	CB16	488.13	487.13	200.0	0.0050	0.012	0.0	24.0	0.0	
28	CB18	485.63	484.74	178.0	0.0050	0.012	0.0	36.0	0.0	
29	CB3	486.19	484.75	188.0	0.0077	0.012	0.0	36.0	0.0	
30	P1	467.00	452.68	104.0	0.1377	0.013	0.0	30.0	0.0	
31	P2	472.50	468.00	209.0	0.0215	0.013	0.0	48.0	0.0	

Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment W-1-01: W-1-01 Runoff Area=93,483 sf 62.65% Impervious Runoff Depth>1.63"
Tc=6.0 min CN=89 Runoff=4.10 cfs 12,692 cf

Subcatchment W-1-02: W-1-02 Runoff Area=90,014 sf 62.52% Impervious Runoff Depth>1.63"
Tc=6.0 min CN=89 Runoff=3.95 cfs 12,221 cf

Subcatchment W-1-03: W-1-03 Runoff Area=40,985 sf 60.85% Impervious Runoff Depth>1.63"
Tc=6.0 min CN=89 Runoff=1.80 cfs 5,564 cf

Subcatchment W-1-04: W-1-04 Runoff Area=51,136 sf 71.19% Impervious Runoff Depth>1.79"
Tc=6.0 min CN=91 Runoff=2.45 cfs 7,634 cf

Subcatchment W-1-05: W-1-05 Runoff Area=52,184 sf 69.76% Impervious Runoff Depth>1.79"
Tc=6.0 min CN=91 Runoff=2.50 cfs 7,791 cf

Subcatchment W-1-06: W-1-06 Runoff Area=36,762 sf 57.56% Impervious Runoff Depth>1.55"
Tc=6.0 min CN=88 Runoff=1.54 cfs 4,756 cf

Subcatchment W-1-07: W-1-07 Runoff Area=55,327 sf 49.42% Impervious Runoff Depth>1.41"
Tc=6.0 min CN=86 Runoff=2.10 cfs 6,487 cf

Subcatchment W-1-08: W-1-08 Runoff Area=4,831 sf 100.00% Impervious Runoff Depth>2.47"
Tc=6.0 min CN=98 Runoff=0.29 cfs 993 cf

Subcatchment W-1-09: W-1-09 Runoff Area=7,334 sf 100.00% Impervious Runoff Depth>2.47"
Tc=6.0 min CN=98 Runoff=0.44 cfs 1,508 cf

Subcatchment W-1-10: W-1-10 Runoff Area=17,662 sf 100.00% Impervious Runoff Depth>2.47"
Tc=6.0 min CN=98 Runoff=1.06 cfs 3,632 cf

Subcatchment W-1-11: W-1-11 Runoff Area=47,143 sf 100.00% Impervious Runoff Depth>2.47"
Tc=6.0 min CN=98 Runoff=2.82 cfs 9,694 cf

Subcatchment W-1-12: W-1-12 Runoff Area=46,014 sf 100.00% Impervious Runoff Depth>2.47"
Tc=6.0 min CN=98 Runoff=2.75 cfs 9,462 cf

Subcatchment W-1-13: W-1-13 Runoff Area=35,758 sf 100.00% Impervious Runoff Depth>2.47"
Tc=6.0 min CN=98 Runoff=2.14 cfs 7,353 cf

Subcatchment W-1-14: W-1-14 Runoff Area=26,935 sf 100.00% Impervious Runoff Depth>2.47"
Tc=6.0 min CN=98 Runoff=1.61 cfs 5,539 cf

Subcatchment W-1-15: W-1-15 Runoff Area=68,257 sf 95.55% Impervious Runoff Depth>2.36"
Tc=6.0 min CN=97 Runoff=4.00 cfs 13,420 cf

Subcatchment W-1-16: W-1-16 Runoff Area=103,234 sf 27.04% Impervious Runoff Depth>1.03"
Tc=6.0 min CN=80 Runoff=2.79 cfs 8,847 cf

Subcatchment W-1-17: W-1-17 Runoff Area=97,113 sf 27.34% Impervious Runoff Depth>1.09"
Tc=6.0 min CN=81 Runoff=2.79 cfs 8,788 cf

Subcatchment W-1-18: W-1-18 Runoff Area=47,087 sf 73.34% Impervious Runoff Depth>1.88"
Tc=6.0 min CN=92 Runoff=2.35 cfs 7,366 cf

Subcatchment W-1-19: W-1-19 Runoff Area=49,992 sf 61.99% Impervious Runoff Depth>1.63"
Tc=6.0 min CN=89 Runoff=2.19 cfs 6,787 cf

Subcatchment W-1-20: W-1-20 Runoff Area=45,984 sf 65.48% Impervious Runoff Depth>1.71"
Tc=6.0 min CN=90 Runoff=2.11 cfs 6,548 cf

Subcatchment W-1-21: W-1-21 Runoff Area=18,171 sf 100.00% Impervious Runoff Depth>2.47"
Tc=6.0 min CN=98 Runoff=1.09 cfs 3,737 cf

Subcatchment W-1-22: W-1-22 Runoff Area=46,207 sf 100.00% Impervious Runoff Depth>2.47"
Tc=6.0 min CN=98 Runoff=2.77 cfs 9,502 cf

Subcatchment W-1-23: W-1-23 Runoff Area=44,247 sf 100.00% Impervious Runoff Depth>2.47"
Tc=6.0 min CN=98 Runoff=2.65 cfs 9,099 cf

Subcatchment W-1-24: W-1-24 Runoff Area=36,712 sf 100.00% Impervious Runoff Depth>2.47"
Tc=6.0 min CN=98 Runoff=2.20 cfs 7,549 cf

Subcatchment W-1-25: W-1-25 Runoff Area=38,020 sf 100.00% Impervious Runoff Depth>2.47"
Tc=6.0 min CN=98 Runoff=2.28 cfs 7,818 cf

Subcatchment W-1-26: W-1-26 Runoff Area=30,635 sf 100.00% Impervious Runoff Depth>2.47"
Tc=6.0 min CN=98 Runoff=1.83 cfs 6,300 cf

Subcatchment W-1-27: W-1-27 Runoff Area=81,982 sf 0.00% Impervious Runoff Depth>0.72"
Tc=6.0 min CN=74 Runoff=1.44 cfs 4,937 cf

Subcatchment W-1-28: W-1-28 Runoff Area=111,028 sf 0.00% Impervious Runoff Depth>0.72"
Tc=6.0 min CN=74 Runoff=1.96 cfs 6,686 cf

Subcatchment WS 1 PRE: WS 1 PRE Runoff Area=3,623,989 sf 0.27% Impervious Runoff Depth>1.69"
Flow Length=4,000' Tc=59.1 min CN=90 Runoff=66.41 cfs 510,510 cf

Subcatchment WS 1B POST: WS 1B Runoff Area=3,089,449 sf 0.00% Impervious Runoff Depth>1.76"
Flow Length=3,130' Tc=94.5 min CN=91 Runoff=43.84 cfs 452,870 cf

Subcatchment WS 2 POST: WS 2 POST Runoff Area=2,639,780 sf 0.00% Impervious Runoff Depth>2.15"
Flow Length=3,389' Tc=23.6 min CN=95 Runoff=92.97 cfs 472,723 cf

Subcatchment WS 2 PRE: WS 2 PRE Runoff Area=3,138,375 sf 0.70% Impervious Runoff Depth>1.95"
Flow Length=3,471' Tc=56.1 min CN=93 Runoff=67.18 cfs 509,535 cf

Subcatchment WS 3 POST: WS 3 POST Runoff Area=1,069,841 sf 7.93% Impervious Runoff Depth>1.14"
Flow Length=1,234' Tc=8.8 min CN=82 Runoff=29.56 cfs 102,071 cf

Subcatchment WS 3 PRE: WS 3 PRE Runoff Area=1,497,134 sf 0.81% Impervious Runoff Depth>1.20"
Flow Length=2,153' Tc=26.3 min CN=83 Runoff=28.89 cfs 149,927 cf

Reach DP1 MO3 PRE: DP DEC MO3 PRE Inflow=149.02 cfs 1,169,972 cf
Outflow=149.02 cfs 1,169,972 cf

Reach MO3 & YB: DEC MO3/YOUNG'S BROOK Inflow=123.00 cfs 1,084,766 cf
Outflow=123.00 cfs 1,084,766 cf

Pond BR1: BIORETENTION 1 Peak Elev=474.48' Storage=12,154 cf Inflow=28.82 cfs 87,123 cf
Primary=18.51 cfs 83,089 cf Secondary=0.00 cfs 0 cf Outflow=18.51 cfs 83,089 cf

Pond BR2: BIORETENTION 2 Peak Elev=480.34' Storage=24,990 cf Inflow=27.78 cfs 71,972 cf
Primary=8.47 cfs 56,252 cf Secondary=0.00 cfs 0 cf Outflow=8.47 cfs 56,252 cf

Pond CB 1: CB 1 Peak Elev=489.43' Inflow=4.10 cfs 12,692 cf
24.0" Round Culvert n=0.012 L=200.0' S=0.0050 '/' Outflow=4.10 cfs 12,692 cf

Pond CB 19: CB-19 Peak Elev=486.28' Inflow=11.91 cfs 38,421 cf
36.0" Round Culvert n=0.012 L=60.0' S=0.0050 '/' Outflow=11.91 cfs 38,421 cf

Pond CB 2: CB 2 Peak Elev=488.25' Inflow=8.04 cfs 24,912 cf
30.0" Round Culvert n=0.012 L=163.0' S=0.0050 '/' Outflow=8.04 cfs 24,912 cf

Pond CB 21: CB 21 Peak Elev=484.63' Inflow=16.21 cfs 51,757 cf
36.0" Round Culvert n=0.012 L=200.0' S=0.0050 '/' Outflow=16.21 cfs 51,757 cf

Pond CB 22: CB 22 Peak Elev=483.63' Inflow=16.21 cfs 51,757 cf
36.0" Round Culvert n=0.012 L=200.0' S=0.0050 '/' Outflow=16.21 cfs 51,757 cf

Pond CB 23: CB 23 Peak Elev=482.67' Inflow=16.21 cfs 51,757 cf
36.0" Round Culvert n=0.012 L=145.0' S=0.0050 '/' Outflow=16.21 cfs 51,757 cf

Pond CB 24: CB 24 Peak Elev=481.99' Inflow=17.30 cfs 55,493 cf
36.0" Round Culvert n=0.012 L=164.0' S=0.0050 '/' Outflow=17.30 cfs 55,493 cf

Pond CB 25: CB 25 Peak Elev=481.32' Inflow=20.06 cfs 64,995 cf
36.0" Round Culvert n=0.012 L=198.0' S=0.0050 '/' Outflow=20.06 cfs 64,995 cf

Pond CB 26: CB 26 Peak Elev=480.48' Inflow=22.71 cfs 74,094 cf
36.0" Round Culvert n=0.012 L=198.0' S=0.0050 '/' Outflow=22.71 cfs 74,094 cf

Pond CB 27: CB 27 Peak Elev=479.68' Inflow=24.90 cfs 81,643 cf
36.0" Round Culvert n=0.012 L=131.0' S=0.0050 '/' Outflow=24.90 cfs 81,643 cf

Pond CB 28: CB 28 Peak Elev=479.09' Inflow=29.01 cfs 95,761 cf
36.0" Round Culvert n=0.012 L=71.0' S=0.0104 '/' Outflow=29.01 cfs 95,761 cf

Pond CB 29: CB 29 Peak Elev=492.07' Inflow=1.83 cfs 6,300 cf
18.0" Round Culvert n=0.012 L=169.0' S=0.0050 '/' Outflow=1.83 cfs 6,300 cf

Pond CB-1-06: CB 6 Peak Elev=486.40' Inflow=14.79 cfs 45,901 cf
36.0" Round Culvert n=0.012 L=142.0' S=0.0051 '/' Outflow=14.79 cfs 45,901 cf

Pond CB-1-07: CB 7 Peak Elev=485.92' Inflow=18.42 cfs 57,144 cf
36.0" Round Culvert n=0.012 L=136.0' S=0.0050 '/' Outflow=18.42 cfs 57,144 cf

Pond CB-1-08: CB 8 Peak Elev=485.27' Inflow=18.71 cfs 58,137 cf
36.0" Round Culvert n=0.012 L=129.0' S=0.0050 '/' Outflow=18.71 cfs 58,137 cf

Pond CB-1-09: CB 9 Peak Elev=484.60' Inflow=19.15 cfs 59,646 cf
36.0" Round Culvert n=0.012 L=200.0' S=0.0050 '/' Outflow=19.15 cfs 59,646 cf

Pond CB-1-10: CB 10 Peak Elev=483.71' Inflow=19.15 cfs 59,646 cf
36.0" Round Culvert n=0.012 L=82.0' S=0.0050 '/' Outflow=19.15 cfs 59,646 cf

Pond CB-1-11: CB 11 Peak Elev=483.26' Inflow=20.20 cfs 63,278 cf
36.0" Round Culvert n=0.012 L=194.0' S=0.0050 '/' Outflow=20.20 cfs 63,278 cf

Pond CB-1-12: CB 12 Peak Elev=482.45' Inflow=23.02 cfs 72,972 cf
36.0" Round Culvert n=0.012 L=200.0' S=0.0050 '/' Outflow=23.02 cfs 72,972 cf

Pond CB-1-13: CB 13 Peak Elev=480.94' Inflow=25.78 cfs 82,434 cf
42.0" Round Culvert n=0.012 L=186.0' S=0.0050 '/' Outflow=25.78 cfs 82,434 cf

Pond CB-1-14: CB 14 Peak Elev=479.87' Inflow=29.53 cfs 95,326 cf
48.0" Round Culvert n=0.012 L=58.0' S=0.0155 '/' Outflow=29.53 cfs 95,326 cf

Pond CB-1-15: CB 15 Peak Elev=492.53' Inflow=1.61 cfs 5,539 cf
18.0" Round Culvert n=0.012 L=114.0' S=0.0053 '/' Outflow=1.61 cfs 5,539 cf

Pond CB-1-17: CB 17 Peak Elev=487.75' Inflow=6.78 cfs 22,267 cf
30.0" Round Culvert n=0.012 L=200.0' S=0.0050 '/' Outflow=6.78 cfs 22,267 cf

Pond CB-20: CB-20 Peak Elev=485.52' Inflow=14.11 cfs 45,208 cf
36.0" Round Culvert n=0.012 L=205.0' S=0.0050 '/' Outflow=14.11 cfs 45,208 cf

Pond CB16: CB16 Peak Elev=489.05' Inflow=4.00 cfs 13,420 cf
24.0" Round Culvert n=0.012 L=200.0' S=0.0050 '/' Outflow=4.00 cfs 13,420 cf

Pond CB18: CB 18 Peak Elev=486.91' Inflow=9.57 cfs 31,055 cf
36.0" Round Culvert n=0.012 L=178.0' S=0.0050 '/' Outflow=9.57 cfs 31,055 cf

Pond CB3: CB3 Peak Elev=487.55' Inflow=12.29 cfs 38,111 cf
36.0" Round Culvert n=0.012 L=188.0' S=0.0077 '/' Outflow=12.29 cfs 38,111 cf

Pond P1: POND 1 Peak Elev=471.38' Storage=61,182 cf Inflow=19.60 cfs 88,026 cf
Primary=0.85 cfs 34,901 cf Secondary=0.00 cfs 0 cf Outflow=0.85 cfs 34,901 cf

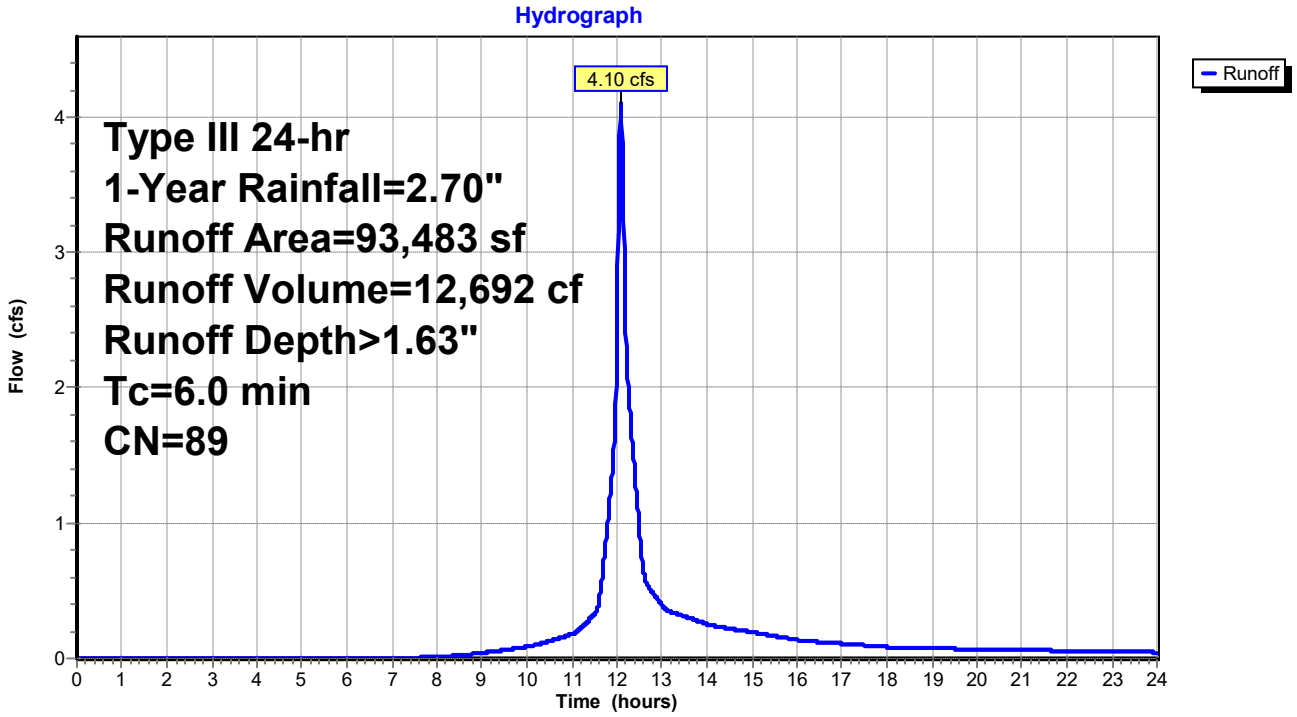
Pond P2: POND 2 Peak Elev=475.20' Storage=42,775 cf Inflow=9.17 cfs 62,939 cf
Primary=0.59 cfs 22,200 cf Secondary=0.00 cfs 0 cf Outflow=0.59 cfs 22,200 cf

Pond SB1: SEDIMENT BASIN 1 Peak Elev=475.21' Storage=11,003 cf Inflow=29.53 cfs 95,326 cf
Outflow=28.82 cfs 87,123 cf

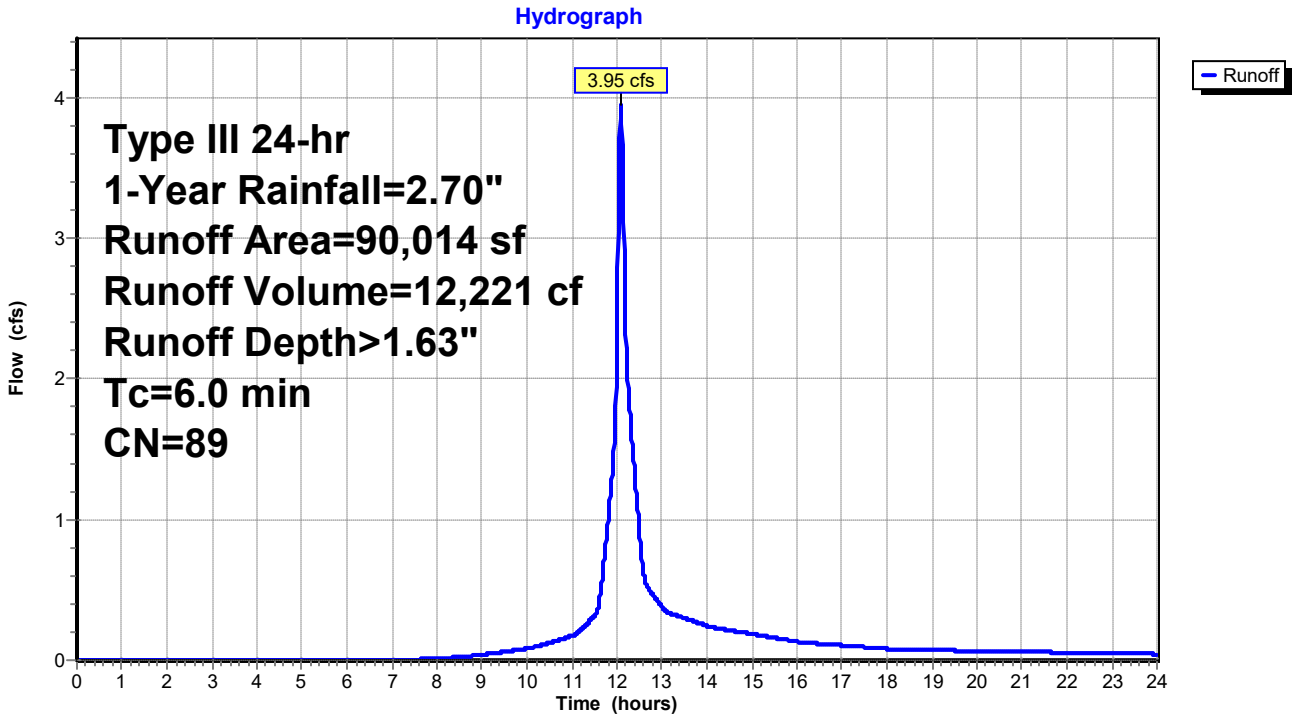
Pond SB2: SEDIMENT BASIN 2 Peak Elev=480.70' Storage=27,485 cf Inflow=29.01 cfs 95,761 cf
Outflow=27.78 cfs 71,972 cf

Total Runoff Area = 16,482,805 sf Runoff Volume = 2,400,346 cf Average Runoff Depth = 1.75"
93.90% Pervious = 15,477,983 sf 6.10% Impervious = 1,004,822 sf

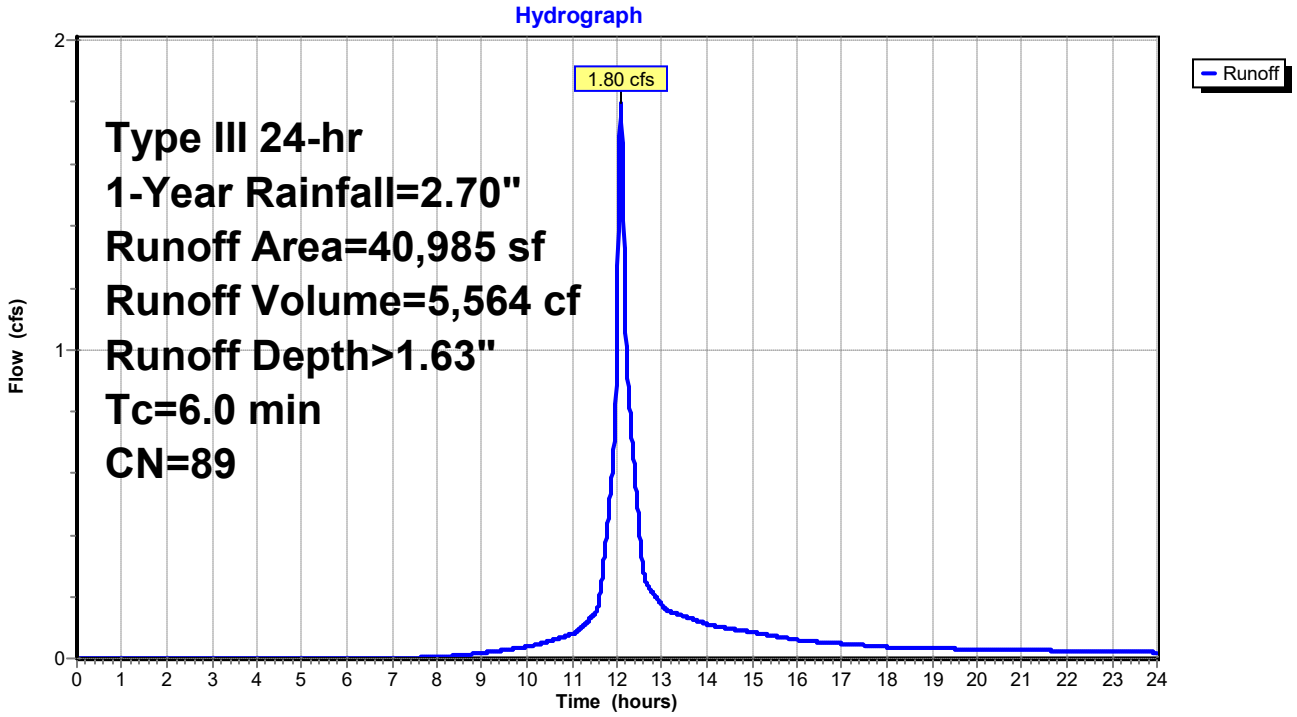
Subcatchment W-1-01: W-1-01



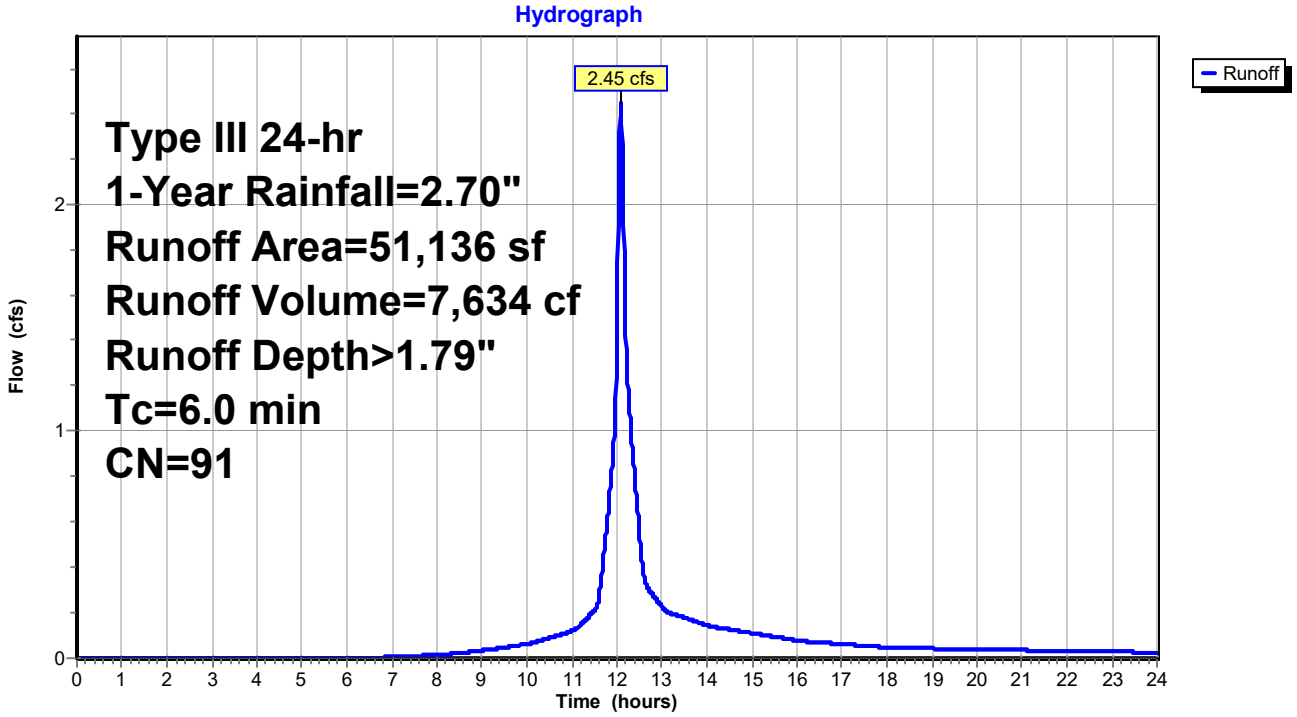
Subcatchment W-1-02: W-1-02



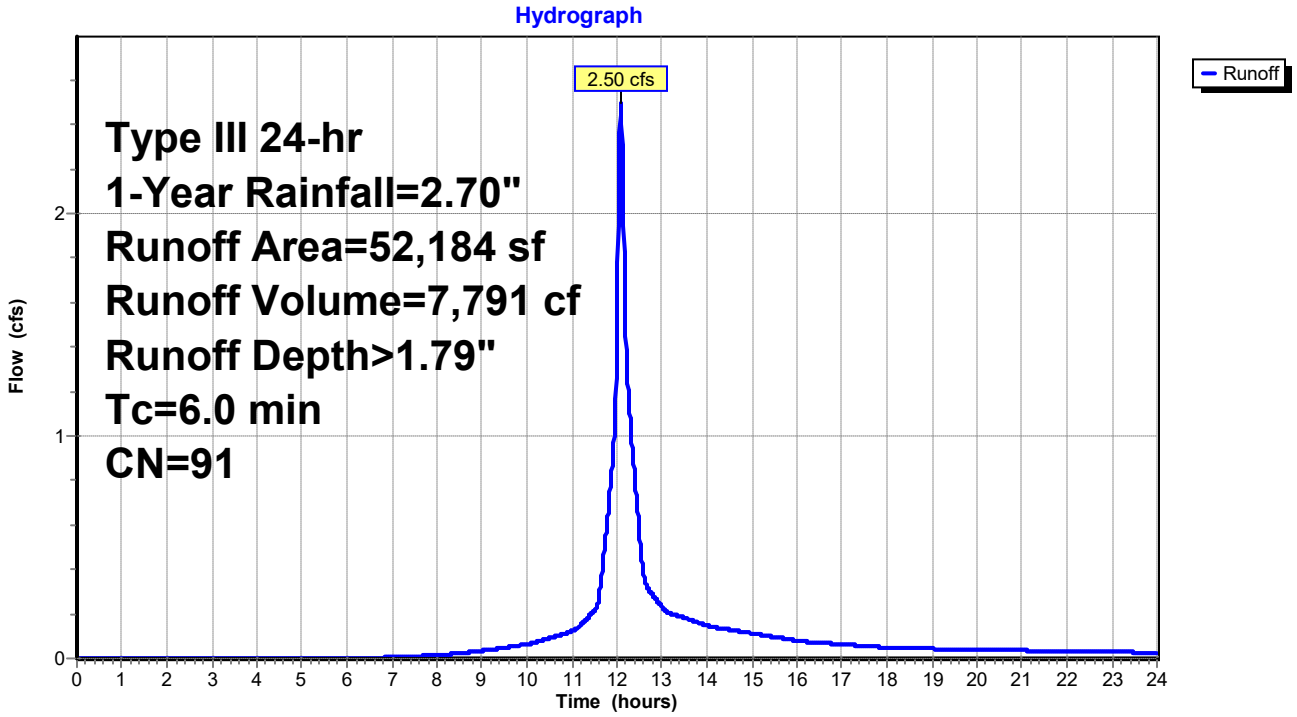
Subcatchment W-1-03: W-1-03



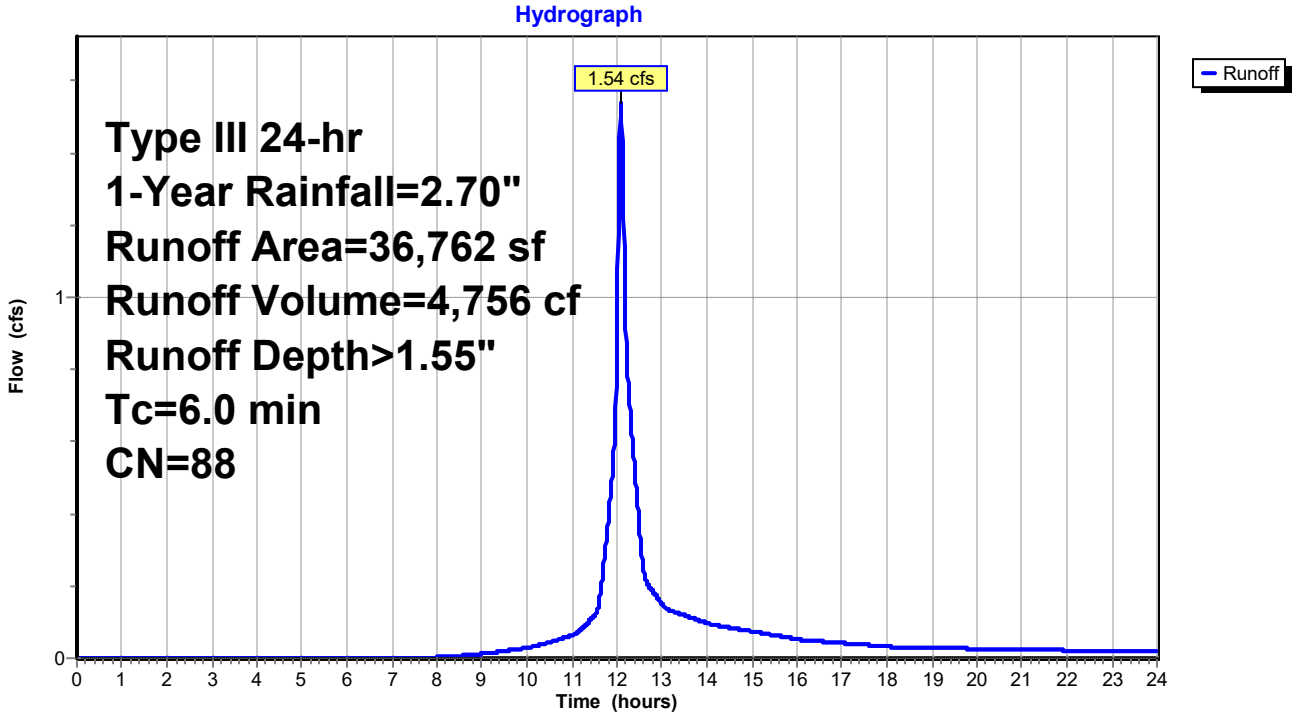
Subcatchment W-1-04: W-1-04



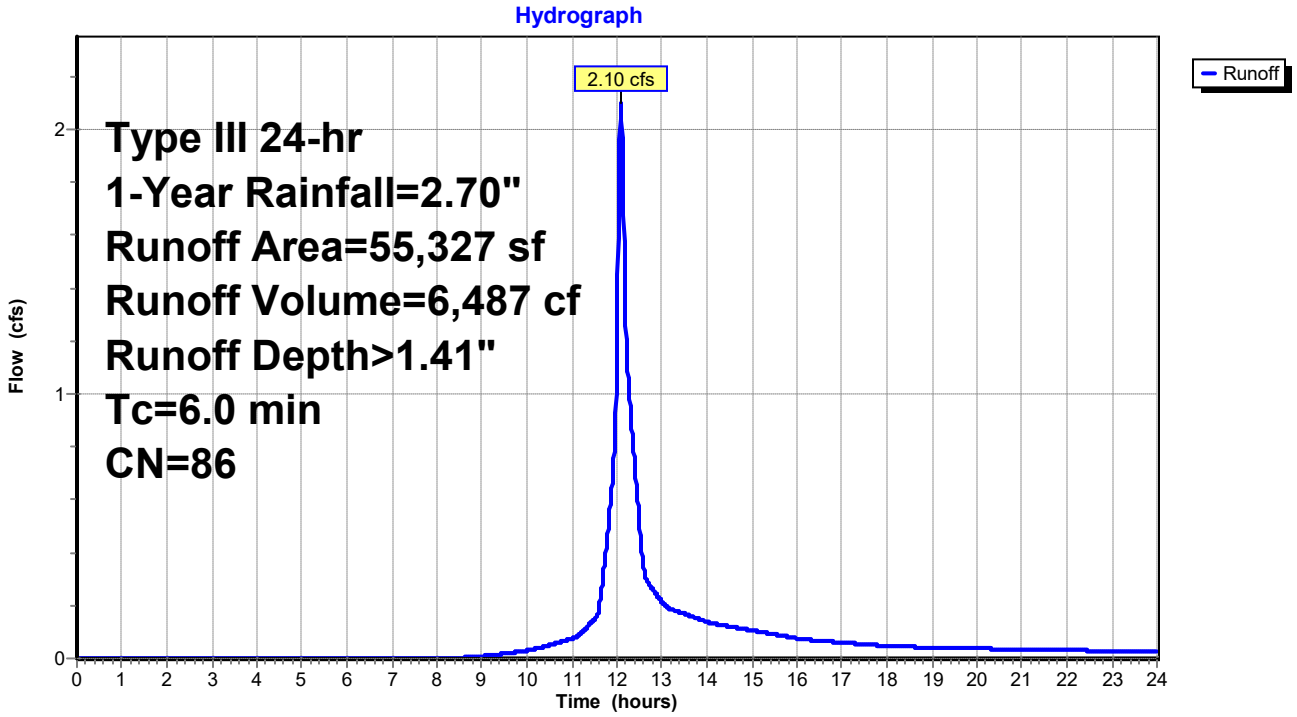
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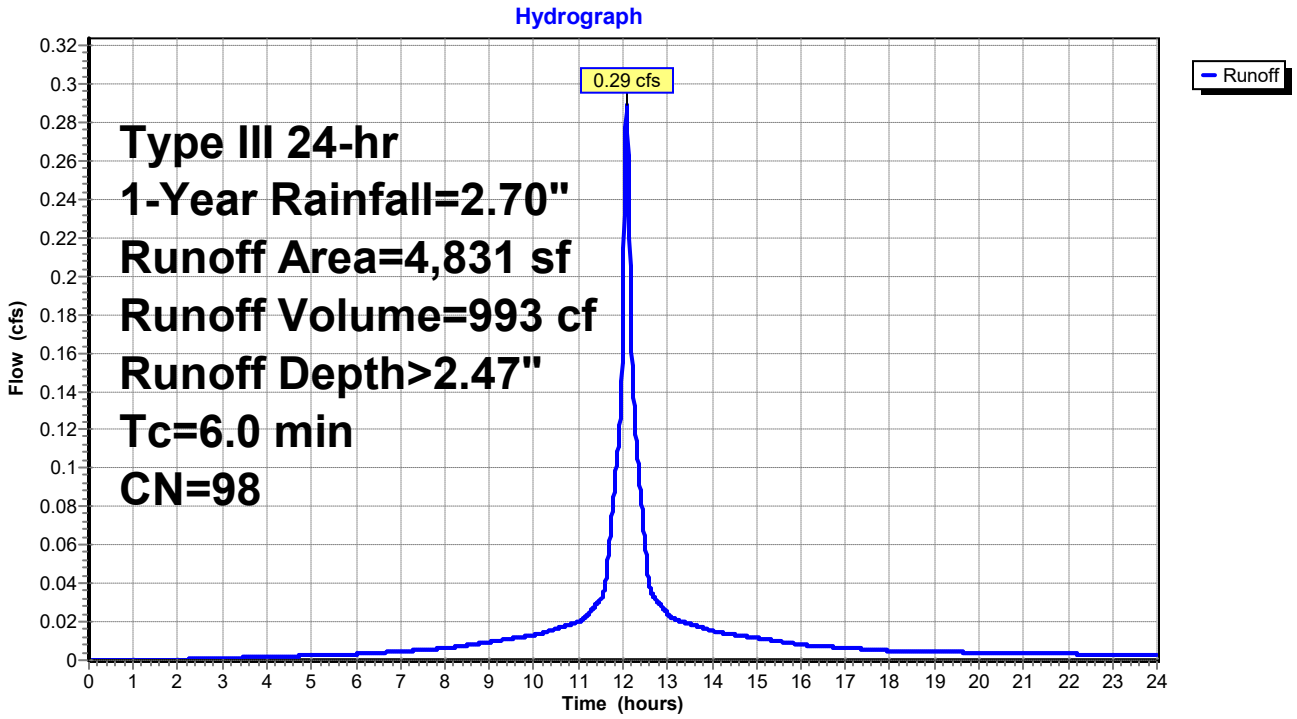
Subcatchment W-1-06: W-1-06



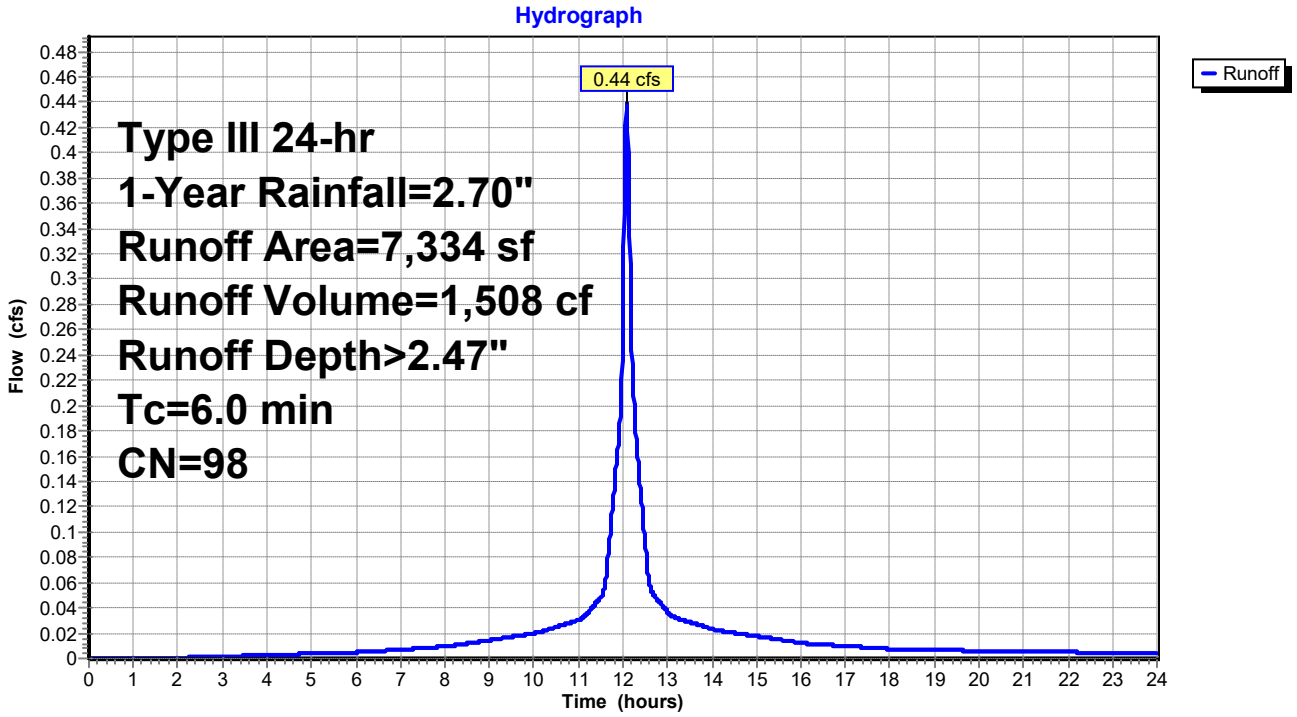
Subcatchment W-1-07: W-1-07



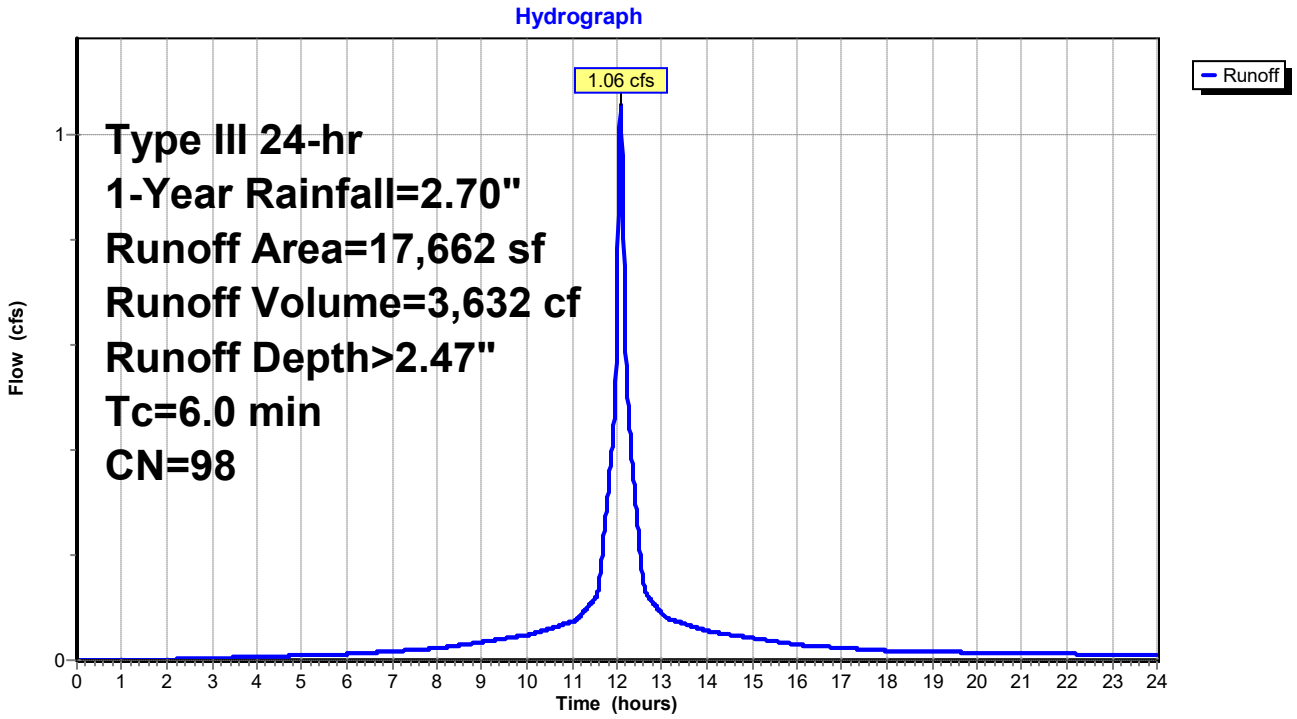
Subcatchment W-1-08: W-1-08



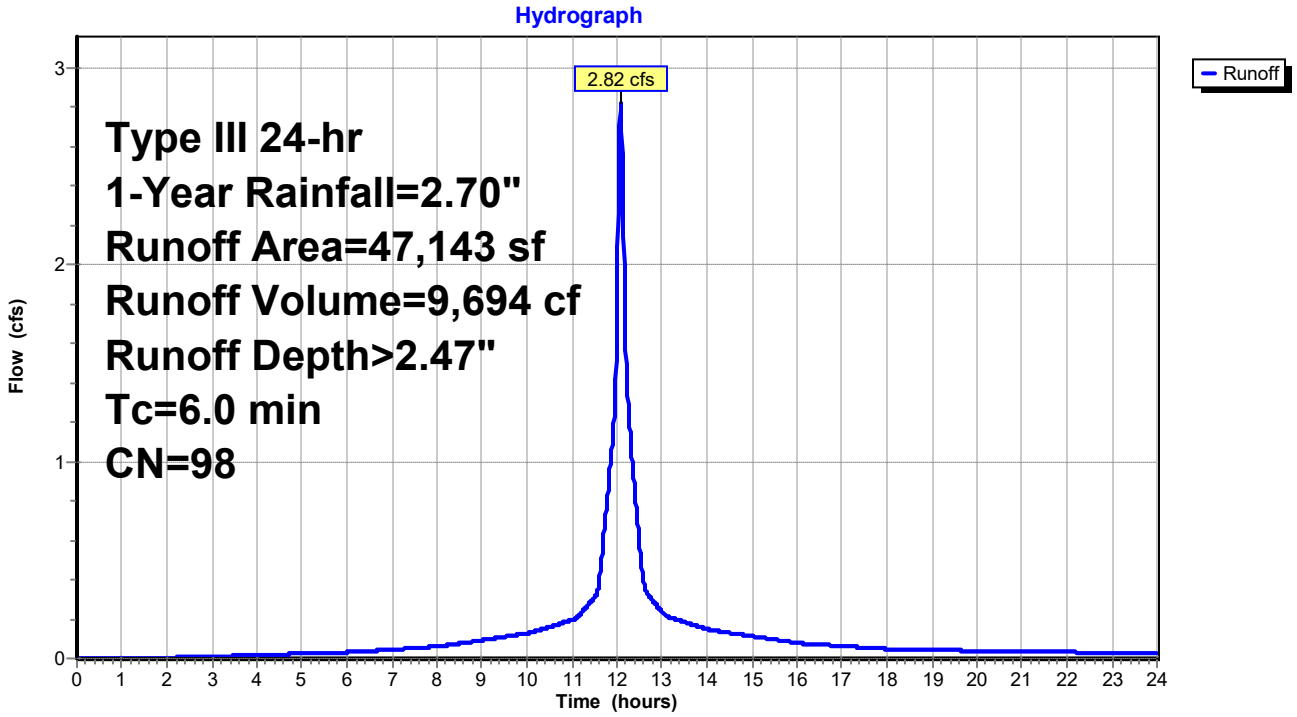
Subcatchment W-1-09: W-1-09



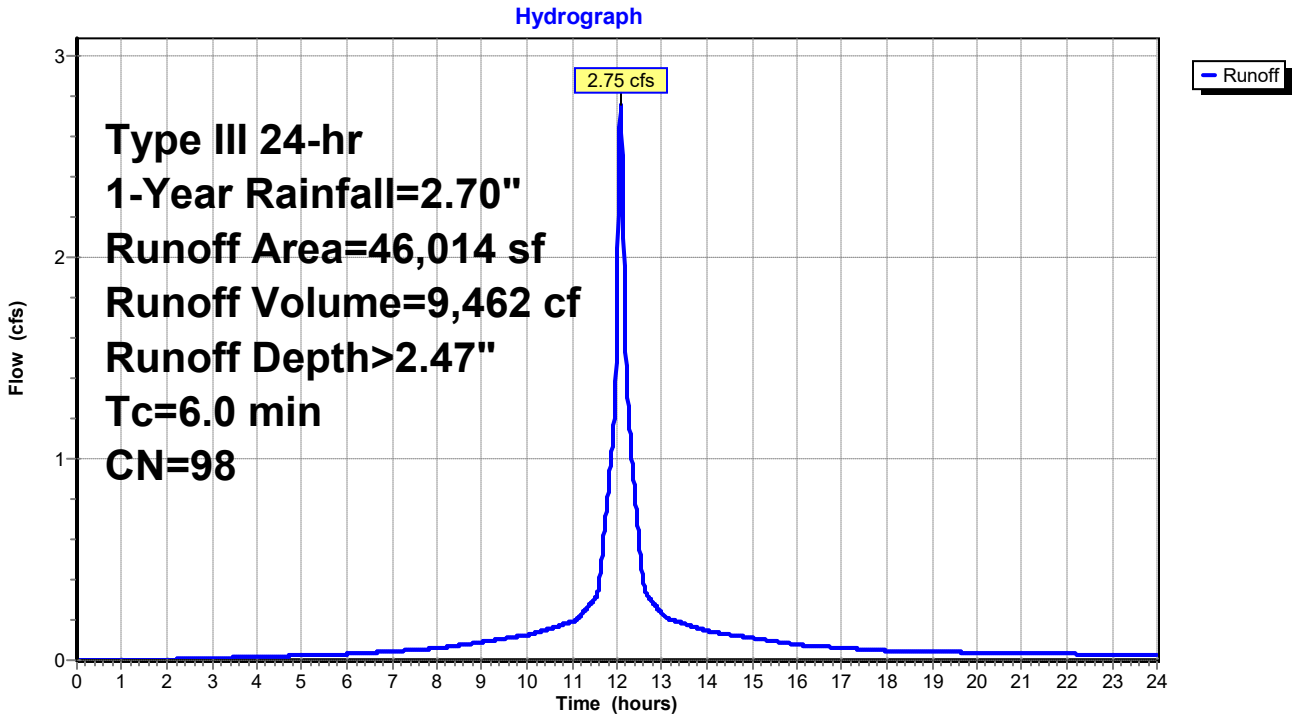
Subcatchment W-1-10: W-1-10



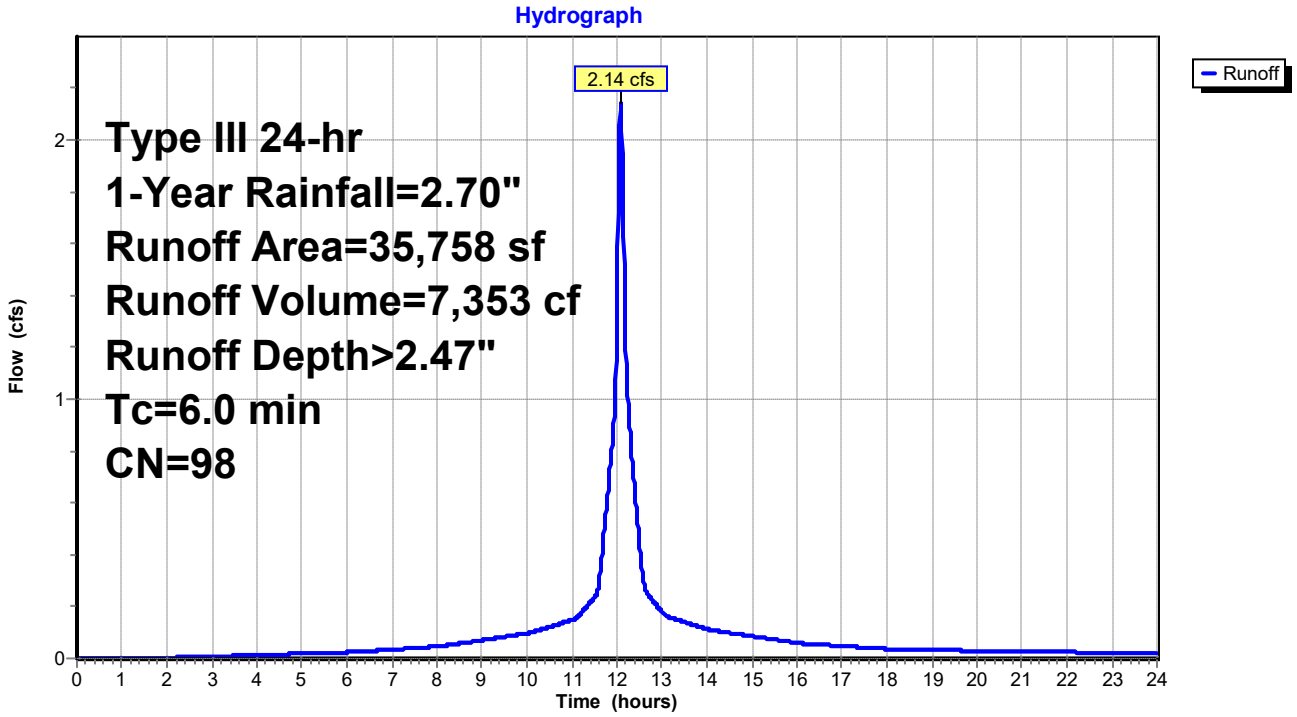
Subcatchment W-1-11: W-1-11



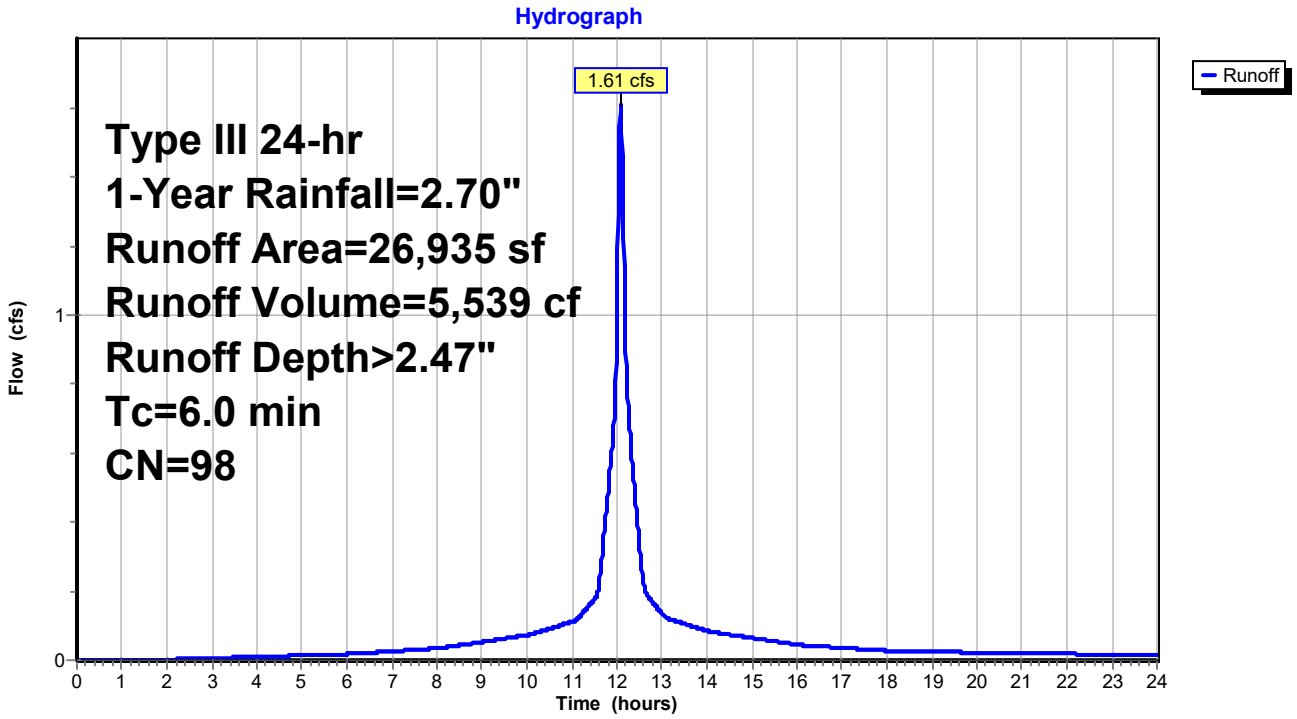
Subcatchment W-1-12: W-1-12



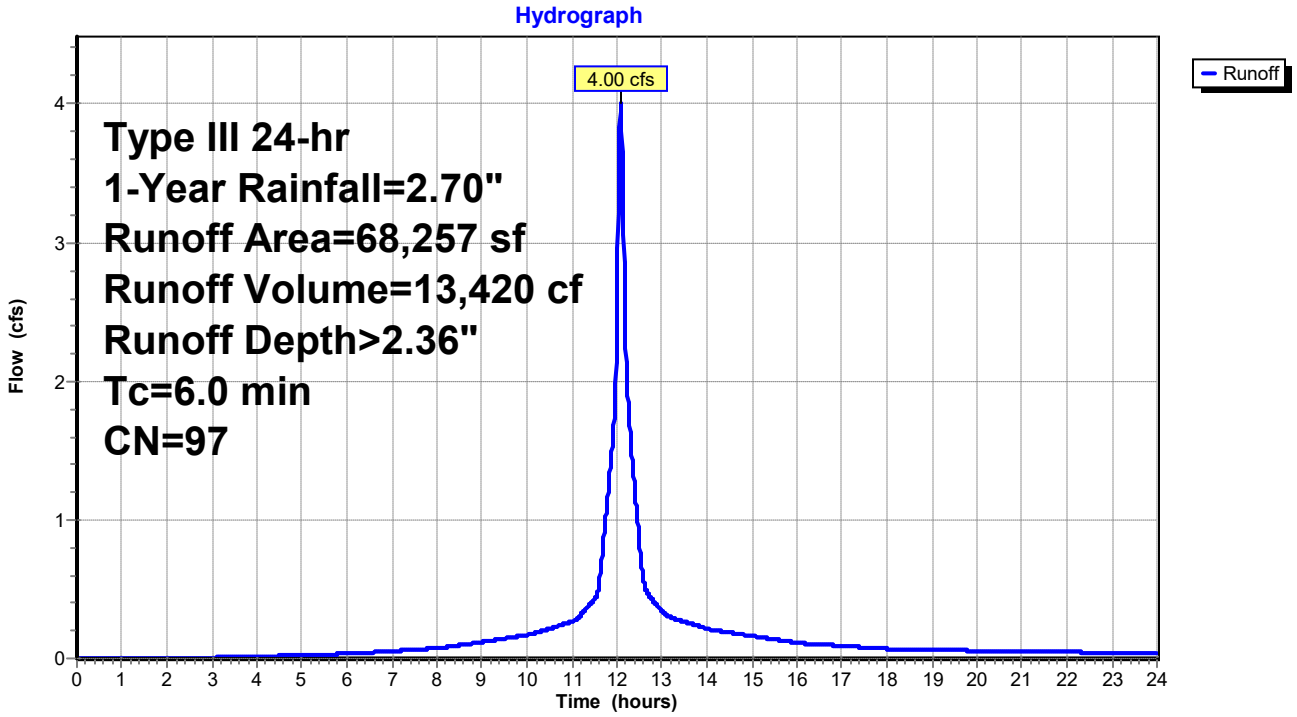
Subcatchment W-1-13: W-1-13



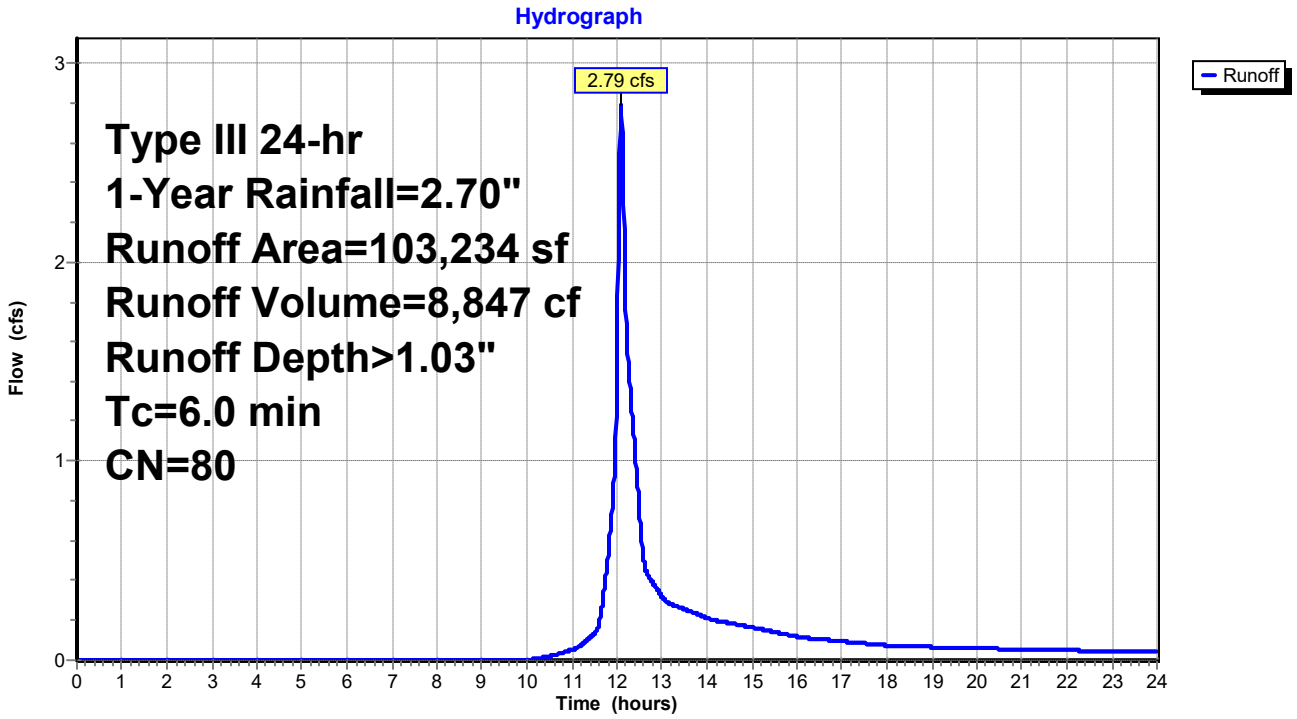
Subcatchment W-1-14: W-1-14



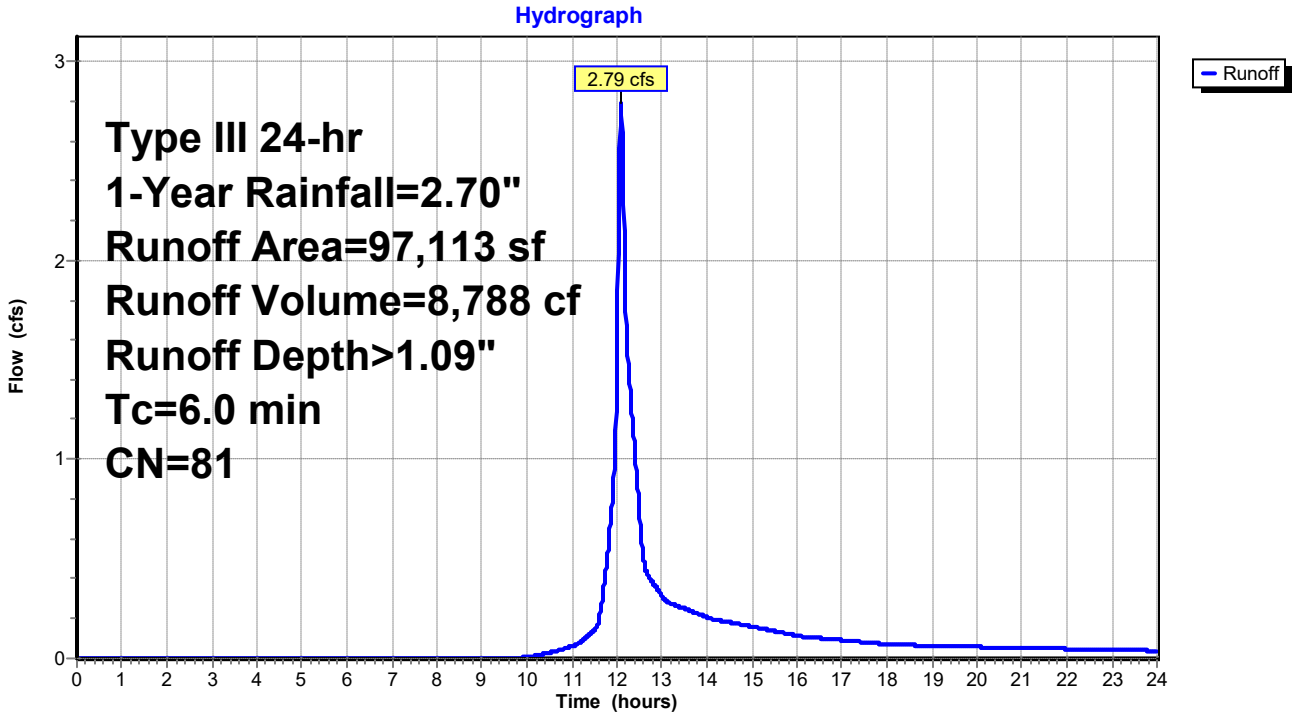
Subcatchment W-1-15: W-1-15



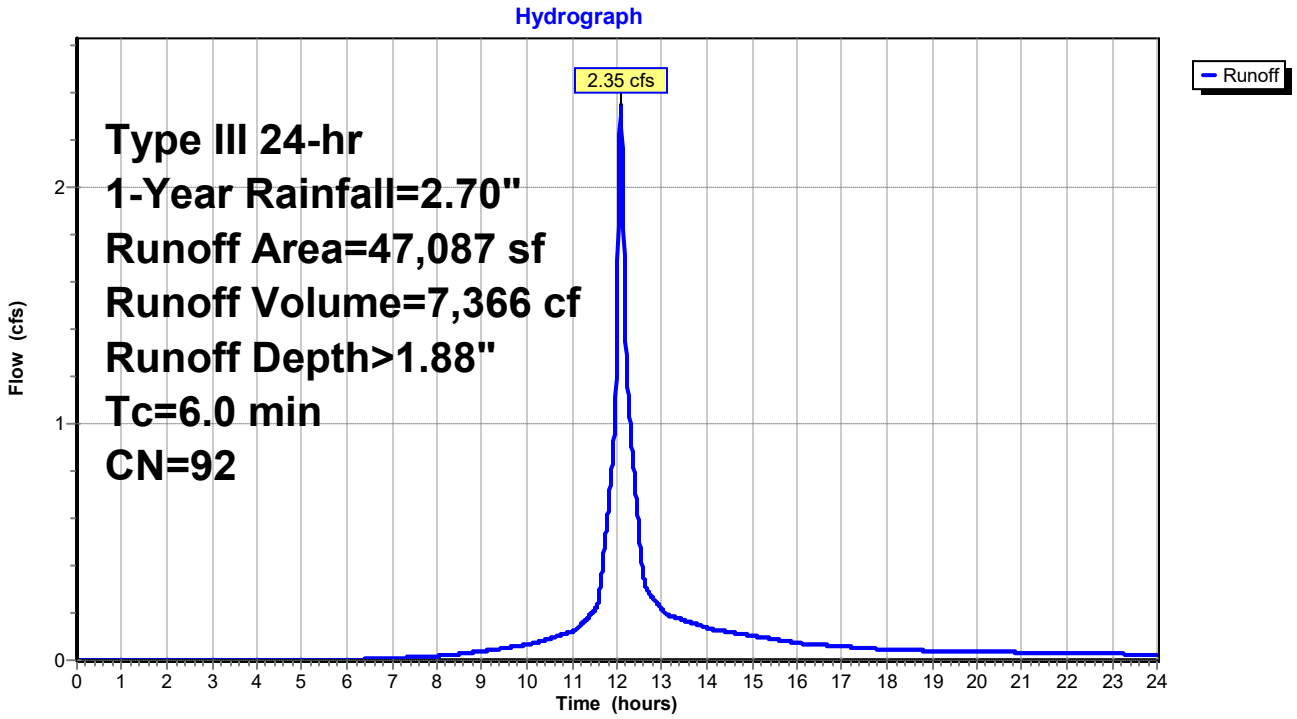
Subcatchment W-1-16: W-1-16



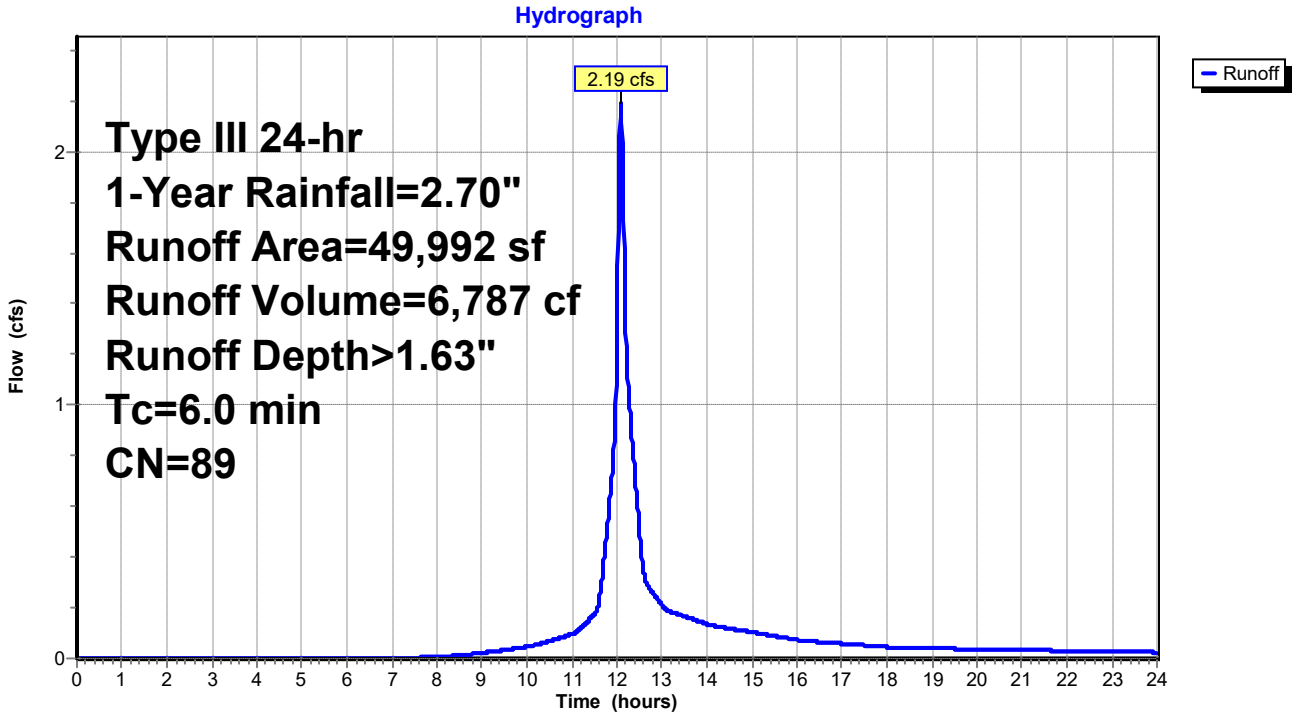
Subcatchment W-1-17: W-1-17



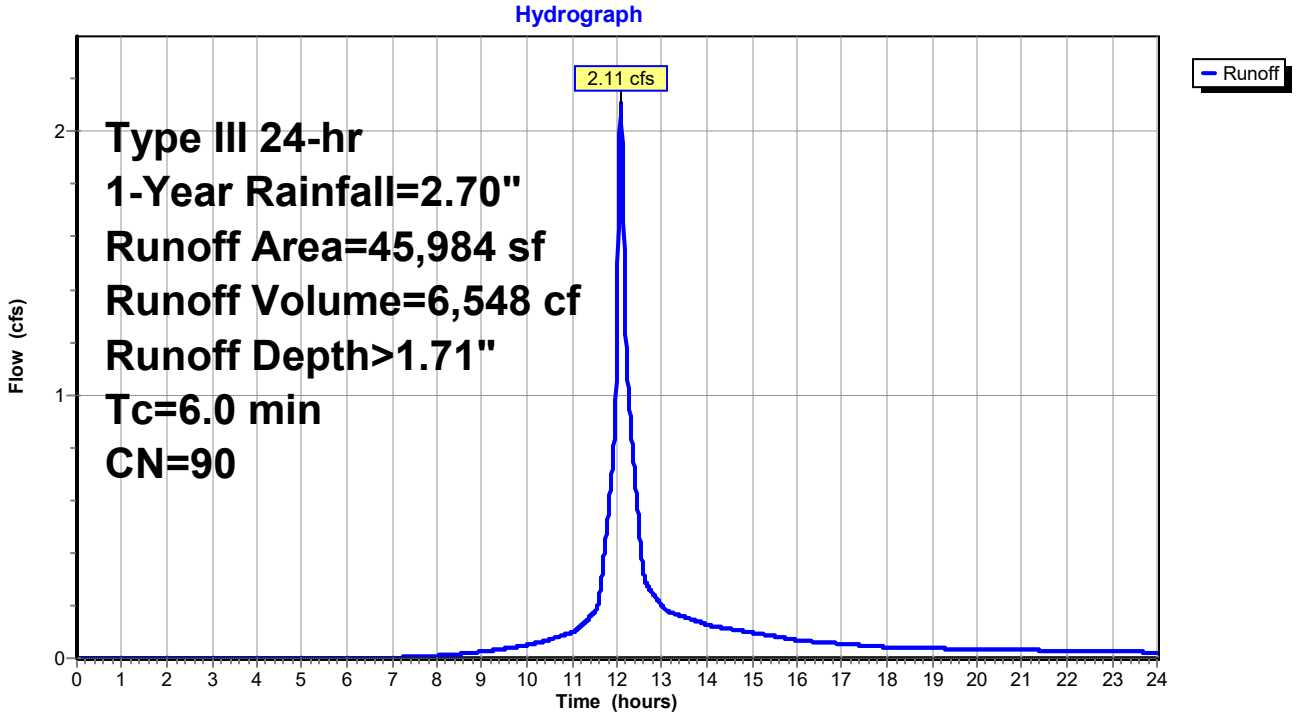
Subcatchment W-1-18: W-1-18



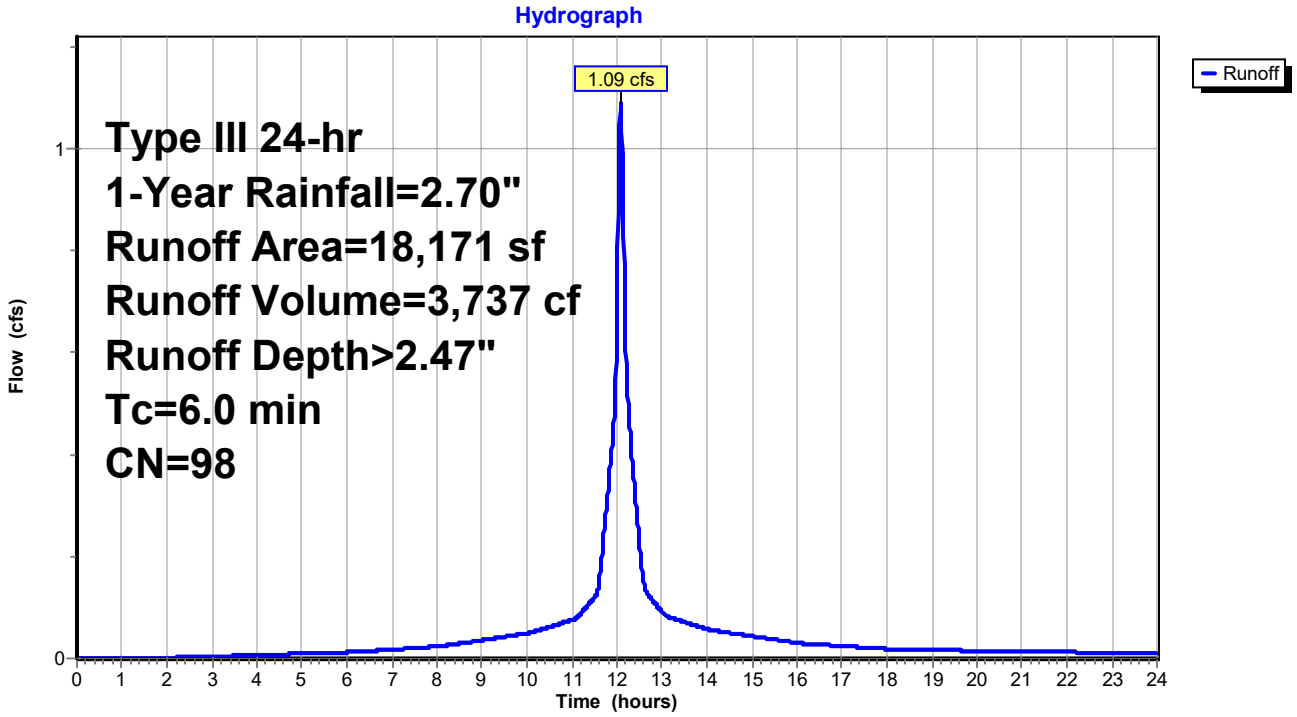
Subcatchment W-1-19: W-1-19



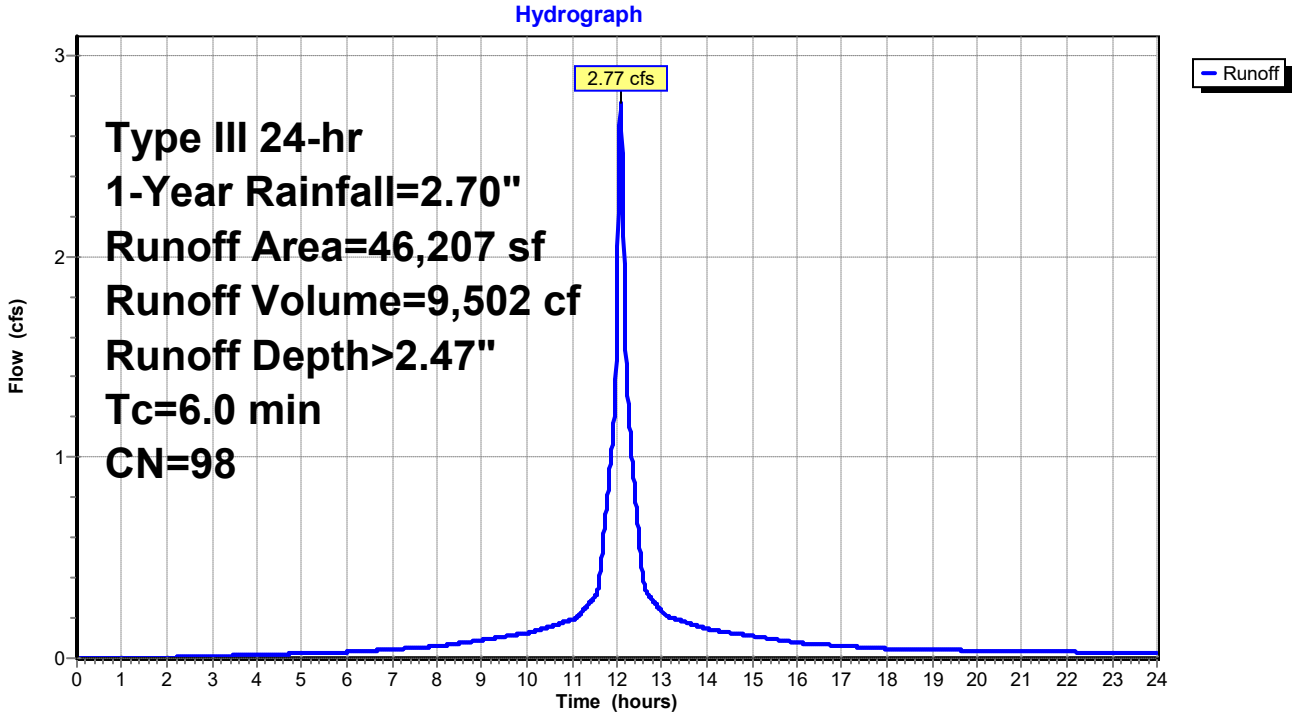
Subcatchment W-1-20: W-1-20



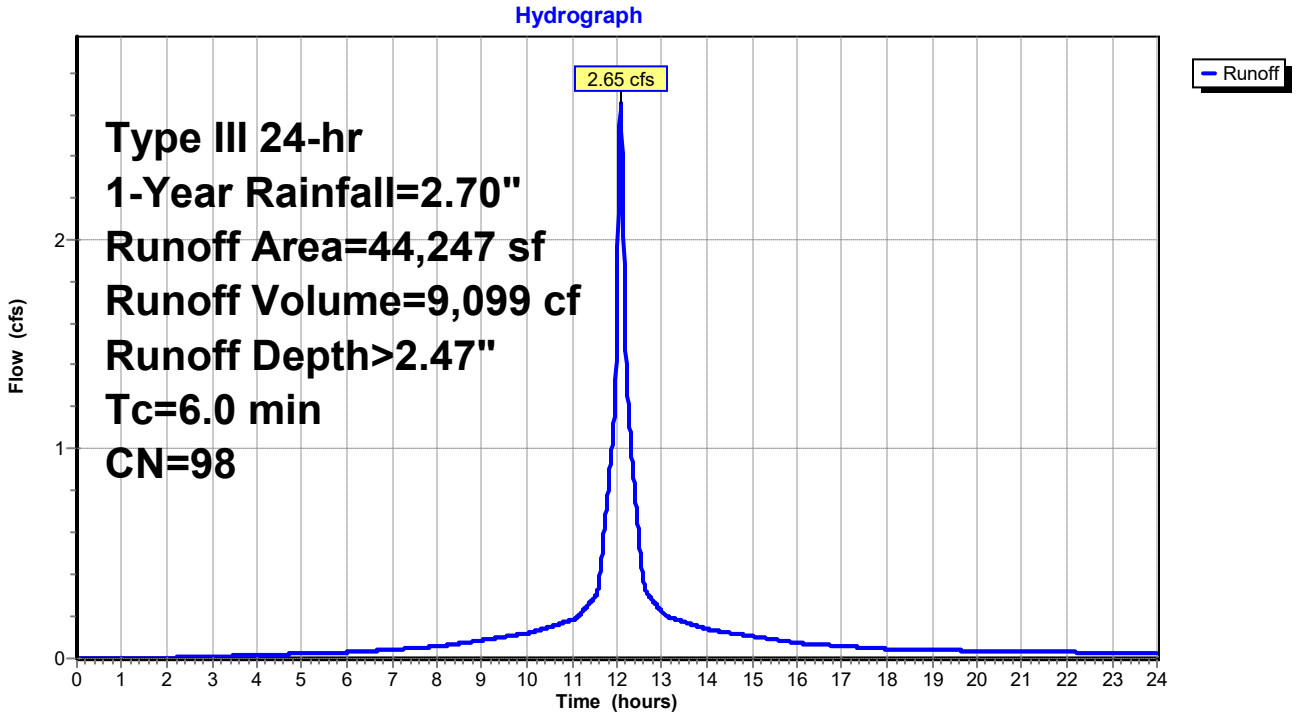
Subcatchment W-1-21: W-1-21



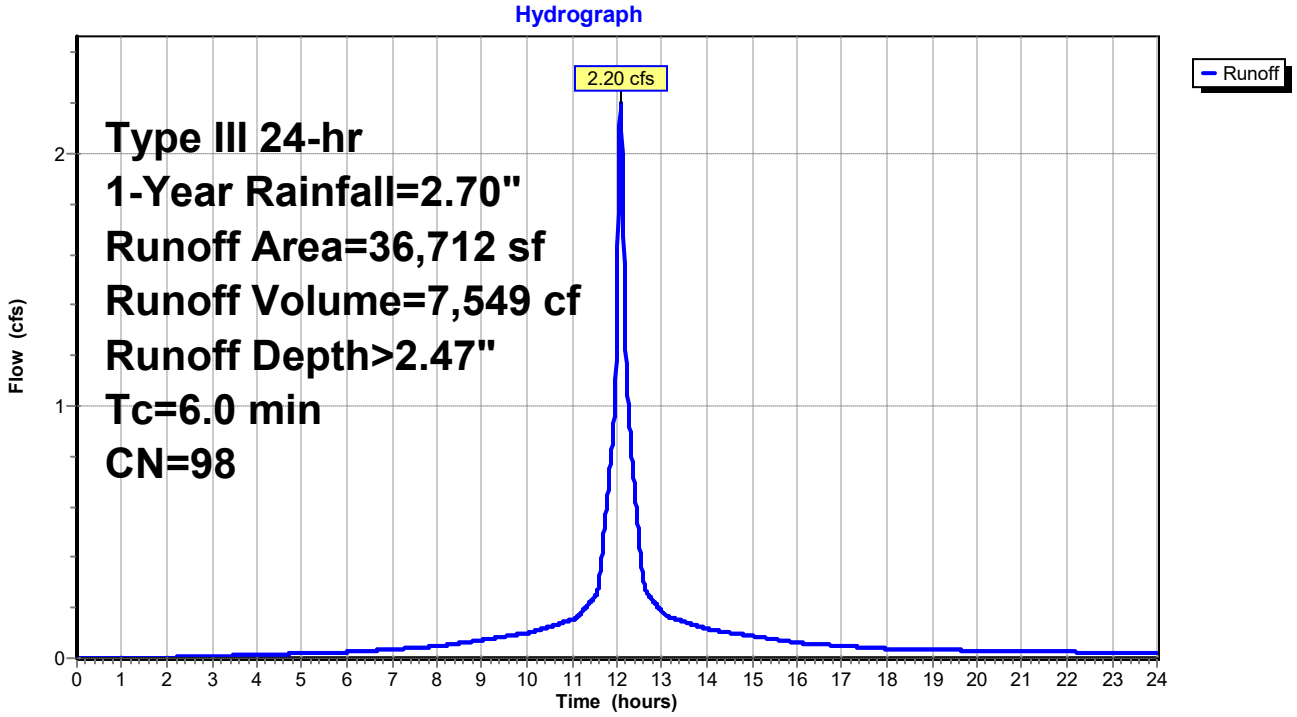
Subcatchment W-1-22: W-1-22



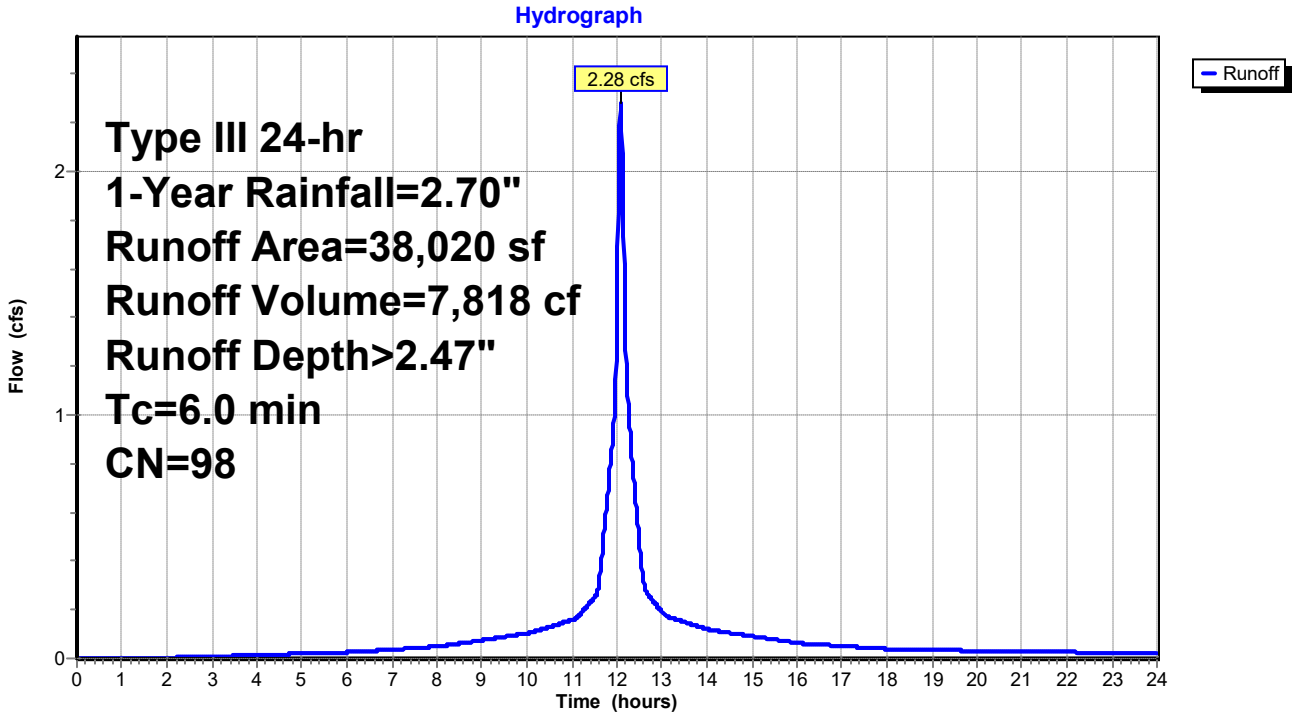
Subcatchment W-1-23: W-1-23



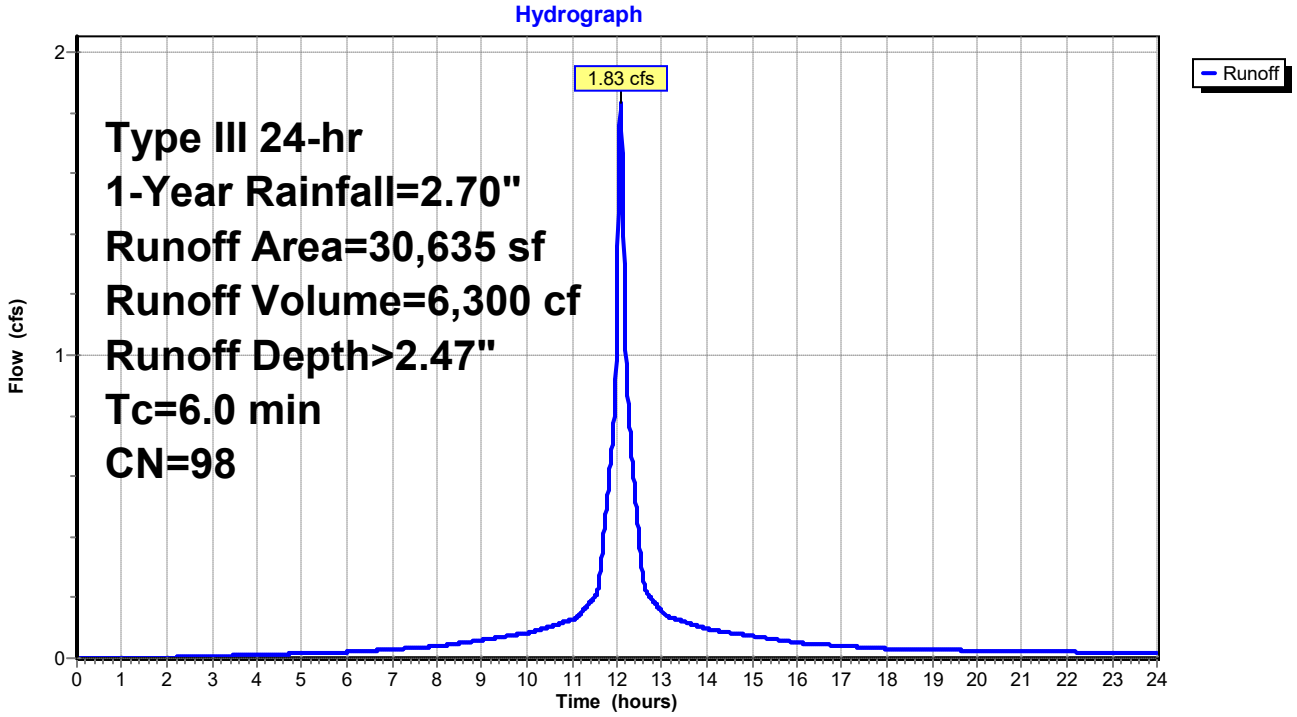
Subcatchment W-1-24: W-1-24



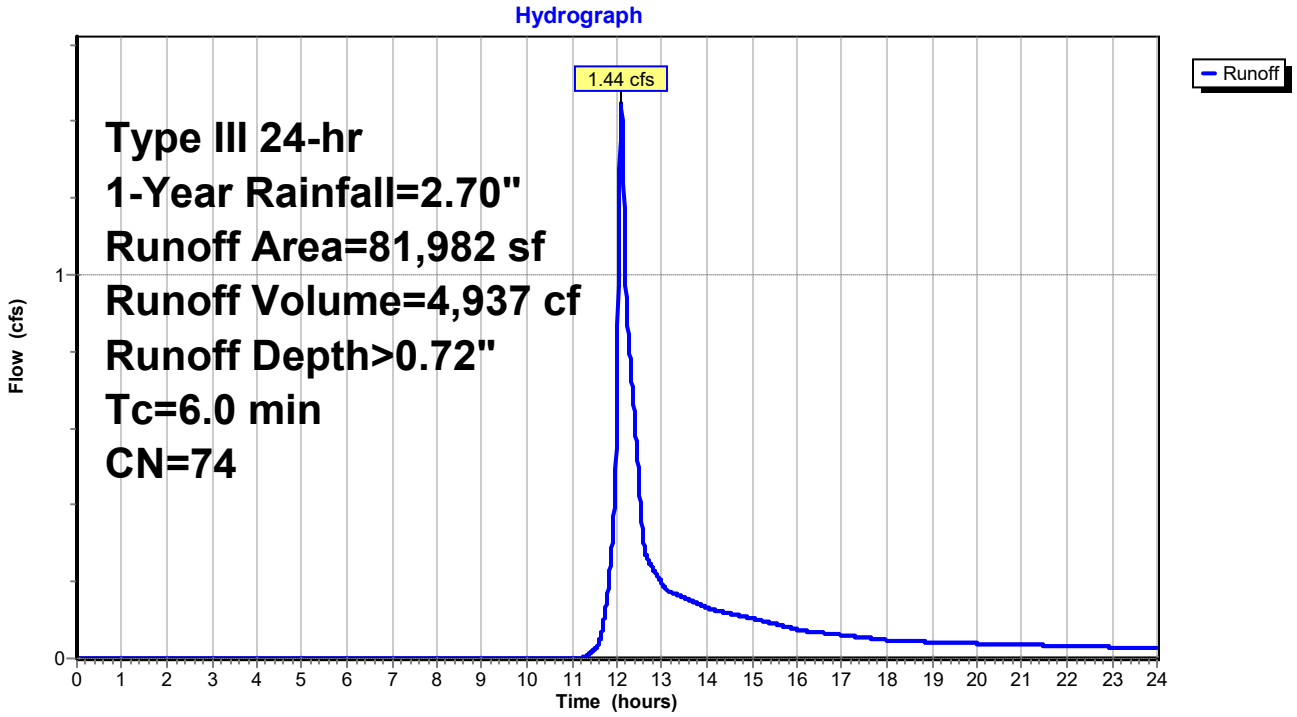
Subcatchment W-1-25: W-1-25



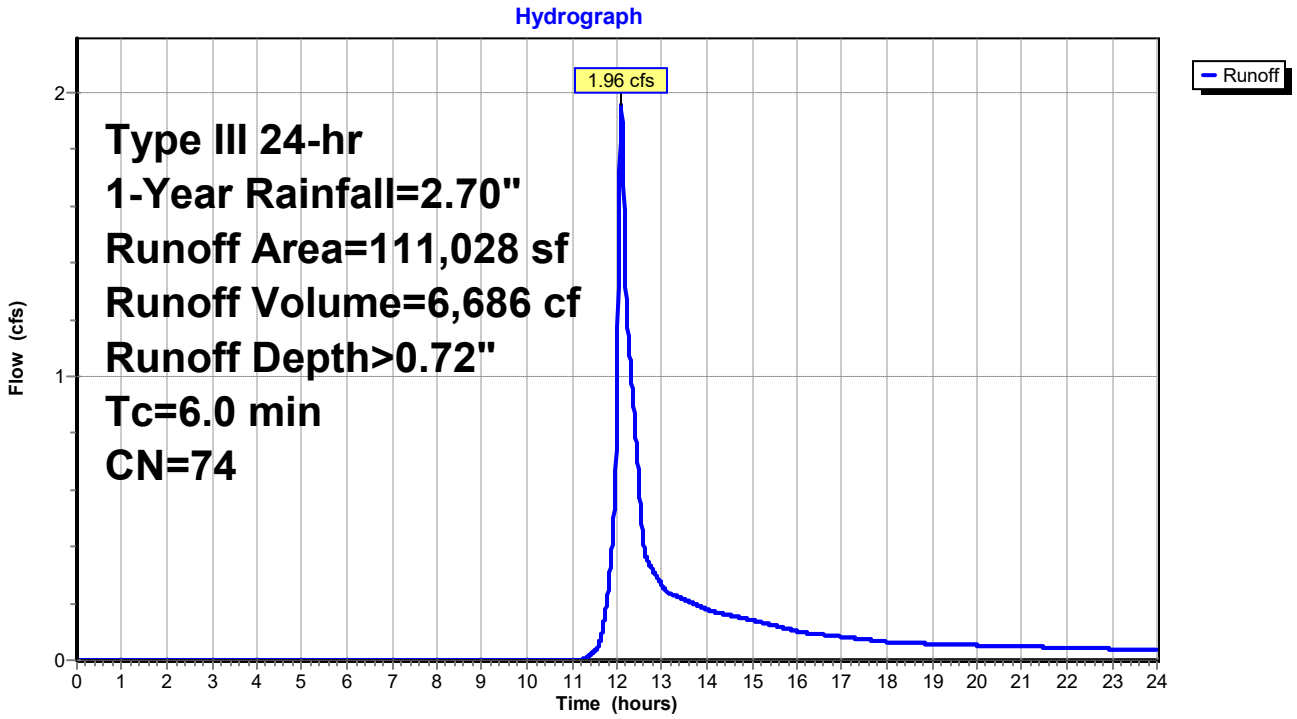
Subcatchment W-1-26: W-1-26



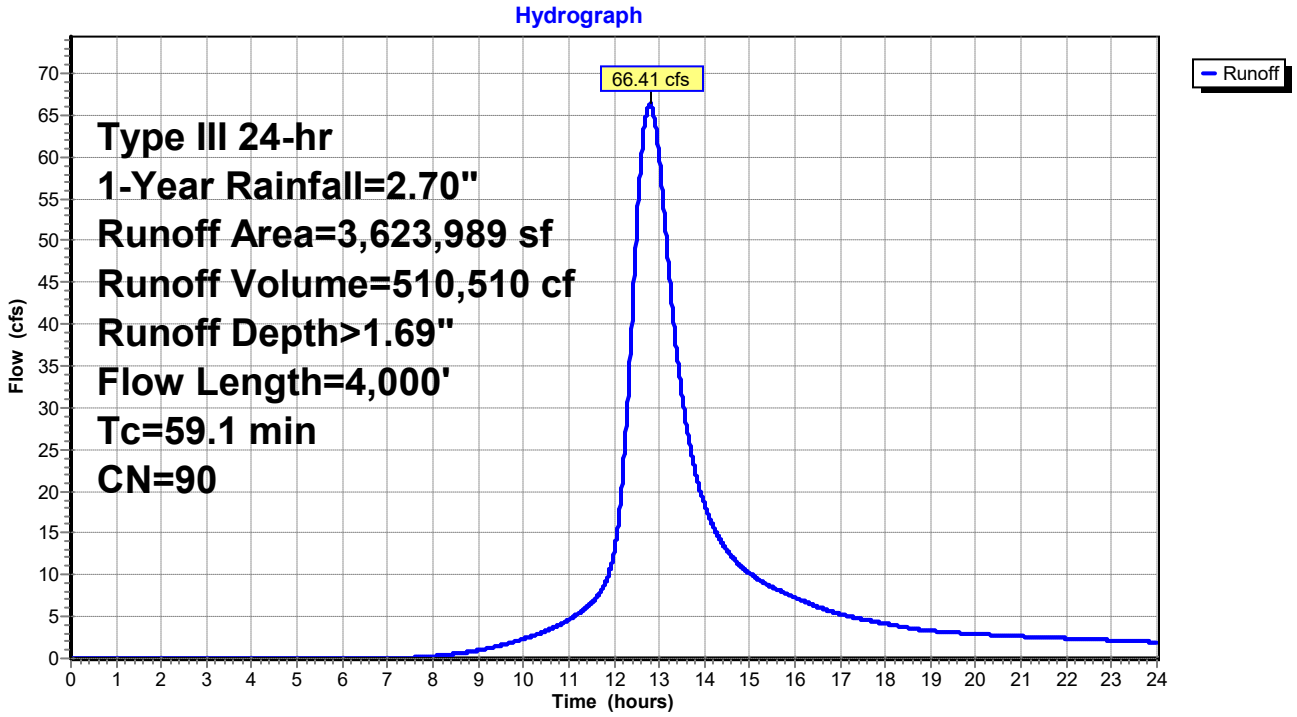
Subcatchment W-1-27: W-1-27



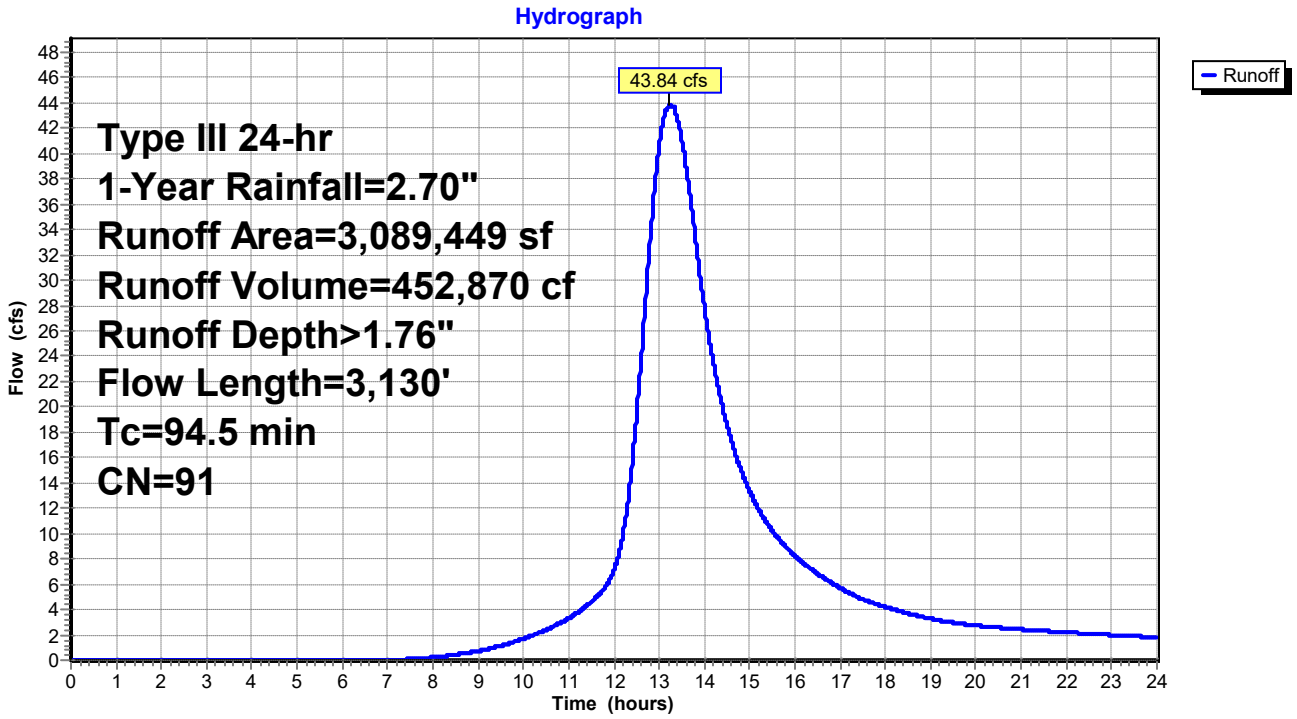
Subcatchment W-1-28: W-1-28



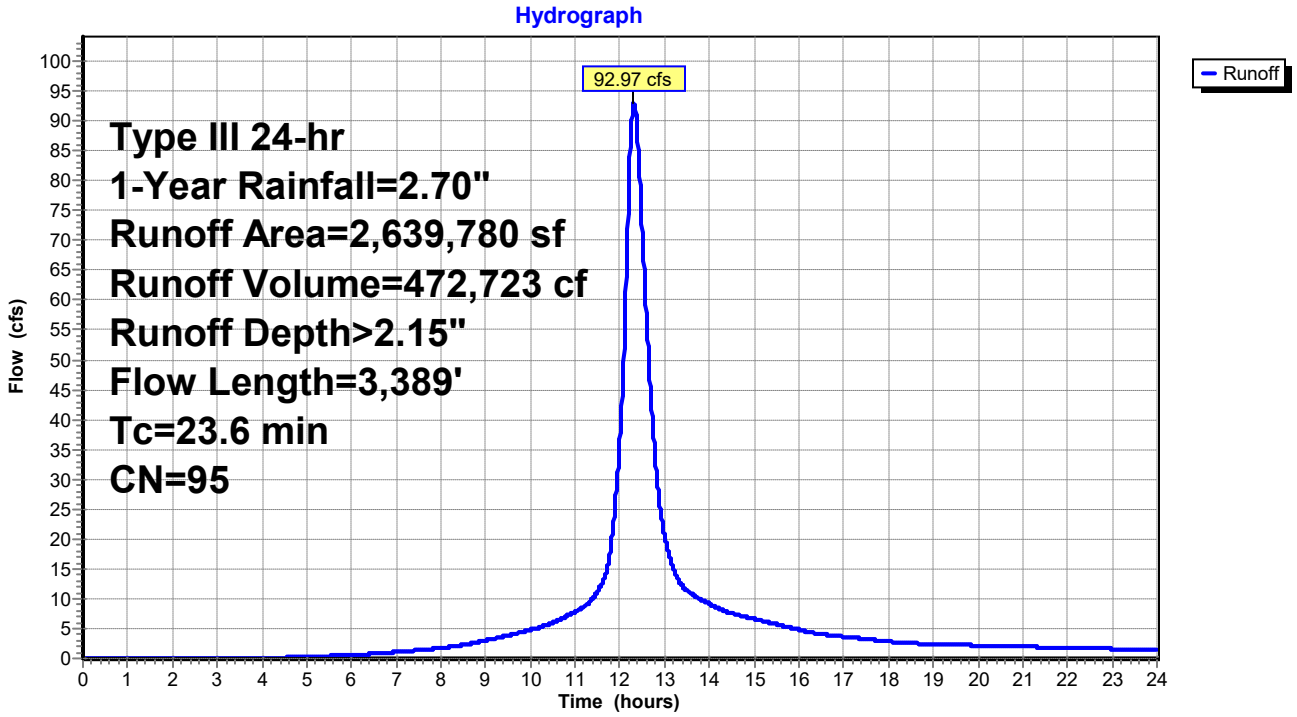
Subcatchment WS 1 PRE: WS 1 PRE



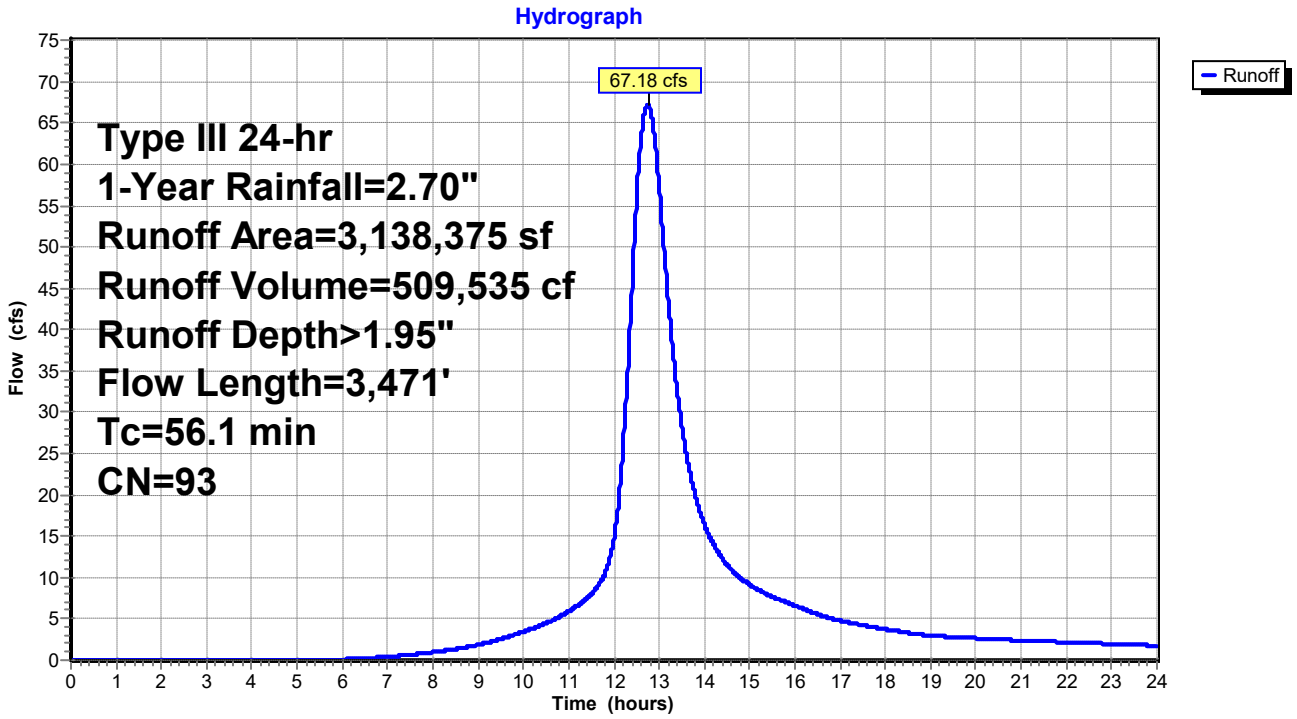
Subcatchment WS 1B POST: WS 1B POST



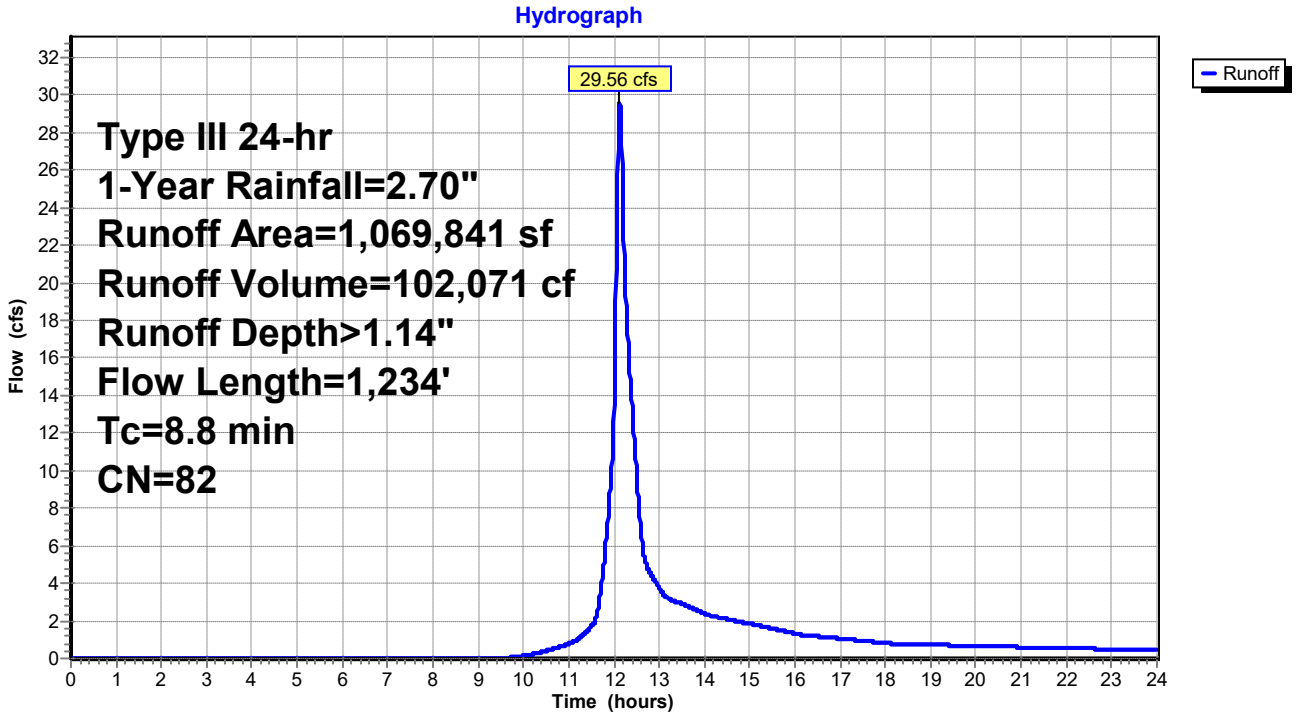
Subcatchment WS 2 POST: WS 2 POST



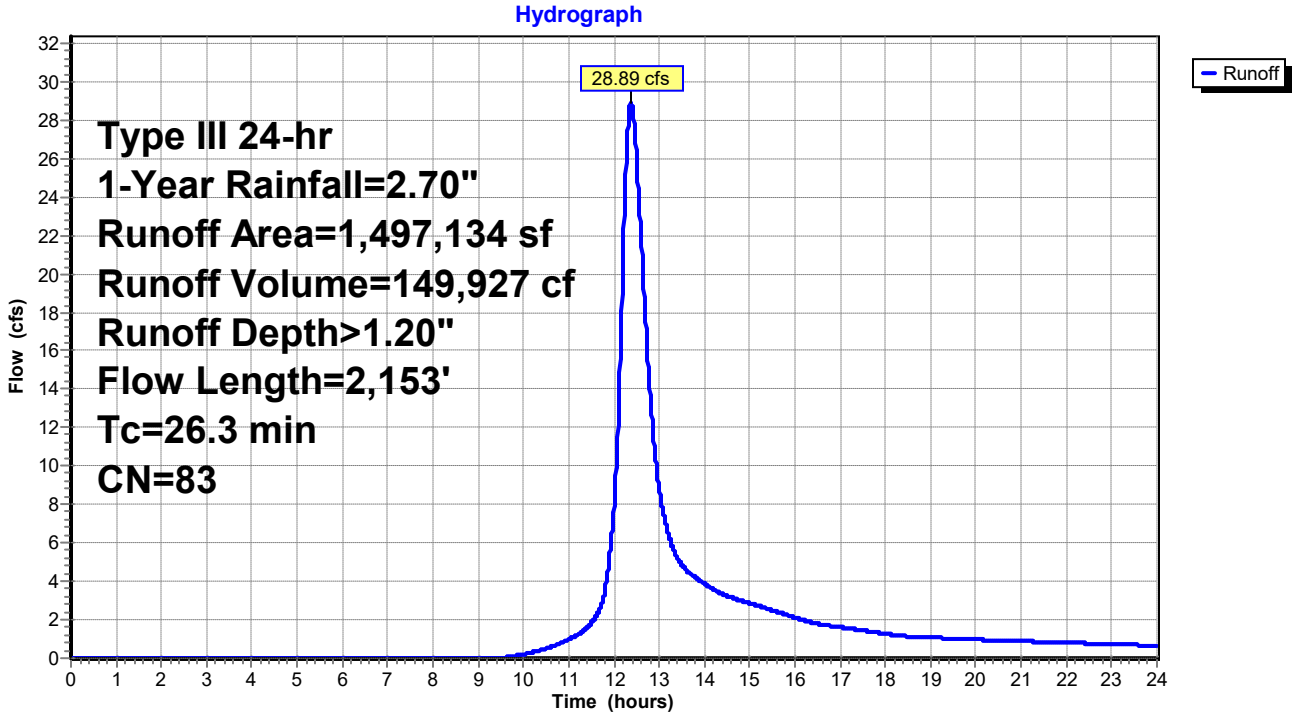
Subcatchment WS 2 PRE: WS 2 PRE



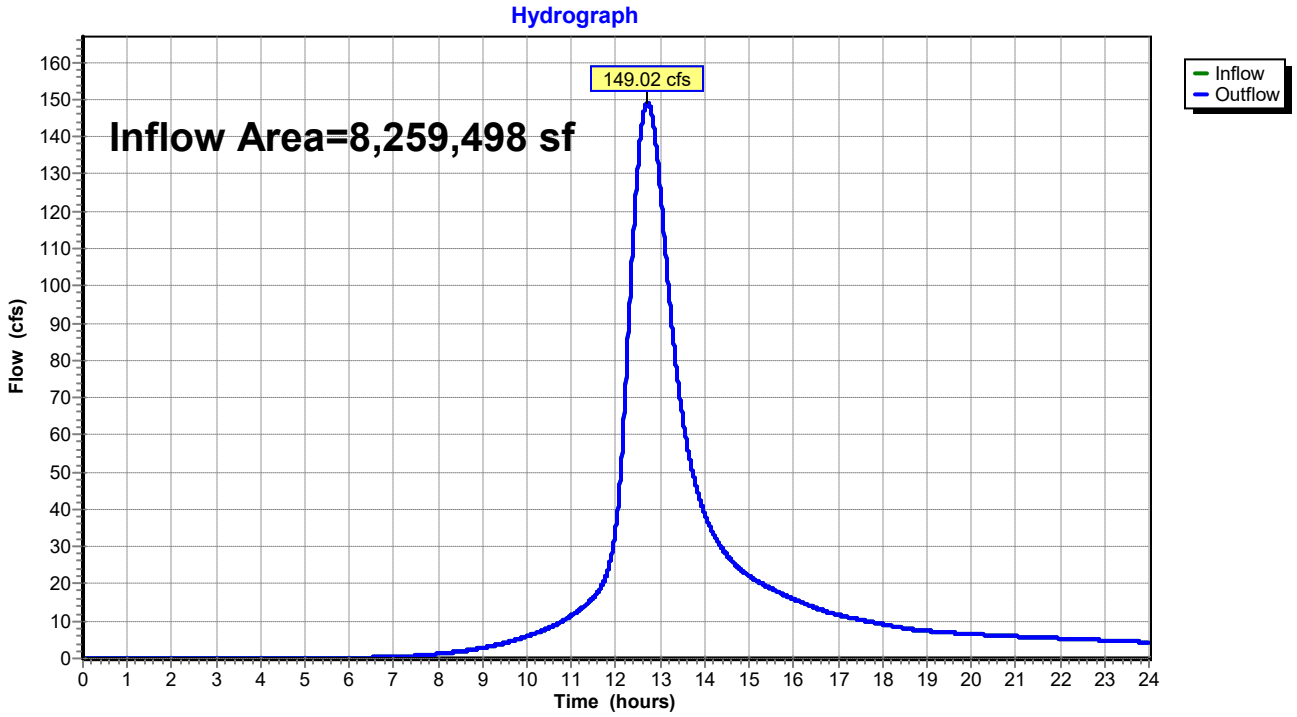
Subcatchment WS 3 POST: WS 3 POST



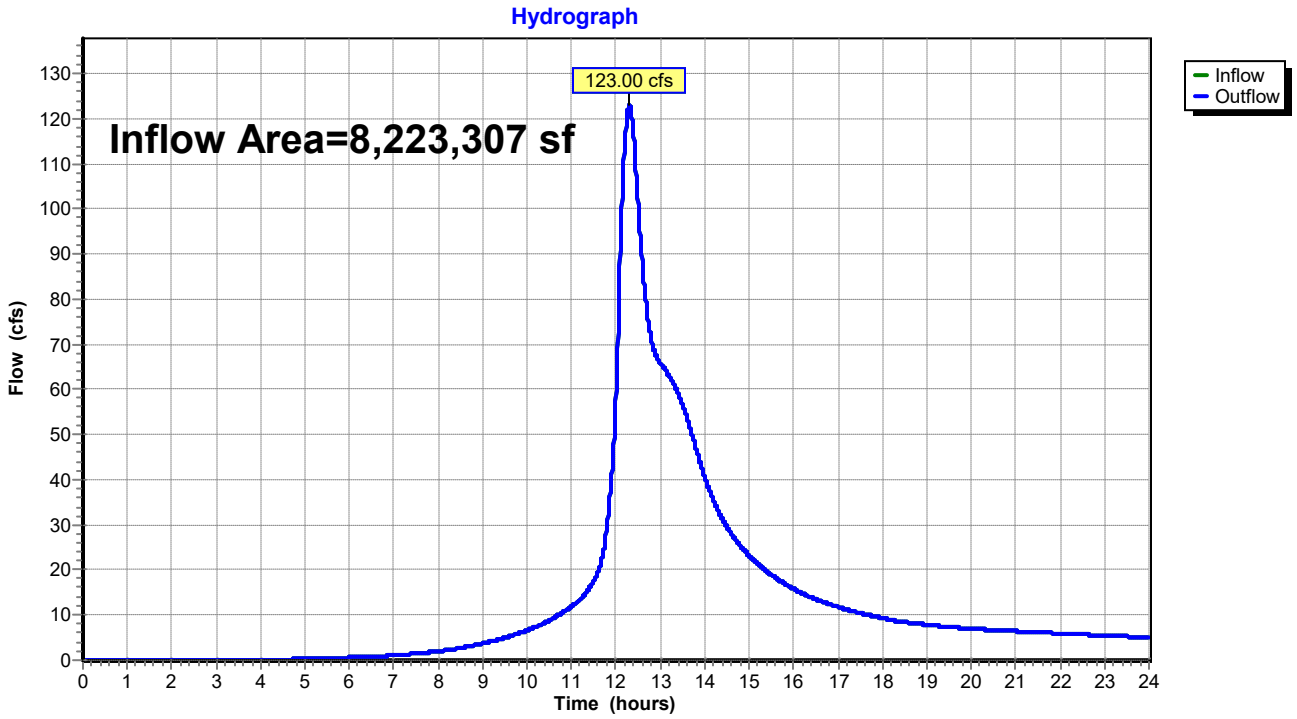
Subcatchment WS 3 PRE: WS 3 PRE



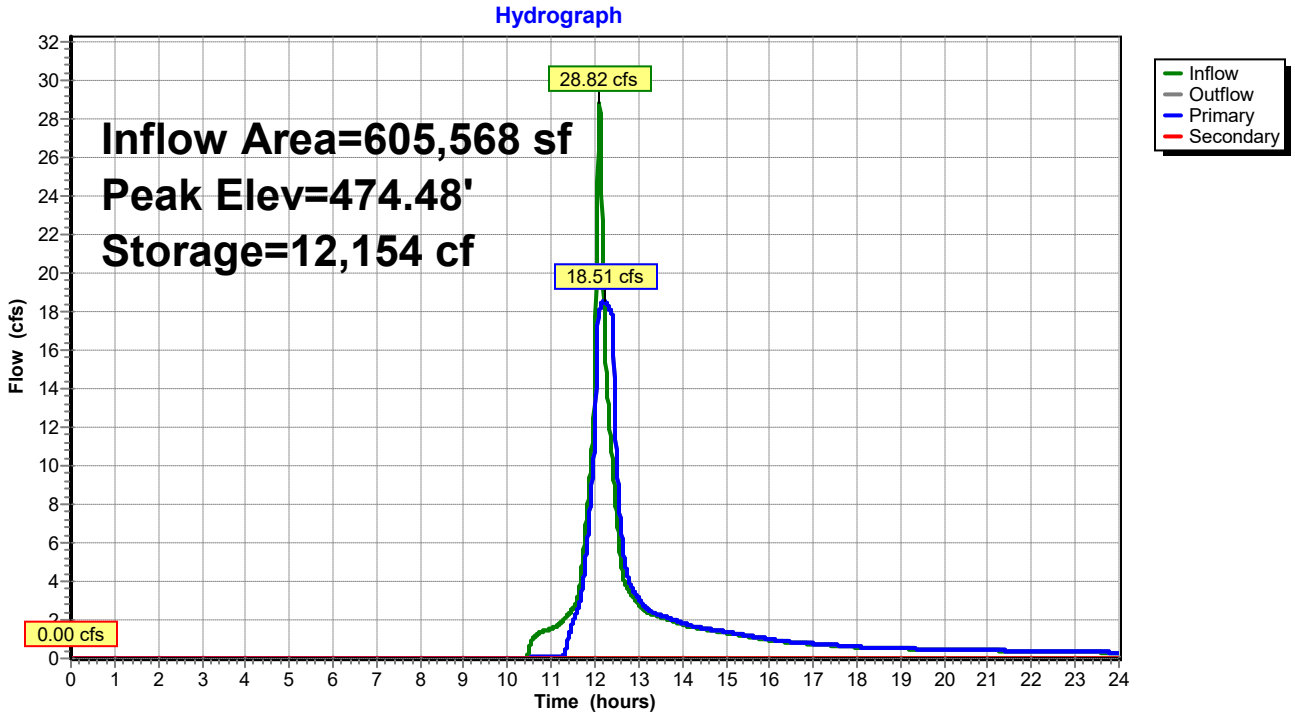
Reach DP1 MO3 PRE: DP DEC MO3 PRE



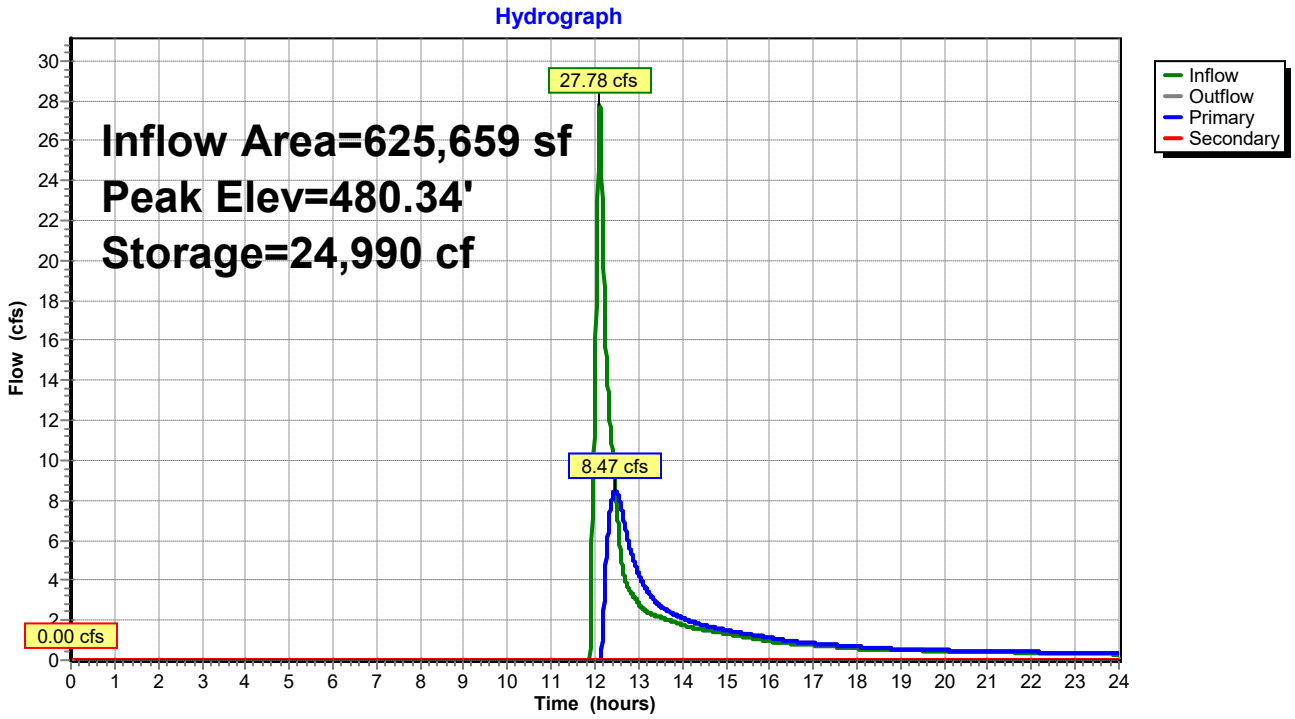
Reach MO3 & YB: DEC MO3/YOUNG'S BROOK



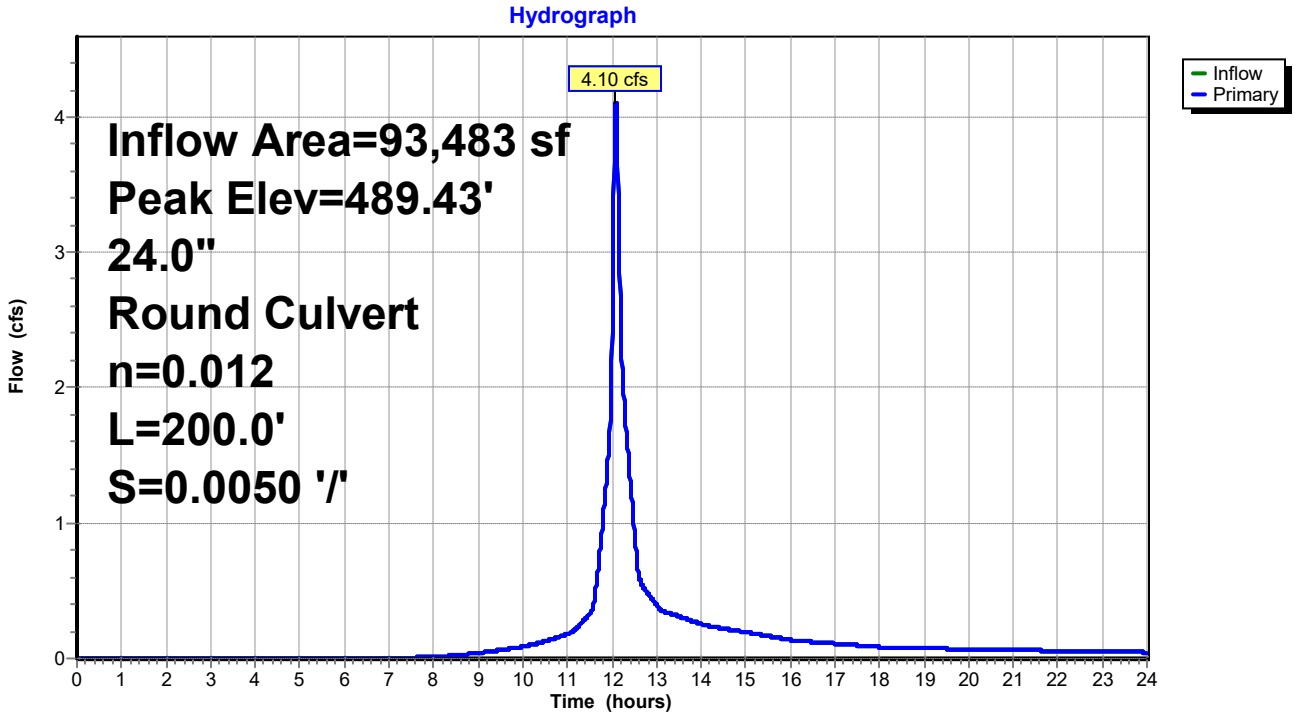
Pond BR1: BIORETENTION 1



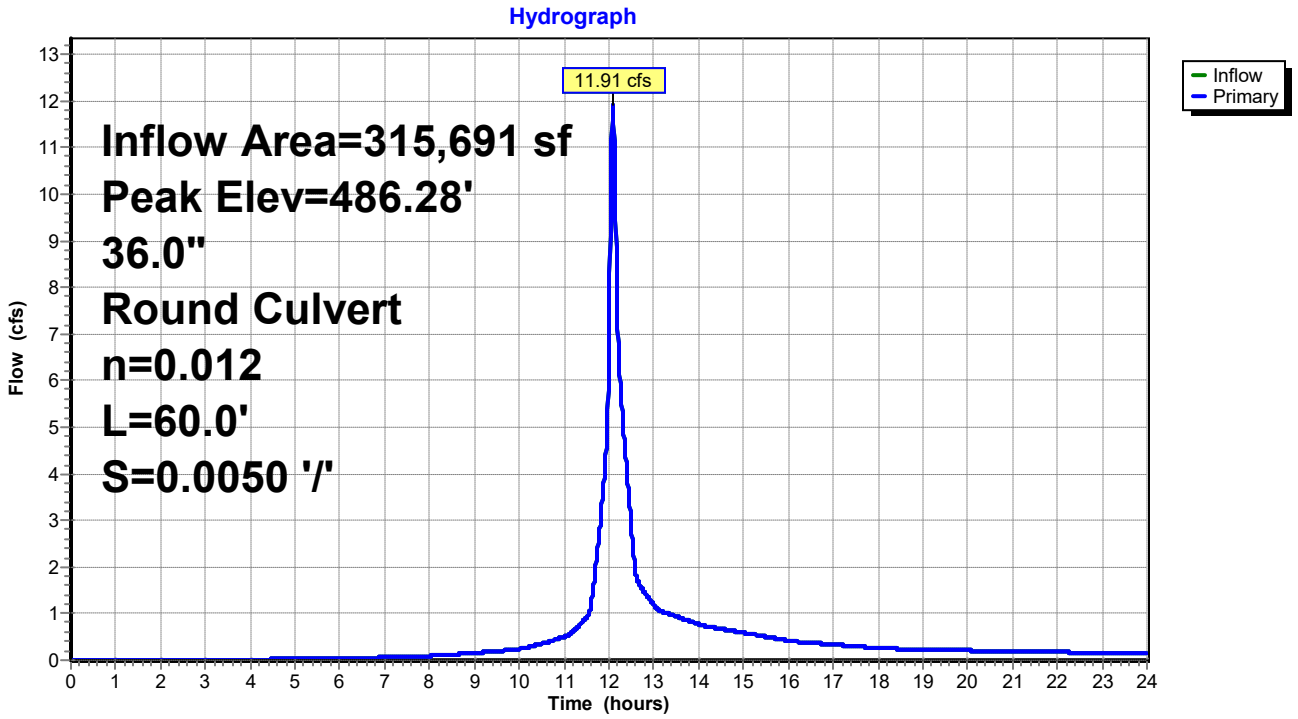
Pond BR2: BIORETENTION 2



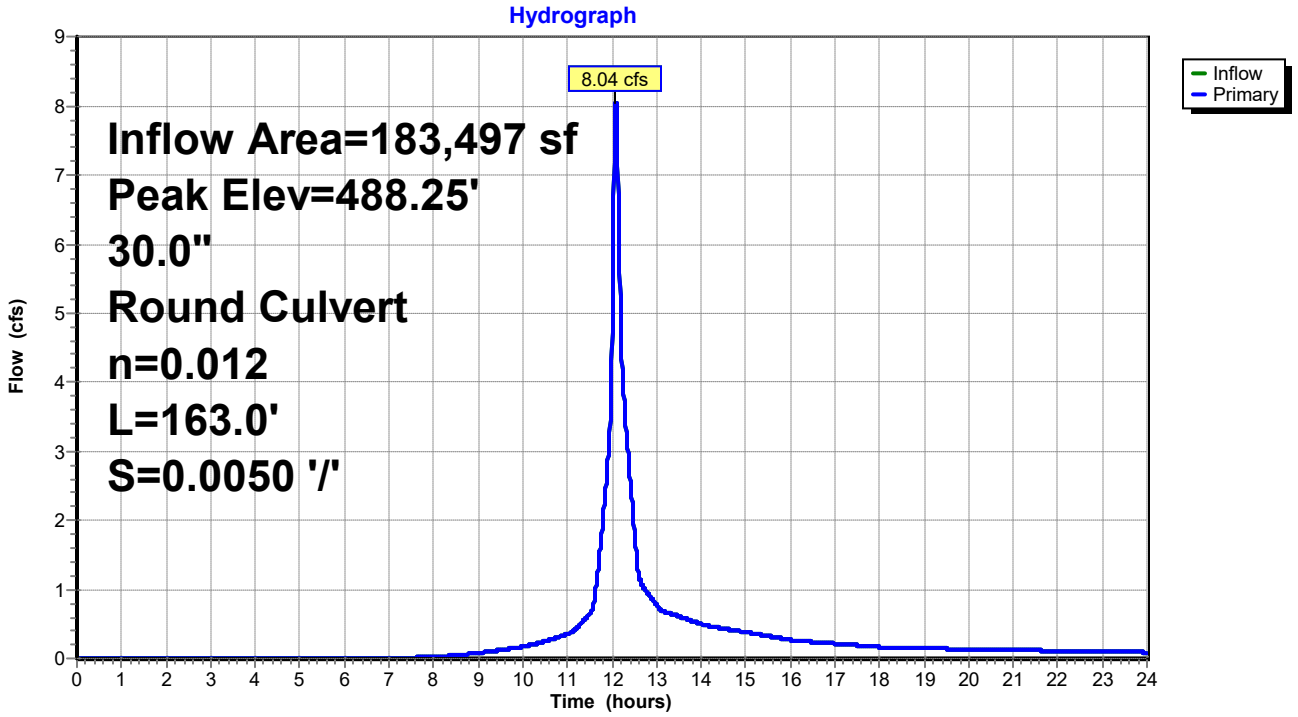
Pond CB 1: CB 1



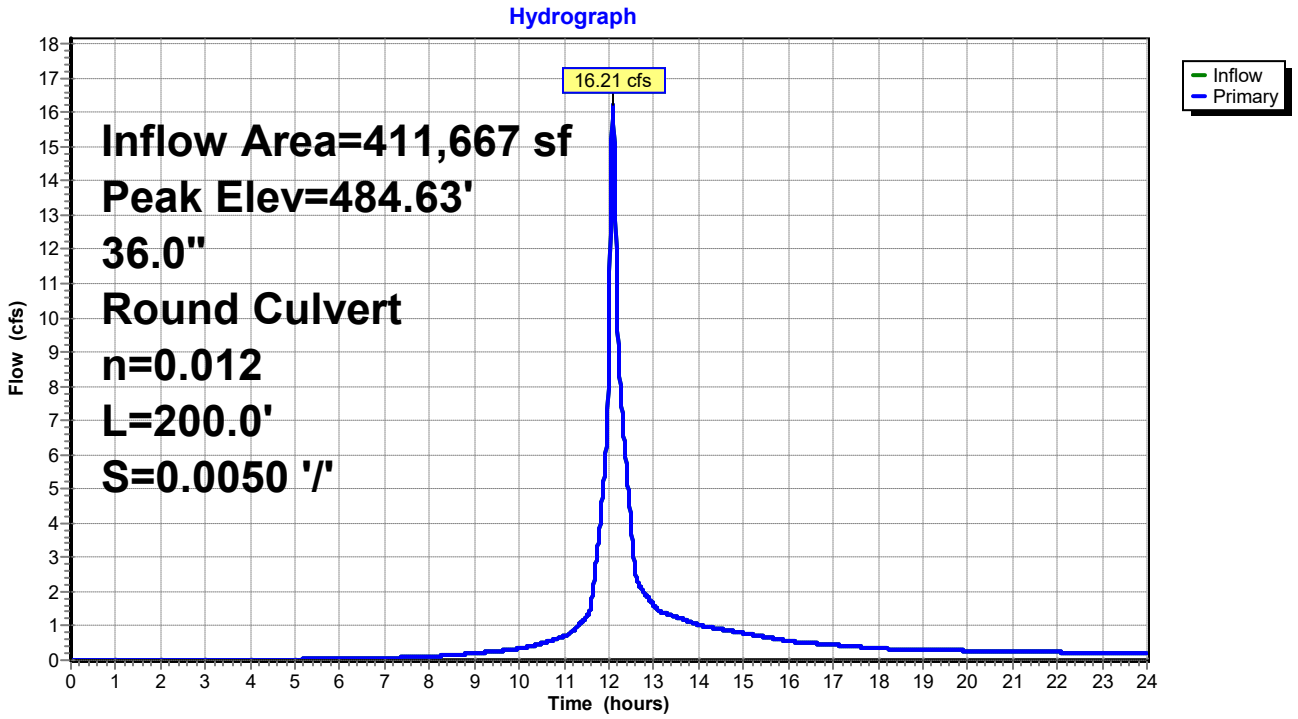
Pond CB 19: CB-19



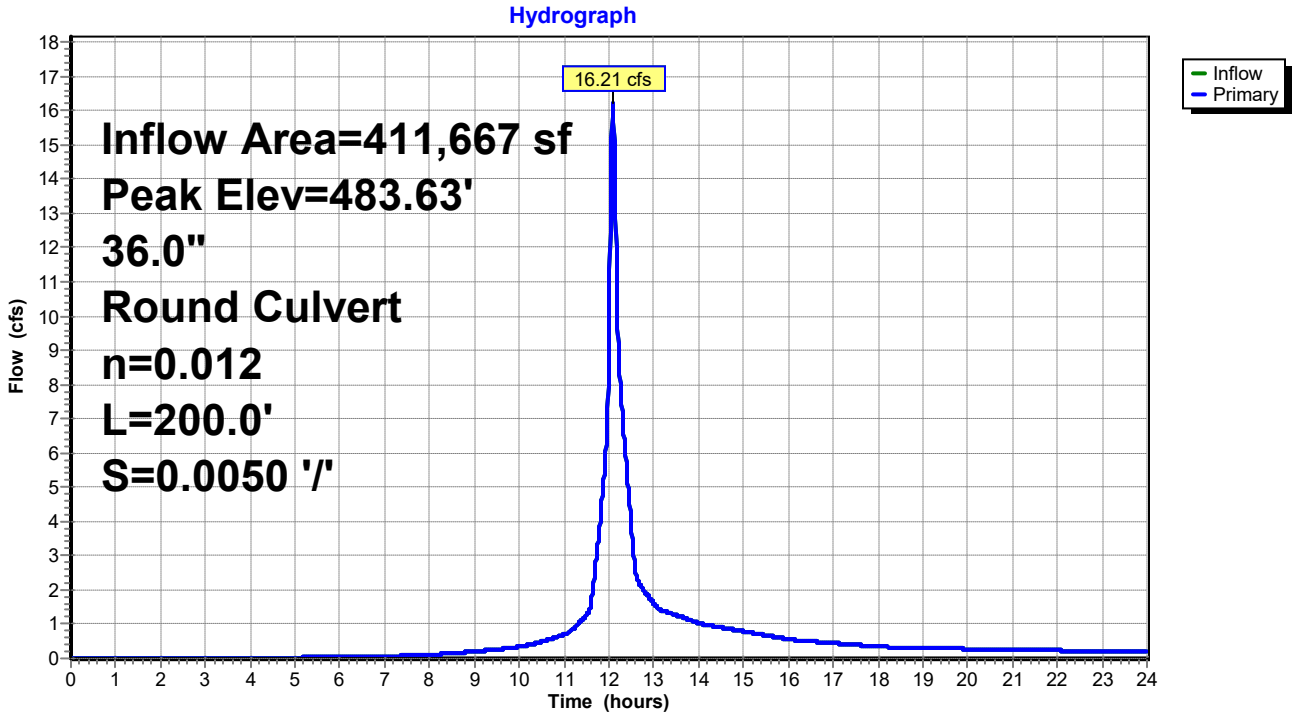
Pond CB 2: CB 2



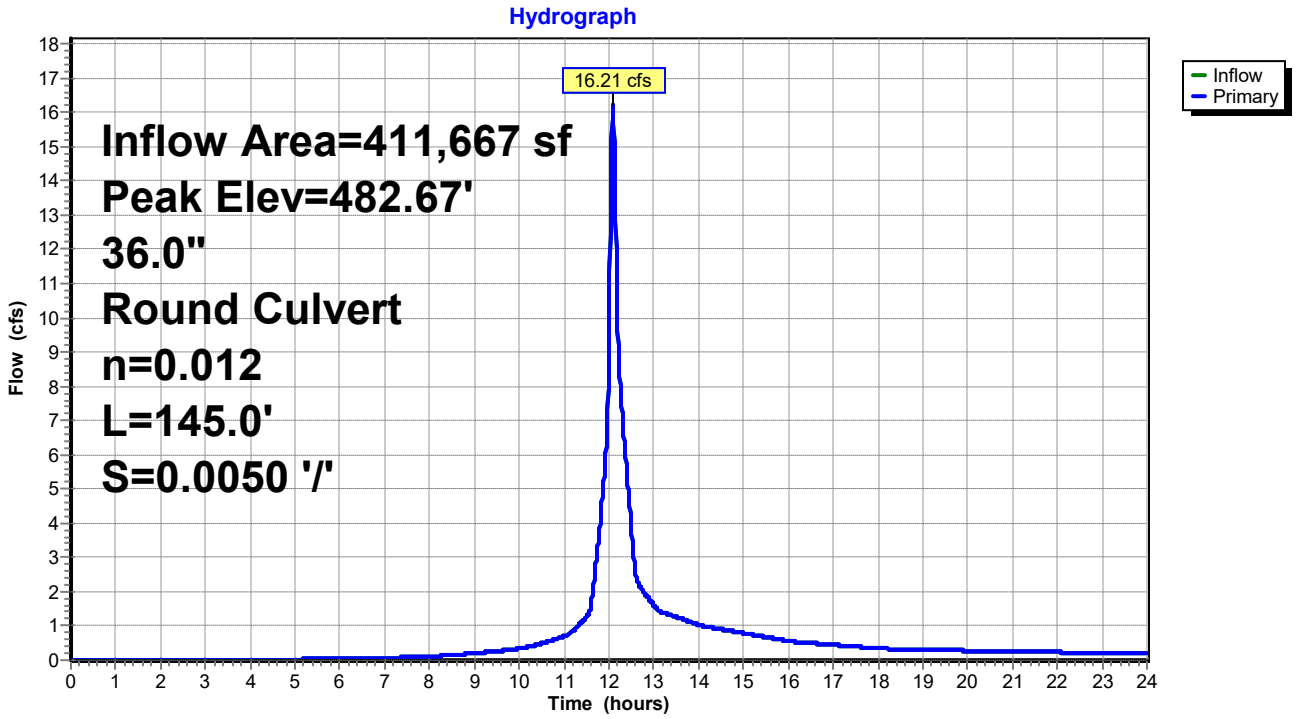
Pond CB 21: CB 21



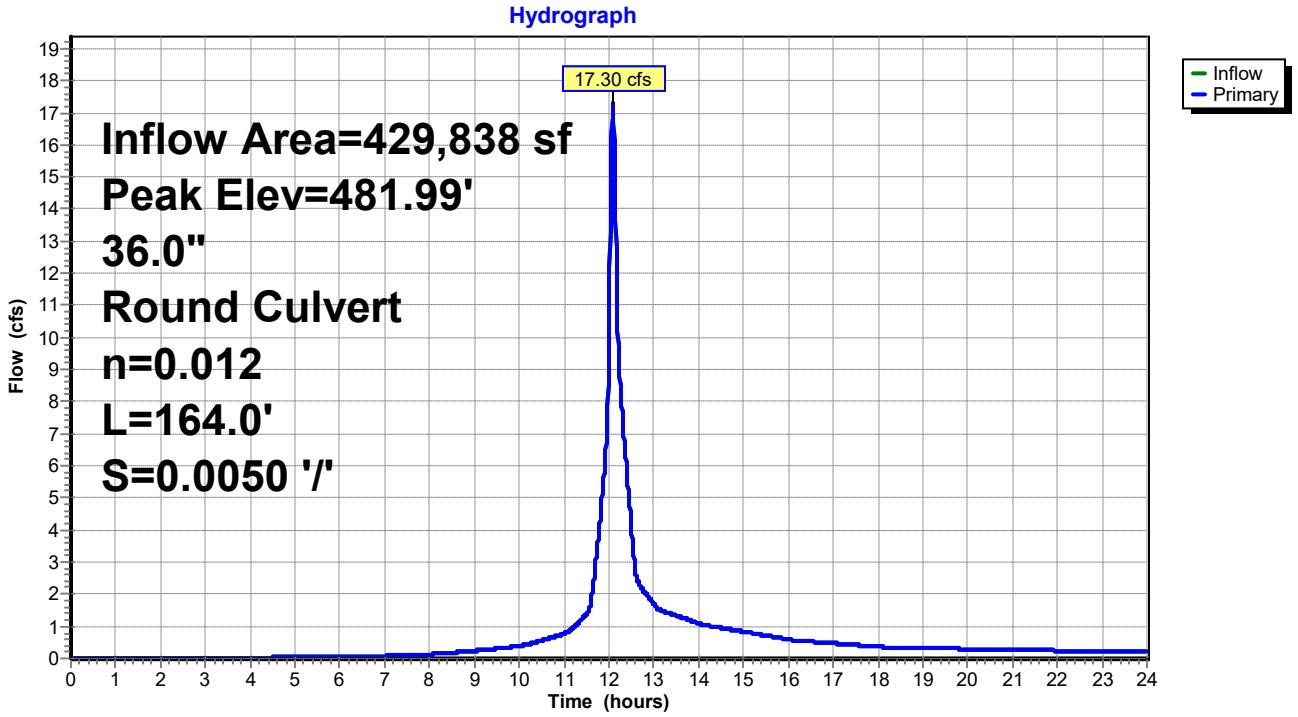
Pond CB 22: CB 22



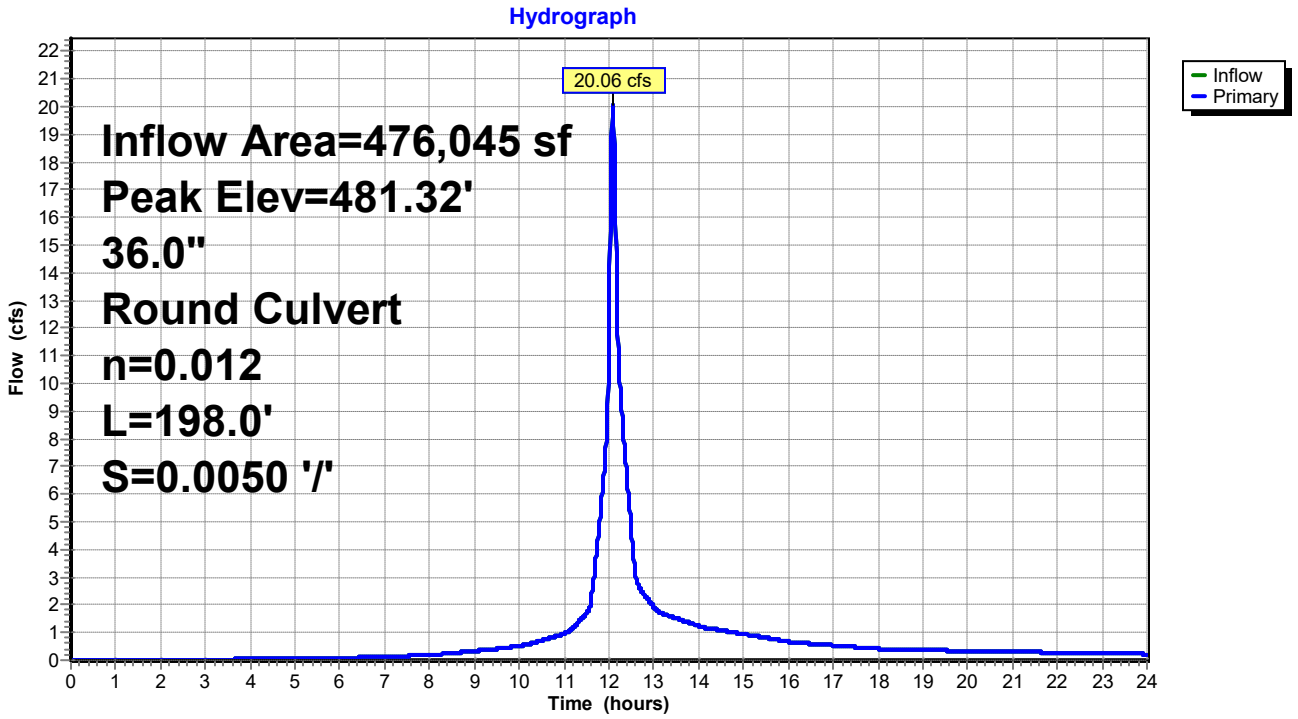
Pond CB 23: CB 23



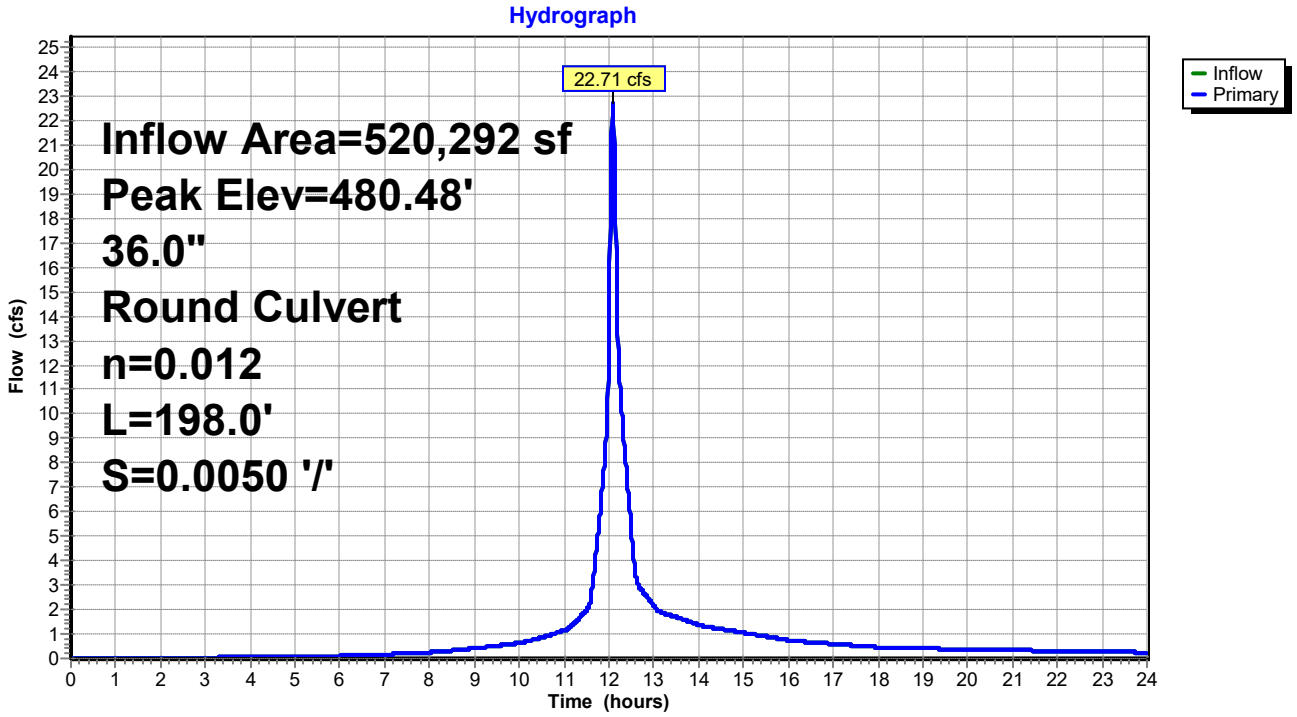
Pond CB 24: CB 24



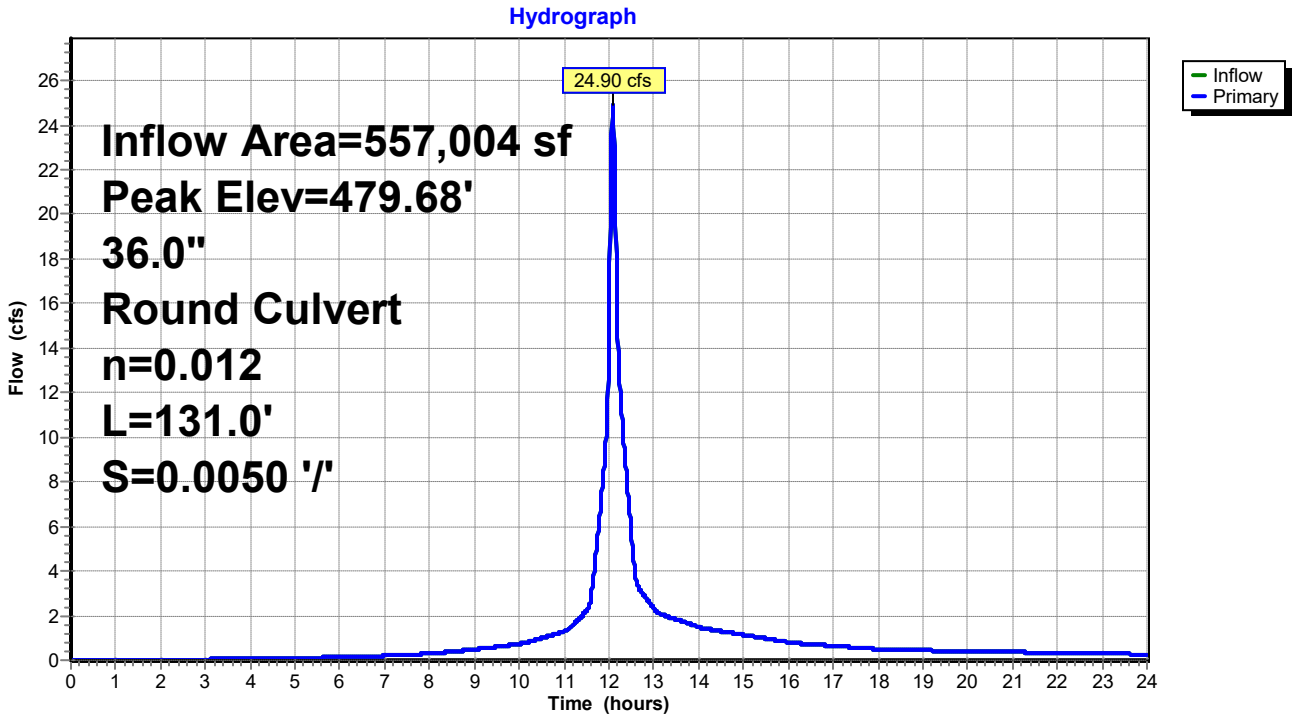
Pond CB 25: CB 25



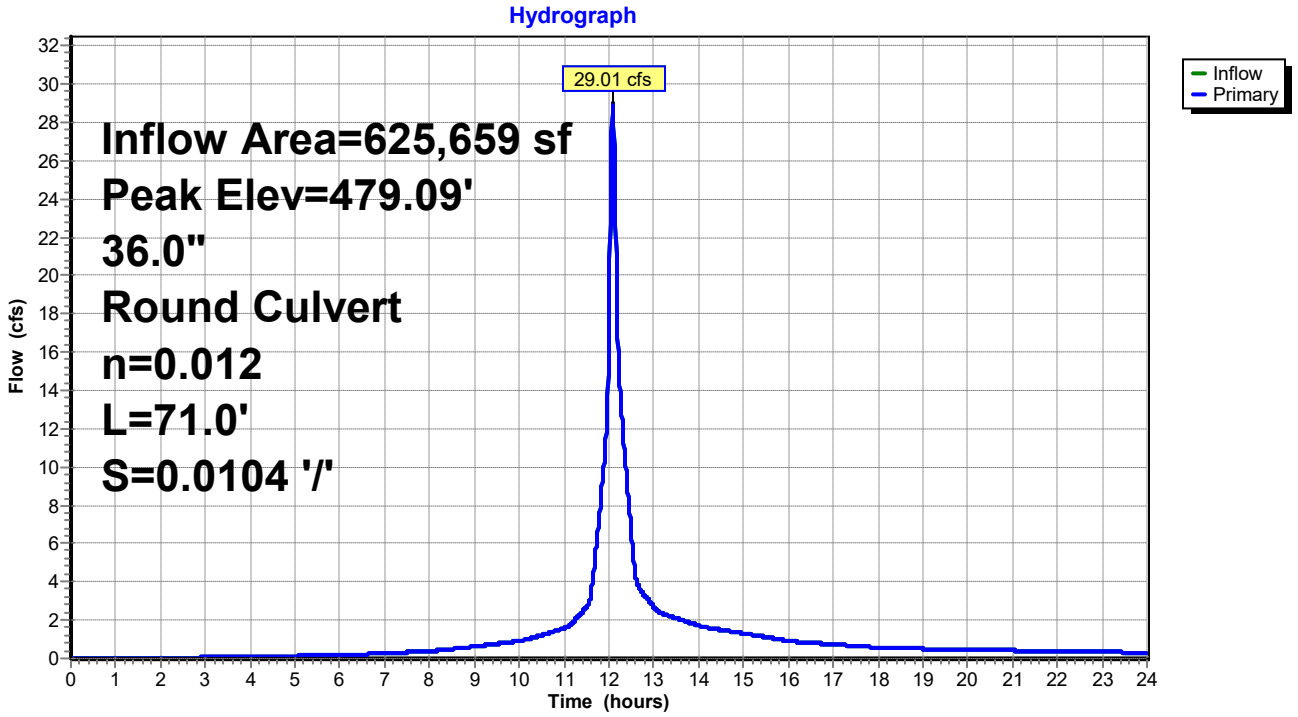
Pond CB 26: CB 26



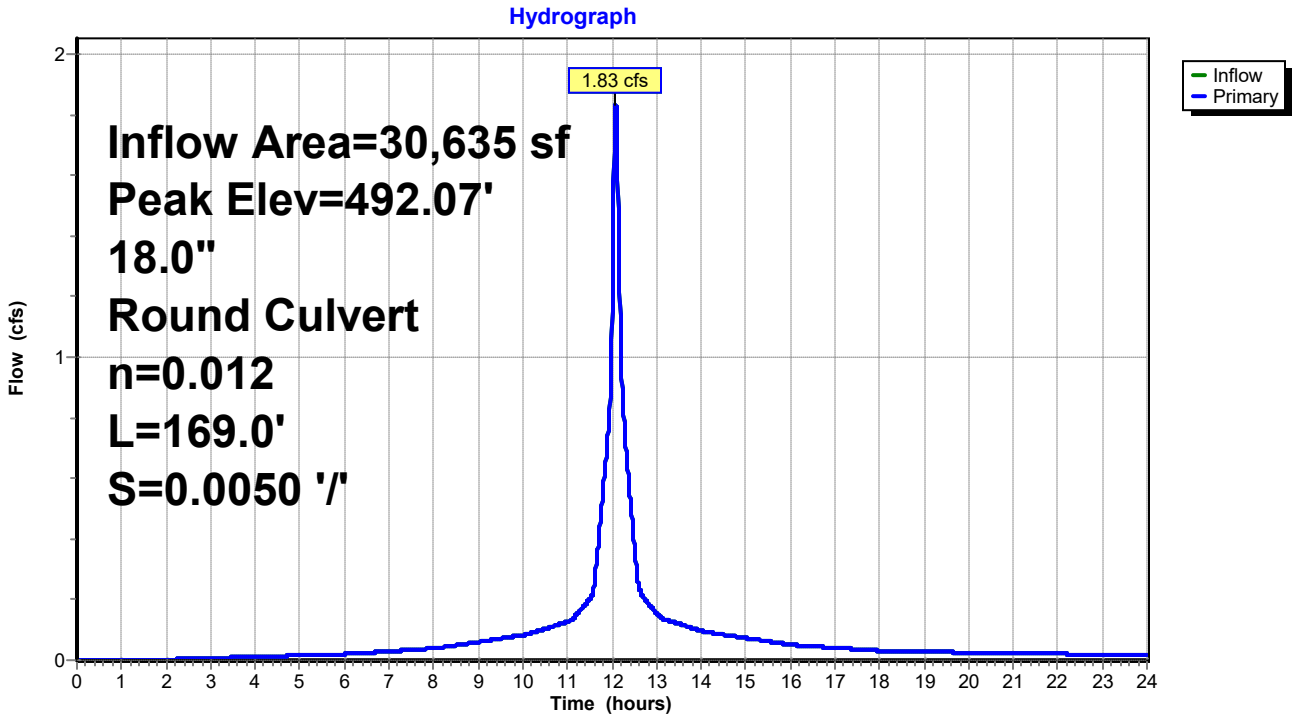
Pond CB 27: CB 27



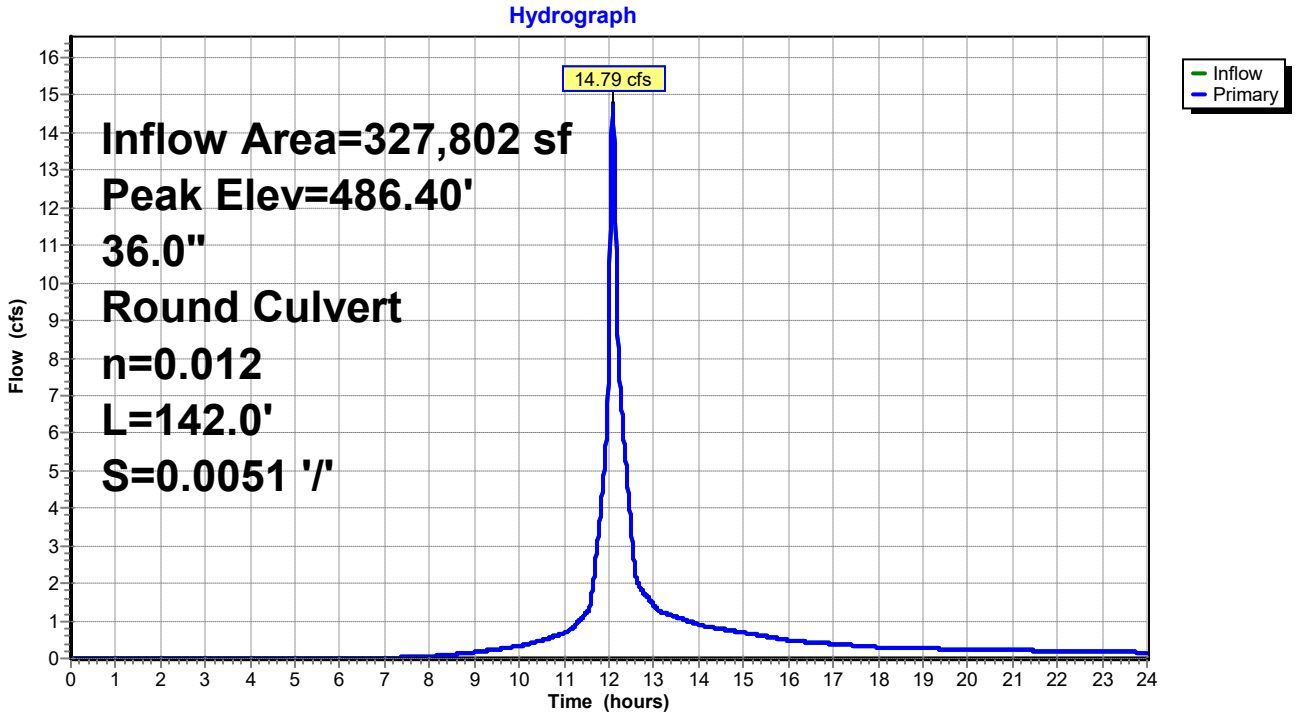
Pond CB 28: CB 28



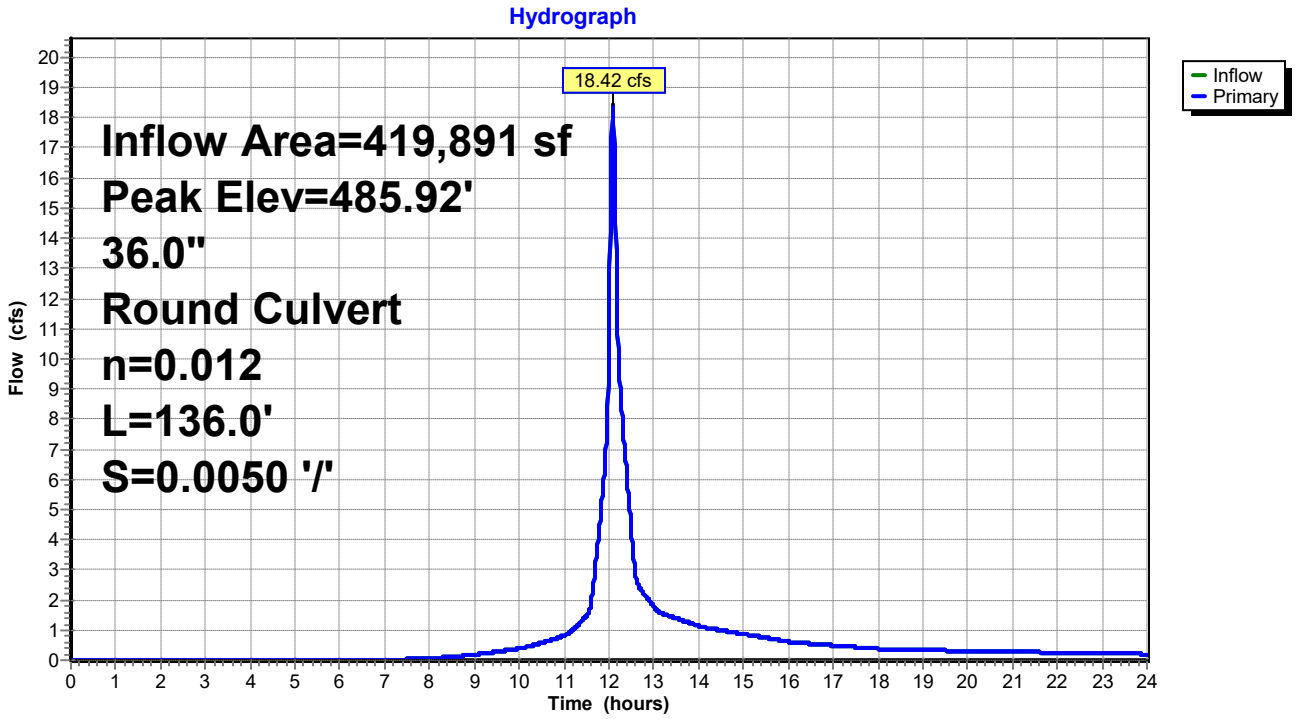
Pond CB 29: CB 29



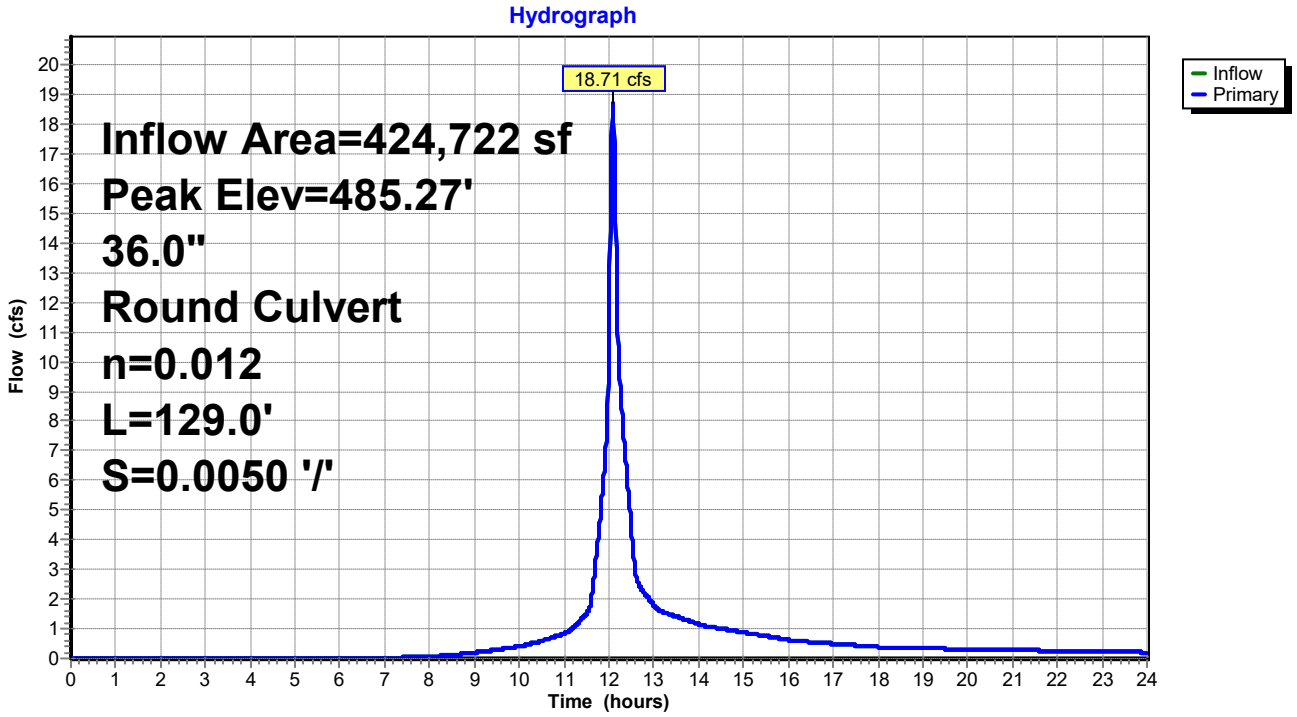
Pond CB-1-06: CB 6



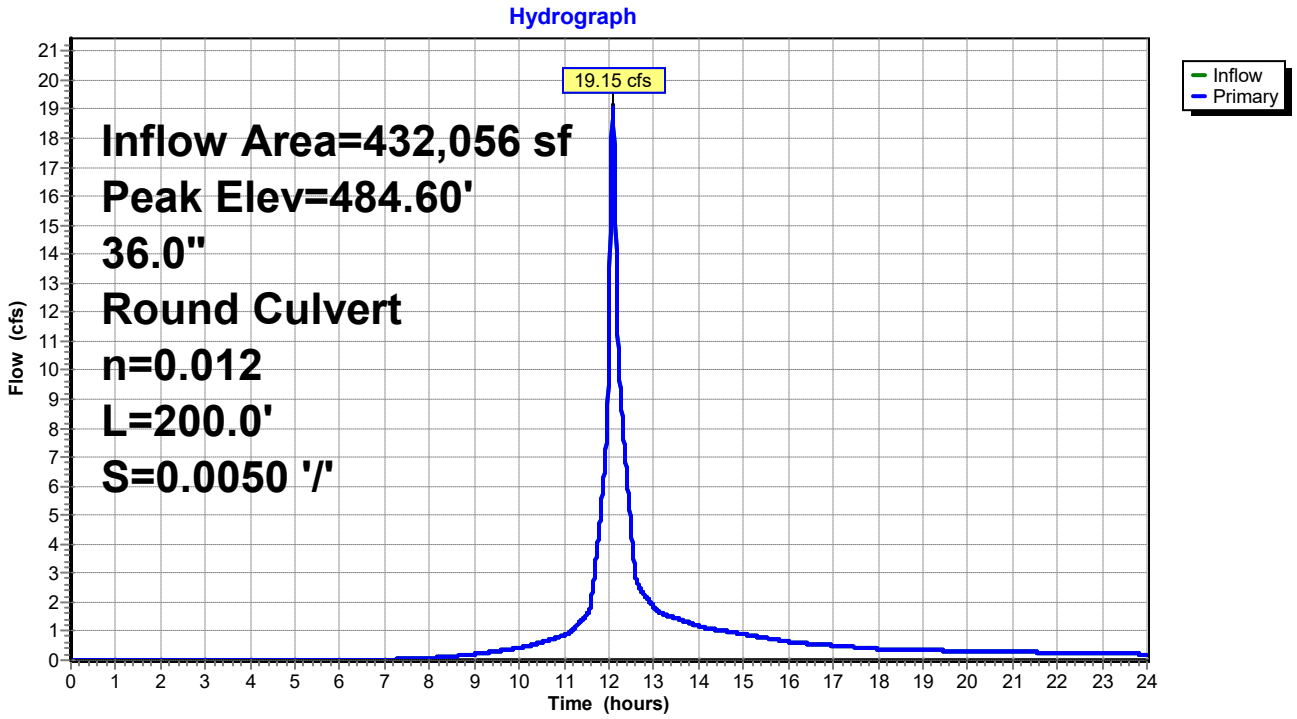
Pond CB-1-07: CB 7



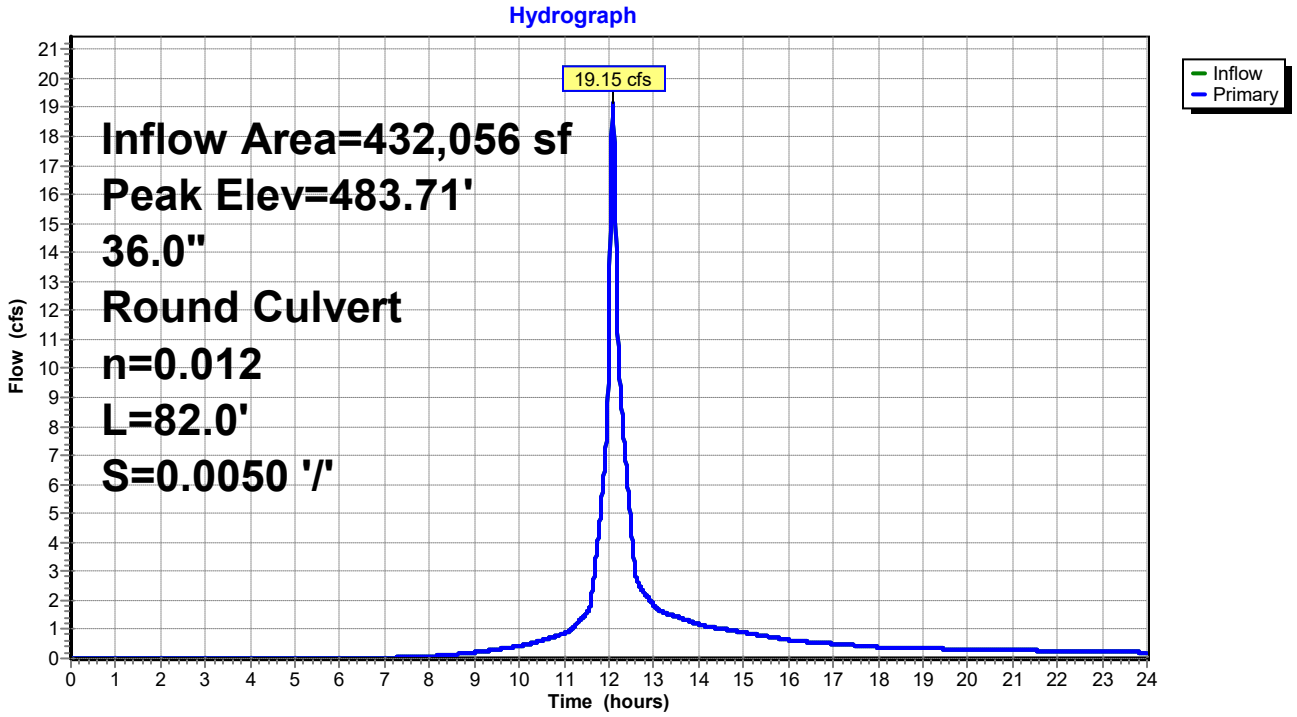
Pond CB-1-08: CB 8



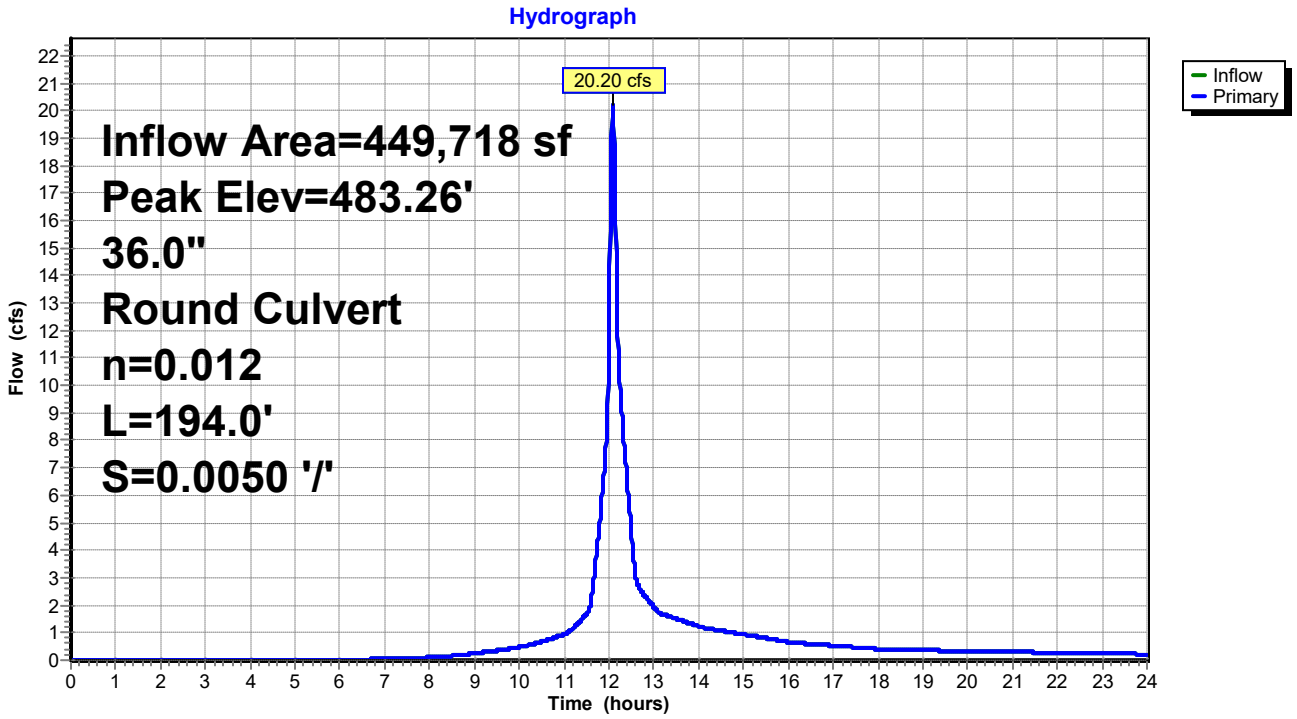
Pond CB-1-09: CB 9



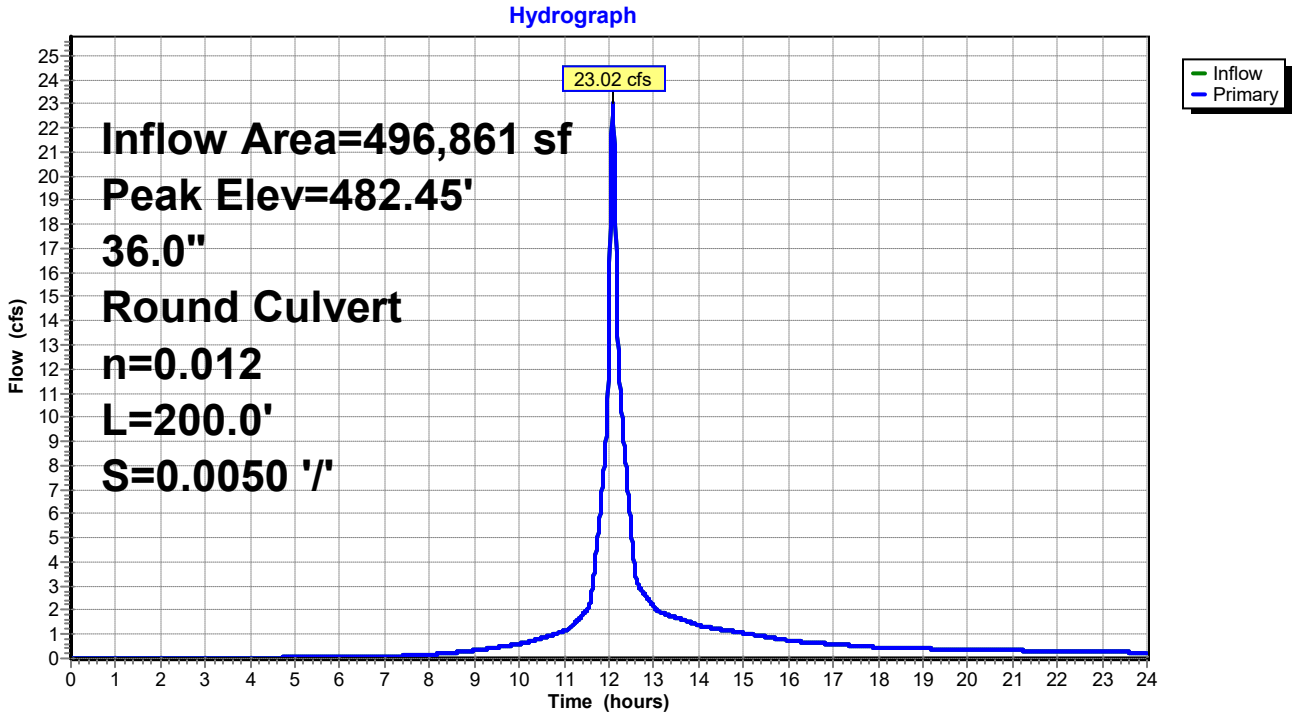
Pond CB-1-10: CB 10



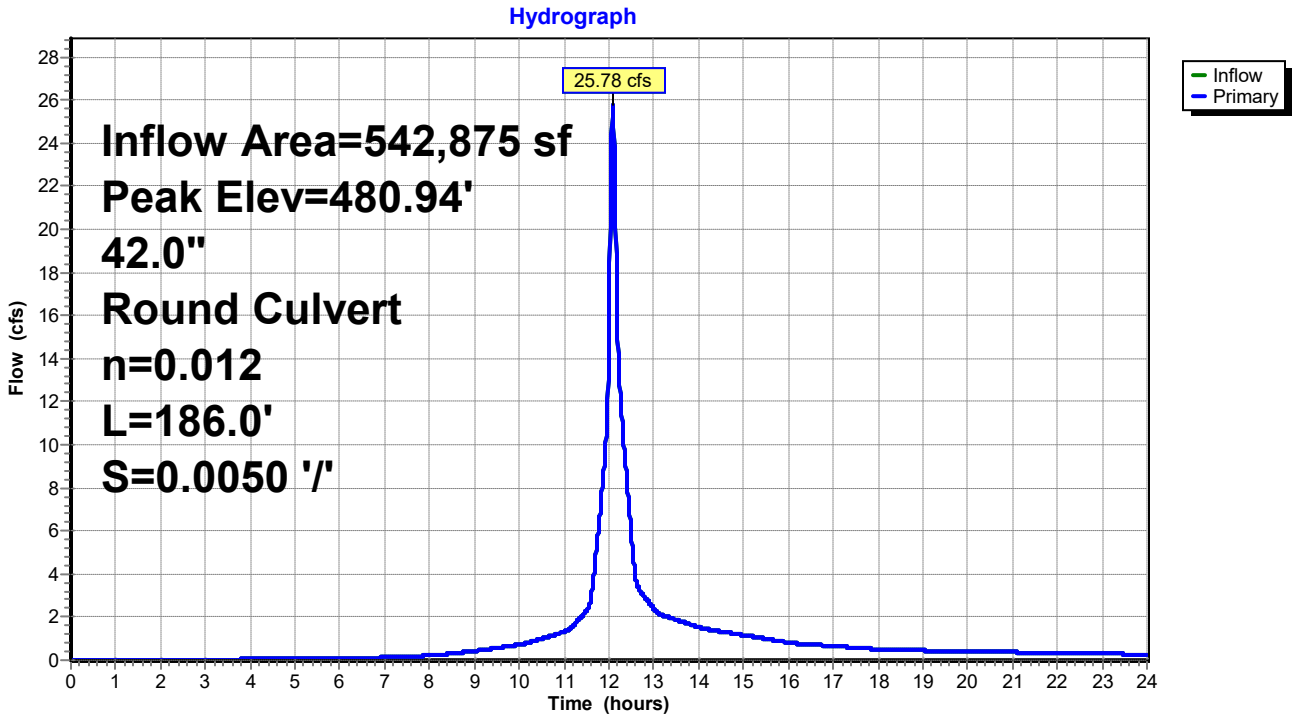
Pond CB-1-11: CB 11



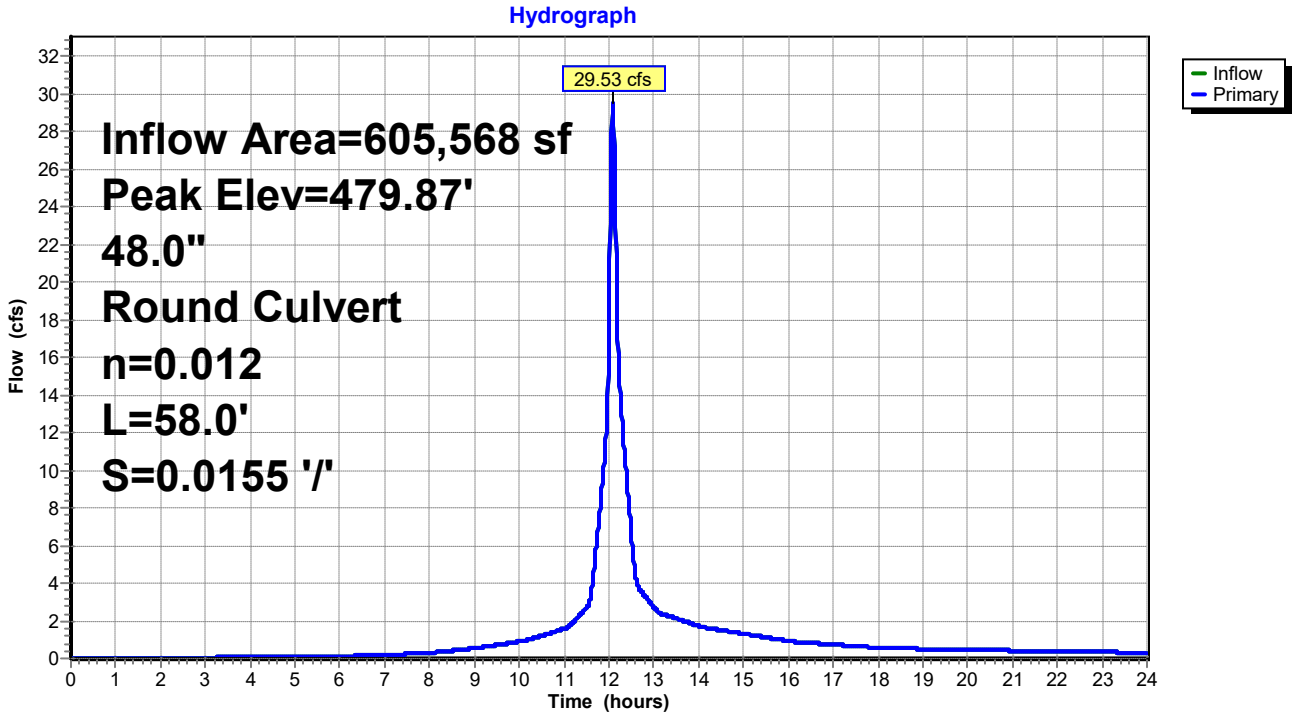
Pond CB-1-12: CB 12



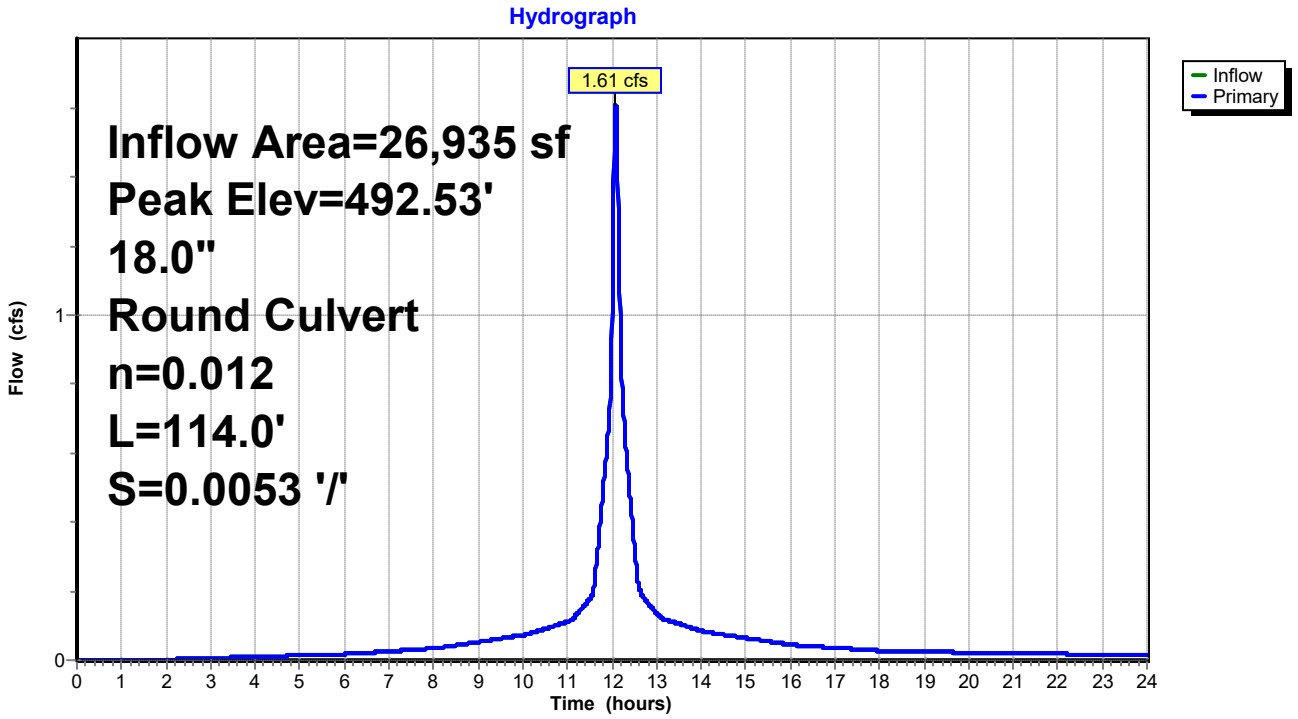
Pond CB-1-13: CB 13



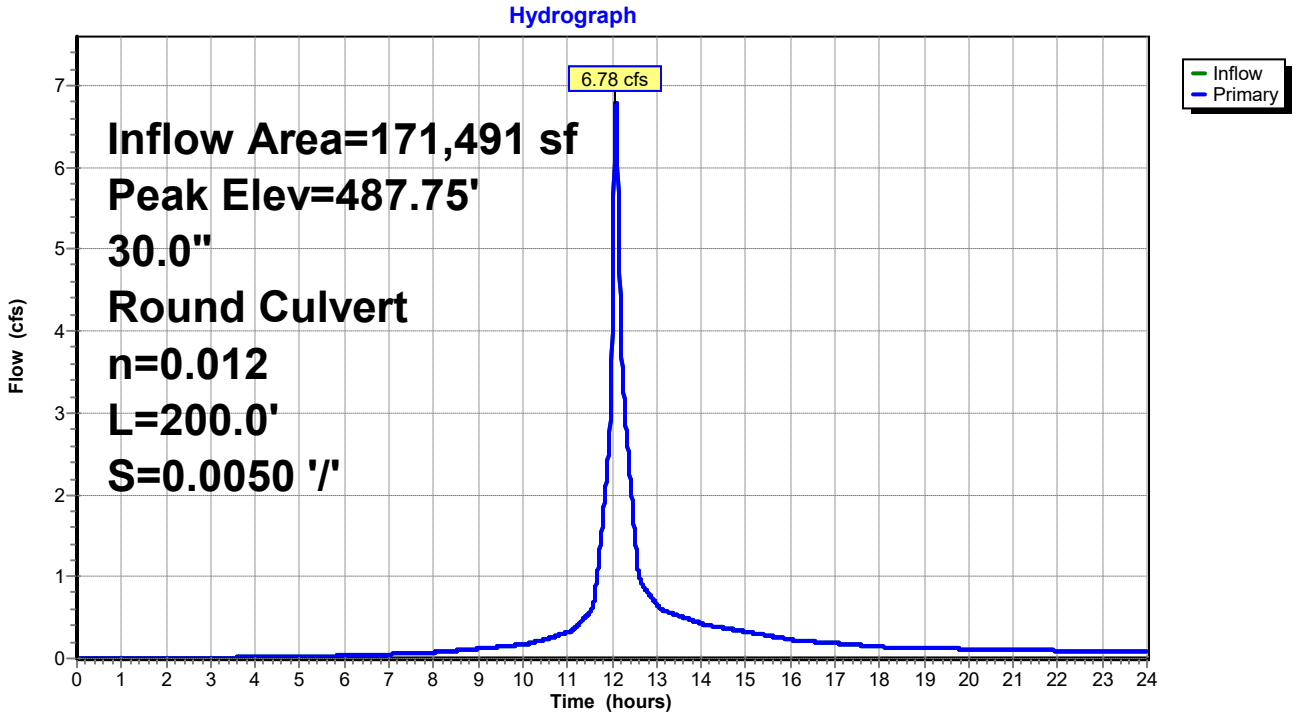
Pond CB-1-14: CB 14



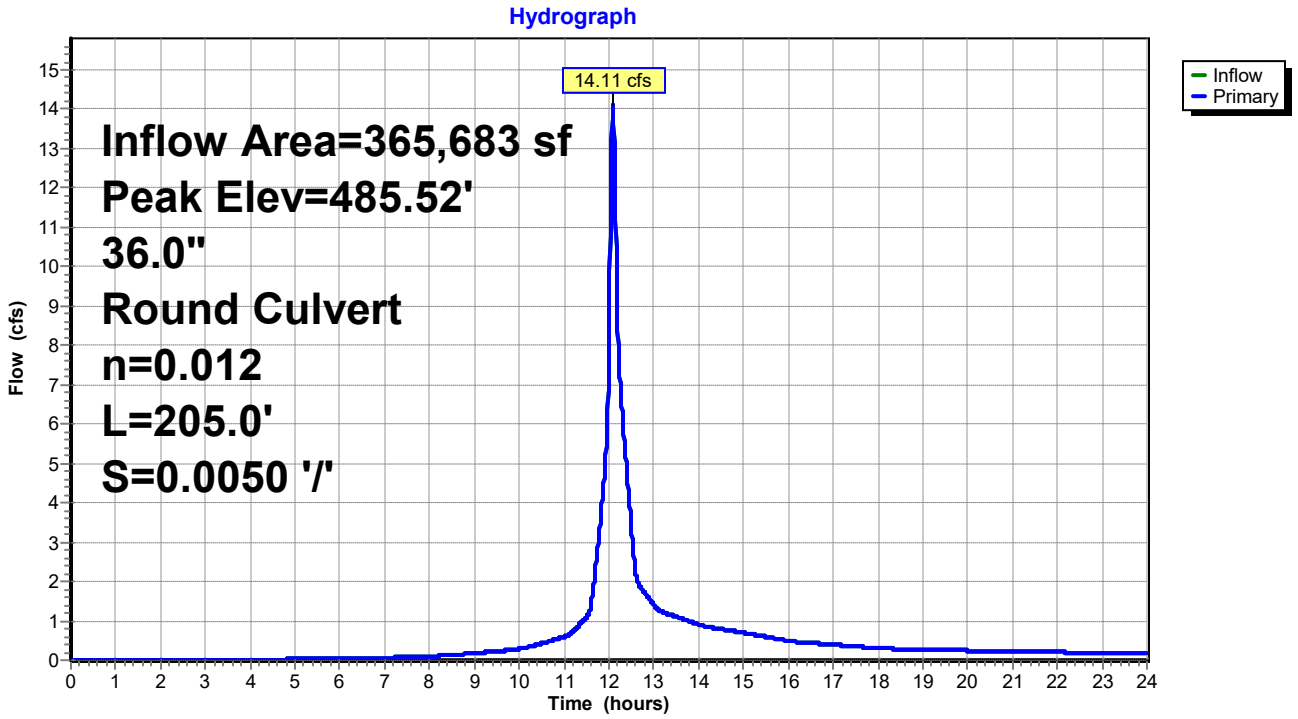
Pond CB-1-15: CB 15



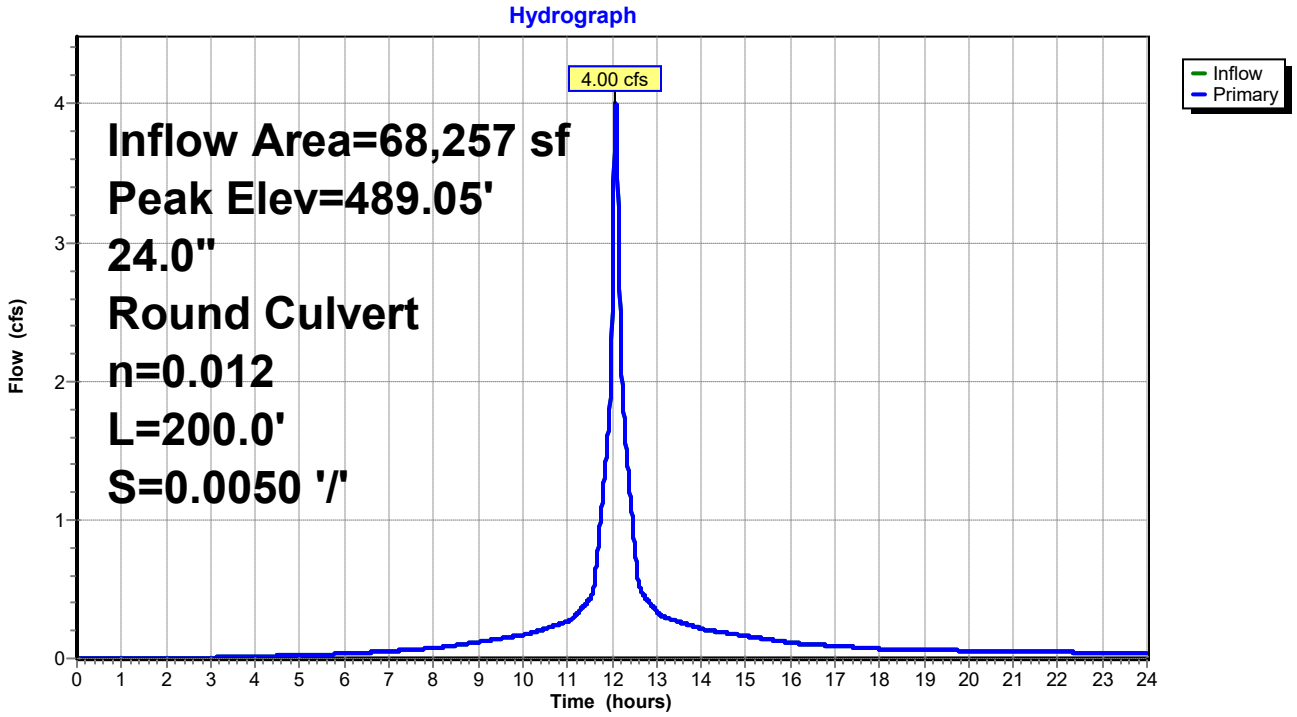
Pond CB-1-17: CB 17



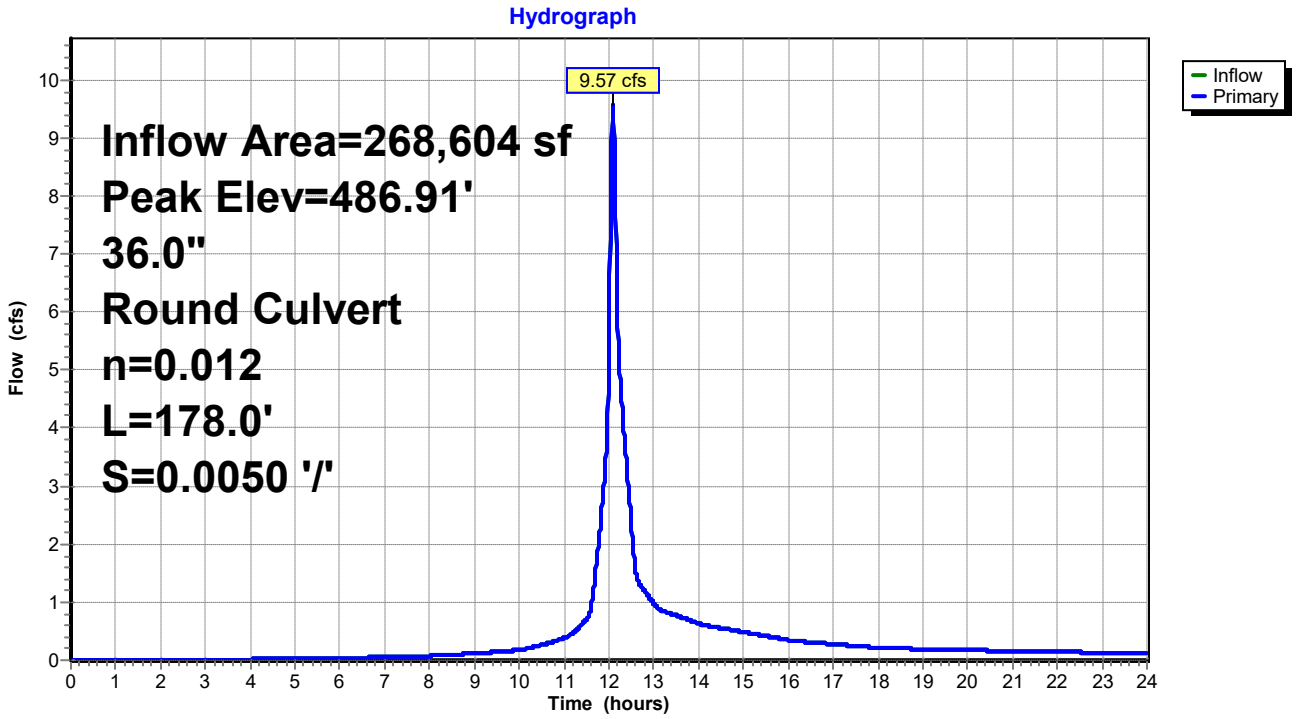
Pond CB-20: CB-20



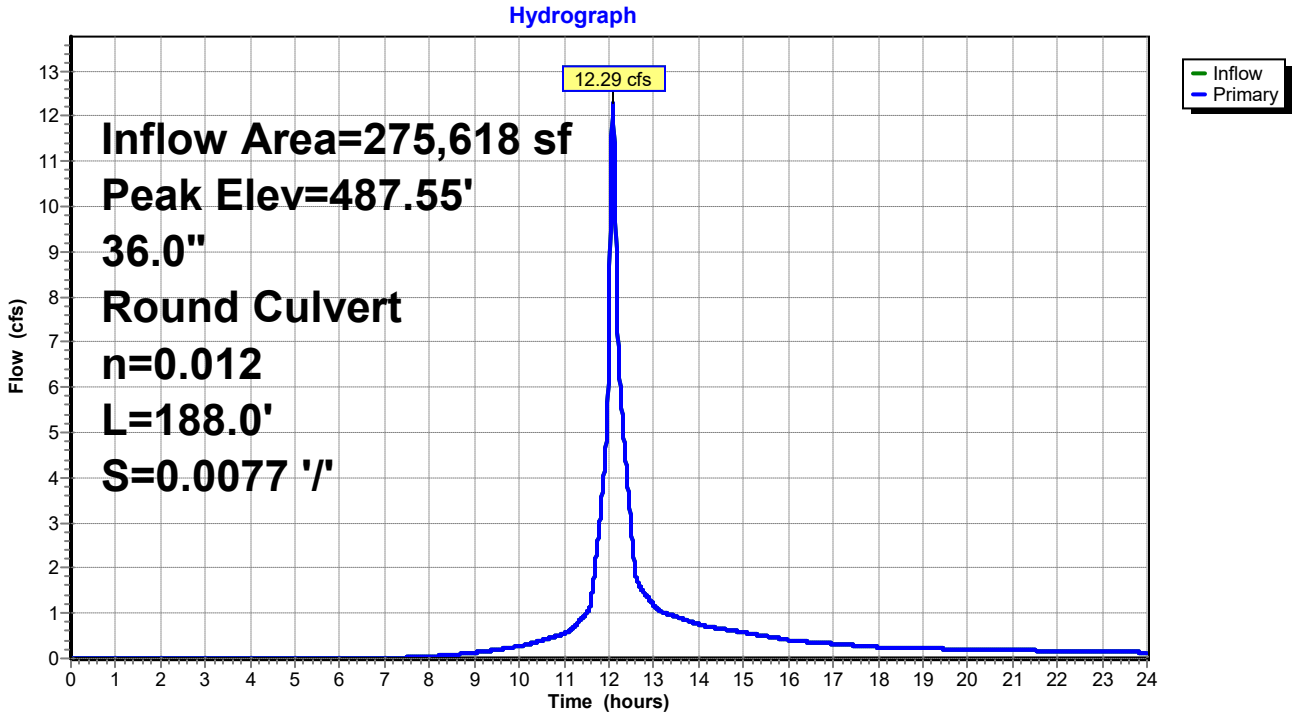
Pond CB16: CB16



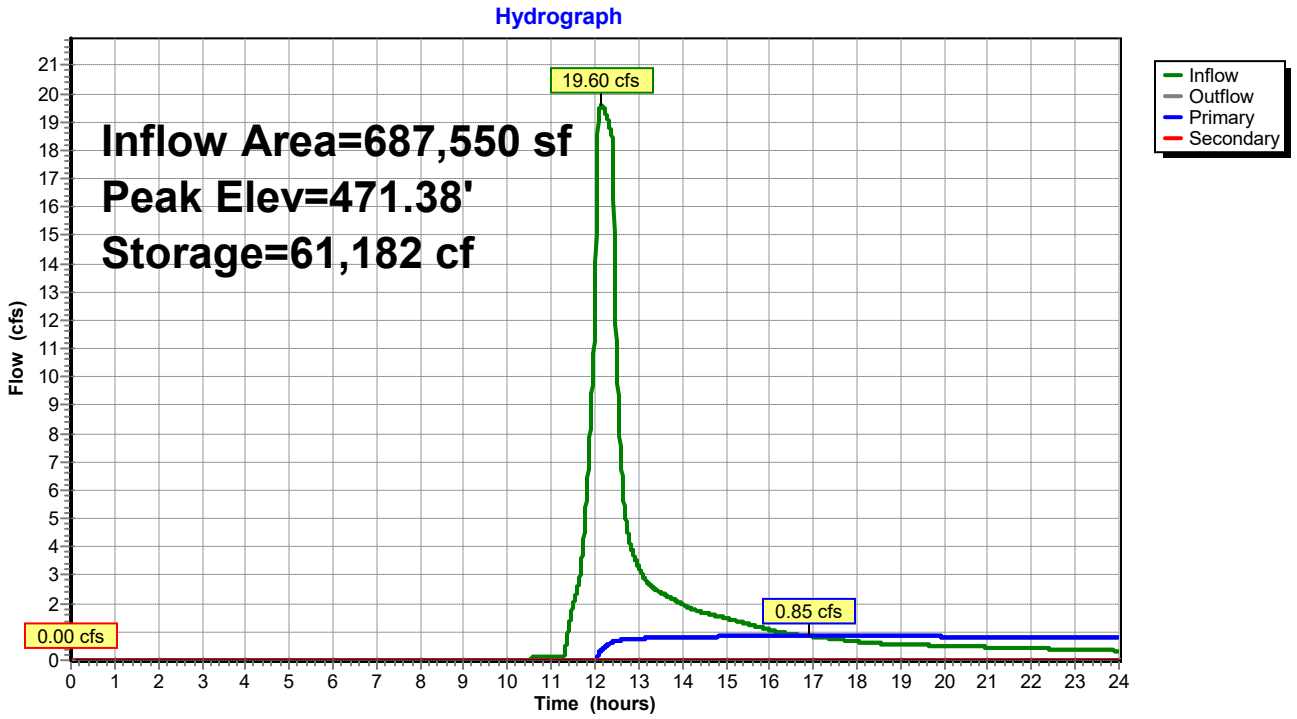
Pond CB18: CB 18



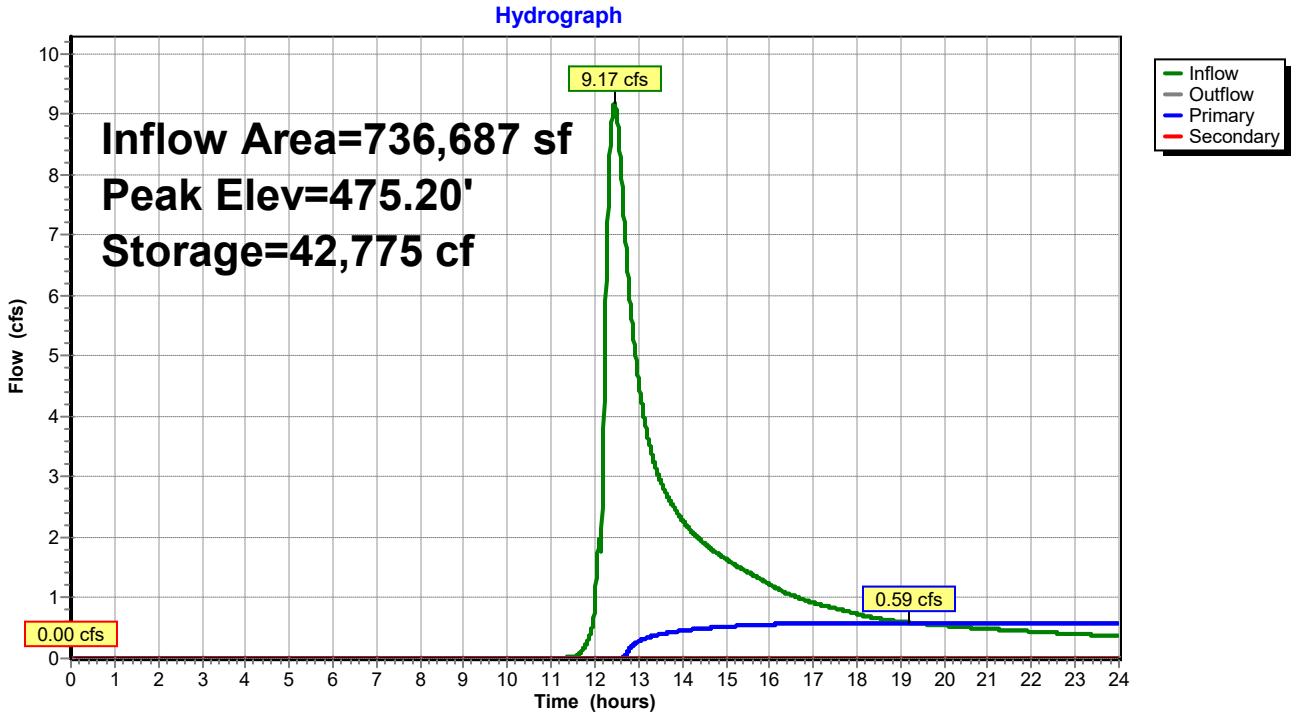
Pond CB3: CB3



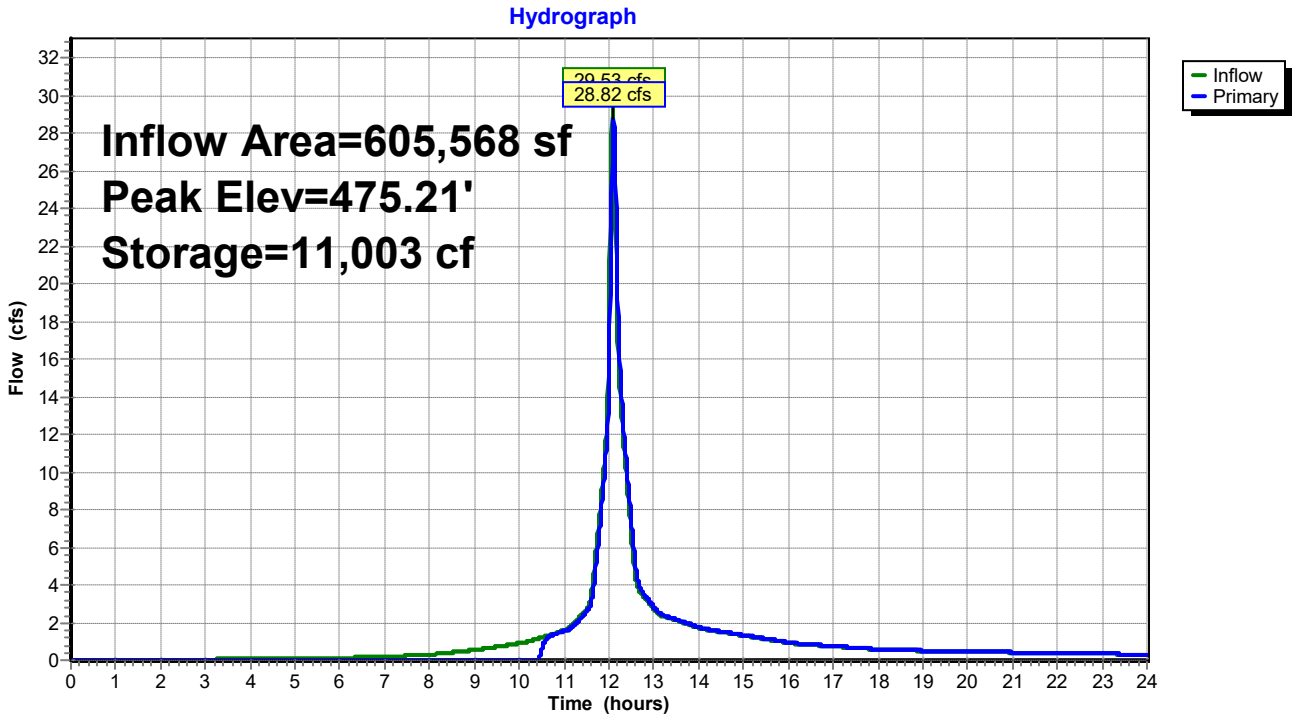
Pond P1: POND 1



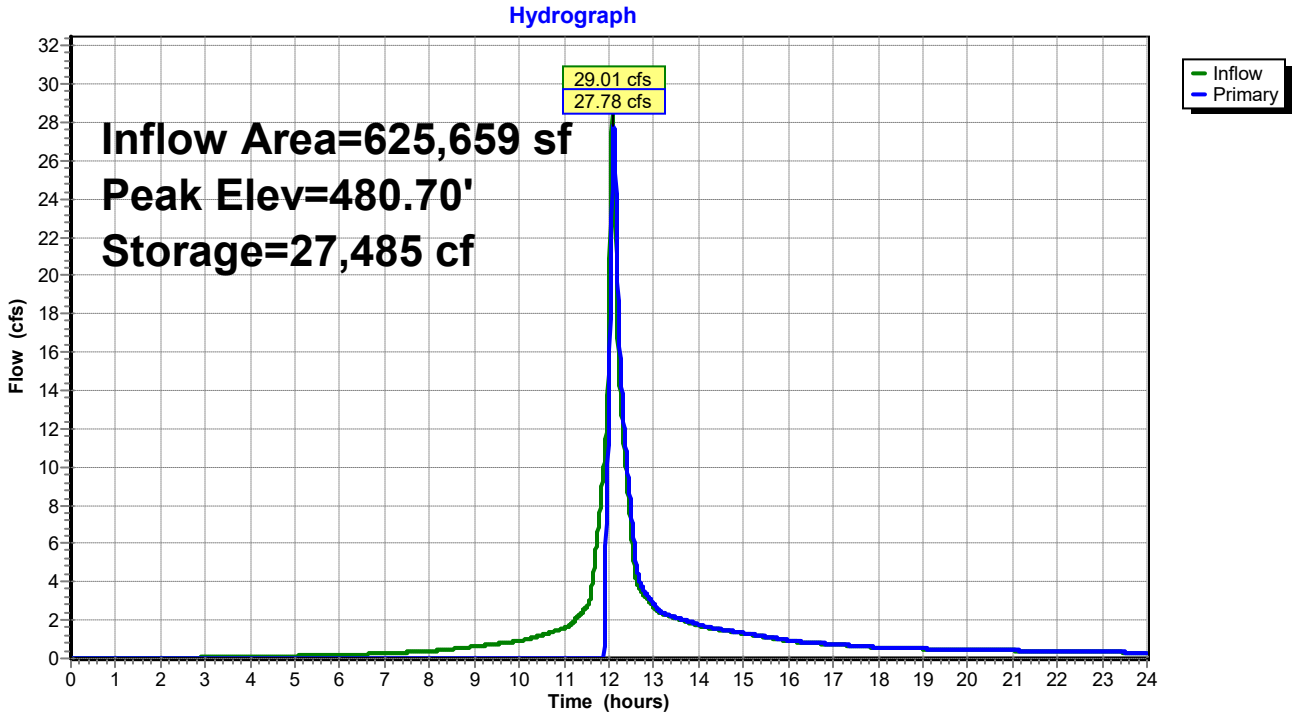
Pond P2: POND 2



Pond SB1: SEDIMENT BASIN 1



Pond SB2: SEDIMENT BASIN 2



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment W-1-01: W-1-01 Runoff Area=93,483 sf 62.65% Impervious Runoff Depth>3.77"
Tc=6.0 min CN=89 Runoff=9.22 cfs 29,356 cf

Subcatchment W-1-02: W-1-02 Runoff Area=90,014 sf 62.52% Impervious Runoff Depth>3.77"
Tc=6.0 min CN=89 Runoff=8.88 cfs 28,267 cf

Subcatchment W-1-03: W-1-03 Runoff Area=40,985 sf 60.85% Impervious Runoff Depth>3.77"
Tc=6.0 min CN=89 Runoff=4.04 cfs 12,870 cf

Subcatchment W-1-04: W-1-04 Runoff Area=51,136 sf 71.19% Impervious Runoff Depth>3.98"
Tc=6.0 min CN=91 Runoff=5.25 cfs 16,953 cf

Subcatchment W-1-05: W-1-05 Runoff Area=52,184 sf 69.76% Impervious Runoff Depth>3.98"
Tc=6.0 min CN=91 Runoff=5.35 cfs 17,301 cf

Subcatchment W-1-06: W-1-06 Runoff Area=36,762 sf 57.56% Impervious Runoff Depth>3.67"
Tc=6.0 min CN=88 Runoff=3.55 cfs 11,229 cf

Subcatchment W-1-07: W-1-07 Runoff Area=55,327 sf 49.42% Impervious Runoff Depth>3.46"
Tc=6.0 min CN=86 Runoff=5.09 cfs 15,969 cf

Subcatchment W-1-08: W-1-08 Runoff Area=4,831 sf 100.00% Impervious Runoff Depth>4.76"
Tc=6.0 min CN=98 Runoff=0.54 cfs 1,916 cf

Subcatchment W-1-09: W-1-09 Runoff Area=7,334 sf 100.00% Impervious Runoff Depth>4.76"
Tc=6.0 min CN=98 Runoff=0.82 cfs 2,909 cf

Subcatchment W-1-10: W-1-10 Runoff Area=17,662 sf 100.00% Impervious Runoff Depth>4.76"
Tc=6.0 min CN=98 Runoff=1.98 cfs 7,005 cf

Subcatchment W-1-11: W-1-11 Runoff Area=47,143 sf 100.00% Impervious Runoff Depth>4.76"
Tc=6.0 min CN=98 Runoff=5.29 cfs 18,698 cf

Subcatchment W-1-12: W-1-12 Runoff Area=46,014 sf 100.00% Impervious Runoff Depth>4.76"
Tc=6.0 min CN=98 Runoff=5.17 cfs 18,250 cf

Subcatchment W-1-13: W-1-13 Runoff Area=35,758 sf 100.00% Impervious Runoff Depth>4.76"
Tc=6.0 min CN=98 Runoff=4.02 cfs 14,182 cf

Subcatchment W-1-14: W-1-14 Runoff Area=26,935 sf 100.00% Impervious Runoff Depth>4.76"
Tc=6.0 min CN=98 Runoff=3.02 cfs 10,683 cf

Subcatchment W-1-15: W-1-15 Runoff Area=68,257 sf 95.55% Impervious Runoff Depth>4.64"
Tc=6.0 min CN=97 Runoff=7.61 cfs 26,412 cf

Subcatchment W-1-16: W-1-16 Runoff Area=103,234 sf 27.04% Impervious Runoff Depth>2.89"
Tc=6.0 min CN=80 Runoff=8.04 cfs 24,859 cf

Subcatchment W-1-17: W-1-17 Runoff Area=97,113 sf 27.34% Impervious Runoff Depth>2.98"
Tc=6.0 min CN=81 Runoff=7.80 cfs 24,133 cf

Subcatchment W-1-18: W-1-18 Runoff Area=47,087 sf 73.34% Impervious Runoff Depth>4.09"
Tc=6.0 min CN=92 Runoff=4.92 cfs 16,032 cf

Subcatchment W-1-19: W-1-19 Runoff Area=49,992 sf 61.99% Impervious Runoff Depth>3.77"
Tc=6.0 min CN=89 Runoff=4.93 cfs 15,699 cf

Subcatchment W-1-20: W-1-20 Runoff Area=45,984 sf 65.48% Impervious Runoff Depth>3.87"
Tc=6.0 min CN=90 Runoff=4.63 cfs 14,840 cf

Subcatchment W-1-21: W-1-21 Runoff Area=18,171 sf 100.00% Impervious Runoff Depth>4.76"
Tc=6.0 min CN=98 Runoff=2.04 cfs 7,207 cf

Subcatchment W-1-22: W-1-22 Runoff Area=46,207 sf 100.00% Impervious Runoff Depth>4.76"
Tc=6.0 min CN=98 Runoff=5.19 cfs 18,327 cf

Subcatchment W-1-23: W-1-23 Runoff Area=44,247 sf 100.00% Impervious Runoff Depth>4.76"
Tc=6.0 min CN=98 Runoff=4.97 cfs 17,549 cf

Subcatchment W-1-24: W-1-24 Runoff Area=36,712 sf 100.00% Impervious Runoff Depth>4.76"
Tc=6.0 min CN=98 Runoff=4.12 cfs 14,561 cf

Subcatchment W-1-25: W-1-25 Runoff Area=38,020 sf 100.00% Impervious Runoff Depth>4.76"
Tc=6.0 min CN=98 Runoff=4.27 cfs 15,079 cf

Subcatchment W-1-26: W-1-26 Runoff Area=30,635 sf 100.00% Impervious Runoff Depth>4.76"
Tc=6.0 min CN=98 Runoff=3.44 cfs 12,150 cf

Subcatchment W-1-27: W-1-27 Runoff Area=81,982 sf 0.00% Impervious Runoff Depth>2.36"
Tc=6.0 min CN=74 Runoff=5.19 cfs 16,132 cf

Subcatchment W-1-28: W-1-28 Runoff Area=111,028 sf 0.00% Impervious Runoff Depth>2.36"
Tc=6.0 min CN=74 Runoff=7.04 cfs 21,847 cf

Subcatchment WS 1 PRE: WS 1 PRE Runoff Area=3,623,989 sf 0.27% Impervious Runoff Depth>3.84"
Flow Length=4,000' Tc=59.1 min CN=90 Runoff=146.91 cfs 1,158,569 cf

Subcatchment WS 1B POST: WS 1B Runoff Area=3,089,449 sf 0.00% Impervious Runoff Depth>3.91"
Flow Length=3,130' Tc=94.5 min CN=91 Runoff=95.23 cfs 1,007,916 cf

Subcatchment WS 2 POST: WS 2 POST Runoff Area=2,639,780 sf 0.00% Impervious Runoff Depth>4.40"
Flow Length=3,389' Tc=23.6 min CN=95 Runoff=183.54 cfs 968,784 cf

Subcatchment WS 2 PRE: WS 2 PRE Runoff Area=3,138,375 sf 0.70% Impervious Runoff Depth>4.16"
Flow Length=3,471' Tc=56.1 min CN=93 Runoff=138.64 cfs 1,087,814 cf

Subcatchment WS 3 POST: WS 3 POST Runoff Area=1,069,841 sf 7.93% Impervious Runoff Depth>3.07"
Flow Length=1,234' Tc=8.8 min CN=82 Runoff=80.36 cfs 274,061 cf

Subcatchment WS 3 PRE: WS 3 PRE Runoff Area=1,497,134 sf 0.81% Impervious Runoff Depth>3.16"
Flow Length=2,153' Tc=26.3 min CN=83 Runoff=76.69 cfs 394,015 cf

Reach DP1 MO3 PRE: DP DEC MO3 PRE Inflow=326.78 cfs 2,640,398 cf
Outflow=326.78 cfs 2,640,398 cf

Reach MO3 & YB: DEC MO3/YOUNG'S BROOK Inflow=269.30 cfs 2,514,271 cf
Outflow=269.30 cfs 2,514,271 cf

Pond BR1: BIORETENTION 1 Peak Elev=475.78' Storage=24,764 cf Inflow=61.05 cfs 197,314 cf
Primary=20.89 cfs 174,411 cf Secondary=30.42 cfs 18,683 cf Outflow=51.31 cfs 193,094 cf

Pond BR2: BIORETENTION 2 Peak Elev=480.96' Storage=44,606 cf Inflow=63.87 cfs 182,973 cf
Primary=18.46 cfs 139,790 cf Secondary=24.27 cfs 26,803 cf Outflow=42.73 cfs 166,592 cf

Pond CB 1: CB 1 Peak Elev=490.00' Inflow=9.22 cfs 29,356 cf
24.0" Round Culvert n=0.012 L=200.0' S=0.0050 '/' Outflow=9.22 cfs 29,356 cf

Pond CB 19: CB-19 Peak Elev=487.34' Inflow=28.36 cfs 91,435 cf
36.0" Round Culvert n=0.012 L=60.0' S=0.0050 '/' Outflow=28.36 cfs 91,435 cf

Pond CB 2: CB 2 Peak Elev=489.05' Inflow=18.09 cfs 57,623 cf
30.0" Round Culvert n=0.012 L=163.0' S=0.0050 '/' Outflow=18.09 cfs 57,623 cf

Pond CB 21: CB 21 Peak Elev=485.89' Inflow=37.91 cfs 121,974 cf
36.0" Round Culvert n=0.012 L=200.0' S=0.0050 '/' Outflow=37.91 cfs 121,974 cf

Pond CB 22: CB 22 Peak Elev=484.89' Inflow=37.91 cfs 121,974 cf
36.0" Round Culvert n=0.012 L=200.0' S=0.0050 '/' Outflow=37.91 cfs 121,974 cf

Pond CB 23: CB 23 Peak Elev=483.95' Inflow=37.91 cfs 121,974 cf
36.0" Round Culvert n=0.012 L=145.0' S=0.0050 '/' Outflow=37.91 cfs 121,974 cf

Pond CB 24: CB 24 Peak Elev=483.32' Inflow=39.95 cfs 129,181 cf
36.0" Round Culvert n=0.012 L=164.0' S=0.0050 '/' Outflow=39.95 cfs 129,181 cf

Pond CB 25: CB 25 Peak Elev=482.81' Inflow=45.14 cfs 147,507 cf
36.0" Round Culvert n=0.012 L=198.0' S=0.0050 '/' Outflow=45.14 cfs 147,507 cf

Pond CB 26: CB 26 Peak Elev=482.52' Inflow=50.10 cfs 165,056 cf
36.0" Round Culvert n=0.012 L=198.0' S=0.0050 '/' Outflow=50.10 cfs 165,056 cf

Pond CB 27: CB 27 Peak Elev=481.85' Inflow=54.23 cfs 179,617 cf
36.0" Round Culvert n=0.012 L=131.0' S=0.0050 '/' Outflow=54.23 cfs 179,617 cf

Pond CB 28: CB 28 Peak Elev=481.55' Inflow=61.93 cfs 206,847 cf
36.0" Round Culvert n=0.012 L=71.0' S=0.0104 '/' Outflow=61.93 cfs 206,847 cf

Pond CB 29: CB 29 Peak Elev=492.36' Inflow=3.44 cfs 12,150 cf
18.0" Round Culvert n=0.012 L=169.0' S=0.0050 '/' Outflow=3.44 cfs 12,150 cf

Pond CB-1-06: CB 6 Peak Elev=487.47' Inflow=32.73 cfs 104,748 cf
36.0" Round Culvert n=0.012 L=142.0' S=0.0051 '/' Outflow=32.73 cfs 104,748 cf

Pond CB-1-07: CB 7 Peak Elev=487.29' Inflow=41.37 cfs 131,946 cf
36.0" Round Culvert n=0.012 L=136.0' S=0.0050 '/' Outflow=41.37 cfs 131,946 cf

Pond CB-1-08: CB 8 Peak Elev=486.67' Inflow=41.91 cfs 133,862 cf
36.0" Round Culvert n=0.012 L=129.0' S=0.0050 '/' Outflow=41.91 cfs 133,862 cf

Pond CB-1-09: CB 9 Peak Elev=485.98' Inflow=42.74 cfs 136,770 cf
36.0" Round Culvert n=0.012 L=200.0' S=0.0050 '/' Outflow=42.74 cfs 136,770 cf

Pond CB-1-10: CB 10 Peak Elev=485.17' Inflow=42.74 cfs 136,770 cf
36.0" Round Culvert n=0.012 L=82.0' S=0.0050 '/' Outflow=42.74 cfs 136,770 cf

Pond CB-1-11: CB 11 Peak Elev=484.72' Inflow=44.72 cfs 143,775 cf
36.0" Round Culvert n=0.012 L=194.0' S=0.0050 '/' Outflow=44.72 cfs 143,775 cf

Pond CB-1-12: CB 12 Peak Elev=484.48' Inflow=50.01 cfs 162,473 cf
36.0" Round Culvert n=0.012 L=200.0' S=0.0050 '/' Outflow=50.01 cfs 162,473 cf

Pond CB-1-13: CB 13 Peak Elev=482.30' Inflow=55.18 cfs 180,723 cf
42.0" Round Culvert n=0.012 L=186.0' S=0.0050 '/' Outflow=55.18 cfs 180,723 cf

Pond CB-1-14: CB 14 Peak Elev=481.07' Inflow=62.22 cfs 205,588 cf
48.0" Round Culvert n=0.012 L=58.0' S=0.0155 '/' Outflow=62.22 cfs 205,588 cf

Pond CB-1-15: CB 15 Peak Elev=492.80' Inflow=3.02 cfs 10,683 cf
18.0" Round Culvert n=0.012 L=114.0' S=0.0053 '/' Outflow=3.02 cfs 10,683 cf

Pond CB-1-17: CB 17 Peak Elev=488.47' Inflow=15.64 cfs 51,270 cf
30.0" Round Culvert n=0.012 L=200.0' S=0.0050 '/' Outflow=15.64 cfs 51,270 cf

Pond CB-20: CB-20 Peak Elev=486.64' Inflow=33.28 cfs 107,133 cf
36.0" Round Culvert n=0.012 L=205.0' S=0.0050 '/' Outflow=33.28 cfs 107,133 cf

Pond CB16: CB16 Peak Elev=489.46' Inflow=7.61 cfs 26,412 cf
24.0" Round Culvert n=0.012 L=200.0' S=0.0050 '/' Outflow=7.61 cfs 26,412 cf

Pond CB18: CB 18 Peak Elev=487.79' Inflow=23.44 cfs 75,403 cf
36.0" Round Culvert n=0.012 L=178.0' S=0.0050 '/' Outflow=23.44 cfs 75,403 cf

Pond CB3: CB3 Peak Elev=488.36' Inflow=27.38 cfs 87,447 cf
36.0" Round Culvert n=0.012 L=188.0' S=0.0077 '/' Outflow=27.38 cfs 87,447 cf

Pond P1: POND 1 Peak Elev=473.02' Storage=92,044 cf Inflow=55.41 cfs 209,226 cf
Primary=20.19 cfs 140,539 cf Secondary=0.00 cfs 0 cf Outflow=20.19 cfs 140,539 cf

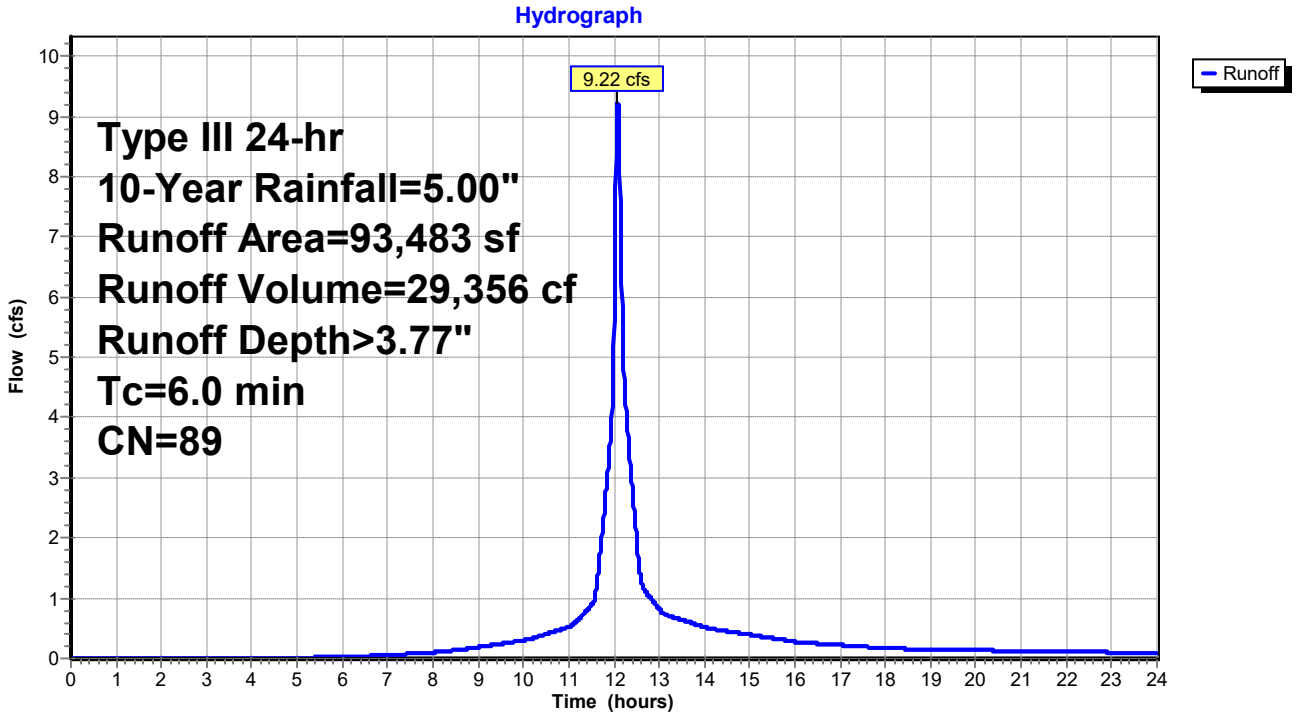
Pond P2: POND 2 Peak Elev=477.51' Storage=90,362 cf Inflow=47.35 cfs 188,440 cf
Primary=9.62 cfs 122,971 cf Secondary=0.00 cfs 0 cf Outflow=9.62 cfs 122,971 cf

Pond SB1: SEDIMENT BASIN 1 Peak Elev=475.53' Storage=12,975 cf Inflow=62.22 cfs 205,588 cf
Outflow=61.05 cfs 197,314 cf

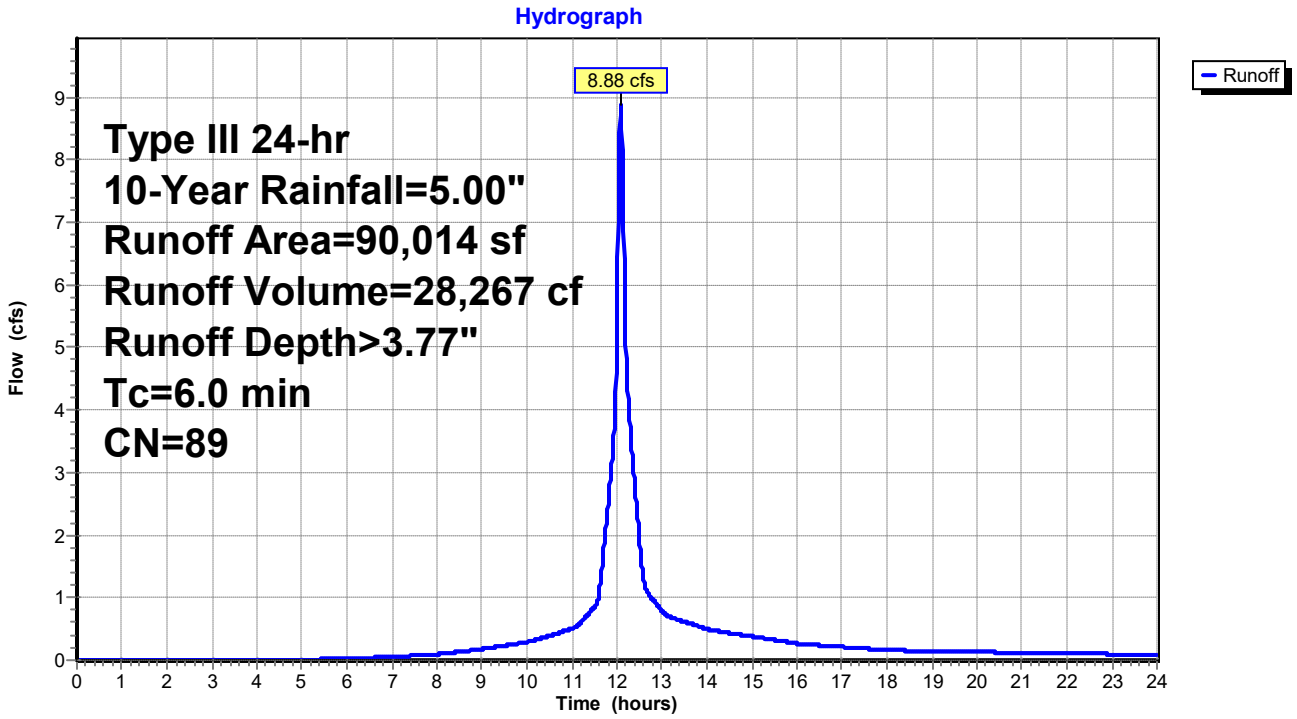
Pond SB2: SEDIMENT BASIN 2 Peak Elev=481.06' Storage=29,966 cf Inflow=61.93 cfs 206,847 cf
Outflow=63.87 cfs 182,973 cf

Total Runoff Area = 16,482,805 sf Runoff Volume = 5,341,573 cf Average Runoff Depth = 3.89"
93.90% Pervious = 15,477,983 sf 6.10% Impervious = 1,004,822 sf

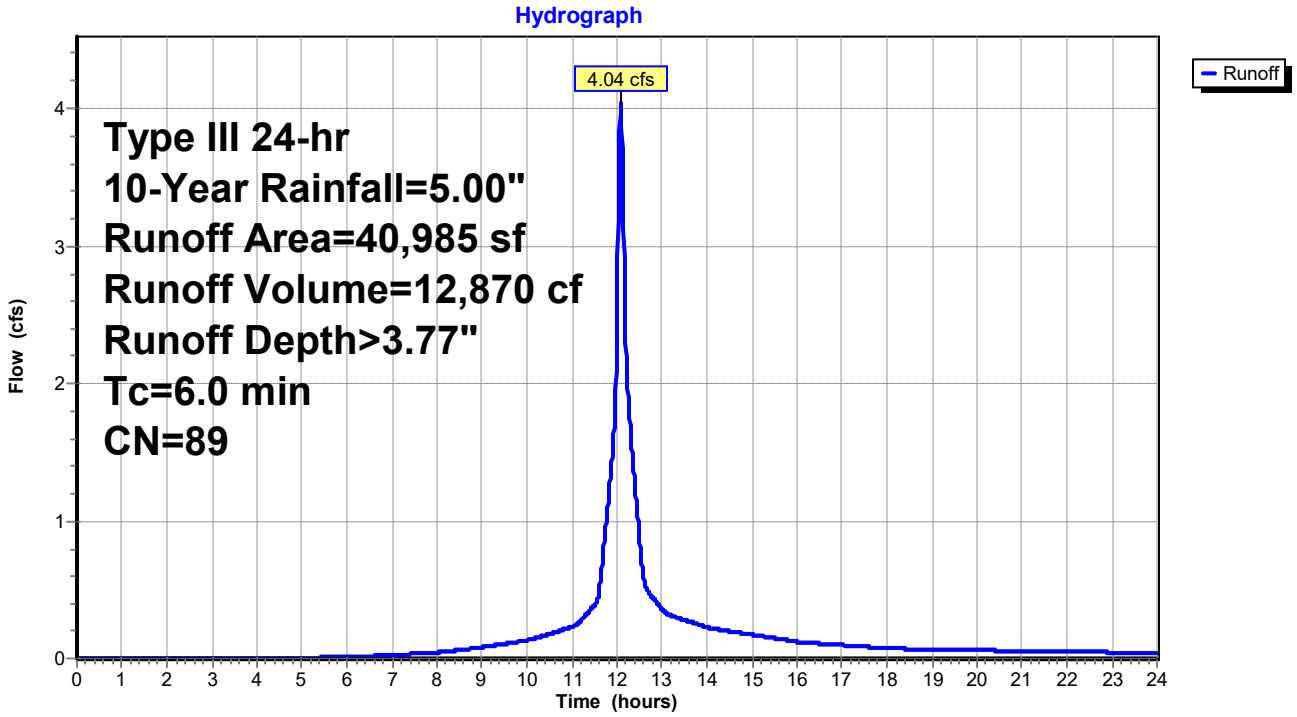
Subcatchment W-1-01: W-1-01



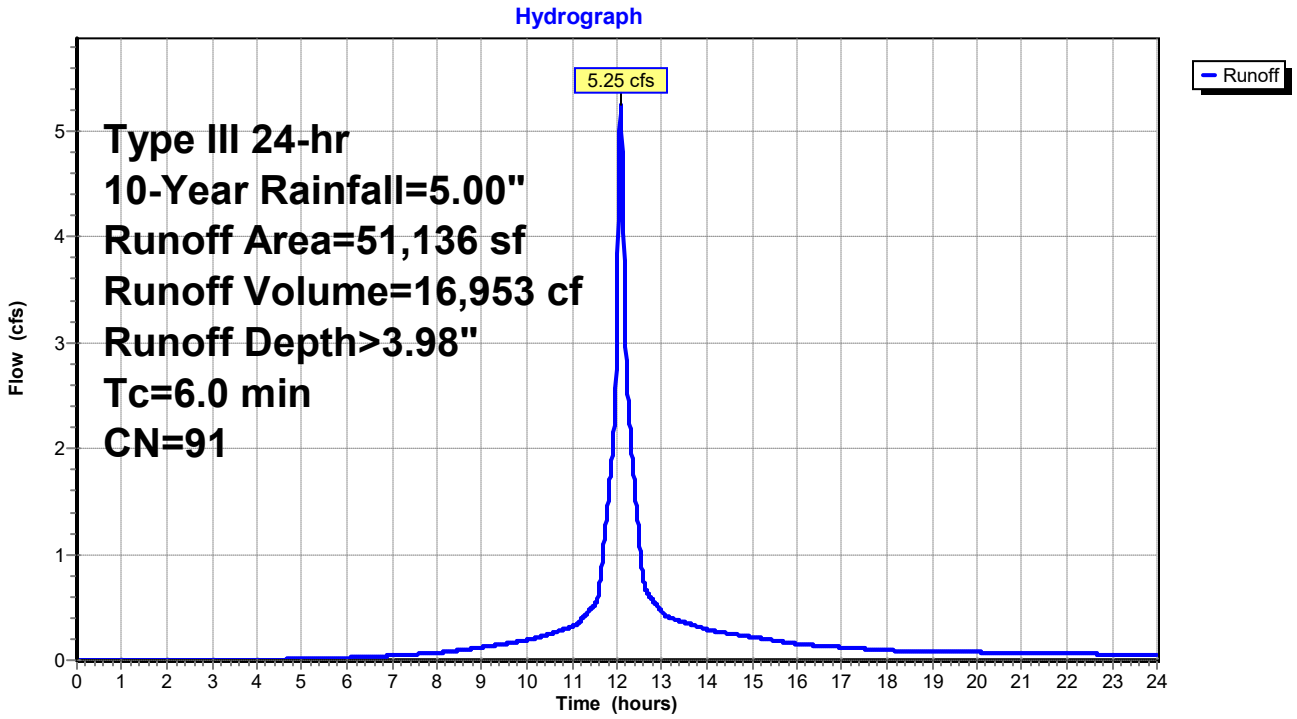
Subcatchment W-1-02: W-1-02



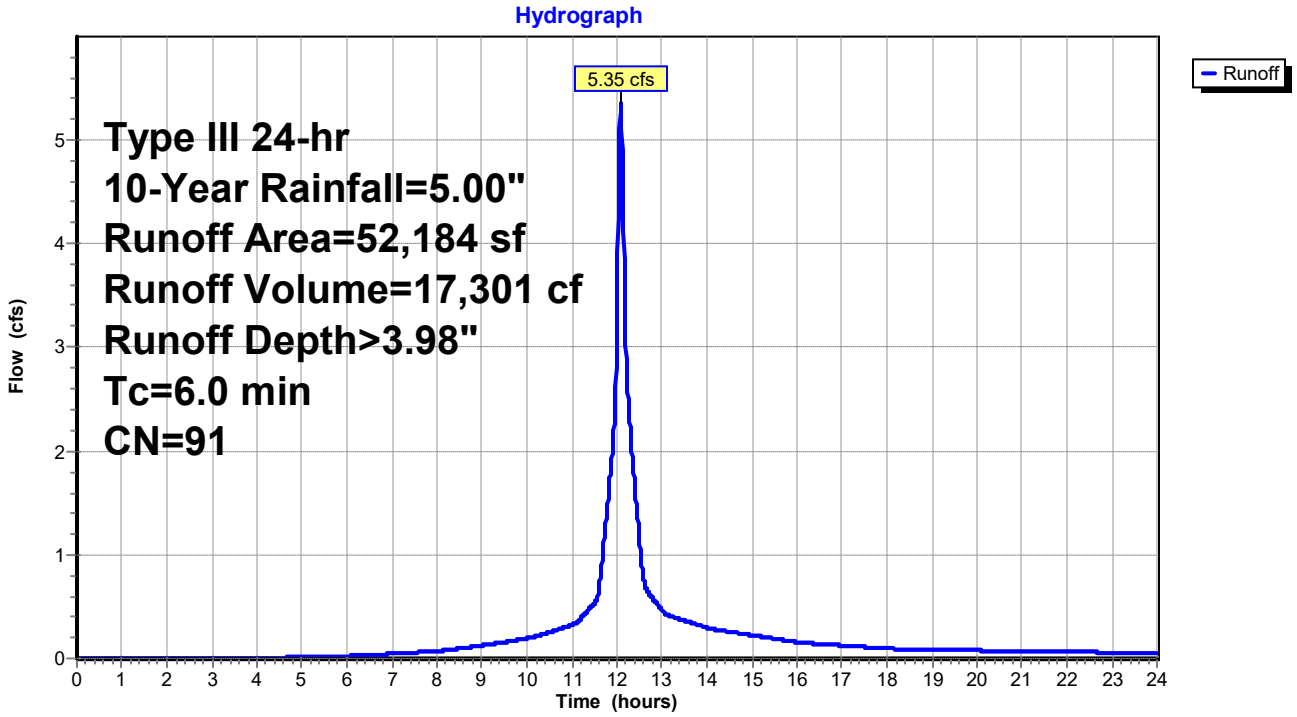
Subcatchment W-1-03: W-1-03



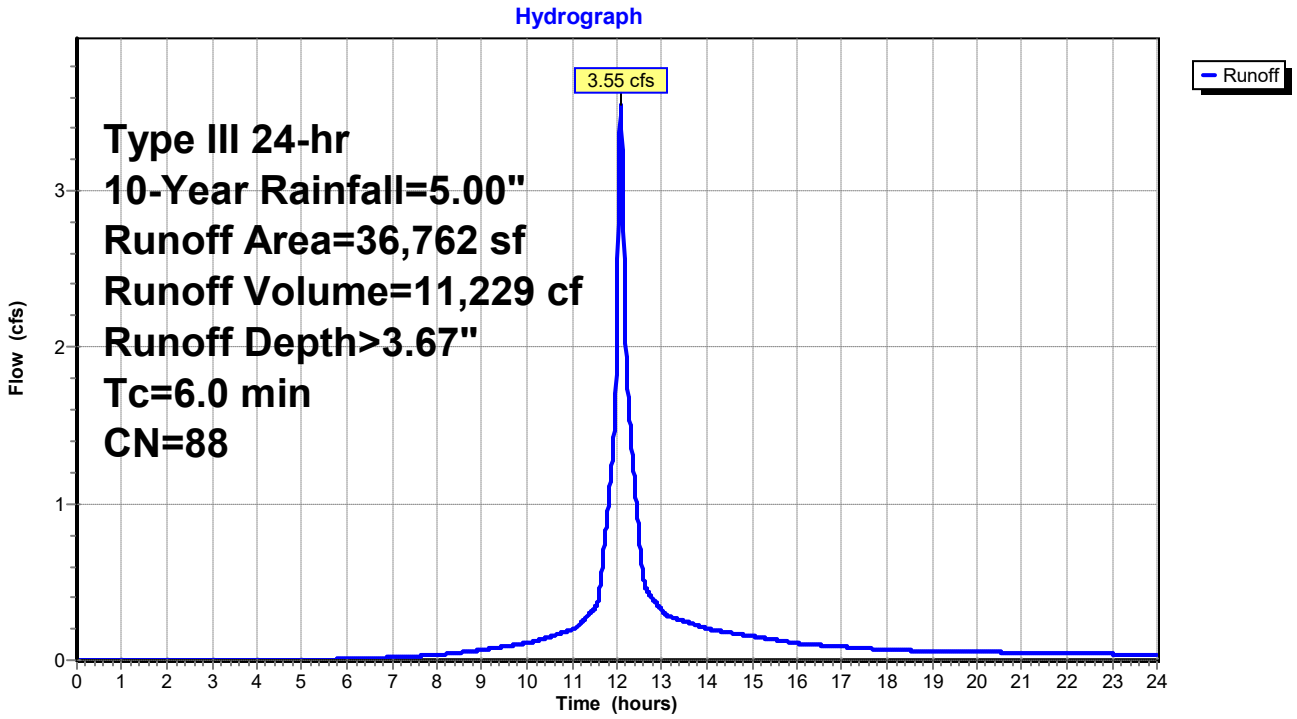
Subcatchment W-1-04: W-1-04



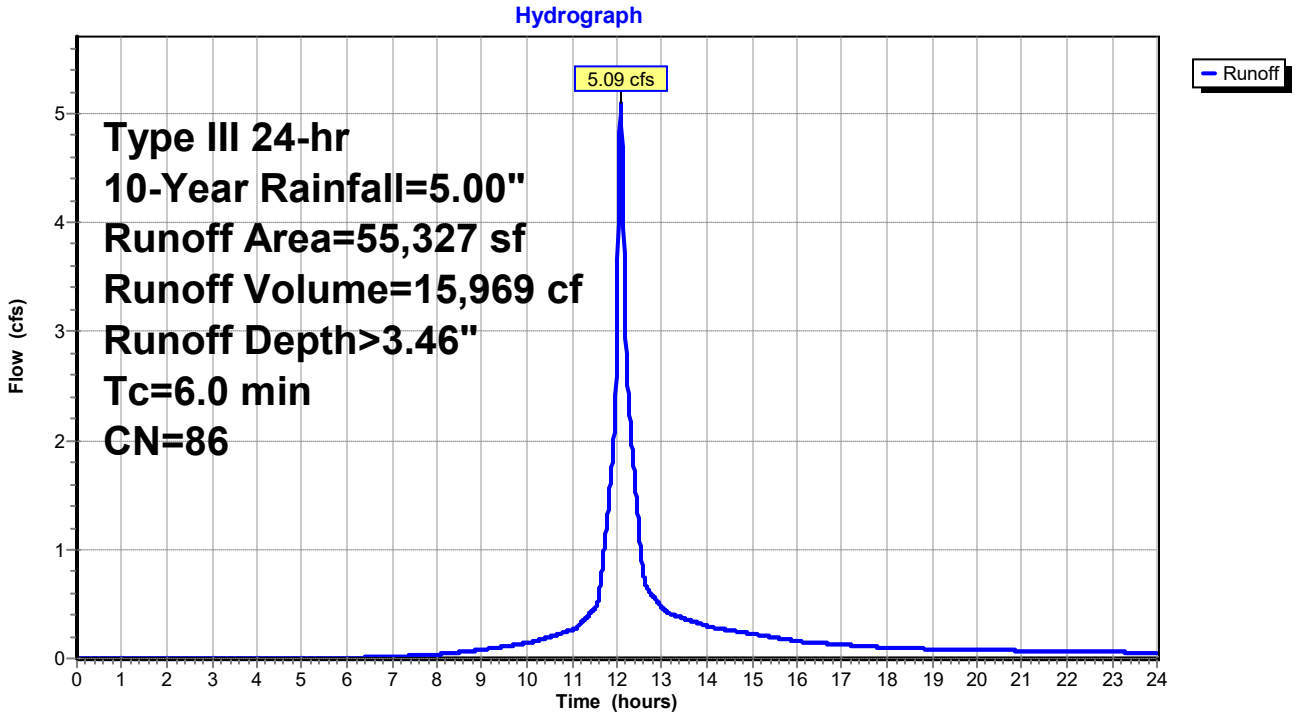
Subcatchment W-1-05: W-1-05



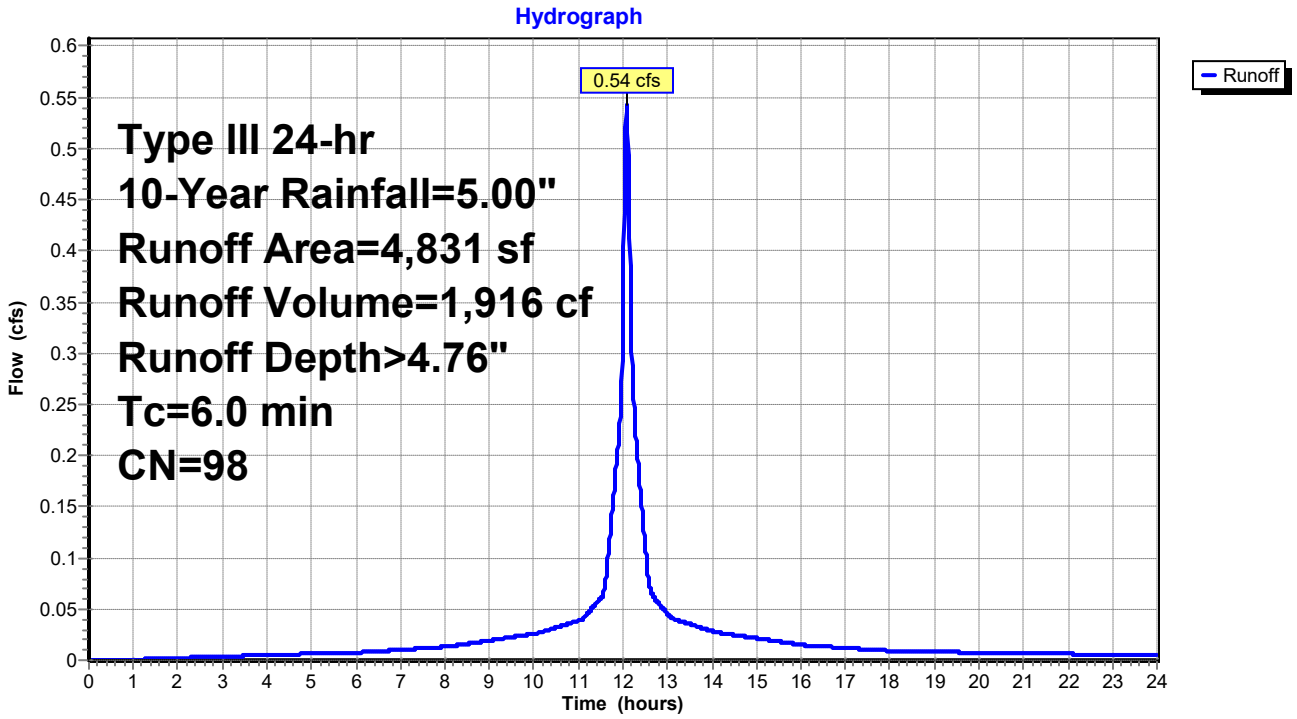
Subcatchment W-1-06: W-1-06



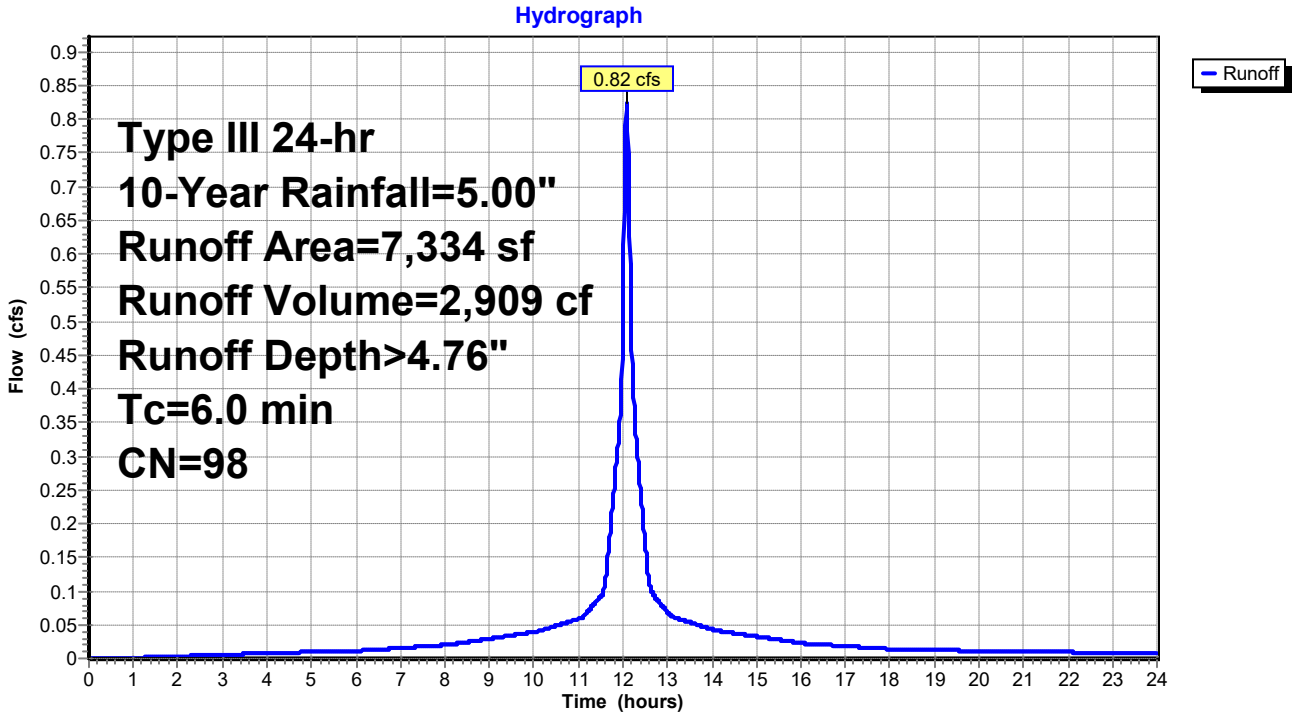
Subcatchment W-1-07: W-1-07



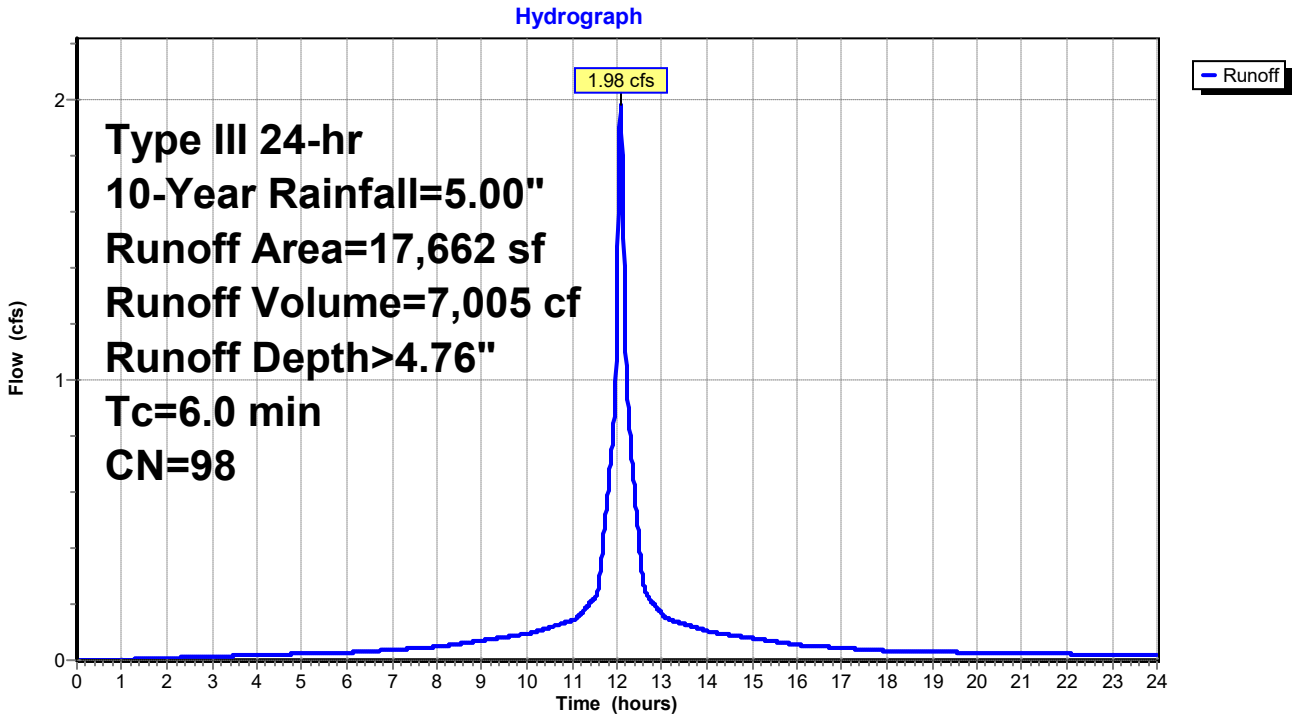
Subcatchment W-1-08: W-1-08



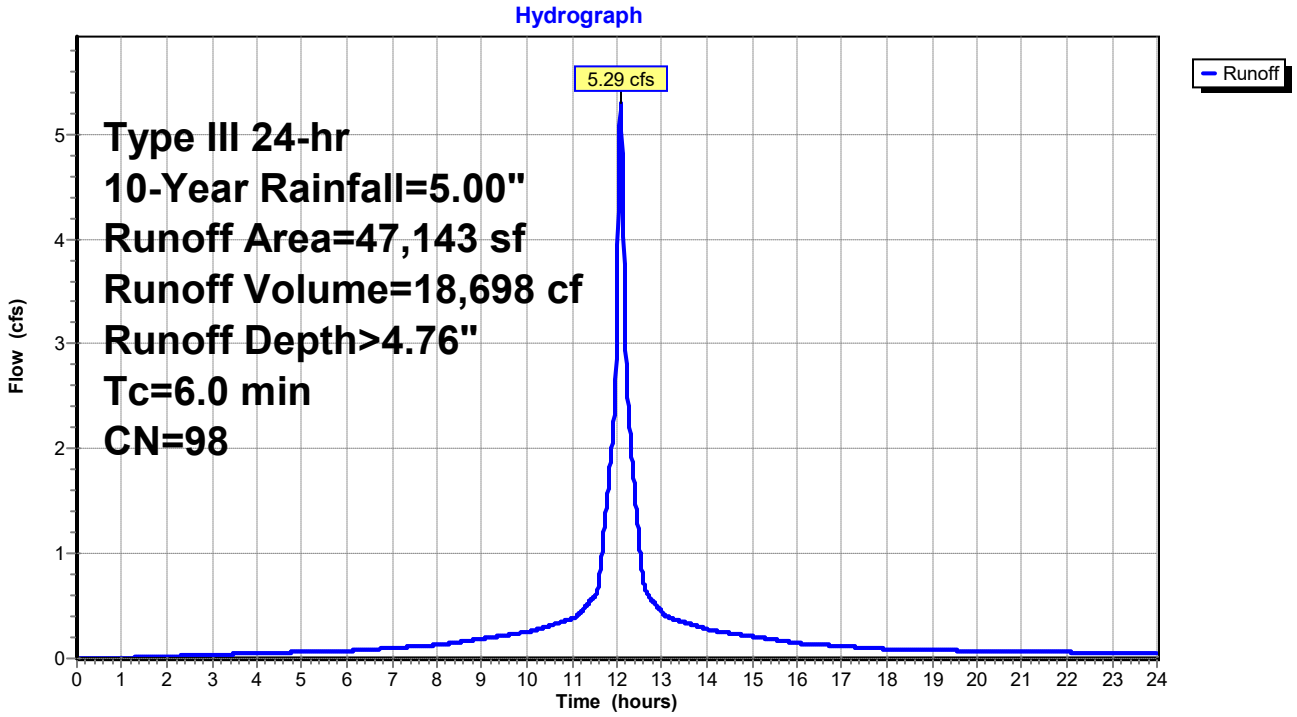
Subcatchment W-1-09: W-1-09



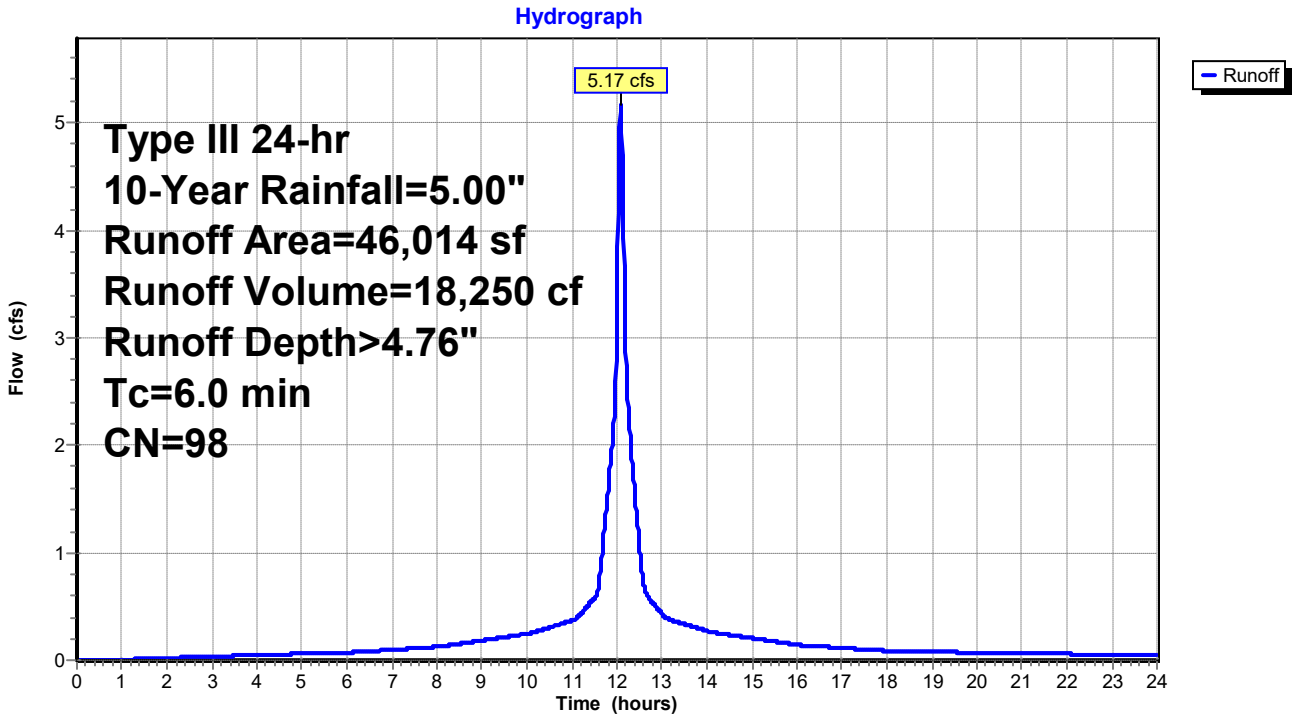
Subcatchment W-1-10: W-1-10



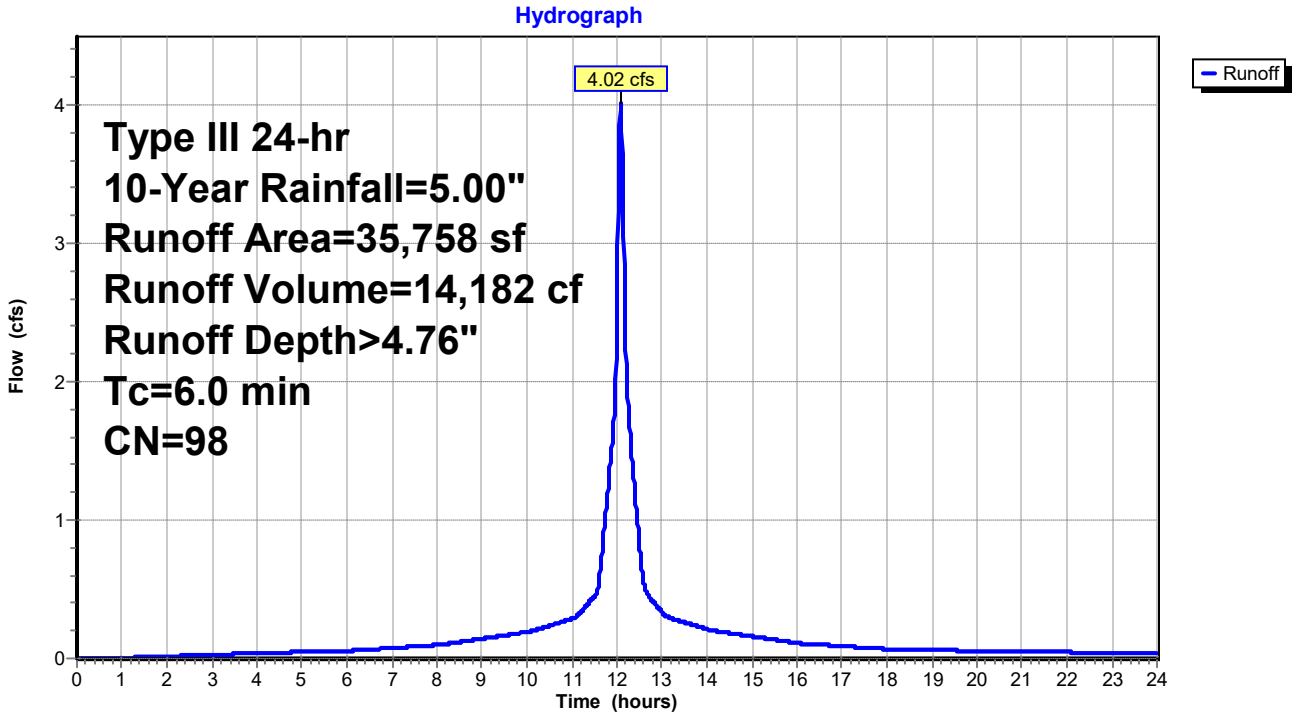
Subcatchment W-1-11: W-1-11



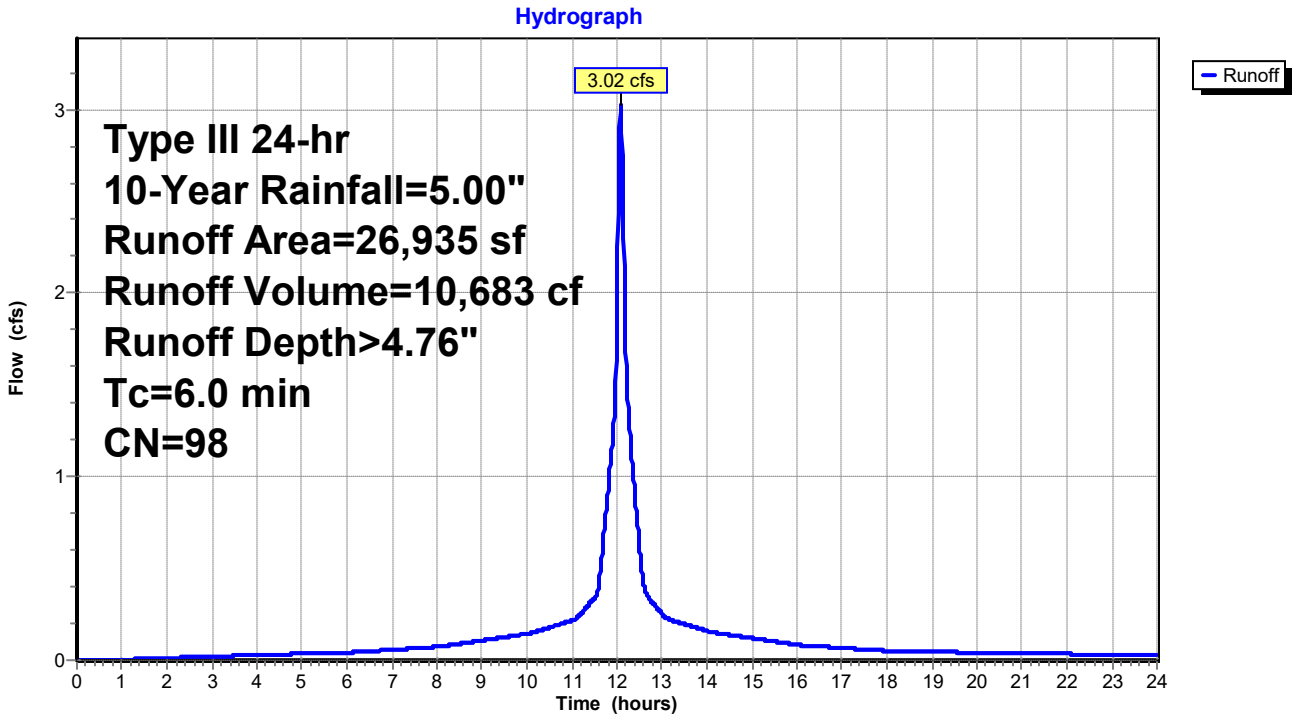
Subcatchment W-1-12: W-1-12



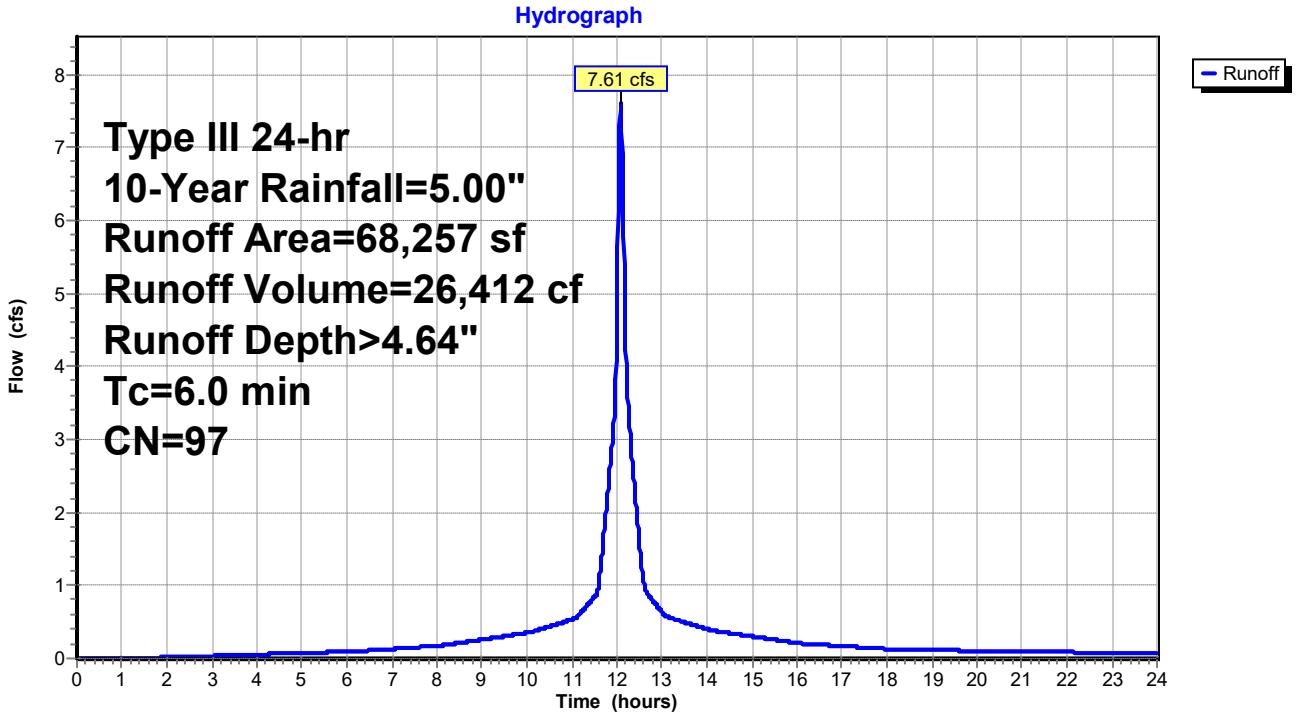
Subcatchment W-1-13: W-1-13



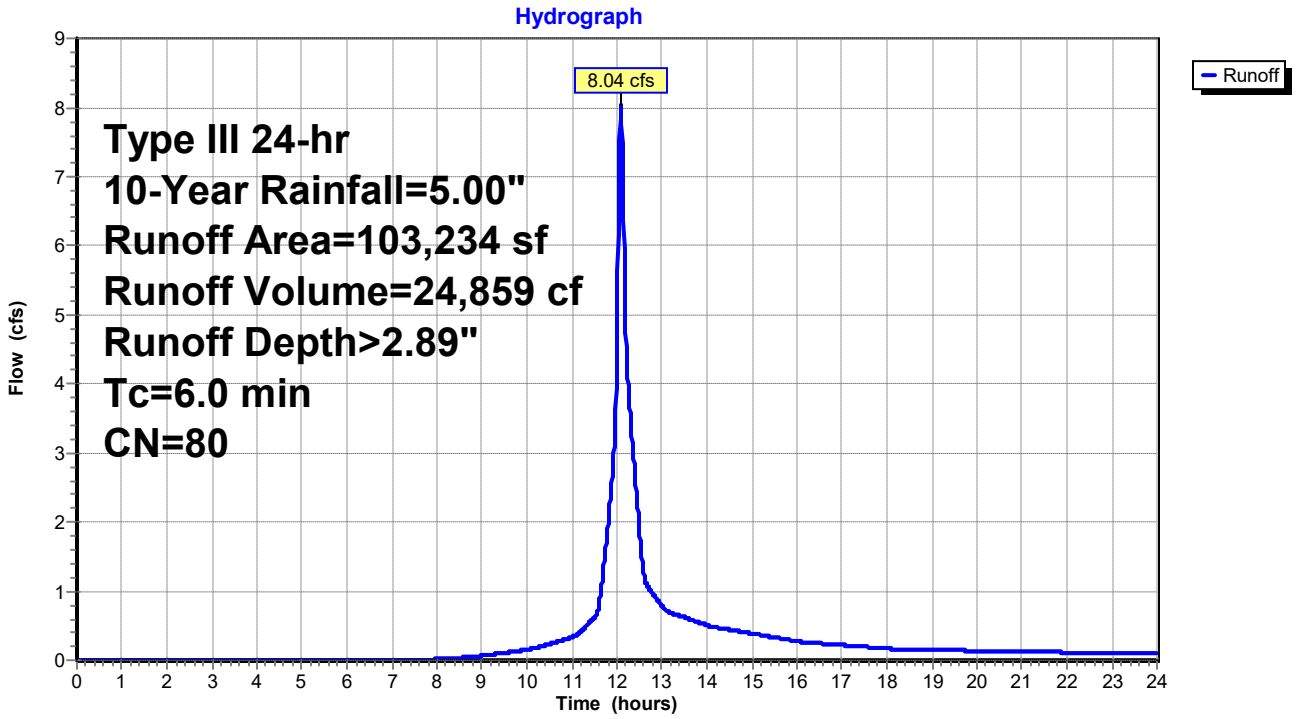
Subcatchment W-1-14: W-1-14



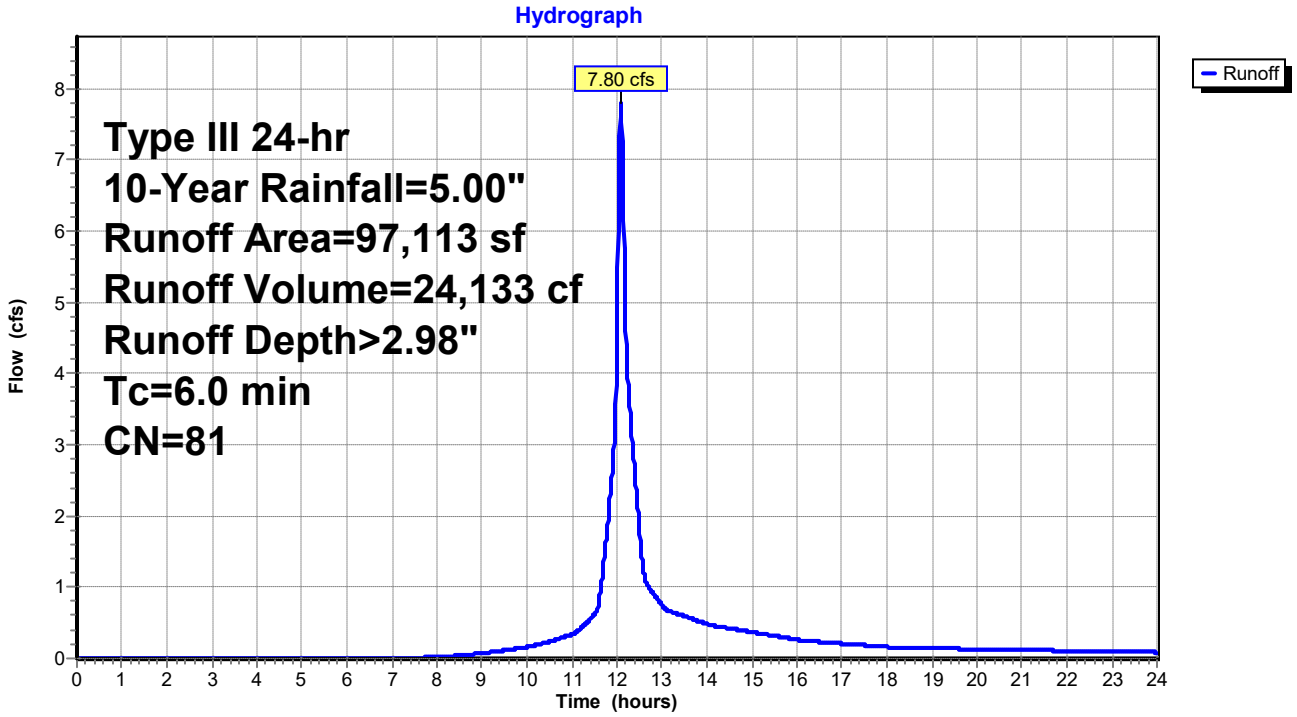
Subcatchment W-1-15: W-1-15



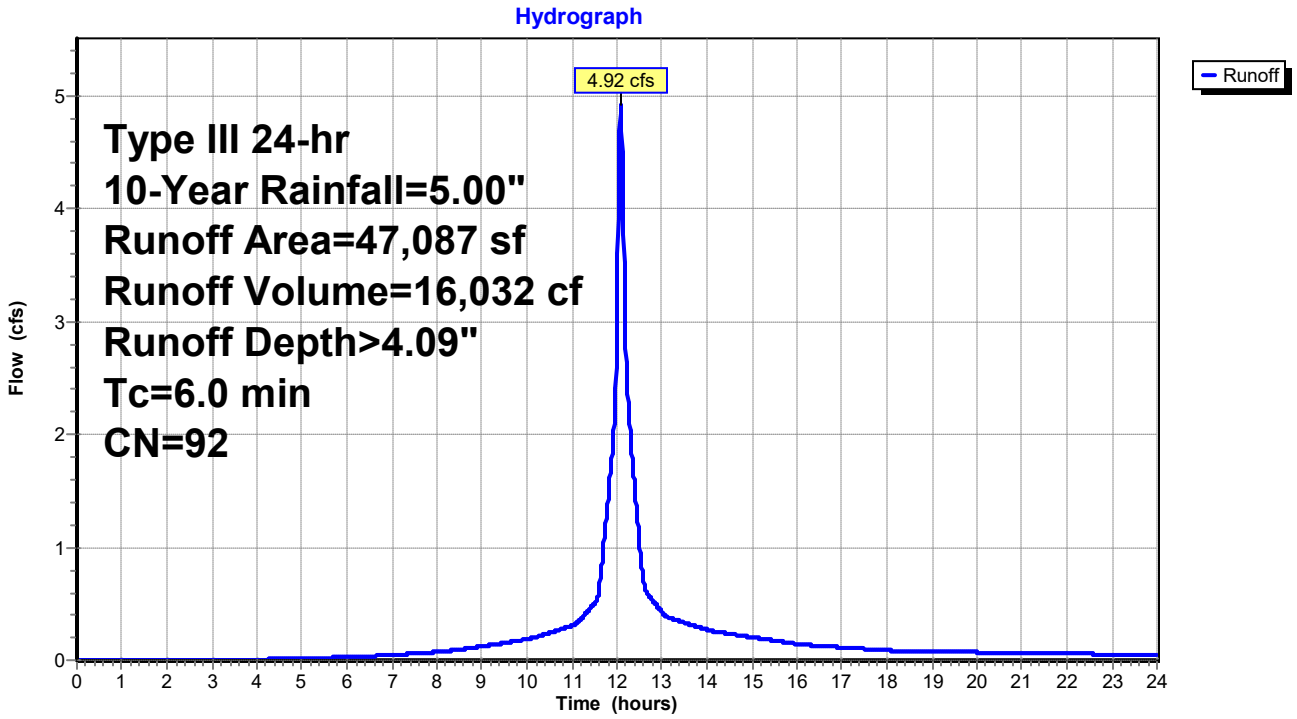
Subcatchment W-1-16: W-1-16



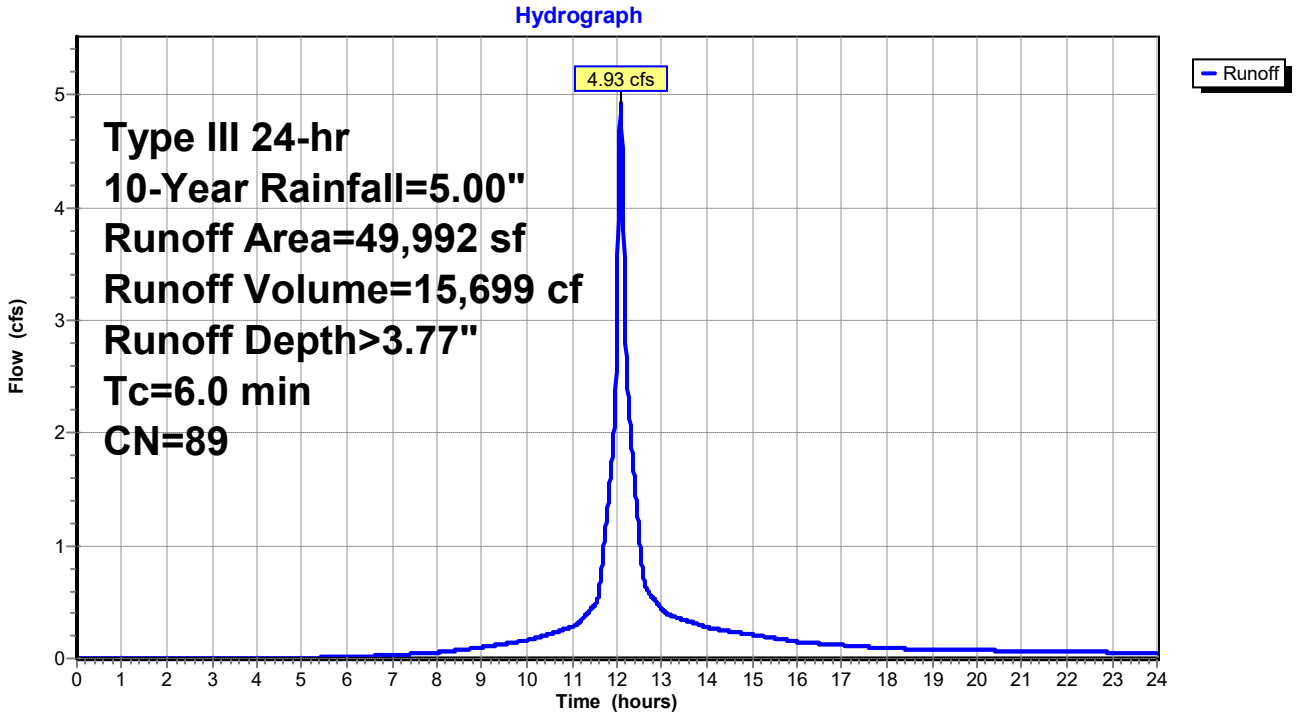
Subcatchment W-1-17: W-1-17



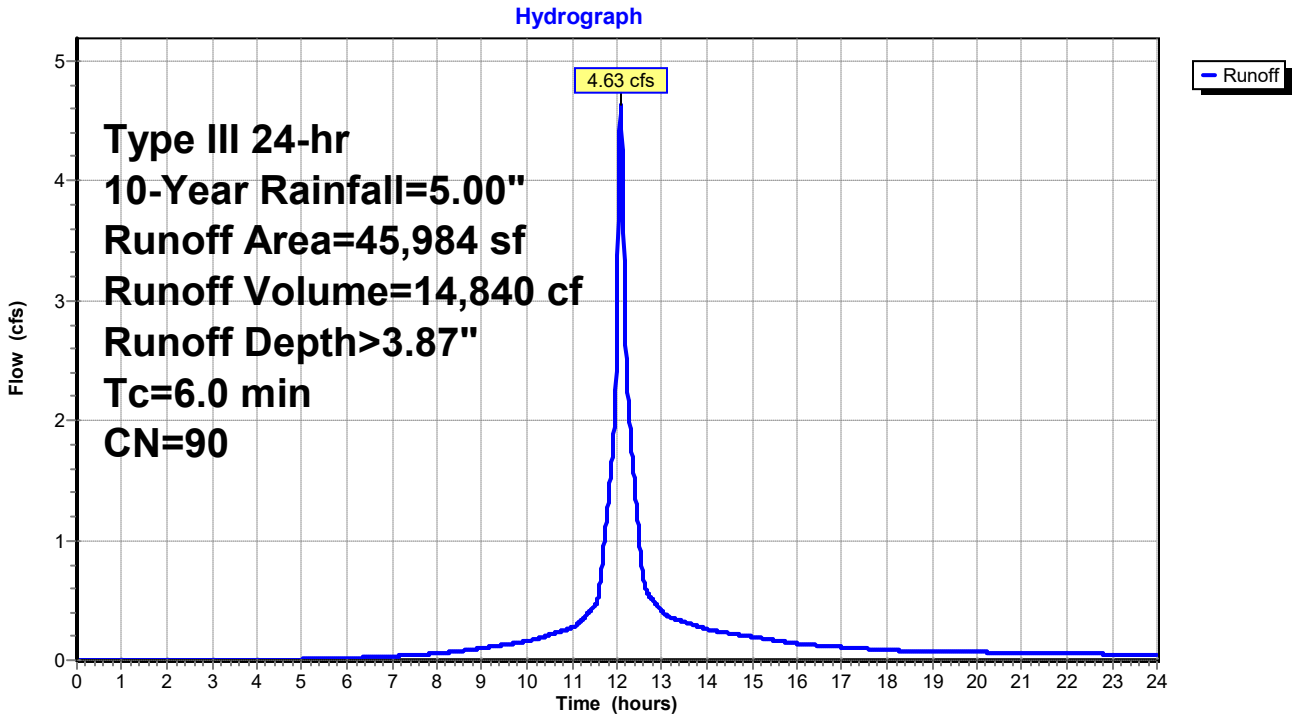
Subcatchment W-1-18: W-1-18



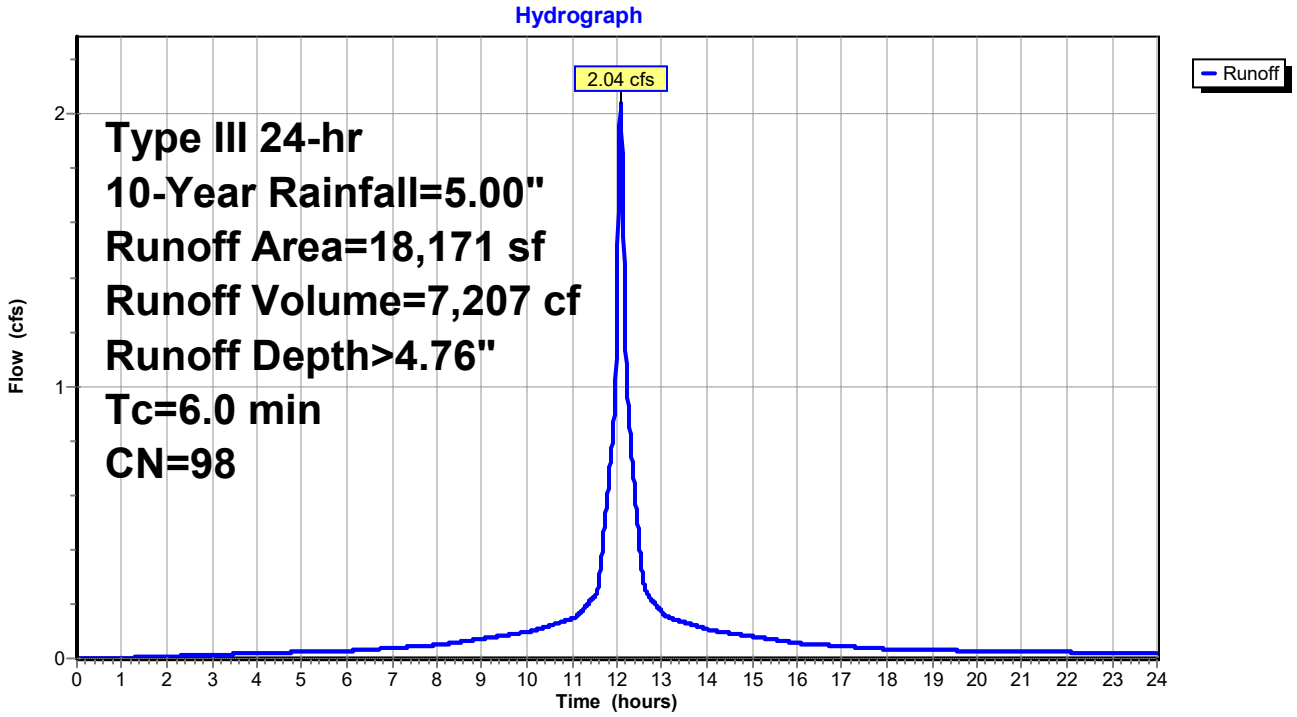
Subcatchment W-1-19: W-1-19



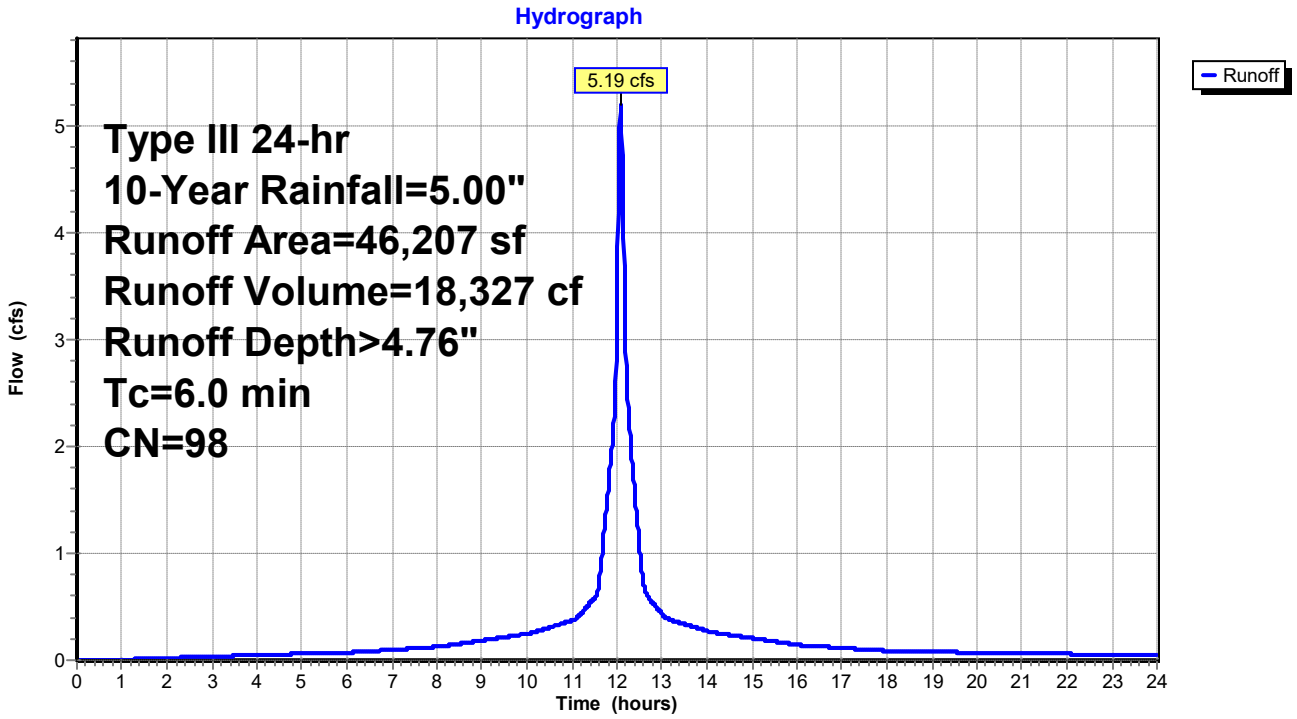
Subcatchment W-1-20: W-1-20



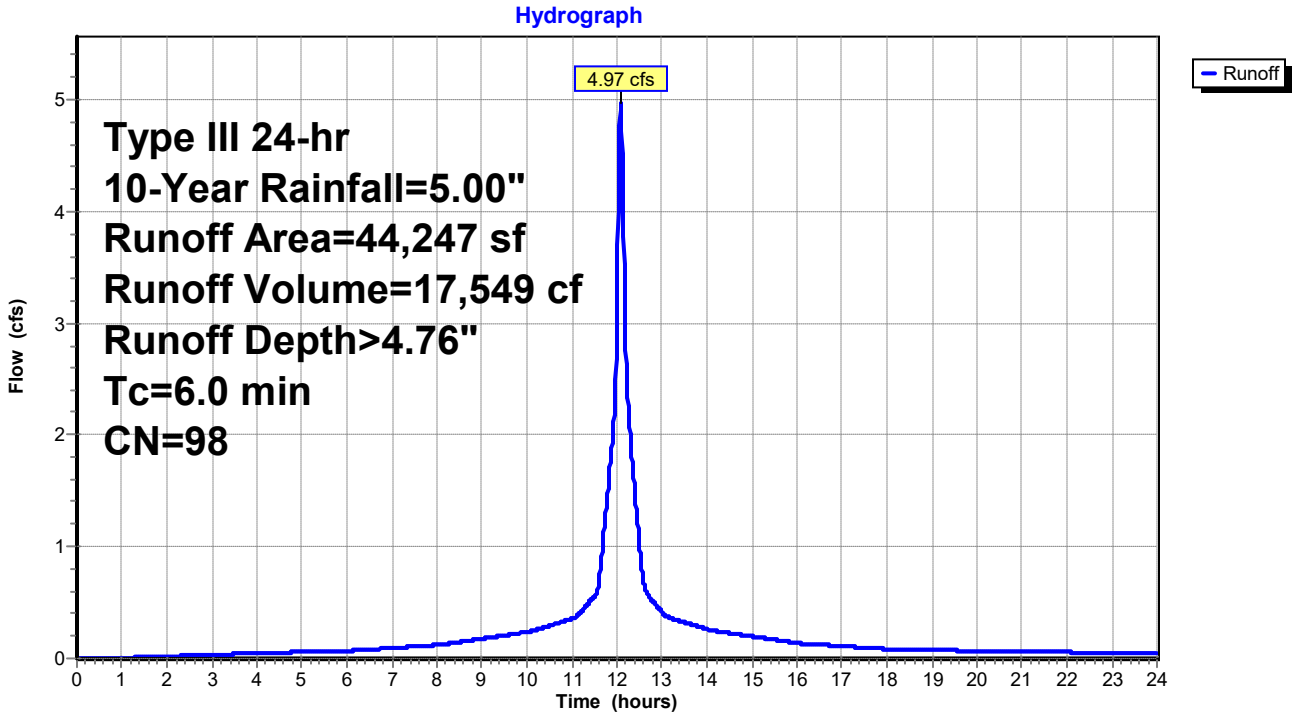
Subcatchment W-1-21: W-1-21



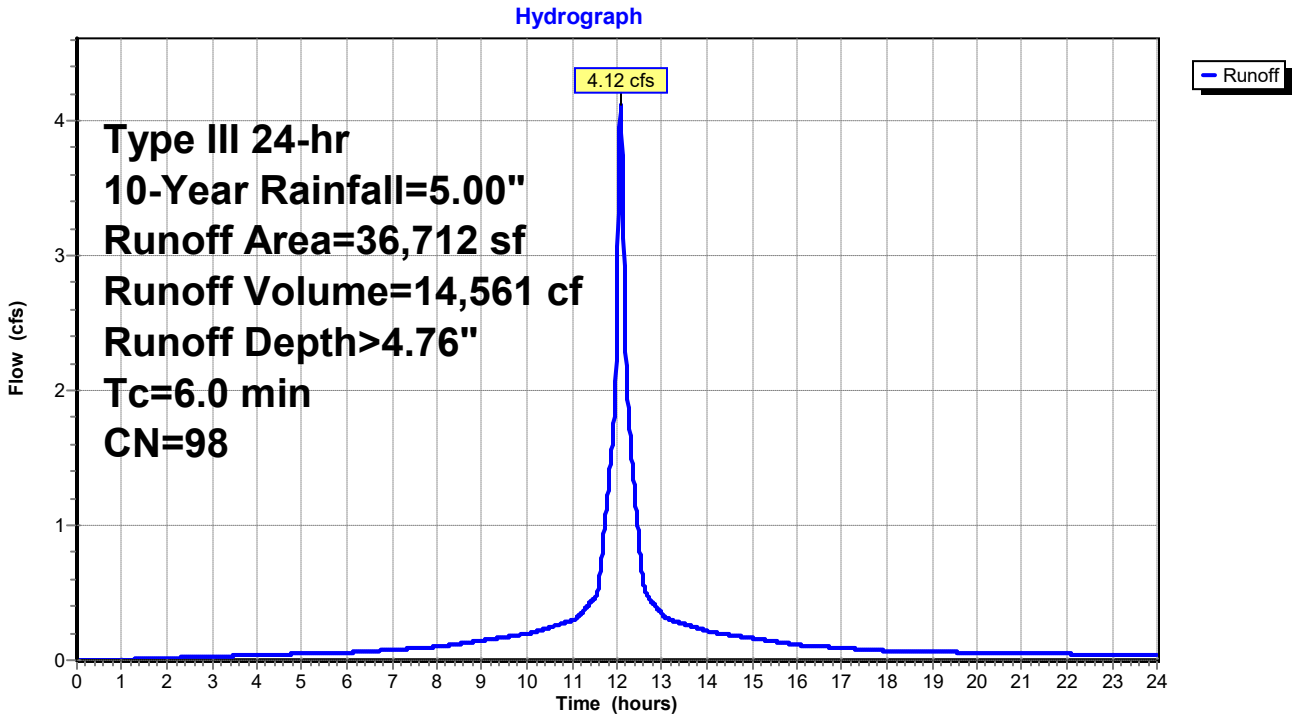
Subcatchment W-1-22: W-1-22



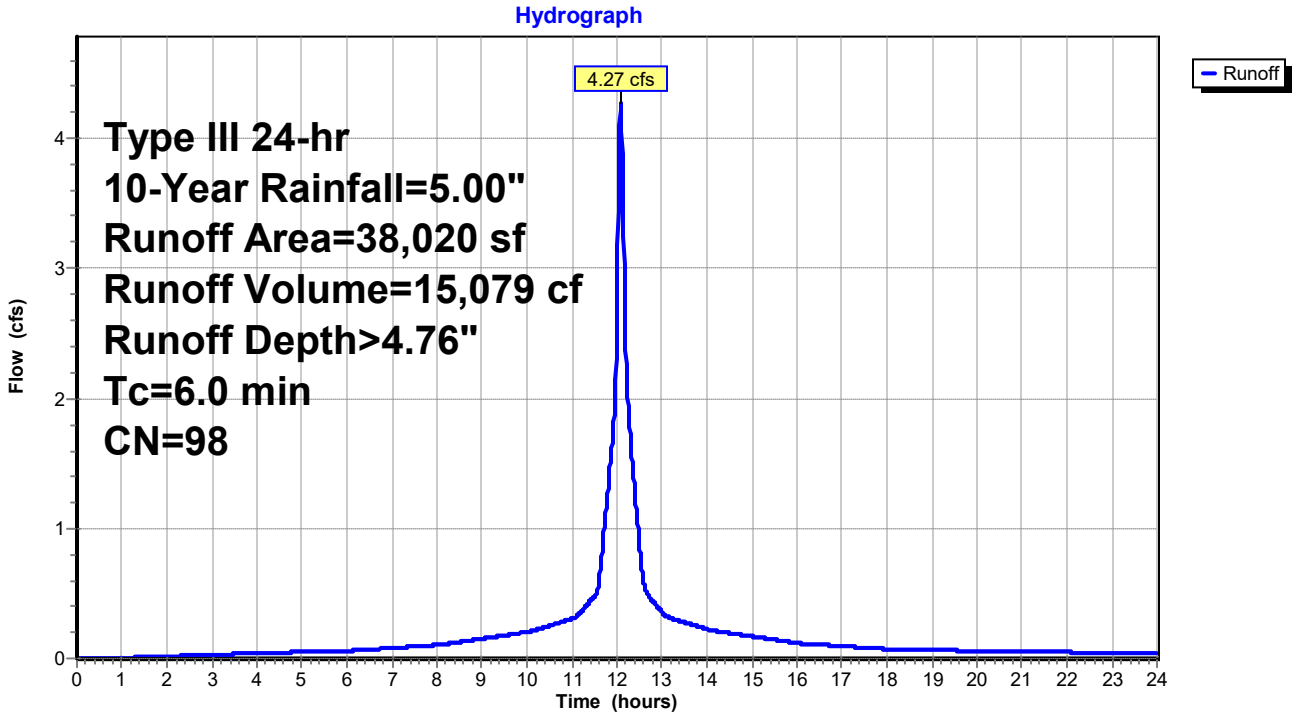
Subcatchment W-1-23: W-1-23



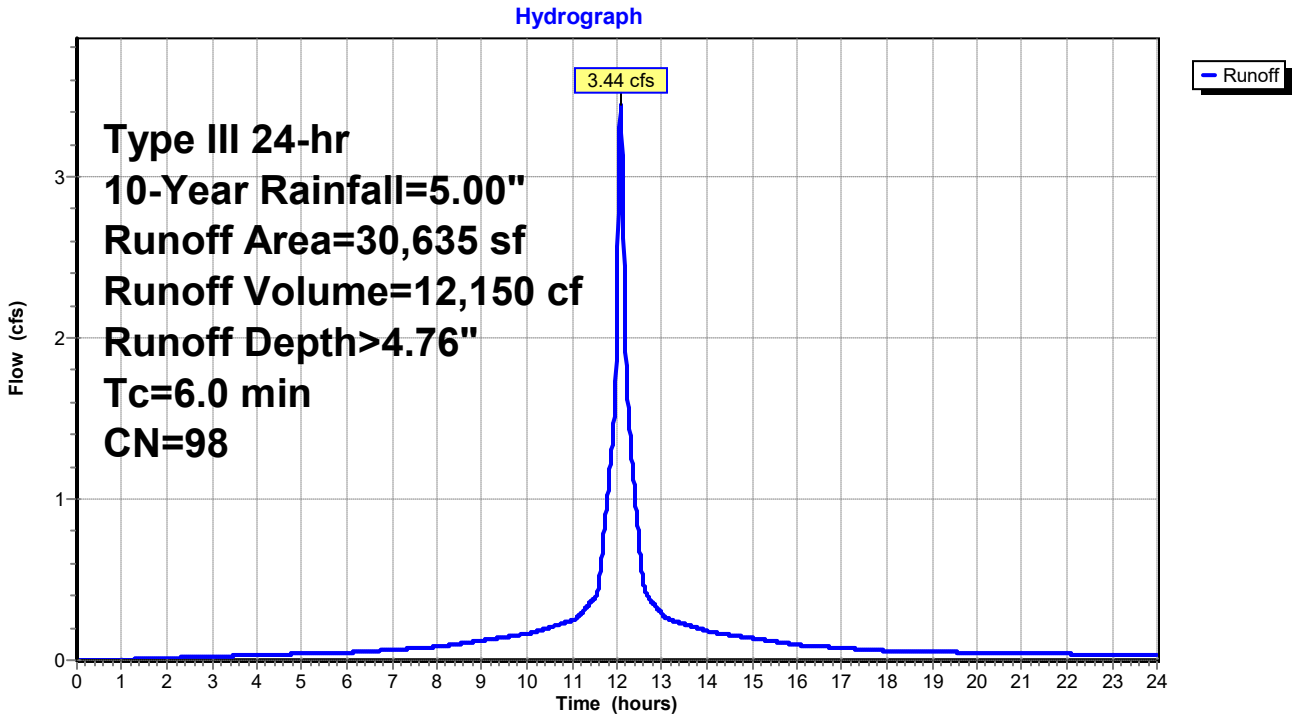
Subcatchment W-1-24: W-1-24



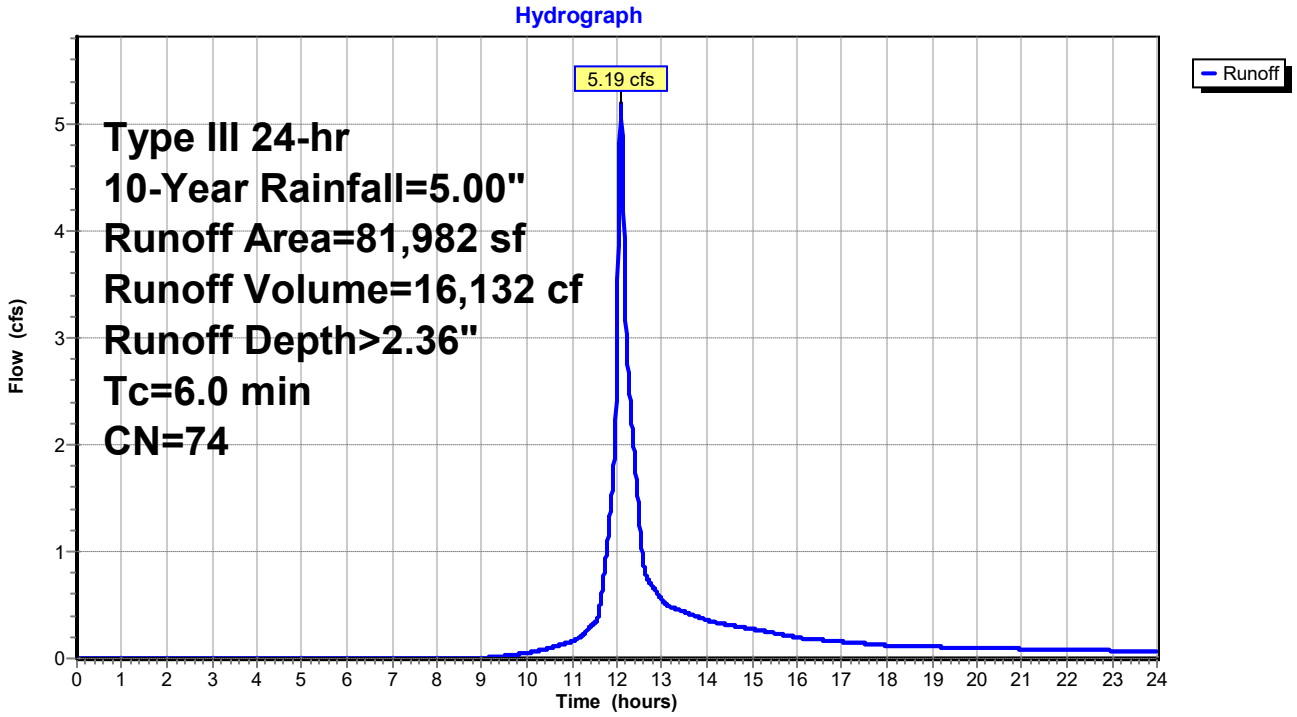
Subcatchment W-1-25: W-1-25



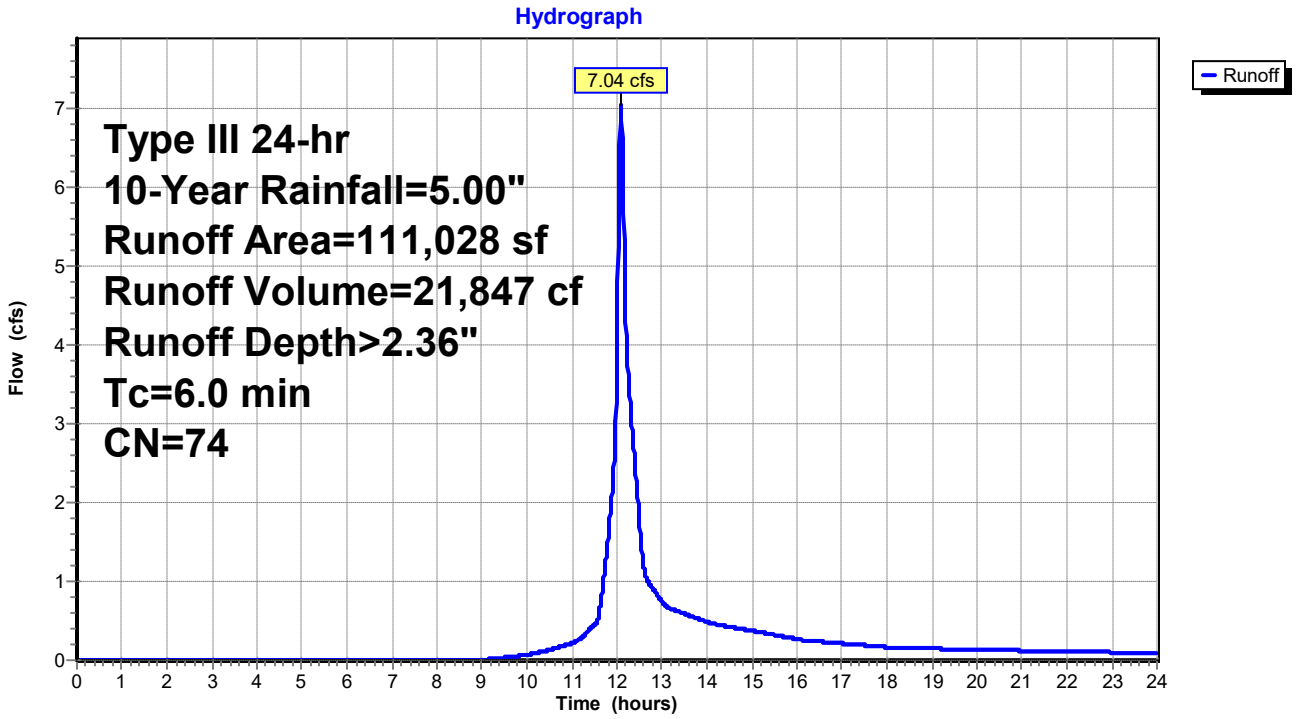
Subcatchment W-1-26: W-1-26



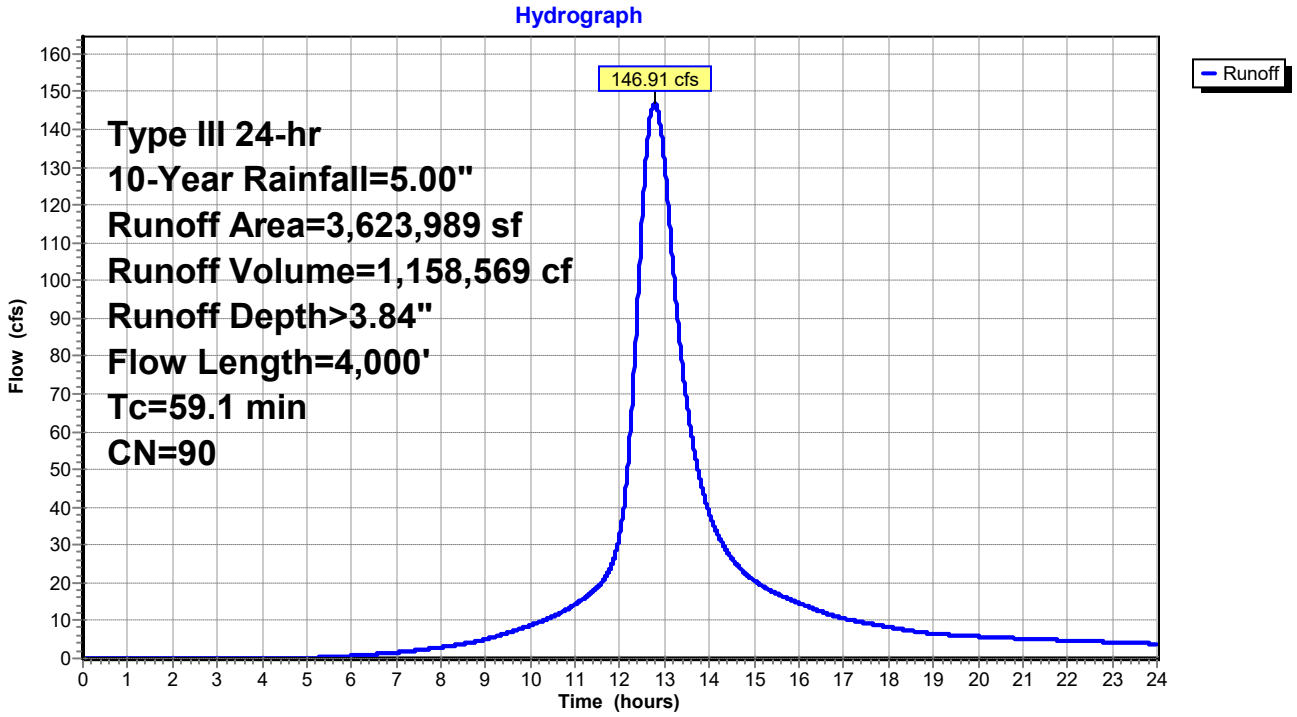
Subcatchment W-1-27: W-1-27



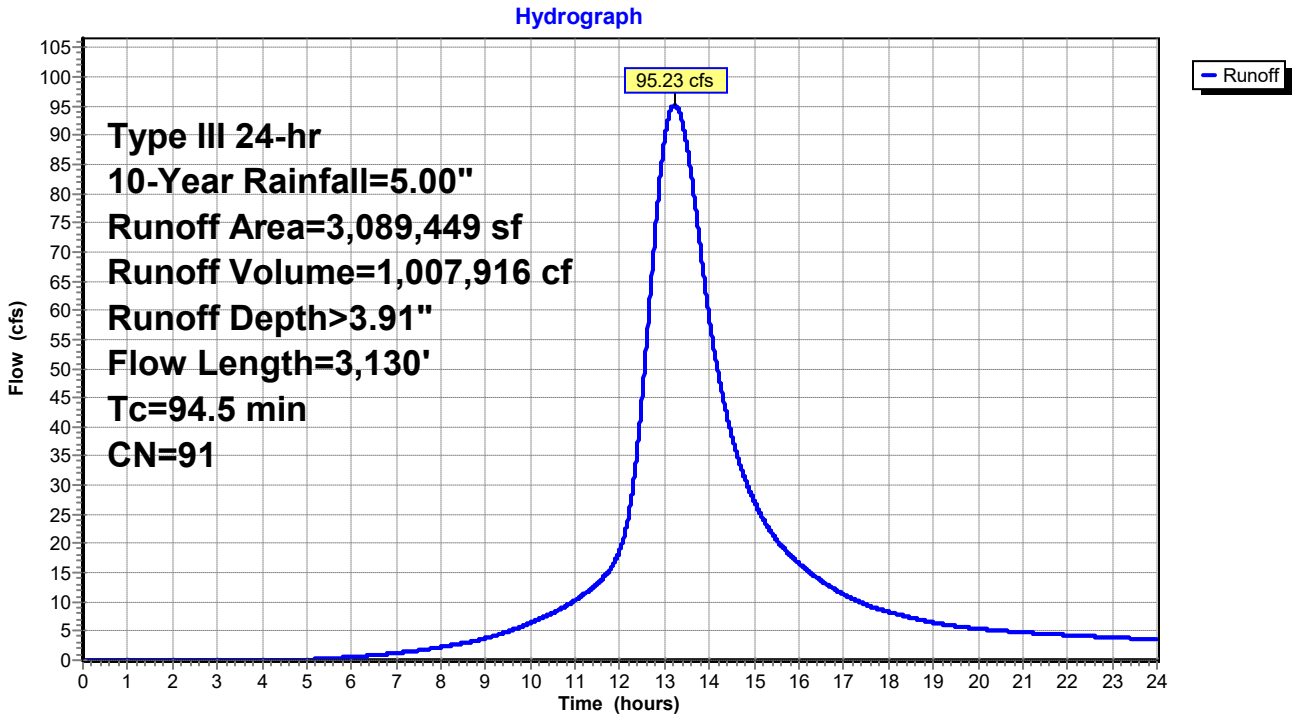
Subcatchment W-1-28: W-1-28



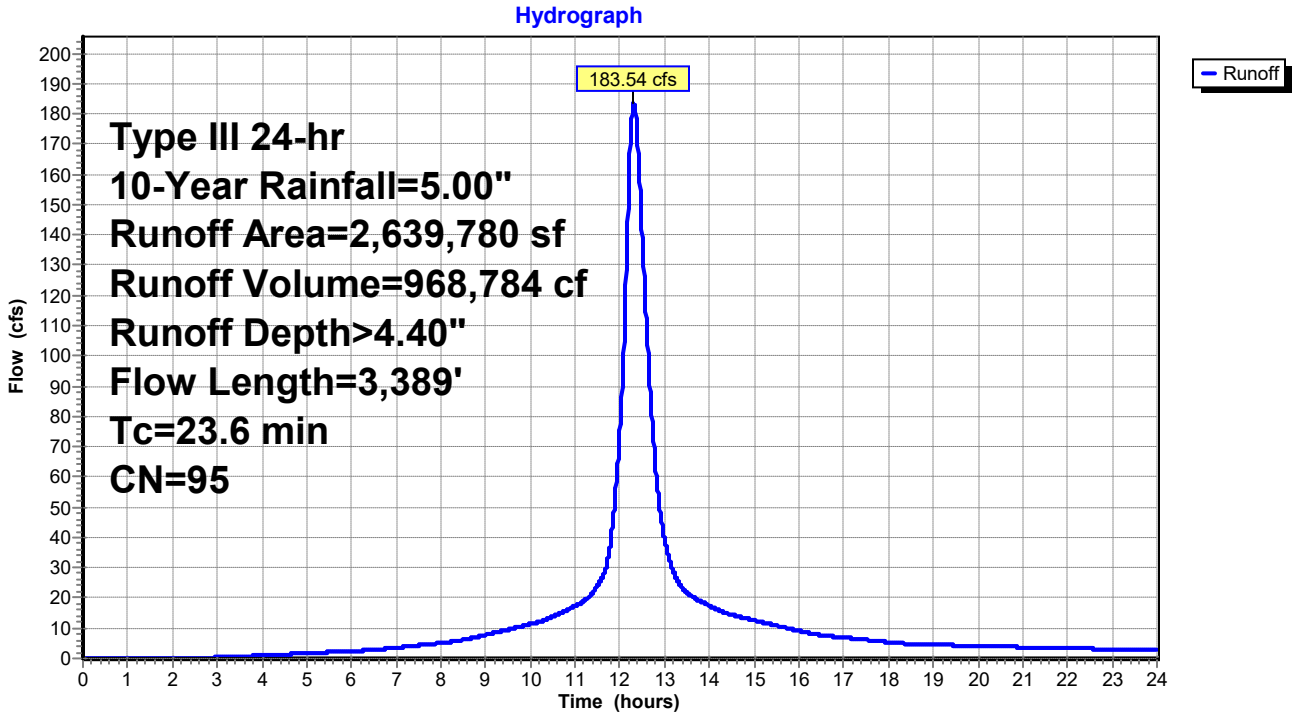
Subcatchment WS 1 PRE: WS 1 PRE



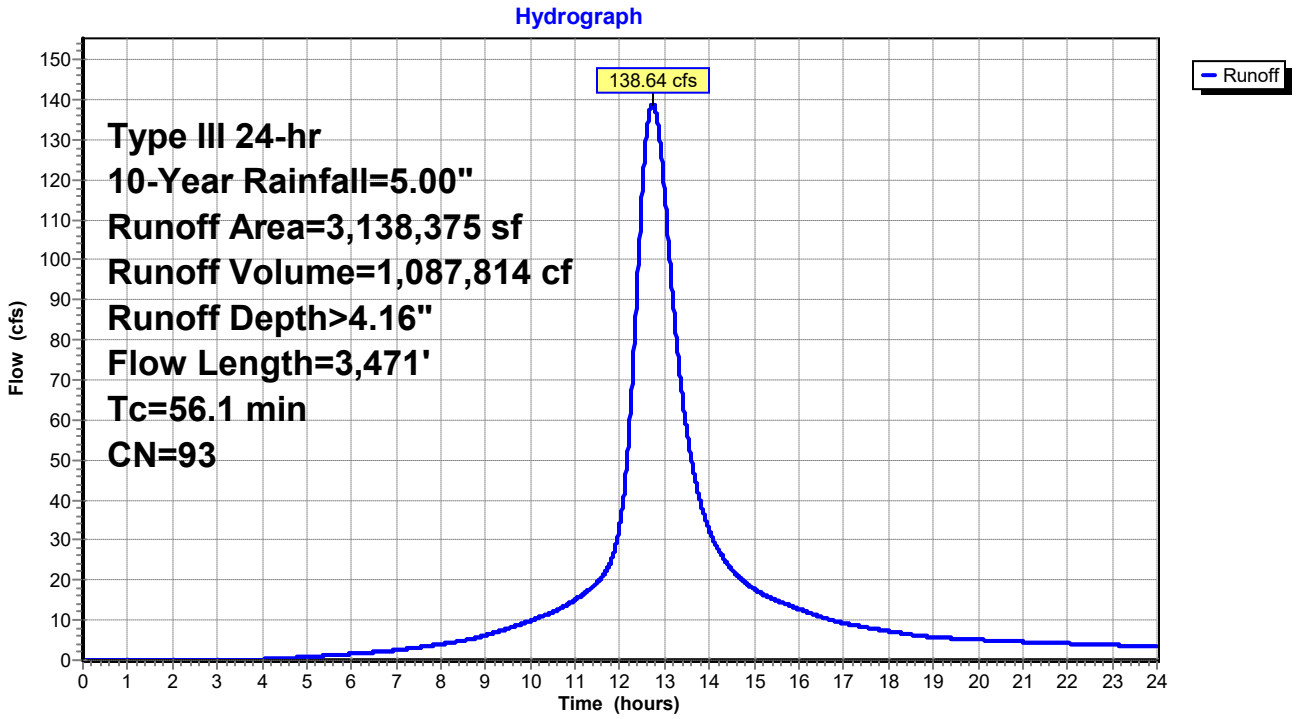
Subcatchment WS 1B POST: WS 1B POST



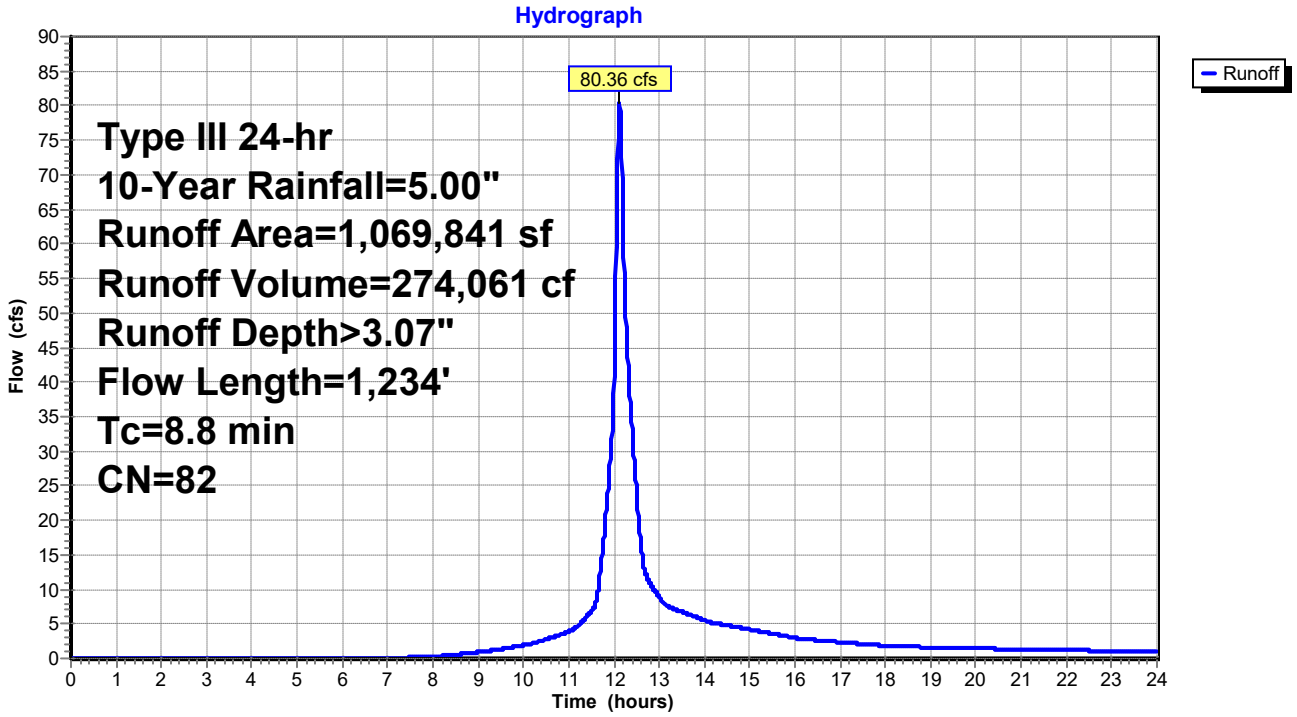
Subcatchment WS 2 POST: WS 2 POST



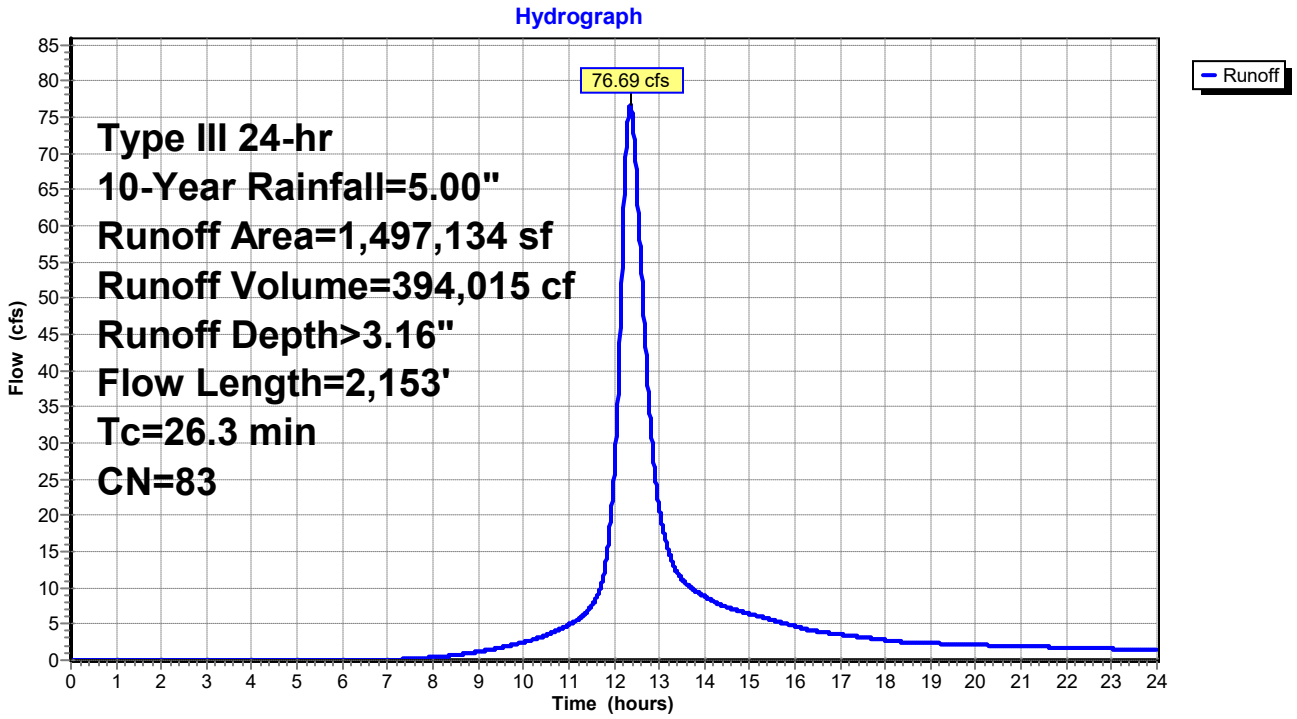
Subcatchment WS 2 PRE: WS 2 PRE



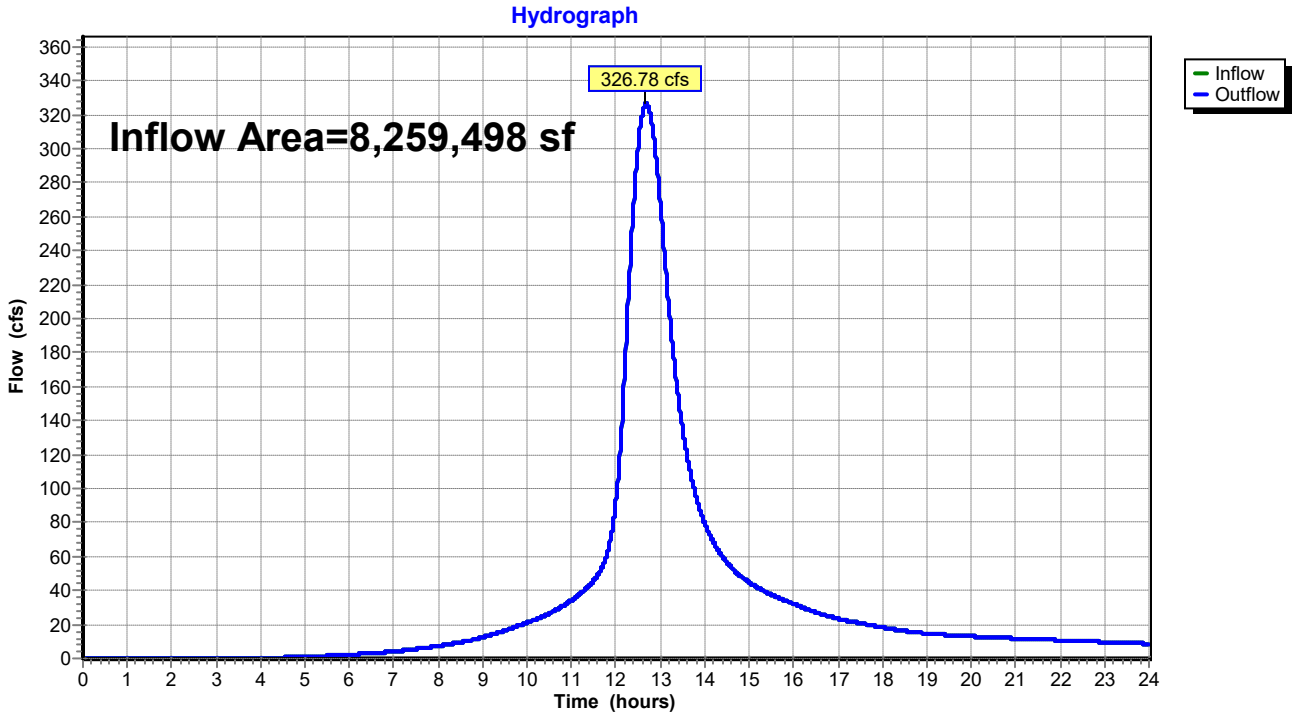
Subcatchment WS 3 POST: WS 3 POST



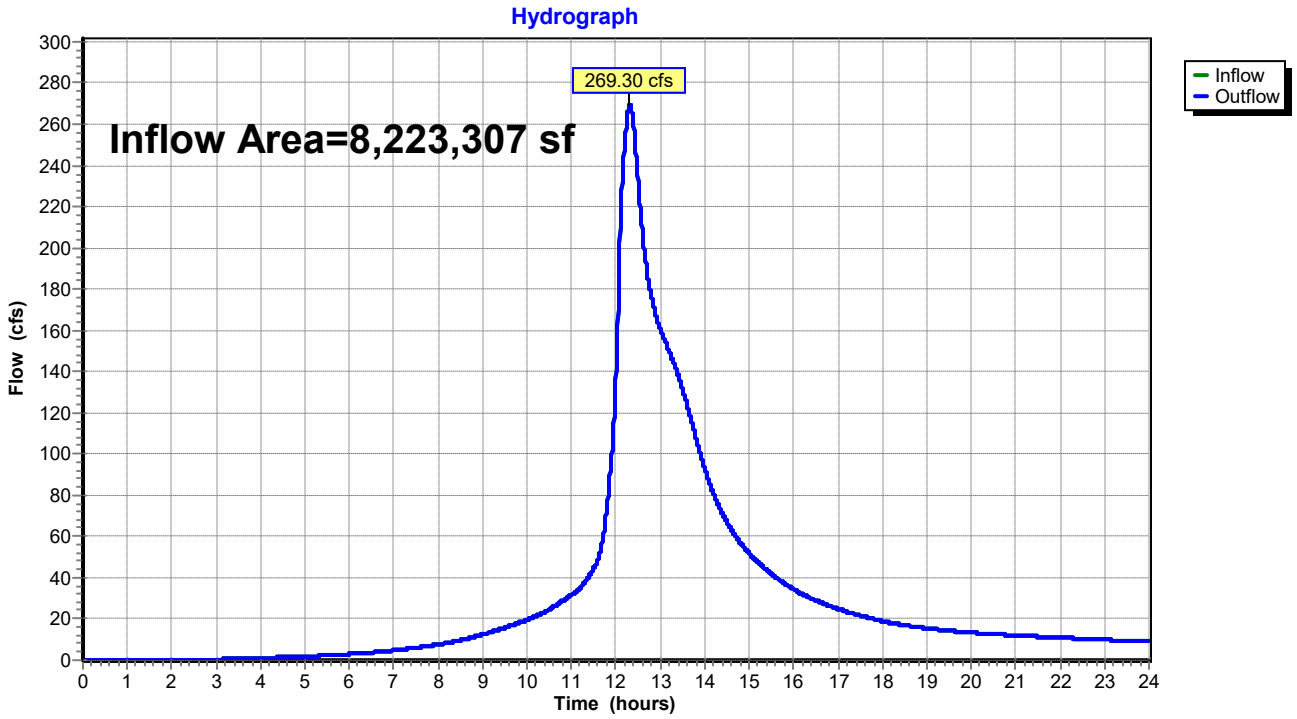
Subcatchment WS 3 PRE: WS 3 PRE



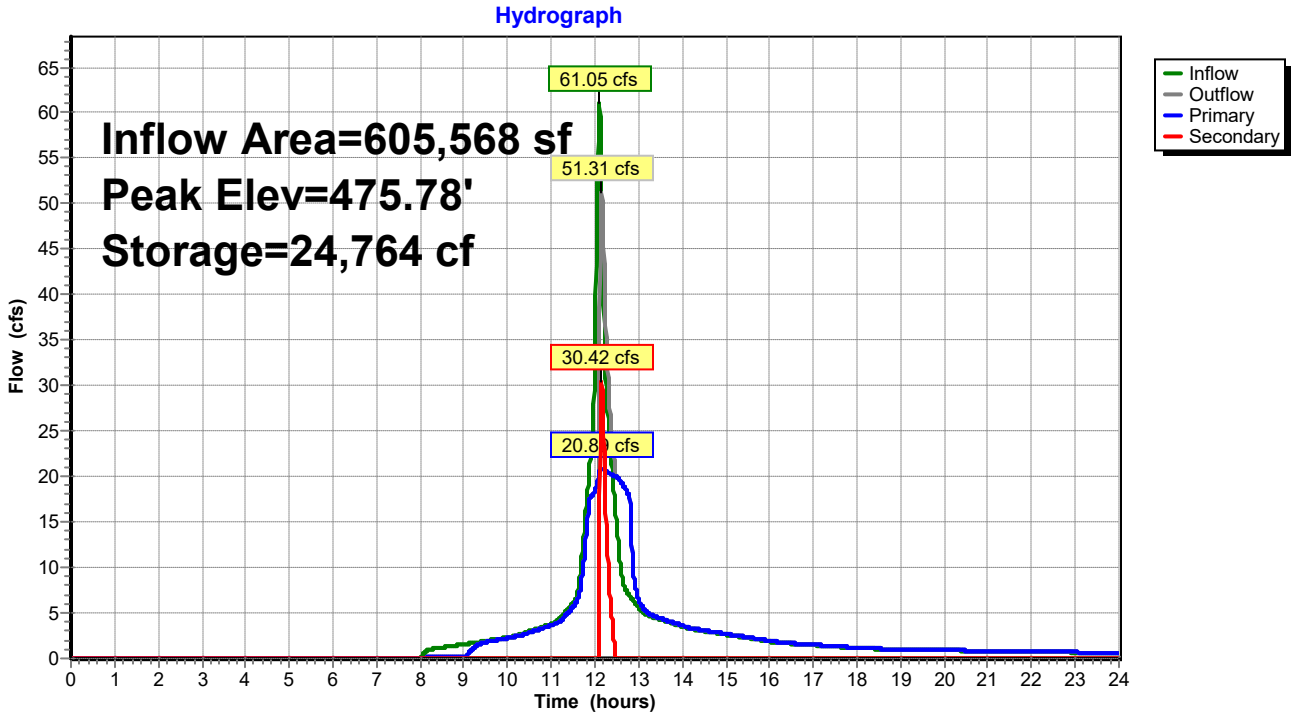
Reach DP1 MO3 PRE: DP DEC MO3 PRE



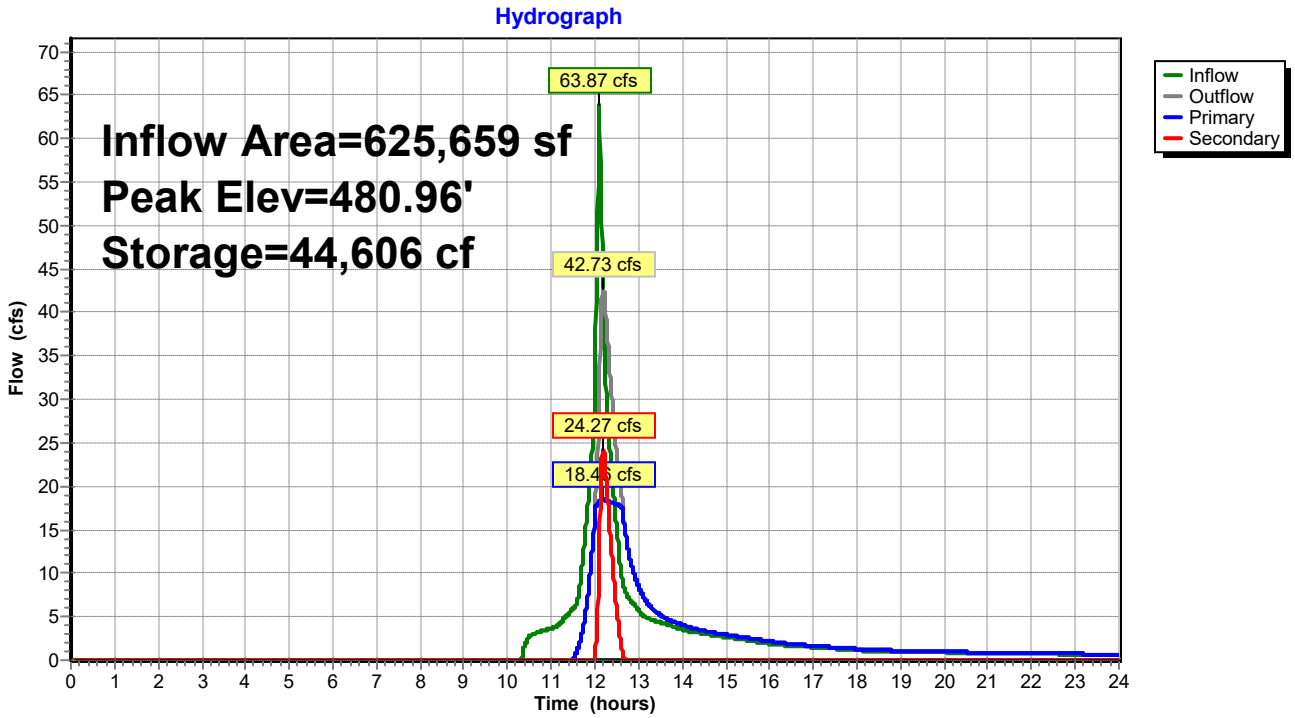
Reach MO3 & YB: DEC MO3/YOUNG'S BROOK



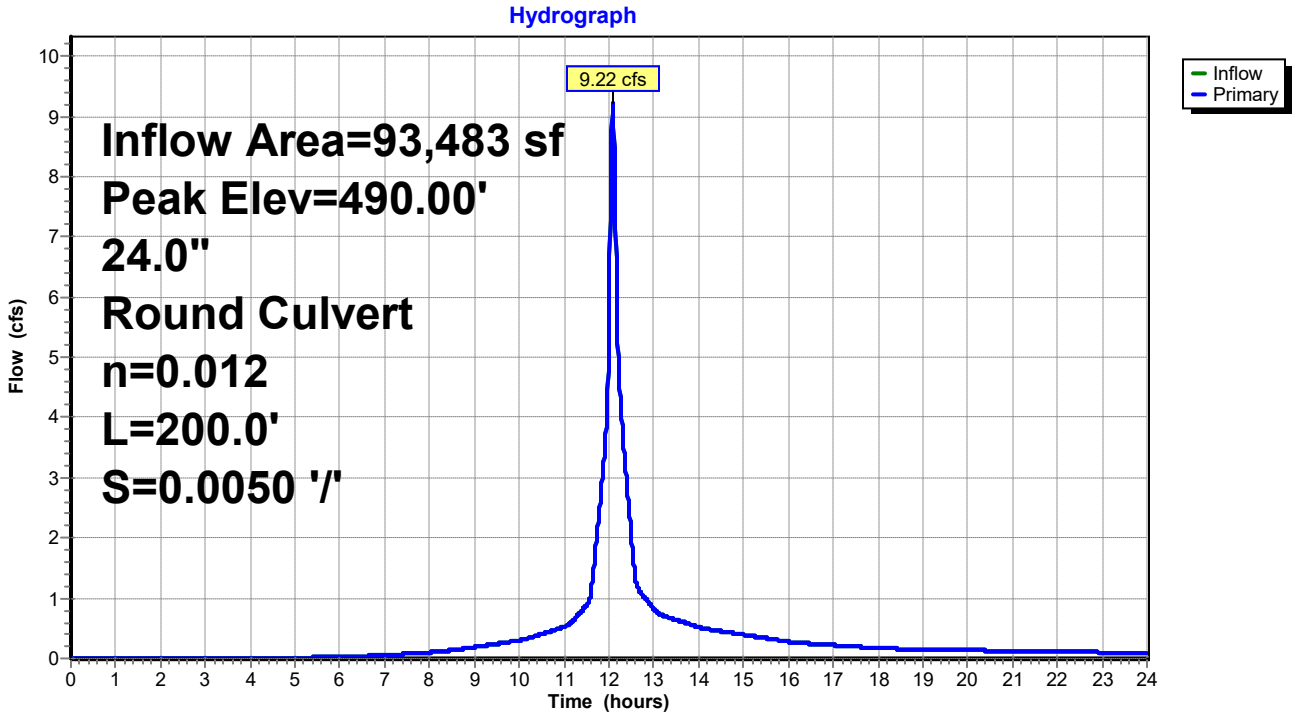
Pond BR1: BIORETENTION 1



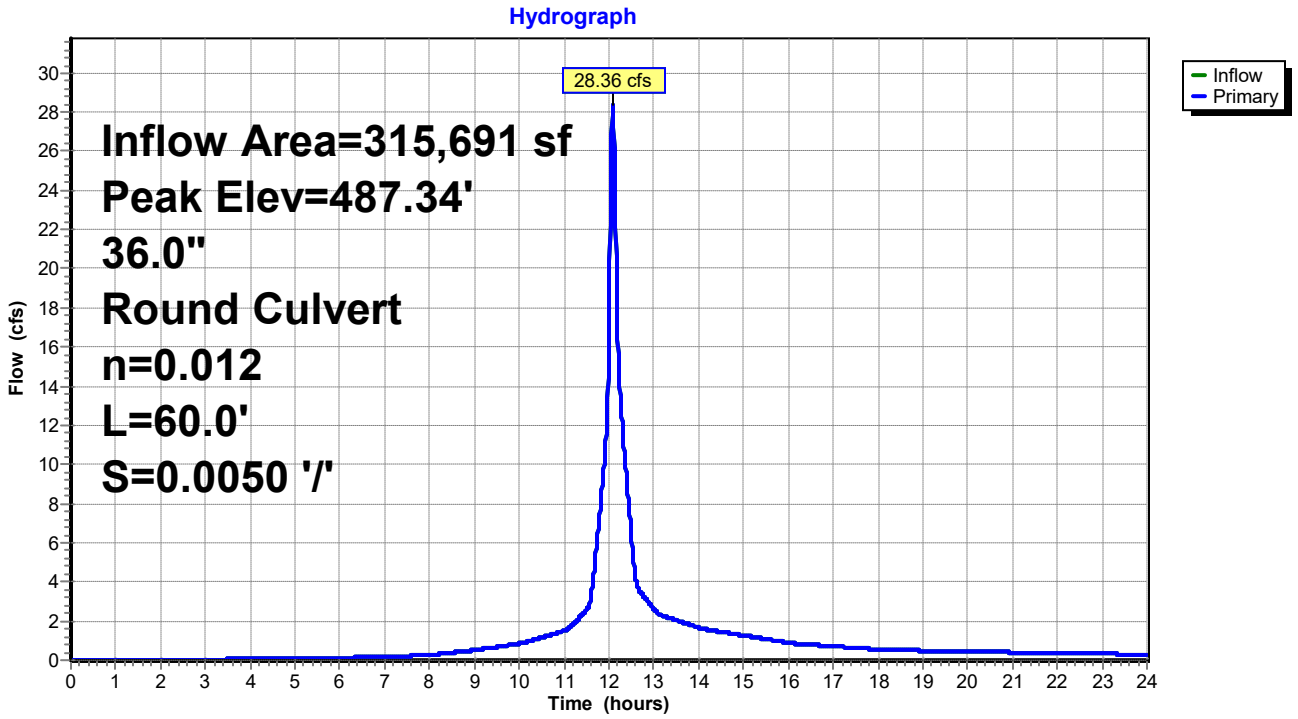
Pond BR2: BIORETENTION 2



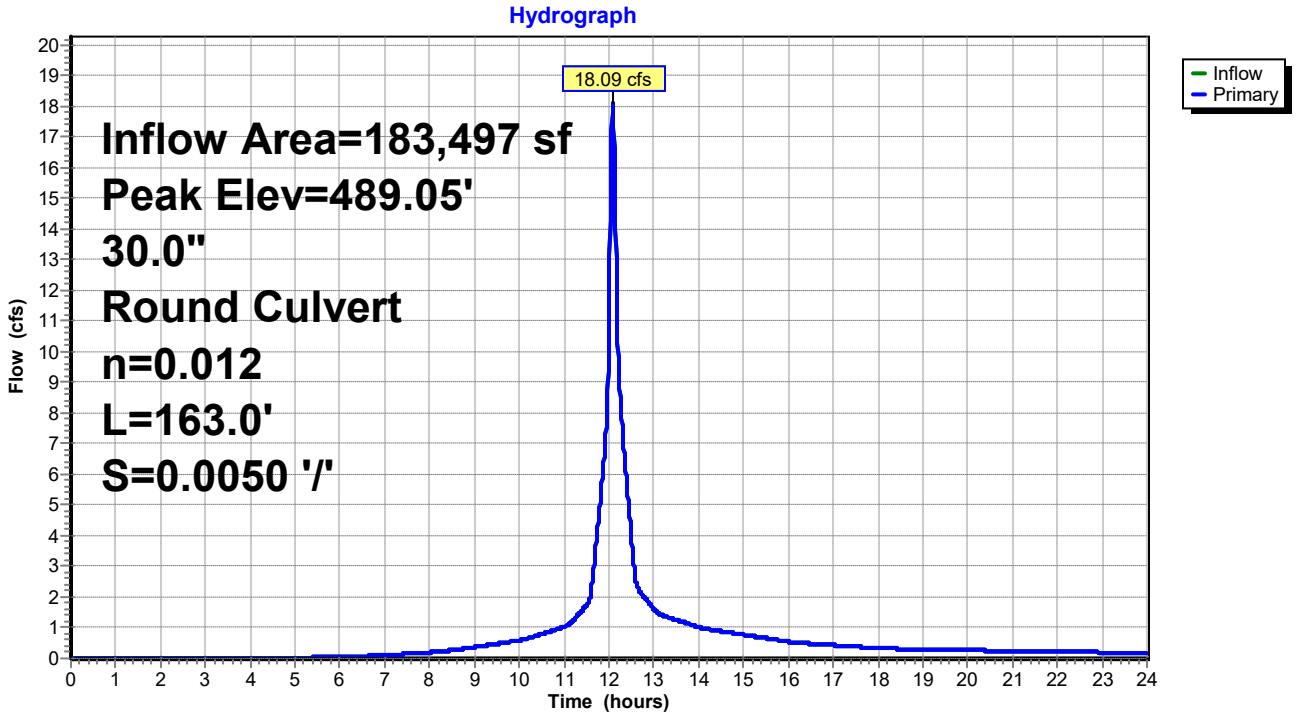
Pond CB 1: CB 1



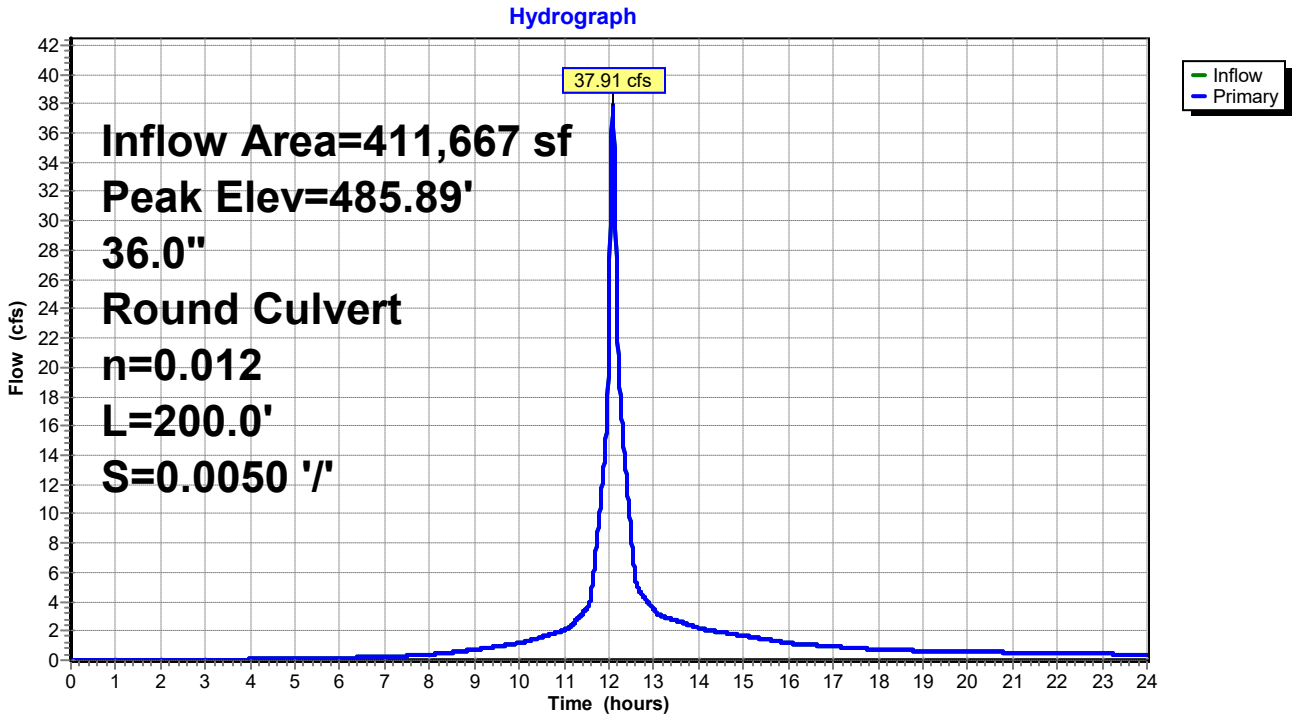
Pond CB 19: CB-19



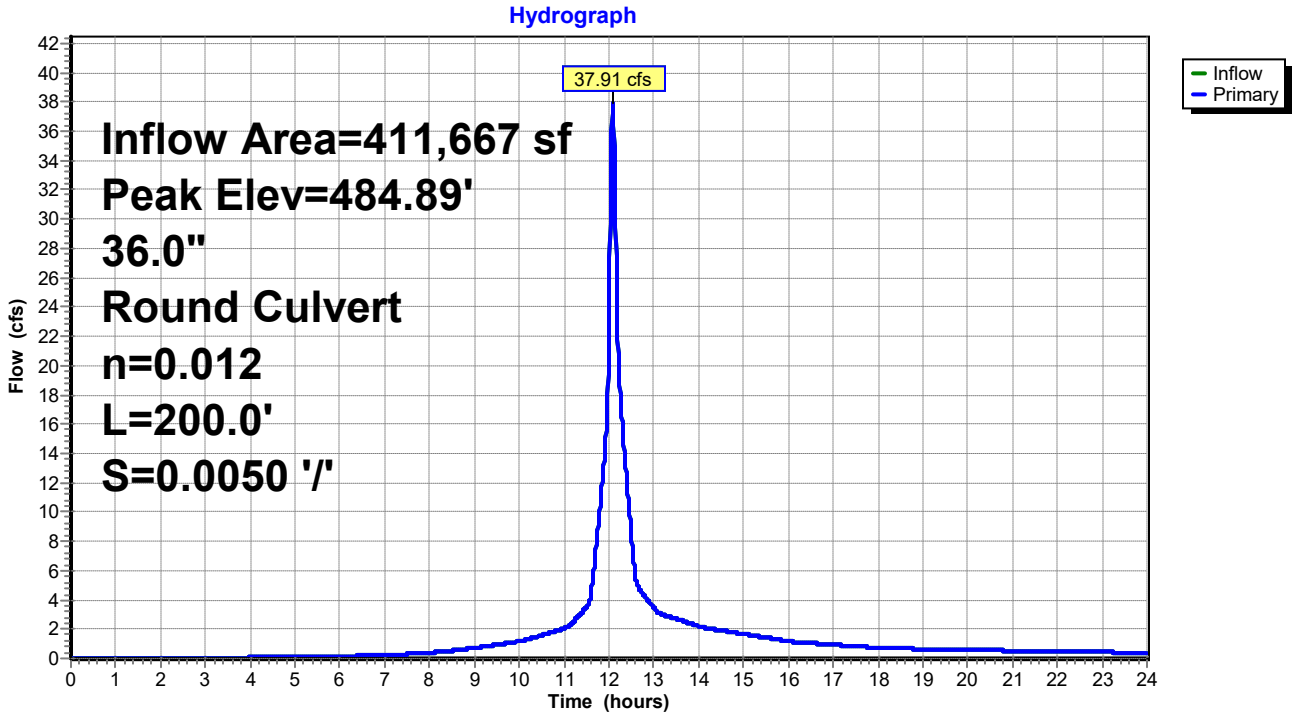
Pond CB 2: CB 2



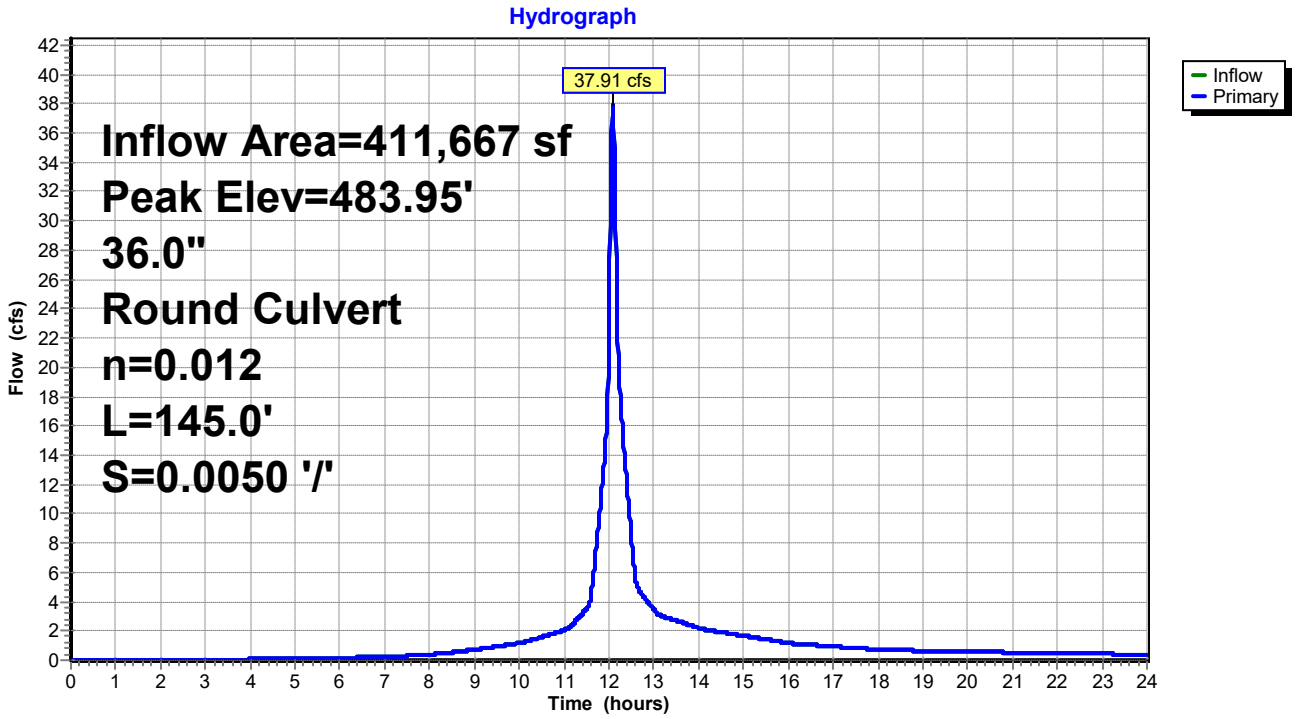
Pond CB 21: CB 21



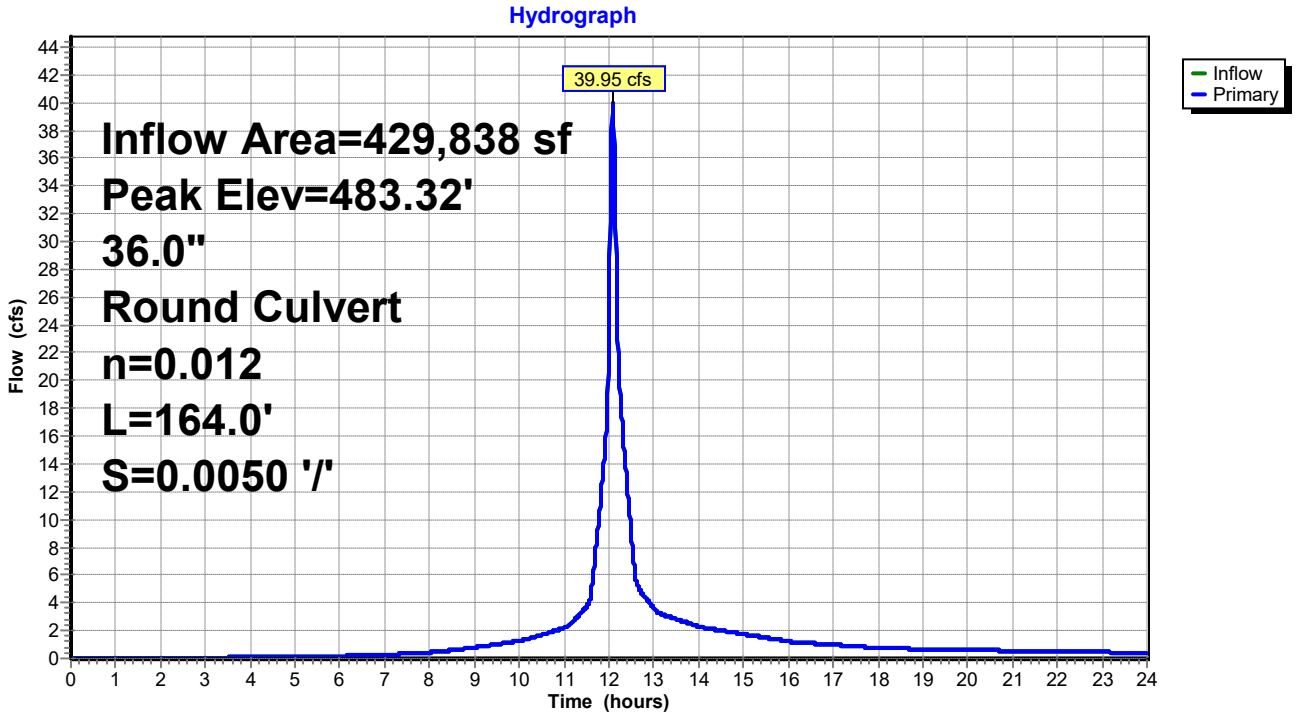
Pond CB 22: CB 22



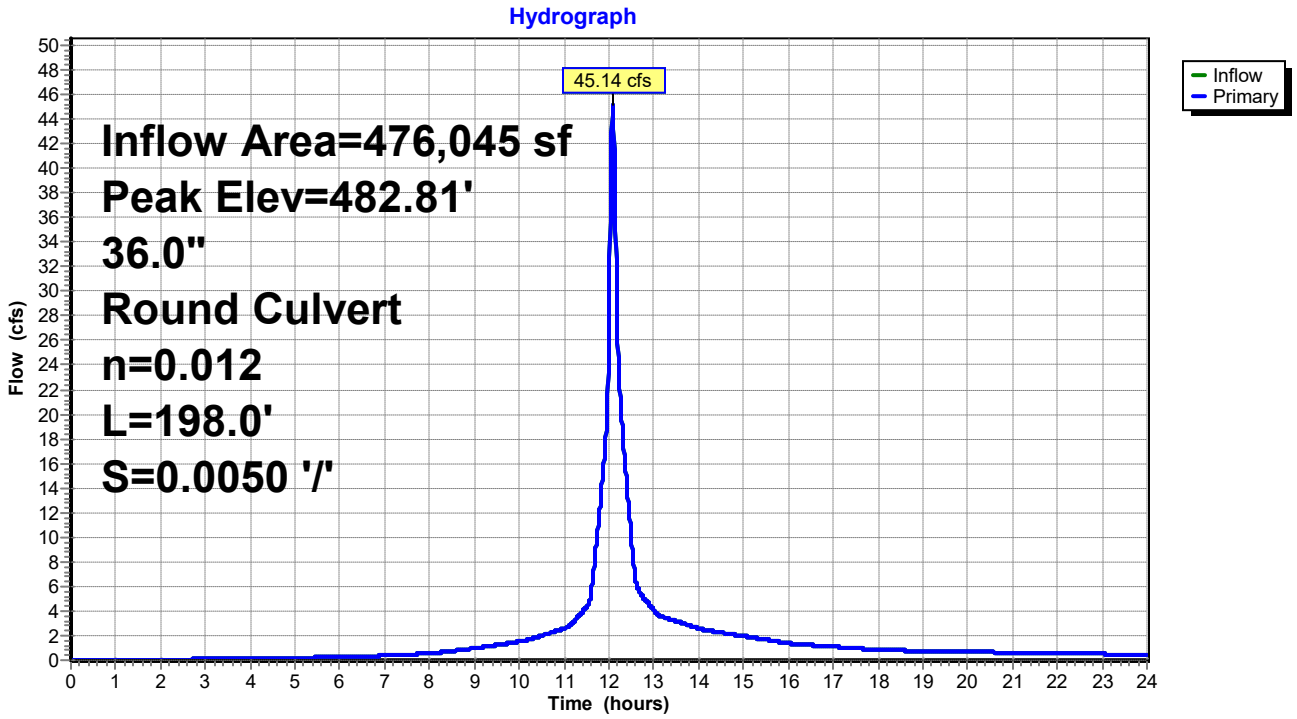
Pond CB 23: CB 23



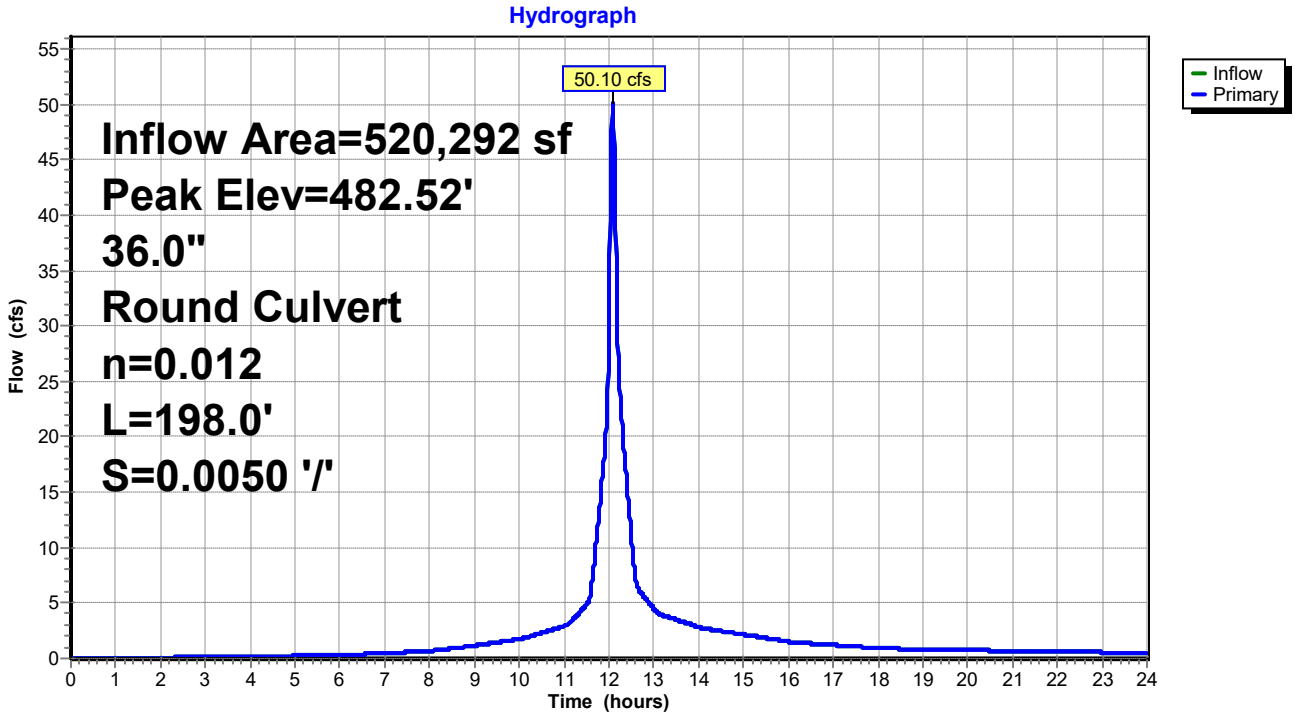
Pond CB 24: CB 24



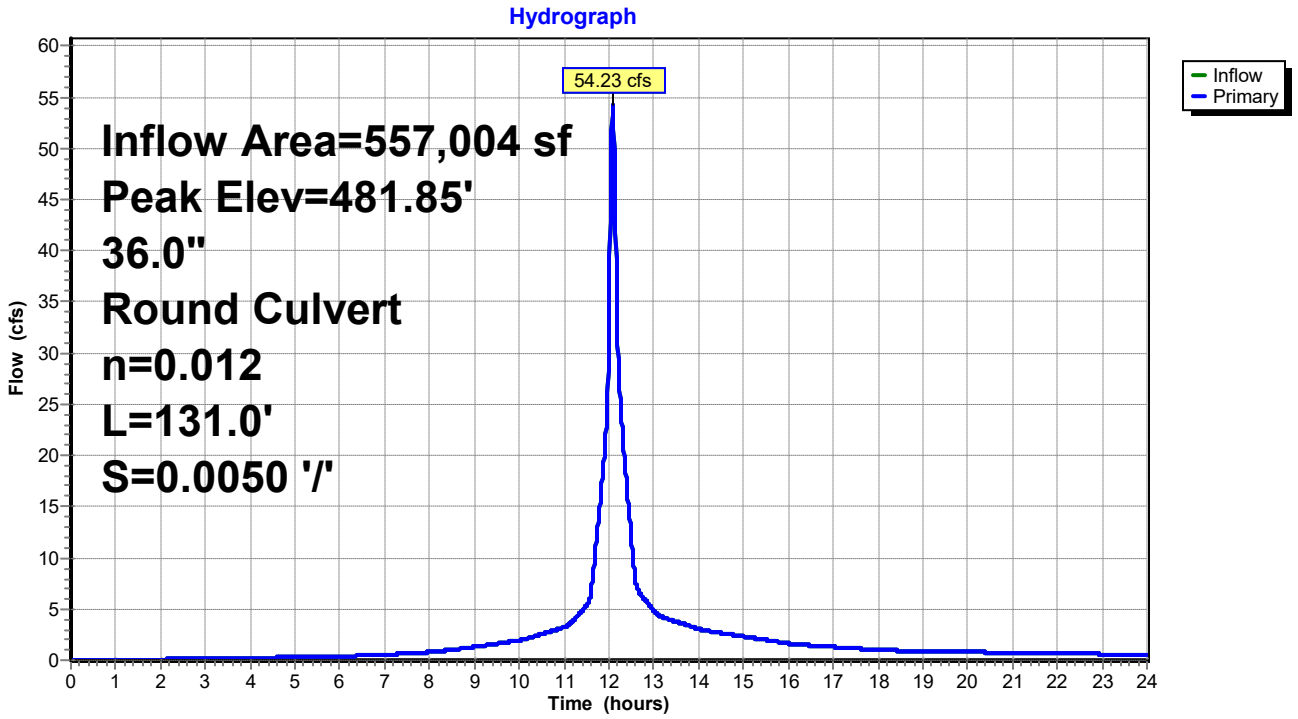
Pond CB 25: CB 25



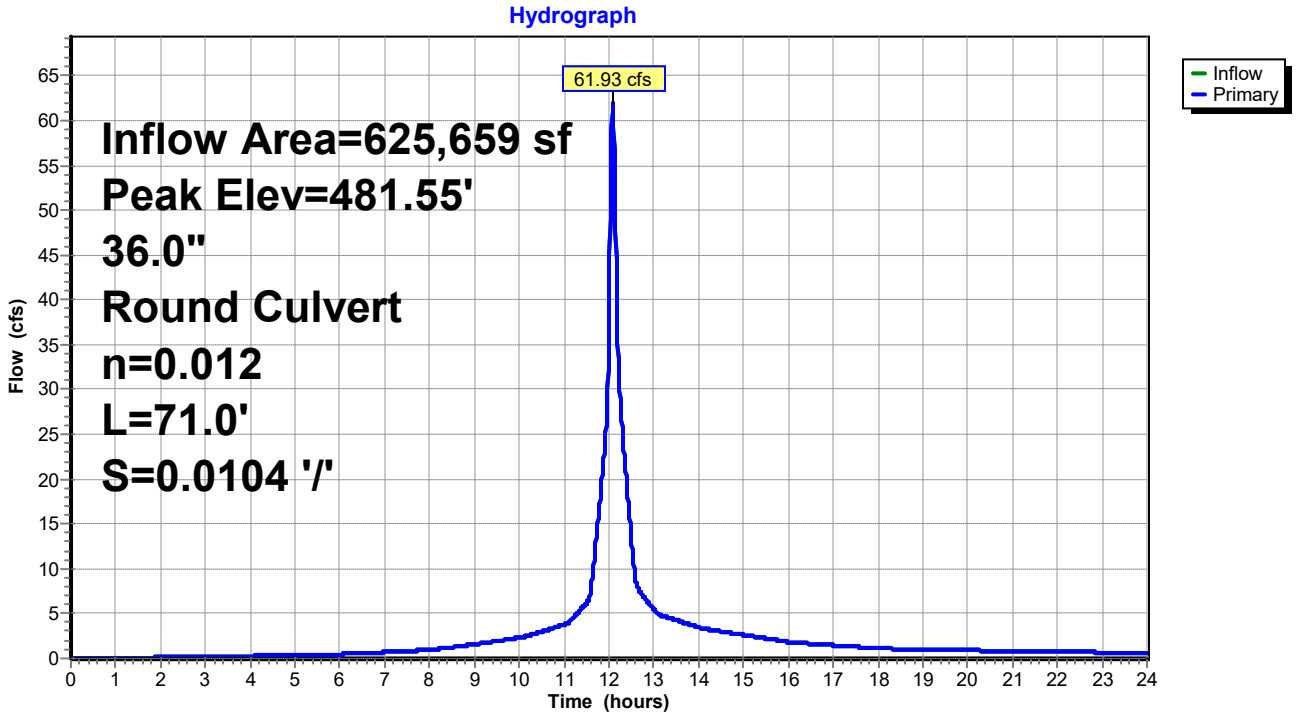
Pond CB 26: CB 26



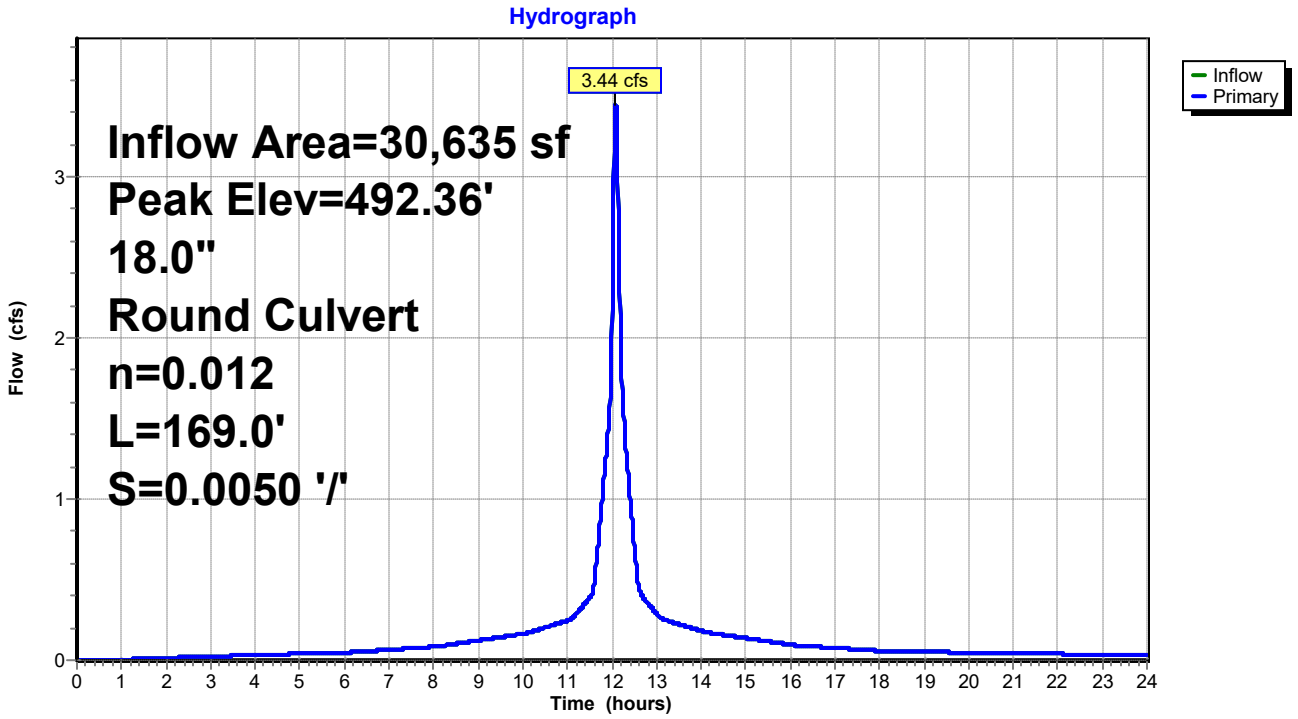
Pond CB 27: CB 27



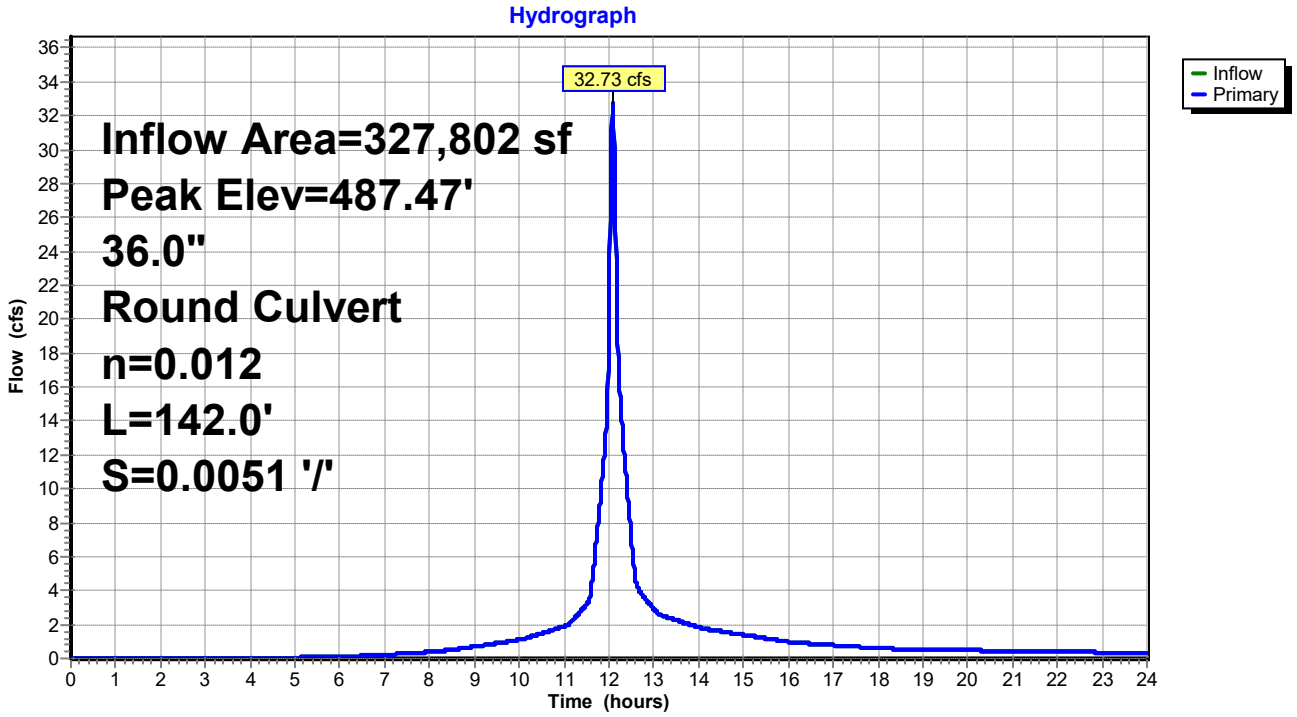
Pond CB 28: CB 28



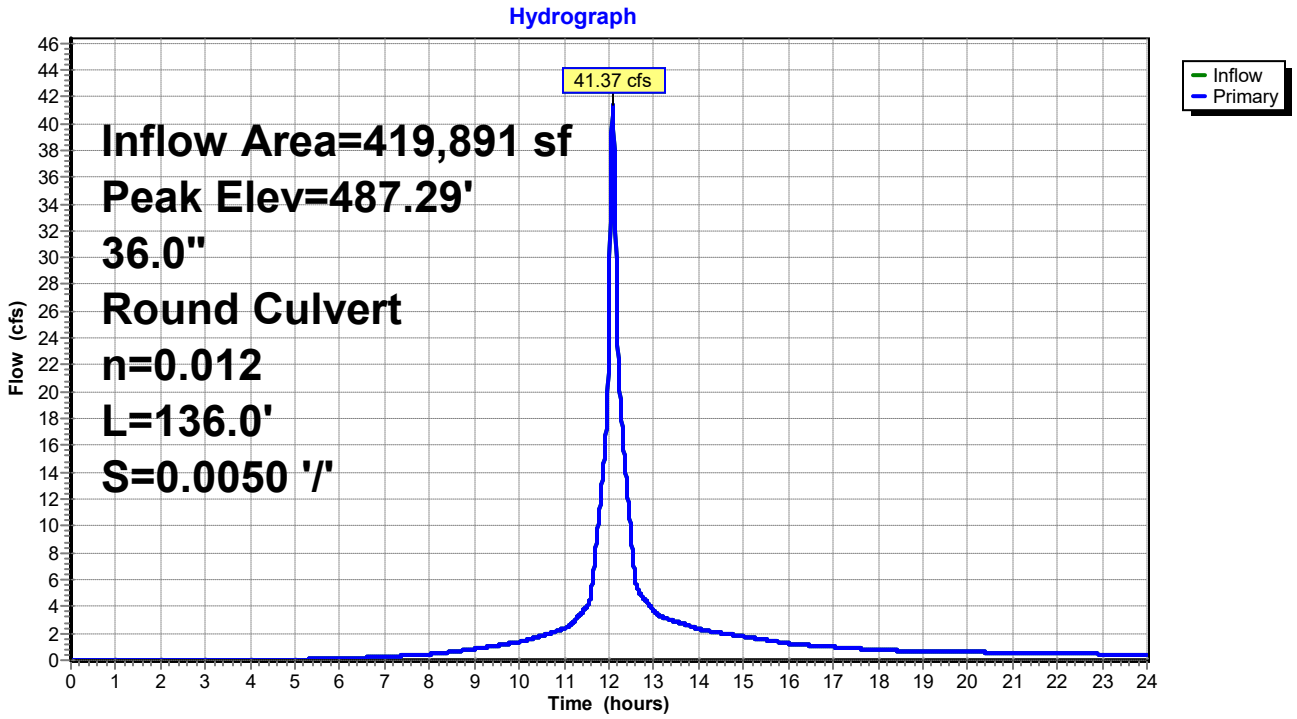
Pond CB 29: CB 29



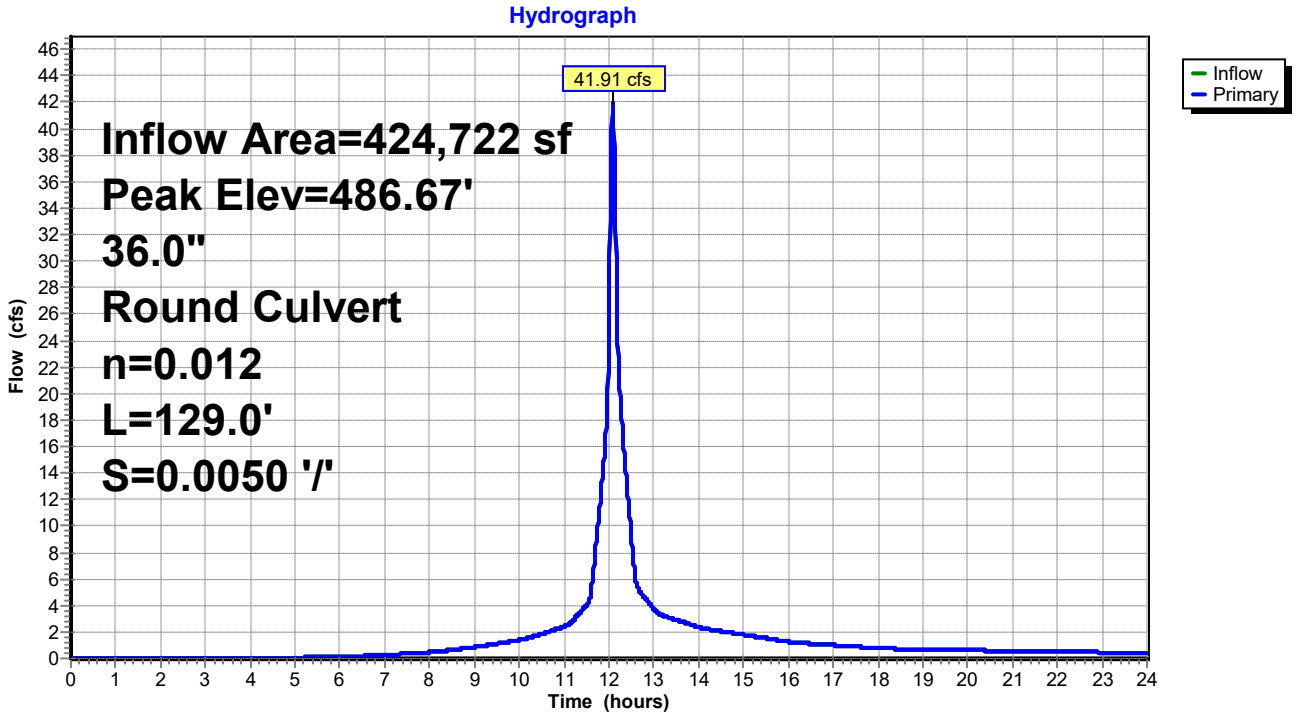
Pond CB-1-06: CB 6



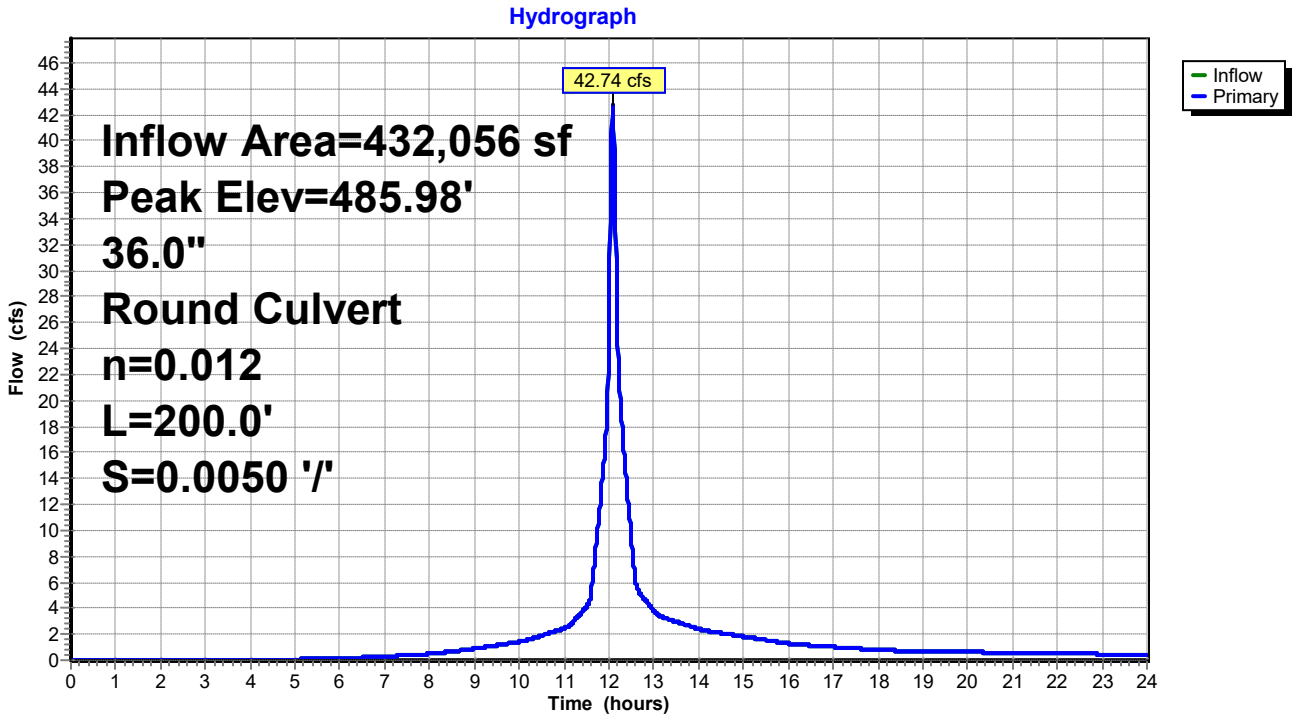
Pond CB-1-07: CB 7



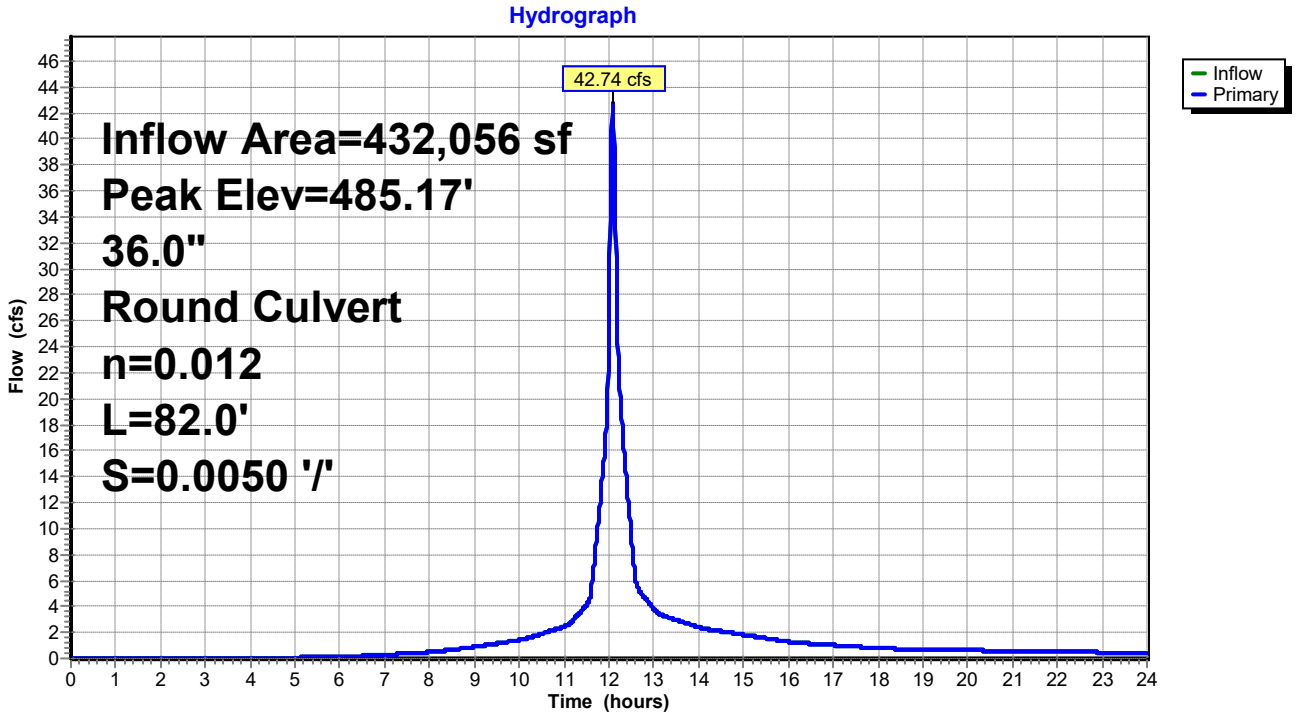
Pond CB-1-08: CB 8



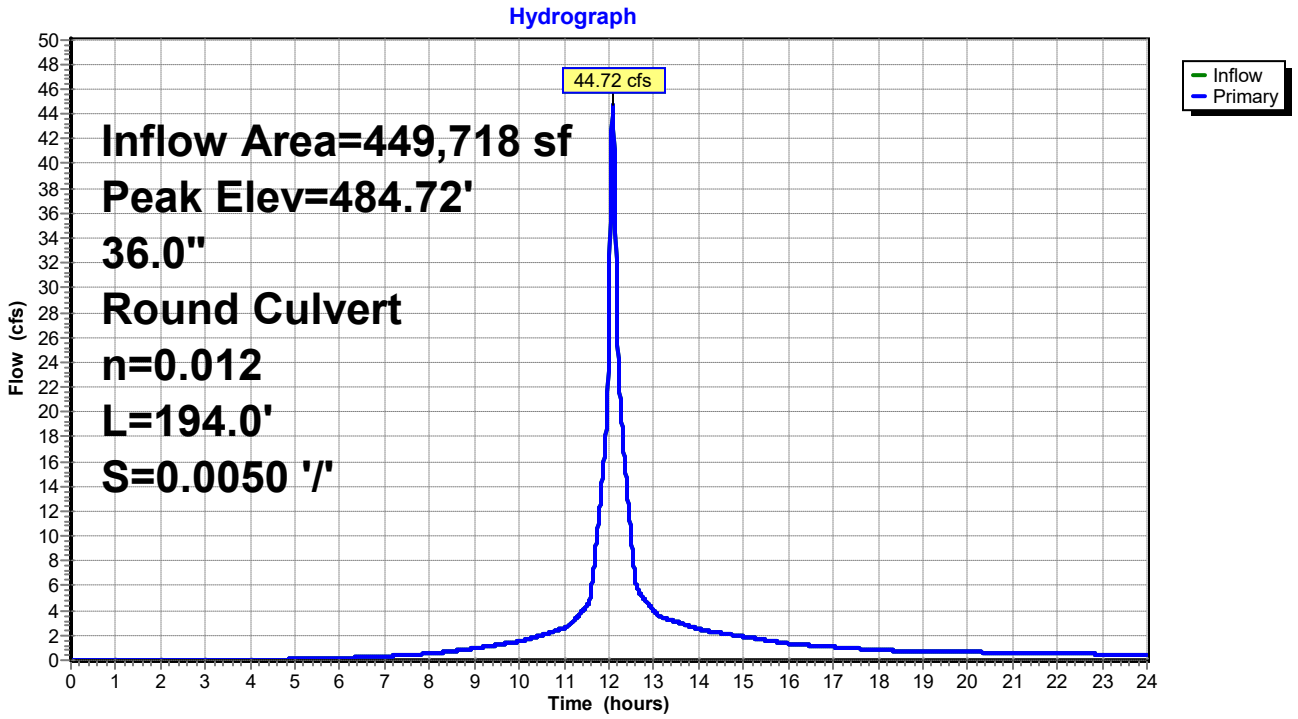
Pond CB-1-09: CB 9



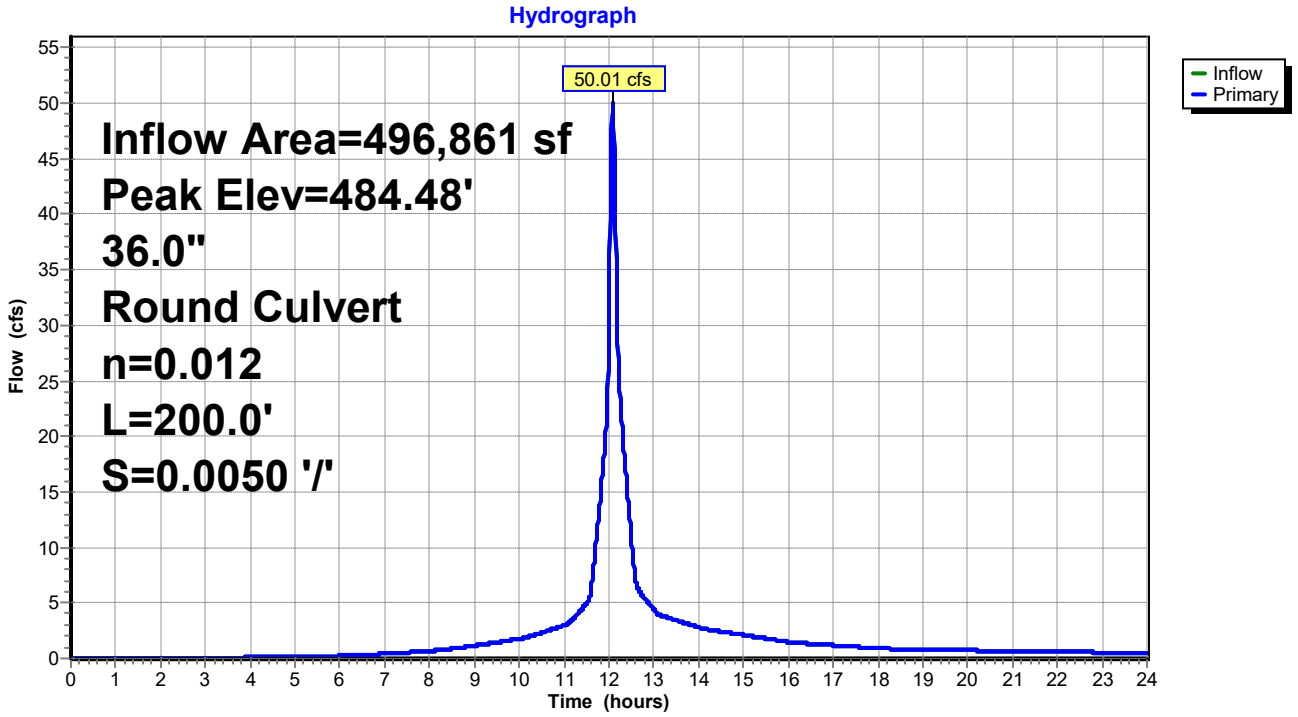
Pond CB-1-10: CB 10



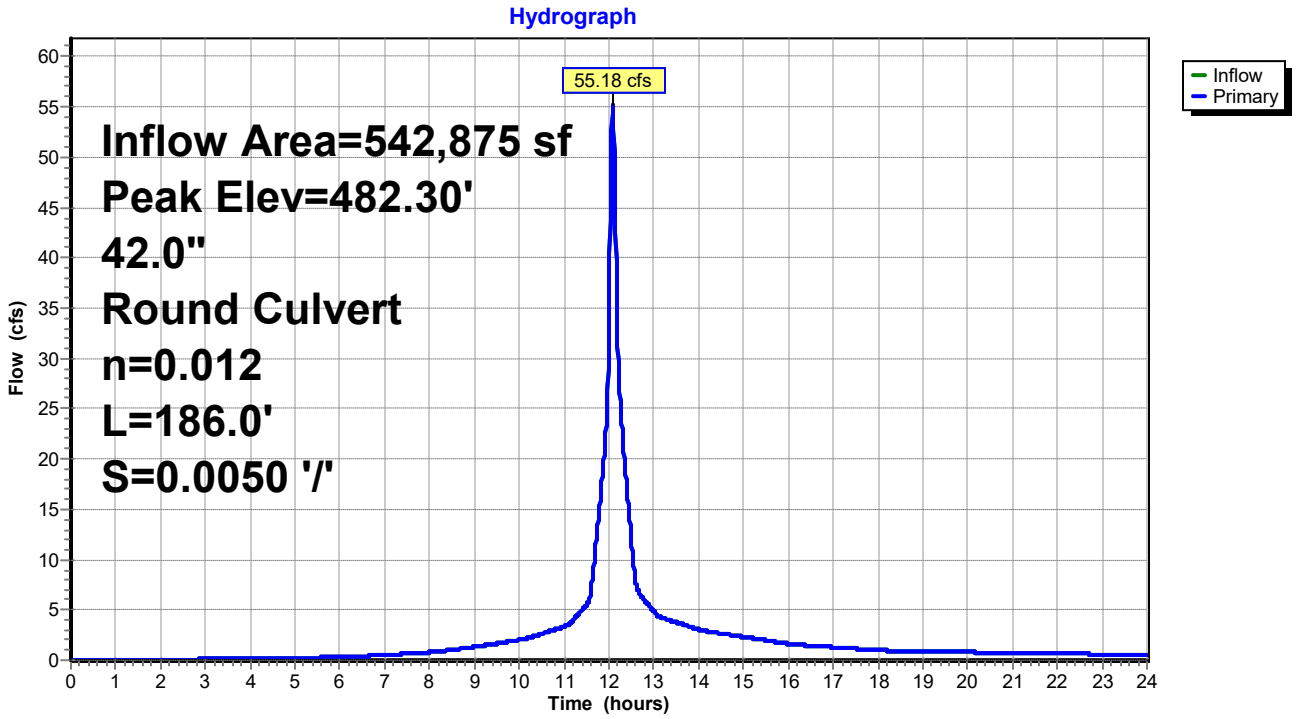
Pond CB-1-11: CB 11



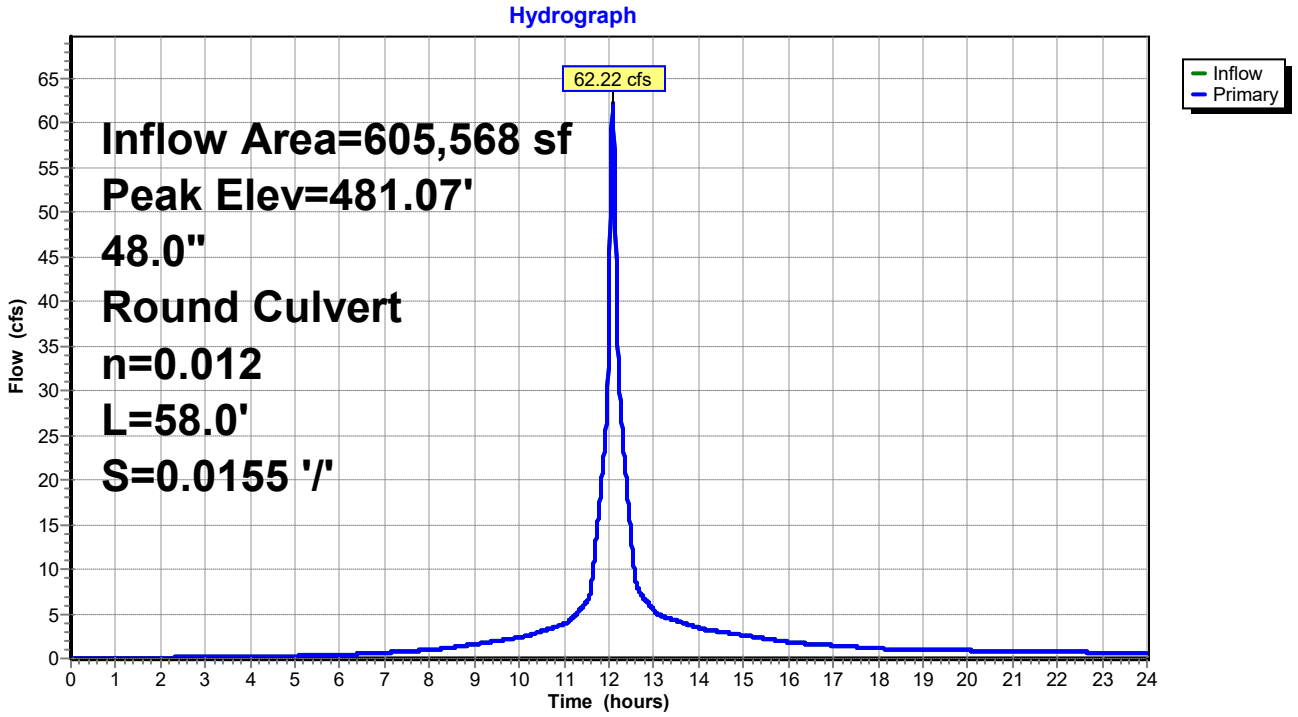
Pond CB-1-12: CB 12



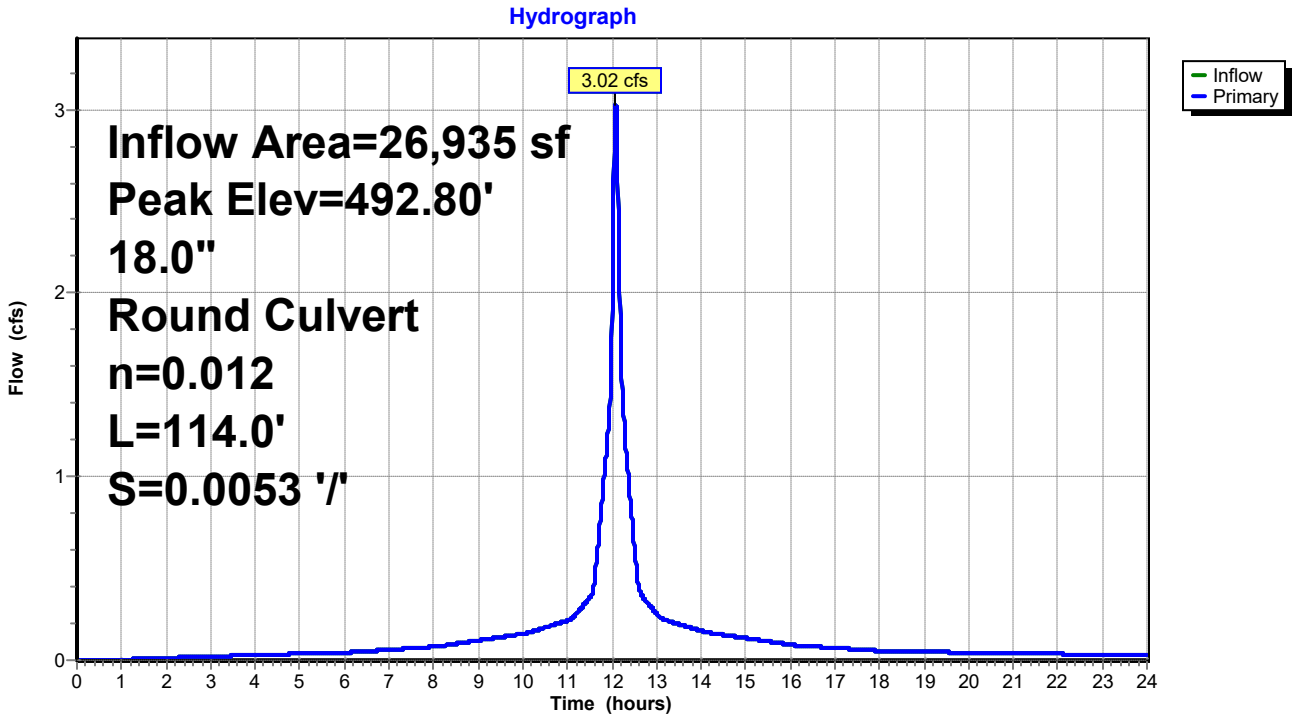
Pond CB-1-13: CB 13



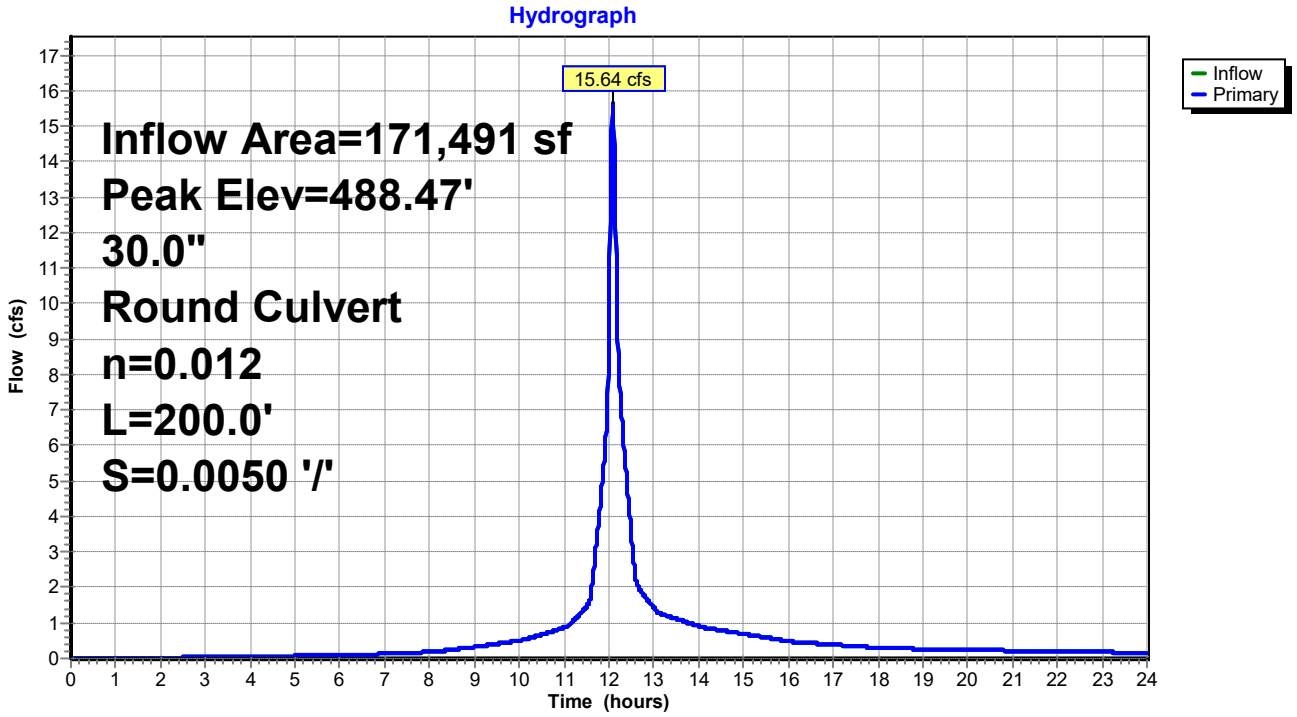
Pond CB-1-14: CB 14



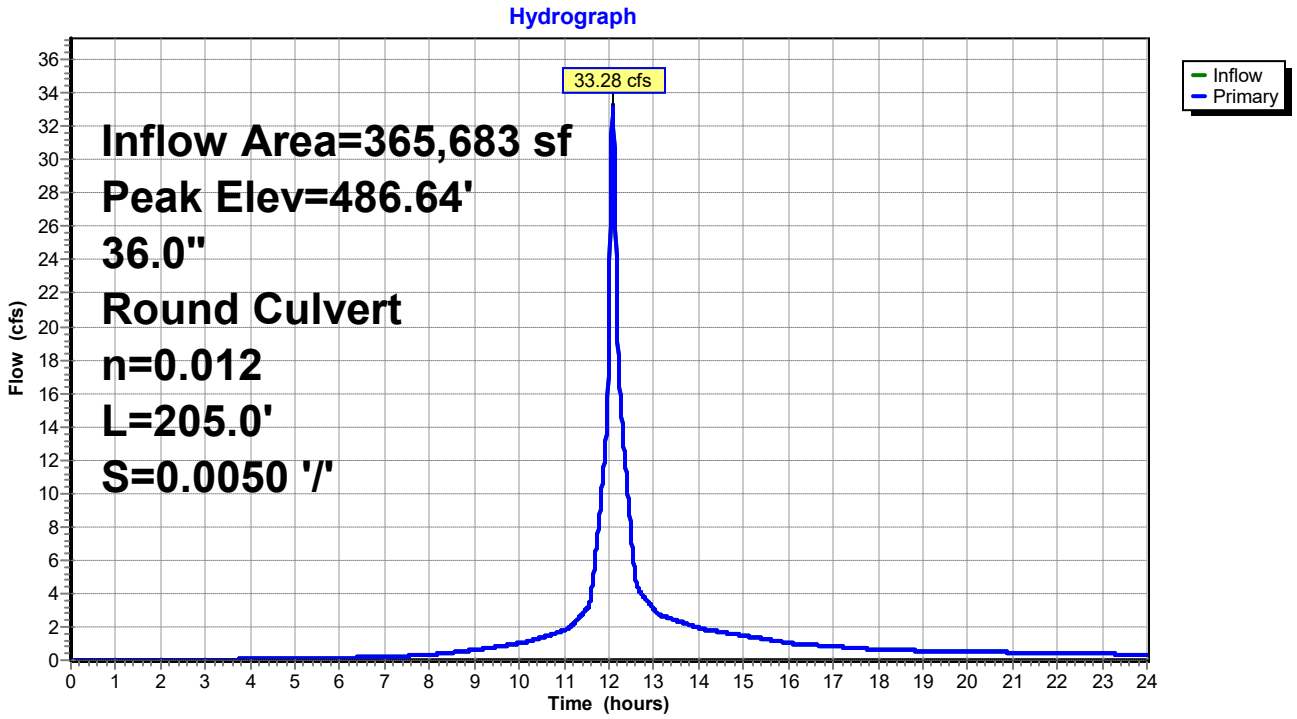
Pond CB-1-15: CB 15



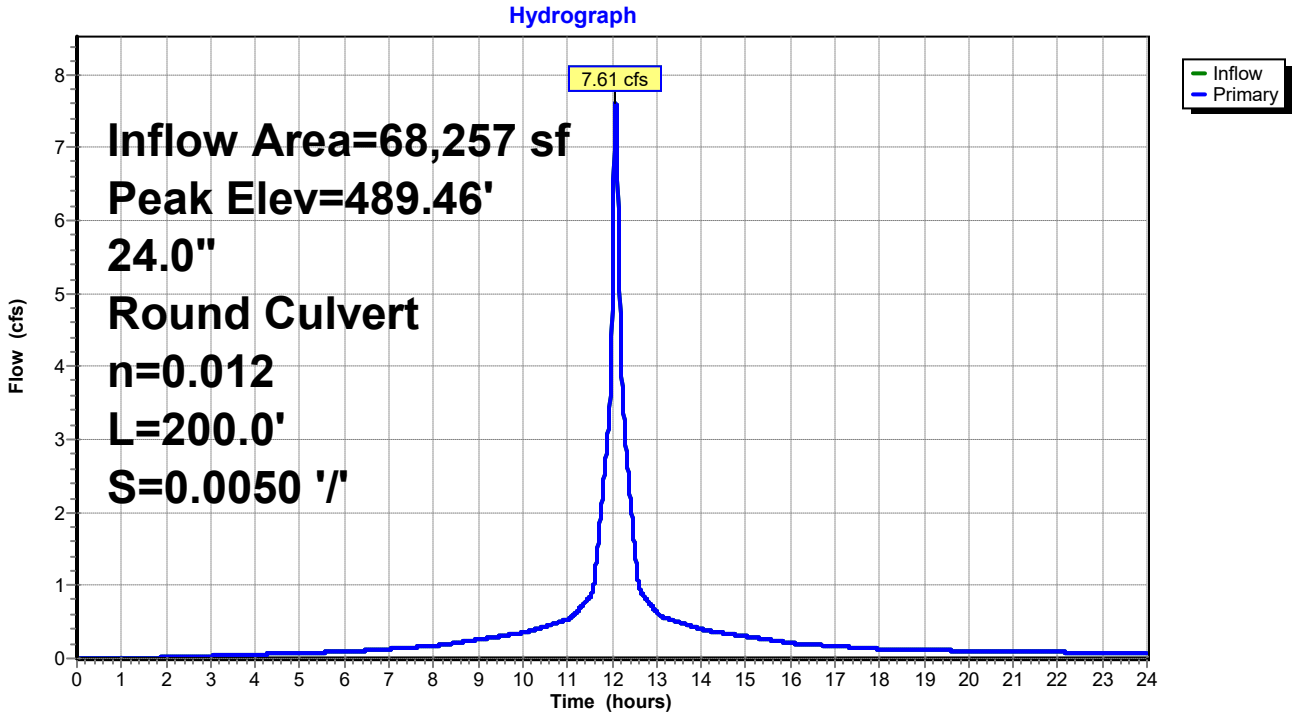
Pond CB-1-17: CB 17



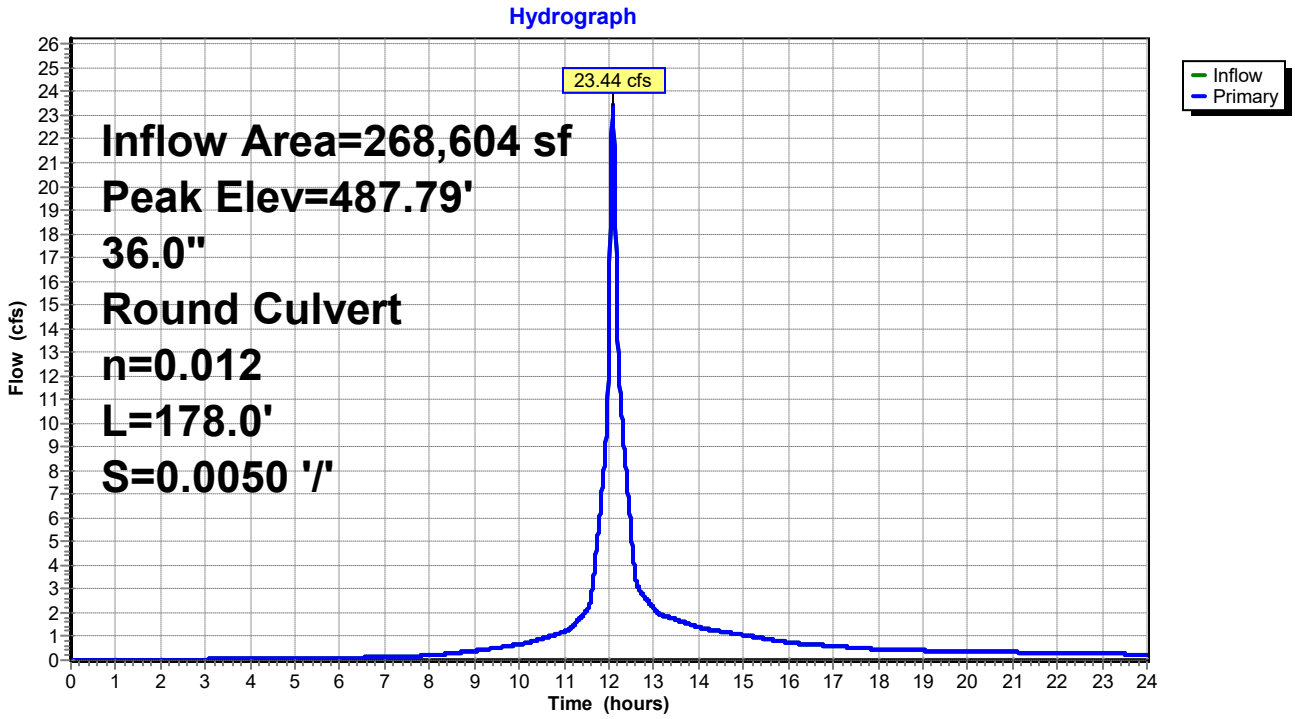
Pond CB-20: CB-20



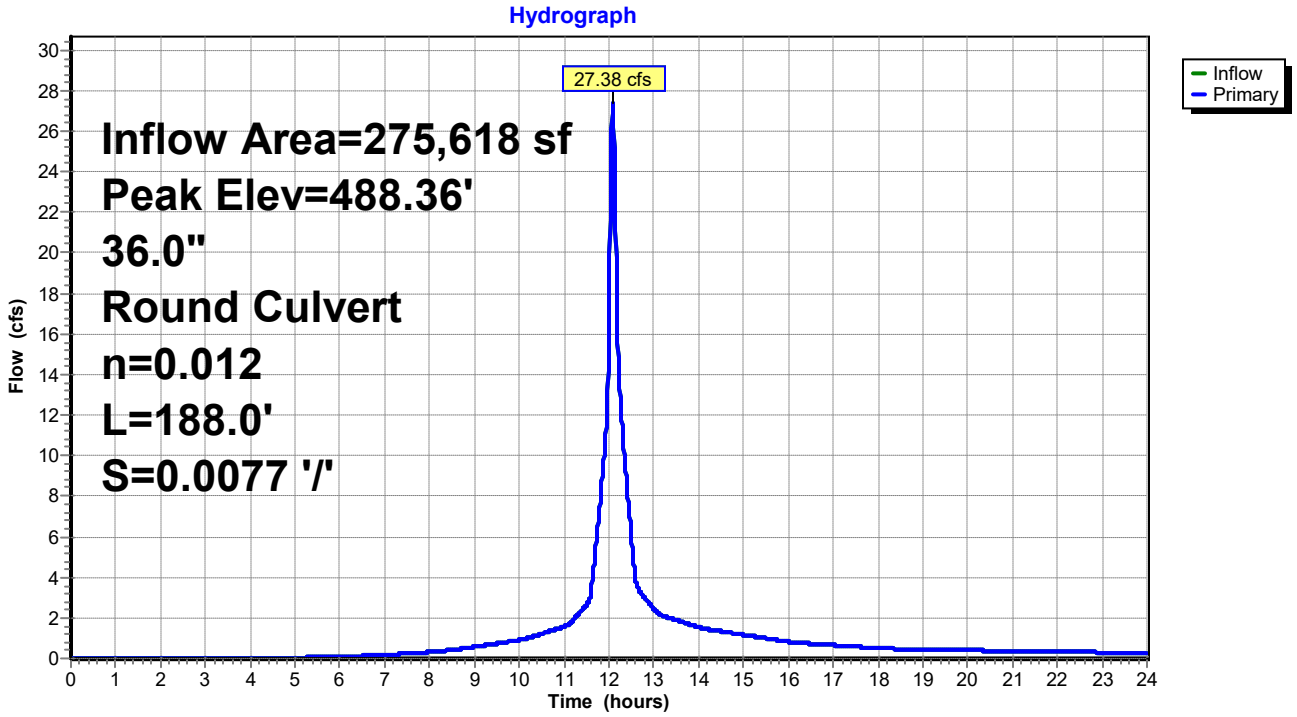
Pond CB16: CB16



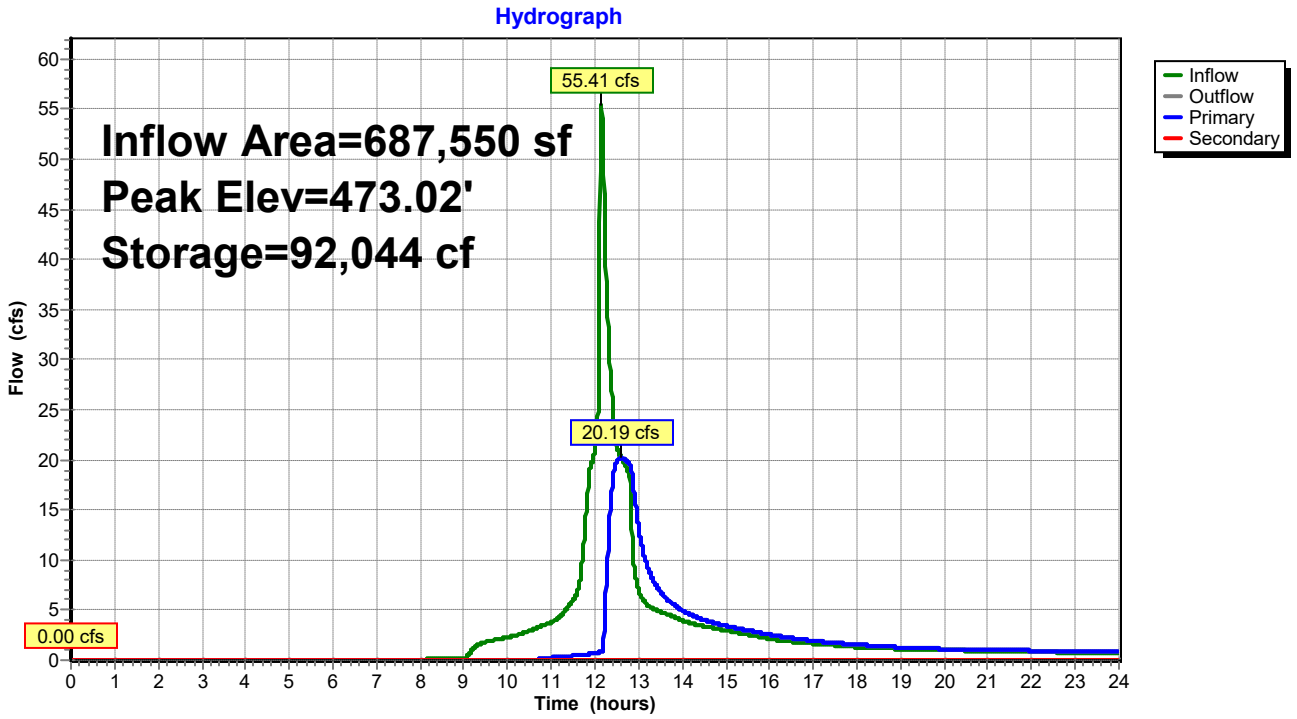
Pond CB18: CB 18



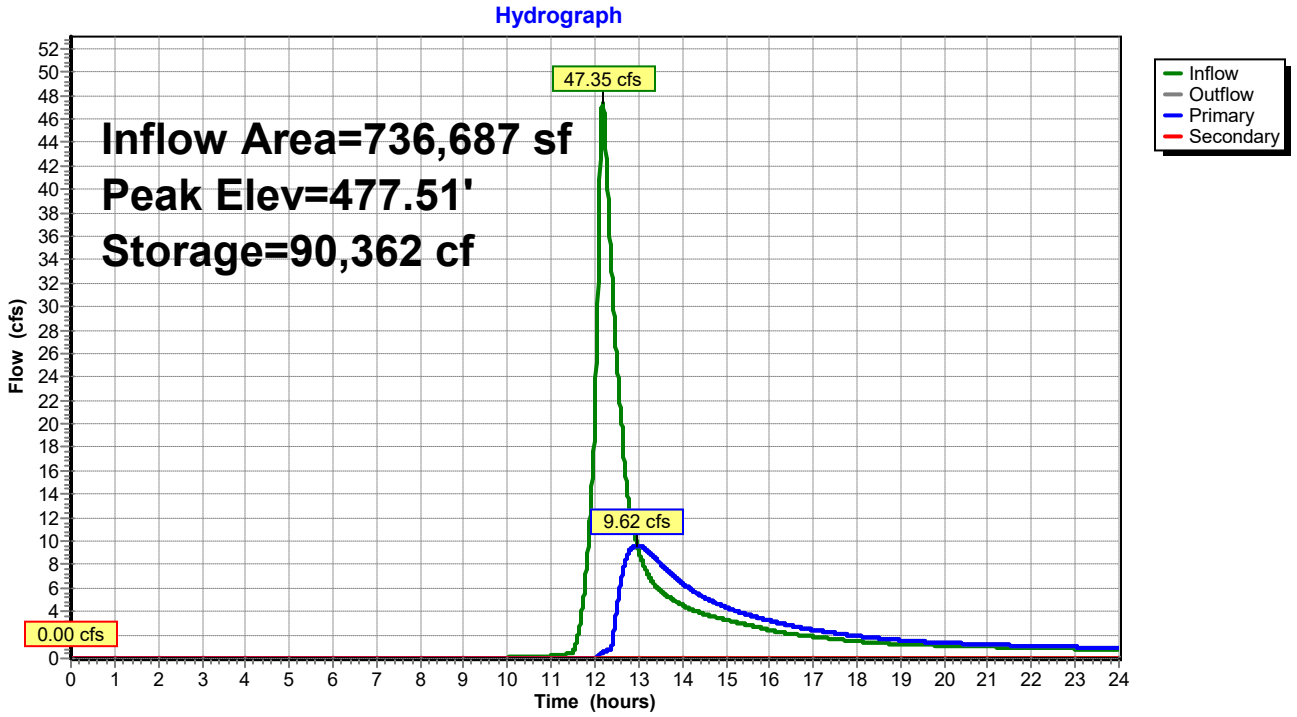
Pond CB3: CB3



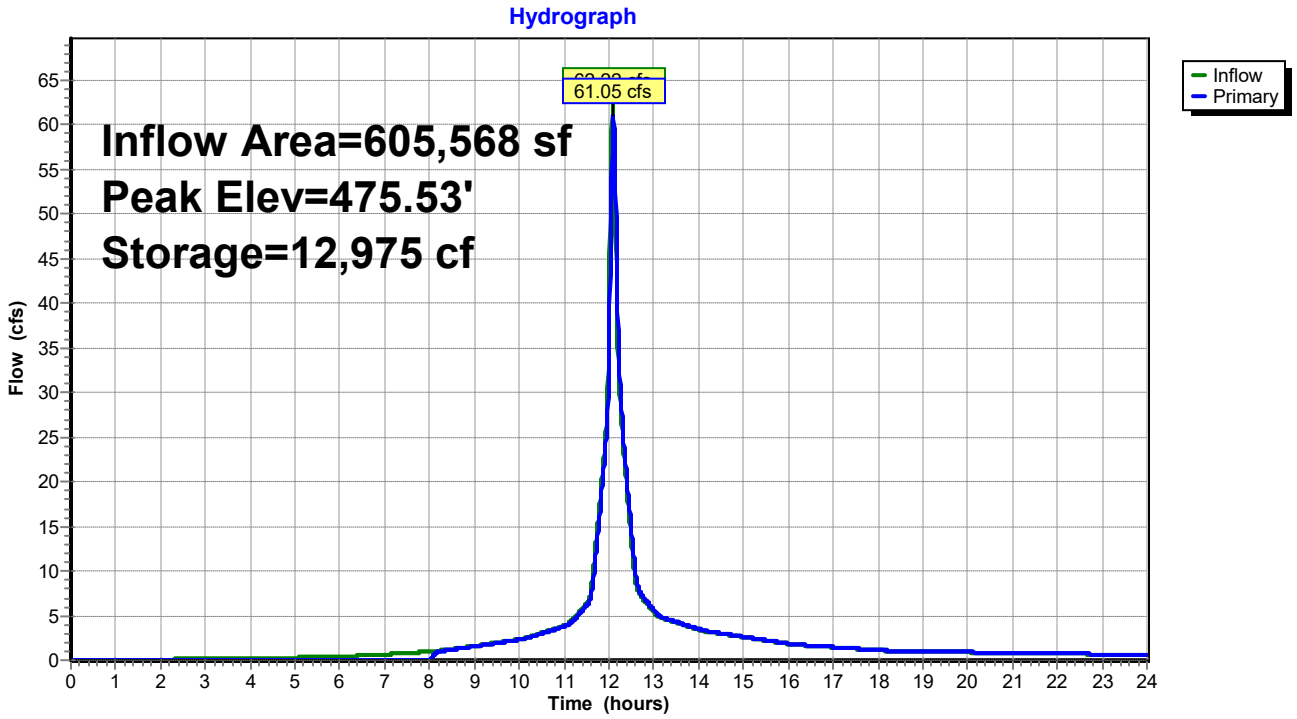
Pond P1: POND 1



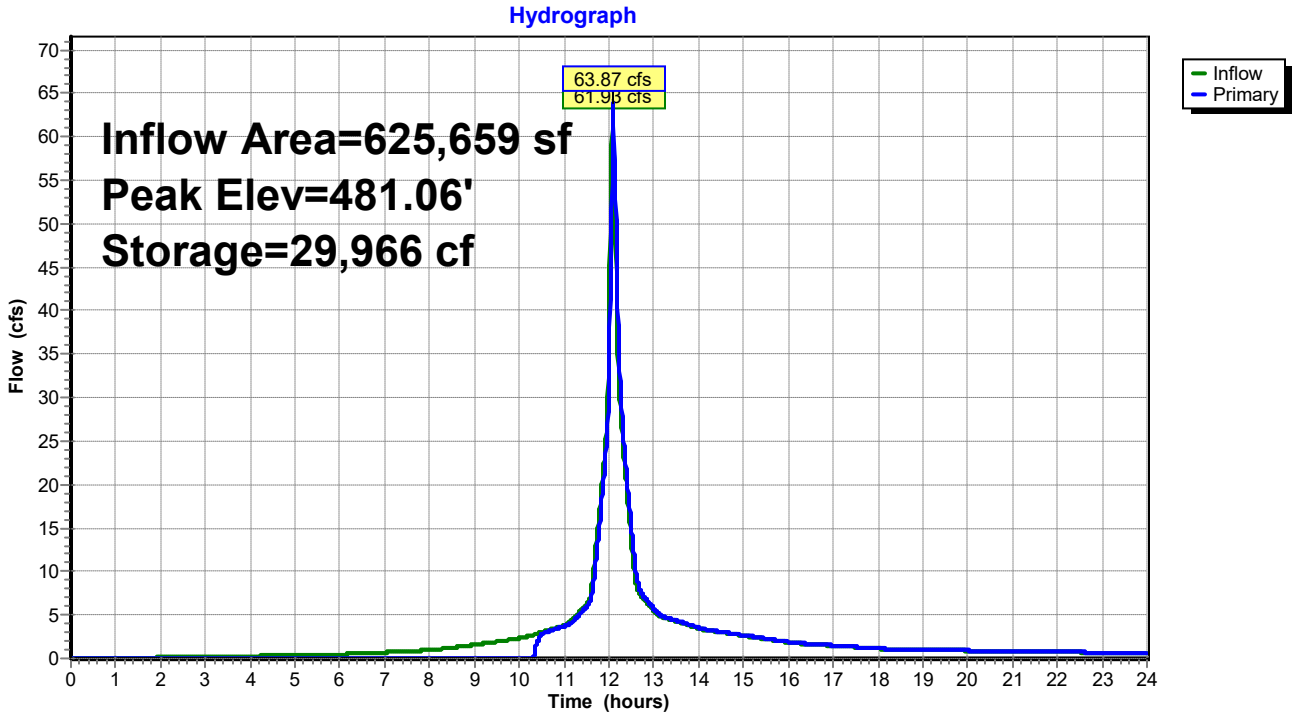
Pond P2: POND 2



Pond SB1: SEDIMENT BASIN 1



Pond SB2: SEDIMENT BASIN 2



Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment W-1-01: W-1-01 Runoff Area=93,483 sf 62.65% Impervious Runoff Depth>7.66"
Tc=6.0 min CN=89 Runoff=18.03 cfs 59,698 cf

Subcatchment W-1-02: W-1-02 Runoff Area=90,014 sf 62.52% Impervious Runoff Depth>7.66"
Tc=6.0 min CN=89 Runoff=17.36 cfs 57,482 cf

Subcatchment W-1-03: W-1-03 Runoff Area=40,985 sf 60.85% Impervious Runoff Depth>7.66"
Tc=6.0 min CN=89 Runoff=7.90 cfs 26,173 cf

Subcatchment W-1-04: W-1-04 Runoff Area=51,136 sf 71.19% Impervious Runoff Depth>7.91"
Tc=6.0 min CN=91 Runoff=10.03 cfs 33,692 cf

Subcatchment W-1-05: W-1-05 Runoff Area=52,184 sf 69.76% Impervious Runoff Depth>7.91"
Tc=6.0 min CN=91 Runoff=10.23 cfs 34,382 cf

Subcatchment W-1-06: W-1-06 Runoff Area=36,762 sf 57.56% Impervious Runoff Depth>7.54"
Tc=6.0 min CN=88 Runoff=7.02 cfs 23,103 cf

Subcatchment W-1-07: W-1-07 Runoff Area=55,327 sf 49.42% Impervious Runoff Depth>7.30"
Tc=6.0 min CN=86 Runoff=10.35 cfs 33,644 cf

Subcatchment W-1-08: W-1-08 Runoff Area=4,831 sf 100.00% Impervious Runoff Depth>8.75"
Tc=6.0 min CN=98 Runoff=0.98 cfs 3,524 cf

Subcatchment W-1-09: W-1-09 Runoff Area=7,334 sf 100.00% Impervious Runoff Depth>8.75"
Tc=6.0 min CN=98 Runoff=1.49 cfs 5,349 cf

Subcatchment W-1-10: W-1-10 Runoff Area=17,662 sf 100.00% Impervious Runoff Depth>8.75"
Tc=6.0 min CN=98 Runoff=3.58 cfs 12,883 cf

Subcatchment W-1-11: W-1-11 Runoff Area=47,143 sf 100.00% Impervious Runoff Depth>8.75"
Tc=6.0 min CN=98 Runoff=9.57 cfs 34,386 cf

Subcatchment W-1-12: W-1-12 Runoff Area=46,014 sf 100.00% Impervious Runoff Depth>8.75"
Tc=6.0 min CN=98 Runoff=9.34 cfs 33,563 cf

Subcatchment W-1-13: W-1-13 Runoff Area=35,758 sf 100.00% Impervious Runoff Depth>8.75"
Tc=6.0 min CN=98 Runoff=7.26 cfs 26,082 cf

Subcatchment W-1-14: W-1-14 Runoff Area=26,935 sf 100.00% Impervious Runoff Depth>8.75"
Tc=6.0 min CN=98 Runoff=5.47 cfs 19,647 cf

Subcatchment W-1-15: W-1-15 Runoff Area=68,257 sf 95.55% Impervious Runoff Depth>8.63"
Tc=6.0 min CN=97 Runoff=13.82 cfs 49,102 cf

Subcatchment W-1-16: W-1-16 Runoff Area=103,234 sf 27.04% Impervious Runoff Depth>6.56"
Tc=6.0 min CN=80 Runoff=17.85 cfs 56,450 cf

Subcatchment W-1-17: W-1-17 Runoff Area=97,113 sf 27.34% Impervious Runoff Depth>6.68"
Tc=6.0 min CN=81 Runoff=17.04 cfs 54,097 cf

Subcatchment W-1-18: W-1-18 Runoff Area=47,087 sf 73.34% Impervious Runoff Depth>8.03"
Tc=6.0 min CN=92 Runoff=9.30 cfs 31,500 cf

Subcatchment W-1-19: W-1-19 Runoff Area=49,992 sf 61.99% Impervious Runoff Depth>7.66"
Tc=6.0 min CN=89 Runoff=9.64 cfs 31,925 cf

Subcatchment W-1-20: W-1-20 Runoff Area=45,984 sf 65.48% Impervious Runoff Depth>7.78"
Tc=6.0 min CN=90 Runoff=8.95 cfs 29,831 cf

Subcatchment W-1-21: W-1-21 Runoff Area=18,171 sf 100.00% Impervious Runoff Depth>8.75"
Tc=6.0 min CN=98 Runoff=3.69 cfs 13,254 cf

Subcatchment W-1-22: W-1-22 Runoff Area=46,207 sf 100.00% Impervious Runoff Depth>8.75"
Tc=6.0 min CN=98 Runoff=9.38 cfs 33,704 cf

Subcatchment W-1-23: W-1-23 Runoff Area=44,247 sf 100.00% Impervious Runoff Depth>8.75"
Tc=6.0 min CN=98 Runoff=8.98 cfs 32,274 cf

Subcatchment W-1-24: W-1-24 Runoff Area=36,712 sf 100.00% Impervious Runoff Depth>8.75"
Tc=6.0 min CN=98 Runoff=7.45 cfs 26,778 cf

Subcatchment W-1-25: W-1-25 Runoff Area=38,020 sf 100.00% Impervious Runoff Depth>8.75"
Tc=6.0 min CN=98 Runoff=7.72 cfs 27,732 cf

Subcatchment W-1-26: W-1-26 Runoff Area=30,635 sf 100.00% Impervious Runoff Depth>8.75"
Tc=6.0 min CN=98 Runoff=6.22 cfs 22,345 cf

Subcatchment W-1-27: W-1-27 Runoff Area=81,982 sf 0.00% Impervious Runoff Depth>5.82"
Tc=6.0 min CN=74 Runoff=12.78 cfs 39,781 cf

Subcatchment W-1-28: W-1-28 Runoff Area=111,028 sf 0.00% Impervious Runoff Depth>5.82"
Tc=6.0 min CN=74 Runoff=17.31 cfs 53,875 cf

Subcatchment WS 1 PRE: WS 1 PRE Runoff Area=3,623,989 sf 0.27% Impervious Runoff Depth>7.72"
Flow Length=4,000' Tc=59.1 min CN=90 Runoff=285.45 cfs 2,330,775 cf

Subcatchment WS 1B POST: WS 1B Runoff Area=3,089,449 sf 0.00% Impervious Runoff Depth>7.79"
Flow Length=3,130' Tc=94.5 min CN=91 Runoff=183.52 cfs 2,005,520 cf

Subcatchment WS 2 POST: WS 2 POST Runoff Area=2,639,780 sf 0.00% Impervious Runoff Depth>8.37"
Flow Length=3,389' Tc=23.6 min CN=95 Runoff=338.26 cfs 1,841,155 cf

Subcatchment WS 2 PRE: WS 2 PRE Runoff Area=3,138,375 sf 0.70% Impervious Runoff Depth>8.09"
Flow Length=3,471' Tc=56.1 min CN=93 Runoff=260.73 cfs 2,114,645 cf

Subcatchment WS 3 POST: WS 3 POST Runoff Area=1,069,841 sf 7.93% Impervious Runoff Depth>6.80"
Flow Length=1,234' Tc=8.8 min CN=82 Runoff=173.24 cfs 606,611 cf

Subcatchment WS 3 PRE: WS 3 PRE Runoff Area=1,497,134 sf 0.81% Impervious Runoff Depth>6.91"
Flow Length=2,153' Tc=26.3 min CN=83 Runoff=163.37 cfs 861,595 cf

Reach DP1 MO3 PRE: DP DEC MO3 PRE Inflow=633.88 cfs 5,307,015 cf
Outflow=633.88 cfs 5,307,015 cf

Reach MO3 & YB: DEC MO3/YOUNG'S BROOK Inflow=601.22 cfs 5,164,964 cf
Outflow=601.22 cfs 5,164,964 cf

Pond BR1: BIORETENTION 1 Peak Elev=476.33' Storage=30,779 cf Inflow=116.88 cfs 395,210 cf
Primary=21.83 cfs 299,656 cf Secondary=90.58 cfs 91,088 cf Outflow=112.41 cfs 390,744 cf

Pond BR2: BIORETENTION 2 Peak Elev=481.47' Storage=61,323 cf Inflow=122.19 cfs 384,971 cf
Primary=19.44 cfs 261,837 cf Secondary=77.00 cfs 105,821 cf Outflow=96.44 cfs 367,658 cf

Pond CB 1: CB 1 Peak Elev=491.35' Inflow=18.03 cfs 59,698 cf
24.0" Round Culvert n=0.012 L=200.0' S=0.0050 '/' Outflow=18.03 cfs 59,698 cf

Pond CB 19: CB-19 Peak Elev=489.40' Inflow=58.00 cfs 191,149 cf
36.0" Round Culvert n=0.012 L=60.0' S=0.0050 '/' Outflow=58.00 cfs 191,149 cf

Pond CB 2: CB 2 Peak Elev=490.94' Inflow=35.39 cfs 117,180 cf
30.0" Round Culvert n=0.012 L=163.0' S=0.0050 '/' Outflow=35.39 cfs 117,180 cf

Pond CB 21: CB 21 Peak Elev=489.91' Inflow=76.59 cfs 252,905 cf
36.0" Round Culvert n=0.012 L=200.0' S=0.0050 '/' Outflow=76.59 cfs 252,905 cf

Pond CB 22: CB 22 Peak Elev=488.91' Inflow=76.59 cfs 252,905 cf
36.0" Round Culvert n=0.012 L=200.0' S=0.0050 '/' Outflow=76.59 cfs 252,905 cf

Pond CB 23: CB 23 Peak Elev=487.56' Inflow=76.59 cfs 252,905 cf
36.0" Round Culvert n=0.012 L=145.0' S=0.0050 '/' Outflow=76.59 cfs 252,905 cf

Pond CB 24: CB 24 Peak Elev=487.41' Inflow=80.28 cfs 266,159 cf
36.0" Round Culvert n=0.012 L=164.0' S=0.0050 '/' Outflow=80.28 cfs 266,159 cf

Pond CB 25: CB 25 Peak Elev=488.19' Inflow=89.65 cfs 299,863 cf
36.0" Round Culvert n=0.012 L=198.0' S=0.0050 '/' Outflow=89.65 cfs 299,863 cf

Pond CB 26: CB 26 Peak Elev=488.63' Inflow=98.63 cfs 332,137 cf
36.0" Round Culvert n=0.012 L=198.0' S=0.0050 '/' Outflow=98.63 cfs 332,137 cf

Pond CB 27: CB 27 Peak Elev=488.60' Inflow=106.08 cfs 358,915 cf
36.0" Round Culvert n=0.012 L=131.0' S=0.0050 '/' Outflow=106.08 cfs 358,915 cf

Pond CB 28: CB 28 Peak Elev=490.67' Inflow=120.01 cfs 408,993 cf
36.0" Round Culvert n=0.012 L=71.0' S=0.0104 '/' Outflow=120.01 cfs 408,993 cf

Pond CB 29: CB 29 Peak Elev=492.82' Inflow=6.22 cfs 22,345 cf
18.0" Round Culvert n=0.012 L=169.0' S=0.0050 '/' Outflow=6.22 cfs 22,345 cf

Pond CB-1-06: CB 6 Peak Elev=490.02' Inflow=63.55 cfs 211,427 cf
36.0" Round Culvert n=0.012 L=142.0' S=0.0051 '/' Outflow=63.55 cfs 211,427 cf

Pond CB-1-07: CB 7 Peak Elev=491.18' Inflow=80.92 cfs 268,174 cf
36.0" Round Culvert n=0.012 L=136.0' S=0.0050 '/' Outflow=80.92 cfs 268,174 cf

Pond CB-1-08: CB 8 Peak Elev=490.64' Inflow=81.90 cfs 271,697 cf
36.0" Round Culvert n=0.012 L=129.0' S=0.0050 '/' Outflow=81.90 cfs 271,697 cf

Pond CB-1-09: CB 9 Peak Elev=490.63' Inflow=83.39 cfs 277,047 cf
36.0" Round Culvert n=0.012 L=200.0' S=0.0050 '/' Outflow=83.39 cfs 277,047 cf

Pond CB-1-10: CB 10 Peak Elev=489.21' Inflow=83.39 cfs 277,047 cf
36.0" Round Culvert n=0.012 L=82.0' S=0.0050 '/' Outflow=83.39 cfs 277,047 cf

Pond CB-1-11: CB 11 Peak Elev=489.68' Inflow=86.98 cfs 289,930 cf
36.0" Round Culvert n=0.012 L=194.0' S=0.0050 '/' Outflow=86.98 cfs 289,930 cf

Pond CB-1-12: CB 12 Peak Elev=490.26' Inflow=96.54 cfs 324,316 cf
36.0" Round Culvert n=0.012 L=200.0' S=0.0050 '/' Outflow=96.54 cfs 324,316 cf

Pond CB-1-13: CB 13 Peak Elev=485.98' Inflow=105.88 cfs 357,879 cf
42.0" Round Culvert n=0.012 L=186.0' S=0.0050 '/' Outflow=105.88 cfs 357,879 cf

Pond CB-1-14: CB 14 Peak Elev=483.74' Inflow=118.61 cfs 403,608 cf
48.0" Round Culvert n=0.012 L=58.0' S=0.0155 '/' Outflow=118.61 cfs 403,608 cf

Pond CB-1-15: CB 15 Peak Elev=493.20' Inflow=5.47 cfs 19,647 cf
18.0" Round Culvert n=0.012 L=114.0' S=0.0053 '/' Outflow=5.47 cfs 19,647 cf

Pond CB-1-17: CB 17 Peak Elev=490.12' Inflow=31.66 cfs 105,552 cf
30.0" Round Culvert n=0.012 L=200.0' S=0.0050 '/' Outflow=31.66 cfs 105,552 cf

Pond CB-20: CB-20 Peak Elev=489.86' Inflow=67.64 cfs 223,074 cf
36.0" Round Culvert n=0.012 L=205.0' S=0.0050 '/' Outflow=67.64 cfs 223,074 cf

Pond CB16: CB16 Peak Elev=490.11' Inflow=13.82 cfs 49,102 cf
24.0" Round Culvert n=0.012 L=200.0' S=0.0050 '/' Outflow=13.82 cfs 49,102 cf

Pond CB18: CB 18 Peak Elev=489.45' Inflow=48.70 cfs 159,649 cf
36.0" Round Culvert n=0.012 L=178.0' S=0.0050 '/' Outflow=48.70 cfs 159,649 cf

Pond CB3: CB3 Peak Elev=490.14' Inflow=53.32 cfs 177,045 cf
36.0" Round Culvert n=0.012 L=188.0' S=0.0077 '/' Outflow=53.32 cfs 177,045 cf

Pond P1: POND 1 Peak Elev=475.09' Storage=137,815 cf Inflow=124.24 cfs 430,525 cf
Primary=61.80 cfs 358,438 cf Secondary=2.04 cfs 705 cf Outflow=63.83 cfs 359,143 cf

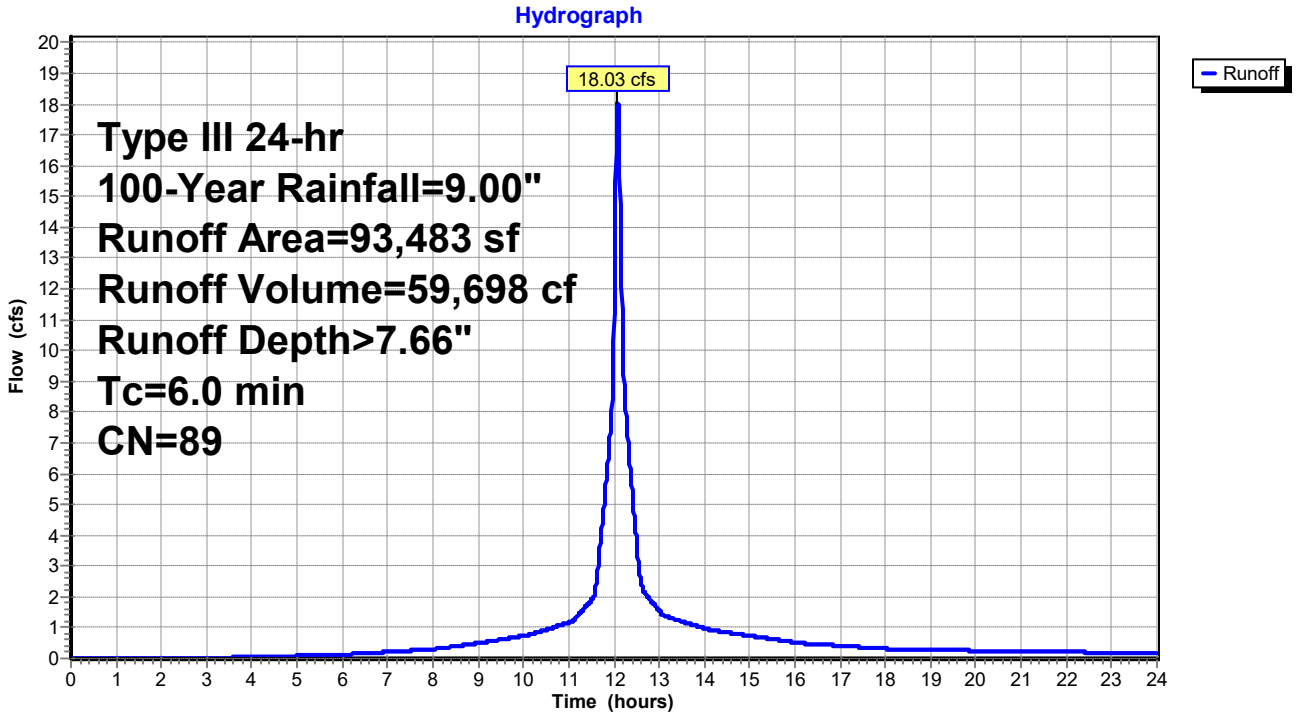
Pond P2: POND 2 Peak Elev=480.14' Storage=157,729 cf Inflow=111.09 cfs 421,533 cf
Primary=50.95 cfs 352,535 cf Secondary=0.00 cfs 0 cf Outflow=50.95 cfs 352,535 cf

Pond SB1: SEDIMENT BASIN 1 Peak Elev=475.98' Storage=15,925 cf Inflow=118.61 cfs 403,608 cf
Outflow=116.88 cfs 395,210 cf

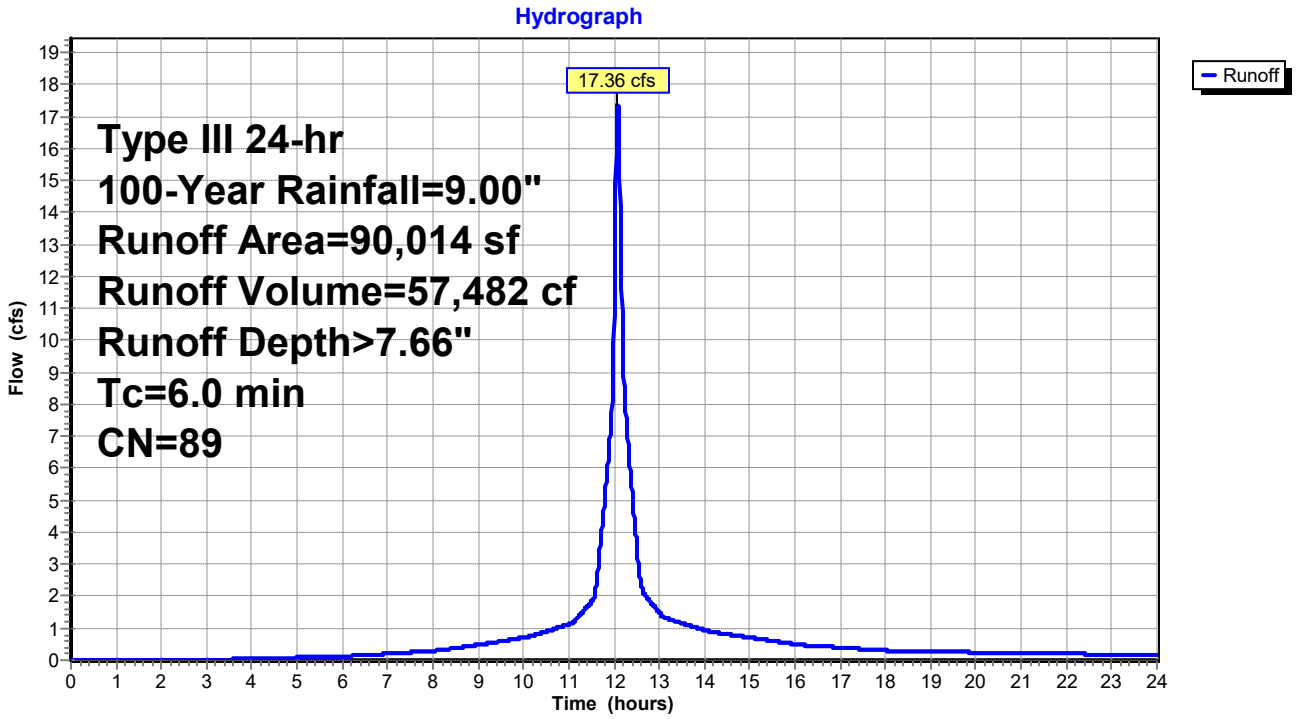
Pond SB2: SEDIMENT BASIN 2 Peak Elev=481.52' Storage=29,966 cf Inflow=120.01 cfs 408,993 cf
Outflow=122.19 cfs 384,971 cf

Total Runoff Area = 16,482,805 sf Runoff Volume = 10,666,557 cf Average Runoff Depth = 7.77"
93.90% Pervious = 15,477,983 sf 6.10% Impervious = 1,004,822 sf

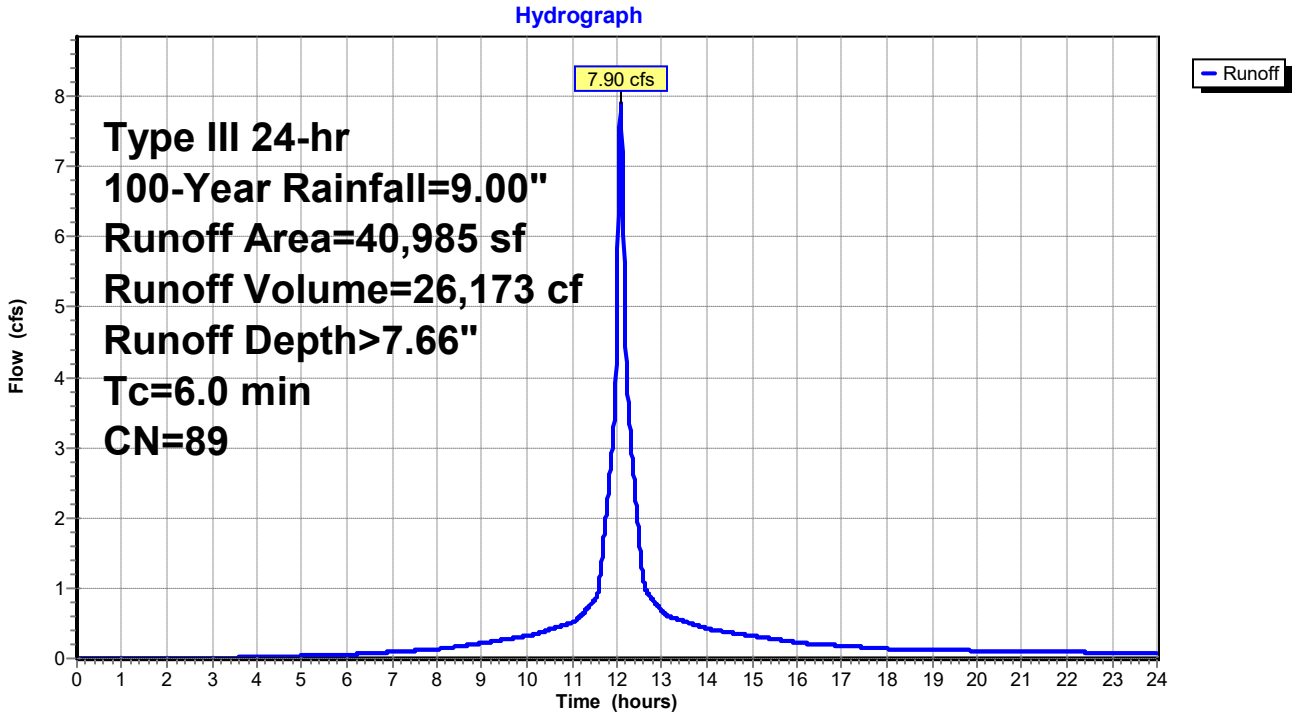
Subcatchment W-1-01: W-1-01



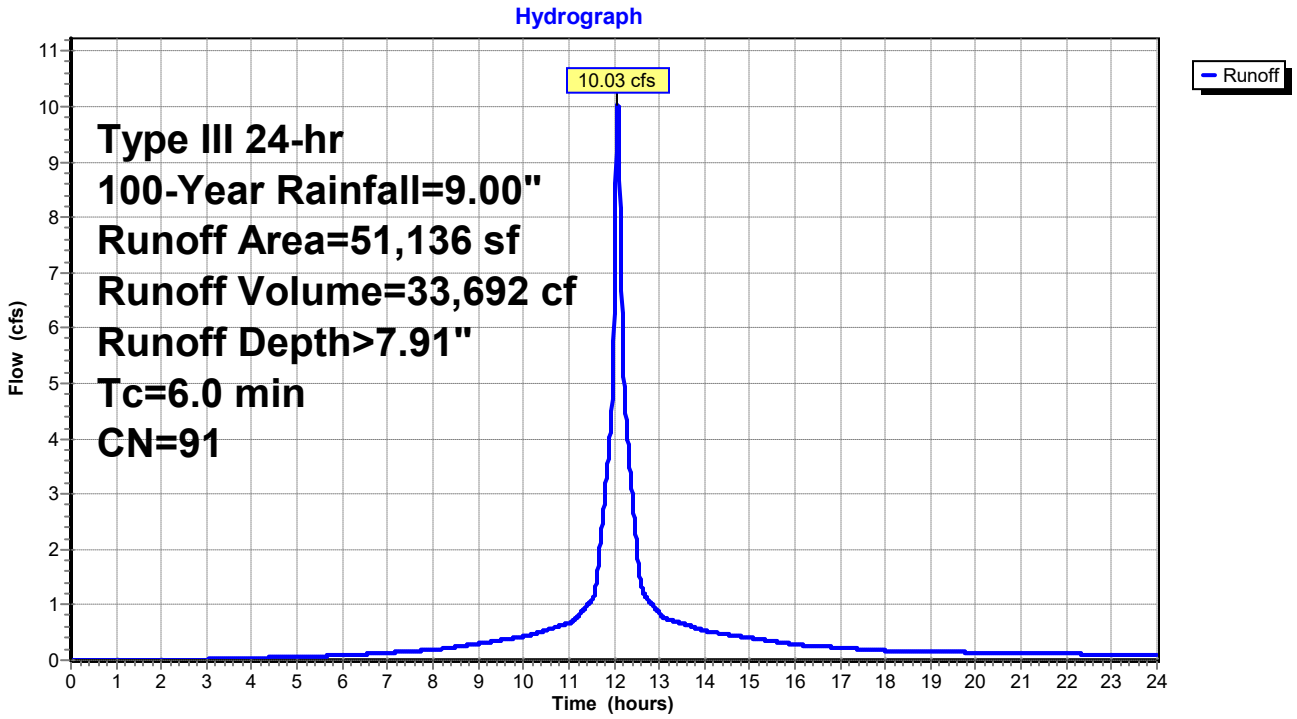
Subcatchment W-1-02: W-1-02



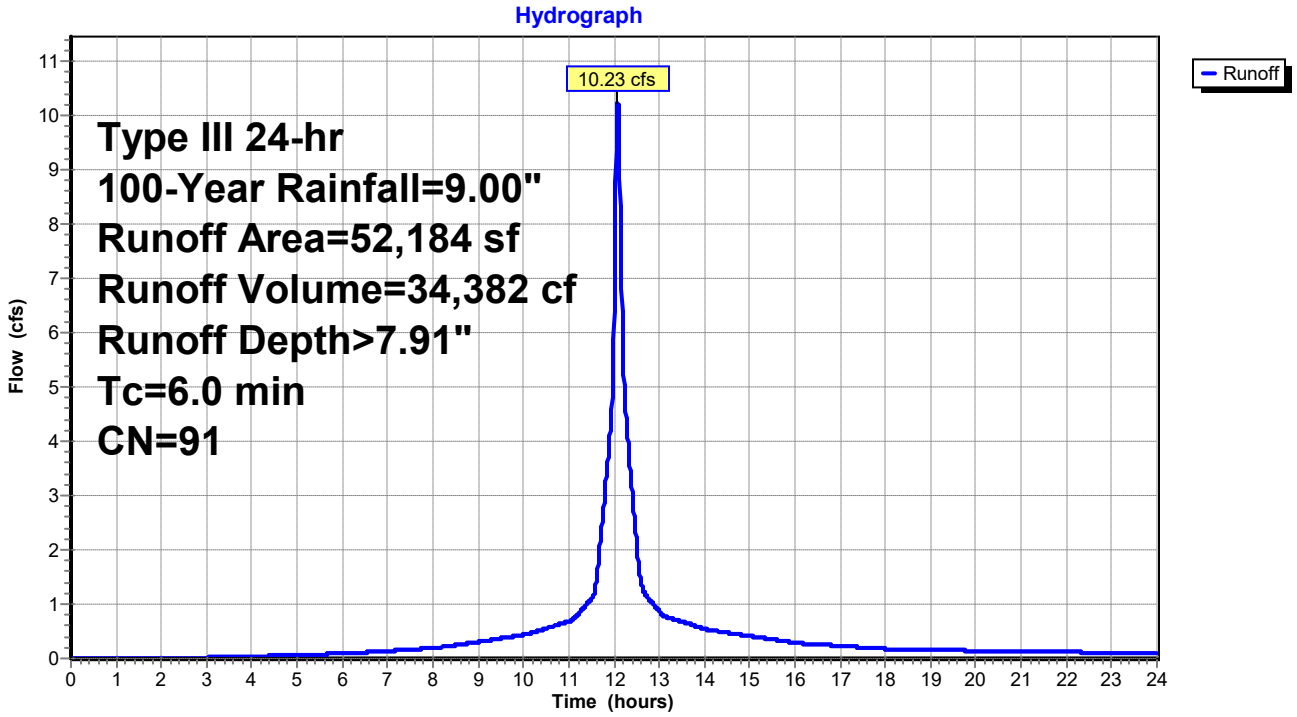
Subcatchment W-1-03: W-1-03



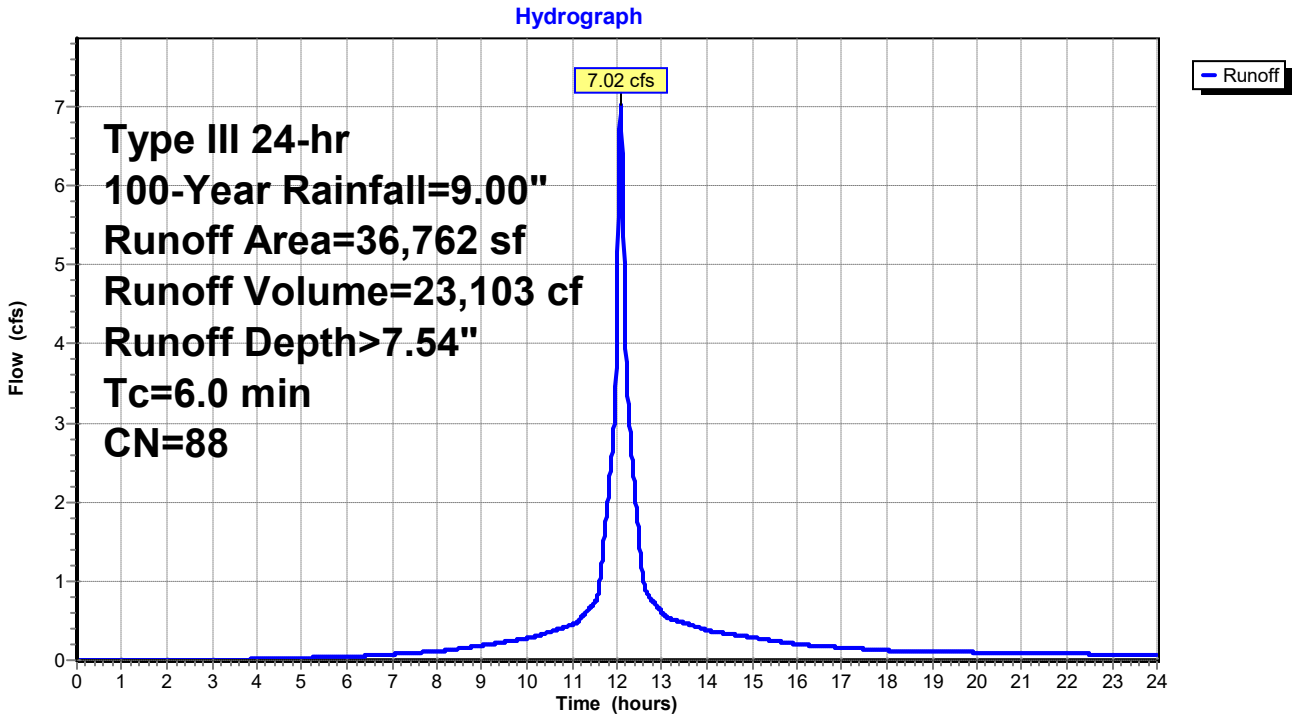
Subcatchment W-1-04: W-1-04



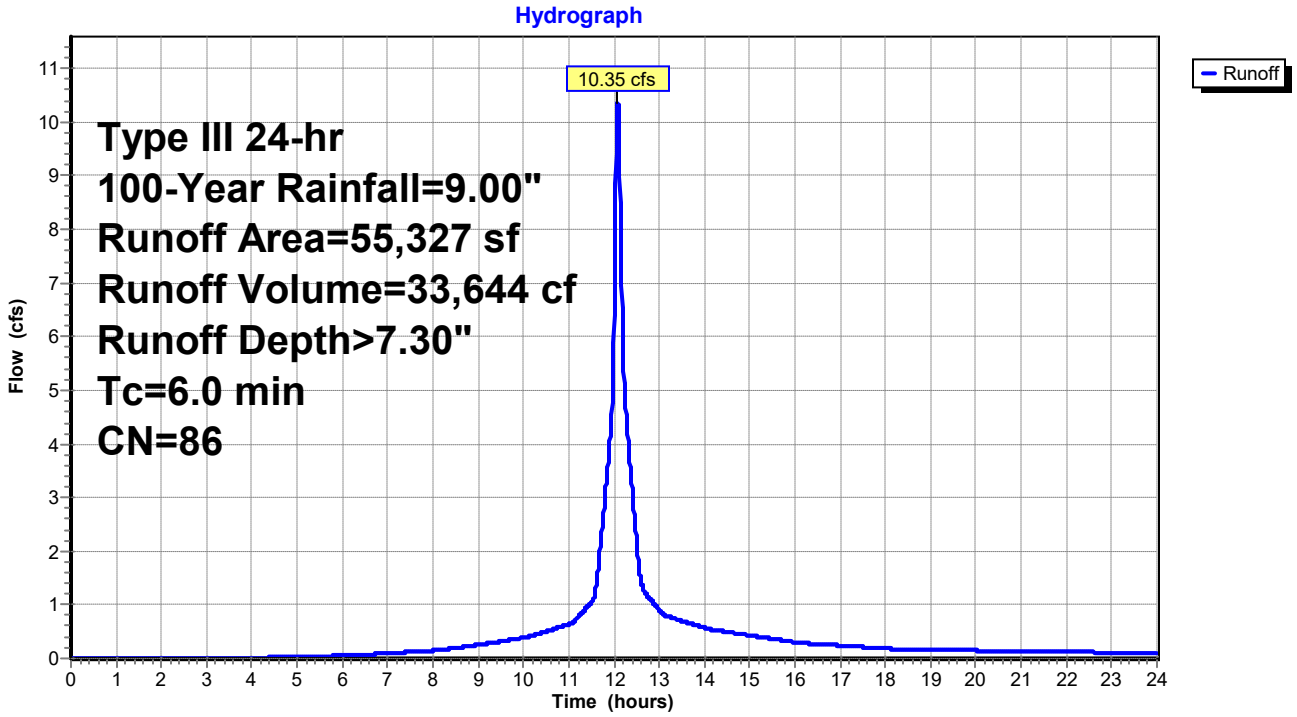
Subcatchment W-1-05: W-1-05



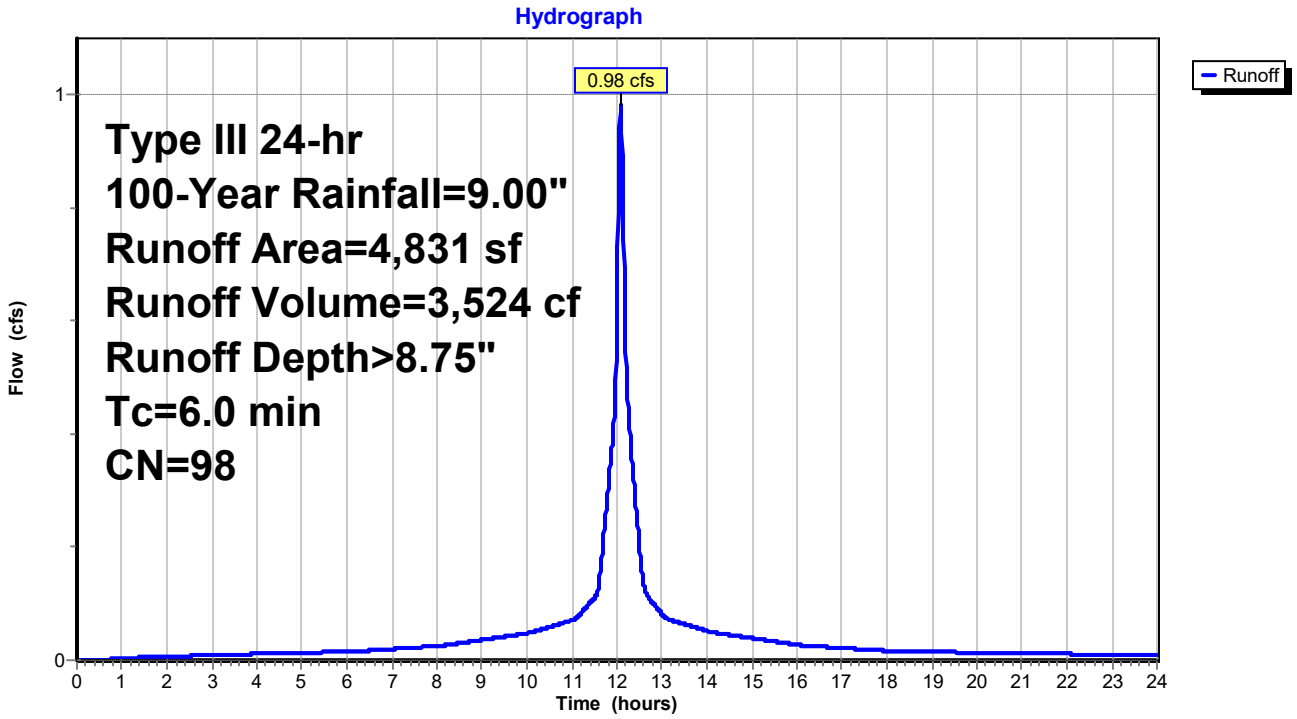
Subcatchment W-1-06: W-1-06



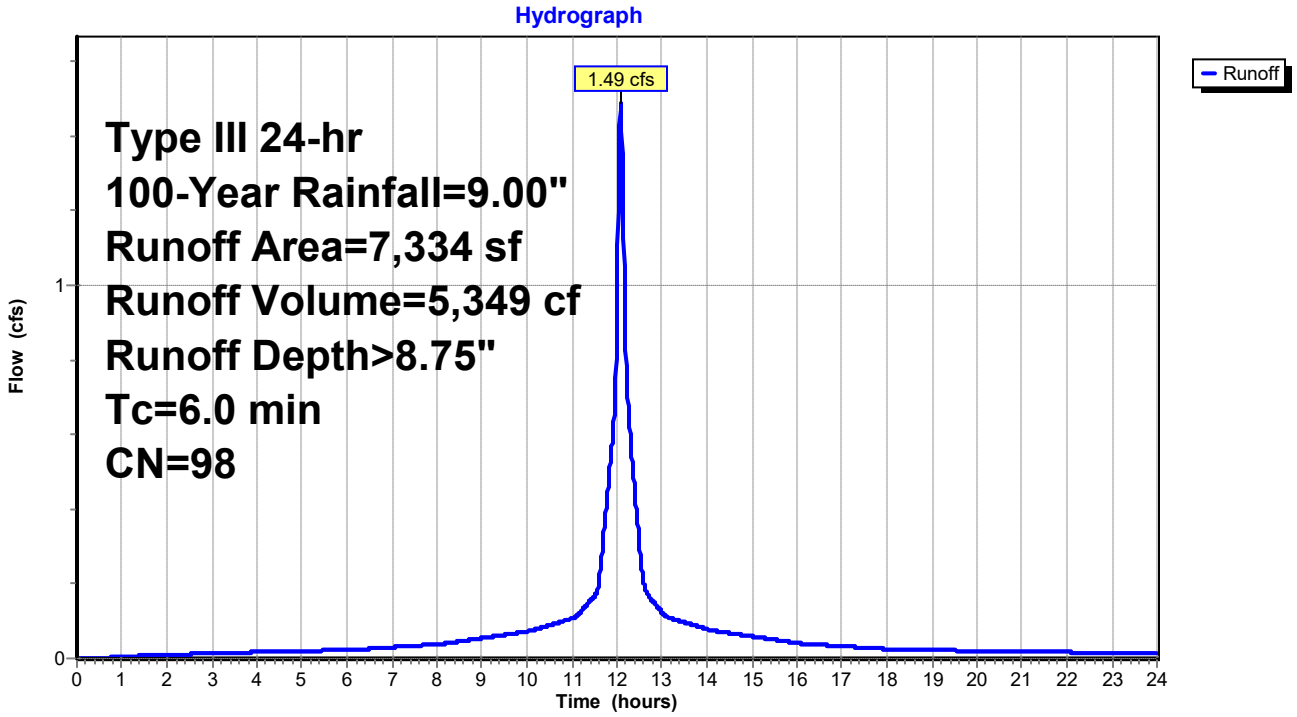
Subcatchment W-1-07: W-1-07



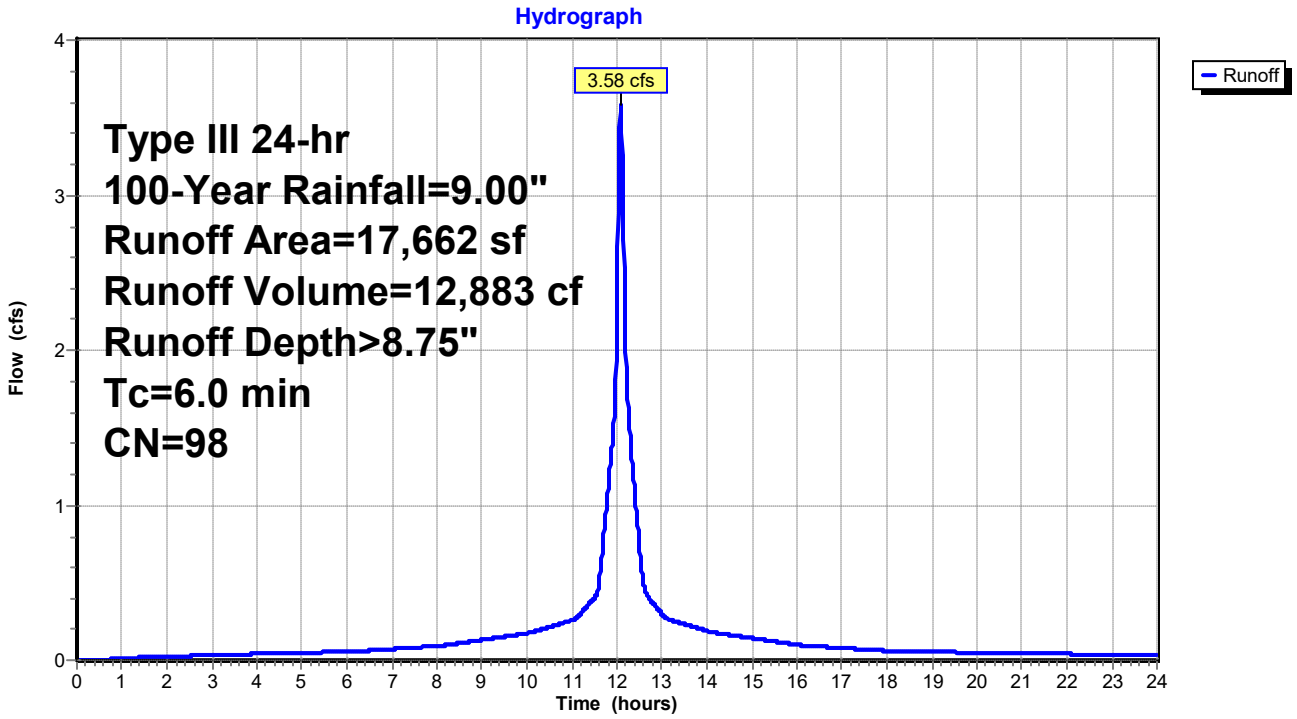
Subcatchment W-1-08: W-1-08



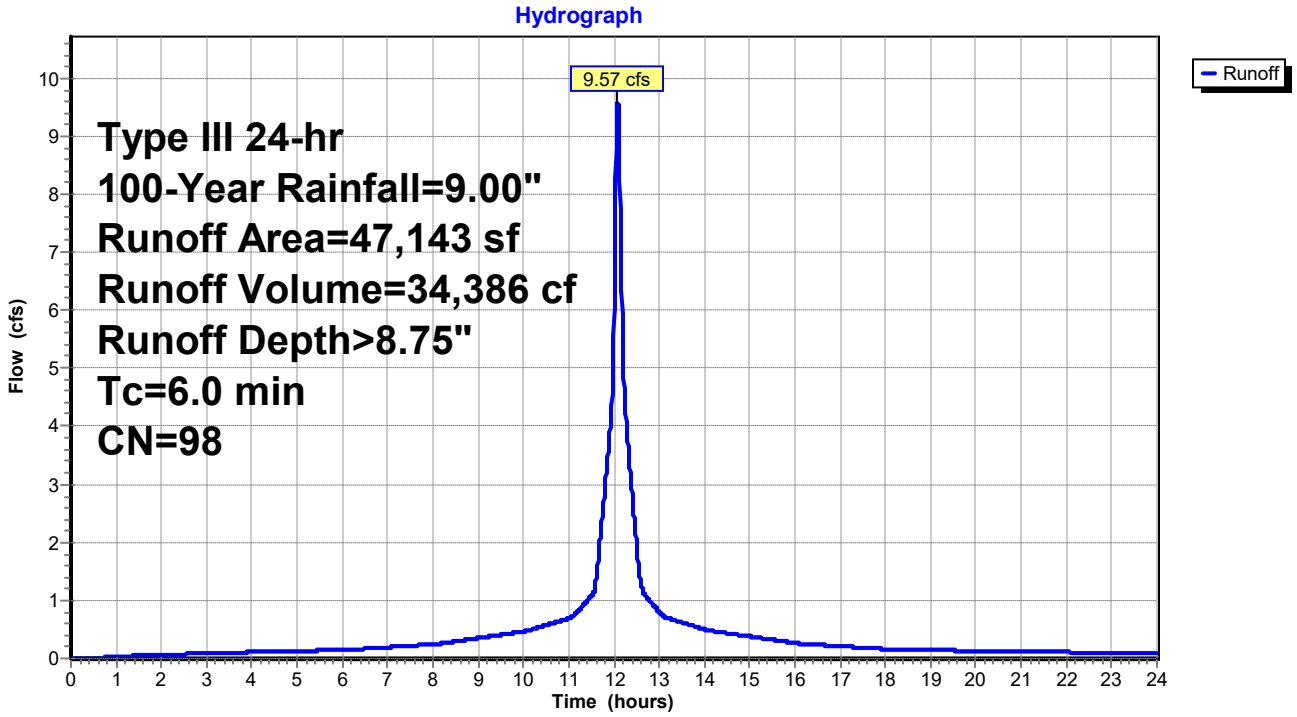
Subcatchment W-1-09: W-1-09



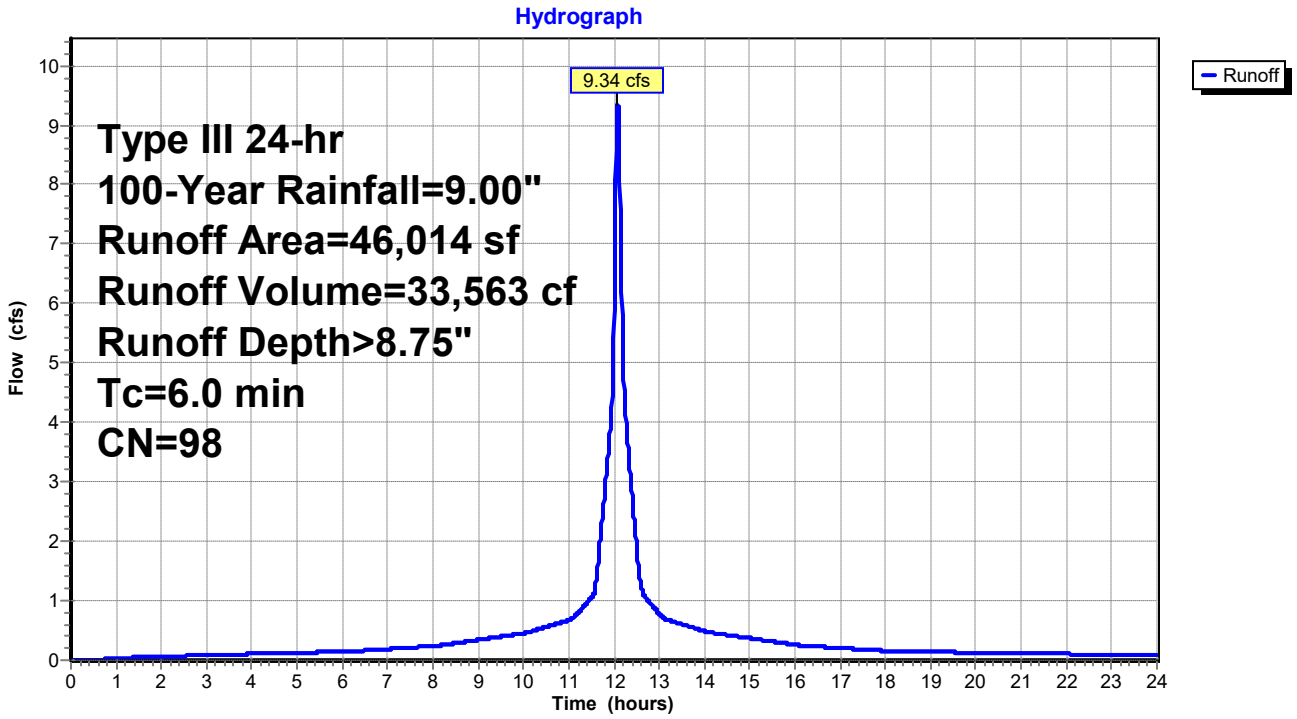
Subcatchment W-1-10: W-1-10



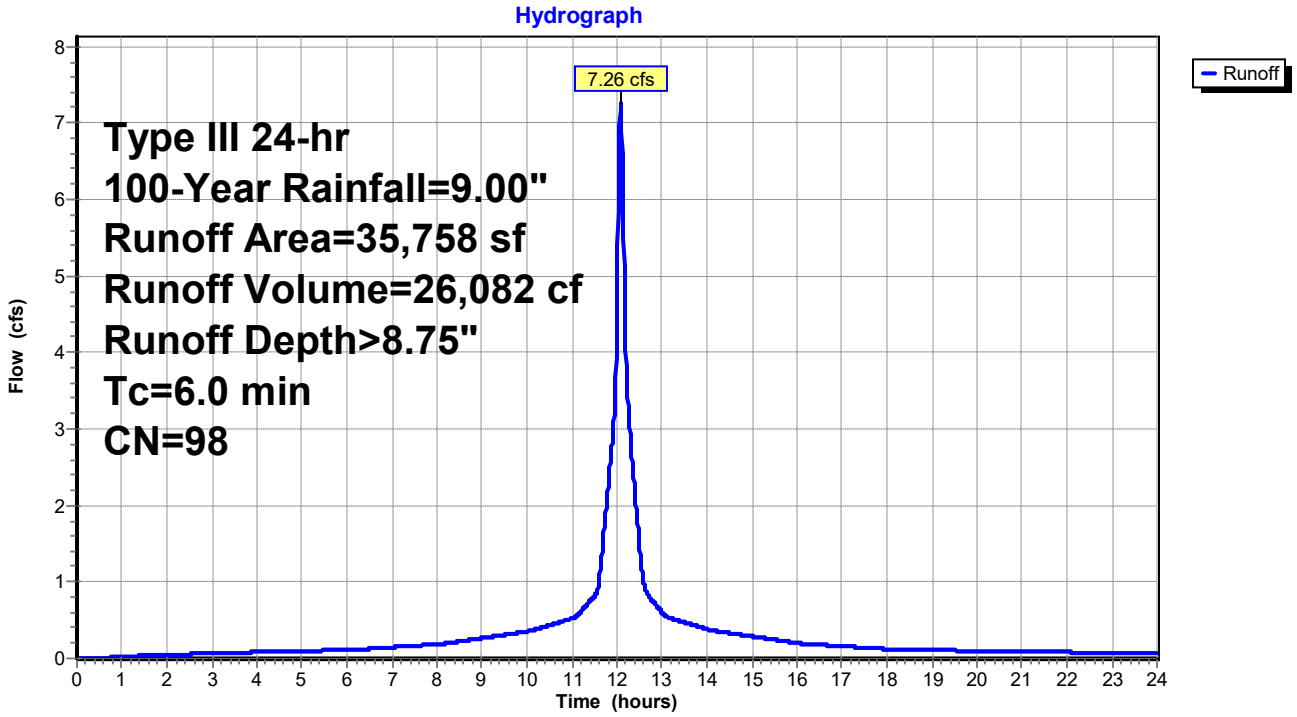
Subcatchment W-1-11: W-1-11



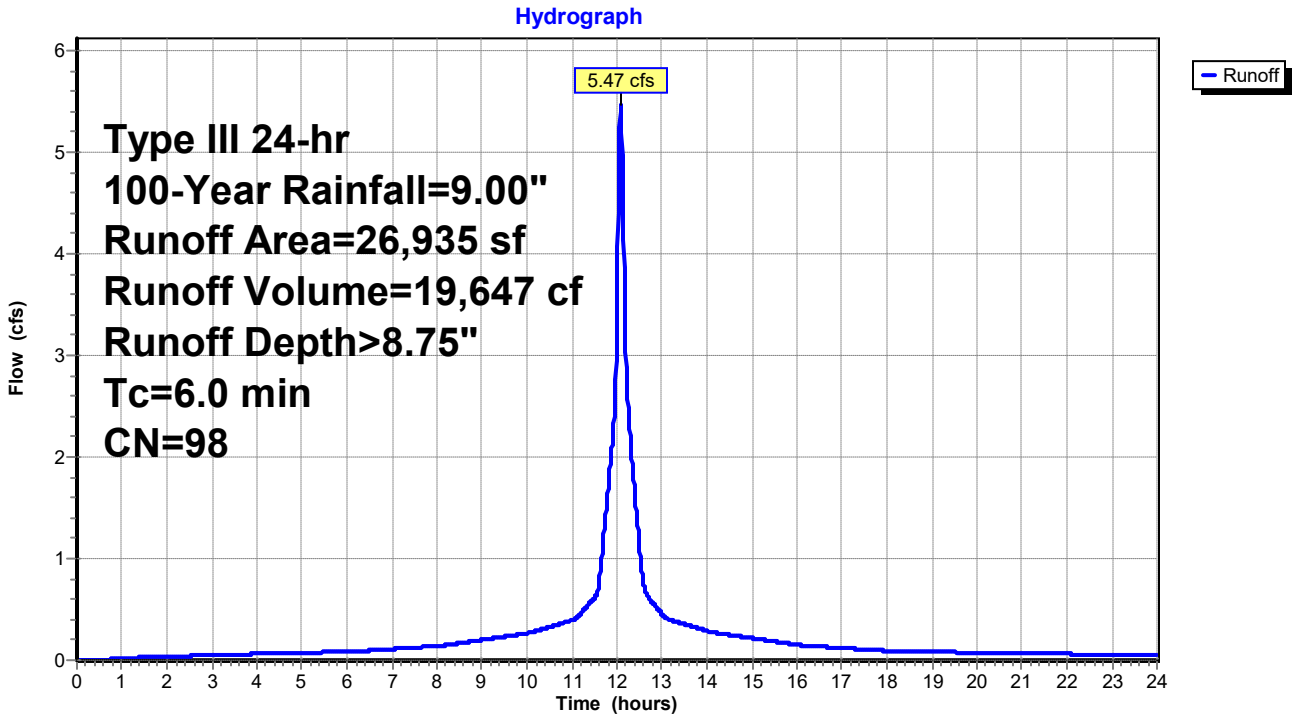
Subcatchment W-1-12: W-1-12



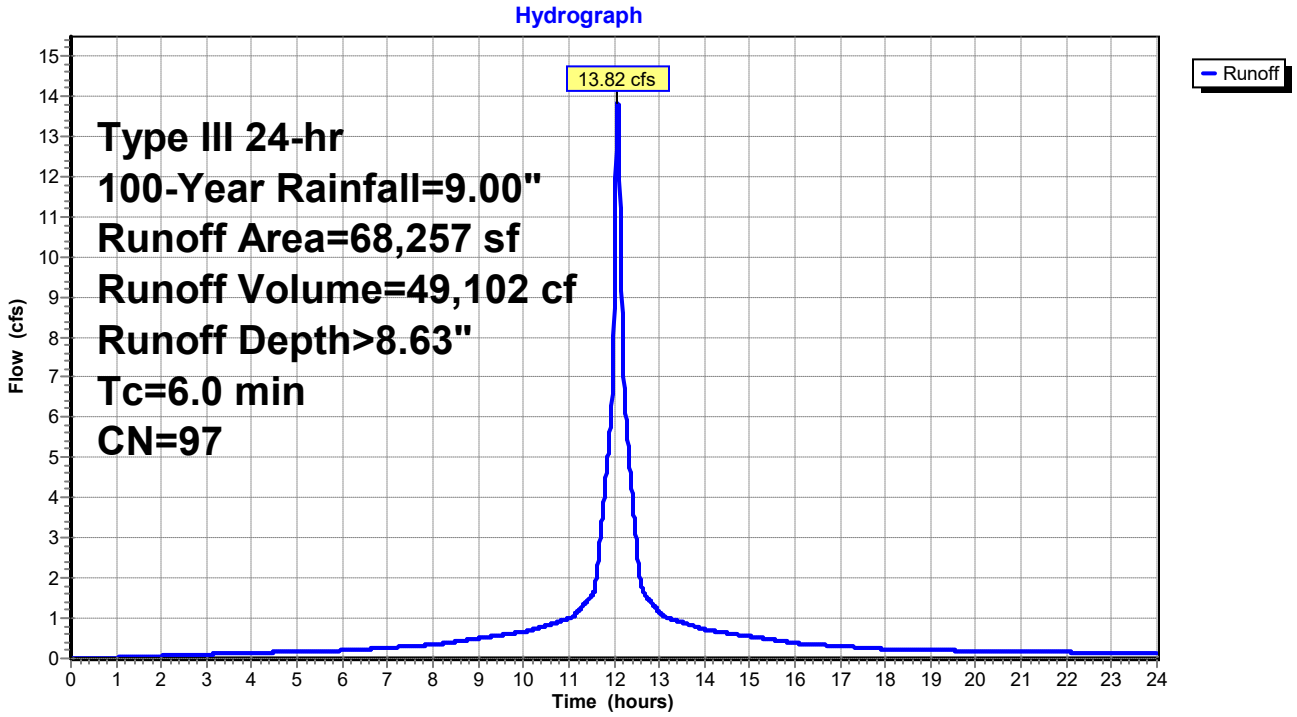
Subcatchment W-1-13: W-1-13



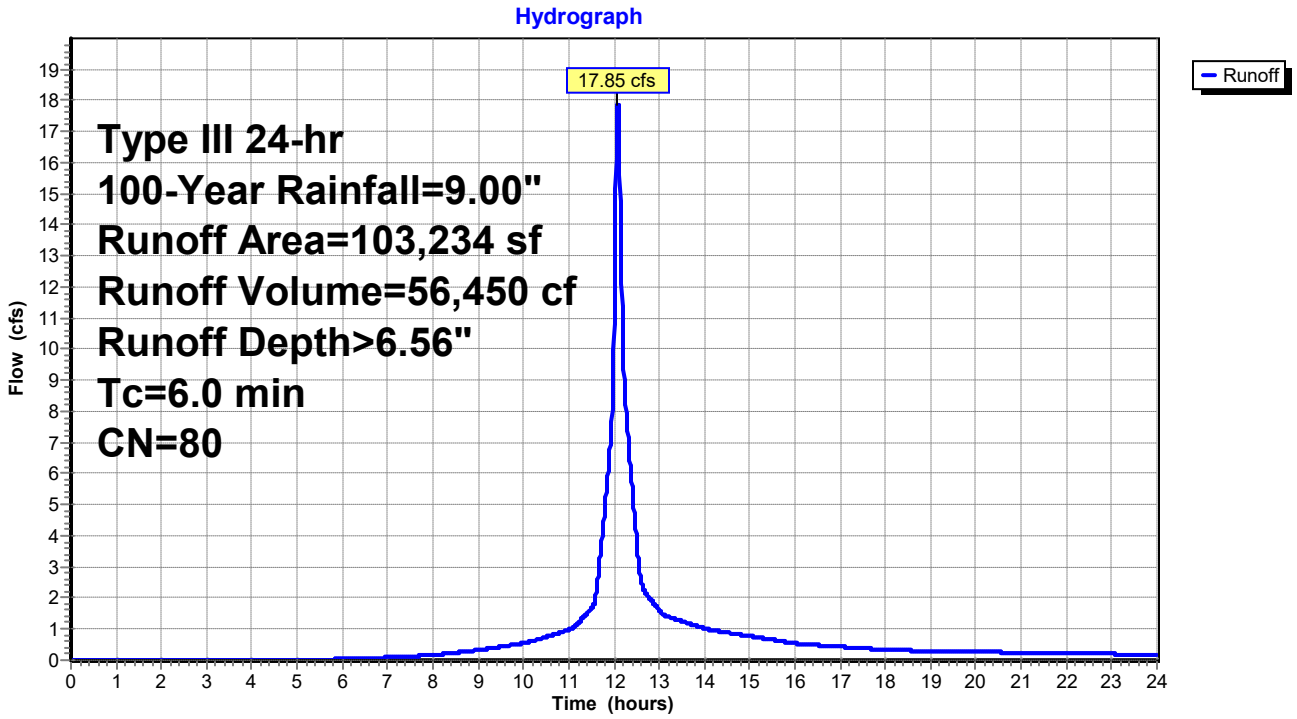
Subcatchment W-1-14: W-1-14



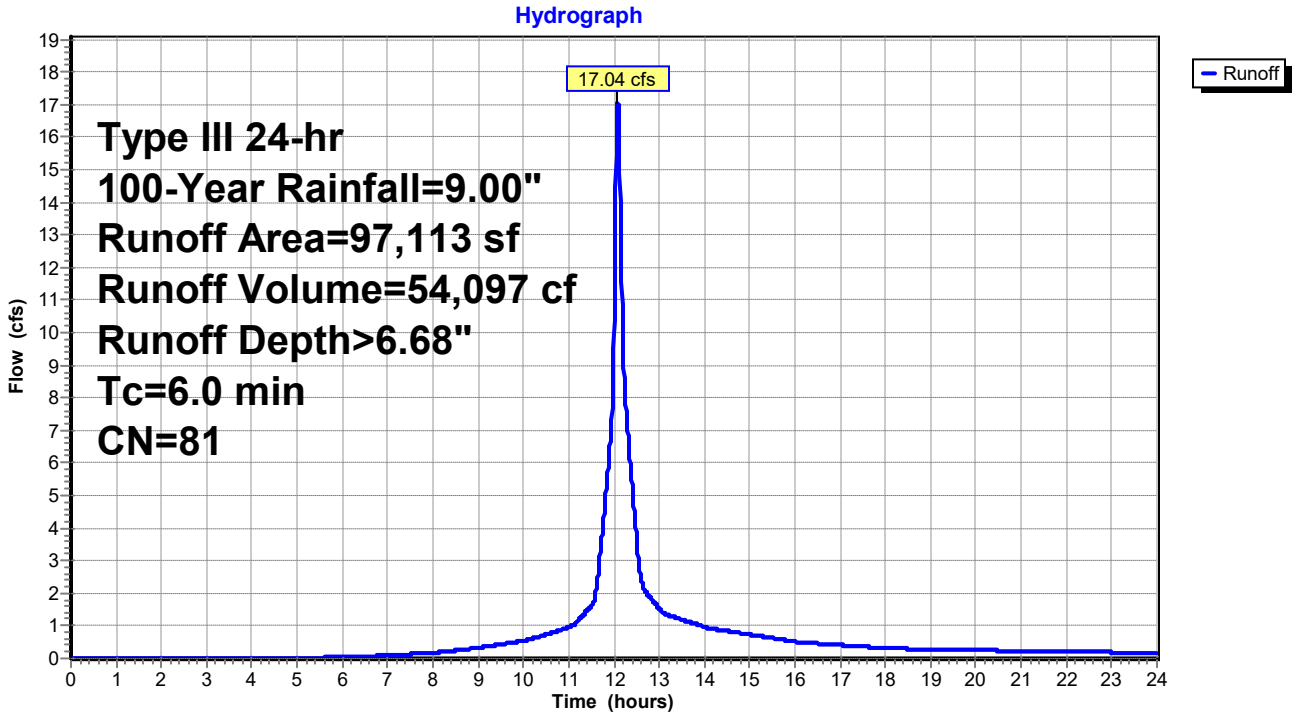
Subcatchment W-1-15: W-1-15



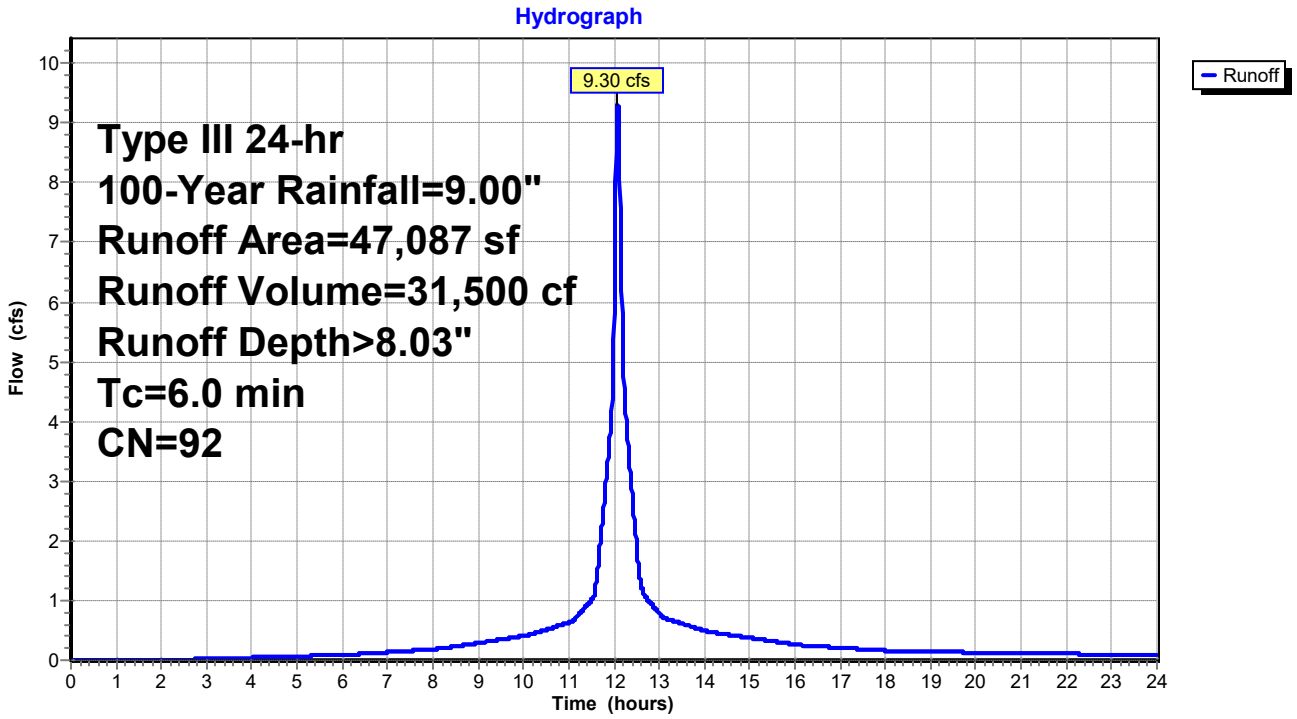
Subcatchment W-1-16: W-1-16



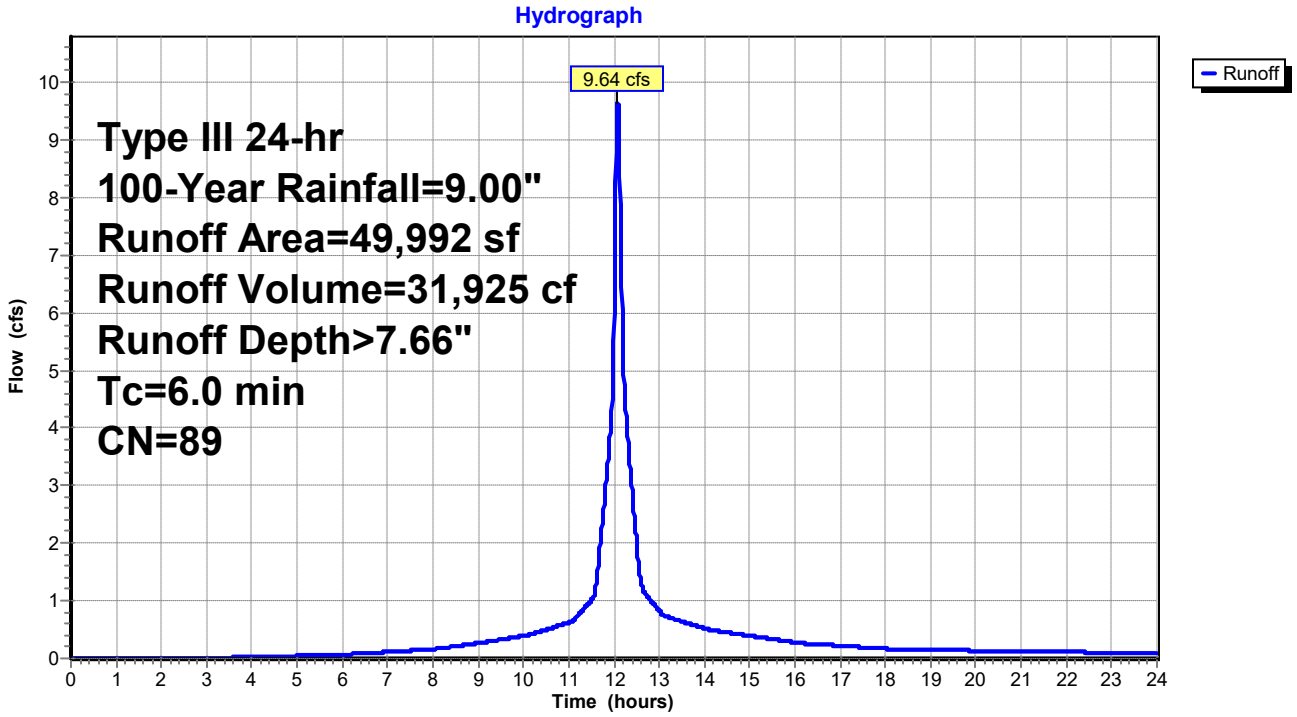
Subcatchment W-1-17: W-1-17



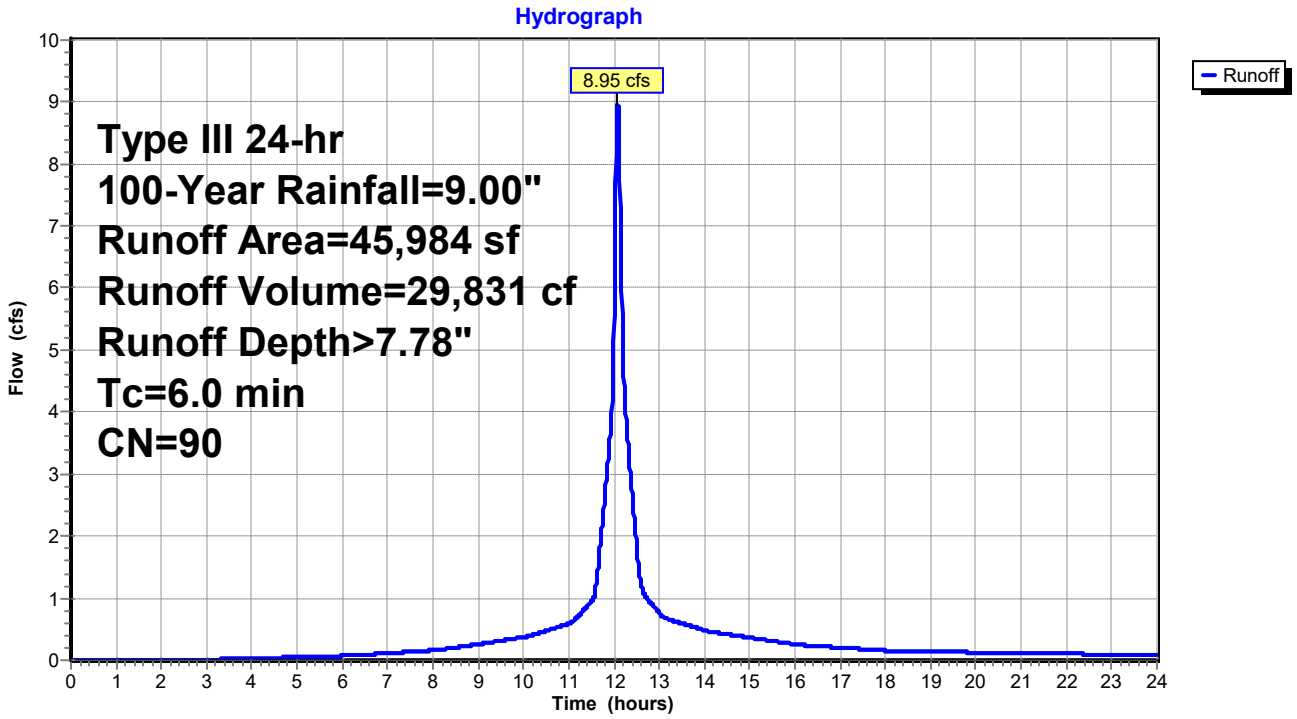
Subcatchment W-1-18: W-1-18



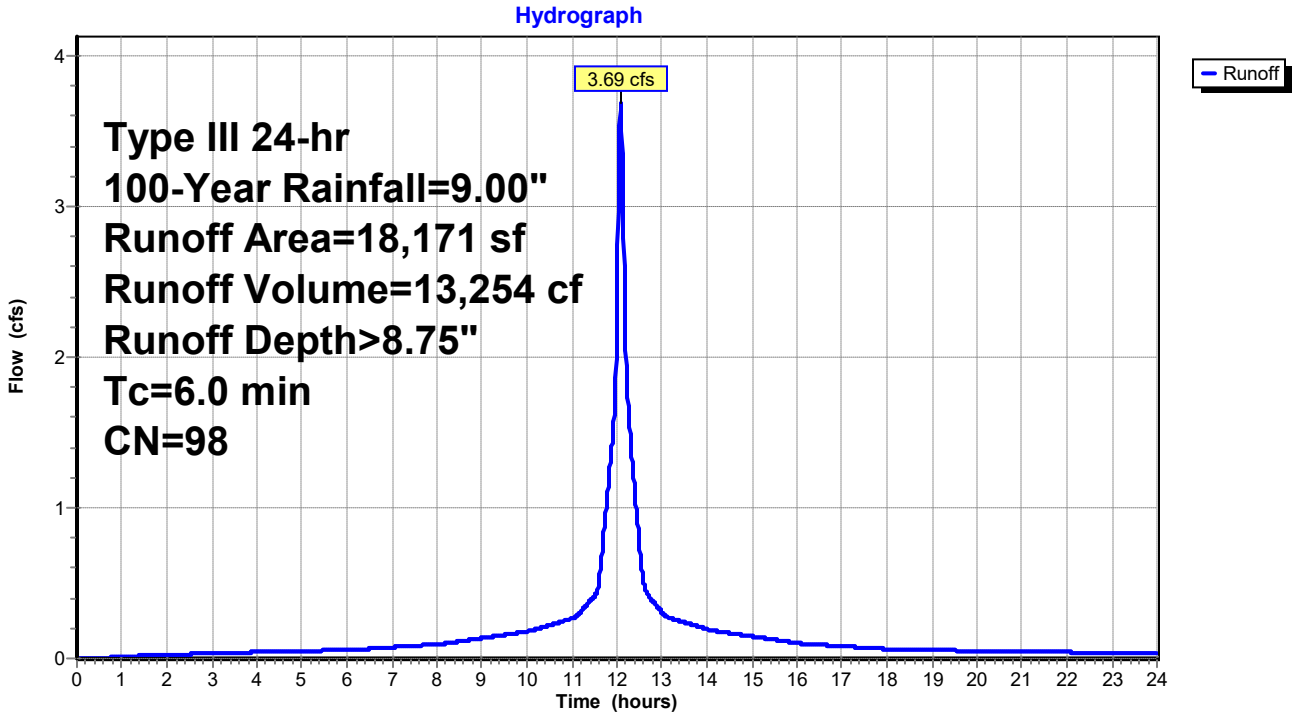
Subcatchment W-1-19: W-1-19



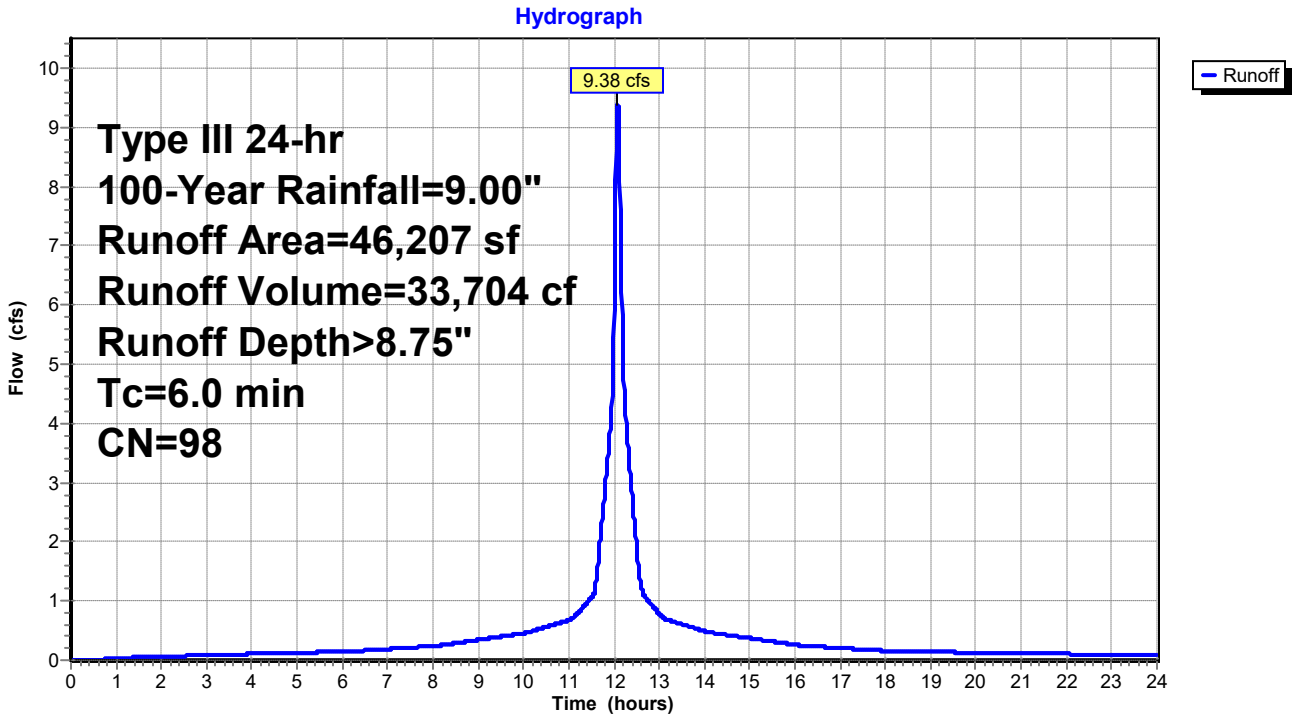
Subcatchment W-1-20: W-1-20



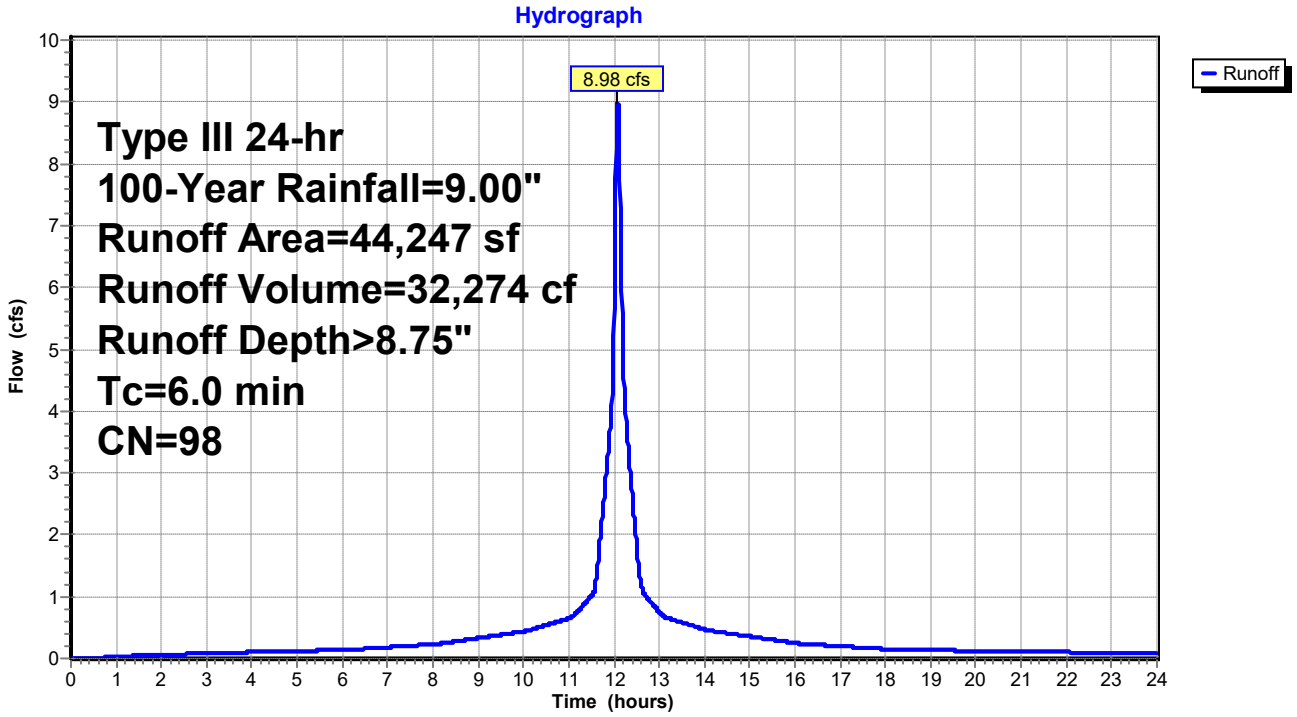
Subcatchment W-1-21: W-1-21



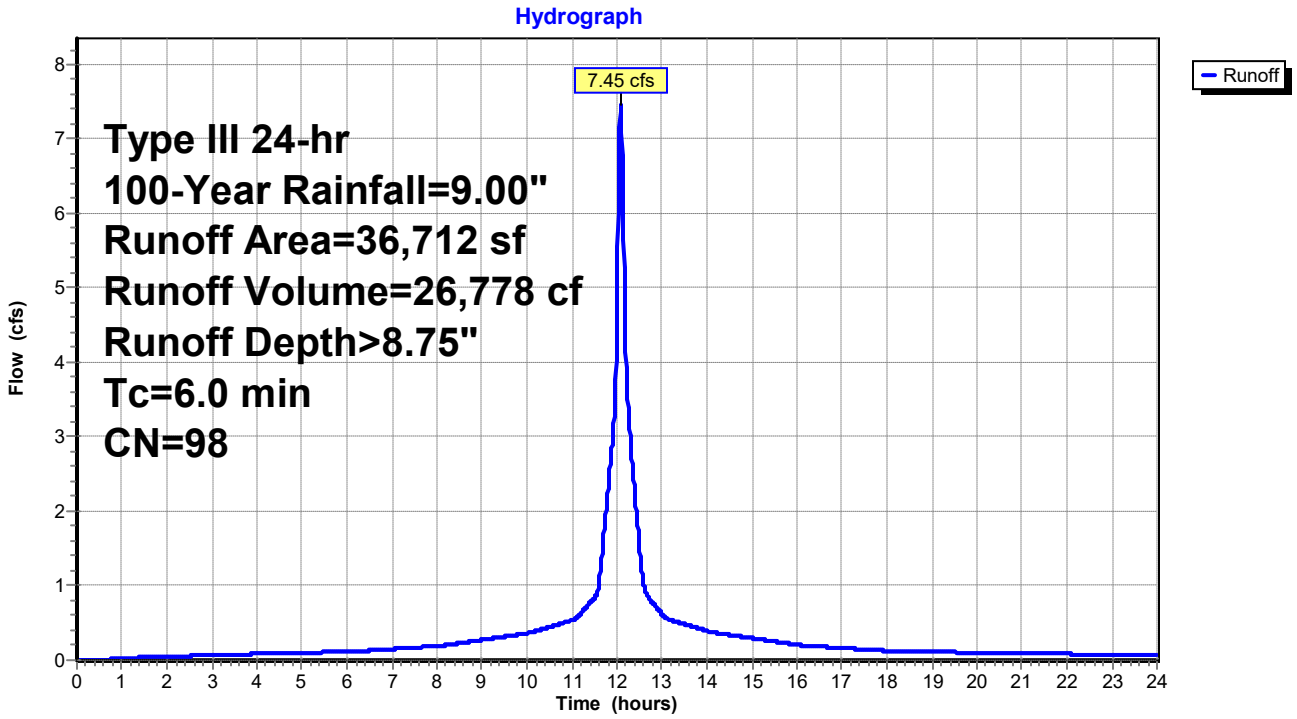
Subcatchment W-1-22: W-1-22



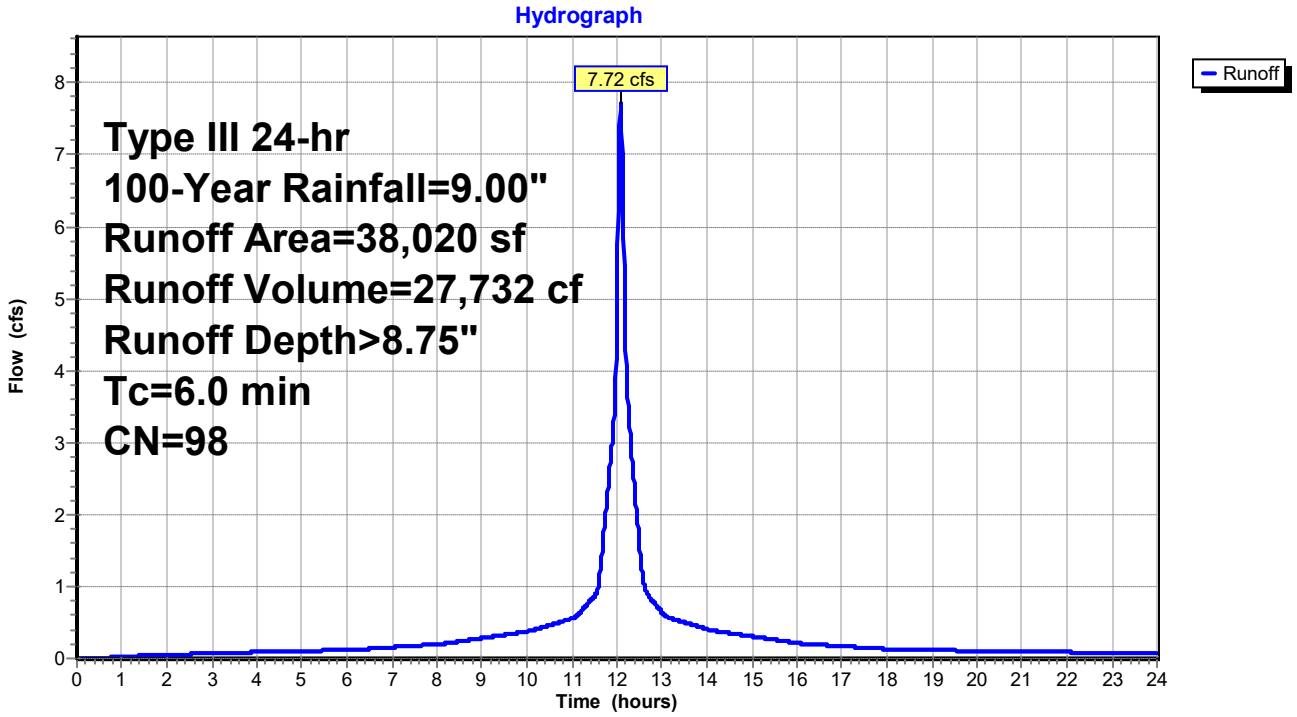
Subcatchment W-1-23: W-1-23



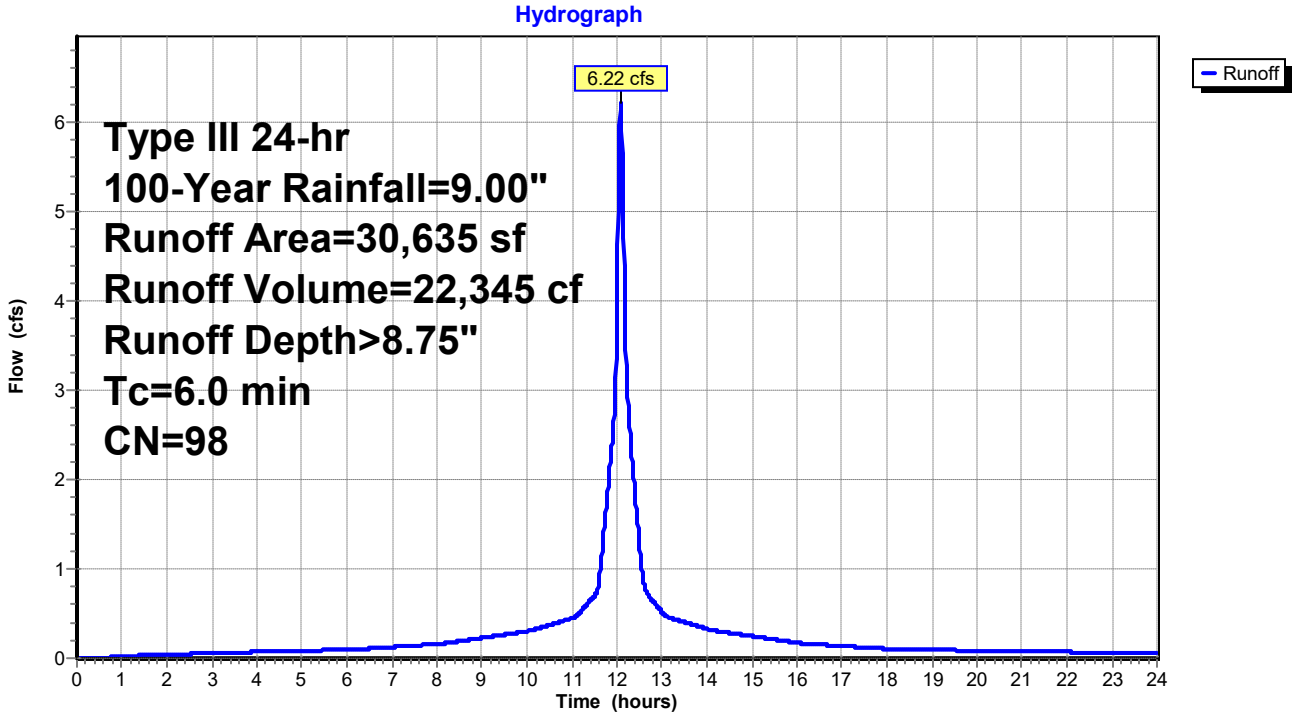
Subcatchment W-1-24: W-1-24



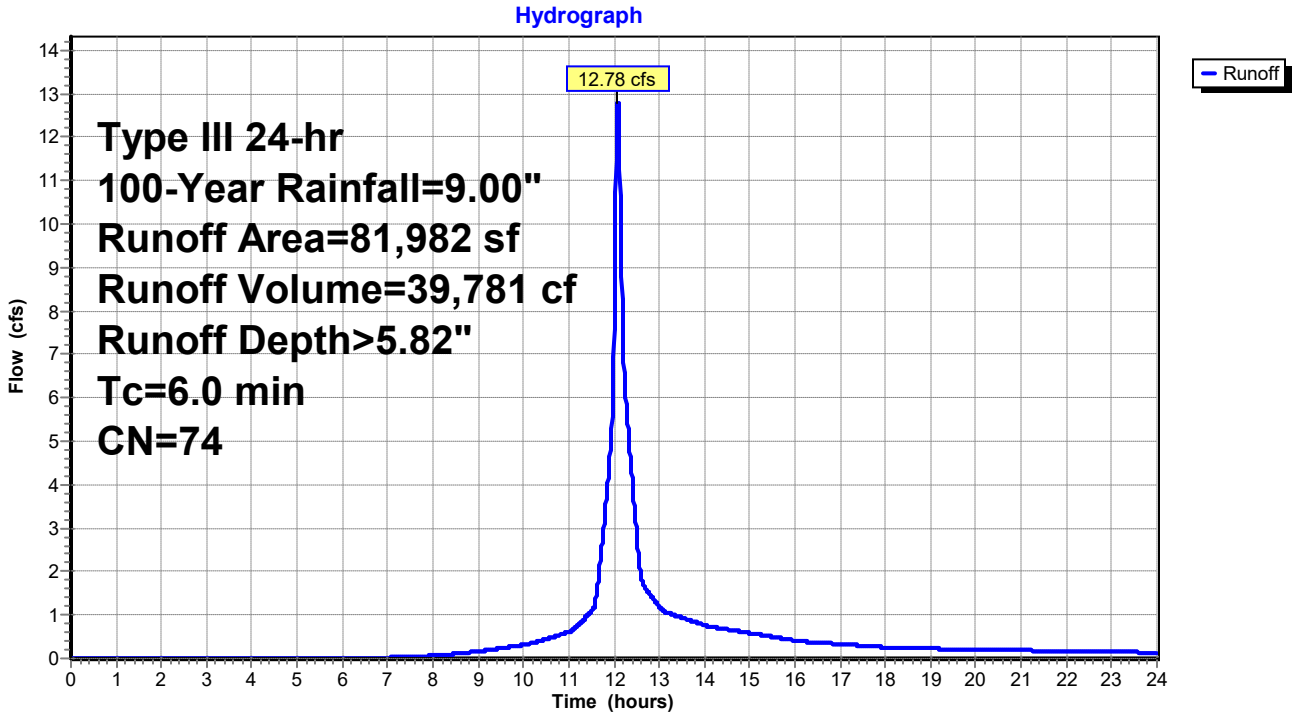
Subcatchment W-1-25: W-1-25



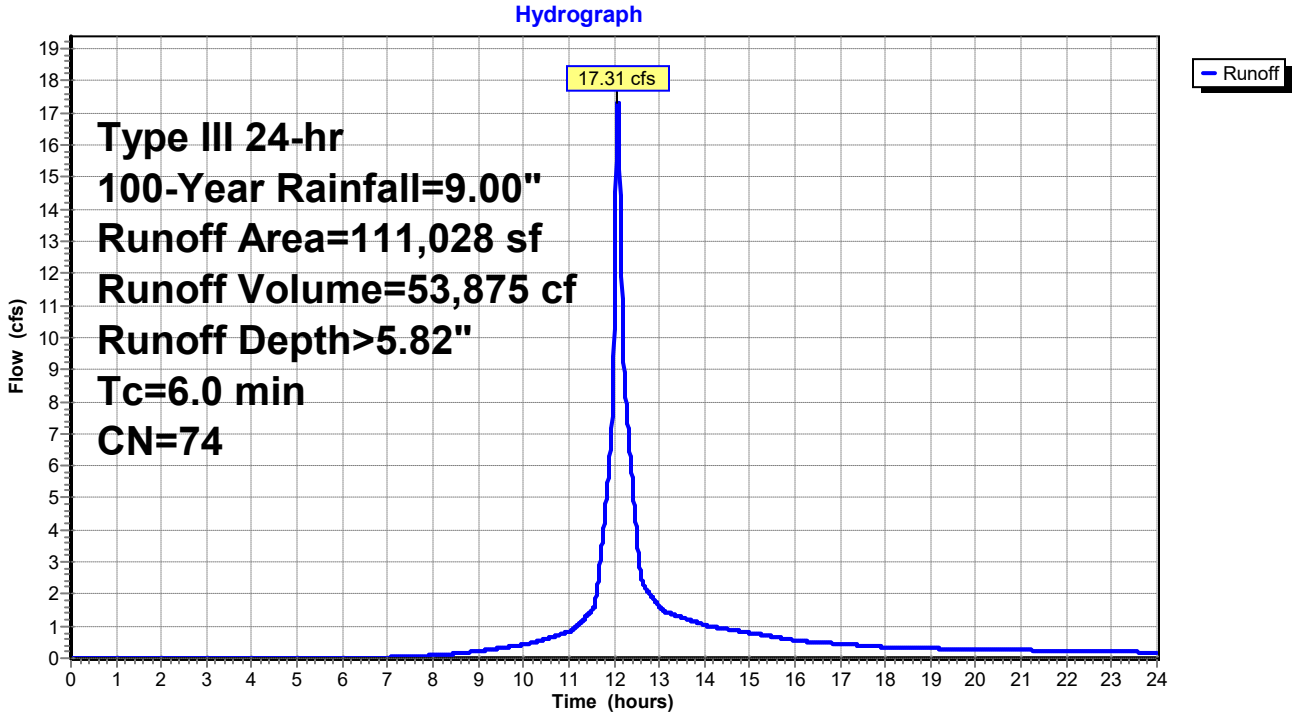
Subcatchment W-1-26: W-1-26



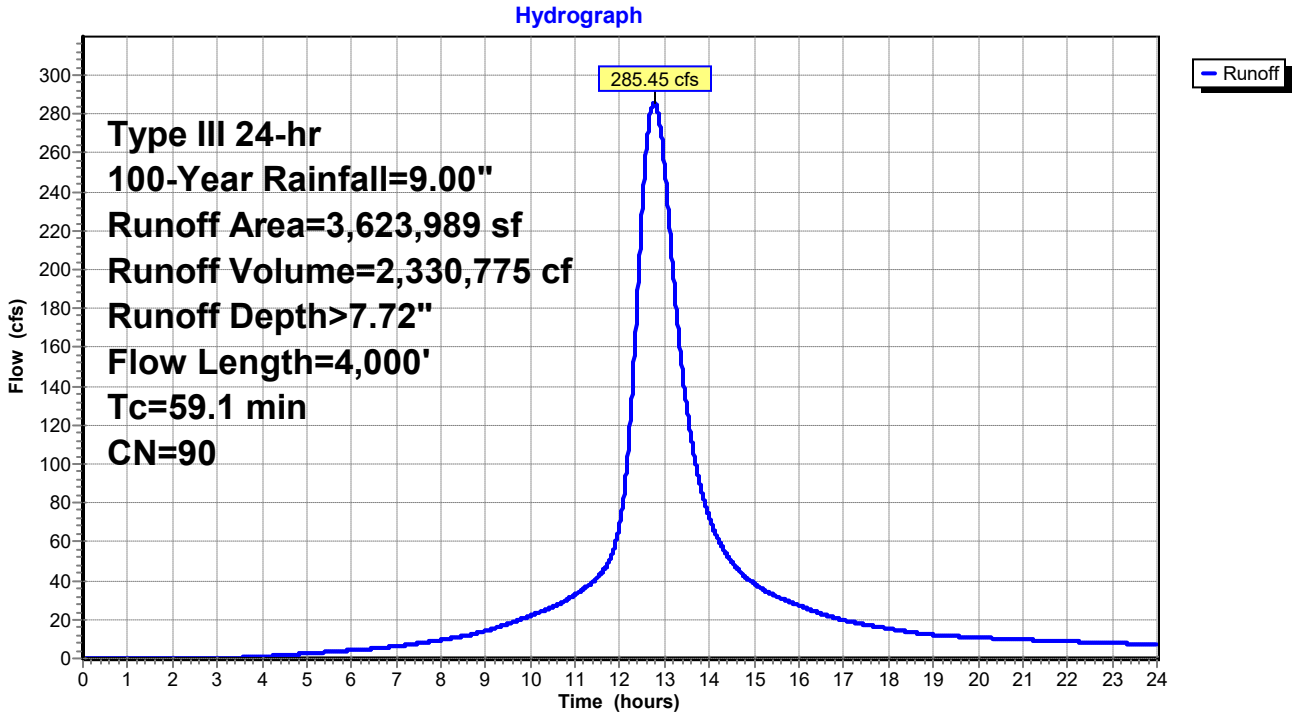
Subcatchment W-1-27: W-1-27



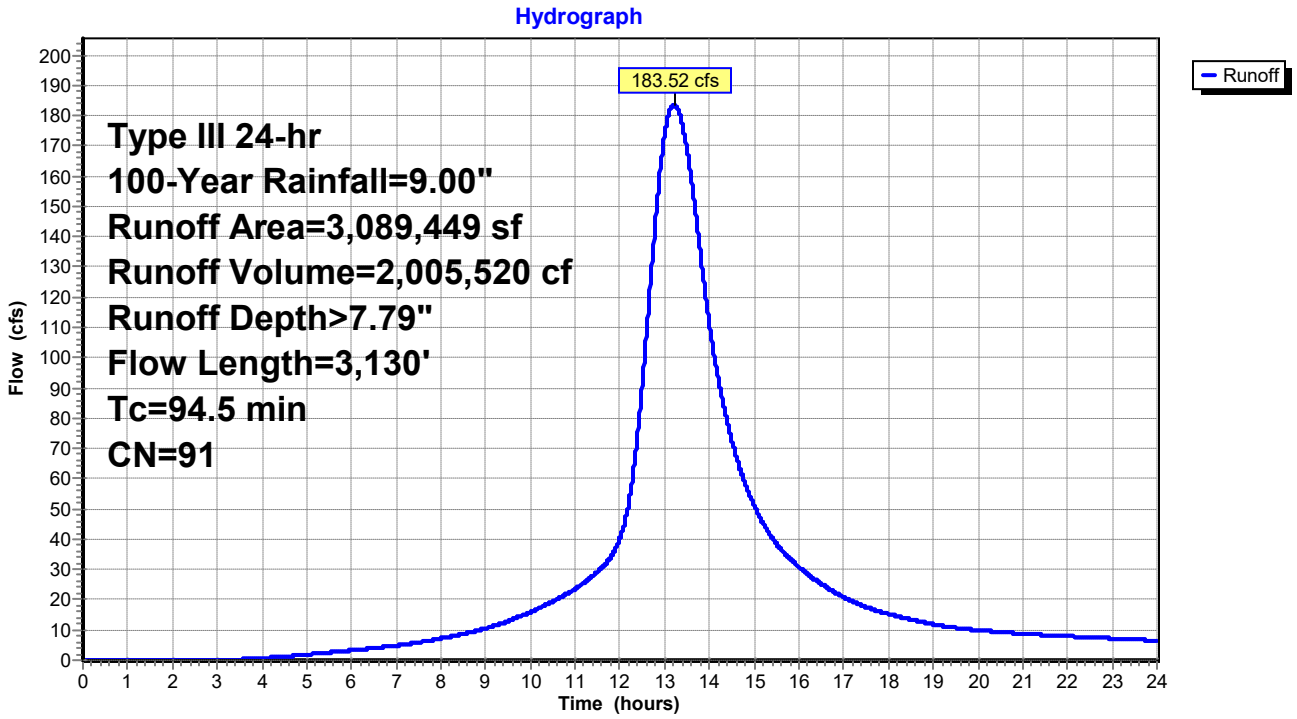
Subcatchment W-1-28: W-1-28



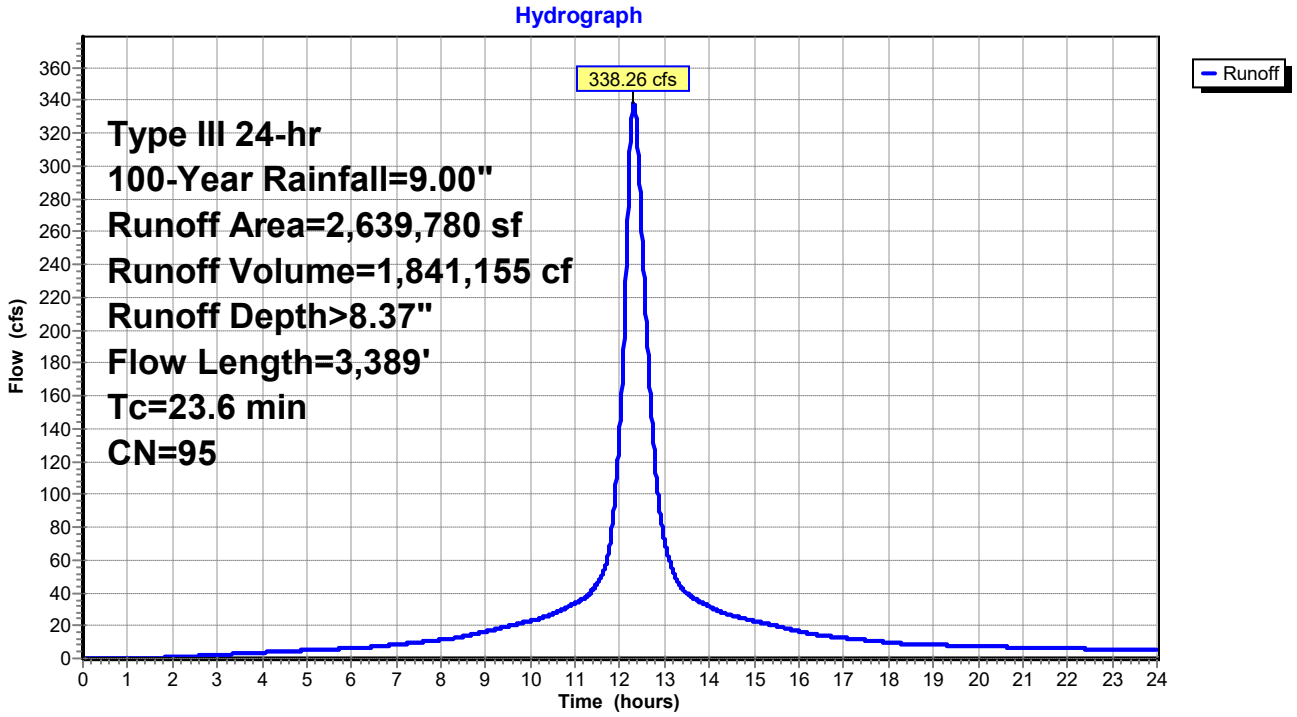
Subcatchment WS 1 PRE: WS 1 PRE



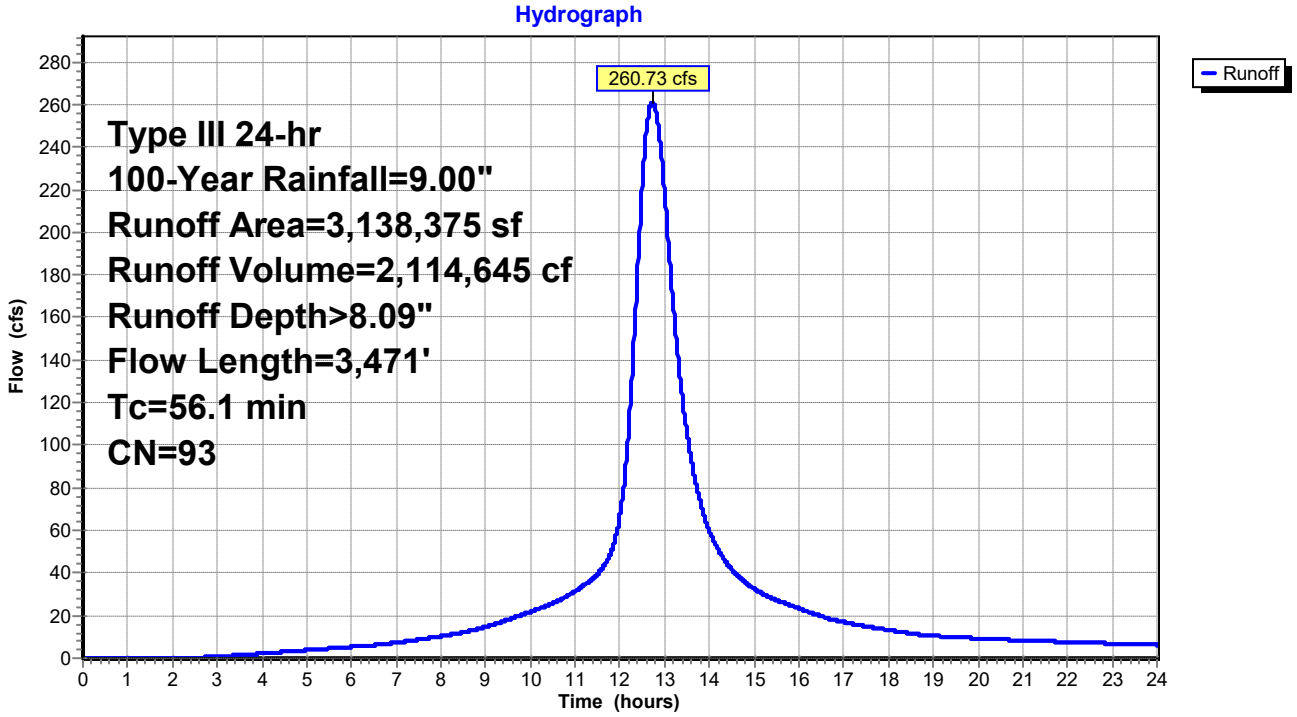
Subcatchment WS 1B POST: WS 1B POST



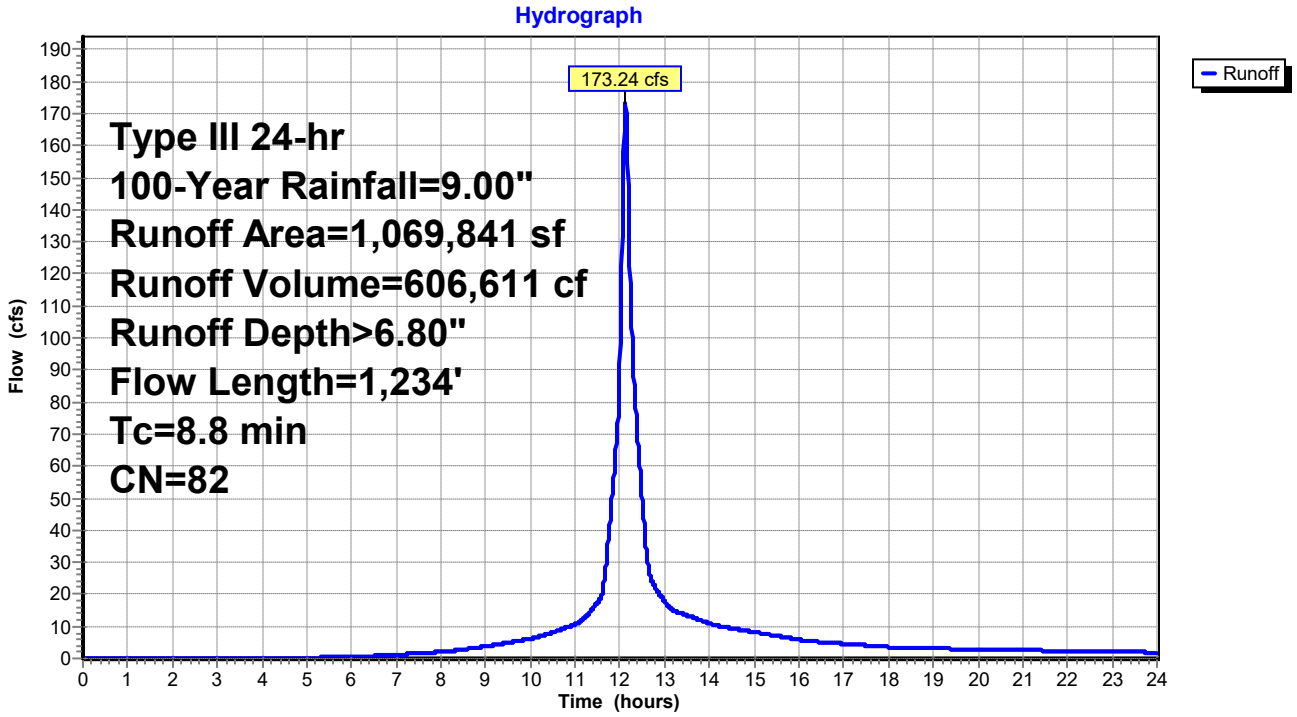
Subcatchment WS 2 POST: WS 2 POST



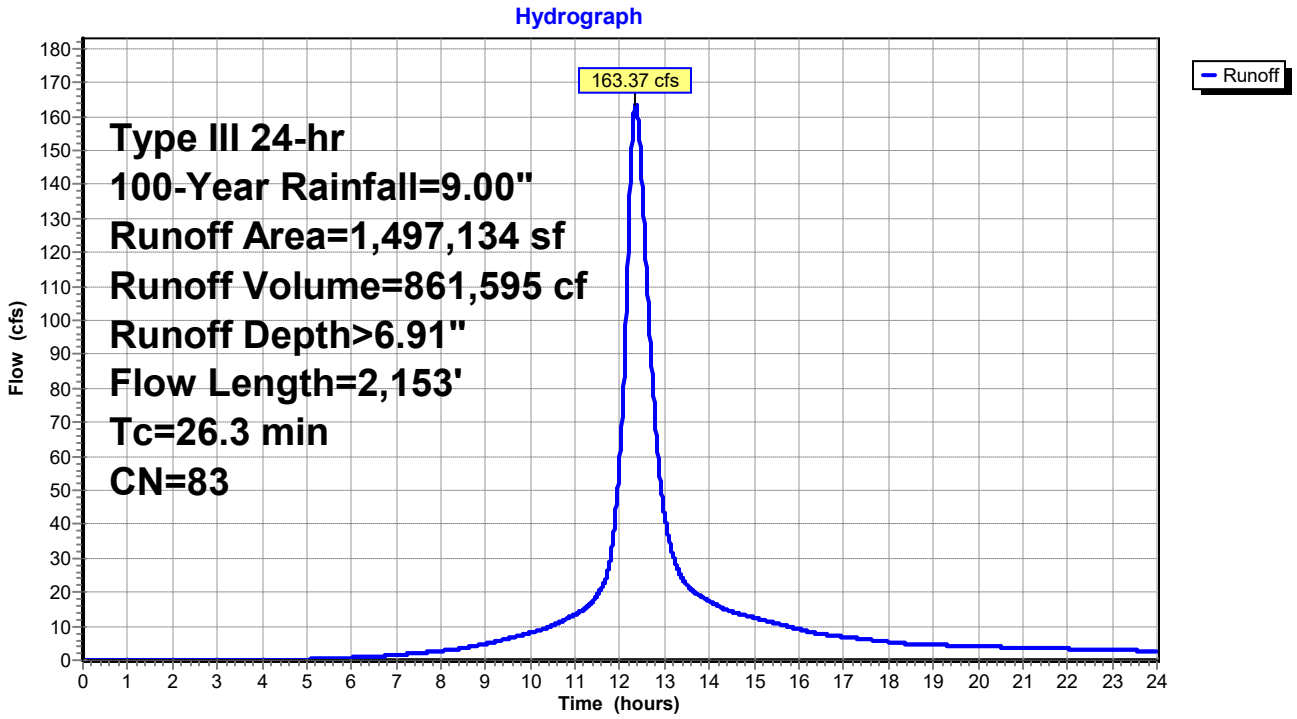
Subcatchment WS 2 PRE: WS 2 PRE



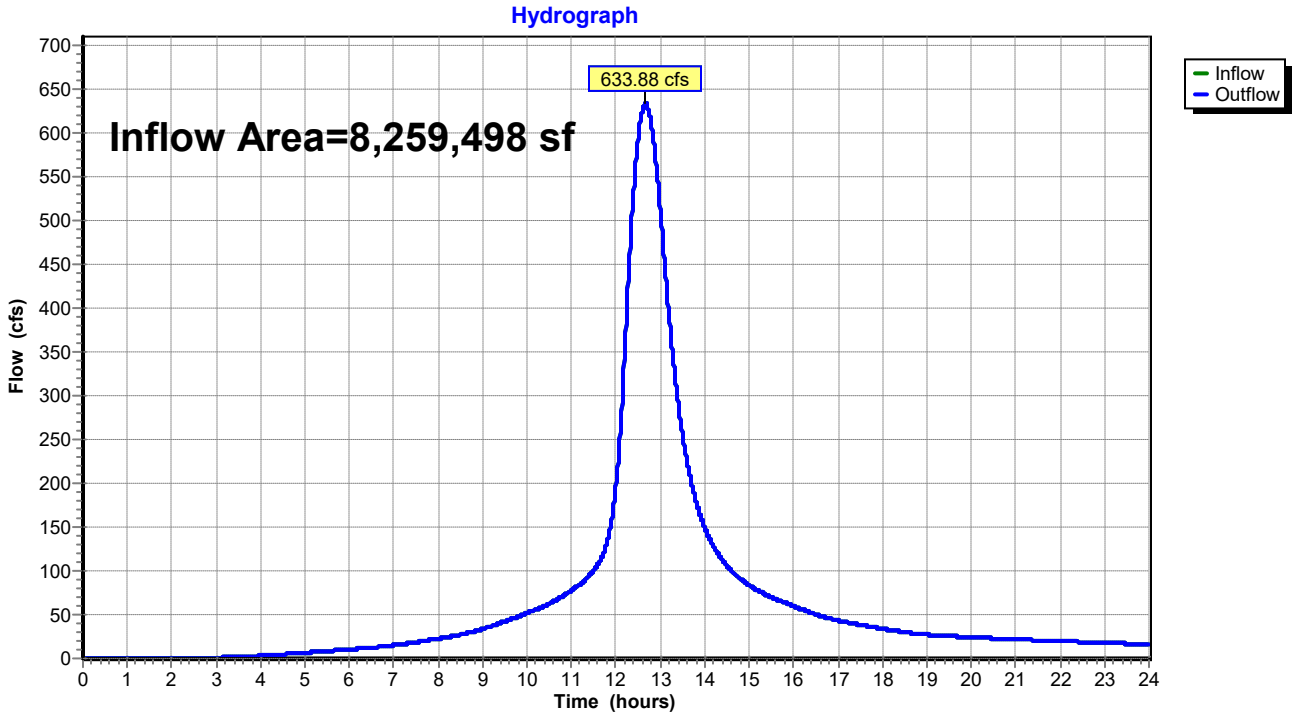
Subcatchment WS 3 POST: WS 3 POST



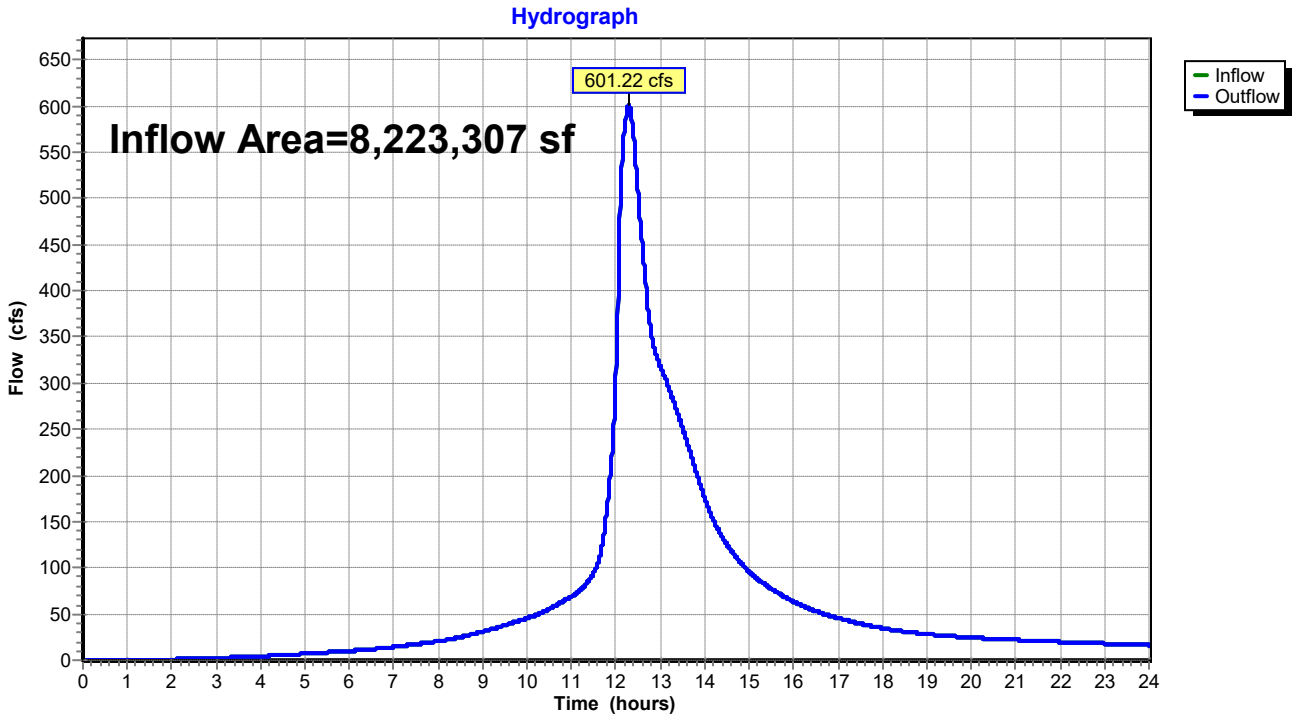
Subcatchment WS 3 PRE: WS 3 PRE



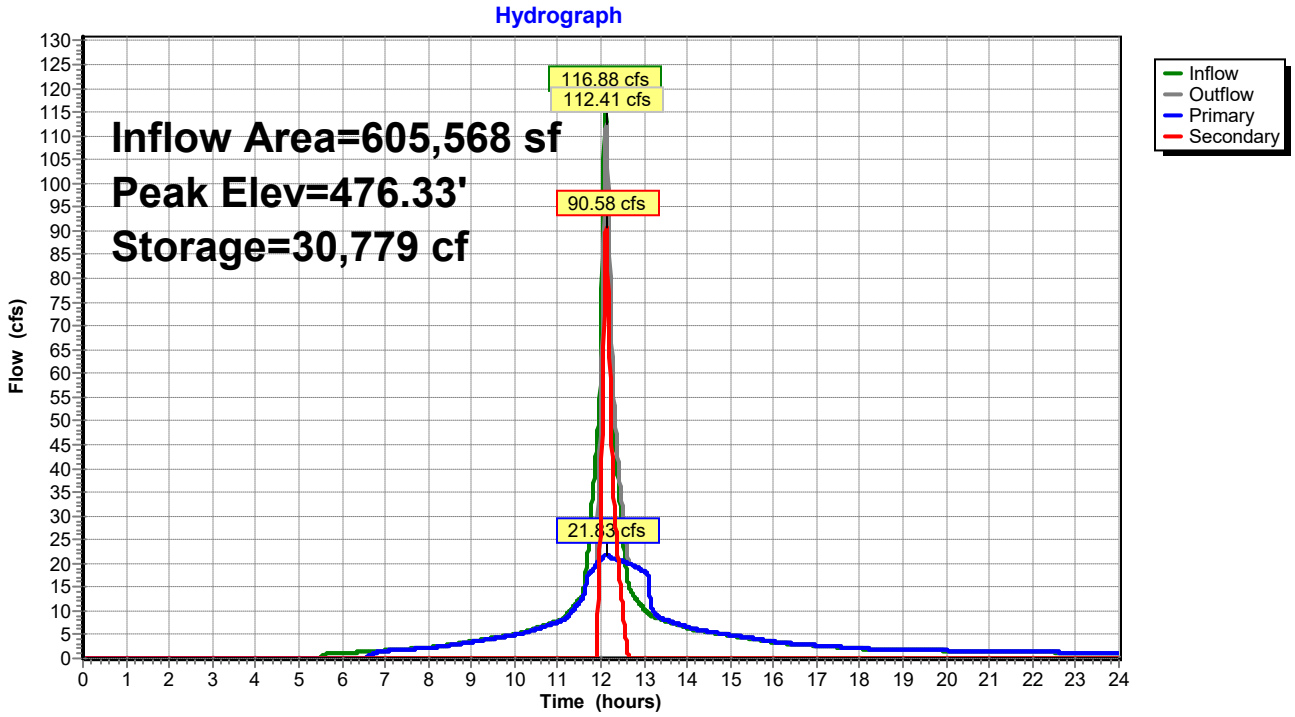
Reach DP1 MO3 PRE: DP DEC MO3 PRE



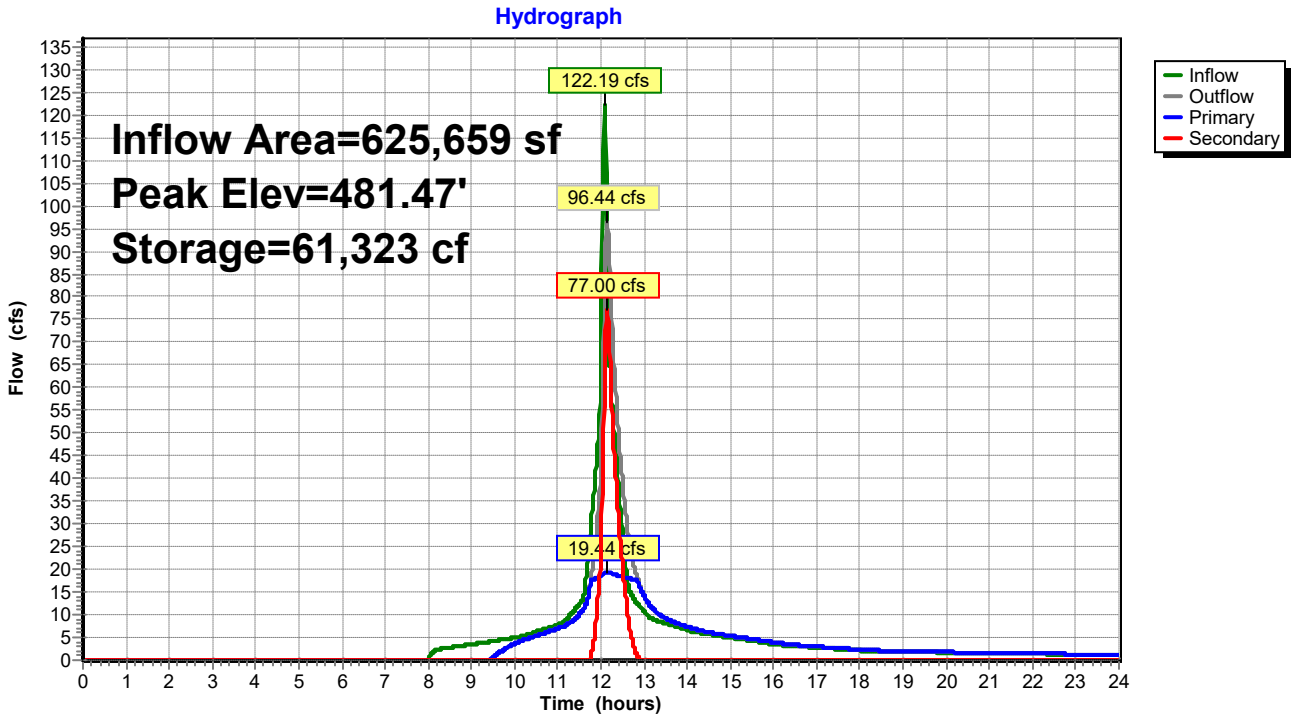
Reach MO3 & YB: DEC MO3/YOUNG'S BROOK



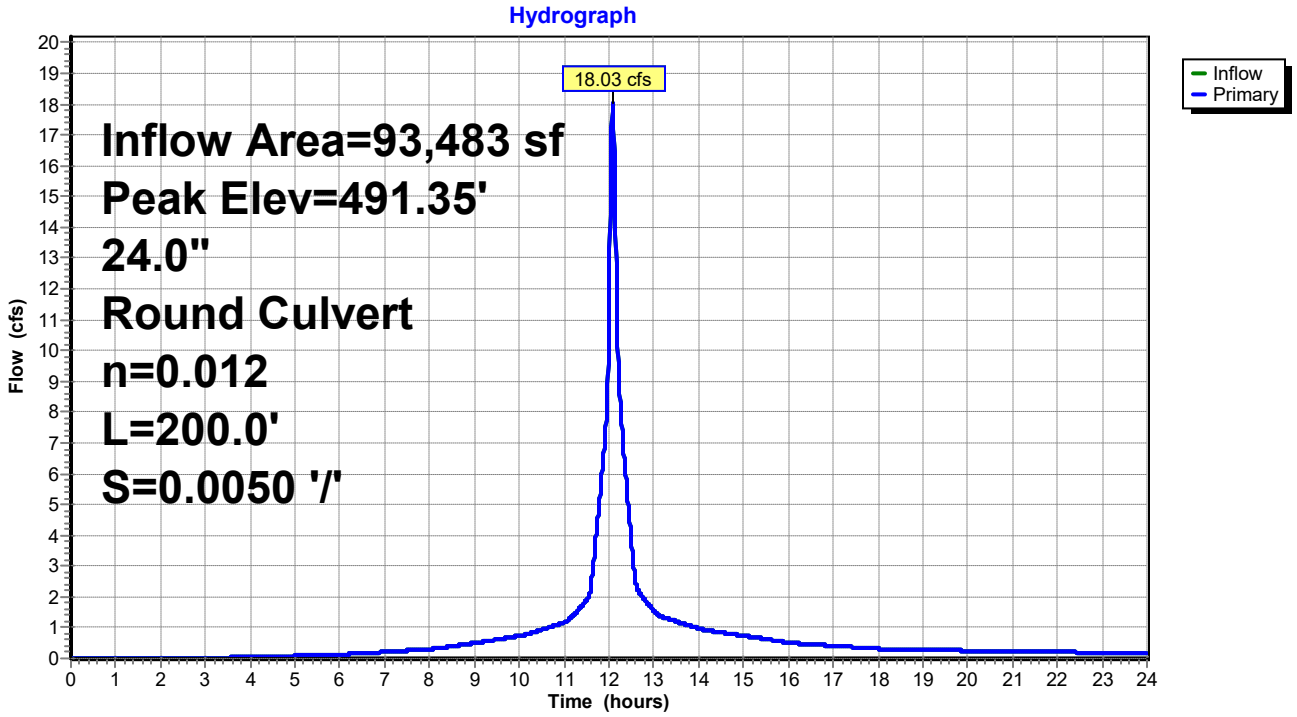
Pond BR1: BIORETENTION 1



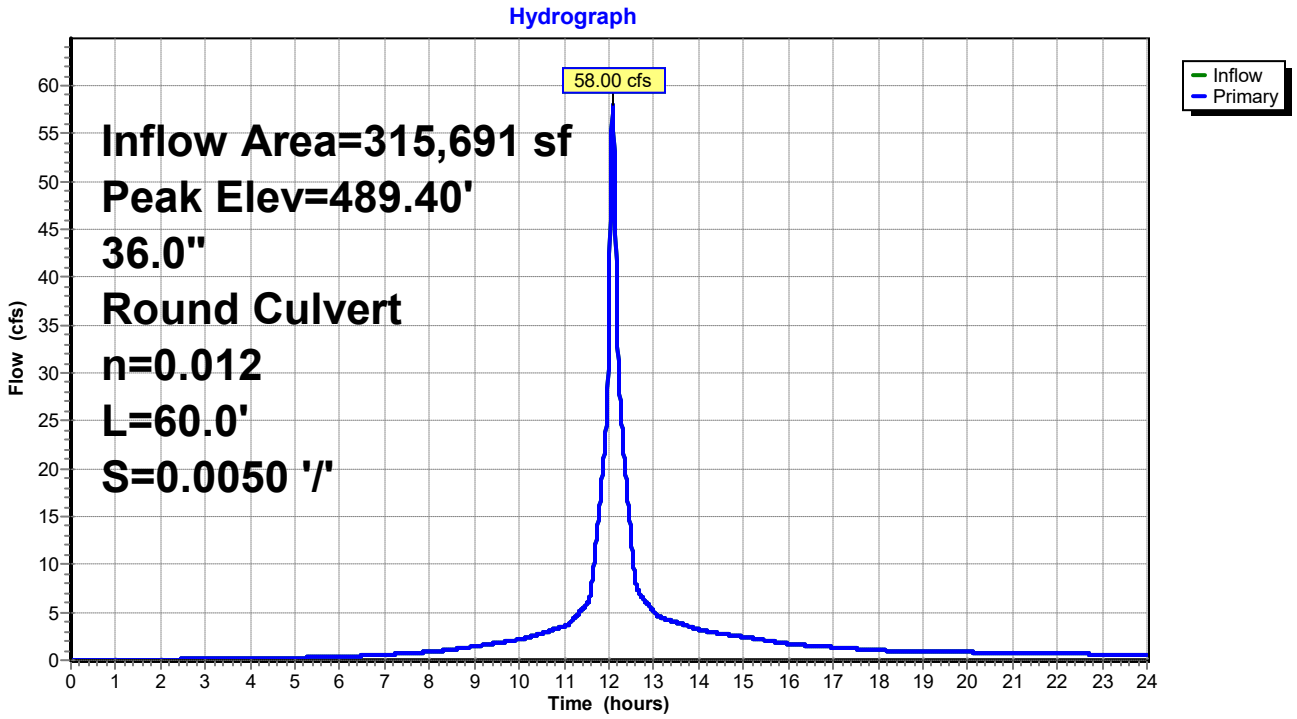
Pond BR2: BIORETENTION 2



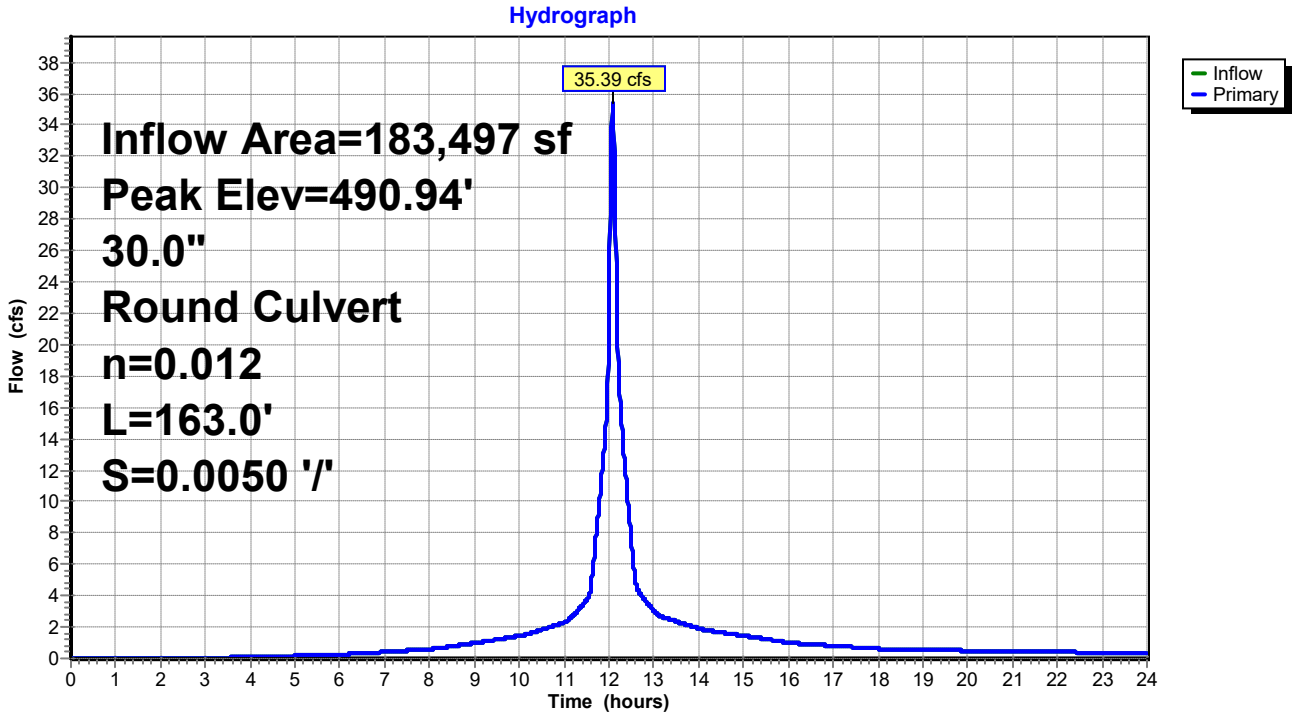
Pond CB 1: CB 1



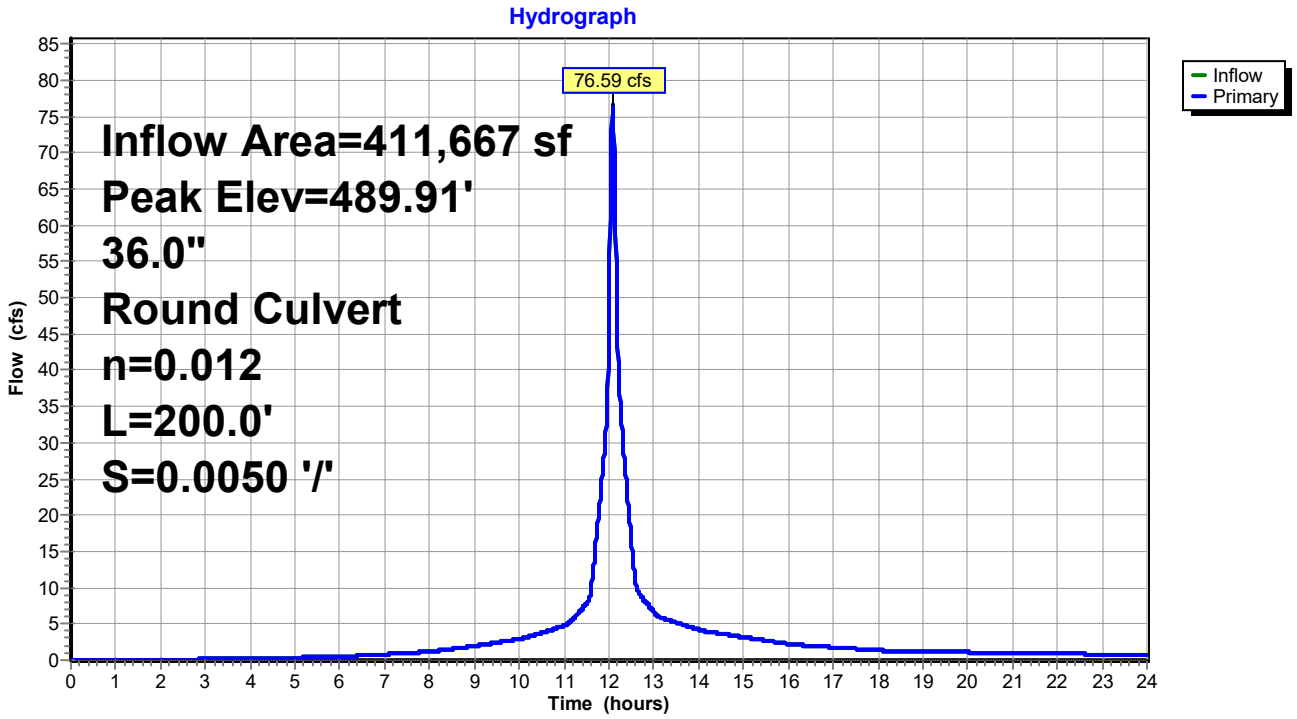
Pond CB 19: CB-19



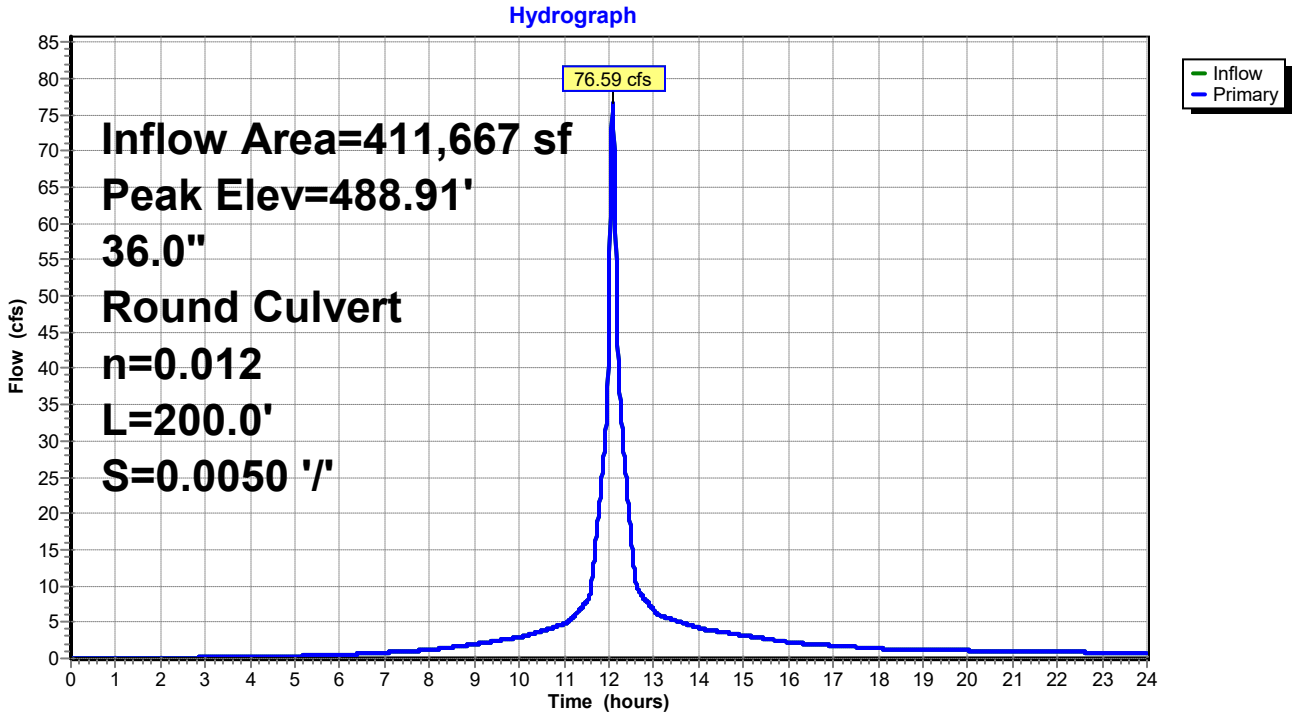
Pond CB 2: CB 2



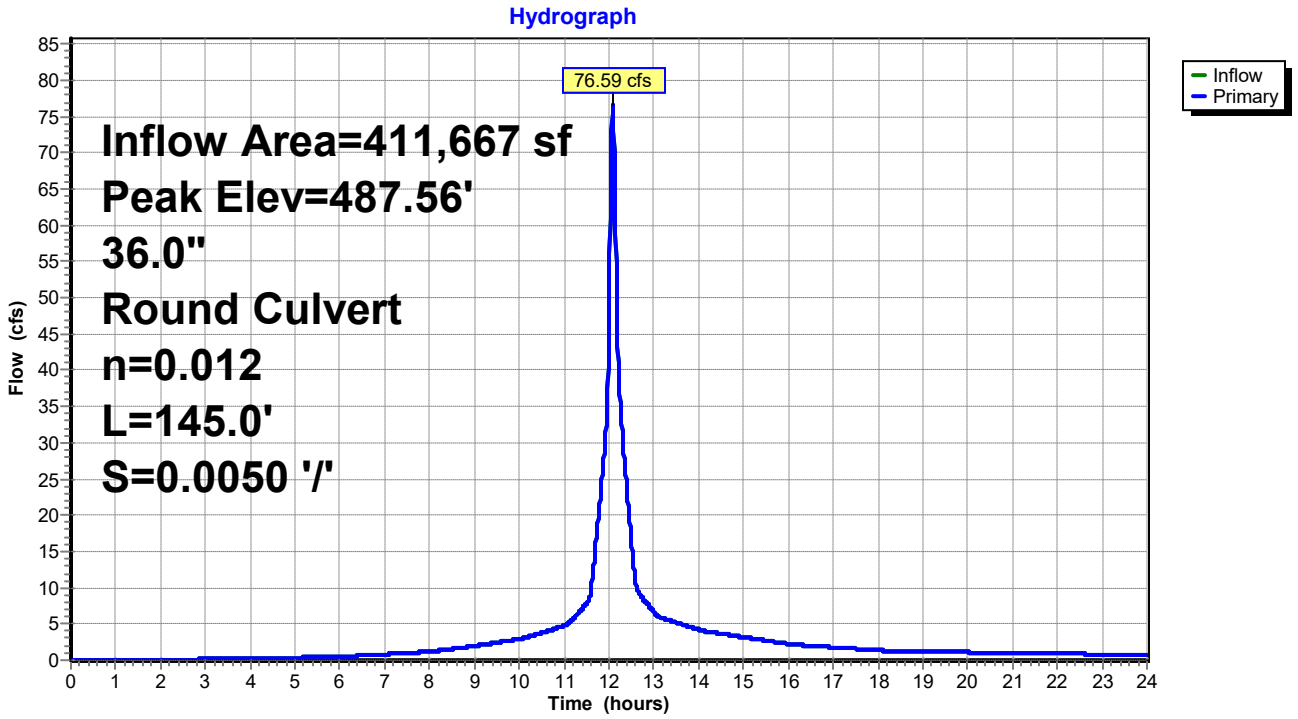
Pond CB 21: CB 21



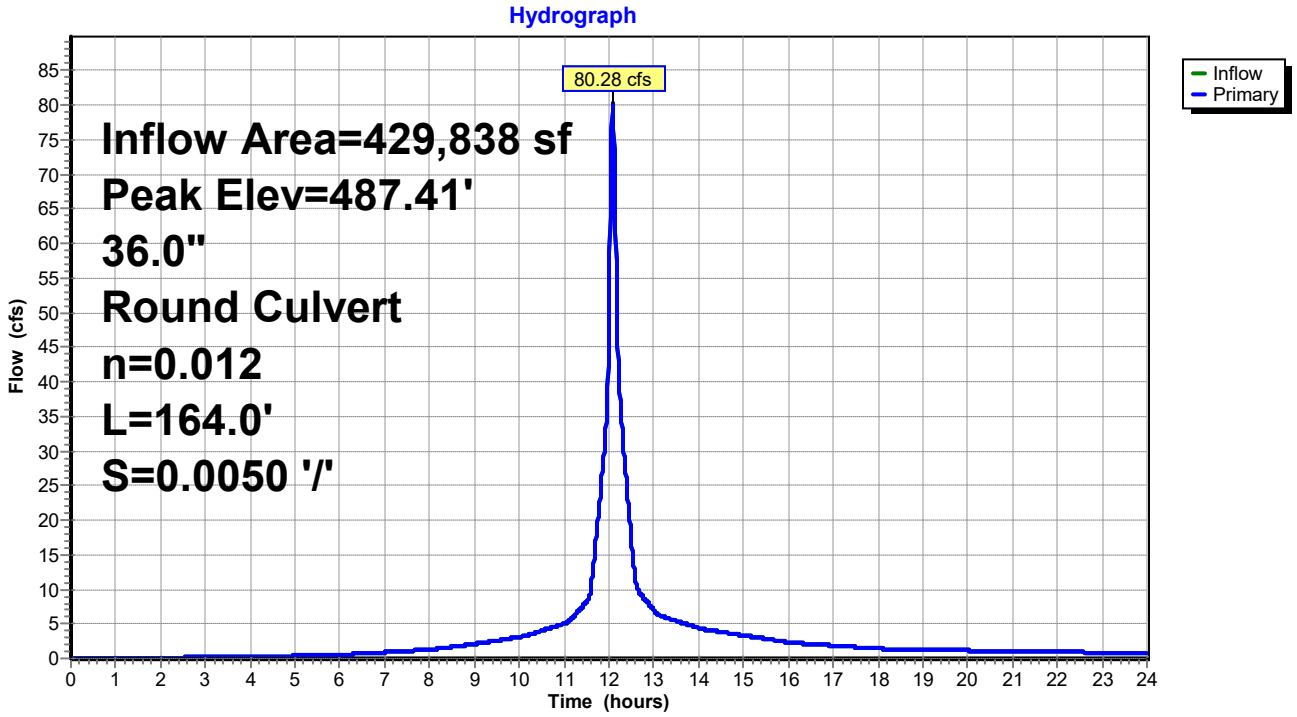
Pond CB 22: CB 22



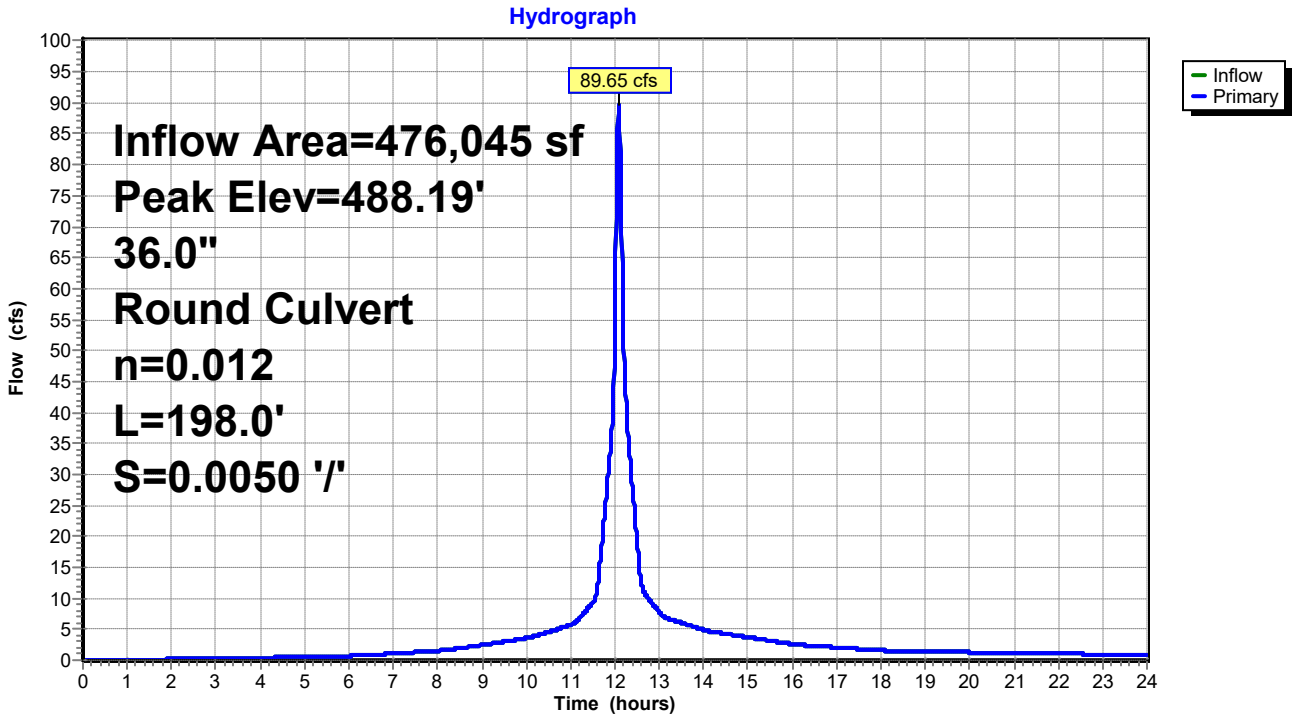
Pond CB 23: CB 23



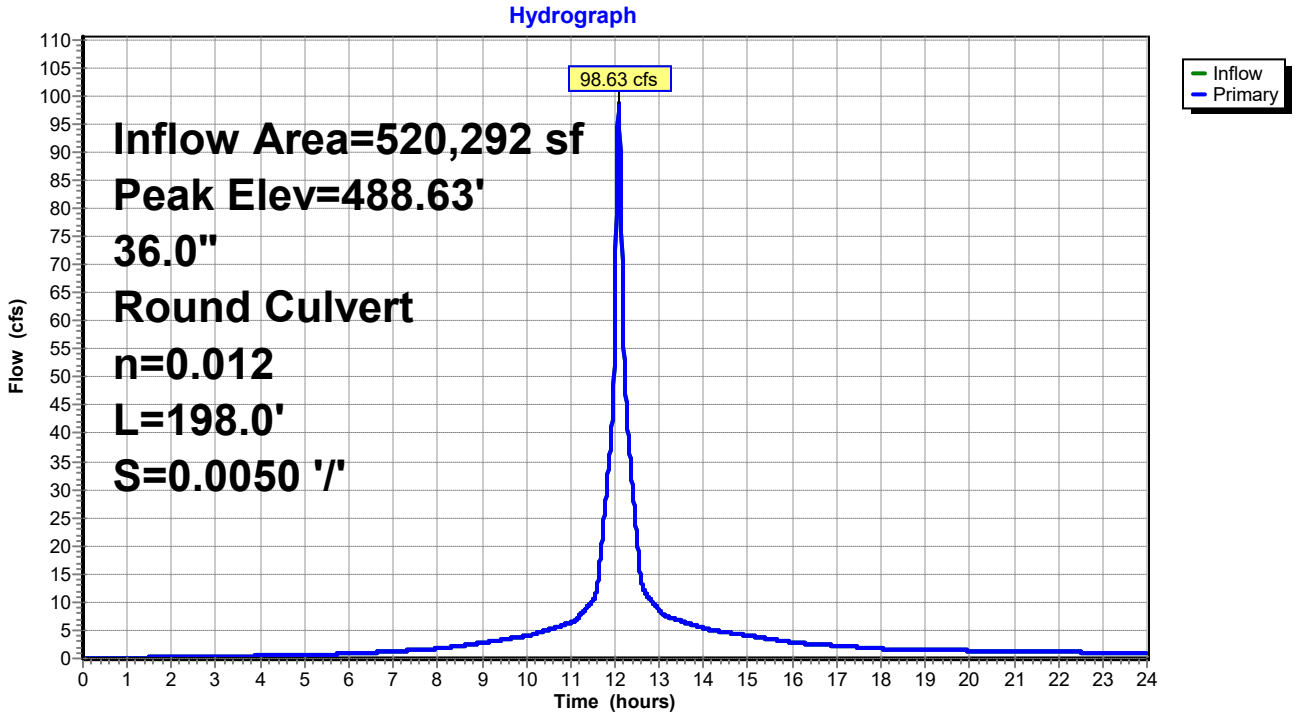
Pond CB 24: CB 24



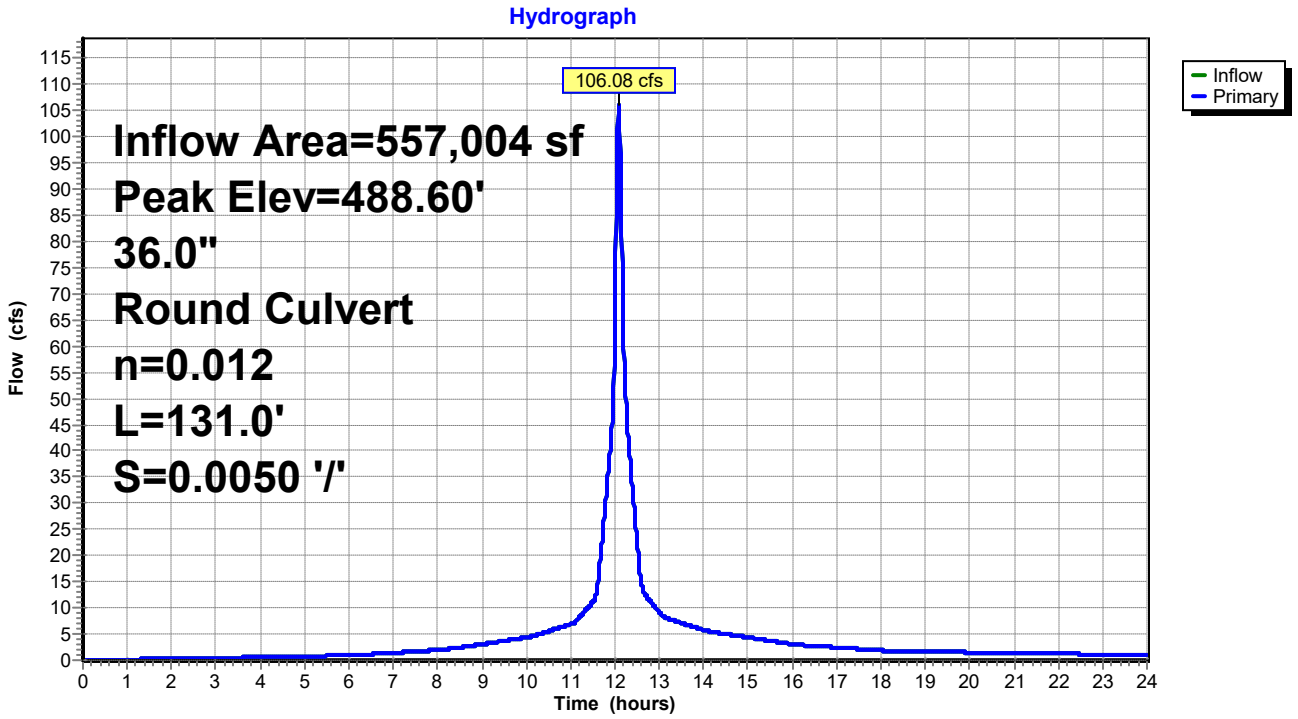
Pond CB 25: CB 25



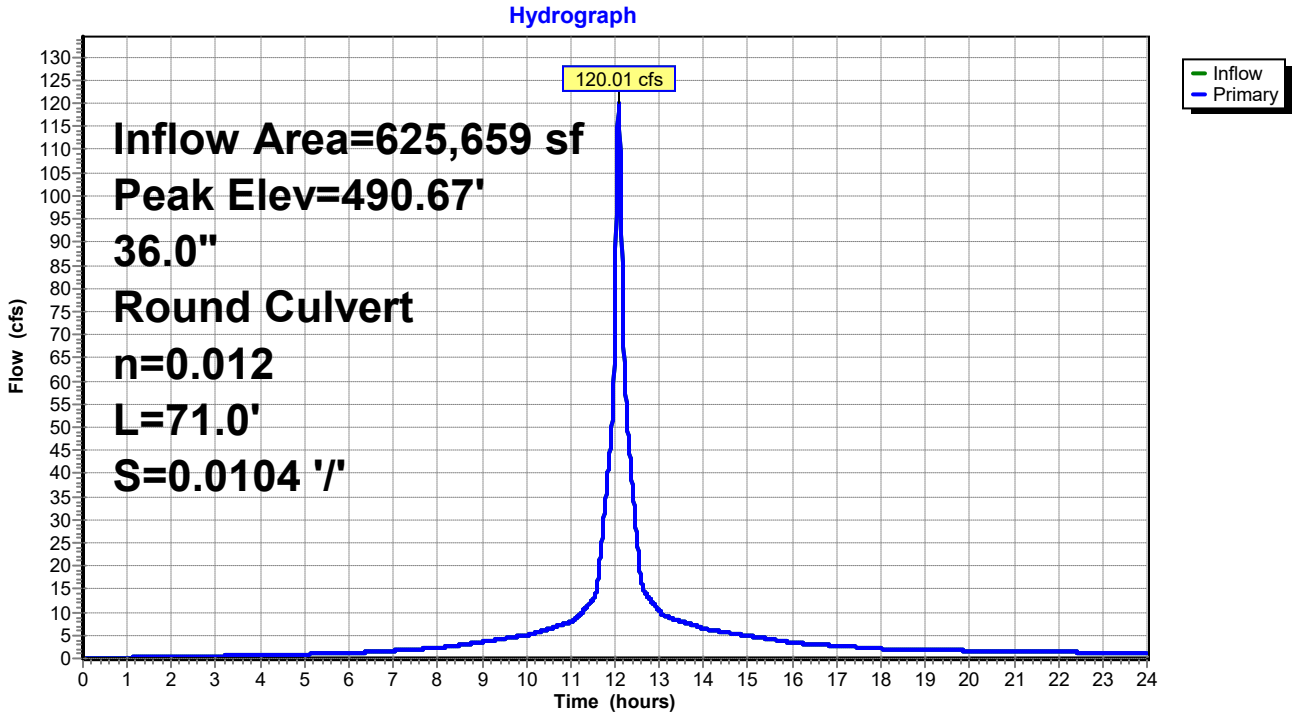
Pond CB 26: CB 26



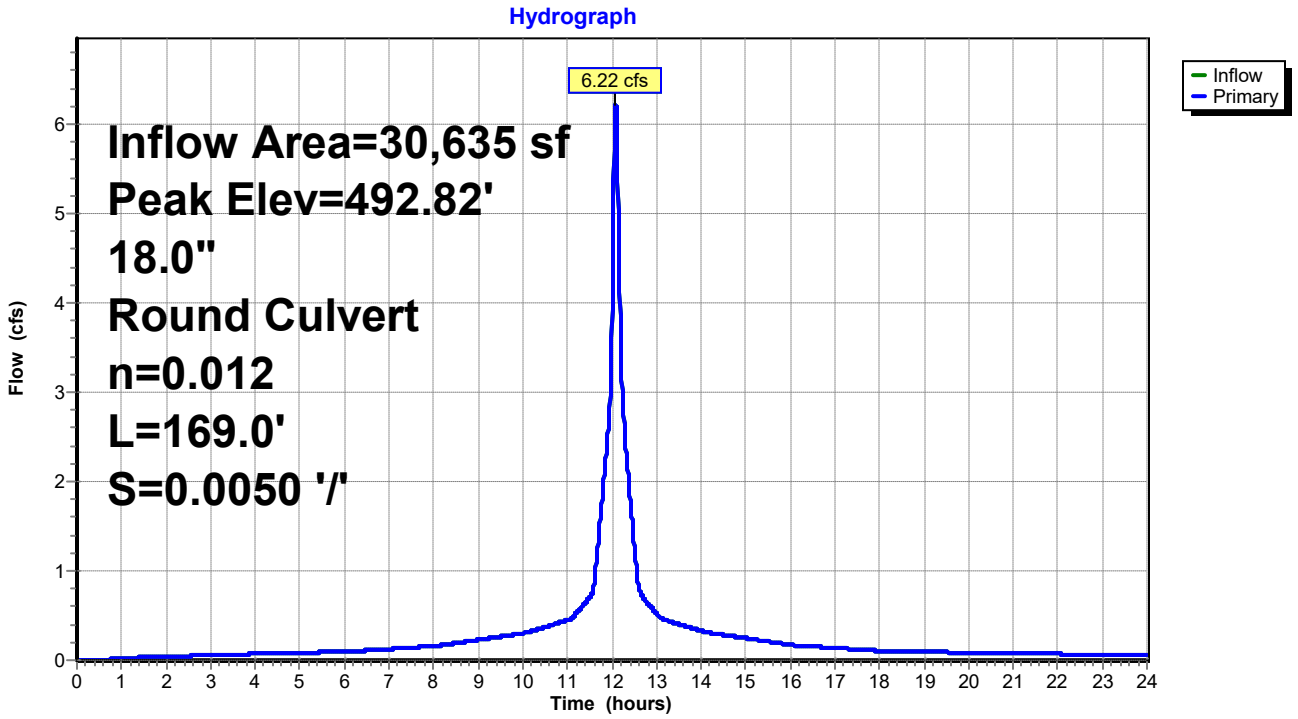
Pond CB 27: CB 27



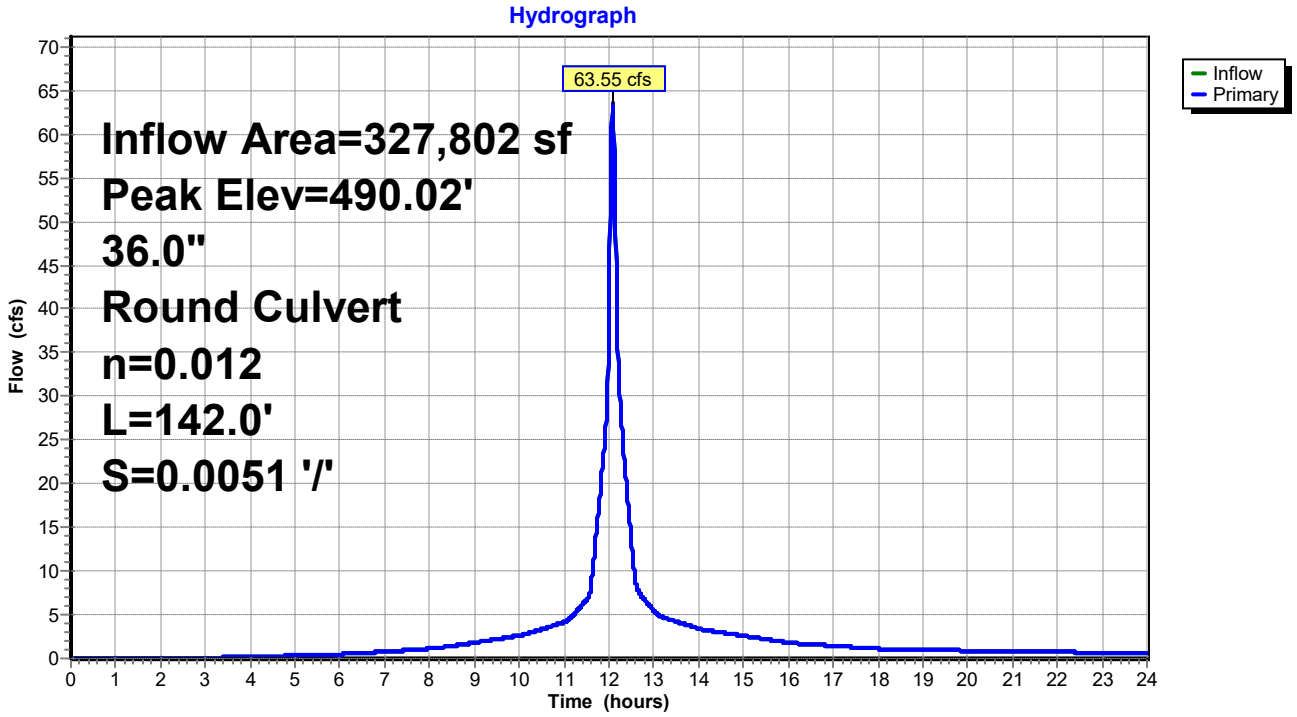
Pond CB 28: CB 28



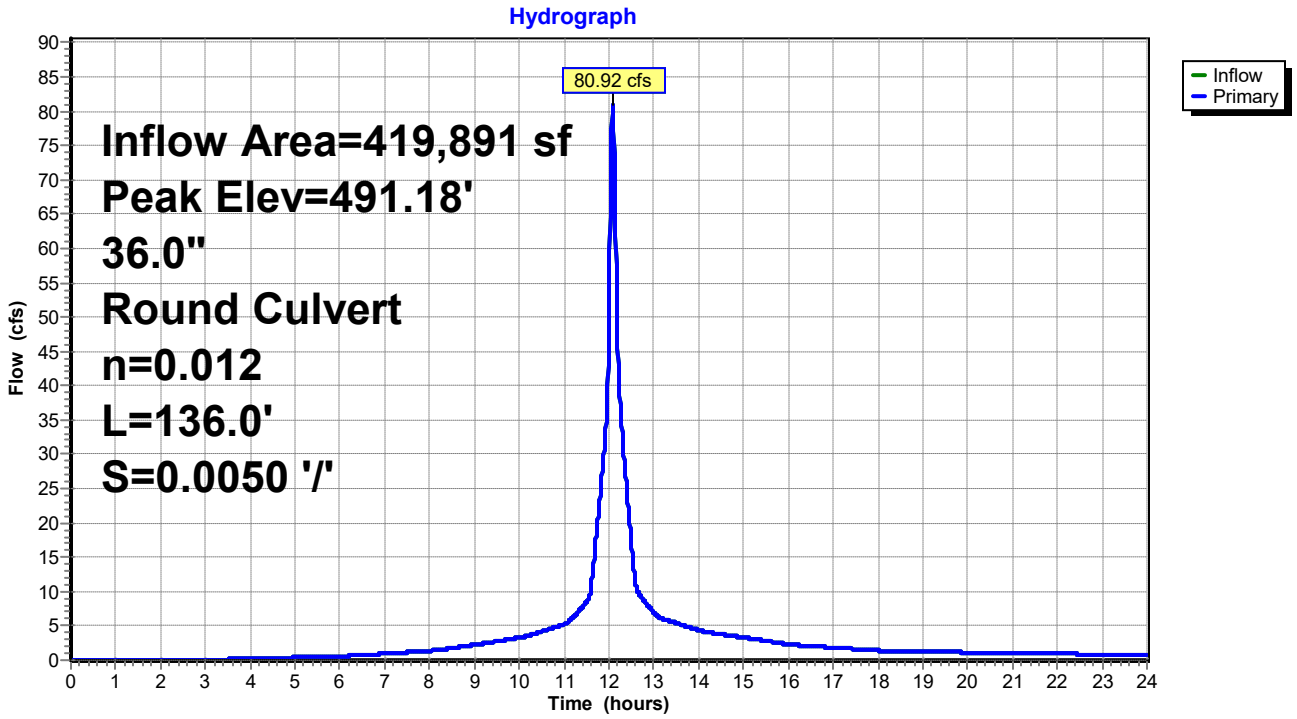
Pond CB 29: CB 29



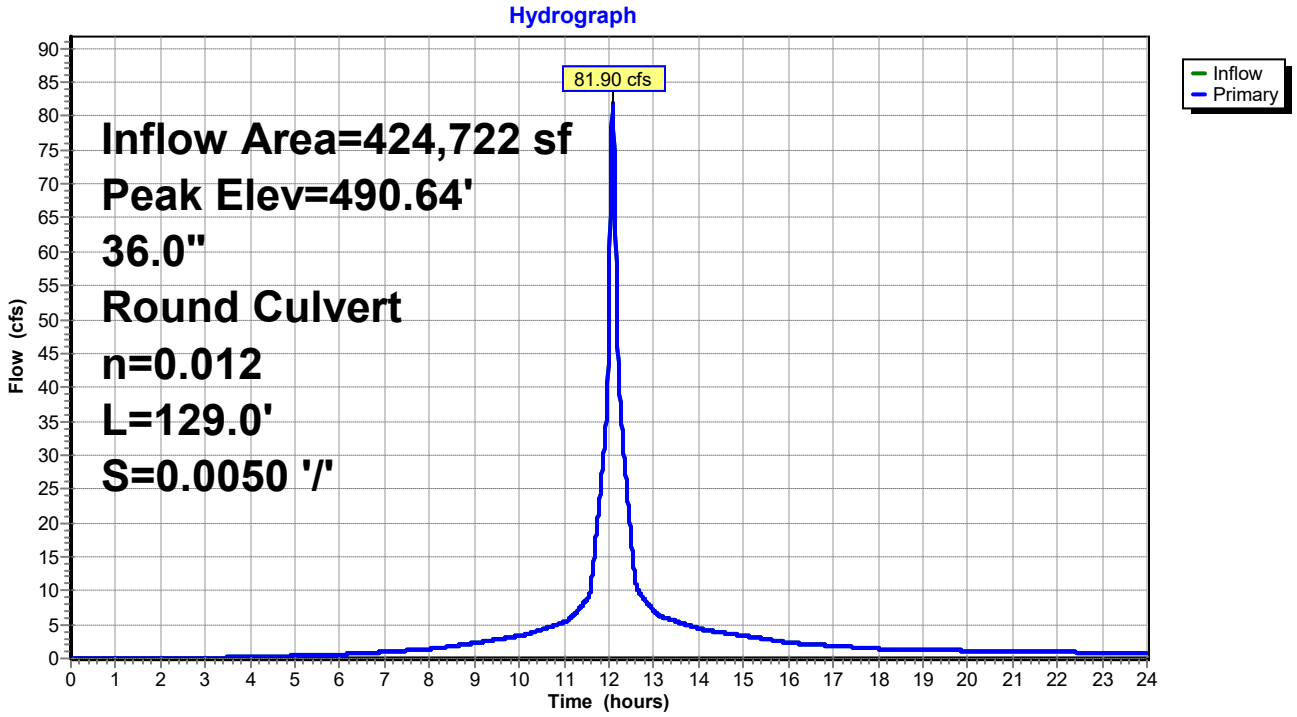
Pond CB-1-06: CB 6



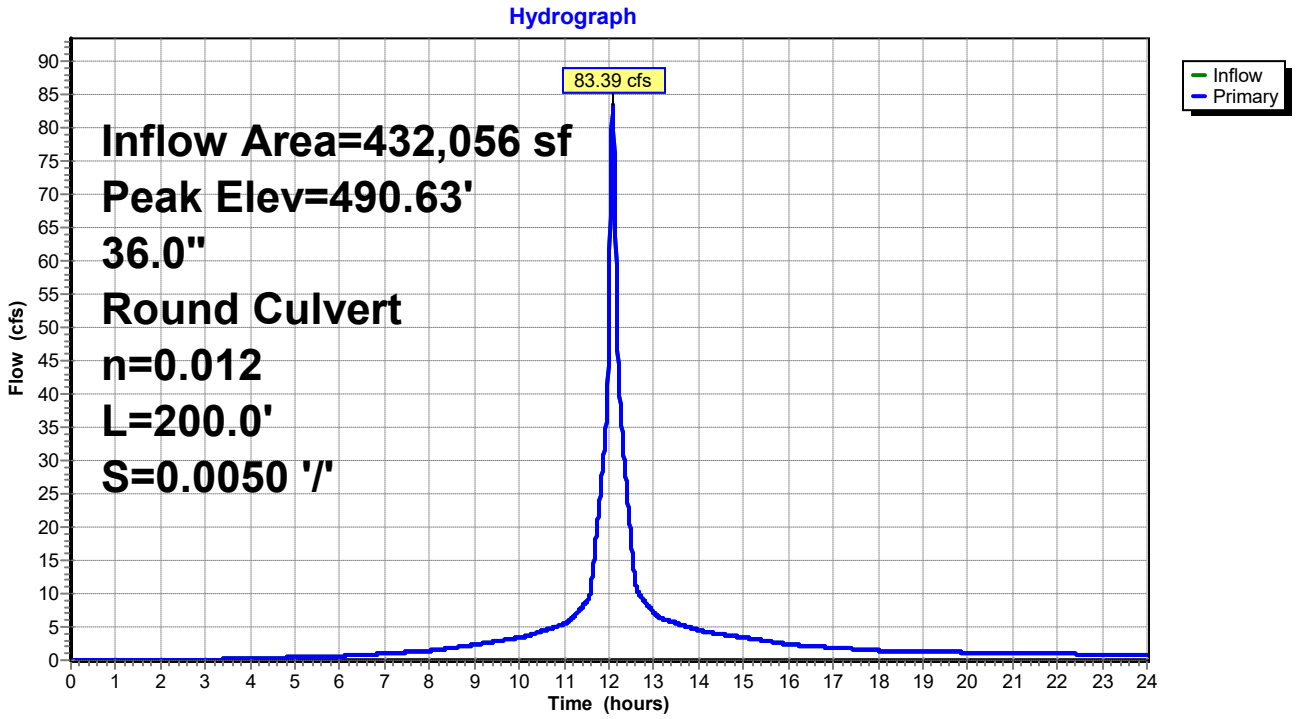
Pond CB-1-07: CB 7



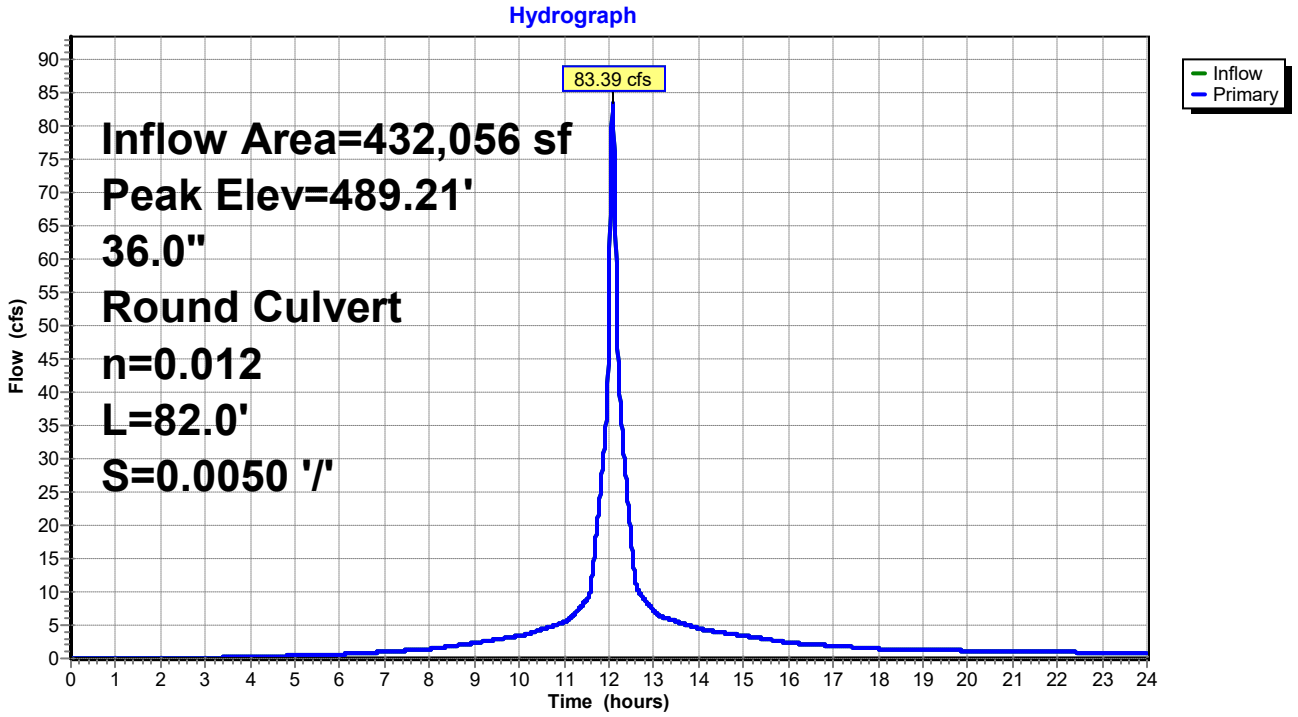
Pond CB-1-08: CB 8



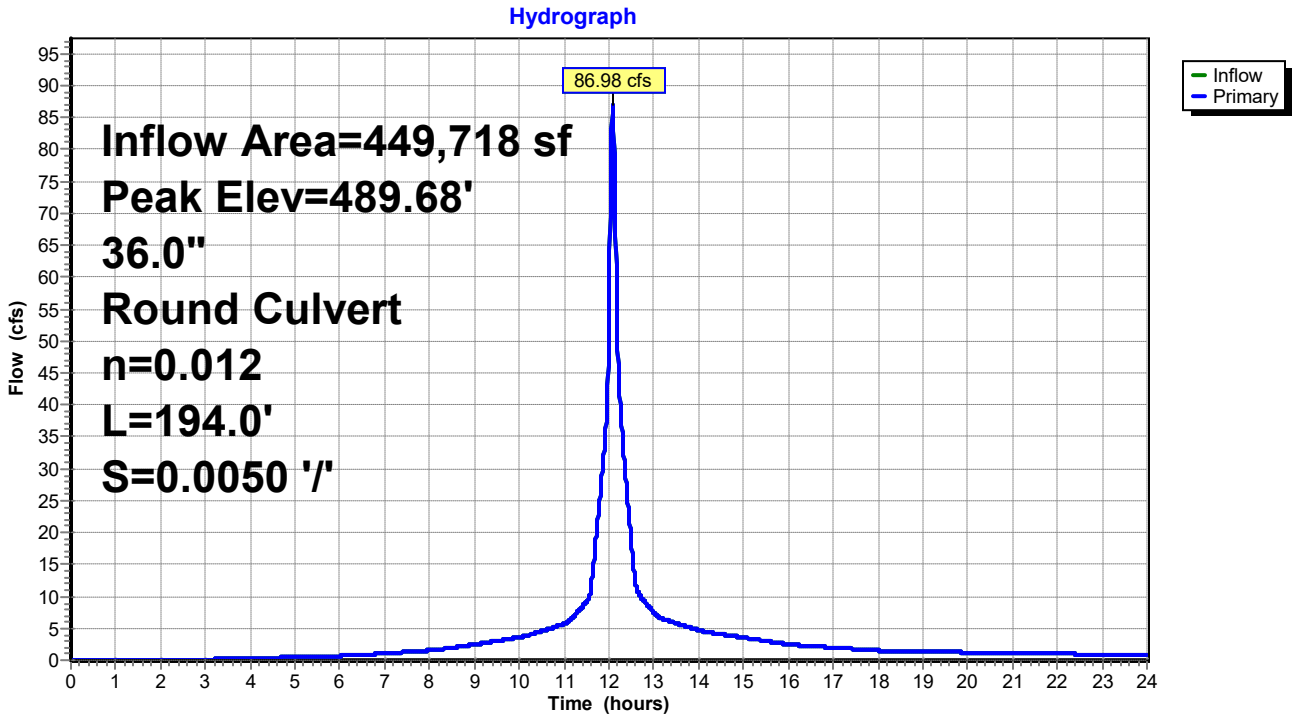
Pond CB-1-09: CB 9



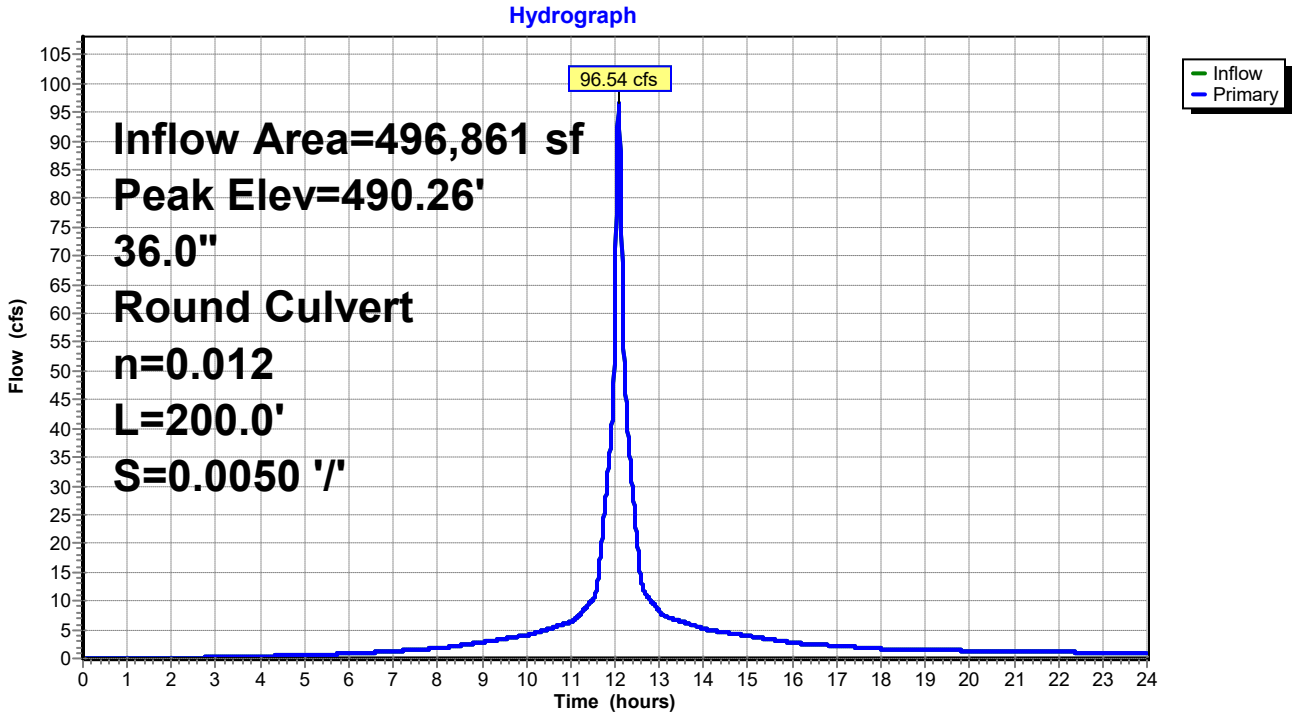
Pond CB-1-10: CB 10



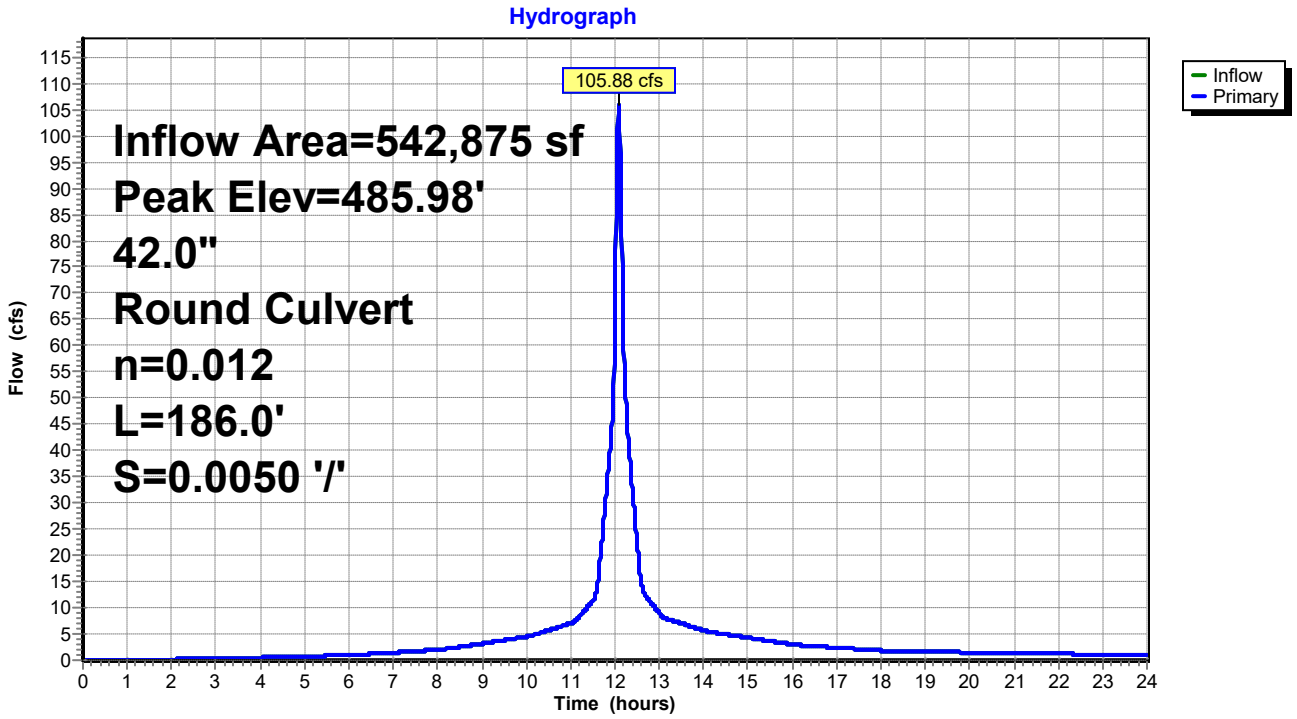
Pond CB-1-11: CB 11



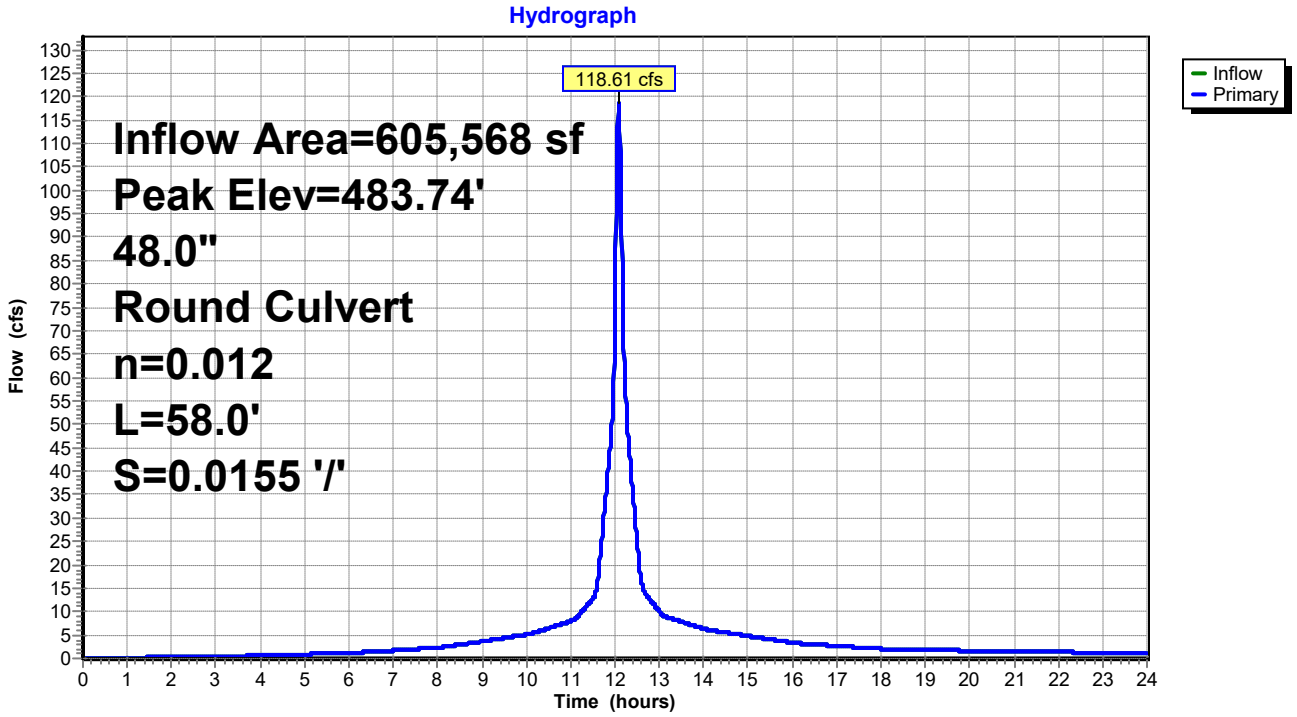
Pond CB-1-12: CB 12



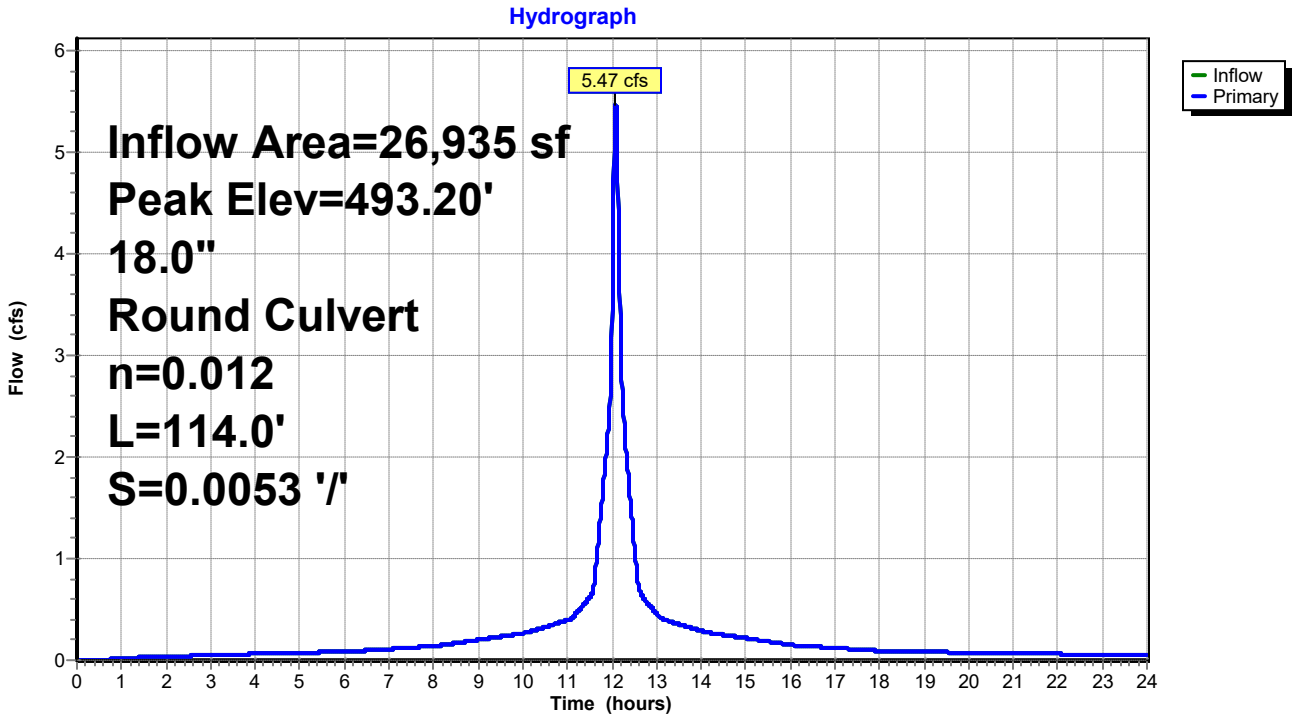
Pond CB-1-13: CB 13



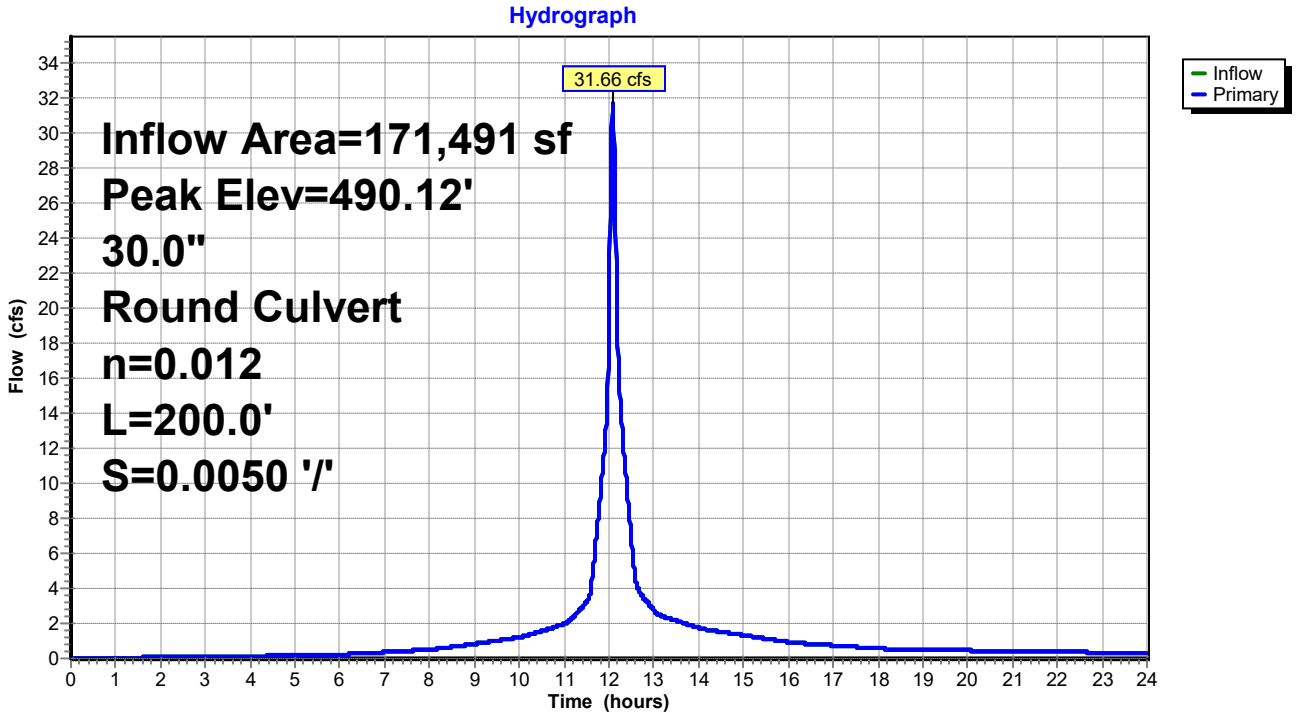
Pond CB-1-14: CB 14



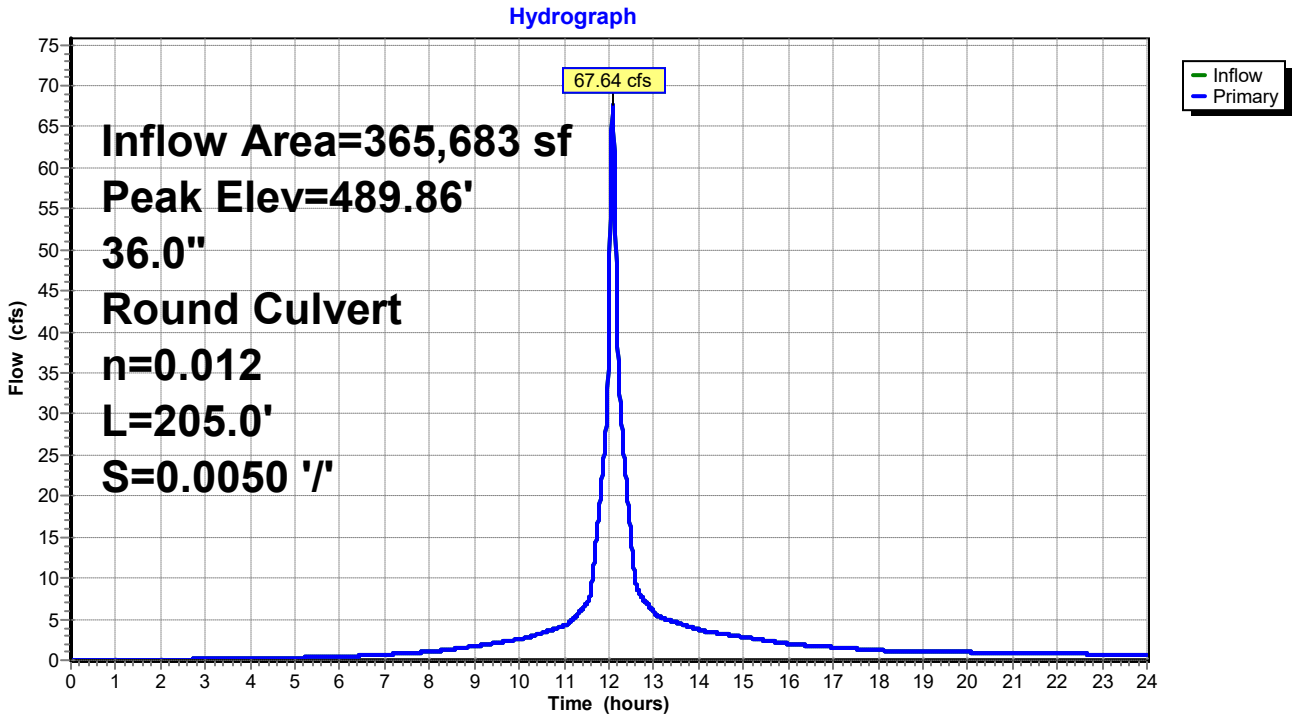
Pond CB-1-15: CB 15



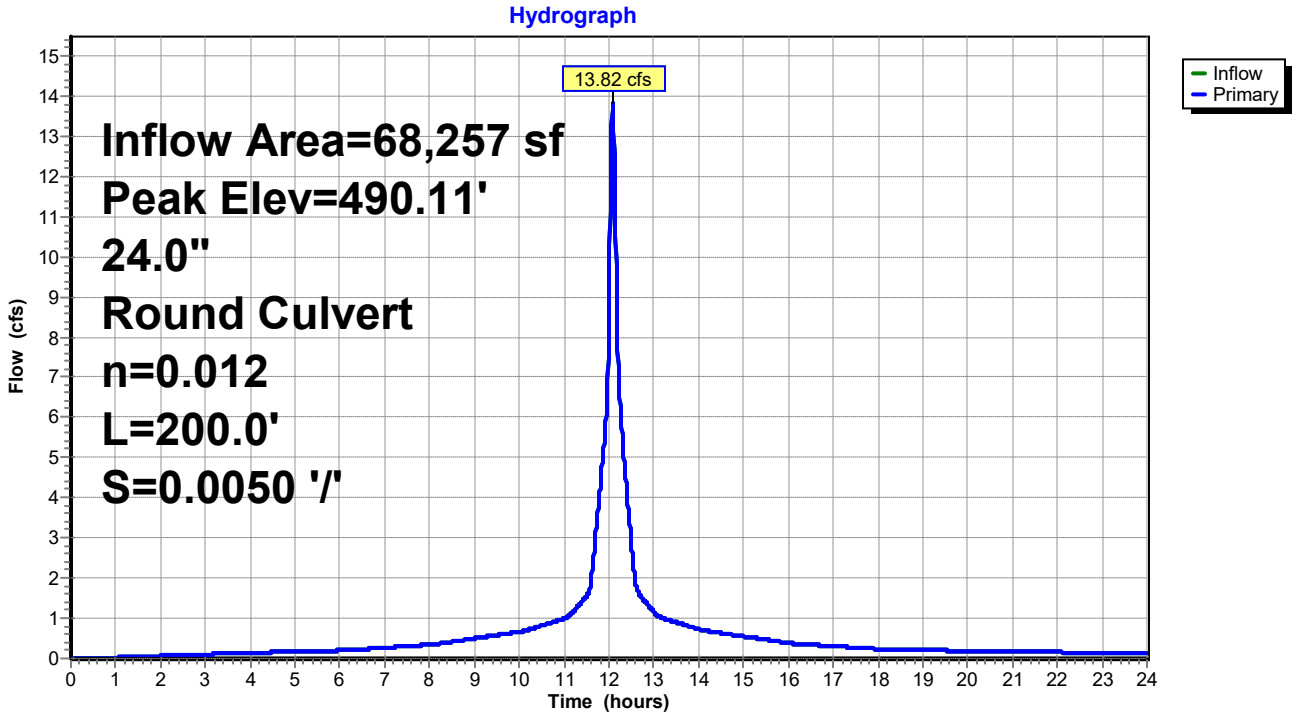
Pond CB-1-17: CB 17



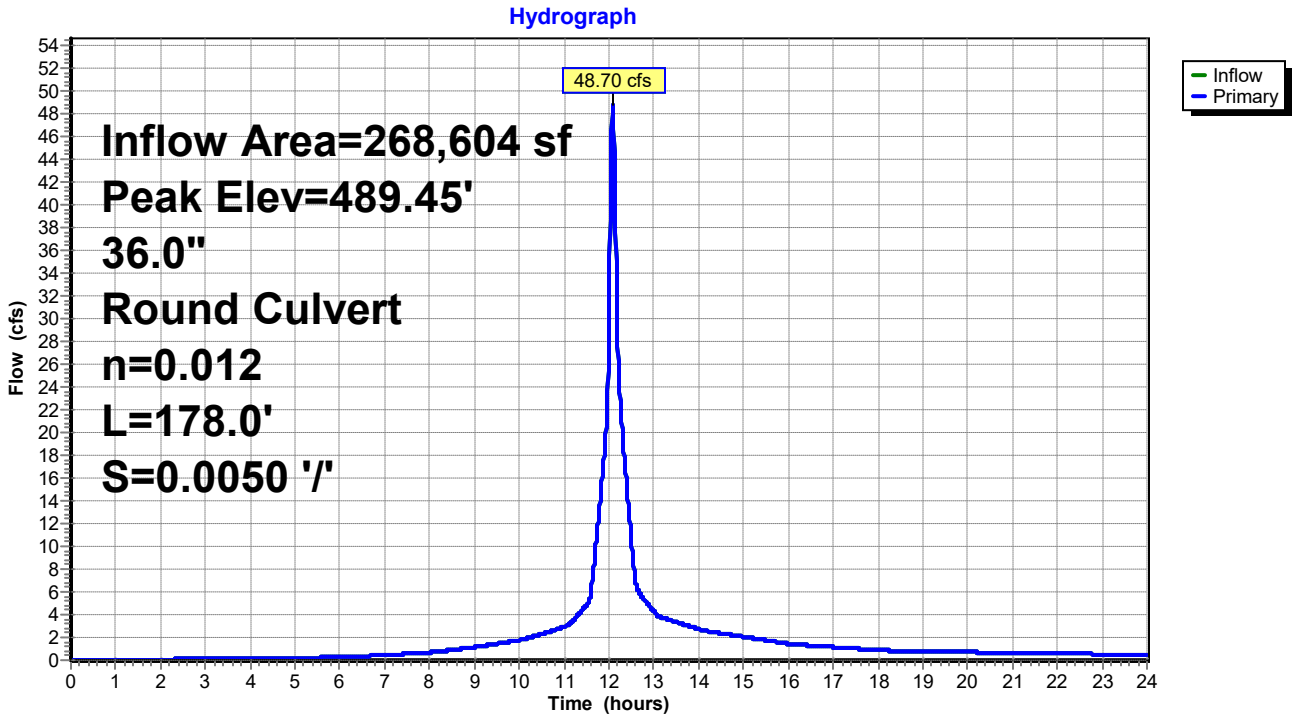
Pond CB-20: CB-20



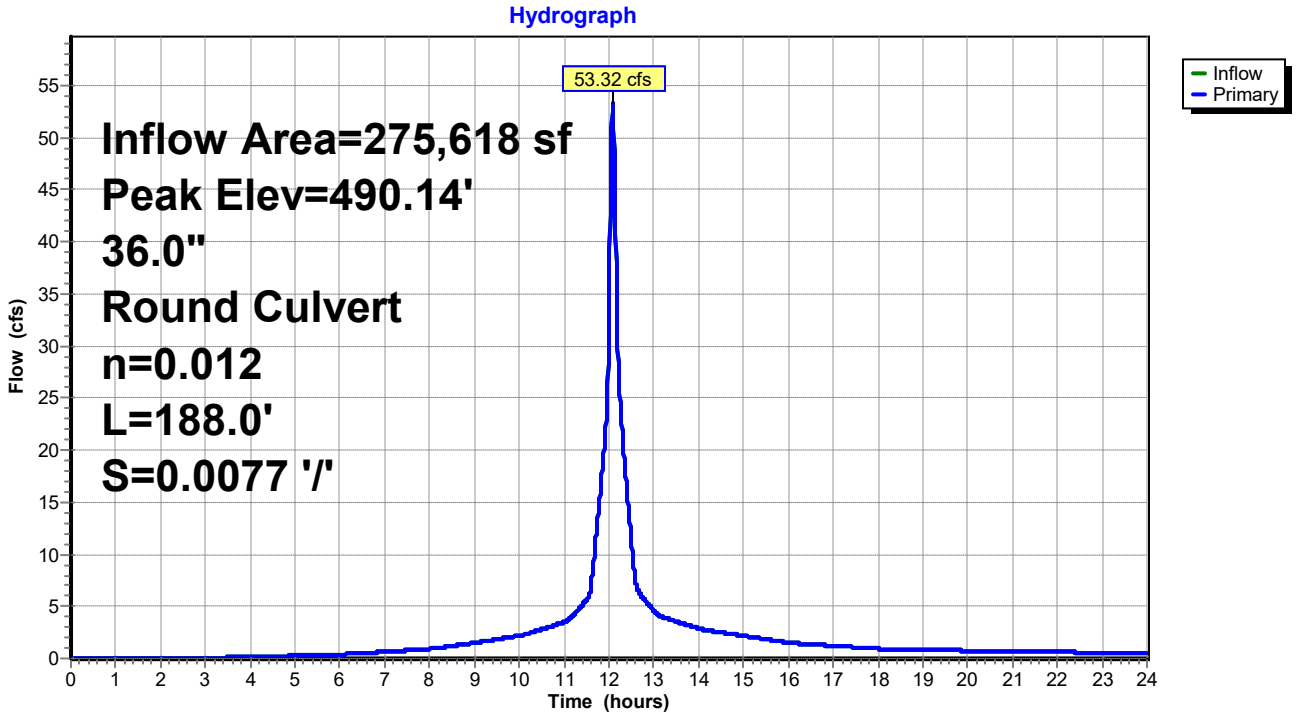
Pond CB16: CB16



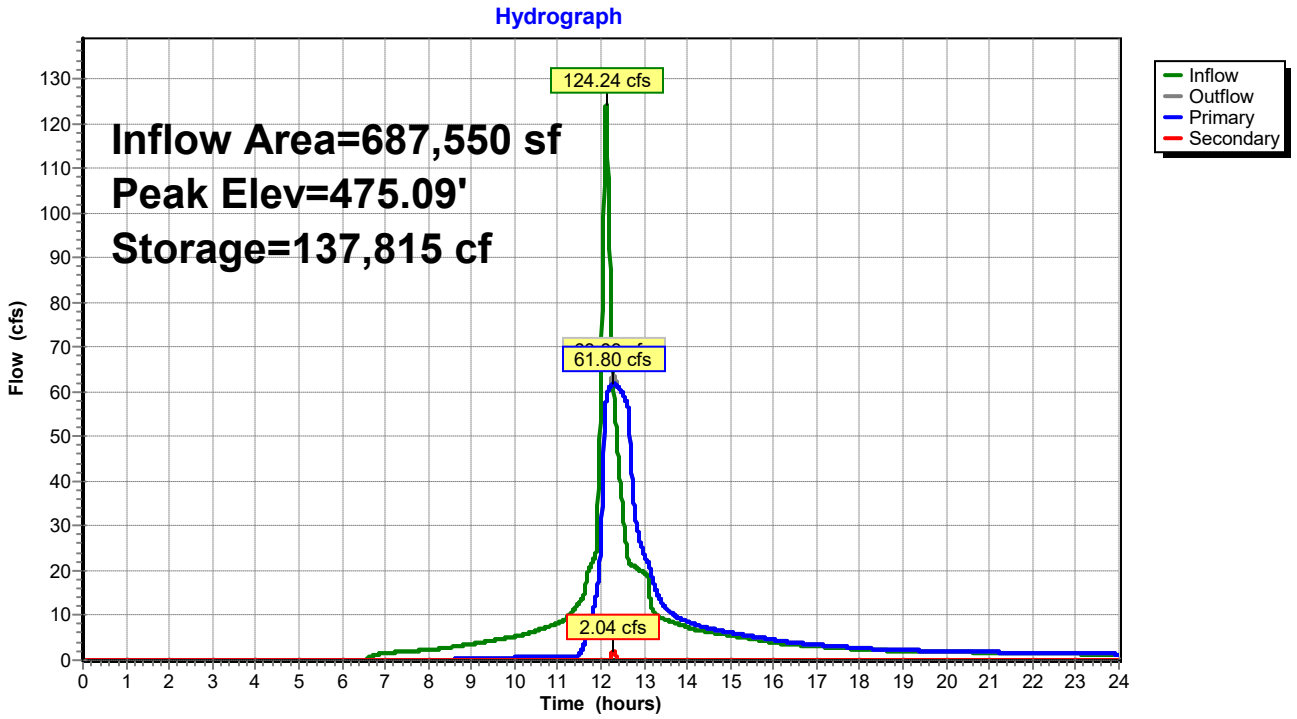
Pond CB18: CB 18



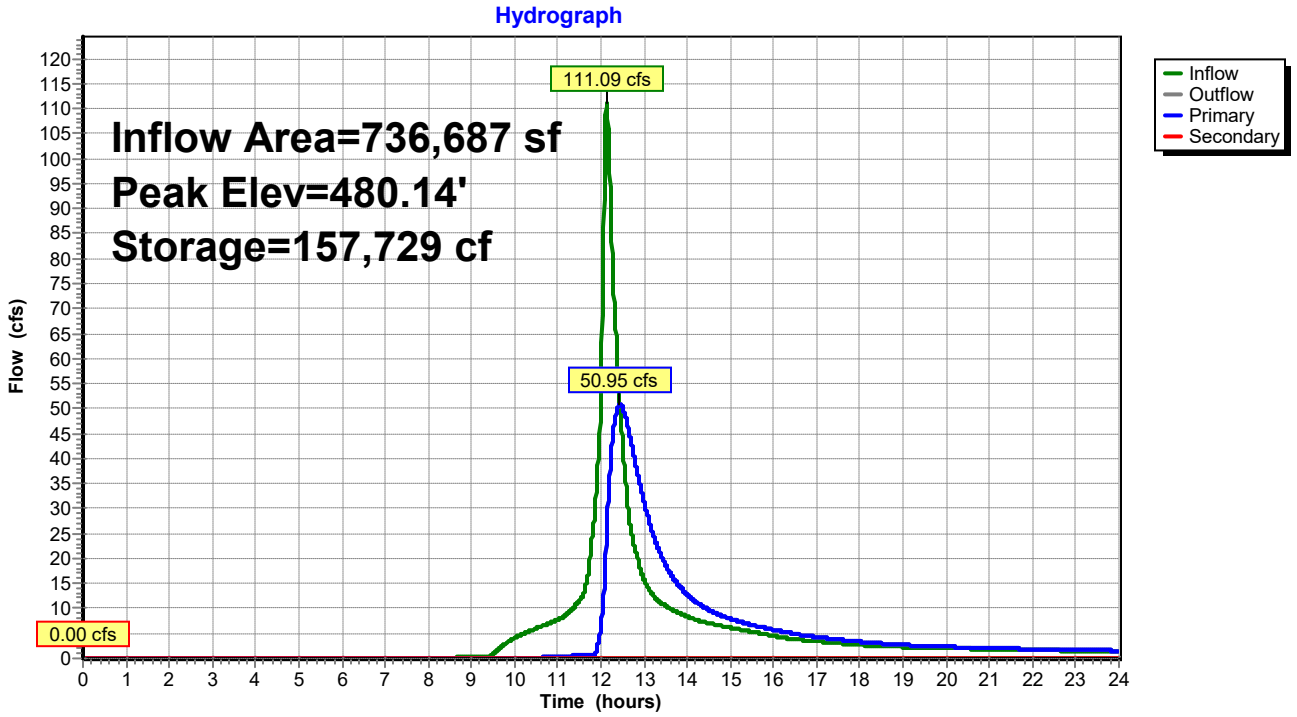
Pond CB3: CB3



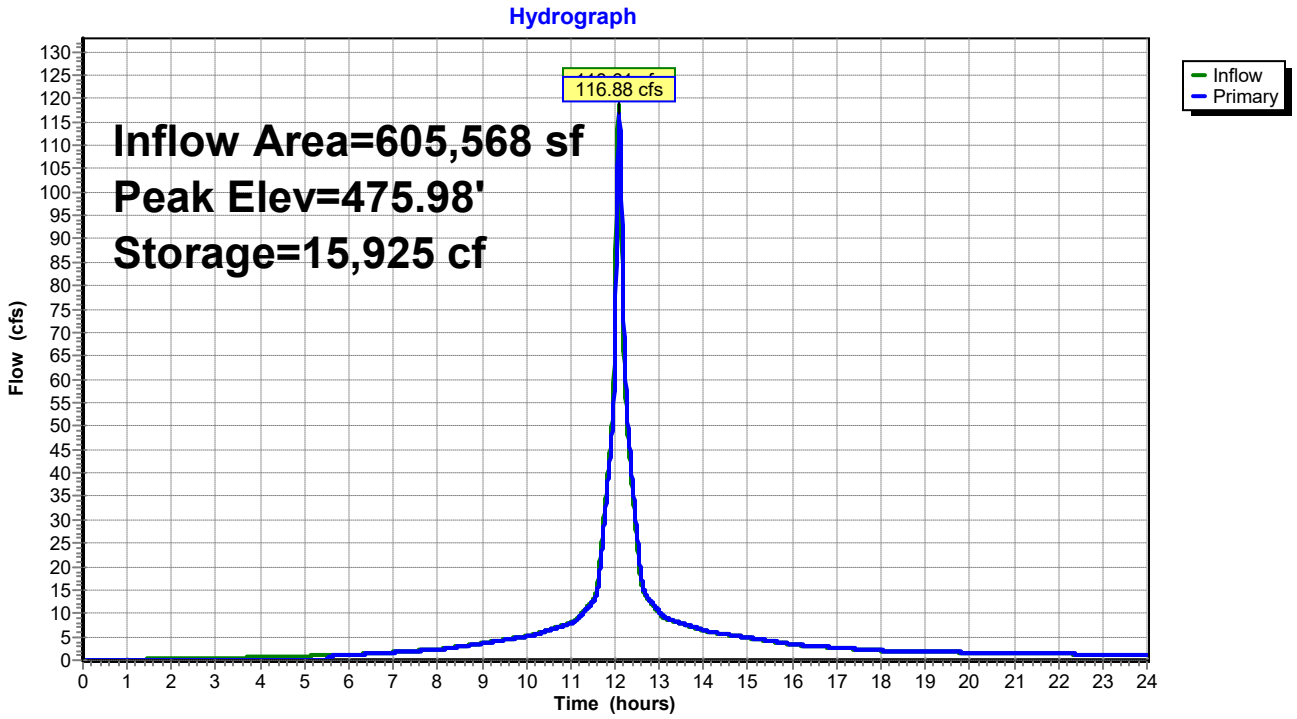
Pond P1: POND 1



Pond P2: POND 2



Pond SB1: SEDIMENT BASIN 1



Pond SB2: SEDIMENT BASIN 2

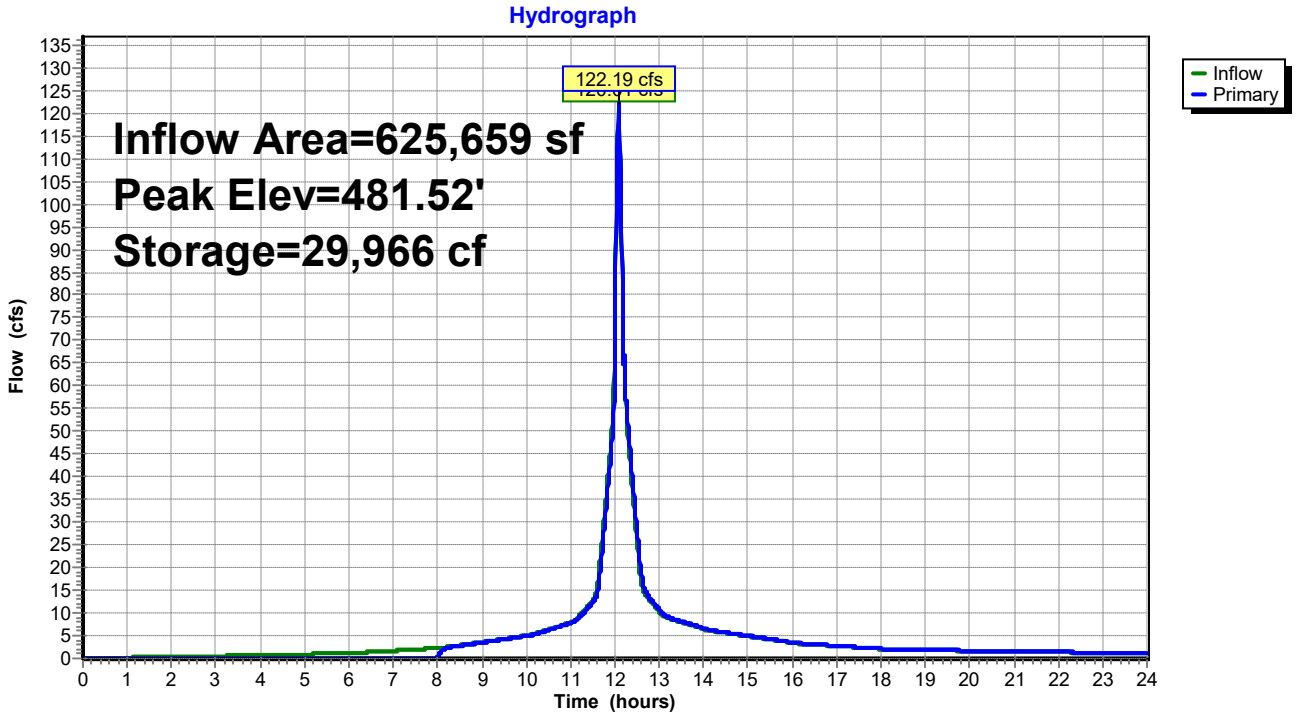


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45 Node Listing
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51 Subcat W-1-03: W-1-03
52 Subcat W-1-04: W-1-04
52 Subcat W-1-05: W-1-05
53 Subcat W-1-06: W-1-06
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81 Pond CB16: CB16
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100-Year Event

85 Node Listing
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91 Subcat W-1-03: W-1-03
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APPENDIX C

ATTACHMENT 1

Construction Stormwater Compliance Inspection Report

Project Name and Location:	Date:	Page 1 of 2
	Permit # (if any): **NYR**	
Municipality: County:	Entry Time:	Exit Time:
On-site Representative(s) and contact information:	Weather Conditions:	
Name and Address of SPDES Permittee/Title/Phone/Fax Numbers: Contacted: Yes ☐ No ☐		

INSPECTION CHECKLIST

SPDES Authority

	Yes	No	N/A		Law, rule or permit citation
1.	☐	☐	☐	Is a copy of the NOI posted at the construction site for public viewing?	
2.	☐	☐	☐	Is an up-to-date copy of the signed SWPPP retained at the construction site?	
3.	☐	☐	☐	Is a copy of the SPDES General Permit retained at the construction site?	

SWPPP Content

	Yes	No	N/A		Law, rule or permit citation
4.	☐	☐	☐	Does the SWPPP describe and identify the erosion & sediment control measures to be employed?	
5.	☐	☐	☐	Does the SWPPP provide a maintenance schedule for the erosion & sediment control measures?	
6.	☐	☐	☐	Does the SWPPP describe and identify the post-construction SW control measures to be employed?	
7.	☐	☐	☐	Does the SWPPP identify the contractor(s) and subcontractor(s) responsible for each measure?	
8.	☐	☐	☐	Does the SWPPP include all the necessary 'CONTRACTOR CERTIFICATION' statements?	
9.	☐	☐	☐	Is the SWPPP signed/certified by the permittee?	

Recordkeeping

	Yes	No	N/A		Law, rule or permit citation
10.	☐	☐	☐	Are inspections performed as required by the permit (every 7 days and after ½" rain event)?	
11.	☐	☐	☐	Are the site inspections performed by a qualified professional?	
12.	☐	☐	☐	Are all required reports properly signed/certified?	
13.	☐	☐	☐	Does the SWPPP include copies of the monthly/quarterly written summaries of compliance status?	

Visual Observations

	Yes	No	N/A		Law, rule or permit citation
14.	☐	☐	☐	Are all erosion and sediment control measures installed/constructed?	
15.	☐	☐	☐	Are all erosion and sediment control measures maintained properly?	
16.	☐	☐	☐	Have all disturbances of 5 acres or more been approved prior to the disturbance?	
17.	☐	☐	☐	Are stabilization measures initiated in inactive areas?	
18.	☐	☐	☐	Are permanent stormwater control measures implemented?	
19.	☐	☐	☐	Was there a discharge into the receiving water on the day of inspection?	
20.	☐	☐	☐	Are receiving waters free of there evidence of turbidity, sedimentation, or oil ? (If no , complete Page 2)	

Overall Inspection Rating: ❑ Satisfactory ❑ Marginal ❑ Unsatisfactory	
Name/Agency of Lead Inspector:	**Signature of Lead Inspector:**
Names/Agencies of Other Inspectors:	

Water Quality Observations

Describe the discharge(s) [source(s), impact on receiving water(s), etc.] _____

_____

_____

_____

_____

Describe the quality of the receiving water(s) both upstream and downstream of the discharge_____

_____

_____

_____

_____

_____

Describe any other water quality standards or permit violations _____

_____

_____

Additional Comments:_____

_____

_____

_____

_____

_____

APPENDIX H

STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM FOR CONSTRUCTION ACTIVITIES

CONSTRUCTION SITE LOG BOOK

Table of Contents

I. Pre-Construction Meeting Documents
   a. Preamble to Site Assessment and Inspections
   b. Operator's Certification
   c. Qualified Professional's Credentials & Certification
   d. Pre-Construction Site Assessment Checklist

II. Construction Duration Inspections
   a. Directions
   b. Modification to the SWPPP

III. Monthly Summary Reports

IV. Monitoring, Reporting, and Three-Month Status Reports
   a. Operator's Compliance Response Form

Properly completing forms such as those contained in Appendix H meet the inspection requirement of NYS-DEC SPDES GP for Construction Activities. Completed forms shall be kept on site at all times and made available to authorities upon request.

I. PRE-CONSTRUCTION MEETING DOCUMENTS
Project Name _____
Permit No. _____ Date of Authorization _____
Name of Operator _____
Prime Contractor _____

a. Preamble to Site Assessment and Inspections
The Following Information To Be Read By All Person's Involved in The Construction of Stormwater Related Activities:

The Operator agrees to have a qualified professional[1] conduct an assessment of the site prior to the commencement of construction[2] and certify in this inspection report that the appropriate erosion and sediment controls described in the SWPPP have been adequately installed or implemented to ensure overall preparedness of the site for the commencement of construction.

Prior to the commencement of construction, the Operator shall certify in this site logbook that the SWPPP has been prepared in accordance with the State's standards and meets all Federal, State and local erosion and sediment control requirements.

When construction starts, site inspections shall be conducted by the qualified professional at least every 7 calendar days and within 24 hours of the end of a storm event of 0.5 inches or greater (Construction Duration Inspections). The Operator shall maintain a record of all inspection reports in this site logbook. The site logbook shall be maintained on site and be made available to the permitting authorities upon request. The Operator shall post at the site, in a publicly accessible location, a summary of the site inspection activities on a monthly basis (Monthly Summary Report).

The operator shall also prepare a written summary of compliance with this general permit at a minimum frequency of every three months (Operator's Compliance Response Form), while coverage exists. The summary should address the status of achieving each component of the SWPPP.

Prior to filing the Notice of Termination or the end of permit term, the Operator shall have a qualified professional perform a final site inspection. The qualified professional shall certify that the site has undergone final stabilization[3] using either vegetative or structural stabilization methods and that all temporary erosion and sediment controls (such as silt fencing) not needed for long-term erosion control have been removed. In addition, the Operator must identify and certify that all permanent structures described in the SWPPP have been constructed and provide the owner(s) with an operation and maintenance plan that ensures the structure(s) continuously functions as designed.

1 "Qualified Professional means a person knowledgeable in the principles and practice of erosion and sediment controls, such as a Certified Professional in Erosion and Sediment Control (CPESC), soil scientist, licensed engineer or someone working under the direction and supervision of a licensed engineer (person must have experience in the principles and practices of erosion and sediment control).

2 "Commencement of construction" means the initial removal of vegetation and disturbance of soils associated with clearing, grading or excavating activities or other construction activities.

3 "Final stabilization" means that all soil-disturbing activities at the site have been completed and a uniform, perennial vegetative cover with a density of eighty (80) percent has been established or equivalent stabilization measures (such as the use of mulches or geotextiles) have been employed on all unpaved areas and areas not covered by permanent structures.

b. Operators Certification

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. Further, I hereby certify that the SWPPP meets all Federal, State, and local erosion and sediment control requirements. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law.

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

c. Qualified Professional's Credentials & Certification

"I hereby certify that I meet the criteria set forth in the General Permit to conduct site inspections for this project and that the appropriate erosion and sediment controls described in the SWPPP and as described in the following Pre-construction Site Assessment Checklist have been adequately installed or implemented, ensuring the overall preparedness of this site for the commencement of construction."

Name (please print): _____

Title _____ **Date:** _____

Address: _____

Phone: _____ **Email:** _____

Signature: _____

d. Pre-construction Site Assessment Checklist
(NOTE: Provide comments below as necessary)

1. Notice of Intent, SWPPP, and Contractors Certification:

Yes No NA

[ ] [ ] [ ] Has a Notice of Intent been filed with the NYS Department of Conservation?
[ ] [ ] [ ] Is the SWPPP on-site? Where?_____
[ ] [ ] [ ] Is the Plan current? What is the latest revision date?_____
[ ] [ ] [ ] Is a copy of the NOI (with brief description) onsite? Where?_____
[ ] [ ] [ ] Have all contractors involved with stormwater related activities signed a contractor's certification?

2. Resource Protection

Yes No NA

[ ] [ ] [ ] Are construction limits clearly flagged or fenced?
[ ] [ ] [ ] Important trees and associated rooting zones, on-site septic system absorption fields, existing vegetated areas suitable for filter strips, especially in perimeter areas, have been flagged for protection.
[ ] [ ] [ ] Creek crossings installed prior to land-disturbing activity, including clearing and blasting.

3. Surface Water Protection

Yes No NA

[ ] [ ] [ ] Clean stormwater runoff has been diverted from areas to be disturbed.
[ ] [ ] [ ] Bodies of water located either on site or in the vicinity of the site have been identified and protected.
[ ] [ ] [ ] Appropriate practices to protect on-site or downstream surface water are installed.
[ ] [ ] [ ] Are clearing and grading operations divided into areas <5 acres?

4. Stabilized Construction Entrance

Yes No NA

[ ] [ ] [ ] A temporary construction entrance to capture mud and debris from construction vehicles before they enter the public highway has been installed.
[ ] [ ] [ ] Other access areas (entrances, construction routes, equipment parking areas) are stabilized immediately as work takes place with gravel or other cover.
[ ] [ ] [ ] Sediment tracked onto public streets is removed or cleaned on a regular basis.

5. Perimeter Sediment Controls

Yes No NA

[ ] [ ] [ ] Silt fence material and installation comply with the standard drawing and specifications.
[ ] [ ] [ ] Silt fences are installed at appropriate spacing intervals
[ ] [ ] [ ] Sediment/detention basin was installed as first land disturbing activity.
[ ] [ ] [ ] Sediment traps and barriers are installed.

6. Pollution Prevention for Waste and Hazardous Materials

Yes No NA

[ ] [ ] [ ] The Operator or designated representative has been assigned to implement the spill prevention avoidance and response plan.
[ ] [ ] [ ] The plan is contained in the SWPPP on page _____
[ ] [ ] [ ] Appropriate materials to control spills are onsite. Where? _____

II. CONSTRUCTION DURATION INSPECTIONS

a. Directions:
Inspection Forms will be filled out during the entire construction phase of the project.
Required Elements:

(1) On a site map, indicate the extent of all disturbed site areas and drainage pathways. Indicate site areas that are expected to undergo initial disturbance or significant site work within the next 14-day period;

(2) Indicate on a site map all areas of the site that have undergone temporary or permanent stabilization;

(3) Indicate all disturbed site areas that have not undergone active site work during the previous 14-day period;

(4) Inspect all sediment control practices and record the approximate degree of sediment accumulation as a percentage of sediment storage volume (for example, 10 percent, 20 percent, 50 percent);

(5) Inspect all erosion and sediment control practices and record all maintenance requirements such as verifying the integrity of barrier or diversion systems (earthen berms or silt fencing) and containment systems (sediment basins and sediment traps). Identify any evidence of rill or gully erosion occurring on slopes and any loss of stabilizing vegetation or seeding/mulching. Document any excessive deposition of sediment or ponding water along barrier or diversion systems. Record the depth of sediment within containment structures, any erosion near outlet and overflow structures, and verify the ability of rock filters around perforated riser pipes to pass
water; and

(6) Immediately report to the Operator any deficiencies that are identified with the implementation of the SWPPP.

SITE PLAN/SKETCH

_____	_____
Inspector (print name)	**Date of Inspection**
_____	_____
Qualified Professional (print name)	**Qualified Professional Signature**

The above signed acknowledges that, to the best of his/her knowledge, all information provided on the forms is accurate and complete.

Maintaining Water Quality

Yes No NA
[ ] [ ] [ ] Is there an increase in turbidity causing a substantial visible contrast to natural conditions?
[ ] [ ] [ ] Is there residue from oil and floating substances, visible oil film, or globules or grease?
[ ] [ ] [ ] All disturbance is within the limits of the approved plans.
[ ] [ ] [ ] Have receiving lake/bay, stream, and/or wetland been impacted by silt from project?

Housekeeping

1. General Site Conditions
Yes No NA
[ ] [ ] [ ] Is construction site litter and debris appropriately managed?
[ ] [ ] [ ] Are facilities and equipment necessary for implementation of erosion and sediment control in working order and/or properly maintained?
[ ] [ ] [ ] Is construction impacting the adjacent property?
[ ] [ ] [ ] Is dust adequately controlled?

2. Temporary Stream Crossing
Yes No NA
[ ] [ ] [ ] Maximum diameter pipes necessary to span creek without dredging are installed.
[ ] [ ] [ ] Installed non-woven geotextile fabric beneath approaches.
[ ] [ ] [ ] Is fill composed of aggregate (no earth or soil)?
[ ] [ ] [ ] Rock on approaches is clean enough to remove mud from vehicles & prevent sediment from entering stream during high flow.

Runoff Control Practices

1. Excavation Dewatering
Yes No NA
[ ] [ ] [ ] Upstream and downstream berms (sandbags, inflatable dams, etc.) are installed per plan.
[ ] [ ] [ ] Clean water from upstream pool is being pumped to the downstream pool.
[ ] [ ] [ ] Sediment laden water from work area is being discharged to a silt-trapping device.
[ ] [ ] [ ] Constructed upstream berm with one-foot minimum freeboard.

2. Level Spreader
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Constructed on undisturbed soil, not on fill, receiving only clear, non-sediment laden flow.
[ ] [ ] [ ] Flow sheets out of level spreader without erosion on downstream edge.

3. Interceptor Dikes and Swales
Yes No NA
[ ] [ ] [ ] Installed per plan with minimum side slopes 2H:1V or flatter.
[ ] [ ] [ ] Stabilized by geotextile fabric, seed, or mulch with no erosion occurring.
[ ] [ ] [ ] Sediment-laden runoff directed to sediment trapping structure

Runoff Control Practices (continued)

4. Stone Check Dam
Yes No NA
[ ] [ ] [ ] Is channel stable? (flow is not eroding soil underneath or around the structure).
[ ] [ ] [ ] Check is in good condition (rocks in place and no permanent pools behind the structure).
[ ] [ ] [ ] Has accumulated sediment been removed?.

5. Rock Outlet Protection
Yes No NA
[ ] [ ] [ ] Installed per plan.
[ ] [ ] [ ] Installed concurrently with pipe installation.

Soil Stabilization

1. Topsoil and Spoil Stockpiles
Yes No NA
[ ] [ ] [ ] Stockpiles are stabilized with vegetation and/or mulch.
[ ] [ ] [ ] Sediment control is installed at the toe of the slope.

2. Revegetation
Yes No NA
[ ] [ ] [ ] Temporary seedings and mulch have been applied to idle areas.
[ ] [ ] [ ] 4 inches minimum of topsoil has been applied under permanent seedings

Sediment Control Practices

1. Stabilized Construction Entrance
Yes No NA
[ ] [ ] [ ] Stone is clean enough to effectively remove mud from vehicles.
[ ] [ ] [ ] Installed per standards and specifications?
[ ] [ ] [ ] Does all traffic use the stabilized entrance to enter and leave site?
[ ] [ ] [ ] Is adequate drainage provided to prevent ponding at entrance?

2. Silt Fence
Yes No NA
[ ] [ ] [ ] Installed on Contour, 10 feet from toe of slope (not across conveyance channels).
[ ] [ ] [ ] Joints constructed by wrapping the two ends together for continuous support.
[ ] [ ] [ ] Fabric buried 6 inches minimum.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.
Sediment accumulation is ___% of design capacity.

Sediment Control Practices (continued)

3. Storm Drain Inlet Protection (Use for Stone & Block; Filter Fabric; Curb; or, Excavated practices)

Yes No NA

[ ] [ ] [ ] Installed concrete blocks lengthwise so open ends face outward, not upward.
[ ] [ ] [ ] Placed wire screen between No. 3 crushed stone and concrete blocks.
[ ] [ ] [ ] Drainage area is 1acre or less.
[ ] [ ] [ ] Excavated area is 900 cubic feet.
[ ] [ ] [ ] Excavated side slopes should be 2:1.
[ ] [ ] [ ] 2" x 4" frame is constructed and structurally sound.
[ ] [ ] [ ] Posts 3-foot maximum spacing between posts.
[ ] [ ] [ ] Fabric is embedded 1 to 1.5 feet below ground and secured to frame/posts with staples at max 8-inch spacing.
[ ] [ ] [ ] Posts are stable, fabric is tight and without rips or frayed areas.

Sediment accumulation ___% of design capacity.

4. Temporary Sediment Trap

Yes No NA

[ ] [ ] [ ] Outlet structure is constructed per the approved plan or drawing.
[ ] [ ] [ ] Geotextile fabric has been placed beneath rock fill.

Sediment accumulation is ___% of design capacity.

5. Temporary Sediment Basin

Yes No NA

[ ] [ ] [ ] Basin and outlet structure constructed per the approved plan.
[ ] [ ] [ ] Basin side slopes are stabilized with seed/mulch.
[ ] [ ] [ ] Drainage structure flushed and basin surface restored upon removal of sediment basin facility.

Sediment accumulation is ___% of design capacity.

Note: Not all erosion and sediment control practices are included in this listing. Add additional pages to this list as required by site specific design.
Construction inspection checklists for post-development stormwater management practices can be found in Appendix F of the New York Stormwater Management Design Manual.

CONSTRUCTION DURATION INSPECTIONS

b. Modifications to the SWPPP (To be completed as described below)

The Operator shall amend the SWPPP whenever:
1. There is a significant change in design, construction, operation, or maintenance which may have a significant effect on the potential for the discharge of pollutants to the waters of the United States and which has not otherwise been addressed in the SWPPP; or
2. The SWPPP proves to be ineffective in:
   a. Eliminating or significantly minimizing pollutants from sources identified in the SWPPP and as required by this permit; or
   b. Achieving the general objectives of controlling pollutants in stormwater discharges from permitted construction activity; and
3. Additionally, the SWPPP shall be amended to identify any new contractor or subcontractor that will implement any measure of the SWPPP.

Modification & Reason:

III. Monthly Summary of Site Inspection Activities

Name of Permitted Facility:	Today's Date:	Reporting Month:
Location:	Permit Identification #:	
Name and Telephone Number of Site Inspector:		

Date of Inspection	Regular / Rainfall based Inspection	Name of Inspector	Items of Concern

Owner/Operator Certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein are punishable as a class A misdemeanor pursuant to Section 210.45 of the Penal Law."

_____ _____

Signature of Permittee or Duly Authorized Representative Name of Permittee or Duly Authorized Representative Date

Duly authorized representatives must have written authorization, submitted to DEC, to sign any permit documents.

APPENDIX D

NOI for coverage under Stormwater General Permit for Construction Activity

version 1.35

(Submission #: HPF-T0BV-F61HS, version 1)

Details

Originally Started By	Michael Morgante
Alternate Identifier	Site Plan and Lot Line Change for Craigville Logistics
Submission ID	HPF-T0BV-F61HS
Submission Reason	New
Status	Draft

Form Input

Owner/Operator Information

Owner/Operator Name (Company/Private Owner/Municipality/Agency/Institution, etc.)
Chester SF LLC

Owner/Operator Contact Person Last Name (NOT CONSULTANT)
Feder

Owner/Operator Contact Person First Name
Sol

Owner/Operator Mailing Address
5014 16 Avenue

City
Brooklyn

State
NY

Zip
11204

Phone
845-637-1152

Email
builtbyindigo@gmail.com

Federal Tax ID
NONE PROVIDED

Project Location

Project/Site Name
Site Plan and Lot Line Change for Craigville Logistics

Street Address (Not P.O. Box)
Craigville Road

Side of Street
West

City/Town/Village (THAT ISSUES BUILDING PERMIT)
Town of Blooming Grove

State
NY

Zip
10914

DEC Region
3

County
ORANGE

Name of Nearest Cross Street
NYS Route 17

Distance to Nearest Cross Street (Feet)
1500

Project In Relation to Cross Street
West

Tax Map Numbers Section-Block-Parcel
54-1-50.1 & 52-5-11

Tax Map Numbers
NONE PROVIDED

1. Coordinates

Provide the Geographic Coordinates for the project site. The two methods are:
- Navigate to the project location on the map (below) and click to place a marker and obtain the XY coordinates.
- The "Find Me" button will provide the lat/long for the person filling out this form. Then pan the map to the correct location and click the map to place a marker and obtain the XY coordinates.

Navigate to your location and click on the map to get the X,Y coordinates
41.34981664648605,-74.22004064544373

Project Details

2. What is the nature of this project?
New Construction

3. Select the predominant land use for both pre and post development conditions.

Pre-Development Existing Landuse
Pasture/Open Land

Post-Development Future Land Use
Commercial

3a. If Single Family Subdivision was selected in question 3, enter the number of subdivision lots.
NONE PROVIDED

4. In accordance with the larger common plan of development or sale, enter the total project site acreage, the acreage to be disturbed and the future impervious area (acreage)within the disturbed area.

*** ROUND TO THE NEAREST TENTH OF AN ACRE. ***

Total Site Area (acres)
201.791

Total Area to be Disturbed (acres)
25

Existing Impervious Area to be Disturbed (acres)
0

Future Impervious Area Within Disturbed Area (acres)
22.2

5. Do you plan to disturb more than 5 acres of soil at any one time?
Yes

---

6. Indicate the percentage (%) of each Hydrologic Soil Group(HSG) at the site.

A (%)
0

B (%)
0

C (%)
75

D (%)
25

7. Is this a phased project?
No

8. Enter the planned start and end dates of the disturbance activities.

Start Date
03/01/2023

End Date
01/31/2024

9. Identify the nearest surface waterbody(ies) to which construction site runoff will discharge.
NYSDEC Wetland MO-3

9a. Type of waterbody identified in question 9?
Wetland/State Jurisdiction On Site (Answer 9b)

Other Waterbody Type Off Site Description
NONE PROVIDED

9b. If "wetland" was selected in 9A, how was the wetland identified?
Delineated by Consultant

10. Has the surface waterbody(ies in question 9 been identified as a 303(d) segment in Appendix E of GP-0-20-001?
No

11. Is this project located in one of the Watersheds identified in Appendix C of GP-0-20-001?
No

12. Is the project located in one of the watershed areas associated with AA and AA-S classified waters?
No

If No, skip question 13.

13. Does this construction activity disturb land with no existing impervious cover and where the Soil Slope Phase is identified as D (provided the map unit name is inclusive of slopes greater than 25%), E or F on the USDA Soil Survey?
No

If Yes, what is the acreage to be disturbed?
NONE PROVIDED

14. Will the project disturb soils within a State regulated wetland or the protected 100 foot adjacent area?
Yes

15. Does the site runoff enter a separate storm sewer system (including roadside drains, swales, ditches, culverts, etc)?
No

16. What is the name of the municipality/entity that owns the separate storm sewer system?
NONE PROVIDED

17. Does any runoff from the site enter a sewer classified as a Combined Sewer?
No

18. Will future use of this site be an agricultural property as defined by the NYS Agriculture and Markets Law?
No

19. Is this property owned by a state authority, state agency, federal government or local government?
No

20. Is this a remediation project being done under a Department approved work plan? (i.e. CERCLA, RCRA, Voluntary Cleanup Agreement, etc.)
No

Required SWPPP Components

21. Has the required Erosion and Sediment Control component of the SWPPP been developed in conformance with the current NYS Standards and Specifications for Erosion and Sediment Control (aka Blue Book)?
Yes

22. Does this construction activity require the development of a SWPPP that includes the post-construction stormwater management practice component (i.e. Runoff Reduction, Water Quality and Quantity Control practices/techniques)?
Yes

If you answered No in question 22, skip question 23 and the Post-construction Criteria and Post-construction SMP Identification sections.

23. Has the post-construction stormwater management practice component of the SWPPP been developed in conformance with the current NYS Stormwater Management Design Manual?
Yes

24. The Stormwater Pollution Prevention Plan (SWPPP) was prepared by:
Professional Engineer (P.E.)

SWPPP Preparer
Arden Consulting Engineers, PLLC

Contact Name (Last, Space, First)
Morgante Michael

Mailing Address
POB 340

City
Monroe

State
NY

Zip
10949

Phone
8457828114

Email
mam@ardenconsulting.net

Download SWPPP Preparer Certification Form
Please take the following steps to prepare and upload your preparer certification form:

1) Click on the link below to download a blank certification form
2) The certified SWPPP preparer should sign this form

3) Scan the signed form
4) Upload the scanned document
Download SWPPP Preparer Certification Form

Please upload the SWPPP Preparer Certification
NONE PROVIDED
Comment
NONE PROVIDED

Erosion & Sediment Control Criteria

25. Has a construction sequence schedule for the planned management practices been prepared?
Yes

26. Select all of the erosion and sediment control practices that will be employed on the project site:

Temporary Structural
Dust Control
Sediment Traps
Silt Fence
Stabilized Construction Entrance
Storm Drain Inlet Protection

Biotechnical
None

Vegetative Measures
Mulching
Seeding
Straw/Hay Bale Dike

Permanent Structural
Retaining Wall

Other
NONE PROVIDED

Post-Construction Criteria

*** IMPORTANT: Completion of Questions 27-39 is not required if response to Question 22 is No.**

27. Identify all site planning practices that were used to prepare the final site plan/layout for the project.
Preservation of Undisturbed Area
Locating Development in Less Sensitive Areas

27a. Indicate which of the following soil restoration criteria was used to address the requirements in Section 5.1.6("Soil Restoration") of the Design Manual (2010 version).
All disturbed areas will be restored in accordance with the Soil Restoration requirements in Table 5.3 of the Design Manual (see page 5-22).

28. Provide the total Water Quality Volume (WQv) required for this project (based on final site plan/layout). (Acre-feet)
3.64

29. Post-construction SMP Identification
Use the Post-construction SMP Identification section to identify the RR techniques (Area Reduction), RR techniques(Volume Reduction) and Standard SMPs with RRv Capacity that were used to reduce the Total WQv Required (#28).

Identify the SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

Note: Redevelopment projects shall use the Post-Construction SMP Identification section to identify the SMPs used to treat and/or reduce the WQv required. If runoff reduction techniques will not be used to reduce the required WQv, skip to question 33a after identifying the SMPs.

30. Indicate the Total RRv provided by the RR techniques (Area/Volume Reduction) and Standard SMPs with RRv capacity identified in question 29. (acre-feet)
1.96

31. Is the Total RRv provided (#30) greater than or equal to the total WQv required (#28)?
No

If Yes, go to question 36. If No, go to question 32.

32. Provide the Minimum RRv required based on HSG. [Minimum RRv Required = (P) (0.95) (Ai) / 12, Ai=(s) (Aic)] (acre-feet)
0.645

32a. Is the Total RRv provided (#30) greater than or equal to the Minimum RRv Required (#32)?
Yes

If Yes, go to question 33.
Note: Use the space provided in question #39 to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). A detailed evaluation of the specific site limitations and justification for not reducing 100% of the WQv required (#28) must also be included in the SWPPP.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

33. SMPs
Use the Post-construction SMP Identification section to identify the Standard SMPs and, if applicable, the Alternative SMPs to be used to treat the remaining total WQv (=Total WQv Required in #28 - Total RRv Provided in #30).

Also, provide the total impervious area that contributes runoff to each practice selected.

NOTE: Use the Post-construction SMP Identification section to identify the SMPs used on Redevelopment projects.

33a. Indicate the Total WQv provided (i.e. WQv treated) by the SMPs identified in question #33 and Standard SMPs with RRv Capacity identified in question #29. (acre-feet)
3.96

Note: For the standard SMPs with RRv capacity, the WQv provided by each practice = the WQv calculated using the contributing drainage area to the practice - provided by the practice. (See Table 3.5 in Design Manual)

34. Provide the sum of the Total RRv provided (#30) and the WQv provided (#33a).
5.6

35. Is the sum of the RRv provided (#30) and the WQv provided (#33a) greater than or equal to the total WQv required (#28)?
Yes

If Yes, go to question 36.

If No, sizing criteria has not been met; therefore, NOI can not be processed. SWPPP preparer must modify design to meet sizing criteria.

36. Provide the total Channel Protection Storage Volume (CPv required and provided or select waiver (#36a), if applicable.

CPv Required (acre-feet)
0.463

CPv Provided (acre-feet)
0.50

36a. The need to provide channel protection has been waived because:
NONE PROVIDED

37. Provide the Overbank Flood (Qp) and Extreme Flood (Qf) control criteria or select waiver (#37a), if applicable.

Overbank Flood Control Criteria (Qp)

Pre-Development (CFS)
326.78

Post-Development (CFS)
298.57

Total Extreme Flood Control Criteria (Qf)

Pre-Development (CFS)
633.88

Post-Development (CFS)
630.47

37a. The need to meet the Qp and Qf criteria has been waived because:
NONE PROVIDED

38. Has a long term Operation and Maintenance Plan for the post-construction stormwater management practice(s) been developed?
Yes

If Yes, Identify the entity responsible for the long term Operation and Maintenance
Project Owner

39. Use this space to summarize the specific site limitations and justification for not reducing 100% of WQv required (#28). (See question #32a) This space can also be used for other pertinent project information.
NONE PROVIDED

Post-Construction SMP Identification

Runoff Reduction (RR) Techniques, Standard Stormwater Management Practices (SMPs) and Alternative SMPs
Identify the Post-construction SMPs to be used by providing the total impervious area that contributes runoff to each technique/practice selected. For the Area Reduction Techniques, provide the total contributing area (includes pervious area) and, if applicable, the total impervious area that contributes runoff to the technique/practice.

RR Techniques (Area Reduction)

Round to the nearest tenth

Total Contributing Acres for Conservation of Natural Area (RR-1)
NONE PROVIDED

Total Contributing Impervious Acres for Conservation of Natural Area (RR-1)
NONE PROVIDED

Total Contributing Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
NONE PROVIDED

Total Contributing Impervious Acres for Sheetflow to Riparian Buffers/Filter Strips (RR-2)
NONE PROVIDED

Total Contributing Acres for Tree Planting/Tree Pit (RR-3)
NONE PROVIDED

Total Contributing Impervious Acres for Tree Planting/Tree Pit (RR-3)
NONE PROVIDED

Total Contributing Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

RR Techniques (Volume Reduction)

Total Contributing Impervious Acres for Disconnection of Rooftop Runoff (RR-4)
NONE PROVIDED

Total Contributing Impervious Acres for Vegetated Swale (RR-5)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Garden (RR-6)
NONE PROVIDED

Total Contributing Impervious Acres for Stormwater Planter (RR-7)
NONE PROVIDED

Total Contributing Impervious Acres for Rain Barrel/Cistern (RR-8)
NONE PROVIDED

Total Contributing Impervious Acres for Porous Pavement (RR-9)
NONE PROVIDED

Total Contributing Impervious Acres for Green Roof (RR-10)
NONE PROVIDED

Standard SMPs with RRv Capacity

Total Contributing Impervious Acres for Infiltration Trench (I-1)
NONE PROVIDED

Total Contributing Impervious Acres for Infiltration Basin (I-2)
NONE PROVIDED

Total Contributing Impervious Acres for Dry Well (I-3)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Infiltration System (I-4)
NONE PROVIDED

Total Contributing Impervious Acres for Bioretention (F-5)
20.2

Total Contributing Impervious Acres for Dry Swale (O-1)
2

Standard SMPs

Total Contributing Impervious Acres for Micropool Extended Detention (P-1)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Pond (P-2)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Extended Detention (P-3)
NONE PROVIDED

Total Contributing Impervious Acres for Multiple Pond System (P-4)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Pond (P-5)
NONE PROVIDED

Total Contributing Impervious Acres for Surface Sand Filter (F-1)
NONE PROVIDED

Total Contributing Impervious Acres for Underground Sand Filter (F-2)
NONE PROVIDED

Total Contributing Impervious Acres for Perimeter Sand Filter (F-3)
NONE PROVIDED

Total Contributing Impervious Acres for Organic Filter (F-4)
NONE PROVIDED

Total Contributing Impervious Acres for Shallow Wetland (W-1)
NONE PROVIDED

Total Contributing Impervious Acres for Extended Detention Wetland (W-2)
NONE PROVIDED

Total Contributing Impervious Acres for Pond/Wetland System (W-3)
NONE PROVIDED

Total Contributing Impervious Acres for Pocket Wetland (W-4)
NONE PROVIDED

Total Contributing Impervious Acres for Wet Swale (O-2)
NONE PROVIDED

Alternative SMPs (DO NOT INCLUDE PRACTICES BEING USED FOR PRETREATMENT ONLY)

Total Contributing Impervious Area for Hydrodynamic
NONE PROVIDED

Total Contributing Impervious Area for Wet Vault
NONE PROVIDED

Total Contributing Impervious Area for Media Filter
NONE PROVIDED

"Other" Alternative SMP?
NONE PROVIDED

Total Contributing Impervious Area for "Other"
NONE PROVIDED

Provide the name and manufaturer of the alternative SMPs (i.e. proprietary practice(s)) being used for WQv treatment.

Note: Redevelopment projects which do not use RR techniques, shall use questions 28, 29, 33 and 33a to provide SMPs used, total WQv required and total WQv provided for the project.

Manufacturer of Alternative SMP
NONE PROVIDED

Name of Alternative SMP
NONE PROVIDED

Other Permits

40. Identify other DEC permits, existing and new, that are required for this project/facility.
Freshwater Wetlands/Article 24
Individual SPDES

If SPDES Multi-Sector GP, then give permit ID
NONE PROVIDED

If Other, then identify
NONE PROVIDED

41. Does this project require a US Army Corps of Engineers Wetland Permit?
No

If "Yes," then indicate Size of Impact, in acres, to the nearest tenth
NONE PROVIDED

42. If this NOI is being submitted for the purpose of continuing or transferring coverage under a general permit for stormwater runoff from construction activities, please indicate the former SPDES number assigned.
NONE PROVIDED

MS4 SWPPP Acceptance

43. Is this project subject to the requirements of a regulated, traditional land use control MS4?
Yes - Please attach the MS4 Acceptance form below

If No, skip question 44

44. Has the "MS4 SWPPP Acceptance" form been signed by the principal executive officer or ranking elected official and submitted along with this NOI?
Yes

MS4 SWPPP Acceptance Form Download
Download form from the link below. Complete, sign, and upload.
MS4 SWPPP Acceptance Form

MS4 Acceptance Form Upload
NONE PROVIDED
Comment
NONE PROVIDED

Owner/Operator Certification

Owner/Operator Certification Form Download
Download the certification form by clicking the link below. Complete, sign, scan, and upload the form.
Owner/Operator Certification Form (PDF, 45KB)

Upload Owner/Operator Certification Form
NONE PROVIDED
Comment
NONE PROVIDED

Attachments

Date	Attachment Name	Context	User
8/22/2022 2:52 PM	constnoioocert.pdf	Attachment	Michael Morgante
8/22/2022 2:50 PM	swpppaccept.pdf	Attachment	Michael Morgante
8/22/2022 2:37 PM	swpppcert.pdf	Attachment	Michael Morgante

APPENDIX E

CONSTRUCTION WASTE MANAGEMENT & SPILL PREVENTION PLAN

At the commencement of construction, land clearing materials will be collected and stored on-site for re-use. Construction debris such as cardboard, concrete, metal, wood and similar garbage will be collected in dumpsters and disposed of properly. An open top container will be on site during construction. The contractor will be responsible for organizing and placing containers on site and timely removal/replacement when containers are filled to capacity.

On-site storage of fuel chemicals shall be equipped with a spill kit. The contractor must provide secondary containment for storing any hazardous chemicals on site.

All equipment stored on site shall be inspected daily by the contractor for any oil or lubricant spills or leaks. Any leaks shall be repaired immediately. In addition, all equipment must be closely inspected prior to working in the Village R.O.W.

The contractor shall clean all spills immediately and shall report all spills to the New York State Department of Environmental Conservation.

This plan will be displayed in the construction jobsite trailer at all times.

APPENDIX F

Contractor Certification Statement

_____ NYR_____ _____

Name of Construction Site | DEC Permit ID | Municipality (MS4)

I hereby certify that I understand and agree to comply with the terms and conditions of the SWPPP and agree to implement any corrective actions identified by the *qualified inspector* during a site inspection. I also understand that the *owner or operator* must comply with the terms and conditions of the most current version New York State Pollution Discharge Elimination System ("SPDES") general permit for stormwater discharges from construction activities and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect or inaccurate information is a violation of the referenced permit and the laws of State of New York and could subject me to criminal, civil and /or administrative proceedings.

Name _____ Title _____

Signature _____ Date _____

Company Name & Address _____ Phone_____

_____

Project Site Address _____

Provisions Responsible for _____

_____

_____

Information on the Trained Certified Contractor or Subcontractor

_____ _____ _____

Name of Trained Employee | Title of Trained Employee | NYSDEC SWT#

A copy of this signed contractor certification statement must be maintained in the SWPPP on site.

APPENDIX G

Town of Blooming Grove
Stormwater Management Facility Easement and Maintenance Agreement

THIS AGREEMENT is made this ____ day of _____ 2022 by and between the Town of Blooming Grove, having an address at 6 Horton Road, Blooming Grove, NY 10914 ("Municipality" or "Town") and _____ a New York limited liability company (or individual or corporation) having an address at _____ (the "Facility Owner").

WHEREAS, the Facility Owner is the owner of certain real property in the Town of Blooming Grove, County of Orange, State of New York, consisting of approximately _____ acres more particularly described in Schedule "A" annexed hereto and made a part hereof (the "Property"); and with a street address of _____ and further known as S-B-L ____-____-____; and further known as the _____ commercial site plan; and

WHEREAS, the project plans were approved by the Town of Blooming Grove Planning Board on _____, 2022 with various conditions; and

WHEREAS, the Municipality and the Facility Owner have to enter into an agreement to provide for the long-term maintenance and continuation of stormwater control measures and facilities approved by the Municipality for the below named project; and

WHEREAS, the Municipality and the Facility Owner desire that the stormwater control measures and facilities be built in accordance with the approved project plans and thereafter be maintained, cleaned, repaired, replaced and continued in perpetuity in order to ensure optimum performance of the components.

NOW, THEREFORE, the Municipality and the Facility Owner agree as follows:

1. This agreement binds the Municipality and the Facility Owner, its successors and assigns to the maintenance provisions depicted in the approved project plans and described in the Stormwater Pollution Prevention Plan (SWPPP) which are on file with the Municipality's Stormwater Management Officer and where the operation and maintenance requirements are clearly set forth. The Facility Owner shall remain solely responsible for operation and maintenance in perpetuity and the Town assumes no operation, maintenance, control or responsibility in respect thereof.

2. The Facility Owner shall install, maintain, clean, repair, replace and continue the stormwater control measures depicted on the approved project plans for the Facility on and about the Property, as necessary to ensure optimum performance of the measures and in accordance with the approved design specifications. The stormwater control measures are identified in the Stormwater Pollution Prevention Plan (SWPPP) approved by the Municipality and shall be in accord with the project plans approved by the Planning Board.

3. The Facility Owner shall be responsible for all expenses, costs and professional fees related to the installation and perpetual maintenance of the stormwater control measures and shall promptly comply with any future regulatory requirements as applicable and shall indemnify and hold the Municipality harmless from all actions, proceedings, including regulatory proceedings, including the Towns reasonable professional fees related thereto, and for all claims, damages, injuries and fines relative to the stormwater control measures and facilities.

4. The Facility Owner shall provide for the periodic inspection of the stormwater control measures, not less than once every 2 years, to determine the condition and integrity of the measures. Such inspection shall be performed by a Professional Engineer licensed by the State of New York. The inspecting engineer shall prepare and submit to the Municipality within 30 days of the inspection, a written report of the findings including recommendations for those actions necessary for the continuation of the stormwater control measures. The Facility Owner shall undertake necessary maintenance, repairs and replacement of the stormwater control measures pursuant to the SWPPP or at the direction of the Municipality or in accordance with the recommendations of the inspecting engineer.

5. The Facility Owner shall not authorize, undertake or permit alteration, abandonment, modification or discontinuation of the stormwater control measures except in accordance with written approval of the Municipality. The obligations of the Facility Owner under paragraphs 2, 3 and 4 of this Agreement shall toll upon the completion of the establishment of a drainage district of the Municipality and the acceptance of the dedication of the stormwater control measures by the Municipality. Notwithstanding, the Municipality shall have no obligation to establish any such drainage district nor accept ownership of any of the stormwater control measures.

6. This agreement shall be recorded in the Office of the County Clerk, County of Orange at the expense of the Facility owner and shall be referenced in any offering plan and/or prospectus, lease, contract of sale or future transfer, however, the failure to so reference shall not affect the validity of this Agreement. All rights, title and privileges herein granted, including all benefits and burdens, shall run with the land and shall be binding upon and inure to the benefit of the parties hereto, their respective heirs, executors, administrators, successors, assigns and legal representatives.

7. If ever the Municipality determines that the Facility Owner has failed to construct or maintain the stormwater control measures and facilities in accordance with the project plans or has failed to undertake corrective action specified by the Municipality or by the inspecting engineer, the Municipality is authorized to undertake such steps as reasonably necessary for the preservation, continuation or maintenance of the stormwater control measures and facilities and is hereby authorized by the owner to assess the expenses thereof as a lien against the property to be collected in the same fashion as other municipal taxes. In lieu thereof, the Facility Owner shall reimburse the Municipality for all actual costs and expenses, incurred in enforcing this Agreement and curing a violation.

8. At any time after a violation of this Agreement is alleged by the Municipality, the owner, at the sole discretion of the Municipality, shall post security in an amount and in a form acceptable to the Municipality to ensure the owner's future performance and maintenance of the stormwater control measures.

9. The Facility Owner hereby grants to the Town, its authorized agents, contractors and employees, a permanent easement which runs with the land to enter upon the Property at reasonable times to inspect the stormwater control measures whenever the Town deems necessary to ensure that the facility is maintained in proper working condition to meet design standards, and to undertake such steps as the Town deems reasonably necessary for the preservation, continuation or maintenance of the stormwater control measures. The Facility Owner hereby releases and shall hold the Town harmless from any damages as a result of such entry and work. It is expressly understood and agreed that the Town is under no obligation to construct or routinely maintain or repair the stormwater control facilities, and in no event shall this agreement be construed to impose any such obligation on the Town.

10. The Facility Owner shall complete the site work within one (1) year of the issuance of permits for the site work, and conduct all site disturbance work in accordance with the approved SWPPP and in compliance with the approved project plans. In the event that the Facility Owner fails to complete the site work within one (1) year of the issuance of permits for the site work or fails to maintain/repair the facilities, the Municipality, upon giving twenty (20) days written notice to the Facility Owner, and a demand to complete, perform and correct by a date certain, and upon default of said Facility Owner, the Municipality shall have the right to complete the site work and/or to maintain/repair the facilities and to take such steps as it deems appropriate to either complete the site work or to stabilize and restore the site and/or to maintain/repair the facilities, and to recover its cost per paragraph 7 above. The time required to notice may be reduced to that deemed practicable and reasonable upon recommendation of the Engineer for the Town and upon the engineer's certification that an emergency condition exists which requires action to be undertaken immediately and does not allow time to give notice to the Facility Owner and an opportunity to correct in the manner specified above.

11. The governing bodies of the parties hereto have authorized the respective signatories to this Agreement.

IN WITNESS WHEREOF, the parties have duly executed this agreement as of the day and year first above written.

TOWN OF BLOOMING GROVE **NAME OF RECORD OWNER:**

By: _____ **By:** _____

Robert Jeroloman, Supervisor [Print name]

STATE OF NEW YORK:)
) SS.
COUNTY OF ORANGE:)

On the ___ day of _____, in the year 2022 before me, the undersigned, personally appeared _____ personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public

STATE OF NEW YORK:)
) SS.
COUNTY OF ORANGE:)

On the ___ day of _____, in the year 2022 before me, the undersigned, personally appeared ROBERT JEROLOMAN personally known to me or proved to me on the basis of satisfactory evidence to be the individual whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his capacity, and that by his signature on the instrument, the individual, or the person upon behalf of which the individual acted, executed the instrument.

_____
Notary Public

APPENDIX H

KEVIN L. PATTON, P.E.
36 PATTON ROAD
NEWBURGH, N.Y. 12550
845 275-7732 PATTONGEOTECH.COM

CLIENT:	Indigo Contracting Inc. 51 Forest Road, Suite 316-76 Monroe, NY 10950	PROJECT: PROJ. No.: DATE:	County 51 Warehouse Town of Blooming Grove, N.Y. 20420 March 5, 2021

GEOTECHNICAL INVESTIGATION REPORT

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SOIL TECHNICAL NOTES
BORING LOCATIONS
SUBSURFACE PROFILE
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LABORATORY TEST REPORTS
USDA SOIL REPORT DATA

1. PROJECT DESCRIPTION

This geotechnical investigation report was prepared for use in the design and construction of the warehouse building ("Building 1") at the project site, which is situated on the west side of Craigville Road (County Route 51) immediately south of the Heritage Trail rail trail. The proposed building is an approximately 704,000 square foot (16.2-acre) warehouse, 438 feet wide by 1607 feet long, with a proposed floor elevation of 495 feet, with its long axis aligned northwest-southeast; in this report the southeast end is designated the east end, the north side is parallel to the rail trail, etc. The building site is an irregular hill, sloping down from a high point at about 548 feet elevation, about 150 feet north from the north side of the proposed building, toward a large wetland area which wraps around the west, south and east sides of the Building 1 site at elevations of about 430 to 460 feet. The site for proposed Building 2, a 150x200-foot support building, is on the south side of this wetland, about 1200 feet south from the southeast corner of proposed Building 1.

The east part of the Building 1 site is mostly farm fields and the west portion is partly wooded. Existing slopes are typically five to twelve percent in the east part of the building area, and ten to fifteen percent elsewhere, with maximum slopes of about thirty percent. The project will require a cut up to sixty feet deep on the north side of the building, fills of up to twenty to twenty-five feet in height on the east and south sides, and fills up to forty feet high on the west end. The middle fifty percent of the building will be in the cut, with the portion supported by fill about equally divided between the east/southeast and west/southwest parts of its footprint; the fill thickness will be greater than ten feet under about 65,000 square feet of the southeast part of the building, and under about 95,000 square feet of the west end.

The USDA Soil Survey indicates that the native topsoil type in the Building 1 and Building 2 areas is Mardin gravelly silt loam, which forms over deep deposits of glacial till, typically composed of silty gravel and sand with cobbles and boulders; the Soil Survey indicates that the upper two feet of this soil unit typically contains about four percent cobbles, up to eighteen percent, and up to three percent boulders (larger than ten inches diameter,) and that at two to six feet depth it typically contains six percent cobbles and three percent boulders, with up to forty percent cobbles and seventeen percent boulders. Cobbles and boulders were common in the borings, becoming more abundant with increasing depth, and the soils consisted of layered glacial till.

The soils in the valley crossing the site consist of Fredon silt loam from Craigville Road past the east end of Building 1; Raynham silt loam from that point to the end of the building; Catden muck below the west end of the building, extending south to Route 17; and Natchaug muck, beginning about seven hundred feet west from Building 1 and extending off-site to the west. Natchaug soils typically consist of about thirty-one inches of peat over sandy to clayey glacial stream or glacial lake deposits, and Catden soils consist of several feet of peat over similar deposits. Raynham silt loam typically forms over glacial lake deposits of silty clay, silt and sandy silt, while Fredon soils form over sandy to gravelly glacial stream deposits. The disposition of these soils reflect the ponding and streamflow that existed during glacial melt-out, and they now form the source of Young's Brook, which flows east under Craigville Road between the Building 1 and Building 2 areas.

The bedrock geology is somewhat complex near the site. The State geologic map indicates that the bedrock is dark gray Ordovician-age siltstone, shale and sandstone of the Normanskill formation. Just to the east, a major SSW-NNE trending fault separates this unit from the younger light gray to reddish sandstone, shale and conglomerate that form Schunemunk Mountain and Bellvale Mountain, which are part of a large down-dropped block of Devonian-age bedrock. Close to the fault are a few isolated blocks of carbonate rocks (limestone, etc.,) O€s on the map. To the west of the Bellvale-Schunemunk fault is a chain of hills composed of buff-colored Precambrian-age quartz-feldspar-biotite gneiss (green 'qtcs' on the map,) which

are erosional remnants of a layer of bedrock thrust into place over younger bedrock during the Taconic orogeny. There is some Wappinger formation limestone (dolostone) along the east side of this unit immediately to the south of the project, truncated by a west-trending fault. None of the faults near the site are known to be seismically active.











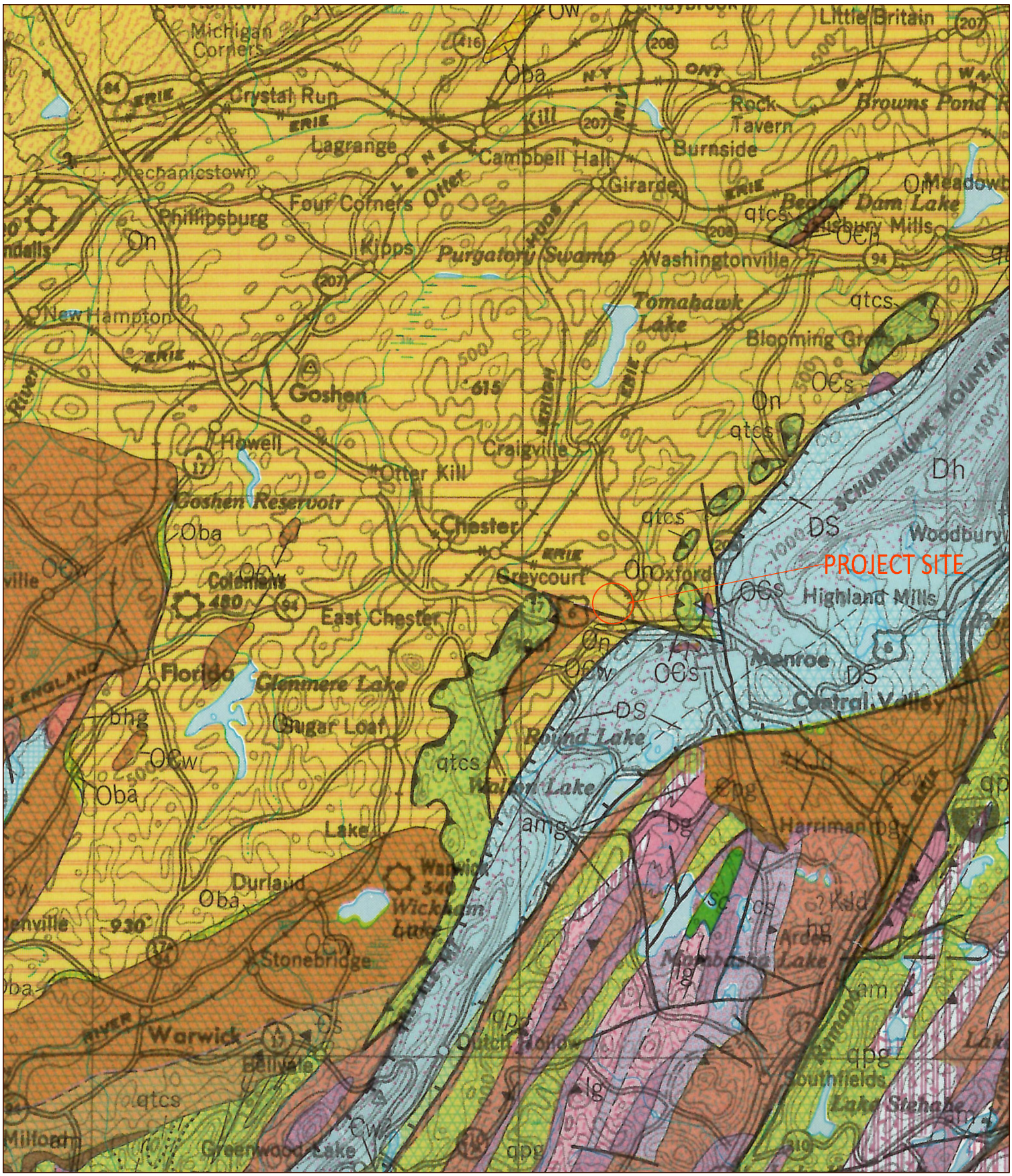
PHOTO 1 (Top Left): Facing west from the south side of the Building 1 fill area.

PHOTO 2 (Top Right): Facing west from a point east of Photo 1.

PHOTO 3 (Above Left): Facing south from the top of the hill, from inside the Building 1 area.

PHOTO 4 (Above Right): Boulders in a stone wall near the north side of proposed Building 1. Almost all of these were sandstone.

PHOTO 5 (Left): The Building 2 site, facing west from the east end.



A portion of the Geologic Map of New York (NYS Museum, 1970,) showing the project location, on the eastern edge of the 'On' Normanskill shale bedrock unit (yellow with red stripes.) The green 'qtcs' unit is gneiss, the brown 'OCw' is limestone, and the blue 'DS' and 'Dh' units are sandstone, shale and conglomerate. Heavy black lines indicate faults; triangles indicate the over–thrust unit on a thrust fault.

2. SOIL INVESTIGATION AND TEST RESULTS

Twenty-four soil borings were drilled in the Building 1 area, beginning on January 22 and ending on February 5, 2021. The site was lightly snow-covered at the beginning of the work, which was interrupted by a blizzard on February 1st and 2nd, with a snowfall of about twenty inches at the site. Drilling was performed by General Borings, Inc. of Prospect, Connecticut. The subsurface investigation was supervised and witnessed by Wyeth Patton, under the direction of Kevin Patton, P.E. Conventional hollow-stem auger borings were drilled, using a Bombardier track-mounted drill rig. Soil sampling and testing were performed by the Standard Penetration Test (SPT,) using a Safety Hammer on a cable, in accordance with ASTM D1586 (Standard Method for Penetration Test and Split-Barrel Sampling of Soils.) A second drill and crew were available for one day (February 4th) and were mobilized to the site, using a Diedrich track-mounted drill rig with an Automatic Hammer to drill borings B19, B20 and B21; drilling of these borings was witnessed by Wyeth Patton, while the drilling of boring B18 on this date, using the Bombardier rig, was witnessed by Warren Patton.

The borings are numbered in the order drilled, which was partly determined by the available trails, as well as by the process of 'feeling out' the site to obtain the most representative data. The upper ten or so feet of the soil profile typically offered normal resistance to drilling, except when occasional boulders were encountered; below this depth the soil was usually very hard, with boulders becoming more abundant, and the soil taking minutes per foot to drill when they were absent. The boulders thwarted all attempts to verify the depth to bedrock; in three of the deepest borings, B10, B17 and B18, coring was performed after refusal was met, but the cores were drilled through boulders and the borings could not advance past them.

The Standard Penetration Test provides the Blow Count "N" Value, equal to the number of blows of the 140-pound steel hammer that were required to drive the 2-inch outside diameter split-spoon sampling tube into the soil, over a twelve-inch increment. Soil samples are also recovered by this method, and additional tests were performed in the field and lab, as noted on the soil boring log, using a hand penetrometer to test bearing capacity. Laboratory testing was performed on representative soil samples, for moisture content, particle size distribution and Atterberg Limits. USCS classifications of the soil, per ASTM D2487 and D2488, are provided on the logs and on the subsurface profile drawing.



PHOTO 6: The Bombardier drill rig drilling on the north side of Building 1. Photo taken facing south.

2.1. Soil Boring Blow Count and Laboratory Data

Field Blow Count Values, N								
	B1	B2	B3	B4	B5	B6	B7	B8
Elev.:	509	499	518	510	520	497	530	495
Depth, ft.: 1	7	7	6	10	9	8	6	6
3	60	81/11	17	42	51	11	17	28
6	32	22	29	43	29	31	20	19
8	30	24	22	18	26	40	29	19
11	46	63	59	86/11″	27	7	50/0	
12								32
16		50/3″		50/2″	50/4″		50/3″	
21					58		50/1″	
Refusal, ft	12.5		14	19	22	12.5	20	13

	B9	B10	B11	B12	B13	B14	B15	B16
Elev.:	471	530	511	497	494	487	484	513
Depth, ft.: 1	8	14	10	16	50/1″	21	13	12
3	81	45	29	14		50/5″	17	20
6	12	36	20	48	32	80	63/9″	24
8	20	98/9″	35	85/9″	45			32
11	36	50/4″″	50/0	50/5″	37	27		33
16		71		50/1″	1	54		50/1″
21		50/1″		50/5″				50/1″
26		43						50/1″
31		50/4″						
Cored:		28-31′						
Refusal, ft	13	31	13		18		5	27

	B17	B18	B19	B20	B21	B22	B23	B24
Elev.:	521	540	489	485	473	454	460	464
Depth, ft.: 1	6	8	7	19	5	3	5	13
3	38	37	25	26	50/3″	46	35	23
6	58	57	42	16	50/1″	25	14	15
8	51	53	42	21	22	13	50/5″	37
11		81	50/4″	77		50/4″	35	29
16	86	50/4″	50/3″	50/1″		22	71	50/3″
21	108/7″	50/3″						
Cored:	26.5-30′	21-22′						
Auger Refusal, ft	30	22			13			

Natural Moisture Content, Percent							
Depth, feet	B2	B6	B7	B8	B9	B10	B11
ELEV.	499	497	530	495	471	530	511
3	9.0	15.3	17.6	9.1	12.6	11.2	8.7
6	11.5	12.6	10.9	8.6	12.9	16.6	9.8
8	15.4	12.5		12.1/16.9	9.3	8.7	12.3
11	8.9	15.0	10.7	5.6 (at 12')		10.4	19.3
16						7.9	
26						31.7/20.1	
31						18.8	

Natural Moisture Content, Percent								
Depth, feet	B13	B14	B15	B16	B19	B20	B22	B24
ELEV.	494	487	484	513	489	485	454	464
1							10.2	
3		10.5	12.5	12.2	9.3		11.6	14.0
6	13.9	11.1	22.8	10.8	22.1	19.3	10.0	11.2
8	6.9			13.1	10.4/12.3	9.1		11.3
11		18.7		9.8		8.4	10.4	20.0
16	22.5	13.5		5.9				14.3

SOIL TEXTURE						
Particle Size Analysis						
Sample		B4-S5	B7-S4	B12-S3	B16-S7	B22-S6
Depth		11 feet	8 feet	6 feet	21 feet	16 feet
Sample Elevation		499 ft	522 ft	491 ft	492 feet	438 ft
SPT N value		86/11″	29	48	50/1″	22
Type		Brown gravelly sandy till	Brown silty sandy till	Brown clayey gravelly till	Gray sandy silty clay till	Brown gravelly sand till
USCS Class		SM	SM	GC-GM	CL-ML	SM
Sieve Size	mm	Percent Passing by Weight				
¾″	19.0	90	89	89	100	93
#4	4.75	63	77	63	90	76
#10	2.00	49	67	55	81	62
#40	0.425	34	55	45	69	43
#200	0.075	21	35	29	50	16
Hydrometer	0.050	18	31	24	46	12
	0.005	7	13	10	24	4
	0.002	4	8	7	16	2
Atterberg Limits						
Sample		B4-S6	B13-S4	B12-S3 (same)	B16-S7 (same)	B22-S6 (same)
Depth		16 feet	11 feet	6 feet	21 feet	16 feet
Liquid Limit		16	15	20	20	None
Plastic Limit		14	15	14	13	None
Plasticity Index		2	Non-plastic	6	7	Non-plastic

The Standard Penetration Test results (blow counts) near the surface were mostly between five and twenty (Loose to Medium Dense.) At depths of about three to ten feet, blow counts were typically between ten and fifty (Medium Dense to Dense) or higher; at ten to fifteen feet and deeper, blow counts were mostly greater than fifty (Very Dense.) Low blow counts in deep soil were recorded in only a few instances; in boring B13, penetration of eighteen inches in one blow occurred just above the refusal depth of eighteen feet. This was at about Elevation 476, near the northeast building corner; the soil was fine sandy till and the Very Loose condition was attributed to upwelling of groundwater during sampling, not to a loose in-situ state. This also occurred in boring B6, just above the refusal depth of 12.5 feet (El. 484.5) in moist silt till. These were the only two borings in the building cut area that had N values less than nineteen at elevations lower that the proposed floor. In the fill area of the building, excluding the initial SPT at one foot depth, the blow counts were mostly in the thirteen to forty-five range, i.e. Medium-Dense to Dense. Boulders and cobbles were common in the soil, often producing blow counts of more than one hundred per foot.

Moisture content tests were performed on most of the testable samples from several boreholes, to investigate the moisture profile of the soil. Most test results were between six and fifteen percent moisture by weight, up to about twenty-two percent for some of the finer-grained samples. The soils were in a moist to wet condition, and these relatively low moisture contents indicate dense consolidation. A high moisture value (31.7%) was recorded at twenty-six feet depth in boring B10 in wet, finely-layered silt, clay and sand, with an N value of 43, just above a large limestone boulder which was cored. The moisture was also somewhat high (22.5%) in the last sample from boring B13, with N=1, discussed in the paragraph above.

Five samples were selected for particle size and plasticity testing to represent the typical soils at the site. For these particular samples, the first two (B4-S5, B7-S4) represent borrow soil from the cut area, the next two (B12-S3 and B16-S7) represent native soil near the footing elevation in a shallow cut and a deep cut, respectively, and sample B22-S6 represents the native soil in the deep fill area at the west end of the building. These samples were all glacial till, and similar soils are found throughout the soil profile. With the exception of B16-S7, which was sandy silty clay, the samples were predominately sandy to gravelly, and the fine portion of the soil was non-plastic to slightly clayey. When possible, the Atterberg Limits tests were performed on the same samples as the particle size analyses; similar samples were used to represent the first two. Some of the soil layers encountered in the borings were not glacial till, but rather were deposited by relatively clean flowing water, or by settling in calm water; these were typically minor layers within the till. Due to the sampling method, the analyses exclude particles that are medium gravel-size or larger. Cobbles and boulders are common in the soil but are not represented by the tests.

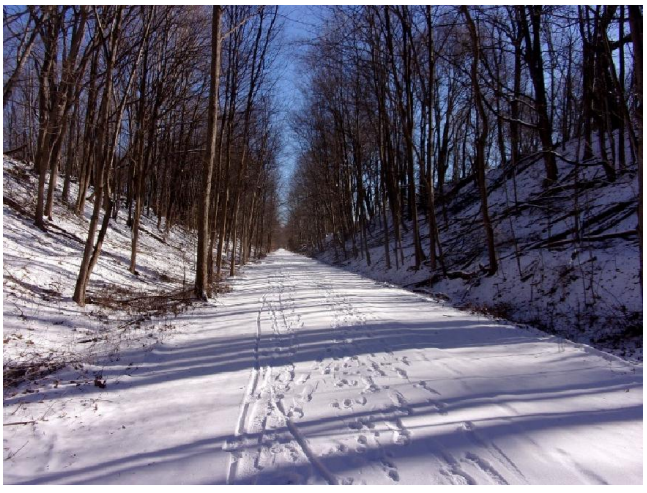


PHOTO 7: The rail cut north of the Building 1 site, facing east, with the project site to the right. This deep cut appears to be all in soil.

2.2. Subsurface Profile and Summary of Soil Conditions

The soils in the Building 1 area consist of layered glacial till with associated veins and/or layers of sand and silt. There are two main zones in the till; the upper zone extends to about ten to fifteen feet depth, and tends to be somewhat finer-grained, typically gravelly sandy till with occasional cobbles and boulders. The deeper zone of till tends to be coarser grained, commonly gravelly silty sand and silty sandy gravel, with many cobbles and boulders.

Perched groundwater was encountered at scattered locations throughout the soil profile in both the cut and fill areas. The groundwater is locally controlled by variations in the soil layering, and springs and seeps can be expected at, above and below the proposed floor elevation.

The presence of bedrock within the building footprint was neither proven nor disproven by the borings. Topographically and geomorphically, the hill on which the project is located appears to be a glacial deposit independent from the adjacent bedrock-controlled ridges and mountains. The railroad cut (rail trail) running three hundred feet north of the north side of Building 1 appears to be all in soil, extending down to elevations of about 495 feet north of the west end, to about 515 feet, north of the east end of the proposed building. In the fill area in the eastern part of Building 1, the mode of refusal in two of the borings indicated possible bedrock at the bottoms of B13 and B15, at elevations of 476 and 477.5 feet; these locations were not cored, as refusal was nearly twenty feet below the proposed floor elevation. This evidence all points to bedrock throughout the cut area being deeper than the proposed building foundation, however two of the borings indicate that shallower rock could be present. Boring B10, near the center of the north side of Building 1, encountered finely-layered soil of a completely different color at a depth of 25 feet, drilling and coring through a dolomitic limestone boulder at 28 to 31 feet, then back into this odd pale-colored carbonate-rich soil, with refusal at Elevation 499. Boring B17, near the center of Building 1, met refusal in soil at Elevation 491 after coring 3.5 feet through another dolostone boulder of similar appearance. The change in soil color and appearance could indicate close proximity to bedrock, and these boulders could be detached bedrock blocks surrounded by weathered rock; geologic maps indicate, however, that the bedrock is dark gray siltstone, shale and sandstone, not dolostone. There is dolostone nearby, however it is on the south side of the fault that crosses the project site.

The borings indicate that bedrock will probably not be encountered, but it could be present above the proposed floor elevation in the deepest part of the cut, in the middle of the north side of the building. Even if rock excavation is not required, a large number of boulders can be expected, especially in the deeper parts of the fill. If additional exploration for bedrock in the building area is desired, a seismic study should be considered as an alternative to trying to drill soil borings through the hard boulder-laden soil.



PHOTO 9: Boulder cores, moistened, from borings B18 (top,) B17 (middle,) and B10. The top core is quartzite sandstone and the other two are dolomitic limestone (dolostone.)



Photo 10.
Core from boring B10, 30-31 feet.



Photo 11.
Top of core from boring B17, 27-30 feet.



Photo 12.
Core from boring B18, 21-22 feet.

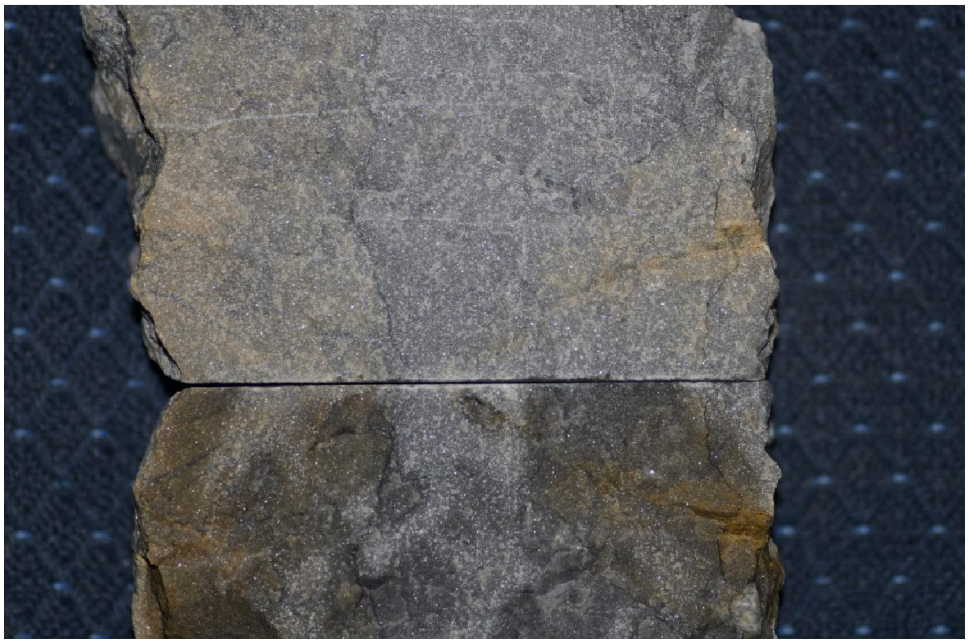


Photo 13.
Split section from the middle of the B17 core, at about 28 feet depth. The top half is dry, the lower half is damp.

3. EVALUATION

3.1. Subgrade Preparation

The conditions encountered in the investigation were evaluated for their impacts on construction methods, structural-geotechnical design, and long-term performance. The evaluation indicates that the soils throughout the proposed building area are suitable for the use of shallow spread footing foundations and slabs-on-grade, subject to performing the required subgrade preparation operations, as described below.

In the area where the Building 1 slab elevation will be in a cut of more than five feet deep, excavate to the required subgrade elevation and correct any local deficiencies. Where the slab and foundation will be close to existing grade, or will be on a fill, remove all topsoil, soft subsoil, stumps and large roots from the subgrade surface, in all building areas and extending at least five feet beyond, including the fill area of the building pad. Use excavation methods that minimize disturbance of the final subgrade surface. Compact the surface to consolidate any soil that was loosened during excavation. In the fill and shallow cut areas, compact and simultaneously proof-roll the surface with a single-drum vibratory soil roller with a nominal weight of four to seven tons. Make at least two vibratory passes over each location, and correct any deficient areas. Remove any pockets or small zones of unsuitable materials that are encountered, and replace with controlled compacted fill. Contact the Engineer prior to performing any significant extra excavation. Where stumps or boulders are removed, or where other over-excavation work is performed to prepare subgrade areas, the sides of the excavation shall be trimmed back to stable soil as each lift is placed; as the backfill is compacted, extra care shall be taken to insure thorough compaction where the edges of each lift meet the sides of the excavation. Where deficient soil is removed from below footing locations, the remediated area shall extend at least one foot out from the footing per foot of depth (1 to 1 splay.)

Where ripping or hammering of jointed or weathered rock is required, remove the rock to an approximately level and uniform elevation. Track over the surface with the excavator, if possible, then compact the surface with several passes of a vibratory trench roller or a single-drum soil roller, to fracture and seat any loose rock. A layer up to four inches thick of Structural Fill or ¾-inch crushed stone may be placed over the rock surface to facilitate compaction. Rake sloping areas of rock with the excavator teeth, and remove the loose material.

Footings may bear directly on the prepared subgrade, or on controlled compacted fill placed over the subgrade. Footing bearing surfaces shall be free from frost, mud and loose soil or standing water, when concrete is placed. Where fine-grained native soil is present at the bearing elevation, a layer up to four inches thick of Structural Fill may be placed in the footing bottom to protect the soil surface, after properly preparing the surface to a level and stable condition; avoid using clean gravel or stone under areas where footings step or slope, as this may promote soil erosion during or after construction. When used, this layer shall be thoroughly compacted with a vibratory plate tamper or roller, and its surface shall not extend above the design bearing elevation.

Where fill will be added against existing slopes or against new fill slopes, bench the fill into the slope to create a stair-step interface, for improved stability and groundwater control. Lightly scarify the surface of the existing soil prior to placing the fill. This is required by Code when the depth of the fill exceeds five feet, against an existing slope of twenty percent or steeper; in such cases, a key shall also be provided at the toe of the slope, with a depth of two feet and a minimum width of ten feet (i.e. the toe of the embankment must be embedded two feet below finished grade.)

For cut slopes and fill slopes with a height of thirty feet or more, and a slope of 33 percent or greater (one in three,) terraces shall be provided at vertical intervals of thirty feet or less, to control drainage and debris.

The terraces shall be at least six feet wide, but where more than one is required, the terrace nearest mid-height of the slope shall have a width of at least twelve feet. Drainage swales shall be provided on terraces. Refer to Appendix J of the Building Code for additional details.

3.2. Excavation

The native soils may be excavated using conventional heavy equipment, such as tracked excavators. Large-size equipment is recommended due to the hard soil conditions and abundant boulders. For mass cuts and fills, scraper pans might be effective, but they may encounter problems with boulders, and may need to be pushed by a bulldozer when cutting; these factors could prevent the use of pans in the deeper cuts, i.e. greater than ten to fifteen feet below existing grade. Some rock excavation may be required; hammering will be required if fresh rock is encountered, and blasting would be more practical if large volumes of rock are found. Refer to the Subgrade Preparation section of this report for specific recommendations.

The investigation indicates that the soils which will be encountered in the building excavations are likely to predominately be OSHA Type A, requiring a minimum slope of 0.75-to-1 in shallow excavations, and OSHA Type B, requiring a minimum slope of 1-to-1; benching is permitted in these soil types. Soil types and excavation requirements must be confirmed during construction.

Groundwater seepage rates in the building excavations are expected to be slow, but will likely be persistent, at least during wet seasons. Occasional zones of concentrated seepage may be encountered. There may also be some initial short-term drainage of greater volume from zones of perched water. Groundwater seepage and stormwater should be removed promptly from the excavations. When dewatering excavations, the water level should be drawn down at a controlled rate, allowing the soil in the sides of the excavation to drain.

3.3. Fill Materials and CLSM

Soils excavated from the site are expected to be of good quality for re-use as fill and backfill for foundations, slabs and pavement areas. The better-quality soils are interlayered with some poorer soils, and it will probably not be feasible to segregate them during excavation, but if the better and poorer soils are blended together the mix should be acceptable for use in most conditions. The native soils are not excessively moisture-sensitive and should be reasonably easy to work with, however boulders are fairly abundant and must be removed from the borrow fill; these could be crushed for use as fill. Any large clumps of clayey soil must be broken up.

If imported fill is used below foundations and slabs, it shall consist of granular material, i.e. imported Structural Fill, which shall be good-quality bank-run sand and gravel or crushed stone, and should comply with the gradation limits below. Structural Fill may also be used as foundation backfill. Structural Fill HD (Heavy Duty) should be used in areas to be protected from heavy construction traffic and where subgrade stabilization and/or enhanced drainage is needed. All fill materials shall consist of sound, durable particles, shall be free from frost or snow, garbage, construction debris or other deleterious material, and shall be substantially free from organic matter and roots. Recycled crushed concrete and masonry from a registered source may be acceptable for some applications, subject to approval by the Designer of Record. Fill shall not be placed over frozen or unstable soil, unless approved by the Engineer.

Sieve size		Structural Fill	Structural Fill HD
Inch	mm	Percent Passing by Weight	
4″	100	100	100
1½″	37.5	50-100	50-95
#4	4.75	20-70	20-50
#40	0.425	5-40	5-25
#200	0.075	0-20	0-10

CLSM (Controlled Low-Strength Material, aka flowable fill or k-crete,) may be used under footings and foundations when specifically approved by the Engineer, and may also be used to backfill trenches or other excavations, typically where rapid fill placement is required, fill areas are narrow, or the use of conventional compaction methods is not practical. For support of footings, a CLSM mix consisting of sand, cement and water, with a 56-day compressive strength of 50 to 200 psi, is appropriate. CLSM may produce high fluid pressures during placement, and caution must be used for placements against foundation walls, near unbraced cuts, etc. Pipes or tanks can also float if not properly restrained during placement. CLSM should not be placed against unprotected aluminum; CLSM containing flyash should not be used in contact with cast iron or ductile iron. Hardened CLSM masses may also adversely affect groundwater flow, possibly causing erosion under or along the CLSM, particularly in sloping trenches.

Other Fill Materials:

- Crushed stone base course for slabs-on-grade should consist of ASTM C33 #56 or #57 stone (⅜- to ¾-inch size,) or as required by the slab system design.
- Crushed stone or gravel for footing drains should consist of ASTM C33 #5, #56 or #57 stone (¾-inch or ⅜-¾-inch size.)
- Well-graded granular subbase material (NYSDOT Item 733-04 'Item 4' or similar) should be used under sidewalks and exterior slabs.

3.4. Fill Placement and Compaction

Site-borrow fill should be compacted with single-drum soil rollers with a nominal size of seven tons or greater. In areas with limited access, trench rollers, vibratory plate tampers or jumping-jack tampers may be used. Backfilling of foundation excavations should be completed prior to erection of building framing. Do not allow water to accumulate in footing excavations prior to backfilling.

Construction of the deep fills, i.e. more than ten feet thick below slabs or footings, is of particular concern. The lifts of fill in these areas must be uniformly compacted, and the effects of post-construction groundwater conditions must be considered. Groundwater can be expected to rise into the lower part of the fill, which will cause consolidation and settlement if the fill is inadequately compacted; the use of coarser-graded granular fill in the first few lifts will help protect against base settlement. Seepage from the native soil must be controlled where seepage zones abut the fill, and surface water infiltration must be controlled, especially from paved areas as they age. A drainage layer near the top of the fill and/or a layer of woven or non-woven geotextile under the pavement base course can be used to minimize infiltration. Select coarse-graded material should also be used for at least the final two feet of fill, to provide adequate support for concrete mixers and dump trucks during slab placement and paving.

Fill shall be placed in controlled compacted lifts, and should be compacted at a moisture content within two percent of optimum moisture, as determined by ASTM D1557. When the fill is compacted within this moisture range, compacted lift thicknesses of up to twelve inches may be used. Reduce the maximum lift

thickness to eight inches if compaction is performed outside this range, or as required to attain the specified percent compaction, and when using small compaction equipment.

Pipe bedding in utility trenches may act as groundwater flow routes during or after construction. Interrupt coarse granular bedding with occasional zones of compatible lower-permeability soil to control minor seepage. Avoid the use of excessively coarse pipe bedding material that can allow fines to wash in from the surrounding soil. Contact the Engineer if excessive groundwater is encountered.

Open-graded stone base course material for slabs-on-grade should be graded level and seated with one or more compaction passes, to help resist displacement during slab area preparation and concrete placement.

3.5. Compaction Requirements

Fill materials shall be placed in controlled compacted lifts. Compact each lift of fill with at least six one-way compaction passes, even if the required compaction percentage is obtained with fewer passes. Each compaction pass shall be made at a slow walking speed (less than four feet per second,) with the equipment passing completely over all areas of the fill. Fill materials shall be compacted to at least the following percentage of the ASTM D1557 maximum dry density. For coarse-graded fill materials with more than thirty percent retained on the ¾-inch sieve, the ASTM D4253 Maximum Index Density test may be substituted for the D1557 test.

Minimum Percent Compaction	
Location	Min. Percent
Below footings/ foundations	95
Foundation Backfill	95
Fill under slabs	95

3.6. Testing

Compaction testing is required by Code for fill materials that support footings or foundations. Inspection of fill placement and additional testing are required when so directed by the local Code Enforcement Official or when specified by the Designer of Record, and as specified in this report. Recommended test procedures and frequencies are provided below.

BEARING CAPACITY: At this site, bearing capacity testing is recommended as part of the subgrade inspection, if soft or otherwise suspect soil conditions are encountered. The specified (design) bearing capacity as indicated by a Static Cone Penetrometer or equivalent device shall be obtained within 3 inches of the surface in footing excavations. Tests should be performed at intervals of fifty feet or less in continuous footings, with at least one test on each footing line and in each isolated spread footing. The soil throughout the bearing area should be probed thoroughly to check for soft spots. Sudden changes or significant variations in bearing capacity should be evaluated. Routine testing is not feasible in areas of predominately gravelly soil, in those areas, verify that no loose material is present.

COMPACTION TESTING: Compaction tests of fill and backfill shall be performed at representative locations in each lift. At least: one test per 100 linear feet should be performed in continuous footings and trenches; one test per lift at each isolated spread footing; and one test per 2500 square feet in slab areas, per lift.

Compaction tests should be performed with a nuclear moisture-density gauge, per ASTM Test Method D6938, unless otherwise approved. Required percent compaction values are provided above.

PROOF-ROLLING: Proof-rolling shall be performed in fill areas and in shallow cut areas, to evaluate soil conditions by observing the effects of compaction during subgrade preparation, as previously discussed. If the soil exhibits excessive deflection, rutting, or cracking, additional excavation, drying of the subgrade, and/or the use of lighter construction equipment may be required. Additionally, if slabs-on-grade will be placed by direct discharge from the concrete ready-mix trucks, prior proof-rolling of the main traffic lanes with a loaded tri-axle dump truck is recommended, to verify that the slab base will remain stable when subjected to concrete truck traffic.

CLSM: When flowable fill is used to support footings or foundations, at least one set of four 6x12-inch test cylinders shall be cast from each day's placement, per ASTM D4832. Test three cylinders for unit weight and for compliance with the specified strength requirements. The fourth cylinder may be retained for later testing; cast additional cylinders if early tests are needed.

3.7. Geosynthetic Materials

Geosynthetic materials are expected be used for reinforcement and drainage applications at the site on an as-needed basis, or where required by Code, such as for footing drains.

Geosynthetic materials shall be installed over a smooth and evenly shaped subgrade, to avoid 'tenting' of the material over voids or high points. The geosynthetic shall be installed substantially free from wrinkles, and fill material shall be placed and spread in a manner that does not displace or damage the geosynthetic material. Vehicles shall not drive on the exposed geosynthetics. The following material types are recommended; the types listed are typical examples of suitable products.

Drainage Separation: For footing drains and similar applications, a woven drainage geotextile with at least 4% open area, with an apparent opening size of 0.21mm (#70) or smaller, should be installed between the native soils and open-graded drainage zones. A suitable product is Carthage Mills "Carthage 6%." Non-woven geotextiles are not recommended for use in this application, due to the presence of fine particles in the native soil that will tend to clog the fabric.

Subgrade Reinforcement: Typically, a woven reinforcing geotextile such as TenCate Mirafi 600X should be used where needed to improve the stability of soft subgrade soils. Geogrids may be used instead of woven geotextiles, especially if free drainage is desired. A minimum of twelve inches of granular fill cover is typically required to mobilize the strength of the reinforcing geosynthetic.

Subgrade Separation: Where fines from the subgrade may infiltrate into an overlying granular layer, and strengthening of the subgrade and free vertical drainage are not required, a non-woven geotextile such as Mirafi S600 or 160N should be used.

Infiltration Barrier: Woven Reinforcement geotextile will act as an effective infiltration barrier when installed in a continuous horizontal layer. Non-woven Separation geotextile will also work as a barrier, when the overlying material in contact with it contains at least three percent silt and clay (passing the #200 sieve.)

4. DESIGN VALUES AND RECOMMENDATIONS

4.1. Bearing Capacity and Soil Pressure

Soil engineering properties for the design of Building 1 are summarized in the tables below. The values assume that the building will be supported by a conventional spread footing foundation with slab-on-grade floor, as described in the previous sections, and will be provided with proper drainage. The design criteria for Building 2 are expected to be consistent with these values.

Allowable Bearing Capacity, q_a	
Deep Cut Areas - Footings bearing more than ten feet below existing grade, and at least 18 inches below finished grade, with a minimum width of 36 inches.	4000 psf
Footings Bearing on Fill, or on native soils ten feet or less below existing grade, and at least 18 inches below finished grade, with a minimum width of 36 inches.	3000 psf
Minor footings bearing at least 12 inches below finished grade, with a minimum width of 12 inches (all areas.)	2000 psf
Allowable bearing values may be interpolated from the information above.	

Soil Properties	Below Deep Cuts	In Fill or Shallow Cuts $\leq$10 ft
Soil Moist Density, γ, lbs/cu ft	140	135
Effective Internal Angle of Friction, $\emptyset$	36	32
Coefficient of Friction (vs. concrete)	0.35	0.35
Coefficient of Active Earth Pressure, k_a	0.26	0.31
Coefficient of Passive Earth Pressure, k_p	3.85	3.25
Coefficient of At-Rest Earth Pressure, k_o	0.41	0.47
Modulus of Subgrade Reaction, k, psi per inch	375	225

Footings subject to frost shall bear at least 42 inches below finished grade, or shall be otherwise protected from frost. Bearing elevations of footings shall be established such that a line drawn between the bottoms of two adjacent footings is not steeper than 30 degrees between the closest points on the footings. (Slope of 1 vertical to 1.75 horizontal.)

In the deep cut areas, little or no post-construction settlement is expected. In shallow cuts, post-construction settlement should be on the order of one-quarter inch, due to normal elastic compression of the soils below the footings, and in fills less than ten feet deep, settlement should be in the range of one quarter to three quarters of an inch. In the deeper fills, some settlement of the embankment fill will be added to the normal footing settlement. There will also be some deflection of the subgrade soil below the embankment, but this should occur simultaneously with fill placement. The total settlement and the long-term post-construction settlement of the fills can be minimized by using thoroughly compacted granular fill materials, with good water seepage and infiltration control throughout the embankment, as previously discussed, but settlement in the deep fill of about one half to one percent of the total fill height, i.e. up to two to four inches in the highest part of the fill, should still be expected. With good materials, thorough compaction and good drainage, most of this settlement should be complete by the time foundation construction begins. Potential differential settlement is estimated at one-half inch for adjacent columns with spacing on the order of thirty to fifty feet.

4.2. Control of Groundwater and Soil Gases

Minor groundwater seepage should be expected in foundation areas and from cuts and excavations during and after construction. Conventional building damp-proofing, including placement of slabs-on-grade over a vapor barrier and an open-graded stone base course, and installation of conventional footing drains are appropriate to control water seepage. Footing drains are optional per Code for construction without floors below grade, but may be beneficial in controlling groundwater during construction. Similarly, surface drainage should be provided for the building interior prior to sealing of the roof, to minimize ponding of stormwater on the floor slab areas. Foundation excavations should be backfilled with well-graded granular fill, to convey groundwater seepage to the footing drains at a controlled rate. Stormwater runoff must be directed away from the foundation and may not be directed to the footing drains.

Soil gases that could normally be expected to impact the structure are water vapor and radon. Thorough foundation damp-proofing, as noted above, placement of dense concrete in slabs-on-grade, (low water-to-cementitious ratio, thoroughly consolidated,) and sealing of all wall-to-slab joints, concrete cracks, pipe penetrations, drainage sumps, etc. are usually effective in controlling transmission of these gases to interior spaces. If an open-graded base course is used under the slab, a passive vapor mitigation system can be included, using small-diameter PVC pipes. The potential for these gases to adversely impact the use of the building is estimated to be low, if the above recommended practices are used, and normal interior ventilation is provided.

4.3. Seismic and Expansive Properties

Seismic Design Values

The Seismic Site Class and Seismic Design Category for the proposed construction were determined per section 1613 of the New York State Building Code and ASCE 7-10. Seismic values for the site were obtained from the current database maintained by the Applied Technology Council, Redwood City, Cal., and are consistent with the published maps in the Building Code. For this evaluation, the proposed deep fill was assumed to consist of well-compacted site-borrow soil. Values were as follow.

Occupancy Category	I/II/III	
Seismic Site Class	C, Very Dense Soil and Soft Rock	
IBC Seismic Design Category	**B**	
Maximum Acceleration	0.2 sec S_S 1.0 sec S_1	0.226 g 0.068 g
Maximum Spectral Response Acceleration	0.2 sec S_{MS} 1.0 sec S_{M1}	0.272 g 0.116 g
5% Damped Spectral Response	0.2 sec S_{DS} 1.0 sec S_{D1}	0.181 g 0.077 g

The seismic design values are based on the "risk adjusted maximum probable earthquake." These are not the maximum values that *could* occur, they are values that are not likely to be exceeded during the service life of a typical structure.

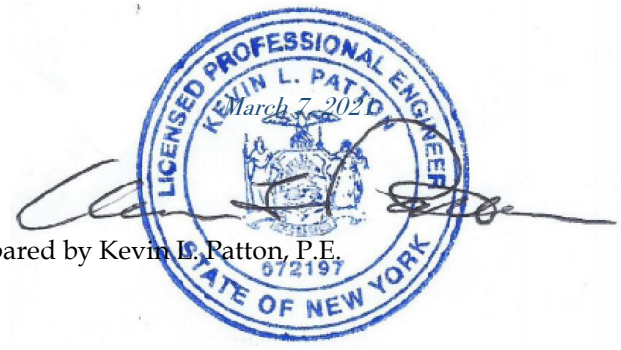
Liquefaction Potential
The soils encountered in the investigation have very low liquefaction susceptibility. The soils are dense and do not have texture/permeability combinations that are associated with loss of shear strength during anticipated seismic events. No special mitigation measures are required.

Expansive Soils and Frost Heave
The soils encountered in the investigation have a very low potential for expansion due to shrinking and swelling resulting from moisture changes. This behavior is typically associated with high-plasticity silt and clay soils. Physical testing and qualitative examination indicate that the soil properties do not meet the criteria for potentially expansive soils as defined in section 1803.5.3 of the Code. No mitigation measures are required.

The on-site soils are moderately susceptible to frost heave. Frost heave can be minimized by providing good drainage and by thoroughly compacting the soil. Well-graded granular fill should be used in areas where frost heave could result in damage.

5. NOTES AND LIMITATIONS
Please see the attached pages for additional information. Subsurface conditions encountered during construction shall be compared to the soil boring logs and this report; any significant variations from anticipated conditions must be evaluated for their effect on the design. This report summarizes the results of a limited investigation and does not purport to predict every variation in subsurface conditions.

This geotechnical investigation was conducted to evaluate the engineering properties of the soils at the site, to aid in the design of the proposed work. The investigation did not include evaluation of the potential effects of the proposed construction on other properties, nor did it include inspection of, or sampling for, items of environmental concern such as the presence of soil contaminants or of regulated wetlands, and did not include review of local zoning regulations, codes, floodplain boundaries or similar matters, unless specifically referenced in the report. This investigation was conducted solely for the use of the Client, the Client's Project Designers and Agents and the Authorities Having Jurisdiction; this report should not be used by others, nor for any use other than its stated purpose, without contacting the Engineer. Any such use is solely at the user's risk.



Prepared by Kevin L. Patton, P.E.

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Soil Technical Notes:

Soil Classifications, Descriptions and Properties

The USCS (Unified Soil Classification System) was used to classify the soils in this report. The USCS is described in ASTM D2487 (laboratory test method) and D2488 (visual-manual method.) The USCS classification gives a 'Group Symbol' and 'Group Name' based on particle size distribution (gradation,) clay properties (Atterberg Limits) and basic composition (mineral or organic.)

USCS Soil Classes

Soils with less than 5% passing the #200 sieve:

GW, GP, SW, SP – Well-graded gravel, Poorly-graded gravel, Well-graded sand, Poorly-graded sand.

Soils with 12% to 50% passing the #200 sieve:

GC, GM, GC-GM, SC, SM, SC-SM – Clayey gravel, Silty gravel, Silty clayey gravel, Clayey sand, Silty sand, Silty clayey sand.

Soils with 5% to 12% passing the #200 sieve use a dual symbol, such as SW-SC (Clayey well-graded sand.)

Soils with more than 50% passing the #200 sieve:

CL-ML, ML, CL, MH, CH, OL, OH – Silty clay, Silt, Lean clay, Elastic silt, Fat clay, Organic silt, Organic clay.

Highly organic soils:

PT – Peat.

The soil group name is modified with the term 'with sand' or 'with gravel' if the soil contains more than 15% of these materials; clays and silts with 30% or more plus-#200 material are described as 'sandy' or 'gravelly' (whichever is predominate.) Examples – GM, Silty gravel with sand; CL, Gravelly lean clay.

Particle size

>12" (300mm)	Boulders
12" to 3" (300-75mm)	Cobbles
3" to #4 (75-4.75mm)	Gravel
#4 to #200 (4.75-0.075mm)	Sand
<#200 (0.075mm)	Silt & Clay

Organic Soils

Highly organic soils such as peat are visually classified. Partly organic soils, with a mix of organic and mineral matter, are classified visually and by Atterberg Limits tests.

Moisture Content

Moisture is visually estimated and samples are usually tested. Soil moisture capacity varies with texture.

Typical examples:
GW, moist at 3%, saturated at 9%
SP, moist at 6%, saturated at 20%.
CL, moist at 12%, saturated at 33%.

Fine- and Coarse-grained Soils

The USCS classification applies to the material smaller than the 3-inch sieve.

'Fine-Grained Soils' (silts and clays) have more than 50% passing the #200 sieve and are classified by their Atterberg Limits.

'Coarse-Grained Soils' (sands and gravels) have less than 50% passing the #200 sieve. When more than 50% of the plus-200 material is retained on the #4 sieve the general soil type is gravel, and if more than 50% is finer than the #4 sieve, it is sand.

Clean coarse-grained soils are classified as well-graded (Classes GW, SW) or poorly-graded (GP, SP.) Well-graded soils have a wider range of sizes and are typically more stable. Poorly-graded soils are usually more permeable.

Atterberg Limits

Test is performed on the clay, silt and fine sand fraction of the soil:
Liquid Limit (LL) – moisture content (%) at which soil becomes very soft.
Plastic Limit (PL) – moisture content at which soil crumbles.
Plasticity Index (PI) = LL minus PL

Higher PI values may indicate reduced permeability and increased drying shrinkage.

LL > 50 indicates soil with a higher potential to shrink and swell due to changing moisture content.

Silts have lower PI values, and behave like very fine sand; most silts also contain some clay. Behavior of clays is partly controlled by electrochemical forces and varies among the several clay minerals.

Color

Soil color sometimes indicates groundwater conditions, with subdued colors below the water table and mottled (mixed) colors in the zone of seasonal water table fluctuation. Color changes tend to be more prominent in fine-grained soils.

Relative Quantities

Estimated percentages in descriptions:
<5% - Trace
5-10% - Traces
10-25% - Little
25-35% - Some
'And' - Approx. equal amounts
'Few' - <10% (cobbles and boulders)

USDA Soil Classification

USDA classifications are based on the relative amounts of sand, silt and clay in the soil fraction passing the #10 (2mm) sieve. 'Gravelly' indicates more than 15% of #10 to 3" size. 'Channery' indicates 15 to 35% thin flat pieces up to 6" long.

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APPROXIMATE SOIL BORING LOCATIONS
JANUARY - FEBRUARY 2021

SHOWN ON A PARTIAL COPY OF "EXISTING CONDITIONS AND WETLAND VALIDATION MAP," DATED 11-2-20, BY ARDEN CONSULTING ENGINEERS, OF MONROE, N.Y.

0 100 200
Feet

NORTH REPORT NORTH

PART OF LOT 11 FM
SBL 52-5-11
N/F MAG ASSOCIATES
LIBER 2222 PAGE 745

SBL 52-1-95.11
N/F LUCKJON CORPORATION
LIBER 4721 PAGE 176

SBL 52-5-78
COUNTY OF ORANGE FORMERLY CONSOLIDATED RAIL

SBL 54-1-50.1
PARCEL 1
AREA = 129.261 ACRES
LOT 1 FM

SBL 54-1-50.2
PARCEL 3

ZONE A

ZONE AE

100' YEAR FLOOD ZONE

WALL, ±12' Max.

WALL, ±13' Max.

WALL, ±32' Max.

Approx. Toe of Proposed Fill

Approx. Cut-Fill Line

Proposed Cut Slope w/Rock Wall at Top of Cut

PAVED AREA

PROPOSED BUILDING 1
135' x 160' FEET
703,205 SF
FFE 525.0

PROPOSED BUILDING 2
PRELIMINARY LOCATION
150'x200'x 17'
FFE 468.0

PROPOSED MFG. HOUSE

WETLAND

APPARENT ROADWAY NOT CLEARED HEAVILY OVERGROWN

APPROPRIATED BY THE STATE OF NEW YORK PER LIBER 519, PAGE 48 MAP # 65, PARCEL # 79

NEW YORK STATE HIGHWAY No. 17 EXIT 128 RAMP (VARIED WIDTH)

COUNTY HIGHWAY NO. 51 (A.K.A. /CRAIGSVILLE ROAD) (VARIED WIDTH)

SBL 54-1-12 LIBER 1601 PAGE 1032

SBL 54-1-12 N/F THOMSON LIBER 4228 PAGE 57

Ra MdB MdC HoD HoC Pg Ed HoB

150 0
SCALE

REVISION	BY	DATE	DESCRIPTION

COUNTY 51
CRAIGVILLE ROAD, TOWN OF BLOOMING GROVE
SOIL BORING LOCATIONS

REV.	DATE	BY
0	3/7/2021	KLP

B-101

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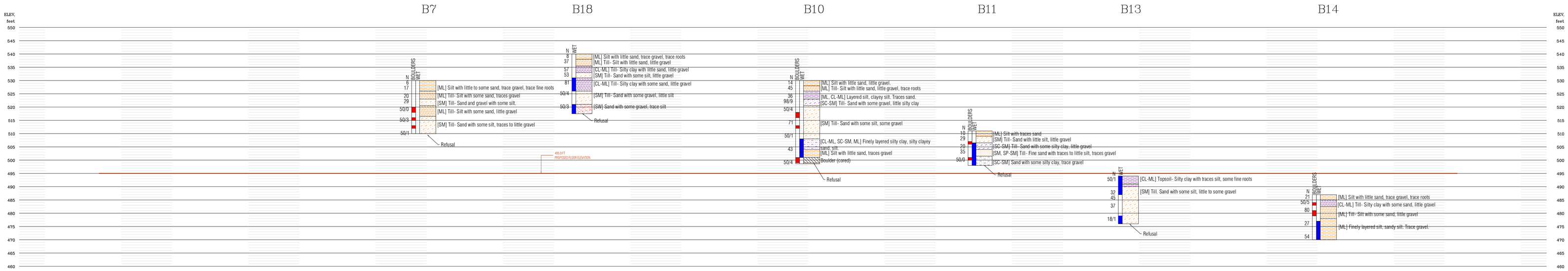
GENERALIZED SUBSURFACE PROFILE

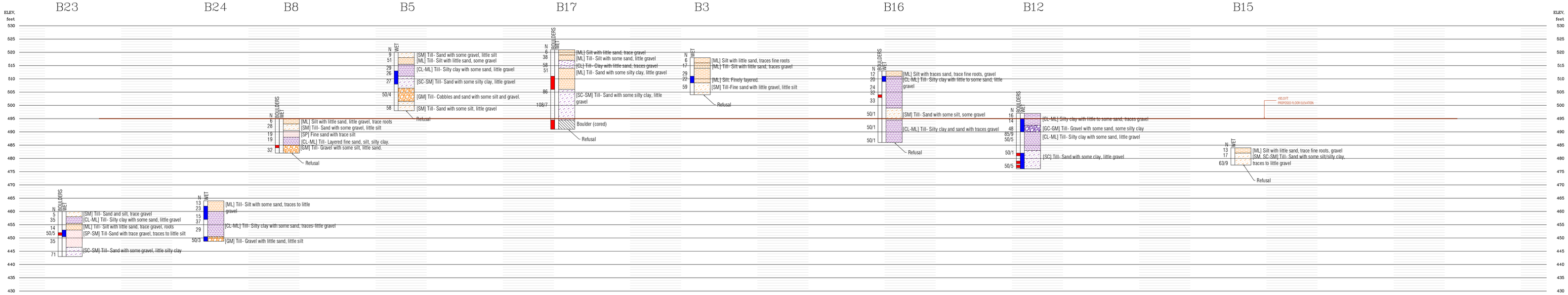
NO HORIZONTAL SCALE. THE BORINGS ARE SHOWN IN THEIR GENERAL RELATIVE LOCATIONS.

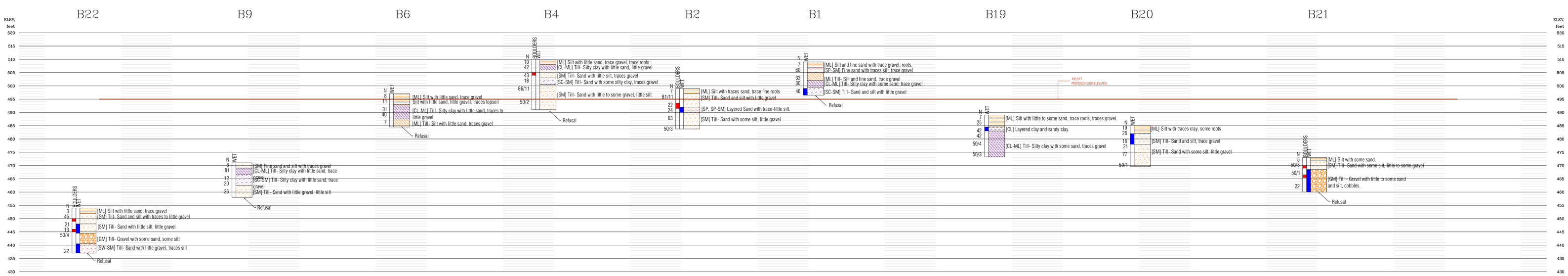
USCS SOIL CLASSIFICATIONS ARE IN BRACKETS.

IN GENERAL, RED PATTERNS INDICATE SANDY OR GRAVELLY SOILS, PURPLE PATTERNS INDICATE CLAY AND CLAYEY SOILS, AND ORANGE INDICATES SILT, MIXED OR INTERMEDIATE TEXTURES.

SOILS INTERPRETED AS GLACIAL TILL DEPOSITS ARE INDICATED BY DIAGONAL PATTERNS.







COUNTY 51

CRAIGVILLE ROAD, TOWN OF BLOOMING GROVE

SUBSURFACE PROFILE

REV.	DATE	BY
0	3/7/2021	KLP

B-201

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CLIENT:	Indigo Contracting		
PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
DATE:	1/22/2020	Project No.:	20420
WEATHER:	Mostly cloudy, 25-45F		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, 140 ft N, 945 ft E from SW corner	**BORING NO.**	**B-1**
DRILLER AND HELPER:	Tom McGovern, Tommy				
HAMMER TYPE:	Safety Hammer on cable	APPROX. ELEV.:	509		
INSPECTOR:	Wyeth Patton	WATER DEPTH:			

Feet	SAMPLE #	Type	Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	7	ML	5	**3**	**4**	8	Very Moist	Silt and fine sand with trace gravel and fine roots	
										Brown and orange	
2-4	**S2**	SS	12	SP-SM	35	**40**	**20**	19	Very Moist	Fine sand with traces silt, trace gravel,	
										lens of silty till. Brown	
5											
5-7	**S3**	SS	6	ML	17	**17**	**15**	15	Moist	Till- Silt and fine sand, trace gravel	
										Brown, pale brown	
7-9	**S4**	SS	12	CL-ML	14	**15**	**15**	15	Very Moist	Till- silty clay with some sand, trace gravel	
										Brown. PEN= 6ksf	
10											
10-12	**S5**	SS	6	SC-SM	41	**30**	**16**	50/2	Wet	Till- Sand and silt with little gravel	
										Brown	Refusal 12 1/2'
15											
20											
25											
30											
35											
40											
45											

COMMENTS:

DRILLING METHOD: HSA - Hollow-Stem Auger MR - Mud-Rotary MEASUREMENTS IN FEET AND INCHES

SAMPLE/TEST TYPE SS - SPLIT SPOON C - CORE T - UNDISTURBED TUBE AUG - AUGER CUTTINGS
PEN - HAND PENETROMETER TOR - TORVANE V - VANE SHEAR

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CLIENT:	Indigo Contracting		
PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
DATE:	1/22/2020	Project No.:	20420
WEATHER:	Mostly cloudy, 25-45F		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, 90 ft N, 820 ft E from SW corner	**BORING NO.**	**B-2**
DRILLER AND HELPER:	Tom McGovern, Tommy				
HAMMER TYPE:	Safety Hammer on cable	APPROX. ELEV.:	499		
INSPECTOR:	Wyeth Patton	WATER DEPTH:			

Feet	SAMPLE #	Type	Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	11	ML	2	**3**	**4**	11	Moist	Silt with traces sand, trace fine roots	
										Dark brown	
2-4	**S2**	SS	10	SM	8	**31**	**50/5**		Moist	Till-Sand and silt with little gravel	
										Brown	
5											
5-7	**S3**	SS	5	SM	7	**7**	**15**	10	Very Moist	Till- Sand (Fmc) with little gravel, little silt	Boulder at
										Brown	5 1/2- 7 1/2'
7-9	**S4**	SS	5	SP, SP-SM	8	**9**	**15**	18	Wet	Layered sandy till- Sand (Fmc) with trace	
										to little silt. Brown. PEN= 3 ksf	
10											
10-12	**S5**	SS	12	SM	39	**32**	**31**	28	Moist	Till. Sand (Fmc) with some silt, little gravel.	
										Brown. PEN = 14 ksf	
15											
15-17	**S6**	SS	0		50/3					No recovery	Stopped in soil.
20											
25											
30											
35											
40											
45											

COMMENTS:

DRILLING METHOD:	HSA - Hollow-Stem Auger	MR - Mud-Rotary		MEASUREMENTS IN FEET AND INCHES
SAMPLE/TEST TYPE	SS - SPLIT SPOON	C - CORE	T - UNDISTURBED TUBE	AUG - AUGER CUTTINGS
	PEN - HAND PENETROMETER		TOR - TORVANE	V - VANE SHEAR

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CLIENT:	Indigo Contracting		
PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
DATE:	1/22/2020	Project No.:	20420
WEATHER:	Mostly cloudy, 25-45F		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, 210 ft N, 750 ft E from SW corner	**BORING NO.**	**B-3**
DRILLER AND HELPER:	Tom McGovern, Tommy				
HAMMER TYPE:	Safety Hammer on cable	APPROX. ELEV.:	518		
INSPECTOR:	Wyeth Patton	WATER DEPTH:			

Feet	SAMPLE #	Type	Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	12	ML	3	**3**	**3**	7	Moist	Silt with little sand, traces fine roots	
										Brown, light brown	
2-4	**S2**	SS	10	ML	7	**8**	**9**	11	Wet	Till- Silt with little sand, traces gravel	
										Brown	
5											
5-7	**S3**	SS	1	--	9	**13**	**16**	21	Moist	Cobble/ Boulder fragments- siltstone	
										Grey. Small sample.	
7-9	**S4**	SS	10	ML	20	**11**	**11**	40	Wet	Silt- Finely layered	
										Brown. PEN= 3 ksf	
10											
10-12	**S5**	SS	12	SM	38	**28**	**31**	37	Moist	Till- Fine sand with little gravel, little silt	
										Dark brown	
											Refusal 14'
15											
20											
25											
30											
35											
40											
45											

COMMENTS:

DRILLING METHOD:	HSA - Hollow-Stem Auger	MR - Mud-Rotary		MEASUREMENTS IN FEET AND INCHES
SAMPLE/TEST TYPE	SS - SPLIT SPOON	C - CORE	T - UNDISTURBED TUBE	AUG - AUGER CUTTINGS
	PEN - HAND PENETROMETER		TOR - TORVANE	V - VANE SHEAR

KEVIN L. PATTON, P.E.
36 PATTON ROAD
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PATTONGEOTECH.COM 845 275-7732

CLIENT:	Indigo Contracting		
PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
DATE:	1/22/2020	Project No.:	20420
WEATHER:	Mostly cloudy, 25-45F		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, 90 ft N, 615 ft E from SW corner	**BORING NO.**	**B-4**
DRILLER AND HELPER:	Tom McGovern, Tommy				
HAMMER TYPE:	Safety Hammer on cable	APPROX. ELEV.:	510		
INSPECTOR:	Wyeth Patton	WATER DEPTH:			

Feet	SAMPLE #	SAMPLE Type	SAMPLE Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	12	ML	2	**5**	**5**	14	Very Moist	Silt with little sand, trace gravel, trace fine roots	
										Brown	
2-4	**S2**	SS	12	CL-ML	14	**22**	**20**	28	Moist	Till- Silty clay with little sand, little gravel	
										Brown	
5											Boulder 5'
5-7	**S3**	SS	6	SM	43	**29**	**14**	18	Very Moist	Till- Fine sand with little silt, traces gravel	
										Brown, light brown	
7-9	**S4**	SS	1	SC-SM	10	**13**	**5**	19	Very Moist	Till- Fmc Sand with some silty clay, traces gravel	Small Sample
										Brown	
10											
10-12	**S5**	SS	10	SM	16	**36**	**50/5**		Very Moist	Till- Sand with some gravel, little silt	
										Brown	
15											
15-17	**S6**	SS	5	SM	33	**50/2**			Very Moist	Till- Sand with little gravel, little silt	
										Olive, brown	
											Refusal 19'
20											
25											
30											
35											
40											
45											

COMMENTS:

DRILLING METHOD: HSA - Hollow-Stem Auger MR - Mud-Rotary MEASUREMENTS IN FEET AND INCHES

SAMPLE/TEST TYPE SS - SPLIT SPOON C - CORE T - UNDISTURBED TUBE AUG - AUGER CUTTINGS
PEN - HAND PENETROMETER TOR - TORVANE V - VANE SHEAR

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CLIENT:	Indigo Contracting		
PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
DATE:	1/22/2020	Project No.:	20420
WEATHER:	Mostly cloudy, 25-45F		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, 225 ft N, 510 ft E from SW corner	**BORING NO.**	**B-5**
DRILLER AND HELPER:	Tom McGovern, Tommy				
HAMMER TYPE:	Safety Hammer on cable	APPROX. ELEV.:	520		
INSPECTOR:	Wyeth Patton	WATER DEPTH:			

Feet	SAMPLE #	SAMPLE Type	SAMPLE Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	5	SM	2	**3**	**6**	10	Moist	Till- Sand with some gravel, little silt	
										Olive brown	
2-4	**S2**	SS	8	ML	17	**25**	**26**	20	Moist	Till- Silt with little sand, some gravel	
										Brown	
5											
5-7	**S3**	SS	18	CL-ML	8	**14**	**15**	24	Very Moist	Till- Silty clay with some sand, little gravel	
										Brown. Faint mottling. PEN= 9 ksf	
7-9	**S4**	SS	16	CL-ML	22	**14**	**12**	27	Wet	Till- Same.	
										Brown	
10											
10-12	**S5**	SS	12	SC-SM	12	**10**	**17**	19	Wet	Till- Sand with some silty clay, little gravel	
										Brown. PEN= 7 ksf	
15											
15-17	**S6**	SS	1	GM	50/4"				Moist	Till- Cobble and gravel fragments and Fmc	Small Sample
										sand with some silt. Brown.	
20											
20-22	**S7**	SS	1	SM	38	**28**	**30**	19	Moist	Till- Sand with some silt, little gravel	Small/Poor Sample
										Brown	
											Refusal 22 feet
25											
30											
35											
40											
45											

COMMENTS:

DRILLING METHOD:	HSA - Hollow-Stem Auger	MR - Mud-Rotary		MEASUREMENTS IN FEET AND INCHES
SAMPLE/TEST TYPE	SS - SPLIT SPOON	C - CORE	T - UNDISTURBED TUBE	AUG - AUGER CUTTINGS
	PEN - HAND PENETROMETER		TOR - TORVANE	V - VANE SHEAR

KEVIN L. PATTON, P.E.
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CLIENT:	Indigo Contracting		
PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
DATE:	1/25/2020	Project No.:	20420
WEATHER:	Sunny, 10-35F		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, 30 ft N, 510 ft E from SW corner	**BORING NO.**	**B-6**
DRILLER AND HELPER:	Tom McGovern, Tommy				
HAMMER TYPE:	Safety Hammer on cable	APPROX. ELEV.:	497		
INSPECTOR:	Wyeth Patton	WATER DEPTH:			

Feet	SAMPLE #	Type	Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	12	ML	6	**4**	**4**	10	Moist	Silt with little sand, trace gravel	
										Brown	
2-4	**S2**	SS	4	ML	15	**4**	**7**	16	Moist	Silt with little sand, little gravel, traces topsoil	
										Brown, dark brown	
5											
5-7	**S3**	SS	11	CL-ML	15	**14**	**17**	15	Moist	Till- Silty clay with little sand, traces gravel	
										Brown. PEN= 12 ksf	
7-9	**S4**	SS	28	CL-ML	15	**20**	**20**	16	Moist	Till- Silty clay with little sand, little gravel	Small Sample
										Brown	
10											
10-12	**S5**	SS	2	ML	8	**5**	**2**	2	Moist	Till- Silt with little sand, traces gravel	Small Sample
										Mottled brown and pale brown	
											Refusal 12 1/2'
15											
20											
25											
30											
35											
40											
45											

COMMENTS:

DRILLING METHOD: HSA - Hollow-Stem Auger MR - Mud-Rotary MEASUREMENTS IN FEET AND INCHES

SAMPLE/TEST TYPE SS - SPLIT SPOON C - CORE T - UNDISTURBED TUBE AUG - AUGER CUTTINGS
PEN - HAND PENETROMETER TOR - TORVANE V - VANE SHEAR

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CLIENT:	Indigo Contracting		
PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
DATE:	1/25/2020	Project No.:	20420
WEATHER:	Sunny, 10-35F		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, 430 ft E from NW corner	**BORING NO.**	**B-7**
DRILLER AND HELPER:	Tom McGovern, Tommy				
HAMMER TYPE:	Safety Hammer on cable	APPROX. ELEV.:	530		
INSPECTOR:	Wyeth Patton	WATER DEPTH:			

Feet	SAMPLE #	Type	Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	8	ML	3	**4**	**2**	5	Moist	Silt with little sand, trace gravel, trace fine roots	
										Brown and light brown	
2-4	**S2**	SS	10	ML	7	**10**	**7**	9	Moist	Silt with some sand, traces gravel, 1" root	
										Brown and light brown	
5											
5-7	**S3**	SS	20	ML	8	**9**	**11**	14	Very Moist	Till- Silt with some sand, traces gravel	
										Brown. PEN= 4.5 ksf	
7-9	**S4**	SS	22	SM	18	**13**	**16**	20	Very Moist	Till- Sand and gravel with some silt	
										Brown. PEN= 4.5 ksf	
10											
10-12	**S5**	SS	4	ML	46	**50/0**			Moist	Till- Silt with some sand, little gravel	Boulder 10'-12'
										Brown	
15											Boulders 14'-15'
15-17	**S6**	SS	3	SM	50/3				Slightly Moist	Till- Sand with some silt, some gravel	Small Sample
										Brown	
											Boulder 17'
20											
20-22	**S7**	SS	0		50/1					No Recovery	Refusal 20'
25											
30											
35											
40											
45											

COMMENTS:

DRILLING METHOD: HSA - Hollow-Stem Auger MR - Mud-Rotary MEASUREMENTS IN FEET AND INCHES

SAMPLE/TEST TYPE SS - SPLIT SPOON C - CORE T - UNDISTURBED TUBE AUG - AUGER CUTTINGS
PEN - HAND PENETROMETER TOR - TORVANE V - VANE SHEAR

KEVIN L. PATTON, P.E.
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CLIENT:	Indigo Contracting		
PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
DATE:	1/25/2020	Project No.:	20420
WEATHER:	Sunny, 10-35F		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, 215 ft N, 315 ft E from SW corner	**BORING NO.**	**B-8**
DRILLER AND HELPER:	Tom McGovern, Tommy				
HAMMER TYPE:	Safety Hammer on cable	APPROX. ELEV.:	495		
INSPECTOR:	Wyeth Patton	WATER DEPTH:			

Feet	SAMPLE #	Type	Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	8	ML	2	**3**	**3**	4	Very Moist	Silt with little sand, little gravel, trace fine roots	
										Orange brown, dark brown	
2-4	**S2**	SS	8	SM	9	**14**	**14**	12	Moist	Till- Sand with some gravel, little silt	
										Mottled brown	
5											
5-7	**S3**	SS	14	SP	23	**9**	**10**	9	Moist	Fine sand with trace silt	
										Dark brown	
7-9	**S4**	SS	18	SP, ML,	6	**9**	**10**	9	Moist	Till- Finely layered very fine sand, coarse silt,	
				CL-ML						silty clay with little sand, trace gravel.	
10										Mottled brown	
											Boulder 10 -11'
11-13	**S5**	SS	5	GM	29	**21**	**11**	50/4	Moist	Till- Gravel with some silt, little sand	
										Mottled brown, grey, pale brown. PEN= 12 ksf	Refusal 13'
15											
20											
25											
30											
35											
40											
45											

COMMENTS:

DRILLING METHOD:	HSA - Hollow-Stem Auger	MR - Mud-Rotary		MEASUREMENTS IN FEET AND INCHES
SAMPLE/TEST TYPE	SS - SPLIT SPOON	C - CORE	T - UNDISTURBED TUBE	AUG - AUGER CUTTINGS
	PEN - HAND PENETROMETER		TOR - TORVANE	V - VANE SHEAR

KEVIN L. PATTON, P.E.
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CLIENT:	Indigo Contracting		
PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
DATE:	1/25/2020	Project No.:	20420
WEATHER:	Sunny, 10-35F		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, 150 ft E from SW corner	**BORING NO.**	**B-9**
DRILLER AND HELPER:	Tom McGovern, Tommy				
HAMMER TYPE:	Safety Hammer on cable	APPROX. ELEV.:	471		
INSPECTOR:	Wyeth Patton	WATER DEPTH:			

Feet	SAMPLE #	Type	Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	6	SM	2	**3**	**5**	7	Very Moist	Fine sand and silt with traces gravel	
										Pale brown, slight mottling	
2-4	**S2**	SS	12	CL-ML	16	**38**	**43**	52	Moist	Till- Silty clay with little sand, trace gravel	
										Mottled brown, grey, and pale brown. PEN= 12ksf	
5											
5-7	**S3**	SS	16	SC-SM	10	**6**	**6**	12	Very Moist	Till- Silty clay with little sand, trace gravel	
										Brown. PEN= 4.3 ksf	
7-9	**S4**	SS	0	--	12	**10**	**10**	15	-	No Recovery	
10											
10-12	**S5**	SS	8	SM	16	**21**	**15**	10	Very Moist	Till- Sand with little gravel, little silt	
										Dark brown. PEN= 3.9 ksf	
											Refusal 13'
15											
20											
25											
30											
35											
40											
45											

COMMENTS:

DRILLING METHOD:	HSA - Hollow-Stem Auger	MR - Mud-Rotary		MEASUREMENTS IN FEET AND INCHES
SAMPLE/TEST TYPE	SS - SPLIT SPOON	C - CORE	T - UNDISTURBED TUBE	AUG - AUGER CUTTINGS
	PEN - HAND PENETROMETER		TOR - TORVANE	V - VANE SHEAR

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CLIENT:	Indigo Contracting		
PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
DATE:	1/26/2020	Project No.:	20420
WEATHER:	Cloudy, 25-30F		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, 930 ft E from NW corner	**BORING NO.**	**B-10**
DRILLER AND HELPER:	Tom McGovern, Tommy				
HAMMER TYPE:	Safety Hammer on cable	APPROX. ELEV.:	530		
INSPECTOR:	Wyeth Patton	WATER DEPTH:			

Feet	SAMPLE #	SAMPLE Type	SAMPLE Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	12	ML	4	**4**	**10**	18	Moist	Silt with little sand, little gravel, trace fine roots	
										Brown, slight mottling	
2-4	**S2**	SS	20	ML	18	**23**	**22**	25	Moist	Till- Silt with little sand, little gravel, trace fine roots	
										Brown, slight mottling. PEN= 7ksf	
5											
5-7	**S3**	SS	16	ML,	16	**16**	**20**	25	Wet	Finely layered silt, clayey silt. Traces sand.	
				CL-ML						Brown, slight mottling. PEN=3.6 ksf	
7-9	**S4**	SS	10	SC-SM	31	**48**	**50/3**		Very Moist	Till- Sand with some gravel, little silty clay	
										Mottled brown	
10											
10-12	**S5**	SS	4	SM	22	**50/4**			Very Moist	Till- Sand with some silt, some gravel	
										Brown	Boulder 12-14'
15											
15-17	**S6**	SS	14	SM	25	**24**	**47**	52	Moist	Till- Sand with some silt, some gravel	
										Brown	Boulder 17'
20											
20-22	**S7**	SS	0		50/1					No recovery	
25											
25-27	**S8**	SS	16	CL-ML,	41	**28**	**15**	22	Wet	Finely layered Silty clay, Silty clayey sand,	
				SC-SM,						change to Silt with few layers of silty sand.	
				ML						Mottled pale brown and orange.	
28-31		RB								Change to orange with trace grey. PEN = 1.9ksf	Cored through
30		RB		Boulder							boulder 28'-31'
		C									
31-33	**S9**	SS	4	ML	50/4				Moist	Silt with little sand, traces gravel. Odor similar	Refusal 31'
										to fresh concrete. Strongly mottled pale grey,	
										red and brown.	
35											
										Samples S8 and S9 were significantly different	
										from the typical deep soils elsewhere in the	
										borings. Both samples showed a vigorous	
40										reaction with dilute hydrochloric acid.	
									28-31 ft	Roller bit from 28-30 feet in soft rock, then	
										cored 30-31 feet. Recovered 10.5" core of	
										hard medium gray crystalline limestone.	
45											

COMMENTS:

DRILLING METHOD:	HSA - Hollow-Stem Auger	MR - Mud-Rotary		MEASUREMENTS IN FEET AND INCHES
SAMPLE/TEST TYPE	SS - SPLIT SPOON	C - CORE	T - UNDISTURBED TUBE	AUG - AUGER CUTTINGS
	PEN - HAND PENETROMETER		TOR - TORVANE	V - VANE SHEAR

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CLIENT:	Indigo Contracting		
PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
DATE:	1/26/2020	Project No.:	20420
WEATHER:	Cloudy, 25-30F		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, 1130 ft E from NW corner	**BORING NO.**	**B-11**
DRILLER AND HELPER:	Tom McGovern, Tommy				
HAMMER TYPE:	Safety Hammer on cable	APPROX. ELEV.:	511		
INSPECTOR:	Wyeth Patton	WATER DEPTH:			

Feet	SAMPLE #	SAMPLE Type	SAMPLE Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	8	ML	4	**5**	**5**	4	Very Moist	Silt with traces sand	
										Pale brown, faintly mottled	
2-4	**S2**	SS	10	SM	5	**10**	**19**	23	Very Moist	Till- Sand with little silt, little gravel	
										Brown, dark brown and grey, fine mottling	Boulder 4'
5											
5-7	**S3**	SS	7	SC-SM	7	**10**	**10**	16	Wet	Till- Sand with some silty clay, little gravel	
										Brown, faintly mottled	
7-9	**S4**	SS	14	SM, SP-SM	39	**17**	**18**	21	Wet	Till- Fine sand with traces to little silt, traces gravel	
										Crudely layered. Brown, faintly mottled	
10											Boulder 10'
10-12	**S5**	SS	3	SC-SM	50/0				Wet	Sand with some silty clay, trace gravel	Poor Sample
										Brown	
											Refusal 13'
15											
20											
25											
30											
35											
40											
45											

COMMENTS:

DRILLING METHOD:	HSA - Hollow-Stem Auger	MR - Mud-Rotary		MEASUREMENTS IN FEET AND INCHES
SAMPLE/TEST TYPE	SS - SPLIT SPOON	C - CORE	T - UNDISTURBED TUBE	AUG - AUGER CUTTINGS
	PEN - HAND PENETROMETER		TOR - TORVANE	V - VANE SHEAR

KEVIN L. PATTON, P.E.
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CLIENT:	Indigo Contracting		
PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
DATE:	1/26/2020	Project No.:	20420
WEATHER:	Cloudy, 25-30F		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, 215 ft N, 1170 ft E from SW corner	**BORING NO.**	**B-12**
DRILLER AND HELPER:	Tom McGovern, Tommy				
HAMMER TYPE:	Safety Hammer on cable	APPROX. ELEV.:	497		
INSPECTOR:	Wyeth Patton	WATER DEPTH:			

Feet	SAMPLE #	Type	Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	12	CL-ML	1	**2**	**14**	7	Very Moist	Silty clay with little fine sand, trace gravel	
										Finely mottled brown and grey. PEN=2 ksf	
2-4	**S2**	SS	14	CL-ML	10	**8**	**6**	7	Wet	Silty clay with some sand, traces gravel	
										Finely mottled brown, grey, orange brown. PEN= 2.2 ksf	
5											
5-7	**S3**	SS	10	GC-GM	12	**21**	**27**	49	Wet	Till- Gravel with some sand, some silty clay.	
										Olive brown, faint mottling	
7-9	**S4**	SS	6	CL-ML	22	**35**	**50/3**		Very Moist	Till- Silty clay with some sand, little gravel	
										Brown	
10											
10-12	**S5**	SS	1		50/5					Gravel Fragments- grey sandstone	Very slow drilling
										Small sample.	
15											
15-17	**S6**	SS	4	SC	50/1				Wet	Till- Sand with some clay, little gravel	Boulder 15'
										Grey- mottled pale and medium	
											Boulder 18'
											Boulder 19 1/2'
20											
20-22	**S7**	SS	4	GM	35	**50/5**			Wet	Till?- Gravel fragments with sandy silt	
										Grey	Stopped in soil.
25											
30											
35											
40											
45											

COMMENTS:

DRILLING METHOD:	HSA - Hollow-Stem Auger	MR - Mud-Rotary		MEASUREMENTS IN FEET AND INCHES
SAMPLE/TEST TYPE	SS - SPLIT SPOON	C - CORE	T - UNDISTURBED TUBE	AUG - AUGER CUTTINGS
	PEN - HAND PENETROMETER		TOR - TORVANE	V - VANE SHEAR

KEVIN L. PATTON, P.E.
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CLIENT:	Indigo Contracting		
PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
DATE:	1/27/2020	Project No.:	20420
WEATHER:	Cloudy, 25-35F		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, 230 ft W from NE corner	**BORING NO.**	**B-13**
DRILLER AND HELPER:	Tom McGovern, Tommy				
HAMMER TYPE:	Safety Hammer on cable	APPROX. ELEV.:	494		
INSPECTOR:	Wyeth Patton	WATER DEPTH:			

Feet	SAMPLE #	Type	Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	6	CL-ML	20	**50/1**			Wet	Topsoil Silty clay with traces silt, some fine roots	
										Brown, slight mottling	
5											
5-7	**S2**	SS	3	SM	11	**15**	**17**	19	Wet	Sand with some silt, little gravel	Small Sample
										Brown	
7-9	**S3**	SS	6	SM	15	**22**	**23**	16	Very Moist	Till- Sand with some gravel, little silt	
										Brown, slight mottling	
10											
10-12	**S4**	SS	8	SM	17	**19**	**18**		Moist	Till- Sand with some silt, little gravel	
										Brown, slight mottling	
15											
15-17	**S5**	SS	5	SM	4	**1/18**			Wet	Till- Fine sand with some silt, little gravel	
										Mottled brown and orange	
											Refusal 18'
										The split-spoon penetrated 18 inches with one	
20										blow at 15.5-17.0 feet, due to groundwater	
										upwelling. Refusal occurred immediately below	
										this depth.	
25											
30											
35											
40											
45											

COMMENTS:

DRILLING METHOD:	HSA - Hollow-Stem Auger	MR - Mud-Rotary		MEASUREMENTS IN FEET AND INCHES
SAMPLE/TEST TYPE	SS - SPLIT SPOON	C - CORE	T - UNDISTURBED TUBE	AUG - AUGER CUTTINGS
	PEN - HAND PENETROMETER		TOR - TORVANE	V - VANE SHEAR

KEVIN L. PATTON, P.E.
36 PATTON ROAD
NEWBURGH, NY 12550
PATTONGEOTECH.COM 845 275-7732

CLIENT:	Indigo Contracting		
PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
DATE:	1/27/2020	Project No.:	20420
WEATHER:	Cloudy, 25-35F		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, NE corner	**BORING NO.**	**B-14**
DRILLER AND HELPER:	Tom McGovern, Tommy				
HAMMER TYPE:	Safety Hammer on cable	APPROX. ELEV.:	487		
INSPECTOR:	Wyeth Patton	WATER DEPTH:			

Feet	SAMPLE #	Type	Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	8	ML	8	**14**	**7**	4	Moist	Silt with little sand, trace gravel, trace fine roots	
										Mottled pale brown and brown	
2-4	**S2**	SS	4	CL-ML	25	**50/5**			Very Moist	Till- Silty clay with some sand, little gravel	Boulder 3'
										Mottled pale brown and brown	
5											
5-7	**S3**	SS	10	ML	14	**35**	**45**	50/1	Moist	Till- Silt with some sand, little gravel	Boulder 6-8'
										Mottled pale grey and brown	
10											
10-12	**S4**	SS	10	ML	10	**12**	**15**	23	Wet	Finely layered silt, trace fine sand	
										Mottled pale grey and brown	
15											
15-17	**S5**	SS	7	ML	28	**26**	**28**	23	Wet	Finely layered silt with traces fine sand and	
										gravel, with layers of sandy silt.	
										Mottled pale grey and brown. PEN= 3 ksf	Stopped in soil.
20											
25											
30											
35											
40											
45											

COMMENTS:

DRILLING METHOD: HSA - Hollow-Stem Auger MR - Mud-Rotary MEASUREMENTS IN FEET AND INCHES

SAMPLE/TEST TYPE SS - SPLIT SPOON C - CORE T - UNDISTURBED TUBE AUG - AUGER CUTTINGS
PEN - HAND PENETROMETER TOR - TORVANE V - VANE SHEAR

KEVIN L. PATTON, P.E.
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CLIENT:	Indigo Contracting		
PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
DATE:	1/27/2020	Project No.:	20420
WEATHER:	Cloudy, 25-35F		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, 200 ft N, 1430 ft E from SW corner	**BORING NO.**	**B-15**
DRILLER AND HELPER:	Tom McGovern, Tommy				
HAMMER TYPE:	Safety Hammer on cable	APPROX. ELEV.:	484		
INSPECTOR:	Wyeth Patton	WATER DEPTH:			

Feet	SAMPLE #	Type	Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	12	ML	3	**6**	**7**	20	Moist	Silt with little sand, trace fine roots, trace gravel	
										Brown, faintly mottled	
2-4	**S2**	SS	8	SM	13	**9**	**8**	10	Moist	Till- sand with some silt, traces gravel	
										Finely mottled brown, olive grey	
5											
5-7	**S3**	SS	4	SC-SM	13	**13**	**50/3**		Very Moist	Till- Sand with some silty clay, little gravel	Poor Sample
										Mottled olive brown	Refusal 6.5 feet
10											
15											
20											
25											
30											
35											
40											
45											

COMMENTS:

DRILLING METHOD:	HSA - Hollow-Stem Auger	MR - Mud-Rotary		MEASUREMENTS IN FEET AND INCHES
SAMPLE/TEST TYPE	SS - SPLIT SPOON	C - CORE	T - UNDISTURBED TUBE	AUG - AUGER CUTTINGS
	PEN - HAND PENETROMETER		TOR - TORVANE	V - VANE SHEAR

KEVIN L. PATTON, P.E.
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PATTONGEOTECH.COM 845 275-7732

CLIENT:	Indigo Contracting		
PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
DATE:	1/28/2020	Project No.:	20420
WEATHER:	Partly cloudy, 15-30F		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, 200 ft N, 1000 ft E from SW corner	**BORING NO.**	**B-16**
DRILLER AND HELPER:	Tom McGovern, Tommy				
HAMMER TYPE:	Safety Hammer on cable	APPROX. ELEV.:	513		
INSPECTOR:	Wyeth Patton	WATER DEPTH:			

Feet	SAMPLE #	Type	Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	12	ML	3	**5**	**7**	28	Moist	Silt with traces sand, trace fine roots, trace gravel	
										Mottled brown	
2-4	**S2**	SS	10	CL-ML	18	**11**	**9**	16	Wet	Till- Silty clay with some sand, little gravel	
										Brown, faintly mottled	
5											
5-7	**S3**	SS	8	CL-ML	10	**12**	**12**	15	Moist	Till- Silty clay with some sand, little gravel	
										Brown	
7-9	**S4**	SS	3	CL-ML	14	**16**	**16**	22	Very Moist	Till- Silty clay with little sand, little gravel,	
										trace fine roots. Mottled brown	
10											Boulder 9-10'
10-12	**S5**	SS	17	CL-ML	11	**14**	**19**	50/2	Very Moist	Till- Silty clay with little sand, little gravel,	
										Faintly mottled brown. PEN= 7 ksf	
15											
15-17	**S6**	SS	3	SM	47	**50/1**			Moist	Till- Sand (Fmc) with some silt, some gravel	
										Olive brown. PEN = 18-25 ksf	
20											
20-22	**S7**	SS	6	CL-ML	23	**50/1**			Moist	Till- Silty Clay and Sand with traces gravel	
										Dark grey	
25											
25-27	**S8**	SS	0		41	**50/1**				No Recovery	
											Refusal 27' in dense till
30											
35											
40											
45											

COMMENTS:

DRILLING METHOD:	HSA - Hollow-Stem Auger	MR - Mud-Rotary		MEASUREMENTS IN FEET AND INCHES
SAMPLE/TEST TYPE	SS - SPLIT SPOON	C - CORE	T - UNDISTURBED TUBE	AUG - AUGER CUTTINGS
	PEN - HAND PENETROMETER		TOR - TORVANE	V - VANE SHEAR

o	CLIENT:	Indigo Contracting		
9	PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
NEWBURGH, NY 12550	DATE:	1/28/2020	Project No.:	20420
PATTONGEOTECH.COM 845 275-7732	WEATHER:	Partly cloudy, 15-30F		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, 200 ft N, 625 ft E from SW corner	BORING NO.	B-17
DRILLER AND HELPER:	Tom McGovern, Tommy				
HAMMER TYPE:	Safety Hammer on cable	APPROX. ELEV.:	521		
INSPECTOR:	Wyeth Patton	WATER DEPTH:			

Feet	SAMPLE #	Type	Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	10	ML	2	**3**	**3**	10	Very Moist	Silt with little sand, trace gravel	
										Faintly mottled brown	
2-4	**S2**	SS	14	ML	13	**21**	**17**	18	Moist	Till- Silt with some sand, little gravel	
										Brown	
5											
5-7	**S3**	SS	3	CL	24	**30**	**28**	41	Moist	Till- Clay with little sand, traces gravel	Small Sample
										Brown	
7-9	**S4**	SS	1	ML	24	**25**	**26**	23	Moist	Till- Sand with some silty clay, little gravel	
										Brown. PEN= 10 ksf	
10											Cored through
											boulders 10-15'
15											
15-17	**S5**	SS	14	SC-SM	44	**41**	**45**	50/1	Moist	Till- Sand with some silty clay, little gravel	
										Brown. PEN= 10 ksf	
20											
20-22	**S6**	SS	8	SC-SM	43	**58**	**50/1**		Moist	Till- Sand with some silty clay, little gravel	
										Olive brown. PEN= 2.7-8 ksf	Grinding 22-24'
											Cored 26 1/2- 30'
25											boulder
26.5-		C		Boulder						Cored through boulder. Soil below boulder.	
30		C								A 33-inch boulder core was recovered. It was	
		C								hard medium gray crystalline limestone, in a	
30		C								fresh condition.	Refusal at 30 feet
											due to boulder.
35											
40											
45											

COMMENTS:

DRILLING METHOD:	HSA - Hollow-Stem Auger	MR - Mud-Rotary		MEASUREMENTS IN FEET AND INCHES
SAMPLE/TEST TYPE	SS - SPLIT SPOON	C - CORE	T - UNDISTURBED TUBE	AUG - AUGER CUTTINGS
	PEN - HAND PENETROMETER		TOR - TORVANE	V - VANE SHEAR

KEVIN L. PATTON, P.E.
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PATTONGEOTECH.COM 845 275-7732

CLIENT:	Indigo Contracting		
PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
DATE:	2/4/2020	Project No.:	20420
WEATHER:	Partly cloudy, 15-30F. After blizzard.		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, 700 ft E from NW corner	**BORING NO.**	**B-18**
DRILLER AND HELPER:	Tom McGovern, Tommy				
HAMMER TYPE:	Safety Hammer on cable	APPROX. ELEV.:	540		
INSPECTOR:	Warren Patton	WATER DEPTH:			

Feet	SAMPLE #	SAMPLE Type	SAMPLE Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	8	ML	4	**3**	**5**	20	Moist	Silt with little sand, trace gravel, trace roots	
										Brown, mottled	
2-4	**S2**	SS	8	ML	19	**18**	**19**	30	Moist	Till- Silt with little sand, little gravel	
										Brown, faintly mottled. PEN= 10 ksf	
5											
5-7	**S3**	SS	8	CL-ML	12	**18**	**39**	50	Very Moist	Till- Silty clay with little sand, little gravel	
										Mottled brown and grey. PEN= 10 ksf	
7-9	**S4**	SS	8	SM	36	**28**	**25**	28	Very Moist	Till- Sand (Fmc) with some silt, little gravel	
										Brown	
10											
10-12	**S5**	SS	6	CL-ML	28	**31**	**50**		Wet	Till- Silty clay with some Fmc sand, little gravel	
										Mottled brown. PEN= 5 ksf	
15											
15-17	**S6**	SS	4	SM	50/4				Moist	Till- Sand with some gravel, little silt	
										Olive Brown. PEN= 25 ksf	
20											
20-22	**S7**	SS	3	SW	50/3				Wet	Sand with some gravel, trace silt	
21-22		C								Brownish grey.	
									21-22':	Cored boulder. Recovered a 4-inch piece	Refusal due to
25										of very hard pale brown quartzite sandstone.	boulder, 22 ft
30											
35											
40											
45											

COMMENTS:

DRILLING METHOD:	HSA - Hollow-Stem Auger	MR - Mud-Rotary		MEASUREMENTS IN FEET AND INCHES
SAMPLE/TEST TYPE	SS - SPLIT SPOON	C - CORE	T - UNDISTURBED TUBE	AUG - AUGER CUTTINGS
	PEN - HAND PENETROMETER		TOR - TORVANE	V - VANE SHEAR

KEVIN L. PATTON, P.E.
36 PATTON ROAD
NEWBURGH, NY 12550
PATTONGEOTECH.COM 845 275-7732

CLIENT:	Indigo Contracting		
PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
DATE:	2/4/2020	Project No.:	20420
WEATHER:	Partly cloudy, 15-30F. After blizzard.		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, 1200 ft E from SW corner	**BORING NO.**	**B-19**
DRILLER AND HELPER:	Jim Casson, Howie				
HAMMER TYPE:	Automatic Hammer	APPROX. ELEV.:	489		
INSPECTOR:	Wyeth Patton	WATER DEPTH:			

Feet	SAMPLE #	Type	Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	16	ML	5	**5**	**2**	5	Moist	Silt with little sand, trace fine roots	
										Mottled brown and orange	
2-4	**S2**	SS	18	ML	7	**12**	**13**	11	Moist	Silt with some Fmc Sand, traces gravel	
										Brown	
5											
5-7	**S3**	SS	16	CL, CL-ML	4	**7**	**35**	23	Wet, Moist	Clay w/some sand. Layer pale brown clay at 6'.	PEN= 10 ksf
										Change to till- silty clay and sand, traces gravel.	Mottled brown and grey
7-9	**S4**	SS	20	CL-ML	14	**21**	**21**	36	Very Moist	Till- Silty clay with some sand, traces gravel	
										Olive brown. PEN= 9 ksf	
10											
10-12	**S5**	SS	3	CL-ML	50/4				Very Moist	Till- Silty clay with some sand, traces gravel	
										Brown. Small Sample	
15											
15-17	**S6**	SS	0	--	57	**50/3**			--	No recovery.	Stopped in soil.
20											
25											
30											
35											
40											
45											

COMMENTS:

DRILLING METHOD:	HSA - Hollow-Stem Auger	MR - Mud-Rotary		MEASUREMENTS IN FEET AND INCHES
SAMPLE/TEST TYPE	SS - SPLIT SPOON	C - CORE	T - UNDISTURBED TUBE	AUG - AUGER CUTTINGS
	PEN - HAND PENETROMETER		TOR - TORVANE	V - VANE SHEAR

KEVIN L. PATTON, P.E.
36 PATTON ROAD
NEWBURGH, NY 12550
PATTONGEOTECH.COM 845 275-7732

CLIENT:	Indigo Contracting		
PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
DATE:	2/4/2020	Project No.:	20420
WEATHER:	Partly cloudy, 15-30F. After blizzard.		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, 220 ft W from SE corner	**BORING NO.**	**B-20**
DRILLER AND HELPER:	Jim Casson, Howie				
HAMMER TYPE:	Automatic Hammer	APPROX. ELEV.:	485		
INSPECTOR:	Wyeth Patton	WATER DEPTH:			

Feet	SAMPLE #	Type	Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	4	ML	17	**10**	**9**	7		Topsoil- Silt with traces clay, some fine roots	
										Dark brown	
2-4	**S2**	SS	0	--	8	**11**	**15**	13	--	No Recovery	
5											
5-7	**S3**	SS	24	SM	10	**9**	**7**	9	Wet	Till- Sand (Fmc) and silt, trace gravel.	
										Olive brown	
7-9	**S4**	SS	16	SM	7	**11**	**10**	14	Very Moist	Till- Sand (Fmc) with some silt, little gravel	
										Olive brown	
10											
10-12	**S5**	SS	12	SM	15	**27**	**50**		Moist	Till- Sand (Fmc) with some silt, little gravel	
										Olive brown	
15											
15-17	**S6**	SS	1	SM	35	**50/1**			Moist	Till- Sand (Fmc) with some silt, little gravel.	
										Cobble fragments. Olive brown. Small sample.	Stopped in soil.
20											
25											
30											
35											
40											
45											

COMMENTS:

DRILLING METHOD: HSA - Hollow-Stem Auger MR - Mud-Rotary MEASUREMENTS IN FEET AND INCHES

SAMPLE/TEST TYPE SS - SPLIT SPOON C - CORE T - UNDISTURBED TUBE AUG - AUGER CUTTINGS
PEN - HAND PENETROMETER TOR - TORVANE V - VANE SHEAR

KEVIN L. PATTON, P.E.
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CLIENT:	Indigo Contracting		
PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
DATE:	2/4/2020	Project No.:	20420
WEATHER:	Partly cloudy, 15-30F. After blizzard.		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, SE corner	**BORING NO.**	**B-21**
DRILLER AND HELPER:	Jim Casson, Howie				
HAMMER TYPE:	Automatic Hammer	APPROX. ELEV.:	473		
INSPECTOR:	Wyeth Patton	WATER DEPTH:			

Feet	SAMPLE #	SAMPLE Type	SAMPLE Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	16	ML, SM	3	**2**	**3**	9	Moist	Silt with some sand. Orange brown. Change to olive grey till- sand with some silt, some gravel.	
2-4	**S2**	SS	2	SM	50/3				Moist	Till- Sand with some silt, little gravel Olive brown	Boulder 3' Small Sample
5											
5-7	**S3**	SS	3	GM	9	**50/1**			Wet	Till- Cobble fragments. Gravel and sand with some silt. Mottled brown, pale brown, orange Small sample.	Small Sample Refusal 6 1/2' on boulder. Offset.
10											
10-12	**S4**	SS	2	GM	15	**14**	**8**	6	Wet	Till- Cobble fragments, traces sandy silt. Olive brown	Small Sample Refusal 13'
15											
20											
ma											
30											
35											
40											
45											

COMMENTS:

DRILLING METHOD:	HSA - Hollow-Stem Auger	MR - Mud-Rotary		MEASUREMENTS IN FEET AND INCHES
SAMPLE/TEST TYPE	SS - SPLIT SPOON	C - CORE	T - UNDISTURBED TUBE	AUG - AUGER CUTTINGS
	PEN - HAND PENETROMETER		TOR - TORVANE	V - VANE SHEAR

KEVIN L. PATTON, P.E.
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CLIENT:	Indigo Contracting		
PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
DATE:	2/5/2020	Project No.:	20420
WEATHER:	Partly cloudy, 20-40F		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, SW corner	**BORING NO.**	**B-22**
DRILLER AND HELPER:	Tom McGovern, Tommy				
HAMMER TYPE:	Safety Hammer on cable	APPROX. ELEV.:	454		
INSPECTOR:	Wyeth Patton	WATER DEPTH:			

Feet	SAMPLE #	Type	Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	10	ML	2	**1**	**2**	10	Very Moist	Silt with little sand, trace gravel	
										Orange brown	
2-4	**S2**	SS	18	SM	17	**24**	**22**	27	Very Moist	Till- Sand and silt with traces gravel	
										Olive brown. PEN=9 ksf	Boulder 4'
5											
5-7	**S3**	SS	10	SM	17	**15**	**6**	9	Moist	Till- Sand (Fmc) with little silt, little gravel	
										Olive brown.	
7-9	**S4**	SS	6	SM	10	**8**	**5**	18	Wet	Till- Sand with little gravel, little silt	Boulder 8'
										Mottled brown with pale brown and orange	
10											
10-12	**S5**	SS	2	GM	50/4				Moist	Till- Gravel with some sand, some silt	Small Sample
										Olive grey	
15											
15-17	**S6**	SS	8	SW-SM	25	**12**	**10**	50/5	Wet	Till- Sand with little gravel, traces silt	
										Olive brown, slightly mottled	Stopped in soil.
20											
25											
30											
35											
40											
45											

COMMENTS:

DRILLING METHOD: HSA - Hollow-Stem Auger MR - Mud-Rotary MEASUREMENTS IN FEET AND INCHES

SAMPLE/TEST TYPE SS - SPLIT SPOON C - CORE T - UNDISTURBED TUBE AUG - AUGER CUTTINGS
PEN - HAND PENETROMETER TOR - TORVANE V - VANE SHEAR

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CLIENT:	Indigo Contracting		
PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
DATE:	2/5/2020	Project No.:	20420
WEATHER:	Partly cloudy, 20-40F		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, 130 ft N, 50 ft E from SW corner	**BORING NO.**	**B-23**
DRILLER AND HELPER:	Tom McGovern, Tommy				
HAMMER TYPE:	Safety Hammer on cable	APPROX. ELEV.:	460		
INSPECTOR:	Wyeth Patton	WATER DEPTH:			

Feet	SAMPLE #	Type	Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	18	SM	1	**3**	**2**	8	Very Moist	Till- Sand (Fmc) and silt, trace gravel	
										Brown. PEN= 2.7 ksf	
2-4	**S2**	SS	18	CL-ML	16	**19**	**16**	14	Moist	Till- Silty clay with some sand, little gravel	
										Brown. PEN= 8 ksf	
5											
5-7	**S3**	SS	5	ML	9	**8**	**6**	9	Moist/ Very Moist	Till- Silt with little sand, trace gravel, trace fine roots	
										Light brown. PEN= 2.6 ksf	
7-9	**S4**	SS	3	SP-SM	9	**50/5**			Wet	Till- Fine sand with trace gravel, traces-little silt	
										Brown. Small sample. PEN= 2.5 ksf	Boulder 8'
10											Harder soil 8-10'
10-12	**S5**	SS	12	SP-SM	11	**10**	**25**	24	Very Moist	Till- Fine sand with trace gravel, traces-little silt	Very slow drilling 1
										Brown. PEN= 4 ksf	
15											
15-17	**S6**	SS	12	SC-SM	26	**43**	**28**	45	Moist	Till- Sand with some gravel, little silty clay	
										Olive brown. Slight mottling	Stopped in soil.
20											
25											
30											
35											
40											
45											

COMMENTS:

DRILLING METHOD:	HSA - Hollow-Stem Auger	MR - Mud-Rotary		MEASUREMENTS IN FEET AND INCHES
SAMPLE/TEST TYPE	SS - SPLIT SPOON	C - CORE	T - UNDISTURBED TUBE	AUG - AUGER CUTTINGS
	PEN - HAND PENETROMETER		TOR - TORVANE	V - VANE SHEAR

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NEWBURGH, NY 12550
PATTONGEOTECH.COM 845 275-7732

CLIENT:	Indigo Contracting		
PROJECT:	County 51, Craigville Road, Town of Blooming Grove N.Y.		
DATE:	2/5/2020	Project No.:	20420
WEATHER:	Partly cloudy, 20-40F		

SOIL BORING LOG

DRILLING COMPANY:	General Borings, Inc., Prospect Conn.	LOCATION:	Bldg. 1, 260 ft N, 50 ft E from SW corner	**BORING NO.**	**B-24**
DRILLER AND HELPER:	Tom McGovern, Tommy				
HAMMER TYPE:	Safety Hammer on cable	APPROX. ELEV.:	464		
INSPECTOR:	Wyeth Patton	WATER DEPTH:			

Feet	SAMPLE #	Type	Rec.	USCS SOIL CLASS	SPT TEST, BLOWS/6" 0-6	6-12	12-18	18-24	MOISTURE	DESCRIPTION	NOTES
0-2	**S1**	SS	20	ML	2	**6**	**7**	7	Moist	Till- Silt with some sand, little gravel	
										Orange brown. PEN= 8 ksf	
2-4	**S2**	SS	6	ML	5	**9**	**14**	19	Wet	Till- Silt and Fmc sand with traces gravel	
										Brown. PEN= 3.2 ksf	
5											
5-7	**S3**	SS	21	CL-ML	6	**6**	**9**	32	Wet	Till- Silty clay with some sand, traces gravel	
										Olive brown. PEN = 5.5ksf	
7-9	**S4**	SS	6	CL-ML	46	**17**	**20**	16	Very Moist	Till- Silty clay with some sand, little gravel	
										Light brown	
10											
10-12	**S5**	SS	20	CL-ML	7	**14**	**15**	23	Very Moist	Till- Silty clay with some sand, little gravel	
										Light brown. PEN= 7 ksf	
15											
15-17	**S6**	SS	3	GM	50/3				Wet	Till- Gravel with little sand, little silt	Stopped in soil.
										Light brown	
20											
25											
30											
35											
40											
45											

COMMENTS:

DRILLING METHOD:	HSA - Hollow-Stem Auger	MR - Mud-Rotary		MEASUREMENTS IN FEET AND INCHES
SAMPLE/TEST TYPE	SS - SPLIT SPOON	C - CORE	T - UNDISTURBED TUBE	AUG - AUGER CUTTINGS
	PEN - HAND PENETROMETER		TOR - TORVANE	V - VANE SHEAR

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CLIENT:	Indigo Contracting Inc.		
PROJECT:	County 51, Blooming Grove, N.Y.		
PROJECT No.:	20420	SAMPLE LOT No.:	210205-1
DATE SAMPLED:	1/22-2/5/2021	DATE TESTED:	2/8,16,19/2021
SAMPLED BY:	Wyeth Patton	TESTED BY:	Wyeth Patton

MOISTURE CONTENT OF SOIL

TEST METHOD: ASTM D2216

SAMPLE NO.	DEPTH,FT.	% MOISTURE
B2 S2	3	9.0
B2 S3	6	11.5
B2 S4	8	15.4
B2 S5	11	8.9
B6 S2	3	15.3
B6 S3	6	12.6
B6 S4	8	12.5
B6 S5	11	15.0
B7 S2	3	17.6
B7 S3	6	10.9
B7 S5	11	10.7
B8 S2	3	9.1
B8 S3	6	8.6
B8 S4 top	8	12.1
B8 S4 bottom	8	16.9
B8 S5	12	5.6
B9 S2	3	12.6
B9 S3	6	12.9
B9 S4	8	9.3
B10 S2	3	11.2
B10 S3	6	16.6
B10 S4	8	8.7
B10 S5	11	10.4
B10 S6	16	7.9
B10 S8 top	26	31.7
B10 S8 bottom	26	20.1
B10 S9	31	18.8
B11 S2	3	8.7
B11 S3	6	9.8
B11 S4	8	12.3
B11 S5	11	19.3

Moisture content is expressed as a percent of the dry mass of the soil.

Reviewed by: *Kevin Patton*

Form NMC

KEVIN L. PATTON, P.E.
36 PATTON ROAD
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CLIENT:	Indigo Contracting Inc.		
PROJECT:	County 51, Blooming Grove, N.Y.		
PROJECT No.:	20420	SAMPLE LOT No.:	210205-1
DATE SAMPLED:	1/22-2/5/2021	DATE TESTED:	2/8,16,19/2021
SAMPLED BY:	Wyeth Patton	TESTED BY:	Wyeth Patton

MOISTURE CONTENT OF SOIL

TEST METHOD: ASTM D2216

SAMPLE NO.	DEPTH,FT.	% MOISTURE
B13 S2	6	13.9
B13 S3	8	6.9
B13 S5	16	22.5
B14 S2	3	10.5
B14 S3	6	11.1
B14 S4	11	18.7
B14 S5	16	13.5
B15 S2	3	12.5
B15 S3	6	22.8
B16 S2	3	12.2
B16 S3	6	10.8
B16 S4	8	13.1
B16 S5	11	9.8
B16 S6	16	5.9
B19 S2	3	9.3
B19 S3	6	22.1
B19 S4 top	8	10.4
B19 S4 bottom	8	12.3
B20 S3	6	19.3
B20 S4	8	9.1
B20 S5	11	8.4
B22 S1	1	10.2
B22 S2	3	11.6
B22 S3	6	10.0
B22 S4	11	10.4
B24 S2	3	14.0
B24 S3	6	11.2
B24 S4	8	11.3
B24 S5	11	20.0
B24 S6	16	14.3

Moisture content is expressed as a percent of the dry mass of the soil.

Reviewed by: *Kevin Patton*

Form NMC

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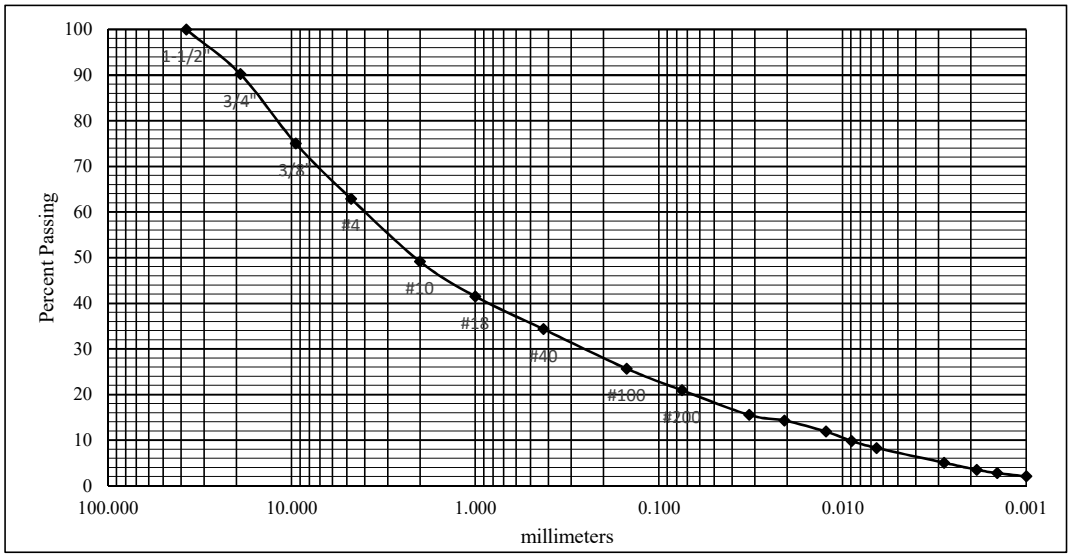
CLIENT:	Indigo Contracting Inc.		
PROJECT:	County 51, Blooming Grove, N.Y.		
PROJECT No.:	20420	SAMPLE LOT No.:	210205-1
DATE SAMPLED:	1/22-2/5/2021	DATE TESTED:	2/16/2021
SAMPLED BY:	Wyeth Patton	TESTED BY:	Wyeth Patton

SIEVE-AND-HYDROMETER ANALYSIS TEST REPORT

TEST METHOD(s): ASTM D422, AASHTO T88

Sample Location	B4-S5
Depth	11 feet

Sieve Size		Percent Retained	Percent Passing	Specification
inches	mm			
1-1/2"	37.5	0	100	
3/4"	19.0	10	90	
3/8"	9.5	15	75	
#4	4.75	12	63	
#10	2.00	14	49	
#18	1.00	7	42	
#40	0.425	8	34	
#100	0.150	8	26	
#200	0.075	5	21	
Hydrometer Analysis	0.050	3	18	
	0.020	4	14	
	0.010	4	10	
	0.005	3	7	
	0.002	3	4	
	0.001	2	2	



USDA Particle Size Classification:		**USDA Textural Class:** Very Gravelly Sandy Loam
Gravel, 2.00mm to 3"	51	
Sand, 2.00 to 0.050mm:	31	**USCS Classification (ASTM D2487/D2488):**
Silt, 0.050 to 0.002mm:	14	SM, Silty Sand with Gravel
Clay, <0.002mm	4	
Total	100	Atterberg Limits were determined by: Test (other sample)

Reviewed by: *Kevin Patton*

Form HYD

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36 PATTON ROAD

NEWBURGH, NY 12550

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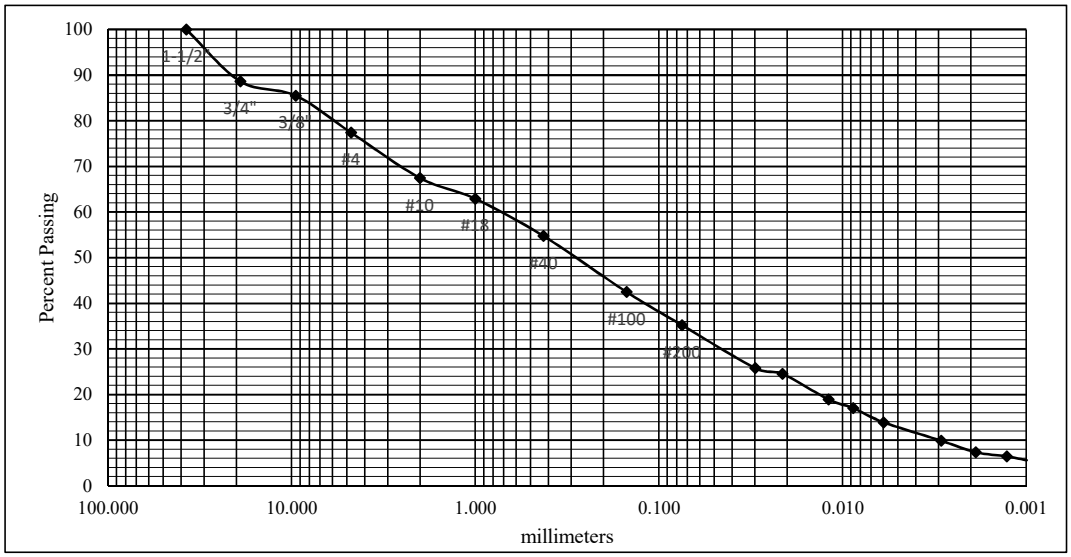
CLIENT:	Indigo Contracting Inc.		
PROJECT:	County 51, Blooming Grove, N.Y.		
PROJECT No.:	20420	SAMPLE LOT No.:	210205-1
DATE SAMPLED:	1/22-2/5/2021	DATE TESTED:	2/16/2021
SAMPLED BY:	Wyeth Patton	TESTED BY:	Wyeth Patton

SIEVE-AND-HYDROMETER ANALYSIS TEST REPORT

TEST METHOD(s): ASTM D422, AASHTO T88

Sample Location	B7-S4
Depth	8 feet

Sieve Size		Percent Retained	Percent Passing	Specification
inches	mm			
1-1/2"	37.5	0	100	
3/4"	19.0	11	89	
3/8"	9.5	4	85	
#4	4.75	8	77	
#10	2.00	10	67	
#18	1.00	4	63	
#40	0.425	8	55	
#100	0.150	13	42	
#200	0.075	7	35	
Hydrometer Analysis	0.050	4	31	
	0.020	7	24	
	0.010	6	18	
	0.005	5	13	
	0.002	5	8	
	0.001	2	6	



USDA Particle Size Classification:		**USDA Textural Class:** Gravelly Sandy Loam
Gravel, 2.00mm to 3"	33	
Sand, 2.00 to 0.050mm:	36	**USCS Classification (ASTM D2487/D2488):**
Silt, 0.050 to 0.002mm:	23	SM, Silty Sand with Gravel
Clay, <0.002mm	8	
Total	100	Atterberg Limits were determined by: Test (other sample)

Reviewed by: *Kevin Patton*

Form HYD

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NEWBURGH, NY 12550
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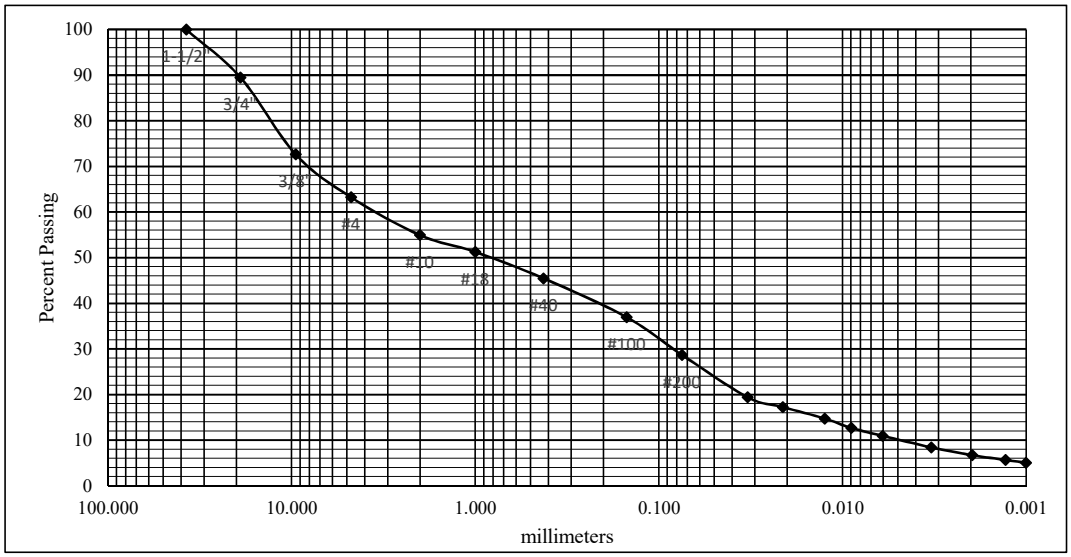
CLIENT:	Indigo Contracting Inc.		
PROJECT:	County 51, Blooming Grove, N.Y.		
PROJECT No.:	20420	SAMPLE LOT No.:	210205-1
DATE SAMPLED:	1/22-2/5/2021	DATE TESTED:	2/16/2021
SAMPLED BY:	Wyeth Patton	TESTED BY:	Wyeth Patton

SIEVE-AND-HYDROMETER ANALYSIS TEST REPORT

TEST METHOD(s): ASTM D422, AASHTO T88

Sample Location	B12-S3
Depth	6 feet

Sieve Size		Percent Retained	Percent Passing	Specification
inches	mm			
1-1/2"	37.5	0	100	
3/4"	19.0	11	89	
3/8"	9.5	16	73	
#4	4.75	10	63	
#10	2.00	8	55	
#18	1.00	4	51	
#40	0.425	6	45	
#100	0.150	8	37	
#200	0.075	8	29	
Hydrometer Analysis	0.050	5	24	
	0.020	7	17	
	0.010	4	13	
	0.005	3	10	
	0.002	3	7	
	0.001	2	5	



USDA Particle Size Classification:		**USDA Textural Class:** Very Gravelly Sandy Loam
Gravel, 2.00mm to 3"	45	
Sand, 2.00 to 0.050mm:	31	**USCS Classification (ASTM D2487/D2488):**
Silt, 0.050 to 0.002mm:	17	GC-GM, Silty Clayey Gravel with Sand
Clay, <0.002mm	7	
Total	100	Atterberg Limits were determined by: Test

Reviewed by: *Kevin Patton*

Form HYD

KEVIN L. PATTON, P.E.

36 PATTON ROAD

NEWBURGH, NY 12550

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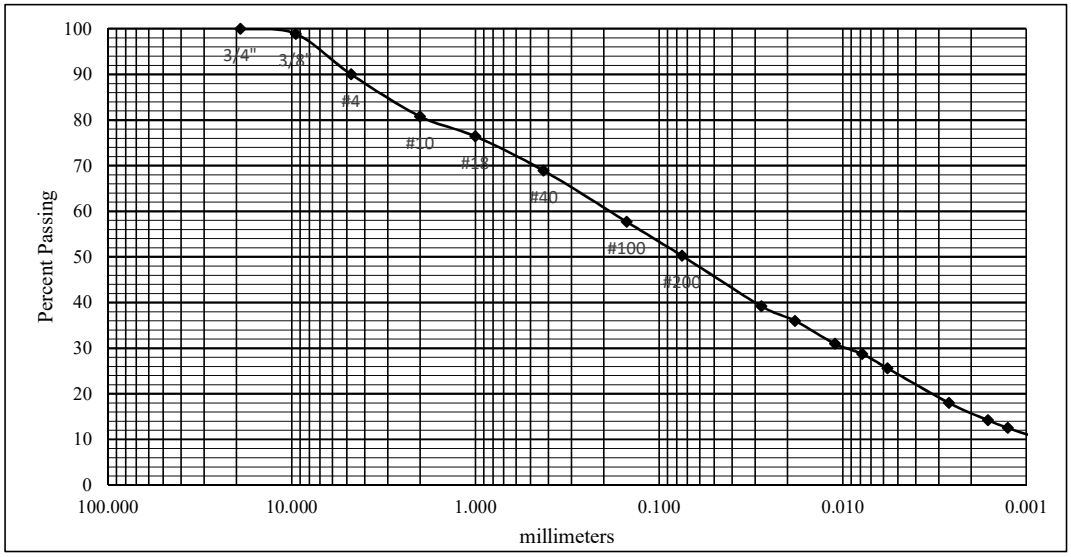
CLIENT:	Indigo Contracting Inc.		
PROJECT:	County 51, Blooming Grove, N.Y.		
PROJECT No.:	20420	SAMPLE LOT No.:	210205-1
DATE SAMPLED:	1/22-2/5/2021	DATE TESTED:	2/16/2021
SAMPLED BY:	Wyeth Patton	TESTED BY:	Wyeth Patton

SIEVE-AND-HYDROMETER ANALYSIS TEST REPORT

TEST METHOD(s): ASTM D422, AASHTO T88

Sample Location	B16-S7
Depth	21 feet

Sieve Size		Percent Retained	Percent Passing	Specification
inches	mm			
3/4"	19.0	0	100	
3/8"	9.5	1	99	
#4	4.75	9	90	
#10	2.00	9	81	
#18	1.00	5	76	
#40	0.425	7	69	
#100	0.150	11	58	
#200	0.075	8	50	
Hydrometer Analysis	0.050	4	46	
	0.020	9	37	
	0.010	7	30	
	0.005	6	24	
	0.002	8	16	
	0.001	5	11	



USDA Particle Size Classification:		**USDA Textural Class:** Gravelly Loam
Gravel, 2.00mm to 3"	19	
Sand, 2.00 to 0.050mm:	35	**USCS Classification (ASTM D2487/D2488):**
Silt, 0.050 to 0.002mm:	30	CL-ML, Sandy Silty Clay
Clay, <0.002mm	16	
Total	100	Atterberg Limits were determined by: Test

Reviewed by: *Kevin Patton*

Form HYD

KEVIN L. PATTON, P.E.

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NEWBURGH, NY 12550

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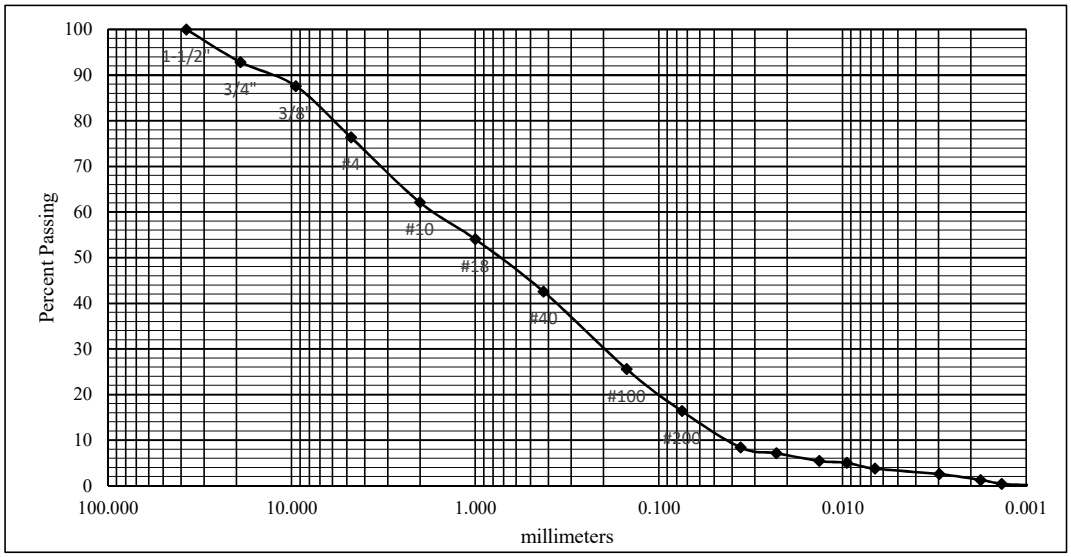
CLIENT:	Indigo Contracting Inc.		
PROJECT:	County 51, Blooming Grove, N.Y.		
PROJECT No.:	20420	SAMPLE LOT No.:	210205-1
DATE SAMPLED:	1/22-2/5/2021	DATE TESTED:	2/19/2021
SAMPLED BY:	Wyeth Patton	TESTED BY:	Wyeth Patton

SIEVE-AND-HYDROMETER ANALYSIS TEST REPORT

TEST METHOD(s): ASTM D422, AASHTO T88

Sample Location	B22-S6
Depth	16 feet

Sieve Size		Percent Retained	Percent Passing	Specification
inches	mm			
1-1/2"	37.5	0	100	
3/4"	19.0	7	93	
3/8"	9.5	5	88	
#4	4.75	12	76	
#10	2.00	14	62	
#18	1.00	8	54	
#40	0.425	11	43	
#100	0.150	17	26	
#200	0.075	10	16	
Hydrometer Analysis	0.050	4	12	
	0.020	5	7	
	0.010	2	5	
	0.005	1	4	
	0.002	2	2	
	0.001	2	<1	



USDA Particle Size Classification:		**USDA Textural Class:** Very Gravelly Loamy Sand
Gravel, 2.00mm to 3"	38	
Sand, 2.00 to 0.050mm:	50	**USCS Classification (ASTM D2487/D2488):**
Silt, 0.050 to 0.002mm:	10	SM, Silty Sand with Gravel
Clay, <0.002mm	2	
Total	100	Atterberg Limits were determined by: Test

Reviewed by: *Kevin Patton*

Form HYD

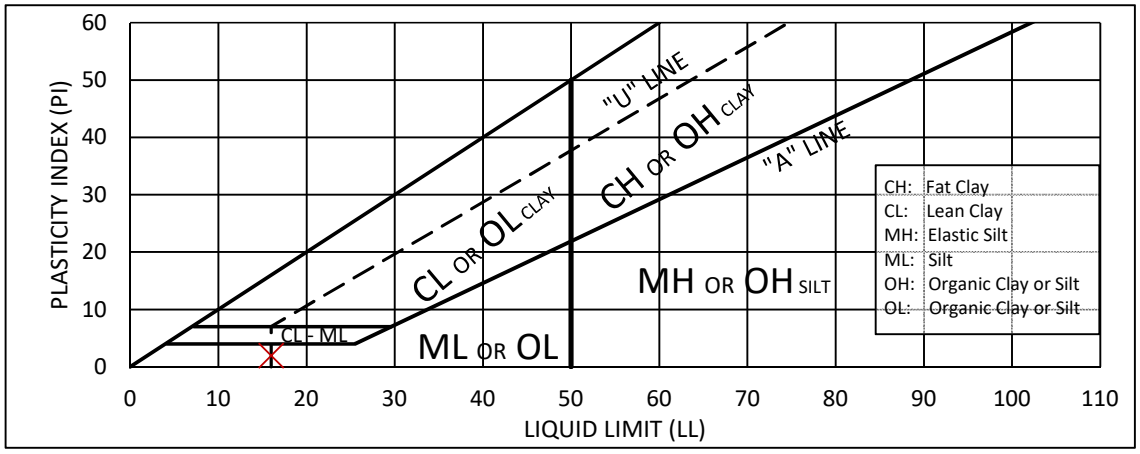
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NEWBURGH, NY 12550
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CLIENT:	Indigo Contracting Inc.		
PROJECT:	County 51, Blooming Grove, N.Y.		
PROJECT No.:	20420	SAMPLE LOT No.:	210205-1
DATE SAMPLED:	1/22-2/5/2021	DATE TESTED:	2/16/2021
SAMPLED BY:	Wyeth Patton	TESTED BY:	Wyeth Patton

ATTERBERG LIMITS TEST

TEST METHODS: ASTM D4318/ AASHTO T89, T90

Sample Location	B4-S6
Depth	16 feet
Percent Passing #40	45
Liquid Limit (LL)	**16**
Plastic Limit (PL)	**14**
Plasticity Index (PI)	**2**
USCS Class of -#40	ML



LL, PL and PI values are percent moisture of the soil by dry mass.

Test is performed on the 'matrix' fraction of the soil, finer than the #40 (0.425mm) sieve.

The Liquid Limit is the moisture content at which the matrix fraction of the soil changes from a stiff to a flowing consistency. The plastic limit is the moisture content at which it changes from cohesive to crumbly. The Plasticity Index is the Liquid Limit minus the Plastic Limit.

Reviewed by: *Kevin Patton*

Form ABL

KEVIN L. PATTON, P.E.

36 PATTON ROAD

NEWBURGH, NY 12550

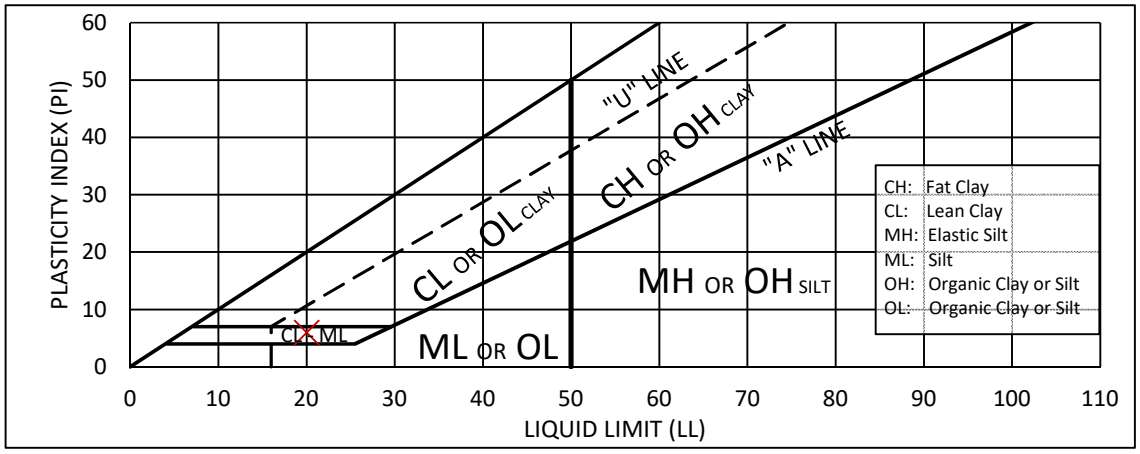
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CLIENT:	Indigo Contracting Inc.		
PROJECT:	County 51, Blooming Grove, N.Y.		
PROJECT No.:	20420	SAMPLE LOT No.:	210205-1
DATE SAMPLED:	1/22-2/5/2021	DATE TESTED:	2/16/2021
SAMPLED BY:	Wyeth Patton	TESTED BY:	Wyeth Patton

ATTERBERG LIMITS TEST

TEST METHODS: ASTM D4318/ AASHTO T89, T90

Sample Location	B12-S3
Depth	6 feet
Percent Passing #40	45
Liquid Limit (LL)	**20**
Plastic Limit (PL)	**14**
Plasticity Index (PI)	**6**
USCS Class of -#40	CL-ML



LL, PL and PI values are percent moisture of the soil by dry mass.

Test is performed on the 'matrix' fraction of the soil, finer than the #40 (0.425mm) sieve.

The Liquid Limit is the moisture content at which the matrix fraction of the soil changes from a stiff to a flowing consistency. The plastic limit is the moisture content at which it changes from cohesive to crumbly. The Plasticity Index is the Liquid Limit minus the Plastic Limit.

Reviewed by: *Kevin Patton*

Form ABL

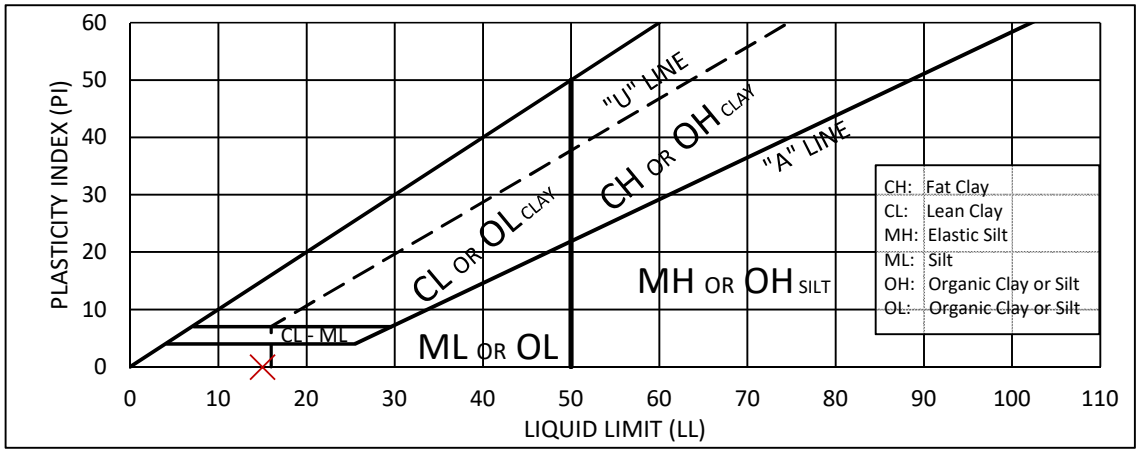
KEVIN L. PATTON, P.E.
36 PATTON ROAD
NEWBURGH, NY 12550
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CLIENT:	Indigo Contracting Inc.		
PROJECT:	County 51, Blooming Grove, N.Y.		
PROJECT No.:	20420	SAMPLE LOT No.:	210205-1
DATE SAMPLED:	1/22-2/5/2021	DATE TESTED:	2/16/2021
SAMPLED BY:	Wyeth Patton	TESTED BY:	Wyeth Patton

ATTERBERG LIMITS TEST

TEST METHODS: ASTM D4318/ AASHTO T89, T90

Sample Location	B13-S4	
Depth	11 feet	
Percent Passing #40	37	
Liquid Limit (LL)	**15**	(15.2)
Plastic Limit (PL)	**15**	(15.0)
Plasticity Index (PI)	**0**	(Non-Plastic)
USCS Class of -#40	ML	



LL, PL and PI values are percent moisture of the soil by dry mass.

Test is performed on the 'matrix' fraction of the soil, finer than the #40 (0.425mm) sieve.

The Liquid Limit is the moisture content at which the matrix fraction of the soil changes from a stiff to a flowing consistency. The plastic limit is the moisture content at which it changes from cohesive to crumbly. The Plasticity Index is the Liquid Limit minus the Plastic Limit.

Reviewed by: *Kevin Patton*

Form ABL

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36 PATTON ROAD

NEWBURGH, NY 12550

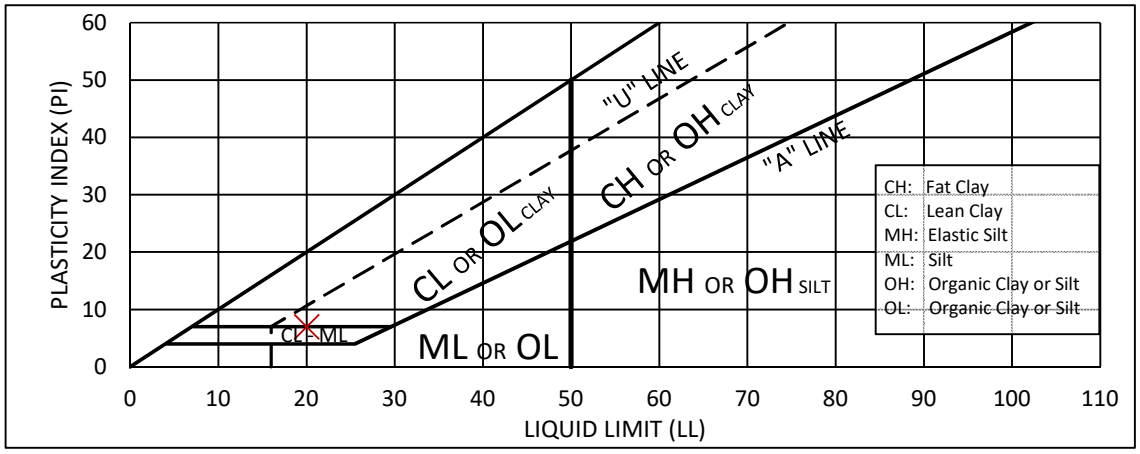
845 275-7732 PATTONGEOTECH.COM

CLIENT:	Indigo Contracting Inc.		
PROJECT:	County 51, Blooming Grove, N.Y.		
PROJECT No.:	20420	SAMPLE LOT No.:	210205-1
DATE SAMPLED:	1/22-2/5/2021	DATE TESTED:	2/19/2021
SAMPLED BY:	Wyeth Patton	TESTED BY:	Wyeth Patton

ATTERBERG LIMITS TEST

TEST METHODS: ASTM D4318/ AASHTO T89, T90

Sample Location	B16-S7
Depth	21 feet
Percent Passing #40	69
Liquid Limit (LL)	**20**
Plastic Limit (PL)	**13**
Plasticity Index (PI)	**7**
USCS Class of -#40	CL-ML



LL, PL and PI values are percent moisture of the soil by dry mass.

Test is performed on the 'matrix' fraction of the soil, finer than the #40 (0.425mm) sieve.

The Liquid Limit is the moisture content at which the matrix fraction of the soil changes from a stiff to a flowing consistency. The plastic limit is the moisture content at which it changes from cohesive to crumbly. The Plasticity Index is the Liquid Limit minus the Plastic Limit.

Reviewed by: *Kevin Patton*

Form ABL

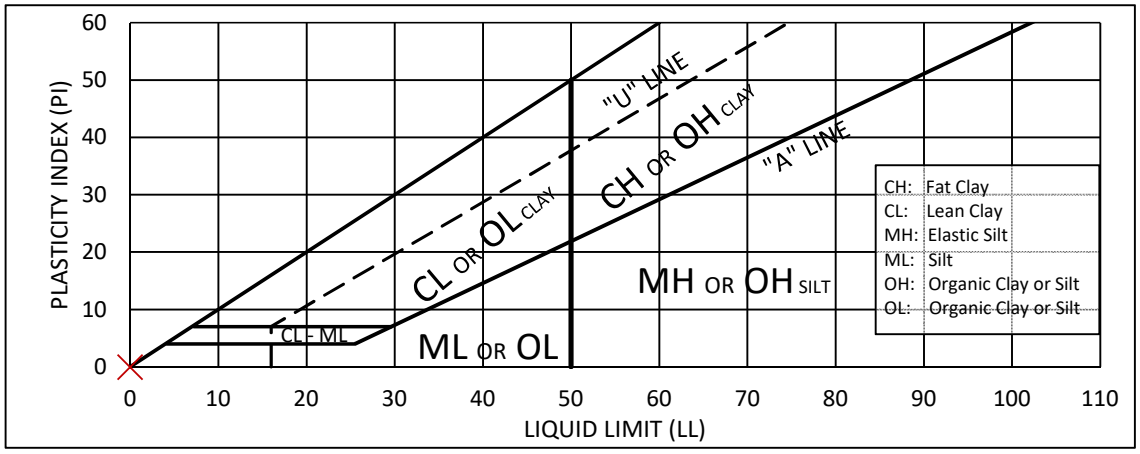
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NEWBURGH, NY 12550
845 275-7732 PATTONGEOTECH.COM

CLIENT:	Indigo Contracting Inc.		
PROJECT:	County 51, Blooming Grove, N.Y.		
PROJECT No.:	20420	SAMPLE LOT No.:	210205-1
DATE SAMPLED:	1/22-2/5/2021	DATE TESTED:	2/19/2021
SAMPLED BY:	Wyeth Patton	TESTED BY:	Wyeth Patton

ATTERBERG LIMITS TEST

TEST METHODS: ASTM D4318/ AASHTO T89, T90

Sample Location	B22-S6
Depth	16 feet
Percent Passing #40	43
Liquid Limit (LL)	**None**
Plastic Limit (PL)	**None**
Plasticity Index (PI)	**Non-Plastic**
USCS Class of -#40	ML



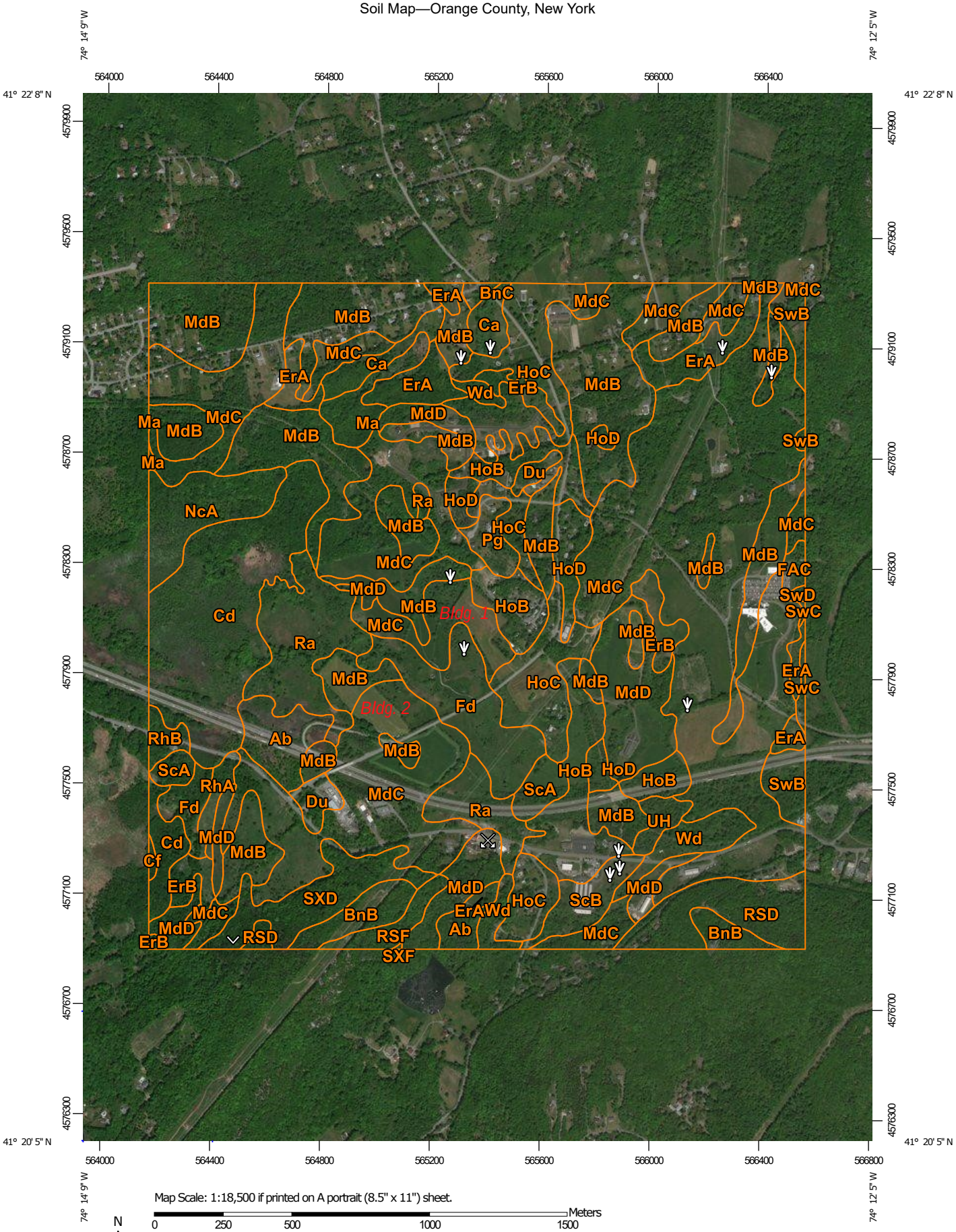
LL, PL and PI values are percent moisture of the soil by dry mass.

Test is performed on the 'matrix' fraction of the soil, finer than the #40 (0.425mm) sieve.

The Liquid Limit is the moisture content at which the matrix fraction of the soil changes from a stiff to a flowing consistency. The plastic limit is the moisture content at which it changes from cohesive to crumbly. The Plasticity Index is the Liquid Limit minus the Plastic Limit.

Reviewed by: *Kevin Patton*

Form ABL


74° 14' 9" W
74° 12' 5" W
41° 22' 8" N
41° 20' 5" N
564000
564400
564800
565200
565600
566000
566400
566800
4579900
4579500
4579100
4578700
4578300
4577900
4577500
4577100
4576700
4576300
MdB
MdC
ErA
BnC
Ca
SwB
HoC
ErB
Wd
MdD
Ma
HoD
Du
NcA
Ra
Pg
FAC
SwD
SwC
Cd
Bldg. 1
Bldg. 2
Fd
RhB
Ab
ScA
RhA
UH
Cf
SXD
BnB
RSF
SXF
RSD
Map Scale: 1:18,500 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0 250 500 1000 1500
Feet
0 500 1000 2000 3000
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Soils

- Soil Survey Areas
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Orange County, New York
Survey Area Data: Version 21, Jun 11, 2020

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

Date(s) aerial images were photographed: Oct 7, 2013—Feb 26, 2017

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

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Ab	Alden silt loam	21.9	1.5%
BnB	Bath-Nassau channery silt loams, 3 to 8 percent slopes	18.2	1.3%
BnC	Bath-Nassau channery silt loams, 8 to 15 percent slopes	1.8	0.1%
Ca	Canandaigua silt loam	15.8	1.1%
Cd	Catden muck, drained, 0 to 2 percent slopes	96.9	6.8%
Cf	Catden, Muskego, and Pinnebog soils, 0 to 2 percent slopes	0.8	0.1%
Du	Dumps	8.6	0.6%
ErA	Erie gravelly silt loam, 0 to 3 percent slopes	38.4	2.7%
ErB	Erie gravelly silt loam, 3 to 8 percent slopes	18.0	1.3%
FAC	Farmington silt loam, sloping	3.1	0.2%
Fd	Fredon loam	44.3	3.1%
HLC	Hollis soils, sloping	0.0	0.0%
HoB	Hoosic gravelly sandy loam, 3 to 8 percent slopes	64.3	4.5%
HoC	Hoosic gravelly sandy loam, 8 to 15 percent slopes	81.5	5.7%
HoD	Hoosic gravelly sandy loam, 15 to 25 percent slopes	18.8	1.3%
Ma	Madalin silt loam	12.3	0.9%
MdB	Mardin gravelly silt loam, 3 to 8 percent slopes	244.6	17.1%
MdC	Mardin gravelly silt loam, 8 to 15 percent slopes	438.4	30.6%
MdD	Mardin gravelly silt loam, 15 to 25 percent slopes	69.1	4.8%
NcA	Natchaug muck, drained, 0 to 2 percent slopes	26.8	1.9%
Pg	Pits, gravel	8.3	0.6%
Ra	Raynham silt loam	55.9	3.9%
RhA	Riverhead sandy loam, 0 to 3 percent slopes	4.8	0.3%
RhB	Riverhead sandy loam, 3 to 8 percent slopes	4.9	0.3%
RSD	Rock outcrop-Nassau complex, hilly	31.6	2.2%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
RSF	Rock outcrop-Nassau complex, very steep	8.2	0.6%
ScA	Scio silt loam, 0 to 3 percent slopes	11.3	0.8%
ScB	Scio silt loam, 3 to 8 percent slopes	13.1	0.9%
SwB	Swartswood gravelly loam, 3 to 8 percent slopes	15.6	1.1%
SwC	Swartswood gravelly loam, 8 to 15 percent slopes	2.0	0.1%
SwD	Swartswood gravelly loam, 15 to 25 percent slopes	0.7	0.1%
SXD	Swartswood and Mardin soils, moderately steep, very stony	27.6	1.9%
SXF	Swartswood and Mardin soils, very steep, very stony	0.1	0.0%
UH	Udorthents, smoothed	5.8	0.4%
Wd	Wayland soils complex, non-calcareous substratum, 0 to 3 percent slopes, frequently flooded	19.7	1.4%
Totals for Area of Interest		**1,433.2**	**100.0%**

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining Hydrologic soil group is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continually being defined and redefined, and the list of soil series names changes so frequently as to make the task of maintaining a single national list virtually impossible. Therefore, the criteria is now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Percentage of rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an ovendry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Report—Engineering Properties

Absence of an entry indicates that the data were not estimated. The asterisk '*' denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Engineering Properties–Orange County, New York														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
Cd—Catden muck, drained, 0 to 2 percent slopes														
Catden, drained	80	B/D	0-2	Mucky peat, muck, peat, woody mucky peat, woody muck, woody peat	PT	A-8	0- 0- 0	0- 0- 0	—	—	—	—	—	—
			2-79	Muck, woody muck	PT	A-8	0- 0- 0	0- 0- 0	—	—	—	—	—	—

Engineering Properties–Orange County, New York														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
Fd—Fredon loam														
Fredon, poorly drained	50	B/D	0-6	Loam	CL-ML, ML, SC, SM	A-1, A-2, A-4	0- 0- 0	0- 0- 5	65-95-96	50-92-95	30-80-90	15-60-80	20-25-30	NP-5-10
			6-24	Very fine sandy loam, silt loam, gravelly sandy loam	SC-SM, GC, ML, SM	A-1, A-2, A-4	0- 0- 0	0- 0- 5	65-95-96	50-92-95	30-80-90	15-50-80	20-25-30	NP-5-10
			24-60	Stratified gravelly sand	GM, SW-SM, GW, GW-GM	A-1, A-2	0- 0- 0	0- 5- 10	45-75-92	30-60-85	15-40-65	0- 7- 30	—	NP
Fredon, somewhat poorly drained	25	B/D	0-6	Loam	CL-ML, ML, SC, SM	A-1, A-2, A-4	0- 0- 0	0- 0- 5	65-95-96	50-92-95	30-80-90	15-60-80	20-25-30	NP-5-10
			6-24	Very fine sandy loam, silt loam, gravelly sandy loam	SC-SM, GC, ML, SM	A-1, A-2, A-4	0- 0- 0	0- 0- 5	65-95-96	50-92-95	30-80-90	15-50-80	20-25-30	NP-5-10
			24-60	Stratified gravelly sand	GM, SW-SM, GW, GW-GM	A-1, A-2	0- 0- 0	0- 5- 10	45-75-92	30-60-85	15-40-65	0- 7- 30	—	NP

Engineering Properties–Orange County, New York														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
HoD—Hoosic gravelly sandy loam, 15 to 25 percent slopes														
Hoosic	80	A	0-5	Gravelly sandy loam	GM, ML, SM	A-1, A-2, A-4, A-5	0- 0- 0	0- 5- 10	50-70-90	35-60-75	15-40-65	10-20-50	30-38-45	2-6 -10
			5-23	Gravelly sandy loam, very gravelly sandy loam, gravelly loam	GM, SM, SP-SM, SC-SM	A-1, A-2, A-4	0- 0- 0	0- 7- 10	50-65-90	35-50-75	15-30-65	10-15-50	20-25-30	2-5 -8
			23-60	Very gravelly sand, very gravelly loamy sand, extremely gravelly loamy sand	GW, GM, SM, GP	A-1	0- 0- 0	0- 8- 15	40-50-75	30-35-50	15-20-30	0- 2- 15	—	NP

Engineering Properties–Orange County, New York														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
MdB—Mardin gravelly silt loam, 3 to 8 percent slopes														
Mardin	85	D	0-8	Silt loam, gravelly silt loam, channery silt loam, channery loam	GC-GM, ML, MH	A-4, A-7-5, A-2-4	0- 0- 3	0- 4- 19	43-70-90	41-68-90	33-62-89	28-54-82	27-35-56	6-9 -16
			8-15	Flaggy silt loam, channery loam, silt loam, loam, channery silt loam, gravelly silt loam, gravelly loam	GC-GM, CL	A-4, A-6, A-2-4	0- 0- 3	0- 4- 18	44-71-91	41-69-90	34-61-88	28-54-81	22-27-38	6-9 -15
			15-20	Channery loam, silt loam, loam, channery silt loam, gravelly silt loam, gravelly loam	CL-ML, GM, CL	A-6, A-4, A-2-4	0- 0- 3	0- 4- 18	46-72-91	43-71-91	34-63-88	26-51-77	17-23-32	2-7 -12
			20-72	Very flaggy silt loam, very flaggy loam, very channery loam, very channery silt loam, channery loam, channery silt loam, gravelly loam, gravelly silt loam	GM, CL	A-6, A-1-b	0- 3- 17	3- 6- 40	33-74-82	30-73-81	23-63-80	18-55-73	16-28-35	2-12-17

Engineering Properties–Orange County, New York														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
MdC—Mardin gravelly silt loam, 8 to 15 percent slopes														
Mardin	85	D	0-8	Channery silt loam, silt loam, gravelly silt loam, channery loam	MH, GC-GM, ML	A-2-4, A-7-5, A-4	0- 0- 3	0- 4- 19	43-70-90	41-68-90	33-62-89	28-54-82	27-35-56	6-9 -16
			8-15	Channery silt loam, gravelly loam, loam, gravelly silt loam, channery loam, silt loam, flaggy silt loam	GC-GM, CL	A-6, A-2-4, A-4	0- 0- 3	0- 4- 18	44-71-91	41-69-90	34-61-88	28-54-81	22-27-38	6-9 -15
			15-20	Gravelly silt loam, loam, gravelly loam, channery silt loam, channery loam, silt loam	CL-ML, GM, CL	A-6, A-4, A-2-4	0- 0- 3	0- 4- 18	46-72-91	43-71-91	34-63-88	26-51-77	17-23-32	2-7 -12
			20-72	Very flaggy loam, very channery loam, channery silt loam, gravelly loam, very channery silt loam, channery loam, gravelly silt loam, very flaggy silt loam	GM, CL	A-6, A-1-b	0- 3- 17	3- 6- 40	33-74-82	30-73-81	23-63-80	18-55-73	16-28-35	2-12-17

Engineering Properties–Orange County, New York														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
MdD—Mardin gravelly silt loam, 15 to 25 percent slopes														
Mardin	85	D	0-8	Channery silt loam, silt loam, gravelly silt loam, channery loam	MH, GC-GM, ML	A-2-4, A-7-5, A-4	0- 0- 3	0- 4- 19	43-70-90	41-68-90	33-62-89	28-54-82	27-35-56	6-9 -16
			8-15	Channery silt loam, gravelly loam, loam, gravelly silt loam, channery loam, silt loam, flaggy silt loam	GC-GM, CL	A-6, A-2-4, A-4	0- 0- 3	0- 4- 18	44-71-91	41-69-90	34-61-88	28-54-81	22-27-38	6-9 -15
			15-20	Gravelly silt loam, loam, gravelly loam, channery silt loam, channery loam, silt loam	CL-ML, GM, CL	A-6, A-4, A-2-4	0- 0- 3	0- 4- 18	46-72-91	43-71-91	34-63-88	26-51-77	17-23-32	2-7 -12
			20-72	Very flaggy loam, very channery loam, channery silt loam, gravelly loam, very channery silt loam, channery loam, gravelly silt loam, very flaggy silt loam	GM, CL	A-6, A-1-b	0- 3- 17	3- 6- 40	33-74-82	30-73-81	23-63-80	18-55-73	16-28-35	2-12-17

Engineering Properties–Orange County, New York														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
NcA—Natchaug muck, drained, 0 to 2 percent slopes														
Natchaug, drained	80	B/D	0-12	Peat, muck, mucky peat, woody peat, woody muck, woody mucky peat	PT	A-8	0- 0- 0	0- 0- 0	—	—	—	—	—	—
			12-31	Muck, woody muck	PT	A-8	0- 0- 0	0- 0- 0	—	—	—	—	—	—
			31-39	Loam, very fine sandy loam, fine sandy loam, gravelly sandy loam, sandy loam, silt loam, silty clay loam, gravelly fine sandy loam	ML, SM, SC-SM, CL-ML, CH, CL	A-2-4, A-4, A-6, A-7-6	0- 0- 0	0- 0- 6	71-98-100	57-92-100	46-89-100	34-76-100	0-24 -53	NP-7 -28
			39-79	Loam, very fine sandy loam, fine sandy loam, gravelly sandy loam, sandy loam, silt loam, silty clay loam, gravelly fine sandy loam	ML, SM, SC-SM, CH, CL	A-4, A-6, A-7-6, A-1-b, A-2-4	0- 0- 0	0- 0- 6	71-98-100	57-92-100	41-78-100	21-46-87	0-18 -52	NP-3 -28

Engineering Properties–Orange County, New York														
Map unit symbol and soil name	Pct. of map unit	Hydrologic group	Depth	USDA texture	Classification		Pct Fragments		Percentage passing sieve number—				Liquid limit	Plasticity index
					Unified	AASHTO	>10 inches	3-10 inches	4	10	40	200		
			In				*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*	*L-R-H*
Ra—Raynham silt loam														
Raynham, poorly drained	50	C/D	0-8	Silt loam	CL-ML, ML	A-4	0- 0- 0	0- 0- 0	100-100 -100	95-100-100	80-95-100	45-80-90	15-20 -25	NP-3 -5
			8-26	Silt loam, silt, very fine sandy loam	CL-ML, ML	A-4	0- 0- 0	0- 0- 0	100-100 -100	95-100-100	80-95-100	45-80-90	15-20 -25	NP-3 -5
			26-60	Silt loam, silt, very fine sandy loam	CL-ML, ML	A-4	0- 0- 0	0- 0- 0	100-100 -100	95-100-100	80-95-100	45-80-90	15-20 -25	NP-3 -5
Raynham, somewhat poorly drained	25	C/D	0-8	Silt loam	CL-ML, ML	A-4	0- 0- 0	0- 0- 0	100-100 -100	95-100-100	80-95-100	45-80-90	15-20 -25	NP-3 -5
			8-26	Silt loam, silt, very fine sandy loam	CL-ML, ML	A-4	0- 0- 0	0- 0- 0	100-100 -100	95-100-100	80-95-100	45-80-90	15-20 -25	NP-3 -5
			26-60	Silt loam, silt, very fine sandy loam	CL-ML, ML	A-4	0- 0- 0	0- 0- 0	100-100 -100	95-100-100	80-95-100	45-80-90	15-20 -25	NP-3 -5

Data Source Information

Soil Survey Area: Orange County, New York
Survey Area Data: Version 21, Jun 11, 2020

APPENDIX I

NEW YORK STATE OF OPPORTUNITY. Parks, Recreation, and Historic Preservation

KATHY HOCHUL
Governor

ERIK KULLESEID
Commissioner

October 29, 2021

Alfred Cammisa
Project Archaeologist
Tracker Archaeology
62 Pickerel Rd
Monroe, NY 10950

Re: SEQRA
Craigville Logistics Warehouse Construction Project
Route 17A, Blooming Grove, Orange County, NY
21PR05959

Dear Alfred Cammisa:

Thank you for requesting the comments of the Division for Historic Preservation of the Office of Parks, Recreation and Historic Preservation (OPRHP) as part of your SEQRA process. These comments are those of OPRHP and relate only to Historic/Cultural resources. They do not include potential environmental impacts to New York State Parkland that may be involved in or near your project. Such impacts must be considered as part of the environmental review of the project pursuant to the State Environmental Quality Review Act (New York Environmental Conservation Law Article 8) and its implementing regulations (6 NYCRR Part 617).

OPRHP has reviewed the Phase I Archaeological Survey report entitled “Phase I Archaeological Investigation for the proposed Craigville Road Warehouse, Town of Blooming Grove, Orange County, New York” prepared Tracker Archaeology, Inc. (July 2021, 21SR00645). The archaeological survey identified the Craigville Prehistoric Site (07101.000190). OPRHP recommends that the archaeological site be avoided, and if site avoidance is not feasible, a Phase II site evaluation should be completed.

If you have any questions, I can be reached at Jessica.Schreyer@parks.ny.gov.

Sincerely,

Jessica E. Schreyer

Jessica Schreyer
Scientist Archaeology